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eem 87 88

electronic engineers master catalog

VOLUME C



interconnections, packaging, and hardware

30th EDITION

1400 Cabinets, Enclosures, Racks, & Chassis
1600 Chemical Compounds (Adhesives, Cleaners, Coatings, etc.)
1700 Circuit Boards (Printed), Materials, & Accessories
2100 Connectors, Terminals, & Sockets
2400 Panel Hardware (Bezels, Dials, Knobs, etc.)
2500 Mechanical Components
2600 Fans, Blowers, Cooling Equipment, & Heat Exchangers
2800 Hardware (Electronic/Electrical)
2825 Hardware (Mechanical)
3100 Insulators & Insulating Materials
3200 Interconnection Systems (Backpanels, Card Holders, & Packaging Systems)
4200 Prototype Boards, Kits, & Design Aids
4525 Shields & Shielding
4600 Soldering & Desoldering Equipment
5400 Tools (Manual & Power)
6000 Wire & Cable

volume A Electronic components
volume B Electromechanical, electro-optical, and military components
volume D Power sources, instrumentation, computer products, and equipment

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contents

How to use EEM ..... C•2
Alphabetical Index of Manufacturers' Catalog Data Pages ..... C•4
Alphabetical Index of Distributors' Advertisements ..... C•8
Product Index & Directory ..... C•9
Manufacturers & Sales Offices Directory ..... Yellow Pages 601
Trademark and Logofinder Directories ..... B•901
Manufacturers' Catalog Data Pages ..... C•1002

product sections

1400 Cabinets, Enclosures, Racks, & Chassis ..... C•1002
1600 Chemical Compounds (Adhesives, Cleaners, Coatings, etc.) ..... C•1105
1700 Circuit Boards (Printed), Materials, & Accessories ..... C•1108
2100 Connectors, Terminals, & Sockets ..... C•1114
2400 Panel Hardware (Bezels, Dials, Knobs, etc.) ..... C•1568
2500 Mechanical Components ..... C•1600
2600 Fans, Blowers, Cooling Equipment, & Heat Exchangers ..... C•1606
2800 Hardware (Electronic/Electrical) ..... C•1696
2825 Hardware (Mechanical) ..... C•1703
3100 Insulators & Insulating Materials ..... C•1704
3200 Interconnection Systems (Backpanels, Card Holders, & Packaging Systems) ..... C•1708
4200 Prototype Boards, Kits, & Design Aids ..... C•1738
4525 Shields & Shielding ..... C•1741
4600 Soldering & Desoldering Equipment ..... C•1755
5400 Tools (Manual & Power) ..... C•1757
6000 Wire & Cable ..... C•1758

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how to use eem

The 30th edition of EEM is arranged in four volumes each composed of related Product Sections. For user convenience, each volume contains its own Product Index and Directory (green pages) and its own Manufacturers and Sales Offices Directory (yellow pages). Every Product Heading and every Manufacturer of electronic products is listed in each volume. Where, however, the Product Section is assigned to a volume other than that in use, a cross reference is made to the appropriate volume for further information.

To locate a specific product. Start by choosing the volume whose title describes the class of electronic product you are seeking. If you are not sure which volume is appropriate, pick up the first one at hand and find the product heading in the green pages. There you will find either a list of that product's manufacturers or you will be referred to the proper volume. All products are identified by their generic terms. Please read the detailed instructions on the first page of this section. Manufacturers with catalog data in this edition of EEM appear in bold face type and page numbers are shown. Manufacturers appearing in light face type have submitted verifying evidence that they supply the products shown. When you have located a product of interest, turn to the page(s) shown for further information. You will find these pages in each volume in the appropriate sections.

product selection guides

There are 34 Product Selection Guides included in this edition of EEM! They are located on the first pages of the Product Section to which they apply. Use these guides for basic selection parameters and then go to the EEM pages shown in the guide for more detailed information.

product selection index

Product Selection Guide		Vol. A	Vol. B	Vol. C	Vol. D
1100	Amplifier Assemblies, Instrumentation				D•1002
1300	Audio Equipment & Accessories				D•1031
1400*	Cabinets, Enclosures, Racks & Chassis			C•1002	
1500*	Capacitors	A•1002			
1600	Chemical Compounds (Adhesives, Cleaners, Coatings)			C•1105	
1700*	Circuit Boards (Printed), Materials & Accessories			C•1108	
1800*	Coils, Chokes, & Inductors	A•1200			
1850	Cores, Magnets, & Ferrites	A•1317			
1900	Communications & Telelmetry Equipment				D•1063
2000	Computer Peripheral Equipment				D•1073
2025	Computers (Mini/Micro)				D•1107
2050	Computer Software				D•1113
2100*	Connectors, Terminals, & Sockets			C•1114	
2200	Control Systems & Components				D•1115
2300*	Crystals, Oscillators, Crystal & Piezoelectric Filters	A•1328			
2325	Data Acquisition/Handling Systems & Accessories				D•1139
2350*	Delay Lines	A•1488			
2400*	Panel Hardware (Bezels, Dials, Knobs, etc.)			C•1568	
2440*	Military Components		B•1002		
2450*	Displays, Readouts, Lamps, & Lights		B•1028		
2475	Fiber Optic Equipment & Accessories		B•1141		
2500	Mechanical Components			C•1600	
2550	Environmental Test Equipment				D•1186
2600*	Fans, Blowers, Cooling Equipment, & Heat Exchangers			C•1606	
2700*	Filters	A•1642			
2800	Hardware (Electrical/Electronic)			C•1696	
2825	Hardware (Mechanical)			C•1703	
2900*	Instruments, Test & Measuring				D•1190
2950*	Panel Meters (Analog & Digital)				D•1334
2975*	Instruments, Oscilloscopes				D•1386
3000*	Instruments, Graphic Recording				D•1404
3100	Insulators & Insulating Materials			C•1704	
3130	Integrated Circuits, Hybrid Circuits, & Function Modules	A•1732			
3200*	Interconnection Systems (Backpanels, Card Holders, Packaging Systems)			C•1708	
3400	Microwave Systems & Subsystems				D•1410
3450*	Microwave Components	A•1776			
3475	Military Systems & Equipment				D•1414
3500*	Motors, Drives, & Rotating Components		B•1152		
3700	Electro-optical Equipment		B•1221		
3900*	Batteries				D•1416
4000*	Power Supplies, DC				D•1482
4050*	Power Supplies, AC				D•2016
4100	Production Equipment, & Manufacturing Services				D•2112
4200	Prototype Boards, Kits & Design Aids			C•1738	
4300*	Protective Components (Fuses, Circuit Breakers, etc.)		B•1232		
4500*	Relays		B•1284		
4525	Shields & Shielding			C•1741	
4550*	Solenoids		B•1508		
4600	Soldering & Desoldering Equipment			C•1755	
4700*	Resistors	A•1862			
4750*	Potentiometers, Trimmers, Controls, & Rheostats	A•2076			
4800*	Discrete Semiconductors	A•2130			
4900	Servomechanisms & Robotic Equipment				D•2120
5100*	Switches		B•1528		
5150*	Keyboards & Keypads		B•1702		
5300*	Thermal Components		B•1728		
5400	Tools (Manual & Power)			C•1757	
5500*	Transducers & Encoders		B•1768		
5600*	Transformers	A•2160			
6000*	Wire & Cable			C•1758	

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*Product Selection Guide

advertisers' index

To find a specific manufacturer's data pages, an alphabetical index of EEM participants appears in EEM starting on page **A**•4 of Volume **A** and on pages **B**•4, **C**•4 and **D**•4 of the other volumes.

eem 87 88

trademark and logofinder directories

A comprehensive trademark directory is included at the end of the EEM yellow pages in Volume **B**. The EEM logofinder shows the symbols and graphics used by manufacturers as identifiers on their products. Use these pages to locate manufacturers of specific trademarks and logos.

manufacturers' index

In the EEM yellow pages you will find pertinent details on all manufacturers listed in EEM including local sales offices and/or distributors. Please refer to the detailed instructions on the first page of the EEM yellow pages for additional information.

to order a product found in eem

When you have located the product that suits your needs, call the manufacturer or the local sales rep or distributor as shown in the EEM yellow pages. Give the EEM data page number and specs from that page. You and the supplier will be talking on the same wave length which should simplify your ordering and buying.

to file manufacturers' catalogs and data

The EEM File System has been revised and updated. The new EEM File System contains a complete Product Index. This Index tells you where to file which catalog. It also contains a cross-reference so you'll know where catalogs are filed.

In order to use the new EEM File System all you need is a supply of standard letter size, third-cut, manila file folders which are available locally. You then use the pressure sensitive labels which are supplied with the File System to go into as much detail as you want (or need).

Each label fits the third-cut file folder exactly. There are over 300 of these labels in one System: 1 for the index, 1 each for the 62 EEM Product Sections, 24 for the alphabetical file of multiproduct catalogs, plus more than 200 additional labels for System expansion. The System also includes 62 Cross Reference Cards so you can quickly and easily find multiproduct catalogs. The EEM File System is complete and can save you countless hours of time and thousands of dollars. The price? Only $25.00. Send a check to: EEM File System, 645 Stewart Ave., Garden City, NY 11530 and we'll absorb postage and handling. Send a purchase order and add $2.00 for postage and handling. NY and CA residents, please add sales tax.

technical information: codes... miniglossaries... charts...

Abbreviations/Acronyms ..... **A**•1090, **B**•1096, **C**•1076, **D**•1020
ASCII Code ..... **D**•1082
Batteries & Fuel Cells ..... **D**•1432
Capacitors ..... **A**•1033
Capacitor Formulas ..... **A**•1037
Conductors, Maximum Current Capacity ..... **C**•1882
Connectors ..... **C**•1210
EBCDIC Code ..... **D**•1090
Encapsulation ..... **C**•1112
Opto Semiconductors ..... **B**•1226
Power Supplies ..... **D**•1571
Relays ..... **B**•1325
Relay Contact Forms ..... **B**•1339
Resistor Color Codes ..... **A**•1904
Servo Components ..... **B**•1202, **D**•2121
SI Units ..... **A**•1216, **B**•1822, **C**•1228, **D**•1040
Thermal Conductivity of Dielectrics .... **B**•1734
Thyristors & High Power Diodes ..... **A**•2148
Voltage Drop Nomograph ..... **C**•1830, **D**•1698
Wire Gauges ..... **C**•1766

87
88 Alphabetical Index of Manufacturers Catalog Pages

This index provides an alphabetical listing of manufacturers pages and where to find them

A

AAVID Engrg. ..... C•1610-1615
Abacus Controls Inc. ..... D•2019-2021
Abbott Transistor Labs., Industrial Products Div. ..... D•1487, 1503-1509, 2022-2023
Abbott Transistor Labs., Power Supply Div. ..... D•1488-1502
Abbott Transistor Labs., Transformer Div. ..... A•2164-2173
ABL Electronics Supply, Inc. ..... C•1763-1765
Acculex Corporation, MetraByte ..... D•1337
Accuride ..... C•1006-1009
ACDC Electronics, Div. of Emerson ..D•1511-1513
Acopian ..... D•1515-1553
Actek, Inc. ..... D•1115
Active Control Instrumentation ..... D•1116
Advance Conversion Devices Co. ...D•2024-2025
Advanced Control Sys. ..... D•1117
Advanced High Voltage Co. ..... D•1567
Advanced Systems Concepts ..... D•1197
Ad-Vance Magnetics, Inc. ..... C•1741
Advantest America, Inc. ..... D•1198-1206
A E G Corporation ..... B•1031; C•1710-1711
Aeroflex Laboratories Inc., Magnetic Products Div. ..... B•1156-1157; D•1110, 1139
Aeroflex Laboratories, Inc., Microelectronics Div. ..... A•1732; D•1110, 1139
AirBorn, Inc. ..... C•1121-1146
Air Electro Supply, Inc. ..... C•1148
Airflyte Elctrns. Co. ..... B•1158-1163
Airpax Corp. ..... B•1234
Airpax Corp., Cheshire Div. ..... B•1165; D•1119
Airpax Corp., Ft. Lauderdale Div. ..... D•2120
Airpax Corp., Frederick Div., A North American Philips Co. ..... B•1287, 1730
Airpax Corporation, International Div. ..... B•1164
Alberox ..... C•1600
Alcoswitch, Augat Inc. ..... B•1534-1535
Alden Products Co. ..... C•1147
Alexander Batteries, New Product/OEM Divison ..... D•1421
Allen Avionics, Inc. ..... A•1490-1493, 1645
Allen Bradley Co., Electronic Components Div., A Rockwell International Co. ..... A•1866-1877
Allen Bradley Co., Electronics Group, Div. of Rockwell Corp., Resistive Products ... A•2076, 2079-2081
Allied Control, Div. of Telemanique, Inc. ..... B•1288-1297
Alpha Wire Corp. ..... C•1767-1774
Alps Electric (USA), Inc. ..... D•1073
Altair Exchange Corporation ..... B•1032-1034
Altech Corporation ..... B•1298, 1536; C•1149
Amco Engineering ..... C•1010-1013, 1616
Amecon, Inc. ..... A•2174-2189
AME Corporation ..... B•1537
Amerex ..... C•1014
American Aerospace Controls ..... B•1733, 1772
American Automation ..... D•1207
American Insulated Wire Corp., Leviton Mfg. Co. ..... C•1775
American Microsemiconductor, Inc. ..A•2132-2133
American Microwave Technology, Inc. ..... D•1002-1003
American Relays, Inc. ..... B•1299-1301
American Research & Engineering ..B•1538-1539
American Shizuki Corporation ..... A•1007-1011
American Switch Corp. ..... B•1541
American Technical Ceramics Corporation ..... A•1013-1017
American Zettler ..... B•1302-1314
AMP Incorporated .....A•1646; B•1142-1144, 1542-1543, 1704; C•1114, 1150-1174, 1712
Amperex Electronic Corporation, Slatersville Division ..... A•2130, 2134-2143; B•1035, 1221
Amperex Electronic Inds., Smithfield Div. ...B•1221
Amplifier Research ..... D•1004-1005
Amuneal Manufacturing Corp. ..... C•1742
Analog Modules, Inc. ..... D•1006
Anasco Corporation ... D•1141, 1209, 1386, 1389
AND, William J. Purdy Co. ..... B•1036-1039
Andersen Laboratories ..... A•1647
Anderson Elctrns. ..... A•1333
Ango Electronics Corp. ..... C•1015
A. P. Circuit Corp. ..... A•1648
Apex Microtechnology Corp. ..... D•1007
Apollo Magnetics Corp. ..... D•1074
Applied Power Conversion, Technology Dynamics, Inc. ..... D•1554-1566
Applied Research, Inc. ..... A•1778-1779
Arcolectric Corp. ..... B•1040-1045, 1544-1555
Aries Electronics ..... C•1176-1181
Arium Corporation ..... D•1210-1211
Armbar Industries, Inc. ..... A•1019
Arnold Magnetics ..... D•1568-1569
Aromat Corp. ..... B•1315-1321
Arra Inc. ..... A•1781
Arrow Hart Component Products, Cooper Inds. ..... B•1556-1561
Arstan Products International Inc. ... A•2190-2193; D•1572-1573
Aselco, Inc. ..... A•1020-1022
Associated Research, Inc. ..... D•1212
Astro-Med, Inc. ..... D•1406
Astron Corp. ..... D•1574
Astrosystems ..... D•1575
AT&T ..... A•1023-1032, 1334-1337, 1733-1743, 2194-2199; B•1322-1324; C•1713-1715; D•1576-1578, 2026-2027
Atlantic Scientific Corporation ..... B•1235
Atlas/Soundolier ..... C•1016
Atlee Inc. ..... B•1236; C•1017, 1716-1717, 1743
Augat, Inc., Interconnection Systems Div. ..... C•1718-1721
Augat Telzon, Augat Inc. ..... B•1145
Ault, Incorporated ..... D•1580-1581
Austron, Inc. ..... A•1338-1339
Automatic Coil Corp., Sub. Designatronics, Inc. ..... A•1203-1205, 1494-1497
Automatic Timing & Controls Co. ..... D•1120
Autronics Corp. ..... D•1121
Avel-Lindberg, Inc. ..... A•2201
Avex Elctrns. ..... D•1422-1424
Avionic Instruments .... D•1582-1583, 2028-2033
AVX Corporation ..... A•1034-1036; B•1009
Axial Magnetics, Tencal Inc. ..... B•1166

B

Babcock Display Products, Inc., A Subsidiary of Babcock, Inc. ..... B•1046-1047
Ballantine Laboratories, Inc. ..... D•1218
B & K Precision, Industrial Electronics Product Group, Dynascan Corporation ..... D•1213-1217, 1390-1392, 1585
Battery Engineering, Inc. ..... D•1425
Bead Electronics, Div. Bead Chain Mfg. Co. ..... C•1696
Beau Products Div., Vernitron Corp. ..C•1188-1192
Beckman Industrial Corp. ..... A•2083
Beede Electrical Instr. Co. ..... D•1345-1347
Behlman Engineering ..... D•2034-2041
BEI Motion Systems Co., Corporate Off. ... B•1775
BEI Motion Systems Co., Computer Products Div. ..... B•1775
BEI Motion Systems Co., Digital Products Div. ..... B•1774
BEI Motion Systems Co., Industrial Encoder Div. ..... B•1774
BEI Motion Systems Company, Kimco Division ..... B•1775
BEI Motion Systems Co., Position Controls Div. ..... B•1774
Belden, Wire and Cable ..... C•1758, 1776-1817
Bel Fuse ..... A•1499-1531; B•1237-1239
Bell, Floyd, Assocs., Inc. ..... D•1031
Bell, F. W., Inc. .....B•1776; D•1122-1123, 1222-1224
Bell Inds., J. W. Miller Div. ..... A•1207-1213
Bergquist ..... B•1702, 1705; C•1704
Berkeley Nucleonics Corp. ..... D•1225
Bertan Assocs. ..... D•1586-1589
Best Technology Inc. ..... B•1731
Bey Electric, Inc. ..... A•2202-2203
B-G Instruments ..... D•1075
BH Electronics, Inc. ..... A•1214-1215, 2204-2207
Bicron Electronics ..... A•2208-2209
Bivar, Inc. ..... C•1018
Blatek Industries, Inc. ..... B•1777
Bliley Electric Co. ..... A•1341-1349
Blue M, A Unit of General Signal ..... D•1186
Bodine Elec. Co. ..... B•1167
Bogen Communications, Inc. ..... C•1193
Boonton Electronics Corp. ..... D•1226
Bopla Enclosures ..... C•1019
Bourns, Inc., Resistive Components Group ..... A•1878-1879, 2084-2087
Breeze-Illinois, Trans Technology Corp. ..... C•1818-1819
Brevel Motors, Inc., Sub. Vernitron Corp. ...B•1168
Brim Electronics ..... C•1820-1829
Buckeye Stamping Co. ..... C•1020
Buehler Products, Inc. ..... B•1169
Burgess Switch Co., Inc. ..... B•1562
Bussmann ..... C•1194

C

Cable Systems, Inc. ..... C•1831
Cabtron Systems, Inc. ..... C•1021-1025
CAC Microcircuits Inc. ..... A•1744
Caddell-Burns Mfg. ..... A•1218-1231
Caddell Coil Corp. ..... A•1232
Caddock Electronics, Inc. ..... A•1880-1903
Calex Mfg. Co., Inc. .. C•1723; D•1008, 1590-1594
California DC ..... D•1595
California Instruments, A Div. of Amstar Tech. Prods. Co., Inc. ..... D•2042
Calmark Corp. ..... C•1027
Cambridge Aeroflo Instruments, Inc. ..... C•1617
Canada Wire and Cable Limited .... C•1832-1833
C & C Jetronic, Inc. ..... A•2210; C•1110, 1198
C & K Components, Inc. ..... B•1564-1566
C & K/Unimax, Inc. ..... B•1567
Canon U.S.A., Elctrn. Comps. Div. ..... B•1170
Canyon Elctrns. ..... B•1048
Capar Components Corp., Div. of Diplomat Electronics ..... A•1038-1039, 2144
Carlingswitch, Inc. ..... B•1240, 1568-1569
Carol Cable Co., Electronic Cable Division ..... C•1834
Carrot Components Corporation .... C•1195-1197
Catalyst Research, Mine Safety Appliances Co. ..... A•1745; D•1426
Caton Connector Corp. ..... C•1199-1203
Ceramaseal ..... C•1204
Chatsworth Data Corporation ..... D•1227
Cherokee International, Inc., Core Industries ..... D•1597-1599
Cherry Electrical Products .... B•1049, 1570-1575; D•1076
Chesterfield Products ..... A•1649
Chicago Lock Co. ..... B•1577
China Storage Battery Co. Ltd., Automotive Accessories Marketing Corp. ..... D•1427
Christie Electric Corp. ..... D•1428, 1600-1601
Chromalox Instrs. & Controls ..... D•1126
Chrono-log Corp. ..... D•1077
Citizen Business Machines ..... D•1079-1081
Clairex Electronics, Clairex Corporation ... B•1222

Clare Division, General Instrument Corp. ..... B•1284, 1326-1327
Clarke-Hess Communications Research Corp. ..... D•1228-1229
Clifton Precision, Litton Systems, Inc. ..... B•1171
CML MACARR Div., Marine Electric RPD, Inc. ..... D•2043
Coilcraft ..... A•1233-1238
Colber Corp. ..... A•1906-1907
Cole Instruments ..... B•1578
Collmer Semiconductor, Inc. ..... A•2145-2147
Colorado Crystal Corp. ..... A•1351-1353
Comair Rotron, A KLI Company .... C•1618-1620
Comclok, Inc. ..... A•1354
Communications Instruments, Inc. ...B•1328-1333
Compac ..... B•1579; C•1028-1031
Compact Power Company ..... D•2044
Component Mfg. Svc., Inc. ..... C•1205
Component Research Co. Inc. ..... A•1040-1073
Computer Components, Inc. ..... B•1334
Computer Conversions Corp. ..... D•1142-1143
Computer Devices Corp. ..... A•1532
Computer Optical Prods., Inc., Sub. of Hathaway Corp. ..... B•1778
Computer Prods. Inc., Power Conversion Grp. .... D•1092-1094, 1482, 1603-1628, 1637-1638
Comstron Corp. ..... A•1355, 1651; D•1230-1231
Concord Electronics Corporation ..... C•1206-1207, 1697
Condor D.C. Power Supplies, Inc. ... D•1640-1659
Connector Corp. ..... C•1208-1209
Connor-Winfield Corp. ..... A•1356-1359
Consolidated Electronic Wire & Cable ..... C•1835-1843
Control Electronics, Neurotech Corp. ..... A•1533
Controlled Power Co. ..... D•2016, 2045-2049
Control Sciences, Inc. ..... D•1145-1149
Control Technology Co. ..... D•2122-2123
Conver Corp. ..... D•1639
Converter Concepts, Inc. ..... D•1660-1667
Corcom, Inc. ..... A•1652-1653; C•1211
Cord Electronics, Inc. ....A•2088; B•1050; C•1845; D•1033-1035, 1668
Cosmo Corporation ..... A•1239; C•1570-1571
Coto Corporation ..... B•1335
CPS, Inc. ..... D•1669
Crosspoint, Div. of Info-Lite ..... B•1580
Crouzet Controls, Inc. ..... B•1172, 1581
Croven Crystals ..... A•1361
Crydom Division, International Rectifier ..... B•1336-1338
CSI Capacitors, CSI Technologies ..... A•1074
C-Tek Inc. ..... D•1124-1125
CTI Electronics ..... D•1083
CTS Corporation ..... A•1746-1747
CTS Corporation, Berne Division ... A•1908-1917
CTS Electronics Corp., Paso Robles Div., Electromechanical Gp. ..... B•1582-1586
CTS Electronics Corp., Knights Division ..... A•1362-1385
CTS Corporation, Microelectronics Div. ..... A•1746-1747
CTS Corporation, Metal Products Group ..... C•1033-1037
Curtis Industries .....A•1654-1655; C•1212-1213; D•2112
Curtis Instruments, Inc. ..... D•1127
Custom Power Systems ..... D•1670
CYTEC Corp. ..... D•1232

D

Daburn Elctrns. & Cable ..... C•1846-1857
Daico Industries, Inc. ..... A•1782-1783
Dai-Ichi Shoji of Amer., Inc. ..... B•1587; C•1215
Dale Electronics, Inc., Columbus Div. ..... A•1929-1937; B•1051-1053
Dale Electronics, Inc., El Paso Div. ..... A•1918-1921; B•1732-1733
Dale Electronics, Inc., Norfolk Div. ..... A•1922-1929, 1934-1937
Dale Electronics, Inc., Specialty Div. ..A•1934-1937
Dale Electronics, Inc., Tempe Div. ..... A•1387-1389, 2089
Dale Electronics, Inc., Yankton Div. ..... A•1240-1247, 2211-2219; C•1216-1219
Damon Electronics Div. ..... A•1390
D & B Power, Inc. ..... D•1672-1673
Daniels Mfg. Corp. ..... C•1757
Data Delay Devices ..... A•1535-1549
Data Instruments, Inc. ..... B•1779
Datak Corp. ..... C•1572, 1739, 1859
Datametrics Inc. ..... B•1781
Datapower Inc., Power Systems Div. ..... D•1671
Datel, General Electric Co. ..... D•1107, 1150-1152, 1340
Datum Inc., Timing/Aacorn Divisions ..... D•1063, 1153
Daytronic Corp., Hawker Siddeley ... D•1154-1156
DCI Inc. ..... B•1055; D•1338-1339
Del Elctrns. Corp. .... A•1075, 2220; D•1675-1677
Delevan Div., American Precision Inds. Inc. ..... A•1077, 1249-1251
Delta Products Corporation ..... A•1551, 1656-1657, 2221; D•1678-1679
Deltrol Controls ..... B•1340-1341, 1510-1513
Densitron Corporation ..... B•1056-1057
Dialight Corp. ..... B•1028, 1058-1064, 1588-1589
Diego Power ..... D•2050-2052
Digitec Corp. ..... D•1344
Digitran Co., Xcel Corporation ..... B•1065, 1590, 1706
Dio-Rey, Div. of Info-Lite ..... B•1066-1072
Disc Instruments, Honeywell ..... B•1782-1784
Displex, Inc., North Hills Electronics, Inc. ..... D•1680, 2053
Dixson, Inc., Instrument Div. ..... D•1341-1343
Doran Manufacturing Co. ..... C•1220
Dormeyer Inds., A. F. Dormeyer Mfg. Co., Inc. ..... A•2223; B•1514-1515
Douglas Randall ..... B•1342-1350
Dranetz Technologies, Inc. ..... D•1233
Duracell Technical Sales & Marketing, Inc. ..... D•1429-1431
Durakool, Inc., American Electronic Components ..... B•1591
Dymec, Inc. ..... A•1748; B•1146; D•1157
Dynage/Power & Magnetics, Division Of Oakleaf, Inc. ..... A•2224-2225; D•1681
Dynapower Corporation ..... D•1682-1685

E

Eagle ..... A•1658
Eagle Magnetic Company, Inc. ..... C•1744
Eagle-Picher Industries, Inc. ..... D•1433-1435
EAO Switch Corp. ..... B•1597
Eastern Air Devices, Inc. ..... B•1173
ebm Inds., Inc. ..... C•1606, 1621-1625
Eby Company, The Pullman-Peabody Co. ..... C•1221
ECS Composites ..... C•1051
Ectron Corp. ..... D•1009
Edcliff, Div. of Systron Donner ..... B•1785
EECO Incorporated ..... B•1594-1596, 1707
EFRATOM, a division of Ball Corp. ..... A•1391
EG & G Almond Instruments ..... D•1686-1687
EG & G Birtcher ..... C•1038-1039
EG & G Vactec ..... B•1223
EG & G Wakefield Engineering ..... C•1627
Electrical Instrument Service ..... D•1312-1314
Electric Switches, Inc. ..... B•1592-1593
Electrodynamics, Inc., A Talley Inds. Co. ...D•1128
Electro-Films, Inc. ..... A•1938-1939
Electro Impulse ..... C•1628-1629; D•1234
Electro Industries, Div. E.I. Elctrns., Inc. .... D•1351
Elec-Trol, Inc. ..... B•1352-1353
Electromech, Inc. ..... A•2227
Electro-Mechanisms, Inc. ..... B•1516-1517
Electro-Mech Components, Inc. ..... B•1598-1599
Electronic Components Groupe, Stein Industries, Inc. ..... B•1600
Electronic Concepts, Inc. ..... A•1078-1083
Electronic Development Corp., EDC ..... D•1235
Electronic Enclosures, Div. Wyle Labs .... C•1045
Electronic Measurements ..... D•1688-1691
Electronic Molding Corp. ..... C•1222-1224, 1708, 1724-1727
Electronic Navigation Industries, Inc. ..... D•1010-1011
Electric Precision Component Corp. .....A•1659, 1940; D•1236-1238
Electronic Research Co. ..... A•1393
Electronic Solutions, A Unit of Zero Corp. ..... C•1046-1047
Electronic Specialty Corp. .....B•1354-1357, 1518-1519
Electronic Transformer Corp. ..... A•2228-2230
Electro-Numerics ..... D•1348-1350
Electro Space Fabricators ..... C•1041-1044
Electroswitch, A Unit of Electro Switch Corp. ..... B•1602-1603
Electroswitch, Southern Div., Electro Switch Corp. ..... B•1528, 1601
Elfab Corporation, Augat, Inc. ..... C•1226-1227
Elform, Inc. ..... C•1225
Elgar Corp. ..... D•2055-2059
Elgenco, Inc. ..... D•1240-1245
ELMA Electronic Inc. .....B•1604; C•1048-1049, 1573; D•1108
Elmec Technology of America ..... A•1552-1555
Elmwood Sensors ..... B•1735-1737
Elpac Components, Elpac Electronics, Inc. ..... A•1084-1085
Elpac Power Systems, Elpac Electronics, Inc. ..... D•1692-1697
Elpower Corporation ..... D•1436-1438
Eltrol Corporation ..... B•1174
EMCO High Voltage Co. ..... D•1699-1701
Emcor Products, Crenlo, Inc. ..... C•1050
Empro Manufacturing Company, Inc. ..... D•1246
EMS, Div. of Sandberg Industries ..... C•1729
Emtronix Corporation ..... D•2113
Encoder Products ..... B•1787
Endicott Research Group ..... B•1073-1075; D•1702-1703
Energy, Ltd. ..... D•2060
EnTech Corporation ..... B•1605
Entran Devices ..... B•1788-1789
EPD Electronics, Inc. ..... C•1230; D•1064, 1704
EPSCO Microwave ..... D•1012-1013, 1411
ERA/Transpac Power Supplies ..... D•1705
Erbtec Engineering, Inc. ..... D•1247
Escap Products ..... B•1175
ESC Electronics Corp. ..... A•1556-1569, 1661, 2231
E-T-A Circuit Breakers ..... B•1241-1243
ETI Systems, Polaris Indl. Entprs. ... A•2091-2095; B•1177
ETM Electromatic Inc ..... D•1248, 1709
ETRI, Inc. ..... C•1630-1634
Eveready Battery Co. Inc., Ralston Purina ..... D•1440-1441
EWC, Inc. ..... A•1252, 2232-2244
Exar Corp. ..... A•1749
Excel Technology Intl. Corp. ..... B•1076-1077
Exel Microelectronics, Inc., Sub. of Exar Corp. ..... A•1751

F

Fabricast ..... B•1178-1183
Fagor Electronic Components, Inc., Fagor Electrotecnica S. Coop. ..... A•2149
Fairchild Weston, Data Recorders ..... D•1249
Fair-Rite Prods. ..... C•1745
FDK America, Inc., Fuji Electromechanical Co., Ltd. .... A•1317, 1571, 1662-1663, 1752-1753, 1784; D•1442-1443, 1710-1712
FEME Electronics, Inc. ..... B•1351, 1606-1607
Fenwal Electronics/APD, Kidde, Inc. ..... B•1738
Ferretec Inc. ..... A•1665
Fiberoptic Systems, Inc. ..... B•1147
FIC Corp. ..... B•1245
Fifth Dimension, Inc. ..... B•1362, 1608
Filter Concepts Inc. ..... A•1666-1667
Filtron Co., Inc., Sub. of ARX Inc. ..... A•1669
Fischer-America, Inc. ..... C•1231-1233
Flex-Key Corp., Sub. of Astronics Corp. ... B•1708
Flight Connector, Trans-Technology Electronics ..... C•1234-1235
FL Jennings, FL Inds. .....A•1087; B•1358-1361; D•1251
Flotek Corporation ..... D•1352-1353, 2116
Foxboro/PCG, The Foxboro Company ..... A•2246-2248
Franek, John, Co., Inc., Power Star Inc. ..... D•2076-2079
Frederick Components Intl. ..... C•1635
Freed Transformer ..... A•2249-2251; D•1252
Frequency and Time Systems, Inc., DATUM, INC. ..... D•1253
Frequency Devices, Inc. ..... A•1670-1671
Frequency Elctrns. ..... A•1394-1395
Frequency Selective Networks ..... A•1396
Fujitsu America, Inc, Storage Products Div. ..... D•1084-1089
Fujitsu Components of America .... B•1363-1382; C•1236-1281
Fuses Unlimited ..... B•1244

G

Gamma High Voltage Resch. Inc. ... D•1714-1717
Gates Energy Products ..... D•1444-1451
Gemini ..... C•1052-1053
General Devices ..... C•1054-1057
General Microwave Corporation ..... A•1785; D•1254
General Power Sys. ..... D•2061
General Resistance, A Prime Technology Company ..... A•1941; D•1255
Genicom Corp. ..... B•1383-1388
Gerator Corp. ..... D•2062-2064
Gilway Technical Lamp ..... B•1078-1081
Glassman High Voltage Inc. ..... D•1719-1727
Golden Pacific Electronics, Inc ..... D•1036, 1452, 1728
Gordos Corporation, Reed Relay Division ..... B•1390-1401, 1609
Gordos Corporation, Solid State Products Division ..... A•1754; B•1390-1401
W. L. Gore & Assocs., Inc. ..... C•1860-1862

INDEX OF MANUFACTURER'S CATALOG PAGES

Gould Inc., Recording Systems Div. ..... D•1407
Gowanda Electronics Corp. ..... A•1253
Gralex Industries ..... D•1354
Graphite Metallizing Corp. ..... B•1184
Grayhill Inc. ..... B•1402-1403, 1610-1618, 1710-1713; C•1290
Greenwich Instruments USA ..... A•1755
Grim Corporation ..... D•1065
Grimes Company ..... B•1619
GSI Corp. ..... C•1864-1866
GTE Products ..... A•1397

H

The Hall Company ..... B•1714
Hamlin ..... B•1082, 1431, 1620, 1790
Hammond Manufacturing Co. ..... C•1058
Harrel, Inc. ..... D•1129
Hasco Components, Inc. ..... B•1404-1412, 1621-1622
Hathaway Instruments, Computer Motor Products Div. ..... B•1185
HC Power Inc. ..... D•1729
HEI, Inc. ..... B•1224
Heinemann Electric Co. ..... B•1246-1247
Hermetic Switch ..... B•1623
Hewlett-Packard Co. .... D•1256-1257, 1730-1733
Hewlett-Packard, Santa Clara Div. ...D•1258-1259
Hexacon Elec. ..... C•1755
Heyco Molded Products, Inc. ..... C•1867
Hi-G Company, A Subsidiary of Nytronics Inc. ..... B•1414-1423
Hipotronics Inc. .....A•2252-2254; D•1260-1263, 1734-1735, 2066-2067
Hiram Jones Electronics ..... C•1282-1285
Richard Hirschmann of America .... C•1286-1289
Hisonic, Inc. ..... A•1673, 2255
Hi-Tech, Inc. ..... C•1636
Hitran Corp., Agex ... A•2256; D•1737, 2068-2069
Holmberg Elctrns. ..... C•1291
Homalite, Inc. ..... B•1083
Hughes Microelectronics Circuits Division ..... A•1399
Huntington Electric Inc. ..... A•1943
Hycomp, Inc. ..... A•1756-1757, 1944-1946
Hypertronics Corp. ..... C•1292-1296

I

IDEC Corporation ..... B•1084-1085, 1424-1430; C•1297-1299
IERC ..... C•1637
IET Labs, Inc. ..... D•1264-1269
ILC Data Device Corp. ..... D•1158-1159
Illinois Capacitor, Inc. ..... A•1088-1089
Illinois Lock Co., The Eastern Co. ... B•1624-1625
IMC Components Corporation ... B•1186; C•1639
Indek Corporation ... B•1626-1627; C•1640-1643
Inductor Supply ..... A•1248
Industrial Devices, Inc. ..... B•1086-1091
Industrial Drives, A Kollmorgen Div. ..B•1187-1189
Industrial Electronic Engineers ..... B•1011, 1092-1093
Industrial Test Equip. ..... D•2070-2074
Information Transfer Indl. ..... D•1161-1163, 1270-1271
Injectorall Electronics (Woman Owned) ..... C•1105, 1111, 1740
Inland Motor ..... B•1190-1193
Instrumentation & Control Sys. ..... B•1432-1433; D•2075
Instruments for Industry, Inc. ..... D•1014
Instrument Specialties Co. ..... C•1746-1747
Integrated Circuits, Inc. .... A•1758; D•1741-1745
Intelligence Power Technology ..... D•1746
Interelectronics Corp. ..... D•1747
Interface Engineering ..... D•1164-1165
Interfan, William J. Purdy Co. ..... C•1644-1647
Inter-Market ..... B•1094, 1628
International Components Corp. ..... D•1038
International Electro Magnetics, Inc. ..... D•1037
International High Voltage Elctrns., Inc. ..... D•1748-1749
International Instruments, General Resistance, Inc. ..... D•1355
International Power D.C., Power Supplies Inc. ..... D•1750-1753
International Power Devices ..... D•1755-1763
International Resistive Company .... A•1948-1953
International Sensor Systems, Inc. ..... A•1759; D•1130
Interoptics, Purdy Group ..... B•1148-1149
Interswitch, Wm. J. Purdy Co. ..... B•1629
Inter-Technical Grp. ..... A•1091
Intronics, Inc. ..... D•1765
ISL Products Int'l, Ltd. ..... A•1092-1093, 2257; C•1301, 1868
Isotemp Research, Inc. ..... A•1400-1401
Itek Measurement Sys., Div. Litton Inds. ..... B•1791-1793
ITT Components, ITT Corporation ..... A•1094-1096, 1402-1403; B•1434-1441; C•1302-1303
ITT Schadow ..... B•1630-1634
IVO Inds., Inc. .. B•1095, 1636-1637, 1794; D•1131
Iwatsu Instruments, Inc. ..... D•1394-1398

J

JAE Electronics Inc. ..... B•1638-1641; C•1304-1307
Janco Corp. ..... B•1642-1643
Jan Hardware Mfg. Co. ..... C•1568, 1575-1595
Jayco Plastics of California, Inc. .... B•1715-1717
JBM Electronics, Inc. ..... A•1572-1577
J-B-T Instruments ..... D•1356
JDK Controls, Inc. ..... A•2096
Jerome Industries Corp. ... A•2259; D•1766-1768
JETA Power Systems ..... D•1706-1708
Jettron Products ..... C•1308-1310
Jewell Electrical Instruments ..... D•1357
JMJ Technical Prods. ..... C•1596
JMK, Inc. ..... A•1674-1676
JM Transformer Co., Inc. ..... A•2260-2265
Jobmaster Corp. ..... A•1318
Johanson Dielectrics ..... A•1098
Johanson Manufacturing Corp. ..... A•1099
Johnson, E. F., Co. ..... C•1312-1317
JSC Wire & Cable ..... C•1869
Judd Wire, High Voltage Engrg. ..... B•1012-1013; C•1870-1871
Judd Wire, High Voltage Engrg. ..... C•1870-1871
Julie Research Labs. ..... A•1954; D•1272-1276

K

Kaiser Systems, Inc. ..... D•1770-1773
Kalamazoo Technical Furniture ..... C•1059
K & M Electronics ..... A•1955
Kappa Networks, Inc. ... A•1579-1600, 2266-2268
Kautt & Bux of America, Inc. ..... B•1644; C•1318-1319
Kay Elemetrics Corp. ..... A•1786
KEC Electronics, Inc. ..... D•1774
Keene Laminates, Keene Corp. ..... C•1601
Kelvin ..... A•1956-1959
Kemet ..... A•1002, 1100-1110; B•1014
Kepco, Inc. ..... D•1775-1804
Kessler-Ellis Prods. ..... D•1132
Kester Solder Div., Litton Sys., Inc. ..... C•1756
Keystone Carbon, Thermistor Div. ...B•1739-1741
Keystone Electronics Corp. ..... C•1699
KGS Electronics, Inc. ..... D•2080-2081
Kikusui International Corp. ..... D•1399, 1805
Kilo International ..... A•2097
Kilovac Corp. ..... B•1442-1447
KOA Speer Electronics ..... A•1111, 1960-1964
Koep Precision Standards, Inc. ..... D•1277
Kooltronic ..... C•1649-1668
KR Electronics, Inc. ..... A•1677
Krohn-Hite Corp. ..... D•1278-1279
Kulka (Dialight Corporation) ..... C•1320-1323

L

Lamptronix Co., Ltd. ..... B•1097
Lansing Research Corp. ..... C•1060
Leach Corp., Control Prods. Div. .... A•1760-1761; B•1448-1453
Leach Corp., Relay Div. ..... B•1454-1459
Lear Siegler, Inc., Telecommunications Div. ..... C•1324
Ledex Inc. ..... B•1508, 1521-1523, 1645-1647
Ledtronics, Inc. ..... B•1098-1099
Leecraft Mfg. ..... B•1101-1103
LEMO U.S.A., Inc. ..... C•1325-1333
Lenco Elctrns., Inc. ..... A•2270-2271
Liberty Controls ..... B•1524
Liberty Engineering ..... C•1702
Line Electric Products ..... B•1461
Linseis, Inc. ..... D•1404, 1408
Litton Encoder Div. ..... B•1795
Litton Systems, Inc., Electron Dvcs. Div. ... A•1787; B•1015; D•1806
Logitek, Inc. ..... B•1462-1464; D•1807
Low Key Corporation, Strong Group ..... B•1718-1720
LVC Industries, Inc. ..... B•1648
LZR Electronics, Inc. .....B•1104; C•1334-1337, 1669, 1873; D•1039, 1091, 1808-1811

M

Mabuchi Motor America Corp. ..... B•1194
Mac Panel Co. ..... C•1730-1731; D•1414
Magnecraft Electric Co. ..... B•1465
Magnetek Corp. ..... A•2272-2273
Magnetico Inc. ..... A•2275
Magnetic Shield Corporation ..... C•1749-1751
Magnum Opus Custom Elctrn. Engrg. ..... D•1109
Maida Development Co. .....A•1113-1117, 1966-1967
Mantex Corp. ..... B•1721
Manufacturers' Components Inc. ..... B•1649
MARCONI INSTRUMENTS ... D•1190, 1280-1284
Markel Corp. ..... C•1705
Mark Eyelet Inc., AMP, Inc. ..... C•1338
Marktech International Corp. ..... B•1105
Marlow Industries ..... C•1670-1671
Marquardt Switches Inc. ..... B•1651
Matrix Corp. ..... D•1167
Matrix Systems Corp. ..... A•1788
Matsuo Electronics ..... A•1118-1123
Maurey Instrument Corp. ..... A•2098-2103
Maxon Precision Motors, Inc. ..... B•1195
McCoy Electronics Co. ..... A•1404-1415
MCG Elctrns. ..... B•1232, 1249-1272
McGill Manufacturing Co., Inc. ..... B•1652-1654
MCI Transformer Corporation ..... A•2276-2291
MCL, Inc. ..... D•1412-1413
McLean Engineering, Zero Corp. .... C•1672-1673
McLean Midwest ..... C•1674-1675
3M Associated Electronics ... C•1183-1187, 1738
3M-Electronic Products Division .... C•1339-1342
3M Co., Static Control Sys. Div. ..... D•2114-2115
MDF Products Inc. ..... D•1285
Measurement Systems, Inc. ..... D•1133
Mechanical Entprs. ..... B•1655, 1722-1723
Mechanical Products, Amstar ..... B•1273
Mechanized Electronic Assembly Div., Universal Instrs. Corp. ..... D•2117
Mechatronics/SAB Inc. .....B•1709; C•1605, 1676-1677, 1874-1875
Melcor/Materials Elctrn. Prods. ..... C•1678-1679
Memcor-Truohm, Inc. ..... A•1969, 2104
Memodyne ..... D•1092-1094
Memtron Technologies, Inc. ..... B•1657
Mepco/Centralab, Inc./Corporate Hdqrts., A North American Philips Co. ..A•1124-1128, 1763, 1970-1973, 2105; B•1002, 1016-1017, 1659-1660
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1127, 1970-1971; B•1016-1017
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1124
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1972; B•1016-1017
Mepco/Centralab, Inc., A North American Philips Co. ..... A•2105; B•1658-1660
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1124-1125
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1128
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1970, 1973; B•1016-1017
Mepco/Centralab, Inc., A North American Philips Co. ..... A•1763
Mercer Electronics, Simpson Electric Co. ..... D•1286-1287
MERET, Inc. ..... B•1150
Metra Byte Corp. ..... D•1168-1169
Metuchen Capacitors, Inc. ..... A•1130-1137, 1678-1679; C•1344-1347
MF Elctrns. Corp. ..... A•1416
MG Electronics ..... D•1045
Mhotronics, Inc. ..... C•1348-1352
Micro-Circuits Co., Inc. ..... C•1106
Micro Devices Product Group, Therm-O-Disc, Inc. ..... B•1274-1275
Microdot, Interconnect Systems Division ..... B•1020; C•1353
Micro Mo Electronics, Inc. ..... B•1152, 1196-1199, 1796; D•2124
Micronel U.S. ..... C•1680-1681
Micronetics ..... D•1289
Micro-Ohm Corp. ..... A•1974-1979; B•1743
Microsonics Inc. ..... A•1417
Micro Switch, A Honeywell Div. ..... B•1662-1663
Micro Technical Industries ..... D•1288
Microtran Co. Inc. ..... A•1254, 2160, 2292-2306
Mid-Eastern Industries ..... D•1812-1816
Midwest Comps. ..... B•1728, 1744-1751
Mil-Comm Distributors, Inc. ..... D•1468
Millivac Instruments, Inc. ..... D•1290
Mill-Max Manufacturing Corp. ..... C•1355
Mills Resistor Co. ..... A•1981

Milwaukee Resistor Corp. ..... A•1982-1986
Mini-Circuits Lab. ..... A•1789-1852; B•1768
Mini-Systems, Inc. ..... A•1987
Mini-Systems, Inc., Electronic Package Div. ..... A•1764
Miyakawa America Corp. ..... B•1107-1109
Modular Devices .... A•1765; D•1818-1819, 2084
Modutec ..... D•1359
Molecu-Wire ..... C•1877-1881
MOLEX, Inc. ..... B•1665; C•1356-1359, 1883
Moli Energy Limited ..... D•1453
Monitor Products Co., Inc. ..... A•1418-1419
Motorola, Inc., Compt. Divs. Clock Oscillator Dept. ..... A•1420-1421
MPC Systems, Div. of Consulting Systems ..... D•1820
M-Tron Industries ..... A•1422-1423
Multi Products International ... A•1129, 2308-2309; D•1821-1823
Mupac ..... C•1732-1733
Murata Erie North America, Inc. .....A•1140-1143, 1424-1425, 1680-1681, 1853, 1988-1989, 2106-2108; D•1042-1044
MuShield Co., Div. Bomco, Inc. ..... C•1752
MWS Wire Industries ..... C•1884-1885

N

Natel Engineering Co., Inc. ..... A•1766-1769
National Capacitor, National Electronics Corp. ..... A•1139
National Electric Cable ..... C•1360, 1886-1887
National Wire & Cable Corp. ..... C•1888-1906
NDK America, Inc. ..... A•1426-1431
NES, Inc. (Nationwide Electronic Systems) ..... B•1110; D•1134, 1360-1365
Newman, M. M., Corp., Heli-Tube Div. ..... C•1907
Newport Electronics ..... D•1366-1367
The J. M. Ney Company ..... C•1361
NIC Components Corp. ..... A•1144-1145, 1990
Nidec-Torin Corporation ..... C•1682-1685
NJE Corporation ..... D•1824
NKK Switches of America, Inc. ..... B•1666-1667
North American Soar Corp. ..... D•1291-1295
North Atlantic Industries ..... D•1296, 1369
North Hills Electronics ..... A•1255, 1776, 1854, 2310-2312; D•1297
Nova Electric Inc. ..... D•2082-2083
Novatronics of Canada Ltd. ..... B•1200
NRD Inc., Mark IV Ind., Inc. ..... D•2118
NTK Technical Ceramics, NGK Spark Plugs (USA), Inc. .....A•1432-1433; B•1797; D•1046-1047, 2119
NWL Transformers ..... A•2313; D•1825
Nytronics Components Grp., Inc. .....A•1146-1158, 1200, 1256-1275, 1602-1608, 1991; B•1019

O

Oak Switch Systems ... B•1111, 1668-1669, 1724
Ocean Marine Instrument ..... D•2085
Ohio Semitronics, Inc. ..... B•1798-1811; D•1298-1303
Ohmite Manufacturing Co., A North American PHILIPS Co. ..... A•1992-2004, 2110-2111
Ohmtek, Inc., Sfernice, Inc. .... A•1862, 2006-2011; B•1024-1025
Olektron Corp.,Signal Technology Corp. ...A•1855
Omega Engineering ..... B•1670, 1752-1753, 1812-1813; C•1909; D•1015, 1095, 1135, 1171, 1304, 1370-1371, 1409
Omniprint, Inc. ..... D•1096
Omron Elctrns., Inc., Control Comps. Div. ..... B•1469-1474, 1671-1673
Opamp Laboratories, Inc. ..... D•1016
Optek Technology, Inc. ..... B•1225
Optima Enclosures ..... C•1061-1066
OPT Industries Inc. ..... A•1443; D•1826-1830
Opto Plus ..... B•1141
Opto 22 ..... B•1466-1467
Oram Power Conversion Systems ...D•1832-1833
Orbit Instrument of Cal. ..... B•1725; D•1136
Oscillatek, K & L Microwave ..... A•1434-1435
Oshino Electric Lamp Works, Ltd. ..... B•1112
Oslo Controls ..... B•1675
Otto Engineering ..... B•1676-1677
Ovenaire, Electronic Technologies Inc. ..... A•1436-1439, 2012-2013

P

Pacific Instruments Inc. ..... D•1017
Pacific Power Source Corp. ..... D•2086-2091
Pacific Resistor Co. ..... A•2014-2015
PacTec Corp., LaFrance Corp. ..... C•1002, 1068-1071
Paine Corporation ..... B•1814
Panasonic Ind'l. Elctrn. Comps. ..... D•1454-1461
Panduit Corp. ..... C•1362-1364, 1910-1911
Panel Components Corp. ..... B•1276-1277; C•1366-1372, 1914-1916; D•2098
Papst Mechatronic Corp. ..... C•1686-1688
Paraline Transformer Corp. ..... A•2315
Park Electronics ..... D•1834
PAR Products ..... C•1073-1075
PCA Electronics ..... A•1610-1620
PCK Elastomerics, Inc., Kollmorgen Corp. ..... C•1373-1375
PC Transformer Corp. ..... A•2316-2321
Pearson Electronics, Inc. ..... A•2322
Penn-Tran Corp. ..... A•1277; D•1835
Performance Controls, Inc. ..... B•1201; D•1836, 2125
Perkin-Elmer Corp., Elctrn. Prods. Dept. ... A•2323
Perma Power Elctrns. ..... B•1278; C•1700-1701
Philips ECG, Amperex Electronics Corp., A North American Philips Co. ..... A•2150-2151
Phi Technologies, Inc. ..... D•1066-1070
Phoenix Wire, Inc. ..... C•1917
Photodyne ..... B•1151
Pico Electronics, Inc. ... A•1278-1283, 2325-2354; D•1837-1856
Piconics ..... A•1284, 1683, 1770
Pioneer Magnetics ..... D•1858-1859
PITTMAN, Penn Engrg. & Mfg. Corp. ..... B•1203
Plainview Electronics ..... D•1462-1463
Polyphase Instrument ..... A•2355-2361
PolyPhaser Corporation ..... B•1279
Polytron Devices ..... D•1860-1862
Pomona Electronics ..... C•1377-1492
Portescap U.S., Inc. ..... B•1175
Potter & Brumfield, A Siemens Co. ..... B•1280, 1475-1488
Powerbox Inc. ..... C•1077
Power Conversion, Inc., Hawker Siddeley Group, Ltd.-London, England ..... D•1464
Power Designs, Inc. ..... D•1864-1869
Power Dynamics Inc. .....A•1685; B•1281, 1678-1679; C•1495-1499, 1597, 1918; D•1465
Powerex, Westinghouse, GE, Mitsubishi ...A•2153
Power General, Unitrode ..... D•1871
Power Group International ..... D•1466-1467
Power Magne-Tech Corporation ..... A•1285, 2362-2365
Powermark ..... D•2092-2093
Power-One D.C. Power Supplies .... D•1872-1877
Power Pac ..... D•1878-1884
Power Products Div., Computer Products, Inc. ..... D•1637-1638
Power-Sonic ..... D•1469
Power Systems, Inc. ..... D•1885
Powertec, Inc. ..... D•1890-1911
Power Technology, Inc. ..... D•1887
Power Ten, Inc. ..... D•1889
Powertron Corporation ..... D•1913
POWR-UPS Corp. ..... B•1204-1205
PPD, Inc. ..... A•1159-1171
PPM, Inc. ..... D•1305
Precicontact, Inc. ..... C•1500-1507
Precision Components, Inc. ..... A•2366
Precision Control Manufacturing, Inc. ..... A•2112
Precision Filters ..... A•1686-1692; D•1018-1019
Precision Resistive Products, Inc. ... A•2016-2017
Precision Resistor Co., Inc. ..... A•2018-2025
Preh Electronic Industries, Inc. ....A•2113; B•1680, 1726; C•1509
Premier Metal Prods. Co. ..... C•1078-1079
Prem Magnetics, Inc. ..... A•2367-2375
Pres-Air-Trol Corp. ..... B•1681
Preston Scientific ..... D•1021, 1172-1173
Printer Products, Capitol Circuits Corporation ..... D•1097
Product Technology, Inc. ..... C•1735
Programmed Test Sources ..... D•1306
Pulizzi Engineering, Inc. ..... D•2094-2097
Pulse Engineering, Inc. ..... A•1693

Q

QPL Magnetics, Inc. ..... A•2376
Q-Tech Corp. ..... A•1440-1442
Qualidyne Sys., Unitech Ltd. ..... D•1914-1920
Quality Power Systems, Inc. ..... D•1922-1927
Quality Thermistor ..... B•1755
Quam-Nichols Co. ..... D•1048-1049
Quantum Data, Inc. ..... D•1307

R

Raltron Electronics ..... A•1444-1445, 2027
RCD Components, Inc. ..... A•2028-2029
RCL-Shallcross ..... A•2030-2035
RDI/Reed Devices, Inc., Augat ..... C•1510-1511
Reeves-Hoffman Div. ..... A•1446-1454; C•1602-1604
Regdon Solenoid, Inc. ..... B•1526-1527
Rehlander Assocs. ..... B•1227
Rekco, Inc. ..... D•1137
Renco Electronics, Inc. ..A•1286-1289, 2377-2379
Reproduction Technologies Inc. .... D•1050-1051
Republic Elctrns. Corp. ..... A•1172
RFI Corporation ..... A•1694
RF Power Laboratories, Inc. ..... D•1022-1024
Rhombus Industries ..... A•1621-1625
Richards, Arklay S., Co., Inc. ..... B•1756-1757; C•1919
RIFA, Inc. ..... D•1929
Risk, George, Inds. ..... B•1727
Rittal Corp. ..... C•1800
Ritz Electronics/Relco .... C•1081; D•1930-1931
RMF Products, Inc. ..... C•1598
RO Associates, Inc. ..... D•1932-1933
Robinson-Halpern, Teleflex, Inc. .... B•1815-1817
Rockwell Filter Products ..... A•1695
ROD-L Electronics, Inc. ..... D•1308-1309
Rose Enclosures Sys., Inc. ..... C•1082-1083
Ross Engineering Corp. ..... B•1489
Rowe Industries, Inc. ..... C•1512-1514, 1920
RTE Aerovox Inc. ..... A•1696-1698
RTE Power/Mate ..... D•1934-1935
RTS Systems, Inc. ..... D•1071
Ryan International Corp. ..... D•1310

S

SAFT America Inc. ..... D•1416
SAFT America Inc., Advanced Battery Sys. Div. ..... D•1470
SAFT America, Inc., Portable Battery Division ..... D•1471-1477
Samarius, Inc. ..... A•2114
SAMTEC ..... C•1515
S & H Inds. ..... D•1936, 2099
Sanyo Electric Inc. ..... D•1478
SaRonix ..... A•1328, 1456-1460
Sawtek Inc. ..... A•1461
Scanbe Unit ..... C•1084-1085
Schaffner EMC, Inc., Instr. Div. ... A•1699; D•1311
Schrack North America Corp. ..... B•1490-1496
Schroff Incorporated, Schroff GMBH ..... C•1086
Schurter, Inc. ..... C•1516-1518
Seiko Instruments U.S.A., Inc. .....A•1462-1463, 1771; B•1113; D•1099
Selco Products Co., SEL Sales, Inc. ..... B•1758; C•1599; D•1372
Semiconductor Packaging Materials Co. ...C•1107
Sensitive Research Instruments .... D•1312-1314
Sensoray ..... D•1175
Sensor Scientific, Inc. ..... B•1759-1761
Sensotec, Inc. ..... B•1818-1820
Serco Products Division, Serco Mold ..... C•1098
Servo-Tek Products Co. ..... B•1206
Setra Systems, Inc. ..... B•1821
SFE Technologies ..... A•1173
Shallco, Inc. ..... B•1682-1687
Shalltronix Corp. ..... D•1315
Shelly Associates, Inc. ..... B•1115
Shinano Kenshi Corp. (SKC) ..... B•1207
Shindengen America Inc. ..... D•1937-1939
Shogyo International Corp. ..... A•2380-2381; B•1116-1118, 1688-1689; C•1519-1521, 1921; D•1052-1053, 1373
Shokai Far East, Ltd. ..... D•1055
Siemens Components, Inc., Semiconductor Grp. ..... B•1119, 1228-1229
Siemens Components, Inc., Special Products Div. ..... A•1175, 1319; B•1282-1283
Sierracin/Magnedyne ..... B•1208-1209
Sierra Power Systems ..... D•1941-1943
Sigma Systems Corp. ..... D•1187
Signal Transformer Co., Inc., Insilco Corporation ..... A•2382-2396
Silicon Power Cube Corp. ..... B•1498-1500
Silonex Inc. ..... B•1230
Simpson Electric Co. ..... D•1316, 1374-1376
Skydyne Inc. ..... C•1087-1089
Slaughter Co. ..... D•1317
Sloan Co. ..... B•1120-1125
H.H. Smith (Dialight Corporation) ..... C•1522-1523, 1698
Sola, A Unit of General Sign. ..... D•1944-1947, 2100-2101

INDEX OF MANUFACTURER'S CATALOG PAGES

Solartron Instruments, Solartron Elctrns., Inc. ..... D•1318
Sorenson Lighted Controls ..... B•1126
Spectrol Electronics ..... A•2116-2119
Spectrum Control, Inc. ..... A•1700-1705; C•1524-1529
Spectrum Technology, Inc., DATUM, Incorporated ..... A•1465-1468
Spellman High Voltage Elctrns. Corp. ..... D•1949-1953
Sprague Electric Co., a Unit of the Penn Central Corp. World HQ ..... A•1706, 1772, 2037; D•1138
Sprague Electric Company, Advanced Ceramics Group ..... A•1706
Sprague Electric Company, The Capacitor Group ..... D•1138
Sprague Electric Company, FIL-MAG Business Unit ..... A•2037
Sprague Electric Company, The Semiconductor Group ..... A•1772
Sprague-Goodman Elctrns., Inc. .... A•1176-1177
SSAC Incorporated ..... B•1501
Staco Transpower ..... A•2397
Stancor Products, Hamilton Standard Controls ..... A•2398; B•1502
Standard Grigsby, Inc., Gordos International Corp. ..... B•1690-1693
Standard Oil Engineered Materials Co., Carborundum ..... A•2038-2039
Standex Elctrns. ..... A•1708-1709; B•1503
Stantron Div. ..... C•1090-1091
Star Micronics, Inc., Components Div. ..... D•1056-1061, 1100-1101
Statek Corp. ..... A•1469-1474
State of the Art, Inc. ..... A•2040-2042
Staver Co., Inc. ..... B•1127-1131
Sterling Transformer Corp. ..... A•2399-2403
Stettner Electronics ..... A•1178-1179, 1290
Stevens-Arnold Div., Computer Prods., Inc. ..... D•1629-1634, 1637-1638
Stock Drive Products, Div. of Designatronics, Inc. ..... B•1211
ST Research Corporation ..... C•1531
STRONGBOX ..... C•1092-1093
Sullins Electronics Corp. ..... C•1532-1534
Summit Electronics, Basler Electric ..... D•1954
Sunrise Electronics, Inc. ..... A•1773
Superior Electric .....A•2404-2405; B•1212-1213; C•1535; D•2103
Switchcraft, Inc. ..... B•1694-1695; C•1536-1539
Switching Power Inc. ..... D•1955-1960
Sylvania Miniature Lighting, GTE Corporation ..... B•1133-1135
Synektron Corporation ..... B•1214-1215; D•2126
Syntest Corp. ..... D•1102

T

Tamura Corporation of America .....A•1291-1293, 1711-1713, 2314, 2407-2414; D•1961-1967
Tauber Elctrns. Inc. ..... D•1479
Taurus Corp. ..... D•1103
T-Bar Incorporated, Data Switch Corporation ..... B•1696
TDJ Co., Inc. ..... C•1094-1095
TDK Corporation, Electronic Components & Material .....A•1180-1183, 1294, 1321-1325, 1627, 1714-1715; D•1062, 1969
TECA, ThermoElectric Cooling America Corp. ..... C•1690-1691
Teccor Electronics, Inc. ..... A•2154-2157
Tech-Etch, Inc. ..... C•1753
Tech Labs., Inc. ..... B•1697
Techmar Corp. ..... C•1096-1097
Technipower, A Penril Co. ..... A•2415; D•1970
Technitrol .....A•1488, 1628-1637, 2416; B•1021-1023
Techno Components Corporation, Sfernice, Inc. ..... A•1862, 2050-2051, 2122; B•1024-1025, 1762-1765
Technology Dynamics Inc. ..... D•1971
Techron Div., Crown Intl, Inc. ..... D•1025-1029
Techtrol Cyclonetics, Inc. ..... A•1476-1477
Tecknit (Eastern Facility) ..... C•1754
Tecknit Interconnection Products ..... C•1541
Tedea Inc. ..... B•1824
Tektronix, Inc., Display Devices Operation ..... D•1401-1403
Tel Laboratories, Inc. ..... A•2044-2045
Telpar, Inc. ..... D•1104
Tenney Engineering ..... D•1189
Tetra-Etch ..... C•1862
Tettex Instruments, Inc. ..... D•1319
Texmate, Inc. ..... D•1378-1379
Textro ..... C•1923
Thermacore Inc. ..... C•1692
Thermalloy, Inc. ..... C•1693
Therm-O-Disc, Inc., Sub. Emerson Elec. Co. ..... B•1767
Thomas & Betts Corporation ..... C•1542-1544
Thordarson Meissner, Components Corp. of Amer. ..... A•2417
Thorn EMI Technlg. Inc. ..... D•1320
Tocos America, Inc., Tokyo Cosmos Electric Co., Ltd. ..... A•2120-2121; B•1698, 1825
Todd Products Corp. ..... D•1972-1975
Todd Systems, Inc. ..... A•2418-2421
Tokin America, Inc. ..A•1295, 1327, 1716; B•1827; D•1105
Toko America, Inc. .....A•1296-1297, 1639, 1717; D•1976
Toroid Corp. of Maryland ..... A•1299, 2422-2424
Torotel Prods. Inc. ..... A•1300-1315, 2426-2431
Torotron Corp. ..... D•1321
Torwico Elctrns. Inc. ..... A•2432-2433
Total Power International, Inc. ..... D•1977-1979
Tracewell Enclosures ..... C•1099-1101
TRAK Microwave Corp. ..... A•1856-1859
TRAK Systems, Div. TRAK Microwave Corp. ..... D•1176-1179
Trans American Transformer ..... A•2434
Transformation Electronics Group ..... D•1980
Transistor Devices, Inc. ..... D•1322-1323
Transmagnetics ..... D•1180-1181
Triad-Utrad, Div. of Magnetek, Inc. ...A•2437-2446
Tri-Mag, Inc. ..... A•1718-1719; D•1981
Triplett Corp.-A Penril Co. ..... D•1324-1325, 1380-1383
Trontech, Inc. ..... D•1030
TRW Motor Div. ..... B•1216
TS Products, Inc. ..... D•2127
TTE, Inc. ..... A•1642, 1720-1723, 2435
Tusonix, Inc. ..... A•1184-1189, 1724-1727
Tycor Electronic Products Ltd. ..... A•1728

U

Ultronix, Inc., Sfernice, Inc. .. A•1774-1775, 1862, 2046-2055; B•1024-1025, 1762-1765
Ulveco, Inc. ..... A•2451-2453
Underwriters Safety Device, Amphenol Products ..... C•1546-1549
Unicorp ..... C•1703
United Chemi-Con Inc. ..... A•1190-1191
United Transformer Corporation, Sub. of OPT Industries ..... A•2448-2449
Unitron Inc. ..... D•2104-2106
Universal Voltronics ..... D•1983
UPSystems, Inc. ..... D•2107
U. S. Digital Corp. ..... B•1828
U S Microtek Components Corp., Sub. of Unitrode Corp. ..... A•1192
U.S. Power Converting Company, Relco ..... C•1081; D•1930-1931
U.S. Toyo Fan Corp. ..... C•1694-1695

V

Valhalla Scientific ..... D•1327
Validyne Engineering Corporation ..... B•1829; D•1184-1185
Valor Electronics .... A•1640-1641; D•1984-1985
Vamistor Corp. ..... A•2057
Varo Quality Semiconductor ..... A•2158
Varta Batteries, Inc. ..... D•1480
Vector Electronic Co., Inc. ..... C•1102, 1108, 1113, 1736-1737; D•1111
Vectron Laboratories, Inc. ..... A•1478-1483
Veetronix, Inc., Sub. Reach Electronics ..... B•1699-1701
Velonex ..... D•1328-1329, 1385
Venus Scientific, Inc. ..... D•1987-1989
Vernitech ..... A•2123; B•1026, 1217, 1830
Vernitron Controls, Vernitron Corp. ...B•1218-1220
Vernitron Piezoelectric Div. ..... A•1485
Vibra-Metrics ..... B•1831
Victoreen, Inc., A Sheller-Globe Corp. Subsidiary ..... A•2058-2061
Virginia Plastics Co. .... C•1550-1553, 1924-1925
Vishay Resistive Systems Group ..... A•2063-2074, 2124-2127
Visionics Corporation ..... D•1114
Visual Communications Co., Inc. .... B•1137-1139
VIZ Test Equipment, Kappa Networks Inc. ..... D•1330-1333, 1991-1993, 2108-2109
VL Electronics, Inc ..... B•1140
Voltage Multipliers, Inc. ..... A•2159
Voltampere Corp. ..... D•1994
Voltex ..... D•1995-1997
Voltronics Corporation ..... A•1193
VRN International, Div. Vernitron ..... A•1861, 2128-2129; B•1027; D•1072

W

Wabash Relay & Electronics, Kearney-National Company ..... B•1506-1507
Wall-Able Mfg. Corp. ..... C•1554-1557
Wall Industries ..... D•1998
Watco, Inc. ..... C•1103
Wayne Transformer Co., Inc. ..... A•2455
WECO Electrical Connectors, Inc. ... C•1558-1567
Wesco Electrical Co. ..... A•1194-1199
Wes-Garde Components Group, Inc. ..... B•1656
Westcor Corporation ..... D•1999-2002
Western Multiplex Corp. ..... A•1729
Wilco Corp. ..... A•1316
Wilmore Electronics Co. ..... D•2004-2008, 2110-2111
Wintek Corp. ..... D•1112-1113
Woven Electronics, Woven Electronics Corporation ..... C•1927

X

Xentek, Inc. ..... D•2010-2013
Xico, Inc. ..... D•1106
Xsis Electronics, Inc. ..... A•1486-1487
Xylog Corp. ..... D•2014-2015

Y

Yuasa Battery (America), Inc. ..... D•1481

Z

Zero Corp. ..... C•1104
Zero Corp., Zero East Div. ..... C•1104

87/88 Index To Distributors Advertisements

Distributors
Air Electro Supply ..... C•1148
Distributor Specialists 701
Electric Switches ..... B•1592-1593, 607, 614, 616, 618, 633, 636, 637, 638, 650, 655, 685, 695, 702, 704, 709, 715, 720, 726, 733, 742, 760, 773, 776, 779
Fuses Unlimited ..... B•1244
Inductor Supply ..... A•1248, 684, 713, 765, 782
Liberty Engineering ..... C•1702
LogiComp 696, 726, 753, 778
Mil-Comm ..... D•1468
Mouser 730
National Capacitor ..... A•1139, 1298
Opto Plus ..... B•1141
RAG 614, 619, 624, 625, 678, 686, 689, 691, 703, 712, 715, 739, 750, 752, 771, 783, 801
Sunshine Instruments 612, 625, 678, 686, 712, 714, 771, 778, 790, 803
Wes-Garde ..... B•1656

87
88 Product Index and Directory

All products are listed alphabetically by their generic names and then by subclassification. For example, look for "Fiber Optic Connectors" under "Connectors, Fiber Optic" or for "Digital Panel Meters" under "Meters, Panel (Digital)."

Following each product heading is a four-digit number directing you to the Product Section where these products are usually cataloged. If that Product Section is not in the EEM volume you are using, a "See Vol. A, B, C, or D" will direct you to the proper volume for your product classification. No numbers appear with cross-reference headings.

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Absorbers, Microwave-3400 — *See Vol. D*

Accelerometers-5500 — *See Vol. B*

Acoustic Systems (MIL)-3475 — *See Vol. D*

AC Power Protection Equipment — See Line Conditioners (Vol. D)

Actuators, Satellite Antennas-1900 — *See Vol. D*

Actuators, Servo, Linear-4900 — *See Vol. D*

Actuators, Servo, Rotary-4900 — *See Vol. D*

Adapters — See Connector Adapters (Vol. C), Plug Adapters (Vol. C), Socket Adapters (Vol. C), etc.

Adapters/Connectors, T.V. to Peripheral Equipment-2100
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222 ..... C•1312-1313
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380**
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Adapters, Fiber Optic-2475 — *See Vol. B*

Adapters, Meter, Current Measurement-2900 — *See Vol. D*

Adapters, Modular Telephone-2100
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
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International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
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§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Adapters, US to European Power-2100
§ **Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... A•1652-1653, C•1211**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... D•1091,1810-1811
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... A•1685
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
Tamura Corporation of America, 1150 Dominguez St., Carson, CA 90746-3518 213-638-1790
§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656 312-867-4600

Adapters, Wall Plug-in — See Power Supplies, Plug-in (Vol. D)

Adapters, Waveguide-3450 — *See Vol. A*

Adapters, RF (MIL)-2440 — *See Vol. B*

Adhesives, Conducting-1600
§ **EG & G Wakefield Engineering, 60 Audubon Rd., Wakefield, MA 01880, 617-245-5900 ..... C•1627**
† **Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106**
† Ablestik Laboratories, 833 W. 182nd St., Gardena, CA 90248 213-532-9341

† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
§ Ambroid Co., P.O. Box 164, Lynnfield, MA 01940 617-246-1180
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
† Armstrong World Inds., W. Liberty St., Lancaster, PA 17604 717-397-0611
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§† Capcon, Inc., 147 West 25th Street, New York, NY 10001 212-243-6275
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
† Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Epoxy Technology, Inc., 14 Fortune Dr., Billerica, MA 01821 ..... 617-667-3805; 800-227-2201
§ Fenwal, Inc., Kidde, Inc., 400 Main St., Ashland, MA 01721 617-881-2000
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050
Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
Sheldahl, Inc., P.O. Box 170, Hwy 3 North, Northfield, MN 55057 507-663-8000
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839 214-243-4321
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4759
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Adhesives, General Purpose-1600

† Ablestik Laboratories, 833 W. 182nd St., Gardena, CA 90248 213-532-9341
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
Ambroid Co., P.O. Box 164, Lynnfield, MA 01940 617-246-1180
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
† Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§† Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 714-951-3231
Epoxy Technology, Inc., 14 Fortune Dr., Billerica, MA 01821 ..... 617-667-3805; 800-227-2201
§ Fenwal, Inc., Kidde, Inc., 400 Main St., Ashland, MA 01721 617-881-2000
Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§† GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
Metron Optics Inc., P.O. Box 690, Solana Beach, CA 92075-0690 619-755-4477
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Rexnord Chemical Products Inc., 6120 E. 58th Ave., Commerce City, CO 80022 303-289-5651
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 313-231-2871
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
† Whittaker Corp., 10880 Wilshire Blvd., Los Angeles, CA 90024 213-475-9411

Adhesives, Insulating-1600

† Ablestik Laboratories, 833 W. 182nd St., Gardena, CA 90248 213-532-9341
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
† Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§ Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 714-951-3231
Epoxy Technology, Inc., 14 Fortune Dr., Billerica, MA 01821 ..... 617-667-3805; 800-227-2201
§ Fenwal, Inc., Kidde, Inc., 400 Main St., Ashland, MA 01721 617-881-2000
Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050
Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Rexnord Chemical Products Inc., 6120 E. 58th Ave., Commerce City, CO 80022 303-289-5651
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 313-231-2871
Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200
§ Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839 214-243-4321
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Adhesives, Liquid Spray-1600

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200

Adhesives, Optical-1600

† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
Epoxy Technology, Inc., 14 Fortune Dr., Billerica, MA 01821 ..... 617-667-3805; 800-227-2201
Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Adhesives, UV Curing-1600

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Xenon Corp., 20 Commerce Way, Woburn, MA 01801 617-938-3594

Adhesives, Wire Tacking-1600

Ambroid Co., P.O. Box 164, Lynnfield, MA 01940 617-246-1180
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983

PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
§ Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Xenon Corp., 20 Commerce Way, Woburn, MA 01801 617-938-3594

Air Cleaners & Filters (Shielded & Unshielded)-2600

Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753
§ Airmatic-Allied, 185 Park Dr., Wilmington, OH 45177 513-382-1691
† Air Maze Corp., 25000 Miles Rd., Cleveland, OH 44128 216-292-6800
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
† Aluminum Filter, 1000 Cindy Lane, Carpinteria, CA 93013 805-684-7651
† Baker Co., Inc., Drawer E - Sanford Airport, Sanford, ME 04073 1-800-992-2537
† Balston, 703 Massachusetts Ave., Lexington, MA 02173 617-861-7240
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
§ Cambridge Filter Corp., P.O. Box 4906, Syracuse, NY 13221-4906 315-457-1000
† Carey Electronic Engineering, 1880 Clifton Ave., Springfield, OH 45505 513-323-6300
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 .. 516-588-7000
§ CUNO, Inc., Process Filtration Products, 400 Research Pkwy., Meriden, CT 06450 203-237-5541
ETRI, Inc., 608 Broome St., Monroe, NC 28110 704-289-5423
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
§ Heat Systems-Ultrasonics, Inc., 1938 New Hwy., Farmingdale, NY 11735 516-694-9555
§ Hobson Bros., 4940 W. Lawrence Ave., Chicago, IL 60630-3884 312-283-3600
§ Hollis Engrg., Inc., Charron Ave., Box 1189, Nashua, NH 03061 603-889-1121
McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550 609-799-0100
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
C. A. Norgren Co., 5400 South Delaware, Littleton, CO 80120-1663 303-794-2611
§ Qualtek Electronics Corp., 7158 Industrial Pk. Blvd., Mentor, OH 44060 .. 216-951-3300
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Tegal Scientific, Inc., Box 5905, Concord, CA 94524 415-827-1054
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Air Conditioners (For Equipment)-2600

Cambridge Aerofio Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464, 617-425-2346 ..... C•1617
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1625
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649,1659,1663-1668
† McLean Midwest, 4000 83rd Ave. N., Brooklyn Pk., MN 55443, 612-561-9400 ..... C•1675
TECA, ThermoElectric Cooling America Corp., 448 N. Halsted St., Chicago, IL 60622, 312-666-1600 ..... C•1690-1691
† Electro Impulse, Box 870, Red Bank, NJ 07701-0870 201-741-0404
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
† Noren Products Inc., 1010 O'Brien Blvd., Menlo Pk., CA 94025 415-322-9500
§ C. A. Norgren Co., 5400 South Delaware, Littleton, CO 80120-1663 303-794-2611
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
† Sinclair Radio Laboratories Ltd., 85 Mary St., Aurora, ONT., CANADA L4G 3G9 416-727-0165
Standard Environmental Systems, Inc., 383 Minnisink Rd., Totowa, NJ 07512 201-256-2200

Alarms & Alarm Systems-2200 — *See Vol. D*

Alarms, Controls, Photoelectric-3700 — *See Vol. B*

Alloys, Brazing-5400

† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† Fusion Inc., 4658 E. 355th. St., Willoughby, OH 44094 216-946-3300
† Transmet Corp., 4290 Perimeter Dr., Columbus, OH 43228 ..... 614-276-5522; 800-245-5253
Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012 312-963-0220
† Wilkinson, P.O. Box 4558, Westlake Village, CA 91359 ... 818-889-0050;800-822-4653

Alloys, Metal/Ceramic-1600

† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
† Magnetics, Spang & Co., Box 391, Butler, PA 16003-0391 412-282-8282
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200

Alphanumeric Readouts — See Tubes, Readout (Vol. A)

Alternators-4050 — *See Vol. D*

Altimeters-2900 — *See Vol. D*

Aluminizers, Vacuum — See Deposition Equip. (Vol. D), Evaporation Equipment, Electronic Beam (Vol. D)

Amplifiers, AF-1300 — *See Vol. D*

Amplifiers, Antenna-1900 — *See Vol. D*

Amplifiers, Compressor-1100 — *See Vol. D*

Amplifiers, Current, AC-1100 — *See Vol. D*

Amplifiers, DC-1100 — *See Vol. D*

Amplifiers, Data — See Amplifiers, Instrumentation (Vol. D)

Amplifiers, Decade-1100 — *See Vol. D*

Amplifiers, Deflection-Also See Yokes, Deflection, Oscilloscopes, etc.-1100 — *See Vol. D*

Amplifiers, Differential-1100 — *See Vol. D*

Amplifiers, Distribution-1100 — *See Vol. D*

Amplifiers, Equalization-1300 — *See Vol. D*

Amplifiers, Fiber Optic-1100 — *See Vol. D*

Amplifiers, FM, IF, Surface Mount-4800 — *See Vol. A*

Amplifiers, IF-1100 — *See Vol. D*

Amplifiers, Instrumentation-1100 — *See Vol. D*

Amplifiers, Integrating-Also See Amplifiers, Operational; Integrators, Electronic-1100 — *See Vol. D*

Amplifiers, Isolation-1100 — *See Vol. D*

Amplifiers, Klystron-3400 — *See Vol. D*

Amplifiers, Limiting-1100 — *See Vol. D*

Amplifiers, Line-1100 — *See Vol. D*

Amplifiers, Lock-in-1100 — *See Vol. D*

Amplifiers, Logarithmic-1100 — *See Vol. D*

Amplifiers, Low Noise-1100 — *See Vol. D*

Amplifiers, Magnetic-1100 — *See Vol. D*

Amplifiers, Master Antenna — See Amplifiers, Distribution (Vol. D)

Amplifiers, Microphone — See Amplifiers, AF (Vol. D)

Amplifiers, Microwave-3400 — *See Vol. D*

Amplifiers, Mixing-1300 — *See Vol. D*

Amplifiers, Multichannel-1100 — *See Vol. D*

Amplifiers, Narrow Band-1100 — *See Vol. D*

Amplifiers, Null-1100 — *See Vol. D*

Amplifiers, Operational-1100 — *See Vol. D*

Amplifiers, Operational, Surface Mount-4800 — *See Vol. A*

Amplifiers, Parametric-3400 — *See Vol. D*

Amplifiers, Peak Limiting-1100 — *See Vol. D*

Amplifiers, Peak Sense & Hold-1100 — *See Vol. D*

Amplifiers, Phase-Lock Loop-1100 — *See Vol. D*

Amplifiers, Photocell — See Amplifiers, Transducer (Vol. D)

Amplifiers, Power-1100 — *See Vol. D*

Amplifiers, Programmable Gain-1100 — *See Vol. D*

Amplifiers, Public Address — See Amplifiers, AF (Vol. D)

Amplifiers, Pulse-1100 — *See Vol. D*

Amplifiers, Pulse Limiting-1100 — *See Vol. D*

Amplifiers, Read/Write, Surface Mount-3130 — *See Vol. A*

Amplifiers, Recording – See Amplifiers, AF (Vol. D)
Amplifiers, Resolver – See Amplifiers, Servo (Vol. D)
Amplifiers, RF-1100 – ***See Vol. D***
Amplifiers, Sample & Hold-1100 – ***See Vol. D***
Amplifiers, Servo-4900 – ***See Vol. D***
Amplifiers, Single Sideband-1900 – ***See Vol. D***
Amplifiers, Strain Gauge – See Amplifiers, Transducer (Vol. D)
Amplifiers, Sweep-1100 – ***See Vol. D***
Amplifiers, Synchro-4900 – ***See Vol. D***
Amplifiers, Telemetering-1900 – ***See Vol. D***
Amplifiers, Thermocouple – See Amplifiers, Transducer (Vol. D)
Amplifiers, Track & Hold-1100 – ***See Vol. D***
Amplifiers, Transducer-Also See Signal Conditioners-1100 – ***See Vol. D***
Amplifiers, Travelling Wave Tube-1100 – ***See Vol. D***
Amplifiers, Ultrasonic-1100 – ***See Vol. D***
Amplifiers, Video-1100 – ***See Vol. D***
Amplifiers, Voltage Reference-1100 – ***See Vol. D***
Amplifiers, Wideband-1100 – ***See Vol. D***
Analyzers, AF-2900 – ***See Vol. D***
Analyzers, Air Pollution-2550 – ***See Vol. D***
Analyzers, Antenna Pattern-2900 – ***See Vol. D***
Analyzers, Dielectric Constant-2900 – ***See Vol. D***
Analyzers, Differential – See Analyzers, Phase & Voltage (Vol. D)
Analyzers, Digital Signal-2900 – ***See Vol. D***
Analyzers, Distortion – See Analyzers, AF (Vol. D)
Analyzers, Disturbance (Power, Volt, Humidity, Temperature)-2900 – ***See Vol. D***
Analyzers, Frequency – See Analyzers, Spectrum (Vol. D)
Analyzers, Frequency Stability – See Meters, Frequency Deviation (Vol. D)
Analyzers, Harmonic-2900 – ***See Vol. D***
Analyzers, Impedance-2900 – ***See Vol. D***
Analyzers, Interference-2900 – ***See Vol. D***
Analyzers, Intermodulation-2900 – ***See Vol. D***
Analyzers, Logic-2900 – ***See Vol. D***
Analyzers, Magnetic-2900 – ***See Vol. D***
Analyzers, Microwave-3400 – ***See Vol. D***
Analyzers, Modulation-2900 – ***See Vol. D***
Analyzers, Network-2900 – ***See Vol. D***
Analyzers, Noise-2900 – ***See Vol. D***
Analyzers, Particle Size-2900 – ***See Vol. D***
Analyzers, Phase & Voltage-2900 – ***See Vol. D***
Analyzers, Protocol-2900 – ***See Vol. D***
Analyzers, Pulse-2900 – ***See Vol. D***
Analyzers, Servo-4900 – ***See Vol. D***
Analyzers, Signature-2900 – ***See Vol. D***
Analyzers, Sonic & Subsonic-2900 – ***See Vol. D***
Analyzers, Spectrum-2900 – ***See Vol. D***
Analyzers, Surface Area-2900 – ***See Vol. D***
Analyzers, Time Interval-2900 – ***See Vol. D***
Analyzers, Total Combustibles-2900 – ***See Vol. D***
Analyzers, Transfer Function-2900 – ***See Vol. D***
Analyzers, Transient-2900 – ***See Vol. D***
Analyzers, Ultrasonic-2900 – ***See Vol. D***
Analyzers, Vibration-2900 – ***See Vol. D***
Analyzers, Video – See Analyzers, Spectrum (Vol. D)
Analyzers, Waveform-2900 – ***See Vol. D***
Analyzers, Wow & Flutter-2900 – ***See Vol. D***
Analyzers, Zirconia O2-2900 – ***See Vol. D***
Analyzers (MIL), Antenna Pattern-3475 – ***See Vol. D***
Analyzers (MIL), Pulse-3475 – ***See Vol. D***
Analyzers (MIL), Spectrum-3475 – ***See Vol. D***
Anemometers-2900 – ***See Vol. D***
Annunciators-2200 – ***See Vol. D***
Antenna Connectors-1900 – ***See Vol. D***
Antenna Dummy Loads – See Dummy Loads (Vol. D)
Antenna Feed Systems-3450 – ***See Vol. A***
Antenna Groups (MIL)-3475 – ***See Vol. D***
Antenna Groups (MIL), Elint-3475 – ***See Vol. D***
Antenna Rotators-1900 – ***See Vol. D***
Antenna Sets (MIL), DF-3475 – ***See Vol. D***
Antenna Switching Matrices-1900 – ***See Vol. D***
Antenna Towers-1900 – ***See Vol. D***
Antennas, Airborne-1900 – ***See Vol. D***
Antennas, Citizens Band – See Antennas, Whip & Accessories (Incl. Marine & Mobile Types) (Vol. D)
Antennas, Direction Finding-1900 – ***See Vol. D***
Antennas, Ground Plane-1900 – ***See Vol. D***
Antennas, Helical-1900 – ***See Vol. D***
Antennas, Log Periodic-1900 – ***See Vol. D***
Antennas, Loop-1900 – ***See Vol. D***
Antennas, Microwave-1900 – ***See Vol. D***
Antennas, Multiband, UHF/VHF-1900 – ***See Vol. D***
Antennas, Phased Array-1900 – ***See Vol. D***
Antennas, Rhombic-1900 – ***See Vol. D***
Antennas, Satellite-1900 – ***See Vol. D***
Antennas, Spiral-1900 – ***See Vol. D***
Antennas, Telescopic-1900 – ***See Vol. D***
Antennas, Whip & Accessories (Incl. Marine & Mobile Types-1900 – ***See Vol. D***
Antennas (MIL)-2440 – ***See Vol. B***
Antennas (MIL), DF-3475 – ***See Vol. D***
Antennas (MIL), ECM-3475 – ***See Vol. D***
Antennas (MIL), EW-3475 – ***See Vol. D***
Antennas (MIL), Multibeam-3475 – ***See Vol. D***
Antennas (MIL), Phased Array-3475 – ***See Vol. D***
Antenna Systems (MIL)-3475 – ***See Vol. D***
Antenna Systems (MIL), DF-3475 – ***See Vol. D***
Antistatic Devices, Blowers, Guns, etc.-4100 – ***See Vol. D***
Antistatic Packaging Materials – See Packaging Materials, Antistatic (Vol. C)

Antitheft Devices — See Alarms & Alarm Systems (Vol. D)

Armatures — See Motor & Generator Armatures, Rotors, Stators (Vol. B)

Arms & Manipulators, Robotic-4900 — *See Vol. D*

Array Processors-2025 — *See Vol. D*

Array Sockets — See Sockets, Array (Vol. C)

Arresters, Electrical Surge — See Suppressors, Transient Voltage (Vol. B)

Arresters, Electrical Surge/Lightning (MIL)-2440 — *See Vol. B*

Artificial Loads — See Dummy Loads (Vol. D)

Assemblers/Disassemblers, Network-1900 — *See Vol. D*

Assembly & Fabrication Services (Incl. R & D) — See Services, Assembly & Fabrication (Vol. D)

Attenuators, Audio-1300 — *See Vol. D*

Attenuators, Audio (T, L, LL Pads)-4750 — *See Vol. A*

Attenuators, Coaxial-3450 — *See Vol. A*

Attenuators, Decade-3450 — *See Vol. A*

Attenuators, Fiber Optic-2475 — *See Vol. B*

Attenuators, Fixed-3450 — *See Vol. A*

Attenuators, IF-1900 — *See Vol. D*

Attenuators, Impedance Matching-3450 — *See Vol. A*

Attenuators, Logarithmic-3450 — *See Vol. A*

Attenuators, Microwave-3450 — *See Vol. A*

Attenuators, Programmable-3450 — *See Vol. A*

Attenuators, RF-1900 — *See Vol. D*

Attenuators, Step-3450 — *See Vol. A*

Attenuators, Switch Operated-3450 — *See Vol. A*

Attenuators, Switchable-3450 — *See Vol. A*

Attenuators, Turret-3450 — *See Vol. A*

Attenuators, Variable-3450 — *See Vol. A*

Attenuators, Voltage Controlled-3450 — *See Vol. A*

Attenuators (MIL)-2440 — *See Vol. B*

Attenuators (MIL), Inductive-2440 — *See Vol. B*

Audible Alarms & Transducers-Also see Piezoelectric Ceramics; Transducers, Audio-1300 — *See Vol. D*

Autoclaves-2550 — *See Vol. D*

Automated Wafer Fabrication Systems — See Machines, Accessories, Semiconductor Machine (Vol. D)

Awls-5400

Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300

Backpanel Interconnect Systems-3200

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710-1711
AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
§† Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1720-1721
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1725-1726
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1227
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... D•1108
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, 714-261-9473 ..... C•1729
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1731
§† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... B•1020, C•1353
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... C•1732
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707, 714-549-8998 ..... C•1735
§ Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 ..... C•1084-1085
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1736-1737, D•1111
ADAC Corp., 70 Tower Office Pk, Woburn, MA 01801 617-935-6668
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
† Assembly Specialists, 914 Main St., Box 965, Acton, MA 01720 617-263-9100
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Austin Electronics, The Austin Co., 17-01 Pollitt Drive, Fair Lawn, NJ 07410 201-794-0200
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100
† Cuplex, Inc., 1500 E. Hwy. 66, Garland, TX 75040 214-276-0333
DataCon, Inc., 60 Blanchard Rd., Burlington, MA 01803 617-273-5800
§ Data-Design Labs., P.O. Box 711, 7925 Center Ave., Cucamonga, CA 91730 714-987-2511
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
Electronic Modular Systems, Inc., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244 214-392-3473
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121 619-452-9333
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
Hollis Engrg./Wire-Wrap, 15 Charron Ave., Nashua, NH 03061 603-889-1121
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
† Interconics, BMC Industries, 1100 American National Bank Building, St. Paul, MN 55101 612-228-6556
† Interconics, Bussing Sys. Oper., a unit of BMC Industries, Inc., 2525 E. Vista Industria, Compton, CA 90220 213-639-2535
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
† Kalmus & Assocs., Inc., 2424 S. 25th Ave., Broadview, IL 60153 312-343-7004
Lamtech Electronics, 620 Easy Street, Garland, TX 75042 214-272-3504
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
North American Printed Circuit Div., Tyco Labs., Inc., Box 145, Stafford, CT 06075 203-684-2703
Ostby & Barton, 487 Jefferson Blvd., Warwick, RI 02886 401-739-7310
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 216-354-0925
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
† United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk, P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
Urban Elctrns., P. O. Box 456, Dover, MA 02030 617-329-4068
West-Tronics, Inc., 215 Park St., Bensenville, IL 60106 312-860-3560

Backplane Wiring Services — See Services, Backplane Wiring (Vol. D)

Baffles, Speaker-1300 — *See Vol. D*

Ballasts — See Resistors, Ballast (Vol. A)

Baluns — See Transformers, Matching (Vol. A)

Bargraphs — See Meters, Bargraph (Vol. D)

Barrier Blocks & Strips — See Terminal Blocks (Vol. C), Terminal Strips (Vol. C)

Bars, Shorting-3200

§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
† Basic Electronics, Inc., 11762 Western Ave. "Q", Stanton, CA 90680 714-530-2400
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571

§ CTS Electronics Corp., Paso Robles Div., Electromechanical Gp., 500 Linne Rd., Paso Robles, CA 93446 805-238-0350
† Eldre Corporation, 1500 Jefferson Rd., Rochester, NY 14623 716-427-7280
† Hytek Microsystems, 980 University Ave., Los Gatos, CA 95030 408-395-2300
Interconics, Bussing Sys. Oper., a unit of BMC Industries, Inc., 2525 E. Vista Industria, Compton, CA 90220 213-639-2535
† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
§† Ross Engineering Corp., 540 Westchester Dr., Campbell, CA 95008 408-377-4621
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Baths, Controlled Temperature (Air & Liquid)-4100 — *See Vol. D*

Baths, Ultrasonic — See Cleaners, Ultrasonic (Vol. D)

Batteries, Alkaline Manganese-3900 — *See Vol. D*

Batteries, Carbon Zinc-3900 — *See Vol. D*

Batteries, Gelled Electrolyte-3900 — *See Vol. D*

Batteries, Lead Acid-3900 — *See Vol. D*

Batteries, Lead Dioxide-3900 — *See Vol. D*

Batteries, Lithium-3900 — *See Vol. D*

Batteries, Lithium Manganese Dioxide-3900 — *See Vol. D*

Batteries, Lithium Thionyl Chloride-3900 — *See Vol. D*

Batteries, Mercury-3900 — *See Vol. D*

Batteries, Mercury Oxide-3900 — *See Vol. D*

Batteries, Nickel Cadmium-3900 — *See Vol. D*

Batteries, Rechargeable-3900 — *See Vol. D*

Batteries, Silver Cadmium-3900 — *See Vol. D*

Batteries, Silver Oxide-3900 — *See Vol. D*

Batteries, Silver Zinc-3900 — *See Vol. D*

Batteries, Solar — See Cells, Photovoltaic (Vol. B)

Batteries, Standard Cell-3900 — *See Vol. D*

Batteries, Thermal-3900 — *See Vol. D*

Batteries, Thin Format-3900 — *See Vol. D*

Batteries, Zinc Air-3900 — *See Vol. D*

Batteries, Zinc Carbon-3900 — *See Vol. D*

Batteries, Zinc Chloride-3900 — *See Vol. D*

Batteries, Zinc Oxide-3900 — *See Vol. D*

Batteries (MIL)-2440 — *See Vol. B*

Battery Chargers — See Chargers, Battery (Vol. D), Power Supplies, Plug-in (Vol. D)

Battery Holders — See Connectors, Battery (Vol. C), Retainers, Battery (Vol. C)

Battery Plugs — See Connectors, Battery (Vol. C)

Beads, Shielding, Ferrite — See Shielding, Beads, Ferrite (Vol. C)

Beam Splitters-3700 — *See Vol. B*

Bearings-2500

Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1580
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1605
§† Andrews Corporation, New Cut Road, P.O. Box 570, Spartanburg, SC 29304 803-583-4541
Bearing Inspection, 10041 Shoemaker Ave., Santa Fe Springs, CA 90670 213-944-6251
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000
† Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702 914-968-8400
Keystone Carbon, Thermistor Div., St. Marys, PA 15857 814-781-1591
† Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
MPB Corp., Miniature Precision Bearings Div., Precision Park, Keene, NH 03431 603-352-0310
MPB Corporation, Split Ballbearing Division, Highway 4, Lebanon, NH 03766
§† New Hampshire Ball Bearings, Inc., Minebea Co., Ltd.-Tokyo, Japan, Rte. 202, Peterborough, NH 03458 603-924-3311
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Stackpole, Carbon Div., 201 Stackpole St., St. Marys, PA 15857 814-781-1234
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 516-328-3300
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

Beepers — See Bells, Buzzers, Gongs, Sirens & Aural Warning Devices (Vol. D)

Bells, Buzzers, Gongs, Sirens & Aural Warning Devices-2200 — *See Vol. D*

Belts, Dial Drive — See Cords & Cable, Dial Drive (Vol. C)

Belts, Drive-2500

Belting Industries Co., Inc., 20 Boright Ave., Kenilworth, NJ 07033 201-272-8591
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923
§ Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

Benches, Consoles, Tables (Work Stations, Lab & Shop)-Also See Enclosures, Equipment and Panel Mounting-1400

† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1010-1012
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1021-1024
† Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901, 507-289-3371 ..... C•1050
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710 ..... C•1058
† Kalamazoo Technical Furniture, P.O. Box 1165, Kalamazoo, MI 49005, 616-385-2255 ..... C•1059
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061,1063,1066
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1078
Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, 213-875-0990 ..... C•1090
† Aldes Sys., Alden Products Co., 262 N. Main St., P.O. Box 860, Brockton, MA 02403-0860 617-583-0160
† Baker Co., Inc., Drawer E - Sanford Airport, Sanford, ME 04073 1-800-992-2537
Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600
Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
† Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 516-588-7000
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
Corning Glass Works, Corning Elctrns., Houghton Pk., Bldg. A-2, Corning, NY 14830 607-974-8725
† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662
§ Digiac Corp., 19 Power Drive, Hauppauge, NY 11788 516-234-2100
† Enclosure Corp., 2900 Wharton Rd., Bristol, PA 19007 215-785-2900
E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
§ Ferno-Salesmaker, Ferno-Washington, Inc., 70 Weil Way, Wilmington, OH 45177 513-382-1451
Forma Scientific, Div. of Mallinckrodt Inc., Box 649, Marietta, OH 45750 614-373-4763
† General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
§ Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800
† House of Metal Enclosures, 500 W. 9th St., Box 225, Hermann, MO 65041 314-486-3111
§ Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6

§ Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
† Stanley-Vidmar, Stanley Works, 11 Grammes Rd., Allentown, PA 18103 215-797-6600
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Bends & Twists, Microwave-3450 — *See Vol. A*

Bezels, Shielded & Unshielded-2400

Flex-Key Corp., Sub. of Astronics Corp., 18 Sargent St., Gloucester, MA 01930, 617-281-2040 ..... B•1708
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1585
† JMJ Technical Prods., 50 Wheeler Point Rd., Newark, NJ 07105, 201-589-4257 ..... C•1596
NES, Inc. (Nationwide Electronic Systems), 3003 Wakefield, Carpentersville, IL 60110, 312-426-5900 ..... D•1360
RMF Products, Inc., 1275 Paramount Pkwy., P.O. Box 520, Batavia, IL 60510, 312-879-0020 ..... C•1598
Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 ..... C•1754
§ Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
§ Arrow Hart Component Products, Cooper Inds., 103 Hawthorn St., Hartford, CT 06101 203-249-8471
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
§† Eaton Corp./Cutler-Hammer Prods, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216 414-449-7487
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
§† Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405 818-787-0311
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
LaFrance Corp., Entprs & Exec Aves, Philadelphia, PA 19153 215-365-8000
Leecraft Mfg., 21-02 44th Rd., Long Island City, NY 11101 718-392-8800
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148 617-321-4410
§ NOBEX Div., Griffith Plastics Corp., 1027 California Dr., Box 4365, Burlingame, CA 94010 415-342-8170
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
§† Shelly Associates, Inc., 14281 Chambers Road, Tustin, CA 92680 714-669-9850
§ Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Bimetals, Thermostatic-5300 — *See Vol. B*

Bins, Part Storage-3800

† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963, 800-328-1368 ..... D•2114
§ Akro-Mils, 1293 S. Main St., Akron, OH 44301 216-253-5593
† Aldes Sys., Alden Products Co., 262 N. Main St., P.O. Box 860, Brockton, MA 02403-0860 617-583-0160
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
§ Flambeau Products Corp., P. O. Box 97, Middlefield, OH 44062 216-632-1631
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800
Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
§† Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Blackbody Radiation Sources-2900 — *See Vol. D*

Blowers, Centrifugal-2600

† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1010,1013,1616
Buehler Products, Inc., P. O. Box 33400, Raleigh, NC 27606, 919-469-8522 ..... B•1169
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1021,1025
§ Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027
CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1036
Eastern Air Devices, Inc., 1 Progress Dr., Dover, NH 03820, 603-742-3330 ..... B•1173
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1624
§† Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
† Hi-Tech, Inc., 3600 16th St., Zion, IL 60099, 312-746-2447 ..... C•1636
§ Interfan, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, 415-347-1203 ..... C•1644-1647
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649-1658
† McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550, 609-799-0100 ..... C•1672-1673
McLean Midwest, 4000 83rd Ave. N., Brooklyn Pk., MN 55443, 612-561-9400 ..... C•1674
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061,1066
Papst Mechatronic Corp., Aquidneck Indl. Pk., Newport, RI 02840, 401-849-5930 ..... C•1686-1687
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1079
§† TRW Motor Div., 2275 Stanley Ave., Dayton, OH 45404, 513-228-3171 ... B•1216
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080 ..... C•1104
† Aeroflex Laboratories Inc., Magnetic Products Div., 35 South Service Road, Plainview, NY 11803 516-694-6700
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
Bertsch U.S., Sycamore Resch. Ctr., 2142F Industrial Ct., Vista, CA 92083 619-727-7420
Brailsford & Co., 670 Milton Rd., Rye, NY 10580 914-967-1820
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000
§ EG & G Rotron, Commercial Div., Saugerties, NY 12477 914-246-3615
§† EG & G Rotron, Custom Div., Hasbrouck La., Woodstock, NY 12498 914-679-5201
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
§† ETRI, Inc., 608 Broome St., Monroe, NC 28110 704-289-5423
Fasco Industries, Inc., Div. of Hawker Siddeley Grp. Plc., 601 North Federal Highway, Boca Raton, FL 33432 305-368-0600
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
§ Howard Industries, MSL Ind., Inc., Box 287, Milford, IL 60953 815-889-4105
† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083 619-727-7400
† Novatronics of Canada Ltd., 677 Erie St., P.O. Box 610, Stratford, Ontario, CANADA N5A 6V6 519-271-3880
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
§ Shinano Kenshi Corp. (SKC), 7525 Ethel Ave., Ste. 1, N. Hollywood, CA 91605 818-764-4266
Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605 213-875-0990
† Telectro Systems Corp., 96-18 43rd Ave., Corona, NY 11368 718-651-8900
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Blowers, Scroll (Squirrel Cage)-2600

§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1624
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649,1652-1658
Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176 312-671-6670
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901 507-289-3371
† Hi-Tech, Inc., 3600 16th St., Zion, IL 60099 312-746-2447
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681

Blowers, Tangential-2600

§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1624
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649-1658
Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176 312-671-6670
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
Hitachi America, Ltd., 50 Prospect Ave., Tarrytown, NY 10591 914-332-5800
† Hi-Tech, Inc., 3600 16th St., Zion, IL 60099 312-746-2447
ITT Schadow, 8081 Wallace Rd., Eden Prairie, MN 55344 612-934-4400
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116

Board Computers & Subassemblies, Multibus Compatible-2025 — *See Vol. D*

Board Computers & Subassemblies, PC Bus Compatible-2025 — *See Vol. D*

Board Computers & Subassemblies, Q Bus/Unibus Compatible-2025 — *See Vol. D*

Board Computers & Subassemblies, S100 Bus Compatible-2025 — *See Vol. D*

Board Computers & Subassemblies, STD Bus Compatible-2025 — *See Vol. D*

Board Computers & Subassemblies, VME Bus Compatible-2025 — *See Vol. D*

Boards, Adapter, IBM PC-2000 — *See Vol. D*

Boards, Circuit, Clad-1700

† **C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540** ..... **C•1110**
† **Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388** ..... **C•1105,1111**
§ **Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.)** ..... **C•1098**
§ **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661** ..... **C•1113**
§ Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
Arstan Products International Inc., 99 Jericho Tpke., Jericho, NY 11753 516-333-8100
Bally Electronics, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-7223
† Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 .. 503-829-9108
Electronic Modular Systems, Inc., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244 214-392-3473
† Enterprise Sys. Corp., P.O. Box 698, Dover, NH 03820 603-742-7363
KDI Electronics, Inc., Engelmann & Pyrofilm Divisions, 60 S. Jefferson Rd., Whippany, NJ 07981 201-887-8100
† Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400

Boards, Circuit, Unclad-1700

† **C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540** ..... **C•1110**
Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... **C•1105**
§ **Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.)** ..... **C•1098**
§ **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661** ..... **C•1113**
§ Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 .. 503-829-9108
† Enterprise Sys. Corp., P.O. Box 698, Dover, NH 03820 603-742-7363
KDI Electronics, Inc., Engelmann & Pyrofilm Divisions, 60 S. Jefferson Rd., Whippany, NJ 07981 201-887-8100
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400

Boards, Display, Graphic-2450 — *See Vol. B*

Boards, Integrated Circuit — See Boards, Plug-in (Vol. C)

Boards, Plug-in-3200

Actek, Inc., 12740 28th N.E., Seattle, WA 98125, 206-363-0217 ..... **D•1115**
Advanced Control Sys., 205 Oak Street, Pembroke, MA 02359, 617-826-4477 ..... **D•1117**
AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... **C•1712**
§† **Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202** ..... **C•1718-1721**
Calex Mfg. Co., Inc., 3355 Vincent Rd., Pleasant Hill, CA 94523, 415-932-3911 ..... **C•1723**
† **C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540** ..... **C•1110**
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... **C•1724-1725**
§ **Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333** ..... **C•1047**
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, 714-261-9473 ..... **C•1729**
§ **Gordos Corporation, Solid State Products Division, 1000 N. Second St., P.O. Box 824, Rogers, AR 72756, 501-636-5000** ..... **B•1400**
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... **C•1699**
† **Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111** ..... **C•1730-1731, D•1414**
Metra Byte Corp., 440 Myles Standish Blvd., Taunton, MA 02780, 617-880-3000 ..... **D•1168**
§ **Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110** ..... **C•1732-1733**
† **Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707, 714-549-8998** ..... **C•1735**
§† **Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300** .... **C•1085**
§† **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661** ..... **C•1113**
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... **C•1564**
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
† Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 617-329-4700
Analogic Corp., 8 Centennial Dr., Peabody, MA 01961 ..... 617-532-5660;617-777-4500; 617-246-0300;800-451-1
Applied Circuits, Inc., 36-06 43rd. Ave., Long Island City, NY 11101 212-786-7200
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
† Assembly Specialists, 914 Main St., Box 965, Acton, MA 01720 617-263-9100
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Bally Electronics, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-7223
Benchmark Technology, 200 S. Turnbull Canyon Rd., City of Industry, CA 91745 818-333-1201
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
Burr-Brown Corp., P.O. Box 11400, Tucson, AZ 85734 602-746-1111
§ Central Data Corp., 1602 Newton Dr., Champaign, IL 61821 217-359-8010
Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
§ Consolink Corp., 1275 S. Sherman Dr., Longmont, CO 80501 303-651-2014
§ Cromemco, Inc., Dynatech Corp., 280 Bernardo Ave., P.O. Box 7400, Mountain View, CA 94039-7400 415-964-7400
Crosspoint, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022 201-941-4455
Data Capture Technology, Hathaway Corp., 10837 E. Marshall, Tulsa, OK 74116 918-438-5366
† DataCon, Inc., 60 Blanchard Rd., Burlington, MA 01803 617-273-5800
§ Digital Communications Associates, Inc., 1000 Alderman Dr., Alpharetta, GA 30201 404-442-4000
Digital Equip., One Iron Way, Marlborough, MA 01752
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
† Eastern Electronics Mfg. Corp., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108 203-528-9821
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
GEN/COMP Inc., 6 Algonquin Rd., Canton, MA 02021 617-828-2008
General Digital Corp., 160 Chapel Rd., Box 1657, Manchester, CT 06040 203-647-9700
Ghielmetti, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028-8770 213-463-5111
§ Gunther, W., GmbH, Virnsberger Strasse 51, D 8500 Nurnberg 82, WEST GERMANY ..... (0)911/65521 or 65520
G W Three Incorporated, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153 703-451-2043
Hancock Electronics Corp., 135 King St., P.O. Box 557, Cohasset, MA 02025 617-383-6610
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
IDE Associates, Inc., 35 Dunham Rd., Billerica, MA 01821 617-663-6878
Information Control Corp., Abacus Div. Dept. EM7, 9610 Bellanca Ave., Los Angeles, CA 90045 213-641-8520
§ Intra-computer, 101 W. 31st St., New York, NY 10001 212-947-5533
Ironics Incorporated, 798 Cascadilla St., Ithaca, NY 14850 607-277-4060
JF Microsystems, 3641 Frontier Road, Pasco, WA 99301 ..... 509-297-4294; 800-JF-CARDS
Kalmus & Assocs., Inc., 2424 S. 25th Ave., Broadview, IL 60153 312-343-7004
† Logic Technology, Inc., 2452 Charleston Rd., Mtn. View, CA 94043 415-967-1007
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Matrox Electronic Systems, 1055 St. Regis Blvd., Dorval, QU, CANADA H9P 2T4 514-685-2630
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
§ Motorola Semiconductor Prods. Sector, 3102 North 56th Street, Phoenix, AZ 85018-6606 ..... James A. Norling, GM
National Instruments, 12109 Technology Blvd., Austin, TX 78727-6204 512-250-9119
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Omnibyte Corp., 245 W. Roosevelt Rd., Bldg. 1-5, W. Chicago, IL 60185 ..... 312-231-6880;1-800-638-5022
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
Real Time Devices, Inc., 1930 Park Forest Avenue, State College, PA 16803 814-234-8087
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700

Tektronix, Inc., P. O. Box 500, Y3-314, Beaverton, OR 97077 ..... 800-547-1512;Oregon only 800-452-1877
§ TransKinetic Sys., 110 Shawmut Rd., Canton, MA 02021 617-828-3000
† United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
Xycom, 750 N. Maple Rd., Saline, MI 48176 313-429-4971
Ziatech, 3433 Roberto Ct., San Luis Obispo, CA 93401 805-541-0488

Boards, Plug-in, Extender-3200

§† Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1718
† C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540 ..... C•1110
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1725
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, 714-261-9473 ..... C•1729
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... C•1732-1733
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707, 714-549-8998 ..... C•1735
§ Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 .... C•1085
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113,1736-1737, D•1111
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
Burr-Brown Corp., P.O. Box 11400, Tucson, AZ 85734 602-746-1111
§ Central Data Corp., 1602 Newton Dr., Champaign, IL 61821 217-359-8010
Comark Corp., 93 W St., P. O. Box 474, Medfield, MA 02052 617-359-8161
Davidge Corporation, 94 Commerce Dr., Buellton, CA 93427 805-688-9598
§ Digital Communications Associates, Inc., 1000 Alderman Dr., Alpharetta, GA 30201 404-442-4000
Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 .. 503-829-9108
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
General Digital Corp., 160 Chapel Rd., Box 1657, Manchester, CT 06040 203-647-9700
G W Three Incorporated, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153 703-451-2043
Hancock Electronics Corp., 135 King St., P.O. Box 557, Cohasset, MA 02025 617-383-6610
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
Kinetic Systems, 11 Maryknoll Dr., Lockport, IL 60441 815-838-0005
Matrix Corp., 1203 New Hope Rd., Raleigh, NC 27610 919-833-2000
Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Prototek, Inc., 25 Standen Dr., Hamilton, OH 45015 513-874-5094
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
Solarcom Technology, Inc., P.O. Box 4715, Hayward, CA 94544 415-489-3141
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Tektronix, Inc., P. O. Box 500, Y3-314, Beaverton, OR 97077 ..... 800-547-1512;Oregon only 800-452-1877

Boards, Plug-in, Interface-3200

Actek, Inc., 12740 28th N.E., Seattle, WA 98125, 206-363-0217 ..... D•1115
§† Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1721
Calex Mfg. Co., Inc., 3355 Vincent Rd., Pleasant Hill, CA 94523, 415-932-3911 ..... C•1723
† C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540 ..... C•1110
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
§ Gordos Corporation, Solid State Products Division, 1000 N. Second St., P.O. Box 824, Rogers, AR 72756, 501-636-5000 ..... B•1400
† ILC Data Device Corp., 105 Wilbur Pl., Bohemia, NY 11716, 516-567-5600 ..... D•1159
Matrix Corp., 2260 Distributors Dr., Indianapolis, IN 46241, 317-248-2036 ..... D•1167
Metra Byte Corp., 440 Myles Standish Blvd., Taunton, MA 02780, 617-880-3000 ..... D•1168
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Bally Electronics, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-7223
Bit 3 Computer Corporation, 8120 Penn Avenue S., Minneapolis, MN 55431 612-881-6955
Burr-Brown Corp., P.O. Box 11400, Tucson, AZ 85734 602-746-1111
§ Central Data Corp., 1602 Newton Dr., Champaign, IL 61821 217-359-8010
Comark Corp., 93 W St., P. O. Box 474, Medfield, MA 02052 617-359-8161
Davidge Corporation, 94 Commerce Dr., Buellton, CA 93427 805-688-9598
§ Digital Communications Associates, Inc., 1000 Alderman Dr., Alpharetta, GA 30201 404-442-4000
Electrologic, Inc., 1359 28th St., Signal Hill, CA 90806 213-595-0551
Electronic Modular Systems, Inc., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244 214-392-3473
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
General Digital Corp., 160 Chapel Rd., Box 1657, Manchester, CT 06040 203-647-9700
§ Gunther, W., GmbH, Virnsberger Strasse 51, D 8500 Nurnberg 82, WEST GERMANY ..... (0)911/65521 or 65520
G W Three Incorporated, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153 703-451-2043
Hancock Electronics Corp., 135 King St., P.O. Box 557, Cohasset, MA 02025 617-383-6610
§ ICS Electronics Corp., 2185 Old Oakland Rd., San Jose, CA 95131 408-263-4844
Ironics Incorporated, 798 Cascadilla St., Ithaca, NY 14850 607-277-4060
JF Microsystems, 3641 Frontier Road, Pasco, WA 99301 ..... 509-297-4294; 800-JF-CARDS
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† K-Systems, Inc., 3902 Lilac, Las Cruces, NM 88005 505-526-3209
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Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
National Instruments, 12109 Technology Blvd., Austin, TX 78727-6204 512-250-9119
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Pickles & Trout, P.O. Box 1206, Goleta, CA 93116 805-685-4642
§ Pure Data Ltd., 860 Denison St., Markham, Ont., CANADA L3R 4H1 ..... 416-494-9563; 416-475-3370
Quartic Systems, Inc., 3575 South West Temple # 7, Salt Lake City, UT 84115 801-268-9264
Racal-Dana Instrs. Inc., 4 Goodyear St., Irvine, CA 92718 714-859-8999
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Sensoray, 44106 Old Warm Springs Blvd., Fremont, CA 94538 415-657-7290
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Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
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§† Titan Technologies, Inc., 310 W. Ann, Ann Arbor, MI 48104 313-662-7777
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
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Ziatech, 3433 Roberto Ct., San Luis Obispo, CA 93401 805-541-0488

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† C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540 ..... C•1110
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Altair Exchange Corporation, 19205 Parthenia St., Ste. F, Northridge, CA 91324 ..... 818-701-6977;800-824-5620
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
Bally Electronics, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-7223
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Comark Corp., 93 W St., P. O. Box 474, Medfield, MA 02052 617-359-8161
§ Computer System Assocs., 7564 Trade St., San Diego, CA 92121 619-566-3911
Creative Micro Systems, 3822 Cerritos Ave., Los Alamitos, CA 90720 ... 213-493-2484
Dataram Corp., P. O. Box 7528, Princeton, NJ 08543-7528 609-799-0071
Davidge Corporation, 94 Commerce Dr., Buellton, CA 93427 805-688-9598
Electronic Modular Systems, Inc., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244 214-392-3473
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121 619-452-9333
Enterprise Sys. Corp., P.O. Box 698, Dover, NH 03820 603-742-7363
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§ General Robotics Corp., 23 S. Main Street, Hartford, WI 53027 414-673-6800
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Hancock Electronics Corp., 135 King St., P.O. Box 557, Cohasset, MA 02025 617-383-6610
IDE Associates, Inc., 35 Dunham Rd., Billerica, MA 01821 617-663-6878
Ironics Incorporated, 798 Cascadilla St., Ithaca, NY 14850 607-277-4060
JF Microsystems, 3641 Frontier Road, Pasco, WA 99301 ..... 509-297-4294; 800-JF-CARDS
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Logical Design Group, Inc., 541 Pylon Dr., Raleigh, NC 27606 919-834-8827
Matrix Corp., 1203 New Hope Rd., Raleigh, NC 27610 919-833-2000
Matrox Electronic Systems, 1055 St. Regis Blvd., Dorval, QU, CANADA H9P 2T4 514-685-2630
Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
Pacific Microcomputers, Signal Technology, 6730 Mesa Ridge Rd., San Diego, CA 92121 619-453-8649
§ Pure Data Ltd., 860 Denison St., Markham, Ont., CANADA L3R 4H1 ..... 416-494-9563; 416-475-3370
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SGS Semiconductor Corporation, 1000 E. Bell Road, Phoenix, AZ 85022 602-867-6100
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Systek, 1027 N. Kellogg St., Kennewick, WA 99336 509-735-1200
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Toko America, Inc., 1250 Feehanville Dr., Mt. Prospect,, IL 60056 312-297-0070

Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
Ziatech, 3433 Roberto Ct., San Luis Obispo, CA 93401 805-541-0488

Boards, Plug-In, Multifunction I/O Boards-2000 — *See Vol. D*

Boards, Plug-in Processor-1900 — *See Vol. D*

Boards, Plug-in, Prototype-4200

§† Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1718
† C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540 ..... C•1110
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1724-1725
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... C•1732-1733
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707, 714-549-8998 ..... C•1735
§ Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.) ..... C•1098
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113,1736, D•1111
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Comark Corp., 93 W St., P. O. Box 474, Medfield, MA 02052 617-359-8161
§ Computer System Assocs., 7564 Trade St., San Diego, CA 92121 619-566-3911
Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 503-829-9108
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
General Digital Corp., 160 Chapel Rd., Box 1657, Manchester, CT 06040 203-647-9700
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
G W Three Incorporated, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153 703-451-2043
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† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Matrox Electronic Systems, 1055 St. Regis Blvd., Dorval, QU, CANADA H9P 2T4 514-685-2630
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060 216-354-9239
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Real Time Devices, Inc., 1930 Park Forest Avenue, State College, PA 16803 814-234-8087
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
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Actek, Inc., 12740 28th N.E., Seattle, WA 98125 206-363-0217
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Matrix Corp., 1203 New Hope Rd., Raleigh, NC 27610 919-833-2000
Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
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Boards, Programming-3200

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AT&T, 555 Union Blvd., Allentown, PA 18103, 1-800-372-2447 ..... C•1713-1715
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CYTEC Corp., 2555 Baird Road, Penfield, NY 14526, 716-381-4740;800-325-7495 pause 0110 ..... D•1232
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† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520, 516-868-1900 .. B•1648
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1730-1731, D•1414
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
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Applied Circuits, Inc., 36-06 43rd. Ave., Long Island City, NY 11101 212-786-7200
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† Assembly Specialists, 914 Main St., Box 965, Acton, MA 01720 617-263-9100
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Data Capture Technology, Hathaway Corp., 10837 E. Marshall, Tulsa, OK 74116 918-438-5366
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Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121 619-452-9333
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§† Fairchild Semiconductor Corporation, 10400 Ridgeview Court, Cupertino, CA 95014 408-864-6026
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† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
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§ Pulse Instruments Co., 1234 Francisco, Torrance, CA 90502 213-515-5330
† Racal-Dana Instrs. Inc., 4 Goodyear St., Irvine, CA 92718 714-859-8999
† Reactel, Inc., 687-D Lofstrand La., Rockville, MD 20850 301-279-5535
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
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Xycom, 750 N. Maple Rd., Saline, MI 48176 313-429-4971

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Magnetek Corp., 7315 Red Deer Dr., Boulder, CO 80301-4696, 303-442-6700 ..... A•2273
Renco Electronics, Inc., 60 Jefryn Blvd., East, Deer Pk., NY 11729, 516-586-5566;1-800-645-5828 ..... A•1289,2377-2378
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† Dia-Netics, Inc., 18823 Napa St., Northridge, CA 91324 818-886-2616
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Bolometers, Microwave-2900 — *See Vol. D*

Bolts-2825

Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
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Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261

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Boxes, Decade — See Decade Boxes (Vol. D)

Boxes, Junction, Outlets & Wall Plates-1400

Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1367,1369-1371
§ **Perma Power Elctrns., 5601 W. Howard Ave., Chicago, IL 60648, 312-647-9414 ..... B•1278, C•1701**
Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
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§ Adalet-PLM Div, Div. Scott & Fetzer Co., 4801 W. 150th St., Cleveland, OH 44135 216-267-9000
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§ Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026 314-349-3110
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
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§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
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§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§† Ericson Manufacturing Co., 4215 Hamann Pkwy., Willoughby, OH 44094 216-951-8000
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§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
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§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Todd Systems, Inc., 50 Ash St., Yonkers, NY 10701 914-963-3400
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§ Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
§ The Wadsworth Electric Manufacturing Co., Inc., 20 W. 11th St., Covington, KY 41012 606-431-0900
§ The Wiremold Company, 60 Woodlawn Street, W. Hartford, CT 06110 203-233-6251
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 718-932-3660
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Boxes, Metal & Plastic — See Enclosures (Various types) (Vol. C)

Boxes, Power Outlet — See Boxes, Junction, Outlets & Wall Plates (Vol. C)

Boxes, Shipping (Reusable) — See Enclosures, Shipping (Vol. C)

Brackets, Antenna — See Mounts, Antenna (Vol. D)

Braid, Cable-Also See Wire Shielding-6000

§† **Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1770-1772**
† **Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818-1819**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1827**
Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080 ..... C•1831
§† **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1835-1836,1841**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1851-1852,1857**
† **Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... C•1751**
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1874-1875
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 914-967-8000
Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 ..... 401-821-1700;SALES 401-821-7800
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Brakes, Clutches, Electromechanical-3500 — *See Vol. B*

Brakes, Magnetic-3500 — *See Vol. B*

Brakes, Mechanical-3500 — *See Vol. B*

Breadboard Assemblies-4200

§† **Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1718**
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1736**
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770

† Eastern Electronics Mfg. Corp., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108 203-528-9821
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Noll, J. A. Co., P.O. Box 312, Monroeville, PA 15146 412-733-1089
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ RCA Solid State Div., Micro Processors/Memories/Peripherals, Route 202, Somerville, NJ 08876 201-685-6000
§ TransKinetic Sys., 110 Shawmut Rd., Canton, MA 02021 617-828-3000
† United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
Xycom, 750 N. Maple Rd., Saline, MI 48176 313-429-4971

Breadboards & Breadboard Kits — See Kits, Breadboarding (Vol. C)

Bridge Rectifiers, Silicon-Also See Rectifiers, Bridges & Assemblies-4800 — *See Vol. A*

Bridges, Admittance-2900 — *See Vol. D*

Bridges, Antenna — See Bridges, RF (Vol. D)

Bridges, Audio-1900 — *See Vol. D*

Bridges, Capacitance-2900 — *See Vol. D*

Bridges, Deviation-2900 — *See Vol. D*

Bridges, Dissipation Factor-2900 — *See Vol. D*

Bridges, Impedance-2900 — *See Vol. D*

Bridges, Inductance-2900 — *See Vol. D*

Bridges, Kelvin-2900 — *See Vol. D*

Bridges, LCR-2900 — *See Vol. D*

Bridges, Limit — See Bridges (Specific Types) (Vol. D)

Bridges, Megohm — See Bridges, Resistance (Vol. D)

Bridges, Power, RF-2900 — *See Vol. D*

Bridges, Programmable — See Bridges (Specific Types) (Vol. D)

Bridges, Q-2900 — *See Vol. D*

Bridges, Ratio — See Meters, Ratio (Vol. D)

Bridges, Resistance-2900 — *See Vol. D*

Bridges, RF-2900 — *See Vol. D*

Bridges, Silicon Cell-4800 — *See Vol. A*

Bridges, Strain Gauge-2900 — *See Vol. D*

Bridges, Synchro & Resolver-2900 — *See Vol. D*

Bridges, Telephone/Data-1900 — *See Vol. D*

Bridges, Temperature-2900 — *See Vol. D*

Bridges, Wheatstone-2900 — *See Vol. D*

Brushes & Brush Assemblies-3500 — *See Vol. B*

Buffers, Data — See Spoolers, Printer Buffers (Vol. D)

Bulbs — See Lamps, Miniature & Subminiature (Vol. B)

Bumpers-2825

§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1580
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
Alasco Rubber & Plastics Corp., 617 Mountain View Ave. # 7, Belmont, CA 94002 415-595-4100
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
Budwig Mfg., P.O. Box 829, Ramona, CA 92065-0829 619-789-0900
Bumper Products Corp., 14 King St., P.O. Box 45, Mt. Holly, NJ 08060 ..... 609-261-8100; 800-541-2500
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
Gasket Intl. Inc., 49 Ackerman St., Bloomfield, NJ 07003 201-338-6814
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Minor Rubber Co., Inc., Ackerman St., Bloomfield, NJ 07003 ..... 201-338-6800; 800-631-8574
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108

Burnishers, Contact-5400

§ Applied Data Communications, 14272 Chambers Rd., Tustin, CA 92680 714-731-9000
Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§ Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Bus Bars, Surface Mount-3200

§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Bus Bars & Systems-3200

† Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1716,1743
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... D•1108
† Janco Corp., Box 3038-Glenoaks Sta., Burbank, CA 91504, 818-846-1800 ..... B•1642
§† Lear Siegler, Inc., Telecommunications Div., 714 N. Brookhurst St., Anaheim, CA 92801, 714-774-1010 ..... C•1324
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1737
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
American Etching & Mfg., 13730 Desmond St., Pacoima, CA 91331-2796 818-896-1187
Apahouser-Elcom, Inc., 101 Walnut St., Watertown, MA 02172 617-924-1500
† Basic Electronics, Inc., 11762 Western Ave. "Q", Stanton, CA 90680 714-530-2400
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Brown Boveri Elec., Norristown Rd., Spring House, PA 19477 215-628-7400
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Eaton Corp./Cutler-Hammer Prods, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216 414-449-7487
† Eldre Corporation, 1500 Jefferson Rd., Rochester, NY 14623 716-427-7280
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
† ILC Data Device Corp., 105 Wilbur Pl., Bohemia, NY 11716 516-567-5600
† Interconics, BMC Industries, 1100 American National Bank Building, St. Paul, MN 55101 612-228-6556
† Interconics, Bussing Sys. Oper., a unit of BMC Industries, Inc., 2525 E. Vista Industria, Compton, CA 90220 213-639-2535
§ Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
Rogers Corp., Bus Products Division, 5750 East McKellips Rd., Mesa, AZ 85205 602-830-3370
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
§† Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360 617-747-0300
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Bus Compatible Instruments — See Instruments, Test and Measuring, GPIB Compatible (Vol. D)

Bushings, Glass, Plastic, Metal, Rubber, etc.-2500

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1207

§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... **C•1857**
† **Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702, 914-968-8400** ..... **B•1184**
§ **Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182** ..... **C•1867**
§ **Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800** ..... **C•1576,1579-1580**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... **C•1698**
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 .. **C•1528**
† **Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700** ..... **C•1703**
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§ Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
§ Adalet-PLM Div, Div. Scott & Fetzer Co., 4801 W. 150th St., Cleveland, OH 44135 216-267-9000
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
Alasco Rubber & Plastics Corp., 617 Mountain View Ave. # 7, Belmont, CA 94002 415-595-4100
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
† Atlantic Optical Moulding, Ellis St., P.O. Box 309, Dudley, MA 01570 617-943-1746
Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718 714-951-8808
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Budwig Mfg., P.O. Box 829, Ramona, CA 92065-0829 619-789-0900
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
Carbone Lorraine Inds., 400 Myrtle Ave., Boonton, NJ 07005 ..... 201-DE4-0700
Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
† Globe Plastics, 1342 S. Signal Dr., Pomona, CA 91766 714-623-2747
§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605 213-875-0213
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211;800-423-2734
3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Moldtronics, Inc., 703 Rogers St., Downers Grove, IL 60515 312-968-7000
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§ Nyltite, 3451 S. Clinton Ave., S. Plainfield, NJ 07080 201-561-1300
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600
§ RAF Electronic Hardware, 95 Silvermine Rd., Seymour, CT 06483 203-888-2133
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
Semiconductor Circuits, 49 Range Rd., Windham, NH 03087 603-893-2330
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
Steward, D. M., Mfg. Co., P.O. Box 510, Chattanooga, TN 37401 615-867-4100
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839 214-243-4321
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626

Busses, Multibus, Q Bus, S100 Bus, STD Bus — See Board Computers & Subassemblies (Vol. D)

Buzzers, Electronic — See Bells, Buzzers, Gongs, Sirens & Aural Warning Devices (Vol. D)

Cabinets, Plastic — See Enclosures, Nonmetallic (Vol. C)

Cabinets & Accessories, Metal — See Enclosures, Equipment & Panel Mounting (Vol. C)

Cable, Audio-6000

§ **Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000** ..... **C•1770-1772**
§ **American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700** ..... **C•1775**
§ **Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1** ..... **C•1776-1781,1789-1797**
† **Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322** ..... **C•1818**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886** ... **C•1823-1825**
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... **C•1833**
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... **C•1834**
§ **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830** ..... **C•1835-1836,1839-1840**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... **C•1850-1852**
GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... **C•1864**
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... **C•1301,1868**
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... **C•1870**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... **C•1873**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... **C•1520**
§ **Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530, 914-681-0700** ..... **D•1055**
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... **C•1924**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
§ Dukane Corp., Communications Sys. Div., 2900 Dukane Dr., St. Charles, IL 60174-9984 312-584-2300
§ Duotone, 6875 S.W. 81st St., S. Miami, FL 33143 305-665-1121
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§ Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
§ Harris Corp., Dracon Div., 809 Calle Plano, Camarillo, CA 93010 805-987-9511
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Martin Sound Prods., 28 Alpha Park, Cleveland, OH 44143-2297 216-442-2286
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400

National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
§ Recoton Corp., 46-23 Crane St., Long Island City, NY 11101 718-392-6442
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
§ Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shure Bros., 222 Hartrey Ave., Evanston, IL 60202-3696 312-866-2200
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§ Vidaire Electronics Mfg. Corp., P. O. Box 788, Freeport, NY 11520 516-623-6696
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Cable, Battery Booster-6000

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
East Penn. Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700

Cable, Coaxial-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769-1770
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, 206-223-1110 ..... B•1145
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1776,1810-1814,1816
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1823
Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080 ... C•1831
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1833
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1835-1836,1838-1840
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1851
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1860-1861
§† JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474, 201-694-6200 ..... C•1869
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1873
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ..... C•1887
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1921
Textro, P.O. Box 381, Greer, SC 29652-0381, 803-879-0752 ..... C•1923
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
† Adams-Russell, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913 617-388-5210
§† Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
Andrew Corp., 10500 W. 153rd St., Orland Pk., IL 60462 312-349-3300
† Antenna Specialists, 12435 Euclid Ave., Cleveland, OH 44106 216-791-7878
Augat Communications Group, Augat Inc., P.O. Box 1110, Seattle, WA 98111 206-223-1110
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
§ Brooks Manufacturing Corp., 4001 N. American St., Philadelphia, PA 19140 215-228-4433
† Cablewave Sys., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 203-239-3311
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
§† Capcon, Inc., 147 West 25th Street, New York, NY 10001 212-243-6275
† Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
† Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
§† Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
Eaton Corp., Microwave Products Division, 785 Palomar Ave., Sunnyvale, CA 94086 408-773-3700
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† Flexco Microwave, Inc., P.O. Box 174, Karrville Rd., Port Murray, NJ 07865 201-689-3020
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
† Gabriel Elctrns., Box 70, Scarborough Indl. Pk., Scarborough, ME 04074 207-883-5161
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 .. 201-768-8082
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
† Gulton Industries, Inc., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627 ..... 714-642-2400;800-854-4066
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
IDE Associates, Inc., 35 Dunham Rd., Billerica, MA 01821 617-663-6878
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lance Industries, P.O. Box 4156, Sylmar, CA 91342-0156 818-367-1811
§ L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§† Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
† Pasternack Enterprises, P.O. Box 16759, Irvine, CA 92713 714-261-1920
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
§† Precision Tube, Church Rd. & Wissahickon, N. Wales, PA 19454 215-699-5801

† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Reactel, Inc., 687-D Lofstrand La., Rockville, MD 20850 301-279-5535
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
Weinschel Engineering, One Weinschel La., Gaithersburg, MD 20877 .... 301-948-3434; 800-638-2048
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Whittaker Corp., 10880 Wilshire Blvd., Los Angeles, CA 90024 213-475-9411
† Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100
§ Wiltron, 490 Jarvis Dr., Morgan Hill, CA 95037-2809 408-778-2000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, Communication-6000

Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1776,1815
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823,1826
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1833
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1850,1852
GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
Gandalf Data Inc., Gandalf Technologies Inc., 1020 S. Noel Ave., Wheeling, IL 60090 312-541-6060
General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376 413-863-4357
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§ L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Textro, P.O. Box 381, Greer, SC 29652-0381 803-879-0752
§ Via West Inc., 534 N. Stone Ave., Tucson, AZ 85705 602-623-5716
Xebex Data Systems, 6610 Buckley Dr., Cambria, CA 93428 805-927-5008

Cable, Computer-6000

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767,1770-1773
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1776,1786,1792-1795,1799,1801-1802,1804-1805,1807-1808,1815
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823,1826
Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080 ... C•1831
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1833
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1850-1851,1857
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1873
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1551,1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
Ansco, 1243 West 134th St., Gardena, CA 90247 .... 1-800-421-1270;1-800-821-3308; 213-532-7780
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
§ Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
Catronix Corp., 2298 Lower Roswell Rd. SE, Marietta, GA 30067 404-977-8220
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§† General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 714-993-6970
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376 413-863-4357
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
† Lamtech Electronics, 620 Easy Street, Garland, TX 75042 214-272-3504
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§ L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§ M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040 ..... 206-232-4800;800-453-4569
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101

§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Via West Inc., 534 N. Stone Ave., Tucson, AZ 85705 602-623-5716
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131
Xebex Data Systems, 6610 Buckley Dr., Cambria, CA 93428 805-927-5008

Cable, Data Transmission-6000

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767,1769,1773
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823,1826
Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080 ... C•1831
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1551,1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
AT&T, 555 Union Blvd., Allentown, PA 18103 1-800-372-2447
§ Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
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§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376 413-863-4357
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Telebyte Technology, Inc., Remark Datacom Div., 270 East Pulaski Road, Greenlawn, NY 11740 ..... 516-423-3232;800-835-3298
§ Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
Textro, P.O. Box 381, Greer, SC 29652-0381 803-879-0752
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ Via West Inc., 534 N. Stone Ave., Tucson, AZ 85705 602-623-5716
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, Dial — See Cords & Cable, Dial Drive (Vol. C)

Cable, FEP Insulated-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1833
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1835-1836,1840
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
† Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Cable, Fiber Optic-2475 — *See Vol. B*

Cable, Flame Retardant-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767-1769
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823,1826
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1837,1842
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1849
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1874-1875
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1896-1897
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

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Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Fibronics Intl. Inc., 325 Stevens St., Hyannis, MA 02601 617-778-0700
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Roanwell, 180 Varick St., New York, NY 10014 212-989-1090
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
† Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, Flat-6000

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ..... C•1763-1765
Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767,1769-1770
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1165
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1179
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1826
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1849
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1860-1862
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1873
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§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1883
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1903-1904
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131 ..... C•1927
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
§ Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
† Basic Electronics, Inc., 11762 Western Ave. "Q", Stanton, CA 90680 714-530-2400
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§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
† C W S, 17 Midland Dr., Norwich, NY 13815 607-334-5366
§ Datatran Corp., 355 Yuma St., Denver, CO 80223 303-778-0870
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154 215-969-4200
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lance Industries, P.O. Box 4156, Sylmar, CA 91342-0156 818-367-1811
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733

§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Tetra-Etch, 1505 North Fourth St, P. O. Box 1389, Flagstaff, AZ 86002 602-526-1290
Textro, P.O. Box 381, Greer, SC 29652-0381 803-879-0752
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
Xebex Data Systems, 6610 Buckley Dr., Cambria, CA 93428 805-927-5008
Yamaichi Electronics, 2471 E. Bayshore Rd. #530, Palo Alto, CA 94303 415-493-3756

Cable, Heater-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769-1771
Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
Amperex Electronic Corp., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802 516-931-6200
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, High Temperature (Over 125°C)-6000

Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769-1772
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1820-1821
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1833
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1836,1839,1842
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1848-1849
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
† Adams-Russell, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913 617-388-5210
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
§† Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Engine Systems Division, Simmonds Precision, P.O. Box 310, Norwich, NY 13815 607-335-5000
† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
† Gulton Industries, Inc., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627 ..... 714-642-2400;800-854-4066
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Masterite Corporation, 2841 Lomita Blvd., Torrance, CA 90505 213-775-3471
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486 802-372-4561
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
† Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, High Voltage (1,000 Volts & Over)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769-1771

§† **American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700** ..... **C•1775**
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... **C•1818**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886** ... **C•1820-1821**
† **Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315** ..... **C•1200,1202**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... **C•1848**
† **W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290** ..... **C•1860**
GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... **C•1864**
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... **C•1870-1871**
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... **C•1894-1895**
† **Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761** ..... **C•1920**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
† Adams-Russell, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913 617-388-5210
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
Bertan Assocs., 121 New South Rd., Hicksville, NY 11801 516-433-3110
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Engine Systems Division, Simmonds Precision, P.O. Box 310, Norwich, NY 13815 607-335-5000
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, Instrumentation & Control-6000

§ **Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000** ..... **C•1767,1769-1772**
§† **American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700** ..... **C•1775**
§† **Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1** ..... **C•1776-1801,1803-1809,1815-1816**
† **Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322** ..... **C•1818**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886** ... **C•1821-1826**
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... **C•1832-1833**
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... **C•1834**
§† **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830** ..... **C•1841**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... **C•1847**
† **GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768** ... **C•1864**
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... **C•1301,1868**
§ **Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357** ..... **C•1870**
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ..... **C•1360,1886**
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... **C•1892-1901,1905-1906**
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... **C•1924**
† **Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131** ..... **C•1927**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Bailey Controls Co., Div. of Babcox & Wilcox, 29801 Euclid Ave., Wickliffe, OH 44092 216-585-8500
Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§ L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
† National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† SpecTran Corp., 50 Hall Road, Sturbridge, MA 01566 617-765-0851
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
Systems Research Laboratories, Inc., 2800 Indian Ripple Rd., Dayton, OH 45440 513-426-6000
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
Textro, P.O. Box 381, Greer, SC 29652-0381 803-879-0752
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100

Cable, Intercommunication & Sound System — See Cable, Audio (Vol. C)

Cable, Irradiated-6000

Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1823
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ... C•1842
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ... B•1012-1013, C•1870
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ... C•1887
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 ... 914-962-2253
§ Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 ... 415-592-4550
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 ... 201-925-8000
† American Electric Cable Co., 181 Appleton St, Holyoke, MA 01040 ... 413-539-9893
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 ... 617-265-2102
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 ... 206-939-4880
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 ... 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 ... 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 ... 617-368-1401
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 ... 301-252-1768
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 ... 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 ... 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 ... 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 ... 201-227-7996
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 ... 415-361-3860
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 ... 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 ... 415-234-9090
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 ... 914-359-9300
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 ... 617-757-3872
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 ... 516-293-1610
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 ... 803-963-5131

Cable, Low Capacitance-6000

§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ... C•1776,1793,1799,1802
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1823,1826
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ... C•1870
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ... C•1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 ... 914-962-2253
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 ... 201-925-8000
§ American Electric Cable Co., 181 Appleton St, Holyoke, MA 01040 ... 413-539-9893
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 ... 401-726-0700
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 ... 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 ... 617-265-2102
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
† Cablewave Sys., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 ... 203-239-3311
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 ... 303-792-5760
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 ... 416-424-5000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 ... 401-724-9605
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 ... 914-469-2141
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 ... 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 ... 206-939-4880
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 ... 312-455-8830
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 ... 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 ... 818-882-8311
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
§ Electro Standards Lab., Inc., P.O. Box 9144, Providence, RI 02940 ... 401-943-1164
Gavitt Wire & Cable, Brookfield, MA 01506 ... 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ... 704-324-2200;800-438-3331
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 ... 201-768-8082
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 ... 602-526-1290
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 ... 302-738-4880
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 ... 301-252-1768
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 ... 617-562-9913
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 ... 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 ... 718-657-4422
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 ... 203-288-5571
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 ... 312-276-4454
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 ... 215-489-3700
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 ... 503-620-9400
National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 ... 305-592-0551
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 ... 213-225-5611
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 ... 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 ... 201-227-7996
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ... 617-685-4341, Ext. 265
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 ... 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 ... 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 ... 914-651-4431
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 ... 419-729-9761
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ... 914-268-6848; 800-431-2774
§ Siecor Corp., Box 489, Hickory, NC 28603 ... 704-328-2171
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 ... 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 ... 415-234-9090
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 ... 201-685-1600
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 ... 914-359-9300
§ Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 ... 617-839-5987
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 ... 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 ... 718-939-8300
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 ... 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 ... 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 ... 805-257-2400
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 ... 803-963-5131

Cable, Microphone-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ... C•1773
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1823-1824
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ... C•1835-1836,1839-1840
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ... C•1852
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ... C•1870
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ... C•1924
§ AKG Acoustics, Inc., 77 Selleck St., Stamford, CT 06902 ... 203-348-2121
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 ... 413-539-9893
§ American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 ... 401-726-0700
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 ... 617-265-2102
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 ... 401-724-9605
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 ... 914-469-2141
§ Custom Cable, 242 Butler, Westbury, NY 11590 ... 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 ... 505-865-6700
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 ... 213-323-7771

§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Roanwell, 180 Varick St., New York, NY 10014 212-989-1090
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Shure Bros., 222 Hartrey Ave., Evanston, IL 60202-3696 312-866-2200
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10963 914-359-9300
Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§ Vidaire Electronics Mfg. Corp., P. O. Box 788, Freeport, NY 11520 516-623-6696
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Cable, Multiconductor-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767,1770-1772
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700 ..... C•1775
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1776-1788,1800,1803,1806-1809,1816
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823-1826
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1835-1840
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1847,1850-1852,1857
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1861
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
§† JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474, 201-694-6200 ..... C•1869
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870-1871
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1892-1901,1903-1906
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1921
Textro, P.O. Box 381, Greer, SC 29652-0381, 803-879-0752 ..... C•1923
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1551,1924
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131 ..... C•1927
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
† Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000

Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
†W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
§ H & T Components Inc., Unitech Plc, 35 Carlough Road, Bohemia, NY 11716 516-567-2282
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lance Industries, P.O. Box 4156, Sylmar, CA 91342-0156 818-367-1811
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Meyer Wire Co., Inc., 1072 Sherman Avenue, Hamden, CT 06514 203-281-0817
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406 707-523-0600
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§† Revere Corporation of America, 845 N. Colony Rd., Wallingford, CT 06492 203-269-7701
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300

† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Teledyne Aerospace Sys., 1007 E. 10th St., Fairmont, MN 56031 ..... 507-235-3355; 507-235-9712
§† Temp-Flex Cable, Inc., 11 Depot Street, S. Grafton, MA 01560 617-839-5987
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400

Cable, Plenum-6000

§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1777-1781,1787-1788
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
§ Electro Standards Lab., Inc., P.O. Box 9144, Providence, RI 02940 401-943-1164
Fibronics Intl. Inc., 325 Stevens St., Hyannis, MA 02601 617-778-0700
§† General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 .. 201-768-8082
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§† M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Cable, Power-6000

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ..... C•1763-1765
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769
Arstan Products International Inc., 99 Jericho Tpke., Jericho, NY 11753, 516-333-8100 ..... A•2191
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1822-1823
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1832-1833
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1837,1840
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1861
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1873
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1914-1915
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1918
§† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1921
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
ETRI, Inc., 608 Broome St., Monroe, NC 28110 704-289-5423
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Linemaster Switch, Box 52, Woodstock, CT 06281 203-974-1000
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
Meyer Wire Co., Inc., 1072 Sherman Avenue, Hamden, CT 06514 203-281-0817
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131
Xebex Data Systems, 6610 Buckley Dr., Cambria, CA 93428 805-927-5008

Cable, Retractile — See Cords, Retractile (Vol. C)

Cable Retractors-1400

§† Accuride, 12311 S. Shoemaker, Santa Fe Springs, CA 90670, 213-944-0921 ..... C•1008-1009

Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... **C•1079**
Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
† General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
Jonathan Manufacturing Corp., 1101 So. Acacia Ave., Fullerton, CA 92631 714-526-4651
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040 ..... 206-232-4800;800-453-4569
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216 212-774-5900

Cable, Ribbon — See Cable, Flat (Vol. C)

Cable, Rotator Antenna — See Cable, Multiconductor (Vol. C)

Cable, Satellite-6000

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... **C•1818**
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§† M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§† Microwave Systems, 6505 Collamer Rd., E. Syracuse, NY 13057 315-437-9951
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, Security-6000

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... **C•1818**
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121

Cable, Shielded-6000

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ..... **C•1763-1765**
§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... **C•1767-1772**
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700 ..... **C•1775**
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... **C•1776,1781-1786,1793-1816**
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... **C•1818-1819**
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821-1825
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... **C•1832-1833**
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... **C•1834**
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... **C•1200**
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... **C•1835-1837,1841**
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... **C•1847,1849,1851-1854,1857**
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... **C•1860-1862**
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... **C•1301,1868**
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474, 201-694-6200 ..... **C•1869**
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... **B•1012-1013, C•1870**
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... **C•1751**
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... **C•1339**
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... **C•1874-1875**
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... **C•1883**
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ..... **C•1360,1886-1887**
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... **C•1892-1899**
§† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... **C•1920**
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... **C•1921**
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... **C•1550-1551,1924-1925**
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 805-484-0540
§† Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
† Gordon Co., 5710 Kenosha St., Richmond, IL 60071 815-678-2211
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§ Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
§ Harris Corp., Dracon Div., 809 Calle Plano, Camarillo, CA 93010 805-987-9511
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§† Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265

§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
§† Precision Tube, Church Rd. & Wissahickon, N. Wales, PA 19454 215-699-5801
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§† Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§† Revere Corporation of America, 845 N. Colony Rd., Wallingford, CT 06492 203-269-7701
† Roanwell, 180 Varick St., New York, NY 10014 212-989-1090
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Shure Bros., 222 Hartrey Ave., Evanston, IL 60202-3696 312-866-2200
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§ SPECO Div., Components Specialties, Inc., P.O. Box 624, 1172 Rte. 109, Lindenhurst, NY 11757 ..... 516-957-8700;800-645-5516
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Teledyne Aerospace Sys., 1007 E. 10th St., Fairmont, MN 56031 ..... 507-235-3355; 507-235-9712
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Cable, Speaker-6000

§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1823**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276

Cable, Telephone-6000

§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823,1826**
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1835,1839-1840**
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... C•1845
GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1335,1873
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1900-1901
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1551,1924**
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 .. 201-768-8082
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
Meyer Wire Co., Inc., 1072 Sherman Avenue, Hamden, CT 06514 203-281-0817
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
† National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, TFE Insulated-6000

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818

§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1820-1821**
§† **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ... C•1835-1838,1840,1842**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ... C•1847-1848**
† **GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864**
† **Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917**
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ... C•1924**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 ... 914-962-2253
† Adams-Russell, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913 ... 617-388-5210
§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 ... 201-925-8000
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 ... 401-726-0700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 ... 617-265-2102
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 ... 303-792-5760
Chabin Corp., 890 Fortress St., Chico, CA 95926 ... 916-891-6410
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 ... 914-469-2141
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ... 612-338-0995;800-422-2537
§ Custom Cable, 242 Butler, Westbury, NY 11590 ... 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 ... 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 ... 617-368-1401
† Galite, 2 Tower Dr., Wallingford, CT 06492 ... 203-265-7126
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 ... 617-752-8260
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 ... 602-526-1290
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 ... 302-738-4880
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 ... 718-657-4422
M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ... 704-324-2200;800-438-3331
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 ... 215-272-8960
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 ... 215-489-3700
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 ... 215-699-5373
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 ... 215-459-3566
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 ... 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 ... 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 ... 201-227-7996
§† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 ... 609-235-6700
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 ... 714-751-7733
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 ... 312-323-9121
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 ... 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 ... 718-939-8300
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 ... 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 ... 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 ... 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 ... 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 ... 805-257-2400
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 ... 803-963-5131

Cable, Thermocouple-6000

§ **American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700 ... C•1775**
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ... C•1870
Omega Engineering, Box 4047, Stamford, CT 06907, 203-359-1660 ... C•1909
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ... B•1756, C•1919
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 ... 201-925-8000
Amperex Electronic Corp., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802 ... 516-931-6200
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ... 617-777-8888;800-826-2726
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ... 317-983-5200; 800-BELDEN-1
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 ... 617-265-2102
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 ... 309-693-3322
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 ... 201-796-2886
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
Ceramaseal, Box 260, New Lebanon, NY 12125 ... 518-794-7800
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 ... 717-792-2644
§ Custom Cable, 242 Butler, Westbury, NY 11590 ... 516-334-3600
† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
Degussa Corp., 104 New Era Drive, So. Plainfield, NJ 07080 ... 201-757-6500
DELTA M Corporation, 525 Warehouse Rd., Oak Ridge, TN 37830 ... 615-483-1569
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 ... 617-752-8932
† Galite, 2 Tower Dr., Wallingford, CT 06492 ... 203-265-7126
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 ... 617-752-8260
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 ... 602-526-1290
§ Love Controls Corp., 1475 S. Wheeling Rd., Wheeling, IL 60090 ... 312-541-3232
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 ... 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 ... 215-272-8960
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 ... 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 ... 201-825-0300
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 ... 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 ... 415-361-3860
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 ... 714-751-7733
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ... 203-265-7126; 800-243-3959
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 ... 312-323-9121
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 ... 914-737-5600
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 ... 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 ... 617-757-3872
Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 ... 805-584-4100

Cable, Transmission Line, Power-6000

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ... C•1769-1773
§ **Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ... C•1806,1810-1816**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1825**
§† **Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ... C•1836,1838-1840**
† **W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ... C•1862**
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ... C•1900-1901
† Adams-Russell, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913 ... 617-388-5210
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 ... 703-642-4000
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 ... 203-456-8000
§† Cablewave Sys., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 ... 203-239-3311
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 ... 303-792-5760
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 ... 416-424-5000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 ... 401-724-9605
Chabin Corp., 890 Fortress St., Chico, CA 95926 ... 916-891-6410
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 ... 914-469-2141
Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
† Flexco Microwave, Inc., P.O. Box 174, Karrville Rd., Port Murray, NJ 07865 ... 201-689-3020
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 ... 302-738-4880
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 ... 201-694-6200
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 ... 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 ... 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 ... 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 ... 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 ... 201-825-0300
§ Precision Tube, Church Rd. & Wissahickon, N. Wales, PA 19454 ... 215-699-5801
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 ... 914-651-4431
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ... 914-268-6848; 800-431-2774
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 ... 312-323-9121
§† T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 ... 201-685-1600
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 ... 914-737-5600
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002 ... 602-526-1290
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 ... 818-707-2020

† Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100

Cable, Triaxial-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1769-1770,1773
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1839
§† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
Chabin Corp., 890 Fortress St., Chico, CA 95926 916-891-6410
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
§† General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 .. 201-768-8082
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
† Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
§ Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
Precision Tube, Church Rd. & Wissahickon, N. Wales, PA 19454 215-699-5801
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 .... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100
† Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682 803-963-5131

Cable, TV (Incl. Camera)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1773
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1839-1840
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§† Microwave Systems, 6505 Collamer Rd., E. Syracuse, NY 13057 315-437-9951
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
§ RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400

Cable, Twisted Pair-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, 206-223-1110 ..... B•1145
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375, 317-983-5200;800-BELDEN-1 ..... C•1787-1788,1793-1799,1802,1804-1809,1815-1816
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821,1823-1825
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4, 416-424-5000 ..... C•1832-1833
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1841
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1847,1850-1853,1857
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1860
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1864
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1875
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1893,1895,1898-1899
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917

§† **Textro, P.O. Box 381, Greer, SC 29652-0381, 803-879-0752** ..... **C•1923**
† **Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131** ..... **C•1927**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 805-484-0540
§† Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
General Instrument Network Cable Div., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
§† Rowe Industries, inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§ Wilco Wire & Cable Co., Inc., 1921 Las Plumas Ave., San Jose, CA 95133 408-926-8880

Cable, Woven Conductor-6000

† **Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080** ... **C•1831**
† **GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768** ..... **C•1864-1865**
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... **C•1870**
† **Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800** ..... **C•1751**
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... **C•1904**
§† **Textro, P.O. Box 381, Greer, SC 29652-0381, 803-879-0752** ..... **C•1923**
Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131 ..... **C•1927**
§† Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400

Cable & Assemblies (MIL)-2440 — *See Vol. B*

Cable & Connectors, Sateliite Antennas-1900 — *See Vol. D*

Cable Assemblies & Harnesses-6000

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ..... **C•1763-1765**
† **Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160** ..... **C•1147**
§ **Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841** ... **C•1176,1179**
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, 206-223-1110 ..... **B•1145**
† **Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322** ..... **C•1818-1819**
† **Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080** ... **C•1831**
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... **C•1199-1200,1202**
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... **C•1205**
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1207**
† **General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000** ..... **C•1057**
† **W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290** ..... **C•1860,1862**
† **GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768** ... **C•1864**
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... **C•1301,1868**
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... **C•1183-1185,1738**
§ **3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800** ..... **C•1339**
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... **C•1874-1875**
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... **C•1348**
§ **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373** ..... **C•1353**
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... **C•1883**
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... **C•1733**
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ..... **C•1360,1886**

National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1906
† **Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, 617-631-7100** ..... C•1907
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1915
Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... C•1378-1380
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722** ..... C•1918
§ **Ritz Electronics/Relco, 196 Queen St. N., New Dundee, Ont., CANADA NOB 2EO, 519-696-2616** ..... C•1081
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1512-1514
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... C•1921
§† **Textro, P.O. Box 381, Greer, SC 29652-0381, 803-879-0752** ..... C•1923
§ **U.S. Power Converting Company, Relco, 21517 Ocean, Torrance, CA 9053, 213-316-9984** ..... C•1081
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... C•1925
† **Woven Electronics, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, 803-963-5131** ..... C•1927
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
Advanced Techn. Research Labs., 5645 K General Washington Dr., Alexandria, VA 22312 703-750-2920
§† Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
† Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
Altek Co., P.O. Box 1128, Torrington, CT 06790 203-482-7626
Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 203-387-5282
† Apsco, Inc., 5976 Heisley Road, Mentor, OH 44060 216-352-8961
§ Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Babcock Display Products, Inc., A Subsidiary of Babcock, Inc., 1051 S. East St., Anaheim, CA 92805-5799 714-491-5121
† Basic Electronics, Inc., 11762 Western Ave. "Q", Stanton, CA 90680 714-530-2400
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Burton Electrical Engineering, Wyle Laboratories, 111 Maryland Street, P.O. Box 217, El Segundo, CA 90245-0217 213-772-1406
Cabletest Products Co., 81 W. Wyoming Ave., Melrose, MA 02176 617-665-2932
§ Cablex, Inc., 14 Inverness Dr. E. H-136, Englewood, CO 80112 303-792-5760
CAL-AV, Inc., 515B Westchester Drive, Campbell, CA 95008 408-371-0666
Capulum Cable Technology, Ltd., 106-195 Stafford Road, Nepean, Ontario, CANADA K2H 9C1 613-726-1966
† Cardinal Control Co., 110 Kensington Rd., Kensington, CT 06037 203-828-6379
† C. E. Precision Assemblies, 1031 W. Fremont Dr., Tempe, AZ 85282 602-820-5596
Chabin Corp., 890 Fortress St., Chico, CA 95926 916-891-6410
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Cirris Systems, 1864 S. State, Ste 90, Salt Lake City, UT 84115 ..... 801-466-6600; 800-424-7747
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
† Corlund Electronics Corp., 3543 Old Conejo Rd., Newbury Park, CA 91320 805-499-6877
Cross Electronics, 100 Commonwealth Dr., Warrendale, PA 15086 412-776-1591
† C W S, 17 Midland Dr., Norwich, NY 13815 607-334-5366
† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† Danmar Inds., 9705 Lurline Ave., Chatsworth, CA 91311 ..... 818-882-7979/5280
§ Dataprobe, 110 Palisades Blvd., Palisades Park, NJ 07650 201-947-9500
§ Data Set Cable Co., Inc., 722 Danbury Rd., Ridgefield, CT 06877 203-438-9684
Davidson Elctrn. Dev. Co., 113 E. 13th St., Erie, PA 16512 814-454-6448
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 213-649-1400
Digital Equip., One Iron Way, Marlborough, MA 01752
Dymec, Inc., 8 Lowell Ave., Winchester, MA 01890 ..... 617-729-7870;800-225-1151
† Eastern Electronics Mfg. Corp., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108 203-528-9821
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electroprep, Inc., Rt 28A, P.O. Box 437, Cataumet, MA 02534 617-563-5559
§ Electro Standards Lab., Inc., P.O. Box 9144, Providence, RI 02940 401-943-1164
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
Emtronix Corporation, N114 W. 19225 Clinton Dr., Germantown, WI 53022 414-255-2620
Engine Systems Division, Simmonds Precision, P.O. Box 310, Norwich, NY 13815 607-335-5000
EOTec Corporation, Fiber Optic Interconnect Group, 420 Frontage Road, West Haven, CT 06516 203-934-7961
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
Everett/Charles Test Equipment, Inc., 2887 N. Towne Ave., Pomona, CA 91767 714-621-9511
Evershed & Vignoles, Ltd., Meggitt Holdings P. L. C., Acton Lane, Chiswick, London, ENGLAND W4 5HJ 01-994-3670
§† Excel Specialty Corp., 6335 N. Broadway, Chicago, IL 60660 312-262-4781
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† Flexco Microwave, Inc., P.O. Box 174, Karrville Rd., Port Murray, NJ 07865 201-689-3020
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§ Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
† Grim Corporation, Box 67, Medford, NJ 08055 609-267-7950
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
† Gulton Industries, Inc., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627 ..... 714-642-2400;800-854-4066
§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
† Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
§† IEC Electronics, 105 Norton St., Newark, NY 14513 315-331-7742
§ Illinois Lock Co., The Eastern Co., 301 W. Hintz Rd., Wheeling, IL 60090 312-537-1800
§ International Data Sciences, 7 Wellington Rd., Lincoln, RI 02865 401-333-6200
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Jettron Products, P.O. Box 337, E. Hanover, NJ 07936 201-887-0571
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§ K & M Electronics, 123 Interstate Dr., W. Springfield, MA 01089 413-781-1350
† Kollsman Instr., 220 Daniel Webster Hwy., Merrimack, NH 03054 603-889-2500
§ Laboratory Products, Inc., 16 Fairmount Ct., P. O. Box 258, Hyde Pk., MA 02136 617-364-6260
† Lamtech Electronics, 620 Easy Street, Garland, TX 75042 214-272-3504
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§ L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† Linemaster Switch, Box 52, Woodstock, CT 06281 203-974-1000
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
† Manage, Inc., Fibre Optics Elctrns. Sys. Grp., P.O. Box 175, 40 Nichols Rd., Chicopee, MA 01014 ..... 413-598-8204;592-3834
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
§ Masterite Corporation, 2841 Lomita Blvd., Torrance, CA 90505 213-775-3471
† Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730 714-987-4715
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Matrix Systems, 645 Anchors St., Ft. Walton Beach, FL 32548-9990 904-244-9600
Micro Industries, 691 Greenscrest Drive, Westerville, OH 43081 614-895-0404
§ Midland Standard, Inc., 1355 Holmes Rd., Elgin, IL 60120 312-741-6600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
† MOLDCON, Div. of K & M Electronics, 221 Interstate Dr., W. Springfield, MA 01089 413-736-0371
Muirhead, 1101 Briston Rd., Mountainside, NJ 07092 201-233-6010
Multi Products International, 218 Little Falls Rd., P.O. Box 238, Cedar Grove, NJ 07009 201-239-8183
† National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
† Pasternack Enterprises, P.O. Box 16759, Irvine, CA 92713 714-261-1920
† Poly-Scientific, Litton Inds., 1213 N. Main St., Blacksburg, VA 24060 703-552-3012
† Precision Tube, Church Rd. & Wissahickon, N. Wales, PA 19454 215-699-5801
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
Ragen Corp., Systems Div., 9 Porete Ave., N. Arlington, NJ 07032 201-997-1000

Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Reactel, Inc., 687-D Lofstrand La., Rockville, MD 20850 301-279-5535
§† Revere Corporation of America, 845 N. Colony Rd., Wallingford, CT 06492 203-269-7701
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§† Rose Enclosures Sys., Inc., 12140 Parklawn Dr., Rockville, MD 20852 ... 301-984-1783
§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§† Systron-Donner Microwave Div., 14844 Oxnard St., Van Nuys, CA 91409 818-786-1760
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Tech Labs., Inc., Bergen & Edsall Blvds., Palisades Pk., NJ 07650 201-944-2221
Tegam, 7230 N. Ridge Rd., Madison, OH 44057 216-428-7505
† Telecommunications Devices, 2320 Wisconsin Ave., Downers Grove, IL 60515 312-971-3460
† Teledyne Aerospace Sys., 1007 E. 10th St., Fairmont, MN 56031 ..... 507-235-3355; 507-235-9712
† Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002 602-526-1290
Tevelec, Ltd., 977 Pantera Drive, Mississauga, Ontario, CANADA L4W 2W6 416-624-5241
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
† V-Tron Electronics Corp., 10 Venus Way, P.O. Box 3297, S. Attleboro, MA 02703 617-761-9100
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
† Western Reserve Electronics, 2150 Highland Rd., Twinsburg, OH 44087 216-425-4951
† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Wilco Wire & Cable Co., Inc., 1921 Las Plumas Ave., San Jose, CA 95133 408-926-8880
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
Xylog Corp., 83 Hobart St., Hackensack, NJ 07601 201-489-4040
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Cable Assemblies, Microwave-3450 — ***See Vol. A***

Cable Fault Locators-2900 — ***See Vol. D***

Cable (MIL), Flat-2440 — ***See Vol. B***

Cable (MIL), RF-2440 — ***See Vol. B***

Cages, Card — See Enclosures, Circuit Board, Module, & Relay Mounting (Vol. C)

Calculators, Electronic, Desk Top-4200
Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611

Calculators, Electronic, Hand Held-4200
Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611

Calculators, Industrial Process-4200
Richard-Lee Co., Box 724, New Providence, NJ 07974 201-276-0710

Calibration & Instrument Repair Services — See Services, Calibration & Instrument Repair (Vol. D)

Calibrators, Accelerometer-2900 — ***See Vol. D***

Calibrators, Attenuation-2900 — ***See Vol. D***

Calibrators, Automated-2900 — ***See Vol. D***

Calibrators, Crystal-2900 — ***See Vol. D***

Calibrators, Current-2900 — ***See Vol. D***

Calibrators, Fluxmeter-2900 — ***See Vol. D***

Calibrators, Frequency-2900 — ***See Vol. D***

Calibrators, LVDT-2900 — ***See Vol. D***

Calibrators, Magnetic Field-2900 — ***See Vol. D***

Calibrators, Meter — See Testers, Meter (Vol. D)

Calibrators, Oscilloscope-2900 — ***See Vol. D***

Calibrators, Sound Level-2900 — ***See Vol. D***

Calibrators, Sweep — See Generators, Sweep (Vol. D)

Calibrators, Synchro-2900 — ***See Vol. D***

Calibrators, Time Base-2900 — ***See Vol. D***

Calibrators, Transducer-2900 — ***See Vol. D***

Calibrators, Voltage-2900 — ***See Vol. D***

Calibrators, VSWR-2900 — ***See Vol. D***

Calorimeters, Microwave-2900 — ***See Vol. D***

CAMAC Modules — See Modules, CAMAC (Vol. D)

Cameras, Data Recording-2325 — ***See Vol. D***

Cameras, Digital Image Acquisition-2325 — ***See Vol. D***

Cameras, Image Converter-1900 — ***See Vol. D***

Cameras, Infrared-2325 — ***See Vol. D***

Cameras, Machine Vision-4100 — ***See Vol. D***

Cameras, Oscilloscope-2975 — ***See Vol. D***

Cameras, Television-1900 — ***See Vol. D***

Cameras, Television, Fiber Optic-1900 — ***See Vol. D***

Cans & Flat Packs, Integrated Circuit — See Packages, Integrated Circuit (Vol. A)

Cans, Capacitor, Relay, Semiconductor, Transformer, etc-2500
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
Hallmark Metals Inc., 610 W. Foothill Blvd., Glendora, CA 91740 213-335-1263
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
Inter-Technical Grp., One Bridge Street, Irvington, NY 10533 914-591-8822
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Plastic Capacitors, Inc., 2623 N. Pulaski Rd., Chicago, IL 60639 312-489-2229
Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Capacitance Comparators — See Bridges, Capacitance (Vol. D)

Capacitor Hardware-2800
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018
§ Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Mallory Capacitor Co., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201 317-636-5353
§ Sprague Electric Co., a Unit of the Penn Central Corp. World HQ, 92 Hayden Ave., Lexington, MA 02173 617-862-5500
§ Sprague Electric Company, The Capacitor Group, 92 Hayden Avenue, Lexington, MA 02173 617-862-5500
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291

Capacitor Leakage Indicators — See Testers, Capacitor (Vol. D)

Capacitor Wafers-1500 — ***See Vol. A***

Capacitors, Chip (For Microcircuits)-1500 — ***See Vol. A***

Capacitors, Energy Storage-1500 — ***See Vol. A***

Capacitors, Fixed, AC (Incl. Motor Start)-1500 — ***See Vol. A***

Capacitors, Fixed, Air-1500 — ***See Vol. A***

Capacitors, Fixed, Aluminum Electrolytic-1500 — ***See Vol. A***

Capacitors, Fixed, Ceramic, Disc & Tubular-1500 — *See Vol. A*

Capacitors, Fixed, Ceramic, Monolithic-1500 — *See Vol. A*

Capacitors, Fixed, Feedthru-1500 — *See Vol. A*

Capacitors, Fixed, Film, Metallized & Nonmetallized-1500 — *See Vol. A*

Capacitors, Fixed, Glass-1500 — *See Vol. A*

Capacitors, Fixed, Laboratory Standard-1500 — *See Vol. A*

Capacitors, Fixed, Mica-1500 — *See Vol. A*

Capacitors, Fixed, Mylar — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Oil Filled-1500 — *See Vol. A*

Capacitors, Fixed, Paper, Metallized & Nonmetallized-1500 — *See Vol. A*

Capacitors, Fixed, Plastic — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Polycarbonate — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Polyester — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Polypropylene — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Polystyrene — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Polysulfone — See Capacitors, Fixed, Film (Vol. A)

Capacitors, Fixed, Porcelain-1500 — *See Vol. A*

Capacitors, Fixed, Tantalum Electrolytic-1500 — *See Vol. A*

Capacitors, Fixed, Vacuum-1500 — *See Vol. A*

Capacitors, Surface Mount-1500 — *See Vol. A*

Capacitors, Variable, Air-1500 — *See Vol. A*

Capacitors, Variable, Ceramic-1500 — *See Vol. A*

Capacitors, Variable, Film-1500 — *See Vol. A*

Capacitors, Variable, Gas Filled-1500 — *See Vol. A*

Capacitors, Variable, Glass-1500 — *See Vol. A*

Capacitors, Variable, HV (Lab Type)-Also See Decade Boxes, Capacitance-1500 — *See Vol. A*

Capacitors, Variable, Mica-1500 — *See Vol. A*

Capacitors, Variable, Padders & Trimmers-1500 — *See Vol. A*

Capacitors, Variable, Vacuum-1500 — *See Vol. A*

Capacitors (MIL), Fixed-2440 — *See Vol. B*

Capacitors (MIL), Variable-2440 — *See Vol. B*

Caps, Connector-2100

Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1295-1296
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1552-1553
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Foundation Instruments Inc., 24 Colonnade Rd., Nepean, ON, CANADA K2E 7J6 613-226-4000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Millen Components, Electronic Instr. & Specialty Corp., 42 Pleasant St., Stoneham, MA 02180 617-438-6951
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§† Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 ... 805-238-2840
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Caps, Forms & Tapes, Heat Shrinkable-Also See Tubing, Heat Shrinkable-2800

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
§ Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386

Caps, Lenses, Indicator Light-2450 — *See Vol. B*

Caps, Wire Splicing — See Splicers, Wire (Vol. C)

Caps (MIL)-2440 — *See Vol. B*

Card Connectors, Surface Mount-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1296
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1883
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281

Card Equipment, Mark Sense-2000 — *See Vol. D*

Card Equip., Punch-2000 — *See Vol. D*

Card Equip., Reader-2000 — *See Vol. D*

Card Equip., Reader/Punch-2000 — *See Vol. D*

Card Holders, Circuit Board — See Enclosures, Circuit Board, Module, & Relay Mounting (Vol. C)

Cards, Data Communication/Interfaces-2000 — *See Vol. D*

Cards, Linear Function-2000 — *See Vol. D*

Cards, Logic-2000 — *See Vol. D*

Cards, Memory — See Memory Devices (Vol. D), Memory Systems (Vol. D)

Carriers — See Holders & Carriers, Chip (Vol. C)

Carts & Dollies, Instrument & Equipment-3800

Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1024
Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027
† Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682
Beechwood Mfg., 310 S. Ohmer, Indianapolis, IN 46219 317-356-2493
§ Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 .. 516-588-7000
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526 503-476-8871
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268 818-442-2572
§† E-Tronics, 16774 Schoenborn, Sepulveda, CA 91343 818-892-7279
§ Ferno-Salesmaker, Ferno-Washington, Inc., 70 Weil Way, Wilmington, OH 45177 513-382-1451
Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.
Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800
Inter Metro Industries Corp., North Washington St., Wilkes-Barre, PA 18705 717-825-2741
§ Leader Instruments Corp., 380 Oser Ave., Hauppauge, NY 11788-3694 516-231-6900
§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Mobile-Tronics Co., Inc., Box 1022, Tustin, CA 92680 714-546-0884
Parsons Manufacturing, 1055 O'Brien Dr., Menlo Park, CA 94025-1476 415-324-4726
Skydyne Inc., River Rd., Port Jervis, NY 12771 ..... 914-856-6655;800-428-CASE
§ Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
§ Sunshine Scientific Instruments, 1810 Grant Ave., Philadelphia, PA 19115 215-673-5600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Cases, Equipment, Instrument, Meter (Portable) — See Enclosures, Portable, Metallic & Nonmetallic (Vol. C)

Cases, Equipment, Instrument, Meter (Stationary) — See Enclosures, Equipment & Panel Mounting (Vol. C)

Cases, Shielded — See Enclosures, Shielded (Vol. C)

Cases, Transit — See Enclosures, Shipping (Vol. C)

Casters-1400

Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1025
CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1036
Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Inter Metro Industries Corp., North Washington St., Wilkes-Barre, PA 18705 717-825-2741
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216 212-774-5900
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
ZyMOS Corp., 477 N. Mathilda Ave., Sunnyvale, CA 94086 ..... 408-730-8800; 408-730-5400

Cathode-Ray Readout Tubes — See Tubes, Readout (Vol. A)

CATV Systems & Equipment-1900 — *See Vol. D*

Cavities, Microwave-3450 — *See Vol. A*

Cells, Electrolytic (Timing) — See Timers, Electrolytic Cell (Vol. D)

Cells, Load-5500 — *See Vol. B*

Cells, Photoconductive-3700 — *See Vol. B*

Cells, Photoemissive-3700 — *See Vol. B*

Cells, Photovoltaic-3700 — *See Vol. B*

Cells, Solar — See Cells, Photovoltaic (Vol. B)

Cements — See Adhesives, (All Types) (Vol. C)

Chambers, Altitude-2550 — *See Vol. D*

Chambers, Anechoic-2550 — *See Vol. D*

Chambers, Environmental-2550 — *See Vol. D*

Chambers, Explosion-2550 — *See Vol. D*

Chambers, Fluid Conditioner-2550 — *See Vol. D*

Chambers, Humidity-2550 — *See Vol. D*

Chambers, Magnetic, Degaussing Coil-4525

† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... C•1751
† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975 219-223-3158
High Voltage Engrg. Corp., S. Bedford St., Burlington, MA 01803 617-272-1313
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148 617-321-4410
† Power Sys. Grp., Rantec Div., Emerson Elec., 9401 Oso Ave., Chatsworth, CA 91311 818-885-8223
Walker Scientific, Rockdale St., Worcester, MA 01606 .... 617-852-3674;617-853-3232

Chambers, Pressure-2550 — *See Vol. D*

Chambers, Radiation-2550 — *See Vol. D*

Chambers, RFI/EMI-2550 — *See Vol. D*

Chambers, Shock-2550 — *See Vol. D*

Chambers, Space Simulation-3475 — *See Vol. D*

Chambers, Temperature-2550 — *See Vol. D*

Chambers, Vacuum-2550 — *See Vol. D*

Chambers, Vibration-2550 — *See Vol. D*

Chambers (MIL)-3475 — *See Vol. D*

Character Recognition Equip., Optical-2000 — *See Vol. D*

Chargers, Battery-4000 — *See Vol. D*

Chargers, Magnet — See Magnetizers (Vol. D)

Chassis, Circuit Board Mounting-1400

Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923, 617-777-8888;800-826-2726 ..... D•1141
§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... D•1108
Lansing Research Corp., 705 Willow Ave., Ithaca, NY 14850, 607-272-3265;607-257-7613;800-847-3535 ..... C•1060
Powerbox Inc., 1503 Spruce St., Boulder, CO 80302, 303-444-1461;800-444-1461 ..... C•1077
Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 .... C•1084
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, 401-732-3770 ..... C•1086
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073, 213-305-8288 ..... C•1092-1093
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064, 213-478-0046;800-TECHMAR;800-CHASSIS (CA) ..... C•1096-1097
Ultronix, Inc., Sfernice, Inc., P.O. Box 1090, Grand Junction, CO 81502, 303-242-0810 ..... A•2054
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102,1736-1737, D•1111
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
§ Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
† Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776 818-287-0451
§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
† Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268 818-442-2572
§ Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
Electrorack Products Co., 1443 S. Sunkist St., Anaheim, CA 92806 714-776-5420
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
§† E-Tronics, 16774 Schoenborn, Sepulveda, CA 91343 818-892-7279
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
† Hamilton Metalcraft, 848 N. Fair Oaks Ave., Pasadena, CA 91103 818-795-4811
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084 404-496-4000
Pacific Microcomputers, Signal Technology, 6730 Mesa Ridge Rd., San Diego, CA 92121 619-453-8649

Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200
Prototek, Inc., 25 Standen Dr., Hamilton, OH 45015 513-874-5094
§ RCA Solid State Div., Micro Processors/Memories/Peripherals, Route 202, Somerville, NJ 08876 201-685-6000
RCI/Data, 1992 Lakewood Rd., Toms River, NJ 08753 201-341-8361
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
TDJ Co., Inc., 1154 Morena Blvd., San Diego, CA 92110 619-276-5920
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
Zendex Corp., 6700 Sierra La., Dublin, CA 94568 415-828-3000
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Chassis Marking Kits — See Kits, Marking (Vol. C)

Chassis, Metal-1400

Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026, 314-349-3110 .. C•1016
§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
† General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000 ..... C•1054-1055,1057
Lansing Research Corp., 705 Willow Ave., Ithaca, NY 14850, 607-272-3265;607-257-7613;800-847-3535 ..... C•1060
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061
Powerbox Inc., 1503 Spruce St., Boulder, CO 80302, 303-444-1461;800-444-1461 ..... C•1077
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073, 213-305-8288 ..... C•1092-1093
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080 ..... C•1104
§ AAK Corp, 747 River St., Haverhill, MA 01830 617-373-3769
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682
† Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
Apahouser-Elcom, Inc., 101 Walnut St., Watertown, MA 02172 617-924-1500
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
Bit 3 Computer Corporation, 8120 Penn Avenue S., Minneapolis, MN 55431 612-881-6955
Boker's, Inc., 3104 Snelling Ave., Minneapolis, MN 55406 612-729-9365
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
† Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776 818-287-0451
† Churchill Corp., 344 Franklin St., Box G, Melrose, MA 02176 617-665-4700
§ Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
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Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ General Robotics Corp., 23 S. Main Street, Hartford, WI 53027 414-673-6800
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
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† Hamilton Metalcraft, 848 N. Fair Oaks Ave., Pasadena, CA 91103 818-795-4811
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§ LMB Heeger, Inc., 2946 E. 11th St., Los Angeles, CA 90023 213-261-0382
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Matrix Corp., 1203 New Hope Rd., Raleigh, NC 27610 919-833-2000
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
§† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200
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§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
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Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
TDJ Co., Inc., 1154 Morena Blvd., San Diego, CA 92110 619-276-5920
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
† Trilobyte Computer Corporation, 801 W. Grand Ave., Oakland, CA 94607 415-839-1100
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660
Zendex Corp., 6700 Sierra La., Dublin, CA 94568 415-828-3000
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Chassis Slides — See Slides, Cabinet, Chassis (Vol. C)

Chassis (MIL), Electrical-2440 — *See Vol. B*

Checkers — See Analyzers (Vol. D), Testers (Vol. D)

Chemicals, Antistatic — See Coatings, Antistatic (Vol. C)

Chemicals, Electroplating-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
Auric Corp., 470 Frelinghuysen Ave., Newark, NJ 07114 201-242-4100
§† Automated Prod. Equip. Corp., 142 Peconic Ave., Medford, NY 11763 ... 516-654-1197
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
ETD Technology, Inc., 605 West County Road E., Shoreview, MN 55126 612-482-7760
Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, NJ 07114 201-242-4110
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
Sel-Rex Div., OMI Intl. Corp., 75 River Rd., Nutley, NJ 07110 201-667-5200
† Technic, Inc., Box 965, Providence, RI 02901 401-781-6100
Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Chemicals, Epoxy Stripping-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
§ Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§ Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 ... 714-951-3231
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710
† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 313-231-2871

Chemicals, Etching-1700

§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1739
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
Auric Corp., 470 Frelinghuysen Ave., Newark, NJ 07114 201-242-4100
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
ETD Technology, Inc., 605 West County Road E., Shoreview, MN 55126 612-482-7760
Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, NJ 07114 201-242-4110
† FMC Corporation, Chemical Products Grp., 2000 Market St., Philadelphia, PA 19103 215-299-6000
§ Gates, Geo. W., & Co., Inc., 1209 Hempstead Tpke., Franklin Sq., NY 11010 516-352-2904
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
† Technic, Inc., Box 965, Providence, RI 02901 401-781-6100
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342' 818-365-9661

Chemicals, Fungicidal — See Coatings, Fungicidal (Vol. C)

Chemicals, Tin Plating-1700

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
ETD Technology, Inc., 605 West County Road E., Shoreview, MN 55126 612-482-7760
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630

SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
† Technic, Inc., Box 965, Providence, RI 02901 401-781-6100
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 .. 718-441-4759

Chemicals, Wire Stripping-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§ Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, NJ 07114 201-242-4110
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Chestsets — See Handsets, Chestsets (Vol. D)

Chip Carriers, Surface Mount-2825

§ International Resistive Company, P.O. Box 1860, Boone, NC 28607, 704-264-8861 ..... A•1951
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§ Dale Electronics, Inc., El Paso Div., P.O. Box 26728, El Paso, TX 79926 915-592-3253
§ Dale Electronics, Inc., Norfolk Div., 2300 Riverside Blvd., Norfolk, NE 68701 402-371-0080
Densepac Microsystems, Inc., 7321 Lincoln Way, Garden Grove, CA 92641-1428 ..... 714-898-0007;800-64-CHIPS
† International Sensor Systems, Inc., Aurora Industrial Pk., Box 345, Aurora, NE 68818 402-694-6111
K-Two Industries, 4331 Miranda Ave., Palo Alto, CA 94306 408-720-9316
Mhotronics, Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015 312-948-5600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Mini-Systems, Inc., Electronic Package Div., 168 E. Bacon St., P.O. Box 1597, Plainville, MA 02762 617-695-2000
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
SMD Technology Center, 5855 N. Glen Pk. Rd., Milwaukee, WI 53209 ... 414-228-7632
Tektronix, Inc., Hybrid Components Operation, P.O. Box 500, Beaverton, OR 97077 503-627-4220

Chips, Integrated Circuit — See Integrated Circuits, Silicon Monolithic, Unpackaged Chips (Vol. A)

Chokes, AF — See Coils, AF (Vol. A)

Chokes, Filter-1800 — *See Vol. A*

Chokes, RF — See Coils, RF (Vol. A)

Chokes, Swinging-1800 — *See Vol. A*

Chokes, Waveguide-3450 — *See Vol. A*

Chokes (MIL)-2440 — *See Vol. B*

Choppers-Also See Light Choppers-4050 — *See Vol. D*

Choppers (MIL)-2440 — *See Vol. B*

Circuit Analyzers — See Testers, Signal Tracing (Vol. D)

Circuit Board Holders, Jig Type — See Holders, Circuit Board (Vol. D)

Circuit Breakers-4300 — *See Vol. B*

Circuit Breakers, Boxes, Panel Boards, Enclosures (MIL)-2440 — *See Vol. B*

Circuit Testers — See Testers, Signal Tracing (Vol. D)

Circuits, Hybrid, Custom-3130 — *See Vol. A*

Circuits, Hybrid, Thick Film-3130 — *See Vol. A*

Circuits, Hybrid, Thick Film, Surface Mount-3130 — *See Vol. A*

Circuits, Hybrid, Thin Film-3130 — *See Vol. A*

Circuits, Hybrid, Thin Film, Surface Mount-3130 — *See Vol. A*

Circuits, Integrated — See Integrated Circuits (Specific Types) (Vol. A)

Circuits, Printed Flexible-1700

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Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... B•1709
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
AT&T, 555 Union Blvd., Allentown, PA 18103 1-800-372-2447
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
† Basic Electronics, Inc., 11762 Western Ave. "Q", Stanton, CA 90680 714-530-2400
§† Boeing Electronics Co., P.O. Box 24969, M/S 9N-41, Seattle, WA 98124-6269 206-657-7474
Bowmar Instrument Corp., Data Entry Division, 4640 126th Ave. N., Clearwater, FL 33520-4796 813-576-2525
Buckbee-Mears Co., Nashua Div., 100 Northeastern Blvd., P.O. Box 888, Nashua, NH 03062 603-883-5541
Chartpak, 1 River Rd., Leeds, MA 01053 413-584-5446
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
† Eldre Corporation, 1500 Jefferson Rd., Rochester, NY 14623 716-427-7280
§† Electrofilm, 27727 Avenue Scott, Valencia, CA 91355 805-257-2240
† Enterprise Sys. Corp., P.O. Box 698, Dover, NH 03820 603-742-7363
† General Technology Corp., 6816 Washington Avenue, NE, Albuquerque, NM 87109 505-345-5591
GTI/Circuits Div., Box 217, Leesburg, IN 46538 219-453-3261
Hi-Tech Components, Mitsubishi International Corp., 520 Madison Ave., New York, NY 10022 212-605-2607
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
† Interconics, BMC Industries, 1100 American National Bank Building, St. Paul, MN 55101 612-228-6556
§ International Resistive Company, P.O. Box 1860, Boone, NC 28607 704-264-8861
Jayco Plastics of California, Inc., 507 W. Blueridge Ave., Orange, CA 92665 714-974-1701
Mantex Corp., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051 313-628-8200
† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Minco Products, 7300 Commerce La., Minneapolis, MN 55432 612-571-3121
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
Noble U.S.A., Inc., 5450 Meadowbrook Ct., Rolling Meadows, IL 60008 .. 312-364-6038
OMNI Switch USA, Inc., 21630 N. 19th Ave., Ste. B-16, Phoenix, AZ 85027 602-582-0629
† Parlex Corp., 145 Milk St., Methuen, MA 01844 ..... 617-685-4341, Ext. 265
Proto Systems of Atlanta, 625 Sims Industrial Blvd., Alpharetta, GA 30201 404-475-1330
† Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
† Sanders Associates, Inc., Microwave, 955 Perimeter Rd., Manchester, NH 03108 ..... 603-645-6000 Ext. 4299
† Sheldahl, Inc., P.O. Box 170, Hwy 3 North, Northfield, MN 55057 507-663-8000
† Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360 617-747-0300
† Thermolab, 14713 Keswick St., N. Hollywood, CA 91605 818-787-4084
† West-Tronics, Inc., 215 Park St., Bensenville, IL 60106 312-860-3560

Circuits, Printed, Multilayer-1700

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† ADI Elctrns. & ADI Circuits, Inc., 101 Trade Zone Dr., Ronkonkoma, NY 11779 516-737-1800
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† Aydin Corp., 700 Dresher Rd., Horsham, PA 19044 215-657-7510
Bally Electronics, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-7223
Benchmark Technology, 200 S. Turnbull Canyon Rd., City of Industry, CA 91745 818-333-1201
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§† Boeing Electronics Co., P.O. Box 24969, M/S 9N-41, Seattle, WA 98124-6269 206-657-7474
† Circuits, Inc., 59 Deming Rd., Berlin, CT 06037 203-828-3526
† Collins Avionics Divisions, Rockwell Intl., 400 Collins Rd. NE, Cedar Rapids, IA 52498 319-395-1000
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
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† Cuplex, Inc., 1500 E. Hwy. 66, Garland, TX 75040 214-276-0333
Data-Design Labs., P.O. Box 711, 7925 Center Ave., Cucamonga, CA 91730 714-987-2511
† Degussa Electronics, Hybrid Division, 2155 North Forbes Blvd., Tucson, AZ 85745 602-622-1278
Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
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† Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 .. 503-829-9108
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 .. 214-221-8776
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† General Technology Corp., 6816 Washington Avenue, NE, Albuquerque, NM 87109 505-345-5591
† Granite State Circuits, Power Elctrns. Corp., P.O. Box 2208, 96 Milton Rd., Rochester, NH 03867 603-332-3334
GTE Products, Circuit Board Operation, Old Route 220, P.O. Box 360, Muncy, PA 17756 717-546-3191
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† Lockheed Electronics Co., Inc., Lockheed Corporation, 1501 Rt. 22, Plainfield, NJ 07061 201-757-1600
† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
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† Trend Circuits, 44358 Old Warm Springs Blvd., Fremont, CA 94536 415-651-1150
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
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§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
McCoy Electronics Co., 100 Watts St., P.O. Box B, Mt. Holly Springs, PA 17065, 717-486-3411 ..... A•1414
§† Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113, D•1111
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
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§† Boeing Electronics Co., P.O. Box 24969, M/S 9N-41, Seattle, WA 98124-6269 206-657-7474
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
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§† Circuits, Inc., 59 Deming Rd., Berlin, CT 06037 203-828-3526
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Data I/O Corp., 10525 Willows Rd. N.E., Redmond, WA 98073-9746 206-881-6444
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
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† Eastern Electronics Mfg. Corp., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108 203-528-9821
† Electro Mechanical Design Services, Inc., 16698 Oakmont Ave., Gaithersburg, MD 20877 301-840-5710
† Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 503-829-9108
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§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Kontron Elctrns., 630 Clyde Avenue, Mountain View, CA 94039-7230 415-965-7020
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Masterite Corporation, 2841 Lomita Blvd., Torrance, CA 90505 213-775-3471
† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
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† National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551
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Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 617-890-6107
† Photocircuits Glen Cove, Div., Kollmorgen Corp., 31 Sea Cliff Ave., Glen Cove, NY 11542 516-674-1303
† Pho-Tronics Div., E. R. Wagner Mfg. Co., 8701 W. Bradley Rd., Milwaukee, WI 53224 414-355-6704
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RCI/Data, 1992 Lakewood Rd., Toms River, NJ 08753 201-341-8361
† Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
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† Sanders Associates, Inc., Microwave, 955 Perimeter Rd., Manchester, NH 03108 ..... 603-645-6000 Ext. 4299
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§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
† Signatron, A Unit of Sundstrand Corp., 110 Hartwell Ave., Lexington, MA 02173 617-861-1500
† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Stetron International, Inc., 90 Broadway, Buffalo, NY 14203 716-854-3443
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§† Techniques, Inc., 235 Jackson St., Englewood, NJ 07631 201-569-5900
Tektronix, Inc., P. O. Box 500, Y3-314, Beaverton, OR 97077 ..... 800-547-1512;Oregon only 800-452-1877
Teledyne/Geotech, 3401 Shiloh Rd., Garland, TX 75041 214-271-2561
† Trend Circuits, 44358 Old Warm Springs Blvd., Fremont, CA 94536 415-651-1150
† United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
† West-Tronics, Inc., 215 Park St., Bensenville, IL 60106 312-860-3560
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Circuits, Printed (With Components) — See Cards, Linear Function (Vol. D)

Circuits, Thick Film, Thin Film — See Circuits, Hybrid (Vol. A)

Circulators, Ferrite-3450 — *See Vol. A*

Clamps & Clips, Cable-Also See Wire & Cable Ties-2800

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206

§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1856

§† Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867

§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699

§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1910-1911

H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698

§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751

Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330

§† Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650

§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400

† Alinabal, 28 Woodmont Rd., Milford, CT 06460 203-877-3241

§† All-States, Inc., 1801 W. Foster Ave., Chicago, IL 60640 312-728-0525

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000

AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

§† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045 501-452-3987

Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202

Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500

Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401

§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010

§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886

§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000

§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411

§† dek, inc., 3480 Swenson Ave., St. Charles, IL 60174 312-377-2575

§† Dennison Mfg. Co., 300 Howard St., Framingham, MA 01701 617-879-0511

EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268 818-442-2572

Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700

§ Elite Electronics, Inc., 1408 Summit - Suite # 5, Plano, TX 75074 214-881-0026

§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

† Globe Plastics, 1342 S. Signal Dr., Pomona, CA 91766 714-623-2747

§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060

† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200

§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900

§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181

† Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225

§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120

Parker Hannifin Corp., 17325 Euclid Ave., Cleveland, OH Eleanor Parrish, Acct. Coord. Dir. 216-531-3000

Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300

§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501

§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060

§ RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700

Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151

§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700

Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220

§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600

§† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 ... 805-238-2840

§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600

§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

§† Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600

§† Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626

Clamps & Clips, Component-2825

§ Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... B•1236, C•1743

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207

EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1039

§† FIC Corp., 12216 Parklawn Dr., Rockville, MD 20852, 301-881-8124;800-638-6594 ..... B•1245

§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699

§ AAVID Engrg., One Kool Path, Laconia, NH 03247 603-528-3400

§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682

† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751

Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330

Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515

Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202

Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500

Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401

§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886

§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400

§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923

§† dek, inc., 3480 Swenson Ave., St. Charles, IL 60174 312-377-2575

East Penn. Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361

§ Elite Electronics, Inc., 1408 Summit - Suite # 5, Plano, TX 75074 214-881-0026

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525 312-354-1040

† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200

§† Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182

§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900

§ IERC, 135 W. Magnolia Blvd., Burbank, CA 91502 213-849-2481

Industrial Devices, Inc., 260 Railroad Ave., Hackensack, NJ 07601 201-489-8989

Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800

† Micro Instrument Company, 2250 Micro Pl., Escondido, CA 92025 619-746-2010

† Micro-Mounting Devices, 4092 Keith Dr., Campbell, CA 95008 408-866-4626

Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225

§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800

§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060

† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151

Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121

† Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220

Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000

§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839 214-243-4321

§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130

§† Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Clamps & Clips, Ground-2825

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207

§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699

§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751

Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330

Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500

§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400

§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

† Micro-Mounting Devices, 4092 Keith Dr., Campbell, CA 95008 408-866-4626

§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225

† Omega Precision Corp., 1384 Pompton Ave., Cedar Grove, NJ 07009 ... 201-256-3422

§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501

Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220

§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600

§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600

§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Clamps, Synchro & Servo-2800

Alpha-Tech Inc., P.O. Box 209, Riverdale, NJ 07457 201-831-1222

PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272

† Timber-Top, Hopkins Rd., Box 517E, Watertown, CT 06795 203-274-6706

† Vernitron Controls, Vernitron Corp., 1601 Precision Park La., San Diego, CA 92073 619-428-5581

Clamps (MIL), Cable-2440 — *See Vol. B*

Cleaners, Magnetic Medium-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105

Cleaners, Ultrasonic-4100 — *See Vol. D*

Cleaners & Degreasers, Machine — See Machines, Cleaning & Degreasing (Vol. D)

Cleaners & Solvents-1600

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ... C•1105,1111
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ... C•1106
§ Allen Co., Inc., Robert G., 7267 Coldwater Canyon, N. Hollywood, CA 91605 ... 818-765-8300;800-423-3186
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ... 499 7772;;201-434-7508
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 ... 617-861-9600
Auric Corp., 470 Frelinghuysen Ave., Newark, NJ 07114 ... 201-242-4100
§† Automated Prod. Equip. Corp., 142 Peconic Ave., Medford, NY 11763 ... 516-654-1197
§† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 ... 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ... 516-582-3322; 800-645-5244
§ Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 ... 516-588-7000
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 ... 201-329-2333
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 ... 517-636-1000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 ... 302-773-3218
§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 ... 201-887-9270
§ Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 ... 503-829-9108
§ Eraser Co., Box 4961, Syracuse, NY 13221 ... 315-454-3237
ETD Technology, Inc., 605 West County Road E., Shoreview, MN 55126 ... 612-482-7760
Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, NJ 07114 ... 201-242-4110
† Formulated Resins Inc., Box 508, Greenville, RI 02828 ... 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 ... 401-723-2100
§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 ... 312-847-0100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§ Heat Systems-Ultrasonics, Inc., 1938 New Hwy., Farmingdale, NY 11735 ... 516-694-9555
§ Hollis Engrg., Inc., Charron Ave., Box 1189, Nashua, NH 03061 ... 603-889-1121
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 ... 914-793-0700
§† Kester Solder Div., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018 ... 312-297-1600
§ L & R Mfg. Co., 577 Elm St., Kearny, NJ 07032 ... 201-991-5330
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 ... 215-355-7200
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 ... 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 ... 312-221-8242
† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 ... 203-743-4447
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 ... 516-334-7997
† Odell, M. P., Co., 1620 Chesapeake Dr., Hoffman Estates, IL 60195 ... 312-991-2828
§ Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 ... 617-890-6107
PTS Corporation, Box 272, Bloomington, IN 47401 ... 812-824-9331
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 ... 213-321-0710
§ R-Columbia Prods. Co., Inc., 2008 St. Johns Ave., Highland Park, IL 60035 ... 312-432-7915
§ Screen Data Corp., 80 S. Jefferson Rd., Whippany, NJ 07981 ... 201-887-7713; 800-248-1212
Sel-Rex Div., OMI Intl. Corp., 75 River Rd., Nutley, NJ 07110 ... 201-667-5200
Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 ... 516-466-0911
† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 ... 313-231-2871
Sonicor Instrument Corp., 1365 Marconi Blvd., Copiague, NY 11726 ... 516-842-3344
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 ... 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 ... 806-372-8523
Transene, Rte. 1, Rowley, MA 01969 ... 617-948-2501
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 ... 813-371-4242

Clean Room Design & Construction-4100 — *See Vol. D*

Clean Room Equipment & Supplies-2550 — *See Vol. D*

Clips, Alligator-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ... C•1378-1380
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1519
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ... C•1523
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 ... 201-796-2886
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 ... 213-323-7771
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525 ... 312-354-1040
§ Industrial Devices, Inc., 260 Railroad Ave., Hackensack, NJ 07601 ... 201-489-8989
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 ... 507-835-6222
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 ... 212-475-4600
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ... 215-677-6700; 800-523-6075
Mouser Electronics, 2401 Hwy. 287 North, Mansfield, TX 76063 ... 817-483-4422
§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 ... 216-771-5225
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 ... 214-333-3201
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 ... 814-724-6440
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 ... 516-239-6161
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 ... 914-698-0080
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 ... 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 ... 215-825-4990
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 ... 312-564-3300

Clips & Holders, Fuse-Also See Panels, Fuse-4300 — *See Vol. B*

Clips, Battery-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ... C•1699
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1519,1521
§† Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845 ... 617-681-1003
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 ... 617-222-2202
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 ... 203-929-1401
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 ... 201-768-5400
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 ... 502-684-0431
Mouser Electronics, 2401 Hwy. 287 North, Mansfield, TX 76063 ... 817-483-4422
§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 ... 216-771-5225
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 ... 814-724-6440
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 ... 516-239-6161
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 ... 312-539-4060
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 ... 914-698-0080
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 ... 914-681-0700
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 ... 516-472-2000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 ... 813-371-4242
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 ... 914-666-2911

Clips, Board, Harness-1700

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 ... 818-446-6175
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 ... 312-532-1800
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 ... 401-461-8220
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 ... 201-685-1600
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 ... 914-666-2911

Clips, Breadboard-4200

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ... C•1738
§ Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 ... 516-546-1751
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 ... 516-599-5010
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 ... 203-288-8001
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 ... 203-624-3103
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 ... 213-323-7771
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 ... 818-446-6175
§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525 ... 312-354-1040
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 ... 501-453-2261
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 ... 216-771-5225
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 ... 818-365-9661

Clips, Fahnestock-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 ... 201-943-7650
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 ... 914-666-2911

Clips, LED — See Retainers, Transistor & Diode (Vol. C)

Clips, Logic Test-2900 — *See Vol. D*

Clips, Test-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207
§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525, 312-354-1040 ... C•1290
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ... C•1738
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ... C•1378-1380
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1519
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 ... 914-628-6952
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 ... 216-354-2101
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 ... 617-222-2202
Components Corp., 6 Kinsey Pl., Denville, NJ 07834 ... 201-627-0290
§ Contact, Inc., 5 Elm Ave., Hudson, NH 03051 ... 603-883-7708

§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Electro Scientific Inds., 13900 N.W. Science Pk. Dr., Portland, OR 97229 503-641-4141
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
Everett/Charles Test Equipment, Inc., 2887 N. Towne Ave., Pomona, CA 91767 714-621-9511
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Industrial Devices, Inc., 260 Railroad Ave., Hackensack, NJ 07601 201-489-8989
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936 201-887-0571
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Micro Electronic Systems, Inc., 3 Quarry Road, Brookfield, CT 06804 ..... 203-775-1440; 800-243-7254
† Micro Instrument Company, 2250 Micro Pl., Escondido, CA 92025 619-746-2010
§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 214-333-3201
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Clips, Transistor & Diode — See Retainers, Transistor & Diode (Vol. C)

Clips (MIL), Electrical-2440 — *See Vol. B*

Clocks, Time Keeping - Also See Oscillators, Clock-2200 — *See Vol. D*

Clocks & Controllers, Thermal-2200 — *See Vol. D*

Clutches, Friction-3500 — *See Vol. B*

Clutches, Magnetic-3500 — *See Vol. B*

Clutches, Positive-3500 — *See Vol. B*

Coating Services — See Services, Coating (Vol. D)

Coatings, Antistatic-1600

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§† ACL Inc., 1960 E. Devon Ave., Elk Grove, IL 60007 ..... 312-981-9212;800-STATIC-0
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§ Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
§ Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
† Evaporated Coatings, Inc., P.O. Box 160-3, Huntingdon Valley, PA 19006 215-947-1465
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
† Libbey-Owens-Ford Co., Liberty Mirror Products, 851 Third Ave., Brackenridge, PA 15014 412-224-1800
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Optical & Conductive Coatings, Meridian Inds., Inc., 428 N. Buchanan Cir., # 8, Pacheco, CA 94553 415-798-6066
§ Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
Static, Inc., Rte. 113 & Mensch Rd., P.O. Box 80, Skippack, PA 19474 ... 215-584-9600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§† Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Coatings, Compounds, Lubricants, etc., Heat Conductive-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
The Cool-Amp Conducto-Lube Co., 8603 S.W. 17th Avenue, Portland, OR 97219 503-244-2230
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§ Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† IERC, 135 W. Magnolia Blvd., Burbank, CA 91502 213-849-2481
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
Varian Assocs., Indl. Equip. Grp., 611 Hansen Way, Palo Alto, CA 94303 415-493-4000

Coatings, Conductive, Electric-1600

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† Balzers Optical Corporation, 170 Locke Dr., Marlboro, MA 01752 617-481-9860
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
The Cool-Amp Conducto-Lube Co., 8603 S.W. 17th Avenue, Portland, OR 97219 503-244-2230
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511

† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† Evaporated Coatings, Inc., P.O. Box 160-3, Huntingdon Valley, PA 19006 215-947-1465
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† Libbey-Owens-Ford Co., Liberty Mirror Products, 851 Third Ave., Brackenridge, PA 15014 412-224-1800
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
† Optical & Conductive Coatings, Meridian Inds., Inc., 428 N. Buchanan Cir., # 8, Pacheco, CA 94553 415-798-6066
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
Sel-Rex Div., OMI Intl. Corp., 75 River Rd., Nutley, NJ 07110 201-667-5200
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 .. 718-441-4759
Varian Assocs., Indl. Equip. Grp., 611 Hansen Way, Palo Alto, CA 94303 415-493-4000
§† Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Coatings, Corrosion Resistant-1600

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Alpha Industries, Inc., 20 Sylvan Rd., Woburn, MA 01801 617-935-5150
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
§† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
The Cool-Amp Conducto-Lube Co., 8603 S.W. 17th Avenue, Portland, OR 97219 503-244-2230
† Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996
Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§ Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
† Electrofilm, 27727 Avenue Scott, Valencia, CA 91355 805-257-2240
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
§† Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 ... 714-951-3231
Ferro Corporation, Coatings Div., 4150 East 56th St., Cleveland, OH 44101 216-641-8580
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† IERC, 135 W. Magnolia Blvd., Burbank, CA 91502 213-849-2481
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
Trans-Tech, Alpha Industries, 5520 Adamstown Rd., Adamstown, MD 21710 301-695-9400
Varian Assocs., Indl. Equip. Grp., 611 Hansen Way, Palo Alto, CA 94303 415-493-4000

Coatings, Electromagnetic Wave Absorbing-1600

§ Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
† Evaporated Coatings, Inc., P.O. Box 160-3, Huntingdon Valley, PA 19006 215-947-1465
FCM Plastics, Plastics Technologies Inc., 2555 Oak Industrial Dr. NE, Grand Rapids, MI 49505 616-451-4502
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† Libbey-Owens-Ford Co., Liberty Mirror Products, 851 Third Ave., Brackenridge, PA 15014 412-224-1800
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Trans-Tech, Alpha Industries, 5520 Adamstown Rd., Adamstown, MD 21710 301-695-9400

Coatings, Fungicidal-1600

§† Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
† Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523

Coatings, High Temperature, Ceramic, Plasma Spray – See Services, Coating (Vol. D)

Coatings, Insulating-3100

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§ Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
§ Ambroid Co., P.O. Box 164, Lynnfield, MA 01940 617-246-1180
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
† Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996
† Dennis Chemical, 2700 Papin St., St. Louis, MO 63103 314-771-1800
§† Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
§ Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 ... 714-951-3231
Evaporated Coatings, Inc., P.O. Box 160-3, Huntingdon Valley, PA 19006 215-947-1465
Ferro Corporation, Electronic Materials Div., 27 Castilion Dr., Santa Barbara, CA 93117-3092 805-968-5000
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
Gasket Intl. Inc., 49 Ackerman St., Bloomfield, NJ 07003 201-338-6814
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050
§† HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† IERC, 135 W. Magnolia Blvd., Burbank, CA 91502 213-849-2481
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200

Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§ Murata Manufacturing Co., Ltd., 26-10-2-chome-Tenjin, Nagaoka-Kyo-Shi, Kyoto, JAPAN 617 075-951-9111
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
† Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Rexnord Chemical Products Inc., 6120 E. 58th Ave., Commerce City, CO 80022 303-289-5651
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
Varian Assocs., Indl. Equip. Grp., 611 Hansen Way, Palo Alto, CA 94303 415-493-4000
† Whittaker Corp., Providence Chemicals Div., King Philip Rd., P.O. Box 16069, E. Providence, RI 02916 401-434-1770
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Coatings, Moisture Repellant & Waterproofing-1600

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106
† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§ Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
Ferro Corporation, Coatings Div., 4150 East 56th St., Cleveland, OH 44101 216-641-8580
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Coatings, Protective-1600

§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1572
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111,1740
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
§ Ambroid Co., P.O. Box 164, Lynnfield, MA 01940 617-246-1180
Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
Auric Corp., 470 Frelinghuysen Ave., Newark, NJ 07114 201-242-4100
§† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Ferro Corporation, Coatings Div., 4150 East 56th St., Cleveland, OH 44101 216-641-8580
Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, NJ 07114 201-242-4110
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
Gasket Intl. Inc., 49 Ackerman St., Bloomfield, NJ 07003 201-338-6814
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
§† HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710
Sel-Rex Div., OMI Intl. Corp., 75 River Rd., Nutley, NJ 07110 201-667-5200
SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
† Technic, Inc., Box 965, Providence, RI 02901 401-781-6100
Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Tempil Div., Big Three Inds., Hamilton Blvd., S. Plainfield, NJ 07080 201-757-8300
† Whittaker Corp., 10880 Wilshire Blvd., Los Angeles, CA 90024 213-475-9411
† Whittaker Corp., Providence Chemicals Div., King Philip Rd., P.O. Box 16069, E. Providence, RI 02916 401-434-1770

Code Actuated Switches — See Switches, Data (Vol. D)

Code & Tab Markers — See Wire Markers (All Types) (Vol. C)

Coded Discs, Optical — See Encoders, Shaft Angle, Optical (Vol. B)

Coder/Decoders — See Converters (Vol. D)

Coders, AF-1300 — *See Vol. D*

Coders, Telephone, Dial-1900 — *See Vol. D*

Coders, Transponder-3400 — *See Vol. D*

Coil Assemblies & Forms-Also See Bobbins, Winding, Coil & Transformer-1800 — *See Vol. A*

Coil/Lens Aligners, Micropositioner-1800 — *See Vol. A*

Coil Standards — See Standards, Inductance (Vol. D)

Coil-Winding Equipment — See Machines, Coil Winding (Vol. D)

Coils, AF-1800 — *See Vol. A*

Coils, Antenna (Incl. Loading Type)-1800 — *See Vol. A*

Coils, Broadcast-1800 — *See Vol. A*

Coils, Chip-1800 — *See Vol. A*

Coils, Degaussing-1800 — *See Vol. A*

Coils, Field-1800 — *See Vol. A*

Coils, Focusing-1800 — *See Vol. A*

Coils, Foil Wound-1800 — *See Vol. A*

Coils, High Q, Low Frequency-1800 — *See Vol. A*

Coils, Hum Eliminating — See Hum Eliminators (Vol. A)

Coils, Hybrid & Repeater-1800 — *See Vol. A*

Coils, IF-1800 — *See Vol. A*

Coils, Metallized Ceramic-1800 — *See Vol. A*

Coils, Metallized Glass-1800 — *See Vol. A*

Coils, Molded-1800 — *See Vol. A*

Coils, pi Winding-1800 — *See Vol. A*

Coils, Relay-1800 — *See Vol. A*

Coils, RF-1800 — ***See Vol. A***

Coils, Saturable Reactor-1800 — ***See Vol. A***

Coils, Shielded-1800 — ***See Vol. A***

Coils, Solenoid-1800 — ***See Vol. A***

Coils, Telephone-1800 — ***See Vol. A***

Coils, Telephone Pickup (Recording) — See Pickups, Telephone (Vol. D)

Coils, Toroidal-1800 — ***See Vol. A***

Coils, Transducer-1800 — ***See Vol. A***

Coils, Transformer-1800 — ***See Vol. A***

Coils, TV (All Types)-1800 — ***See Vol. A***

Coils, Variable-1800 — ***See Vol. A***

Coils, Vidicon Alignment-1800 — ***See Vol. A***

Coils (MIL), Non-RF-2440 — ***See Vol. B***

Coils (MIL), RF-2440 — ***See Vol. B***

Cold-Cathode Readout Tubes — See Tubes, Readout (Vol. A)

Cold Plates — See Thermal Platforms (Vol. D)

Collection Systems (MIL)-3475 — ***See Vol. D***

Collimators-2900 — ***See Vol. D***

Combiners, Microwave — See Couplers, Microwave (Vol. A)

Communications Intelligence (Comint) Systems (MIL)-3475 — ***See Vol. D***

Communications Systems, FM-1900 — ***See Vol. D***

Communications Systems, Laser-1900 — ***See Vol. D***

Communication Systems, Megalinks-1900 — ***See Vol. D***

Communication Systems, Megaplex-1900 — ***See Vol. D***

Communications Systems, Microwave-3400 — ***See Vol. D***

Communications Systems, Multiplex-1900 — ***See Vol. D***

Communications Systems, Telemetering-1900 — ***See Vol. D***

Communications Systems, Telephone-1900 — ***See Vol. D***

Commutators-3500 — ***See Vol. B***

Comparators, Analog — See Comparators, Voltage (Vol. D)

Comparators, Attenuation-3400 — ***See Vol. D***

Comparators, Capacitance — See Bridges, Capacitance (Vol. D)

Comparators, Digital-2900 — ***See Vol. D***

Comparators, Dimension Calibrators-4100 — ***See Vol. D***

Comparators, Frequency-2900 — ***See Vol. D***

Comparators, Impedance — See Bridges, Impedance (Vol. D)

Comparators, Inductance — See Bridges, Inductance (Vol. D)

Comparators, Optical-2900 — ***See Vol. D***

Comparators, Phase-2900 — ***See Vol. D***

Comparators, Resistance — See Bridges, Resistance (Vol. D)

Comparators, Voltage-2900 — ***See Vol. D***

Component Handling Equipment, Surface Mount-4100 — ***See Vol. D***

Compounds, Encapsulating, Molding, Potting-Also See Plastic Raw Materials-1600

§ EG & G Wakefield Engineering, 60 Audubon Rd., Wakefield, MA 01880, 617-245-5900 ..... **C•1627**

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... **C•1105**

§ Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171

† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550

Amicon Corp., 25 Hartwell Ave., Lexington, MA 02173 617-861-9600

Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685

Armstrong World Inds., W. Liberty St., Lancaster, PA 17604 717-397-0611

§ Automation Unlimited, Icon Corporation, 134 New Boston St., Woburn, MA 01801 617-933-7288

† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550

† Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996

† Danmar Inds., 9705 Lurline Ave., Chatsworth, CA 91311 ..... 818-882-7979/5280

† Dennis Chemical, 2700 Papin St., St. Louis, MO 63103 314-771-1800

§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333

§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000

§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000

DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300

§ Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 714-951-3231

Epoxy Technology, Inc., 14 Fortune Dr., Billerica, MA 01821 ..... 617-667-3805; 800-227-2201

† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060

† Freed Transformer, 1718 Weirfield St., Ridgewood, NY 11385 212-386-1300

† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100

Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030

† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000

Isolation Products, Inc., 157 San Lazaro Ave., Sunnyvale, CA 94086 408-730-4672

Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411

† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983

Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550

† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE

§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100

§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880

Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600

§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710

Rexnord Chemical Products Inc., 6120 E. 58th Ave., Commerce City, CO 80022 303-289-5651

SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728

† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 313-231-2871

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§ Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550

Transene, Rte. 1, Rowley, MA 01969 617-948-2501

† Whittaker Corp., Providence Chemicals Div., King Philip Rd., P.O. Box 16069, E. Providence, RI 02916 401-434-1770

Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Compounds, Insulating-3100

§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... **C•1693**

† Ablestik Laboratories, 833 W. 182nd St., Gardena, CA 90248 213-532-9341

† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581

Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171

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Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685

† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550

† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321

Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850

† Dennis Chemical, 2700 Papin St., St. Louis, MO 63103 314-771-1800

§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333

§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000

DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300

† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000

Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411

Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550

Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727

Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660

SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100

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Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Computer-Aided Design Services — See Computers, CAD, CAM, & CAD/CAM (Vol. D), Services, Computer-Aided Design (Vol. D)

Computer Interfaces — See Interfaces, Computer

Computer Logic Circuits — See Cards, Logic (Vol. D), Circuits, Hybrid (Vol. A), Integrated Circuits (Vol. A), Modules, Logic (Vol. A)

Computer Systems, Ruggedized-2000 — *See Vol. D*

Computer Tape Recorders — See Recorders, Computer Data (Vol. D)

Computer Type Indicators — See Displays, Indicator Lights (Vol. B)

Computers, Analog-2025 — *See Vol. D*

Computers, CAD, CAM, & CAD/CAM-2025 — *See Vol. D*

Computers, Digital, Micro-2025 — *See Vol. D*

Computers, Digital, Mini-2025 — *See Vol. D*

Computers, Hybrid, Analog/Digital-2025 — *See Vol. D*

Computers, Mainframe-2025 — *See Vol. D*

Computers, Micro-2025 — *See Vol. D*

Computers, Micro, Ruggedized, for Industrial Applications-2000 — *See Vol. D*

Computers, Mini, High End-2025 — *See Vol. D*

Computers, Mini, Low End-2025 — *See Vol. D*

Computers, Mini, Midrange-2025 — *See Vol. D*

Computers, Personal-2025 — *See Vol. D*

Computers, Small Business-2025 — *See Vol. D*

Computer Sets (MIL), Digital Data-3475 — *See Vol. D*

Computer Systems (MIL)-3475 — *See Vol. D*

Computing Equipment, Peripheral — See Converters, Digital To Paper Tape (Vol. D), Printers (Vol. D), Terminals, Data Display (Vol. D), etc.

Concentrators, Communications-1900 — *See Vol. D*

Conditioners, Power Line — See Regulators & Stabilizers, Voltage (Vol. D), Line Conditioners (Vol. D)

Conductive Elastomers-4525

† **AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195, 201-263-1700** ..... **B•1537**
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... **C•1746**
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... **C•1373-1375**
Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... **C•1753**
A.C. Interface Inc., 17911 Sampson, Huntington Beach, CA 92647 714-841-6090
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
Cotronics, 3379 Shore Pkwy., Brooklyn, NY 11235 718-646-7996
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368
Monsanto Co., 800 N. Lindbergh Blvd., St. Louis, MO 63167 314-694-1000
§† Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
§† Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4759
† UCE, Inc., 24 Fitch St., Norwalk, CT 06855 203-838-7509
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Conductive Fabrics, Films & Tapes — See Fabrics, Conductive (Vol. C)

Conductive Floor Coatings & Cleaners-1600

§† ACL Inc., 1960 E. Devon Ave., Elk Grove, IL 60007 ..... 312-981-9212;800-STATIC-0
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Conductive Plastic Materials & Parts-4525

Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... **C•1746**
§† **NRD Inc., Mark IV Ind., Inc., 2937 Alt Blvd. N., Grand Island, NY 14072, 716-773-7634** ..... **D•2118**
† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
American Cyanamid Co., Metal Coated Fibers Dept., One Cyanamid Plaza, Wayne, NJ 07470 201-831-3148
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
ITW Thielex, 201 11th St., Piscataway, NJ 08854 201-968-5300
Litton Potentiometer Div., 750 So. Fulton Ave., Mt. Vernon, NY 10551 914-664-7733
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Monsanto Co., 800 N. Lindbergh Blvd., St. Louis, MO 63167 314-694-1000
Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
§† Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
† Transmet Corp., 4290 Perimeter Dr., Columbus, OH 43228 ..... 614-276-5522; 800-245-5253
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4759
† United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
§† Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Conduit, Electrical-6000

† **Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322** ..... **C•1819**
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
† Titchener, E. H., & Co., 1 Titchener Pl, Binghamton, NY 13902 607-772-1161
§ The Wiremold Company, 60 Woodlawn Street, W. Hartford, CT 06110 203-233-6251
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Connecting Blocks, Data-2100

Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484

Connecting Blocks, Modular Telephones-2100

Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Connector Adapters-2100

† Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1191
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1295-1296
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1346
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... C•1509
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519-1520,1921
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 .. C•1525
Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1552-1553
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1555
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
† Alford Manufacturing Co., P.O. Box 2116, 32 Sixth Rd., Woburn, MA 01801 617-935-8610
Alpha Inds., Inc. - TRG Millimeter Comp., 651 Lowell St., Methuen, MA 01844 617-682-4661
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 216-248-1200
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Cablewave Sys., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 203-239-3311
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
§ Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
† Elcom Systems, Inc., 932 Clint Moore Rd., Boca Raton, FL 33431 305-994-1774
§ E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
GTE Fiberoptic Products, 2401 Reach Rd., Williamsport, PA 17701 ..... 717-326-6591; 1-800-FBR-OPTICS
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 ... 201-835-5002
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
† Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730 714-987-4715
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Microlab/FXR, 10 Microlab Rd., Livingston, NJ 07039 201-992-7700
† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§ Recoton Corp., 46-23 Crane St., Long Island City, NY 11101 718-392-6442
RLC Electronics, Inc., 83 Radio Cir., Mt. Kisco, NY 10549 914-241-1334
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 ... 805-238-2840
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
† Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ Test Probes, Inc., Box 2113, La Jolla, CA 92038 619-459-4197
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
United States Software Corp., 14215 N.W. Science Pk. Dr., Portland, OR 97229 503-641-8446
Vann Instruments, 1046 Vassar N.E., Albuquerque, NM 87106 505-265-2498
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Weinschel Engineering, One Weinschel La., Gaithersburg, MD 20877 .... 301-948-3434; 800-638-2048
§ Wiltron, 490 Jarvis Dr., Morgan Hill, CA 95037-2809 408-778-2000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Connector Backshells-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710-1711
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
§ Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355 ..... C•1234
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1552-1553
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400

§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 805-484-0540
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 213-649-1400
§ Elite Electronics, Inc., 1408 Summit - Suite # 5, Plano, TX 75074 214-881-0026
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§ Northern Technologies, 747 Main St., Ste. 207, Concord, MA 01742 617-371-0915
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§† Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 301-921-8282
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

Connector Blocks, Mother Board-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710-1711
† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121-1128,1130-1137,1144-1145
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293-1294,1296
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1366
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
† Eastern Electronics Mfg. Corp., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108 203-528-9821
† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 214-221-8776
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Urban Elctrns., P. O. Box 456, Dover, MA 02030 617-329-4068

Connector Boxes & Strips, Power Outlet-2800

Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... C•1211
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1295-1296
MCG Elctrns., 12 Burt Dr., Deer Park, NY 11729, 516-586-5125 ..... B•1252,1271
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1367,1369-1371,1914
§ Perma Power Elctrns., 5601 W. Howard Ave., Chicago, IL 60648, 312-647-9414 ..... B•1278, C•1700-1701
Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1497,1499
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 ..... C•1516-1518
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
§† Brooks Manufacturing Corp., 4001 N. American St., Philadelphia, PA 19140 215-228-4433
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
SL Waber, Inc., 300 Harvard Ave., Westville, NJ 08093 ..... 609-456-5400;800-257-8384
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ The Wadsworth Electric Manufacturing Co., Inc., 20 W. 11th St., Covington, KY 41012 606-431-0900
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§ The Wiremold Company, 60 Woodlawn Street, W. Hartford, CT 06110 203-233-6251
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Connectors, AC Power-2100

Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
§ Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... A•1652-1653, C•1211
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... C•1289
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
Kautt & Bux of America, Inc., 675 Toner Rd., P.O. Box 867, Mundelein, IL 60060, 312-949-8505 ..... C•1318-1319
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1366
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... A•1685, C•1495-1497,1499
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 ..... C•1516-1518
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Anderson Power Products, Div. of High Voltage Engineering, 145 Newton St., Boston, MA 02135 617-787-5880
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 714-993-6970
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
§ Indek Corporation, 2360 Qume Dr., No. A, San Jose, CA 95131 408-432-1199
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 213-463-2295
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879 301-921-9440
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656 312-867-4600
U.S. Instr. Rentals, 2988 Campus Dr., San Mateo, CA 94403 800-824-2873
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136

Connectors, Antenna — See Connectors, RF, Coaxial & Triaxial (Vol. C)

Connectors, Audio-2100

§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1190-1191
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
† Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1231
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... C•1286
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1335
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... C•1509
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519-1520
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700 ..... C•1539
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1554
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. #104, Westlake Village, CA 91362 818-889-9304
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Bead Electronics, Div. Bead Chain Mfg. Co., 11C Mountain Grove St., Bridgeport, CT 06605 203-334-4124
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
DataCon, Inc., 60 Blanchard Rd., Burlington, MA 01803 617-273-5800
Dialight Corp., 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Duotone, 6875 S.W. 81st St., S. Miami, FL 33143 305-665-1121
§ Ercona, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776 516-331-5500
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 714-993-6970
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705 714-250-8770
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Connectors, Back Panel — See Connectors, Wirewrap (Z-3 Level) (Vol. C)

Connectors, Battery-2100

Bogen Communications, Inc., 50 Spring St., Ramsey, NJ 07446, 201-934-8500 ..... C•1193
† Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Hitran Corp., Agex, 362 Highway 31, Flemington, NJ 08822-9301, 201-782-5525 ..... D•1737
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294,1296
Plainview Electronics, 1121 Holland Dr., Ste. 7, Boca Raton, FL 33431, 305-997-7705 ..... D•1463
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... D•1465
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519-1520
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 201-943-7650
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Anderson Power Products, Div. of High Voltage Engineering, 145 Newton St., Boston, MA 02135 617-787-5880
Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
East Penn Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
§† Elcon Products International Company, 42700 Lawrence Place, Fremont, CA 94538 415-490-4200
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
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§† Gruenberg Oven Co., Inc., P.O. Box 3246, 2121 Reach Rd., Williamsport, PA 17701 717-326-1755
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 516-937-3475
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§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
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Nesco Battery Systems, Electro-Sales Corp., 7110 Gerald Ave., Van Nuys, CA 91409-7840 818-781-0505
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Rose Electronic, Inc., Energy Products Group, 2461 Autumn Vale Dr., San Jose, CA 95131 408-263-2934
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ Speciality Electronics, Inc., 208 E. Rutherford St., Landrum, SC 29356 803-457-3824
§† Tauber Elctrns. Inc., 4901 Morena Blvd., Bldg. 314, San Diego, CA 92117 619-274-7242
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
Yardney Battery Div., Yardney Corp., 82 Mechanic St., Pawcatuck, CT 02891 203-599-1100
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors, Cable-2100

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ..... C•1763-1765
† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121-1122,1125-1126,1128
† Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767-1768,1770-1772,1774
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1152-1162,1164,1166-1168
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1190-1191
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818-1819
Cable Systems, Inc., 210 Broadway, Everett, MA 02149, 617-389-7080 ..... C•1831
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... C•1199,1201,1203
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1231-1233

† **Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355** ..... **C•1234**
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... **C•1286**
† **Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141** ..... **C•1291**
† **Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228** ..... **C•1292,1294-1296**
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... **C•1298-1299**
Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... **C•1105**
Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... **C•1309**
§ **Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222** ..... **C•1312-1313**
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... **C•1325-1333**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... **C•1334,1336**
† **Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111** ..... **C•1730**
§† **3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800** ..... **C•1339-1340**
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... **C•1344-1345,1347**
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... **C•1348**
§ **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373** ..... **C•1353**
§ **MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550** ..... **C•1357,1359,1883**
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... **C•1733**
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224, 503-620-9400 ..... **C•1360,1886**
§† **Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800** ..... **C•1362-1363,1911**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... **C•1378-1380**
Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... **C•1509**
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... **C•1510**
† **Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761** ..... **C•1512-1513**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... **C•1519-1520,1921**
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... **C•1524-1527,1529**
§† **Superior Electric, 383 Middle St., Bristol, CT 06010, 203-582-9561** ..... **C•1535**
§ **Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700** ..... **C•1539**
Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... **C•1542**
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... **C•1552-1553**

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§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Andrew Corp., 10500 W. 153rd St., Orland Pk., IL 60462 312-349-3300
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
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Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
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§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
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§ International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
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† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Minelco Inc. - A Talley Ind., 135 S. Main St., Thomaston, CT 06787-0459 203-283-8261
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
† Narda Microwave Corp., 435 Moreland Rd., Hauppauge, NY 11788 516-231-1700
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Qualtek Electronics Corp., 7158 Industrial Pk. Blvd., Mentor, OH 44060 .. 216-951-3300
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§† Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
U.S. Instr. Rentals, 2988 Campus Dr., San Mateo, CA 94403 800-824-2873

§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941
Yamaichi Electronics, 2471 E. Bayshore Rd. # 530, Palo Alto, CA 94303 415-493-3756

Connectors, Circular, MS/AN-2100

AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1139-1140
† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1161-1163
Ceramaseal, Box 260, New Lebanon, NY 12125, 518-794-7800 ..... C•1204
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011, 212-691-9050 ..... C•1215
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1231
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355 ..... C•1234
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... C•1287
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1295-1296
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1305
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
§† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... C•1353
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1512
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700 ..... C•1538
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Braxton Mfg., Echo Lake Rd. N., P.O. Box 429, Watertown, CT 06795 203-274-6781
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Burton Electrical Engineering, Wyle Laboratories, 111 Maryland Street, P.O. Box 217, El Segundo, CA 90245-0217 213-772-1406
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
† Hoffman Engineering Corp., P.O. Box 300, Old Greenwich, CT 06870 ... 203-325-8933
§ Holmberg Elctrns., Asheville Hwy., Inman, SC 29349 803-472-4141
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970
† Sealtron, Inc., 9705 Reading Road, Cincinnati, OH 45215 513-733-8400
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

Connectors, DIN-2100

§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1226
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... C•1573, D•1108
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... C•1286-1287,1289
Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141 ..... C•1291
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... C•1297
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
§ LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1334
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1352
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1362
§ Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... C•1509
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700 ..... C•1538
Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1736-1737
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1556
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
Electronic Modular Systems, Inc., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244 214-392-3473
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 714-993-6970
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 213-463-2295
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069 619-744-0125
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
Yamaichi Electronics, 2471 E. Bayshore Rd. # 530, Palo Alto, CA 94303 415-493-3756

Connectors, D Subminiature-2100

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774

§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1156-1160,1162-1163

§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1196

Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205

§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221

§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1227

Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237-1281

§† Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141 ..... C•1291

IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... C•1299

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111

ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868

JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1304

LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1337

§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183

§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340

Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1344-1347

Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1348-1349

§† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... B•1020, C•1353

§ Murata Erie North America, Inc., 2200 Lake Park Dr., Smyrna, GA 30080, 404-436-1300 ..... A•1680

§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1362

H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1522-1523

§ Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... A•1700, C•1524-1527,1529

§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542

Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1555

WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1564

Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751

§† ADI Elctrns. & ADI Circuits, Inc., 101 Trade Zone Dr., Ronkonkoma, NY 11779 516-737-1800

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800

§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400

§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304

§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913

§† AMP Distributor Marketing Div. A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025

§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841

§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515

§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1

Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900

§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444

§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500

Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537

Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880

§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451

§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411

Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640

CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511

† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533

CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100

§† CW Industries, 130 James Way, Southhampton, PA 18966 215-355-7080

§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301

Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374

§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515

§ Elite Electronics, Inc., 1408 Summit - Suite # 5, Plano, TX 75074 214-881-0026

§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771

§ Ercona, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776 516-331-5500

§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367

Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355

Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060

§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282

§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247

Interconnect Technologies, Inc., 194C Charlestown Road, Malvern, PA 19355 215-647-9260

International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500

§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700

Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571

Lawrence-Crow Elctrns. Inc., 2100 Stemmons, Dallas, TX 75207 214-749-5440

L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936

§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550

Mouser Electronics, 2401 Hwy. 287 North, Mansfield, TX 76063 817-483-4422

National Telephone & Electronics Inc., 2350 N.W. 96 Avenue, Miami, FL 33172 305-592-0551

§ Northern Technologies, 747 Main St., Ste. 207, Concord, MA 01742 617-371-0915

§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996

§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600

§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161

§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322

Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300

§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431

§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211

Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199

† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970

§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6

Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440

§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830

§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700

§ Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561

§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090

§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 216-354-0925

Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500

§ Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 301-921-8282

§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161

§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080

§ U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145

§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Yamaichi Electronics, 2471 E. Bayshore Rd. # 530, Palo Alto, CA 94303 415-493-3756

Connectors, Edgeboard — See Connectors, Printed Circuit, Card Edge (Vol. C)

Connectors, Elastomeric-2100

Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225

PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... C•1373-1375

Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753

Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541

AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355

GTE Fiberoptic Products, 2401 Reach Rd., Williamsport, PA 17701 ..... 717-326-6591; 1-800-FBR-OPTICS

PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400

SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311

† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500

Connectors, Fiber Optic-2475 — *See Vol. B*

Connectors, Filtered-2100

§ Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... C•1211

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294
† Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1344-1347
§ Murata Erie North America, Inc., 2200 Lake Park Dr., Smyrna, GA 30080, 404-436-1300 ..... A•1680
† Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... A•1700, C•1524-1527,1529
ST Research Corporation, 8419 Terminal Road, Newington, VA 22122, 703-550-7000 ..... C•1531
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 .. 214-221-8776
§ Ercona, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776 516-331-5500
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
† Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Qualtek Electronics Corp., 7158 Industrial Pk. Blvd., Mentor, OH 44060 .. 216-951-3300
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970
§ Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010

Connectors, Flat Cable (Incl. Flexible)-2100

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121,1125
§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767-1772,1774
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1158-1160,1164-1168
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1180
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237-1281
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... C•1298
Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1305-1306
§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183,1738
§† 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1358-1359,1883
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1362-1364,1911
T-Bar Incorporated, Data Switch Corporation, 141 Danbury Rd., P. O. Box T, Wilton, CT 06897-0730, 203-834-8227 ..... B•1696
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§ WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1565-1567
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Advanced Circuit Technology, 118 N. Eastern Blvd., Nashua, NH 03062 603-880-6000
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. #104, Westlake Village, CA 91362 818-889-9304
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Aromat Corp., 250 Sheffield St., Mountainside, NJ 07092 201-232-4260
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Burton Electrical Engineering, Wyle Laboratories, 111 Maryland Street, P.O. Box 217, El Segundo, CA 90245-0217 213-772-1406
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
§† Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879 ... 301-921-9440
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015 312-948-5600
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
U.S. Instr. Rentals, 2988 Campus Dr., San Mateo, CA 94403 800-824-2873
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Yamaichi Electronics, 2471 E. Bayshore Rd. #530, Palo Alto, CA 94303 415-493-3756

Connectors, Fused-2100

Altech Corporation, 349 Rte. 206, Somerville, NJ 08876, 201-359-4454 ..... B•1298,1536, C•1149

§ **Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... C•1211**

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294

Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1366

§ **Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 .. C•1516-1518**

Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355

§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722

Connectors, Heavy Duty, Power-2100

§ **Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1190-1191**

Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... C•1211

Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1232-1233

† **Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355 ..... C•1235**

† **Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296**

LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333

Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1366-1367,1369-1371

§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1495-1497,1499**

Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 .. C•1516-1518

§ **WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1560-1562**

§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400

§ Alpha Products, Inc., 5740 Corsa Ave. #104, Westlake Village, CA 91362 818-889-9304

Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454

AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

§ Anderson Power Products, Div. of High Voltage Engineering, 145 Newton St., Boston, MA 02135 617-787-5880

† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201

§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800

§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444

§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451

† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130

Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374

§ Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460

§† Ericson Manufacturing Co., 4215 Hamann Pkwy., Willoughby, OH 44094 216-951-8000

§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367

Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950

§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181

International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380

§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700

LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 213-463-2295

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550

§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120

§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800

§† Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211

§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300

Powerright Products, Inc., 2739 Oakland Avenue, Garland, TX 75041 214-840-0575

Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300

† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970

§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600

§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311

TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900

§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656 312-867-4600

§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080

§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

Connectors, Hermetically Sealed, Pressurized, or Waterproof-2100

Ceramaseal, Box 260, New Lebanon, NY 12125, 518-794-7800 ..... C•1204

§ **Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011, 212-691-9050 ..... C•1215**

Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1231-1233

§ **Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355 ..... C•1235**

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1295

Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ..... C•1308-1309

LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333

§† **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... B•1020, C•1353**

§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380**

§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400

AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

§† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 203-387-5282

§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000

Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444

Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315

§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301

† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130

§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200

§† Ericson Manufacturing Co., 4215 Hamann Pkwy., Willoughby, OH 44094 216-951-8000

† Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500

† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000

† Gulton Industries, Inc., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627 ..... 714-642-2400;800-854-4066

† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411

§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182

§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181

§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700

§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111

Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700

§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566

§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111

Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300

† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970

§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118

† Sealtron, Inc., 9705 Reading Road, Cincinnati, OH 45215 513-733-8400

§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000

§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830

Standex Elctrns., 4538 Camberwell Rd., Cincinnati, OH 45209 513-871-3777

TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900

Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330

§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010

§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100

Connectors, High Density, Multipin-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710-1711

† **AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1122-1124,1127-1128,1130-1138,1141-1146**

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293-1296

LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1327

§ **Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1364**

§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122

† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444

Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800

§† CW Industries, 130 James Way, Southhampton, PA 18966 215-355-7080

Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050

ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400

† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151

Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342 818-362-9395

Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355

§ Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054 408-727-1700

§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247

§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700

JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705 714-250-8770
† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136

Connectors, High Voltage (1,000 Volts & Over)-2100

AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
† Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1190-1191
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... C•1199,1201-1203
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... C•1232-1233
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ..... C•1308-1309
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1326,1328-1333
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1512-1513
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Bertan Assocs., 121 New South Rd., Hicksville, NY 11801 516-433-3110
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
† Del Elctrns. Corp., 250 E. Sandford Blvd., Mt. Vernon, NY 10550 914-699-2000
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
Engine Systems Division, Simmonds Precision, P.O. Box 310, Norwich, NY 13815 607-335-5000
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
§ Hobson Bros., 4940 W. Lawrence Ave., Chicago, IL 60630-3884 312-283-3600
Isolation Products, Inc., 157 San Lazaro Ave., Sunnyvale, CA 94086 408-730-4672
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§ Millen Components, Electronic Instr. & Specialty Corp., 42 Pleasant St., Stoneham, MA 02180 617-438-6951
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Pasternack Enterprises, P.O. Box 16759, Irvine, CA 92713 714-261-1920
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
† PTK/Rantec Division, 1173 Los Olivos Ave., Los Osos, CA Francesca Wilmot, Sls. Engr. 805-528-5858
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
† Sealtron, Inc., 9705 Reading Road, Cincinnati, OH 45215 513-733-8400
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145

Connectors, IDC (Insulation Displacement Contact)-2100

§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1196-1197
§ Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1296
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1304,1306
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1359,1883
§† Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
§† CW Industries, 130 James Way, Southhampton, PA 18966 215-355-7080
§ Elite Electronics, Inc., 1408 Summit - Suite # 5, Plano, TX 75074 214-881-0026
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Yamaichi Electronics, 2471 E. Bayshore Rd. # 530, Palo Alto, CA 94303 415-493-3756
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors, Integrated Circuit — See Sockets, Integrated Circuit (Vol. C)

Connectors, LCD-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1180
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... C•1373-1375
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1498
Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
† UCE, Inc., 24 Fitch St., Norwalk, CT 06855 203-838-7509

Connectors, Magnetron-2100

† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ..... C•1308-1309

Connectors, Miniature, Subminiature & Microminiature-2100

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121-1125,1127-1141,1143-1146
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1152-1160,1162-1165,1168-1170
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1179
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1189
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1196-1197
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205

§ **Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011, 212-691-9050** ..... **C•1215**
§ **Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078, 605-665-9301** ..... **C•1219**
§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... **C•1221**
§ **Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800** ..... **C•1724,1726**
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... **C•1231**
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... **C•1237-1281**
† **Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141** ..... **C•1291**
† **Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228** ..... **C•1293-1296**
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... **C•1299**
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... **C•1305**
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... **C•1325-1333**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... **C•1337**
§ **3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800** ..... **C•1339-1340**
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... **C•1344-1347**
§ **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373** ..... **C•1353**
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... **C•1357,1359,1883**
§ **Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800** ..... **C•1362-1363**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... **C•1378-1380**
Preh Electronic Industries, Inc., 5665 Howard Street; Niles, IL 60648, 312-647-8338 ..... **C•1509**
† **Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761** ..... **C•1512-1513**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... **C•1519-1520**
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... **A•1700, C•1524,1526-1527,1529**
§ **Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700** ..... **C•1538**
Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... **C•1541**
§ **Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600** ..... **C•1542**
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... **C•1550-1553,1924**
§ **WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136** ..... **C•1558,1563,1565-1567**
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 203-387-5282
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
† Avibank Mfg., Inc., 210 S. Victory Blvd., Burbank, CA 91503 818-843-4330
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Conductive Rubber Technlg., 1235 Coast Village Rd., Santa Barbara, CA 93108 805-969-5805
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
§† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 214-221-8776
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
† Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Heraeus Inc., Temp. Measurement Group, 222-34 96th Ave., Queens Village, NY 11429 212-464-8400
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
† Hoffman Engineering Corp., P.O. Box 300, Old Greenwich, CT 06870 203-325-8933
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
*§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060 216-354-9239
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Min-E-Con, 1791 Reynolds, Irvine, CA 92714 714-250-0474
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ RVS Electronics, Inc., 40 North St., Middletown, NY 10940 914-342-3199
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
† Sealtron, Inc., 9705 Reading Road, Cincinnati, OH 45215 513-733-8400
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
† Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090
§† Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561
Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 216-354-0925
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
† Ted Corp., 11415 Johnson Dr., Shawnee Mission, KS 66203 913-631-6211
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§† Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§† Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§† U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080

† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Connectors, Missile (Umbilicals, Interstage, Post Boost)-3475 — *See Vol. D*

Connectors, Mixed Contact Configurations-2100

Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293-1296
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Babcock Display Products, Inc., A Subsidiary of Babcock, Inc., 1051 S. East St., Anaheim, CA 92805-5799 714-491-5121
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
† FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342 818-362-9395
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705 714-250-8770
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406 707-578-8811
† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136

Connectors, Piggy Back — See Connectors, Wirewrap (Z-3 Level) (Vol. C)

Connectors, Plug-in, Program Board-2100

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767-1768,1770-1772,1774
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1179
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1337
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1730-1731, D•1414
§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183,1187
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1883
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113, D•1111
§ WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1560-1562
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
Cable Systems, Inc., 210 Broadway, Everett, MA 02149 617-389-7080
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Crosspoint, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022 201-941-4455
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
§† Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
§ Interswitch, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 .. 415-347-8217
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§† Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561
§ Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376

Connectors, Printed Circuit, Card Edge-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710
AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121,1123-1124,1127-1128,1130-1137
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1166-1170
Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078, 605-665-9301 ..... C•1216-1218
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1724
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1227
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237-1281
§† Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141 ..... C•1291
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... C•1297
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1306
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183,1187
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... B•1020
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ... C•1357,1883
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1362-1364
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
§ Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125 ..... C•1532-1534
Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541
§† Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656, 312-867-4600 ..... C•1546-1547
§† Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113,1737, D•1111
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§† AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500

† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Aromat Corp., 250 Sheffield St., Mountainside, NJ 07092 201-232-4260
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
§ Cincinnati Electrosys., 420 Wards Corner Rd., Loveland, OH 45140 513-831-4347
Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
Components Corp., 6 Kinsey Pl., Denville, NJ 07834 201-627-0290
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Connect-Air International, Inc., 50 37th St. N.E., Auburn, WA 98002 206-939-4880
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ..... 201-575-7660; 800-221-1451
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
† CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100
§ Curtis Industries, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699 414-535-1500
† DataCon, Inc., 60 Blanchard Rd., Burlington, MA 01803 617-273-5800
Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 213-649-1400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
§ Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
§† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
† Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
Lawrence-Crow Elctrns. Inc., 2100 Stemmons, Dallas, TX 75207 214-749-5440
LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 213-463-2295
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879 ... 301-921-9440
§ Masterite Corporation, 2841 Lomita Blvd., Torrance, CA 90505 213-775-3471
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281
§ PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§ Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§† Teka Prods., 45 Salem, Providence, RI 02907 401-785-4110
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§† Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611
§† Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Urban Elctrns., P. O. Box 456, Dover, MA 02030 617-329-4068
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Connectors, Printed Circuit (Other than Card Edge)-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710
† **AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200** ..... C•1121,1123-1124,1127-1128,1130-1137
§† **Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000** ..... C•1774
§† **AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100** ..... C•1154-1155,1158-1160,1164,1166-1168
§ **Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101** ..... C•1190-1191
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... C•1221
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1226-1227
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237-1281
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ..... C•1287
† **Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141** ..... C•1291
† **Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228** ..... C•1293-1296
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1304-1306
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
§ **3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239** ..... C•1183,1187
§† **3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800** ..... C•1339-1340
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1345-1346
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1348-1349,1352
§ **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373** ..... B•1020
§ **Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000** ..... C•1355
§ **MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550** ... C•1359,1883
§† **Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800** ..... C•1362,1364
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... C•1373-1375
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... C•1378-1380
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1522
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... C•1524-1527,1529
§ **Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125** ..... C•1532-1534
Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700 ..... C•1538
Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541
§ **Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600** ..... C•1542
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811** ..... C•1550-1553,1924

§† **WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136** ..... **C•1558,1560-1567**
Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 203-387-5282
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 805-484-0540
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
† CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
Delta Electronics Mfg. Corp., 416 Cabot St., Beverly, MA 01915 617-927-1060
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225 513-681-5424
Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§† Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
Elcon Products International Company, 42700 Lawrence Place, Fremont, CA 94538 415-490-4200
§ Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342 818-362-9395
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 213-463-2295
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879 ... 301-921-9440
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648 312-647-8338
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
† Refac Elctrns. Corp., P.O. Box 809, Winsted, CT 06098 203-379-2731
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
§ Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
† Sealtron, Inc., 9705 Reading Road, Cincinnati, OH 45215 513-733-8400
§ Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
§ Speciality Electronics, Inc., 208 E. Rutherford St., Landrum, SC 29356 ... 803-457-3824
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§ Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 704-866-9161
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors, Rack & Panel-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... **C•1710-1711**
† **AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200** ..... **C•1121-1125,1127,1130-1133,1135-1137,1144-1145**
§† **AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100** ..... **C•1154-1155,1158-1161,1168,1712**
§ **Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101** ..... **C•1190-1191**
Ceramaseal, Box 260, New Lebanon, NY 12125, 518-794-7800 ..... **C•1204**
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... **C•1205**
§ **Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400** ..... **A•1652-1653**
§† **Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078, 605-665-9301** ..... **C•1219**
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... **D•1108**
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... **C•1231-1233**
† **Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228** ..... **C•1293-1296**
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... **C•1304-1306**
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... **C•1325-1333**
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... **C•1344,1347**
NES, Inc. (Nationwide Electronic Systems), 3003 Wakefield, Carpentersville, IL 60110, 312-426-5900 ..... **D•1364**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... **C•1378-1380**
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722** ..... **A•1685**
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... **C•1512-1513**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... **C•1519-1520**
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 ..... **A•1700, C•1524,1526-1527,1529**
§ **Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700** ..... **C•1538**
§ **Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600** ..... **C•1542**
§ **WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136** ..... **C•1564-1567**
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Anderson Power Products, Div. of High Voltage Engineering, 145 Newton St., Boston, MA 02135 617-787-5880

Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 ... 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 ... 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 ... 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 ... 203-929-1401
† Bailey Controls Co., Div. of Babcox & Wilcox, 29801 Euclid Ave., Wickliffe, OH 44092 ... 216-585-8500
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 ... 203-288-8001
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 ... 216-946-3200
Burndy Corporation, Richards Ave., Norwalk, CT 06852 ... 203-838-4444
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 ... 805-484-0540
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 ... 617-585-4315
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 ... 416-475-8500
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 ... 1-212-777-6571
§ Contact Electronics, Inc., 30 Plymouth St., Fairfield, NJ 07006 ... 201-575-7660; 800-221-1451
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 ... 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 ... 612-533-3533
Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 ... 213-649-1400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 ... 415-483-8770
§ Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 ... 416-445-2292
§† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 ... 814-643-0700
§† Elcon Products International Company, 42700 Lawrence Place, Fremont, CA 94538 ... 415-490-4200
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 ... 309-693-3355
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 ... 213-283-0411
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 ... 818-709-1247
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 ... 714-660-5701
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 ... 617-772-5422
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 ... 815-895-5181
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 ... 714-557-4700
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 ... 203-288-5571
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 ... 617-682-6936
LMI Connectors, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028 ... 213-463-2295
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 ... 512-834-1800
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 ... 215-699-5373
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 ... 203-693-8361
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 ... 215-355-0200
Min-E-Con, 1791 Reynolds, Irvine, CA 92714 ... 714-250-0474
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 ... 612-770-5247
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 ... 201-227-7996
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 ... 417-866-2322
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 ... 312-342-6300
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 ... 812-945-0211
Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 ... 714-660-1970
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 ... 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG ... 0442-40471/6
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 ... 305-823-5440
§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 ... 805-257-4830
§ Superior Electric, 383 Middle St., Bristol, CT 06010 ... 203-582-9561
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 ... 415-234-9090
Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 ... 216-354-0925
§ Teka Prods., 45 Salem, Providence, RI 02907 ... 401-785-4110
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 ... 612-854-9177
§ Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 ... 617-699-3800
§ Tex-Techs Connectors, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053 ... 704-866-9161
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 ... 312-981-6000
† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 ... 612-537-1010
§† U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 ... 516-589-8080
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 ... 818-341-4330
Wells Electronics, 1701 S. Main St., South Bend, IN 46613 ... 219-287-5941

Connectors, RF, Coaxial & Triaxial-2100

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ... C•1763-1765
AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ... C•1121
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ... C•1147
§† **AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1152-1153**
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, 206-223-1110 ... B•1145
† **C & C Jetronic, Inc., Research Pk. 318 Wall St., Princeton, NJ 08540, 609-921-8540 ... C•1198**
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ... C•1205
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1206-1207,1697**
† **Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ... C•1209**
§ **Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011, 212-691-9050 ... C•1215**
§ **EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ... C•1230**
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ... C•1231-1233
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ... C•1294-1295
§ **Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222 ... C•1312-1313**
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ... C•1325-1333
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ... C•1336
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ... C•1340
§ **Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ... C•1353**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ... C•1378-1380**
† **Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ... C•1512**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1519-1520**
† Adams-Russell, Anzac Div., 80 Cambridge St., Burlington, MA 01803 ... 671-273-3333
§† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 ... 612-835-6800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ... 213-873-6400; 818-988-4400
Alpha Inds., Inc. - TRG Millimeter Comp., 651 Lowell St., Methuen, MA 01844 ... 617-682-4661
† Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 ... 818-889-9304
§† AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 ... 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
Andrew Corp., 10500 W. 153rd St., Orland Pk., IL 60462 ... 312-349-3300
§† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 ... 203-387-5282
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
§† Arco Elctrns., 400 Moreland Rd., Commack, NY 11725 ... 516-864-7000
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 ... 201-869-4201
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 ... 201-783-7800
Augat Broadband Comm. Grp., 710 Narragansett Pk. Dr., Pawtucket, RI 02861 ... 401-724-4400
Augat Communications Group, Augat Inc., P.O. Box 1110, Seattle, WA 98111 ... 206-223-1110
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 ... 516-543-5000
† Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 ... 216-248-1200
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 ... 203-838-4444
§† Cablewave Sys. Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 ... 203-239-3311
§ Cambridge Products, 244 Woodland Ave., Bloomfield, CT 06002 ... 203-243-1761, 800-243-8814
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 ... 617-585-4315
Ceramaseal, Box 260, New Lebanon, NY 12125 ... 518-794-7800
§ Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 ... 516-585-3400
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ... 612-338-0995;800-422-2537
† Connector Industries of America Div., Microdot Mfg., 639 N. Wayne, Cincinnati, OH 45215 ... 513-733-3680
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 ... 301-298-4411
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
Delta Electronics Mfg. Corp., 416 Cabot St., Beverly, MA 01915 ... 617-927-1060
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 ... 818-579-7130
§† EMC Technology Inc, 1971 Old Cuthbert Rd., Cherry Hill, NJ 08034 ... 609-429-7800
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 ... 818-446-6175
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 ... 309-693-3355
† Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 ... 516-794-4500
Gabriel Elctrns., Box 70, Scarborough Indl. Pk., Scarborough, ME 04074 ... 207-883-5161
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 ... 305-658-1971
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 ... 818-709-1247
† Imtronics Industries, 11930 31st Ct. N., St. Petersburg, FL 33715 ... 813-577-9010
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 ... 714-557-4700
Kevlin Microwave Corp., 26 Conn St., Woburn, MA 01801 ... 617-935-4800
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 ... 203-288-5571

L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§ Macom Inds., 8230 Haskell Ave., Van Nuys, CA 91406
M/A-Com Cable/Home Communication Prodelin Satellite Antenna Systems, M/A-Com, Inc., P.O. Box 468, Newton, NC 28658 ..... 800-222-1195;704-464-4141
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
† Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730 714-987-4715
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
§† Microtech, 1420 Conchester Hwy., Boothwyn, PA 19061 215-459-3566
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
† Minelco Inc. - A Talley Ind., 135 S. Main St., Thomaston, CT 06787-0459 203-283-8261
§ Murata Manufacturing Co., Ltd., 26-10-2-chome-Tenjin, Nagaoka-Kyo-Shi, Kyoto, JAPAN 617 075-951-9111
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Pasternack Enterprises, P.O. Box 16759, Irvine, CA 92713 714-261-1920
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§† Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
† Sabritec, 1733 Kaiser Ave., Irvine, CA 92714 714-660-1970
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Sitco Antennas, 10330 N.E. Marx St., Portland, OR 97220 503-253-2000
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
§† Specialty Connector Co., 2100 Earlywood Dr., Franklin, IN 46131 317-738-2800
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§† Ted Corp., 11415 Johnson Dr., Shawnee Mission, KS 66203 913-631-6211
§ Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
† Weinschel Engineering, One Weinschel La., Gaithersburg, MD 20877 .... 301-948-3434; 800-638-2048
Whittaker Corp., Electronic Resources Div., 1955 N. Surveyor Ave., Simi Valley, CA 93063 805-584-4100
§ Wiltron, 490 Jarvis Dr., Morgan Hill, CA 95037-2809 408-778-2000

Connectors, Solderless-2100

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121
§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1768,1770-1772,1774
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1165-1168
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1189
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1697
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
Lear Siegler, Inc., Telecommunications Div., 714 N. Brookhurst St., Anaheim, CA 92801, 714-774-1010 ..... C•1324
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1345-1346
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1359
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§† Superior Electric, 383 Middle St., Bristol, CT 06010, 203-582-9561 ..... C•1535
Teknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1560-1562
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
Cambridge Products, 244 Woodland Ave., Bloomfield, CT 06002 ..... 203-243-1761, 800-243-8814
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
§† Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
East Penn. Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
§† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 .. 214-221-8776
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Patton-MacGuyer Inc., 17 Virginia Ave., Providence, RI 02905 401-941-6000
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§† Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
Standex Elctrns., 4538 Camberwell Rd., Cincinnati, OH 45209 513-871-3777
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
† Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§† Teka Prods., 45 Salem, Providence, RI 02907 401-785-4110
§† Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156

† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors, Splicing-2100

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1768
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Connectors, Stripline-2100

AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1141
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176,1178,1180
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183-1185,1187
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1564
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Applied Engrg. Prods., P.O. Box A-D, Amity Sta., New Haven, CT 06525 203-387-5282
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
† EMC Technology Inc, 1971 Old Cuthbert Rd., Cherry Hill, NJ 08034 609-429-7800
Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
† Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
§† Sealectro-BICC Electronics, 40 Linderman Dr., Trumbull, CT 06611 203-372-4118
§† Solitron/Microwave, Box 278, Port Salerno, FL 33492 305-287-5000
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Wiltron, 490 Jarvis Dr., Morgan Hill, CA 95037-2809 408-778-2000

Connectors, Surface Mount-2100

† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1226-1227
Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
Holmberg Elctrns., Asheville Hwy., Inman, SC 29349, 803-472-4141 ..... C•1291
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293,1296
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1306
† Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... B•1020
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ... C•1357,1883
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1362,1364
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1523
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
† Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† CW Industries, 130 James Way, Southhampton, PA 18966 215-355-7080
§ Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054 408-727-1700
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Weinschel Engineering, One Weinschel La., Gaithersburg, MD 20877 .... 301-948-3434; 800-638-2048

Connectors, Test-2100

AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1129
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1295
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1730
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
§ Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
§† Air-O-Tronics, Trush Group, Route 20 E., Cazenovia, NY 13035 315-655-2387
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 ... 201-835-5002
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§ Interconnect Devices, Inc., 5101 Richland Ave., Kansas City, KS 66106 .. 913-342-5544
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
† Narda Microwave Corp., 435 Moreland Rd., Hauppauge, NY 11788 516-231-1700
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Russtech Engineering Company, Inc., 23322 (D) Madero Road, Mission Viejo, CA 92691 714-472-0880

§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors, Thermocouple-2100

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1295
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
Omega Engineering, Box 4047, Stamford, CT 06907, 203-359-1660 ..... B•1670
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... B•1757
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
Amperex Electronic Corp., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802 516-931-6200
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923 ..... 617-777-8888;800-826-2726
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
† Connector Industries of America Div., Microdot Mfg., 639 N. Wayne, Cincinnati, OH 45215 513-733-3680
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342 818-362-9395
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§ GIC Thermodynamics, 2611 Parmenter, Royal Oak, MI 48073 313-280-1648
† Gordon Co., 5710 Kenosha St., Richmond, IL 60071 815-678-2211
† Gulton Industries, Inc., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627 ..... 714-642-2400;800-854-4066
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
† Honeywell, Industrial Controls Div., 1100 Virginia Dr., Ft. Washington, PA 19034 ..... 800-321-5111, Ext. 596
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Love Controls Corp., 1475 S. Wheeling Rd., Wheeling, IL 60090 312-541-3232
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† NANMAC Corp., 9 Mayhew St., Framingham, MA 01701 617-872-4811
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
Pyrocom Co., 924 N. 143rd St., Seattle, WA 98133 206-365-3535
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800

Connectors, Video-2100

EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325,1333
† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342 818-362-9395
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
† Imtronics Industries, 11930 31st Ct. N., St. Petersburg, FL 33715 813-577-9010
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 516-937-3475
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705 714-250-8770
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Connectors, Wire – See Wire Nuts (Vol. C)

Connectors, Wirewrap (Z-3 Level)-2100

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121-1125,1127,1138
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1767-1768,1770-1772,1774
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1189
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1724,1726
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294-1296
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1304
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183-1185,1187
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
§ Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125 ..... C•1533
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113, D•1111
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
† CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§ Dale Electronics, Inc., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078 605-665-9301
† DataCon, Inc., 60 Blanchard Rd., Burlington, MA 01803 617-273-5800
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
§† Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
§† Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 214-221-8776
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Erni Components, 520 Southlake Blvd., Richmond, VA 23236 804-794-6367
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§ Masterite Corporation, 2841 Lomita Blvd., Torrance, CA 90505 213-775-3471
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Star-Tron Corp., 58 Curtis St., Providence, RI 02909 401-274-5090

Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§† Teka Prods., 45 Salem, Providence, RI 02907 401-785-4110
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§† Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Urban Elctrns., P. O. Box 456, Dover, MA 02030 617-329-4068
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Connectors, Zero & Low Insertion Force-2100

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121-1130,1132-1135,1143
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1292-1296
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1305-1307
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1552,1924
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
Burndy Corporation, Richards Ave., Norwalk., CT 06852 203-838-4444
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
† CTS Fabri-Tek, Inc., 6900 Shady Oak Rd., Eden Prairie, MN 55344 612-941-9100
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 .. 214-221-8776
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281
§ PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040 ..... 215-672-0787;215-672-4741
§† Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731 818-579-2300
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080

Connectors & Terminals, Push-on, Quick Disconnect-2100

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1711
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... C•1147
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876, 201-359-4454 ..... B•1298,1536, C•1149
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1150-1151,1154-1155,1161,1164
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1190-1191
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... C•1845
Cosmo Corporation, 3239 W. 14th St., Cleveland, OH 44109, 216-861-5594 ..... A•1239
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293-1294
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1320-1321,1323
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339-1340
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1357,1359,1883
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1496
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1512
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519-1520
Tecknit Interconnection Products, 135 Bryant Ave., Cranford, NJ 07016, 201-272-3850 ..... C•1541
§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656, 312-867-4600 ..... C•1547
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1552
§ Visual Communications Co., Inc., 7920 Arjons Dr., Ste. G, San Diego, CA 92126, 619-549-6900 ..... B•1137-1138
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1557
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§† Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
† Avibank Mfg., Inc., 210 S. Victory Blvd., Burbank, CA 91503 818-843-4330
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
† Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 216-248-1200
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk., CT 06852 203-838-4444
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
Computer Systems Products, 740 Washington Ave N, Minneapolis, MN 55401 ..... 612-338-0995;800-422-2537
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Elcon Products International Company, 42700 Lawrence Place, Fremont, CA 94538 415-490-4200
Electronic Essentials, 60-20 34th Avenue, Woodside, NY 11377 718-898-8300
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282

§† Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Marathon Special Prods., 13300 Van Camp Rd., Bowling Green, OH 43402 419-352-8441
§ Martin Sound Prods., 28 Alpha Park, Cleveland, OH 44143-2297 216-442-2286
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Minelco Inc. - A Talley Ind., 135 S. Main St., Thomaston, CT 06787-0459 203-283-8261
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Patton-MacGuyer Inc., 17 Virginia Ave., Providence, RI 02905 401-941-6000
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
§ PTS Corporation, Box 272, Bloomington, IN 47401 812-824-9331
Pyle-National Division, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651 312-342-6300
§ Reliance Comm/Tec, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199 800-245-4501
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Standex Elctrns., 4538 Camberwell Rd., Cincinnati, OH 45209 513-871-3777
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
† Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§† Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Connectors (MIL), Flat Cable-2440 — *See Vol. B*

Connectors (MIL), Power-2440 — *See Vol. B*

Connectors (MIL), Printed Circuit-2440 — *See Vol. B*

Connectors (MIL), RF-2440 — *See Vol. B*

Consoles, Cabinet — See Benches, Consoles etc. (Vol. C)

Consoles (MIL), ECCM-3475 — *See Vol. D*

Contact Cleaners — See Cleaners & Solvents (Vol. C), Burnishers, Contact (Vol. C)

Contact Strips, Finger-4525

Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746

Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Airflyte Elctrns. Co., 56 New Hook Rd., P. O. Box 231, Bayonne, NJ 07002 201-436-2230
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§ Edac Inc., 20 Railside Rd., Toronto, ON, CANADA M3A 1A4 416-445-2292
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Hugin Industries Inc., 745 Distel Dr., Los Altos, CA 94022 415-961-2950
§ Interconnect Devices, Inc., 5101 Richland Ave., Kansas City, KS 66106 .. 913-342-5544
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Mantex Corp., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051 313-628-8200
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Micro-Products Engineering Co., 230 Ridgewood Ave., Newark, NJ 07108 201-824-8467
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
§ Tapeswitch Corp. of America, 100 Schmitt Blvd., Farmingdale, NY 11735 516-694-6312
Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360 617-747-0300
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800

Contactors — See Relays, Power (Vol. B)

Contactors (MIL)-2440 — *See Vol. B*

Contacts, Electrical-2800

† AirBorn, Inc., 4321 AirBorn Dr., Addison, TX 75001-0519, 214-931-3200 ..... C•1121
AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1163
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1178
† Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702, 914-968-8400 ..... B•1184
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ... C•1357,1883
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1556
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ Air Electro Supply, Inc., 7700 Gloria Ave., Van Nuys, CA 91406 ..... 213-873-6400; 818-988-4400
§ Airflyte Elctrns. Co., 56 New Hook Rd., P. O. Box 231, Bayonne, NJ 07002 201-436-2230
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§ Arrow Hart Component Products, Cooper Inds., 103 Hawthorn St., Hartford, CT 06101 203-249-8471
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§ Brady, W. H., Co., Xymox Div., 8225 W. Parkland Ct., P.O. Box 571, Milwaukee, WI 53201 414-355-8300
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Carbone Lorraine Inds., 400 Myrtle Ave., Boonton, NJ 07005 ..... 201-DE4-0700
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Components Corp., 6 Kinsey Pl., Denville, NJ 07834 201-627-0290
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
† Danmar Inds., 9705 Lurline Ave., Chatsworth, CA 91311 ..... 818-882-7979/5280
Deringer Mfg. Co., 1250 Townline Road, Mundelein, IL 60060 312-566-4100
§ Eaton Corp./Cutler-Hammer Prods, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216 414-449-7487
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067 .. 214-221-8776
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Everett/Charles Contact Products, 700 E. Harrison Ave., Pomona, CA 91767 714-625-5551

Everett/Charles Test Equipment, Inc., 2887 N. Towne Ave., Pomona, CA 91767 714-621-9511
§ Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ Heraeus Inc., Temp. Measurement Group, 222-34 96th Ave., Queens Village, NY 11429 212-464-8400
† Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§† Industrial Electronic Hardware Corp., 109 Prince St., New York, NY 10012 212-677-1881
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327 717-424-8510
§ Interconnect Devices, Inc., 5101 Richland Ave., Kansas City, KS 66106 .. 913-342-5544
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879 ... 301-921-9440
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
§ Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 203-242-2281
† Poly-Scientific, Litton Inds., 1213 N. Main St., Blacksburg, VA 24060 703-552-3012
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 .. 417-866-2322
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
Stackpole, Carbon Div., 201 Stackpole St., St. Marys, PA 15857 814-781-1234
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§† Superior Carbon Products, Inc., Hwy. 35, Superior Place, Walnut Grove, MS 39189 601-253-2442
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
† Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360 617-747-0300
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§ U.S. Components, Inc., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716 516-589-8080
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388

Contacts (MIL), Assemblies & Holders-2440 — *See Vol. B*

Containers, Shielded (All Types) — See Enclosures, Shielded (Vol. C)

Containers, Shipping, Metal & Fiberglass — See Enclosures, Shipping, Metallic & Nonmetallic (Vol. C)

Containers, Storage-3800

† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, 503-476-8871 ..... C•1051
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963, 800-328-1368 ..... D•2115
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089
§ Akro-Mils, 1293 S. Main St., Akron, OH 44301 216-253-5593
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
† Anvil Cases, Inc., 4128 Temple City Blvd., Rosemead, CA 91770 ..... 818-575-8614; 800-242-4466;800-423-4279(outside CA)
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Flambeau Products Corp., P. O. Box 97, Middlefield, OH 44062 216-632-1631
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009 507-263-3957
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Instrument Enclosures, 9767 Glenoaks Blvd., Sun Valley, CA 91352 818-768-4622
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Mercury Plastics, A Unit of Zero Corp., 672 Fuller Rd., Chicopee, MA 01020 413-267-5561
Matrix Systems, 645 Anchors St., Ft. Walton Beach, FL 32548-9990 904-244-9600
† MFG-West, Parabam Div., 1130 Watsoncenter Rd., Carson, CA 90745 .. 213-549-5044
§† Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
† TA Instrument Co., 4625 Alger St., Los Angeles, CA 90039 818-242-8855
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976
† United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Contract Manufacturing & Services-4100 — *See Vol. D*

Controllers, Card Reader/Punch, Add-in-2000 — *See Vol. D*

Controllers, Card Reader/Punch, Standalone-2000 — *See Vol. D*

Controllers, Energy Conservation-2200 — *See Vol. D*

Controllers, Error-1900 — *See Vol. D*

Controllers, Floppy Disk Drive, Add-in-2000 — *See Vol. D*

Controllers, Floppy Disk Drive, Standalone-2000 — *See Vol. D*

Controllers, Hard Disk Drive, Add-in-2000 — *See Vol. D*

Controllers, Hard Disk Drive, Standalone-2000 — *See Vol. D*

Controllers, IEEE 488 (GPIB) Bus-2900 — *See Vol. D*

Controllers, Magnetic Tape Drive, Add-in-2000 — *See Vol. D*

Controllers, Magnetic Tape Drive, Standalone-2000 — *See Vol. D*

Controllers, Memory Device, Add-in-2000 — *See Vol. D*

Controllers, Memory Device, Standalone-2000 — *See Vol. D*

Controllers, Paper Tape Reader/Punch, Add-in-2000 — *See Vol. D*

Controllers, Paper Tape Reader/Punch, Standalone-2000 — *See Vol. D*

Controllers, Plotter, Add-in-2000 — *See Vol. D*

Controllers, Plotter, Standalone-2000 — *See Vol. D*

Controllers, Power-2200 — *See Vol. D*

Controllers, Printer, Add-in-2000 — *See Vol. D*

Controllers, Printer, Standalone-2000 — *See Vol. D*

Controllers, Programmable-2200 — *See Vol. D*

Controllers, Protocol, Communications-2000 — *See Vol. D*

Controllers, Terminal, Add-in-2000 — *See Vol. D*

Controllers, Terminal, Standalone-2000 — *See Vol. D*

Controls, Access-2200 — *See Vol. D*

Controls, Audio System Consoles-2200 — *See Vol. D*

Controls, Capacitance Operated-2200 — *See Vol. D*

Controls, Carbon — See Potentiometers (Vol. A), Rheostats (Vol. A)

Controls, Computer Input, Joysticks, Mouse Devices, etc.-2000 — *See Vol. D*

Controls, Constant Impedance — See Attenuators (Vol. A)

Controls, Counting & Sorting-2200 — *See Vol. D*

Controls, DC Motor, Programmable-4900 — *See Vol. D*

Controls, DC Regenerative-2200 — *See Vol. D*

Controls, Density-2200 — *See Vol. D*

Controls, Dimension-4100 — *See Vol. D*

Controls, Environmental Test Equipment-2550 — *See Vol. D*
Controls, Fader-1300 — *See Vol. D*
Controls, Fluid Conductivity-2200 — *See Vol. D*
Controls, Fluid Flow-2200 — *See Vol. D*
Controls, Fluorescent Light Power-2200 — *See Vol. D*
Controls, Frequency-2200 — *See Vol. D*
Controls, Gas-2200 — *See Vol. D*
Controls, Humidity-2200 — *See Vol. D*
Controls, Ignitron Firing-2200 — *See Vol. D*
Controls, Joystick, Mouse Devices, etc. — See Controls, Computer Input (Vol. D)
Controls, Lamp Dimming, Flashing-2200 — *See Vol. D*
Controls, Level, Dry Material-2200 — *See Vol. D*
Controls, Level, Liquid-2200 — *See Vol. D*
Controls, Machine Tool-2200 — *See Vol. D*
Controls, Moisture — See Controls, Humidity (Vol. D)
Controls, Motion, Digital-2200 — *See Vol. D*
Controls, Motor Speed-2200 — *See Vol. D*
Controls, Oscillator-2200 — *See Vol. D*
Controls, Photoelectric-2200 — *See Vol. D*
Controls, Positioning-4100 — *See Vol. D*
Controls, Pressure-2200 — *See Vol. D*
Controls, Proportional-2200 — *See Vol. D*
Controls, Proximity-Also See Controls, Capacitance Operated-2200 — *See Vol. D*
Controls, Remote-2200 — *See Vol. D*
Controls, Run, Shutdown Command, Start-2200 — *See Vol. D*
Controls, SCR-2200 — *See Vol. D*
Controls, Sensing/Monitoring-Voltage, Phase, Frequency-2200 — *See Vol. D*
Controls, Servo System-4900 — *See Vol. D*
Controls, Stepping Motor-2200 — *See Vol. D*
Controls, Temperature-2200 — *See Vol. D*
Controls, Timing — See Timers (Vol. D)
Controls, Torque, Electronic-2200 — *See Vol. D*
Controls, Vibrator-2200 — *See Vol. D*
Controls, Voltage Regulating — See Regulators & Stabilizers, Voltage (Vol. D)
Controls, Volume & Tone — See Potentiometers (Vol. A), Rheostats (Vol. A)
Control Systems, Air Traffic-3475 — *See Vol. D*
Control Systems, Distributed Numerical-2200 — *See Vol. D*
Control Systems, Robotics-4900 — *See Vol. D*
Convection Cooling Packages, Semiconductor — See Heat Sinks, Semiconductor (Vol. C)
Converters, AC to DC (Nonrotary) — See Power Supplies, AC Input, DC Output (Vol. D)
Converters, Analog to Digital-2325 — *See Vol. D*
Converters, Analog to Pulse-2325 — *See Vol. D*
Converters, ASCII to Baudot-2325 — *See Vol. D*
Converters, ASCII to BCD-2325 — *See Vol. D*
Converters, BCD to ASCII-2325 — *See Vol. D*
Converters, Binary to BCD-2325 — *See Vol. D*
Converters, Binary to Decimal-2325 — *See Vol. D*
Converters, CRT Display-2000 — *See Vol. D*
Converters, DC to DC, for LANs-4000 — *See Vol. A*
Converters, DC to DC, Less Than 30 VDC Output-4000 — *See Vol. D*
Converters, DC to DC, 30 to 300 VDC Output-4000 — *See Vol. D*
Converters, DC to DC, 300 to 1,000 VDC Output-4000 — *See Vol. D*
Converters, DC to DC, Greater Than 1,000 VDC Output-4000 — *See Vol. D*
Converters, DC to Sine/Cosine-2325 — *See Vol. D*
Converters, DC to Synchro-2325 — *See Vol. D*
Converters, Digital to Analog-2325 — *See Vol. D*
Converters, Digital to Paper Tape-2000 — *See Vol. D*
Converters, Digital to Resolver-2325 — *See Vol. D*
Converters, Digital to Synchro-2325 — *See Vol. D*
Converters, Frequency to Frequency-1900 — *See Vol. D*
Converters, Frequency to Voltage-2325 — *See Vol. D*
Converters, Frequency, Logarithmic-4050 — *See Vol. D*
Converters, Frequency Shift Keying-1900 — *See Vol. D*
Converters, Frequency to DC-Also See Power Supplies, AC Input, DC Output-4000 — *See Vol. D*
Converters, Graphic to Digital-2000 — *See Vol. D*
Converters, Multiplying, Analog to Digital & Digital to Analog-2325 — *See Vol. D*
Converters, Paper Tape to Magnetic Tape-2000 — *See Vol. D*
Converters, Phase-4050 — *See Vol. D*
Converters, Polar to Rectangular Coordinates-2325 — *See Vol. D*
Converters, Power Frequency, Electronic-4050 — *See Vol. D*
Converters, Power Frequency, Rotary-4050 — *See Vol. D*
Converters, Pressure to DC, Pressure to Frequency — See Transducers, Pressure (Vol. B)
Converters, Rectangular to Polar-2325 — *See Vol. D*
Converters, Resolver to Digital-2325 — *See Vol. D*
Converters, Rotary — See Motor Generator Sets (Vol. D)
Converters, Serial to Parallel/Parallel to Serial-2325 — *See Vol. D*
Converters, Synchro to Digital-2325 — *See Vol. D*
Converters, Synchro to Linear DC-2325 — *See Vol. D*
Converters, Synchro to Sine/Cosine-2325 — *See Vol. D*
Converters, Telemetry-1900 — *See Vol. D*
Converters, Thermal-5300 — *See Vol. B*
Converters, UHF to VHF-1900 — *See Vol. D*
Converters, VLF to HF-1900 — *See Vol. D*
Converters, Voltage to Frequency-2325 — *See Vol. D*
Converters (MIL) DC to DC-3475 — *See Vol. D*
Converters (MIL), Frequency-3475 — *See Vol. D*

Coolants, Circuit & Component — See Refrigerants, Spray (Vol. C)

Cooling Equipment — See Air Conditioners (Vol. C), Blowers & Fans (Vol. C), Heat Exchangers & Systems (Vol. C)

Cooling/Heating Modules, Thermoelectric-2600

Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464, 617-425-2346 ... C•1617
Electro Impulse, Box 870, Red Bank, NJ 07701-0870, 201-741-0404 ... C•1628-1629
† **Marlow Industries, 10451 Vista Park Rd., Dallas, TX 75238, 214-340-4900 ... C•1670-1671**
† **Melcor/Materials Elctrn. Prods., 994 Spruce St., Trenton, NJ 08648, 609-393-4178 ... C•1678-1679**
TECA, ThermoElectric Cooling America Corp., 448 N. Halsted St., Chicago, IL 60622, 312-666-1600 ... C•1690-1691
Thermacore Inc., 780 Eden Road, Lancaster, PA 17601, 717-569-6551 ... C•1692
§ Allen Co., Inc., Robert G., 7267 Coldwater Canyon, N. Hollywood, CA 91605 ... 818-765-8300;800-423-3186
§ Casso-Solar, P.O. Box 163, U.S. Route 202, Pomona, NY 10970 ... 914-354-2500
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 ... 214-746-6000
† EG & G Rotron, Custom Div., Hasbrouck La., Woodstock, NY 12498 ... 914-679-5201
† Noren Products Inc., 1010 O'Brien Blvd., Menlo Pk., CA 94025 ... 415-322-9500
Products for Research, 88 Holten St., Danvers, MA 01923 ... 617-774-3250
† Sensortek, Inc., 154 Em Huron Ave., Clifton, NJ 07013 ... 201-779-5577
§ Temptronic Corporation, 55 Chapel St., Newton, MA 02158 ... 617-969-2501
Thomson-CSF Comps. Corp., Special Prods. Div., 301 Rte. 17 North, Rutherford, NJ 07070 ... 201-438-2300

Cooling Sprays — See Refrigerants, Spray (Vol. C)

Cords & Tapes, Lacing-6000

§† **Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ... C•1768,1774**
§† **Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1826**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ... C•1856**
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 ... 914-962-2253
§† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045 ... 501-452-3987
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 ... 1-212-777-6571
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 ... 415-856-9900
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 ... 312-532-1800
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 ... 215-825-4990

Cords, Communication, Control, Microphone, etc. — See Cable, Specific Type (Vol. C)

Cords, Line & Set, Extension-6000

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ... C•1765
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ... C•1853-1854**
§ **JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474, 201-694-6200 ... C•1869**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ... C•1335
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ... C•1915-1916
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ... C•1496,1918**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1520,1921**
Todd Systems, Inc., 50 Ash St., Yonkers, NY 10701, 914-963-3400 ... A•2421
§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ... C•1924**
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 ... 1-203-677-2657
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 ... 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 ... 919-299-2294
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 ... 201-925-8000
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 ... 201-796-2886
Cable Systems, Inc., 210 Broadway, Everett, MA 02149 ... 617-389-7080
§ Concept Industries, App-Rep, Inc., 3641 San Gabriel River Pkwy., Pico Rivera, CA 90660 ... 213-699-0918; 800-255-2666
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 ... 312-455-8830
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 ... 312-459-1000
Diamond Magnetics, 235 Tank Farm Rd., Ste. G, San Luis Obispo, CA 93401 ... 805-544-4019
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§† Excel Specialty Corp., 6335 N. Broadway, Chicago, IL 60660 ... 312-262-4781
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 ... 714-993-6970
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 ... 203-749-6380
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§ McGill Manufacturing Co., Inc., 909 North Lafayette Street, Valparaiso, IN 46383 ... 219-465-2200
Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 ... 201-227-7996
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 ... 213-532-6600
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 ... 914-681-0700
SL Waber, Inc., 300 Harvard Ave., Westville, NJ 08093 ... 609-456-5400;800-257-8384
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§† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 ... 401-821-1700;SALES 401-821-7800
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 ... 813-371-4242

Cords, Line (Lamp) — See Cable, Multiconductor (Vol. C)

Cords, Line, Resistance-6000

§† **Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ... C•1924**
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ... 215-677-6700; 800-523-6075
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 ... 201-736-5722
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 ... 914-681-0700

Cords, Patch-2100

ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598, 914-962-2253 ... C•1763-1765
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923, 617-777-8888;800-826-2726 ... D•1389
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ... C•1207**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ... C•1853-1854**
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451, 201-835-5002 ... C•1288
§ **Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222 ... C•1317**
† **Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ... D•1414**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ... C•1378-1380**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ... C•1520,1921**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ... C•1523
§†·ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 ... 612-835-6800
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 ... 1-203-677-2657
§ Advance Wire & Cable, The Advance Group, 1661 Industrial Way, Belmont, CA 94002 ... 415-592-4550
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 ... 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 ... 919-299-2294
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 ... 216-354-2101
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 ... 703-642-4000
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 ... 312-232-8900
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 ... 201-796-2886
§ Brooks Manufacturing Corp., 4001 N. American St., Philadelphia, PA 19140 ... 215-228-4433
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 ... 516-935-3640
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 ... 714-558-8755
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 ... 219-784-3011
EOTec Corporation, Fiber Optic Interconnect Group, 420 Frontage Road, West Haven, CT 06516 ... 203-934-7961
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§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 ... 818-446-6175
§ Gavitt Wire & Cable, Brookfield, MA 01506 ... 617-867-6476
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§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 ... 212-475-4600
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§ Macom Inds., 8230 Haskell Ave., Van Nuys, CA 91406
Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 ... 203-348-7761
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† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 ... 215-355-0200
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† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
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† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Cords, Power — See Cable, Power (Vol. C)

Cords, Retractile-6000

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821-1822
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... C•1845
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1853-1854
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780, 213-225-5611 ..... C•1905
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Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1496
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§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1550-1551,1924
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§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§ Concept Industries, App-Rep, Inc., 3641 San Gabriel River Pkwy., Pico Rivera, CA 90660 ..... 213-699-0918; 800-255-2666
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§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
Interelectronics Corp., Interelectronics Park, 550 U.S. Rte. 303, Congers, NY 10920 ..... 914-EL8-8000
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§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
Meyer Wire Co., Inc., 1072 Sherman Avenue, Hamden, CT 06514 203-281-0817
MOLDCON, Div. of K & M Electronics, 221 Interstate Dr., W. Springfield, MA 01089 413-736-0371
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
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§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800

Cords, Speaker Extension — See Cable, Audio (Vol. C)

Cords, Telephone, Modular — See Cable, Telephone (Vol. C)

Cords, Twin Lead — See Cable, Multiconductor (Vol. C)

Cords & Cable, Dial Drive-2400

§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Carolina Steel & Wire, I-20 & S.C. 6, Lexington, SC 29072 803-359-5501
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
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§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700

Cords & Cord Sets, Telephone-6000

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 ..... C•1834
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... C•1845
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1853-1854
Kautt & Bux of America, Inc., 675 Toner Rd., P.O. Box 867, Mundelein, IL 60060, 312-949-8505 ..... C•1318-1319
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1335, D•1091
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1371
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§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§ Golden Pacific Electronics, Inc, 560 S. Melrose St., Placentia, CA 92670 714-993-6970
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
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Cords & Cord Sets, International-6000

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§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1496,1918
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§ Qualtek Electronics Corp., 7158 Industrial Pk. Blvd., Mentor, OH 44060 .. 216-951-3300
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Cores, Ceramic-1850 — *See Vol. A*

Cores, Magnetic, Ferrite, L, E, etc.-1850 — *See Vol. A*

Cores, Magnetic, Ferrite, Pot/Cup-1850 — *See Vol. A*

Cores, Magnetic, Ferrite, Slug-1850 — *See Vol. A*

Cores, Magnetic, Ferrite, Toroid-1850 — *See Vol. A*

Cores, Magnetic, Ferrite, Yoke Section-1850 — *See Vol. A*

Cores, Magnetic, Metal Alloy (Other Than Silicon & Nickel-Iron)-1850 — *See Vol. A*

Cores, Magnetic, Nickel-Iron, L, EE, F, & Ring Laminations-1850 — *See Vol. A*

Cores, Magnetic, Nickel-Iron, Toroid-1850 — *See Vol. A*

Cores, Magnetic, Powdered Iron, Pot/Cup-1850 — *See Vol. A*

Cores, Magnetic, Powdered Iron, Slug-1850 — *See Vol. A*

Cores, Magnetic, Powdered Iron, Toroid-1850 — *See Vol. A*

Cores, Magnetic, Powdered Permalloy, Toroid-1850 — *See Vol. A*

Cores, Magnetic, Silicon C-1850 — *See Vol. A*

Cores, Magnetic, Silicon EI, EE, & F Laminations-1850 — *See Vol. A*

Cores, Magnetic, Silicon, Toroid-1850 — *See Vol. A*

Cores, Magnets & Ferrites-1850 — *See Vol. A*

Corners, Waveguide — See Bends & Twists, Microwave (Vol. A)

Coulometers — See Timers, Electrolytic Cell (Vol. D)

Countermeasures (CM) Sets (MIL), Airborne-3475 — *See Vol. D*

CM Sets (MIL), Internal-3475 — *See Vol. D*

CM Sets (MIL), Mobile-3475 — *See Vol. D*

Counter/Timers-2900 — *See Vol. D*

Counters, Bidirectional-2200 — *See Vol. D*

Counters, Coil Winding-2200 — *See Vol. D*

Counters, Decade-2200 — *See Vol. D*

Counters, Directional-2200 — *See Vol. D*

Counters, Electromagnetic-2200 — *See Vol. D*

Counters, Event-2200 — *See Vol. D*

Counters, Frequency-2900 — *See Vol. D*

Counters, Mechanical-2200 — *See Vol. D*

Counters, Particle-2900 — *See Vol. D*

Counters, Photoelectric-2200 — *See Vol. D*

Counters, Predetermining — See Counters, Preset (Vol. D)

Counters, Preset-2200 — *See Vol. D*

Counters, Printing-2200 — *See Vol. D*

Counters, Proportional — See Counters, Particle (Vol. D)

Counters, Pulse-2200 — *See Vol. D*

Counters, Reversible — See Counters, Bidirectional (Vol. D)

Counters, Revolution-2200 — *See Vol. D*

Counters, Universal-2900 — *See Vol. D*

Couplers, Acoustic-1900 — *See Vol. D*

Couplers, Antenna-1900 — *See Vol. D*

Couplers, Communications, Acoustic, Telephone-1900 — *See Vol. D*

Couplers, Directional-3450 — *See Vol. A*

Couplers, Fiber Optic-2475 — *See Vol. B*

Couplers, Microwave-3450 — *See Vol. A*

Couplers, Multiset — See Couplers, Antenna (Vol. D)

Couplers, Optoelectronic — See Isolators, Optoelectronic (Vol. B)

Couplers, Rotary-3450 — *See Vol. A*

Couplers (MIL), Directional-2440 — *See Vol. B*

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§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923
High Voltage Engrg. Corp., S. Bedford St., Burlington, MA 01803 617-272-1313
Vactronic Lab. Equip., 65 Brightside Ave., E. Northport, NY 11731 516-261-2660

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† Micro Mo Electronics, Inc., 742 2nd Ave. S., St. Petersburg, FL 33701, 813-822-2529 ..... B•1152, D•2124

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Crimping Services — See Services, Crimping (Vol. D)

Crossbars — See Scanners, Crossbar (Vol. D)

Crystal Blanks-2300 — *See Vol. A*

Crystals, Frequency Control-2300 — *See Vol. A*

Crystals, Microprocessor-2300 — *See Vol. A*

Crystals, Piezoelectric-2300 — *See Vol. A*

Crystals, Quartz-2300 — *See Vol. A*

Crystals, Quartz, for Watches-2300 — *See Vol. A*

Crystals, Semiconductor(Ingots & Wafers)-2300 — *See Vol. A*

Crystals, Surface Mount-2300 — *See Vol. A*

Crystals, YIG-2300 — *See Vol. A*

Crystals (MIL)-2440 — *See Vol. B*

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Current Limiters (MIL)-2440 — *See Vol. B*

Current Sensors-Also See Transducers, Volt, etc.-2200 — *See Vol. D*

Current Sources-4000 — *See Vol. D*

Custom Molding Services, Plastics — See Services, Custom Molding, Plastics (Vol. D)

Cutters, Diagonal — See Cutters, Manual (Vol. C)

Cutters, Wire, Automatic — See Machines, Wire Measuring & Cutting (Vol. D)

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Dampers, Servo-4900 — *See Vol. D*

Dampers, Structural, Chassis, Panel, etc. — See Mounts, Shock & Vibration (Vol. C)

Data Acquisition & Reduction Systems-Also See Modules, Data Acquisition-2325 — *See Vol. D*

Data Collection Equipment, Hand Held-2000 — *See Vol. D*

Data Collection Equipment, Modular-2000 — *See Vol. D*

Data Collection Equipment, Portable-2000 — *See Vol. D*

Data Compressors, Digital-2000 — *See Vol. D*

Data Display Indicators — See Displays Indicator Lights (Vol. B)

Data Display Systems — See Displays, CRT (Vol. A), Terminals, Data Display (Vol. D)

Data Links, Fiber Optic-2475 — *See Vol. B*

Data Links, Freespace Communications-2475 — *See Vol. B*

Data Links, Optical-2000 — *See Vol. D*

Data Loggers-2325 — *See Vol. D*

Data Security Devices: Encryptors, Decryptors — See Security Systems, Data (Vol. D)

Data Switches — See Switches, Data (Vol. D)

Data Systems (MIL), Naval Tactical-3475 — *See Vol. D*

Data Translators — See Translators, Data

DCXO — See Oscillators, Digitally Compensated Crystal (Vol. A)

Decade Boxes, Capacitance-2900 — *See Vol. D*

Decade Boxes, Inductance-2900 — *See Vol. D*

Decade Boxes, Resistance-2900 — *See Vol. D*

Decade Boxes, Resistance, Programmable-2900 — *See Vol. D*

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Decapsulation Services — See Services, Decapsulation (Vol. D)

Decoders, Binary To Decimal — See Converters, Binary To Decimal (Vol. D)

Decoders, Digital To Analog — See Converters, Digital To Analog (Vol. D)

Decoders, Pulse-1900 — *See Vol. D*

Decoders, Readout — See Drivers & Decoders For Readouts (Vol. B)

Decoders, Surface Mount-3130 — *See Vol. A*

Decoders, Telemetry — See Decoders, Tone (Vol. D)

Decoders, Tone-1900 — *See Vol. D*

Decoders, Video-1900 — *See Vol. D*

Decommutators, PCM-3500 — *See Vol. B*

Decontaminants — See Cleaners & Solvents (Vol. C)

Decoys (MIL), Buoy-3475 — *See Vol. D*

Decoys (MIL), IR Flare-3475 — *See Vol. D*

Decryptors — See Security Systems, Data (Vol. D)

Degaussers — See Demagnetizers (Vol. C), Coils, Degaussing (Vol. A)

Degreasers & Cleaners, Machine — See Machines, Cleaning & Degreasing (Vol. D)

Degreasing Chemicals — See Cleaners & Solvents (Vol. C)

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Delay Generators — See Generators, Timing Digital (Vol. D)

Delay Lines, Active-2350 — *See Vol. A*

Delay Lines, Cable-2350 — *See Vol. A*

Delay Lines, Digital-2350 — ***See Vol. A***
Delay Lines, Dispersive (Frequency Variable)-2350 — ***See Vol. A***
Delay Lines, Distributed, Constant (Fixed)-2350 — ***See Vol. A***
Delay Lines, Distributed, Constant (Variable)-2350 — ***See Vol. A***
Delay Lines, Glass & Quartz-2350 — ***See Vol. A***
Delay Lines, Liquid-2350 — ***See Vol. A***
Delay Lines, Lumped Constant (Electrically Variable)-2350 — ***See Vol. A***
Delay Lines, Lumped Constant (Fixed)-2350 — ***See Vol. A***
Delay Lines, Lumped Constant (Mechanically Variable)-2350 — ***See Vol. A***
Delay Lines, Magnetostrictive-2350 — ***See Vol. A***
Delay Lines, Programmable-2350 — ***See Vol. A***
Delay Lines, SAW — See Surface Acoustic Wave Devices (Vol. A)
Delay Lines, Strip-2350 — ***See Vol. A***
Delay Lines, Surface Mount-2350 — ***See Vol. A***
Delay Lines, Trimmer-2350 — ***See Vol. A***
Delay Lines, Ultrasonic-2350 — ***See Vol. A***
Delay Lines, Video — See Delay Lines, Ultrasonic (Vol. A)
Delay Lines, Waveguide-2350 — ***See Vol. A***
Delay Lines (MIL)-2440 — ***See Vol. B***
Demagnetizers-1850 — ***See Vol. A***
Demodulators-1900 — ***See Vol. D***
Demodulators, Magnetic-2200 — ***See Vol. D***
Densitometers-2900 — ***See Vol. D***
Deposition Equipment, Vacuum & Accessories-Also See Evaporation Equipment, Electron Beam-4100 — ***See Vol. D***
Desiccators — See Dehumidifiers (Vol. C)
Desks, Data Terminal — See Benches, Consoles, Tables (Vol. C)
Desoldering Tools & Equipment — See Soldering Accessories (Vol. C), Soldering Equip. (Vol. C), Soldering Guns (Vol. C), etc.
Detection & Ranging Systems (MIL)-3475 — ***See Vol. D***
Detection Sets (MIL), IR-3475 — ***See Vol. D***
Detection Systems, Laser-3700 — ***See Vol. B***
Detection Systems (MIL), Passive-3475 — ***See Vol. D***
Detection Systems (MIL), Submarine-3475 — ***See Vol. D***
Detector Arrays, Infrared-3700 — ***See Vol. B***
Detectors, Air Flow-2900 — ***See Vol. D***
Detectors, RF-2900 — ***See Vol. D***
Detectors, Bar Code — See Readers, Bar Code (Vol. D)
Detectors, Coaxial-2900 — ***See Vol. D***
Detectors, Corona — See Testers, Corona (Vol. D)
Detectors, Crystal-2300 — ***See Vol. A***
Detectors, Fiber Optic-Also See Diodes, PIN-2475 — ***See Vol. B***
Detectors, Flaw & Defect-2900 — ***See Vol. D***
Detectors, GaAs-3450 — ***See Vol. A***
Detectors, Ground Fault-4300 — ***See Vol. B***
Detectors, Impedance — See Meters, Impedance (Vol. D)
Detectors, Infrared-3700 — ***See Vol. B***
Detectors, Leak-2900 — ***See Vol. D***
Detectors, Light Intensity — See Meters, Light, Nonphotographic (Vol. D)
Detectors, Magnetic — See Meters, Gauss (Vol. D)
Detectors, Metal, Handheld-4100 — ***See Vol. D***
Detectors, Metal, Walk Through-4100 — ***See Vol. D***
Detectors, Microwave-3400 — ***See Vol. D***
Detectors, Null — See Indicators, Null (Vol. D)
Detectors, Phase Sensitive-2900 — ***See Vol. D***
Detectors, Photovoltaic — See Cells, Photovoltaic (Vol. B)
Detectors, RF-2900 — ***See Vol. D***
Detectors, Radiation-2900 — ***See Vol. D***
Detectors, Resistance Temperature (RTDs) — See Thermometers, Resistance (Vol. D)
Detectors, Standing Wave-2900 — ***See Vol. D***
Detectors, Synchronous-2900 — ***See Vol. D***
Detectors, Tone-1900 — ***See Vol. D***
Detectors, Ultraviolet-2900 — ***See Vol. D***
Detectors, Vacuum-4100 — ***See Vol. D***
Detectors,Vibration — See Transducers, Vibration (Vol. B)
Detectors, Video-2900 — ***See Vol. D***
Detectors, Voltage-2900 — ***See Vol. D***
Detectors (MIL), IR-3475 — ***See Vol. D***
Detectors (MIL), Radar-3475 — ***See Vol. D***
DIACs-4800 — ***See Vol. A***

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Dielectric Heating Equipment-4100 — *See Vol. D*

Dielectrics — See Films (Vol. C), Insulation Materials (Vol. C)

Differentials, Mechanical — See Gears & Gear Mechanisms (Vol. B)

Digital Panel Meters — See Meters, Panel (Digital) (Vol. D)

Digital Tape Recorders — See Recorders, Computer Data (Vol. D)

Digitizers, Audio (Sonic)-2000 — *See Vol. D*

Digitizers, Video-2000 — *See Vol. D*

Digitizers, Pencil Follower (Incl. Coordinate & Graphic)-2000 — *See Vol. D*

Digitizers, Transient & Waveform-2900 — *See Vol. D*

Dimmers, Light — See Controls, Lamp Dimming, Flashing (Vol. D)

Diode Arrays (Incl. Photo)-3700 — *See Vol. B*

Diodes, Avalanche-4800 — *See Vol. A*

Diodes, Backward-4800 — *See Vol. A*

Diodes, Breakdown — See Diodes, Avalanche (Vol. A)

Diodes, Chip, Unpackaged-4800 — *See Vol. A*

Diodes, Electroluminescent (Radiating)-4800 — *See Vol. A*

Diodes, Frequency Multiplier-4800 — *See Vol. A*

Diodes, Germanium-4800 — *See Vol. A*

Diodes, Gunn-4800 — *See Vol. A*

Diodes, High Voltage (1,000 Volts & Over)-4800 — *See Vol. A*

Diodes, Hot Carrier-4800 — *See Vol. A*

Diodes, Impatt-4800 — *See Vol. A*

Diodes, Infrared-4800 — *See Vol. A*

Diodes, Laser-4800 — *See Vol. A*

Diodes, Light Emitting (LEDs)-3700 — *See Vol. B*

Diodes, Limiting-4800 — *See Vol. A*

Diodes, Liquid Crystal (LCDs)-3700 — *See Vol. B*

Diodes, Matched Pairs-4800 — *See Vol. A*

Diodes, Matched Quads-4800 — *See Vol. A*

Diodes, Microwave Detector-4800 — *See Vol. A*

Diodes, Microwave Mixer-4800 — *See Vol. A*

Diodes, Noise-4800 — *See Vol. A*

Diodes, Photoelectric-3700 — *See Vol. B*

Diodes, PIN-4800 — *See Vol. A*

Diodes, Power, Surface Mount-4800 — *See Vol. A*

Diodes, Schottky-4800 — *See Vol. A*

Diodes, Selenium — See Rectifiers, Selenium (Vol. A)

Diodes, Silicon-4800 — *See Vol. A*

Diodes, Step Recovery-4800 — *See Vol. A*

Diodes, Switching-4800 — *See Vol. A*

Diodes, Switching, Surface Mount-4800 — *See Vol. A*

Diodes, Temperature Compensating-4800 — *See Vol. A*

Diodes, Trigger — See Diodes, Avalanche (Vol. A)

Diodes, Tuning, Surface Mount-4800 — *See Vol. A*

Diodes, Tunnel-4800 — *See Vol. A*

Diodes, Varactor-4800 — *See Vol. A*

Diodes, Varactor, Surface Mount-4800 — *See Vol. A*

Diodes, Video Detector — See Diodes, Microwave Detector (Vol. A)

Diodes, Zener & Stabistors (Forward Reference Diodes)-4800 — *See Vol. A*

Diodes, Zener, Surface Mount-4800 — *See Vol. A*

Diodes (MIL)-2440 — *See Vol. B*

Diplexers, Antenna-1900 — *See Vol. D*

Direction Finders (MIL), High Frequency-3475 — *See Vol. D*

Direction Finders (MIL), Radio-3475 — *See Vol. D*

Direction Finding Sets & Systems (MIL)-3475 — *See Vol. D*

Discharge Systems, Energy-4000 — *See Vol. D*

Discriminators-1900 — *See Vol. D*

Disks, Alignment, Flexible Disk Drive-2000 — *See Vol. D*

Disks, Computer Memory — See Memory Systems, Disk (Vol. D)

Disks, Diagnostic, Flexible Disk Drive-2000 — *See Vol. D*

Disks, Magnetic 3½″-2000 — *See Vol. D*

Disks, Magnetic, 5¼″ Flexible-2000 — *See Vol. D*

Disks, Magnetic, 8″ Flexible-2000 — *See Vol. D*

Disks, Magnetic, Front-loading Cartridge-2000 — *See Vol. D*

Disks, Magnetic, Pack-2000 — *See Vol. D*

Disks, Magnetic, Sub-4″-2000 — *See Vol. D*

Disks, Magnetic, Top-loading Cartridge-2000 — *See Vol. D*

Disks, Magnetic, Winchester Module-2000 — *See Vol. D*

Disks, Memory, Flexible — See Memory Systems, Disk, Flexible (Vol. D)

Disks, Optical Encoder — See Encoders, Shaft Angle, Optical (Vol. B)

Dispensers, Adhesive-1600

§† Automation Unlimited, Icon Corporation, 134 New Boston St., Woburn, MA 01801 617-933-7288
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Fusion Inc., 4658 E. 355th. St., Willoughby, OH 44094 216-946-3300
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
§ IVEK Corp., 43 School St., N. Springfield, VT 05150 802-886-2238
§† Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Roean Industries, Inc., 12970 Branford, Ste. C, Pacoima, CA 91331 818-767-7047
† Tridak, 1120 Federal Rd., Brookfield, CT 06804 203-775-1287

Zevatech, Inc., 1580 Old Oakland Rd., Suite C-108, San Jose, CA 95131 408-289-1001

Dispensers, DIP & IC — See Machines, Component Handling (Vol. D)

Display Modules-2450 — *See Vol. B*

Display Power Supplies — See Converters, DC to DC (Vol. D), Power Supplies, AC Output (Vol. D)

Displays, CRT-5700 — *See Vol. A*

Displays, Dot Matrix-2450 — *See Vol. B*

Displays, Edge Lighted & Back Lighted-2450 — *See Vol. B*

Displays, Electroluminescent-2450 — *See Vol. B*

Displays, Electromagnetic-2450 — *See Vol. B*

Displays, Electromechanical-2450 — *See Vol. B*

Displays, Fiber Optic-2450 — *See Vol. B*

Displays, Graphic-2450 — *See Vol. B*

Displays, Graphic Systems-2000 — *See Vol. D*

Displays, Indicator Lights-2450 — *See Vol. B*

Displays, Intelligent-2450 — *See Vol. B*

Displays, Laser-2450 — *See Vol. B*

Displays, Light-emitting Diode (LED)-2450 — *See Vol. B*

Displays, Lighted Segment-2450 — *See Vol. B*

Displays, Liquid Crystal (LCD)-2450 — *See Vol. B*

Displays, Message-2450 — *See Vol. B*

Displays, Planar Gas Discharge-2450 — *See Vol. B*

Displays, Plasma-2450 — *See Vol. B*

Displays, Programmable-2450 — *See Vol. B*

Displays, Projection Type (CRT; Electromechanical; Film; Light Valve)-2450 — *See Vol. B*

Displays, Remote-2450 — *See Vol. B*

Displays, Status-2450 — *See Vol. B*

Displays, Storage Tube — See Displays, CRT (Vol. A)

Displays, Surface Mount-2450 — *See Vol. B*

Displays, Touch Sensitive (Infrared & Mechanical) — See Touch Monitors (Vol. D), Touch Panels (Vol. D), Touch Terminals (Vol. D)

Displays, Tube — See Tubes, Readout (Vol. A)

Displays, Vacuum Fluorescent-2450 — *See Vol. B*

Display Sets (MIL), Computer-3475 — *See Vol. D*

Dissipators, Heat — See Heat Sinks, Semiconductor (Vol. C), Heat Sinks, Soldering (Vol. C)

Distortion Analyzers, Indicators — See Analyzers, AF (Vol. D)

Distributed Control Systems & Components-2200 — *See Vol. D*

Dividers, Analog-3130 — *See Vol. A*

Dividers, Frequency-3450 — *See Vol. A*

Dividers, Power (LF, HF, VHF, UHF)-3450 — *See Vol. A*

Dividers, Power, Microwave-3450 — *See Vol. A*

Dividers, Voltage-Also See Networks, Resistance; Transformers, Voltage Dividing-2900 — *See Vol. D*

Doublers, Frequency — See Multipliers, Frequency (Vol. A)

Doublers, Voltage-Also See Rectifiers, Bridges & Assemblies-4800 — *See Vol. A*

Down Converters-3400 — *See Vol. D*

Drafting Machines-4200

Catronix Corp., 2298 Lower Roswell Rd. SE, Marietta, GA 30067 404-977-8220

Drafting Symbols, Dry Transfer, Pressure Sensitive, etc. (Incl. Lettering)-4200

§† **Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1572,1739**

§ **Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111,1740**

§ Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600

§ Chartpak, 1 River Rd., Leeds, MA 01053 413-584-5446

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630

Stanpat Prods., 366 Main St., Port Washington, NY 11050 516-883-8400

Drawers, Sliding-1400

Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1025

CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1037

PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1074-1075

§† **Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 .... C•1085**

Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064, 213-478-0046;800-TECHMAR;800-CHASSIS (CA) ..... C•1097

† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176 312-671-6670

§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202

§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200

ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400

† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000

† General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000

Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800

§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941

§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110

† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084 404-496-4000

† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200

York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660

† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

ZyMOS Corp., 477 N. Mathilda Ave., Sunnyvale, CA 94086 ..... 408-730-8800; 408-730-5400

Drills & Accessories, Manual & Power-5400

Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685

§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000

† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000

§ Foredom Elec. Co., Blackstone Inds. Inc., Route 6, Bethel, CT 06801 203-792-8622

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§ General Hardware Mfg., 80 White St., New York, NY 10013 212-431-6100

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716 516-563-3388

§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241

§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630

§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Drivers & Decoders For Readouts-2450 — *See Vol. B*

Drivers, Chopper-1100 — *See Vol. D*

Drivers, Hardware & Software-2000 — *See Vol. D*

Drivers, Nut-5400

§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241

Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700

§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200

Micro Mo Electronics, Inc., 742 2nd Ave. S., St. Petersburg, FL 33701 ... 813-822-2529

§† Moody Tools, Inc., 43 Crompton Ave., E. Greenwich, RI 02818 401-885-0911

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010

§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300

§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Drivers, Solenoid-4550 — *See Vol. B*

Drivers, Speaker-1300 — *See Vol. D*

Drivers, Surface Mount-1100 — *See Vol. D*

Drivers, Switch-3450 — *See Vol. A*

Drivers, Tube — See Drivers & Decoders for Readouts (Vol. B)

Drives & Drive Mechanisms (Dial)-2400

§ **Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1575,1577,1583**

§† Bailey Controls Co., Div. of Babcox & Wilcox, 29801 Euclid Ave., Wickliffe, OH 44092 216-585-8500

§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
† General Defense Corporation, Tactical Systems Division, Box 500, Pinellas Pk., FL 34290-0500 813-541-6681
§ Machine Components Corp., 70 Newtown Rd., Plainview, NY 11803 516-694-7222
Nidec-Torin Corporation, 100 Franklin Drive, Torrington, CT 06790 203-482-4422
† Perfect Gear & Instrument, Designatronics, Inc., 2101 Jericho Tpk., New Hyde Park, NY 11040 516-328-3300
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Reproduction Technologies Inc., Dept. EM, P.O. Box 790, Bristol, IN 46507-0518 219-848-5233
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
† Transicoil, Inc., Trooper Rd., P.O. Box 99, Worcester, PA 19490-9990 215-277-1300
§† Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600

Drives/Subsystems, Core Disk Emulator-2000 — *See Vol. D*

Drives/Subsystems, Disk, 3½" Diskette-2000 — *See Vol. D*

Drives/Subsystems, Disk, 5¼" Diskette-2000 — *See Vol. D*

Drives/Subsystems, Disk, 5¼" Winchester-2000 — *See Vol. D*

Drives, Subsystems, Disk, 8" Diskette-2000 — *See Vol. D*

Drives/Subsystems, Disk, 8" Winchester-2000 — *See Vol. D*

Drives/Subsystems, Disk, 14" Winchester-2000 — *See Vol. D*

Drives/Subsystems, Disk, Fixed-2000 — *See Vol. D*

Drives/Subsystems, Disk, Fixed/Removable-2000 — *See Vol. D*

Drives/Subsystems, Magnetic Tape, ¼" Cartridge-2000 — *See Vol. D*

Drives/Subsystems, Magnetic Tape, Cassette-2000 — *See Vol. D*

Drives/Subsystems, Magnetic Tape, Reel-to-Reel-2000 — *See Vol. D*

Drives/Subsystems, Semiconductor Emulator-2000 — *See Vol. D*

Dry Transfer Letters & Numbers — See Kits, Marking (Vol. C)

Ducts, Wiring-6000

§ dek, inc., 3480 Swenson Ave., St. Charles, IL 60174 312-377-2575
§ Gould Inc., Circuit Protection Div., 374 Merrimac St., Newburyport, MA 01950 ..... 617-462-6662/3131
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§ The Wadsworth Electric Manufacturing Co., Inc., 20 W. 11th St., Covington, KY 41012 606-431-0900
§ The Wiremold Company, 60 Woodlawn Street, W. Hartford, CT 06110 .. 203-233-6251

Dummy Loads, Electronic-2900 — *See Vol. D*

Dummy Loads, Microwave-2900 — *See Vol. D*

Dummy Loads, Power-2900 — *See Vol. D*

Dummy Loads, Programmable-2900 — *See Vol. D*

Dummy Loads, Resistive-2900 — *See Vol. D*

Dummy Loads (MIL), RF-2440 — *See Vol. B*

Duplexers, Microwave-3400 — *See Vol. D*

Duplexers, Nonmicrowave-1900 — *See Vol. D*

Duplicators, Magnetic Tape-1300 — *See Vol. D*

Dust Covers — See Covers, Protective (Vol. C)

DVMs — See Meters, Volt, Digital (Vol. D)

Earphones — See Headphones (Vol. D)

Earth Stations, TV, Receive Only-1900 — *See Vol. D*

Earth Stations; TV, Receive/Transmit-1900 — *See Vol. D*

Edge Clips, Surface Mount-2800

Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Comatel USA, Inc., 87 Sand Pit Rd., Danbury, CT 06810 203-797-9445
§ NEC Electronics, Inc., 401 Ellis Street, Mountain View, CA 94039-7241 .. 415-960-6000

Edge Connectors, Surface Mount-2100

Elform, Inc., P.O. Box 7362, Reno, NV 89510, 702-356-1734 ..... C•1225
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1293-1294
† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500

Editing Equipment, Tape-1300 — *See Vol. D*

Ejectors & Extractors, PC Boards — See Pullers, Circuit Board (Vol. C)

Elastomers, Conductive — See Conductive Elastomers (Vol. C)

Elastomers, Heat Shrinkable — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C)

Electret — See Microphones, Condenser (Vol. D)

Electrical Measurement & Test Services — See Services, Electrical Measurement & Test (Vol. D)

Electrodes, Electroplating — See Electroplating Equipment & Supplies (Vol. D)

Electrodes, High Voltage-2900 — *See Vol. D*

Electromagnets-1850 — *See Vol. A*

Electronic Counter Countermeasures (ECCM) Fixes (MIL)-3475 — *See Vol. D*

Electronic Countermeasures (ECM) (MIL), Cruise Missiles-3475 — *See Vol. D*

ECMs (MIL), Torpedo Defense-3475 — *See Vol. D*

ECM Sets (MIL)-3475 — *See Vol. D*

ECM Sets (MIL), Close Air Support-3475 — *See Vol. D*

ECM Sets (MIL), Shipboard-3475 — *See Vol. D*

ECM Systems (MIL)-3475 — *See Vol. D*

ECM Systems (MIL), Deceptive-3475 — *See Vol. D*

Electronic Intelligence (Elint) (MIL)-3475 — *See Vol. D*

Electronic Loads — See Dummy Loads (Vol. D)

Electronic Support Measures (ESM) Sets (MIL)-3475 — *See Vol. D*

ESM (MIL), Digitally Controlled-3475 — *See Vol. D*

ESM (MIL), Ships-3475 — *See Vol. D*

ESM Suites (MIL)-3475 — *See Vol. D*

ESM Systems (MIL), Automated-3475 — *See Vol. D*

ESM Systems (MIL), IFM Receiver-3475 — *See Vol. D*

Electronic Warfare (EW) Sets (MIL)-3475 — *See Vol. D*

EW Sets (MIL), Ground Multitarget-3475 — *See Vol. D*

EW Sets (MIL), Portable-3475 — *See Vol. D*

EW Suites (MIL), Ships-3475 — *See Vol. D*

EW Systems (MIL), Advanced Airborne Multitarget-3475 — *See Vol. D*

Electroplating Equipment & Supplies-4100 — *See Vol. D*

Electrostatic Discharge Guns - Also See Generators, ESD-2900 — *See Vol. D*

Electrostatic Discharge (MIL)-2440 — *See Vol. B*

Elements, Sensing — See Transducers (Vol. B)

Eliminators, Battery — See Power Supplies, AC to DC Adapter (Vol. D)

Emitter Location & Identification System (MIL), Automatic Ground Transportable-3475 — *See Vol. D*

Emitters/Detectors, Infrared-3700 — *See Vol. B*

Emitters, Fiber Optic-Also See Diodes, Laser-2475 — *See Vol. B*

Emulators, In-circuit-2900 — *See Vol. D*

Emulators, RTS-2900 — *See Vol. D*

Emulators, Terminal-2900 — *See Vol. D*

Encapsulating Materials — See Compounds, Encapsulating, Molding, Potting (Vol. C)

Encapsulation Services — See Services, Encapsulation (Vol. D)

Enclosures, Circuit Board, Module, & Relay Mounting-1400

Actek, Inc., 12740 28th N.E., Seattle, WA 98125, 206-363-0217 ..... D•1115
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... C•1710
† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1012
Ango Electronics Corp., 16 North Third St., Harrison, NJ 07029, 201-484-1115 ..... C•1015
Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1718-1719,1721
Bopla Enclosures, 12140 Parklawn Dr., Rockville, MD 20852, 301-770-2225 ..... C•1019
§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1021-1022,1024-1025
† Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027
§ Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741, 516-585-3400 ..... C•1028-1031
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1038
Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, 215-682-7181 ..... C•1041-1044
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... B•1604, C•1048-1049, D•1108
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, 714-261-9473 ..... C•1729
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009, 507-263-3957 .. C•1052-1053
† General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000 ..... C•1057
Gordos Corporation, Solid State Products Division, 1000 N. Second St., P.O. Box 824, Rogers, AR 72756, 501-636-5000 ..... B•1396-1397,1400
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710 ..... C•1058
§ IERC, 135 W. Magnolia Blvd., Burbank, CA 91502, 213-849-2481 ..... C•1637
Lansing Research Corp., 705 Willow Ave., Ithaca, NY 14850, 607-272-3265;607-257-7613;800-847-3535 ..... C•1060
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... C•1733
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061,1065
§ Opto 22, 15461 Springdale St., Huntington Bch., CA 92649, 714-891-5861 ..... B•1466
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
Powerbox Inc., 1503 Spruce St., Boulder, CO 80302, 303-444-1461;800-444-1461 ..... C•1077
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1078-1079
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505, 800-637-4425 ... C•1800
§ Ritz Electronics/Relco, 196 Queen St. N., New Dundee, Ont., CANADA NOB 2EO, 519-696-2616 ..... C•1081
§ Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 ..... C•1084-1085
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, 401-732-3770 ..... C•1086
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064, 213-478-0046;800-TECHMAR;800-CHASSIS (CA) ..... C•1096-1097
Tracewell Enclosures, 7032 Worthington Galena Rd., Columbus, OH 43085, 614-846-6175;800-848-4525 ..... C•1099-1101
§ U.S. Power Converting Company, Relco, 21517 Ocean, Torrance, CA 9053, 213-316-9984 ..... C•1081
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102,1736-1737
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
§ Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026 314-349-3110
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
§ Automatic Switch Co., 50-60 Hanover Road, Florham Park, NJ 07932 1-201-966-2000
Beechwood Mfg., 310 S. Ohmer, Indianapolis, IN 46219 317-356-2493
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
† Contours, Inc., P.O. Box 1041, Middletown, CT 06457 203-347-5694
Controls Unlimited, Inc., 4823 North Ridge Rd., Perry, OH 44081 216-259-2500
§ CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959 219-253-6666
§ CTS Electronics Corp., San Jose Division, 660 Lenfest Rd., San Jose, CA 95133 408-251-1600
Datec, Inc., 200 Eastowne Dr., Ste. 116, Chapel Hill, NC 27514 919-929-2135
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526 503-476-8871
§ Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Electronic Packaging Technology, Inc., 132 Gloster Road, Lawrenceville, GA 30245 404-925-8149
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901 507-289-3371
Energy Engineering, Rt. 4, Box 330, Fayetteville, AR 72701 501-521-4707
§† E-Tronics, 16774 Schoenborn, Sepulveda, CA 91343 818-892-7279
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§ Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
Hallmark Metals Inc., 610 W. Foothill Blvd., Glendora, CA 91740 213-335-1263
† Hamilton Metalcraft, 848 N. Fair Oaks Ave., Pasadena, CA 91103 818-795-4811
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
Industrial Fabricating Co., 481 Shelton Ave., Hamden, CT 06517 203-787-9111
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
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Kinetic Systems, 11 Maryknoll Dr., Lockport, IL 60441 815-838-0005
§ Line Electric Products, 122 Naubuc Ave., Glastonbury, CT 06033 ..... 203-659-3573; 1-800-331-1137
Mallory Capacitor Co., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201 317-636-5353
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Matrox Electronic Systems, 1055 St. Regis Blvd., Dorval, QU, CANADA H9P 2T4 514-685-2630
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Motorola Semiconductor Prods. Sector, 3102 North 56th Street, Phoenix, AZ 85018-6606 ..... James A. Norling, GM
Octagon Systems, 6510 W. 91st Ave., Westminster, CO 80030 303-426-8540
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766 714-623-3463
† Princeton Case Co., Inc., 667 Lehigh Ave., Union, NJ 07083 201-687-1750
† Product Technology, Inc., 2201-E S. Standard Avenue, Santa Ana, CA 92707 714-549-8998
Pro-Log, 2411 Garden Rd., Monterey, CA 93940 408-372-4593
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
Prototek, Inc., 25 Standen Dr., Hamilton, OH 45015 513-874-5094
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§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
§† Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
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Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
† TA Instrument Co., 4625 Alger St., Los Angeles, CA 90039 818-242-8855
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§ Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
† Teledyne Relays, Teledyne, Inc., 12525 Daphne Ave., Hawthorne, CA 90250 213-777-0077
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
Teradyne Connection Sys., 44 Simon St., Nashua, NH 03060 603-889-5156

Thermotech, Div. of FL Industries, Inc., 1203 S. 5th St., Hopkins, MN 55343 612-933-9400
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
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United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
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Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
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Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Enclosures, CRT — See Mounts CRT (Vol. C)

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† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1010-1013,1616
§ Amerex, P.O. Box 2815, Riverside, CA 92516, 714-686-1400 ..... C•1014
Ango Electronics Corp., 16 North Third St., Harrison, NJ 07029, 201-484-1115 ..... C•1015
§ Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026, 314-349-3110 .. C•1016
Bopla Enclosures, 12140 Parklawn Dr., Rockville, MD 20852, 301-770-2225 ..... C•1019
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Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1021-1025
§ CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1033-1037
† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, 503-476-8871 ..... C•1051
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1038
† Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
§ Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, 619-452-9333 ..... C•1046-1047
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, 215-682-7181 ..... C•1041,1043-1044
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... B•1604, C•1048-1049, D•1108
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901, 507-289-3371 ..... C•1050
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009, 507-263-3957 .. C•1052-1053
† General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000 ..... C•1056-1057
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710 ..... C•1058
§ Kepco, Inc., 131-38 Sanford Ave., Flushing, NY 11352, 718-461-7000 ..... D•1784,1789,1802-1804
Lansing Research Corp., 705 Willow Ave., Ithaca, NY 14850, 607-272-3265;607-257-7613;800-847-3535 ..... C•1060
NES, Inc. (Nationwide Electronic Systems), 3003 Wakefield, Carpentersville, IL 60110, 312-426-5900 ..... D•1364
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061-1066
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, 215-365-8400 ..... C•1068-1071
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
Powerbox Inc., 1503 Spruce St., Boulder, CO 80302, 303-444-1461;800-444-1461 ..... C•1077
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1078-1079
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505, 800-637-4425 ... C•1800
§ Ritz Electronics/Relco, 196 Queen St. N., New Dundee, Ont., CANADA NOB 2EO, 519-696-2616 ..... C•1081
§ Rose Enclosures Sys., Inc., 12140 Parklawn Dr., Rockville, MD 20852, 301-984-1783 ..... C•1082-1083
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, 401-732-3770 ..... C•1086
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Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, 213-875-0990 ..... C•1091
TDJ Co., Inc., 1154 Morena Blvd., San Diego, CA 92110, 619-276-5920 ..... C•1094-1095
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064, 213-478-0046;800-TECHMAR;800-CHASSIS (CA) ..... C•1096-1097
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§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102,1736-1737
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† Enclosure Corp., 2900 Wharton Rd., Bristol, PA 19007 215-785-2900
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§ Viking Cases, 10480 Oak St. N.E., St. Petersburg, FL 33702 813-577-1216
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PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
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Watco, Inc., 315 Racetrack Rd., N.E., Ft. Walton, FL 32548, 904-863-2247 ..... C•1103
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080 ..... C•1104
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§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766 714-623-3463
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Enclosures, Keyboard-1400

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PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
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Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, 401-732-3770 ..... C•1086
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089
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Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080 ..... C•1104
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FCM Plastics, Plastics Technologies Inc., 2555 Oak Industrial Dr. NE, Grand Rapids, MI 49505 616-451-4502
§ Flambeau Products Corp., P. O. Box 97, Middlefield, OH 44062 216-632-1631
General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Mallory Capacitor Co., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201 317-636-5353
Mantex Corp., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051 313-628-8200
† Mercury Plastics, A Unit of Zero Corp., 672 Fuller Rd., Chicopee, MA 01020 413-267-5561
Miller, W. A., Co., Mingo Loop, P.O. Box 337, Oquossoc, ME 04964-0337 ..... 207-864-3344;800-227-1415
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216 212-774-5900
Parsons Manufacturing, 1055 O'Brien Dr., Menlo Park, CA 94025-1476 415-324-4726
Plastic Forming Co., Inc., 5 Lunar Dr., P.O. Box N, Woodbridge, CT 06525 203-397-1338
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766 714-623-3463
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200
† Princeton Case Co., Inc., 667 Lehigh Ave., Union, NJ 07083 201-687-1750
§ Ritz Electronics/Relco, 196 Queen St. N., New Dundee, Ont., CANADA NOB 2EO 519-696-2616
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
† Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976
Thermotech, Div. of FL Industries, Inc., 1203 S. 5th St., Hopkins, MN 55343 612-933-9400
Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
§ U.S. Power Converting Company, Relco, 21517 Ocean, Torrance, CA 9053 213-316-9984
† Vertox Co., 9252 Garden Grove Blvd. #22, Garden Grove, CA 92644 .. 714-530-4541

§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
† Zero Corp., Zero East Div., 288 Main St, Monson, MA 01057 413-267-5561

Enclosures, Portable, Metallic & Nonmetallic-1400

† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1010-1013
§ Amerex, P.O. Box 2815, Riverside, CA 92516, 714-686-1400 ..... C•1014
Ango Electronics Corp., 16 North Third St., Harrison, NJ 07029, 201-484-1115 ..... C•1015
Bopla Enclosures, 12140 Parklawn Dr., Rockville, MD 20852, 301-770-2225 ..... C•1019
§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1021-1025
§ CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1033-1036
† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, 503-476-8871 ..... C•1051
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1038
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... C•1048-1049
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901, 507-289-3371 ..... C•1050
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009, 507-263-3957 .. C•1052-1053
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710 ..... C•1058
IET Labs, Inc., 534 Main St., Westbury, NY 11590, 516-334-5959 ..... D•1266
McCoy Electronics Co., 100 Watts St., P.O. Box B, Mt. Holly Springs, PA 17065, 717-486-3411 ..... A•1414
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1062,1065
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, 215-365-8400 ..... C•1068-1070
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1078-1079
§ Rose Enclosures Sys., Inc., 12140 Parklawn Dr., Rockville, MD 20852, 301-984-1783 ..... C•1082-1083
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, 401-732-3770 ..... C•1086
§ Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.) ..... CA 1098
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073, 213-305-8288 .. C•1092
TDJ Co., Inc., 1154 Morena Blvd., San Diego, CA 92110, 619-276-5920 ..... C•1094-1095
Tracewell Enclosures, 7032 Worthington Galena Rd., Columbus, OH 43085, 614-846-6175;800-848-4525 ..... C•1099-1101
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080 ..... C•1104
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682
Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
† Anvil Cases, Inc., 4128 Temple City Blvd., Rosemead, CA 91770 ..... 818-575-8614; 800-242-4466;800-423-4279(outside CA)
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
Baker Co., Inc., Drawer E - Sanford Airport, Sanford, ME 04073 1-800-992-2537
Beechwood Mfg., 310 S. Ohmer, Indianapolis, IN 46219 317-356-2493
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
Casemaker Division, Stebco Industries, Inc., 1020 West 40th Street, Chicago, IL 312-254-1221
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662
§ Cross Brothers, Inc., 5255 Sheila St., Los Angeles, CA 90040 213-266-2000
CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
§ Davies, Harry, Molding Co., 4920 Bloomingdale Ave., Chicago, IL 60639 312-622-8966
Diversified Case Co., Ellis Ave., Off. 2, Whitesboro, NY 13492 ..... 800-553-2411; 800-258-1188
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
§ Electronic Packaging Technology, Inc., 132 Gloster Road, Lawrenceville, GA 30245 404-925-8149
Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121 619-452-9333
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
Energy Engineering, Rt. 4, Box 330, Fayetteville, AR 72701 501-521-4707
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
FCM Plastics, Plastics Technologies Inc., 2555 Oak Industrial Dr. NE, Grand Rapids, MI 49505 616-451-4502
§ Ferno-Salesmaker, Ferno-Washington, Inc., 70 Weil Way, Wilmington, OH 45177 513-382-1451
§ Flambeau Products Corp., P. O. Box 97, Middlefield, OH 44062 216-632-1631
General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
§ GMR Co., 8801 Sepulveda Blvd., Los Angeles, CA 90045 213-216-9516
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
§† Hardigg Inds., Inc., North Main St., South Deerfield, MA 01373 413-665-2163
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
§† Holiday-Hammond Corp., 220 S. 2nd Street, Waco, TX 76701 817-756-7401
† House of Metal Enclosures, 500 W. 9th St., Box 225, Hermann, MO 65041 314-486-3111
† Instrument Enclosures, 9767 Glenoaks Blvd., Sun Valley, CA 91352 818-768-4622
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Lectro Magnetics, Inc., 6056 W. Jefferson Blvd., Los Angeles, CA 90016 ..... 213-870-9383;(USA):800-325-9814;(CA):800-325-9815
† Mercury Plastics, A Unit of Zero Corp., 672 Fuller Rd., Chicopee, MA 01020 413-267-5561
Miller, W. A., Co., Mingo Loop, P.O. Box 337, Oquossoc, ME 04964-0337 ..... 207-864-3344;800-227-1415
Parsons Manufacturing, 1055 O'Brien Dr., Menlo Park, CA 94025-1476 415-324-4726
Plastic Forming Co., Inc., 5 Lunar Dr., P.O. Box N, Woodbridge, CT 06525 203-397-1338
Precision Tech. Sewing, 921 E. Charleston Rd., Palo Alto, CA 94303 415-856-2128
† Princeton Case Co., Inc., 667 Lehigh Ave., Union, NJ 07083 201-687-1750
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
Pylon Elex Development Co. Ltd., 2300 Victoria, Lachine, PQ, CANADA H8S 1Z3 514-637-1186
† Reeves-Hoffman Div., 400 W. North St., Carlisle, PA 17013 717-243-5929
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
Stanley-Vidmar, Stanley Works, 11 Grammes Rd., Allentown, PA 18103 215-797-6600
Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605 213-875-0990
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
† TA Instrument Co., 4625 Alger St., Los Angeles, CA 90039 818-242-8855
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)
§ Ten-Tec, Inc., Industrial Park, Sevierville, TN 37862 615-453-7172
§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976
† Trilobyte Computer Corporation, 801 W. Grand Ave., Oakland, CA 94607 415-839-1100
Triplett Corp.-A Penril Co., One Triplett Dr., Bluffton, OH 45817-9987 419-358-5015
Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
§ Viking Cases, 10480 Oak St. N.E., St. Petersburg, FL 33702 813-577-1216
Watco, Inc., 315 Racetrack Rd., N.E., Ft. Walton, FL 32548 904-863-2247
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Enclosures, Shielded-1400

§ Amerex, P.O. Box 2815, Riverside, CA 92516, 714-686-1400 ..... C•1014
Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1743
§† Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741, 516-585-3400 ..... C•1028-1031
† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, 503-476-8871 ..... C•1051
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1038
† Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181 ..... C•1045
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, 215-682-7181 ..... C•1043
Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901, 507-289-3371 ..... C•1050
† General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000 ..... C•1056
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710 ..... C•1058
IET Labs, Inc., 534 Main St., Westbury, NY 11590, 516-334-5959 ..... D•1266
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061,1063,1065-1066
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, 215-365-8400 ..... C•1068-1071
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
§† Rose Enclosures Sys., Inc., 12140 Parklawn Dr., Rockville, MD 20852, 301-984-1783 ..... C•1082-1083
§ Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.) ..... C•1098
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089
TDJ Co., Inc., 1154 Morena Blvd., San Diego, CA 92110, 619-276-5920 ..... C•1094-1095
Tracewell Enclosures, 7032 Worthington Galena Rd., Columbus, OH 43085, 614-846-6175;800-848-4525 ..... C•1099
§† Abalon Precision Mfg., 1040 Home Street, Bronx, NY 10459 212-589-5682

ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121
† Adams-Russell, Anzac Div., 80 Cambridge St., Burlington, MA 01803 671-273-3333
† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975 219-223-3158
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176 312-671-6670
† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124 215-535-3000
† Ark Elctrns. Corp., 1325 Industrial Hwy., Southampton, PA 18966 215-322-6510
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
Baker Co., Inc., Drawer E - Sanford Airport, Sanford, ME 04073 1-800-992-2537
Beechwood Mfg., 310 S. Ohmer, Indianapolis, IN 46219 317-356-2493
† Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
† Churchill Corp., 344 Franklin St., Box G, Melrose, MA 02176 617-665-4700
† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662
CTS Corporation, 905 North West Blvd., Elkhart, IN 46514 219-293-7511
CTS Electronics Corp., San Jose Division, 660 Lenfest Rd., San Jose, CA 95133 408-251-1600
Diversified Case Co., Ellis Ave., Off. 2, Whitesboro, NY 13492 ..... 800-553-2411; 800-258-1188
§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700
Eaton Corp., Electronic Instrument Div., 5340 Alla Rd., Los Angeles, CA 90066 213-822-3061
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
§ Electronic Packaging Technology, Inc., 132 Gloster Road, Lawrenceville, GA 30245 404-925-8149
Electronic Solutions, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121 619-452-9333
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
† Enclosure Corp., 2900 Wharton Rd., Bristol, PA 19007 215-785-2900
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
FCM Plastics, Plastics Technologies Inc., 2555 Oak Industrial Dr. NE, Grand Rapids, MI 49505 616-451-4502
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009 507-263-3957
† Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
† House of Metal Enclosures, 500 W. 9th St., Box 225, Hermann, MO 65041 314-486-3111
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
† Instrument Enclosures, 9767 Glenoaks Blvd., Sun Valley, CA 91352 818-768-4622
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Langley, P.O. Box 2911, San Diego, CA 92112 619-264-3181
† Lectro Magnetics, Inc., 6056 W. Jefferson Blvd., Los Angeles, CA 90016 ..... 213-870-9383;(USA):800-325-9814;(CA):800-325-9815
† Lindgren RF Enclosures, Inc., 1228 Capitol Drive, Addison, IL 60101 312-628-9100
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
Mantex Corp., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051 313-628-8200
Miller, W. A., Co., Mingo Loop, P.O. Box 337, Oquossoc, ME 04964-0337 ..... 207-864-3344;800-227-1415
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148 617-321-4410
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766 714-623-3463
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
Prototek, Inc., 25 Standen Dr., Hamilton, OH 45015 513-874-5094
Ray Proof, Shielding Systems Corp., 50 Keeler Ave., P.O. Box 5060, Norwalk, CT 06856-5060 800-243-5704
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
§ Schroff UK Ltd., Maylands Ave., Hemel Hempstead, Herts, ENGLAND HP2 4SG 0442-40471/6
SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728
§† Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505 814-455-0966
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073 213-305-8288
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
† TA Instrument Co., 4625 Alger St., Los Angeles, CA 90039 818-242-8855
§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
Transmet Corp., 4290 Perimeter Dr., Columbus, OH 43228 ..... 614-276-5522; 800-245-5253
† Trilobyte Computer Corporation, 801 W. Grand Ave., Oakland, CA 94607 415-839-1100
Triplett Corp.-A Penril Co., One Triplett Dr., Bluffton, OH 45817-9987 419-358-5015
Unibox, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Enclosures, Shipping, Metallic & Nonmetallic-3800

† ECS Composites, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, 503-476-8871 ..... C•1051
† Gemini, 103 Mensing Way, Cannon Falls, MN 55009, 507-263-3957 .. C•1052-1053
McCoy Electronics Co., 100 Watts St., P.O. Box B, Mt. Holly Springs, PA 17065, 717-486-3411 ..... A•1414
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963, 800-328-1368 ..... D•2115
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
§ Serco Products Division, Serco Mold, 612 Commercial Ave., Covina, CA 91723, 818-331-0517;800-843-8172(Calif.) ..... C•1098
† Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... C•1087-1089

§† ADE, Inc., 1430 E. 130th St., Chicago, IL 60633 312-646-3400
§† American Aluminum, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092 201-233-3500
† Anvil Cases, Inc., 4128 Temple City Blvd., Rosemead, CA 91770 ..... 818-575-8614; 800-242-4466;800-423-4279(outside CA)
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
Beechwood Mfg., 310 S. Ohmer, Indianapolis, IN 46219 317-356-2493
Casemaker Division, Stebco Industries, Inc., 1020 West 40th Street, Chicago, IL 312-254-1221
† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662
Diversified Case Co., Ellis Ave., Off. 2, Whitesboro, NY 13492 ..... 800-553-2411; 800-258-1188
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† E-Tronics, 16774 Schoenborn, Sepulveda, CA 91343 818-892-7279
General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
† Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537
§† Hardigg Inds., Inc., North Main St., South Deerfield, MA 01373 413-665-2163
† Instrument Enclosures, 9767 Glenoaks Blvd., Sun Valley, CA 91352 818-768-4622
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
† Mercury Plastics, A Unit of Zero Corp., 672 Fuller Rd., Chicopee, MA 01020 413-267-5561
Parsons Manufacturing, 1055 O'Brien Dr., Menlo Park, CA 94025-1476 415-324-4726
Plastic Forming Co., Inc., 5 Lunar Dr., P.O. Box N, Woodbridge, CT 06525 203-397-1338
Precision Tech. Sewing, 921 E. Charleston Rd., Palo Alto, CA 94303 415-856-2128
† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200
† Princeton Case Co., Inc., 667 Lehigh Ave., Union, NJ 07083 201-687-1750
Pylon Elex Development Co. Ltd., 2300 Victoria, Lachine, PQ, CANADA H8S 1Z3 514-637-1186
§ Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
§ Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
† TA Instrument Co., 4625 Alger St., Los Angeles, CA 90039 818-242-8855
§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976
United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
§ Viking Cases, 10480 Oak St. N.E., St. Petersburg, FL 33702 813-577-1216
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Enclosures, (MIL)-2440 — *See Vol. B*

Encoders, Digital — See Encoders, Shaft Angle (Vol. B)

Encoders, Displacement, Linear-5500 — *See Vol. B*

Encoders, Fiber Optic-2475 — *See Vol. B*

Encoders, Magnetic Strip-5500 — *See Vol. B*

Encoders, Proof-2000 — *See Vol. D*

Encoders, Shaft Angle, Contacting-5500 — *See Vol. B*

Encoders, Shaft Angle, Magnetic-5500 — *See Vol. B*

Encoders, Shaft Angle, Optical-5500 — *See Vol. B*

Encoders, Shaft Position — See Encoders, Shaft Angle (Vol. B), Resolvers, Synchro (Vol. D)

Encoders, Tone-1900 — *See Vol. D*

Encoders, (MIL)-2440 — *See Vol. B*

Encryptors — See Security Systems, Data (Vol. D)

Engineering Reference Books — See Technical Books (Vol. D)

Energy Management Systems-2200 — *See Vol. D*

Environmental Testing Services — See Services, Environmental Testing (Vol. D)

Epoxies — See Compounds, Enscapsulating, Molding, Potting (Vol. C), Adhesives (Vol. C)

Equalizers, Audio-1300 — *See Vol. D*

Equalizers, Delay-1900 — *See Vol. D*

Equalizers, Phase-1900 — *See Vol. D*

Erasers, Magnetic Tape (Bulk)-1300 — *See Vol. D*

Erasing Equipment, EPROM-3130 — *See Vol. A*

Escutcheons-2400

§ **Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1585**
† Milton Ross Co., 511 Second St Pike, Southampton, PA 18966 215-355-0200
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
† Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386

Etchants, Fluorocarbon-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1862
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
§ W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290

Etchants, Printed Circuit-1700

§† **Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1739**
§ **Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111**
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Etching & Engraving — See Services, Metal Etching, Engraving (Vol. D)

Ethernet Extenders-2475 — *See Vol. B*

Evaporation Equipment, Electron Beam-4100 — *See Vol. D*

Exciters — See Oscillators (Vol. A)

Exciters, Vibration — See Testers, Vibration (Vol. D)

Expanders, Data-3475 — *See Vol. D*

Expanders, Meter — See Multipliers, Meter (Vol. D)

Extractors, Circuit Board, Tube — See Pullers, Circuit Board (Vol. C)

Extractors, DIP, IC, & Pin Grid Array-5400

§ **Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176**
§ **EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1039**
Julie Research Labs., 211 West 61st St., New York, NY 10023, 212-245-2727 ..... D•1275
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380**
§ Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§ Micro Electronic Systems, Inc., 3 Quarry Road, Brookfield, CT 06804 ..... 203-775-1440; 800-243-7254
§† Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Eyelets-2825

† Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Automated Production Concepts, 8 E. Garden Pl., Pompton Plains, NJ 07444 201-831-8300
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
BMW Atlas, 17 Willow St., Lynn, MA 01903 617-581-9241
† Braxton Mfg., Echo Lake Rd. N., P.O. Box 429, Watertown, CT 06795 203-274-6781
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
§ Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† Wall, A. T., Co., 55 Service Ave., Warwick, RI 02886 401-739-0740
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Fabrics, Conductive-4525

American Cyanamid Co., Metal Coated Fibers Dept., One Cyanamid Plaza, Wayne, NJ 07470 201-831-3148
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Carbone Lorraine Inds., 400 Myrtle Ave., Boonton, NJ 07005 ..... 201-DE4-0700
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631
Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
§ Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681
§ Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 .. 718-441-4759
§ TWP, Inc., 2133 4th St., Berkeley, CA 94710 415-548-4434
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Facsimile Equipment, Receive Only-1900 — *See Vol. D*

Facsmile Equipment, Send Only-1900 — *See Vol. D*

Facsimile Equipment, Send/Receive-1900 — *See Vol. D*

Fans, Axial-2600

† **Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176, 312-671-6670 ..... C•1011,1616**
Buehler Products, Inc., P. O. Box 33400, Raleigh, NC 27606, 919-469-8522 ..... B•1169
Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027
Eastern Air Devices, Inc., 1 Progress Dr., Dover, NH 03820, 603-742-3330 ..... B•1173
§ **ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1621-1623**
§ **ETRI, Inc., 608 Broome St., Monroe, NC 28110, 704-289-5423 ..... C•1630-1634**
§ **Frederick Components Intl., 20806 Plummer St., Chatsworth, CA 91311, 818-882-0868;800-354-0660 ..... C•1635**
† **General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000 ..... C•1057**
† **Hi-Tech, Inc., 3600 16th St., Zion, IL 60099, 312-746-2447 ..... C•1636**
IMC Components Corporation, 55 Eddy St., Providence, RI 02903, 401-273-6900 ..... C•1639
§ **Interfan, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, 415-347-1203 ..... C•1644-1647**
† **Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649-1651**
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1669
† **McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550, 609-799-0100 ..... C•1672-1673**
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1676-1677
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083, 619-727-7400 ..... C•1680-1681
Papst Mechatronic Corp., Aquidneck Indl. Pk., Newport, RI 02840, 401-849-5930 ..... C•1686-1688
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
TECA, ThermoElectric Cooling America Corp., 448 N. Halsted St., Chicago, IL 60622, 312-666-1600 ..... C•1690-1691
Techron Div., Crown Intl., Inc., 1718 W. Mishawaka Rd., Elkhart, IN 46517, 219-294-8300 ..... D•1029
TRW Motor Div., 2275 Stanley Ave., Dayton, OH 45404, 513-228-3171 ... B•1216
§ **U.S. Toyo Fan Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-5297 ..... C•1694-1695**
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
Brailsford & Co., 670 Milton Rd., Rye, NY 10580 914-967-1820
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
§ EG & G Rotron, Commercial Div., Saugerties, NY 12477 914-246-3615
§† EG & G Rotron, Custom Div., Hasbrouck La., Woodstock, NY 12498 914-679-5201
§ Electric Motor Engineering, 6255 Sunset Blvd., Ste. 923, Los Angeles, CA 90028 213-469-7393
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
§ General Inds., Taylor & Olive St., Elyria, OH 44035 216-323-3136
§ Hoffman Engineering, Federal-Hoffman, Inc., 900 Ehlen Dr., Anoka, MN 55303 612-421-2240
§ Howard Industries, MSL Ind., Inc., Box 287, Milford, IL 60953 815-889-4105
† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070
§ Indek Corporation, 2360 Qume Dr., No. A, San Jose, CA 95131 408-432-1199
Inmark Corp., 147 West Cedar St., Norwalk, CT 06854 203-866-8474
§ Japanese Products Corp., 7 Westchester Plaza, Elmsford, NY 10523 914-592-8880
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
§ MG Electronics, 32 Ranick Rd., Hauppauge, NY 11788 516-582-3400
Motor-Tronics, Inc., 2142 Industrial Ct., Bldg. "F", Vista, CA 92083 619-727-7430
§† Nidec-Torin Corporation, 100 Franklin Drive, Torrington, CT 06790 203-482-4422

† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084 404-496-4000
§ Oriental Motor U.S.A. Corporation, 2701 Toledo Street, Suite 702, Torrance, CA 90503 213-515-2264
§ Qualtek Electronics Corp., 7158 Industrial Pk. Blvd., Mentor, OH 44060 .. 216-951-3300
§ Raltron Electronics, 2315 N.W. 107th Ave.-A25, Miami, FL 33172 305-593-6033
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
§ Shinano Kenshi Corp. (SKC), 7525 Ethel Ave., Ste. 1, N. Hollywood, CA 91605 818-764-4266
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
§ Worldnet Marketing Inc., 3187 F Airway Ave., Costa Mesa, CA 92626 ... 714-545-7118
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Fans, Propeller-2600

Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1025
Eastern Air Devices, Inc., 1 Progress Dr., Dover, NH 03820, 603-742-3330 ..... B•1173
IMC Components Corporation, 55 Eddy St., Providence, RI 02903, 401-273-6900 ..... C•1639
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649-1651
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
† Hi-Tech, Inc., 3600 16th St., Zion, IL 60099 312-746-2447
§ Howard Industries, MSL Ind., Inc., Box 287, Milford, IL 60953 815-889-4105
† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070
§ Interfan, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 .. 415-347-1203
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
§ Oriental Motor U.S.A. Corporation, 2701 Toledo Street, Suite 702, Torrance, CA 90503 213-515-2264

Fans, Tubeaxial-2600

§ Comair Rotron, A KLI Company, 12 North Street, Saugerties, NY 12477, 914-246-3615 ..... C•1618-1620
Eastern Air Devices, Inc., 1 Progress Dr., Dover, NH 03820, 603-742-3330 ..... B•1173
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1621-1623
ETRI, Inc., 608 Broome St., Monroe, NC 28110, 704-289-5423 ..... C•1630-1634
IMC Components Corporation, 55 Eddy St., Providence, RI 02903, 401-273-6900 ..... C•1639
§ Indek Corporation, 2360 Qume Dr., No. A, San Jose, CA 95131, 408-432-1199 ..... C•1640-1643
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1669
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1676-1677
§ Nidec-Torin Corporation, 100 Franklin Drive, Torrington, CT 06790, 203-482-4422 ..... C•1682-1685
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073
§ TRW Motor Div., 2275 Stanley Ave., Dayton, OH 45404, 513-228-3171 ... B•1216
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
§ EG & G Rotron, Commercial Div., Saugerties, NY 12477 914-246-3615
§ Frederick Components Intl., 20806 Plummer St., Chatsworth, CA 91311 ..... 818-882-0868;800-354-0660
§ General Inds., Taylor & Olive St., Elyria, OH 44035 216-323-3136
† Hi-Tech, Inc., 3600 16th St., Zion, IL 60099 312-746-2447
§ Howard Industries, MSL Ind., Inc., Box 287, Milford, IL 60953 815-889-4105
† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070
§ Interfan, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 .. 415-347-1203
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525 609-466-3400
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
§ MG Electronics, 32 Ranick Rd., Hauppauge, NY 11788 516-582-3400
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083 619-727-7400
§ Raltron Electronics, 2315 N.W. 107th Ave.-A25, Miami, FL 33172 305-593-6033
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)

Fans, Vaneaxial-2600

Eastern Air Devices, Inc., 1 Progress Dr., Dover, NH 03820, 603-742-3330 ..... B•1173
IMC Components Corporation, 55 Eddy St., Providence, RI 02903, 401-273-6900 ..... C•1639
Mechatronics/SAB Inc., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, 206-232-4800;800-453-4569 ..... C•1676-1677
† Ashland Elec. Prods., 80 39th Street, Brooklyn, NY 11232 718-965-0770
Cambridge Aeroflo Instruments, Inc., 900 Mount Laurel Circle, Shirley, MA 01464 617-425-2346
† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070
§ Interfan, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 .. 415-347-1203
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083 619-727-7400
§ Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
TRW Motor Div., 2275 Stanley Ave., Dayton, OH 45404 513-228-3171

Fans/Blowers (MIL)-2440 — *See Vol. B*

Fasteners, Cable & Wire — See Wire & Cable Ties (Vol. C)

Fasteners, Metal-2825

§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1857
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1582
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§† Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
† Alinabal, 28 Woodmont Rd., Milford, CT 06460 203-877-3241
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
§† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
† APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700
§ Arrow Fastener, 271 Mayhill St., Saddlebrook, NJ 07662 201-843-6900
§† Associated Spring, Barnes Grp., 10 Main St., Bristol, CT 06010 203-583-1331
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
† Avibank Mfg., Inc., 210 S. Victory Blvd., Burbank, CA 91503 818-843-4330
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Cornell Manufacturing, An Elgin Co., 25 Ramland Road, Orangeburg, NY 10962 914-365-0400
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
§ Dimco-Gray, 8200 S. Suburban Rd., Dayton, OH 45459 513-433-7600
† Dupree, Inc., 14395 Romona Ave., Chino, CA 91710 714-597-4889
† Dzus Fastener, 425 Union Blvd., W. Islip, NY 11795 516-669-6000
§† Eberhard Mfg. Co., Div., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136 216-238-9720
EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268 818-442-2572
§† Elastic Stop Nut Div., Harvard Inds. Inc., 3200 Country Club Rd., Pocahontas, AR 72455 501-892-5201
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§† FISHERTECH, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
† Hoffman Engineering Corp., P.O. Box 300, Old Greenwich, CT 06870 ... 203-325-8933
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211;800-423-2734
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
Milford Rivet & Mach., 857 Bridgeport Ave., Milford, CT 06460 203-878-4631
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Morris, J. I., Co., 372 Elm St., Southbridge, MA 01550 617-764-4394
§† NKR Precision Manufacturing, Rte. 17M, Box 333, Harriman, NY 10926 914-782-8562
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Penn Engineering & Manufacturing Corp., P.O. Box 1000, Danboro, PA 18916 215-766-8853
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
§† RAF Electronic Hardware, 95 Silvermine Rd., Seymour, CT 06483 203-888-2133
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
† Southco, Inc., 210 N. Brinton Lake Rd., Concordville, PA 19331 215-459-4000
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† Waldes Truarc, Inc., Member of the Seeger Fastening Sys. Grp., 29-01 Borden Ave., Long Island City, NY 11101-4478 718-392-3100
§ Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Fasteners, Nonmetallic-2825

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
§† All-States, Inc., 1801 W. Foster Ave., Chicago, IL 60640 312-728-0525
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
§† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045 501-452-3987
APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718 714-951-8808
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Budwig Mfg., P.O. Box 829, Ramona, CA 92065-0829 619-789-0900
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
§† Dennison Mfg. Co., 300 Howard St., Framingham, MA 01701 617-879-0511
† Dzus Fastener, 425 Union Blvd., W. Islip, NY 11795 516-669-6000
§† Eberhard Mfg. Co., Div., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136 216-238-9720
† Elastic Stop Nut Div., Harvard Inds. Inc., 3200 Country Club Rd., Pocahontas, AR 72455 501-892-5201
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Globe Plastics, 1342 S. Signal Dr., Pomona, CA 91766 714-623-2747
Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
Hanscom, H. F., Co., Inc., 225 Chapman St., Providence, RI 02905 401-941-1455
† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211; 800-423-2734
§ Mallory Capacitor Co., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201 317-636-5353
§ Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§† RAF Electronic Hardware, 95 Silvermine Rd., Seymour, CT 06483 203-888-2133
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
† Southco, Inc., 210 N. Brinton Lake Rd., Concordville, PA 19331 215-459-4000
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
§† Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626

Fault Locators — See Detectors (Vol. D)

Feedthrus & Seals, Environmental-2500

Metuchen Capacitors, Inc., 420 Park Ave., Perth Amboy, NJ 08861, 201-442-0500 ..... C•1347
Airpax Corp., Woods Rd., Cambridge, MD 21613 301-228-4600
† Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
† Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Schott Electronics, 42 Silvermine Road, Seymour, CT 06483 203-881-0102
§ Sloan Technology, 602 E. Montecito St., Santa Barbara, CA 93103 805-963-4431
Temescal, 2850 Seventh St., Berkeley, CA 94710 415-841-5720
Vactronic Lab. Equip., 65 Brightside Ave., E. Northport, NY 11731 516-261-2660
Varian Associates, Electron Device Group, 611 Hansen Way, Palo Alto, CA 94303 415-493-4000
Veeco Instruments Inc., Terminal Dr., Plainview, NY 11803 516-349-8300

Ferrite Material & Parts-1850 — ***See Vol. A***

Ferrules, Cable-end-2825

Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, 206-223-1110 ..... B•1145
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
Alpha Industries, Inc., 20 Sylvan Rd., Woburn, MA 01801 617-935-5150
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ Augat Communications Group, Augat Inc., P.O. Box 1110, Seattle, WA 98111 206-223-1110
Braxton Mfg., Echo Lake Rd. N., P.O. Box 429, Watertown, CT 06795 203-274-6781
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Fiberoptics Technlg., Inc., Quassett Rd., Pomfret, CT 06258 203-928-0443

Fiber Optic Components — See Adapters (Vol. B), Attenuators (Vol. B), Cable (Vol. B), Connectors (Vol. B), Couplers (Vol. B), Detectors (Vol. B), Isolators (Vol. B), Light Sources (Vol. B), Receivers (Vol. B), Transmitters (Vol. B)

Fiber Optic Data Links — See Data Links, Fiber Optic (Vol. B)

Fiber Optic Scanners — See Scanners, Fiber Optic (Vol. B)

Fiber Optic Splices & Splicing Equipment-2475 — ***See Vol. B***

Fiber Optics (MIL)-2440 — ***See Vol. B***

Fiber Optic Test Equipment — See Test Equipment, Fiber Optic (Vol. B), Testers, Fiber Optic (Vol. D)

Films, Masking-2500

† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
Conforming Matrix, Box 5126, Pt. Pl. Sta., Toledo, OH 43611 419-729-3777
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

Films, Resistance-4700 — ***See Vol. A***

Filters, AF-2700 — ***See Vol. A***

Filters, Air — See Air Cleaners & Filters (Vol. C)

Filters, Air (for Clean Room)-2550 — ***See Vol. D***

Filters, Air (for Disk Drives)-2700 — ***See Vol. A***

Filters, Analog — See Filters, Continuously Variable (Vol. A)

Filters, Antenna-2700 — ***See Vol. A***

Filters, Antialias-2700 — ***See Vol. A***

Filters, Band Elimination-2700 — ***See Vol. A***

Filters, Bandpass-2700 — ***See Vol. A***

Filters, Bandpass, SAW (Surface Acoustic Wave)-2700 — ***See Vol. A***

Filters, Band Reject, Band Stop — See Filters, Band Elimination (Vol. A)

Filters, Ceramic-2700 — ***See Vol. A***

Filters, Ceramic, Surface Mount-2700 — ***See Vol. A***

Filters, Coaxial-2700 — ***See Vol. A***

Filters, Color, Panel Light - Also see Lenses, Readout & Display; Lenses, Filters, Windows, Infrared-2450 — ***See Vol. B***

Filters, Comb-2700 — ***See Vol. A***

Filters, Continuously Variable-2700 — ***See Vol. A***

Filters, Crystal (Incl. Monolithic Devices)-2300 — ***See Vol. A***

Filters, Delay-2700 — ***See Vol. A***

Filters, Digital-2700 — ***See Vol. A***

Filters, Display-2450 — ***See Vol. B***

Filters, EMI/RFI-2700 — ***See Vol. A***

Filters, Equalizer-2700 — ***See Vol. A***

Filters, Harmonic-2700 — ***See Vol. A***

Filters, High Pass-2700 — ***See Vol. A***

Filters, Hybrid-2700 — ***See Vol. A***

Filters, IF-2700 — ***See Vol. A***

Filters, Ladder-2700 — ***See Vol. A***

Filters, LC-2700 — ***See Vol. A***

Filters, Line — See Filters, EMI/RFI (Vol. A)

Filters, Linear Phase-2700 — ***See Vol. A***

Filters, Low Pass-2700 — ***See Vol. A***

Filters, Mechanical-2700 — ***See Vol. A***

Filters, Microwave-3450 — ***See Vol. A***

Filters, Notch — See Filters, Band Elimination (Vol. A)

Filters, Optical-3700 — ***See Vol. B***

Filters, Programmable — See Filters, Variable (Vol. A)

Filters, RF-2700 — ***See Vol. A***

Filters, Single Sideband-2700 — ***See Vol. A***

Filters, Synchronous Tracking-2700 — ***See Vol. A***

Filters, Telemetering-1900 — ***See Vol. D***

Filters, Tone, Telegraph-2700 — ***See Vol. A***

Filters, Tunable — See Filters, Continuously Variable (Vol. A)

Filters, Tuning Fork-2300 — ***See Vol. A***

Filters, UHF & VHF-2700 — ***See Vol. A***

Filters, Variable-2700 — ***See Vol. A***

Filters, Vestigial Sideband-2700 — ***See Vol. A***

Filters, Video-2700 — ***See Vol. A***

Filters, Waveguide-3450 — ***See Vol. A***

Filters, YIG-2700 — ***See Vol. A***

Filters (MIL), Electrical & Networks-2440 — ***See Vol. B***

Flanges, Waveguide-3450 — ***See Vol. A***

Flanges (MIL), Waveguide-2440 — ***See Vol. B***

Flashers-2200 — ***See Vol. D***

Flashers (MIL)-2440 — ***See Vol. B***

Flat Packages, Integrated Circuit — See Packages, Integrated Circuit (Vol. A)

Fluid Flow Indicators — See Meters, Fluid Flow (Vol. D)

Flux, Brazing & Soldering Materials-4600

§† **Kester Solder Div., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018, 312-297-1600** ..... **C•1756**

§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508

† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000

Degussa Corp., 104 New Era Drive, So. Plainfield, NJ 07080 201-757-6500

DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)

Fusion Inc., 4658 E. 355th. St., Willoughby, OH 44094 216-946-3300

§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997

Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862

§ Superior Flux & Mfg. Co., 95 Alpha Pk., Cleveland, OH 44143 216-461-3315

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523

Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012 312-963-0220

Foil, Magnetic-1850 — ***See Vol. A***

Foil, Magnetic Shielding — See Shields, Magnetic (Vol. C)

Forks, Tuning — See Tuning Forks (Vol. A)

Forms, Coil — See Coil Assemblies & Forms (Vol. A)

Frames, Cabinet & Rack-1400

§ **Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026, 314-349-3110** .. **C•1016**

§ **Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433** ..... **C•1020**

Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... **C•1021-1022,1024-1025**

EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... **C•1038**

† **Electronic Enclosures, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, 213-643-8181** ..... **C•1045**

ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... **C•1048-1049**

† **General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000** ..... **C•1056**

§ **Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, 716-894-5710** ..... **C•1058**

† **Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000** ..... **C•1064**

† **Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200** ..... **C•1078-1079**

Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 .... **C•1085**

Skydyne Inc., River Rd., Port Jervis, NY 12771, 914-856-6655;800-428-CASE ..... **C•1087-1089**

Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, 213-875-0990 ..... **C•1091**

Tracewell Enclosures, 7032 Worthington Galena Rd., Columbus, OH 43085, 614-846-6175;800-848-4525 ..... **C•1100-1101**

§ **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661** ..... **C•1102**

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800

† Amco Engineering, 3801 N. Rose St., Schiller Pk., IL 60176 312-671-6670

Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110

§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001

§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200

§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411

† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662

§ Dyma Engineering, Box 1535, Los Lunas, NM 87031 505-865-6700

Emcor Products, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901 507-289-3371

† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691

Forma Scientific, Div. of Mallinckrodt Inc., Box 649, Marietta, OH 45750 614-373-4763

GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484

High Voltage Engrg. Corp., S. Bedford St., Burlington, MA 01803 617-272-1313

† Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422

Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871

§† Thermodyne International Ltd., 20850 S. Alameda, Long Beach, CA 90810 213-603-1976

† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161

Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

ZyMOS Corp., 477 N. Mathilda Ave., Sunnyvale, CA 94086 ..... 408-730-8800; 408-730-5400

Freezer Cabinets — See Refrigerators, Environmental Test (Vol. D)

Freeze Spray — See Refrigerants, Spray (Vol. C), Coolants, Circuit & Component (Vol. C)

Frequency Analyzers — See Analyzers, Spectrum (Vol. D)

Frequency Extenders — See Dividers, Frequency (Vol. A)

Frequency Sources — See Oscillators (Vol. A)

Frequency Standards — See Standards, Frequency (Vol. D)

Frozen Epoxies — See Compounds, Encapsulating, Molding, Potting (Vol. C)

Furnaces, Electric-4100 — ***See Vol. D***

Furnaces, Gas (Production)-4100 — ***See Vol. D***

Furnaces, Infrared-4100 — ***See Vol. D***

Furnaces, Ultraviolet-4100 — ***See Vol. D***

Furnaces, Vacuum-4100 — ***See Vol. D***

Furniture, Electronic Lab. — See Benches, Consoles, Stools, Tables (Lab & Shop) (Vol. C)

Fuse Clips — See Clips & Holders, Fuse (Vol. B)

Fuse Elements-4300 — ***See Vol. B***

Fuseholders — See Clips & Holders, Fuse (Vol. B)

Fuses-4300 — ***See Vol. B***

Fuses, Failure Indicating-4300 — ***See Vol. B***

Fuses, Fuseholders, Boxes & Panels (MIL)-2440 — *See Vol. B*

Fuses, International, 5x20 mm-4300 — *See Vol. B*

Fuses, Thermal-4300 — *See Vol. B*

Galvanometers — See Meters, Galvanometer (Vol. D)

Gaskets — See Seals (Vol. C)

Gaskets, Shielding, RF-Also See Shields, RF-4525

Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741

Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1743

Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746-1747

§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380

§† Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753

† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 ..... C•1754

† Airtron, Litton Industries, Inc., 200 E. Hanover Ave., Morris Plains, NJ 07950 201-539-5500

† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700

Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200

† Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677

† Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400

Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850

§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631

† Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400

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Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030

§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448

§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300

† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666

† McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550 609-799-0100

† Mitec Electronics, 104 Gun Avenue, Pointe Claire, QUEBEC, CANADA H9R 3X3 802-864-0064

† Omega Precision Corp., 1384 Pompton Ave., Cedar Grove, NJ 07009 ... 201-256-3422

§† Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351

PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040 ..... 215-672-0787;215-672-4741

§† Press-On Products, 21 Factory Rd., Addison, IL 60101 312-628-2255

Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200

Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505 814-455-0966

† Spira Manufacturing Corp., 12721 Saticoy Street South, North Hollywood, CA 91605 818-764-8222

§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400

Gates, Computer Circuit (AND, OR, NOR, etc.) — See Cards, Logic (Vol. D)

Gauges, Displacement, Linear-5400

Robinson-Halpern, Teleflex, Inc., One Apollo Rd., P.O. Box 248, Plymouth Meeting, PA 19462-0248, 215-825-9200 ..... B•1815,1817

Applied Controls Co., Inc., 1275 Bloomfield Ave., Fairfield, NJ 07006-2828 201-227-5454

§ Automatic Timing & Controls Co., 201 So. Gulph Rd., King of Prussia, PA 19406 ..... 215-337-5500;800-441-8245

† Bourns Instruments Inc., 6135 Magnolia Ave., Riverside, CA 92506 714-781-5148

Computer Instruments, 100 Madison Ave., Hempstead, NY 11550 516-483-8200

Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.

Instron Corp., 100 Royall St., Canton, MA 02021 617-828-2500

Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700

† Marlow Industries, 10451 Vista Park Rd., Dallas, TX 75238 214-340-4900

§† NES, Inc. (Nationwide Electronic Systems), 3003 Wakefield, Carpentersville, IL 60110 312-426-5900

Nuclear Resch. Corp., 125 Titus Ave., Warrington, PA 18976 215-343-5900

Schaevitz Engrg., U.S. 130, Union Ave., Pennsauken, NJ 08110 609-662-8000

Teledyne Gurley, 514 Fulton St. P.O. Box 88, Troy, NY 12181 518-272-6300

§ Temposonics, MTS Sys. Corp., 111 East Ames Ct., Plainview, NY 11803 516-349-1950

Trans-Tek, P.O. Box 338, Rte. 83, Ellington, CT 06029 203-872-8351

† Warren-Knight Instrument Co., Warren Industries, Inc., 2045 Bennett Rd., Philadelphia, PA 19116 215-464-9300

Gauges, Humidity-2900 — *See Vol. D*

Gauges, Ionization-2900 — *See Vol. D*

Gauges, Pressure-Also See Transducers, Pressure-2900 — *See Vol. D*

Gauges, Strain-5500 — *See Vol. B*

Gauges, Temperature-2900 — *See Vol. D*

Gearheads & Speed Reducers - Also see gears and gear mechanisms-3500 — *See Vol. B*

Gears & Gear Mechanisms (Precision)-2500

† Maxon Precision Motors, Inc., 838 Mitten Rd., Burlingame, CA 94010, 415-697-9614 ..... B•1195

† Micro Mo Electronics, Inc., 742 2nd Ave. S., St. Petersburg, FL 33701, 813-822-2529 ..... B•1152,1198-1199

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§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010

† Bowmar Instrument Corp., Aerospace Div., 8000 Bluffton Rd., Ft. Wayne, IN 46809 219-747-3121

† EEMCO Div., Datron Systems Inc., 4585 Electronics Pl., Los Angeles, CA 90039 818-247-7060

Escap Products, 36 Central Ave., Hauppauge, NY 11788 516-234-3900

† Evershed & Vignoles, Ltd., Meggitt Holdings P. L. C., Acton Lane, Chiswick, London, ENGLAND W4 5HJ 01-994-3670

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Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702 914-968-8400

† IMC Magnetics Corp., Eastern Div., 570 Main St., Westbury, NY 11590 .. 516-334-7070

† Industrial Control Co., 3100 Pineda Ave., Rockledge, FL 32955 305-259-7105

§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800

Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444

§ Machine Components Corp., 70 Newtown Rd., Plainview, NY 11803 516-694-7222

† Micro-Products Engineering Co., 230 Ridgewood Ave., Newark, NJ 07108 201-824-8467

Millen Components, Electronic Instr. & Specialty Corp., 42 Pleasant St., Stoneham, MA 02180 617-438-6951

† Perfect Gear & Instrument, Designatronics, Inc., 2101 Jericho Tpk., New Hyde Park, NY 11040 516-328-3300

PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272

Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600

Portescap U.S., Inc., 36 Central Ave., Hauppauge, NY 11788 516-234-3900

† Precision Mechanisms, 44 Brooklyn Ave., Westbury, NY 11590 ..... 516-ED3-5955

† Precision Specialties, Inc., 19414 Londelius St., Northridge, CA 91324 ... 818-349-9774

† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300

† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

† Transicoil, Inc., Trooper Rd., P.O. Box 99, Worcester, PA 19490-9990 215-277-1300

† Valley Electromagnetics Corp., P.O. Box 557, Crystal Lake, IL 60014 815-459-3080

† Valley Electromagnetics, P.O. Box 131, Spring Valley, IL 61362 815-664-2348

† Western Gear Corp., Applied Tech. Div., 14724 E. Proctor, City of Industry, CA 91744 818-968-6525

Generator Groups (MIL), Signal-3475 — *See Vol. D*

Generators, AM-2900 — *See Vol. D*

Generators, AM/FM-2900 — *See Vol. D*

Generators, Arbitrary Waveform-2900 — *See Vol. D*

Generators, Audio-2900 — *See Vol. D*

Generators, Bar, Dot & Crosshatch-2900 — *See Vol. D*

Generators, Baud Rate-1900 — *See Vol. D*

Generators, Character-2325 — *See Vol. D*

Generators, Color Bar-2900 — *See Vol. D*

Generators, Digital Delay — See Generators, Timing, Digital (Vol. D)

Generators, Electrical Power-4000 — *See Vol. D*

Generators, Electrostatic Discharge - Also See Electrostatic Discharge Guns-2900 — *See Vol. D*

Generators, FM-2900 — *See Vol. D*

Generators, FM/Stereo-2900 — *See Vol. D*

Generators, Frequency Synthesizer-2900 — *See Vol. D*

Generators, Function-2900 — *See Vol. D*

Generators, Gating/Timing-2900 — *See Vol. D*

Generators, Hall-5500 — *See Vol. B*

Generators, Harmonic-2900 — *See Vol. D*

Generators, High Power Pulse-2900 — *See Vol. D*

Generators, Impulse-2900 — *See Vol. D*

Generators, Infrared — See Lamps, Infrared (Vol. B)

Generators, Ion - Also see Static Eliminating Materials and Equipment; Generators ESD-2900 — *See Vol. D*

Generators, Light Pulse-2900 — *See Vol. D*

Generators, Low Frequency-2900 — *See Vol. D*

Generators, Marker-2900 — *See Vol. D*

Generators, Microwave-3400 — *See Vol. D*

Generators, Noise, Random (Electrical)-2900 — *See Vol. D*

Generators, Optical Signal — See Generators, Light Pulse (Vol. D)

Generators, Phase-2900 — *See Vol. D*

Generators, Programmable, Function-2900 — *See Vol. D*

Generators, Programmable, Pulse-2900 — *See Vol. D*

Generators, Programmable, Synthesizers-2900 — *See Vol. D*

Generators, Pulse-2900 — *See Vol. D*

Generators, Pulse, National Instrumentation Module (NIM)-2900 — *See Vol. D*

Generators, RF-2900 — *See Vol. D*

Generators, Sawtooth, Sine — See Generators, Function (Vol. D)

Generators, Signal-Also See Generators, Specific Type-2900 — *See Vol. D*

Generators, Sine/Cosine Function (Module)-3130 — *See Vol. A*

Generators, Spectrum — See Generators, Sweep (Vol. D)

Generators, Spike-2900 — *See Vol. D*

Generators, Square Wave — See Generators, Function (Vol. D)

Generators, Surge-2900 — *See Vol. D*

Generators, Sweep-2900 — *See Vol. D*

Generators, Time Code-2000 — *See Vol. D*

Generators, Timing, Digital-2000 — *See Vol. D*

Generators, Tone-2900 — *See Vol. D*

Generators, Tone Burst-2900 — *See Vol. D*

Generators, Transient Line Voltage-2900 — *See Vol. D*

Generators, UHF/VHF-2900 — *See Vol. D*

Generators, Ultrasonic-2900 — *See Vol. D*

Generators, White Noise-2900 — *See Vol. D*

Generators, Word-2900 — *See Vol. D*

Geophysical Equip. — See Transducers (Vol. B)

Germanium — See Crystals, Semiconductor (Vol. A)

Glass Diode Sleeves-2500

Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
Garner Glass Co., 177 S. Indian Hill Blvd., Claremont, CA 91711 714-624-5071
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161

Glass Parts-2500

† Atlantic Optical Moulding, Ellis St., P.O. Box 309, Dudley, MA 01570 617-943-1746
§ Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
Ercona, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776 516-331-5500
Garner Glass Co., 177 S. Indian Hill Blvd., Claremont, CA 91711 714-624-5071
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161
† Kontes, Kimble Div. of Owens/IL, 1001 Spruce St., Vineland, NJ 08360 609-692-8500

Glues — See Adhesives (Vol. C)

Graphic Recording Instruments — See Recorders (Vol. D)

Graphic Recording Paper & Supplies-3000 — *See Vol. D*

Graphite Parts-2500

† **Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702, 914-968-8400 ..... B•1184**
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
§ Carbone Lorraine Inds., 400 Myrtle Ave., Boonton, NJ 07005 ..... 201-DE4-0700
† Dylon Graphite Corp., 124 First Avenue, Berea, OH 44017 216-234-1600
LASER TECHNOLOGY, INC., 10624 Ventura Blvd., N. Hollywood, CA 91604 818-763-7091
Stackpole, Carbon Div., 201 Stackpole St., St. Marys, PA 15857 814-781-1234
Superior Carbon Products, Inc., Hwy. 35, Superior Place, Walnut Grove, MS 39189 601-253-2442

Grilles & Accessories, Speaker-1300 — *See Vol. D*

Grilles, Metal, Plastic-1400

Amerex, P.O. Box 2815, Riverside, CA 92516, 714-686-1400 ..... C•1014
† **Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061**
ETRI, Inc., 608 Broome St., Monroe, NC 28110 704-289-5423
§ Fourjay Industries, Box 14617 Northridge Br., Dayton, OH 45414 513-890-6444
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
LaFrance Corp., Entprs & Exec Aves, Philadelphia, PA 19153 215-365-8000
§ Martin Sound Prods., 28 Alpha Park, Cleveland, OH 44143-2297 216-442-2286
† McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550 609-799-0100
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
§† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451 212-993-9200
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Sparkomatic, Rte. 6 & 209, Milford, PA 18337 717-296-6444
§ SPECO Div., Components Specialties, Inc., P.O. Box 624, 1172 Rte. 109, Lindenhurst, NY 11757 ..... 516-957-8700;800-645-5516
Suckle Corp., 733 Davis St., Dept. EM, Scranton, PA 18505 717-346-3871
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
§ TWP, Inc., 2133 4th St., Berkeley, CA 94710 415-548-4434
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Grommets & Bushings-2800

§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1207,1697**
§ **Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867**
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
§ **Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693**
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† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
§ Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026 314-349-3110
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
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Budwig Mfg., P.O. Box 829, Ramona, CA 92065-0829 619-789-0900
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§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
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§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
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† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
† Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
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Ground Strips-1900 — *See Vol. D*

Guides, Circuit Board-1400

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§† **Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018**
§ **Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020**
§† **Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451 ..... C•1027**
§ **EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, 818-442-2572 ..... C•1038-1039**
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, 215-682-7181 ..... C•1042

ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... D•1108
Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061
§† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1079
§† Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 .... C•1084
§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1102,1737
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1564
§ Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
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Components Corp., 6 Kinsey Pl., Denville, NJ 07834 201-627-0290
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
§† E-Tronics, 16774 Schoenborn, Sepulveda, CA 91343 818-892-7279
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
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§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
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† Taurus Corp., Academy Hill, P.O. Box 278, Lambertville, NJ 08530 609-397-2390
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
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† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
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Hall Effect Devices — See Generators, Hall (Vol. B), Magnetoresistors, Hall (Vol. A), Multipliers, Hall (Vol. A), Probes, Hall (Vol. A), Switches, Hall Effect (Vol. B)

Handlers, Integrated Circuit (Automatic)-4100 — *See Vol. D*

Handles For Cabinets, Circuit Boards, Racks, etc.-1400

§ Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... C•1025
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1036
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1581
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, 215-365-8400 ..... C•1068
§† Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200 ..... C•1079
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
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† Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§† Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776 818-287-0451
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Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
† General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
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PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§† RAF Electronic Hardware, 95 Silvermine Rd., Seymour, CT 06483 203-888-2133
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
† Southco, Inc., 210 N. Brinton Lake Rd., Concordville, PA 19331 215-459-4000
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073 213-305-8288
† Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)
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† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
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§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600
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Hardware — See Fasteners (Vol. C), Clamps (Vol. C), Terminals (Vol. C), etc.

Hardware (MIL), Connector-2440 — *See Vol. B*

Harnesses, Wire — See Cable Assemblies & Harnesses (Vol. C)

Headers, Connector — See Connectors, Cable (Vol. C), Connectors, Flat Cable (Vol. C), etc.

Headers, DIP-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1178
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363-1364
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Mini-Systems, Inc., Electronic Package Div., 168 E. Bacon St., P.O. Box 1597, Plainville, MA 02762 617-695-2000
Morris Enterprises, 16799 Schoenborn St, Sepulveda, CA 91343 818-894-9103
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Headers, Hermetic — See Seals, Hermetic (Vol. C), Services, Hermetic Sealing (Vol. D)

Headers, Programmable-2100

Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1178
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202

Headers, Relay & Transformer-2100

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
Essex Group, 9933 13th St., Ft. Wayne, IN. 46809 219-478-1521
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§ Line Electric Products, 122 Naubuc Ave., Glastonbury, CT 06033 ..... 203-659-3573; 1-800-331-1137
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Moldtronics, Inc., 703 Rogers St., Downers Grove, IL 60515 312-968-7000
§ Morris Enterprises, 16799 Schoenborn St, Sepulveda, CA 91343 818-894-9103
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388

Headers, Shrouded-2100

§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237-1281
§ 3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1186,1738
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363-1364
Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125 ..... C•1534

§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§† 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700

Headers, Socket-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176,1178,1180
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363-1364
§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1500-1501,1504-1507
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, 812-944-6733 ..... C•1515
Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125 ..... C•1534
Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Aromat Corp., 250 Sheffield St., Mountainside, NJ 07092 201-232-4260
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
Mhotronics, Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015 312-948-5600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Headers, Strip-2100

Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605, 203-334-4124 ..... C•1696
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010, 805-484-0540 ..... C•1195
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1697
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, 812-944-6733 ..... C•1515
§ Sullins Electronics Corp., P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92069, 619-744-0125 ..... C•1534
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vi., IL 60007, 312-956-8000 ..... C•1556
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136

Headers, Transistor & Diode-2500

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176
† Airpax Corp., Woods Rd., Cambridge, MD 21613 301-228-4600
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
† Detoronics Corporation, 10660 E. Rush St., S. El Monte, CA 91733 818-579-7130
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§ Motorola Semiconductor Prods. Sector, 3102 North 56th Street, Phoenix, AZ 85018-6606 ..... James A. Norling, GM

Headphones-1300 — *See Vol. D*

Heads, Magnetic Recording-1300 — *See Vol. D*

Heads, Reflective-3700 — *See Vol. B*

Headsets (MIL)-2440 — *See Vol. B*

Heat Dissipators — See Heat Sinks, Semiconductor (Vol. C), Heat Sinks, Soldering (Vol. C)

Heaters, Immersion-4100 — *See Vol. D*

Heaters & Heating Elements (For Components & Equipment)-Also See Ovens-5300 — *See Vol. B*

Heat Exchangers & Systems-2600

§† AAVID Engrg., One Kool Path, Laconia, NH 03247, 603-528-3400 ... C•1614-1615
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085, 203-674-1515 ..... C•1625
§ EG & G Wakefield Engineering, 60 Audubon Rd., Wakefield, MA 01880, 617-245-5900 ..... C•1627
† Electro Impulse, Box 870, Red Bank, NJ 07701-0870, 201-741-0404 ..... C•1628-1629
† Kooltronic, Hamilton Ave., Hopewell, NJ 08525, 609-466-3400 ..... C•1649,1659-1662
† McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550, 609-799-0100 ..... C•1672
† McLean Midwest, 4000 83rd Ave. N., Brooklyn Pk., MN 55443, 612-561-9400 ..... C•1674
TECA, ThermoElectric Cooling America Corp., 448 N. Halsted St., Chicago, IL 60622, 312-666-1600 ..... C•1690-1691
† Thermacore Inc., 780 Eden Road, Lancaster, PA 17601, 717-569-6551 ... C•1692
§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693
§ Aerotronic Assocs., Inc., Riverside Dr., Contoocook, NH 03229 603-746-4631
† Aham Tor Inc (ATI), 999, 27901 Front St., Rancho California, CA 92390 714-676-4151
† Bemco, 9908 San Fernando Rd., Pacoima, CA 91331 818-899-5296
† Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 216-248-1200
Corning Glass Works, Corning Elctrns., Houghton Pk., Bldg. A-2, Corning, NY 14830 607-974-8725
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
EG & G Rotron, Commercial Div., Saugerties, NY 12477 914-246-3615
† EG & G Rotron, Custom Div., Hasbrouck La., Woodstock, NY 12498 914-679-5201
† Electro-Optical Industries, Box 3770, Santa Barbara, CA 93130 ..... 805-964-6701 (ext. 280)
Energy Systems, 37925-6th St. East, Ste.213, Palm Dale, CA 93550 805-273-0547
† FTS Systems, Inc., Rte. 209, P.O. Box 158, Stone Ridge, NY 12484 800-824-0400
§ International Rectifier Corp., Semiconductor Div., 233 Kansas St., El Segundo, CA 90245 213-772-2000
† Lepel, 50 Heartland Blvd., Edgewood, NY 11717 516-586-3300
† Lytron Incorporated, Dragon Court, Billerica, MA 01801 617-933-7300
† Marlow Industries, 10451 Vista Park Rd., Dallas, TX 75238 214-340-4900
Melcor/Materials Elctrn. Prods., 994 Spruce St., Trenton, NJ 08648 609-393-4178
† Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083 619-727-7400
† Noren Products Inc., 1010 O'Brien Blvd., Menlo Pk., CA 94025 415-322-9500
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505 800-637-4425
§ Science/Elctrns., P. O. Box 986, Dayton, OH 45401-0986 513-228-6011
Technipower, A Penril Co., P.O. Box 222, Commerce Pk., Danbury, CT 06813 203-748-7001
§ Temptronic Corporation, 55 Chapel St., Newton, MA 02158 617-969-2501
† WEI Corp., 1405 S. Village Way, Santa Ana, CA 92705 714-834-9333
§ Wellman Thermal Systems, 1 Progress Rd, Shelbyville, IN 46176 317-398-4411

Heat Guns, Production-5400

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 201-925-8000
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ GTE Corp., Sylvania Emissive Prods./Process Heat, Portsmouth Ave., Exeter, NH 03833 603-772-4331
Henes Products, 4225 E. Madison St., Phoenix, AZ 85034 602-275-4126
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§† Master Appliance Corp., 2420 18th St., Box 68, Racine, WI 53403 414-633-7791
Micronel U.S., 2142F Industrial Ct., Sycamore Research Center, Vista, CA 92083 619-727-7400
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
§ Pamran Inc., 1900 Williams St., Young Jnd. Pk., Racine, WI 53404 414-637-7999
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Ungar, Div. Eldon Inds., Inc., 100 W. Manville St., Compton, CA 90224-6005 213-774-5950

Heating Elements, Infrared-5300 — *See Vol. B*

Heat Pumps — See Cooling/Heating Modules, Thermoelectric (Vol. B)

Heat Shrinkable Elastomers, Plastics — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)

Heat Sinks, Semiconductor-2600

§† AAVID Engrg., One Kool Path, Laconia, NH 03247, 603-528-3400 ... C•1610-1615
§† Bergquist, 5300 Edina Ind'l., Minneapolis, MN 55435, 800-328-3882 ..... C•1704

Crydom Division, International Rectifier, 1521 Grand Ave., El Segundo, CA 90245, 213-322-4987 ..... B•1337
§ **EG & G Wakefield Engineering, 60 Audubon Rd., Wakefield, MA 01880, 617-245-5900 ..... C•1627**
§ **IERC, 135 W. Magnolia Blvd., Burbank, CA 91502, 213-849-2481 ..... C•1637**
† **Thermacore Inc., 780 Eden Road, Lancaster, PA 17601, 717-569-6551 ... C•1692**
§ **Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693**
† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Aham Tor Inc (ATI), 999, 27901 Front St., Rancho California, CA 92390 714-676-4151
† Astro Dynamics, Inc., 2 Gill St., Woburn, MA 01801 617-935-4944
Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845 617-681-1003
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
Dubbledee Diamond Corporation, D. Drukker & Zn., N.V., 100 Stierli Ct., Mt. Arlington, NJ 07856 201-770-1420
Fab-Tek Inc., 68 Morgan Ave., Danbury, CT 06810 203-743-3312
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§ Hobson Bros., 4940 W. Lawrence Ave., Chicago, IL 60630-3884 312-283-3600
IMC Magnetics Corp., Thermal Products Group., 100 Jericho Quad., Ste. 221, Jericho, NY 11753 516-938-0800
Merrill, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437 .. 215-643-2116
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
† Noren Products Inc., 1010 O'Brien Blvd., Menlo Pk., CA 94025 415-322-9500
§ Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 617-890-6107
§ Powerex, Westinghouse, GE, Mitsubishi, Hillis St., Youngwood, PA 15697 412-925-7272
§ RCA Distributor & Special Products Div., RCA Corp., 2000 Clements Bridge Rd., Deptford, NJ 08096 609-541-3636
§ Semikron, Inc., 11E Executive Dr., P.O. Box 66, Hudson, NH 03051-0066 ..... 603-883-8102;1-800-258-1308
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
Tran-Tec, Box 1044, Columbus, NE 68601 402-564-2748
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
† WEI Corp., 1405 S. Village Way, Santa Ana, CA 92705 714-834-9333

Heat Sinks, Soldering-4600

§† **AAVID Engrg., One Kool Path, Laconia, NH 03247, 603-528-3400 ... C•1610-1615**
§ **EG & G Wakefield Engineering, 60 Audubon Rd., Wakefield, MA 01880, 617-245-5900 ..... C•1627**
§ **Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693**
American Etching & Mfg., 13730 Desmond St., Pacoima, CA 91331-2796 818-896-1187
§ Clauss Cutlery Co., Alco Industries, 223 N. Prospect St., Fremont, OH 43420 419-332-7344
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
Syntel Div., Tegam, Inc., 7230 North Ridge Rd., Madison, OH 44057 216-428-7505
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Thermacore Inc., 780 Eden Road, Lancaster, PA 17601 717-569-6551
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Heat Sinks, Surface Mount-2600

§† **AAVID Engrg., One Kool Path, Laconia, NH 03247, 603-528-3400 ... C•1610-1615**
Bergquist, 5300 Edina Ind'l., Minneapolis, MN 55435, 800-328-3882 ..... C•1704
Powerbox Inc., 1503 Spruce St., Boulder, CO 80302, 303-444-1461;800-444-1461 ..... C•1077
† Thermacore Inc., 780 Eden Road, Lancaster, PA 17601 717-569-6551

Heat Sinks (MIL)-2440 — *See Vol. B*

Hermetic Sealing — See Machines, Hermetic Sealing (Vol. D), Seals, Hermetic (Vol. C), Services, Hermetic Sealing (Vol. D)

High Vacuum Services — See Services, High Vacuum (Vol. D)

Hinges-2825

§† Eberhard Mfg. Co., Div., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136 216-238-9720
† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600

Holders, Battery — See Retainers, Battery (Vol. C), Connectors, Battery (Vol. C)

Holders, Brush — See Brushes & Brush Assemblies (Vol. B)

Holders, Circuit Board (Production Type)-4100 — *See Vol. D*

Holders, Crystal-2300 — *See Vol. A*

Holders, Diode-2500

ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Harris Corporation/GSSD/PRD Instruments, 1200 Prospect Avenue, Westbury, NY 11590 516-364-0400
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 ..... 215-355-0200.
† Sage Laboratories, Inc., 11 Huron Dr., Natick, MA 01760 617-653-0844

Holders, Fuse — See Clips & Holders, Fuse (Vol. B), Panels, Fuse (Vol. B)

Holders, Lamp — See Sockets, Lamp & Lamp Assemblies (Vol. B)

Holders, Test Lead-2900 — *See Vol. D*

Holders, Tube — See Retainers, Tube (Vol. A)

Holders & Carriers, Chip (Capacitor, IC, LSI)-2100

† **Mini-Systems, Inc., Electronic Package Div., 168 E. Bacon St., P.O. Box 1597, Plainville, MA 02762, 617-695-2000 ..... A•1764**
American Etching & Mfg., 13730 Desmond St., Pacoima, CA 91331-2796 818-896-1187
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
K-Two Industries, 4331 Miranda Ave., Palo Alto, CA 94306 408-720-9316
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Textool Test & Interconnect Prods. Dept., 3M Electronic Products Division, 1001 Fountain Parkway, Grand Prairie, TX 75050 214-647-0392
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Holders & Carriers, IC, LSI (Packaged)-3130 — *See Vol. A*

Honeycomb Sheets, Panels, etc.-2500

Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500

Housings, Circuit Module — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

Housings, Photomultiplier Tube — See Photomultiplier Tube Housings (Vol. A)

Housings, Terminal-1400

§ **Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1178**
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... C•1048-1049
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000

Hum Eliminators-2700 — *See Vol. A*

Hybrid Circuits — See Circuits, Hybrid (Vol. A)

Hybrid Voltage Regulators — See Regulators & Stabilizers (Vol. D)

Identification, Friend or Foe (IFF) ESM (MIL)-3475 — *See Vol. D*

Igniters, Piezo-2300 — *See Vol. A*

Image Processing Systems — See Processors, Image (Vol. D)

Imagers, Thermal-2900 — *See Vol. D*

Imagers, Charge-Coupled Devices-3700 — *See Vol. B*

IEEE 488 (GPIB) Bus — See Controllers, IEEE 488 (GPIB) (Vol. D)

Impedance Comparators — See Bridges, Impedance (Vol. D)

Impedance Converters, Microwave-3400 — *See Vol. D*

Inclinometers-2900 — *See Vol. D*

Incremental Magnetic Recorders — See Recorders, Computer Data (Vol. D)

Indexers (Stepping Motor)-3500 — *See Vol. B*

Indexing Mechanism, Electromechanical-2400

§ Machine Components Corp., 70 Newtown Rd., Plainview, NY 11803 516-694-7222
† Vernitron Controls, Vernitron Corp., 1601 Precision Park La., San Diego, CA 92073 619-428-5581

Indexing Tables, Electromechanical-2400

§ Design Components, Inc., 1 Kenwood Circle, Franklin, MA 02038 .... 617-528-7300; 800-341-4811

Indicator Lights — See Lights, Indicator (Vol. B)

Indicators, Angle-Also See Encoders, Shaft Position-5500 — *See Vol. B*

Indicators, Azimuth-5500 — *See Vol. B*

Indicators, Capacitor Leakage — See Testers, Capacitor (Vol. D)

Indicators, Circuit Condition, On, Off, etc. (Electromechanical)-Also See Indicators, Instrument, Flag, Pointer, etc.-2450 — *See Vol. B*

Indicators, Computer Type & Data Display — See Lamps, Dial, Panel, Pilot Incandescent & Accessories (Vol. B)

Indicators, Distortion — See Analyzers, AF (Vol. D)

Indicators, Elapsed Time-2200 — *See Vol. D*

Indicators, Electromechanical — See Indicators, Circuit Condition, On / Off (Vol. B)

Indicators, Frequency — See Meters, Frequency (Vol. D)

Indicators, Directional-2200 — *See Vol. D*

Indicators, Illumination — See Meters, Light (Nonphotographic) (Vol. D)

Indicators, Instrument, Flag, Pointer, etc.-2450 — *See Vol. B*

Indicators, Liquid Level-2200 — *See Vol. D*

Indicators, Null-2900 — *See Vol. D*

Indicators, Numeric Readout — See Tubes, Readout (Vol. A)

Indicators, Phase Rotation-2200 — *See Vol. D*

Indicators, Phase Sequence-2200 — *See Vol. D*

Indicators, Positioning-2200 — *See Vol. D*

Indicators, Power Level — See Monitors, Power (Vol. D)

Indicators, Pressure — See Gauges, Pressure (Vol. D)

Indicators, Proximity — See Sensors, Proximity (Vol. D)

Indicators, RF — See Meters, Frequency (Vol. D)

Indicators, Rotary Shaft Position — See Encoders, Shaft Angle (Vol. B)

Indicators, Servo-4900 — *See Vol. D*

Indicators, Shorted Turn — See Testers, Coil (Vol. D)

Indicators, Sound Level — See Meters, Audio Level (Vol. D)

Indicators, Speed-3500 — *See Vol. B*

Indicators, Temperature — See Meters, Temperature (Vol. D)

Indicators, Temperature (Not Meter Type)-5300 — *See Vol. B*

Indicators, Tilt-2200 — *See Vol. D*

Indicators, VSWR — See Meters, Standing Wave Ratio (Vol. D)

Indicators (MIL), Fault Locating-3475 — *See Vol. D*

Inductance Comparators — See Bridges, Inductance (Vol. D)

Inductance Standards — See Standards, Inductance (Vol. D)

Induction Potentiometers — See Resolvers, Synchro (Vol. D)

Inductors — See Coils (Vol. A)

Inductors (MIL) — See Coils (MIL) (Vol. B)

Inductors, Surface Mount-1800 — *See Vol. A*

Infrared Emitter Detectors — See Emitters/Detectors, Infrared (Vol. B)

Infrared (IR) Equipment (MIL)-3475 — *See Vol. D*

Infrared Soldering — See Soldering Equipment, Infrared (Vol. D)

Inks for Thick Film Microcircuits-1700

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 .... C•1105
† Displays, Inc., Mifflin Countey Indl. Pk., Rte. 4, Box 6AAA, Lewistown, PA 17044 717-242-2541
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 .... 201-632-6000;800-932-0444 (in NJ)
† Ferro Corporation, Electronic Materials Div., 27 Castilion Dr., Santa Barbara, CA 93117-3092 805-968-5000
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Input/Output Equipment, Voice-2000 — *See Vol. D*

Input/Output Switching Modules — See Modules, Control & Switching (Vol. D)

Inserters, DIP & IC — See Extractors, DIP & IC (Vol. C)

Insertion Loss Measurement Systems-2900 — *See Vol. D*

Inserts — See Bushings, etc. (Vol. C)

Inspection Systems, Visual, Surface Mount-4100 — *See Vol. D*

Installation Equipment, Fiber Optic-2475 — *See Vol. B*

Instrumentation, Fiber Optic-2475 — *See Vol. B*

Instrument Design Services (Industrial) — See Services, Instrument Design (Industrial) (Vol. D)

Instrument Parts, Precision — See Bearings (Vol. C), Gears & Gear Mechanisms (Precision) (Vol. C)

Instruments, Test & Measuring, GPIB (IEEE 488) Compatible-2900 — *See Vol. D*

Instruments, Test & Measuring, Personal Computer-2900 — *See Vol. D*

Insulation Materials-3100

† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 .... C•1751
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, 617-631-7100 .... C•1907
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869, 201-526-0800;800-526-3842 .... C•1707
§† Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
† Armstrong World Inds., W. Liberty St., Lancaster, PA 17604 717-397-0611
† Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Caristrap Internatonal, Inc., 1760 Fortin Blvd., Chomedey, Lavac, QUEBEC, CANADA H7SIN8 514-667-4700

§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Ferro Corporation, Coated Fabrics Division, 34 Smith St., Norwalk, CT 06852 203-853-2123
Ferro Corporation, Electronic Materials Div., 27 Castilion Dr., Santa Barbara, CA 93117-3092 805-968-5000
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
§† HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§ Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601
§ Murata Manufacturing Co., Ltd., 26-10-2-chome-Tenjin, Nagaoka-Kyo-Shi, Kyoto, JAPAN 617 075-951-9111
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§ Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351
Rexnord Chemical Products Inc., 6120 E. 58th Ave., Commerce City, CO 80022 303-289-5651
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
† Saphikon, Inc., 51 Powers St., Milford, NH 03055 603-673-5831
§ S. F. Products Corporation, P. O. Box 369, Southport, CT 06490 203-929-6180
Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Thermal Amer. Fused Quartz, Route 202, Montville, NJ 07045 201-334-7770
§† Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§ Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Insulation Parts, Fabricated-3100

§† Bergquist, 5300 Edina Ind'l., Minneapolis, MN 55435, 800-328-3882 ..... C•1704
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018
Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... C•1751
† Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685
† Atlantic Optical Moulding, Ellis St., P.O. Box 309, Dudley, MA 01570 617-943-1746
† Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
Garner Glass Co., 177 S. Indian Hill Blvd., Claremont, CA 91711 714-624-5071
Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§ Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Nyltite, 3451 S. Clinton Ave., S. Plainfield, NJ 07080 201-561-1300
Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600
† Quartzite Processing, Inc., 6 Holyoke St., Malden, MA 02148 617-322-1380
† Robison Electronics, P.O. Box 8121, San Luis Obispo, CA 93403-8121 805-544-8000
† Saphikon, Inc., 51 Powers St., Milford, NH 03055 603-673-5831
Semiconductor Circuits, 49 Range Rd., Windham, NH 03087 603-893-2330
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
† Star Porcelain, 71 Muirhead Ave., Trenton, NJ 08638 609-392-3154
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
Steward, D. M., Mfg. Co., P.O. Box 510, Chattanooga, TN 37401 615-867-4100
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
Tran-Tec, Box 1044, Columbus, NE 68601 402-564-2748
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Insulators, Antenna-3100

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† FL Jennings, FL Inds., 970 McLaughlin Ave., San Jose, CA 95122 408-292-4025
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Nyltite, 3451 S. Clinton Ave., S. Plainfield, NJ 07080 201-561-1300
† Star Porcelain, 71 Muirhead Ave., Trenton, NJ 08638 609-392-3154

Insulators, Bushing (Metallized) — See Bushings, etc. (Vol. C)

Insulators, Clip, Test & Battery-3100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Insulators, Mica-3100

§ AAVID Engrg., One Kool Path, Laconia, NH 03247, 603-528-3400 ..... C•1614
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§ Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
§ Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291

Integrated Circuit Handlers — See Handlers, Integrated Circuit (Automatic) (Vol. D)

Integrated Circuit Interconnect Systems-3200

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176
AT&T, 555 Union Blvd., Allentown, PA 18103, 1-800-372-2447 ..... C•1715
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018

§† **Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800** ..... **C•1724-1726**
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... **C•1732-1733**
§† **Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300** ..... **C•1084-1085**
§ **Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661** ..... **C•1736-1737**
Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
Calex Mfg. Co., Inc., 3355 Vincent Rd., Pleasant Hill, CA 94523 415-932-3911
§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Dynatech Corp., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702 714-558-8755
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
Gebex Corporation, 10500 Ridgeview Ct., Cupertino, CA 95014 408-973-1137
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700

Integrated Circuit Design Aids-4200

§† Advanced Micro Devices, P.O. Box 3453, 901 Thompson Pl., Sunnyvale, CA 94088 408-732-2400
Cherry Semiconductor Corp, 2000 S. County Trail, East Greenwich, RI 02818 401-885-3600
Exar Corp., P. O. Box 3575, 750 Palomar Ave., Sunnyvale, CA 94088-3575 408-732-7970
† Ferranti Interdesign, Inc., 1500 Green Hills Rd., Scotts Valley, CA 95066 408-438-2900
Gebex Corporation, 10500 Ridgeview Ct., Cupertino, CA 95014 408-973-1137
§† General Electric, RCA/Solid State Div., Route 202, Somerville, NJ 08876 201-685-6000
Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
Highlevel Technology, Inc., 18902 Bardeen, Irvine, CA 92715 714-752-5215
Holt Inc., 9351 Jeronimo Rd., Irvine, CA 92718 714-859-8800
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
International Microelectronic Prods., 2830 North First Street, San Jose, CA 95134 408-262-9100
Linear Technology Inc., P.O. Box 489, Sta. "A", Burlington, ON, CANADA L7R 3Y3 416-632-2996
§† LSI Logic Corp., 1551 McCarthy Blvd., Milpitas, CA 95035 408-263-9494
§ Matra Design Semiconductor, 2840 San Tomas Expressway, Santa Clara, CA 95051 408-986-9000
MCE Semiconductor, Inc., 1111 Fairfield Dr., West Palm Beach, FL 33407 305-845-2837
§ Panatech Semiconductor, 3375 Scott Blvd., Suite 314, Santa Clara, CA 95054 408-727-7700
Polycore Electronics, 1107 Tourmaline Dr., Newbury Pk., CA 91320 805-499-6777
§† Raytheon Semiconductor, 350 Ellis St., Mountain View, CA 94043 415-968-9211
§ Rockwell Int'l., 4311 Jamboree Rd., Newport Beach, CA 92660 800-854-8099
SGS Semiconductor Corporation, 1000 E. Bell Road, Phoenix, AZ 85022 602-867-6100
Tektronix, Inc., P. O. Box 500, Y3-314, Beaverton, OR 97077 ..... 800-547-1512;Oregon only 800-452-1877
VLSI Technology, Inc., 1109 McKay Dr., San Jose, CA 95131 408-434-3000
ZyMOS Corp., 477 N. Mathilda Ave., Sunnyvale, CA 94086 ..... 408-730-8800; 408-730-5400

Integrated Circuits, Bipolar, Digital, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Bipolar, Linear, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Bipolar, Memories, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Custom/Semicustom, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Custom/Semicustom-3130 — *See Vol. A*

Integrated Circuits, Digital-3130 — *See Vol. A*

Integrated Circuits, Digital, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Gate Array, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Interface-3130 — *See Vol. A*

Integrated Circuits, Interface, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Linear-3130 — *See Vol. A*

Integrated Circuits, Linear, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Logic, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Memory-3130 — *See Vol. A*

Integrated Circuits, Microprocessor-3130 — *See Vol. A*

Integrated Circuits, Microprocessor, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, MOS, Digital, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, MOS, Linear, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, MOS, Memory, Surface Mount-3130 — *See Vol. A*

Integrated Circuits, Silicon Monolithic, Unpackaged Chips-3130 — *See Vol. A*

Integrators, Electronic-2325 — *See Vol. D*

Integrators, Mechanical & Electromechanical-2200 — *See Vol. D*

Intensifiers, Image-5700 — *See Vol. A*

Intercom Systems — See Switching Systems, Audio (Vol. D)

Interconnection Systems-3200

A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, 201-722-9800 ..... **C•1710-1711**
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... **C•1238-1281**
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... **C•1187**
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... **C•1356,1358-1359,1883**
Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... **C•1733**
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... **C•1373-1375**
Bit 3 Computer Corporation, 8120 Penn Avenue S., Minneapolis, MN 55431 612-881-6955
Computer Peripherals Inc., 2635 Labery Ct., Ste. 5, Newbury Pk., CA 91320 ..... 805-499-5751;800-854-7600
Ghielmetti, Inc., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028-8770 213-463-5111
Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
MarLee Switch Co., 933-D N. Central Ave., Upland, CA 91786 714-982-8988
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136

Interfaces, Computer/Peripheral-2000 — *See Vol. D*

Interfaces, Telex/Computer-1900 — *See Vol. D*

Interrupters, Ground Fault-4300 — *See Vol. B*

Interrupters, Optoelectronic-3700 — *See Vol. B*

Interrupters, Photo-3700 — *See Vol. B*

Interrupters, Power-4300 — *See Vol. B*

Interrupters, Vacuum-4300 — *See Vol. B*

Intervalometers — See Timers (Vol. D)

Inverters, DC to AC — See Power Supplies, AC Output (Vol. D)

Ion, implanter, medium current-4100 — *See Vol. D*

Isolators, Antenna-1900 — *See Vol. D*

Isolators, Ferrite-3450 — *See Vol. A*

Isolators, High Voltage-4050 — *See Vol. D*

Isolators, Line-4050 — *See Vol. D*

Isolators, Microwave (All Types)-3450 — *See Vol. A*

Isolators, Multi-channel-1900 — *See Vol. D*

Isolators, Optoelectronic-3700 — *See Vol. B*

Isolators, Signal (I, V,)-1900 — *See Vol. D*

Isolators, Source — See Isolators, Line (Vol. D)

Isolator Systems, Multiplexed-1900 — *See Vol. D*

Jack Adapters (All Types)-2100

§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... C•1206-1207,1697
§ **EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771** ..... C•1230
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... C•1378-1380
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... C•1519,1921
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Duotone, 6875 S.W. 81st St., S. Miami, FL 33143 305-665-1121
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 516-937-3475
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Jack Covers-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... C•1699
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247 603-524-5101
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700

Jack Panel Assemblies & Access. — See Panels, Jack (Vol. C)

Jacks (All Types)-2100

Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923, 617-777-8888;800-826-2726 ..... D•1389
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... C•1206-1207,1697
§ **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... C•1855
§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... C•1221
§† **Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800** ..... C•1224
§ **Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213** ..... C•1282-1283
§ **Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222** ..... C•1314-1315
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... C•1699
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1334, D•1091
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... C•1378-1380
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... C•1519-1520,1921
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1522-1523
§† **Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700** ..... C•1536-1537,1539
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1554
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
† Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
§† Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Barber-Colman Co., Indl. Instrs. Div., P.O. Box 2940, 1354 Clifford Ave., Loves Park, IL 61132 815-877-0241
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646 312-539-3108
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
† Imtronics Industries, 11930 31st Ct. N., St. Petersburg, FL 33715 813-577-9010
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 516-937-3475
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§ Lab-Line Instruments, 15th & Bloomingdale, Melrose Park, IL 60160 312-450-2600
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Middleburg Corp., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019 203-693-8361
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771 516-922-6000
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§† Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§† Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
§ Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376

Jacks, Modular Telephones-2100

Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... C•1845
§ **EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230**
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... C•1353
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1556
Accurate Electronics, 169 S. Abbe Rd, P.O. Box 1287, Elyria, OH 44036 216-366-6330
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Concept Industries, App-Rep, Inc., 3641 San Gabriel River Pkwy., Pico Rivera, CA 90660 ..... 213-699-0918; 800-255-2666
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Dataprobe, 110 Palisades Blvd., Palisades Park, NJ 07650 201-947-9500
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
L-Com Inc., 1755 Osgood St., N. Andover, MA 01845 617-682-6936
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161

Jacks (MIL)-2440 — *See Vol. B*

Jammers (MIL)-3475 — *See Vol. D*

Jammers (MIL), Advanced Self Protection-3475 — *See Vol. D*

Jammers (MIL), Chaff, Flares-3475 — *See Vol. D*

Jammers (MIL), Communications (Commjam)-3475 — *See Vol. D*

Jammers (MIL), Commjam, Truck Mounted-3475 — *See Vol. D*

Jammers (MIL), Drone Borne-3475 — *See Vol. D*

Jammers (MIL), Expendable-3475 — *See Vol. D*

Jammers (MIL), Fuze-3475 — *See Vol. D*

Jammers (MIL), High Band-3475 — *See Vol. D*

Jammers (MIL), Integrated Command-3475 — *See Vol. D*

Jammers (MIL), J-band-3475 — *See Vol. D*

Jammers (MIL), Low Band-3475 — *See Vol. D*

Jammers (MIL), Portable-3475 — *See Vol. D*

Jammers (MIL), Radar-3475 — *See Vol. D*

Jammers (MIL), Shipboard-3475 — *See Vol. D*

Jammers (MIL), Standoff-3475 — *See Vol. D*

Jammers (MIL), Tactical-3475 — *See Vol. D*

Jamming Pods (MIL), ECM-3475 — *See Vol. D*

Jamming Sets (MIL), Multipurpose-3475 — *See Vol. D*

Jamming Systems (MIL)-3475 — *See Vol. D*

Jamming Systems (MIL), Mobile-3475 — *See Vol. D*

Jamming Systems (MIL), Multipurpose-3475 — *See Vol. D*

Jamming Systems (MIL), Tactical Communications (TACJAM)-3475 — *See Vol. D*

Jigs And Fixtures, Chassis & Circuit Board-4100 — *See Vol. D*

Joint Compounds, Semiconductor — See Coatings, Compounds, Lubricants, etc., Heat Conductive (Vol. C)

Joints, Rotary, Fiber Optic-2475 — *See Vol. B*

Joints, Rotary, Microwave-3450 — *See Vol. A*

Joysticks — See Controls, Computer Input (Vol. D)

Joysticks, Inductive-2200 — *See Vol. D*

Joysticks, Potentiometer-2200 — *See Vol. D*

Joystick, Toggle Switch-2200 — *See Vol. D*

Jumpers, Bonding-2100

§† **Janco Corp., Box 3038-Glenoaks Sta., Burbank, CA 91504, 818-846-1800 ..... B•1642**
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247 603-524-5101
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
§† Excel Specialty Corp., 6335 N. Broadway, Chicago, IL 60660 312-262-4781
Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Mini-Systems, Inc., 20 David Rd., North Attleboro, MA 02761 617-695-0203
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
State of the Art, Inc., 2470 Fox Hill Rd., State College, PA 16803-1797 .. 814-355-8004

Jumpers, Circuit Board-2100

Allen Bradley Co., Electronic Components Div., A Rockwell International Co., 1414 Allen-Bradley Dr., El Paso, TX 79936, 915-592-4888;800-592-4888 ..... A•1870
§ **Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1179**
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207**
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ **3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340**
§ **Micro-Ohm Corp., 1088 Hamilton Rd., Duarte, CA 91010, 818-3575377 ... A•1977**
§ **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380**
§† **RCD Components, Inc., 520 E. Industrial Pk. Dr., Manchester, NH 03103, 603-669-0054 ..... A•2029**
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Components Corp., 6 Kinsey Pl., Denville, NJ 07834 201-627-0290
Cross Electronics, 100 Commonwealth Dr., Warrendale, PA 15086 412-776-1591
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154 215-969-4200
§ Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† Fancort Industries, Inc., 31 Fairfield Place, W. Caldwell, NJ 07006 201-575-0610
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
§ International Resistive Company, P.O. Box 1860, Boone, NC 28607 704-264-8861
† Kantz Electronic Industry, 1804 Wall Church Rd., Wall Township, NJ 07719 201-974-0090
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Noble U.S.A., Inc., 5450 Meadowbrook Ct., Rolling Meadows, IL 60008 .. 312-364-6038
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
Roederstein Elctrns., Inc., P.O. Box 5588, Statesville, NC 28677 704-872-8101
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§† T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376

Jumpers, Wire, Terminated — See Cords, Patch (Vol. C)

Junctions, Hybrid, Microwave-3450 — *See Vol. A*

Keyboard Legends and Symbols-5150 — *See Vol. B*

Keyboards, Address Encoded-5150 — *See Vol. B*
Keyboards, Capacitive-5150 — *See Vol. B*
Keyboards, Conductive Rubber-5150 — *See Vol. B*
Keyboards, Ferrite Core-5150 — *See Vol. B*
Keyboards, Full Travel-5150 — *See Vol. B*
Keyboards, Hard Contact-5150 — *See Vol. B*
Keyboards, Lighted-5150 — *See Vol. B*
Keyboards, Low Profile-5150 — *See Vol. B*
Keyboards, Membrane-5150 — *See Vol. B*
Keyboards, Modular-5150 — *See Vol. B*
Keyboards, Pad-5150 — *See Vol. B*
Keyboards, Programmable-5150 — *See Vol. B*
Keyboards, Reed-5150 — *See Vol. B*
Keyboards, Solid State-5150 — *See Vol. B*
Keyboards, Wireless-5150 — *See Vol. B*
Keyboards & Keypads (MIL)-2440 — *See Vol. B*
Keyers, Tone-1900 — *See Vol. D*
Keypads-5150 — *See Vol. B*

Kits, Breadboarding (For Engineers)-4200

Calex Mfg. Co., Inc., 3355 Vincent Rd., Pleasant Hill, CA 94523, 415-932-3911 ..... C•1723
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600
§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
Clarostat Mfg. Co., Inc., 3 Washington St., Dover, NH 03820 603-742-1120
§ Computer System Assocs., 7564 Trade St., San Diego, CA 92121 619-566-3911
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
§ EG & G Birtcher, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268 818-442-2572
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† Ferranti Interdesign, Inc., 1500 Green Hills Rd., Scotts Valley, CA 95066 408-438-2900
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
Holt Inc., 9351 Jeronimo Rd., Irvine, CA 92718 714-859-8800
International Components Corp., 105 Maxess Rd., Melville, NY 11747 ... 516-293-1500
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Linear Technology Inc., P.O. Box 489, Sta. "A", Burlington, ON, CANADA L7R 3Y3 416-632-2996
Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ Pulse Instruments Co., 1234 Francisco, Torrance, CA 90502 213-515-5330
Rehlander Assocs., 118A Bridge St., Beverly, MA 01915 617-922-5961
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
§ Sunshine Scientific Instruments, 1810 Grant Ave., Philadelphia, PA 19115 215-673-5600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Victory Engineering Corp., Victory Rd., Springfield, NJ 07081 201-379-5900

Kits, Connector-2100

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1768
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1153,1164
Babcock Display Products, Inc., A Subsidiary of Babcock, Inc., 1051 S. East St., Anaheim, CA 92805-5799, 714-491-5121 ..... B•1047
† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ..... C•1308-1309
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1320
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ..... C•1061
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 213-649-1400
§ E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
† Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.
Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
† Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730 714-987-4715
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Kits, Enclosure Prototyping-1400

Lansing Research Corp., 705 Willow Ave., Ithaca, NY 14850, 607-272-3265;607-257-7613;800-847-3535 ..... C•1060
§ PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, 215-365-8400 ..... C•1068-1071
Rittal Corp., 1900 E. Leffel Lane, Springfield, OH 45505, 800-637-4425 ... C•1800
Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, 213-875-0990 ..... C•1091
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073, 213-305-8288 .. C•1092
Alusett U.S.A., Inc., 3 Cecilia Lane, Pleasantville, NY 10570 914-747-3477
Axis Corporation, 7825 Engineer Rd., Ste. 208, San Diego, CA 92111 ... 619-560-7737
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)

Kits, Fiber Optic-2475 — *See Vol. B*

Kits, Marking (Dial, Instrument, Equipment, etc.)-2400

§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1572,1859
Allen Avionics, Inc., 224 E. 2nd St., Mineola, NY 11501 516-248-8080
§ Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
Chartpak, 1 River Rd., Leeds, MA 01053 413-584-5446
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Eastern Marking Machines, 422 S Franklin St., Hempstead, NY 11550 .. 516-483-7070
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Metron Optics Inc., P.O. Box 690, Solana Beach, CA 92075-0690 619-755-4477
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Kits, Potentiometer, Rheostat-4750 — *See Vol. A*

Kits, Printed Circuit-1700

§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1739
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111,1740
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Automated Prod. Equip. Corp., 142 Peconic Ave., Medford, NY 11763 ... 516-654-1197
§ Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600
Calex Mfg. Co., Inc., 3355 Vincent Rd., Pleasant Hill, CA 94523 415-932-3911

§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
Cybernetic Micro Sys., P.O. Box 3000, 3000 Hwy. 84, San Gregorio, CA 94074 415-726-3000
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
§ Emco Electronics, 104 S. Central Ave., Valley Stream, NY 11580 516-825-3330
Foredom Elec. Co., Blackstone Inds. Inc., Route 6, Bethel, CT 06801 203-792-8622
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
§† Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731 818-579-2300
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Kits, Programming Board-4200

† Crosspoint, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022, 201-941-4455 .... B•1580
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 .... C•1340
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
UVP, Inc., 5100 Walnut Grove Ave., P.O. Box 1501, San Gabriel, CA 91778 818-285-3123

Kits, Shielding-4525

Fair-Rite Prods., PO Box J, Wallkill, NY 12589, 914-895-2055 .... C•1745
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 .... C•1746
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 .... C•1751
MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410 .... C•1752
Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 .... C•1753
Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 .... C•1754
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
† Craig Systems Corp., 10 Industrial Way, Amesbury, MA 01913-4848 617-388-5662
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
Ferronics, 52 N. Main St., Fairport, NY 14450 716-388-1020
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Kits, Terminal-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 .... C•1206
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 .... C•1340
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809 305-855-6161
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300

Kits, Training Aid-4200

† Arra Inc., 15 Harold Ct., Bay Shore, NY 11706 516-231-8400
§ Chartpak, 1 River Rd., Leeds, MA 01053 413-584-5446
Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
§ Computer System Assocs., 7564 Trade St., San Diego, CA 92121 619-566-3911
† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809 305-855-6161
§ Digiac Corp., 19 Power Drive, Hauppauge, NY 11788 516-234-2100
Diversified Case Co., Ellis Ave., Off. 2, Whitesboro, NY 13492 .... 800-553-2411; 800-258-1188
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
§ Emco Electronics, 104 S. Central Ave., Valley Stream, NY 11580 516-825-3330
† Ferranti Interdesign, Inc., 1500 Green Hills Rd., Scotts Valley, CA 95066 408-438-2900
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 .. Call Local Sls. Off.
MCE Semiconductor, Inc., 1111 Fairfield Dr., West Palm Beach, FL 33407 305-845-2837
† Microlab/FXR, 10 Microlab Rd., Livingston, NJ 07039 201-992-7700
§ Midwest Comps., 1981 Port City Blvd., Muskegon, MI 49443 616-777-2602
§ Paccom, 3928 148th NE, Redmond, WA 98052 .... 206-883-9200;800-426-6254
§ Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
Philips Test & Measuring Instrs., 85 McKee Dr., Mahwah, NJ 07430 201-529-3800
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Knobs - Also see Dials, Instrument-2400

§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 .... C•1020
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 .... C•1206-1207,1697
§ Cosmo Corporation, 3239 W. 14th St., Cleveland, OH 44109, 216-861-5594 .... C•1570-1571
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 .... C•1573
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 .... C•1575,1587,1589-1595
§ Selco Products Co., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621, 714-521-8673 .... C•1599
§ Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Bourns, Inc., Resistive Components Group, 1200 Columbia Ave., Riverside, CA 92507 714-781-5050
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
§† Davies, Harry, Molding Co., 4920 Bloomingdale Ave., Chicago, IL 60639 312-622-8966
Dimco-Gray, 8200 S. Suburban Rd., Dayton, OH 45459 513-433-7600
§† Electronic Hardware, 320 Broad Hollow Rd., Farmingdale, NY 11735 516-752-1950
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
§† FISHERCAST, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
§ Front Panel Devices, Inc., 38-7 Raymor Ave., Ronkonkoma, NY 11779 .. 212-471-9800
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990
§† Kurz-Kasch, Knob Div., 711 Hunter Dr., Wilmington, OH 45177 513-382-0966
† Microavionics Corp., 3198-K Airport Loop Dr., Costa Mesa, CA 92626 714-957-6904
Millen Components, Electronic Instr. & Specialty Corp., 42 Pleasant St., Stoneham, MA 02180 617-438-6951
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
Piher International Corp., 903 Feehanville Dr., Mt. Prospect, IL 60056 .... 312-640-8300; 800-323-6693
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§† Radial Controls, 2555 E. 55th Place, Indianapolis, IN 46220 317-255-2796
§ Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
† Raytheon Co., Microwave & Power Tube Div., 190 Willow St., Waltham, MA 02154 617-899-8400
§† Rogan, 3455 Woodhead Dr., Northbrook, IL 60062 800-423-1543
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Security Plastics, Inc., 14427 N.W. 60th Ave., Miami Lakes, FL 33014 305-823-5440
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§† Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600

Knobs, Collet-2400

Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 .... C•1020
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 .... C•1206-1207
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 .... C•1573
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 .... C•1597
Selco Products Co., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621, 714-521-8673 .... C•1599
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990

Knobs, Limit Stop-2400

Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 .... C•1020
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 .... C•1206
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 .... C•1573
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 .... C•1593-1594
Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371
Amerex, P.O. Box 2815, Riverside, CA 92516 714-686-1400
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Front Panel Devices, Inc., 38-7 Raymor Ave., Ronkonkoma, NY 11779 .. 212-471-9800
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990

Kurz-Kasch, Knob Div., 711 Hunter Dr., Wilmington, OH 45177 513-382-0966
† Microavionics Corp., 3198-K Airport Loop Dr., Costa Mesa, CA 92626 ... 714-957-6904
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
§† Rogan, 3455 Woodhead Dr., Northbrook, IL 60062 800-423-1543

Knobs, Locking, Control Shaft-2400

Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
§ Cosmo Corporation, 3239 W. 14th St., Cleveland, OH 44109, 216-861-5594 ..... C•1570
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... C•1573
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1593-1594
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1597
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
† Dupree, Inc., 14395 Romona Ave., Chino, CA 91710 714-597-4889
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
§ ETI Systems, Polaris Indl. Entprs., 215 Via Del Norte, Oceanside, CA 92054 619-757-7770
Front Panel Devices, Inc., 38-7 Raymor Ave., Ronkonkoma, NY 11779 .. 212-471-9800
† Kilo International, 2118 D Street, La Verne, CA 91750 714-593-4626
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990
Kurz-Kasch, Knob Div., 711 Hunter Dr., Wilmington, OH 45177 513-382-0966
† Microavionics Corp., 3198-K Airport Loop Dr., Costa Mesa, CA 92626 714-957-6904
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§† Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300

Knobs, Slip Clutch-2400

Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1587,1593-1594
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Illinois Lock Co., The Eastern Co., 301 W. Hintz Rd., Wheeling, IL 60090 312-537-1800
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990
Kurz-Kasch, Knob Div., 711 Hunter Dr., Wilmington, OH 45177 513-382-0966
§† Machine Components Corp., 70 Newtown Rd., Plainview, NY 11803 516-694-7222
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722

Knobs, Torque, Incremental, Ratio Drive-2400

Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
§ Cosmo Corporation, 3239 W. 14th St., Cleveland, OH 44109, 216-861-5594 ..... C•1570
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1575
Selco Products Co., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621, 714-521-8673 ..... C•1599
§ Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371
Knobs, Incorporated, P. O. Box 166, Elmhurst, IL 60126 312-449-1990
Kurz-Kasch, Knob Div., 711 Hunter Dr., Wilmington, OH 45177 513-382-0966
§ Machine Components Corp., 70 Newtown Rd., Plainview, NY 11803 516-694-7222
† Microavionics Corp., 3198-K Airport Loop Dr., Costa Mesa, CA 92626 714-957-6904
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
§† Rogan, 3455 Woodhead Dr., Northbrook, IL 60062 800-423-1543

Labels, Coatings, Crayons, Pellets, etc., Temperature Indicating-5300 — *See Vol. B*

Labels, Pressure Sensitive, Adhesive-2400

§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1572
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1911
Ansco, 1243 West 134th St., Gardena, CA 90247 .... 1-800-421-1270;1-800-821-3308; 213-532-7780
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
§ Computerware, Inc., 8480-I Tyco Rd., Vienna, VA 22180 703-821-8200
Display Devices, Inc., Box 667, Encinitas, CA 92024 619-753-0113
† Dow Switch, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887 617-935-6395
† GM Nameplate, Inc., 2040 15th Ave. West, Seattle, WA 98119 206-284-2200
Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537
† GraphTec Services, Inc., 1600 N.W. Madrid Way, P.O. Box 1380, Boca Raton, FL 33432 305-392-3373
† Hallmark Nameplate, Inc., 1855 New Highway, Farmingdale, NY 11735 516-454-0700
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673
Jayco Plastics of California, Inc., 507 W. Blueridge Ave., Orange, CA 92665 714-974-1701
† JRW Industries, Inc., 2312 N Second St., Harrisburg, PA 17110 717-236-1418
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Mantex Corp., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051 313-628-8200
† Markem Corp., 150 Congress St., Keene, NH 03431 603-352-1130
† Membronics Division, Chicago Decal Company, 3310 North Elston Avenue, Chicago, IL 60618 312-463-4007
§† Miller Dial Corp., 4400 N. Temple City Blvd., El Monte, CA 91734 818-444-4555
Oliver Advanced Engineering, 320 W. Arden St., Glendale, CA 91203 818-240-0080
† San Francisco Custom Label, 999 Blandford Blvd., Redwood City, CA 94062 415-573-6365
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
† Skyway Magnetics, 35372 Hwy 79, Warner Springs, CA 92086 619-782-3342
Stanpat Prods., 366 Main St., Port Washington, NY 11050 516-883-8400
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
† Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386
Valmark Industries Inc., 1376 Borregas Ave., Sunnyvale, CA 94089 408-734-4253
Won Tronics, Apollo Magnetics Corp., 2720 W. Beverly Blvd., Los Angeles, CA 90057 213-381-2500

Laboratories, Testing — See Services, Electrical Measurement & Test (Vol. D)

Lacing, Cable — See Cords & Tapes, Lacing (Vol. C)

Laminates, Clad Metal, Continuous Strip-2500

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
† Alinabal, 28 Woodmont Rd., Milford, CT 06460 203-877-3241
Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
Technical Materials, Inc., Sub. of Brush Wellman, Inc., 5 Wellington Rd., Lincoln, RI 02865 401-333-1700

Laminates, Metal Clad (Including Copper)-2500

§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105,1111
† Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
† Alinabal, 28 Woodmont Rd., Milford, CT 06460 203-877-3241
§† Astro Packaging, Inc., 100 Thomas Road North, Hawthorne, NJ 07507 .. 201-423-3000
Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† General Elec. Co., Electromaterials Dept., 1350 South Second Street, Coshocton, OH 43812 614-622-5310
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290
Handy & Harman Elctrn. Matls. Corp., 72 Elm St., Box 1031, N. Attleboro, MA 02761-1031 617-695-1401
§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Mica Corporation, 8536 National Blvd., Culver City, CA 90232 213-837-8100
§† Miller Dial Corp., 4400 N. Temple City Blvd., El Monte, CA 91734 818-444-4555
§† Norplex/Oak Inc., Allied-Signal, Inc., 505 King St., P.O. Box 1448, La Crosse, WI 54602-1448 608-784-6070
† OAK Materials Group Inc., Laminates Div., 1 Mechanic Street, Hoosick Falls, NY 12090 518-686-4379
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
Technical Materials, Inc., Sub. of Brush Wellman, Inc., 5 Wellington Rd., Lincoln, RI 02865 401-333-1700

Laminates, Plastic Impregnated (Unclad)-2500

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
American Cyanamid Co., Metal Coated Fibers Dept., One Cyanamid Plaza, Wayne, NJ 07470 201-831-3148
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
† General Elec. Co., Electromaterials Dept., 1350 South Second Street, Coshocton, OH 43812 614-622-5310
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290

Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† Mica Corporation, 8536 National Blvd., Culver City, CA 90232 213-837-8100
§† Norplex/Oak Inc., Allied-Signal, Inc., 505 King St, P.O. Box 1448, La Crosse, WI 54602-1448 608-784-6070
† OAK Materials Group Inc., Laminates Div., 1 Mechanic Street, Hoosick Falls, NY 12090 518-686-4379
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
Rogers Corp., One Technology Dr., Rogers, CT 06263 203-774-9605
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241

Laminates, Plastic (With Integral Heating Elements)-5300 — *See Vol. B*

Lamp Adapters-2450 — *See Vol. B*

Lamp Assembly Color Filters, Lens Mountable-2450 — *See Vol. B*

Lamp Drivers-2450 — *See Vol. B*

Lamp Holders — See Sockets, Lamp & Lamp Assemblies (Vol. B)

Lamps, Arc-2450 — *See Vol. B*

Lamps, Deutenium-2450 — *See Vol. B*

Lamps, Edge Lighting, Panel-2450 — *See Vol. B*

Lamps, Electroluminescent-2450 — *See Vol. B*

Lamps, Exciter, Photographic-2450 — *See Vol. B*

Lamps, Flashtube-2450 — *See Vol. B*

Lamps, Fluorescent-2450 — *See Vol. B*

Lamps, Glow — See Lamps, Neon (Vol. B)

Lamps, Hollow Cathode-2450 — *See Vol. B*

Lamps, Incandescent-2450 — *See Vol. B*

Lamps, Indicator — See Lamps, Miniature & Subminiature (Vol. B)

Lamps, Infrared-2450 — *See Vol. B*

Lamps, LED & LCD — See Diodes, Light Emitting (Vol. B), Diodes, Liquid Crystal (Vol. B)

Lamps, Magnifying, Inspection-4100 — *See Vol. D*

Lamps, Mercury Vapor-2450 — *See Vol. B*

Lamps, Miniature & Subminiature-2450 — *See Vol. B*

Lamps, Neon-2450 — *See Vol. B*

Lamps, Oil Tight-2450 — *See Vol. B*

Lamps, Press-to-Test-2450 — *See Vol. B*

Lamps, Projection-2450 — *See Vol. B*

Lamps, Solid State — See Diodes, Light Emitting (Vol. B), Diodes, Liquid Crystal (Vol. B)

Lamps, Stroboscopic Source-2450 — *See Vol. B*

Lamps, Tritium (Hydrogen 3) Powered-2450 — *See Vol. B*

Lamps, Tungsten Halogen-2450 — *See Vol. B*

Lamps, Ultraviolet-2450 — *See Vol. B*

Lamps, Xenon-2450 — *See Vol. B*

LANs — See Networks, Computer, Local Area (Vol. D)

Laser Systems-4100 — *See Vol. D*

Laser Components & Laser Accessories-3700 — *See Vol. B*

Laser Diodes — See Diodes, Laser (Vol. A)

Latches, Panels & Cabinets-2400

Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121
† Avibank Mfg., Inc., 210 S. Victory Blvd., Burbank, CA 91503 818-843-4330
† Dzus Fastener, 425 Union Blvd., W. Islip, NY 11795 516-669-6000
§† Eberhard Mfg. Co., Div., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136 216-238-9720
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§ NEC Electronics, Inc., 401 Ellis Street, Mountain View, CA 94039-7241 .. 415-960-6000

LCDs — See Diodes, Liquid Crystal (Vol. B)

Lead Assemblies, High Voltage-Also See Connectors; Cable Assemblies & Harnesses-6000

† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... C•1203
Component Mfg. Svc., Inc., 1 Component Park, W. Bridgewater, MA 02379, 617-580-0111 ..... C•1205
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1310
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
† Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Cardinal Control Co., 110 Kensington Rd., Kensington, CT 06037 203-828-6379
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
§† Electronic Coil Corp., Farmington Industrial Park, Farmington, CT 06032 203-677-6731
Engine Systems Division, Simmonds Precision, P.O. Box 310, Norwich, NY 13815 607-335-5000
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
§† Excel Specialty Corp., 6335 N. Broadway, Chicago, IL 60660 312-262-4781
§† FISHERTECH, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
§ Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† PTK/Rantec Division, 1173 Los Olivos Ave., Los Osos, CA Francesca Wilmot, Sls. Engr. 805-528-5858
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Tevelec, Ltd., 977 Pantera Drive, Mississauga, Ontario, CANADA L4W 2W6 416-624-5241

Lead Preparation Equipment, Surface Mount-4100 — *See Vol. D*

Leads, Test & Adapters-2900 — *See Vol. D*

LEDs — See Diodes, Light Emitting (LEDs) (Vol. B)

Light Emitting Diodes (LEDs), Surface/Mount-3700 — *See Vol. B*

Lenses, Filters, Windows, Infrared - Also see Filters, Color, Panel light; Lenses, Readout & Display-3700 — *See Vol. B*

Lenses, Optical & Camera-3700 — *See Vol. B*

Lenses, Readout & Display - Also see Filters, Color, Panel light; Lenses, filters, Windows, Infrared-2450 — *See Vol. B*

Lids, Hybrid Package-3130 — *See Vol. A*

Light Choppers-3700 — *See Vol. B*

Light Pens-2000 — *See Vol. D*

Light Sources, Fiber Optic - Also see Generators, Light Pulse-2475 — *See Vol. B*

Light Sources, Infrared - Also see Generators, Light Pulse-3700 — *See Vol. B*

Light Sources, Photoelectric-3700 — *See Vol. B*

Light Sources, Stroboscopic-3700 — *See Vol. B*

Light Sources, Ultraviolet-3700 — *See Vol. B*

Lights, Indicator-2450 — *See Vol. B*

Lights, Panel — See Lights, Indicator (Vol. B)

Lights, Pilot — See Lights, Indicator (Vol. B)

Limit Stops — See Knobs, Limit Stop (Vol. C)

Limit Stops, Mechanical-2500

§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Dillon, W. C., & Co., National Controls, Inc., 2320 Airport Blvd., Santa Rosa, CA 95401 707-527-5555
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† Perfect Gear & Instrument, Designatronics, Inc., 2101 Jericho Tpk., New Hyde Park, NY 11040 516-328-3300
† PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Precision Mechanisms, 44 Brooklyn Ave., Westbury, NY 11590 ..... 516-ED3-5955
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
§ Tapeswitch Corp. of America, 100 Schmitt Blvd., Farmingdale, NY 11735 516-694-6312

Limiters, Current-4300 — *See Vol. B*

Limiters, Microwave-3450 — *See Vol. A*

Limiters, Surge — See Suppressors, Transient Voltage (Vol. B)

Line Conditioners-4050 — *See Vol. D*

Line Controlled Switches — See Switches, Data (Vol. D)

Line Stretchers, Microwave-3450 — *See Vol. A*

Liners, Tube Shield — See Shields, Tube (Vol. C)

LNA-LNB, Satellite Antennas-1900 — *See Vol. D*

Liquid Crystal Display Sheets-2450 — *See Vol. B*

Loads, Electronic, Variable-Also See Dummy Loads-2900 — *See Vol. D*

Locators, Static-2900 — *See Vol. D*

Locators, Open Short-2900 — *See Vol. D*

Locks, Dial & Shaft-2400

CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1036
§ Illinois Lock Co., The Eastern Co., 301 W. Hintz Rd., Wheeling, IL 60090, 312-537-1800 ..... B•1624
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1580
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† Aimsco Inc., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056 206-284-5563
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600

Logic Cards (without Components) — See Boards, Plug-in (Vol. C)

Logic Circuits — See Cards, Logic (Vol. D), Modules, Logic (Vol. A)

Loudspeakers — See Speakers (Vol. D)

Louvers, Vents, & Windows (For Equipment) — See Enclosures, Equipment & Panel Mounting (Vol. C)

Lubricants-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
The Cool-Amp Conducto-Lube Co., 8603 S.W. 17th Avenue, Portland, OR 97219 503-244-2230
§† CVC Prods., 525 Lee Rd., Rochester, NY 14603 716-458-2550
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
§† Dow Corning Corp., Box 0994, Midland, MI 48686-0994 517-496-4000
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
† E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
Metron Optics Inc., P.O. Box 690, Solana Beach, CA 92075-0690 619-755-4477
† Miller-Stephenson Chem. Co., Inc., George Washington Hwy., Danbury, CT 06810-7378 203-743-4447
Monsanto Co., 800 N. Lindbergh Blvd., St. Louis, MO 63167 314-694-1000
† Nye, William F. Co., Div. of New Bedford Thread Co., Inc., P.O. Box G-927, New Bedford, MA 02742-0927 617-996-6721
§ Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 617-890-6107
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Lugs, Terminal — See Terminals, Lug (Vol. C)

LVDTs — See Transducers, Displacement (Vol. B)

Machines & Accessories, Semiconductor Manufacturing-4100 — *See Vol. D*

Machines & Tools, Crimping — See Tools, Crimping & Swaging (Vol. C)

Machines, Automatic Heat Shrink-4100 — *See Vol. D*

Machines, Capacitor Winding-4100 — *See Vol. D*

Machines, Cleaning & Degreasing-Also See Cleaners, Ultrasonic-4100 — *See Vol. D*

Machines, Coil Winding-4100 — *See Vol. D*

Machines, Component Handling, Feeding, Insertion & Sorting-4100 — *See Vol. D*

Machines, Drilling, Laser-4100 — *See Vol. D*

Machines, Hermetic Sealing-4100 — *See Vol. D*

Machines, Induction Heating (Electronic)-4100 — *See Vol. D*

Machines, Lead Cutting & Forming-4100 — *See Vol. D*

Machines, Magnet Wire Twisting-4100 — *See Vol. D*

Machines, Marking & Numbering-4100 — *See Vol. D*

Machines, Marking, Laser-4100 — *See Vol. D*

Machines, Mask Alignment & Exposure-4100 — *See Vol. D*

Machines, Metallizing, Vacuum — See Deposition Equipment, Vacuum & Accessories (Vol. D)

Machines, Plastic Molding-4100 — *See Vol. D*

Machines, Plating-4100 — *See Vol. D*

Machines, Printed Circuit Drilling, Etching & Punching-4100 — *See Vol. D*

Machines, Terminal Installing-4100 — *See Vol. D*

Machines, Ultrasonic Bonding-4100 — *See Vol. D*

Machines, Vibration Fatigue Testing — See Testers, Vibration (Vol. D)

Machines, Wafer Alignment — See Machines, Mask Alignment & Exposure (Vol. D)

Machines, Wire Marking, Manual & Automatic-4100 — *See Vol. D*

Machines, Wire Measuring & Cutting-4100 — *See Vol. D*

Machines, Wire Stripping, Laser-4100 — *See Vol. D*

Machines, Wire Wrapping — See Tools, Wire Wrapping (Vol. C)

Magnetic Materials — See Cores, Magnetic (All Types) (Vol. C), Ferrite Material & Parts (Vol. C)

Magnetizers-2900 — *See Vol. D*

Magnetodiodes — See Magnetoresistors, Hall (Vol. A)

Magnetometers-2900 — *See Vol. D*

Magnetoresistors, Hall-4800 — *See Vol. A*

Magnetrons — See Tubes, Microwave (Vol. A)

Magnets, Focusing — See Magnets, Permanent (Vol. C)

Magnets (Lab. Type)-1850 — *See Vol. A*

Magnets, Permanent-1850 — *See Vol. A*

Magnets, Superconducting-1850 — *See Vol. A*

Magnets (MIL), Permanent-2440 — *See Vol. B*

Magnifying Glasses, Inspection-4100 — *See Vol. D*

Maintenance, Self, Computers-2000 — *See Vol. D*

Markers, Dry Transfer — See Kits, Marking (Vol. C)

Markers, Identification — See Labels (Vol. C), Nameplates (Vol. B), Machines, Marking and Numbering (Vol. D)

Markers, RF — See Generators, Marker (Vol. D)

Markers, Terminal — See Kits, Marking, etc. (Vol. C)

Markers, Wire, Tab & Sleeve — See Wire Markers (Vol. C)

Mark Recognition Equipment, Optical-2000 — *See Vol. D*

Masers & Accessories-3450 — *See Vol. A*

Mask Alignment & Exposure Systems — See Machines, Mask Alignment & Exposure (Vol. D)

Masks, Solder-4600

Affiliated Manufacturers, Inc., U.S. Highway 22, P.O. Box 5049, North Branch, NJ 08876 201-722-7100
§ Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772; 201-434-7508
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
§ Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
† HumiSeal Div., Columbia Chase Corp., 26-60 Bklyn. - Queens Expwy., Woodside, NY 11377 718-932-0800
PCK Technology Div., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747 516-454-4400
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523

Material, Permanent Magnet-1850 — *See Vol. A*

Materials, Shock, Noise, & Vibration Control-2500

§† E-A-R Div., Cabot Corp., 7911 Zionsville Rd., Indianapolis, IN 46268 317-872-1111
Ferro Corporation, Coated Fabrics Division, 34 Smith St., Norwalk, CT 06852 203-853-2123
Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200

Materials, Thick Film-1600

Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050

Matrices, Switching-Also See Boards, Programming-2000 — *See Vol. D*

Measuring Equipment, Fiber Optic, Attenuation & Bandwidth-2200 — *See Vol. D*

Media, Magnetic — See Disks, Magnetic (Vol. D), Tape, Magnetic (Vol. D)

Megaphones — See Amplifiers (Vol. D)

Memories, DRAM, Surface Mount-3130 — *See Vol. A*

Memories, RAM, Surface Mount-3130 — *See Vol. A*

Memory Devices/Controllers, Bipolar, Add-in-2000 — *See Vol. D*

Memory Devices/Controllers, Bipolar, Add-on-2000 — *See Vol. D*

Memory Devices/Controllers, Bubble, Add-in-2000 — *See Vol. D*

Memory Devices/Controllers, Bubble, Add-on-2000 — *See Vol. D*

Memory Devices/Controllers, CCD, Add-in-2000 — *See Vol. D*

Memory Devices/Controllers, CCD, Add-on-2000 — *See Vol. D*

Memory Devices/Controllers, Magnetic Core, Add-in-2000 — *See Vol. D*

Memory Devices/Controllers, Magnetic Core, Add-on-2000 — *See Vol. D*

Memory Devices/Controllers, MOS, Add-in-2000 — *See Vol. D*

Memory Devices/Controllers, MOS, Add-on-2000 — *See Vol. D*

Memory Systems, Bubble-2000 — *See Vol. D*

Memory Systems, Core-2000 — *See Vol. D*

Memory Systems, Delay Line-2000 — *See Vol. D*

Memory Systems, Disk-2000 — *See Vol. D*

Memory Systems, Disk, Flexible-2000 — *See Vol. D*

Memory Systems, Semiconductor-2000 — *See Vol. D*

Memory Systems, Tape-2000 — *See Vol. D*

Meter Cases — See Enclosures, Equipment & Panel Mounting (Vol. C)

Meter Controllers — See Relays, Meter (Vol. B)

Meter Expanders — See Multipliers, Meter (Vol. D)

Meters, Acceleration — See Accelerometers (Vol. B)

Meters, Admittance-2900 — *See Vol. D*

Meters, Ampere, AC-2900 — *See Vol. D*

Meters, Ampere, DC-2900 — *See Vol. D*

Meters, Ampere, RF-2900 — *See Vol. D*

Meters, Ampere, True RMS-2900 — *See Vol. D*

Meters, Ampere Hour-2900 — *See Vol. D*

Meters, Attenuation-2900 — *See Vol. D*

Meters, Audio Level-2900 — *See Vol. D*

Meters, Bar Graph-2950 — *See Vol. D*

Meters, Battery Capacity-2900 — *See Vol. D*

Meters, Capacitance, Inductance-2900 — *See Vol. D*

Meters, Clamp-on-2900 — *See Vol. D*

Meters, Conductance-2900 — *See Vol. D*

Meters, Counting Rate, Nuclear-2900 — *See Vol. D*

Meters, Decibel Indicating-2900 — *See Vol. D*

Meters, Deviation-2900 — *See Vol. D*

Meters, Digital ESR-2900 — *See Vol. D*

Meters, Digital RPM-2900 — *See Vol. D*

Meters, Digital, 2-wire, 4-20 mA Current Loop-2950 — *See Vol. D*

Meters, Dissolved Oxygen-2900 — *See Vol. D*

Meters, Distortion & Noise-2900 — *See Vol. D*

Meters, Edgewise-2950 — *See Vol. D*

Meters, Elapsed Time — See Indicators, Elapsed Time (Vol. D)

Meters, Electrometer-2900 — *See Vol. D*

Meters, EMC — See Meters, RFI (Vol. D)

Meters, FM Deviation-2900 — *See Vol. D*

Meters, Field Strength-2900 — *See Vol. D*
Meters, Fluid Flow-2200 — *See Vol. D*
Meters, Flux-2900 — *See Vol. D*
Meters, Frequency-2900 — *See Vol. D*
Meters, Frequency Deviation-2900 — *See Vol. D*
Meters, Galvanometer-2900 — *See Vol. D*
Meters, Gauss-2900 — *See Vol. D*
Meters, Hand Held-2900 — *See Vol. D*
Meters, Humidity-2900 — *See Vol. D*
Meters, Illuminated Scale-2950 — *See Vol. D*
Meters, Impedance-2900 — *See Vol. D*
Meters, Kilovolt-2900 — *See Vol. D*
Meters, Laser Energy — See Monitors, Laser Energy (Vol. D)
Meters, Light (Nonphotographic)-2900 — *See Vol. D*
Meters, Megohm-2900 — *See Vol. D*
Meters, Microampere — See Meters, Ampere (Vol. D)
Meters, Micro Ohm-2900 — *See Vol. D*
Meters, Microwave-2900 — *See Vol. D*
Meters, Modulation-2900 — *See Vol. D*
Meters, Moving Coil-2950 — *See Vol. D*
Meters, Moving Iron-2950 — *See Vol. D*
Meters, Moving Scale-2950 — *See Vol. D*
Meters, Multifunction (Analog)-2900 — *See Vol. D*
Meters, Multifunction (Digital)-2900 — *See Vol. D*
Meters, Noise & Sound Level-2900 — *See Vol. D*
Meters, Null-2950 — *See Vol. D*
Meters, Ohm-2900 — *See Vol. D*
Meters, Optical Power-2900 — *See Vol. D*
Meters, Panel (Analog)-2950 — *See Vol. D*
Meters, Panel, Bargraph — See Meters, Bargraph (Vol. D)
Meters, Panel (Digital)-2950 — *See Vol. D*
Meters, Peak Power-2900 — *See Vol. D*
Meters, PH-2900 — *See Vol. D*
Meters, Phase-2900 — *See Vol. D*
Meters, Power — See Meters, Watt (Vol. D)
Meters, Power Factor-2900 — *See Vol. D*
Meters, Q-2900 — *See Vol. D*
Meters, Rate (Pulsed)-2900 — *See Vol. D*
Meters, Ratio-2900 — *See Vol. D*
Meters, Reflectometer-2900 — *See Vol. D*
Meters, Relay — See Relays, Meter (Vol. B)
Meters, Resistance-2900 — *See Vol. D*
Meters, RFI-2900 — *See Vol. D*
Meters, Slope — See Inclinometer (Vol. D)
Meters, Snap-around — See Meters, Clamp-on (Vol. D)
Meters, Standing Wave Ratio-2900 — *See Vol. D*
Meters, Static Decay-2900 — *See Vol. D*
Meters, Taut Band-2950 — *See Vol. D*
Meters, Temperature (Contacting)-2900 — *See Vol. D*
Meters, Temperature, Dial type (Noncontacting) — See Pyrometers (Vol. D)
Meters, Temperature, Infrared-2900 — *See Vol. D*
Meters, Thermal Transfer-2900 — *See Vol. D*
Meters, Time Interval — See Timers, Interval (Vol. D)
Meters, Vacuum Tube Volt (VTVM)-2900 — *See Vol. D*
Meters, VAR-2900 — *See Vol. D*
Meters, Vibration-2900 — *See Vol. D*
Meters, Volt, AC-2900 — *See Vol. D*
Meters, Volt/Ampere — See Meters, Watt (Vol. D)
Meters, Volt, DC-2900 — *See Vol. D*
Meters, Volt, Differential — See Meters, Volt (Vol. D)
Meters, Volt, Digital-2900 — *See Vol. D*
Meters, Volt, Potentiometric-2900 — *See Vol. D*
Meters, Volt, RF-2900 — *See Vol. D*
Meters, Volt, Sampling-2900 — *See Vol. D*
Meters, Volt, True RMS-2900 — *See Vol. D*
Meters, VU-2900 — *See Vol. D*
Meters, Watt-2900 — *See Vol. D*
Meters, Watt Hour-2900 — *See Vol. D*
Meters, Watt, RF-2900 — *See Vol. D*
Meters, Wave-2900 — *See Vol. D*
Meters, Waveguide — See Meters, Microwave (Vol. D)
Meters (MIL)-2440 — *See Vol. B*
Microcircuit Production Equip.-4100 — *See Vol. D*
Microcircuits — See Integrated Circuits (Specific Types) (Vol. A)
Microcircuits, Thick Film — See Circuits, Hybrid, Thick Film (Vol. A)
Microcircuits (MIL)-2440 — *See Vol. B*
Microcircuits (MIL), Linear-2440 — *See Vol. B*
Microcircuits (MIL), Low Power Schottky-2440 — *See Vol. B*
Microcircuits (MIL), Memories, CMOS, Hybrids-2440 — *See Vol. B*
Microcircuits (MIL), TTL, Schottky, Microprocessor-2440 — *See Vol. B*
Microcomputer Boards-3130 — *See Vol. A*
Microfilm, Computer Output (COM) Equipment-2000 — *See Vol. D*
Micrometers — See Testers, Thickness (All Types) (Vol. D)
Microphone Accessories (Incl. Stands, Holders, Booms)-1300 — *See Vol. D*
Microphones, Bone Conduction-1300 — *See Vol. D*
Microphones, Carbon-1300 — *See Vol. D*
Microphones, Cardioid-1300 — *See Vol. D*
Microphones, Ceramic-1300 — *See Vol. D*
Microphones, Condenser (Incl. Electret)-1300 — *See Vol. D*
Microphones, Crystal-1300 — *See Vol. D*
Microphones, Dynamic-1300 — *See Vol. D*
Microphones, Lavalier-1300 — *See Vol. D*
Microphones, Magnetic-1300 — *See Vol. D*
Microphones, Omnidirectional-1300 — *See Vol. D*
Microphones, Subminiature-1300 — *See Vol. D*
Microphones, Velocity-1300 — *See Vol. D*

Microphones, Wireless-1300 — *See Vol. D*
Microphones (MIL)-2440 — *See Vol. B*
Microprocessor — See Integrated Circuits, Microprocessor (Vol. A)
Microprocessor Development Systems-2900 — *See Vol. D*
Microscopes, Scanning, Laser, Acoustic-4100 — *See Vol. D*
Microscopes-3700 — *See Vol. B*
Microscopes, Measuring-2900 — *See Vol. D*
Microwave Comb Generator — See Generators, Microwave (Vol. D)
Microwave Integrated Circuits (MICs)-3450 — *See Vol. A*
Microwave Receivers — See Receivers, Microwave (Vol. D)
Microwave Systems, Local Distribution-3400 — *See Vol. D*
Miriplex Communication Systems-1900 — *See Vol. D*
Mirrors, Front Surface-3700 — *See Vol. B*
Mirrors, Rear Surface-3700 — *See Vol. B*
Mixers, Audio-1300 — *See Vol. D*
Mixers, Microwave-3450 — *See Vol. A*
Mixers, RF-3450 — *See Vol. A*
Modems — See Modulator/Demodulators, Data (Vol. D)
Modems, Broadband RF-1900 — *See Vol. D*
Modems, Communications, Eliminator/Line Driver-1900 — *See Vol. D*
Modems, Communications, Line Receivers-1900 — *See Vol. D*
Modems, Communications, Long Haul-1900 — *See Vol. D*
Modems, Communications, Short Haul (Limited Distance)-1900 — *See Vol. D*
Modular Telephone Cords — See Cable, Telephone (Vol. D)
Modulation Transfer Analyzers — See Analyzers, Transfer Function (Vol. D)
Modulator/Demodulators, Data-2000 — *See Vol. D*
Modulator/Demodulators, Laser-3700 — *See Vol. B*
Modulators, AM-1900 — *See Vol. D*
Modulators, FM-1900 — *See Vol. D*
Modulators, Light-3700 — *See Vol. B*
Modulators, Magnetic-2200 — *See Vol. D*
Modulators, Microwave-3400 — *See Vol. D*
Modulators, Phase-1900 — *See Vol. D*
Modulators, Pulse-3400 — *See Vol. D*
Modulators, RF-1900 — *See Vol. D*
Modulators, Satellite Antennas-1900 — *See Vol. D*
Modulators, Video-2200 — *See Vol. D*
Modules, Amplifier-Also See Amplifiers, Specific Types-3130 — *See Vol. A*
Modules, Analog Multiplier-3130 — *See Vol. A*
Modules, Analog-to-Digital Conversion-3130 — *See Vol. A*
Modules, CAMAC-2900 — *See Vol. D*
Modules, Control & Switching-2200 — *See Vol. D*
Modules, Data Acquisition-2325 — *See Vol. D*
Modules, Data Retention-2325 — *See Vol. D*
Modules Delay Line-2350 — *See Vol. A*
Modules, Digital-to-Analog Conversion-3130 — *See Vol. A*
Modules, Display — See Display Modules (Vol. B)
Modules, Encoding/Decoding-3130 — *See Vol. A*
Modules, Filter-3130 — *See Vol. A*
Modules, I/O Relay-3130 — *See Vol. A*
Modules, Logic-Also See Cards; Circuits; Networks-3130 — *See Vol. A*
Modules, Logic, Surface Mount-3130 — *See Vol. A*
Modules, NIM-2900 — *See Vol. D*
Modules, Oscillator-2300 — *See Vol. A*
Modules, Power Entry, Filtered-2700 — *See Vol. A*
Modules, RMS-to-DC Conversion-3130 — *See Vol. A*
Modules, Sample & Hold-3130 — *See Vol. A*
Modules, Switching-5100 — *See Vol. B*
Modules (MIL), Electronic-2440 — *See Vol. B*
Modules (MIL), Standard Electronic-2440 — *See Vol. B*
Molding Services — See Services, Molding (Vol. D)
Monitors, Current-2200 — *See Vol. D*
Monitors, Data Link-1900 — *See Vol. D*
Monitors, Error Rate-1900 — *See Vol. D*
Monitors, Frequency-2900 — *See Vol. D*
Monitors, Laser Energy-2200 — *See Vol. D*
Monitors, Line & Program-1900 — *See Vol. D*
Monitors, Modulation-2900 — *See Vol. D*
Monitors, Phase & Phase Angle-2900 — *See Vol. D*
Monitors, Phase Sequence & Loss-2200 — *See Vol. D*
Monitors, Power, AC & DC-2200 — *See Vol. D*
Monitors, Power, AF-1300 — *See Vol. D*
Monitors, Power Failure-2200 — *See Vol. D*
Monitors, Power, Microwave-2900 — *See Vol. D*
Monitors, Power, RF-2900 — *See Vol. D*
Monitors, Response Time-2900 — *See Vol. D*
Monitors, Television, Fiberoptic-2475 — *See Vol. B*
Monitors, Temperature-Also See Controls, Temperature-5300 — *See Vol. B*
Monitors, Touch — See Touch Monitors (Vol. D)
Monitors, Video-1900 — *See Vol. D*
Monitors, Voltage — See Meters, Volt (Vol. D)
Monitors, Waveform — See Oscilloscopes (Vol. D)
Monitors (MIL), Data-3475 — *See Vol. D*
Motor & Generator Armatures, Rotors, Stators-3500 — *See Vol. B*
Motor Assemblies with Integral Tachometer/Encoder-3500 — *See Vol. B*
Motor Generator Sets-4000 — *See Vol. D*
Motorized Micropositioners-4900 — *See Vol. D*
Motorized Translation Stages-4900 — *See Vol. D*
Motor Speed Drives — See Controls, Motor Speed (Vol. D)
Motors, Brush, DC-3500 — *See Vol. B*

Motors, Brushless, DC-3500 — *See Vol. B*

Motors, Clock & Timing-3500 — *See Vol. B*

Motors, Control-3500 — *See Vol. B*

Motors, DC Timing-3500 — *See Vol. B*

Motors, Drag Cup-3500 — *See Vol. B*

Motors, Fractional Horsepower-3500 — *See Vol. B*

Motors, Gearhead-3500 — *See Vol. B*

Motors, Gyro-3500 — *See Vol. B*

Motors, Hysteresis-3500 — *See Vol. B*

Motors, Incremental, Stepping — See Motors, Stepping (Vol. B)

Motors, Induction-3500 — *See Vol. B*

Motors, Linear-3500 — *See Vol. B*

Motors, Miniature — See Motors, Fractional HP (Vol. B)

Motors, Permanent Magnet-3500 — *See Vol. B*

Motors, Selsyn — See Motors, Synchronous (Vol. B)

Motors, Servo-4900 — *See Vol. D*

Motors, Squirrel Cage-3500 — *See Vol. B*

Motors, Stepping-3500 — *See Vol. B*

Motors, Synchronous-3500 — *See Vol. B*

Motors, Synchronous, Polarized — See Motors, Synchronous (Vol. B)

Motors, Timing — See Motors, Clock & Timing (Vol. B)

Motors, Torque (Incl. Torquers)-3500 — *See Vol. B*

Motors, Universal, AC or DC Operation-3500 — *See Vol. B*

Motors, (MIL)-2440 — *See Vol. B*

Mounts, Antenna-1900 — *See Vol. D*

Mounts, CRT & Accessories-2500

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Mounts, Crystal-2300 — *See Vol. A*

Mounts, Integrated Circuit — See Sockets, Integrated Circuit (Vol. C), Boards, Plug-In (Vol. C)

Mounts, Microwave-3450 — *See Vol. A*

Mounts, Mobile Antenna — See Mounts, Antenna (Vol. D)

Mounts, Satellite Antennas-1900 — *See Vol. D*

Mounts, Shock & Vibration-2825

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Mounts, Thermistor-5300 — *See Vol. B*

Mounts, Transistor (Incl. Kits) — See Pads, Transistor Mounting (Vol. C)

Mouse Devices — See Controls, Computer Input (Vol. D)

Multibus — See Board Computers & Subassemblies, Multibus (Vol. D)

Multiplexers, Analog-2325 — *See Vol. D*

Multiplexers, Digital-2325 — *See Vol. D*

Multiplexers, Fiber Optic-2475 — *See Vol. B*

Multiplexers, Frequency Division-1900 — *See Vol. D*

Multiplexers, Statistical-1900 — *See Vol. D*

Multiplexers, Time Division-1900 — *See Vol. D*

Multiplexers, Transmission-1900 — *See Vol. D*

Multiplexers, Video-1900 — *See Vol. D*

Multipliers, Analog-2325 — *See Vol. D*

Multipliers, Channel Electron-2325 — *See Vol. D*

Multipliers, Crystal-1900 — *See Vol. D*

Multipliers, Diode-1900 — *See Vol. D*

Multipliers, Frequency-3450 — *See Vol. A*

Multipliers, Hall-4800 — *See Vol. A*

Multipliers, Magnetic Analog-2200 — *See Vol. D*

Multipliers, Meter-2900 — *See Vol. D*

Multipliers, Servo-4900 — *See Vol. D*

Nameplates-2400

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Network Processors-1900 — *See Vol. D*

Networks, Computer, Local Area-2000 — *See Vol. D*

Networks, Crossover, Attenuator (Audio)-1300 — *See Vol. D*

Networks, Directional Antenna Phasing-1900 — *See Vol. D*

Networks, Hybrid-2000 — *See Vol. D*

Networks, Hybrid Substrates-3130 — *See Vol. A*

Networks, Ladder-4700 — *See Vol. A*

Networks, LC-2700 — *See Vol. A*

Networks, Line Impedance Stabilization-1900 — *See Vol. D*

Networks, Matching-1900 — *See Vol. D*

Networks, Phase-2700 — *See Vol. A*

Networks, Pulse Forming-2700 — *See Vol. A*

Networks, Rejection — See Filters (Vol. A)

Networks, RC-2000 — *See Vol. D*

Networks, Resistance-4700 — *See Vol. A*

Networks, Resistance, Trimmer-4700 — *See Vol. A*

Networks, Resistance, Voltage Divider-4700 — *See Vol. A*

Networks, Video-2700 — *See Vol. A*

Networks, (MIL), Resistance-2440 — *See Vol. B*

NIM Modules — See Modules, NIM (Vol. D)

Nuclear EMP (NEMP) Protectors-4300 — *See Vol. B*

Null Detectors — See Indicators, Null (Vol. D)

Nuts, Metal-2825

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Nuts, Plastic — See Fasteners, Nonmetallic (Vol. C)

Oils — See Lubricants (Vol. C)

Opamps — See Amplifiers, Operational (Vol. D)

Optical Breadboards-4200

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Optical Character Readers (OCR)-2000 — *See Vol. D*

Optical Component Mounts & Accessories-3700 — *See Vol. B*

Optical-Coupler Isolators — See Isolators, Opto (Vol. B)

Optical Design Service — See Services, Optical Design (Vol. D)

Optical Disk Drives-2000 — *See Vol. D*

Optical Radiation Measuring-2900 — *See Vol. D*

Optical Signal Sources — See Generators, Light Pulse (Vol. D)

Optocouplers-3700 — *See Vol. B*

Optocouplers, Surface Mount-3700 — *See Vol. B*

Oscillators, Audio (Module)-2300 — *See Vol. A*

Oscillators, Audio (Test) — See Generators, Audio (Vol. D)

Oscillators, Beat Frequency (BFO)-2300 — *See Vol. A*

Oscillators, Bias-2300 — *See Vol. A*

Oscillators, Cavity-2300 — *See Vol. A*

Oscillators, Clock-2300 — *See Vol. A*

Oscillators, Crystal Controlled (Module)-2300 — *See Vol. A*

Oscillators, Decade (Test)-2900 — *See Vol. D*

Oscillators, Digitally Compensated Crystal (DCXO)-2300 — *See Vol. A*

Oscillators, LC-2300 — *See Vol. A*

Oscillators, Low Frequency (Module)-2300 — *See Vol. A*

Oscillators, Microwave-3450 — *See Vol. A*

Oscillators, Oven-2300 — *See Vol. A*

Oscillators, Power (Module)-2300 — *See Vol. A*

Oscillators, Programmable-2300 — *See Vol. A*

Oscillators, Pulse (Module)-2300 — *See Vol. A*

Oscillators, Pulse (Test) — See Generators, Pulse (Vol. D)

Oscillators, RC (Module)-2300 — *See Vol. A*

Oscillators, Reed-2300 — *See Vol. A*

Oscillators, RF (Module)-2300 — *See Vol. A*

Oscillators, RF (Test) — See Generators, RF (Vol. D)

Oscillators, Sinusoidal (Module)-2300 — *See Vol. A*

Oscillators, Sinusoidal (Test) — See Generators, Function (Vol. D)

Oscillators, Square Wave (Module)-2300 — *See Vol. A*

Oscillators, Square Wave (Test) — See Generators, Function (Vol. D)

Oscillators, Surface Mount-2300 — *See Vol. A*

Oscillators, Sweep — See Generators, Sweep (Vol. D)

Oscillators, Telemetry-1900 — *See Vol. D*

Oscillators, Temperature Compensated-2300 — *See Vol. A*

Oscillators, Test Equipment — See Generators (Specific Types) (Vol. D)

Oscillators, Tuning Fork Controlled - Also see Resonators-2300 — *See Vol. A*

Oscillators, UHF/VHF (Module)-2300 — *See Vol. A*

Oscillators, UHF/VHF (Test) — See Generators, UHF/VHF (Vol. D)

Oscillators, Ultrasonic (Module)-2300 — *See Vol. A*

Oscillators, Ultrasonic (Test) — See Generators, Ultrasonic (Vol. D)

Oscillators, Voltage Controlled Crystal (VCXO)-2300 — *See Vol. A*

Oscillators (MIL), Crystal & Ovens-2440 — *See Vol. B*

Oscillators (MIL), VCO, Solid State, RF-2440 — *See Vol. B*

Oscillographs, Direct Writing-3000 — *See Vol. D*

Oscilloscope Accessories-2975 — *See Vol. D*

Oscilloscopes, Digital-2975 — *See Vol. D*

Oscilloscopes, General Purpose-2975 — *See Vol. D*

Oscilloscopes, High Frequency (Above 200 MHz)-2975 — *See Vol. D*

Oscilloscopes, Low Frequency (DC to 3 MHz)-2975 — *See Vol. D*

Oscilloscopes, Mid Frequency (DC to 200 MHz)-2975 — *See Vol. D*

Oscilloscopes, Multibeam-2975 — *See Vol. D*

Oscilloscopes, Multiple Channel-2975 — *See Vol. D*

Oscilloscopes, Portable, Battery Operated-2975 — *See Vol. D*

Oscilloscopes, Programmable-2975 — *See Vol. D*

Oscilloscopes, Sampling-2975 — *See Vol. D*

Oscilloscopes, Storage-2975 — *See Vol. D*

Oscilloscopes, Triggered Sweep-2975 — *See Vol. D*

Outlets, Electrical — See Boxes, Junction, Outlets & Wall Plates (Vol. C)

Outlets, Power, International-2100

H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1523

Brooks Power Systems, 3569 Bristol Pike Bldg. 2 Ste 102, Bensalem, PA 19020 ..... 215-244-0264;1-800-523-1551

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000

International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380

Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311

Ovens, Adhesive Caring-4100 — *See Vol. D*

Ovens, Aging, Burn-in, Life Test-2550 — *See Vol. D*

Ovens, Crystal & Component-2300 — *See Vol. A*

Ovens, Drying (for Electronic Instruments)-4100 — *See Vol. D*

Ovens, Electric — See Furnaces, Electric (Vol. D)

Ovens, Vacuum-4100 — *See Vol. D*

Packages, Integrated Circuit-3130 — *See Vol. A*

Packaging Materials, Antistatic-3800

§† ADE, Inc., 1430 E. 130th St., Chicago, IL 60633 312-646-3400

§† Astro Packaging, Inc., 100 Thomas Road North, Hawthorne, NJ 07507 .. 201-423-3000

Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400

§ Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 .. 516-588-7000

§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448

† Gemini, 103 Mensing Way, Cannon Falls, MN 55009 507-263-3957

† Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537

ITW Thielex, 201 11th St., Piscataway, NJ 08854 201-968-5300

§† NRD Inc., Mark IV Ind., Inc., 2937 Alt Blvd. N., Grand Island, NY 14072 .. 716-773-7634

§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681

§† Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171

† United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200

Packaging Materials, Foam & Plastic-3800

§† ADE, Inc., 1430 E. 130th St., Chicago, IL 60633 312-646-3400

§† Astro Packaging, Inc., 100 Thomas Road North, Hawthorne, NJ 07507 .. 201-423-3000

§† Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000

§ E-A-R Div., Cabot Corp., 7911 Zionsville Rd., Indianapolis, IN 46268 317-872-1111

† Gemini, 103 Mensing Way, Cannon Falls, MN 55009 507-263-3957

§† Hardigg Inds., Inc., North Main St., South Deerfield, MA 01373 413-665-2163

International Instrumentation, Inc., 2282 Townsgate Rd., Westlake Vlg., CA 91361 805-495-7673

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683

† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368

† Mercury Plastics, A Unit of Zero Corp., 672 Fuller Rd., Chicopee, MA 01020 413-267-5561

§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE

† Press-On Products, 21 Factory Rd., Addison, IL 60101 312-628-2255

Robison Electronics, P.O. Box 8121, San Luis Obispo, CA 93403-8121 .. 805-544-8000

§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681

† United Foam Plastics, 172 E. Main St., Georgetown, MA 01833 617-352-2200

§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Packaging Panels, Integrated Circuits — See Boards, Plug-in (Vol. C)

Packaging Services — See Services, Packaging (Vol. D)

Pads, L, T, & H — See Attenuators, Audio (Vol. D)

Pads, Transistor Mounting-2100

§† Bergquist, 5300 Edina Ind'l., Minneapolis, MN 55435, 800-328-3882 ..... C•1704

§† Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018

§† Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693

§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751

Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850

§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571

§ D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341

Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900

§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270

Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800

† Globe Plastics, 1342 S. Signal Dr., Pomona, CA 91766 714-623-2747

§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600

Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200

Mini-Systems, Inc., 20 David Rd., North Attleboro, MA 02761 617-695-0203

† Robison Electronics, P.O. Box 8121, San Luis Obispo, CA 93403-8121 .. 805-544-8000

§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733

Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311

§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118

§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291

§† Teledyne Relays, Teledyne, Inc., 12525 Daphne Ave., Hawthorne, CA 90250 213-777-0077

Paints, Conductive, Electric — See Coatings, Conductive, Electric (Vol. C)

Paints, Finishing-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105

§† Casso-Solar, P.O. Box 163, U.S. Route 202, Pomona, NY 10970 914-354-2500

Paints, Metallic, Conductive-1600

† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106

† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581

Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171

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Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000

E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511

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† Master Bond, 154 Hobart St., Hackensack, NJ 07601 201-343-8983

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SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100

† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500

§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Paints, Radioactive — See Coatings, Radioactive (Vol. C)

Paints, Resistive-Also See Inks for Thick Film Microcircuits-1600

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105

† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117, 616-469-2727 ..... C•1106

† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581

DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434

† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)

Ferro Corporation, Electronic Materials Div., 27 Castilion Dr., Santa Barbara, CA 93117-3092 805-968-5000

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800

§† Kepro Circuit Systems, 630 Axminister Dr., Fenton, MO 63026 314-343-1630

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Metron Optics Inc., P.O. Box 690, Solana Beach, CA 92075-0690 619-755-4477

§ Murata Manufacturing Co., Ltd., 26-10-2-chome-Tenjin, Nagaoka-Kyo-Shi, Kyoto, JAPAN 617 075-951-9111

Transene, Rte. 1, Rowley, MA 01969 617-948-2501

Panel Equipment — See Dials (Vol. C), Connectors (Vol. C), Jacks (Vol. C), Lights, Indicator (Vol. B), etc.

Panel Marking Kits — See Kits, Marking (Vol. C)

Panels, Back Lighted & Edge Lighted-2450 — *See Vol. B*

Panels, Electroluminescent-2450 — ***See Vol. B***

Panels, Fuse-4300 — ***See Vol. B***

Panels, IC Packaging — See Boards, Plug-in (Vol. C)

Panels, Jack-2100

† Grim Corporation, Box 67, Medford, NJ 08055, 609-267-7950 ..... D•1065
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1731
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
† Ansco, 1243 West 134th St., Gardena, CA 90247 .... 1-800-421-1270;1-800-821-3308; 213-532-7780
Apahouser-Elcom, Inc., 101 Walnut St., Watertown, MA 02172 617-924-1500
§† Armiger Co., Woodhead Industries Inc., 2525 Ridgmar Blvd., Fort Worth, TX 76116 817-737-2900
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
§ Communication Cables & Connectors, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830 614-828-2468
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Crosspoint, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022 201-941-4455
§ Dataprobe, 110 Palisades Blvd., Palisades Park, NJ 07650 201-947-9500
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† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Electro Standards Lab., Inc., P.O. Box 9144, Providence, RI 02940 401-943-1164
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Front Panel Devices, Inc., 38-7 Raymor Ave., Ronkonkoma, NY 11779 .. 212-471-9800
§ Furman Sound, Inc., 30 Rich St., Greenbrae, CA 94904 415-927-1225
§ Glasgal Communications, Inc., 151 Veterans Dr., Northvale, NJ 07647 .. 201-768-8082
GTE Fiberoptic Products, 2401 Reach Rd., Williamsport, PA 17701 ..... 717-326-6591; 1-800-FBR-OPTICS
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
The Hall Company, 420 East Water St., Urbana, OH 43078 513-652-1376
† Honeywell, Industrial Controls Div., 1100 Virginia Dr., Ft. Washington, PA 19034 ..... 800-321-5111, Ext. 596
§ International Data Sciences, 7 Wellington Rd., Lincoln, RI 02865 401-333-6200
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† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Minntronics Corporation, 2599 White Bear Ave., St. Paul, MN 55109 612-770-5247
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
§† Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
§ Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
York Metal Products, Inc., 34-20 12th St., Long Island City, NY 11367 ... 718-932-3660

Panels, Metal — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

Panels, Meter — See Enclosures, Circuit Board, Module, & Relay Mounting (Vol. C)

Panels, Patch — See Panels, Jack (Vol. C)

Panels, Power BUS for ICs-3200

Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ..... C•1718-1721
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1725
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, 714-261-9473 ..... C•1729
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
† Eldre Corporation, 1500 Jefferson Rd., Rochester, NY 14623 716-427-7280
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
Spectro Equipment, Inc., 13821 Progress Pkwy., N. Royalton, OH 44133 216-237-8910
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700

Panels, Relay Rack — See Enclosures, Circuit Board, Module, & Relay Mounting (Vol. C)

Panels, Touch — See Touch Panels (Vol. D)

Paper Tape Equipment, Punch-2000 — ***See Vol. D***

Paper Tape Equipment, Reader-2000 — ***See Vol. D***

Paper Tape Equipment, Reader/Punch-2000 — ***See Vol. D***

Paper, Graphic Recording-3000 — ***See Vol. D***

Paper, Thermal-2000 — ***See Vol. D***

Patch Boards — See Boards, Programming (Vol. C)

PC Instruments — See Instruments, Test & Measuring, Personal Computer (Vol. D)

Peak Sense & Hold Amplifiers — See Amplifiers, Peak Sense & Hold (Vol. D)

Peltier (Thermoelectric) Heat Pumps — See Cooling/Heating Modules, Thermoelectric (Vol. B)

Perforators, Paper Tape (Electrically Powered)-2000 — ***See Vol. D***

Personal Computer Instruments — See Instruments, Test & Measuring, Personal Computer (Vol. D)

Phones — See Handsets, Chestsets, Headphones, Headsets, etc. (Vol. D)

Photocells & Phototubes — See Cells, Photoconductive (Vol. B)

Photodetectors, GaAs-3700 — ***See Vol. B***

Photodectectors, Silicon-3700 — ***See Vol. B***

Photoelectric Equipment — See Alarms, Controls, Photoelectric (Vol. B)

Photoelectric Tubes — See Cells, Photoconductive (Vol. B)

Photoemissive Detectors — See Cells, Photoemissive (Vol. B)

Photographic Services — See Services, Photographic (Vol. D)

Photometers — See Meters, Light (Vol. D)

Photomultiplier Tube Housings-5700 — ***See Vol. A***

Photoresistors-3700 — ***See Vol. B***

Phototransistors, Surface Mount-4800 — ***See Vol. A***

Pick and Place Equipment, Automatic-4100 — ***See Vol. D***

Pick and Place Equipment, Manual-4100 — ***See Vol. D***

Pickups, Magnetic, Proximity, Torque, Vibration, etc. — See Transducers, Specific Type (Vol. B)

Pickups, Telephone (For Recording)-1300 — ***See Vol. D***

Piezoelectric Ceramics-2300 — ***See Vol. A***

Pilot Lights — See Lights, Indicator (Vol. B)

Pin Grid Arrays — See Sockets, Pin Grid Array (Vol. C)

Pin Straighteners, Tube-5700 — ***See Vol. A***

Pins, Cotter, Dowel, Taper, etc.-2825

Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

Pins, Electrically Conductive-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1181
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605, 203-334-4124 ..... C•1696

§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1697**
Crosspoint, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022, 201-941-4455 ..... **B•1580**
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... **C•1294**
Lear Siegler, Inc., Telecommunications Div., 714 N. Brookhurst St., Anaheim, CA 92801, 714-774-1010 ..... **C•1324**
§† **Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000** ..... **C•1355**
§† **Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202** ..... **C•1506**
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Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
§ Automatic Connector, Inc., 400 Moreland Rd., Commack, NY 11725 516-543-5000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161
H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
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Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Philips Elmet, 1560 Lisbon Rd., Lewiston, ME 04240 207-784-3591
§ Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731 818-579-2300
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145

Pins, Mechanical-2825

Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605, 203-334-4124 ..... **C•1696**
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1697**
Lear Siegler, Inc., Telecommunications Div., 714 N. Brookhurst St., Anaheim, CA 92801, 714-774-1010 ..... **C•1324**
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
† Avibank Mfg., Inc., 210 S. Victory Blvd., Burbank, CA 91503 818-843-4330
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
§† Elastic Stop Nut Div., Harvard Inds. Inc., 3200 Country Club Rd., Pocahontas, AR 72455 501-892-5201
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† Hartwell Corp., 900 S. Richfield Rd., Placentia, CA 92670 714-993-4200
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 516-328-3300
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Plastic Raw Materials, Liquids, Pellets, Powders, Resins-1600

† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† Dennis Chemical, 2700 Papin St., St. Louis, MO 63103 314-771-1800
§ Dolph, John C., Co., New Rd., Monmouth Junction, NJ 08852 201-329-2333
§ Dow Chemical Co., 2020 Dow Center, Midland, MI 48674 517-636-1000
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
§ Epoxylite Corp., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713 714-951-3231
Ferro Corporation, Complas Thermoplastics Div., 5001 O'Hara Dr., Evansville, IN 47711 812-423-5218
Ferro Corporation, Houston Thermoplastics Div., 1370 E. 40 St., Houston, TX 77022 713-691-1407
Ferro Corporation, Stryker Thermoplastics Div., 3 Railroad Ave., Stryker, OH 43557 419-682-3311
Ferro Industrial Products Ltd., Canadian Thermoplastics Division, 354 Davis Road, Oakville, ONT. L6J 2X1 416-845-4277
† FMC Corporation, Chemical Products Grp., 2000 Market St., Philadelphia, PA 19103 215-299-6000
† Formulated Resins Inc., Box 508, Greenville, RI 02828 401-949-2060
† Furane Prods. Co./Isochem Opers., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865 401-723-2100
† Hardman Inc., 600 Cortlandt St., Belleville, NJ 07109 201-751-3000
Leepoxy Plastics, 3324 Ferguson Rd., Ft. Wayne, IN 46809 219-747-7411
† LNP Corporation, Div. of ICI, 412 King Street, Malvern, PA 19355 215-644-5200
Mereco Products Div., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893 401-828-4550
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
Monsanto Co., 800 N. Lindbergh Blvd., St. Louis, MO 63167 314-694-1000
§† Pennwalt Corp., Three Pkwy., Philadelphia, PA 19102 215-587-7520
Permagile Industries, Inc., 101 Commercial St., Plainview, NY 11803 516-349-1100
§ Ram Chemicals, Div. Whittaker Corp., 210 E. Alondra Blvd., Gardena, CA 90248 213-321-0710
† Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
† Sigma Plastronics, Inc., P.O. Box 649, Whitmore Lake, MI 48189 313-231-2871
Tra-Con, Inc., 55 North St., Medford, MA 02155 617-391-5550
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717
† Whittaker Corp., Providence Chemicals Div., King Philip Rd., P.O. Box 16069, E. Providence, RI 02916 401-434-1770

Plastics, Custom Molding — See Services, Custom Molding, Plastic (Vol. D)

Plastics, Encapsulating — See Compounds, Encapsulating, Molding, Potting (Vol. C)

Plastics Fabrication — See Services, Plastics Fabrication (Vol. D)

Plastics, Heat Shrinkable — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)

Plated Wire Memory Systems — See Memory Systems (Vol. D)

Plates, Instructional, Name, Silk Screen — See Nameplates (Vol. B)

Plates, Multihole-2500

§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090

Platforms, Thermal — See Thermal Platforms (Vol. D)

Plating Services — See Services, Plating (Vol. D)

Players, Magnetic Tape — See Recorders, Magnetic Tape (Vol. D)

Pliers-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000
§ Edsyn, Inc., 15958 Arminta Ave., Van Nuys, CA 91406 ..... 818-989-2324;213-873-5115
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
† Waldes Truarc, Inc., Member of the Seeger Fastening Sys. Grp., 29-01 Borden Ave., Long Island City, NY 11101-4478 718-392-3100

Plotters/Hard-Copy Devices-2000 — *See Vol. D*

Plotters, X-Y, & Accessories-3000 — *See Vol. D*

Plug & Jack Sets-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, 213-323-7771 ..... C•1230
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222 ..... C•1315-1316
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
LZR Electronics, Inc., 8174 Beechcraft Ave., Gaithersburg, MD 20879, 301-921-9440 ..... C•1873, D•1091
† Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... C•1730-1731
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519,1921
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530, 914-681-0700 ..... D•1055
§† Superior Electric, 383 Middle St., Bristol, CT 06010, 203-582-9561 ..... C•1535
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700 ..... C•1539
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1563,1565-1567
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
Barber-Colman Co., Indl. Instrs. Div., P.O. Box 2940, 1354 Clifford Ave., Loves Park, IL 61132 815-877-0241
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ GIC Thermodynamics, 2611 Parmenter, Royal Oak, MI 48073 313-280-1648
GTE SUPPLY; GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 201-835-5002
† Honeywell, Industrial Controls Div., 1100 Virginia Dr., Ft. Washington, PA 19034 ..... 800-321-5111, Ext. 596
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Plug Adapters-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... C•1325-1333
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1914
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1495
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, 812-944-6733 ..... C•1515
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911 ..... C•1519
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1555
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590 516-935-3640
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 201-835-5002
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Todd Systems, Inc., 50 Ash St., Yonkers, NY 10701 914-963-3400
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Plug Buttons-2825

§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1207,1697**
§ **Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182** ..... **C•1867**
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700

Plug Caps & Shells-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... **C•1207,1697**
§ **Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182** ..... **C•1867**
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... **C•1340**
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... **C•1495**
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
§† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010

Plugboard Programming Systems — See Boards, Programming (Vol. C)

Plugs, Electrical (All Types)-2100

Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403, 617-583-0160 ..... **C•1147**
Anasco Corporation, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923, 617-777-8888;800-826-2726 ..... **D•1389**
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... **C•1207,1697**
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... **C•1209**
Cord Electronics, Inc., 177 Cantiague Rock Rd., Westbury, NY 11590, 516-935-3640 ..... **C•1845**
§† **Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400** ..... **C•1855**
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... **B•1604, C•1573**
Fischer-America, Inc., 13756 Glenoaks Blvd., Sylmar, CA 91342, 818-362-9395 ..... **C•1232-1233**
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... **C•1699**
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406, 707-578-8811 ..... **C•1325-1333**
† **Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111** ..... **C•1730-1731**
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... **C•1340**
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936, 215-699-5373 ..... **C•1353**
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... **C•1366-1371,1914**
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722** ..... **C•1495-1497,1499**
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 .. **C•1516-1518**
† **Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021, 516-466-0911** ..... **C•1519**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... **C•1522-1523**
§ **Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630, 312-792-2700** .. **C•1537,1539**
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... **C•1554**
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247 603-524-5101
§† Brim Electronics, 120E Home Pl, Lodi, NJ 07644 201-796-2886
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154 215-969-4200
§† Ericson Manufacturing Co., 4215 Hamann Pkwy., Willoughby, OH 44094 216-951-8000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 201-835-5002
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
International Components Corp., 105 Maxess Rd., Melville, NY 11747 516-293-1500
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SL Waber, Inc., 300 Harvard Ave., Westville, NJ 08093 ..... 609-456-5400;800-257-8384
§ SPEMCO Switches, 23425 Harper, Box 386, St. Clair Shores, MI 48080 800-482-2828
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
§† Superior Electric, 383 Middle St., Bristol, CT 06010 203-582-9561
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Todd Systems, Inc., 50 Ash St., Yonkers, NY 10701 914-963-3400
Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Plugs, Fused-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... **C•1697**
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722** ..... **C•1496-1497,1499**
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952, 707-778-6311 .. **C•1516-1518**
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000

Plugs, Hole-2500

§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1697**
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... **C•1699**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... **C•1698**
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000

Plugs, Power, International-2100

Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048, 312-680-7400 ..... **C•1211**
§ **Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722** ..... **C•1495-1496**
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
§ Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311

Plugs (MIL)-2440 — *See Vol. B*

Pointers, Dial-2400

Selco Products Co., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621, 714-521-8673 ..... **C•1599**
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§† Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
Spectra Lux Corp., 12840 N.E. 21 St. Pl., Bellevue, WA 98005 206-747-0560
Stimpson Company, Inc., 900 Sylvan Ave., Bayport, NY 11705-1097 516-472-2000
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Polarizers, Satellite Antennas-1900 — *See Vol. D*

Position Control Systems, Servo — See Controls, Servo Systems (Vol. D)

Positioning Systems, Multiple Axis, Computer Guided-4100 — *See Vol. D*

Posts, Binding-2100

Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605, 203-334-4124 ..... **C•1696**
§ **Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571** ..... **C•1206-1207,1697**
§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... **C•1221**
§ **Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525, 312-354-1040** ..... **C•1290**
§ **Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093, 507-835-6222** ..... **C•1316**
§† **Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463** ..... **C•1378-1380**
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... **C•1523**
§† **Superior Electric, 383 Middle St., Bristol, CT 06010, 203-582-9561** ..... **C•1535**
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702 914-968-8400
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 201-835-5002
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§† Raytheon Co., 465 Centre St., Quincy, MA 02169 617-479-5300
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Posts, Harness Board-2825

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... **C•1206,1697**
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060

Potentiometer Elements-4750 — *See Vol. A*

Potentiometers, Air Operated-4750 — *See Vol. A*

Potentiometers, Carbon Ceramic-4750 — *See Vol. A*

Potentiometers, Carbon Film-4750 — *See Vol. A*

Potentiometers, Ceramic Metal (CERMET)-4750 — *See Vol. A*

Potentiometers, Composition, Carbon-4750 — *See Vol. A*

Potentiometers, Conductive Plastic-4750 — *See Vol. A*

Potentiometers, Hot Molded-4750 — *See Vol. A*

Potentiometers, Hybrid-4750 — *See Vol. A*

Potentiometers, Lab Type-4750 — *See Vol. A*

Potentiometers, Linear-4750 — *See Vol. A*

Potentiometers, Metal Film-4750 — *See Vol. A*

Potentiometers, Metal, Glazed — See Potentiometers, Ceramic Metal (Vol. A)

Potentiometers, Motorized-4750 — *See Vol. A*

Potentiometers, Multiturn-4750 — *See Vol. A*

Potentiometers, Nonlinear-4750 — *See Vol. A*

Potentiometers, Power — See Rheostats (Vol. A)

Potentiometers, Pushbutton-4750 — *See Vol. A*

Potentiometers, Rectilinear-4750 — *See Vol. A*

Potentiometers, Servo Mount-4750 — *See Vol. A*

Potentiometers, Sliding-4750 — *See Vol. A*

Potentiometers, Surface Mount-4750 — *See Vol. A*

Potentiometers, Trimmer-4750 — *See Vol. A*

Potentiometers, Trimmer, Carbon Composition — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Carbon Film — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Ceramic Metal (CERMET) — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Conductive Plastic — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Hot Molded — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Metal Film — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Trimmer, Wirewound — See Potentiometers, Trimmer (Vol. A)

Potentiometers, Wirewound-4750 — *See Vol. A*

Potentiometers (MIL)-2440 — *See Vol. B*

Power Amplifiers — See Amplifiers, Power (Vol. D)

Power Entry Module — See Adaptors, US to European Power (Vol. C)

Power Distribution Modules-4000 — *See Vol. D*

Power Line Monitor Printers — See Printers, Event (Vol. D)

Power Modules-4000 — *See Vol. D*

Power Receptacles — See Sockets, Power (Vol. C)

Power Supplies, AC to DC Adapter-4000 — *See Vol. D*

Power Supplies, AC Input, Up to 30 VDC Output-4000 — *See Vol. D*

Power Supplies, AC Input, 31 to 300 VDC Output-4000 — *See Vol. D*

Power Supplies, AC Input, 301 to 1,000 VDC Output-4000 — *See Vol. D*

Power Supplies, AC Input, Greater than 1,000 VDC Output-4000 — *See Vol. D*

Power Supplies, AC Output-4050 — *See Vol. D*

Power Supplies, Bipolar-4000 — *See Vol. D*

Power Supplies, Constant Current-4000 — *See Vol. D*

Power Supplies, Constant Voltage — See Power Supplies, Linear (Vol. D)

Power Supplies, Constant Voltage/Constant Current-4000 — *See Vol. D*

Power Supplies, DC Input, AC Output — See Power Supplies, AC Output (Vol. D)

Power Supplies, DC Input, DC Output — See Converters, DC to DC (Vol. D)

Power Supplies, Encapsulated-4000 — *See Vol. D*

Power Supplies, Enclosed-4000 — *See Vol. D*

Power Supplies, Ferroresonant-4000 — ***See Vol. D***

Power Supplies, High Voltage — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Power Supplies, Isolated-4000 — ***See Vol. D***

Power Supplies, Lab (Incl. Metered Units)-4000 — ***See Vol. D***

Power Supplies, Laser — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Power Supplies, Linear-4000 — ***See Vol. D***

Power Supplies, Logic Level (Incl. Microprocessor) — See Power Supplies, AC Input, Up to 30 VDC Output (Vol. D)

Power Supplies, Microwave — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Power Supplies, Multiple Output-4000 — ***See Vol. D***

Power Supplies, Open Frame-4000 — ***See Vol. D***

Power Supplies, Photomultiplier — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Power Supplies, Plug In-4000 — ***See Vol. D***

Power Supplies, Precision, Low Noise-4000 — ***See Vol. D***

Power Supplies, Printed Circuit Card-4000 — ***See Vol. D***

Power Supplies, Programmable-4000 — ***See Vol. D***

Power Supplies, Proportional (to Input) Output-4000 — ***See Vol. D***

Power Supplies, Redundant-4000 — ***See Vol. D***

Power Supplies, Standby (Emergency)-4000 — ***See Vol. D***

Power Supplies, Submodular-4000 — ***See Vol. D***

Power Supplies, Switching-4000 — ***See Vol. D***

Power Supplies, Switching, Battery Backup-4000 — ***See Vol. D***

Power Supplies, Uninterruptable (UPS)-4050 — ***See Vol. D***

Power Supplies, Wall Plug-in — See Power Supplies, Plug-in (Vol. D)

Power Supplies, Welding, Electroplating — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Power Supplies (MIL), DC-3475 — ***See Vol. D***

Power Supplies for Displays — See Converters, DC to DC (Vol. D), Power Supplies, AC Output (Vol. D)

Power Supply Interfaces & Accessories-4000 — ***See Vol. D***

Preamplifiers-1100 — ***See Vol. D***

Prebonding Etchants — See Chemicals, Etching (Vol. C)

Preforms, Precious Metal-2825

† **Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353** ..... **C•1107**
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§† Electronic Essentials, 60-20 34th Avenue, Woodside, NY 11377 718-898-8300
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012 312-963-0220
Tricon Industries, Inc., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076 312-964-2330
† Wilkinson, P.O. Box 4558, Westlake Village, CA 91359 ... 818-889-0050;800-822-4653

Preforms, Soldering-4600

† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012 312-963-0220

Prescalers-2900 — ***See Vol. D***

Preselector-Mixers-3450 — ***See Vol. A***

Preselectors-1900 — ***See Vol. D***

Pressure Indicators — See Gauges, Pressure (Vol. D)

Pressure Vessels — See Chambers, Pressure (Vol. D)

Pressurization Units — See Chambers, Pressure (Vol. D)

Printed Circuits & Printed Circuit Materials (MIL)-2440 — ***See Vol. B***

Printer/Plotters-2000 — ***See Vol. D***

Printers, Daisywheel-2000 — ***See Vol. D***

Printers, Digital-2000 — ***See Vol. D***

Printers, Dot Matrix Impact-2000 — ***See Vol. D***

Printers, Event-3000 — ***See Vol. D***

Printers, Jet Ink-2000 — ***See Vol. D***

Printers, Thermal-2000 — ***See Vol. D***

Printers, Laser-2000 — ***See Vol. D***

Printers, Line — See Printers, Digital (Vol. D)

Printers, Page-2000 — ***See Vol. D***

Printers, Screen, Stencil-4100 — ***See Vol. D***

Printers, Serial-2000 — ***See Vol. D***

Printers, Solder, Paste, Surface Mount-4100 — ***See Vol. D***

Printing, Dry Transfer — See Kits, Marking (Vol. C)

Probe Cards, Semiconductor Testing-4100 — ***See Vol. D***

Probes, Hall-4800 — ***See Vol. A***

Probes, High Voltage (1,000 Volts & Over)-2900 — ***See Vol. D***

Probes, IC-2900 — ***See Vol. D***

Probes, Logic Test-2900 — ***See Vol. D***

Probes, Microwave-3450 — ***See Vol. A***

Probes, Oscilloscopes-2975 — ***See Vol. D***

Probes, RF-2900 — ***See Vol. D***

Probes, Temperature-2900 — ***See Vol. D***

Probes, Test Lead-2900 — ***See Vol. D***

Process Control Systems-2200 — ***See Vol. D***

Processors, Array — See Array Processors (Vol. D)

Processors, Communications, Front End-1900 — ***See Vol. D***

Processors, Communications, Message Switching-1900 — ***See Vol. D***

Processors, Communications, Network Node-1900 — ***See Vol. D***

Processors, Communications, Standalone-1900 — ***See Vol. D***

Processors, Image-2000 — ***See Vol. D***

Processors, Video Signal-1900 — ***See Vol. D***

Program Board Connectors — See Connectors, Plug-in, Program Board (Vol. C)

Programmers, Cam & Drum-2200 — ***See Vol. D***

Programmers, Matrix Boards — See Boards, Programming (Vol. C)

Programmers, Power-2200 — *See Vol. D*

Programmers, Power Supply-4000 — *See Vol. D*

Programmers, PROM & Logic Array-3130 — *See Vol. A*

Programmers, Punched Card-2000 — *See Vol. D*

Programmers, Tape-2000 — *See Vol. D*

PROM Programmers — See Programmers, PROM & Logic Array (Vol. A)

Protectors, Brownout-4300 — *See Vol. B*

Protectors, Surge — See Suppressors, Transient Voltage (Vol. B)

Protocol Converters-1900 — *See Vol. D*

Proximity Transducers — See Current Sensors (Vol. D), Transducers, Volt, etc. (Vol. B)

Public Address Systems-1300 — *See Vol. D*

Pullers, Circuit Board-5400

§ **Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808** ..... **C•1018**
§† **Calmark Corp., 4915 Walnut Grove Ave., San Gabriel, CA 91776, 818-287-0451** ..... **C•1027**
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, 215-682-7181 ..... **C•1042**
§† **Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300** ..... **C•1084-1085**
§ **Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321** ..... **C•1693**
§ Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 ... 203-288-8001
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† Micro-Products Engineering Co., 230 Ridgewood Ave., Newark, NJ 07108 201-824-8467
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
§ Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
UNITRACK Div., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380 215-692-0800
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661

Pullers, Tube-5400

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700

Pulleys-2500

Belting Industries Co., Inc., 20 Boright Ave., Kenilworth, NJ 07033 201-272-8591
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

Pulsers, Diode — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)

Pulsers, Logic Test-2900 — *See Vol. D*

Pumps, Vacuum-4100 — *See Vol. D*

Punches, Chassis-5400

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Greenlee Tool Co., 4455 Boeing Drive, Rockford, IL 61109 815-397-7070
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Pyrometers, Infrared-2900 — *See Vol. D*

Pyrometers, Optical, Noninfrared-5300 — *See Vol. B*

Pyrometers, Recording-2900 — *See Vol. D*

Q Bus — See Board Computers & Subassemblies (Vol. D)

Quartz, Fused-2300 — *See Vol. A*

Quartz, Raw — See Crystals, Quartz (Vol. A)

Racks, Aging — See Ovens, Aging, Burn-in, Life Test (Vol. D)

Racks, Cabinet — See Enclosures, Equipment & Panel Mounting (Vol. C)

Racks, Circuit Board — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

Racks, Desk & Console — See Enclosures, Equipment & Panel Mounting (Vol. C)

Racks, Module — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

Racks, Relay & Mounting — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

Radar Forward-Looking Infrared (FLIR) Sets (MIL)-3475 — *See Vol. D*

Radar Homing & Warning (RHAW) Systems (MIL)-3475 — *See Vol. D*

Radar Intercept (MIL)-3475 — *See Vol. D*

Radar (MIL), Tail Warning-3475 — *See Vol. D*

Radar Systems (MIL), Elint-3475 — *See Vol. D*

Radar System Components-3450 — *See Vol. A*

Radio Communications Systems — See Communications Systems (Vol. D)

Radiographic Equip. — See X-ray Inspection Equip. (Vol. D)

Radiometers-2900 — *See Vol. D*

Radomes & Windows, Microwave-3450 — *See Vol. A*

Reactors, Charging-5600 — *See Vol. A*

Reactors, Epitaxial — See Machines & Accessories, Semiconductor Manufacturing (Vol. D)

Reactors, Filter-5600 — *See Vol. A*

Reactors, Loading-5600 — *See Vol. A*

Reactors, Saturable-1800 — *See Vol. A*

Reactors (MIL)-2440 — *See Vol. B*

Readers, Badge-2000 — *See Vol. D*

Readers, Bar Code-2000 — *See Vol. D*

Readers, Character-2000 — *See Vol. D*

Readers, Magnetic Card-2000 — *See Vol. D*

Readers, Magnetic Stripe Card-2000 — *See Vol. D*

Readers, Punched Card-2000 — *See Vol. D*

Readers, Punched Tape-2000 — *See Vol. D*

Readers, Static Card-2000 — *See Vol. D*

Readers, Time Code-2000 — *See Vol. D*

Readouts — See Tubes, Readout (Vol. A)

Reamers-5400

† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Receivers, AM/FM (Incl. Precision Test)-2900 — *See Vol. D*

Receivers, Communication-1900 — *See Vol. D*

Receivers, Fiber Optic-2475 — *See Vol. B*

Receivers, Field Intensity, Microwave — See Receivers, Microwave (Vol. D)

Receivers, Fixed Frequency-2900 — *See Vol. D*

Receivers, Frequency Shift-1900 — ***See Vol. D***

Receivers, Headphone — See Handsets, etc. (Vol. D)

Receivers, Loran & Omega-1900 — ***See Vol. D***

Receivers, Microwave-3400 — ***See Vol. D***

Receivers, Monitoring, Communications-1900 — ***See Vol. D***

Receivers, NBS-2900 — ***See Vol. D***

Receivers, Telemetry-1900 — ***See Vol. D***

Receivers, Tone-1900 — ***See Vol. D***

Receivers, TV — See Monitors, Video (Vol. D)

Receivers (MIL)-3475 — ***See Vol. D***

Receivers (MIL), Acoustic Intercept-3475 — ***See Vol. D***

Receivers (MIL), Digital Warning-3475 — ***See Vol. D***

Receivers, (MIL), ECM-3475 — ***See Vol. D***

Receivers (MIL), Elint-3475 — ***See Vol. D***

Receivers (MIL), ESM-3475 — ***See Vol. D***

Receivers (MIL), GPS-3475 — ***See Vol. D***

Receivers (MIL), Handoff-3475 — ***See Vol. D***

Receivers (MIL), IFM-3475 — ***See Vol. D***

Receivers (MIL), IR Warning-3475 — ***See Vol. D***

Receivers (MIL), Missile Launch Warning-3475 — ***See Vol. D***

Receivers (MIL), Radar Warning-3475 — ***See Vol. D***

Receivers (MIL), Radio-3475 — ***See Vol. D***

Receivers (MIL), Recon-3475 — ***See Vol. D***

Receivers (MIL), Search-3475 — ***See Vol. D***

Receivers (MIL), Shipboard-3475 — ***See Vol. D***

Receivers (MIL), Submarine-3475 — ***See Vol. D***

Receivers (MIL), Surveillance-3475 — ***See Vol. D***

Receivers (MIL), Warning-3475 — ***See Vol. D***

Receptacles — See Connectors (Vol. C), Jacks (Vol.), Sockets

Receptacles, Power — See Sockets, Power (Vol. C)

Recognition Equipment, Speech-2000 — ***See Vol. D***

Recorders, Cartridge, Bubble Memory-2000 — ***See Vol. D***

Recorders, Computer Data-2000 — ***See Vol. D***

Recorders, Electrostatic-3000 — ***See Vol. D***

Recorders, Event/Multievent-3000 — ***See Vol. D***

Recorders, FM — See Recorders, Magnetic Tape (Vol. D)

Recorders, Graphic — See Recorders, Specific Types (Vol. D)

Recorders, Magnetic Tape-2000 — ***See Vol. D***

Recorders, Polar-3000 — ***See Vol. D***

Recorders, Program Loading-2000 — ***See Vol. D***

Recorders, Pyrometer — See Pyrometers, Recording (Vol. D)

Recorders, Sound Level-1300 — ***See Vol. D***

Recorders, Strip Chart-3000 — ***See Vol. D***

Recorders, Transient-3000 — ***See Vol. D***

Recorders, Vibration-3000 — ***See Vol. D***

Recorders, Video-1900 — ***See Vol. D***

Recorders, X-Y — See Plotters X-Y (Vol. D)

Recorders (MIL), Magnetic Tape-3475 — ***See Vol. D***

Recorders (MIL), RHAW-3475 — ***See Vol. D***

Recording Systems (MIL)-3475 — ***See Vol. D***

Rectifier Assemblies-4800 — ***See Vol. A***

Rectifiers, Blocks-4800 — ***See Vol. A***

Rectifiers, Bridges & Assemblies-4800 — ***See Vol. A***

Rectifiers, Cartridge-4800 — ***See Vol. A***

Rectifiers, Electron Tube — See Tubes, Rectifying (Vol. A)

Rectifiers, General Purpose, Surface Mount-4800 — ***See Vol. A***

Rectifiers, Germanium-4800 — ***See Vol. A***

Rectifiers, Schottky, Surface Mount-4800 — ***See Vol. A***

Rectifiers, Selenium-4800 — ***See Vol. A***

Rectifiers, Silicon-4800 — ***See Vol. A***

Rectifiers, Silicon Controlled — See Thyristors (Vol. A)

Rectifiers, Surface Mount-4800 — ***See Vol. A***

Rectifiers, Ultrafast-4800 — ***See Vol. A***

Rectifiers (MIL), Semiconductor-2440 — ***See Vol. B***

Reducers, Speed — See Gear Heads & Speed Reducers (Vol. B)

Reels, Tape — See Tape Recording Accessories (Vol. D)

Reference Books — See Technical Books (Vol. D)

References, DC Voltage-2900 — ***See Vol. D***

Refrigerants, Spray-1600

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Refrigerated Cooling Equipment — See Air Conditioners (Vol. C)

Refrigerators, Environmental Test-2550 — ***See Vol. D***

Regulators, Current-4000 — ***See Vol. D***

Regulators, Frequency-4050 — ***See Vol. D***

Regulators & References, Silicon-Also See Diodes, Zener & Stabistors-4800 — ***See Vol. A***

Regulators & Stabilizers, Voltage-Also See Transformers, Voltage Regulating-4000 — ***See Vol. D***

Regulators, Pulse-Width Modulating, Surface Mount-3130 — ***See Vol. A***

Regulators, Voltage, Surface Mount-4800 — ***See Vol. A***

Relays, Antenna — See Relays, RF (Incl. Antenna & Coaxial) (Vol. B)

Relays, Audio Operated — See Relays, Frequency Selective (Vol. B)

Relays, Coaxial — See Relays, RF (Vol. B)

Relays, Contact — See Relays, Power (Vol. B)

Relays, Cradle-4500 — ***See Vol. B***

Relays, Crystal Can, 1/2 Crystal Can-4500 — ***See Vol. B***

Relays, Current Sensing-4500 — ***See Vol. B***

Relays, Differential-4500 — ***See Vol. B***

Relays, Frequency Selective-4500 — ***See Vol. B***

Relays, General Purpose-4500 — ***See Vol. B***

Relays, High Voltage (500 Volts & Over)-4500 — *See Vol. B*
Relays, Hybrid-4500 — *See Vol. B*
Relays, Impulse — See Relays, Stepping (Vol. B)
Relays, I/O Modules — See Modules, I/O Relays (Vol. A)
Relays, Latching-4500 — *See Vol. B*
Relays, Mercury-Wetted Contacts-4500 — *See Vol. B*
Relays, Meter-4500 — *See Vol. B*
Relays, Motor Start-4500 — *See Vol. B*
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Relays, Printed Circuit Mounting (Incl. Transistor & DIP Case Types)-4500 — *See Vol. B*
Relays, Programmable-4500 — *See Vol. B*
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Relays, Reed-4500 — *See Vol. B*
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Relays, Stepping-4500 — *See Vol. B*
Relays, Telephone-4500 — *See Vol. B*
Relays, Thermal-4500 — *See Vol. B*
Relays, Time Delay-4500 — *See Vol. B*
Relays, Transistor & DIP Case Types — See Relays, Printed Circuit Mounting (Vol. B)
Relays, Vacuum-4500 — *See Vol. B*
Relays, Voltage Sensitive-4500 — *See Vol. B*
Relays (MIL)-2440 — *See Vol. B*
Rental & Lease Equipment-2900 — *See Vol. D*
Repair Equipment, Surface Mount-4100 — *See Vol. D*
Repair Services, Surface Mount Equipment-4100 — *See Vol. D*
Repeaters, Pulse — See Transponders (Vol. D)
Repeaters, Servo-4900 — *See Vol. D*
Resins, Encapsulating — See Compounds, Encapsulating, Molding & Potting (Vol. C)
Resins, Synthetic — See Plastic Raw Materials (Vol. C)
Resistance Comparators — See Bridges, Resistance (Vol. D)

Resistor Hardware-2800

Caddock Electronics, Inc., 1717 Chicago Ave., Riverside, CA 92507, 714-788-1700 ..... **A•1902**
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§† Dale Electronics, Inc., Norfolk Div., 2300 Riverside Blvd., Norfolk, NE 68701 402-371-0080
International Resistive Company, P.O. Box 1860, Boone, NC 28607 704-264-8861
Lectrohm Div. of Capco, Inc., Box 1028, Grand Junction, CO 81502 303-243-8480
Micro-Ohm Corp., 1088 Hamilton Rd., Duarte, CA 91010 818-3575377
Milwaukee Resistor Corp., 700 W. Virginia St., Milwaukee, WI 53204 414-271-9900
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Ward Leonard Electric Co., Inc., 31 South St., Mt. Vernon, NY 10550 914-664-1000

Resistor Networks, Surface Mount-4700 — *See Vol. A*
Resistors, Adjustable-Also See Potentiometers; Rheostats-4700 — *See Vol. A*
Resistors, Ballast (Incl. Tube & Solid State Devices)-4700 — *See Vol. A*
Resistors, Beryllia Core — See Resistors, Integral Heat Dissipator (Vol. A)
Resistors, Bulk Ceramic-4700 — *See Vol. A*
Resistors, Carbon Film-4700 — *See Vol. A*
Resistors, Ceramic Core-4700 — *See Vol. A*
Resistors, Ceramic Metal (Cermet)-4700 — *See Vol. A*
Resistors, Chip (For Microcircuits)-4700 — *See Vol. A*
Resistors, Composition, Carbon-4700 — *See Vol. A*
Resistors, Decade-4700 — *See Vol. A*
Resistors, Deposited Carbon-4700 — *See Vol. A*
Resistors, Disk, Rod & Tube-4700 — *See Vol. A*
Resistors, Film, Metallized & Nonmetallized-4700 — *See Vol. A*
Resistors, Flame Retardant-4700 — *See Vol. A*
Resistors, Flux Sensitive-4700 — *See Vol. A*
Resistors, Foil, Ultraprecision-4700 — *See Vol. A*
Resistos, Four Terminal-4700 — *See Vol. A*
Resistors, Fuse-4300 — *See Vol. B*
Resistors, Glass-4700 — *See Vol. A*
Resistors, Heat Sink Encased — See Resistors, Integral Heat Dissipator (Vol. A)
Resistors, High Frequency-4700 — *See Vol. A*
Resistors, High Megohm (Over 22 Megohms)-4700 — *See Vol. A*
Resistors, High Temperature (Over 125°C)-4700 — *See Vol. A*
Resistors, High Voltage (1,000 Volts & Over)-4700 — *See Vol. A*
Resistors, Hot Molded-4700 — *See Vol. A*
Resistors, Integral Heat Dissipator-4700 — *See Vol. A*
Resistors, Low Temperature Coefficient-4700 — *See Vol. A*
Resistors, Metal Glazed-4700 — *See Vol. A*
Resistors, Metal Oxide-4700 — *See Vol. A*
Resistors, Microwave-4700 — *See Vol. A*
Resistors, Negative Temperature Coefficient-4700 — *See Vol. A*
Resistors, Noninductive-4700 — *See Vol. A*
Resistors, Oil Filled-4700 — *See Vol. A*
Resistors, Plug-in-4700 — *See Vol. A*
Resistors, Positive Temperature Coefficient-4700 — *See Vol. A*
Resistors, Power-4700 — *See Vol. A*
Resistors, Precision-4700 — *See Vol. A*
Resistors, Pressure Sensitive-4700 — *See Vol. A*
Resistors, Rectilinear-4700 — *See Vol. A*
Resistors, Standards — See Standards, Resistance (Vol. D)
Resistors, Strip-4700 — *See Vol. A*
Resistors, Suppressor-4700 — *See Vol. A*

Resistors, Surge-4700 — *See Vol. A*

Resistors, Surface Mount-4700 — *See Vol. A*

Resistors, Tapped-4700 — *See Vol. A*

Resistors, Temperature Sensitive-5300 — *See Vol. B*

Resistors, Tin Oxide-4700 — *See Vol. A*

Resistors, Variable — See Potentiometers (Vol. A), Rheostats (Vol. A), Resistors, Adjustable (Vol. A)

Resistors, Voltage Sensitive-4700 — *See Vol. A*

Resistors, Wirewound-4700 — *See Vol. A*

Resistors, Zero-Ohm-4700 — *See Vol. A*

Resistors (MIL)-2440 — *See Vol. B*

Resolvers, Synchro-4900 — *See Vol. D*

Resonators, Ceramic-2300 — *See Vol. A*

Resonators, Ceramic, Surface Mount-2700 — *See Vol. A*

Resonators, SAW-2300 — *See Vol. A*

Retainers, Battery-2800

§† **Bogen Communications, Inc., 50 Spring St., Ramsey, NJ 07446, 201-934-8500** ..... **C•1193**

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Retainers, Relay-4500 — *See Vol. B*

Retainers, Transistor & Diode-2800

§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222

Retainers, Tube-5700 — *See Vol. A*

Retractors & Carriers — See Cable Retractors (Vol. C)

RFI Measuring Equipment-2900 — *See Vol. D*

RFI Shielding — See Shields, RF (Vol. C)

RFI Testing Services — See Services, Electrical Measurement & Test (Vol. D)

Rheostats-4750 — *See Vol. A*

Ribbons for Printers-2000 — *See Vol. D*

Rings, Retaining-2500

Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515

Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200

Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000

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† Stock Drive Products, Div. of Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Pk., NY 11040 ..... 516-328-0200;328-3300

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† Waldes Truarc, Inc., Member of the Seeger Fastening Sys. Grp., 29-01 Borden Ave., Long Island City, NY 11101-4478 718-392-3100

Rings, Slip — See Slip Rings (Vol. B)

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Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012 312-963-0220

Robotic Pick & Place — See Arms & Manipulators, Robotic (Vol. D)

Robotics — See Arms & Manipulators, Robotic (Vol. D), Control Systems, Robotic (Vol. D)

Robots, Machine Vision-4900 — *See Vol. D*

Robots, Pick and Place-4900 — *See Vol. D*

Rods, Ground-2800

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† Union Carbide Corporation, Industrial Chemicals Div., Crystal Products Dept., 9320 Chesapeake Dr., Ste. 104, San Diego, CA 92123 619-279-4500

Rotators — See Antenna Rotators (Vol. D)

Rotors, Motor & Generator — See Motor & Generator Armatures, Rotors, Stators (Vol. B)

Rubber, Conductive-1600

Alasco Rubber & Plastics Corp., 617 Mountain View Ave. # 7, Belmont, CA 94002 415-595-4100

† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700

Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400

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† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368

† Minor Rubber Co., Inc., Ackerman St., Bloomfield, NJ 07003 ..... 201-338-6800; 800-631-8574

§† Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351

PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040 ..... 215-672-0787;215-672-4741

† Press-On Products, 21 Factory Rd., Addison, IL 60101 312-628-2255

§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681

SIDAC Enclosures, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385 718-441-4728

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Stetron International, Inc., 90 Broadway, Buffalo, NY 14203 716-854-3443

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016 201-272-5500

Toko America, Inc., 1250 Feehanville Dr., Mt. Prospect, IL 60056 312-297-0070

§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Rubber Guards (For Equipment) — See Bumpers (Vol. C)

Rubber, Silicone-1600

Alasco Rubber & Plastics Corp., 617 Mountain View Ave. # 7, Belmont, CA 94002 415-595-4100

† Allaco Products Div., Bacon Industries, Inc., 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
† APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700
† Bacon Industries, 192 Pleasant St., Watertown, MA 02172-2399 617-926-2550
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631
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† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
† Minor Rubber Co., Inc., Ackerman St., Bloomfield, NJ 07003 ..... 201-338-6800; 800-631-8574
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Satellite Antennas — See Antennas, Satellite (Vol. D)

Satellite Earth Stations, Transmit & Receive-1900 — *See Vol. D*

Scale Expanders, Meter — See Multipliers, Meter (Vol. D)

Scalers, Binary, Decade-2325 — *See Vol. D*

Scales, Dial-2400

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§ Dillon, W. C., & Co., National Controls, Inc., 2320 Airport Blvd., Santa Rosa, CA 95401 707-527-5555
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Sunshine Scientific Instruments, 1810 Grant Ave., Philadelphia, PA 19115 215-673-5600
§ Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600

Scales, Electronic (Counting/Weighing)-2900 — *See Vol. D*

Scanners, Bar Code — See Readers, Bar Code (Vol. D)

Scanners, Crossbar-1900 — *See Vol. D*

Scanners, Fiber Optic-2475 — *See Vol. B*

Scanners, Flying Spot-1900 — *See Vol. D*

Scanners, Infrared-2900 — *See Vol. D*

Scanners, Instrument, Input/Output-2900 — *See Vol. D*

Scanners, Optical-2900 — *See Vol. D*

Scanners, Reed-2900 — *See Vol. D*

Scintillometers-2900 — *See Vol. D*

Scissors-5400

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§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010

Scope Dollies — See Carts & Dollies, Instrument & Equipment (Vol. C)

SCRs — See Thyristors (Vol. A)

SCR Firing Controls — See Controls, SCR (Vol. D)

Scramblers, Data-2325 — *See Vol. D*

Scramblers/Descramblers, Video-1900 — *See Vol. D*

Scramblers, Speech-1900 — *See Vol. D*

Screens, Printed Circuit-1700

Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ..... C•1105
Affiliated Manufacturers, Inc., U.S. Highway 22, P.O. Box 5049, North Branch, NJ 08876 201-722-7100
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§ NAZ-DAR/K.C., Thrall Enterprises, 1087 N. Branch St., Chicago, IL 60622 312-943-8338
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§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Screws, Lead, Feed & Translatory — See Drives & Drives Mechanisms (Dial) (Vol. C)

Screws, Fastening-2825

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Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
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§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† Dimensional Swiss Products, 424 Roberson Lane, San Jose, CA 95112 408-436-0361
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ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
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§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
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Southco, Inc., 210 N. Brinton Lake Rd., Concordville, PA 19331 215-459-4000

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Scribers, Wafer-Also See Machines & Accessories, Semiconductor Manufacturing-4100 — *See Vol. D*

Sealers — See Coatings (Vol. C)

Sealing Equipment, Metal to Glass/Ceramic-4100 — *See Vol. D*

Seals & Feedthrus, Environmental — See Feedthrus & Seals, Environmental (Vol. C)

Seals, Ceramic To Metal-2500

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3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601
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Seals, Microwave — See Gaskets, Shielding, RF (Vol. C), Seals, Waveguide (Vol. A)

Seals, Pressure Sensitive-2500

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Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386

Seals, Waveguide-3450 — ***See Vol. A***

Search, Interceptor Set (MIL)-3475 — ***See Vol. D***

Search Unit, Magnetic Tape — See Tape Search Equipment (Vol. D)

Security Systems, Access Control-2000 — ***See Vol. D***

Security Systems, Data-2325 — ***See Vol. D***

Seismographs-2900 — ***See Vol. D***

Seizers-5400

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Selsyns — See Motors, Synchronous (Vol. B)

Semiconductor Material — See Crystals, Semiconductor (Vol. A)

Semiconductor Wafer Fabrication, Assembling (Packaging)-4100 — ***See Vol. D***

Semiconductor Wafer Fabrication, Designing (Topological)-4100 — ***See Vol. D***

Semiconductor Wafer Fabrication, Maskmaking (Tooling)-4100 — ***See Vol. D***

Semiconductor Wafer Fabrication, Processing-4100 — ***See Vol. D***

Semiconductor Wafer Fabrication, Testing/Trimming-4100 — ***See Vol. D***

Semiconductors — See Diodes (Vol. A), Rectifiers (Vol. A), Transistors (Vol. A)

Sensors — See Transducer Listings (Vol. B)

Sensors, Acoustic-2200 — ***See Vol. D***

Sensors, Angle Measuring-5500 — ***See Vol. B***

Sensors, CCD Image-3700 — ***See Vol. B***

Sensors, Chemical-2200 — ***See Vol. D***

Sensors, Fiber Optic-2475 — ***See Vol. B***

Sensors, Hall Effect-2200 — ***See Vol. D***

Sensors, Light-3700 — ***See Vol. B***

Sensors, Moisture-5500 — ***See Vol. B***

Sensors, Proximity — See Transducers, Proximity (Vol. B)

Sensors, Temperature — See Bolometers (Vol. D), Thermistors (Vol. B), Transducers (Vol. A)

Sensors (MIL), Tactical Electronic Reconnaissance-3475 — ***See Vol. D***

Sequence Controllers — See Controllers, Programmable (Vol. D)

Services, Acoustical, Consulting-4100 — ***See Vol. D***

Services, Assembly & Fabrication (Incl. R&D) - Also see Services, Metal Parts Fabrication; Services, Printed Circuit Products-4100 — *See Vol. D*

Services, Assembly, Surface Mount Technology-4100 — *See Vol. D*

Services, Backplane Wiring - Also see Services, Wire Wrapping; Services, Cable Assembly - Also see Services, Crimping; Services, Wire Cutting & Stripping-4100 — *See Vol. D*

Services, Cable Assembly-4100 — *See Vol. D*

Services, Calibration & Instrument Repair-4100 — *See Vol. D*

Services, Coating-4100 — *See Vol. D*

Services, Component Testing & Screening-4100 — *See Vol. D*

Services, Computer-Aided Design (CAD)-Also See Computers, CAD, CAM, & CAD/CAM-4100 — *See Vol. D*

Services, Computer Programming - Also see Services, Computer Systems, Specific Classification-2050 — *See Vol. D*

Services, Computer Systems, Builders-2050 — *See Vol. D*

Services, Computer Systems, Consulting-2050 — *See Vol. D*

Services, Computer Systems, Integrators-2050 — *See Vol. D*

Services, Computer Systems, Turnkey-2050 — *See Vol. D*

Services, Consulting, Chemical Analysis-4100 — *See Vol. D*

Services, Consulting, Data Processing-4100 — *See Vol. D*

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Services, Consulting, Engineering-4100 — *See Vol. D*

Services, Consulting, Patent Development-4100 — *See Vol. D*

Services, Consulting, Production-4100 — *See Vol. D*

Services, Consulting, Research & Development-4100 — *See Vol. D*

Services, Crimping - Also see Services, Wire Cutting & Stripping-4100 — *See Vol. D*

Services, Cryogenic-4100 — *See Vol. D*

Services, Custom Cable Fabrication-6000

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Services, Decapsulation/Encapsulation-4100 — *See Vol. D*

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Services, Electroplating — See Services, Plating (Vol. D)

Services, EMI/RFI Testing-4100 — *See Vol. D*

Services, Encapsulation — See Services, Decapsulation/Encapsulation (Vol. D)

Services, Environmental Testing-4100 — *See Vol. D*

Services, Equipment Leasing/Rental-4100 — *See Vol. D*

Services, Failure Analysis — See Services, Reliability (Vol. D)

Services, Fiberoptics, Consulting-4100 — *See Vol. D*

Services, Hermetic Sealing-4100 — *See Vol. D*

Services, High Vacuum-4100 — *See Vol. D*

Services, Instrument Calibration — See Services, Calibration & Instrument Repair (Vol. D)

Services, Instrument Design (Industrial)-4100 — *See Vol. D*

Services, Integration, Computer Systems — See Services, Computer Systems, Integrators (Vol. D)

Services, Laser, Consulting-4100 — *See Vol. D*

Services, Magnetics-4100 — *See Vol. D*

Services, Measurement & Test, Electrical — See Services, Electrical Measurements & Test (Vol. D), Services, Environmental Testing

Services, Measuring — See Services, Instrument Calibration (Vol. D), Services, Testing & Measuring

Services, Metal Etching, Engraving-4100 — *See Vol. D*

Services, Metal Parts Fabrication-4100 — *See Vol. D*

Services, Metallizing (Incl. Electroforming)-4100 — *See Vol. D*

Services, Microprocessor Development - Also see Services, PROM & Array Programming-4100 — *See Vol. D*

Services, Molding/Casting - Also see Services, Plastic Fabrication & Molding-4100 — *See Vol. D*

Services, Optical Design-4100 — *See Vol. D*

Services, Packaging-4100 — *See Vol. D*

Services, Photographic-4100 — *See Vol. D*

Services, Plastics Fabrication/Molding/Foaming/Finishing-4100 — *See Vol. D*

Services, Plating-4100 — *See Vol. D*

Services, Precious Metal Refining-4100 — *See Vol. D*

Services, Precious Metal Resmelting, Recovery, Recycling-4100 — *See Vol. D*

Services, PC Design/Preparation/Production-4100 — *See Vol. D*

Services, PROM & Array Programming - Also see Services, Microprocessor Development-4100 — *See Vol. D*

Services, Qualification Testing — See Services, Environmental Testing (Vol. D)

Services, Reliability-4100 — *See Vol. D*

Services, Rental, Instruments & Equipment — See Test Equipment, Rental & Lease (Vol. D)

Services, Repair, Maintenance — See Services, Calibration & Repair Instrument (Vol. D)

Services, RFI Measuring — See Services, Electrical Measurement & Test (Vol. D)

Services, Silicon Foundry — See Silicon Foundry Services (Vol. D)

Services, Silk Screening-4100 — *See Vol. D*

Services, Soldering-4100 — *See Vol. D*

Services, Technical Writing — See Services, Documentation (Vol. D)

Services, Testing & Measuring — See Services, Electrical Measurement & Test (Vol. D), Services, Environmental Testing

Services, Testing, Environmental — See Services, Environmental Testing (Vol. D)

Services, Training/Education-4100 — *See Vol. D*

Services, Vibration Surveys-4100 — *See Vol. D*

Services, Welding & Brazing-4100 — *See Vol. D*

Services, Wire Cutting & Stripping - Also see Services, Crimping-4100 — *See Vol. D*

Services, Wirewrapping/Soldering/Welding/Brazing - Also See Services, Backplane Wiring-4100 — *See Vol. D*

Servo Systems-4900 — *See Vol. D*

Shaft Encoders, Shaft Position — See Encoders, Shaft Angle (Vol. B)

Shaft Locks — See Locks, Dial & Shaft (Vol. C)

Shafts & Adapters-Also See Couplings, Shaft, Rigid & Flexible-3500 — *See Vol. B*

Shake Tables — See Testers, Vibration (Vol. D)

Shells, Encapsulation — See Cups, Encapsulation (Vol. C)

Shielding, EMI/RFI-4525

Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1743
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
Fair-Rite Prods., PO Box J, Wallkill, NY 12589, 914-895-2055 ..... C•1745
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746-1747
Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753
Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171
§ ADE, Inc., 1430 E. 130th St., Chicago, IL 60633 312-646-3400
§ Allen-Bradley Co., Magnetics Division, Div. of Rockwell Corp., 5900 N. Harrison St., Shawnee, OK 74801 405-275-2100
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124 215-535-3000
† Ark Elctrns. Corp., 1325 Industrial Hwy., Southampton, PA 18966 215-322-6510
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§† Capcon, Inc., 147 West 25th Street, New York, NY 10001 212-243-6275
§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631
Compliance Design Inc., 593 Massachusetts Ave., Boxboro, MA 01719 .. 617-264-4668
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
E/M Lubricants, Inc., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906 317-463-2511
Facet Enterprises, Fluid Technology Group, 2225 E. Randol Mill Rd., Ste. 223, Arlington, TX 76011 816-649-5597
† GM Nameplate, Inc., 2040 15th Ave. West, Seattle, WA 98119 206-284-2200
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
† Lectro Magnetics, Inc., 6056 W. Jefferson Blvd., Los Angeles, CA 90016 ..... 213-870-9383;(USA):800-325-9814;(CA):800-325-9815
† Lindgren RF Enclosures, Inc., 1228 Capitol Drive, Addison, IL 60101 312-628-9100
† LNP Corporation, Div. of ICI, 412 King Street, Malvern, PA 19355 215-644-5200
Microdot, Interconnect Systems Division, 12 Progress Dr., Montgomeryville, PA 18936 215-699-5373
MOLDCON, Div. of K & M Electronics, 221 Interstate Dr., W. Springfield, MA 01089 413-736-0371
Moxness Products, Inc., Versa Technologies, 1914 Indiana St., Racine, WI 53405 ..... 414-554-5050;800-558-5706
† Omega Precision Corp., 1384 Pompton Ave., Cedar Grove, NJ 07009 ... 201-256-3422
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040 ..... 215-672-0787;215-672-4741
Ray Proof, Shielding Systems Corp., 50 Keeler Ave., P.O. Box 5060, Norwalk, CT 06856-5060 800-243-5704
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505 814-455-0966
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
Tokin America, Inc., 2261 Fortune Drive, San Jose, CA 95131 408-432-8020
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Shielding Beads, Ferrite-4525

§ Fair-Rite Prods., PO Box J, Wallkill, NY 12589, 914-895-2055 ..... C•1745
Tokin America, Inc., 2261 Fortune Drive, San Jose, CA 95131, 408-432-8020 ..... A•1327
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
§ Allen-Bradley Co., Magnetics Division, Div. of Rockwell Corp., 5900 N. Harrison St., Shawnee, OK 74801 405-275-2100
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Capcon, Inc., 147 West 25th Street, New York, NY 10001 212-243-6275
Ferronics, 52 N. Main St., Fairport, NY 14450 716-388-1020
§ Ferroxcube, Amperex Electronic Corp., 5083 Kings Hwy., Saugerties, NY 12477 914-246-2811
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
Micrometals, 1190 N. Hawk, Anaheim, CA 92807 714-630-7420
§ Stackpole, Electronic Components Div., 201 Stackpole St., St. Marys, PA 15857 814-781-1234
Steward, D. M., Mfg. Co., P.O. Box 510, Chattanooga, TN 37401 615-867-4100

Shields, Cable — See Braid, Cable (Vol. C)

Shields, Cathode-Ray Tube-4525

† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000 ..... C•1742
† Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030 ..... C•1744
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410 ..... C•1752
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
† CELCO, 70 Constantine Dr., Mahwah, NJ 07430 201-327-1123
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
Inter-Technical Grp., One Bridge Street, Irvington, NY 10533 914-591-8822
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800

† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
§ Screen Data Corp., 80 S. Jefferson Rd., Whippany, NJ 07981 ..... 201-887-7713; 800-248-1212

Shields, Coil-4525

† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000 ..... C•1742
Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1743
† Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030 ..... C•1744
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410 ..... C•1752
Caddell-Burns Mfg., 258 E. 2nd St., Mineola, NY 11501-3508 516-746-2310
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
§ Microtran Co. Inc., 145 E. Mineola Ave., P. O. Box 236, Valley Stream, NY 11582 516-561-6050
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
SL Electronics, 300 Harvard Ave., Westville, NJ 08093 609-456-7300
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400

Shields, Corona-4525

Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746
† Ross Engineering Corp., 540 Westchester Dr., Campbell, CA 95008, 408-377-4621 ..... B•1489
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
Hipotronics Inc., P.O. Drawer A, Brewster, NY 10509 914-279-8091
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523

Shields, Electrostatic — See Shields, Tube (Vol. C)

Shields, Indicator Light-4525

† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000

Shields, Magnetic-4525

† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000 ..... C•1742
† Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030 ..... C•1744
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1586
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... C•1749,1751
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410 ..... C•1752
ATV Research, Inc., 1301 Broadway, Dakota City, NE 68731 402-987-3771
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
† CELCO, 70 Constantine Dr., Mahwah, NJ 07430 201-327-1123
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
Hamamatsu Photonics K.K., 325-6 Sunayama-Cho, Hamamatsu City, Shizuoka Pref, JAPAN 0534-52-2141
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327 717-424-8510
Inter-Technical Grp., One Bridge Street, Irvington, NY 10533 914-591-8822
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
† Lectro Magnetics, Inc., 6056 W. Jefferson Blvd., Los Angeles, CA 90016 ..... 213-870-9383;(USA):800-325-9814;(CA):800-325-9815
† Magnetics, Spang & Co., Box 391, Butler, PA 16003-0391 412-282-8282
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
† Schonstedt Instrument Co., 1775 Wiehle Ave., Reston, VA 22090 703-471-1050
SL Electronics, 300 Harvard Ave., Westville, NJ 08093 609-456-7300
§ Stackpole, Electronic Components Div., 201 Stackpole St., St. Marys, PA 15857 814-781-1234
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
THORN EMI Gencom Inc., 23 Madison Rd., Fairfield, NJ 07006 201-575-5586
§ Tokin America, Inc., 2261 Fortune Drive, San Jose, CA 95131 408-432-8020
§ Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386
Won Tronics, Apollo Magnetics Corp., 2720 W. Beverly Blvd., Los Angeles, CA 90057 213-381-2500
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Shields, Photomultiplier-4525

† Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741
† Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000 ..... C•1742
† Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030 ..... C•1744
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 ..... C•1750
† MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410 ..... C•1752
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Inter-Technical Grp., One Bridge Street, Irvington, NY 10533 914-591-8822
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§ THORN EMI Gencom Inc., 23 Madison Rd., Fairfield, NJ 07006 201-575-5586

Shields, RF-Also See Gaskets, Shielding, RF-4525

Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158 ..... C•1741
Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000 ..... C•1742
Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... C•1743
§ Bergquist, 5300 Edina Ind'l., Minneapolis, MN 55435, 800-328-3882 ..... C•1704
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746-1747
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§† Tech-Etch, Inc., 45 Aldrin Rd., Plymouth, MA 02360, 617-747-0300 ..... C•1753
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 ..... C•1754
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
† AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195 201-263-1700
American Cyanamid Co., Metal Coated Fibers Dept., One Cyanamid Plaza, Wayne, NJ 07470 201-831-3148
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200
† Ark Elctrns. Corp., 1325 Industrial Hwy., Southampton, PA 18966 215-322-6510
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dontech, Inc., 700 Airport Blvd., Doylestown, PA 18901 215-348-5010
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
† Emerson & Cuming, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021 617-828-3300
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
Evaporated Coatings, Inc., P.O. Box 160-3, Huntingdon Valley, PA 19006 215-947-1465
§† Krystinel Corp., 126 Pennsylvania Ave., Paterson, NJ 07509 201-345-8900
† Lectro Magnetics, Inc., 6056 W. Jefferson Blvd., Los Angeles, CA 90016 ..... 213-870-9383;(USA):800-325-9814;(CA):800-325-9815
† Lindgren RF Enclosures, Inc., 1228 Capitol Drive, Addison, IL 60101 312-628-9100
† McLean Engineering, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550 609-799-0100
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963 800-328-1368
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
† Omega Precision Corp., 1384 Pompton Ave., Cedar Grove, NJ 07009 201-256-3422
† Optical & Conductive Coatings, Meridian Inds., Inc., 428 N. Buchanan Cir., = 8, Pacheco, CA 94553 415-798-6066
PacTec Corp., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153 215-365-8400
PCK Elastomerics, Inc., Kolimorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040 ..... 215-672-0787;215-672-4741
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
Ray Proof, Shielding Systems Corp., 50 Keeler Ave., P.O. Box 5060, Norwalk, CT 06856-5060 800-243-5704
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505 814-455-0966
† Spira Manufacturing Corp., 12721 Saticoy Street South, North Hollywood, CA 91605 818-764-8222
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
§† Tafa, Inc., Dow Rd, Box 1157, Bow, NH 03301-1157 603-224-9585
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
† Titchener, E. H., & Co., 1 Titchener Pl., Binghamton, NY 13902 607-772-1161
§ Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Shields, Transformer-4525

† **Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158** ..... **C•1741**
† **Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000** ..... **C•1742**
Atlee Inc., 10 Bayfield Dr., North Andover, MA 01845, 617-681-1003 ..... **C•1743**
† **Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030** ..... **C•1744**
† **MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410** ..... **C•1752**
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
Framar Metal Products Co., Inc., 345 Carnegie Avenue, Kenilworth, NJ 07033 201-241-0710
† Hudson Tool & Die Co., 18 Malvern St., Newark, NJ 07105 201-589-1800
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
Microtran Co. Inc., 145 E. Mineola Ave., P. O. Box 236, Valley Stream, NY 11582 516-561-6050
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
SL Electronics, 300 Harvard Ave., Westville, NJ 08093 609-456-7300
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400

Shields, Tube-4525

† **Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975, 219-223-3158** ..... **C•1741**
† **Amuneal Manufacturing Corp., 4737 Darrah St., Philadelphia, PA 19124, 215-535-3000** ..... **C•1742**
† **Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224, 317-297-1030** ..... **C•1744**
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... **C•1738**
† **MuShield Co., Div. Bomco, Inc., 103 Madison St., P.O. Box W, Malden, MA 02148, 617-321-4410** ..... **C•1752**
† Air/Flex Inds. Inc., 2422 Merced Ave., S. El Monte, CA 91733 818-579-7060
American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Drawn Metal Products, 6143 W. Howard St., Niles, IL 60648 312-647-8941
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
Hamamatsu Photonics K.K., 325-6 Sunayama-Cho, Hamamatsu City, Shizuoka Pref, JAPAN 0534-52-2141
§† IERC, 135 W. Magnolia Blvd., Burbank, CA 91502 213-849-2481
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327 717-424-8510
ITW Thielex, 201 11th St., Piscataway, NJ 08854 201-968-5300
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106 312-766-7800
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
† Micro-Circuits Co., Inc., 10792 Maublin Rd., New Buffalo, MI 49117 616-469-2727
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
† Proto Stamping Corp., 850 Charter St., Redwood City, CA 94063 415-365-0498
Staver Co., Inc., 41-51 Saxon Ave., Bay Shore, NY 11706 516-666-8000
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Shields, Wire — See Braid, Cable (Vol. C)

Shift Registers-2325 — *See Vol. D*

Shifters, Frequency — See Converters, Frequency to Frequency (Vol. D)

Shifters, Phase, Microwave-3450 — *See Vol. A*

Shifters, Phase, RF-3450 — *See Vol. A*

Shifters, Phase 60/400 Hz-4050 — *See Vol. D*

Shrinkable Plastics & Elastomers — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)

Shunts, Connector-2100

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... **C•1296**
§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525 312-354-1040
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Shunts, Meter-2900 — *See Vol. D*

Shutters, Microwave-3450 — *See Vol. A*

SIDACs-4800 — *See Vol. A*

Signal Averagers-2900 — *See Vol. D*

Signal Conditioners & Equipment-1100 — *See Vol. D*

Signal Generators — See Generators, Specific Type (Vol. D)

Signal Systems, Fiber Optic-2325 — *See Vol. D*

Signal Tracers — See Testers, Signal Tracing (Vol. D)

Silica, Fused-2500

† Accumet Engineering, 518 Main St., Hudson, MA 01749 617-568-8311
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 214-746-6000
Thermal Amer. Fused Quartz, Route 202, Montville, NJ 07045 201-334-7770

Silk Screening Services — See Services, Silk Screening (Vol. D)

Simulation Systems, Electromagnetic Pulse-1100 — *See Vol. D*

Simulators, Data-2900 — *See Vol. D*

Simulators, Digital Satellite-1900 — *See Vol. D*

Simulators, Motion-2550 — *See Vol. D*

Simulators, Optics-3700 — *See Vol. B*

Simulators, Power Failure-2900 — *See Vol. D*

Simulators, Powerline Disturbance-2900 — *See Vol. D*

Simulators, Radar-3475 — *See Vol. D*

Simulators, Resolvers-2900 — *See Vol. D*

Simulators, Solar-2900 — *See Vol. D*

Simulators, Thermocouple-2900 — *See Vol. D*

Simulators (MIL), EW-3475 — *See Vol. D*

Simulators (MIL), EW Quick Reaction Capability-3475 — *See Vol. D*

Simulators (MIL), RHAW-3475 — *See Vol. D*

Simulators (MIL), Weapon-3475 — *See Vol. D*

Sinks, Heat — See Heat Sinks, Semiconductor (Vol. C), Heat Sinks, Soldering (Vol. C)

Sleeves — See Tubing (Vol. C)

Slides, Cabinet & Chassis-1400

§† **Accuride, 12311 S. Shoemaker, Santa Fe Springs, CA 90670, 213-944-0921** ..... **C•1006-1009**
Cabtron Systems, Inc., 200 N. Anets Dr., Northbrook, IL 60062, 312-498-6090 ..... **C•1025**
† **General Devices, Box 39100, Indianapolis, IN 46239-9632, 317-897-7000** ..... **C•1054-1055**
† **Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000** ..... **C•1061**
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... **C•1073-1075**
§† **Premier Metal Prods. Co., 381 Canal Pl., Bronx, NY 10451, 212-993-9200** ..... **C•1079**
† **Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, 213-629-7080** ..... **C•1104**
§† Barnes Engrg., 1645 So. Claudina Way, Anaheim, CA 92805 714-533-7530
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
† Grant Hardware Co., Div. of Grant Inds. Inc., 7 Hoover Ave, Haverstraw, NY 10927-1092 ..... 914-EL8-4400
Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 716-894-5710
Jonathan Manufacturing Corp., 1101 So. Acacia Ave., Fullerton, CA 92631 714-526-4651
Lambda Electronics, Veeco Instr., Inc., 515 Broad Hollow Rd., Melville, NY 11747 516-694-4200
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† STRONGBOX, P.O. Box 84508, Los Angeles, CA 90073 213-305-8288
Techmar Corp., 2232 S. Cotner Ave., Los Angeles, CA 90064 ..... 213-478-0046; 800-TECHMAR;800-CHASSIS (CA)
† Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 413-267-5561

Slip Clutch — See Knobs, Slip Clutch (Vol. C)

Slip Rings & Assemblies-3500 — *See Vol. B*

Slotted Lines, Microwave-3450 — *See Vol. A*

Socket Adapters-2100

Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1208
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1358
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1914
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1495
§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1500-1507
Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... C•1509
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718 714-951-8808
Data I/O Corp., 10525 Willows Rd. N.E., Redmond, WA 98073-9746 206-881-6444
† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731 818-579-2300
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Sockets, Array-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176-1177,1179-1181
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1222
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ..... C•1338
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1342
§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1502-1505,1507
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§ Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405 818-787-0311
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, Capacitor-2100

§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1504
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600

Sockets, Chip Carrier, Surface Mount-2100

† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1171-1173
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1307
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1342
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1350
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
PCK Elastomerics, Inc., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, 215-672-0787;215-672-4741 ..... C•1373-1375
Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, CRT-2100

† Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646 312-539-3108

Sockets, Crystal-2100

Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1208
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1504-1505
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Sockets, Diode-2100

Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1208
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ..... C•1338
Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1504-1505
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
§ Visual Communications Co., Inc., 7920 Arjons Dr., Ste. G, San Diego, CA 92126, 619-549-6900 ..... B•1139
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Leecraft Mfg., 21-02 44th Rd., Long Island City, NY 11101 718-392-8800
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600

§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 ... 312-392-3500
† Milton Ross Co., 511 Second St Pike, Southampton, PA 18966 ... 215-355-0200
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 ... 812-944-6733
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 ... 203-372-4118
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 ... 312-981-6000
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 ... 513-561-8145
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 ... 219-287-5941

Sockets, DIP and DIL-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176-1181
Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ... C•1721
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ... C•1208
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ... C•1223
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ... C•1227
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ... C•1238-1281
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ... C•1105,1111
ITT Components, ITT Corporation, 5 Genner St., Ste. 100, Irvine, CA 92715, 714-559-4700 ... C•1302-1303
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ... C•1307
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ... C•1338
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ... C•1183,1187,1738
§† 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ... C•1340,1342
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ... C•1357-1358
§ Precontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ... C•1500-1501,1504-1507
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, 812-944-6733 ... C•1515
§† Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 ... C•1085
Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ... C•1542
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ... C•1565-1567
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 ... 401-823-5200
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 ... 818-889-9304
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105 ... 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 ... 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 ... 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 ... 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 ... 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 ... 718-429-0500
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 ... 203-838-4444
§ Circuit Assembly Corp., 18 Thomas St, Irvine, CA 92718-2703 ... 714-855-7887
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 ... 415-483-8770
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 ... 203-674-1515
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 ... 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
§† H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 ... 516-567-2282
§† Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405 ... 818-787-0311
Interdyne Co., 157 Topaz St., Milpitas, CA 95035 ... 408-943-9133
Interlok, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 ... 415-348-5625
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 ... 714-557-4700
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 ... 714-554-6840
§ Mallory Capacitor Co., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201 ... 317-636-5353
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 ... 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 ... 312-392-3500
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 ... 312-451-1360
† Milton Ross Co., 511 Second St Pike, Southampton, PA 18966 ... 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ... 415-856-9332; 800-NEPENTHE
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002 ... 203-242-2281
§† Refac Elctrns. Corp., P.O. Box 809, Winsted, CT 06098 ... 203-379-2731
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 ... 812-945-0211
† Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 ... 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 ... 714-996-0960
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 ... 612-854-9177
§ Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 ... 214-995-6611
§† Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 ... 617-699-3800
§ Textool Test & Interconnect Prods. Dept., 3M Electronic Products Division, 1001 Fountain Parkway, Grand Prairie, TX 75050 ... 214-647-0392
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 ... 312-981-6000
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 ... 818-365-9661
§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 ... 219-287-5941
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 ... 213-629-7080

Sockets, Disposable Carrier-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1179-1180
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 ... 401-823-5200
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 ... 203-756-8847
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 ... 219-287-5941

Sockets, Integrated Circuit-2100

§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1171-1173
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176-1177,1179-1181
Augat, Inc., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, 617-222-2202 ... C•1721
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ... C•1208
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ... C•1223-1224
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ... C•1227
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ... C•1238-1281
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ... C•1299
§ Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405, 818-787-0311 ... B•1093
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388 ... C•1105,1111
ITT Components, ITT Corporation, 5 Genner St., Ste. 100, Irvine, CA 92715, 714-559-4700 ... C•1302-1303
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ... C•1307
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ... C•1309
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ... C•1183,1187,1738
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ... C•1340,1342
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ... C•1350
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ... C•1357
§† Precontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ... C•1500-1507
§† Scanbe Unit, 3445 Fletcher Ave., El Monte, CA 91731, 818-579-2300 ... C•1085
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ... C•1542
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ... C•1556
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ... C•1564-1567
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 ... 516-546-1751
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 ... 401-823-5200
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 ... 818-889-9304
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 ... 203-322-1913
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 ... 717-780-7025
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 ... 312-983-3500
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 ... 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 ... 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 ... 617-222-2202
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 ... 617-699-7646
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 ... 718-429-0500
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 ... 714-492-6481
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 ... 203-838-4444
§ Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 ... 714-855-7887
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 ... 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 ... 800-237-2374
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 ... 203-624-3103
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 ... 203-674-1515
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 ... 415-960-0652
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 ... 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 ... 815-968-9661
H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 ... 516-567-2282
Interdyne Co., 157 Topaz St., Milpitas, CA 95035 ... 408-943-9133
Interlok, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 ... 415-348-5625
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 ... 714-557-4700
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 ... 714-554-6840
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 ... 203-756-8847
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 ... 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 ... 312-392-3500
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 ... 312-451-1360

† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
§NTE Electronics, Inc., 44 Farrand St., Bloomfield, NJ 07003 201-748-5089
§ PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 617-890-6107
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Sealectro-BICC Electronics, 40 Linderman Dr., Trumbull, CT 06611 203-372-4118
§ SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
§ Textool Test & Interconnect Prods. Dept., 3M Electronic Products Division, 1001 Fountain Parkway, Grand Prairie, TX 75050 214-647-0392
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, International-2100

Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1368,1370-1372
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1495,1497,1499
Precontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1504
Preh Electronic Industries, Inc., 5665 Howard Street, Niles, IL 60648, 312-647-8338 ..... C•1509
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
§ Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Sockets, Lamp & Lamp Assemblies-2450 — *See Vol. B*

Sockets, Leadless Carrier-2100

The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§ Alpha Products, Inc., 5740 Corsa Ave. # 104, Westlake Village, CA 91362 818-889-9304
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
§ Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405 818-787-0311
Interlok, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 415-348-5625
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, LIF & ZIF-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1171-1173
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 ..... C•1294
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ..... C•1338
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1349,1352
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, Miniature & Subminiature — See Sockets, Diode (Vol. C)

Sockets, Pin Grid Array-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176-1177,1179-1181
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1222
JAE Electronics Inc., 1901A E. Carnegie Ave., Santa Ana, CA 92705, 714-250-8770 ..... C•1307
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ..... C•1338
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1342
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
§ Precontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1502-1505,1507
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), 9254 Deering Avenue, Chatsworth, CA 91311 818-709-1247
§ Industrial Electronic Engineers, 7740 Lemona Ave., Van Nuys, CA 91405 818-787-0311
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015 312-948-5600
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177

Sockets, Power (Receptacles)-2100

Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, 201-736-5722 ..... C•1495,1497,1499
Thermalloy, Inc., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, 214-243-4321 ..... C•1693
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
Brooks Power Systems, 3569 Bristol Pike Bldg. 2 Ste 102, Bensalem, PA 19020 ..... 215-244-0264;1-800-523-1551
Corcom, Inc., 1600 Winchester Rd., Libertyville, IL 60048 312-680-7400
International Configurations, Inc., P. O. Box 3374, Enfield, CT 06082 203-749-6380
Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† The Wiremold Company, 60 Woodlawn Street, W. Hartford, CT 06110 .. 203-233-6251

Sockets, Relay-2100

§ Allied Control, Div. of Telemanique, Inc., 100 Relay Rd., Plantsville, CT 06479, 203-621-6771 ..... B•1290,1297
§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176-1177,1179-1181
† Aromat Corp., 250 Sheffield St., Mountainside, NJ 07092, 201-232-4260 ..... B•1315
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1208
§ Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200 ..... C•1221
§ IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... B•1424-1426
§ ITT Components, ITT Corporation, 5 Genner St., Ste. 100, Irvine, CA 92715, 714-559-4700 ..... C•1302-1303
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1581,1584

§ Magnecraft Electric Co., 1910 Techny Road, Northbrook, IL 60062-5376, 564-8800 ..... B•1465
§ Omron Elctrns., Inc., Control Comps. Div., One E. Commerce Dr., Schaumburg, IL 60173, 312-843-7900 ..... B•1671
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1511
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... C•1557
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§ American Zettler, 16881 Hale Ave., Irvine, CA 92714 714-660-1670
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Bosch, Robert, Corp., 2800 S. 25th Ave., Broadview, IL 60153 312-865-5200
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
Cardinal Control Co., 110 Kensington Rd., Kensington, CT 06037 203-828-6379
§ Clare Division, General Instrument Corp., 3101 W. Pratt Blvd., Chicago, IL 60645 312-262-7700
Computer Components, Inc., 629 Fifth Ave., Pelham, NY 10803 914-738-1611
§ Curtis Industries, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699 414-535-1500
§ Custom Connector, 1738 E. 30th St., Cleveland, OH 44114 216-241-1679
† DAN-L Inc., 229 Laurel Rd., E. Northport, NY 11731 516-757-8000
§ Diversified Electronics, Inc., 119 N. Morton Ave., Evansville, IN 47711 812-426-2806
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ Electromatic Controls Corp., 2495 Pembroke Road, Hoffman Estates, IL 60195-2010 312-882-5757
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ FEME Electronics, Inc., 5 Longwood Dr., S. Huntington, NY 11746 516-385-4151
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Inmark Corp., 147 West Cedar St., Norwalk, CT 06854 203-866-8474
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§ H. Kuhnke, Inc., 26 W. Highland Ave., Atlantic Highlands, NJ 07716 ..... 201-291-3334; 800-221-0714
§ Leach Corp., Relay Div., 5915 Avalon Blvd., Los Angeles, CA 90003 213-232-8221
§ Line Electric Products, 122 Naubuc Ave., Glastonbury, CT 06033 ..... 203-659-3573; 1-800-331-1137
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§† Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§ Potter & Brumfield, A Siemens Co., 200 S. Richland Creek Dr., Princeton, IN 47671-0001 812-386-1000
† PSG Inds., 1225 Tunnel Road, Perkasie, PA 18944 215-257-3621
§ Relay Specialties, 17 Raritan Rd., Oakland, NJ 07436 201-337-1000
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Schrack North America Corp., 3 Westchester Plaza, Elmsford, NY 10533 914-592-1305
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Sigma Instrs., 170 Pearl St., Braintree, MA 02184 617-843-5000
Souriau, Inc., 25158 Avenue Stanford, Valencia, CA 91355 805-257-4830
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
§† Struthers-Dunn, Inc., Subsidiary of Nytronics, Inc., Lamb's Rd., Pitman, NJ 08071-0901 609-589-7500
Telemecanique, Inc., Allied Control, 100 Relay Rd., Plantsville, CT 06479 203-621-6771
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Viking Connectors Co., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311 818-341-4330

Sockets, SIMM-2100

Mhotronics., Inc., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, 312-948-5600 ..... C•1351
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100

Sockets, SIP-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176-1177,1180-1181
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1224
§ Elfab Corporation, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, 214-221-8776 ..... C•1227
† Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, 203-756-8847 ..... C•1338
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1340
§ Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1500-1501,1504-1507
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869, 201-685-1600 ..... C•1542
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Interlok, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 415-348-5625
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
ITT Components, ITT Corporation, 5 Genner St., Ste. 100, Irvine, CA 92715 714-559-4700
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941

Sockets, Surface Mount-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1712
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1222
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
Aromat Corp., 250 Sheffield St., Mountainside, NJ 07092 201-232-4260
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Azimuth Electronics, Inc., 2605 So. El Camino Real, San Clemente, CA 92672 714-492-6481
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
§ Power Dynamics Inc., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052 201-736-5722

Sockets, Test-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1179
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538, 415-656-3400 ..... C•1573
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1238-1281
† Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571 ..... C•1309
The J. M. Ney Company, Ney Industrial Park, Bloomfield, CT 06002, 203-242-2281 ..... C•1361
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... C•1504,1507
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 415-960-0652
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
Richard Hirschmann of America, Industrial Row, Riverdale, NJ 07451 201-835-5002
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§ Interconnect Devices, Inc., 5101 Richland Ave., Kansas City, KS 66106 913-342-5544
Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264 919-884-8111
† Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
† Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§ "World" Test Systems, Inc., P. O. Drawer 1428, Waynesboro, VA 22980 703-949-6753

Sockets, Transistor-2100

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176,1180-1181
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1208

§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... **C•1221**
§ **Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525, 312-354-1040** .... **C•1290**
† **Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571** ... **C•1309**
§† **Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600** ..... **C•1699**
§ **MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550** ..... **C•1357**
Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047, 215-757-1202 ..... **C•1504-1505**
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007, 312-956-8000 ..... **C•1557**
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
§† Electronic Essentials, 60-20 34th Avenue, Woodside, NY 11377 718-898-8300
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
§ Midway Mfr. Co., 10750 W. Grand Ave., Franklin Park, IL 60131 312-451-1360
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
§ NTE Electronics, Inc., 44 Farrand St., Bloomfield, NJ 07003 201-748-5089
§ Philips ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254 617-890-6107
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Wells Electronics, 1701 S. Main St., South Bend, IN 46613 219-287-5941
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Sockets, Tube-2100

Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... **C•1208**
§ **Eby Company, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, 215-969-4200** ..... **C•1221**
† **Jettron Products, P.O. Box 337, E. Hanover, NJ 07936, 201-887-0571** ... **C•1309**
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ Amperex Electronic Corp., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802 516-931-6200
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§† Electronic Essentials, 60-20 34th Avenue, Woodside, NY 11377 718-898-8300
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ THORN EMI Gencom Inc., 23 Madison Rd., Fairfield, NJ 07006 201-575-5586
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Varian Associates, Electron Device Group, 611 Hansen Way, Palo Alto, CA 94303 415-493-4000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Sockets (MIL)-2440 — *See Vol. B*

Software, Applications-2050 — *See Vol. D*

Software, CAD-2050 — *See Vol. D*

Software, Communications-2050 — *See Vol. D*

Software, Compilers/Languages-2050 — *See Vol. D*

Software, Computer Performance Measurement-2050 — *See Vol. D*

Software, Data Base Management-2050 — *See Vol. D*

Software, Data Base Management Dictionaries-2050 — *See Vol. D*

Software, Data Base Query Language-2050 — *See Vol. D*

Software, Data Communications Control-2050 — *See Vol. D*

Software, DC Motor Control-2050 — *See Vol. D*

Software, Disk/Tape File Utilities-2050 — *See Vol. D*

Software, Emulation/Simulation-2050 — *See Vol. D*

Software, Graphics-2050 — *See Vol. D*

Software, Information Storage & Retrieval-2050 — *See Vol. D*

Software, Job Scheduling/Accounting-2050 — *See Vol. D*

Software, Librarians-2050 — *See Vol. D*

Software, Motion Control-2050 — *See Vol. D*

Software, Operating Systems-2050 — *See Vol. D*

Software, Operating Systems Enhancement-2050 — *See Vol. D*

Software, Programming/Systems Development Aids-2050 — *See Vol. D*

Software, Program Translators-2050 — *See Vol. D*

Software, Report Generators-2050 — *See Vol. D*

Software, Security-2050 — *See Vol. D*

Software, Sort/Merge-2050 — *See Vol. D*

Software, Spoolers-2050 — *See Vol. D*

Software, Utilities-2050 — *See Vol. D*

Solar Cells — See Cells, Photovoltaic (Vol. B)

Solder (All Types)-4600

§† **Kester Solder Div., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018, 312-297-1600** ..... **C•1756**
§† Alpha Metals, 600 Rte 440, Jersey City, NJ 07305 ..... 499 7772;;;201-434-7508
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
† DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
Edsyn, Inc., 15958 Arminta Ave., Van Nuys, CA 91406 .... 818-989-2324;213-873-5115
† EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543 914-698-8434
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Ferro Corporation, Electronic Materials Div., 27 Castilion Dr., Santa Barbara, CA 93117-3092 805-968-5000
† Fusion Inc., 4658 E. 355th. St., Willoughby, OH 44094 216-946-3300
§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† Glenmarc Manufacturing, 330 Melvin Dr., Northbrook, IL 60062 312-272-9030
Heraeus Cermalloy Division, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428 215-825-6050
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Kantz Electronic Industry, 1804 Wall Church Rd., Wall Township, NJ 07719 201-974-0090
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§† Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
† New England Smelting Works, Inc., 502 Union St., W. Springfield, MA 01090 413-734-6491
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
Transene, Rte. 1, Rowley, MA 01969 617-948-2501
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Solder Lugs — See Terminals, Lug (All Types) (Vol. C)

Solder Pots & Baths-4600

Kester Solder Div., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018, 312-297-1600 ..... **C•1756**
† Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
Air-Vac Engrg., 100 Gulf St., Milford, CT 06460 203-874-2541
† Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244

§ Contact, Inc., 5 Elm Ave., Hudson, NH 03051 603-883-7708
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
EPAC:Gardner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ ESICO, Inc., Box 247, Deep River, CT 06417 203-526-5361
§ Hexacon Elec., 161 W. Clay Ave., Roselle Park, NJ 07204 201-245-6200
§ Hollis Engrg., Inc., Charron Ave., Box 1189, Nashua, NH 03061 603-889-1121
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§† Plato Products, Inc., 2120 E. Allen Ave., Glendora, CA 91740 800-423-4510
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
† Trent, Inc., 201 Leverington Ave., Philadelphia, PA 19127 215-482-5000
§ Wellman Thermal Systems, 1 Progress Rd, Shelbyville, IN 46176 317-398-4411

Soldering, Wave, Control/Monitoring-4600

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Electronic Controls Design, 13626 S. Freeman Rd., Mulino, OR 97042 .. 503-829-9108
EPAC:Gardner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100

Soldering Accessories-4600

§ Hexacon Elec., 161 W. Clay Ave., Roselle Park, NJ 07204, 201-245-6200 ..... C•1755

Kester Solder Div., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018, 312-297-1600 ..... C•1756

† Air-Vac Engrg., 100 Gulf St., Milford, CT 06460 203-874-2541
§† Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
§† ASMD, Inc., 11030-C Roselle St., San Diego, CA 92121 619-453-8111
§† Automated Prod. Equip. Corp., 142 Peconic Ave., Medford, NY 11763 ... 516-654-1197
§† Beau Tech, 98 Elm Street, Portland, ME 04101 207-775-6139
§ Caig Labs., 1175-0 Industrial Ave., Escondido, CA 92025 619-743-7143
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
§ Contact, Inc., 5 Elm Ave., Hudson, NH 03051 603-883-7708
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
§† Edsyn, Inc., 15958 Arminta Ave., Van Nuys, CA 91406 ... 818-989-2324;213-873-5115
Elvo Electronics Corporation, 140 Kisco Avenue, Mt. Kisco, NY 10549 .. 914-241-1008
EPAC:Gardner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ ESICO, Inc., Box 247, Deep River, CT 06417 203-526-5361
Fusion Inc., 4658 E. 355th. St., Willoughby, OH 44094 216-946-3300
§† Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Miller, L.C., Co., 717 Monterey Pass Rd., Monterey Pk., CA 91754 213-268-3611
Multicore Solders, Cantiague Rock Rd., Westbury, NY 11590 516-334-7997
§† Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§ Overnight Engineering Inc., 1859 Andrews Ave., San Jose, CA 95124 ... 408-448-0462
§ Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
§ PanaVise Prods., 2850 E. 29th St., Long Beach, CA 90806 213-595-7621
§ Plato Products, Inc., 2120 E. Allen Ave., Glendora, CA 91740 800-423-4510
§ Roean Industries, Inc., 12970 Branford, Ste. C, Pacoima, CA 91331 818-767-7047
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Ungar, Div. Eldon Inds., Inc., 100 W. Manville St., Compton, CA 90224-6005 213-774-5950
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010
§ Wall Lenk Corporation, Box 3349, Kinston, NC 28502-3349 919-527-4186
§ Wellman Thermal Systems, 1 Progress Rd, Shelbyville, IN 46176 317-398-4411
§ Wilson, H. F., Engineering Co., 475 Taft Ave., Glen Ellyn, IL 60137 312-469-8473
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Soldering Equipment, Hot Gas-4100 — *See Vol. D*

Soldering Equipment, Induction Heating-4100 — *See Vol. D*

Soldering Equipment, Infrared-4100 — *See Vol. D*

Soldering Equipment, Printed Circuit-4100 — *See Vol. D*

Soldering Equipment, Resistance-4100 — *See Vol. D*

Soldering Systems, Temperature Controlled-4100 — *See Vol. D*

Soldering Equipment, Ultrasonic-4100 — *See Vol. D*

Soldering Equipment, Vapor Phase-4100 — *See Vol. D*

Soldering Guns, Irons & Desoldering Tools-4600

§ Hexacon Elec., 161 W. Clay Ave., Roselle Park, NJ 07204, 201-245-6200 ..... C•1755

† Air-Vac Engrg., 100 Gulf St., Milford, CT 06460 203-874-2541
† Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
ASMD, Inc., 11030-C Roselle St., San Diego, CA 92121 619-453-8111
Automated Production Concepts, 8 E. Garden Pl., Pompton Plains, NJ 07444 201-831-8300
§† Automated Prod. Equip. Corp., 142 Peconic Ave., Medford, NY 11763 ... 516-654-1197
§† Chemtronics Inc., 681 Old Willets Path, Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244
§ Contact, Inc., 5 Elm Ave., Hudson, NH 03051 603-883-7708
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
§† Edsyn, Inc., 15958 Arminta Ave., Van Nuys, CA 91406 ... 818-989-2324;213-873-5115
Elvo Electronics Corporation, 140 Kisco Avenue, Mt. Kisco, NY 10549 .. 914-241-1008
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§ ESICO, Inc., Box 247, Deep River, CT 06417 203-526-5361
§ Gardiner Solder Co., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632 312-847-0100
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
§ Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716 516-563-3388
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ MG Electronics, 32 Ranick Rd., Hauppauge, NY 11788 516-582-3400
† Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
§ Nu-Concept Systems, 2725 Advance La.,P. O. Box 587, Colmar, PA 18915 215-822-8400
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§ Overnight Engineering Inc., 1859 Andrews Ave., San Jose, CA 95124 ... 408-448-0462
§ Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§† Plato Products, Inc., 2120 E. Allen Ave., Glendora, CA 91740 800-423-4510
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Roean Industries, Inc., 12970 Branford, Ste. C, Pacoima, CA 91331 818-767-7047
§ Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
§† Solder Removal, P.O. Box 1678, Covina, CA 91722 213-967-3681
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Triton Mfg. Co., P. O. Box 239, Rowayton, CT 06853 203-838-4666
§ Ungar, Div. Eldon Inds., Inc., 100 W. Manville St., Compton, CA 90224-6005 213-774-5950
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
§† Wall Lenk Corporation, Box 3349, Kinston, NC 28502-3349 919-527-4186
§ Wellman Thermal Systems, 1 Progress Rd, Shelbyville, IN 46176 317-398-4411
§ Wilson, H. F., Engineering Co., 475 Taft Ave., Glen Ellyn, IL 60137 312-469-8473
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Soldering Machines, Laser-4100 — *See Vol. D*

Soldering (MIL)-2440 — *See Vol. B*

Solenoids, Linear-4550 — *See Vol. B*

Solenoids, Proportional-4550 — *See Vol. B*

Solenoids, Rotary-4550 — *See Vol. B*

Solenoids, Stepping-4550 — *See Vol. B*

Solenoids (MIL)-2440 — *See Vol. B*

Solvents — See Cleaners & Solvents (Vol. C)

S100 Bus — See Board Computers & Subassemblies (Vol. D)

Sound Absorbing Materials-2825

† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§ E-A-R Div., Cabot Corp., 7911 Zionsville Rd., Indianapolis, IN 46268 317-872-1111
Ferro Corporation, Coated Fabrics Division, 34 Smith St., Norwalk, CT 06852 203-853-2123
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Soundcoat Co., Inc., 1 Burt Dr., Deer Park, NY 11729 516-242-2200
† Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
§ Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Sound Level Indicators — See Meters, Audio Level (Vol. D)

Sound Recording Equip. — See Microphones (Vol. D), Recorders (Vol. D), etc.

Source & Detector Assemblies (SDAs)-3700 — *See Vol. B*

Spacers-2825

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600

§ Bivar, Inc., 4 Thomas, Irvine, CA 92718, 714-951-8808 ..... C•1018

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1207,1697
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1857
Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
Spectrum Control, Inc., 2185 W. 8th St., Erie, PA 16505, 814-455-0966 .. C•1528
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
§ Aries Electronics, Box 130, Frenchtown, NJ 08825 201-996-6841
Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Boker's, Inc., 3104 Snelling Ave., Minneapolis, MN 55406 612-729-9365
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Control Inds. Inc., 530 Burnside Ave., Inwood, NY 11696 212-471-9800
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
Delbert Blinn Co., Box 2007, Pomona, CA 91769 714-629-3900
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Dynaloy, Inc., 7 Great Meadow La., Hanover, NJ 07936 201-887-9270
† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
Garner Glass Co., 177 S. Indian Hill Blvd., Claremont, CA 91711 714-624-5071
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211;800-423-2734
Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
† PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
† Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§ Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
§ RAF Electronic Hardware, 95 Silvermine Rd., Seymour, CT 06483 203-888-2133
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Schurter, Inc., 1016 Clegg Ct., Petaluma, CA 94952 707-778-6311
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Semiconductor Circuits, 49 Range Rd., Windham, NH 03087 603-893-2330
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
§ Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Spaghetti — See Tubing, Spaghetti (Vol. C)

Spark Gaps-4300 — *See Vol. B*

Speakers, Explosion & Flame Proof-1300 — *See Vol. D*

Speakers, Horn-1300 — *See Vol. D*

Speakers, Intercom-1300 — *See Vol. D*

Speakers, Midrange-1300 — *See Vol. D*

Speakers, Musical Instrument-1300 — *See Vol. D*

Speakers, Paging — See Speakers, Intercom (Vol. D)

Speakers, Pillow-1300 — *See Vol. D*

Speakers, Public Address-1300 — *See Vol. D*

Speakers, Replacement (Incl. Aircraft, Automotive & TV)-1300 — *See Vol. D*

Speakers, Submergence Proof-1300 — *See Vol. D*

Speakers, Subminiature-Also See Bells, Buzzers, Gongs, Sirens & Aural Warning Devices-1300 — *See Vol. D*

Speakers, Tweeter-1300 — *See Vol. D*

Speakers, Weatherproof-1300 — *See Vol. D*

Speakers, Woofer-1300 — *See Vol. D*

Speakers (MIL)-2440 — *See Vol. B*

Speaker Systems-1300 — *See Vol. D*

Spectrometers-2900 — *See Vol. D*

Speech Compression & Synthesis Equipment-2325 — *See Vol. D*

Speed Drives, Motor — See Controls, Motor Speed (Vol. D)

Spiral Wrap — See Tubing, Spiral Wrap (Vol. C)

Splicers, Coaxial Cable-5400

AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
† Cablewave Sys., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473 203-239-3311
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Splicers, Fiber Optic-2475 — *See Vol. B*

Splicers, Wire (Incl. Butt & Cap Types)-5400

† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1150
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182
Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Splices-2100

Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800

Splices, Fiberoptic-2475 — *See Vol. B*

Splicing Equipment, Fiber Optic-5400

† Interoptics, Purdy Group, 770 Airport Blvd., Burlingame, CA 94010, 415-347-7727 ..... B•1148-1149
Power Technology, Inc., P.O. Box 9769, Little Rock, AR 72219, 501-568-1995 ..... D•1887
Custom Sci. Instrs., 13 Wing Dr., Cedar Knolls, NJ 07927 201-538-8500
§ EOTec Corp., 420 Frontage Road, W. Haven, CT 06516 203-934-7961
† Foundation Instruments Inc., 24 Colonnade Rd., Nepean, ON, CANADA K2E 7J6 613-226-4000
§† General Cable Co., Fiber Optics Div., 160 Fieldcrest Ave., P.O. Box 7810, Edison, NJ 08818-7810 201-225-4780
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000

Splicing Equipment, Magnetic Tape-1300 — *See Vol. D*

Splitters/Combiners, Power — See Dividers, Power (Vol. A)

Spoolers, Printer Buffers-2325 — *See Vol. D*

Spoolers, Punched Tape — See Readers, Punched Tape (Vol. D)

Springs (All Types)-2500

Graphite Metallizing Corp., 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702, 914-968-8400 ..... B•1184
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§† Associated Spring, Barnes Grp., 10 Main St., Bristol, CT 06010 203-583-1331
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327 717-424-8510
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
† Omega Precision Corp., 1384 Pompton Ave., Cedar Grove, NJ 07009 .. 201-256-3422
† PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700

Stabilizers, Current — See Current Sources (Vol. D), Regulators, Current (Vol. D)

Stabilizers, Line Impedance-4050 — *See Vol. D*

Stabilizers, Voltage — See Regulators & Stabilizers, Voltage (Vol. D), Transformers, Voltage Regulating (Vol. A), Voltage Sources (Vol. D)

Stabilizers, Voltage/Current, Automatic — See Power Supplies, Constant Current (Vol. D)

Stalos (Stabilized Local Oscillators) — See Oscillators, Microwave (Vol. A)

Stampings, Precious Metal — See Preforms, Precious Metal (Vol. C)

Standards, Atomic Beam-2900 — *See Vol. D*

Standards, Capacitance-2900 — *See Vol. D*

Standards, Current-2900 — *See Vol. D*

Standards, Delay Line-2350 — *See Vol. A*

Standards, Frequency-2900 — *See Vol. D*

Standards, Inductance-2900 — *See Vol. D*

Standards, Noise-2900 — *See Vol. D*

Standards, Phase-2900 — *See Vol. D*

Standards, Phase Angle-2900 — *See Vol. D*

Standards, Resistance-2900 — *See Vol. D*

Standards, Temperature-2900 — *See Vol. D*

Standards, Time-2900 — *See Vol. D*

Standards, Voltage-2900 — *See Vol. D*

Standards, Voltage Ratio-2900 — *See Vol. D*

Standoffs — See Bushings, Glass, Plastic, Metal, etc. (Vol. C)

Standoffs, PCB-2825

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† Dimensional Swiss Products, 424 Roberson Lane, San Jose, CA 95112 408-436-0361
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211;800-423-2734
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291

Stands, Instruments-1400

§ Buckeye Stamping Co., 555 Marion Rd., Columbus, OH 43207, 614-445-8433 ..... C•1020
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800
Mobile-Tronics Co., Inc., Box 1022, Tustin, CA 92680 714-546-0884
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084 404-496-4000
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
† Zero Corp., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071 213-629-7080

Stands, Instrument, Tilting-1400

PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Hodge Manufacturing Co., Inc., 55 Fisk Ave., Springfield, MA 01107 413-781-6800
Leader Instruments Corp., 380 Oser Ave., Hauppauge, NY 11788-3694 516-231-6900
Mobile-Tronics Co., Inc., Box 1022, Tustin, CA 92680 714-546-0884

Stands, Printer/Terminal-1400

PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... C•1073-1075
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 216-946-3200
† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
† Equipto Electronics Corp., 351 Woodlawn Ave., Aurora, IL 60506 312-897-4691
Ergotron, Inc., 1621 E. 79th Street, Minneapolis, MN 55420 ..... 612-854-9116; 800-328-9839
General Devices, Box 39100, Indianapolis, IN 46239-9632 317-897-7000
Mobile-Tronics Co., Inc., Box 1022, Tustin, CA 92680 714-546-0884
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084 404-496-4000
† Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 .. 301-921-8282
Unitronix Corp., 50 County Line Rd., Somerville, NJ 08876 201-231-9400

Starters, Motor, Solid State-3500 — *See Vol. B*

Static Eliminating Materials, Devices, & Equipment-4525

Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327, 717-424-8510 ..... C•1746
† 3M Co., Static Control Sys. Div., P. O. Box 2963, Austin, TX 78769-2963, 800-328-1368 ..... D•2114-2115
§† NRD Inc., Mark IV Ind., Inc., 2937 Alt Blvd. N., Grand Island, NY 14072, 716-773-7634 ..... D•2118
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ S & H Inds., 2257 North Penn Rd., Hatfield, PA 19440, 215-822-7211 .... D•2099
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 ..... C•1754
† Acheson Colloids, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060 313-984-5581
§† ACL Inc., 1960 E. Devon Ave., Elk Grove, IL 60007 ..... 312-981-9212;800-STATIC-0
§† ADE, Inc., 1430 E. 130th St., Chicago, IL 60633 312-646-3400
§ Amherst International Corp., Cover Craft Div., 540 Commercial St., Manchester, NH 03101 603-644-3555
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Chapman Corp., P.O. Box 10700, 125 Presumpscot St., Portland, ME 04104 207-773-4726
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Clauss Cutlery Co., Alco Industries, 223 N. Prospect St., Fremont, OH 43420 419-332-7344
§ Clean Room Prods., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528 .. 516-588-7000
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Eagle Magnetic Company, Inc., P.O. Box 24283, Indianapolis, IN 46224 317-297-1030
§ Fancort Industries, Inc., 31 Fairfield Place, W. Caldwell, NJ 07006 201-575-0610
† Gordon, L., Packaging, 1050 S. Paca St., Baltimore, MD 21230 301-539-6537
§ Herbert Prods. Inc., 180 Linden Ave., Westbury, NY 11590-0384 516-334-6500
LNP Corporation, Div. of ICI, 412 King Street, Malvern, PA 19355 215-644-5200
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§† Merix Chem. Co., 2234 East 75th St., Chicago, IL 60649 312-221-8242
§ NTE Electronics, Inc., 44 Farrand St., Bloomfield, NJ 07003 201-748-5089
§ Nu-Concept Systems, 2725 Advance La.,P. O. Box 587, Colmar, PA 18915 215-822-8400
§ Semtronics Corp., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269 404-487-6681
§† Simco Co., 2257 North Penn Rd., Hatfield, PA 19440 215-822-2171
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
Spectrascan, Inc., 1110A Elkton Drive, Colorado Springs, CO 80907 303-599-9254
† Stanley-Vidmar, Stanley Works, 11 Grammes Rd., Allentown, PA 18103 215-797-6600
Static, Inc., Rte. 113 & Mensch Rd., P.O. Box 80, Skippack, PA 19474 ... 215-584-9600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tech Spray, Inc., Box 949, Amarillo, TX 79105 806-372-8523
§ Voyager Technologies, Inc., 2250 Cabot Blvd. W. Bldg. 40M, Langhorne, PA 19047 215-750-0270
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl, IL 60007 312-956-8000
§ Wescorp Antistatic Products, 144 S. Whisman Rd., Mountain View, CA 94041 415-969-7717

Stators, Motor & Generator — See Motor & Generator Armatures,Rotors, Stators (Vol. B)

STD Bus — See Board Computers & Subassemblies (Vol. D)

Steppers, Indexing, Motor-3500 — *See Vol. B*

Steppers, Indexing, Switch-5100 — *See Vol. B*

Stiffeners, PCB, Glass Epoxy-1700

Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666

Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140

Storage Equipment, Cartridge/Cassette-3800

Phi Technologies, Inc., 4605 North Stiles, Oklahoma City, OK 73105, 405-521-9000 ..... D•1066-1067
§ Algo, Inc., 9198-C Red Branch Rd., Columbia, MD 21045 301-730-7442
Analog & Digital Peripherals, Inc.(ADPI), 815 Diana Dr., Troy, OH 45373 513-339-2241
Astec USA, Ltd., A BSR Intl. Co., 2880 San Tomas Expwy., = 200, Santa Clara, CA 95051 408-748-1200
§ Digi-Data Corp., 8580 Dorsey Run Rd., Jessup, MD 20794 301-498-0200
§ Dylon, a Div. of Liken Inds. Inc., 130 McCormick Ave., Ste. 112, Costa Mesa, CA 92626 714-540-2205
† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
Unitronix Corp., 50 County Line Rd., Somerville, NJ 08876 201-231-9400

Storage Equipment, Disk-3800

Computer Maintenance Corp., 405 Murray Hill Pkwy, East Rutherford, NJ 07073 201-896-0707
§ Data General, 4400 Computer Dr., Westboro, MA 01581 617-366-8911
§ Fujitsu America, Inc, Storage Products Div., 3055 Orchard Dr., San Jose 95134 408-432-1300
Harris Corp., Computer Systems Div., 2101 W. Cypress Creek Rd., Ft. Lauderdale, FL 33309 305-974-1700
RACET Computes, Ltd., 1855 W Katella Ste. 255, Orange, CA 92667 714-997-4950
Unitronix Corp., 50 County Line Rd., Somerville, NJ 08876 201-231-9400
Vermont Resch. Corp., Precision Pk., N. Springfield, VT 05150 802-886-2256

Storage Equipment, Flexible Disk-3800

Analog & Digital Peripherals, Inc.(ADPI), 815 Diana Dr., Troy, OH 45373 513-339-2241
Applied Micro Technlg., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713 602-622-8605
§ Data General, 4400 Computer Dr., Westboro, MA 01581 617-366-8911
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
§ Fujitsu America, Inc, Storage Products Div., 3055 Orchard Dr., San Jose 95134 408-432-1300

Storage Equipment, Magnetic Card-3800

† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
Xico, Inc., 9737 Eton Ave., Chatsworth, CA 91311 818-709-4403

Storage Equipment, Multifunctional-3800

§ Lyon Metal Products, 47 Railroad Ave., Aurora, IL 60507 312-892-8941
§ Stackbin Corp., Albion Road, Lincoln, RI 02865 401-333-1600
† Stanley-Vidmar, Stanley Works, 11 Grammes Rd., Allentown, PA 18103 215-797-6600

Storage Equipment, Reel-to-Reel Tape-3800

† Data Capture Technology, Hathaway Corp., 10837 E. Marshall, Tulsa, OK 74116 918-438-5366
§ Digi-Data Corp., 8580 Dorsey Run Rd., Jessup, MD 20794 301-498-0200
§ Dylon, a Div. of Liken Inds. Inc., 130 McCormick Ave., Ste. 112, Costa Mesa, CA 92626 714-540-2205
† Equipto, 225 S. Highland Ave., Aurora, IL 60507 312-859-1000
§ Fujitsu America, Inc, Storage Products Div., 3055 Orchard Dr., San Jose 95134 408-432-1300
Harris Corp., Computer Systems Div., 2101 W. Cypress Creek Rd., Ft. Lauderdale, FL 33309 305-974-1700
Nissei Sangyo America, Ltd., 1701 Golf Rd., Ste. 401, Rolling Meadows, IL 60008 312-981-8989
RACET Computes, Ltd., 1855 W Katella Ste. 255, Orange, CA 92667 714-997-4950

Storage racks, Circuit Board-3800

Mupac, 10 Mupac Dr., Brockton, MA 02401, 617-588-6110 ..... C•1732
§ Fancort Industries, Inc., 31 Fairfield Place, W. Caldwell, NJ 07006 201-575-0610
§† Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200

Strain Reliefs, Cable & Wire-2800

§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867
Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406, 707-523-0600 ..... C•1914
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Atlantic Research, 5390 Cherokee Ave., Alexandria, VA 22312 703-642-4000
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Bopla Enclosures, 12140 Parklawn Dr., Rockville, MD 20852 301-770-2225
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Carrot Components Corporation, 750 West Ventura Blvd., Camarillo, CA 93010 805-484-0540
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Elco Corp., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652 814-643-0700
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Harwil, 1548 17th St., Santa Monica, CA 90404 213-829-2310
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
Lance Wire & Cable, Inc., 1010 Sherman Ave., Hamden, CT 06514 203-288-5571
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
† Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
† Newman, M. M., Corp.; Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
§ Olflex Wire & Cable, Inc., 30 Plymouth Street, Fairfield, NJ 07006 201-575-1101
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Strip-Line Components, Microwave-3450 — *See Vol. A*

Strips, Ground-1900 — *See Vol. D*

Strips, Marker & Fanning-6000

Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1189
CTS Corporation, Metal Products Group, Highway 16 West, Monon, IN 47959, 219-253-6666 ..... C•1037
§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1572
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1910
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
† San Francisco Custom Label, 999 Blandford Blvd., Redwood City, CA 94062 415-573-6365
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§ Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Stroboscopes — See Lamps, Stroboscopic Source (Vol. B)

Substrates, Ceramic-2800

† Electro-Films, Inc., 111 Gilbane St., Warwick Central Indl. Pk., Warwick, RI 02886, 401-738-9150 ..... A•1938-1939
Mini-Systems, Inc., 20 David Rd., North Attleboro, MA 02761, 617-695-0203 ..... A•1987
† Accumet Engineering, 518 Main St., Hudson, MA 01749 617-568-8311
Allen Bradley Co., Electronic Components Div., A Rockwell International Co., 1414 Allen-Bradley Dr., El Paso, TX 79936 ..... 915-592-4888;800-592-4888
Allen Bradley Co., Electronics Group, Div. of Rockwell Corp., PTC Div., 23201 S. Normandie Ave., Torrance, CA 90501 213-534-3737
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
AVX Corporation, Box 867, Myrtle Bch., SC 29577 803-448-9411
California Micro Devices, Inc., 215 Topaz Street, Milpitas, CA 95035 408-263-3214
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
† Circuit Technology, Inc., 160 Smith St., Farmingdale, NY 11735 516-293-8686
† Compex Corp., Taunton Professional Park, 238 Taunton Blvd., Medford, NJ 08055 609-596-9388
Coors Ceramics Co., 600 Ninth St., Golden, CO 80401 303-278-4000
§ Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
† Degussa Electronics, Hybrid Division, 2155 North Forbes Blvd., Tucson, AZ 85745 602-622-1278
Environmental Comm., 3150 Pullman St., Costa Mesa, CA 92627 714-557-7800
Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500
Honeywell Inc., Aerospace & Defense Grp., Honeywell Plaza, Minneapolis, MN 55408 612-870-5186
† Hycomp, Inc., 165 Cedar Hill St., Marlborough, MA 01752 617-485-6300
§† Kyocera North West, Electronic Components Group, 11425 Sorrento Valley Rd., San Diego, CA 92121 619-454-1800
M/A-Com. Cable/Home Communications, Network Coaxials, M/A Com Inc., P.O. Box 1729, Hickory, NC 28603 ..... 704-324-2200;800-438-3331
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601
† MERET, Inc., 1815 24th St., Santa Monica, CA 90404-4998 213-828-7496
Microplex, Inc., 1977 State College Blvd., Anaheim, CA 92806 ..... 714-979-8833; 714-634-1535
§ Murata Erie North America, Inc., 2200 Lake Park Dr., Smyrna, GA 30080 404-436-1300
§ NTK Technical Ceramics, NGK Spark Plugs (USA), Inc., 99 Morris Ave., Springfield, NJ 07081 201-376-6070
† Quartzite Processing, Inc., 6 Holyoke St., Malden, MA 02148 617-322-1380

† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000
§ TDK Corporation, Electronic Components & Material, 13-1, Nihonbashi, 1-Chome, Chuo-ku,, Tokyo, JAPAN 103 ..... (03) 278-5111
Tektronix, Inc., Hybrid Components Operation, P.O. Box 500, Beaverton, OR 97077 503-627-4220
† Teledyne Microelectronics, 12964 Panama St., Los Angeles, CA 90066 ..... 213-822-8229;213-870-9831
Trans-Tech, Alpha Industries, 5520 Adamstown Rd., Adamstown, MD 21710 301-695-9400
† Union Carbide Corporation, Industrial Chemicals Div., Crystal Products Dept., 9320 Chesapeake Dr., Ste. 104, San Diego, CA 92123 619-279-4500
United Supertek, Inc., 118 Charcot Ave., San Jose, CA 95131-1101 408-922-0730

Substrates, Flexible-2800

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
Rogers Corp., Box 700, Chandler, AZ 85244 602-963-4584

Substrates, Glass-2800

† Accumet Engineering, 518 Main St., Hudson, MA 01749 617-568-8311
† Atlantic Optical Moulding, Ellis St., P.O. Box 309, Dudley, MA 01570 617-943-1746
California Micro Devices, Inc., 215 Topaz Street, Milpitas, CA 95035 408-263-3214
Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
Ercona, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776 516-331-5500
Frequency Elctrns., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553 516-794-4500
† Hycomp, Inc., 165 Cedar Hill St., Marlborough, MA 01752 617-485-6300
KLC/Karl Lambrecht Corp., 4204 N. Lincoln Ave., Chicago, IL 60618 312-472-5442
† Melles Griot, Optics, 1770 Kettering St., Irvine, CA 92714 714-261-5600
Thermal Amer. Fused Quartz, Route 202, Montville, NJ 07045 201-334-7770
† Unique Optical Co., Diversified Optical Corp., P.O. Box 585, Farmingdale, NY 11735 516-420-0288

Substrates, Metallic-2800

Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914, 800-556-7683 ..... C•1601
Accumet Engineering, 518 Main St., Hudson, MA 01749 617-568-8311
† Alpha Industries, Inc., 20 Sylvan Rd., Woburn, MA 01801 617-935-5150
California Micro Devices, Inc., 215 Topaz Street, Milpitas, CA 95035 408-263-3214
† Hycomp, Inc., 165 Cedar Hill St., Marlborough, MA 01752 617-485-6300
Lincoln Laser Co., 234 East Mohave, Phoenix, AZ 85004 602-257-0407
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Philips Elmet, 1560 Lisbon Rd., Lewiston, ME 04240 207-784-3591

Substrates, Sapphire-2800

California Micro Devices, Inc., 215 Topaz Street, Milpitas, CA 95035 408-263-3214
† Degussa Electronics, Hybrid Division, 2155 North Forbes Blvd., Tucson, AZ 85745 602-622-1278
† Saphikon, Inc., 51 Powers St., Milford, NH 03055 603-673-5831
† Union Carbide Corporation, Industrial Chemicals Div., Crystal Products Dept., 9320 Chesapeake Dr., Ste. 104, San Diego, CA 92123 619-279-4500

Suppressors, Arc — See Protectors, Surge (Vol. B)

Suppressors, Noise-2700 — *See Vol. A*

Suppressors, Transient Voltage (All Types)-4300 — *See Vol. B*

Surface Acoustic Wave, Delay Line-2350 — *See Vol. A*

Surface Acoustic Wave Devices-2350 — *See Vol. A*

Surface Acoustic Wave, Filter-2700 — *See Vol. A*

Surface Mounted Assemblies, Devices & Technology — See Product type: Amplifiers, Circuits, Diodes, etc.

Surveillance (MIL), EW Drone-3475 — *See Vol. D*

Surveillance Sets (MIL)-3475 — *See Vol. D*

Surveillance Systems (MIL), Optical-3475 — *See Vol. D*

Surveillance Systems (MIL), Radio Frequency-3475 — *See Vol. D*

Surveillance/Warning Systems (MIL), Control-3475 — *See Vol. D*

Switch Arrays-5100 — *See Vol. B*

Switches, Backup-5100 — *See Vol. B*

Switches, Cam-5100 — *See Vol. B*

Switches, Capacitive — See Switches, Touch Actuated (Vol. B)

Switches, Coaxial — See Switches, RF (Vol. B)

Switches, Coded-5100 — *See Vol. B*

Switches, Crossbar — See Switches, Matrix (Vol. B)

Switches, Data, Manual-2325 — *See Vol. D*

Switches, Data, Programmable-2325 — *See Vol. D*

Switches, Decade-5100 — *See Vol. B*

Switches, Diode-3450 — *See Vol. A*

Switches, DIP-5100 — *See Vol. B*

Switches, Fiber Optic-2475 — *See Vol. B*

Switches, Float-5100 — *See Vol. B*

Switches, Foot Pedal, Mat, Ribbon, etc.-5100 — *See Vol. B*

Switches, Hall Effect-5100 — *See Vol. B*

Switches, High Voltage (Over 250 Volts)-5100 — *See Vol. B*

Switches, Interlock-5100 — *See Vol. B*

Switches, Keyboard-5150 — *See Vol. B*

Switches, Key Lock-5100 — *See Vol. B*

Switches, Leaf, Single/Multiple-5100 — *See Vol. B*

Switches, Lever-5100 — *See Vol. B*

Switches, Limit-5100 — *See Vol. B*

Switches, Lock — See Switches, Key Lock (Vol. B)

Switches, low Voltage-5100 — *See Vol. B*

Switches, Matrix-5100 — *See Vol. B*

Switches, Membrane-5150 — *See Vol. B*

Switches, Mercury Displacement-5100 — *See Vol. B*

Switches, Microwave — See Switches, Diode (Vol. A)

Switches, Momentary Action-5100 — *See Vol. B*

Switches, Multiposition-5100 — *See Vol. B*

Switches, Optical-3700 — *See Vol. B*

Switches, Paddle Handle-5100 — *See Vol. B*

Switches, Peripheral-5100 — *See Vol. B*

Switches, Photoelectric-3700 — *See Vol. B*

Switches, Port Sharing-5100 — *See Vol. B*

Switches, Power-5100 — *See Vol. B*

Switches, Pressure-5100 — *See Vol. B*

Switches, Program-5100 — *See Vol. B*

Switches, Proximity-5100 — *See Vol. B*

Switches, Pushbutton, Illuminated-5100 — *See Vol. B*

Switches, Pushbutton, Nonilluminated-5100 — *See Vol. B*

Switches, Reed-5100 — *See Vol. B*

Switches, RF-5100 — *See Vol. B*

Switches, Rocker-5100 — *See Vol. B*

Switches, Rotary-5100 — *See Vol. B*

Switches, Sealed-5100 — *See Vol. B*

Switches, Slide-5100 — *See Vol. B*

Switches, Snap Action (All Types)-5100 — *See Vol. B*

Switches, Solid State-5100 — *See Vol. B*

Switches, Step Type-5100 — *See Vol. B*

Switches, Surface Mount-5100 — *See Vol. B*

Switches, Tap — See Switches, Rotary (Vol. B)

Switches, Thermally Actuated-5300 — *See Vol. B*

Switches, Thumbwheel-5100 — *See Vol. B*

Switches, Tilt — See Switches, Mercury Displacement (Vol. B)

Switches, Toggle-5100 — *See Vol. B*

Switches, Touch Actuated-5100 — *See Vol. B*

Switches, Vacuum — See Switches, Pressure

Switches (MIL), Non-RF-2440 — *See Vol. B*

Switches (MIL), RF-2440 — *See Vol. B*

Switch Hardware-2800

Arcolectric Corp., 9001 Canoga Ave., Canoga Park, CA 91304, 818-700-1933 ..... **B•1549**

§ **Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011, 212-691-9050** ..... **B•1587**

§ **Electro-Mech Components, Inc., 1826 N. Floradale Ave., South El Monte, CA 91733, 818-442-7180** ..... **B•1598-1599**

Janco Corp., Box 3038-Glenoaks Sta., Burbank, CA 91504, 818-846-1800 ..... **B•1642-1643**

§ **Mechanical Entprs., 461 Carlisle Dr., Herndon, VA 22070, 703-435-9496** ..... **B•1655**

Oak Switch Systems, 100 S. Main St., Crystal Lake, IL 60014, 815-459-5000 ..... **B•1668**

Veetronix, Inc., Sub. Reach Electronics, Box 480, Lexington, NE 68850, 308-324-4600 ..... **B•1700**

Adams Rite Products, Inc., 540 W. Chevy Chase Dr., Glendale, CA 91204 818-241-5121

§ Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371

APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700

§† Arrow Hart Component Products, Cooper Inds., 103 Hawthorn St., Hartford, CT 06101 203-249-8471

† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880

C & K Components, Inc., 15 Riverdale Ave., Newton, MA 02158-1082 617-964-6400

§ Carlingswitch, Inc., 60 Johnson Avenue, Plainville, CT 06062-1156 203-793-9281

§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411

§† Eaton Corp./MSC Prods., 1640 Monrovia St., Costa Mesa, CA 92627 714-642-2427

§† Eaton Corp./Cutler-Hammer Prods, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216 414-449-7487

§† FISHERCAST, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522

§ Gaynor Electric Co., 135 South Main St, P.O. Box 316, Thomaston, CT 06787-0316 203-283-4388

§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661

§ Grayhill Inc., 569 Hillgrove Ave., La Grange, IL 60525 312-354-1040

ITT Schadow, 8081 Wallace Rd., Eden Prairie, MN 55344 612-934-4400

§ ITW Switches, Illinois Tool Works, 6615 W. Irving Park Rd., Chicago, IL 60634 312-282-4040

§ Licon Div., Illinois Tool Works, 6615 W. Irving Park Rd., Chicago, IL 60634 312-282-4040

§ MEC A/S, Industriparken 23, Ballerup, DENMARK DK-2750 011-452-973366

§ Mepco/Centralab, Inc., A North American Philips Co., Hwy. 20 W., P.O. Box 858, Ft. Dodge, IA 50501 515-573-1300

§ Micro Switch, A Honeywell Div., 11 W. Spring St., Freeport, IL 61032 815-235-6600

§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800

Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108

† Radio Switch Corp., 64 S. Main St., P.O. Box A, Marlboro, NJ 07746 201-462-6100

Relay Service Co., 1300 N. Pulaski Rd., Chicago, IL 60651 312-252-2700

Russtech Engineering Company, Inc., 23322 (D) Madero Road, Mission Viejo, CA 92691 714-472-0880

Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220

§ Switchcraft, Inc., 5555 N. Elston, Chicago, IL 60630 312-792-2700

Switching Systems, Audio-1300 — *See Vol. D*

Switching Systems, Test & Measurement-2900 — *See Vol. D*

Switch Seals, Environmental-2800

§† **AME Corporation, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195, 201-263-1700** ..... **B•1537**

§ Alcoswitch, Augat Inc., 1551 Osgood St., N. Andover, MA 01845 617-685-4371

† APM-Hexseal, 44 Honeck St., Englewood, NJ 07631 201-569-5700

Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 401-253-0200

§ Arrow Hart Component Products, Cooper Inds., 103 Hawthorn St., Hartford, CT 06101 203-249-8471

Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202

§† Clare Division, General Instrument Corp., 3101 W. Pratt Blvd., Chicago, IL 60645 312-262-7700

§† Eaton Corp./MSC Prods., 1640 Monrovia St., Costa Mesa, CA 92627 714-642-2427

§ Eaton Corp./Cutler-Hammer Prods, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216 414-449-7487

§† EECO Incorporated, 1601 E. Chestnut Ave., P.O. Box 659, Santa Ana, CA 92702-0659 714-835-6000

Micro Switch, A Honeywell Div., 11 W. Spring St., Freeport, IL 61032 815-235-6600

† Otto Engineering, 2 E. Main St., Carpentersville, IL 60110 312-428-7171

† Risk, George, Inds., 802 S. Elm St., Kimball, NE 69145 308-235-4645

§ SPEMCO Switches, 23425 Harper, Box 386, St. Clair Shores, MI 48080 800-482-2828

Swivel Units, Data Entry Terminals-1400

PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ..... **C•1073-1075**

Ergotron, Inc., 1621 E. 79th Street, Minneapolis, MN 55420 ..... 612-854-9116; 800-328-9839

Synchronizers (MIL), Antenna-3475 — *See Vol. D*

Synchros-4900 — *See Vol. D*

Synchros & Resolvers (MIL)-2440 — *See Vol. B*

Synchro Transmitters, Solid State-4900 — *See Vol. D*

Synthesizers, Delay Line-2350 — *See Vol. A*

Synthesizers, Frequency-2900 — *See Vol. D*

Synthesizers, Speech-2325 — *See Vol. D*

Synthesizers, Waveform-2900 — *See Vol. D*

Systems Integration — See Services, Systems Integration (Vol. D)

Tables, X-Y Axis — See Simulators, Motion (Vol. D)

Tablets, Digitizing-2000 — *See Vol. D*

Tachometers, Generator-4900 — *See Vol. D*

Tachometers, Optical-4900 — *See Vol. D*

Tachometers, Pulse-4900 — *See Vol. D*

Tachometers, Stroboscopic-4900 — *See Vol. D*

Tape and Reel Packaging-4100 — *See Vol. D*

Tape Decks — See Recorders, Magnetic Tape (Vol. D), Transports, Tape (Vol. D)

Tape Duplicators — See Duplicators, Magnetic Tape (Vol. D), Perforators,Paper Tape (Vol. D)

Tape Recording Accessories-1300 — *See Vol. D*

Tape Search Equipment-2000 — *See Vol. D*

Tape Winders-2000 — *See Vol. D*

Tapes, Electrical Insulation-3100

§† **Markel Corp., P.O. Box 752, Norristown, PA 19404, 215-272-8960** ..... **C•1705**

Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171

† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886

† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200

§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631

Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151

† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000

DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218

§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900

§ Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683

§† Moxness Products, Inc., Versa Technologies, 1914 Indiana St., Racine, WI 53405 ..... 414-554-5050;800-558-5706

Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300

§ Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600

† Press-On Products, 21 Factory Rd., Addison, IL 60101 312-628-2255

† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600

§ Vidaire Electronics Mfg. Corp., P. O. Box 788, Freeport, NY 11520 516-623-6696

Tapes, Films & Foils, Pressure Sensitive-2500

§ **Injectorall Electronics (Woman Owned), 110 Keyland Court, Bohemia, NY 11716, 516-563-3388** ..... **C•1105,1740**

Acme Division, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505 203-562-2171

Ad-Vance Magnetics, Inc., 625 Monroe St., Rochester, IN 46975 219-223-3158

Auburn Mfg., Pease Ave. & Stack St., Middletown, CT 06457 203-346-6677

Bishop Graphics, Inc., 5388 Sterling Center, Westlake Village, CA 91359 818-991-2600

§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630

† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200

Chartpak, 1 River Rd., Leeds, MA 01053 413-584-5446

§† CHR Industries, Inc., 407 East St., P.O. Box 1911, New Haven, CT 06509 203-777-3631

Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151

DuPont de Nemours, E. I., & Co., 1007 Market St. Wilmington, DE 19898 302-773-3218

§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
GM Nameplate, Inc., 2040 15th Ave. West, Seattle, WA 98119 206-284-2200
§ Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
Markem Corp., 150 Congress St., Keene, NH 03431 603-352-1130
Moxness Products, Inc., Versa Technologies, 1914 Indiana St., Racine, WI 53405 ..... 414-554-5050;800-558-5706
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600
† Press-On Products, 21 Factory Rd., Addison, IL 60101 312-628-2255
§ Tapecon, Inc., 10 Latta Rd., Rochester, NY 14612 716-621-8400
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
† Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386
§ Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Tapes, Heat Shrinkable — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C)

Tapes, Magnetic, Cartridge-2000 — *See Vol. D*

Tapes, Magnetic, Reel-2000 — *See Vol. D*

Tapes, Magnetic, Digital Cassette-2000 — *See Vol. D*

Tapes, Plastic Coated for Cable-2500

§† Capitol Magnetic Prods., 6902 Sunset Blvd., Hollywood, CA 90028 213-461-2701
§ Computerware, Inc., 8480-I Tyco Rd., Vienna, VA 22180 703-821-8200
§ Duotone, 6875 S.W. 81st St., S. Miami, FL 33143 305-665-1121
DuPont de Nemours, E. I., & Co., 1007 Market St., Wilmington, DE 19898 302-773-3218
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
§† Magnetic Audio/Video Products Div., 3M Co., 3M Center, Bldg. 223-5 South, St. Paul, MN 55101 612-733-1110
§ Recoton Corp., 46-23 Crane St., Long Island City, NY 11101 718-392-6442
Teledyne Camera Sys., 131 N. Fifth Ave., Arcadia, CA 91006 818-359-6691
Tri-Data Corp., 505 E Middlefield Rd., Mountain View, CA 94043-4082 .. 415-969-3700

Technical Books-4200

Omega Engineering, Box 4047, Stamford, CT 06907, 203-359-1660 ..... B•1670, D•1015,1095,1135,1171,1304,1409
† Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 617-329-4700
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Compliance Design Inc., 593 Massachusetts Ave., Boxboro, MA 01719 .. 617-264-4668
† D.A.T.A., Inc., International Thomson Organization, P.O. Box 26875, San Diego, CA 92126 619-578-7600
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
Electro-Craft, 1600 2nd St. S., Hopkins, MN 55343 612-931-2700
Feedback, 620 Springfield Ave., Berkeley Hghts., NJ 07922 201-464-5181
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 616-982-3210
§ Motorola Semiconductor Prods. Sector, 3102 North 56th Street, Phoenix, AZ 85018-6606 ..... James A. Norling, GM
Powerex, Westinghouse, GE, Mitsubishi, Hillis St., Youngwood, PA 15697 412-925-7272
§† Tab Books, Monterey & Pinola Aves., Blue Ridge Summit, PA 17214 717-794-2191
Xycom, 750 N. Maple Rd., Saline, MI 48176 313-429-4971

Tees, Coaxial-3450 — *See Vol. A*

Tees, Waveguide-3450 — *See Vol. A*

Telecommunication Systems & Equipment — See Communications Systems, Telephone (Vol. D)

Telemetering Systems, Electronic — See Communications Systems, Telemetering (Vol. D)

Telephone Cords & Cord Sets — See Cords & Cord Sets, Telephone

Telephone Handsets — See Handsets, etc. (Vol. D)

Telephone Ringing Generators — See Generators, Signal (Vol. D)

Telephone Sets, Exclusion Key-1900 — *See Vol. D*

Telephone Systems, Telephones Sound Powered — See Communications Systems, Telephone (Vol. D)

Teleprinters, Auto Send/Receive-1900 — *See Vol. D*

Teleprinters, Keyboard Send/Receive-1900 — *See Vol. D*

Teleprinters, Receive Only-1900 — *See Vol. D*

Teletypewriters & Equipment-1900 — *See Vol. D*

Television Systems & Equipment, Cable (CATV) & Master Antenna (MATV) — See CATV Systems & Equipment (Vol. D)

Television Systems & Equipment Closed Circuit-1900 — *See Vol. D*

Temperature Compensators-5300 — *See Vol. B*

Temperature Indicators — See Meters, Temperature (Vol. D), Labels, Temperature Indicating (Vol. B)

Temperature Sensors — See Transducers, Temperature (Vol. B)

Tensile Testers — See Testers, Material (Vol. D)

Terminal Blocks (Incl. Barrier Types)-2100

Altech Corporation, 349 Rte. 206, Somerville, NJ 08876, 201-359-4454 ..... B•1298,1536, C•1149
§ AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1166-1167
Arcolectric Corp., 9001 Canoga Ave., Canoga Park, CA 91304, 818-700-1933 ..... B•1546,1549
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
§ Curtis Industries, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699, 414-535-1500 ..... C•1212
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584, 309-693-3355 ..... C•1235
IDEC Corporation, 1213 Elko Drive, Sunnyvale, CA 94089-2211, 408-747-0550 ..... C•1297
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1581,1584
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1320-1323
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188, 312-682-4100 ..... C•1510-1511
§ Underwriters Safety Device, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656, 312-867-4600 ..... C•1546-1547
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1559,1564
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
† ADC Telecommunications, Inc., 4900 W. 78th St., Minneapolis, MN 55435 612-835-6800
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247 603-524-5101
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718 714-951-8808
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Custom Connector, 1738 E. 30th St., Cleveland, OH 44114 216-241-1679
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
Dialight Corp., 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
FIC Corp., 12216 Parklawn Dr., Rockville, MD 20852 ..... 301-881-8124;800-638-6594
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Gould Inc., Circuit Protection Div., 374 Merrimac St., Newburyport, MA 01950 ..... 617-462-6662/3131
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§† Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§ Marathon Special Prods., 13300 Van Camp Rd., Bowling Green, OH 43402 419-352-8441
§ Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 214-333-3201
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440

§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Panel Components Corp., P.O. Box 6626M, Santa Rosa, CA 95406 707-523-0600
PCD, 5 Lowell Avenue, Winchester, MA 01890 617-721-1280
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
Powerright Products, Inc., 2739 Oakland Avenue, Garland, TX 75041 214-840-0575
§ Relay Specialties, 17 Raritan Rd., Oakland, NJ 07436 201-337-1000
§ Reliance Comm/Tec, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
Selco Products Co., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621 714-521-8673
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
TIW Systems, Inc., 1284 Geneva Drive, Sunnyvale, CA 94089 408-734-3900
§ Trimm, Inc., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048 312-362-3700
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Terminal Boards-2100

Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ... C•1176,1178
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1581,1584
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1320-1323
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1564
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Airflyte Elctrns. Co., 56 New Hook Rd., P. O. Box 231, Bayonne, NJ 07002 201-436-2230
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247 603-524-5101
§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
Dialight Corp., 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
FIC Corp., 12216 Parklawn Dr., Rockville, MD 20852 ..... 301-881-8124;800-638-6594
G W Three Incorporated, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153 703-451-2043
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
KMC Systems, Inc., 140 Greenwood Ave. (Bldg. 3), Midland Pk., NJ 07432 201-447-0007
† K-Systems, Inc., 3902 Lilac, Las Cruces, NM 88005 505-526-3209
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Powerright Products, Inc., 2739 Oakland Avenue, Garland, TX 75041 214-840-0575
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§ Reliance Comm/Tec, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Tektronix, Inc., P. O. Box 500, Y3-314, Beaverton, OR 97077 ..... 800-547-1512;Oregon only 800-452-1877
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl, IL 60007 312-956-8000
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Terminal Boards, Blocks, Strips (MIL)-2440 — *See Vol. B*

Terminal Equipment, Digital-2000 — *See Vol. D*

Terminal Strips (Including Barrier Types)-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1166-1167
Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1177
§ Beau Products Div., Vernitron Corp., Box 10, Laconia, NH 03247, 603-524-5101 ..... C•1188-1189
Bussmann, P.O. Box 14460, St. Louis, MO 63178, 314-394-2877 ..... C•1194
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206,1697
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
§ Curtis Industries, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699, 414-535-1500 ..... C•1212
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1284
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
§† Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101, 718-361-0800 ..... C•1584
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1320-1323
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, 812-944-6733 ..... C•1515
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1559,1564-1567
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 201-943-7650
ADAC Corp., 70 Tower Office Pk., Woburn, MA 01801 617-935-6668
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ Amerace Corporation, Newburgh Rd., Hackettstown, NJ 07840 201-852-1122
Apahouser-Elcom, Inc., 101 Walnut St., Watertown, MA 02172 617-924-1500
A P Products/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060 216-354-2101
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§ Assmann Components, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Christiansen Radio Inc., 1950 San Remo, Laguna Beach, CA 92651 714-497-1506
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§ ebm Inds., Inc., 525 New Britain Ave., Unionville, CT 06085 203-674-1515
† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§ Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
FIC Corp., 12216 Parklawn Dr., Rockville, MD 20852 ..... 301-881-8124;800-638-6594
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
Interlok, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010 415-348-5625
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§† Mechanical Engraving, 4500 Bullard Ave, Bronx, NY 10470 212-324-4455
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
Powerright Products, Inc., 2739 Oakland Avenue, Garland, TX 75041 214-840-0575
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§ Reliance Comm/Tec, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
§ Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl, IL 60007 312-956-8000
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Communications-2000 — *See Vol. D*

Terminals, Credit Authorization-2000 — *See Vol. D*

Terminals, Crimp-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1883
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093 .. 516-937-3475
§ Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
Quantum Electronics, Inc., R.D. 4, Box 6AAA, Lewistown, PA 17044 717-242-2541
§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311

Terminals, Data Display (Incl. Alphanumeric & Graphic)-2000 — *See Vol. D*

Terminals, Data Entry, Multimedia-2000 — *See Vol. D*

Terminals, Display-2000 — *See Vol. D*

Terminals, Feedthru-2800

† Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
Curtis Industries, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699, 414-535-1500 ..... C•1212
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1224
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283,1285
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§ Augat/Pylon Co., Inc., P.O. Box 2510, Attleboro Falls, MA 02763 617-699-7646
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
† Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dai-Ichi Shoji of Amer., Inc., 150 Fifth Ave., Suite 845, New York, NY 10011 212-691-9050
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
§ Johnson, E. F., Co., 299 Johnson Ave., Waseca, MN 56093 507-835-6222
§ Jolo Industries, 13921 Nautilus Dr., Garden Grove, CA 92643 714-554-6840
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
† Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
Philips Elmet, 1560 Lisbon Rd., Lewiston, ME 04240 207-784-3591
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 .. 516-328-3300
† Taurus Corp., Academy Hill, P.O. Box 278, Lambertville, NJ 08530 609-397-2390
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Ferrule, Cable-End-2100

Altech Corporation, 349 Rte. 206, Somerville, NJ 08876, 201-359-4454 ..... B•1298,1536, C•1149
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877

Terminals, Financial-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Batch-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Interactive-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Multiprogramming-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Multiuser-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Real Time-2000 — *See Vol. D*

Terminals, Intelligent/Programmable, Transaction Processing-2000 — *See Vol. D*

Terminals, Lug (All Types)-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 ..... C•1150
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283,1285
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1911
Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§† AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330

§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk., CT 06852 203-838-4444
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
Hallmark Metals Inc., 610 W. Foothill Blvd., Glendora, CA 91740 213-335-1263
§ Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
† Patton-MacGuyer Inc., 17 Virginia Ave., Providence, RI 02905 401-941-6000
§ Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
† Taurus Corp., Academy Hill, P.O. Box 278, Lambertville, NJ 08530 609-397-2390
§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
Thermotech, Div. of FL Industries, Inc., 1203 S. 5th St., Hopkins, MN 55343 612-933-9400
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§ WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§† Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Miniature & Subminiature-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1150-1151
§ Citizen Business Machines, 2999 Overland Ave., Los Angeles, CA 90064, 213-558-0961;800-421-6516 ..... D•1081
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1285
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1323
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1911
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk., CT 06852 203-838-4444
Burr-Brown Corp., P.O. Box 11400, Tucson, AZ 85734 602-746-1111
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
Control Module, 380 Enfield St., Enfield, CT 06082 203-745-2433
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
§ G. R. Electronics, 1640 5th St., Suite 224, Santa Monica, CA 90401 213-395-4774
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 ..... 213-849-6211;800-423-2734
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
† Shogyo International Corp., 287 Northern Blvd., Great Neck, NY 11021 516-466-0911
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
SMK Electronics Corporation, U.S.A., 1901 Nancita Cir., Placentia, CA 92670 714-996-0960
Staffail Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
† Taurus Corp., Academy Hill, P.O. Box 278, Lambertville, NJ 08530 609-397-2390
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Point-of-Sale-2000 — *See Vol. D*

Terminals, Printed Circuit Board-2100

Altech Corporation, 349 Rte. 206, Somerville, NJ 08876, 201-359-4454 ..... B•1298,1536, C•1149
Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1176
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Cosmo Corporation, 3239 W. 14th St., Cleveland, OH 44109, 216-861-5594 ..... A•1239
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1224
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1284
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1323
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1883
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1559,1564
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Applied Digital Data Systems Inc., 100 Marcus Blvd., Hauppauge, NY 11787 516-231-5400
† Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330

† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
† Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
Components Corp., 6 Kinsey Pl., Denville, NJ 07834 201-627-0290
† CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
Electro Space Fabricators, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067 215-682-7181
§ Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
† Oxley, Inc., 25 Business Pk. Dr., P.O. Box 814, Branford, CT 06405 203-488-1033
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§† Penn Engineering & Manufacturing Corp., P.O. Box 1000, Danboro, PA 18916 215-766-8853
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
Symbex Corp., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077 .. 216-354-0925
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ Wago Corp., 6657 N. Sidney Pl., Milwaukee, WI 53209-3217 414-352-1035
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Push-on, Quick Disconnect — See Connectors & Terminals, Push-on, Quick Disconnect (Vol. C)

Terminals, Solderless-2100

§† AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1150-1151
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
Doran Manufacturing Co., 2834 Sidney Ave., Cincinnati, OH 45225, 513-681-5424 ..... C•1220
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1738
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
† Assembly Specialists, 914 Main St., Box 965, Acton, MA 01720 617-263-9100
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 .. 203-288-8001
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580
§ Cole-Hersee Co., 20 Old Colony Ave., Boston, MA 02127-2467 617-268-2100
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
E & L Instruments, Inc., 70 Fulton Terrace, New Haven, CT 06512 203-624-3103
East Penn Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Global Specialties, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509 203-624-3103
§ Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
† Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§ Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532 312-969-4550
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 214-333-3201
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Patton-MacGuyer Inc., 17 Virginia Ave., Providence, RI 02905 401-941-6000
§ Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§ Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 415-965-4500
§† Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
Wall-Able Mfg. Corp., 2201 Landmeier Rd., Elk Grove Vl., IL 60007 312-956-8000
§† WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Standoff-2100

† Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600
§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207,1697
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895, 401-769-3800 ..... C•1224
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283,1285
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880

Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
† Hermetic Seal Corp., 4232 Temple City Blvd., Rosemead, CA 91770 213-283-0411
Jan Hardware Mfg. Co., 47-27 36th St., Long Island City, NY 11101 718-361-0800
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 ..... 213-849-6211;800-423-2734
Mark Eyelet Inc., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716 203-756-8847
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Penn Engineering & Manufacturing Corp., P.O. Box 1000, Danboro, PA 18916 215-766-8853
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047 215-757-1202
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
† Reeves-Hoffman Div., 400 W. North St., Carlisle, PA 17013 717-243-5929
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 516-328-3300
† Taurus Corp., Academy Hill, P.O. Box 278, Lambertville, NJ 08530 609-397-2390
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Threaded-2100

§† Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745 617-995-1725
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 ..... 213-849-6211;800-423-2734
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§† Penn Engineering & Manufacturing Corp., P.O. Box 1000, Danboro, PA 18916 215-766-8853
§ Positronic Industries, Inc., 423 North Campbell, Springfield, MO 65801 417-866-2322
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
† Sterling Instruments, 2101 Jericho Turnpike, New Hyde Pk., NY 11040 516-328-3300
TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
§ WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH 514-694-9136
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals, Touch — See Touch Terminals (Vol. D)

Terminals, Turret-2100

§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
§ Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1282-1283
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
§† Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
† Aaba Components Corp., P.O. Box 171, Baldwin Place, NY 10505 914-628-6952
§† Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
† Armel Electronics, 1601 75th St., N. Bergen, NJ 07047 201-869-4201
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† D-Cemco, 3200 N. San Fernando Blvd., Burbank, CA 91504 213-849-6341
§† Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
§† Electrical Industries, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974 201-464-3200
§† Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
† General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749 ..... 617-568-0451;800-225-9228
† LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 ..... 213-849-6211;800-423-2734
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771 516-922-6000
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047 215-757-1202
§† Precision Metal Products Co., Centennial Indl. Pk., Peabody, MA 01961-6026 617-532-5500
§ RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
† Reeves-Hoffman Div., 400 W. North St., Carlisle, PA 17013 717-243-5929
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
§† Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
§ Useco Div., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409 818-786-9388
† U.S. Terminals, 7502 Camargo Rd., Cincinnati, OH 45243 513-561-8145
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200

Terminals, Wirewrap-2100

AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1166-1167
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206-1207
Connector Corp., 6025 N. Keystone Ave., Chicago, IL 60646, 312-539-3108 ..... C•1209
§† Mill-Max Manufacturing Corp., P.O. Box 300, Oyster Bay, NY 11771, 516-922-6000 ..... C•1355
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1911
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, 818-365-9661 ..... C•1113
Accessories for Elctrns., Inc., 800 Merrick Rd., Baldwin, NY 11510-3593 516-546-1751
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 401-823-5200
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
† Assembly Specialists, 914 Main St., Box 965, Acton, MA 01720 617-263-9100
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
† Auto-Swage Prods., 726 River Rd., Shelton, CT 06484 203-929-1401
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
§ BICC-VERO Electronics, Inc., 1000 Sherman Ave, Hamden, CT 06514 203-288-8001
§ Bussco Inc., 119 Standard St., El Segundo, CA 90245 213-322-6580

Circuit Assembly Corp., 18 Thomas St., Irvine, CA 92718-2703 714-855-7887
†CTS Fabri-Tek Connector Inc., 9210 Science Center Dr., New Hope, MN 55428 612-533-3533
§Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dialight Corp. (Kulka Smith, Inc), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
Douglas Electronics, 718 Marina Blvd., San Leandro, CA 94577 415-483-8770
§†Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§†Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 401-769-3800
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
§Entrelec, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977 914-425-7460
§†Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
†General Manufacturing, 724 Ruberta Ave., Glendale, CA 91201 818-243-2069
†Hybricon Corporation, 12 Willow Road, Ayer, MA 01432 617-772-5422
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736 201-223-9400
†LVC Industries, Inc., 23 Hanse Ave., Freeport, NY 11520 516-868-1900
§Methode Electronics, Inc., 7444 W. Wilson Ave., Chicago, IL 60656 312-867-9600
§Methode Electronics, Inc., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008 312-392-3500
†Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
Miniature Metal Forming Div., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509 213-370-3679
§Mupac, 10 Mupac Dr., Brockton, MA 02401 617-588-6110
§National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 ..... 415-856-9332; 800-NEPENTHE
§OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§Phoenix Contact, P.O. Box 4100, Harrisburg, PA 17111 717-944-1300
§Precicontact, Inc., 835 Wheeler Way, Langhorne, PA 19047 215-757-1202
§RDI/Reed Devices, Inc., Augat, 525 Randy Rd., Carol Stream, IL 60188 312-682-4100
§Reliance Comm/Tec, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199 800-245-4501
§Reliance Electric Co., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199 800-245-4501
§Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
†Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150 812-944-6733
Staffall Inc., 7 Woodland St., Providence, RI 02908 401-351-8282
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§†TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§†Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Terminals (MIL), Ground Data-3475 — *See Vol. D*

Terminations, Antenna-Also See Dummy Loads-2800

†Airtron, Litton Industries, Inc., 200 E. Hanover Ave., Morris Plains, NJ 07950 201-539-5500
†Alan Inds., P.O. Box 1203, Columbus, IN 47201 812-372-8869
Alpha Inds., Inc. - TRG Millimeter Comp., 651 Lowell St., Methuen, MA 01844 617-682-4661
†Arra Inc., 15 Harold Ct., Bay Shore, NY 11706 516-231-8400
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
†Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 216-248-1200
Coaxial Dynamics, 15210 Industrial Parkway, Cleveland, OH 44135 216-267-2233
†Connecticut Microwave Corp., 106 Powder Mill Rd., Box 389, Canton, CT 06019 203-693-4247
§†Dielectric Communications, General Signal, Tower Hill Rd., Raymond, ME 04071 ..... 207-655-4555;800-341-9678
†Elcom Systems, Inc., 932 Clint Moore Rd., Boca Raton, FL 33431 305-994-1774
†Electro Impulse, Box 870, Red Bank, NJ 07701-0870 201-741-0404
§†EMC Technology Inc, 1971 Old Cuthbert Rd., Cherry Hill, NJ 08034 609-429-7800
†Gabriel Elctrns., Box 70, Scarborough Indl. Pk., Scarborough, ME 04074 207-883-5161
§†JFW Inds., Inc., 5134 Commerce Sq. Dr., Indianapolis, IN 46237 887-1340
KDI Electronics, Inc., Engelmann & Pyrofilm Divisions, 60 S. Jefferson Rd., Whippany, NJ 07981 201-887-8100
Lectronic Research Labs., Inc., 1423 Ferry Ave., Camden, NJ 08104 609-541-4200
†Maury Microwave Corp., 8610 Helms Ave., Cucamonga, CA 91730 714-987-4715
†Microlab/FXR, 10 Microlab Rd., Livingston, NJ 07039 201-992-7700
†Microwave Applications Group, 3030 Industrial Pkwy., Santa Maria, CA 93455 805-928-5711
Microwave Development Laboratories, 10 Michigan Dr., Natick, MA 01760 617-655-0060
§†Microwave Filter Inc., 6743 Kinne St., East Syracuse, NY 13057-0486 ..... 315-437-3953; 800-448-1666
†Narda Microwave Corp., 435 Moreland Rd., Hauppauge, NY 11788 516-231-1700
RLC Electronics, Inc., 83 Radio Cir., Mt. Kisco, NY 10549 914-241-1334
†Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
†Sage Laboratories, Inc., 11 Huron Dr., Natick, MA 01760 617-653-0844
§Sealectro-BICC Electronics, 40 Lindeman Dr., Trumbull, CT 06611 203-372-4118
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§†Systron-Donner Microwave Div., 14844 Oxnard St., Van Nuys, CA 91409 818-786-1760
†Transco Products, Inc., 1001 Flynn Rd., Camarillo, CA 93011-6003 805-987-8007
§†Waveline, Box 718, W. Caldwell, NJ 07006 201-226-9100

Terminations, Cable-2100

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1819
Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1207
ISL Products Int'l, Ltd., 235 P Robbins Lane, Syosset, NY 11791-6093, 516-937-3475 ..... C•1301,1868
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183-1185
3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, 512-834-1800 ..... C•1339
§†**Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1363-1364**
§**Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380**
§**WECO Electrical Connectors, Inc., 16805 Hymus Blvd., Kirkland, Quebec, CANADA H9H LH, 514-694-9136 ..... C•1565-1567**
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
§†Bird Electronic Corp., 30303 Aurora Rd., Cleveland, OH 44139 216-248-1200
Compac, 1320-13 Lincoln Ave., Holbrook, NY 11741 516-585-3400
§Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§†FISHERTECH, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
§†M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
MERET, Inc., 1815 24th St., Santa Monica, CA 90404-4998 213-828-7496
§†Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
U.S. Instr. Rentals, 2988 Campus Dr., San Mateo, CA 94403 800-824-2873
Wide Band Engineering Co., Inc., Box 21652, Phoenix, AZ 85036 602-254-1570
§Wiltron, 490 Jarvis Dr., Morgan Hill, CA 95037-2809 408-778-2000

Terminations, Fiber Optic-2475 — *See Vol. B*

Terminations, Microwave-3450 — *See Vol. A*

Terminations, VHF, Video, Pulse-1900 — *See Vol. D*

Termination Systems, Wire-2100

Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1818
3M Associated Electronics, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, 216-354-9239 ..... C•1183-1185
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
†FISHERCAST, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
§†FISHERTECH, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, CANADA K9J 6Y9 705-748-9522
†Patton-MacGuyer Inc., 17 Virginia Ave., Providence, RI 02905 401-941-6000

Test Assemblies (MIL)-3475 — *See Vol. D*

Test Benches (MIL), ECM-3475 — *See Vol. D*

Test Equipment — See Meters, Acceleration, Admittance, etc. (Vol. D)

Test Equipment, Closed Circuit TV-Also See Television Systems & Equipment, Closed-Circuit-2900 — *See Vol. D*

Test Equipment, Color TV-2900 — *See Vol. D*

Test Equipment, Data Communications, Monitors & Recorders-2900 — *See Vol. D*

Test Equipment, Fiber Optic-2475 — *See Vol. B*

Test Equipment, Mechanical Impedance-2900 — *See Vol. D*

Test Equipment, Memory Systems, Disk-2900 — *See Vol. D*

Test Equipment, Motor-2900 — *See Vol. D*

Test Equipment, Rental & Lease - Also See Services, Electrical Measurement & Test-2900 — *See Vol. D*

Test Equipment, RFI Susceptibility-2900 — *See Vol. D*

Test Equipment (MIL)-3475 — *See Vol. D*

Test Fixtures, ATE-2900 — *See Vol. D*

Test Methods (MIL)-2440 — *See Vol. B*

Test Sets, Communications-1900 — *See Vol. D*

Test Sets (MIL)-3475 — *See Vol. D*

Test Sets (MIL), Airborne Radar-3475 — *See Vol. D*

Test Sets (MIL), ECM-3475 — *See Vol. D*

Test Sets (MIL), EW-3475 — *See Vol. D*

Test Sets (MIL), Flight Line-3475 — *See Vol. D*

Test Sets (MIL), IRCM-3475 — *See Vol. D*

Test Systems, Automatic DC-2900 — *See Vol. D*

Test Systems, Board-2900 — *See Vol. D*

Test Systems, Component-2900 — *See Vol. D*

Test Systems, Computer Controlled (Automatic)-2900 — *See Vol. D*

Test Systems, Development Engineering — See Services, Assembly & Fabrication (Vol. D)

Test Systems, Functional-2900 — *See Vol. D*

Test Systems, Hall Effect-2900 — *See Vol. D*

Test Systems, IC-2900 — *See Vol. D*

Test Systems, Ultrasonic, Computer Controlled-2900 — *See Vol. D*

Test Systems, VLSI & Memory-2900 — *See Vol. D*

Testers, Accelerometer — See Calibrators, Accelerometer (Vol. D)

Testers, Armature-2900 — *See Vol. D*

Testers, Battery-2900 — *See Vol. D*

Testers, Bit Rate-2900 — *See Vol. D*

Testers, Burn-in, Aging-2550 — *See Vol. D*

Testers, Cable-2900 — *See Vol. D*

Testers, Capacitor-2900 — *See Vol. D*

Testers, Circuit — See Testers, Signal Tracing (Vol. D)

Testers, Coil & Transformer-2900 — *See Vol. D*

Testers, Communication Equipment (Automatic)-2900 — *See Vol. D*

Testers, Component Linearity-2900 — *See Vol. D*

Testers, Corona-2900 — *See Vol. D*

Testers, CRT-2900 — *See Vol. D*

Testers, Diode-2900 — *See Vol. D*

Testers, Electrical Parameter-2900 — *See Vol. D*

Testers, Electric Power — See Monitors, Power, AC & DC (Vol. D)

Testers, Encoder-2900 — *See Vol. D*

Testers, Fiber Optic-2900 — *See Vol. D*

Testers, Ground Resistance — See Meters, Ohm (Vol. D)

Testers, Heat, Manual-2550 — *See Vol. D*

Testers, Hipot — See Testers, Insulation Breakdown (Vol. D)

Testers, Insulation Breakdown-2900 — *See Vol. D*

Testers, Insulation Resistance-2900 — *See Vol. D*

Testers, Integrated Circuit (Automatic)-2900 — *See Vol. D*

Testers, Integrated Circuit (Manual)-2900 — *See Vol. D*

Testers, Interface-2900 — *See Vol. D*

Testers, LED & LED Arrays-2900 — *See Vol. D*

Testers, Life, Component-2550 — *See Vol. D*

Testers, Logic Card-2900 — *See Vol. D*

Testers, Loopback-2900 — *See Vol. D*

Testers, Magnetic Core-2900 — *See Vol. D*

Testers, Magnetic head Media-2900 — *See Vol. D*

Testers, Magnetic Medium-2900 — *See Vol. D*

Testers, Magnetron-2900 — *See Vol. D*

Testers, Material-2550 — *See Vol. D*

Testers, Memory Board-2900 — *See Vol. D*

Testers, Meter-2900 — *See Vol. D*

Testers, Microwave-2900 — *See Vol. D*

Testers, Modem-2900 — *See Vol. D*

Testers, Motor-2900 — *See Vol. D*

Testers, Potentiometer-2900 — *See Vol. D*

Testers, Power Supply-2900 — *See Vol. D*

Testers, Pulse Jitter-2900 — *See Vol. D*

Testers, Relay-2900 — *See Vol. D*

Testers, Resistivity-2900 — *See Vol. D*

Testers, Resistor-2900 — *See Vol. D*

Testers, ROM Devices-2900 — *See Vol. D*

Testers, Servo — See Analyzers, Servo (Vol. D)

Testers, Shock-2550 — *See Vol. D*

Testers, Short Turn — See Testers, Coil (Vol. D)

Testers, Signal Tracing-2900 — *See Vol. D*

Testers, Solderability-4100 — *See Vol. D*

Testers, Synchro/Resolver-2900 — *See Vol. D*

Testers, Thickness (all types)-2900 — *See Vol. D*

Testers, Thyristor-2900 — *See Vol. D*

Testers, Tracking & Erosion Resistance (Insulation)-2900 — *See Vol. D*

Testers, Transistor-2900 — *See Vol. D*

Testers, Transmission & Delay-2900 — *See Vol. D*

Testers, Tube-2900 — *See Vol. D*

Testers, Vibration-Also See Services, Environmental Test-2900 — *See Vol. D*

Testers, Voltage-2900 — *See Vol. D*

Testers, Voltage Breakdown-2900 — *See Vol. D*

Testers, (MIL), ECM Pod-3475 — *See Vol. D*

Testers, (MIL), ECM-3475 — *See Vol. D*

Testers, (MIL), ESM-3475 — *See Vol. D*

Testing, Environmental — See Services, Environmental Testing (Vol. D)

Thermal Converters — See Converters, Thermal (Vol. B)

Thermal Imagers — See Imagers, Thermal (Vol. D)

Thermal Platforms-2900 — *See Vol. D*

Thermistors-5300 — *See Vol. B*

Thermistors, Surface Mount-5300 — *See Vol. B*

Thermocouple Devices & Materials — See Cooling/Heating Modules, Thermoelectric (Vol. B)

Thermocouple Interfaces for Personal Computers-2000 — *See Vol. D*

Thermocouples, Elements & Accessories-5300 — *See Vol. B*

Thermoelectric, Modules — See Cooling/Heating Modules, Thermolectric (Vol. B)

Thermographs-2900 — *See Vol. D*

Thermometers, Electronic (All Types) — See Meters, Temperature (Vol. D)

Thermometers, Microscopic, Infrared-2900 — *See Vol. D*

Thermometers, Resistance-2900 — *See Vol. D*

Thermostats-Also See Switches, Thermally Actuated; Controls, Temperature-5300 — *See Vol. B*

Thermowells-5300 — *See Vol. B*

Thin-Film Memory Systems, Planar — See Memory Systems (Vol. D)

Thyristors and SCRs, Surface Mount-4800 — *See Vol. A*

Thyristors (Incl. Silicon Controlled Rectifiers) - Also see DIACs; TRIACs, SIDACs-4800 — *See Vol. A*

Thyristors (MIL)-2440 — *See Vol. B*

Ties, Wire & Cable — See Wire & Cable Ties (Vol. C)

Time Delays, Precision-2900 — *See Vol. D*

Time Dispenser, Microprocessor based-2200 — *See Vol. D*

Time Management Systems-2200 — *See Vol. D*

Timers, Counting-2200 — *See Vol. D*

Timers, Cycle & Reset-2200 — *See Vol. D*

Timers, Delay-2200 — *See Vol. D*

Timers, Electrolytic Cell-2200 — *See Vol. D*

Timers, Interval-2200 — *See Vol. D*

Timers, Programmed-2200 — *See Vol. D*

Timers, Sequence-2200 — *See Vol. D*

Timers, Solid State-2200 — *See Vol. D*

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§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 .. C•1363
§† Astro Tool Co., Inc., 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006 .. 503-642-9853
Bearing Inspection, 10041 Shoemaker Ave., Santa Fe Springs, CA 90670 .. 213-944-6251
§† Beau Tech, 98 Elm Street, Portland, ME 04101 .. 207-775-6139
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 .. 617-682-2000
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 .. 919-781-7200
Diversified Case Co., Ellis Ave., Off. 2, Whitesboro, NY 13492 .. 800-553-2411; 800-258-1188
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 .. 214-746-6000
§ Emulation Technology, Inc., 422 Ives Terrace, Sunnyvale, CA 94087 .. 415-960-0652
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 .. 815-968-9661
§ General Hardware Mfg., 80 White St., New York, NY 10013 .. 212-431-6100
§ Heath Co., Hilltop Road, St. Joseph, MI 49085 .. 616-982-3210
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 .. 717-285-4581
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 .. 602-968-6241
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 .. 914-793-0700
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 .. 212-475-4600
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 .. 215-355-7200
Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 .. 619-449-3844
§† Moody Tools, Inc., 43 Crompton Ave., E. Greenwich, RI 02818 .. 401-885-0911
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 .. 214-333-3201
§ Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 .. 301-490-9860
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 .. 516-239-6161
† Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 .. 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 .. 215-825-4990
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 .. 312-564-3300
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 .. 813-371-4242

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AMP Incorporated, Box 3608, Harrisburg, PA 17105, 717-564-0100 .. C•1150
† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
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Allied Systems Corp., Box 18077, Greensboro, NC 27419 .. 919-299-2294
Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 .. 312-983-3500
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 .. 203-838-4444
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 .. 416-475-8500
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 .. 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 .. 301-298-4411
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 .. 800-237-2374
§† Electronic Molding Corp., 96 Mill St., Woonsocket, RI 02895 .. 401-769-3800
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 .. 309-693-3355
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 .. 215-949-2300
Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 .. 714-660-5701
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 .. 714-752-3800
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 .. 714-557-4700
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 .. 914-793-0700
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 .. 212-475-4600
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 .. 215-355-7200
§ Nepenthe, Inc., 2471 E. Bayshore Road, Palo Alto, CA 94303 .. 415-856-9332; 800-NEPENTHE
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 .. 914-969-6800
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 .. 301-490-9860
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 .. 812-945-0211
Symtron Corp., 2415 E. Charleston Rd., Mountain View, CA 94043 .. 415-965-4500
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 .. 215-825-4990
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 .. 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 .. 612-537-1010
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 .. 803-534-7010
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 .. 818-365-9661
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 .. 703-949-8376

Tools, Alignment & Tuning-5400

§ Quantum Data, Inc., 2111 Big Timber Road, Elgin, IL 60123, 312-888-0450 .. D•1307
Spectrol Electronics, 17070 East Gale Ave., City of Industry, CA 91745, 818-964-6565 .. A•2116
§† Astro Tool Co., Inc., 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006 .. 503-642-9853
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 .. 414-351-6630
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 .. 617-682-2000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 .. 815-968-9661
Information Technolgoy A.D.S.C., P.O. Box 470, College Park, MD 20740 .. 301-779-5110
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 .. 602-968-6241
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 .. 914-793-0700
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 .. 718-444-3880
§ PTS Corporation, Box 272, Bloomington, IN 47401 .. 812-824-9331
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 .. 215-825-4990
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 .. 813-371-4242

Tools, Cable Tie-5400

† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 .. 718-429-0500
Burndy Corporation, Richards Ave., Norwalk,, CT 06852 .. 203-838-4444
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 .. 617-682-2000
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 .. 201-768-5400
§ Dennison Mfg. Co., 300 Howard St., Framingham, MA 01701 .. 617-879-0511
Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 .. 201-245-0033; 800-526-4182
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 .. 815-895-5181
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 .. 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 .. 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 .. 215-355-7200
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 .. 215-355-0200
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 .. 215-323-7120
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 .. 312-532-1800
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 .. 713-682-5151
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 .. 215-825-4990
§ Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 .. 414-355-1130
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 .. 803-534-7010

Tools, Connector-5400

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ....C•1176,1178
† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 .. C•1237
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 .. C•1357
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 .. C•1363-1364
§† Advanced Interconnections Corp., 5 Energy Way, West Warwick, RI 02893 .. 401-823-5200
§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711 .. 201-925-8000
† AMP Incorporated, Box 3608, Harrisburg, PA 17105 .. 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 .. 312-983-3500
§† Astro Tool Co., Inc., 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006 .. 503-642-9853
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 .. 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 .. 718-429-0500
Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 .. 317-983-5200; 800-BELDEN-1
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 .. 203-838-4444
§ Cambridge Products, 244 Woodland Ave., Bloomfield, CT 06002 .. 203-243-1761, 800-243-8814
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 .. 416-475-8500
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 .. 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 .. 301-298-4411

Deutsch Co., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045 213-649-1400
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
§ H & T Components Inc., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716 516-567-2282
§ Harris Corp., Dracon Div., 809 Calle Plano, Camarillo, CA 93010 805-987-9511
§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033 ..... 201-245-0033; 800-526-4182
Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Macom Inds., 8230 Haskell Ave., Van Nuys, CA 91406
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ 3M-Electronic Products Division, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963 512-834-1800
§ Methode Electronics, Inc., Interconnect Prods Div. 1700 Hicks Rd. Rolling Meadows, IL 60008 312-392-3500
Micro Mode Prods., 1870 John Towers Ave., El Cajon, CA 92020 619-449-3844
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
† RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
§ Robinson Nugent, Inc., 800 East 8th St., New Albany, IN 47150 812-945-0211
Russtech Engineering Company, Inc., 23322 (D) Madero Road, Mission Viejo, CA 92691 714-472-0880
Sjoberg, C., & Son, Inc., 415 Station St., Cranston, RI 02910 401-461-8220
§ Square D Co., Executive Plaza, Palatine, IL 60067 312-397-2600
Stanford Applied Engrg. Inc., 3520 De La Cruz Blvd., Santa Clara, CA 95050 400-988-0700
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ T&B/Ansley Corp., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869 201-685-1600
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§† TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
§† TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376

Tools, Crimping & Swaging-5400

† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
Fujitsu Components of America, 3320 Scott Blvd., Santa Clara, CA 95054, 408-727-1700 ..... C•1237
Hiram Jones Electronics, 11607 Vanowen St., No. Hollywood, CA 91605, 213-875-0213 ..... C•1284
Mac Panel Co., P. O. Box 7728, 551 W. Fairfield Rd., High Point, NC 27264, 919-884-8111 ..... D•1414
§ MOLEX, Inc., 2222 Wellington Ct., Lisle, IL 60532, 312-969-4550 ..... C•1357
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1364
Allied Systems Corp., Box 18077, Greensboro, NC 27419 919-299-2294
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
Amatom Electronic Hardware, 446 Blake St., New Haven, CT 06515 203-397-3311
§† AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
§ Ark-Les, 51 Water St., Watertown, MA 02172 617-924-2330
§† Astro Tool Co., Inc., 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006 503-642-9853
§ Augat Inc., 33 Perry Ave., Box 779, Attleboro, MA 02703 617-222-2202
Augat, Inc., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703 617-222-2202
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
Bead Electronics, Div. Bead Chain Mfg. Co., 110 Mountain Grove St., Bridgeport, CT 06605 203-334-4124
† Black & Webster, 219 Bear Hill Rd., Waltham, MA 02254 617-890-9100
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§ Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444

§ Cambridge Products, 244 Woodland Ave., Bloomfield, CT 06002 ..... 203-243-1761, 800-243-8814
§ Clauss Cutlery Co., Alco Industries, 223 N. Prospect St., Fremont, OH 43420 419-332-7344
§ Compar, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, CANADA L3R 4Z4 416-475-8500
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
Du Pont Connector Systems, 30 Hunter La., Camp Hill, PA 17011 800-237-2374
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§† Flight Connector, Trans-Technology Electronics, 8823 N. Industrial Rd., Peoria, IL 61615-1584 309-693-3355
Fuji Electric Corp. of America, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017 213-622-4490
§ General Hardware Mfg., 80 White St., New York, NY 10013 212-431-6100
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
Hughes Aircraft Co., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714 714-660-5701
Hughes Aircraft Co., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715 714-752-3800
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§ ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 714-557-4700
§† Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012 212-475-4600
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Methode Electronics, Inc., Interconnect Prods Div. 1700 Hicks Rd. Rolling Meadows, IL 60008 312-392-3500
National Tel-Tronics, State Road Hill, Meadville, PA 16335 814-724-6440
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 603-424-4111
§ PanaVise Prods., 2850 E. 29th St., Long Beach, CA 90806 213-595-7621
Parker Hannifin Corp., 17325 Euclid Ave., Cleveland, OH Eleanor Parrish, Acct. Coord. Dir. 216-531-3000
§ Philmore Manufacturing, 40 Inip Dr., Inwood, NY 11696 516-239-6161
§† Pico Crimping Tools, 9832 Jersey Ave., Santa Fe Springs, CA 90670 213-723-2150
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
Schroff Incorporated, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886 401-732-3770
Sjoberg, C., & Son, Inc., 415 Station St. Cranston, RI 02910 401-461-8220
§ Support Systems Intl. Corp., 150 South Second St., Richmond, CA 94804 415-234-9090
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
† Trompeter Electronics, Inc., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069 818-707-2020
§ TRW Connector Div., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007 312-981-6000
TRW Cylindrical Connector Div., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428 612-537-1010
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§† Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
† Virginia Panel, 1400 New Hope Rd., Waynesboro, VA 22980 703-949-8376
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242
§ Zierick Manufacturing Corp., 44 Radio Circle, Mt. Kisco, NY 10549 914-666-2911

Tools, Heat Sealing-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Harwil, 1548 17th St., Santa Monica, CA 90404 213-829-2310
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§† Master Appliance Corp., 2420 18th St., Box 68, Racine, WI 53403 414-633-7791
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Pamran Inc., 1900 Williams St., Young Ind. Pk., Racine, WI 53404 414-637-7999
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Tools, Lead Bending & Insertion-5400

§ Aries Electronics, Box 130, Frenchtown, NJ 08825, 201-996-6841 ..... C•1177
§† Beau Tech, 98 Elm Street, Portland, ME 04101 207-775-6139
† Black & Webster, 219 Bear Hill Rd., Waltham, MA 02254 617-890-9100
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
Elvo Electronics Corporation, 140 Kisco Avenue, Mt. Kisco, NY 10549 .. 914-241-1008
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§† Fancort Industries, Inc., 31 Fairfield Place, W. Caldwell, NJ 07006 201-575-0610
§ Harwil, 1548 17th St., Santa Monica, CA 90404 213-829-2310

Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Plato Products, Inc., 2120 E. Allen Ave., Glendora, CA 91740 800-423-4510
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
United Solder Wrap Inc., 2608 Electronic La., Ste 509, Dallas, TX 75220 ..... 214-350-4978;800-527-5144
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010

Tools, Magnetic Pickup-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
† E-Z-Hook, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006 818-446-6175
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§† Jobmaster Corp., 9008 Liberty Rd., Randallstown, MD 21133 ..... 301-655-1400; 1-806-642-1400;(Can)-416-897-1380
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§† Moody Tools, Inc., 43 Crompton Ave., E. Greenwich, RI 02818 401-885-0911
§ Orbit Industries, Countis Industries, 2670 Lockheed Way, Carson City, NV 89701 702-882-6123
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010

Tools, Marking, Numbering, Engraving-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
† Control Laser Corp., 7503 Chancellor Dr., Orlando, FL 32809 305-438-2500
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800

Tools, Parts Handling, Vacuum Operated-5400

† Air-Vac Engrg., 100 Gulf St., Milford, CT 06460 203-874-2541
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
† Black & Webster, 219 Bear Hill Rd., Waltham, MA 02254 617-890-9100
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Orbit Industries, Countis Industries, 2670 Lockheed Way, Carson City, NV 89701 702-882-6123
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
§ PanaVise Prods., 2850 E. 29th St., Long Beach, CA 90806 213-595-7621
SC Technology, Inc., 2450 Armstrong St., Livermore, CA 94550 415-373-9230
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Tools, Relay Servicing-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
GTE Switching & Telephone Products, 400 N. Wolf Rd., Northlake, IL 60164 312-681-7100
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Multi-Amp Corp., TBG, 4271 Bronze Way, Dallas, TX 75237 214-333-3201
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Tools, Resistance Soldering — See Soldering Equip., Resistance (Vol. C)

Tools, Wire Wrapping-5400

† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
† Advance Wire & Cable, The Advange Group, 1661 Industrial Way, Belmont, CA 94002 415-592-4550
Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
Garry Mfg. Co., Div. of Brand-Rex Co., 9 Queen Anne Ct., Laghorne, PA 19047 215-949-2300
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Hollis Engrg./Wire-Wrap, 15 Charron Ave., Nashua, NH 03061 603-889-1121
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Tel Tec, Inc., 7890 12th Ave. S., Minneapolis, MN 55420 612-854-9177
§ Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
Vemaline Prods. Div., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887 401-739-7600
Wilson, H. F., Engineering Co., 475 Taft Ave., Glen Ellyn, IL 60137 312-469-8473

Torches, Soldering, Welding & Accessories-4600

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
Henes Products, 4225 E. Madison St., Phoenix, AZ 85034 602-275-4126
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ Pamran Inc., 1900 Williams St., Young Ind. Pk., Racine, WI 53404 414-637-7999
§ Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Wall Lenk Corporation, Box 3349, Kinston, NC 28502-3349 919-527-4186

Toroids — See Coils, Toroidal (Vol. A)

Torque Control — See Knobs, Torque, Incremental, Ratio Drive (Vol. C)

Torquers, Gyro — See Motors, Torque (Vol. B)

Totalizers, Digital-2200 — *See Vol. D*

Touch Monitors-2000 — *See Vol. D*

Touch Panels-2000 — *See Vol. D*

Touch Terminals-2000 — *See Vol. D*

Tracers, Curve-2900 — *See Vol. D*

Tracers, Signal — See Testers, Signal Tracing (Vol. D)

Trackballs, XY Positioning-2200 — *See Vol. D*

Trackers (MIL), Laser-3475 — *See Vol. D*

Tracking Systems (MIL)-3475 — *See Vol. D*

Trainers (MIL), ECM-3475 — *See Vol. D*

Trainers (MIL), Elint-3475 — *See Vol. D*

Trainers (MIL), EW-3475 — *See Vol. D*

Trainers (MIL), Maritime-3475 — *See Vol. D*

Training Systems (MIL)-3475 — *See Vol. D*

Transceivers-1900 — *See Vol. D*

Transceivers (MIL)-2440 — *See Vol. B*

Transducer Elements-5500 — *See Vol. B*

Transducers, Acceleration — See Accelerometers (Vol. B)

Transducers, Audio-5500 — *See Vol. B*

Transducers, Ceramic-5500 — *See Vol. B*

Transducers, Displacement-5500 — *See Vol. B*

Transducers, Flow-5500 — *See Vol. B*

Transducers, Force-5500 — *See Vol. B*

Transducers, Frequency — See Transducers, Volt, Watt, Current, etc. (Vol. B)

Transducers, Humidity-5500 — *See Vol. B*

Transducers, Incremental Digital Position, Rotary — See Encoders, Shaft Angle (Vol. B)

Transducers, Magnetic Pickup-5500 — *See Vol. B*

Transducers, Magnetostrictive-5500 — *See Vol. B*

Transducers, Piezoelectric-5500 — *See Vol. B*

Transducers, Position, Linear-5500 — *See Vol. B*

Transducers, Position, Rotary-5500 — *See Vol. B*

Transducers, Power — See Transducers, Volt, Watt, Currents, etc. (Vol. B)

Transducers, Pressure-5500 — *See Vol. B*

Transducers, Proximity-5500 — *See Vol. B*

Transducers, Sonic-5500 — *See Vol. B*

Transducers, Strain Gauge-5500 — *See Vol. B*

Transducers, Temperature-5500 — *See Vol. B*

Transducers, Thermoelectric — See Transducers, Temperature (Vol. B)

Transducers, Tilt - Also see Inclinometers-5500 — *See Vol. B*

Transducers, Torque-5500 — *See Vol. B*

Transducers, Ultrasonic-5500 — *See Vol. B*

Transducers, Velocity-5500 — *See Vol. B*

Transducers, Vibration-5500 — *See Vol. B*

Transducers, Volt, Watt, Current VAR, Power Factor, Frequency-5500 — ***See Vol. B***

Transformers, Audio-5600 — ***See Vol. A***

Transformers, Autotransformer-5600 — ***See Vol. A***

Transformers, Bias — See Transformers, Power (Vol. A)

Transformers, Bridging — See Transformers, Matching (Vol. A)

Transformers, Chip-5600 — ***See Vol. A***

Transformers, Chopper-5600 — ***See Vol. A***

Transformers, Constant Voltage-5600 — ***See Vol. A***

Transformers, Control — See Transformers, Power (Vol. A), Transformers, Synchro, Control (Vol. A)

Transformers, Converter, DC To DC-5600 — ***See Vol. A***

Transformers, Current — See Transformers, Instrument (Vol. A)

Transformers, Data — See Transformers, Telephone Coupling (Vol. A)

Transformers, Decade-5600 — ***See Vol. A***

Transformers, Differential-5600 — ***See Vol. A***

Transformers, Discriminator-5600 — ***See Vol. A***

Transformers, Donut — See Transformers, Toroidal (Vol. A)

Transformers, Driver-5600 — ***See Vol. A***

Transformers, Ferroresonant-5600 — ***See Vol. A***

Transformers, Filament-5600 — ***See Vol. A***

Transformers, Flyback-5600 — ***See Vol. A***

Transformers, Foil Wound — See Coils, Foil Wound (Vol. A)

Transformers, 400 Hz-5600 — ***See Vol. A***

Transformers, High Voltage (1,000 Volts & Over)-5600 — ***See Vol. A***

Transformers, Horizontal Sweep-5600 — ***See Vol. A***

Transformers, Hybrid-5600 — ***See Vol. A***

Transformers, IF-5600 — ***See Vol. A***

Transformers, Input-5600 — ***See Vol. A***

Transformers, Instrument-5600 — ***See Vol. A***

Transformers, Interstage-5600 — ***See Vol. A***

Transformers, Inverter-5600 — ***See Vol. A***

Transformers, Isolation-5600 — ***See Vol. A***

Transformers, Isolation, for LANs-5600 — ***See Vol. A***

Transformers, Line-5600 — ***See Vol. A***

Transformers, Linear Variable-Differential — See Transformers, Differential (Vol. A)

Transformers, Magnetic Amplifier-5600 — ***See Vol. A***

Transformers, Matching-5600 — ***See Vol. A***

Transformers, Microminiature-5600 — ***See Vol. A***

Transformers, Microphone-5600 — ***See Vol. A***

Transformers, Mixing-5600 — ***See Vol. A***

Transformers, Modulation-5600 — ***See Vol. A***

Transformers, Output-5600 — ***See Vol. A***

Transformers, Plate-5600 — ***See Vol. A***

Transformers, Plug-in-5600 — ***See Vol. A***

Transformers, Power-5600 — ***See Vol. A***

Transformers, Power Distribution-5600 — ***See Vol. A***

Transformers, Printed Circuit Mounting-5600 — ***See Vol. A***

Transformers, Programmable Ratio-5600 — ***See Vol. A***

Transformers, Pulse-5600 — ***See Vol. A***

Transformers, Ratio-5600 — ***See Vol. A***

Transformers, RF-5600 — ***See Vol. A***

Transformers, Reactor — See Reactors, Filter (Vol. A)

Transformers, Rectifier-5600 — ***See Vol. A***

Transformers, Reference-5600 — ***See Vol. A***

Transformers, Rotary-5600 — ***See Vol. A***

Transformers, Scott T-5600 — ***See Vol. A***

Transformers, Servo-5600 — ***See Vol. A***

Transformers, Split Bobbin-5600 — ***See Vol. A***

Transformers, Step Down, Step Up — See Transformers, Power (Vol. A)

Transformers, Surface Mount-5600 — ***See Vol. A***

Transformers, Synchro Control-5600 — ***See Vol. A***

Transformers, Telephone Coupling-5600 — ***See Vol. A***

Transformers, Toroidal-5600 — ***See Vol. A***

Transformers, Transistor-5600 — ***See Vol. A***

Transformers, Trigger — See Transformers, Pulse (Vol. A)

Transformers, Variable-5600 — ***See Vol. A***

Transformers, Voltage Dividing-5600 — ***See Vol. A***

Transformers, Voltage Regulating-Also See Regulators & Stabilizers, Voltage-5600 — ***See Vol. A***

Transformers, Wall Plug-in — See Power Supplies, Plug-in (Vol. D)

Transformers, Wideband-5600 — ***See Vol. A***

Transformers (MIL), Audio, Power, RF-2440 — ***See Vol. B***

Transformers (MIL), Pulse & Variable-2440 — ***See Vol. B***

Transistor Arrays-4800 — ***See Vol. A***

Transistor Arrays, Surface Mount-4800 — ***See Vol. A***

Transistor, Diode, Thyristor Heat Dissipators — See Heat Sinks, Transistor (Vol. C)

Transistors, Bipolar-Also See Transistors, Silicon-4800 — ***See Vol. A***

Transistors, Bipolar, Surface Mount-4800 — ***See Vol. A***

Transistors, Chip, Unpackaged-4800 — ***See Vol. A***

Transistors, Darlington-4800 — ***See Vol. A***

Transistors, Darlington, Surface Mount-4800 — ***See Vol. A***

Transistors, Dual-4800 — ***See Vol. A***

Transistors, Field Effect-4800 — ***See Vol. A***

Transistors, Field Effect, Surface Mount-4800 — ***See Vol. A***

Transistors, Germanium-4800 — ***See Vol. A***

Transistors, Low Noise, GaAs, FETs - Also See Transistors, Microwave-4800 — ***See Vol. A***

Transistors, Microwave-4800 — ***See Vol. A***

Transistors, NPN, Surface Mount-4800 — ***See Vol. A***

Transistors, Photo (Incl. Arrays)-3700 — ***See Vol. B***

Transistors, PNP, Surface Mount-4800 — ***See Vol. A***

Transistors, Power-4800 — ***See Vol. A***

Transistors, Power, Bipolar-4800 — *See Vol. A*

Transistors, Power, Bipolar, Surface Mount-4800 — *See Vol. A*

Transistors, Power, FET-4800 — *See Vol. A*

Transistors, Power, Field Effect, Surface Mount-4800 — *See Vol. A*

Transistors, Pressure Sensitive-4800 — *See Vol. A*

Transistors, RF-4800 — *See Vol. A*

Transistors, RF, Surface Mount-4800 — *See Vol. A*

Transistors, Silicon-4800 — *See Vol. A*

Transistors, Switching-4800 — *See Vol. A*

Transistors, Switching, Surface Mount-4800 — *See Vol. A*

Transistors, Unijunction-4800 — *See Vol. A*

Transistors, Unijunction, Surface Mount-4800 — *See Vol. A*

Transistors (MIL)-2440 — *See Vol. B*

Translators, Data-2325 — *See Vol. D*

Translators, Frequency Band-2700 — *See Vol. A*

Translators, Time Code-2000 — *See Vol. D*

Transmission Line, Data — See Cable, Data Transmission (Vol. C)

Transmission Line, Wire & Cable — See Cable, Transmission Line (Vol. C)

Transmission Lines (MIL), RF-2440 — *See Vol. B*

Transmission Systems, Data-2000 — *See Vol. D*

Transmitters, Fiber Optic-2475 — *See Vol. B*

Transmitters, Fixed Frequency-1900 — *See Vol. D*

Transmitters, Infrared remote control transmitters for satellite T.V. receivers-1900 — *See Vol. D*

Transmitters, Laser-3700 — *See Vol. B*

Transmitters, Position-1900 — *See Vol. D*

Transmitters, Process Control (Temperature, Pressure, Flow, etc.)-5500 — *See Vol. B*

Transmitters, Radar — See Radar System Components (Vol. A)

Transmitters, Telemetry-1900 — *See Vol. D*

Transmitters, Tone-1900 — *See Vol. D*

Transmitters (MIL), ECM-3475 — *See Vol. D*

Transmitters (MIL), Shipboard Jamming-3475 — *See Vol. D*

Transmitters (MIL), TWTs-3475 — *See Vol. D*

Transponders-1900 — *See Vol. D*

Transports, Tape (all kinds)-2000 — *See Vol. D*

TRIACs-4800 — *See Vol. A*

Triggers, SCR — See Controls, SCR (Vol. D)

Trimmers, Capacitor — See Capacitors, Variable, Padders & Trimmers (Vol. A)

Trimmers, Potentiometer — See Potentiometers, Trimmer (Vol. A)

Trimmers, Surface Mount-4750 — *See Vol. A*

Tube Heat Dissipators-5700 — *See Vol. A*

Tubes, Backward Wave-5700 — *See Vol. A*

Tubes, Ballast — See Resistors, Ballast (Vol. A)

Tubes, Cathode Ray, General Purpose-5700 — *See Vol. A*

Tubes, Cathode Ray, Special Purpose-5700 — *See Vol. A*

Tubes, Counting-5700 — *See Vol. A*

Tubes, Electron Multiplier-5700 — *See Vol. A*

Tubes, Flash-5700 — *See Vol. A*

Tubes, Gas-5700 — *See Vol. A*

Tubes, Ignitron-5700 — *See Vol. A*

Tubes, Image Converter-5700 — *See Vol. A*

Tubes, Indicator — See Tubes, Readout (Vol. A)

Tubes, Magnetron — See Tubes, Microwave (Vol. A)

Tubes, Microwave-5700 — *See Vol. A*

Tubes, Noise Source-5700 — *See Vol. A*

Tubes, Photomultiplier-5700 — *See Vol. A*

Tubes, Readout (CRT, Cold-Cathode, Vacuum Fluorescent, Incandescent, etc.)-5700 — *See Vol. A*

Tubes, Receiving-5700 — *See Vol. A*

Tubes, Rectifying-5700 — *See Vol. A*

Tubes, Strobe — See Lamps, Stroboscopic Source (Vol. B)

Tubes, Switching-5700 — *See Vol. A*

Tubes, TV Camera Pickup-5700 — *See Vol. A*

Tubes, Transmitting-5700 — *See Vol. A*

Tubes, Voltage Reference or Regulating-5700 — *See Vol. A*

Tubes, X-ray-5700 — *See Vol. A*

Tubes (MIL), Indicator & Pickup-2440 — *See Vol. B*

Tubes (MIL), Microwave-2440 — *See Vol. B*

Tubes (MIL), Power & Gas, Planar-2440 — *See Vol. B*

Tubes (MIL), Receiving, & Tube Shields-2440 — *See Vol. B*

Tubing, Ceramic-2500

Alberox, New Bedford Ind'l. Pk., New Bedford, MA 02745, 617-995-1725 ..... C•1600

Aremco Products, Inc., Box 429, Ossining, NY 10562 914-762-0685

† Centerflex Techn. Corp., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507 201-423-0505

Coors Ceramics Co., 600 Ninth St., Golden, CO 80401 303-278-4000

Corning Glass Works, Corning Elctrns., Houghton Pk., Bldg. A-2, Corning, NY 14830 607-974-8725

3M Co., Tech Ceramic Resources, 3M Center 225-4W, St. Paul, MN. 55101 617-736-0601

Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660

† Quartzite Processing, Inc., 6 Holyoke St., Malden, MA 02148 617-322-1380

Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733

† Saphikon, Inc., 51 Powers St., Milford, NH 03055 603-673-5831

† Standard Oil Engineered Materials Co., Carborundum, P. O. Box 156, Niagara Falls, NY 14302 716-278-2000

Steward, D. M., Mfg. Co., P.O. Box 510, Chattanooga, TN 37401 615-867-4100

Thermal Amer. Fused Quartz, Route 202, Montville, NJ 07045 201-334-7770

Tubing, Fiberglass-2800

† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886

§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000

† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200

§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830

§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400

§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000

§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900

§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422

§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000

§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960

§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245

† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733

† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140

Tubing, Glass-2500

§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
Corning Glass Works, Corning Elctrns., Houghton Pk., Bldg. A-2, Corning, NY 14830 607-974-8725
§† Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Garner Glass Co., 177 S. Indian Hill Blvd., Claremont, CA 91711 714-624-5071
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161

Tubing, Heat Shrinkable-Also See Caps, Forms & Tapes, Heat Shrinkable-2800

Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1768,1774
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1828-1829
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1843
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1846
§† Markel Corp., P.O. Box 752, Norristown, PA 19404, 215-272-8960 ..... C•1705
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869, 201-526-0800;800-526-3842 ..... C•1707
§ Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
High Voltage Engrg. Corp., S. Bedford St., Burlington, MA 01803 617-272-1313
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
SP America Inc., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112 408-947-0311
Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
Topflight, 160 East 9th Ave., York, PA 17404 ..... 717-843-9901;800-233-9386
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Tubing, Metal-2500

† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† ITT-Higbie Mfg., Wagner Rd., Rochester, MI 48063 313-651-5300
† KBI, A Div. of Cabot Corp., PO Box 1462, Reading, PA 19603 215-371-3600
Lear Siegler, Inc., 2850 Ocean Park Blvd., P.O. Box 2158, Santa Monica, CA 90406 213-452-5444
§† Micro-Coax Components, Inc., a UTI Company, Box E, Collegeville, PA 19426 215-489-3700
† NGK Berylco, NGK Metals Corporation, P.O. Box 13367, Reading, PA 19612-3367 215-921-5000
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Parker Hannifin Corp., 17325 Euclid Ave., Cleveland, OH Eleanor Parrish, Acct. Coord. Dir. 216-531-3000
† Wall, A. T., Co., 55 Service Ave., Warwick, RI 02886 401-739-0740

Tubing, Plastic-Also See Tubing, Spaghetti-2800

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1828-1829
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1843
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1846,1856
† Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, 617-631-7100 ..... C•1907
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869, 201-526-0800;800-526-3842 ..... C•1707
Acme Model Engineering Co., 654 Bergen Blvd., Ridgefield, NJ 07657 .. 201-943-7650
§† Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
§ Bivar, Inc., 4 Thomas, Irvine, CA 92718 714-951-8808
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
Gasket Intl. Inc., 49 Ackerman St., Bloomfield, NJ 07003 201-338-6814
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
† Glenair Inc., 1211 Air Way, Glendale, CA 91201-2497 818-247-6000
† Homalite, Inc., 11 Brookside Dr., Wilmington, DE 19804 302-652-3686
§ ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
ITW Thielex, 201 11th St., Piscataway, NJ 08854 201-968-5300
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Moxness Products, Inc., Versa Technologies, 1914 Indiana St., Racine, WI 53405 ..... 414-554-5050;800-558-5706
§† Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
C. A. Norgren Co., 5400 South Delaware, Littleton, CO 80120-1663 303-794-2611
§ Nyltite, 3451 S. Clinton Ave., S. Plainfield, NJ 07080 201-561-1300
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Parker Seal Grp., P.O. Box 11751, Lexington, KY 40512 606-269-2351
§ Polymer Corp., 2120 Fairmont Ave., Reading, PA 19605 215-320-6600
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
† Spruce Pine Mica Co., Mtn. Laurel Dr., Spruce Pine, NC 28777 704-765-4241
† Stevens Products, Inc., 128 N. Park St., E. Orange, NJ 07019 201-672-2140
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 ... 805-238-2840
Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291
† Teledyne Aerospace Sys., 1007 E. 10th St., Fairmont, MN 56031 ..... 507-235-3355, 507-235-9712
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Tubing, Spaghetti-2800

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1828-1829
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1843
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1846
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869, 201-526-0800;800-526-3842 ..... C•1707
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
† Cadillac Plastic & Chem. Co., Day International, 530 Stephenson Hwy., Troy, MI 48007 313-583-1200
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
§ Norelcom Inds., 63 Marine St., Farmingdale, NY 11735 516-249-7245
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996

Tubing, Spiral Wrap-2800

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1829
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1856
† Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, 617-631-7100 ..... C•1907
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045 501-452-3987
§† Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
Applied Plastics Technology, 45 Broadcommon Rd., Bristol, RI 02809 ... 401-253-0200
† Chomerics, Inc., 77 Dragon Ct., Woburn, MA 01888 617-935-4850
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Dayco Products, Inc., 333 W. First St., Dayton, OH 45401 513-226-5923
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Dixon Inds., 386 Metacom Ave., Bristol, RI 02809 401-253-2000
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
† Spira Manufacturing Corp., 12721 Saticoy Street South, North Hollywood, CA 91605 818-764-8222
Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 ... 805-238-2840
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869 ... 201-526-0800;800-526-3842

Tubing, Waveguide-3450 — *See Vol. A*

Tubing, Zipper-2800
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Tuners, AM/FM-1300 — *See Vol. D*

Tuners, Microwave-3450 — *See Vol. A*

Tuning Forks-2300 — *See Vol. A*

Tweezers, Manual & Vacuum-5400
† Air-Vac Engrg., 100 Gulf St., Milford, CT 06460 203-874-2541
§ Clauss Cutlery Co., Alco Industries, 223 N. Prospect St., Fremont, OH 43420 419-332-7344
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ General Hardware Mfg., 80 White St., New York, NY 10013 212-431-6100
§ Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 717-285-4581
§ Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Moody Tools, Inc., 43 Crompton Ave., E. Greenwich, RI 02818 401-885-0911
§ Orbit Industries, Countis Industries, 2670 Lockheed Way, Carson City, NV 89701 702-882-6123
§ Plato Products, Inc., 2120 E. Allen Ave., Glendora, CA 91740 800-423-4510
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990

Ultraviolet Inspection Lighting-Also See Microscopes, Ultraviolet-4100 — *See Vol. D*

Urea Formaldehyde — See Plastic Raw Materials (Vol. C)

Valve Position Indicators/Transmitters-5500 — *See Vol. B*

Valves, Solenoid-4550 — *See Vol. B*

Valves, Vacuum-4100 — *See Vol. D*

Varactors — See Diodes, Varactor (Vol. A)

Varistors — See Resistors, Voltage Sensitive (Vol. A)

VCXO — See Oscillators, Voltage Controlled Crystal

VHF Equipment — See Generators (Vol. D), Receivers (Vol. D), etc.

Vibration Surveys — See Services, Vibration Surveys (Vol. D)

Vibration Test Systems — See Testers, Vibration (Vol. D)

Vibrators-4050 — *See Vol. D*

Video Components & Equipment — See Specific Component: Amplifiers (Vol. D), Cameras (Vol. D), Networks (Vol. D), etc.

Viewers (MIL), Infrared-3475 — *See Vol. D*

Viewing Hoods, Cathode Ray Tube-2975 — *See Vol. D*

Vinyl Compounds — See Plastic Raw Materials (Vol. C)

Vises-5400
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ PanaVise Prods., 2850 E. 29th St., Long Beach, CA 90806 213-595-7621

Visual Micro Inspection Systems-2900 — *See Vol. D*

VLF Equipment — See Receivers (Vol. D), Transmitters (Vol. D), etc.

VME Bus Cards-2025 — *See Vol. D*

Voice Recognition Equipment — See Recognition Equipment, Speech (Vol. D)

Voltage Selector — See Adaptors, US to European Power (Vol. C)

Voltage Sources-4000 — *See Vol. D*

Voltmeter, Electrostatic-2900 — *See Vol. D*

Wafer Fabrication, Semiconductor — See Semiconductor Wafer Fabrication (Vol. D)

Wall Plates — See Boxes, Junction, Outlet & Wall Plates (Vol. C)

Warning Systems, Lightning-4300 — *See Vol. B*

Warning Systems (MIL), Computerized-3475 — *See Vol. D*

Warning Systems (MIL), EW-3475 — *See Vol. D*

Warning Systems (MIL), IR-3475 — *See Vol. D*

Warning Systems (MIL), Laser-3475 — *See Vol. D*

Warning Systems (MIL), SAM Launch-3475 — *See Vol. D*

Washers, Lock-2825
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206,1697
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
† Morris, J. I., Co., 372 Elm St., Southbridge, MA 01550 617-764-4394
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121

Washers, Plain-2825
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206,1697
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1857
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
† Unicorp, 291 Cleveland St., Orange, NJ 07050, 201-674-1700 ..... C•1703
Alpha-Tek, 7286 Murdy Circle, Huntington Beach, CA 92647 714-847-7515
§† Berg, W. M., Inc., 499 Ocean Ave., East Rockaway, NY 11518 516-599-5010
Boker's, Inc., 3104 Snelling Ave., Minneapolis, MN 55406 612-729-9365
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Cut Craft, Inc., 1500 Northpark Dr., Ste. 200, Ft. Worth, TX 76102 817-332-6151
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
ELMA Electronic Inc., 41440 Christy Street, Fremont, CA 94538 415-656-3400
Forma Scientific, Div. of Mallinckrodt Inc., Box 649, Marietta, OH 45750 614-373-4763
Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
LEMO U.S.A., Inc., P.O. Box 11488, Santa Rosa, CA 95406 707-578-8811
† Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
† Morris, J. I., Co., 372 Elm St., Southbridge, MA 01550 617-764-4394
PIC Design, P.O. Box 1004, Middlebury, CT 06762 203-758-8272
Seastrom Manufacturing Co., Inc., 701 Sonora Ave., Glendale, CA 91201 213-245-9121

Washers, Shoulder-2825
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012, 1-212-777-6571 ..... C•1206,1697
Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1857
§† Keystone Electronics Corp., 49 Bleecker St., New York, NY 10012, 212-475-4600 ..... C•1699
Kulka (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1321
H.H. Smith (Dialight Corporation), 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400 ..... C•1698
§† Kam Components, Inc., P. O. Box 192-EEM, Nesconset, NY 11767 516-585-0666
§† Teknational Inds., Inc., 430 S. Clinton Ave., Rochester, NY 14620 716-232-1291

Waveguide-Coax Adapters-3450 — *See Vol. A*

Waveguides-3450 — *See Vol. A*

Waveguides (MIL)-2440 — *See Vol. B*

Wave Soldering Equipment — See Soldering Equip, Printed Circuit (Vol. C)

Wave Traps — See Filters, Antenna (Vol. A), Filters, Microwave (Vol. A), etc.

Welding Equipment & Accessories (Excl. Equipment for Semiconductor Devices)-5400
§ Apollo Lasers, Inc., 20977 Knapp St., Chatsworth, CA 91311 818-407-3000
§ BEA electro-optics, inc., 690 First Ave., Des Plaines, IL 60016 312-298-1420
† Black & Webster, 219 Bear Hill Rd., Waltham, MA 02254 617-890-9100
† Coherent General, Inc., Picker Rd., Sturbridge, MA 01566 617-347-2681
Coherent, Inc., 3210 Porter Dr., Palo Alto, CA 94304 415-493-2111
† Dukane Corp., Communications Sys. Div., 2900 Dukane Dr., St. Charles, IL 60174-9984 312-584-2300
† Ewald Instruments, Rte. 7R, Kent, CT 06757 203-927-3278
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161
Henes Products, 4225 E. Madison St., Phoenix, AZ 85034 602-275-4126
Hughes Aircraft Co., Industrial Products Division, 6155 El Camino Real, Carlsbad, CA 92009 619-931-3000
Lumonics Material Processing Corp., 12163 Globe Rd., Livonia, MI 48150 313-591-0101
Solder Absorbing Technology (SAT), A Spirig Co., 144 Oakland St., Springfield, MA 01108 800-628-8862
Venable Industries, Inc., 3555 Lomita Blvd., Torrance, CA 90505 213-539-2522

Welding Machines, Laser-4100 — *See Vol. D*

White Noise Generator Modules — See Generators, White Noise (Vol.), Diodes, Noise

White Printers-4200

§ Teledyne Rotolite, 150 Mt. Bethel Rd., Warren, NJ 07060 201-647-1040

Windows, Sapphire-2500

Ceramaseal, Box 260, New Lebanon, NY 12125 518-794-7800
† Saphikon, Inc., 51 Powers St., Milford, NH 03055 603-673-5831
† Union Carbide Corporation, Industrial Chemicals Div., Crystal Products Dept., 9320 Chesapeake Dr., Ste. 104, San Diego, CA 92123 619-279-4500

Windows, Shielded — See Shields, RF (Vol. C)

Wire & Cable Ties-2825

§† Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, 617-631-7100 ..... C•1907
§† Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1910
§† Zeus Indl. Prods. Inc., P.O. Box 298, Raritan, NJ 08869, 201-526-0800;800-526-3842 ..... C•1707
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
† Accurate Electronics, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036 216-366-6330
§† All-States, Inc., 1801 W. Foster Ave., Chicago, IL 60640 312-728-0525
§ Amlan, Inc., 97 Thornwood Rd., Stamford, CT 06903 203-322-1913
AMP Incorporated, Box 3608, Harrisburg, PA 17105 717-564-0100
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
§† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045 501-452-3987
Antex Division, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945 617-631-7100
Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 206-223-1110
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Budwig Mfg., P.O. Box 829, Ramona, CA 92065-0829 619-789-0900
§ Burndy Corporation, Richards Ave., Norwalk., CT 06852 203-838-4444
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† dek, inc., 3480 Swenson Ave., St. Charles, IL 60174 312-377-2575
§† Dennison Mfg. Co., 300 Howard St., Framingham, MA 01701 617-879-0511
§ Elite Electronics, Inc., 1408 Summit - Suite #5, Plano, TX 75074 214-881-0026
§ Fastex, 195 Algonquin Rd., Des Plaines, IL 60016 312-299-2222
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ Gries/Dynacast, Div. Coats & Clark Inc., 1401 Front Street, Yorktown Heights, NY 10598 914-245-0060
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
Hanscom, H. F., Co., Inc., 225 Chapman St., Providence, RI 02905 401-941-1455
Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
§† ICO-Rally, 2575 E. Bayshore Rd., Palo Alto, CA 94303 415-856-9900
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
† Independent Cable, Inc., 43 Broad St., Hudson, MA 01749 617-562-9913
§† Lyn-Tron, Inc., 3150 Damon Way, Burbank, CA 91505 .... 213-849-6211;800-423-2734
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
† Micro Plastics Inc., Hwy 178 North, Flippin, AR 72634 501-453-2261
Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§† Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 215-323-7120
§ NTE Electronics, Inc., 44 Farrand St., Bloomfield, NJ 07003 201-748-5089
§† Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211
§† Pioneer Components, 2352 E. 66th St., Brooklyn, NY 11234 718-444-3880
Plastiglide Mfg., 2701 W. El Segundo Blvd., Hawthorne, CA 90250 213-777-8108
§† Richco Plastic Co., P.O. Box 804238, Chicago, IL 60680 312-539-4060
§ RMS Electronics Inc., 50 Antin Pl., Bronx, NY 10462 212-892-6700
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
§ Thomas & Betts Corporation, 920 Route 202, Raritan, NJ 08869 201-685-1600
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 414-355-1130
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
§† Weckesser Co. Inc., 4444 W. Irving Park Rd., Chicago, IL 60641 312-282-8626
Whitso, 9326 Byron St., Schiller Pk., IL 60176 312-678-5200
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Wire, Airframe-2440 — *See Vol. B*

Wire, Antenna (All Types)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1878-1881
American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§† Carolina Steel & Wire, I-20 & S.C. 6, Lexington, SC 29072 803-359-5501
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ EPD Electronics, Inc., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247 213-323-7771
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Sparkomatic, Rte. 6 & 209, Milford, PA 18337 717-296-6444
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 .. 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Wire, Bare, Copper-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700 ..... C•1775
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1877-1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... B•1757, C•1919
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
AT&T, 555 Union Blvd., Allentown, PA 18103 1-800-372-2447
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 317-664-6211
Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
§† Phelps Dodge Magnet Wire, P.O. Box 600, Ft. Wayne, IN 46801 ..... 219-456-4444; 800-255-2542
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Piher International Corp., 903 Feehanville Dr., Mt. Prospect, IL 60056 ..... 312-640-8300; 800-323-6693
Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
† Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Wilkinson, P.O. Box 4558, Westlake Village, CA 91359 ... 818-889-0050;800-822-4653

Wire, Bare, Nickel-6000

† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1877-1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
§ Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311

§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
† Magnetics, Spang & Co., Box 391, Butler, PA 16003-0391 412-282-8282
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
Piher International Corp., 903 Feehanville Dr., Mt. Prospect, IL 60056 ..... 312-640-8300; 800-323-6693
† Wilkinson, P.O. Box 4558, Westlake Village, CA 91359 ... 818-889-0050;800-822-4653

Wire, Bare, Nickel-Chrome-6000

† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1877-1881
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... B•1757, C•1919
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
§ Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Materials Research Corporation, Route 303, Orangeburg, NY 10962 914-359-4200
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660

Wire, Bonding-6000

Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553

Wire, Braid (Excluding Shielding)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1819
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1821,1827
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
† Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
† National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Pyrocom Co., 924 N. 143rd St., Seattle, WA 98133 206-365-3535
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Wire, Braid (Shielding) — See Braid, Cable (Vol. C)

Wire, Ceramic Insulated-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... C•1919
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Ceramawire, Box 1084, Cranford, NJ 07016 201-276-1170
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
DELTA M Corporation, 525 Warehouse Rd., Oak Ridge, TN 37830 615-483-1569
Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800

Wire, Clad (All Types)-6000

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
East Penn. Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† Fema Elctrns. Corp., 12-6 Edgeboro Rd., E. Brunswick, NJ 08816 201-238-1223
International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
† National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
† Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Texas Instrs., Inc., Box 225012-MS-84, Dallas, TX 75265 214-995-6611
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800

Wire Cutting & Stripping — See Services, Wire Cutting & Stripping (Vol. D)

Wire, Enamel Insulated — See Wire, Hookup (All Types) (Vol. C)

Wire, Fiberglass Insulated — See Wire, Glass Insulated (Vol. C)

Wire, Flame Retardant-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870-1871
Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§ American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102

§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
† Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400

Wire, Flat Strip — See Cable, Flat (Vol. C)

Wire, Glass Insulated-6000

† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... C•1919
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
Corning Glass Works, Materials Business, Main Plant, MP 21-3, Corning, NY 14831 607-974-4102
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000

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Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872

Wire, Gold-2825

Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553

Wire, Guy-6000

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Carolina Steel & Wire, I-20 & S.C. 6, Lexington, SC 29072 803-359-5501
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lance Industries, P.O. Box 4156, Sylmar, CA 91342-0156 818-367-1811
National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700

Wire, Heater — See Cable, Heater (Vol. C)

Wire, High Temperature (Over 125° C)-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, 401-726-0700 ..... C•1775
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1820-1821
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1848
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§† Atomergic Chemetals Corp., 91 Carolyn Blvd., Farmingdale, NY 11735-1527 516-694-9000
Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364 617-585-4315
Ceramawire, Box 1084, Cranford, NJ 07016 201-276-1170
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Continental Wire & Cable, Gulton Rd., P. O. Box 1863, York, PA 17405 .. 717-792-2644
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
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Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
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§† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002 602-526-1290

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§† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
† Plastoid Corporation, 45 Gingerbread Castle Rd., Hamburg, NJ 07419 .. 201-827-7141
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
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SermeTel, 155 Limerick Rd., Limerick, PA 19468 215-948-5100
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
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† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Wilco Wire & Cable Co., Inc., 1921 Las Plumas Ave., San Jose, CA 95133 408-926-8880
† Wilkinson, P.O. Box 4558, Westlake Village, CA 91359 ... 818-889-0050;800-822-4653

Wire, High Voltage (1000 Volts & Over)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
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Caton Connector Corp., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, 617-585-4315 ..... C•1200,1203
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§ Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1878-1881
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Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 305-658-1971
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§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1848
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§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
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§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
† Barcel Wire & Cable Corp., Electronics Div., 2851 Aton Ave., Irvine, CA 92714 714-863-0300
§† Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
† Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
East Penn Mfg. Co., Inc., Main Office, Lyon Station, PA 19536 215-682-6361
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§ Macom Inds., 8230 Haskell Ave., Van Nuys, CA 91406
§† Manhattan Electric Cable, 225 Passaic St., Passaic, NJ 07055 201-779-8900
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§† Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996

§† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§ Remee Products Corp., 41 Bridge St., Florida, NY 10921 914-651-4431
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 ..... 914-268-6848; 800-431-2774
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002 602-526-1290
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
Vector Electronic Co., Inc., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342 818-365-9661
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Wire, Irradiated-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 ..... C•1842
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
† Brand Dielectrics, Inc., Route 203, N. Windham, CT 06256 203-423-6321
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
§† FL Surprenant Div., 172 Sterling St., Clinton, MA 01510 617-368-1401
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Wire, Lead-in & Ground-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 ... 317-664-6211
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
§ Lance Industries, P.O. Box 4156, Sylmar, CA 91342-0156 818-367-1811
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§ Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Siecor Corp., Box 489, Hickory, NC 28603 704-328-2171
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610

Wire, Litz-6000

§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276

Wire, Magnet-6000

Caddell-Burns Mfg., 258 E. 2nd St., Mineola, NY 11501-3508, 516-746-2310 ..... A•1222
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884-1885
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Canada Wire and Cable Limited, 250 Ferrand Dr., Don Mills, Ontario, CANADA M3C 3J4 416-424-5000
Ceramawire, Box 1084, Cranford, NJ 07016 201-276-1170
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Electromech, Inc., 528 Elm Street, Kearny, NJ 07032 201-997-0950
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
§† Phelps Dodge Magnet Wire, P.O. Box 600, Ft. Wayne, IN 46801 ..... 219-456-4444; 800-255-2542
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800

Wire Markers (All Types)-Also See Strips Marker & Fanning-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† Datak Corp., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, 201-863-7667 ..... C•1859
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093, 301-252-1768 ... C•1866
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 ..... C•1910
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§† Brady, W. H., Co., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201 414-351-6630
§ Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
Eubanks Engineering, 1307 So. Myrtle Ave., Monrovia, CA 91016 818-357-7011
§† Excel Specialty Corp., 6335 N. Broadway, Chicago, IL 60660 312-262-4781
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
§ Newman, M. M., Corp., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945 617-631-7100
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
† San Francisco Custom Label, 999 Blandford Blvd., Redwood City, CA 94062 415-573-6365

§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§ Weidmuller Terminations, Inc., 821 Southlake Blvd., Richmond, VA 23236 804-794-2877
Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Wire, Multiconductor — See Cable, Multiconductor (Vol. C)

Wire Nuts-2500

§ Heyco Molded Products, Inc., Box 160, Kenilworth, NJ 07033, 201-245-0033;800-526-4182 ..... C•1867
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
§ Pass & Seymour, Inc., P.O. Box 4822, Syracuse, NY 13221 315-468-6211
§ Shokai Far East, Ltd., 280 North Central Ave., Hartsdale, NY 10530 914-681-0700
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300

Wire, Plastic Insulated — See Wire, Hookup (All Types) (Vol. C)

Wire, Plated (All Types)-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1877-1880
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† Handy & Harman Elctrn. Matls. Corp., 72 Elm St., Box 1031, N. Attleboro, MA 02761-1031 617-695-1401
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
Ken-Tron Mfg., Inc., 1204 Industrial Dr., Owensboro, KY 42301 502-684-0431
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
† National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100
Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

Wire, Radiation Resistant-6000

§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ..... C•1821
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870
Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 309-693-3322
Ceramawire, Box 1084, Cranford, NJ 07016 201-276-1170
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 ..... 213-849-4543; 213-849-6454
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400

Wire, Resistance-6000

† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1878-1881
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362, 818-991-8553 ..... C•1884
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
§ Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Electrical Systems, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536 219-784-3011
Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600

Wire, Semiconductor Lead-6000

† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 ..... C•1107
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
† Art Wire/Doduco, 9 Wing Dr., Cedar Knolls, NJ 07927 201-428-4880
§† Associated Electronics & Mfg. Corp., 546 Valley Rd., Upper Montclair, NJ 07043 201-783-7800
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ..... 201-632-6000;800-932-0444 (in NJ)
GTI/Electronics Div., P.O. Box 2096, Hadley, PA 16130 412-253-3161
§ Heraeus Inc., Temp. Measurement Group, 222-34 96th Ave., Queens Village, NY 11429 212-464-8400
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
† National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761

Wire, Shielded-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1768,1770-1772,1774
Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 ..... C•1819
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1820-1821
† W. L. Gore & Assocs., Inc., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, 602-526-1290 ..... C•1860-1862
§† Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... B•1012-1013, C•1870
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, 419-729-9761 ..... C•1920
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1924-1925
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
Adirondack Wire & Cable Co., Inc., 1451 New Britain Ave., Farmington, CT 06032 1-203-677-2657
Alden Products Co., P.O. Box 860, 117 N. Main St., Brockton, MA 02403 617-583-0160
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
§ American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
AT&T, 555 Union Blvd., Allentown, PA 18103 1-800-372-2447
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§† Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
Belden Electrical Wire Products, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134 312-232-8900
§† Berk Tek, Inc., Box 888, RD 1, New Holland, PA 17557 717-354-6200
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
† BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
§† Capcon, Inc., 147 West 25th Street, New York, NY 10001 212-243-6275
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605

§ Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
Essex Grp., Power Conductor Div., 2601 S. Adams, Marion, IN 46953 317-664-6211
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§† Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
§† General Electric Co., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602 203-382-2000
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§ JSC Wire & Cable, Box 248, Burgess Pl., Wayne, NJ 07474 201-694-6200
§† Judd Wire, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069 619-744-7720
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 .... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
Okonite Co., Box 340, Ramsey, NJ 07446 201-825-0300
Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Pacific Electricord, 747 W. Redondo Bch. Blvd., Gardena, CA 90247 213-532-6600
Permaluster, Inc., 1844 N. Keystone St., Burbank, CA 91504 .... 213-849-4543; 213-849-6454
§ Phalo Corp., Transitron Corp., 900 Holt Ave., Manchester, NH 03103 603-669-4347
† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
† Rockland Insulated Wire & Cable, 87 Broadway, Haverstraw, NY 10927 914-429-3103
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§† Saxton Wire and Cable, 215 N. Rte. 303, Congers, NY 10920 .... 914-268-6848; 800-431-2774
§ Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 .... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 .... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§ Tappan Wire & Cable, 256 Oak Tree Rd., Tappan, NY 10983 914-359-9300
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Tetra-Etch, 1505 North Fourth St., P. O. Box 1389, Flagstaff, AZ 86002 602-526-1290
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Wilco Wire & Cable Co., Inc., 1921 Las Plumas Ave., San Jose, CA 95133 408-926-8880

Wire Shielding-Also See Braid, Cable-4525

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 .... C•1768,1770-1772,1774
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, 309-693-3322 .... C•1818-1819
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 .... C•1821,1827
§ Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862, 401-724-9605 .... C•1834
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412, 312-455-8830 .... C•1835-1836
† Magnetic Shield Corporation, 750 North Thomas Dr., Bensenville, IL 60106, 312-766-7800 .... C•1751
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .... C•1881
† Tecknit (Eastern Facility), 129 Dermody St., Cranford, NJ 07016, 201-272-5500 .... C•1754
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 .... C•1924
§† American Electric Cable Co., 181 Appleton St., Holyoke, MA 01040 413-539-9893
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Baron Wire & Cable, 1811 W. Bryn Mawr Ave., Chicago, IL 60660 312-728-7480
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 .... 317-983-5200; 800-BELDEN-1
Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 201-283-0400
Burndy Corporation, Richards Ave., Norwalk,, CT 06852 203-838-4444
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Egis Corporation, P. O. Box 751, Barrington, IL 60010 312-639-4448
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† Estes Engrg. Co., 930 Marine Dr., Port Angeles, WA 98362 206-457-0904
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† GSI Corp., 1917 Greenspring Dr., Timonium, MD 21093 301-252-1768
Keene Laminates, Keene Corp., 199 Amaral St., E. Providence, RI 02914 800-556-7683
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
Lenz Electric Mfg. Co., 1751 N. Western Ave., Chicago, IL 60647 312-276-4454
† Manger Electric Company, Inc., W. Henry St., Stamford, CT 06902 203-348-7761
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 415-361-3860
§† Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
† Sunbank Electronics, 1740 Commerce Way, Paso Robles, CA 93446 805-238-2840
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
Texas Instrs., Matls. & Controls Grp., 34 Forrest St., Attleboro, MA 02703 617-699-3800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
† Victor Elec. Wire & Cable, 618 Main St., W. Warwick, RI 02893 .... 401-821-1700;SALES 401-821-7800
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
† Zippertubing Co., Box 61074, Los Angeles, CA 90061 213-321-3901

Wire, Stainless Steel-6000

Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1878-1881
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 215-371-2000
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 201-891-5800
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
† National-Standard Co., 601 N. 8th, Niles, MI 49120 616-683-8100

Wire, Strain Gauge-6000

Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .... C•1881
† Semiconductor Packaging Materials Co., 431 Fayette Ave., Mamaroneck, NY 10543, 914-698-5353 .... C•1107
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 .... 317-983-5200; 800-BELDEN-1
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§† MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 .... 203-265-7126; 800-243-3959

Wire Connectors-2100

Hypertronics Corp., 16 Brent Dr., Hudson, MA 01749, 617-568-0451;800-225-9228 .... C•1294
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, 312-532-1800 .... C•1910
A E G Corporation, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269 201-722-9800
§ Amphenol Products, 4300 Commerce Ct., Lisle, IL 60532 312-983-3500
Autosplice, Inc., 59-12, 37th Ave, Woodside, NY 11377 718-429-0500
§ Concord Electronics Corporation, 30 Great Jones St., New York, NY 10012 1-212-777-6571
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
† Milton Ross Co., 511 Second St. Pike, Southampton, PA 18966 215-355-0200
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300

Wire Strippers, Automatic-4100 — *See Vol. D*

Wire Strippers, Chemical — See Chemicals, Wire Stripping (Vol. C)

Wire Strippers, Manual-5400

† Daniels Mfg. Corp., 6103 Anno Ave., Orlando, FL 32809, 305-855-6161 .. C•1757
Altech Corporation, 349 Rte. 206, Somerville, NJ 08876 201-359-4454
§ AMP Distributor Marketing Div, A Division of AMP Products Corporation, Harrisburg, PA 17105 717-780-7025
Automated Production Concepts, 8 E. Garden Pl., Pompton Plains, NJ 07444 201-831-8300

§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§ Blackburn, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144 314-993-9430
§ Burndy Corporation, Richards Ave., Norwalk, CT 06852 203-838-4444
§† Clauss Cutlery Co., Alco Industries, 223 N. Prospect St., Fremont, OH 43420 419-332-7344
Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§ Control Cable, Inc., 7261 Ambassador Rd., Baltimore, MD 21207 301-298-4411
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 919-781-7200
§ Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648 201-768-5400
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§ Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
§ Erem Corp., 3740 Skypark Dr., Torrance, CA 90505 213-772-0751
† Ewald Instruments, Rte. 7R, Kent, CT 06757 203-927-3278
§ GC Electronics, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209 815-968-9661
§ General Hardware Mfg., 80 White St., New York, NY 10013 212-431-6100
§ Greenlee Tool Co., 4455 Boeing Drive, Rockford, IL 61109 815-397-7070
GTE SUPPLY, GTE Communications Systems, 5225 Wiley Post Way, Salt Lake City, UT 84116 800-342-3484
Hoffman Products, Premier Industrial Corp., 170 Allen Blvd., Farmingdale, NY 11735 516-293-5244
Hollis Engrg./Wire-Wrap, 15 Charron Ave., Nashua, NH 03061 603-889-1121
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 602-968-6241
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
§ OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 914-969-6800
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§ Overnight Engineering Inc., 1859 Andrews Ave., San Jose, CA 95124 ... 408-448-0462
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 312-532-1800
† Rush/Houston, Inc., 600 Kealrick, Ste C-40, Houston, TX 77060 713-682-5151
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Teledyne Ansonia, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401 203-735-9311
† Trans American Transformer, 142 Peconic Ave., Medford, NY 11763 516-654-1880
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 803-534-7010
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 312-564-3300
§† Workman Elctrn. Prods., Box 3828, Sarasota, FL 33578 813-371-4242

Wire Strippers, Thermal-5400

Automated Production Concepts, 8 E. Garden Pl., Pompton Plains, NJ 07444 201-831-8300
† Coherent General, Inc., Picker Rd., Sturbridge, MA 01566 617-347-2681
§ Contact, Inc., 5 Elm Ave., Hudson, NH 03051 603-883-7708
§ E.P.E. Corp., P.O. Box 5238, Manchester, NH 03108 603-669-9181
§† Eraser Co., Box 4961, Syracuse, NY 13221 315-454-3237
§ Ideal Industries, 4450 Becker Pl., Sycamore, IL 60178 815-895-5181
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 215-355-7200
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
Pace Inc., 9893 Brewers Ct., Laurel, MD 20707 301-490-9860
§ Techni-Tool, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462 215-825-4990
§ Teledyne Kinetics, Div. of Teledyne, Inc., 410 S. Cedros Ave., Solana Beach, CA 92075 619-755-1181
† Trans American Transformer, 142 Peconic Ave., Medford, NY 11763 516-654-1880

Wire, Test Lead-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1848,1853
§ Pomona Electronics, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, 714-623-3463 ..... C•1378-1380
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644 201-796-2886
Carol Cable Co., Electronic Cable Division, 249 Roosevelt Ave., Pawtucket, RI 02862 401-724-9605
§ Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Cooner Wire Co., 9186 Independence Ave., Chatsworth, CA 91311 818-882-8311
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§ Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714 714-261-9473
Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
§ Gavitt Wire & Cable, Brookfield, MA 01506 617-867-6476
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 914-793-0700
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§ Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ..... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
Mueller Elec. Co., 1583 E. 31st St., Cleveland, OH 44114 216-771-5225
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 818-991-8553
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 419-729-9761
§ Rye Industries, Inc., 125 Spencer Pl., P.O. Box M, Mamaroneck, NY 10543 914-698-0080
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933

Wire, TFE Insulated-6000

§† Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
§† Brim Electronics, 120E Home Pl., Lodi, NJ 07644, 201-796-2886 ... C•1820-1821
§† Daburn Elctrns. & Cable, 70 Oak St., Norwood, NJ 07648, 201-768-5400 ..... C•1848
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 ..... C•1881
† Phoenix Wire, Inc., 100 Teflon Ave., S. Hero, VT 05486, 802-372-4561 ... C•1917
§† Virginia Plastics Co., P.O. Box 4577, Roanoke, VA 24015-0577, 703-985-3811 ..... C•1924
ABL Electronics Supply, Inc., 1736 Front St., Yorktown Hgts., NY 10598 914-962-2253
American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
§ Belden, Wire and Cable, P.O. Box 1980, Richmond, IN 47375 ..... 317-983-5200; 800-BELDEN-1
§† BIW Cable Systems, Inc., 65 Bay St., Dorchester, MA 02125 617-265-2102
§ BRIntec Corp., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128 203-456-8000
Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 914-469-2141
§† Consolidated Electronic Wire & Cable, 11044 King St., Franklin Park, IL 60131-1412 312-455-8830
§ Custom Cable, 242 Butler, Westbury, NY 11590 516-334-3600
§† Dearborn Wire & Cable, Inc., 250 W. Carpenter, Wheeling, IL 60090 312-459-1000
Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 215-785-0511
§ Delta Wire & Cable Co., 1260 Neil Ln., North Chicago, IL 60064 312-473-4990
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 617-752-8932
† Galite, 2 Tower Dr., Wallingford, CT 06492 203-265-7126
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 617-752-8260
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 302-738-4880
§† King Wire & Cable Corp., 179-45 110 Ave., Jamaica, NY 11433 718-657-4422
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 .. 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 215-272-8960
National Electric Cable, 16640 SW 72nd Ave., Portland, OR 97224 503-620-9400
National Wire & Cable Corp., 136 San Fernando Rd., Los Angeles, CA 90031-1780 213-225-5611
§ Olympic Wire & Cable, 1 Madison Rd., Fairfield, NJ 07006 201-227-7996
Omega Engineering, Box 4047, Stamford, CT 06907 203-359-1660
§† Philadelphia Insulated Wire Co. Inc., 333 New Albany Rd., Moorestown, NJ 08057 609-235-6700
Pyrocom Co., 924 N. 143rd St., Seattle, WA 98133 206-365-3535
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 714-751-7733
§† Specialty Cable Corporation, P.O. Box 50, Wallingford, CT 06492 ..... 203-265-7126; 800-243-3959
§† Standard Wire & Cable Co., 2345 Alaska Ave., El Segundo, CA 90245 ... 213-536-0006; 800-447-0006;Outside CA 800-821-5276
Storm Products Co., 116 Shore Drive, Hinsdale, IL 60521 312-323-9121
§† Tensolite Company, Subsidiary of Carlisle Corp., Old Post Rd., Rte. 9A, Buchanan, NY 10511 914-737-5600
§† Thermax Wire Corp., 32-02 Linden Pl., Flushing, NY 11354-2897 718-939-8300
† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 .. 617-757-3872
§† Vertex Computer Cable & Products, 61 Executive Blvd., Farmingdale, NY 11735 516-293-1610
† Victor Wire & Cable Corp., 3601 Holdrege Ave., Los Angeles, CA 90016 213-870-9933
§† Whitmor Wire & Cable, 27737 Ave. Hopkins, Valencia, CA 91355 805-257-2400
§† Wilco Wire & Cable Co., Inc., 1921 Las Plumas Ave., San Jose, CA 95133 408-926-8880

Wire, Thermocouple-6000

§ Alpha Wire Corp., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, 201-925-8000 ..... C•1774
Judd Wire, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, 413-863-4357 ..... C•1870
† Molecu-Wire, P.O. Box 495, Farmingdale, NJ 07727, 201-938-9473 .. C•1878-1881
Omega Engineering, Box 4047, Stamford, CT 06907, 203-359-1660 ..... C•1909
Richards, Arklay S., Co., Inc., 72 Winchester St., Newton Highlands, MA 02161-1793, 617-527-4385 ..... B•1756, C•1919
Acme Elec. Heating Corp., 4685 E. 11th Ave., Hialeah, FL 33013 305-685-8326
§† American Insulated Wire Corp., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862 401-726-0700
§ Amperex Electronic Corp., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802 516-931-6200
Apex Microtechnology Corp., 5980 N. Shannon Rd., Tucson, AZ 85741 602-742-8600
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† Carpenter Technology Corp., P.O. Box 14662, Reading, PA 19612 ... 215-371-2000
§ Chester Cable, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918 ... 914-469-2141
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§ Custom Cable, 242 Butler, Westbury, NY 11590 ... 516-334-3600
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Delco Wire & Cable, Inc., 257 Rittenhouse Cir., Bristol, PA 19007 ... 215-785-0511
DELTA M Corporation, 525 Warehouse Rd., Oak Ridge, TN 37830 ... 615-483-1569
§ EDL, Inc., 385 Oser Ave., Hauppauge, NY 11788 ... 516-435-2808;1-800-DIAL EDL
† Electro Weave, 425 Shrewsbury St., Worcester, MA 01604 ... 617-752-8932
† Engelhard Corp., Menlo Pk., CN40, Edison, NJ 08818 ... 201-632-6000;800-932-0444 (in NJ)
Galite, 2 Tower Dr., Wallingford, CT 06492 ... 203-265-7126
† General Wire Products, Inc., 425 Shrewsbury Street, Worcester, MA 01604 ... 617-752-8260
§ GIC Thermodynamics, 2611 Parmenter, Royal Oak, MI 48073 ... 313-280-1648
† Gordon Co., 5710 Kenosha St., Richmond, IL 60071 ... 815-678-2211
† W. L. Gore & Assocs., 555 Paper Mill Rd., Newark, DE 19714 ... 302-738-4880
† Honeywell, Industrial Controls Div., 1100 Virginia Dr., Ft. Washington, PA 19034 ... 800-321-5111, Ext. 596
† International Wire Products Co., 500 W. Main St., Wyckoff, NJ 07481 ... 201-891-5800
ITT Cannon, 666 E. Dyer Road, Santa Ana, CA 92705-5684 ... 714-557-4700
Leeds & Northrup Instruments, Sumneytown Pike, North Wales, PA 19454 ... 215-643-2000
§ Love Controls Corp., 1475 S. Wheeling Rd., Wheeling, IL 60090 ... 312-541-3232
Lynn Electronics, 915 Pennsylvania Blvd., Feasterville, PA 19047 ... 215-677-6700; 800-523-6075
§† Manhattan Electric Cable Corporation, 1 Station Plaza, Rye, NY 10580 ... 914-967-8000
§† Markel Corp., P.O. Box 752, Norristown, PA 19404 ... 215-272-8960
MWS Wire Industries, 31200 Cedar Valley Dr., Westlake Village, CA 91362 ... 818-991-8553
† NANMAC Corp., 9 Mayhew St., Framingham, MA 01701 ... 617-872-4811
Okonite Co., Box 340, Ramsey, NJ 07446 ... 201-825-0300
Pyrocom Co., 924 N. 143rd St., Seattle, WA 98133 ... 206-365-3535
Raychem Corp., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025 ... 415-361-3860
Rowe Industries, Inc., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612 ... 419-729-9761
† Santa Fe Textiles, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863 ... 714-751-7733
§ Science/Elctrns., P. O. Box 986, Dayton, OH 45401-0986 ... 513-228-6011
Sensortek, Inc., 154 Em Huron Ave., Clifton, NJ 07013 ... 201-779-5577
§ S. F. Products Corporation, P. O. Box 369, Southport, CT 06490 ... 203-929-6180
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† Thermo Electric, 109 Fifth St., Saddle Brook, NJ 07662 ... 201-843-5800
† United Wire & Cable Corp., 425 Shrewsbury St., Worcester, MA 01604 ... 617-757-3872
§ Wahl Instruments, Inc., 5750 Hannum Ave., Culver City, CA 90231 ... 800-421-2853
§ West Instrument, A Mark IV Company, 3860 N. River Rd., Schiller Park, IL 60176 ... 312-678-6400
§ West Instrument, A Mark IV Company, 3860 N. River Rd., Schiller Park, IL 60176 ... 312-678-6400

Wire, Transmission — See Cable, Transmission Line (Vol. C)

Wire, Twisted Pair — See Cable, Twisted Pair (Vol. C)

Wire (MIL)-2440 — *See Vol. B*

Wire Twisters, Automatic-5400

§ Eraser Co., Box 4961, Syracuse, NY 13221 ... 315-454-3237
Hollis Engrg./Wire-Wrap, 15 Charron Ave., Nashua, NH 03061 ... 603-889-1121
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 ... 914-793-0700
Linemaster Switch, Box 52, Woodstock, CT 06281 ... 203-974-1000
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 ... 215-355-7200
§ Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 ... 215-323-7120
Rutherford Research, Box 249, Rutherford, NJ 07070 ... 201-933-2091

Wire Twisters, Manual-5400

Eraser Co., Box 4961, Syracuse, NY 13221 ... 315-454-3237
Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 ... 914-793-0700
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 ... 215-355-7200
Ostby & Barton, 487 Jefferson Blvd., Warwick, RI 02886 ... 401-739-7310

Wire Ways-6000

Augat Telzon, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111 ... 206-223-1110
† Breeze-Illinois, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584 ... 309-693-3322
Nichifu America, Inc., 1494 N. Charlotte St., Pottstown, PA 19464 ... 215-323-7120
OK Industries, Inc., 4 Executive Plaza, Yonkers, NY 10701 ... 914-969-6800
§ Panduit Corp., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981 ... 312-532-1800
§ Square D Co., Executive Plaza, Palatine, IL 60067 ... 312-397-2600
§† Tyton Corp., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223 ... 414-355-1130
§ The Wadsworth Electric Manufacturing Co., Inc., 20 W. 11th St., Covington, KY 41012 ... 606-431-0900

Wirewrapping Services — See Services, Wirewrapping (Vol. D)

Wiring Panels & Boards, Computer — See Boards, Programming (Vol. C)

Word Processors, Shared Logic Systems-2025 — *See Vol. D*

Word Processors, Standalone Systems-2025 — *See Vol. D*

Work Positioners, Circuit Board & Chassis — See Holders, Circuit Board (Vol. D), Jigs (Vol. D)

Work Room, Shielded-1400

† Brady Co., 63 Middlesex Ave., Iselin, NJ 07083 ... 201-283-0400
† Lindgren RF Enclosures, Inc., 1228 Capitol Drive, Addison, IL 60101 ... 312-628-9100

Work Stations, Laminar Flow-4100 — *See Vol. D*

Work Stations/Decks, Data Entry-1400

Atlas/Soundolier, 1859 Intertech Dr., Fenton, MO 63026, 314-349-3110 ... C•1016
Kalamazoo Technical Furniture, P.O. Box 1165, Kalamazoo, MI 49005, 616-385-2255 ... C•1059
† Optima Enclosures, 2166 Mountain Indl. Blvd., Tucker, GA 30084, 404-496-4000 ... C•1061,1063,1066
PAR Products, 1260 Atlantic Ave., Brooklyn, NY 11216, 212-774-5900 ... C•1073-1075
Stantron Div., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, 213-875-0990 ... C•1090
Alusett U.S.A., Inc., 3 Cecilia Lane, Pleasantville, NY 10570 ... 914-747-3477
Ansco, 1243 West 134th St., Gardena, CA 90247 ... 1-800-421-1270;1-800-821-3308; 213-532-7780
§† Bud East, Inc., 4605 E. 355th St., Willoughby, OH 44094-0431 ... 216-946-3200
§† Compucart, Versa Tec Corp., 107 N. Rome Ave., Tampa, FL 33606 ... 800-237-9024; 813-251-2431
† General Devices, Box 39100, Indianapolis, IN 46239-9632 ... 317-897-7000
§† Gra-Mar Inc., 5135 Curry Ford Rd., Suite 100, Orlando, FL 32806 ... 305-658-1971
§ Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225 ... 716-894-5710
Harris Corp., Computer Systems Div., 2101 W. Cypress Creek Rd., Ft. Lauderdale, FL 33309 ... 305-974-1700
† Hewlett-Packard Co., 1820 Embarcadero Rd., Palo Alto, CA 94303 ... Call Local Sls. Off.
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Skan-A-Matic, Box S, Elbridge, NY 13060 ... 315-689-3961
Terminal Data Corp., 15733 Crabbs Branch Way, Rockville, MD 20855 ... 301-921-8282
Zero Corp., Zero East Div., 288 Main St., Monson, MA 01057 ... 413-267-5561

Wrenches-5400

Contact East, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845 ... 617-682-2000
§† Cooper Group, PO Box 30100, Raleigh, NC 27622 ... 919-781-7200
† Dresser Inds., 1505 Elm St., Dallas, TX 75201 ... 214-746-6000
Hunter Tools, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604 ... 717-285-4581
§ Jensen Tools, Inc., Axia, Inc., 7815 S. 46th St., Phoenix, AZ 85044 ... 602-968-6241
§† Jonard Industries Corp., 134 Marbledale Rd., Tuckahoe, NY 10707 ... 914-793-0700
§† M/A-COM Omni Spectra, Inc., 21 Continental Blvd., Merrimack, NH 03054 ... 603-424-4111
§ Mann, Henry, Inc., 3983 Mann Road, Huntingdon Valley, PA 19006 ... 215-355-7200
§† Moody Tools, Inc., 43 Crompton Ave., E. Greenwich, RI 02818 ... 401-885-0911
§† Omni Spectra, 21 Continental Blvd., Merrimack, NH 03054 ... 603-424-4111
§† Raymond Engrg. Inc., Raycorder Prods. Div., 217 Smith St., Middletown, CT 06457 ... 203-632-1000
§ Utica Tool Co., Inc., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115 ... 803-534-7010
§ Vaco Products Div., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645 ... 312-564-3300

X-ray Detector Arrays (For Industrial Inspections)-4100 — *See Vol. D*

X-Ray Imaging System-4100 — *See Vol. D*

X-ray Inspection Equipment-4100 — *See Vol. D*

X-Y Axis Tables — See Simulators, Motion (Vol. D)

X-Y-Z Systems, Programmable-2550 — *See Vol. D*

Yokes, Deflection, CRT-1800 — *See Vol. A*

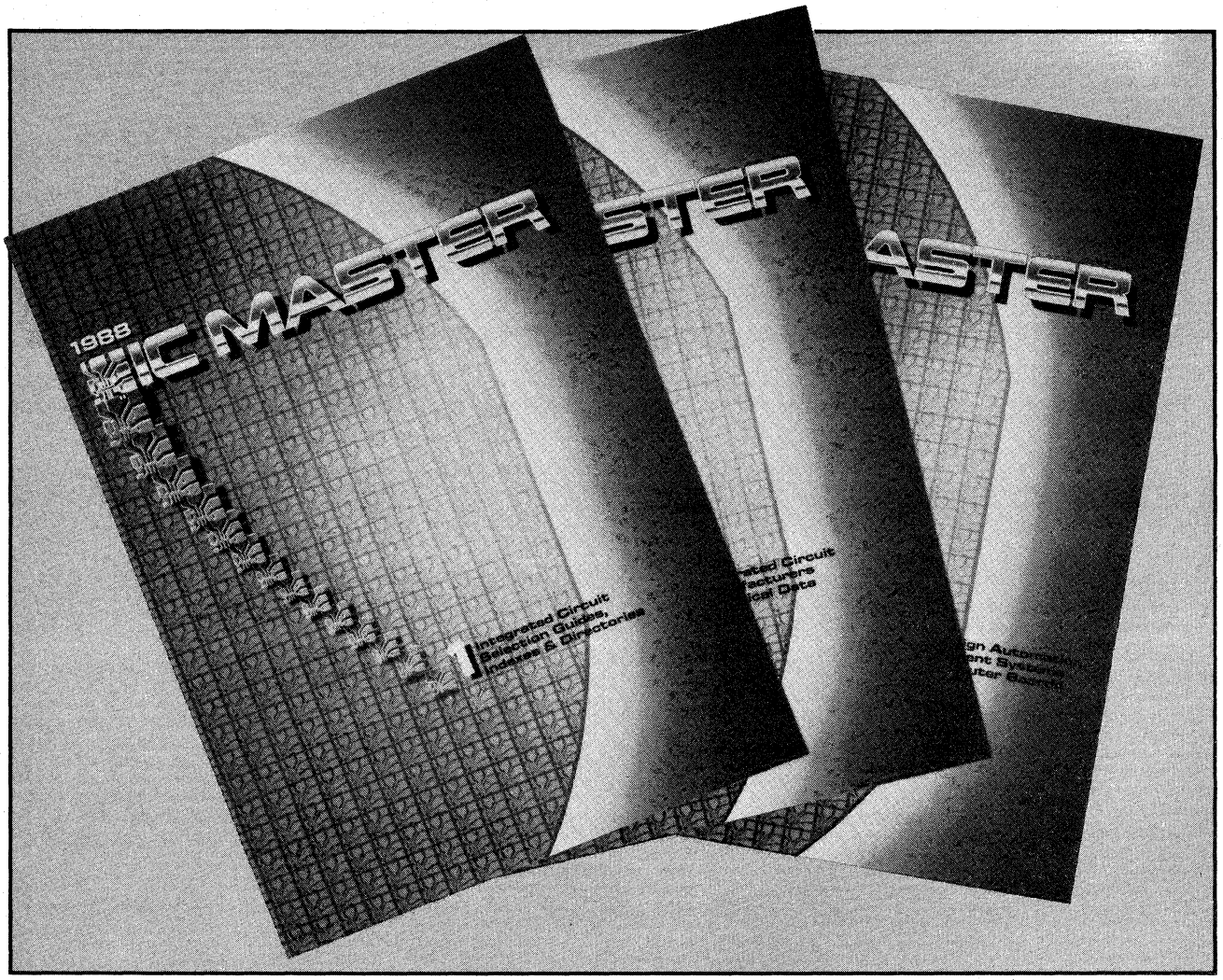
Yokes, Deflection, Oscilloscope-1800 — *See Vol. A*

Yokes, Deflection, Radar PPI-1800 — *See Vol. A*

Yokes, Deflection, TV Camera-1800 — *See Vol. A*

Zener Diodes — See Diodes, Zener

Zone Boxes, Thermocouple — See Thermocouples, Elements & Accessories (Vol. B)



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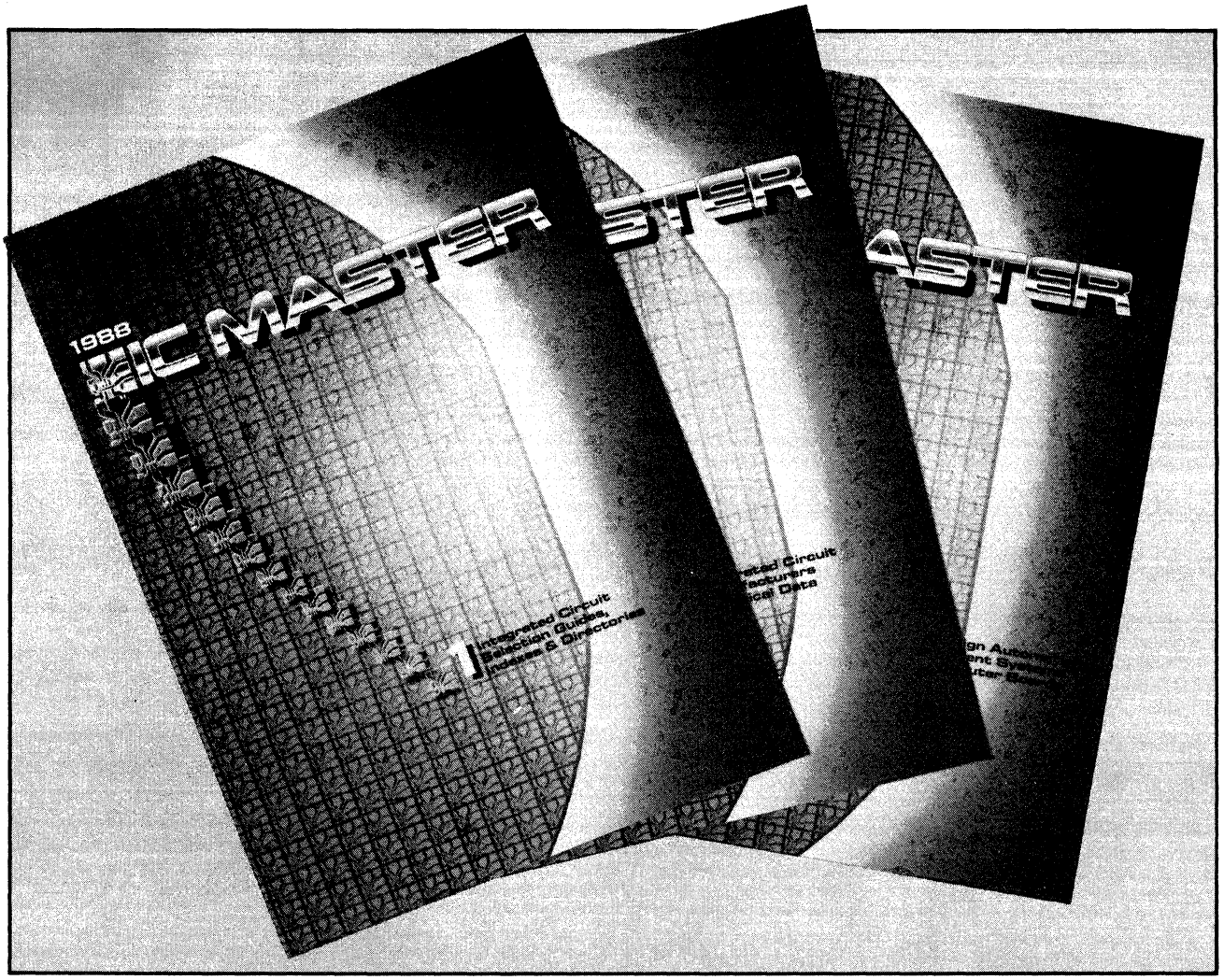

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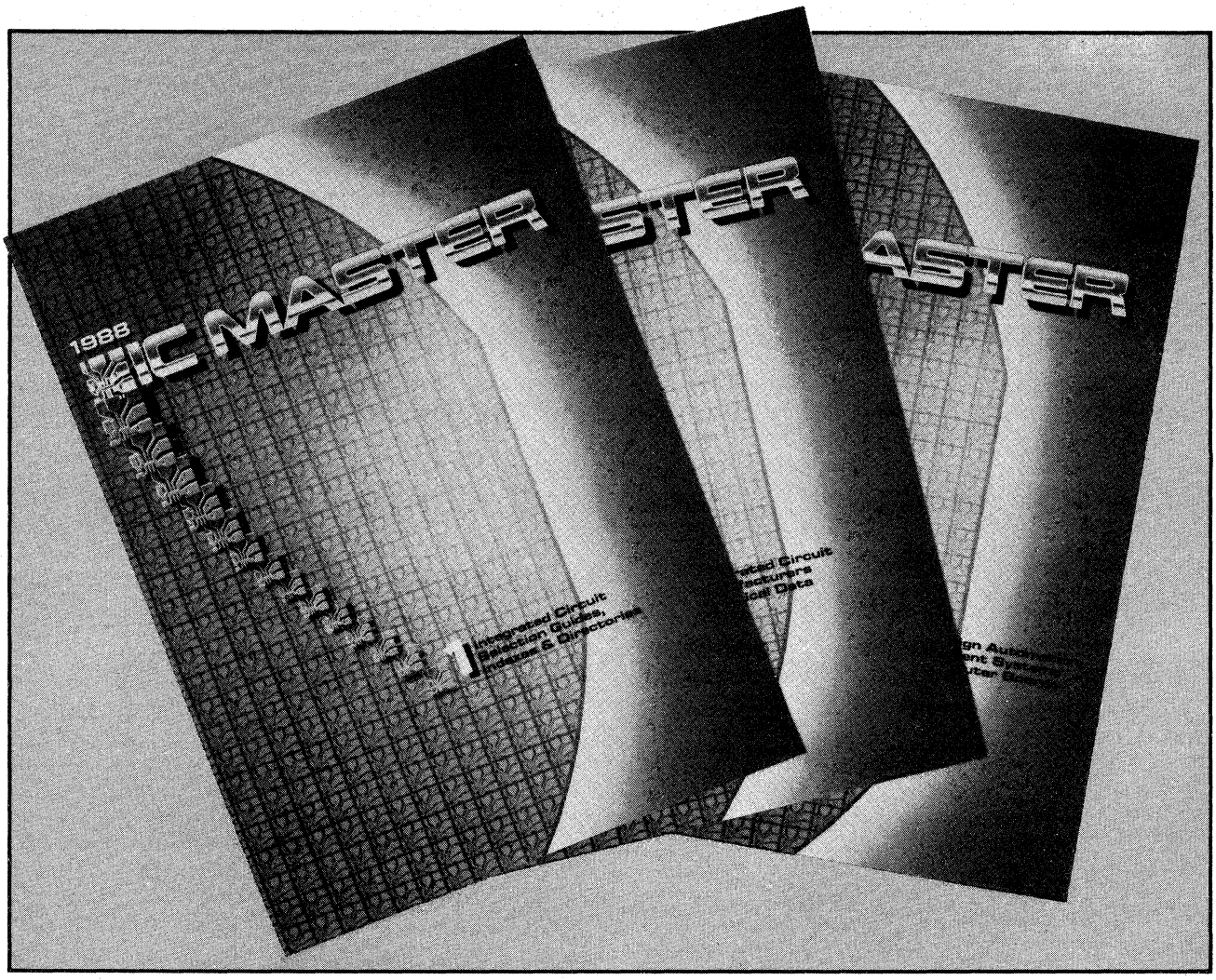

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EDN MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

MAXIMUM CURRENT CAPACITY—CONDUCTORS

Size, AWG	MIL-W-5088				National Electrical Code	Underwriters Laboratory		American Insurance Association	500 c mils/A
	Copper		Aluminum			60°C	80°C		
	Single-wire	Wire-bundled	Single-wire	Wire-bundled					
30	...	...	...	...	...	0.2	0.4	...	0.20
28	...	...	...	...	...	0.4	0.6	...	0.32
26	...	...	...	...	...	0.6	1.0	...	0.51
24	...	...	...	...	...	1.0	1.6	...	0.81
22	9	5	...	...	...	1.6	2.5	...	1.28
20	11	7.5	...	...	...	2.5	4.0	3	2.04
18	16	10	...	...	6	4.0	6.0	5	3.24
16	22	13	...	...	10	6.0	10.0	7	5.16
14	32	17	...	...	20	10.0	16.0	15	8.22
12	41	23	...	...	30	16.0	26.0	20	13.05
10	55	33	...	...	35	...	...	25	20.8
8	73	46	58	36	50	...	...	35	33.0
6	101	60	86	51	70	...	...	50	52.6
4	135	80	108	64	90	...	...	70	83.4
2	181	100	149	82	125	...	...	90	132.8
1	211	125	177	105	150	...	...	100	167.5
0	245	150	204	125	200	...	...	125	212.0
00	283	175	237	146	225	...	...	150	266.0
000	328	200	...	...	275	...	...	175	336.0
0000	380	225	...	...	325	...	...	225	424.0

MINIGLOSSARY ENCAPSULATION

MATERIALS/HANDLING

Catalyst: A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

Conformal coating Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

Curing agent: See catalyst.

Hardener: See catalyst.

Hermetic: A permanent gas-tight seal.

RTV: Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

Thermoplastic: Plastic materials which can be made to flow *repeatedly* with the application of heat.

Thermosetting: Plastics which once cured cannot be made to flow again.

Thixotropy: The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

Viscosity: Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

PROCESSING

Casting: Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

Dip coating: Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

Embedding: Wherein an encapsulant substantially fills all voids in and about an assembly.

Impregnation: A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

Molding: Similar to casting except this process usually implies multicavity molds and costly machines.

Potting: Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

DIELECTRIC

Arc resistance: An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

Breakdown voltage: The voltage at which an encapsulant fails electrically.

Capacitance: The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

Corona: A luminous discharge of electricity due to air ionization when a certain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

Dielectric: Insulator (Nonconductor.)

Dielectric constant: The property of a material that determines its ability to store electrostatic energy.

Dielectric strength: The ratio of dielectric breakdown to the thickness of insulating material.

Dissipation factor: The ratio of a dielectric material's energy losses.

Flashover: Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

Insulation resistance: (IR) An insulating material's total DC leakage.

Surface resistivity: The resistance of the surface of an insulating material to the flow of direct current.

Voltage endurance: Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

Volume resistivity: The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.

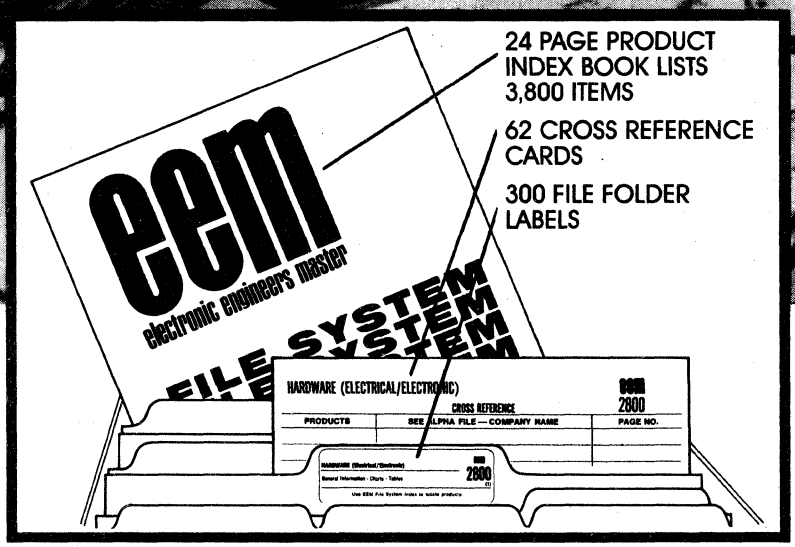
WIRE GAUGES— DIAMETER, AREA AND COPPER WEIGHT

	Diameter at 20°C (68°F)		Area at 20°C (68°F)			Weight at 20°C (68°F), bare copper wire		
Size, AWG	mils	mm	mils	c mils	mm	lb/1,000 ft.	lb/mile	kg/km
4/0	460.0	11.68	166,200	211,600	107.2	640.5	3,382	953.2
3/0	409.6	10.40	131,800	167,800	85.01	507.8	2,681	755.7
2/0	364.8	9.266	104,500	133,100	67.43	402.8	2,127	599.5
1/0	324.9	8.252	82,891	105,600	53.49	319.5	1,687	477.6
1	289.3	7.348	85,730	83,690	42.41	253.3	1,338	337.0
2	257.6	6.543	52,120	66,360	33.62	200.9	1,061	298.9
3	229.4	5.827	41,330	52,620	26.67	159.3	841.1	237.1
4	204.3	5.189	32,780	41,740	21.15	126.3	667.1	188.0
5	181.9	4.620	25,990	33,090	16.77	100.2	528.8	149.0
6	162.0	4.115	20,610	26,240	13.30	79.44	419.4	118.2
7	144.3	3.665	16,350	20,820	10.55	63.03	332.8	93.80
8	128.5	3.264	12,970	16,510	8.367	49.98	263.9	74.38
9	114.4	2.906	10,280	13,090	6.631	39.61	209.2	58.95
10	101.9	2.588	8,155	10,380	5.261	31.43	166.0	46.77
11	90.7	2.304	6,460	8,230	4.17	24.90	131	37.1
12	80	2.05	5,130	6,530	3.310	19.8	104	29.4
13	72.0	1.83	4,070	5,180	2.63	15.7	82.9	23.4
14	64.1	1.63	3,230	4,110	2.08	12.4	65.7	18.5
15	57.1	1.45	2,560	3,260	1.650	9.87	52.1	14.7
16	50.8	1.29	2,030	2,580	1.31	7.81	41.2	11.6
17	45.3	1.150	1,610	2,050	1.040	6.21	32.8	9.24
18	40.3	1.02	1,280	1,620	0.823	4.92	26.0	7.32
19	35.9	0.912	1,010	1,290	0.653	3.90	20.6	5.81
20	32.0	0.813	804.0	1,020	0.519	3.10	16.4	4.61
21	28.5	0.724	638.0	812.0	0.412	2.46	13.0	3.66
22	25.3	0.643	503.0	640.0	0.324	1.94	10.2	2.88
23	22.6	0.574	401.0	511.0	0.259	1.55	8.16	2.30
24	20.1	0.511	317.0	404.0	0.205	1.22	6.46	1.82
25	17.9	0.455	252.0	320.0	0.162	0.970	5.12	1.44
26	15.9	0.404	199.0	253.0	0.128	0.765	4.04	1.14
27	14.2	0.361	158.0	202.0	0.102	0.610	3.22	0.908
28	12.6	0.320	125	159.0	0.0804	0.481	2.54	0.715
29	11.3	0.287	100.0	128.0	0.0647	0.387	2.04	0.575
30	10.0	0.254	78.50	100.0	0.0507	0.303	1.60	0.450
31	8.9	0.226	62.20	79.2	0.0401	0.240	1.27	0.357
32	8.0	0.203	50.30	64.0	0.0324	0.194	1.02	0.288
33	7.1	0.180	39.60	50.40	0.0255	0.153	0.806	0.227
34	6.3	0.160	31.20	39.7	0.0201	0.120	0.634	0.179
35	5.6	0.142	24.60	31.4	0.0159	0.0940	0.501	0.141
36	5.0	0.127	19.60	25.00	0.0127	0.0757	0.400	0.113
37	4.50	0.114	15.90	20.20	0.0103	0.0613	0.324	0.0912
38	4.0	0.102	12.60	16.0	0.00811	0.0484	0.256	0.0721
39	3.5	0.0889	9.62	12.2	0.00621	0.0371	0.196	0.0552
40	3.1	0.0787	7.55	9.61	0.00487	0.0291	0.154	0.0433
41	2.8	0.0711	6.16	7.84	0.00397	0.0237	0.125	0.0353
42	2.5	0.0635	4.91	6.25	0.00317	0.0189	0.0999	0.0282
43	2.2	0.0559	3.80	4.84	0.00245	0.0147	0.0774	0.0218
44	2.0	0.0508	3.14	4.00	0.00203	0.0121	0.0639	0.0180
45	1.8	0.0457	2.54	3.24	0.00164	0.00981	0.0519	0.0146
46	1.6	0.0406	2.01	2.56	0.00130	0.00775	0.0409	0.0115
47	1.4	0.0356	1.54	1.96	0.000993	0.00593	0.0313	0.00883
48	1.2	0.0305	1.13	1.44	0.000730	0.00436	0.0230	0.00649
49	1.1	0.0279	0.950	1.21	0.000613	0.00366	0.0193	0.00545
50	1.0	0.0254	0.785	1.00	0.000507	0.00303	0.0160	0.00450

THERMAL CONDUCTIVITY OF DIELECTRICS AT ROOM TEMPERATURE

Material	Thermal Conductivity, J/ (m.K)
Diamond	658
BeO	167
Graphite	117-200
Bonded SiC	42
MgO	42
Al_2O_3	33
TiC	33
BN	28
Mullite	6.3
Titania	3.3-4.2
Porcelain	1.7
Fused silica glass	1.5
Soda-lime glass	0.8
Cast epoxies	0.17-1.3
Wood	0.5-2.5
Melamines	0.3-0.7
Mica	0.3-0.7
Phenolics (molded)	0.17-0.67
Polyethylenes	0.33
Nylons	0.17-0.25
TFE fluorocarbons	0.25
Elastomers	0.08-0.17
Foams	0.003-0.04





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87
88 Manufacturers and Sales Offices Directory

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Many manufacturers also show TWX and Telex numbers, FSC (Federal Supply Code), other pertinent company data, their sales and/or local distributor offices and phones. The page numbers of their data pages in this edition are shown in all volumes.

ADC MAGNETIC CONTROLS CO., 4900 W. 78th St., Minneapolis, MN 55435, Tel: 612-835-6800, Telex: 290321; Empl.: 2000; *Sls. Mgr.:* Jack Brandmueller

AABA COMPONENTS CORP., P.O. Box 171, Baldwin Place, NY 10505, Tel: 914-628-6952; Empl.: 15; *Sls. Mgr.:* D. McVey; *Dist. Mgr.:* D. McVey

AAK CORP, 747 River St., Haverhill, MA 01830, Tel: 617-373-3769; FSC No.: 04 26 3109-1; Empl.: 20; *Sls. Mgr.:* Marie Credit

Local Sales Offices & Reps

OH Cleveland, Tiby Co. 216-371-5335

A & B TECHNICAL SERVICES, 7250 Bellaire Ave., N. Hollywood, CA 91605-4212, Tel: 818-982-2515; Empl.: 7; *Sls. Mgr.:* Chris Cloud; *Dist. Mgr.:* C. Cloud

A & D ELEC. INSTRS., 73-07 88th St., Glendale, NY 11385, Tel: 718-275-6516; Empl.: 7

AAVID ENGRG., One Kool Path, Laconia, NH 03247, Tel: 603-528-3400, TWX: 510-298-1127; FSC No.: 30161; Empl.: 350; *Sls. Mgr.:* Charles Nelson; *Dist. Mgr.:* Allen Hillman ..... **C•1610-1615**

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CA El Monte, Cook Entprs., Inc. 213-686-2120
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CA Solana Bch., Cook Entprs., Inc. 619-584-0936
CO Boulder, Lillard Sls., Inc. 303-447-9288
CT North Haven, Kitchen & Kutchen Inc. 203-239-0212
FL Deerfield Bch., Cartwright & Bean, Inc. 305-429-3400
FL Orlando, Cartwright & Bean, Inc. 305-422-4531
GA Atlanta, Cartwright & Bean, Inc. 404-233-2939
IL Glendale Hgts., Beta Technig. Sls., Inc. 312-790-9886
IN Indianapolis, Kahsar Sls. Inc. 317-888-8396
IA Des Moines, S P S Assocs. 515-225-0607
KS Olathe, S P S Assocs. 913-764-4460
LA Covington, Cartwright & Bean, Inc. 504-892-1780
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NY Endwell, Reagan/Compar Binghamton 607-723-8743
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MA Reading, Meco, Inc.
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AZ Scottsdale, SMS & Assocs. 602-998-0831
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FL Altamonte Springs, Gugel-Tuttle Assocs. Inc. 305-788-0845
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NY Liverpool, R&D Assocs., Inc. 305-688-0845
OK Tulsa, General Sls. & Assocs. 918-622-7744
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Can Ottawa, Subtec Ltd. 613-738-1470

ABBOTT TRANSISTOR LABS., Transformer Div., 639 So. Glenwood Pl., Burbank, CA 91506, Tel: 818-841-3630, Telex: 69-6282; FSC No.: 58910; Empl.: 50; *Sls. Mgr.:* P. Ferrari ..... **A•2164-2173**

Local Sales Offices & Reps

CA Hayward, Pacific Mktg., Inc. 415-887-1620
FL Altamonte Springs, Gugel Assocs. Inc. 305-788-0845
ID Boise, Norman R. Schultz Co. 208-377-8686
IL Hinsdale, Palatine Engrg. & Sls. (CKC) 312-655-0668
IA Cedar Rapids, Palatine Engrg. & Sls., Inc. 319-365-8071
KS Wichita, Palatine Engrg. & Sls., Inc. 316-262-1020
MN Minneapolis, Holmgren Assocs., Inc. 612-786-7641
MO Hazelwood, Palatine Engrg. & Sls., Inc. 314-839-0800
NJ Ft. Lee, Abbott Transistor Labs. 201-461-4411
OR Beaverton, Norman R. Schultz Co. 503-643-1644
TX Richardson, Abbott Transistor Labs. 214-437-0697
WA Bellevue, Norman R. Schultz Co. 206-454-0300
Can Rexdale, Ontario, Source Elctrns., Ltd. 416-675-6235

ABL ELECTRONICS SUPPLY, INC., 1736 Front St., Yorktown Hgts., NY 10598, Tel: 914-962-2253, FAX: 914-962-2296; Empl.: 18; *Sls. Mgr.:* George Wiesel ..... **C•1763-1765**

ABLE POWER AND ENGINEERING INC., 1222 N. Delta St., S. San Gabriel, CA 91770, Tel: 818-571-6260, Telex: 287020 SCS UR; Empl.: 25; *Sls. Mgr.:* Joe Chou; *Dist. Mgr.:* Bob Thomas

ABLESTIK LABORATORIES, 833 W. 182nd St., Gardena, CA 90248, Tel: 213-532-9341, TWX: 910-346-7606; FSC No.: 21109; Empl.: 100; *Sls. Mgr.:* D. W. Lefever

ABORN ELECTRONICS INC., 2108 D Bering Dr., San Jose, CA 95131, Tel: 408-436-5444, Telex: 184817 MSGSNDR, 184967 MGSNDR, FAX: 408-287-4535; FSC No.: 8Z441; Empl.: K. Bomin; *Sls. Mgr.:* V. Lumba

ABRAMS INSTRUMENT CORP., P.O. Box 26007, Lansing, MI 48909, Tel: 517-332-6405, TWX: 810-251-0785; FSC No.: 00048; *Sls. Mgr.:* Merlyn Gates

A B TOOL & MFG., INC., Engineered Automation Div., 152 Cregar Road, High Bridge, NJ 08829, Tel: 201-638-8555, Telex: 847-340; Empl.: 25; *Sls. Mgr.:* David F. Mowen

ACC ELECTRONICS COMPANY, Echlin Inc., 1300 W. Oak, Independence, KS 67301, Tel: 316-331-1000, Telex: 436483; FSC No.: 316-331-0660; Empl.: 1000; *Sls. Mgr.:* Leon Allen

ACCESSORIES FOR ELCTRNS., INC., 800 Merrick Rd., Baldwin, NY 11510-3593, Tel: 516-546-1751, FAX: 516 867-1922; FSC No.: 54355; Empl.: 20; *Sls. Mgr.:* Bill Harris

ACCUDYNE CORP., P.O. Box 1429, Janesville, WI 53547, Tel: 608-752-9081; FSC No.: 18356; Empl.: 540; *Sls. Mgr.:* R. E. Mowris; *Dist. Mgr.:* R. E. Mowris

ACCUGRAPH CORP., 50 Gervais Drive, Suite 204, Don Mills, ONT, Canada M3C 1Z3, Tel: 416-441-2211, Telex: 06-986973, FAX: 416 441-2228; Empl.: 93; *Sls. Mgr.:* Dennis Kukulsky; *Dist. Mgr.:* Dennis Kukulsky

ACCULEX CORPORATION, MetraByte, 440 Myles Standish Blvd., Taunton, MA 02780, Tel: 617-880-3660, Telex: 240713; *Sls. Mgr.:* Ben Bailey ..... **D•1337**

ACCUMET ENGINEERING, 518 Main St., Hudson, MA 01749, Tel: 617-568-8311, FAX: 617-562-4384; *Sls. Mgr.:* J. B. Snook

Local Sales Offices & Reps

MD Pasadena, Spectro-Lambda 301-437-7633
NJ Clarksburg, Micro-Lambda 609-259-0400
NY Huntington, Compar New York 516-423-5660
TX Dallas, Cain & Co. 214-247-3901

ACCUPROBE, INC., 1 Harrison Ave, Box 1044, Salem, MA 01970, Tel: 617-745-7878, Telex: 882194 Accuprobe UD; Empl.: 26; *Sls. Mgr.:* Robert J. Wilson; *Dist. Mgr.:* T. H. Murphy

ACCURATE ELECTRONICS, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036, Tel: 216-366-6330, Telex: 469705; FSC No.: 11375; Empl.: 35; *Sls. Mgr.:* J. F. Seybold

Accuride

ACCURIDE, 12311 S. Shoemaker, Santa Fe Springs, CA 90670, Tel: 213-944-0921, TWX: 910-586-1632; *Sls. Mgr.:* Mike Hart; *Dist. Mgr.:* Bill Kniegge ..... **C•1006-1009**

ACCUSONIC SYSTEMS CORP., Designatronics, Inc., 2101 Jericho Turnpike, New Hyde Park, NY 11040, Tel: 516-328-3300; FSC No.: 5965; Empl.: 15 (This Subsidiary); *Sls. Mgr.:* Dennis Goodman

ACCUTRONICS/CONNOR-WINFIELD, See Connor-Winfield

acdc electronics

ACDC ELECTRONICS, Div. of Emerson, 401 Jones Rd., Oceanside, CA 92054, Tel: 619-757-1880, TWX: 910-322-1470; Empl.: 750; *Sls. Mgr.:* Bruce Hamilton; *Dist. Mgr.:* Ray Brown ..... **D•1511-1513**

Local Sales Offices & Reps

CA	Burbank, ACDC	818-848-9252
CA	Orange City, ACDC	619-439-4200
CA	San Diego, ACDC	619-942-7230
CA	Santa Clara, ACDC Elctrns.	408-727-1626
CO	Englewood, Omega Ltd.	203-265-2972
CT	Wallingford, ACDC	203-265-2972
FL	Tampa, ACDC Elctrns.	813-962-2537
GA	Atlanta, ACDC	404-457-8696
IL	Elk Grove Vl, John G. Twist	312-593-0200
IL	Naperville, ACDC Elctrns.	312-355-8444
IN	Indianapolis, EMCI	317-253-1668
KS	Kansas City, Rush & West	913-764-2700
MA	Sudbury, ACDC Elctrns.	617-443-9903
MN	Minneapolis, Components	612-374-1250
MO	Ballwin, Rush & West	314-965-3322
NY	Binghamton, Tri-Tech	510-252-0891
NY	Hudson Valley, Tri-Tech	914-897-5611
NY	Islip, ACDC	516-348-7710
NY	Rochester, Tri-Tech	716-385-6500
NY	Syracuse, Tri-Tech	315-446-2881
OH	Cleveland, Lyons Corp.	216-659-9224
OH	Columbus, Lyons Corp.	614-890-2743
OH	Dayton, Lyons Corp.	513-278-0714
OK	Bixby, MGR Elctrns.	918-369-5186
OR	Portland, Core II Mktg.	503-649-0877
PA	Philadelphia, Tech. Sls.	215-675-8600
TX	Austin, ACDC Elctrns.	512-250-1011
TX	Austin, MGR Elctrns.	512-250-0926
TX	Dallas, MGR ELctrns.	214-238-5246
TX	Houston, MGR Elctrns.	713-487-8306
WA	Seattle, Core II Mktg.	206-855-4344
WA	Spokane, Core II Mktg.	509-922-2971
Can	Burnaby, BC, Webster Instrs.	604-434-2611
Can	Montreal, Que., Webster Instrs.	514-744-5829
Can	Toronto, Webster	416-625-0600

Local Distributors

AZ	Tempe, Acacia	602-894-2874
CA	Anaheim, Time Elctrns.	714-937-0911
CA	Chatsworth, Time Elctrns.	818-998-7200
CA	Irvine, Acacia	714-660-0834
CA	Sacramento, Acacia	916-638-1861
CA	San Diego, Acacia	619-565-4365
CA	San Diego, Time Elctrns.	619-586-1331
CA	Sunnyvale, Acacia	408-745-7200
CA	Sunnyvale, Time Elctrns.	408-734-9888
CA	Torrance, Time Elctrns.	213-320-0880
CT	Chshire, Time Elctrns.	203-271-3200
CT	Hartford, Cronin Elctrns.	203-265-3134
FL	Ft. Lauderdale, Time Elctrns.	305-974-4800, 305-841-6565
FL	Winter Pk., Milgray Elec., Inc.	305-647-5747
GA	Atlanta, Milgray Elctrns.	404-393-9666
GA	Atlanta, Time Elctrns.	404-448-4448
IL	Chicago, Magnuson Elec., Inc.	312-956-0700
IL	Chicago, Newark Elec.	312-784-5100
IL	Chicago, Time Elctrns.	312-350-0610
KS	Overland Park, Milgray Elctrns.	913-236-8800
MD	Columbia, Milgray	301-621-8169
MD	Columbia, Time Elctrns.	301-964-3090
MA	Needham, Cronin Elctrns.	617-449-5000
MA	Woburn, Time Elctrns.	617-935-8080
MN	Bloomington, Time Elctrns.	612-944-9192
MO	St. Louis, Time Elctrns.	314-391-6444
NY	Farmingdale, Milgray Elec., Inc.	516-546-5600
NY	Hauppauge, Time Elctrns.	516-273-0100
NY	Rochester, Milgray Elec., Inc.	716-385-9330
NY	Rochester, Simcona Elctrns.	716-328-3230
NY	Syracuse, Time Elctrns.	315-432-0355
OH	Cincinnati, Hughes-Peters	513-351-2000
OH	Cleveland, Milgray Elctrns.	216-447-1520
OH	Columbus, Hughes-Peters	614-294-5351
OH	Dublin, Time Elctrns.	614-761-1100
OK	Tulsa, Norvell Elctrns.	918-663-1247
OR	Portland, Almac Elctrns.	503-641-9076
OR	Portland, Time Elctrns.	503-684-3780
PA	Philadelphia, Philadelphia Elctrns.	215-568-7400
PA	Philadelphia, Time Elctrns.	215-337-0900
SC	Charlotte, Time Elctrns.	704-522-7600
TX	Austin, Norvell Elctrns.	512-458-8106
TX	Carrollton, Time Elctrns.	214-241-7441
TX	Dallas, Norvell Elctrns.	214-233-0020
TX	Houston, Norvell Elctrns.	713-777-1666
TX	Houston, Time Elctrns.	713-530-0800
UT	Salt Lake City, Time Elctrns.	801-973-8181
WA	Bellevue, Almac Elctrns.	206-643-9992
WA	Bellevue, Time Elctrns.	206-641-3640
WI	Milwaukee, Taylor Elec.	414-241-4321
Can	Burnaby, BC, Webster Instrs.	604-434-2611
Can	Montreal, Que., Webster Instrs.	514-744-5829
Can	Toronto, Webster Instrs.	416-625-0600

ACD-ELCOR PRODUCTS, P.O. Box 244, Bethel, CT 06801, Tel: 203-743-3510; Empl.: 3

ACHESON COLLOIDS, Div. of Acheson Industries, Inc., P.O. Box 288, Port Huron, MI 48060, Tel: 313-984-5581, TWX: 810-231-5265; Empl.: 200

ACI DATA PRODUCTS, 17921 Sampson Ln., Huntington Beach, CA 92647, Tel: 714-842-2945, Telex: 655328; Empl.: 10; *Sls. Mgr.:* J. Rogers

A.C. INTERFACE INC., 17911 Sampson, Huntington Beach, CA 92647, Tel: 714-841-6090, Telex: 655-328; Empl.: 23; *Sls. Mgr.:* Bill Roth; *Dist. Mgr.:* Ray Ponkey

ACL INC., 1960 E. Devon Ave., Elk Grove, IL 60007, Tel: 312-981-9212, 800-STATIC-0, Telex: 4330251; Empl.: 8; *Sls. Mgr.:* Ralph D. Considine

ACME DIVISION, Allied Products Corporation, P.O. Box 1404, New Haven, CT 06505, Tel: 203-562-2171, Telex: 295503 Acme UR; Empl.: 75; *Sls. Mgr.:* Marvin Leonard

ACME ELEC. HEATING CORP., 4685 E. 11th Ave., Hialeah, FL 33013, Tel: 305-685-8326; Empl.: 12

ACME MODEL ENGINEERING CO., 654 Bergen Blvd., Ridgefield, NJ 07657, Tel: 201-943-7650; Empl.: 29

ACOPIAN, Box 638, Easton, PA 18044, Tel: 215-258-5441, TWX: 510-651-4919; FSC No.: 14749; *Sls. Mgr.:* T. Skopal **D•1515-1553**

Local Sales Offices & Reps

FL	Melbourne, Acopian	305-727-1172
MD	Ellicott City, Doss Elctrns.	301-465-1336

ACOUSTIC POWER SYS., 5731 Palmer Way, Ste. A, Carlsbad, CA 92008, Tel: 619-438-4848, Telex: 4995113 (SHAKE); Empl.: 5

ACRODYNE CONTROLS, See Accudyne Corp.

ACROSYSTEMS CORP., 66 Cherry Hill Dr., Beverly, MA 01915, Tel: 617-927-8880, Telex: RCA Telex:201205 ACRO UR; Empl.: 30; *Sls. Mgr.:* Herbert Tobey

ACTEK, INC., 12740 28th N.E., Seattle, WA 98125, Tel: 206-363-0217, Telex: 329473 (Burgess Sea); Empl.: 19; *Sls. Mgr.:* Fred Graham **D•1115**

Local Sales Offices & Reps

CA	Fremont, DeZarn Designs	415-657-2100
MI	Rochester Hills, Infinity	313-853-9880
OH	Columbus, Infinity	614-268-8359
PA	Pittsburgh, Infinity	412-821-6389
PA	Warminster, Multi-Meas.	215-675-3082
Can	Mississauga, Ont., Tracan Elctrns.	416-625-7752

ACTION INSTRUMENTS, 8601 Aero Dr., San Diego, CA 92123, Tel: 619-279-5726, TWX: 910-335-2030; Empl.: 230; *Sls. Mgr.:* Frank Williams

ACTIVAIR, Duracell, Inc., 2777 Eagandale Blvd., Eagan, MN 55121, Tel: 612-681-4200, 800-328-2072, Telex: 62752504; Empl.: 100; *Sls. Mgr.:* H. T. Ross; *Dist. Mgr.:* H. T. Ross

ACTIVE CONTROL INSTRUMENTATION, P.O. Box 243-Wildwood Circle, Key Largo, FL 33037, Tel: 305-451-1000, FAX: 305-451-3232; FSC No.: 55116; Empl.: 6 **D•1116**

AC TRANSFORMER, 89 Madison St., Newark, NJ 07105, Tel: 201-589-8574; Empl.: 13; *Sls. Mgr.:* George Giangrande

ACUREX-AUTODATA, 555 Clyde Ave., P.O. Box 7042, Mountain View, CA 94039, Tel: 415-967-9100, Telex: 34-6391, TWX: 910-379-6593; Empl.: 600; *Sls. Mgr.:* Rudolf Touitou

Local Sales Offices & Reps

AL	Huntsville, Kemp Instrs. Co.	205-837-4304
AZ	Sun City, Hannah Hill, Inc.	602-933-4623
CA	Irvine, INSS, Inc.	714-250-0320
CA	Sunnyvale, RDX Assocs.	408-734-4500
CO	Broomfield, Hannah-Hill, Inc.	303-460-0602
FL	Clearwater, Structural Engrg. & Testing Svcs.	813-442-7767
FL	DeLeon Springs, Dell-Tech Control Co.	904-985-5530
GA	Atlanta, Kemp Instrs. Co.	404-452-8050
IL	Wheaton, Ray Knitter Assocs., Inc.	312-690-6363
MA	Bedford, Eastronix	617-275-5775
MA	Natick, Andruss-Peskin	617-653-3919
MO	St. louis, Comtel Midwest Co.	314-991-5363
NJ	Spring Lake, CPN Assocs.	201-774-5244
NY	Liverpool, Syronics	315-451-0968
NC	Charlotte, Walk/Man Instrs.	704-375-3132
OH	Medina, Stress Analysis Svcs.	216-725-7733
OK	Stillwater, Acudata	405-743-1886
PA	Jenkintown, PDC Corp.	215-887-9610
SC	Spartanburg, Henry Cook Assocs., Inc.	803-576-8594
TX	Houston, Acudata	713-580-2451
VA	Richmond, PDC Corp.	804-379-2008
WA	Medical Lake, Calvert Control	509-244-3601
Can	Chomedey Laval, Que., Technolor Instrs., Inc.	514-331-7405
Can	N. Vancouver, Jerome & Francis Co., Ltd.	604-986-1286

ADAC CORP., 70 Tower Office Pk., Woburn, MA 01801, Tel: 617-935-6668, Telex: 951802; Empl.: 80; *Sls. Mgr.:* Les Silvern

ADALET-PLM DIV, Div. Scott & Fetzer Co., 4801 W. 150th St., Cleveland, OH 44135, Tel: 216-267-9000, Telex: 98-5349; FSC No.: 73389; Empl.: 177; *Sls. Mgr.:* J. L. Smelko

ADAMS-MAXWELL DIVISION, Coast Magnetics, 1207 North La Brea Ave., Inglewood, CA 90302-1284, Tel: 213-673-3245, Telex: 686103AMISPACEASA; FSC No.: 22558; Empl.: 60; *Sls. Mgr.:* H. Adams

ADAMS RITE PRODUCTS, INC., 540 W. Chevy Chase Dr., Glendale, CA 91204, Tel: 818-241-5121, TWX: 910-497-2276; Empl.: 150; *Sls. Mgr.:* Jonas Williams

ADAMS-RUSSELL, Antenna & Microwave Div., Haverhill Rd., Amesbury, MA 01913, Tel: 617-388-5210, TWX: 710-347-6360; FSC No.: 11556; Empl.: 400; *Sls. Mgr.:* David W. Ryan

ADAMS-RUSSELL, Anzac Div., 80 Cambridge St., Burlington, MA 01803, Tel: 671-273-3333, Telex: 200155, TWX: 710-332-0258; FSC No.: 21912; Empl.: 300; *Sls. Mgr.:* Mike Smith

ADATEK, INC., P.O. Box 1339, Sandpoint, ID 83864, Tel: 208-263-1471, 800-323-3343, Telex: 62903932; Empl.: 13; *Sls. Mgr.:* Ken Brookings; *Dist. Mgr.:* Suzy Hook

ADCOTECH, 1980 Tarob Ct., Milpitas, CA 95035, Tel: 408-943-9430, TWX: 910-338-2333; Empl.: 125; *Sls. Mgr.:* Dale Ann Springer

ADC TELECOMMUNICATIONS, INC., 4900 W. 78th St., Minneapolis, MN 55435, Tel: 612-835-6800, Telex: 290321, FAX: 612-893-3292; Empl.: 1750; *Sls. Mgr.:* Michael Hopkins

ADDACON, INC., 3702-C Alliance Dr., Greensboro, NC 27407, Tel: 919-852-6200, TWX: 510-922-7361; *Sls. Mgr.:* Lynn Cummings

A.D. DATA SYS., Techtran Industries, 200 Commerce Dr., Rochester, NY 14623, Tel: 716-334-9649, TWX: 510-253-3246; Empl.: 35; *Sls. Mgr.:* Jack Petz

ADDITIVE PRODUCTS DIV., Kollmorgen Corp., P.O. Box 700, West La., Aquebogue, NY 11931, Tel: 516-722-4100, TWX: 510-220-0022; Empl.: 450

ADE, INC., 1430 E. 130th St., Chicago, IL 60633, Tel: 312-646-3400; FSC No.: 62049

ADI ELCTRNS. & ADI CIRCUITS, INC., 101 Trade Zone Dr., Ronkonkoma, NY 11779, Tel: 516-737-1800, TWX: 800-645-5402; Empl.: 200; *Sls. Mgr.:* Peter Tumolo

ADIRONDACK WIRE & CABLE CO., INC., 1451 New Britain Ave., Farmington, CT 06032, Tel: 1-203-677-2657; Empl.: 150; *Sls. Mgr.:* Kenneth W. Thompson; *Dist. Mgr.:* Mary Ann Gauthier

ADTECH POWER INC., 1620 S. Sunkist St., Anaheim, CA 92806, Tel: 714-634-9211, Telex: 68-1498; FSC No.: 56410; Empl.: 70; *Sls. Mgr.:* C. C. O'Reilly; *Dist. Mgr.:* C. C. O'Reilly

ADTRON CORPORATION, 745 N. Gilbert Rd., Ste. 124-361, Gilbert, AZ 85234, Tel: 602-926-1461, TWX: 910-240-3012; Empl.: 3; *Sls. Mgr.:* Douglas Lonngren

ADVANCE CONVERSION DEVICES CO., 274 S. Salem St., Randolph, NJ 07869, Tel: 201-989-0095; FSC No.: 52298; Empl.: 24; *Sls. Mgr.:* D. J. Fedderly **D•2024-2025**

ADVANCED CIRCUIT TECHNOLOGY, 118 N. Eastern Blvd., Nashua, NH 03062, Tel: 603-880-6000, TWX: 710-228-8961; FSC No.: 57034; Empl.: 125; *Sls. Mgr.:* David Bouley

ADVANCED COMPONENTS INDS., INC., 120 Center Street, El Segundo, CA 90245, Tel: 213-322-4249, Telex: 5106000379 ACI LSA CA; *Sls. Mgr.:* Irma Spreitzer

ADVANCED CONTROL SYS., 205 Oak Street, Pembroke, MA 02359, Tel: 617-826-4477; Empl.: 6; *Sls. Mgr.:* Leopold Bric ..... **D•1117**

ADVANCED DETECTOR CORP., Applied Solar Energy Corp., 15251 E. Don Julian Rd., Industry, CA 91746, Tel: 818-369-6886, TWX: 910-584-4890; FSC No.: 818-336-8694; Empl.: 275; *Sls. Mgr.:* Robert R. Sears

ADVANCED DIGITAL TECH, 13400 Northrup Wy Ste 27, Bellevue, WA 98005, Tel: 206-643-2382, TWX: 296 352 ADT UR; Empl.: 14; *Sls. Mgr.:* Brian T. Best; *Dist. Mgr.:* Matt Astengo

ADVANCED ELECTRONIC PACKAGING, 2159 Bay St., Los Angeles, CA 90021, Tel: 213-622-9042; *Sls. Mgr.:* Douglas A. Hill

ADVANCED FILTER DEVICES, INC., 6241 Yarrow Dr., Ste. D, Carlsbad, CA 92009, Tel: 619-438-2074; FSC No.: 56620; Empl.: 45; *Sls. Mgr.:* Herbert Johnson

ADVANCED HIGH VOLTAGE CO., P.O. Box 2136, Lancaster, CA 93539, Tel: 818-997-7222; *Sls. Mgr.:* John Richardson ..... **D•1567**

ADVANCED INPUT DEVICES, W. 250 A.I.D. Dr., Coeur d'Alene, ID 83814, Tel: 208-765-8000, TWX: 510-776-0584; FSC No.: 95666; Empl.: 550; *Sls. Mgr.:* John Hartman

ADVANCED INTERCONNECTIONS CORP., 5 Energy Way, West Warwick, RI 02893, Tel: 401-823-5200, TWX: 910-240-3454, FAX: 401 823-8723; FSC No.: 05-0394638; *Sls. Mgr.:* Max E. Rice

ADVANCED KINETICS, 1231 Victoria St., Costa Mesa, CA 92627, Tel: 714-646-7165, Telex: 18-2714; Empl.: 32; *Sls. Mgr.:* Mitch Barker

ADVANCED LINEAR DEVICES, INC., 1030 West Maude Ave., Bldg. 501, Sunnyvale, CA 94086-2810, Tel: 408-720-8737, Telex: 5101006588; Empl.: 10; *Sls. Mgr.:* G. M. O'Neal; *Dist. Mgr.:* G. M. O'Neal

ADVANCED MATERIALS SYSTEMS, See Handy & Harman Electronic Materials Corp.

ADVANCED MICRO DEVICES, P.O. Box 3453, 901 Thompson Pl., Sunnyvale, CA 94088, Tel: 408-732-2400, Telex: 34-6306, TWX: 910-339-9280; Empl.: 14,000; *Sls. Mgr.:* Steve Zelencik; *Dist. Mgr.:* Casey Cho

ADVANCED SYSTEMS CONCEPTS, 2333 N. Lake Ave., Altadena, CA 91001, Tel: 818-791-0983, Telex: 701 215 ASCI; FSC No.: 6U785; Empl.: 20; *Sls. Mgr.:* Maria Reddix; *Dist. Mgr.:* B. Lee ..... **D•1197**

Local Sales Offices & Reps

IA	Des Moines, Beams Co.	515-255-1148
MN	Edina, Integrated Peripheral Sys.	612-831-0349
OH	Dayton, Ashby Assocs.	513-252-5627
VA	Vienna, Advanced Technlg. Assocs.	703-556-0500

ADVANCED TECHN. RESEARCH LABS., 5645 K General Washington Dr., Alexandria, VA 22312, Tel: 703-750-2920; Empl.: 12; *Sls. Mgr.:* Bob Palma, Sr.; *Dist. Mgr.:* Bob Palma, Sr.

ADVANCED THERMAL PRODUCTS, INC., P.O. Box 249, St. Marys, PA 15857, Tel: 814-772-0278; *Sls. Mgr.:* John M. Sidoni

Local Sales Offices & Reps

AL	Huntsville, DHR Mktg.	205-533-5165
GA	Atlanta, DHR Mktg.	404-451-9848
MA	Peabody, JSR Assocs.	617-532-0348
NY	Syracuse, The Martin Assocs.	315-422-6943
NC	Raleigh, DHR Mktg.	919-781-1961
SC	Greenville, DHR Mktg.	803-235-3594
WI	Berlin, Thomas Labant	414-425-7157

AD-VANCE MAGNETICS, INC., 625 Monroe St., Rochester, IN 46975, Tel: 219-223-3158, TWX: 810-290-0294; FSC No.: 50788; Empl.: 30; *Sls. Mgr.:* Kay Nixon ..... **C•1741**

Local Sales Offices & Reps

CA	El Cajon, A-Tronics	619-444-1501
CA	Los Altos, Frauman Assoc.	415-941-0660
CA	Woodland Hills, A-Tronics	818-703-7212
CA	Woodland Hills, A-Tronics	213-703-7212
CT	Branford, Abbott-Allison	203-481-0405
IL	Westchester, W. G. Brouillette	312-345-6500
MD	Timonium, Eastern Comps.	301-561-5811
MN	Edina, J. H. Hanson	612-893-9960
NY	Commack, RC Engrg.	516-543-3325
NY	Pittsford, Schiller & Fox	716-381-1933
NY	Syracuse, Schiller & Fox	315-446-2346
OH	Hillsboro, Merit Elctrns.	513-393-1596
OH	Sharon Center, Merit Elctrns.	216-239-2186
PA	Pittsburgh, Merit Elctrns.	412-279-8727
PA	W. Conshohocken, Eastern Comps.	215-825-8610
TX	Austin, Space Elctrns.	512-346-2215
TX	Houston, Space Elctns.	713-266-9245
TX	Irving, Space Elctns.	214-251-3636
VA	Herndon, Eastern Comps.	703-444-1089
WA	Belleview, Caruso & Co.	206-455-8811

ADVANCE WIRE & CABLE, The Advange Group, 1661 Industrial Way, Belmont, CA 94002, Tel: 415-592-4550, Telex: 334475; FSC No.: 57775; Empl.: 158; *Sls. Mgr.:* Ed Mittelbusher; *Dist. Mgr.:* Ed Mittelbusher

ADVANTEST®

ADVANTEST AMERICA, INC., 300 Knightsbridge Parkway, Lincolnshire, IL 60069, Tel: 312-634-2552, Telex: 280777; Empl.: 102; *Sls. Mgr.:* Steve Langerock ..... **D•1198-1206**

Local Sales Offices & Reps

CA	San Jose, Aegis, Inc.	408-268-1714
CA	Santa Clara, Advantest America, Inc.	408-970-9922
CA	Santa Monica, Advantest America, Inc.	213-392-0381
FL	Orlando, Advantest America, Inc.	305-859-0722
IL	Lincolnshire, Advantest America, Inc.	312-634-2552
IL	Park Ridge, Aegis, Inc.	312-823-1587
IN	Carmel, Aegis, Inc.	317-846-6305
MN	Plymouth, Aegis, Inc.	612-473-8894
NH	Nashua, Aegis, Inc.	603-880-4463
NJ	Fort Lee, Advantest America, Inc.	201-886-0300
PA	Allentown, Advantest America, Inc.	215-264-7680
TX	Austin, Advantest America, Inc.	512-451-3936
TX	Farmers Branch, Advantest America, Inc.	214-239-7834

ADVANTEST CORPORATION, NS Bldg. 14th,4-1,Nishi-Shinjuku 2-Chome,Shinjuku-ku, Tokyo 160, Tokyo 176, Japan, Tel: 03-342-7500, Telex: 232-4914 ADVAN J; Empl.: 1200; *Sls. Mgr.:* Tadashi Atarashiya

A E CORP., 65 Wellesley Ave., Needham, MA 02194, Tel: 617-449-3142; Empl.: 10; *Sls. Mgr.:* H. Harrison

AEG

A E G CORPORATION, Route 22-Orr Drive, P.O. Box 3800, Somerville, NJ 08876-1269, Tel: 201-722-9800, Telex: 833409 ..... **B•1031; C•1710-1711**

Local Sales Offices & Reps

AL	Huntsville, AEG Sls. Off.	205-536-4194
AL	Huntsville, Electramark	205-539-7040
AZ	Tempe, Cantec Sls. Inc.	602-829-0191
CA	El Monte, Cook Entprs.	213-686-2120
CA	Los Angeles, A.T.A. Assocs.	714-498-7180
CA	Palo Alto, United Tech. Mktg.	415-449-7644
CA	San Diego, A.T.A. Assocs.	619-967-9066
CA	San Francisco, United Tech. Mktg.	415-449-7644
CA	Solana Bch., Cook Entprs.	619-584-0936
CA	Sunnyvale, W. W. Posey Co.	408-746-0771
CT	Danbury, Ray Perron & Co., Inc.	203-744-4120
CT	Farmington, Ray Perron & Co., Inc.	203-673-4825
FL	Clearwater, Sigma Tech. Assocs., Inc.	813-791-0271
FL	Ft. Lauderdale, Sigma Tech. Assocs., Inc.	305-731-5995
GA	Norcross, Electramark	404-446-7915
IL	Chicago, Janus Ins.	312-250-9650
IL	Des Plaines, AEG Sls. Off.	312-299-8799
IL	Schaumburg, Phase II Mktg.	312-303-5092
IA	Des Moines, SPS Assocs., Inc.	515-225-0607
KS	Olathe, SPS Assocs., Inc.	913-764-4460
MD	Annapolis, V.G. Sls. Co. Inc.	301-267-9830
MA	Needham, Ray Perron & Co., Inc.	617-449-6162
MN	Minneapolis, Robert W. Marshall	612-929-0457
MO	Earth City, SPS Assocs., Ltd.	314-291-0520
NE	Panama, SPS Assocs., Ltd.	913-764-4460
NV	Carson City, United Tech. Mktg.	415-449-7644
NH	Merrimack, Ray Perron & Co., Inc.	603-424-4423
NJ	Haddonfield, Sunday O'Brien	609-429-4013
NY	Commack, ERA	516-543-0510
NY	Long Island City, M. H. Lynn	718-352-9233
NY	Syracuse, Pi Tronics Inc.	315-455-7346
NC	Raleigh, Zucker Assocs., Inc.	919-782-8433
OH	Cleveland, Arthur H. Baier Co.	216-461-6161
OH	Columbus, Arthur H. Baier Co.	614-764-1144
OR	Tigard, Elctrn. Comp. Sls.	503-245-2342
PA	Pittsburgh, Arthur H. Baier Co.	412-367-7799
TX	Garland, Pro Comp Sls.	214-276-1948
TX	Hurst, Pro Comp Sls.	817-589-0336
WA	Mercer Island, Elctrn. Comp. Sls.	206-232-9301
WI	Milwaukee, Janus Inc.	414-542-7575
WI	Milwaukee, Phase II Mktg.	414-272-1171
Can	Brampton, Ont., Cantec Reps., Inc.	416-791-5922
Can	Dollard des Ormeaux, Que., Cantec Reps.	514-683-6131
Can	Ottawa, Ont., Cantec Reps., Inc.	613-725-3704

Local Distributors

AZ	Phoenix, Cetec/Future	602-272-7851
CA	Anaheim, Pacesetter Elctrns. USA, Inc.	714-779-5855
CA	Chatsworth, Cetec/Future	818-700-0914
CA	Irvine, Cetec/Future	714-250-4141,818-446-5733
CA	Irvine, Integrated Elctrns.	714-837-9960
CA	Milpitas, Cable Conn	408-943-6655
CA	Orange, Elctrn. Connexions Corp.	714-998-9241
CA	Sacramento, Integrated Elctrns.	916-424-5297
CA	San Diego, Cetec/Future, Inc.	619-278-5020
CA	San Jose, Future Elctrns.	408-435-9100
CA	San Jose, Integrated Elctrns.	408-435-1000
CA	Santa Clara, Cetec/Future, Inc.	408-748-8550
CA	Sunnyvale, Pacesetter Elctrns.	408-734-5470
CA	Sunnyvale, SAI	408-720-0760
CO	Denver, Integrated Elctrns.	303-292-6121
CO	Westminster, Future Elctrns.	303-650-0123
CT	Danbury, Future Elctrns.	203-743-9594
CT	Wallingford, Midstoth Elctrns.	203-265-9900
FL	Altemonte Springs, SAI	305-831-6201
FL	Boca Raton, Plainview Elctrns.	305-997-7705
FL	Clearwater, Future Elctrns.	813-578-1770
FL	Ft. Lauderdale, Reptron Elctrns.	305-735-1112
FL	Longwood, Intertec Components	305-834-7777
FL	Orlando, Future Elctrns.	305-767-8414
FL	Tampa, Reptron Elctrns.	813-855-4656
GA	Norcross, Future Elctrns.	404-441-7676
GA	Norcross, Reptron Elctrns.	404-446-1300
IL	Des Plaines, Rod Graham	312-299-8799
IL	Hoffman Estates, Integrated Elctrns.	312-843-2040
IL	Schaumberg, Future Elctrns.	312-882-1255
IL	Schaumberg, Reptron Elctrns.	312-882-1700
IN	Indianapolis, Mar Elctrns.	317-633-6699
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
MD	Columbia, Future Elctrns.	301-995-1222
MD	Columbia, Gen. Radio Supply Co.	301-995-6744
MA	Westboro, Future Elctrns.	617-366-2400
MA	Wilmington, SAI	617-657-5700
MI	Livonia, Reptron Elctrns.	313-525-2700
MN	Minnetonka, Reptron Elctrns.	612-938-0000
NJ	Camden, General Radio	609-964-8560
NJ	Cherry Hill, Exact Inc.	609-429-6586
NJ	Mount Laurel, Future Elctrns.	609-778-7600
NJ	Newark, Samar Corp.	201-344-4453
NJ	West Berlin, Gen. Components Inc.	609-768-6767
NM	Albuquerque, Elctrn. Dvcs., Inc.	505-884-2950
NY	Liverpool, Future Elctrns.	315-451-2371
NY	Melville, SAI	516-293-2710
NY	Rochester, Future Elctrns.	716-272-1120
OH	Worthington, Reptro Elctrns.	614-436-6675
OR	Beaverton, Future Elctrns.	503-645-9454
OR	Beaverton, Integrated Elctrns.	503-641-1690
TX	Ft. Worth, Swieco, Inc.	817-335-6521
TX	San Antonio, Sherman Elctrns.	512-224-1004
UT	N. Salt Lake City, Integrated Elctrns.	801-298-1869
UT	Salt Lake City, Future Elctrns.	801-972-8489
VT	Rutland, SAI	802-775-7126
WA	Bellevue, Future Elctrns.	206-881-8199
WA	Bellevue, Integrated Elctrns.	206-455-2727
Can	Calgary, Alb., Future Elctrns.	403-235-5325
Can	Downsview, Ont., Future Elctrns.	416-638-4771
Can	Edmonton, Alb., Future Elctrns.	403-438-2858
Can	Ottawa, Ont., Future Elctrns.	613-820-8313
Can	Pointe Claire, Que., Future Elctrns., Inc.	514-694-7710
Can	Vancouver, B.C., Future Elctrns.	604-294-1166

A E G TELEFUNKEN, High Power Grp., Rte. 22, Orr Dr., Somerville, NJ 08876, Tel: 201-722-9800, Telex: 833409; *Sls. Mgr.:* John Szafranski

AEG TELEFUNKEN, SEMICONDUCTOR GRP., See AEG Corp.

AEL, INC, See American Electronic Labs

AEMC, 99 Chauncy, Boston, MA 02111, Tel: 617-451-0227, 800-343-1391, Telex: 95-1073; *Sls. Mgr.:* Jon Henderson

AEROCOM, 3090 S.W. 37th Ave., Miami, FL 33133, Tel: 305-448-6503, Telex: 6812020; FSC No.: 81535; Empl.: 100; *Sls. Mgr.:* Thomas A. Coleman

AEROFLEX LABS., INTEGRATED MICROSYSTEMS DIV., See Aeroflex Labs., Microelectronics Div.

AEROFLEX LABORATORIES INC.

AEROFLEX LABORATORIES INC., Magnetic Products Div., 35 South Service Road, Plainview, NY 11803, Tel: 516-694-6700, TWX: 510-224-6417; Empl.: 490; *Sls. Mgr.:* Robert M. Slatkin ..... **B•1156-1157; D•1110, 1139**

Local Sales Offices & Reps

AZ	Phoenix, The Knight Co.	602-994-1311
CA	Los Altos Hills, HB Mktg.	415-941-4080
CA	Los Angeles, The Knight Co.	213-670-2833
CA	San Diego, The Knight Co.	619-743-5136
CO	Englewood, Westenn Sls. Inc.	303-798-0945
CT	Simsbury, Multitronics Sls. Co.	203-651-0140
FL	Clearwater, Brennan Assocs.	813-446-5006
IL	Northfield, Feller Assocs., Inc.	312-446-8065
IA	Cedar Rapids, Feller Assocs., Inc.	319-364-0566
MD	Baltimore, Micro Comp Inc.	301-644-5700
MN	Minneapolis, Intl. Elctrns. Inc.	612-571-0000
NH	Nashua, Multitronics Sls. Co.	603-888-5899
NJ	Ft. Lee, Nexus Technlg. Sls. Inc.	201-947-0151
NY	Albany, Nu-Tekneex Mktg.	518-355-1829
NY	Pleasantville, Nexus Technlg. Sls. Inc.	914-769-0382
NY	Smithtown, Nexus Technlg. Sls. Inc.	516-864-2263
OH	Novelty, Feller Assocs. Inc.	216-338-3774
PA	Morrisville, Nexus Technlg. Sls. Inc.	215-295-6549
TX	Garland, Tesco Inc.	214-681-1376
WA	Mercer Island, Eagle Entprs.	206-232-7401
EXP	Montvale, NJ, Henley & Co.	201-307-0422
Can	Montreal, Elcom GBM Inc.	514-643-4812

AEROFLEX LABORATORIES, INC., Microelectronics Div., 35 S. Service Rd., Plainview, NY 11803, Tel: 516-694-6700, TWX: 510-224-6417; FSC No.: 88379; Empl.: 100; *Sls. Mgr.:* Melvin D. Schwartz ..... **A•1732; D•1110, 1139**

Local Sales Offices & Reps

AZ	Phoenix, The Knight Co.	602-994-1311
CA	Los Altos Hills, HB Mktg.	415-941-4080
CA	Los Angeles, The Knight Co.	213-670-2833
CA	San Diego, The Knight Co.	619-743-5136
CO	Englewood, Western Sls. Inc.	303-798-0945
CT	Simsbury, Multitronics Sls. Co.	203-651-0140
FL	Clearwater, Brennan Assocs.	813-446-5006
IL	Northfield, Feller Assocs., Inc.	312-446-8065
IA	Cedar Rapids, Feller Assocs., Inc.	319-364-0566
MD	Baltimore, Micro Comp, Inc.	301-644-5700
MN	Minneapolis, International Elctrns, Inc.	612-571-0000
NJ	Ft. Lee, Nexus Technlg.	201-942-0151
NY	Smithtown, L.I., Nexus Technlg.	516-864-2263
NY	Albany, Nu-Tekneex Mktg.	518-355-1829
NY	Hartsdale, T.J. Squared	516-864-2263
OH	Novelty, Feller Assocs.	216-338-3774
PA	Morrisville, Nexus Technlg.	215-295-6549
TX	Garland, Tesco Inc.	214-681-1376
WA	Mercer Island, Eagle Entprs.	206-232-7401
EXP	Montvale, NJ, Henley & Co.	201-307-0422
EXP	NY, Plainview, Aeroflex Labs.	516-694-6700
Can	Montreal, Elcom GMB Inc.	514-643-4812
Can	Pointe Claire, Que., Elcom Gmb Inc.	514-697-4556

Local Distributors

AZ	Phoenix, The Knight Co.	602-994-1311
CA	Los Altos Hills, HB Mktg.	415-941-4080
CA	Los Angeles, The Knight Co.	213-670-2833
CA	San Diego, The Knight Co.	619-743-5136
CO	Englewood, Western	303-798-0945
CT	Sinsbury, Multitronics Sls.	203-651-0140
FL	Clearwater, Brennan Assocs.	813-446-5006
IL	Northfield, Feller Assocs.	312-446-8065
IA	Cedar Rapids, Feller Assocs.	319-364-0566
MD	Baltimoreids, Micro Comp Inc.	301-644-5700
MN	Minneapolis, Intl. Elctrns. Inc.	612-571-0000
NJ	Ft. Lee, Nexus Technlg.	201-942-0151
NY	Clarence Cen., Nu-Tekneex	716-741-9138
NY	Guilderland, Nu-Tekneex	518-335-1829
NY	Pleasantville, Nexus Technlg.	914-769-4765
NY	Smithtown, Nexus Technlg.	516-864-2263
OH	Novelty, Feller Assocs.	216-338-3774
PA	Morrisville, Nexus Technlg.	215-295-6549
TX	Garland, Tesco	214-681-1376
WA	Mercer Island, Eagle Entprs.	206-232-7401
EXP	Montvale, NJ, Henley & Co.	201-307-0422
Can	Pointe Claire, Que., Elcom Gmb Inc.	514-697-4556

AEROSPACE OPTICS, INC., 3201 Sandy La., Fort Worth, TX 76112, Tel: 817-451-1141, Telex: 75-8461; Empl.: 83; *Sls. Mgr.:* Guy V. Langley

AEROTECH, INC., 101 Zeta Dr., Pittsburgh, PA 15238, Tel: 412-963-7470, TWX: 710-795-3125; Empl.: 150; *Sls. Mgr.:* F. Armstrong; *Dist. Mgr.:* K. Ross

Local Sales Offices & Reps

CA	Cupertino, Aerotech Northwest	408-257-1102
CA	Paramount, Aerotech West	213-376-9698
CT	Farmington, Aerotech Northeast	203-673-3330
FL	Winter Park, McMahan Assocs.	305-645-0463
IL	Dundee, Aerotech Midwest	312-428-5440
NM	Albuquerque, G. Moore Assocs.	505-262-1416
NC	Raleigh, Aerotech S. Atlantic	919-848-1965
OH	Columbiana, Aerotech Midwest	216-482-9957

Local Distributors

MI	Farmington Hills, Digital Motion Sys.	313-474-0666
OH	Bedford, Behm Indl. Prods.	216-581-3600
Can	Rexdale, Ont., E. W. Playford	416-248-0176
Can	St. Laurent, Que., E. W. Playford	514-340-9343

AEROTRONIC ASSOCS., INC., Riverside Dr., Contoocook, NH 03229, Tel: 603-746-4631; FSC No.: 67272; Empl.: 225; *Sls. Mgr.:* Gary Moravchik

AERTECH INDS., See TRW Microwave

AES CORP., 285 Newbury St, P.O. Box 2093, Peabody, MA 01960, Tel: 617-535-7310, Telex: 387852 AES CORP INTL; Empl.: 25; *Sls. Mgr.:* Philip G. Huntley

AETNA ENGINEERING, P.O. Box 7749, Van Nuys, CA 91409-7749, Tel: 818-341-9409; Empl.: 6; *Sls. Mgr.:* T. W. Collins

AETNA TELECOMMUNICATIONS LABS., P.O. Box 723, 131 Flanders Rd., Westborough, MA 01581, Tel: 617-366-0400, Telex: 951356; *Sls. Mgr.:* Marjorie Katz

AFFILIATED MANUFACTURERS, INC., U.S. Highway 22, P.O. Box 5049, North Branch, NJ 08876, Tel: 201-722-7100, Telex: 264712; Empl.: 150; *Sls. Mgr.:* Craig Brown

Local Sales Offices & Reps

AL	Huntsville, BJR Mfrs. Reps.	205-881-3569
AZ	Phoenix, Affiliated Mfrs., Inc.	602-863-4111
CA	Fountain Valley, B.J. Engrg.	714-964-5541
CA	Northridge, AMI West, Inc.	818-993-0662
CA	Santa Clara, Meade Advantage	408-748-1991
FL	W. Palm Bch., William J. Irvine, Inc.	305-845-0707
KS	Overland Park, Electri-Rep, Inc.	913-649-2168
MA	Amesbury, Affiliated Mfrs., Inc.	617-388-5770
MN	Minnetonka, Process Technlg. Inc.	612-934-7624
NC	High Point, Micro-Tech Assocs.	919-889-5606
OR	Aloha, Demarest Assocs., Inc.	503-642-4515
TX	Austin, Torenko & Assocs.	512-251-5317
TX	Dallas, Torenko & Assocs.	214-340-6565
WA	Seattle, Demarest Assocs., Inc.	206-523-3210
WI	Hales Corners, Process Technlg.	414-425-2940

AFI/DATATROL, See Datatrol, Div. of Data Card Corp.

DATATROL, Division of Data Card Corp., Brent Dr., Hudson, MA 01749, Tel: 617-568-1411; Empl.: 350; *Sls. Mgr.:* Howard Cantor

AHAM TOR INC (ATI), 999, 27901 Front St, Rancho California, CA 92390, Tel: 714-676-4151

AIE MAGNETICS, Div. of Vernitron, 701 Murfreesboro Rd., Nashville, TN 37210, Tel: 615-244-9024, Telex: 554466; FSC No.: 06978; Empl.: 300; *Sls. Mgr.:* J. Holeman

AIKEN ADVANCED SYSTEMS, INC., Amstar Electronics Group, 5901 Edsall Rd., Alexandria, VA 22304-4197, Tel: 703-370-0900, TWX: 710-832-0612; FSC No.: 60590; Empl.: 190; *Sls. Mgr.:* C. G. Gilmer

AIL, DIV. CUTLER-HAMMER, See Eaton Corp. AIL Div.

AILTEC DIV. CUTLER-HAMMER, See Eaton Corp., Elctrn. Instrmn. Div.

AIMSCO INC., 4000-4024 22nd Ave. W., Seattle, WA 98199-0056, Tel: 206-284-5563, TWX: 910-444-1333; Empl.: 30; *Sls. Mgr.:* C. Ernst; *Dist. Mgr.:* E. Chadwick

AIPHONE, 1700 130th Ave. NE, Bellevue, WA 98005, Tel: 206-455-0510, FAX: 206-455-0071; Empl.: 44; *Sls. Mgr.:* Jim Morrison

AirBorn

AIRBORN, INC., 4321 AirBorn Dr., Addison, TX 75001-0519, Tel: 214-931-3200, Telex: 79-4200, TWX: 910-860-5230; FSC No.: 10400;Multiple; Empl.: 498; *Sls. Mgr.:* T. V. Lee, Sls. Dir. ..... **C•1121-1146**

Local Sales Offices & Reps

AZ	Tempe, Piper Sls. Co.	602-949-0048
CA	Downey, Buffa Co., Inc.	213-923-4618
CA	Mountain View, Serra Assocs.	415-964-4300
CA	No. Hollywood, R. A. Strassner	213-761-1231
CO	Denver, ATM	303-595-4884
CT	Roxbury, Kimble Assocs.	203-354-1954
FL	Ft. Lauderdale, Southland Comps.	305-491-6110
IL	Des Plaines, ESCO Assoc.	312-298-5310
IA	Cedar Rapids, Dytronix	319-377-8275
KS	Wichita, Dytronix	316-838-0884
MD	Hunt Valley, Eagle Sls. Corp.	301-666-3930
MN	Bloomington, PWC	612-831-5999
MO	Bridgeton, Dytronics, Inc.	314-291-4777
MO	Raytown, Dytronix	816-356-6340
NH	Nashua, Solla - Tronics	603-882-7146
NJ	Manville, Dynorep	201-685-0135
NM	Albuquerque, Piper Sls. Co.	505-883-9090
NY	Rochester, R.P. Kennedy Co.	716-271-6322
OH	Dayton, Electro-Com	513-898-5140
TX	Arlington, Comptech Sls. Inc.	817-274-3621
TX	Austin, Comptech Sls. Inc.	512-331-8922
WA	Seattle, Don Smith Sls. Co.	206-633-3160
Can	Etobicoke, Willagen Elctrns.	416-626-3734
Can	Montreal, Que., Willagen Elctrns.	514-331-4283

Local Distributors

TX	Addison, AirBorn Distribution Service	214-931-3200

Distributor

AIR ELECTRO SUPPLY, INC., 7700 Gloria Ave., Van Nuys, CA 91406, Tel: 213-873-6400, 818-988-4400, Telex: 66-2459, TWX: 910-495-1794 ..... **C•1148**

AIR/FLEX INDS. INC., 2422 Merced Ave., S. El Monte, CA 91733, Tel: 818-579-7060; FSC No.: 22782; *Sls. Mgr.:* Karl Thorp

Airflyte ELECTRONICS CO.

AIRFLYTE ELCTRNS. CO., 56 New Hook Rd., P. O. Box 231, Bayonne, NJ 07002, Tel: 201-436-2230, FAX: 201-436-6024; Empl.: 75; *Sls. Mgr.:* John Piret ..... **B•1158-1163**

Local Sales Offices & Reps

CA	Los Altos, Poltronics	415-941-3020
CA	Signal Hill, Thorson Co.	213-595-0361
CT	No. Haven, Kitchen & Kutchin	203-239-0212
IL	Park Ridge, Probe Elctrns.	312-698-2044
MA	Lexington, Kitchen & Kutchin	617-862-8230
NJ	Kinnelon, Avionics Equip.	201-838-8105
NY	Rochester, R. P. Kennedy Co.	716-271-6322
PA	Dowing, Budd Elctrns. Corp.	215-458-8258
TX	Austin, Electra Reps., Inc.	512-339-1163
TX	Dallas, Electra Reps., Inc.	214-248-3852

AIR LAND SYSTEMS CORPORATION, 2710 Prosperity Ave., Fairfax, VA 22031, Tel: 703-573-1100, Telex: 710-833-1174, TWX: Airland Frax; Empl.: 35; *Sls. Mgr.:* Frank Glaspell

AIRMATIC-ALLIED, 185 Park Dr., Wilmington, OH 45177, Tel: 513-382-1691; Empl.: 150

AIR MAZE CORP., 25000 Miles Rd., Cleveland, OH 44128, Tel: 216-292-6800, Telex: 98-5413; Empl.: 300; *Sls. Mgr.:* Jim Ernster; *Dist. Mgr.:* Gary Yoho

AIR-O-TRONICS, Trush Group, Route 20 E., Cazenovia, NY 13035, Tel: 315-655-2387, TWX: 710-541-1530, FAX: 315-655-3862; FSC No.: 16663; Empl.: 15

AIRPAX®

AIRPAX CORP., Woods Rd., Cambridge, MD 21613, Tel: 301-228-4600, Telex: 8-7715, TWX: 710-865-9655; FSC No.: 81541; Empl.: 550; *Sls. Mgr.:* Bob Phillips ..... **B•1234**

Local Sales Offices & Reps

AL	Huntsville, BCI	205-539-4411
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Westrep	714-566-6580
CA	Santa Ana, Airpax Corp.	408-980-0470
CO	Littleton, Lange Sls.	303-795-3600
CT	Clinton, Selmark Assocs.	203-573-9088
FL	Deerfield Bch., ElectroComp	305-429-0802
GA	Chamblee, BCI	404-455-0405
IL	Palatine, Somers-Reagan, Inc.	312-991-1108
IN	Indianapolis, Leslie M. Devoe	317-842-3245
IA	Marion, Rep Assocs.	319-373-0152
MD	Frederick, Airpax Corp.	301-243-3133
MA	Millis, Selmark	617-376-2914
MI	Farmington Hills, Airpax Corp.	313-553-9300
MN	Minnetonka, Airpax Corp.	612-933-0170
MO	Florissant, Delltron	314-839-0033
MO	Kansas City, Delltron	816-436-6445
NH	Hopkinton, Selmark Assocs.	603-746-3299
NY	Hyde Pk., Airpax Corp.	914-229-0016
NY	Jericho, Airpax Corp.	516-822-2410
NY	Rochester, Airpax Corp.	716-654-7470
NC	Winston-Salem, L.G. White	919-725-3612
OH	Columbus, Baehr, Greenleaf	614-486-4046
OH	Dayton, Baehr, Greenleaf	513-439-0724
OH	Westlake, Baehr, Greenleaf	216-892-1770
OR	Beaverton, Airpax Corp.	503-641-6130
PA	Harleysville, T. Jackson	215-643-5560
PA	Pittsburgh, Russell F. Clark	412-242-9500
SC	Greenville, L.G. White	803-271-0630
TX	Dallas, Airpax Corp.	214-733-4377
UT	Salt Lake City, Lange Sls.	801-487-0843
WI	Wauwatosa, Larson Assocs.	414-258-0529

AIRPAX CORP., Cheshire Div., Cheshire Indl. Pk., Box E, Cheshire, CT 06410, Tel: 203-272-0301, Telex: 962421, TWX: 710-455-4048; Empl.: 800; *Sls. Mgr.:* John Ricardi ..... **B•1165; D•1119**

Local Sales Offices & Reps

AL	Huntsville, B.C.I.	205-539-4411
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Westrep	619-566-6580
CA	Santa Clara, Airpax Corp.	408-980-0410
CO	Littleton, Lange Sls.	303-795-3600
CT	Clinton, Selmark Assocs.	203-573-9088
FL	Deerfield Bch., Electrocomp Assocs.	305-429-0802
GA	Chamblee, B.C.I.	404-455-0405
IL	Palatine, Somers-Reagan, Inc.	312-991-1108
IN	Indianapolis, Leslie M. Devoe	317-842-3245
IA	Marion, Rep Assocs.	319-373-0152
MD	Frederick, Airpax Corp.	301-243-3133
MA	Millis, Selmark Assocs.	617-376-2914
MI	Farmington Hills, Airpax Corp.	313-553-9300
MN	Minnetonka, Airpax Corp.	612-933-0170
MO	Florissant, Delltron	314-839-0033
MO	Kansas City, Delltron Co., Inc.	816-436-6445
NH	Hopkinton, Selmark Assocs.	603-746-3299
NY	Hyde Park, Airpax Corp.	914-229-0016
NY	Jericho, Airpax Corp.	516-822-2410
NY	Rochester, Airpax Corp.	716-654-7470
NC	Winston-Salem, L. G. White	919-725-3612
OH	Columbus, Baehr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Baehr, Greenleaf & Assocs.	513-439-0724
OH	Westlake, Baehr, Greenleaf & Assocs.	216-892-1770
OR	Beaverton, Airpax Corp.	503-641-6130
PA	Harleysville, Thomas Jackson Assocs.	215-256-8877
PA	Pittsburgh, Russell F. Clark Co.	412-242-9500
SC	Greenville, L.G. White Southern, Inc.	803-271-0630
TX	Dallas, Airpax Corp.	214-733-4377
UT	Salt Lake City, Lange Sls.	801-487-0843
WI	Wauwatosa, Larson Assocs.	414-258-0529

AIRPAX CORP., Ft. Lauderdale Div., 6801 W. Sunrise Blvd., Ft. Lauderdale, FL 33313, Tel: 305-587-1100, Telex: 51-4448, TWX: 510-955-9866; Empl.: 200 ..... **D•2120**

Local Sales Offices & Reps

AL	Birmingham, Dwight W. Prouty Co., Inc.	205-979-4040
AZ	Phoenix, Westrep	602-997-8899
CA	Costa Mesa, FLW, Inc.	714-751-7512
CA	Santa Clara, Airpax Corp.	408-980-0410
CO	Littleton, Lange Sls., Inc.	303-795-3600
FL	Ft. Lauderdale, Panamtech, Inc.	305-587-3769
GA	Marietta, Control Equip. Co.	404-427-8776
IL	Chicago, Somers Reagan Inc.	312-991-1108
IN	Indianapolis, Leslie M. DeVoe & Assocs.	317-842-3245
IA	Cedar Rapids, Rep Assocs.	319-373-0152
LA	Kenner, D & W System Sls.	504-466-1692
MD	Mount Airy, Strayton Assocs.	301-831-7007
MA	Hingham, Northeast Reps., Inc.	617-749-8700
MI	Farmington Hills, Airpax Corp.	313-553-9300
MN	Minnetonka, Airpax Corp.	612-933-0170
MS	Jackson, D & W Sys. Sls.	601-956-9292
MO	Florissant, Delltron, Inc.	314-839-0033
MO	Kansas City, Delltron, Inc.	816-436-6445
NJ	Spring Lakes Hgts., Neville & Vespo	201-974-1520
NY	Buffalo, Process Mgmt.	716-847-0450
NY	Hyde Pk., Airpax Corp.	914-229-0016
NY	Jericho, Airpax Corp.	516-822-2420
NC	Charlotte, MacGuire & Crawford Inc.	704-366-3454
OH	Columbus, Baehr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Baehr, Greenleaf & Assocs.	513-439-0724
OH	Westlake, Baehr, Greenleaf, & Assocs.	216-892-1770
OR	Beaverton, Airpax Corp.	503-641-6130
PA	Harleysville, T. Jackson & Assocs.	215-256-8877
PA	Pittsburgh, Friday Engrg. Sls.	412-341-1444
TX	Dallas, Automatic Sys.	214-688-1810
TX	Houston, Haltom Co.	713-782-5625
UT	Salt Lake City, Lange Sls.	801-487-0843
VA	Salem, Process Specialties	703-345-5683
WI	Wauwatosa, Larsen Assocs.	414-258-0529

Local Distributors

AL	Mobile, Dwight D. Prouty	205-476-5056
CA	Costa Mesa, FLW Inc.	714-751-7512
CA	Santa Clara, MANCO	408-496-6611
FL	Clearwater, Brake Supp. Gulf Coast	813-576-3811
GA	Marietta, Control Equip. Co.	404-427-8776
IL	Countryside, Chicago Chain & Transmission	312-482-9000
IN	Mishawaka, Power Comps. of Midwest	219-256-6630
LA	Baton Rouge, D & W Sys. Sls.	1-800-833-4319
MA	Hingham, Hingham Bay Corp.	617-740-1900
MI	Detroit, Automatic Controls	315-533-8890
MI	Troy, I/O Corp.	313-583-9086
MN	Minneapolis, Kim Controls	612-780-2991
MO	Fenton, Hi-Tech Elec.	314-343-6060
NY	Johnson City, Help Elctrns.	607-729-3528
NY	Thompson Ridge, Vespo Mktg.	914-361-2800
NY	Yonkers, I/O Corp.	914-964-1940
NC	Charlotte, McGuire & Crawford	704-366-3454
NC	Jamestown, I/O Corp.	919-884-4474
OH	Cincinnati, ATR Distrs.	513-574-8500
OH	Cleveland, Automatic Controls	216-631-0333
OH	Cleveland, I/O Corp.	216-432-2153
PA	Conshohocken, I/O Corp.	215-825-4610
PA	Pittsburgh, Friday Engrg.	412-341-1444
TX	Dallas, Automatic Sys.	214-688-1810
TX	Houston, The Haltom Co.	713-782-5625
VA	Salem, Process Specialties	703-563-0707

AIRPAX CORP., FREDERICK DIV., A North American Philips Co., Husky Park P.O. Box 500, Frederick, MD 21701, Tel: 301-663-5141, TWX: 710-862-0901; Empl.: 600; *Sls. Mgr.:* Al Knezevich; *Dist. Mgr.:* B. L. Reeder ..... **B•1287, 1730**

Local Sales Offices & Reps

AL	Huntsville, B.C.I.	205-539-4411
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Westrep	619-566-6580
CA	Santa Clara, Airpax Corp.	408-980-0410
CO	Littleton, Lange Sls.	303-795-3600
CT	Clinton, Selmark Assocs.	203-573-9088
FL	Deerfield Beach, Electrocomp Assocs.	305-429-0802
GA	Chamblee, B.C.I.	404-455-0405
IL	Palatine, Somers-Reagan	312-991-1108
IN	Indianapolis, Leslie M. De Voe Co.	317-842-3245
IA	Marion, Rep Assocs., Inc.	319-373-0152
MD	Frederick, Airpax Corp.	301-243-3133
MA	Millis, Selmark Assocs.	617-376-2914
MI	Farmington Hills, Airpax Corp.	313-553-9300
MN	Minnetonka, Airpax Corp.	612-933-0170
MO	Florissant, Delltron Co.	314-839-0033
MO	Kansas City, Delltron Co., Inc	816-436-6445
NH	Hopkinton, Selmark Assocs.	603-746-3299
NY	Jericho, Airpax Corp.	516-822-2410
NY	Hyde Pk., Airpax Corp.	914-229-0016
NY	Rochester, Airpax Corp.	716-654-7470
NC	Winston-Salem, L. G. White Southern	919-725-3612
OH	Columbus, Baehr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Baehr, Greenleaf & Assocs.	513-439-0724
OH	Westlake, Baehr, Greenleaf & Assocs.	216-892-1770
OR	Beaverton, Airpax Corp.	503-641-6130
PA	Harleysville, Thomas Jackson Assocs.	215-256-8877
PA	Pittsburgh, Russell F. Clark Co.	412-242-9500
SC	Greenville, L. G. White	803-271-0630
TX	Dallas, Altair	214-867-7741
UT	Salt Lake City, Lange Sls.	801-487-0843
WI	Wauwatosa, Larson Assocs.	414-258-0529

Local Distributors

CA	Santa Ana, Norstan Elctrns.	714-540-4165
OK	Tulsa, Altair	918-665-0524
TX	Houston, Altair	713-462-3029
TX	Richardson, Altair	214-231-5166

AIRPAX CORPORATION, International Div., West Johnson Ave., Cheshire, CT 06410, Tel: 203-272-0301, Telex: 643967; Empl.: 350; *Sls. Mgr.:* Walter Kalwara ..... **B•1164**

Local Sales Offices & Reps

AL	Huntsville, B.C.I.	205-539-4411
AZ	Phoenix, Westrep	609-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Westerep	619-566-6580
CA	Santa Clara, Airpax Corp.	408-980-0410
CO	Littleton, Lange Sls.	303-795-3600
CT	Clinton, Selmark Assocs.	203-573-9088
FL	Deerfield Bch., Electrocomp Assocs.	305-429-0802
GA	Chamblee, B.C.I.	404-455-0405
IL	Palatine, Somers-Reagan, Inc.	312-991-1108
IN	Indianapolis, Leslie M. Devoe	317-842-3245
IA	Marion, Rep Assocs.	319-373-0152
MD	Frederick, Airpax Corp.	301-243-3133
MA	Millis, Selmark Assocs.	617-376-2914
MI	Farmington Hills, Airpax Corp.	313-553-9300
MN	Minnetonka, Airpax Corp.	612-933-0170
MO	Florissant, Delltron Co., Inc.	314-839-0033
MO	Kansas City, Delltron Co., Inc.	816-436-6440
NH	Hopkinton, Selmark Assocs.	603-746-3299
NY	Hyde Pk., Airpax Corp.	914-229-0016
NY	Jericho, Airpax Corp.	516-822-2410
NY	Rochester, Airpax Corp.	716-654-7470
NC	Winston-Salem, L. G. White	919-725-3612
OH	Columbus, Behr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Behr, Greenleaf & Assocs.	513-439-0724
OH	Westlake, Behr, Greenleaf & Assocs.	216-892-1770
OR	Beaverton, Airpax Corp.	503-641-6130
PA	Harleysville, Thomas Jackson Assocs.	215-256-8877
PA	Pittsburgh, Russell F. Clark Co.	412-242-9500
SC	Greenville, L. G. White	803-271-0630
TX	Dallas, Airpax Corp.	214-733-4377
UT	Salt Lake City, Lange Sls.	801-487-0843
WI	Wauwatosa, Larson Assocs.	414-258-0529

AIRTRON, Litton Industries, Inc., 200 E. Hanover Ave., Morris Plains, NJ 07950, Tel: 201-539-5500, TWX: 710-986-7473; FSC No.: 80006; Empl.: 500; *Sls. Mgr.:* M. R. Grosso, Natl. Sls. Mgr.

AIR-VAC ENGRG., 100 Gulf St., Milford, CT 06460, Tel: 203-874-2541; Empl.: 30

AJAX MAGNETHERMIC CORP., 1745 Overland Ave., N.E., Warren, OH 44482, Tel: 216-372-8511, Telex: 098-2482, FAX: 216-372-8644; Empl.: 500

AKG ACOUSTICS, INC., 77 Selleck St., Stamford, CT 06902, Tel: 203-348-2121, Telex: 285481; Empl.: 25; *Sls. Mgr.:* David Talbot

AKRO-MILS, 1293 S. Main St., Akron, OH 44301, Tel: 216-253-5593, Telex: 98-6321; Empl.: 200; *Sls. Mgr.:* W. J. Tonachio; *Dist. Mgr.:* D. Martin

ALADDIN ELCTRNS., See AIE Div. of Vernitron

ALAN GORDON ENTPRS., INC., P.O. Box 3914, 5362 Cahuenga Blvd., N. Hollywood, CA 91601, Tel: 818-985-5500, Telex: AGE-FOTO LSA 662532, TWX: 910-321-4526 GORDONENT LSA; FSC No.: 94972; Empl.: 81; *Sls. Mgr.:* D. Sahlein

ALAN INDS., P.O. Box 1203, Columbus, IN 47201, Tel: 812-372-8869; FSC No.: 52750; Empl.: 36

Local Sales Offices & Reps

AL	Huntsville, Saber Assocs.	800-327-0853
CA	Los Angeles, RF Assocs.	213-478-1586

CA Palo Alto, RF Assocs. 415-494-3331
CO Wheat Ridge, Trembly Assocs. 303-421-8900
CT Plainville, Addelco Corp. 203-747-9464
FL Apopka, Saber Assocs. 800-432-6288
FL Bradenton, Saber Assocs. 800-432-6288
FL Melbourne, Saber Assoc. 800-432-6288
GA Norcross, Saber Assocs. 800-327-0853
IL Park Ridge, Elctrn. Instr. Assoc. 312-298-2290
IN Indianapolis, Elctrn. Instr. Assoc. 317-257-7231
KS Olathe, Acorn Elctrns. 913-764-1079
MD Randallstown, C. L. Malinow & Co. 301-922-2092
MA Needham, Addelco Corp. 617-444-4754
MN Minneapolis, Elctrn. Instr. Assoc. 612-374-5628
MO St. Louis, Acorn Elctrns. 314-644-2510
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assocs. 505-266-8616
NY Liverpool, R. & D. Assocs. 315-457-0100
NY New Rochelle, Ascor Elctrns. 914-235-8838
NC Clayton, Saber Assocs. 800-327-0853
OH Dayton, Frederic L. Ohmer 513-434-1454
PA Huntingdon Valley, Rabal Assocs. 215-947-4825
TX Dallas, Airep Elctrns. 214-349-4360
TX Houston, Airep Elctrns. 713-644-8171
UT Salt Lake City, Trembly Assocs. 801-486-5292
EXP CT, Stamford, Dage Corp. 203-324-3123

ALARM CONTROLS CORPORATION, 19 Brandywine Dr., Deer Park, NY 11729, Tel: 516-586-4220; FSC No.: 55042; Empl.: 50; *Sls. Mgr.:* Howard Berger

ALASCO RUBBER & PLASTICS CORP., 617 Mountain View Ave. # 7, Belmont, CA 94002, Tel: 415-595-4100; FSC No.: 13862; Empl.: 25; *Sls. Mgr.:* Philip K. Nordberg

ALBAR, INC., 19013 36th Ave. W., Lynnwood, WA 98036, Tel: 206-771-4006; Empl.: 15; *Sls. Mgr.:* Merv Eaton

ALBEROX, New Bedford Ind'l. Pk., New Bedford, MA 02745, Tel: 617-995-1725; Empl.: 180 ..... **C•1600**

Local Sales Offices & Reps

CA Los Gatos, Alberox Corp. 408-358-1714
FL Longwood, Dataramica Inc. 305-774-0014
IL Chicago, Karl D. Engle Co. 312-539-1820
IN Indianapolis, Butler Components 317-253-5143
MA Weston, J. Goode Assocs. 617-235-3900
MI Birmingham, Clifford Armstrong Co. 313-851-1404
MN Minneapolis, Magner & Assocs. 612-483-0656
NY Fayetteville, S. F. Foster Co. 315-637-5427
NY Valley Stream, Levison Sls. 516-561-9696
OH Cleveland, Greenleaf & Assocs. 216-333-5480
PA Philadelphia, Shelton Sls. Corp. 215-248-0131
TX Dallas, C. M. Farmer Co., Inc. 214-339-4970

ALCOSWITCH, Augat Inc., 1551 Osgood St., N. Andover, MA 01845, Tel: 617-685-4371, TWX: 710-342-0552, FAX: 617-686-9545; FSC No.: 95146; Empl.: 150; *Sls. Mgr.:* Mark Orton; *Dist. Mgr.:* Robyn Goodwin ..... **B•1534-1535**

Local Sales Offices & Reps

AZ Phoenix, Augat Inc. 602-224-6104
CA Montrose, Signal Entprs. 818-957-0640
CA San Jose, Augat Inc. 408-249-8801
CA Solano Bch., Signal Entprs. 619-259-0179
CO Denver, Augat Inc. 303-757-2100
FL Coral Springs, Augat Inc. 305-755-4364
FL Orlando, Augat Inc. 305-352-2020
GA Marietta, Augat Inc. 404-256-0452
IL Downer's Grove, Rockford Controls 312-960-2046
IL Naperville, Augat Inc. 513-256-6118
IN Indianapolis, Luebbe Sls. Co. 513-891-5770
MA Canton, Augat Inc. 617-762-3164
MI Livonia, Luebbe Sls. Co. 313-477-3131
MN Edina, Augat Inc. 612-894-4855
MN St. Paul, Countryman Assocs. 612-645-9151
MO Blue Springs, KKB & Co. 816-229-0001
MO St. Louis, KKB & Co. 314-647-2400
NJ Clifton, Augat/Alcoswitch 201-279-5233
NY Fairport, L. D. Allen Inc. 716-377-3530
NY Syracuse, L. D. Allen Inc. 315-437-8387
OH Cincinnati, Luebbe Sls. Co. 513-891-5770
OH Cleveland, Luebbe Sls. Co. 216-333-0425
OH Columbus, Luebbe Sls. Co. 614-431-0474
OH Fairborn, Augat Inc. 513-878-8518
PA Pittsburgh, Luebbe Sls. Co. 412-364-0490
PA Trevose, P.S.A., Inc. 215-245-0513
TX Dallas, Augat Inc. 214-788-4211
TX Houston, Augat Inc. 713-781-9343
UT Murray, Butterworth Mktg. 801-268-2244
VA Lynchburg, P.S.A., Inc. 804-384-7549
VA Oakton, P.S.A. Inc. 800-233-4242
WA Bellevue, Augat Sls. 206-451-9777
WI W. Bend, Rockford Controls Co. 414-338-3715
PR Rio Piedras, D K Mktg. 909-765-5380

Local Distributors

AL Huntsville, Hall-Mark Elexs. 205-837-8700
AZ Phoenix, Hall-Mark Elexs. 602-437-1200
AZ Phoenix, Wyle Labs. 602-866-2888
AZ Tempe, Acacia Sls. 602-894-2874
AZ Tempe, Time Elctrns. 602-967-2000
AR Little Rock, Carlton-Bates 501-562-9100
CA Anaheim, Time Elctrns. 714-937-0911
CA Burbank, Switching Devices 213-849-2211
CA Canoga Pk., Hall-Mark Elctrns. 818-716-7300
CA Citrus Hgts., Hall-Mark Elctrns. Corp. 916-722-8600
CA El Segundo, Wyle Labs 213-322-8100
CA Gardena, CA Switch & Signal 213-770-2330
CA Hollywood, Yale Radio Electric 213-465-3186
CA Irvine, Acacia Sales 714-660-0834
CA Irvine, Wyle Labs., EMG 714-863-9953
CA Los Angeles, Electric Switch 213-660-1310
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Pasadena, Dow Radio 818-793-1195
CA Rancho Cordova, Wyle, EMG Sacramento 916-638-5282
CA Riverside, Elctrn. Supp. 714-787-9220
CA San Diego, Acacia Sls. 619-565-4365
CA San Diego, Arrow Elctrns. 910-335-1195
CA San Diego, Hall-Mark Elexs. 619-268-1201
CA San Diego, Wyle Labs., EMG 619-565-9171
CA San Francisco, Steven Engrg. 415-588-9200
CA San Jose, Hall-Mark Elexs. 408-946-0900
CA Santa Clara, Wyle Labs., EMG 408-727-2500
CA Sunnyvale, Abacus Elctrns. 408-732-2000
CA Sunnyvale, Acacia Sls. 408-745-7200
CA Sunnyvale, Arrow Elctrns. 408-745-6000
CA Sunnyvale, Time Elctrns. 408-734-9888
CA Torrance, Hall-Mark Elctrns. 213-217-8400
CA Tustin, Hall-Mark Elctrns. 714-669-4100
CA Van Nuys, Pacific Switch Controls 213-873-4802
CO Denver, Newark Elctrns. 303-757-8531
CO Englewood, Hall-Mark Elexs. 303-694-1662
CO Englewood, Shelley-Ragon Elctrns. 303-762-0670
CO Englewood, Time Elctrns. 303-799-8851
CO Lakewood, Acacia Sls. 303-232-2882
CO Thornton, Wyle Labs., EMG 303-457-9953
CT Cheshire, Time Elctrns. 203-271-3200
CT Greenwich, Wise Comps. 203-531-4880
CT Hartford, Wes-Garde 203-525-6907
CT Stratford, Utronics 203-378-4201
CT W. Hartford, Atlantic Switch Controls 203-527-7705
CT Wallingford, Almo Elctrns. 800-922-4813
CT Wallingford, Hall-Mark Elctrns. 203-269-0100
FL Clearwater, Hall-Mark Elctrns. 813-530-4543
FL Deerfield Bch., Arrow Elctrns. 305-429-8200
FL Ft. Lauderdale, Time Elctrns. 305-974-4800
FL Lakeland, Switch Controls 813-644-7564
FL Lakeland, TAA Elec. 813-665-6941
FL Miami, Elctrn. Equip. 305-871-3500
FL Orlando, Hall-Mark Elexs. 305-855-4020
FL Orlando, Hammond Elctrns. 305-849-6060
FL Orlando, Time Elctrns. 305-841-6565
FL Palm Bay, Arrow Elexs. 305-725-1480
FL Pompano Bch., Hall-Mark Elctrns. Corp. 305-971-9280
GA Norcross, Arrow Elexs. 404-449-8252
GA Norcross, Hall-Mark Elexs. 404-447-8000
GA Norcross, Time Elctrns. 404-448-4448
IL Arlington Heights, Lo Dan Elctrns. 312-398-5311
IL Bensenville, Voyager Elexs. Corp. 312-860-1300
IL Carol Stream, Wes-Garde Comp. Grp. 312-653-1460
IL Champaign, Klaus Radio 217-356-1896
IL Chicago, Newark Elctrns. 312-784-5100
IL La Salle, Klaus Radio 815-223-7400
IL Palatine, OHM Elexs. 312-359-5500
IL Peoria, Klaus Radio, Inc. 309-691-4840
IL Rockford, Midwest Assocs. Inc. 815-962-8036
IL Schaumberg, Arrow Elctrns. 312-397-3440
IL Wood Dale, Hall-Mark Elctrns. 312-860-3800
IL Wood Dale, Time Elctrns. 312-350-0618
IN Indianapolis, Graham Elctrns. 317-634-8202
IN Indianapolis, Hall-Mark Elctrns. 317-872-8875
IN Indianapolis, Meunier Elex. Supply 317-635-3511
IN Indianapolis, PEI Genesis 317-637-5571
IA Cedar Rapids, Arrow Elctrns. 319-395-7230
IA Cedar Rapids, Deeco Inc. 319-365-7551
IA Eldridge, Klaus Radio, Inc. 319-285-8484
KS Lenexa, Hall-Mark Elexs Corp. 913-888-4747
KS Witchita, Lee Products 316-264-2172
MD Baltimore, A. S. I. 301-265-5100
MD Columbia, Arrow Elctrns. 710-236-9005
MD Columbia, Hall-Mark Elctrns. 301-988-9800
MD Columbia, Time Elctrns. 301-964-3090
MD Gaithersburg, Almo Elctrns. 301-670-0090
MD Gaithersburg, Pioneer Wash. 301-921-0660
MD Kensington, Marine Air Supp. 301-949-9560
MD Rockville, Arrow Elexs 301-424-0244
MA Billerica, Hall-Mark Elctrns. Corp. 617-935-9777, 617-667-0902
MA Canton, Almo Elctrns. 617-821-1450
MA Hingham, Sager Elec. Supp. 617-749-6700
MA Lynn, Land Elctrns. 617-592-2220
MA Norwood, Gerber Elctrns. 617-769-6000
MA Peabody, Time Elctrns. 617-532-6200
MA Wilmington, Heilind Elexs 617-657-4870
MA Woburn, Arrow Elexs 617-933-8130
MI Ann Arbor, Arrow Elctrns. 313-971-8220
MI Farmington Hills, Advent Elctrns. 313-477-1650
MI Livonia, RS Elctrns. 313-525-1155
MN Bloomington, Time Elctrns. 612-944-9192
MN Eden Prairie, Hall-Mark Elctrns. 612-941-2600
MN Edina, Arrow Elctrns. 612-830-1800
MN Fridley, Voyager Elctrns. 612-571-7766
MO Independence, Ragon Elctrns. 816-254-3410
MN Minneapolis, Newark Elexs 612-331-6350
MN St. Paul, Newark Elctrns. 612-631-2683
MN St. Paul, Ragon 612-642-2828
MO Earth City, Hall-Mark Elexs. 314-291-5350
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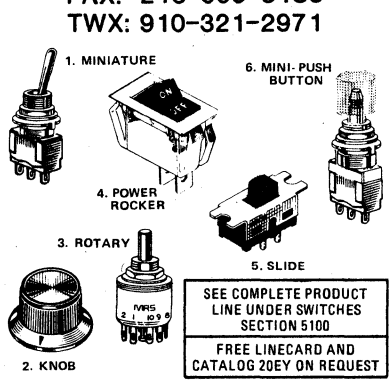

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OH Dayton, Stotts Friedman 513-298-5555
OH Solon, Target Elctrns. 216-248-7930
OH Toledo, Newark Elctrns. 419-866-0404
OH Warrensville Heights, Newark Elctrns. 216-587-1700
OH Wickliffe, Gateway Megatech 216-944-5801
OH Youngstown, Newark Elctrns. 216-793-6134
OK Oklahoma City, Electro Entprs. 405-427-6591
OK Oklahoma City, Newark Elctrns. 405-495-5000
OK Tulsa, Newark Elctrns. 918-832-7004
OR Portland, Newark Elctrns. 503-257-0741
PA Allentown, Federated Purchaser 215-437-4481
PA Allentown, Newark Elctrns. 215-434-7171
PA Cornwells Heights, Newark Elctrns. 215-245-7300
PA Erie, Wettekin Elctrns. 814-838-9184
PA Johnstown, Bird Elec. & Supp. 814-535-3574
PA King of Prussia, Newark Elctrns. 215-265-0933
PA Malvern, Control Design 215-296-0150
PA Malvern, Newark Elctrns. 215-296-5522
PA McKees Rocks, Newark Elctrns. 412-331-2400
PA McKeesport, Barno Radio 412-751-5966
PA North Versailles, Newark Elctrns. 412-824-8504
PA Philadelphia, P. E. I. Genesis 215-568-7400
PA Philadelphia, Shap Elctrns. 215-969-3300
PA Pittsburgh, Newark Elctrns. 412-367-2790
RI Cranston, Newark Elctrns. 401-943-3340
SC Greenville, Newark Elctrns. 803-288-9610
TN Knoxville, Newark Elctrns. 615-588-6493
TN Memphis, Newark Elctrns. 901-365-8060
TN Nashville, Electra Distrbg. 615-256-0800
TN Nashville, Newark Elctrns. 615-883-2482
TX Dallas, Control Design 214-358-0489
TX Dallas, Elctrn. Parts Inventory 214-503-1414
TX Dallas, Newark Elctrns. 214-340-3585
TX Dallas, Sterling Elctrns. 214-243-1600
TX Dallas, Trevino Sls. 214-357-5446
TX El Paso, Intl. Elctrns. 915-598-3406
TX El Paso, Midland Specialty 915-533-9555
TX El Paso, Newark Elctrns. 915-778-5322
TX Ft. Worth, Newark Elctrns. 817-589-1295
TX Garland, Newark Elctrns. 214-494-5911
TX Houston, Geophysical Supp. 713-666-4100
TX Houston, Newark Elctrns. 713-688-6846
TX Houston, Newark Elctrns. 713-782-4800
TX Houston, Sterling Elctrns. 713-623-6600
TX San Antonio, Newark Elctrns. 512-349-2641
UT Salt Lake City, Kimball Elctrns. 801-328-2075
UT Salt Lake City, Newark Elctrns. 801-484-8611
VA Arlington, Newark Elctrns. 703-522-0880
VA Richmond, Newark Elctrns. 804-282-5671
VA Roanoke, Key Resources 703-989-7925
VA Virginia Beach, Newark Elctrns. 804-499-0719
WA Bellevue, Newark Elctrns. 206-641-9800
WA Seattle, Carlyle Tech. Sls. 206-251-0700
WA Spokane, Newark Elctrns. 509-922-5007
WV Charleston, Newark Elctrns. 304-345-6505
WI Green Bay, Newark Elctrns. 414-494-1400
WI Madison, Newark Elctrns. 608-221-4738
WI Milwaukee, Newark Elctrns. 414-351-6031
WI Milwaukee, Newark Elctrns. 414-463-1100
WI New Berlin, Control Design 414-784-1016
Can Downsview, Ont., Future Elctrns. 416-638-4771
Can Ottawa, Ont., Future Elctrns. 613-820-9471
Can Pointe Claire, Que., Future Elctrns. 514-694-7710

ALLIED CORP. AEROSPACE SECTOR, Bendix Communications Div., East Joppa Rd., Towson, MD 21204, Tel: 301-583-4000, TWX: 710-232-1823; Empl.: 1350; *Sls. Mgr.:* Jack L. Shagena

ALLIED CORPORATION, Bendix Electric Power, 118 Hwy. 35, Eatontown, NJ 07724, Tel: 201-542-2000, Telex: 132-444 , TWX: 710-722-6686; FSC No.: 83298;Multiple; Empl.: 950; *Sls. Mgr.:* R. Freeman; *Dist. Mgr.:* Cal Schrum

ALLIED PRECISION ELECTRONICS CORP., 1702-D Ponderosa, College Station, TX 77840, Tel: 409-693-5397, Telex: 989303 APEC; Empl.: 15; *Sls. Mgr.:* Don Taylor

ALLIED SYSTEMS CORP., Box 18077, Greensboro, NC 27419, Tel: 919-299-2294; Empl.: 25; *Sls. Mgr.:* Nan B. Kollar

ALLIGATOR TECHNOLOGIES, P. O. Box 11386, Costa Mesa, CA 92627, Tel: 714-722-1842; Empl.: 2; *Sls. Mgr.:* Alex Terrazas; *Dist. Mgr.:* Peter Campbell

ALL-STATES, INC., 1801 W. Foster Ave., Chicago, IL 60640, Tel: 312-728-0525, Telex: 317027; FSC No.: 26863

ALMOND INSTRUMENTS, See EG & G Almond Instruments

ALPHA COMPS., 1106 E. Simpson Rd., Mechanicsburg, PA 17055, Tel: 717-697-8595, TWX: 510-650-4930; FSC No.: 52748; *Dist. Mgr.:* Jerry Buckwalter

Local Sales Offices & Reps

CO Boulder, Herb Bass Assocs. 303-530-7509
MD Towson, Dickison Sls. Co. 301-823-0923
NY Rochester, H. C. Johnson Agencies ... 716-586-0777
PA Glenshaw, H. C. Johnson Agys., Inc. .. 412-487-1246

ALPHA DATA, 20750 Marilla St., Chatsworth, CA 91311, Tel: 818-882-6500, Telex: 910-494-4914; FSC No.: 7025; Empl.: 30; *Sls. Mgr.:* Eric S. Fidler

ALPHA DISTR. CORP., 3554 Brecksville Rd., Richfield, OH 44286, Tel: 216-659-7100

ALPHA INDS., INC., Microelectronic Div., 2800 Crystal Drive, Hatfield, PA 19440, Tel: 215-822-1311, TWX: 510-661-7370; FSC No.: 17540; *Sls. Mgr.:* Joe Diesso

ALPHA INDS., INC., Microwave Comp. Div., 90 Glenn St., Lawrence, MA 01843, Tel: 617-681-8520, Telex: 949436, TWX: 710-342-8033; FSC No.: 63596; Empl.: 200; *Sls. Mgr.:* David Barker

ALPHA INDS., INC., 20 Sylvan Rd., Woburn, MA 01801, Tel: 617-935-5150, Telex: 949436, TWX: 710-393-1236; FSC No.: 17540; *Sls. Mgr.:* Nicholas Bishop; *Dist. Mgr.:* Nicholas Bishop

ALPHA INDUSTRIES, INC., 20 Sylvan Rd., Woburn, MA 01801, Tel: 617-935-5150, Telex: 949436, TWX: 710-393-1236; FSC No.: 17540; Empl.: 1400; *Sls. Mgr.:* Nick Bishop

ALPHA INDS., INC. - TRG MILLIMETER COMP., 651 Lowell St., Methuen, MA 01844, Tel: 617-682-4661, Telex: 710-321-6434; FSC No.: 17540; *Sls. Mgr.:* Peter K. Butler; *Dist. Mgr.:* Nicholas Bishop&

ALPHA-M CORP., 913 Highland Dr., Euless, TX 76040, Tel: 817-267-7022; Empl.: 8; *Sls. Mgr.:* W. L. Cowley

ALPHA METALS, 600 Rte 440, Jersey City, NJ 07305, Tel: 499 7772, , , 201-434-7508, Telex: 499 7772; Empl.: 350; *Sls. Mgr.:* Dave Zerfoss, VP Sls.

ALPHA PRODUCTS, INC., 5740 Corsa Ave. #104, Westlake Village, CA 91362, Tel: 818-889-9304, Telex: 65-9210

ALPHA-TECH INC., P.O. Box 209, Riverdale, NJ 07457, Tel: 201-831-1222; Empl.: 8; *Sls. Mgr.:* M. Rice

ALPHA TECHNOLOGIES, 3767 Alpha Way, Bellingham, MA 98225, Tel: 206-647-2360, 206-671-7703; Empl.: 100; *Sls. Mgr.:* Robert A. Bridge

ALPHA-TEK, 7286 Murdy Circle, Huntington Beach, CA 92647, Tel: 714-847-7515

ALPHA THERMISTOR, INC., 7181 Construction Ct., San Diego, CA 92121

ALPHA WIRE CORP., 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, Tel: 201-925-8000, Telex: 6853017, TWX: 710-996-5895, FAX: 201-925-7938; Empl.: 575; *Sls. Mgr.:* Paul Dietlin ..... **C•1767-1774**

ALPS ELECTRIC (USA), INC., 3553 N. First St., San Jose, CA 95134, Tel: 408-946-6000, Telex: 157061; Empl.: 200+ ..... **D•1073**

Local Sales Offices & Reps

AL	Huntsville, Jack Harvey & Assocs.	205-536-4414
CA	Garden Grove, Alps Elec.	714-897-1005
CO	Englewood, Nelligan Co.	303-761-2121
CT	Yalesville, JMG, Inc.	203-284-9049
FL	Clearwater, Jack Harvey & Assocs. ...	813-725-1841
FL	Pompano Bch., Jack Harvey & Assocs.	305-972-0666
GA	Norcross, Jack Harvey & Assocs.	404-449-4643
IL	Arlington Hgts., Micro Sls.	312-956-1000
IN	Indianapolis, Alps Elec. (USA)	317-248-2577
IN	Indianapolis, Jack Harvey & Assocs. ..	317-872-1031
KS	Kansas City, BC Electronic Sls.	913-342-1211
KS	Wichita, BC Elctrn. Sls.	316-722-0104
KY	Prospect, Jack Harvey & Assocs.	502-228-4100
MD	Columbia, Robert Elctrn. Sls.	301-995-1900
MA	Norwood, JMG, Inc.	617-762-5333
MI	Oak Park, A. Blumenberg Assocs.	313-968-3230
MN	Minneapolis, PSI	612-944-8545
MO	St. Louis, BC Elec. Sls.	314-521-6683
NY	Rockville Centre, Alps Elec. (USA)	516-766-3636
NC	Morrisville, Jack Harvey & Assocs.	919-361-5885
OH	Rocky River, Norm Case Assocs.	216-333-0400
OK	Tulsa, Norcom	918-832-7747
OR	Beaverton, Venture Elctrns.	503-248-1907
TN	Knoxville, Jack Harvey & Assocs.	615-524-7057
TX	Austin, Norcom	512-451-2757
TX	Dallas, Norcom	214-386-4888
TX	Houston, Norcom	713-778-0392
UT	Salt Lake City, Nelligan Co.	802-261-1121
VA	Richmond, Robert Elctrn. Sls.	804-745-5342
WA	Bellevue, Venture Elctrns.	206-454-4594
WI	Monomonee Falls, Micro Sls., Inc.	414-251-0151

ALTAIR

ALTAIR EXCHANGE CORPORATION, 19205 Parthenia St., Ste. F, Northridge, CA 91324, Tel: 818-701-6977, 800-824-5620, Telex: 4945965 .... **B•1032-1034**

ALTECH CORPORATION, 349 Rte. 206, Somerville, NJ 08876, Tel: 201-359-4454, Telex: 130796, FAX: 201-359-8178; Empl.: 10; *Sls. Mgr.:* W. Leuschner/Controls ..... **B•1298, 1536; C•1149**

ALTEK CO., P.O. Box 1128, Torrington, CT 06790, Tel: 203-482-7626; FSC No.: 53939; Empl.: 45; *Sls. Mgr.:* Stephen Altschuler

ALTEK CORP., 2150 Industrial Pkwy., Silver Spring, MD 20904, Tel: 301-622-3906, TWX: 710-825-0422; Empl.: 75; *Sls. Mgr.:* Lou Robert; *Dist. Mgr.:* Lou Robert

ALTUS CORPORATION, 1610 Crane Ct., San Jose, CA 95112, Tel: 408-436-1300, Telex: 287580 ALTUS UR, FAX: 408-436-0494; FSC No.: 67036; Empl.: 600; *Dist. Mgr.:* Ronnie Le Fevre

ALUMINUM FILTER, 1000 Cindy Lane, Carpinteria, CA 93013, Tel: 805-684-7651, Telex: 6713624; FSC No.: 17504; Empl.: 120; *Sls. Mgr.:* B. L. Baker

ALUSETT U.S.A., INC., 3 Cecilia Lane, Pleasantville, NY 10570, Tel: 914-747-3477; Empl.: 35

AMATOM ELECTRONIC HARDWARE, 446 Blake St., New Haven, CT 06515, Tel: 203-397-3311, Telex: 963-419; FSC No.: 06540; Empl.: 55; *Sls. Mgr.:* Vince Maida

AMBER ELECTRO DESIGN INC., 4810 Jean Talon Blvd. W., Montreal, Quebec, Canada H4P2N5, Tel: 514-735-4105, 800-361-3697, Telex: 05-827598; FSC No.: 38047; Empl.: 17; *Sls. Mgr.:* Wayne Jones

AMBI-TECH INDS., 319 Knickerbocker Ave., Hillsdale, NJ 07642, Tel: 201-666-0504; Empl.: 20; *Sls. Mgr.:* Al Nagler; *Dist. Mgr.:* Al Nagler

AMBROID CO., P.O. Box 164, Lynnfield, MA 01940, Tel: 617-246-1180; Empl.: 10; *Sls. Mgr.:* J. F. Strauss

AMCO ENGINEERING, 3801 N. Rose St., Schiller Pk., IL 60176, Tel: 312-671-6670, TWX: 910-227-3152; Empl.: 350; *Sls. Mgr.:* F. A. Johnson ..... **C•1010-1013, 1616**

Local Sales Offices & Reps

AL	Huntsville, Kemp Instrs.	205-837-4304
AZ	Phoenix, The Knight Co.	602-994-1311
CA	Escondido, The Knight Co.	619-743-5136
CA	Los Angeles, Knight Co.	213-670-2833
CA	Orange County, Knight Co.	714-833-8250
CA	San Mateo, Hatchel Assocs.	415-345-4466
CO	Englewood, FG Mktg. Co.	303-795-9176
CT	Bethel, Instr. Dynamics	203-743-5045
FL	Tampa, Temco Sls. Inc.	813-855-7566, 800-282-6815
GA	Atlanta, Kemp Instrs.	404-452-8050
IL	Bensenville, R. L. Lang & Assocs.	312-766-3667
IN	Ft. Wayne, Aktron Corp.	219-747-3650
IA	Davenport, Rush & West	319-388-9494
KS	Olathe, Rush & West	913-764-2700
LA	Lafayette, Kemp Engrg.	318-269-9452
MD	Silver Spring, L. G. White & Co.	301-434-1555
MA	Wakefield, Instr. Dynamics	617-245-5100
MI	Livonia, Electro Sls. Assocs.	313-421-7500
MN	St. Paul, Heyda/Hanks Co.	612-484-8531
MO	Ballwin, Rush & West	314-394-7271
NM	Albuquerque, C. T. Carlberg Assocs. ..	505-888-3883
NY	Albany, Reagan/Compar Albany	518-489-4777/7408
NY	Binghamton, Reagan/Compar, Inc.	607-723-8743
NY	Great Neck, F & F Metro, Inc.	516-482-4080
NY	New Hartford, Reagan/Compar, Inc. ..	315-732-3775
NY	Rochester, Reagan/Compar, inc.	716-271-2230
NC	Raleigh, L. G. White & Co.	919-872-6049
NC	Winston Salem, L. G. White & Co.	919-725-3612
OH	Chesterland, Electro Sls. Assocs.	216-729-0190
OH	Dayton, Electro Sls. Assocs.	513-426-5551
OK	Tulsa, Kemp Engr.	918-663-4501
OR	Beaverton, Eclipse Mktg. Grp.	503-642-1661
PA	Edgemont, White/Whiddett Co.	215-353-6343
PA	Pittsburgh, Electro Sls. Assocs.	412-322-9000
SC	Greenville, L. G. White & Co.	803-271-0630
TX	Addison, Kemp Engrg.	214-931-7100
TX	Austin, Kemp Engrg.	512-263-3322
TX	Houston, Kemp Engrg.	713-466-1465
VA	Ruther Glen, L. G. White & Co.	804-448-4476
WA	Redmond, Eclipse Mktg. Grp.	206-885-6991
WA	Spokane, Eclipse Mktg. Grp.	509-922-3972
EXP	NJ, Mahwah, Intl. Sls. Div.	201-825-0473

AMECON, INC., 1900 S. Chris La., Anaheim, CA 92805, Tel: 714-634-2220, 800-392-2292, TWX: 510-1000-364; *Sls. Mgr.:* Frank Carleone ..... **A•2174-2189**

AME CORPORATION, 33 Jacksonville Rd., P.O. Box 195, Towaco, NJ 07082-0195, Tel: 201-263-1700, Telex: 136479-309; Empl.: 15; *Sls. Mgr.:* Edward Dimitry ..... **B•1537**

Local Sales Offices & Reps

FL	Orlando, EAB,Inc.	305-898-7444
NJ	Wyckoff, Chanco, Inc.	201-891-7866
TX	Dallas, Control Comps. Corp.	214-458-8877
Can	Scarborough, Ont., Leecraft Inds.	416-439-6320

Local Distributors

Can	Scarborough, Ont., Leecraft Inds.	416-439-6320

AMERACE CORPORATION, Newburgh Rd., Hackettstown, NJ 07840, Tel: 201-852-1122, Telex: 6853377 AMERACE or 136435 HACK; FSC No.: 3L154;2270; Empl.: 275; *Sls. Mgr.:* D. Bucci

AMERACE CORP., Elastimold Div., Newburg Rd., P.O. Box 503, Hackettstown, NJ 07840, Tel: 201-852-1122

AMEREX, P.O. Box 2815, Riverside, CA 92516, Tel: 714-686-1400; *Sls. Mgr.:* Roger D. Orton ..... **C•1014**

AMERICAN AEROSPACE CONTROLS, 570 Smith St., Farmingdale, NY 11735, Tel: 516-694-5100; Empl.: 48; *Sls. Mgr.:* Gregory D'Abramo ..... **B•1733, 1772**

Local Sales Offices & Reps

CA	Los Angeles, Dyna Sls. Co.	213-268-1175

AMERICAN ALUMINUM, 230 Sheffield St., Dept. EEM, Mountainside, NJ 07092, Tel: 201-233-3500; Empl.: 125

AMERICAN AUTOMATION, 2651 Dow Avenue, Tustin, CA 92680, Tel: 714-731-1661, TWX: 910-595-2670 AMAUTO TSTN, FAX: 714/731-6344; *Sls. Mgr.:* Paul Niquette ..... **D•1207**

Local Sales Offices & Reps

AZ	Sun City, Hannah-Hill	602-933-4623
CA	Placentia, Access Technlgs.	714-996-3917
CO	Broomfield, Hannah-Hill	303-424-0108
NH	Merrimac, Design Automations Sls., Inc.	603-424-7909
NJ	Freehold, Beta Lambda	201-446-1100

AMERICAN CAPACITOR, 2080 Central Ave, Duarte, CA 91010, Tel: 818-357-8806, Telex: 910 333 9810; FSC No.: 59366; Empl.: 65; *Sls. Mgr.:* John Williams; *Dist. Mgr.:* John Williams

AMERICAN CHEMICAL ETCHING, See American Etching & Mfg.

AMERICAN COMPUTER HARDWARE CORP., 2205 S. Wright St., Santa Ana, CA 92705, Tel: 714-549-2688, Telex: 330038; Empl.: 25; *Sls. Mgr.:* Regan Dunne; *Dist. Mgr.:* Barbara Cosanella

AMERICAN CONTROL PRODUCTS, Div. of Precision Timer Co., Inc., 13 Westbrook Ind'l. Pk., Westbrook, CT 06498, Tel: 203-399-6253; Empl.: 35; *Sls. Mgr.:* J. H. Hunicke

AMERICAN CYANAMID CO., Metal Coated Fibers Dept., One Cyanamid Plaza, Wayne, NJ 07470, Tel: 201-831-3148, Telex: 219-136, TWX: 710-988-3045; *Sls. Mgr.:* James Tonges

AMERICAN ELECTRIC CABLE CO., 181 Appleton St., Holyoke, MA 01040, Tel: 413-539-9893; Empl.: 125; *Sls. Mgr.:* Michael A. Bousquet

AMERICAN ELECTRONIC LABORATORIES, INC., 305 Richardson Rd., Lansdale, PA 19446, Tel: 215-822-2929, TWX: 510-661-4976; FSC No.: 93346; Empl.: 1600; *Sls. Mgr.:* Arthur Gross

AMERICAN ELCTRNS., 1600 E. Valencia Dr., Fullerton, CA 92631, Tel: 714-871-3020, TWX: 910-592-1256; FSC No.: 89321; Empl.: 200; *Sls. Mgr.:* T. V. Sacco

AMERICAN ETCHING & MFG., 13730 Desmond St., Pacoima, CA 91331-2796, Tel: 818-896-1187; Empl.: 90

AMERICAN HV TEST SYSTEMS INC., Central Garrett Ind'l. Pk., Accident, MD 21520, Tel: 301-826-8651, Telex: 86223; Empl.: 45; *Sls. Mgr.:* Dan Callaway

AMERICAN INSULATED WIRE CORP., Leviton Mfg. Co., 36 Freeman St., Pawtucket, RI 02862, Tel: 401-726-0700, TWX: 710-384-0150; FSC No.: 401-723-1420; Empl.: 1300; *Sls. Mgr.:* Al Beauvais; *Dist. Mgr.:* Michael Koshgarian ..... **C•1775**

Local Sales Offices & Reps

AZ	Scottsdale, Bill Earl Assocs., Inc.	602-994-3813
CA	Pico Rivera, Leviton-American	213-949-6575
CT	Hartford, Sturgeon Co.	203-249-7800
FL	Margate, EPM Corp.	305-977-0331
GA	Atlanta, Cavendish & Winchester	404-449-5104
GA	Atlanta, Leviton/American	404-691-9303
IL	Chicago, Leviton/American	312-766-4100
IL	Park Ridge, Bob Burns & Assocs.	312-823-9360

KS Overland Park, Thomas L. Dowell & Assocs. 913-648-7373
LA Gretna, M F Sls., Inc. 504-361-4343
LA New Orleans, Leviton/American 504-834-9415
MA Needham, Sturgeon Co. 617-444-6603
MI Detroit, Leviton/American 313-933-3100
MN Lakeville, Peter Galdikas 612-435-7549
MO St. Louis, Thomas Dowell & Assocs. .. 314-849-4234
NY New York, Leviton Corp. Headquarters 212-229-4040
NY W. Hempstead, Schmitt Indl. Mktg. 516-486-3510
NC Kings Mountain, Cavendish & Winchester 704-739-9297
OH Cleveland, Leviton/American 216-831-1673
PA Philadelphia, Linton Assocs. 215-277-8600
TN Manchester, Cavendish & Winchester 615-728-7291
TX Dallas, Leviton/American 214-241-4556
TX Grapevine, Dan Cheetham 817-481-6238
TX Houston, Leviton/American 713-956-2816
WA Seattle, Dussault & Assocs. 206-527-5454
WA Seattle, Leviton/American 206-576-0242

AMERICAN LASER SYSTEMS, INC., 106 Fowler Rd., Goleta, CA 93117, Tel: 805-967-0423, Telex: 4941760ALS; Empl.: 12; *Sls. Mgr.:* L. Shallenberger

AMERICAN MAGNETICS, 740 Watson Center Rd., Carson, CA 90745, Tel: 213-775-8651, FAX: 213-834-0685; Empl.: 300; *Sls. Mgr.:* Stuart Katcher

AMERICAN MAGNETICS, P.O. Box 8, Carterville, IL 62918, Tel: 618-985-4838; Empl.: 120

AMERICAN MAGNETICS, P.O. Box 2509, Oak Ridge, TN 37831-2509, Tel: 615-482-1056, Telex: 557-592; Empl.: 25; *Sls. Mgr.:* E. T. Henson

AMERICAN MICROSEMICONDUCTOR, INC., 133 Kings Rd., Madison, NJ 07940, Tel: 201-377-9566, TWX: 710-986-8500; Empl.: 15; *Sls. Mgr.:* W. M. Foley; *Dist. Mgr.:* D. B. Wilson ..... **A•2132-2133**

AMERICAN MICROSYSTEMS, INC., See GOULD AMI

AMERICAN MICROWAVE TECHNOLOGY INC.

AMERICAN MICROWAVE TECHNOLOGY, INC., 1127 S. Placentia Ave., Fullerton, CA 92631, Tel: 714-680-4936, TWX: 910 350 1922; Empl.: 15; *Sls. Mgr.:* Lowell A. Beezley ..... **D•1002-1003**

Local Sales Offices & Reps
CA Saratoga, AD-COM Mktg., Inc. 408-741-5433
OH Cleveland, Dietrich & Assocs., Inc. 216-781-1855
MI Warren, Dietrich & Assocs., Inc. 313-751-4990
OH Dayton, Dietrich & Assocs., Inc. 513-223-6042
PA Pittsburgh, Dietrich & Assocs., Inc. 412-892-2992
Can Ottawa, Gigatron Assocs. 613-225-4090

AMERICAN MONARCH, 2801-37th Ave., N.E., Minneapolis, MN 55421, Tel: 612-788-9161; Empl.: 300; *Sls. Mgr.:* B. Sutherland

AMERICAN PHOTONICS INC., 71 Commerce Dr., Brookfield Center, CT 06805, Tel: 203-775-8950, Telex: 821353; *Sls. Mgr.:* James A. Walyus

AMERICAN POWER DEVICES, 7 Andover St., Andover, MA 01810, Tel: 617-475-4074, Telex: 951206; Empl.: 140; *Sls. Mgr.:* Robert Dimodana

American Relays, Inc.

AMERICAN RELAYS, INC., 677 West Knox St., Gardena, CA 90248, Tel: 213-327-4240, 213-770-2450, Telex: 3710614; FSC No.: 1H941; Empl.: 30; *Sls. Mgr.:* Richard Lenning ..... **B•1299-1301**

Local Sales Offices & Reps
CA Irvine, Vale Elctrn. Assocs. 714-551-4004
CA San Diego, The Manning Co. 619-565-6097
CT Guilford, Data Mark, Inc. 203-453-0575
IL Wheaton, Chadra-Schilke & Assocs. .. 312-653-8126
IA Cedar Rapids, Elctrn. Sls., Inc. 319-362-6413
MA Waltham, Data Mark, Inc. 617-890-6777
MN Burnsville, Elctrn. Sls., Inc. 612-894-8200
NY Jericho, J-Square Mktg., Inc. 516-935-3200
NY Rochester, B. H. Tollefson 716-271-4141
OH Cleveland, Components, Inc. 216-243-9200
OR Tigard, Eltech, Inc. 503-684-3458
WA Bellevue, Eltech, Inc. 206-643-4330
Can Scarborough, Ont., Cantronics, Ltd. 416-665-8020

AMERICAN RESEARCH & ENGINEERING, 1500 Executive Dr., Elgin, IL 60123, Tel: 312-888-7245, TWX: 910-251-3008 ..... **B•1538-1539**

AMERICAN SHIZUKI CORPORATION

AMERICAN SHIZUKI CORPORATION, 21541 Blythe St., Canoga Pk., CA 91304, Tel: 818-710-8555, Telex: 66-2633 SHIZAM, FAX: 818-710-0694; Empl.: 1000; *Sls. Mgr.:* Jeff Cohen/Dennis Lieneman ..... **A•1007-1011**

Local Sales Offices & Reps
AL Huntsville, Interep Assocs., Inc. 205-533-1730
AL Huntsville, R. O. Whitesell & Assocs. .. 205-883-5110
AL Mobile, Interep Assocs., Inc. 215-478-1036
AZ Phoenix, Compass Mktg. & Sls., Inc. 602-293-1220
CA Chatsworth, WCV-Raltech, Inc. 818-700-0933
CA Downey, Randolph Inds., Inc. 213-803-1407
CA Oceanside, A.T.A. Assocs. 619-439-0209
CA Redwood City, James S. Heaton Co., Inc. 415-367-9000
CA San Clemente, A.T.A. Assocs. 714-498-7180
CA San Francisco, Wrathall & Krusi, Inc. .. 415-777-0226
CO Wheatridge, Waugaman Assocs. 303-423-1020
GA Norcross, Interep Assocs., Inc. 404-449-8680
GA Norcross, R. O. Whiteself & Assocs. 404-449-9190
IL Elmhurst, Circuit Sls., Inc. 312-883-2242
IL Palatine, T-Squared Assocs. 312-991-2144
IN Ft. Wayne, R. O. Whitesell & Assocs. .. 219-432-5591
IN Indianapolis, Insul-Reps., Inc. 317-251-1994
IN Indianapolis, R. O. Whitesell & Assocs. 317-359-9283
IN Kokomo, R. O. Whitesell & Assocs. 317-457-9127
IA Cedar Rapids, C. H. Horn & Assocs. .. 319-393-8703
KS Lenexa, Midtec Assocs., Inc. 913-541-0505
KS Lenexa, Spectrum Sls. 913-492-3903
KY Pewee Valley, R. O. Whitesell & Assocs. 502-241-1441
LA Hammond, Design Mktg. & Assocs. 504-294-3076
MI Grand Blanc, R. O. Whitesell & Assocs. 313-695-0770
MI Grand Rapids, R. O. Whitesell & Assocs. 616-942-5420
MI Livonia, H. E. Bowman & Assocs. 313-261-2772
MI Southfield, R. O. Whitesell & Assocs. .. 313-559-5454
MI St. Joseph, R. O. Whitesell & Assocs. 616-983-7337
MN Eden Prarie, Com-Tek Sls. 612-941-7181
MO Creve Coeur, Hill & Co. 314-432-1136
MO Kansas City, Hill & Co. 816-561-2593
MO St. Louis, John G. Macke Co. 314-432-2830
NH Salem, Sls. Engrg. Co. 603-893-5521
NY Clifton Pk., Bastian Sls. Agy. 518-452-2026
NY E. Syracuse, Bastian Sls. Agy. 315-437-1482
NY Fairport, Bastian Sls. Agy. 716-223-0237
NY Great Neck, Marcus Sls. Assocs. 516-829-4446
NC Greensboro, R. O. Whitesell & Assocs. 919-273-1945
NC Raleigh, Micro Sls., Inc. 919-872-7922
OH Cincinnati, R. O. Whitesell & Assocs. .. 513-521-2290
OH Cleveland, Allied Entprs., Inc. 216-779-0080
OH Cleveland, R. O. Whitesell & Assocs. .. 216-447-9020
OH Columbus, R. O. Whitesell & Assocs. 614-888-9396
OH Dayton, R. O. Whitesell & Assocs. 513-298-9546
PA Murraysville, Allied Entprs., Inc. 412-325-3200
PA Pittsburgh, R. O. Whitesell & Assocs. 412-936-6161
TN Greeneville, Interep Assocs., Inc. 615-639-4391
TN Knoxville, R. O. Whitesell & Assocs. 615-694-9476
TX Austin, Design Mktg. & Assocs. 512-263-9151
TX Houston, Design Mktg. & Assocs. 713-550-3318
TX Irving, Design Mktg. & Assocs. 214-929-0611
UT Salt Lake City, Waugaman Assocs. 801-261-0802
WA Bellevue, N. R. Schultz Co. 206-454-0300
WI Mequon, T-Squared Assocs. 414-241-9243
WI W. Allis, Circuit Sls. Inc. 414-321-5505

AMERICAN STEAM TIMER, INC., Div. of JMR Electronics, Inc., 1525 Blondell Ave., Bronx, NY 11050, Tel: 212-597-6050; Empl.: 6; *Sls. Mgr.:* Jack Gaon

ASC

AMERICAN SWITCH CORP., 134 Water St., Wakefield, MA 01880, Tel: 617-246-1007, TWX: 710-348-6756; FSC No.: 54659; Empl.: 40; *Sls. Mgr.:* Mike Palmerino; *Dist. Mgr.:* Mike Palmerino ..... **B•1541**

Local Sales Offices & Reps
MI Grand Blanc, Intercomm 313-695-0665
AL Decatur, Tenn Tech 205-350-0630
AZ Tempe, EMI 602-820-5881
CA Arcadia, HMC, Inc. 818-447-0958
CA Mountain View, Serra Assocs. 415-964-4300
CO Boulder, Stratford Grp. 303-530-3194
FL Deerfield Bch., Newell-Hynes Assocs. 305-429-3207
GA Marietta, Tenn Tech 404-428-9594
IL Wheaton, Chadra-Schilke & Assoc. ... 312-653-8126
IN Acton, Nationwide Comps. 317-872-7207
IA Marion, M-S-B Assocs. 319-377-6261
KS Shawnee Mission, M-S-B Assocs. 913-432-2131
MA Andover, Crawford Assocs. 617-470-2122
MN Minneapolis, Elctrn. Center 612-371-5200
MN Minneapolis, Hei-Lite Sls. 612-861-6051
MO St. Charles, M-S-B Assocs. 314-946-5577
MO St. Louis, Wes-Garde Comps. 314-567-7776
NH Hudson, Interconnect of N. E. 603-883-1515
NY Bayside, JLH Sls. 718-428-5658
NY Mendon, Tech-Mark 716-624-3840
NC Raleigh, Service Plus 919-850-9550
OH Willoughby, Nationwide Comps. 216-946-3226
OR Beaverton, Rose Elctrns. 503-629-9288
OR Forest Grove, Doran Sls. 503-357-3333
PA Elkins Park, Arnold Assocs. 215-742-0600
TX Garland, J & S Elec.
TX Houston, Angie Elec. 713-659-8386
TX Lewisville, Townsend Sls. 214-434-2479
UT Salt Lake City, Sage Sls. 801-467-5451
VT Shelburne, Foster Deihl Co. 802-985-3743
WA Redmond, Doran Sls. 206-885-1885
WA Seattle, Pacific Elec. 206-575-1050
EXP CT, Litchfield, Intrade 203-567-5901
Can Markham, Deskin Sls. 416-475-1412
Can Pointe Claire, Que., A. R. Gray Assocs. 514-694-6378
Can Vancouver, B. C., Blakewood Elec. Sys. 604-261-8099

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IN Terre Haute, Midwest Supp. 812-232-0187
AL Birmington, Forbes Distr. 205-251-4104
AZ Phoenix, Arizona Comps. 602-269-5655
AZ Phoenix, Electro Comps. 602-258-2665
AZ Tempe, RCD Inds. 602-838-0979
CA Buena Park, Cypress Elec. 213-744-0355
CA Hawthorne, Electrosonic Comps. 213-970-0997
CA Los Angeles, Elec. Switches 213-660-1310
CA San Diego, Deco Elec. 619-693-1595
CA San Jose, Rose Elctrns. 408-263-9700
CA Santa Monica, Master Distrs. 213-452-1229
CA Sunnyvale, Power Supp. Comps. 408-737-1333
CA Sunnyvale, Sierra West 408-747-1188
CA Tustin, Western Switch & Controls 714-731-4333
CO Englewood, Indl. Elctrns. 303-694-9444
CT Bridgeport, Park Distr. 203-366-7200
CT Greenwich, Wise Comps. 203-531-4880
CT Wallingford, Mid-State Elctrns. 203-265-9900
DE New Castle, Elctrns. Exchange 302-322-5401
FL Clearwater, Electronics Precepts 813-596-2742
FL Longwood, Intertec Comps. 305-834-7777
FL Oakland Pk., Zelcon 305-565-2555
GA Doraville, Specialty Distr. 404-873-2521
ID Spirit Lake, A-I Elctrns. 208-623-3111
IL Chicago, NEP Elctrns. 312-625-8400
IL Crystal Lakes, Sub-Sem 312-782-3954
IL Wheeling, Hawk Elec. 312-459-4030
IN Carmel, Altex Elec. 317-848-1323
IN Lafayette, CWY Elec. 317-448-1611
IA Cedar Rapids, Iowa Radio Supply 319-393-4510
IA W. Des Moines, Ramco Co. 515-225-6933
KS Wichita, Radio Inc. 316-264-2798
MD Beltsville, Petricko Sls. 301-937-4960
MD Jessup, Treeko Sls. 301-470-3300
MD Kensington, Marine Air Supp. 301-949-9560
MI Battle Creek, Great Lakes Elctrns. 616-731-4156
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MI Grand Rapids, T&W Elec. 616-241-3645
MI St. Clair Shores, Spemco 313-771-2700
MN Eden Prairie, Cassidy Elctrns. 612-944-0100
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NH Hampstead, Astrum Elctrns. 603-329-5656

NJ E. Brunswick, Brothers Elctrns. 201-238-2200
NJ Mt. Laurel, PAC Elctrns. 609-387-3549
NJ Oakland, Relay Specialties 201-337-1000
NM Albuquerque, Intl. Elctrns. 505-345-8127
NY Amherst, Standard Elec. 716-691-3801
NY Bohemia, Key Comps. 516-567-7500
NY E. Syracuse, Add Elctrns. 315-437-0300
NY Hempstead, Davis Elctrns. 516-483-9200
NY Mt. Vernon, QAR 914-699-2224
NY Rome, Rome Elctrns. 315-337-5400
NY Woodside, Switches Unltd. 718-478-5000
NC Winston-Salem, Kirkman Elect. 919-722-9131
OH Columbus, Whitehead Elctrns. 614-224-1186
OH Dayton, Stotts-Friedman 513-298-5555
OH Wickliffe, Gateway Megatech 216-944-5801
OK Oklahoma City, Electro Entprs. 405-427-6591
OK Tulsa, Radio Inc. 918-587-9123
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PA Philadelphia, Shap Elctrns. 215-969-3300
RI Pawtucket, MAJOR/Edwards 401-725-7400
TN Chattanooga, Specialty Distr. 615-267-9531
TN Knoxville, Curle Elctrn. 615-266-4727
TX Arlington, Bell Comp. Sls. 817-461-5303
TX Austin, Galtronics 512-837-7470
TX Dallas, Force Elec. 214-438-5700
TX Dallas, Wholesale Elctrns. Supp. 214-824-3001
TX El Paso, Intl. Elctrns. 915-598-3406
TX Ft. Worth, Industrial Elctrns. 817-731-7321
UT Salt Lake City, Standard Supp. Co. 801-486-3371
WA Kent, Pyramid Elctrn. 206-872-5800
WV Huntington, Electronic Supp. 304-523-6443
WI Mequon, Lakeview Elctrns. 414-377-8250
WI New Berlin, Nep Elctrn. 414-785-9100
Can Montreal, Prelco Elctrn. 514-389-8051



AMERICAN TECHNICAL CERAMICS CORPORATION, 1 Norden La., Huntington Sta., NY 11746, Tel: 516-271-9600, Telex: 221201, FAX: 516-271-9615; FSC No.: 29990;11272-868-73; Empl.: 497; *Sls. Mgr.:* R. Blumkin ..... **A•1013-1017**

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CA San Diego, Fetty/Schoenduve, Inc. 619-292-5136
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KS Lenexa, Midwest Tech. Sls., Inc. 913-888-5100
KS Wichita, Midwest Tech. Sls., Inc. 316-262-7240
MA Topsfield, R.F. Assocs. 617-887-9762
MN New Brighton, TWC Sls. 612-636-1770
MO St. Charles, Midwest Tech. Sls., Inc. ... 314-441-1012
NM Albuquerque, Odyssey 1 505-265-6645
NY Huntington Sta., American Tech. Ceramics Corp. 516-271-9600
NY Rochester, Sweetco Assocs. 716-225-2383
NY Utica, Sweetco Assocs. 315-797-6721
OH Kettering, J. May Assocs., Inc. 513-299-8424
OR Beaverton, Quest Mktg. Inc. 503-641-7377
PA Lafayette Hill, M. Lader Co. 215-825-3177
TX Richardson, Vector Sls. Co. 214-234-4291
WA Bellevue, Quest Mktg. Inc. 206-747-9424

AMERICAN TIME PRODS. DIV., See Frequency Control Prods., Inc.

AMERICAN ULTRAVIOLET, 320 Commerce St, Chatham, NJ 07928, Tel: 201-635-8355, Telex: 13-9266; Empl.: 14; *Sls. Mgr.:* George Baer, Sls. Mgr.; *Dist. Mgr.:* M. C. Stines

AMERICAN VOLPI CORP., 26 Aurelius Ave., Auburn, NY 13021, Tel: 315-253-9707; Empl.: 23; *Sls. Mgr.:* Bob Leonard; *Dist. Mgr.:* Stephanie Chesaner



AMERICAN ZETTLER, 16881 Hale Ave., Irvine, CA 92714, Tel: 714-660-1670, Telex: 67-8472, FAX: 714-660-0293; Empl.: 200; *Sls. Mgr.:* D. O. Barkhurst ..... **B•1302-1314**

Local Sales Offices & Reps
AL Huntsville, MacKay, Smith & Assocs. .. 205-539-8000
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CA Irvine, Groh Assocs. 714-837-9871
CA Mountain View, G.C. Woempner 415-964-5454
CA San Diego, Groh Assocs. 619-696-0054
CO Longmont, Luscombe Engrg. Co. 303-772-3342
CT Madison, Focus/Forsberg 203-245-4314
FL Casselberry, Southern Elctrn. Mktg., Inc. 305-831-2822
FL Hollywood, Southern Elctrn. Mktg. Inc. 305-962-2255
GA Norcross, MacKay, Smith & Assocs. .. 404-449-7444
IL Rolling Meadows, KMA Sls. Co. 312-398-5300
IN Carmel, Berndt Assocs. 317-844-0114
KS Overland Pk, AME Sls. 913-262-3971
MA Taunton, Focus/Forsberg 617-824-3840
MI Ypsilanti, Techrep, Inc. 313-572-1950
MN Minneapolis, R.W. Marshall Co. 612-929-0457
MO St. Charles, AME Sls. 314-947-0333
NJ Cherry Hill, Danco Elctrn. Sls. 609-424-5590
NJ Rahway, R. E. Breuer Co., Inc. 201-388-5045
NM Albuquerque, Thorson Desert States, Inc. 505-293-8555
NY Alexander, B.H. Tollefson Assocs. 716-591-1219
NY Auburn, B.H. Tollefson Assocs. 315-253-4109
NY E. Norwich, R. E. Breuer Co. Inc. 516-922-2838
NY Portchester, R. E. Breuer Co. Inc. 914-939-3887
NY Rochester, B.H. Tollefson Assocs. 716-271-4141
NY S. Farmingdale, R. E. Breuer Co., Inc. .. 516-694-6597
NC Raleigh, Mountain Electro, Inc. 919-876-9686
OH Cincinnati, Makin & Assocs. 513-871-2424
OR Beaverton, Thorson Co. N.W. 503-644-5900
TX Irving, AID Elctrns. 214-790-4761
TX Spring, AID Elctrns. 713-376-8527
WA Bellevue, Thorson Co. N.W. 206-455-9180
WI Milwaukee, KMA Sls. Co. 414-259-1771
Can Concord, Ont., Votron Elctrns., Inc. 416-669-9870
Can Richmond, B.C., Macom Agy. Ltd. 604-271-2661

Local Distributors
AL Huntsville, Hammond Elctrns. 205-830-4764
AZ Tempe, Acacia Elctrns. 602-894-2874
CA Buena Pk., Cypress Elctrns. 714-521-5230
CA Fountain Valley, Comps. Ctr. 714-979-0433
CA Irvine, Acacia Elctrns. 714-660-0834
CA San Diego, Acacia Elctrns. 619-565-4365
CA San Diego, Cypress Elctrns. 619-292-5611
CA Santa Clara, Components Ctr. 408-988-3751
CA Santa Clara, Cypress Elctrns. 408-980-2500
CA Santa Monica, Master Distrs. 213-452-1229
CO Lakewood, Acacia Elctrns. 303-232-2882
CO Wheatridge, Cypress Elctrns. 303-431-2622
CT Cheshire, Time Elctrns. 203-271-3200
CT E. Haven, J V Elctrns. 619-292-5611
CT New Haven, The Green-Shaw Co. 203-397-0710
FL Ft. Lauderdale, Time Elctrns. 305-974-4800
FL Orlando, Time Elctrns. 305-841-6565
IL Lisle, Comps., Inc. 312-852-7707
IN Carmel, Altex Elctrns. 317-848-1323
MD Savage, Pyttronic Inds. 301-953-9650
MA Peabody, Time Elctrns./New Eng. 617-532-6200
MN New Brighton, Chris Elctrns. Distrs. ... 612-631-2647
MO St. Louis, Time Elctrns. 314-391-6444
NJ Oakland, Relay Spec. 201-337-1000
NY Buffalo, Genesee Indl. Elctrns. 716-873-9661
NY Farmingdale, Pride Elctrns. 516-293-4020
NC Raleigh, Resco/Raleigh 919-781-5700
OH Dublin, Time Elctrns. 614-761-1100
OR Beaverton, Acacia Sls. 503-646-3377
PA Montgomeryville, Pyttronics Inds. 215-643-2850
TX Dallas, Cypress Elctrns. 214-869-1435
TX Dallas, Wallace Elctrns. 214-340-0400
TX Richardson, Comps. Ctr., Inc. 214-644-3444
WA Redmond, Time Elctrns. 206-882-1600

AMETEK, DYNAMICS DIVISION, AMETEK, Inc., 5649 Peck Rd., Arcadia, CA 91006, Tel: 818-442-5981, TWX: 910-587-3534; FSC No.: 18098; Empl.: 105

AMETEK, INC., Mansfield & Green Div., 8600 Somerset Dr., Largo, FL 33543, Tel: 813-536-7831, FAX: 813-539-6882; FSC No.: ;43560; Empl.: 230; *Sls. Mgr.:* Gary Queens Berry

AMETEK, INC., Mansfield & Green Div., 8600 Sunset Dr., Largo, FL 33543, Tel: 813-536-7831, Telex: 808-741; Empl.: 120; *Sls. Mgr.:* Gary Queensberry

AMETEK/RODAN DIV., 2905 Blue Star St., Anaheim, CA 92806, Tel: 714-630-0081, TWX: 910-591-1684, FAX: 714-630-4131; FSC No.: 15454;DESC-EQP-75-1387; Empl.: 100; *Sls. Mgr.:* R. J. Ruby

Local Sales Offices & Reps
AL Huntsville, Alpha Mktg. 205-533-0766
CA Mountain View, Gene Woempner Co. 415-964-5454
CO Westminster, Straube Assocs. 303-426-0890
FL Coral Springs, H.A., Inc. 305-752-7520
IL Downers Grove, Richmar Elctrns. 312-968-0118
IN Ft. Wayne, Menze Sls. Co. 219-747-5616
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MI Lathrup Village, R. C. Nordstrom Co. .. 313-559-7373
MI Southfield, R. A. Casalou 313-559-0350
MN Mendota Hgts., G-II Sls. 612-454-3086
MO St. Louis, Abrams & Assocs. 314-569-0447
NJ Cherry Hill, Danco Elctrn. Sls. 609-424-5590
NY Melville, Comtronic Assocs. 516-249-0505
NY Syracuse, Caravan-Scanlon Assocs. .. 315-437-1271
NC Cary, Lawson Assocs. 919-481-4121
TX Dallas, Cunningham Comps. Corp. 214-669-9706
TX Houston, Cunningham Comps. Corp. 713-461-4197
UT Salt Lake City, Straube Assocs. 801-263-2640
WA Vancouver, R. Over Sls. 206-695-6179

AMF POTTER & BRUMFIELD, See Potter & Brumfield

AMGLO, 5265 Michigan Ave., Rosemont, IL 60018, Tel: 312-671-4321; Empl.: 37

AMHERST INTERNATIONAL CORP., Cover Craft Div., 540 Commercial St, Manchester, NH 03101, Tel: 603-644-3555; *Sls. Mgr.:* Terry M. Pratt; *Dist. Mgr.:* Terry M. Pratt

AMICON CORP., 25 Hartwell Ave., Lexington, MA 02173, Tel: 617-861-9600; Empl.: 300; *Sls. Mgr.:* James Gilliland

AMILON CORP., 49-12 30th Ave., Woodside, NY 11377, Tel: 718-274-1794, Telex: 4972608-LUSA; Empl.: 50; *Sls. Mgr.:* L. Rosenblatt

AMKEY, INC., Sub. American Pwr. Dvs., Inc., 220 Ballardvale St., Wilmington, MA 01887, Tel: 617-658-7800; *Sls. Mgr.:* P. D. Prevett

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CA	Compton, AMP, Inc.	213-537-4490
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FL	Altamonte Springs, AMP, Inc.	305-869-6766
FL	Boca Raton, AMP, Inc.	305-997-7005
GA	Atlanta, AMP, Inc.	404-934-6363
IL	Schaumburg, AMP, Inc.	312-351-5020
IN	Carmel, AMP, Inc.	317-848-1250
MA	Boston, AMP, Inc.	617-891-7500
MA	Framingham, AMP, Inc.	617-879-3255
MI	Southfield, AMP, Inc.	313-645-5590
MN	Minneapolis, AMP, Inc.	612-831-8242
NJ	Parsippany, AMP, Inc.	201-334-6664
NY	Holbrook, AMP, Inc.	516-588-4430
NY	Pittsford, AMP, Inc.	716-385-2862
NC	Winston- Salem, AMP, Inc.	919-725-8968
OH	Dublin, AMP, Inc.	614-764-9415
PA	Malvern, AMP, Inc.	215-296-5303
TN	Knoxville, AMP, Inc.	615-691-5710
TX	Irving, AMP, Inc.	214-550-1114
VA	Alexandria, AMP, Inc.	703-683-5955
WA	Renton, AMP, Inc.	206-255-0064

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MD	Columbia, Hamilton/Avnet Elctrns.	301-995-3500
NC	Greenboro, Hammond Elctrns.	919-275-6391
PA	Horsham, Schweber Elctrns.	215-441-0600
MA	Peabody, Hamilton/Avnet Elctrns.	617-596-7855
AZ	Phoenix, Hamilton/Avnet Elctrns.	602-231-5100
CA	Sacramento, Hamilton/Avnet Elctrns.	916-925-2216
CA	Santa Clara, Cypress Elctrns.	408-945-8400
CA	Sunnyvale, Hamilton/Avnet Elctrns.	408-743-3355
CT	Wallingford, Marshall Inds.	203-265-3822
AL	Huntsville, Powell Elctrns.	205-539-2731
AZ	Phoenix, Dalis Elctrn. Supp.	602-275-2626
AZ	Phoenix, Sterling Elctrns. Corp.	602-268-2121
CA	Buena Park, RPS Elctrns.	213-744-0355
CA	Chatsworth, Marshall Inds.	213-640-7188
CA	Costa Mesa, Avnet Inc.	714-754-6111
CA	Costa Mesa, Hamilton Electro Sls.	714-641-4100
CA	Culver City, Hamilton Avnet Elctrns.	213-558-2225
CA	El Monte, Marshall Ind.	818-442-7204
CA	Fullerton, Pyramid Elctrns.	714-773-0781
CA	Gardena, Hamilton Electro Sls.	213-615-3900
CA	Hawthorne, Electro-Sonic Comps.	213-970-0997
CA	Irvine, Marshall Elctrns. Grp.	714-556-6400
CA	Irvine, Schweber Elctrns.	714-863-0200
CA	Milpitas, Marshall Inds.	408-943-4600
CA	Ontario, Hamilton Avnet Elctrns.	714-989-4602
CA	San Diego, Hamilton Avnet Elctrns.	714-541-7525
CA	San Diego, Marshall Elctrns. Grp.	619-578-9600
CA	San Diego, RPS Elctrns.	619-292-5611
CA	San Fernando, Hamilton Avent Elctrns.	818-700-6500
CA	San Jose, Powell Elctrns.	408-943-9020
CA	Santa Clara, Pyramid Elctrns.	408-727-9810
CO	Denver, CSID, Inc.	303-292-9594
CO	Englewood, Hamilton Avnet Elctrns.	303-790-1000
CO	Thornton, Marshall Inds.	303-451-8383
CT	Wallingford, ALMO Elctrns., Inc.	203-269-6801
CT	Wallingford, Cronin Elctrns.	203-265-3134
FL	Ft. Lauderdale, Hammond Elctrns., Inc.	305-973-7103
FL	Orlando, Hammond Elctrns.	305-849-6060
FL	Pompano Bch., Schweber Elctrns.	800-432-4240
GA	Norcross, Schweber Elctrns. Corp.	404-449-5842
IL	Bensenville, Hamilton Avnet Elctrns.	312-860-7700
IL	Elk Grove, Schweber Elctrns. Corp.	312-364-3750
IL	Elmhurst, Semiconductor Spec.	312-279-1000
IL	Urbana, Bell Inds., Inc.	217-328-1077
IN	Indianapolis, Graham Elctrns.	317-634-8202
KS	Edwardsville, C. Tennant, Sons & Co.	913-441-1801
KS	Overland Pk., Hamilton Avnet Elctrns.	913-888-8900
MD	Columbia, Powell Elctrns.	301-621-4070
MD	Gaithersburg, MS Elctrns.	301-921-0200
MA	Needham, Cronin Elctrns.	617-449-5000
MA	Wilmington, Marshall Inds.	617-658-0810
MA	Winchester, Rush Industries, Inc.	617-729-5800
MI	Livonia, Hamilton Avnet Elctrns.	313-522-4700
MI	Livonia, RS Elctrns.	313-525-1155
MN	St. Paul, Gopher Elctrns. Co., Inc.	612-483-3322
MO	Earth City, Hamilton Avnet Elctrns.	314-344-1200
MO	St. Charles, Lectronix	314-946-6424
NH	Hudson, C & H Elctrns.	603-882-1133
NH	Manchester, Hamilton Avnet Elctrns.	603-624-9400
NY	Buffalo, Summit Distrs.	716-884-3450
NJ	Fairfield, Hamilton Avnet Elctrns.	201-575-3390
NJ	Fairfield, Marshall Elctrns.	201-882-0320
NJ	Kenilworth, Federated Purchaser	201-272-0505
NJ	Mt. Laurel, Marshall Inds.	609-234-9100
NM	Albuquerque, Hamilton Avnet Elctrns.	505-765-1500
NY	Hauppage, Marshall Inds.	516-273-2424
NY	Johnson City, Help Elctrns.	607-729-3528
NY	Lynbrook, Peerless Elctrns.	516-593-2121
NY	Rochester, Marshall Inds.	301-840-9450
NY	Syracuse, Hamilton Avnet Elctrns.	315-437-2641
NY	Westbury, Schweber Elctrns. Corp.	516-334-7474
NC	Raleigh, Hamilton Avnet Elctrns.	919-828-0819
NC	Raleigh, Southeastern Elctrns.	919-828-2311
OH	Akron, Akron Elctrn. Supp. Co.	216-762-8818
OH	Dayton, Graham/Bell Inds.	513-435-8660
OH	Solon, Marshall Inds.	216-248-1788
OR	Lake Oswego, Hamilton-Avnet Elctrns.	503-635-8157
PA	Mars, ALMO Elctrns., Inc.	412-776-9090
PA	Philadelphia, Almo Elctrns. Corp.	215-698-4000
PA	Philadelphia, Powell Elctrns.	215-365-1900
TN	Nashville, Graham Elctrns.	615-367-4400
TX	Austin, Kent Elctrns. Corp.	512-834-1900
TX	Carrollton, Marshall Inds.	214-233-5200
TX	Houston, Kent Elctrns.	713-780-7770
TX	Houston, Sterling Elctrns.	713-623-6600
TX	Irving, Hamilton/Avnet Elctrns.	214-659-4100
TX	Richardson, Kent Elctrns. Corp.	214-669-2600
TX	Stafford, Hamilton-Avnet Elctrns.	713-240-7898
UT	Salt Lake City, Hamilton Avnet Elctrns.	801-972-2800
UT	Salt Lake City, Kimball Elctrns.	801-328-2075
WA	Bellevue, Hamilton Avnet Elctrns.	206-643-3950
WA	Bellevue, Marshall Inds.	206-747-9100
WA	Kent, Pyramid Elctrns. Supp., Inc.	206-872-5800

AMP DISTRIBUTOR MARKETING DIV, A Division of AMP Products Corporation, Harrisburg, PA 17105, Tel: 717-780-7025; Empl.: 22,800; *Sls. Mgr.:* Larry Backus

AMPEREX ELECTRONIC CORP., Hicksville Div., Box 418 - 230 Duffy Ave., Hicksville, NY 11802, Tel: 516-931-6200, TWX: 510-221-1839, FAX: 516-931-6223; Empl.: 270; *Sls. Mgr.:* Robert Carlin; *Dist. Mgr.:* Robert Carlin

AMPEREX ELECTRONIC CORPORATION, Slatersville Division, Providence Pike, Slatersville, RI 02876, Tel: 401-762-3800, Telex: 927584, TWX: 710-382-6332; FSC No.: 73445; Empl.: 565; *Sls. Mgr.:* Robert Carlin ..... **A•2130, 2134-2143; B•1035, 1221**

Local Sales Offices & Reps

AL	Huntsville, Hughes Assocs., Inc.	205-533-9108
AZ	Tempe, Amperex Sls. Corp.	602-968-7917
CA	North Hollywood, Amperex Sls. Corp.	818-980-4212
CA	Santa Clara, Amperex Sls. Corp.	408-727-6132
CO	Denver, Amperex Sls. Corp.	303-989-7310
FL	Clearwater, Hutto-Hawkins Peregoy, Inc.	813-797-4447
FL	Maitland, Hutto-Hawkins, Peregoy, Inc.	305-831-2474
FL	Pompano Beach, Hutto-Hawkins, Peregoy, Inc.	305-971-5750
GA	Atlanta, Amperex Sls. Corp.	404-458-2519
GA	Atlanta, CSR Elctrns., Inc.	404-396-3720
IL	Wood Dale, Amperex Sls. Corp.	312-860-7373
IN	Indianapolis, Leslie M. DeVoe Co.	317-842-3245
KS	Shawnee Mission, Lowell-Kangas & Assoc.	913-631-3515
PA	W. Conshohocken, Eastern Comps. Sls. Corp.	800-223-3851
MA	Norwood, Amperex Sls. Corp.	617-769-6940
MI	Farmington Hills, R. C. Merchant & Co., Inc.	313-476-4600
MI	St. Joseph, R. C. Merchant & Co., Inc.	616-983-7378
MN	Eden Prairie, Comprehensive Tech. Sls.	612-941-7181
MO	St. Louis, Lowell-Kangas & Assocs.	314-821-4050
NY	Endicott, Tech-Mark, Inc.	607-748-7473
NY	Hicksville, Amperex Sls. Corp.	516-931-6200
NY	Mendon, Tech-Mark, Inc.	716-624-3840
NY	Utica, Tech-Mark, Inc.	315-733-0575
NC	Raleigh, CSR Elctrns., Inc.	919-878-9200
OH	Dayton, Amperex Sls. Corp.	513-898-9577
OR	Hillsboro, Western Tech. Sls.	503-640-4621
PA	King of Prussia, Amperex Sls. Corp.	215-265-4240
TX	Dallas, Amperex Sls. Corp.	214-231-3481
WA	Bellevue, Western Tech. Sls.	206-641-3900
WA	Spokane, Western Tech. Sls., Inc.	509-922-7600

Local Distributors

CA	Anaheim, Pacesetter Elctrns.	213-233-5800
CA	Santa Clara, Cypress Elctrns., Inc.	408-980-2500
CA	Tustin, AVED, Inc.	213-770-0871
CO	Denver, IEC	303-292-6121
FL	Orlando, Hammond Elctrns.	305-849-6060
IL	Elk Grove Village, QPS Elctrns., Inc.	312-640-7755
IL	Elmhurst, Semiconductor Specialists	312-279-1000/5
MA	Canton, Impact Sls. Co., Inc.	617-821-1500
MI	Livonia, Chelsea Inds., Inc.	313-525-1155
MN	Minneapolis, Industrial Comps., Inc.	612-831-2666
NJ	Camden, General Radio Supp.	609-964-8560
NY	E. Syracuse, ADD Elctrns.	315-437-0300
NY	Plainview, ACI Elctrns.	516-293-6630,212-591-4045

AMPEREX ELECTRONIC INDS., Smithfield Div., George Washington Hwy., Smithfield, RI 02917, Tel: 401-232-0500, Telex: 92 76 43 ..... **B•1221**

Refer to Amperex, Slatersville Div. for sales office information.

AMPERITE CO., INC., 600 Palisade Ave., Union City, NJ 07087, Tel: 201-864-9503, FAX: 201-864-3955; FSC No.: 70563; Empl.: 76; *Sls. Mgr.:* T. Whalen; *Dist. Mgr.:* T. Whalen

AMPHENOL PRODUCTS, 4300 Commerce Ct., Lisle, IL 60532, Tel: 312-983-3500, TWX: 910-651-0219; Empl.: 8300; *Sls. Mgr.:* S. Horowitz, VP Sls.; *Dist. Mgr.:* S. Horowitz

AMPLIFIER RESEARCH

AMPLIFIER RESEARCH, 160 School House Rd., Souderton, PA 18964-9990, Tel: 215-723-8181, TWX: 510-661-6094; FSC No.: 30639; Empl.: 55; *Sls. Mgr.:* D.W. Roth ..... **D•1004-1005**

Local Sales Offices & Reps

AL	Huntsville, W. A. Brown Instrs.	205-883-8660
AZ	Tempe, Mar Tech Assocs.	602-968-4944
CA	N. Hollywood, O'Halloran Assoc.	213-877-0173
CA	Palo Alto, O'Halloran Assoc.	415-969-1600
CO	Boulder, H. Bass. Assoc.	303-530-7509
CT	Hamden, J.B.L. Assoc.	203-281-3161
FL	Ft. Lauderdale, W. A. Brown Instrs., Inc.	305-776-6661
FL	Melbourne, W. A. Brown Instrs., Inc.	305-723-0766
FL	Orlando, W. A. Brown Instrs., Inc.	305-425-5505
FL	Tampa, W. A. Brown Instrs., Inc.	813-977-5460
GA	Atlanta, W. A. Brown Instrs.	404-441-2980
IL	Park Ridge, Elctrn. Instr. Assocs.	312-298-2290
IN	Indianapolis, Elctrn. Instr. Assocs.	317-257-7231
MD	Severna Park, Delmarva Eng. Assoc. Ltd.	301-647-8388
MA	Lexington, R.J. Sickles	617-862-5100
MN	Minneapolis, Elctrn. Instr. Assocs.	612-374-5628
NJ	Westfield, Metro Mics	201-233-6116
NM	Albuquerque, Hewitt & Assocs.	505-299-7746
NY	Amsterdam, Electro-Tech Sls., Inc.	518-864-5524
NY	Melville, Metro Mics	516-271-6677
NC	Durham, W. A. Brown Instrs.	919-471-1885
OH	Centerville, Micro Sls.	513-433-8171
OH	North Olmsted, Micro Sls.	216-734-3080
OK	Tulsa, The Hugh J. Daly Co.	918-494-7711
PA	Philadelphia, R. Meyers Assoc.	215-224-1663
TX	Austin, Airep Elctrns.	713-644-8171
TX	Dallas, Airep Elctrns.	214-349-4360
TX	Houston, Airep Elctrns.	713-644-8171
UT	Bountiful, Herb Bass Assoc.	801-295-7100
UT	Salt Lake City, Herb Bass Assoc.	801-268-0262
WA	Seattle, J. J. Assocs., Inc.	206-246-6619

AMPLIFONIX, INC., 2010 Cabot Blvd. West, Langehorne, PA 19047, Tel: 215-757-9600, TWX: 510-667-0501; FSC No.: 60979; Empl.: 49; *Sls. Mgr.:* Richard P. Dubois; *Dist. Mgr.:* Richard P. Dubois

AMPROBE INSTRUMENTS, Core Industries, Inc., 630 Merrick Rd., Lynbrook, NY 11563, Tel: 516-LY3-5600, TWX: 510-225-8403; Empl.: 200; *Sls. Mgr.:* Duncan Ladd, VP Sls.; *Dist. Mgr.:* W. Eagle

AMPTEK, INC., 6 De Angelo Dr., Bedford, MA 01730, Tel: 617-275-2242; Empl.: 15

Local Sales Offices & Reps

EXP	MA, Plainville, Teknis	617-695-3591

AMPTRONIX, INC., P.O. Box 8146, Rowland Heights, CA 91748, Tel: 714-595-5814; *Dist. Mgr.:* Ching Lim

AMRAD & TRANSCON MFG. CO., Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7045, Tel: 501-452-3987, Telex: 3791705 DJ USA; FSC No.: 55943; Empl.: 17; *Sls. Mgr.:* D. G. Beck; *Dist. Mgr.:* D. G. Beck

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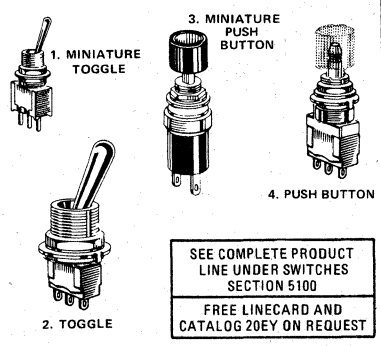

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Local Sales Offices & Reps

AZ	Phoenix, Shefler-Kahn Co.	602-257-9015
CA	Fremont, William Parks Assoc., Inc.	415-796-0875
CA	San Diego, C.E.M., Inc.	619-692-3551
CA	Santa Ana, C.E.M., Inc.	714-835-2702
CO	Wheatridge, Waugaman Assocs., Inc.	303-423-1020
CT	Meriden, MPS Elctrns.	203-235-1414
GA	Norcross, Mountain Electro Prods., Inc.	404-448-5594
IL	Chicago, Brock & Cushman, Inc.	312-622-4110
KS	Lenexa, Midtec Assocs., Inc.	913-541-0505
MD	Baltimore, Muncy Sls.	301-484-6376
MA	Norwood, MPS Elctrns.	617-769-8700
MN	Hamel, Hedtke Mktg., Inc.	612-478-2120
MO	St. Louis, Midtec Assocs., Inc.	314-275-6666
NE	Omaha, Hedtke Assocs., Inc.	402-895-6756
NM	Albuquerque, Shefler Kahn Co.	505-296-0749
NY	Mendon, Tech-Mark, Inc.	716-624-3840
NY	Yonkers, Sonkin Assocs.	914-968-8282
OH	Kettering, F.L.Ohmer & Assoc.	513-434-1454
TX	Houston, Barry Sls.	713-784-5860
TX	Richardson, Barry Sls.	214-234-0255
UT	Salt Lake City, Waugaman Assoc. Utah, Inc.	801-261-0802
UT	Salt Lake City, Waugaman Assocs. Utah, Inc.	801-261-0802
WA	Seattle, Rep-West	206-283-8351
WI	Waterford, Brock & Cushman, Inc.	414-662-3154
EXP	NJ, Oradell, Sylvan Ginsbury	201-261-3200
Can	Montreal, Que., Solid State Engrg.	514-481-3313

ANADEX INC., 1080 Avenida Acaso, Camarillo, CA 93010, Tel: 805-987-9660, TWX: 910-494-2761, FAX: 805-388-0133; Empl.: 11; *Sls. Mgr.:* Randy Weaver

ANADYNE POWER SUPPLY DIVISION, 721 W. Whittier Blvd., Ste. B, La Habra, CA 90631-3759, Tel: 213-697-3116, TWX: 910-583-4807; Empl.: 100

ANAHEIM AUTOMATION, 910 E. Orangefair La., Anaheim, CA 92801, Tel: 714-992-6990, Telex: 2978217 MCI, FAX: 714-992-0471; Empl.: 35

ANALOG & DIGITAL PERIPHERALS, INC.(ADPI), 815 Diana Dr., Troy, OH 45373, Tel: 513-339-2241, TWX: 810-450-2685; FSC No.: 31-0949-745; Empl.: 19; *Sls. Mgr.:* Alan Kuebier

ANALOG DEVICES, INC., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, Tel: 617-329-4700, TWX: 710-394-6577; FSC No.: 24355; Empl.: 4,000

ANALOG EQUIPMENT CORPORATION, 7289 Garden Rd., Riviera Bch., FL 33404, Tel: 305-848-7850; FSC No.: 67584

ANALOGIC CORP., 8 Centennial Dr., Peabody, MA 01961, Tel: 617-532-5660, 617-777-4500, 617-246-0300, 800-451-1, TWX: 681-7021; Empl.: 1900; *Sls. Mgr.:* M. E. Culverhouse; *Dist. Mgr.:* D. Vermilyea

ANALOGIC CORP., Data Conversion Prods. Grp., Audubon Rd., Wakefield, MA 01880, Tel: 617-246-0300, Telex: 466-069; Empl.: 1900; *Sls. Mgr.:* John J. Flynn

ANALOG MODULES, INC., 126 Baywood Avenue, Longwood, FL 32750, Tel: 305-339-4356/4355, Telex: ANALOG MOD C1 467617; FSC No.: 61651; Empl.: 29; *Sls. Mgr.:* W. C. Hudson, VP Mktg. ..... **D•1006**

ANALOG SYSTEMS, P.O. Box 35879, Tucson, AZ 85740-5879, Tel: 602-792-3202, TWX: 275008 (RCA); FSC No.: 58976; Empl.: 13; *Sls. Mgr.:* Sharon Raban; *Dist. Mgr.:* Sharon Raban

ANALYTICS COMMUNICATIONS SYSTEMS, 1820 Michael Faraday Dr., Reston, VA 22090, Tel: 703-471-0892, Telex: 710-833-0326; Empl.: 25; *Sls. Mgr.:* Thomas Mitchell, VP

ANAREN MICROWAVE, P.O. Box 178, 6635 Kirkville Rd., E. Syracuse, NY 13057, Tel: 315-432-8909, Telex: 71-685-4503/4567, TWX: 310-685-4518/4568; FSC No.: 31597; Empl.: 439; *Sls. Mgr.:* Lou Nielsen

Local Sales Offices & Reps

AZ	Scottsdale, Thorson Desert States	602-998-2444
CA	Los Angeles, Cain Technology	213-477-9054
CA	Orange, Cain Technology	714-997-7311
CA	Palo Alto, Waldman Assocs.	415-961-4100
CO	Englewood, Cain Technlgy.	303-220-8118
FL	Clearwater, Southeastern Comp. Sls.	813-447-1911
FL	Indian Harbor Beach, Southeastern Comp. Sls.	305-773-3767
GA	Atlanta, Southeastern Comp. Sls.	404-451-5353
IL	Arlington Hghts., Dytec/Central	312-394-3380
IN	Fort Wayne, J & B Engrg. Sls.	219-483-2813
IN	Indianapolis, J & B Eng.	317-842-3008
KS	Lenexa, Dytec/South	913-888-0215
MD	Davidsonville, R.L. Engrg.	301-760-5533
MA	Lexington, R.J. Sickles Assocs.	617-862-5100
MI	Southfield, Comtel Instrs.	313-358-2505
MN	Minneapolis, Deerland Distrs.	612-331-6433
MO	Maryland Hghts., Dytec/South	314-569-2990
NJ	W. Orange, E-F Tech. Sls.	201-731-7203
NM	Albuquerque, Thorson Desert States	505-293-8555
NY	Huntington Station, E-F Tech. Sls.	516-549-1818
NY	Skaneateles, Robtron	315-685-5731
OH	Cleveland, Comtel Instr.	216-442-8080
OH	Dayton, Comtel Instr.	513-298-7573
OH	Hillard, Comtel Inst.	614-876-8305
PA	Ambler, WM Assocs.	215-643-4119
PA	Pittsburgh, Comtel Instr.	412-922-5720
WA	Bellevue, Arva-Hudson, Inc.	206-455-0773
WI	Milwaukee, Deerland Dist.	414-784-1414
Can	Ottawa, Giga-Tron Assocs., Ltd.	613-225-4090

Local Distributors

CA	Los Angeles, Sertek	213-477-9051

ANASCO CORPORATION, 42A Cherry Hill Dr., Commerce Ctr. Bldg., Danvers, MA 01923, Tel: 617-777-8888, 800-826-2726; *Sls. Mgr.:* John Shirey ..... **D•1141, 1209, 1386, 1389**

AND

AND, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-9916, Telex: 677-1439, FAX: 415-340-1670; FSC No.: (PURDY UW); Empl.: 30; *Sls. Mgr.:* Clarence Bruce ..... **B•1036-1039**

Local Sales Offices & Reps

AL	Huntsville, Currie, Peak, Frazier	205-536-1506
AZ	Tempe, Foley, Tallent & Lee	602-438-1564
CA	Burlingame, William J. Purdy	415-347-7701
CA	Costa Mesa, Berman-Gravely Co.	714-549-2122
CO	Denver, William J. Purdy	303-753-6800
NH	Nashua, Bell Controls, Inc.	603-882-6984
FL	Orlando, Currie, Peak, Frazier	305-855-0843
IL	Elmhurst, F.F./Hill Gray, Inc.	312-832-4101
MN	Minneapolis, Hei-Lite Sls.	612-861-6051
MO	Grandview, Harris-Hanson	816-763-6200
MO	St. Louis, Harris-Hanson	314-432-3611
NJ	Englewood, Harold Gray Assocs.	201-894-0894
NM	Albuquerque, William J. Purdy	505-266-7959
NC	Greensboro, Currie, Peak & Frazier, Inc.	919-373-0380
OR	Beaverton, William J. Purdy Co.	503-641-9373
PA	Philadelphia, S. K. MacDonald, Inc.	215-545-1205
UT	Salt Lake City, William J. Purdy Co.	801-486-8557

Local Distributors

AL	Huntsville, Newark Elctrns.	205-837-9091
AZ	Tempe, Anjon Entprs.	602-894-1332
AZ	Tempe, Newark Elctrns.	602-968-7441
CA	Anaheim, A to Z Elctrns.	714-632-1620
CA	Canoga Pk., Panel Parts Co.	818-884-8898
CA	Foster City, Newark Elctrns.	415-572-8300
CA	Hawthorne, Electro Sonic Comp.	213-970-0997
CA	Inglewood, Newark Elctrns.	213-671-7066
CA	Sacramento, Integrated Elctrns.	916-424-5297
CA	San Jose, Rose Elctrn.	408-263-9700
CA	Santa Clara, Waltronic Sls.	408-727-1200
CA	Sunnyvale, Sierra West Elctrns.	408-747-1188
CO	Denver, Denver Wintronics	303-934-2406

CO Denver, Integrated Elctrns. 303-534-6121
CO Denver, Newark Elctrns. 303-757-3351
CT Stratford, Utronics 203-378-4201
CT Wallingford, Sager Electrical Supp. 203-265-4600
FL Melbourne, Rome Elctrns. South 305-242-8151
FL Miami, ESL Elctrn. Distr. 305-633-6973
IL Chicago, Newark Elctrns. 312-784-5100
IL Rosemont, Advent Elctrns. 312-297-6200
IL Schaumburg, Newark Elctrns. 312-843-0700
IN Merrillville, Newark Elctrns. 219-738-2787
MA Canton, Almo Elctrns. 617-821-1450
MA Lynn, Land Elctrn. Supp. 617-592-2220
MI Detroit, SRA, Inc. 313-965-8550
MI Farmington Hills, Advent Elect. 313-447-1650
MI Oak Pk., Newark Elctrns. 313-967-0600
MN Minneapolis, Newark Elctrns. 612-331-6350
MO St. Louis, Newark Elctrns. 314-421-5066
NH Nashua, Newark Elctrns. 603-883-9110
NJ Bordentown, Newark Elctrns. 609-298-4450
NJ Cranford, Garden State Elect. 201-272-6400
NY Buffalo, Genessee Radio & Parts Co., Inc. 716-873-9661
NY East Syracuse, ADD Elctrns. 315-437-0300
NY Farmingdale, Midway Indl. Elctrns. 516-293-6800
NY Rochester, Simcona 716-328-3230
NY Rome, Rome Elctrns. 315-337-5400
NY Syracuse, Newark Elctrns. 315-437-6611
NC Greensboro, Newark Elctrns. 919-292-7240
OH Dayton, Stotts-Friedman 513-298-5555
OH Valley View, Trexon Elctrns. 216-447-8860
OH Warren, REM Elect. 216-373-1300
OR Beaverton, Almac Elctrns. Grp. 503-629-8090
PA Drexel Hill, Kass Elect. 215-449-2300
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PA Pittsburgh, Newark Elctrns. 412-367-2790
TX Fort Worth, Allied Elctrns. 817-336-5401
TX Garland, Newark Elctrns. 214-487-8144
TX Houston, Newark Elctrns. 713-783-1629
TX Irving, Newark Elctrns. 214-258-1355
UT Salt Lake City, Standard Supp. Co. 801-486-3371
VA Richmond, Newark Elctrns. 804-282-5671
WA Bellevue, Almac Elctrns. Corp. 206-643-9992
WI Mequon, Lakeview Elctrns. Corp. 414-377-8250
Can Rexdale, Ont., Newark Elctrns. 416-675-1130

ANDEEN-HAGERLING, INC., 31899 Miles Road, Chagrin Falls, OH 44022, Tel: 216-349-0370, Telex: 4931432; Empl.: 14; *Sls. Mgr.:* Eric Whitman

ANDERS, INC., 77 Wolcott Rd., Simsbury, CT 06070, Tel: 203-658-7666; FSC No.: 52045; Empl.: 18; *Sls. Mgr.:* Donald W. Miner

ANDERSEN LABORATORIES, 1280 Blue Hills Ave., Bloomfield, CT 06002, Tel: 203-242-0761, TWX: 710-425-2390; FSC No.: 03947; Empl.: 125 ..... **A•1647**

Local Sales Offices & Reps
CA Mountain View, Peninsula Tech. Sls. .. 415-965-3636
CA Mtn. View, Peninsula Tech Sls. 415-965-3636
CA Santa Ana, SSK USA, Inc. 714-250-4073
CA Santa Ana, SSK, USA 714-250-4073
CA Torrance, Andersen Labs. 213-533-5185
IL Northfield, Feller Assocs. 312-446-8065
IA Cedar Rapids, Feller Assocs. 319-364-0566
MD Owings Mill, Neal Deoul Assocs., Inc. 301-795-5775
MD Owings Mills, Neal Deoul Assocs. 301-363-4311
MA Wayland, High Tech Sls. 617-653-3838
MA Wayland, High-Tech Sls. 617-653-3838
NY Melville, Carnes Assocs. 516-694-1600
NY Rockville Ctr., Milano Bros. 516-764-2200
PA Huntingdon Valley, Rabal Assoc. 215-947-4825
PA Huntington Valley, Rabal Assocs. 215-947-4825
TX Dallas, McDonald Assocs. 214-238-1858
Can St. Laurent, Que., R.F. Microwave 514-335-2335

Local Distributors
FL Indian Harbor, S. E. Comp. Sls. 305-773-3767
GA Atlanta, S. E. Comp. Sls. 404-451-5353

ANDERSON ELCTRNS., P. O. Box 89, Hollidaysburg, PA 16648, Tel: 814-695-4428, TWX: 510-691-2516, ESYLNK: 1-814-696-0403; Empl.: 60; *Sls. Mgr.:* W. H. Anderson ..... **A•1333**

Local Sales Offices & Reps
CA Fullerton, GRU Assocs. 714-738-0903
CA Santa Clara, Logan Sls 408-496-0660
FL Jupiter, Southern Elctrns. Sls. Co. 305-744-0028
GA Lawrenceville, B. T. Funderburk, Inc. .. 404-963-9495
IL South Elgin, R.K. Elctrn. 312-695-8552
MA Woburn, Microwave Comp. Mktg., Inc. 617-273-3106
MI Southfield, R. C. Nordstrom & Co. 313-559-7373
NY Smithtown, L.I., PAF Assocs. 516-360-0940
NY Syracuse, Murcan Sls. Corp. 315-437-0734
NC Raleigh, B. T. Funderburk, Inc. 919-782-3493
OH Worthington, Dynel Co. 614-436-9452
PA Rydal, Espy Sls. 215-576-0780
TX Plano, GW Prods. 214-422-1746
WA Seattle, Harry Levinson Co. 206-382-1300
Can Mississauga, Ontario, Gidden-Morton Assocs. 416-671-8111

ANDERSON POWER PRODUCTS, Div. of High Voltage Engineering, 145 Newton St., Boston, MA 02135, Tel: 617-787-5880, Telex: 940453, FAX: 617-254-9217

ANDOVER, INC., 310 North Earl Avenue, Lafayette, IN 47904, Tel: 317-447-1157, FAX: 317-447-1150; Empl.: 120; *Sls. Mgr.:* Harry O. Minns; *Dist. Mgr.:* Joe C. Chatman

ANDREW CORP., 10500 W. 153rd St., Orland Pk., IL 60462, Tel: 312-349-3300, Telex: 25-3897, TWX: 910-651-3340; *Sls. Mgr.:* Harry McKee

ANDREWS CORPORATION, New Cut Road, P.O. Box 570, Spartanburg, SC 29304, Tel: 803-583-4541, TWX: 810-282-2578; *Sls. Mgr.:* David A. Lorinovich

ANDRICH SYSTEMS, INC., 1699 Roosevelt Ave., Bohemia, NY 11716, Tel: 516-589-5656; *Sls. Mgr.:* Robert G. Andrews

ANDROTEK/DMI, Box 29098, Columbus, OH 43229, Tel: 614-882-7821; *Sls. Mgr.:* Carl Nennerfelt

ANGO ELECTRONICS CORP., 16 North Third St., Harrison, NJ 07029, Tel: 201-484-1115, Telex: 421531; *Sls. Mgr.:* Brian K. Yuen ..... **C•1015**

ANGSTROHM, See Vishay Angstrohm

ANN ARBOR TERMINALS, 6175 Jackson Rd., Ann Arbor, MI 48103, Tel: 313-663-8000, Telex: 706905; Empl.: 50

ANORAD CORP., 110 Oser Ave., Hauppauge, NY 11788, Tel: 516-231-1995, TWX: 510-227-9894; Empl.: 260

Local Sales Offices & Reps
CA San Jose, Anorad West 408-238-9793
IL Chicago, Anorad Midwest 312-519-1994

ANRITSU, 15 Thornton Rd., Oakland, NJ 07436, Tel: 201-337-1111, 800-255-7234, Telex: 64-2141, FAX: 201-337-1033; Empl.: 75; *Sls. Mgr.:* Ed McDonald

ANRO ELCTRN. INDS. LTD., 300 Wildcat Rd., Downsview, ON, Canada M3J 2N5, Tel: 416-661-2600; Empl.: 85; *Sls. Mgr.:* E.H. Jones

ANSCO, 1243 West 134th St., Gardena, CA 90247, Tel: 1-800-421-1270, 1-800-821-3308, 213-532-7780; Empl.: 25+; *Sls. Mgr.:* Melvin Preston

ANSLEY ELECTRONICS, DIVISION OF THOMAS & BETTS, See T & B/Ansley Corp.

ANSONICS, INC., P.O. Box 910, Halfway, OR 97834, Tel: 503-742-7475; Empl.: 6

ANTENNA RESEARCH ASSOCIATES, 11317 Frederick Ave., Beltsville, MD 20705, Tel: 301-937-8888, Telex: 374-6620; FSC No.: 04190; Empl.: 30; *Sls. Mgr.:* H.W. Rapalus

ANTENNA SPECIALISTS, 12435 Euclid Ave., Cleveland, OH 44106, Tel: 216-791-7878, Telex: 980-732; Empl.: 1000; *Sls. Mgr.:* Larry Kline

ANTEX DIVISION, 24 Tioga Way, P.O.Box 615, Marblehead, MA 01945, Tel: 617-631-7100; *Sls. Mgr.:* C. Loutrel; *Dist. Mgr.:* C. Loutrel

ANTEX ELECTRONICS CORP., 16100 S. Figueroa St., Gardena, CA 90248, Tel: 213-532-3092, TWX: 910-344-7381; Empl.: 53; *Sls. Mgr.:* Richard Gross; *Dist. Mgr.:* M. Sheridan

ANVIL CASES, INC., 4128 Temple City Blvd., Rosemead, CA 91770, Tel: 818-575-8614, 800-242-4466, 800-423-4279(outside CA), TWX: 910-587-4935; FSC No.: FNCM59288; Empl.: 180; *Sls. Mgr.:* Ron Phenicie

APAHOUSER-ELCOM, INC., 101 Walnut St., Watertown, MA 02172, Tel: 617-924-1500; FSC No.: 53721; Empl.: 90; *Sls. Mgr.:* Fred Gately

A. P. CIRCUIT CORP., 513 East 86th St., P.O. Box 1350, New York, NY 10028, Tel: 212-737-1348, Telex: 428759 ..... **A•1648**

Local Sales Offices & Reps
MI Southfield, Comtel Instrs. 313-358-2505
NJ Matawan, Reps Five 201-495-2315
OH Cleveland, Comtel Instrs. 216-442-8080
OH Dayton, Comtel Instrs. 513-298-7573

APEX MICROTECHNOLOGY CORP., 5980 N. Shannon Rd., Tucson, AZ 85741, Tel: 602-742-8600, Telex: 170631; FSC No.: 60024; Empl.: 100; *Sls. Mgr.:* Rita Olschewski; *Dist. Mgr.:* Rita Olschewski ..... **D•1007**

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AL Huntsville, Currie, Peak & Frazier, Inc. 205-536-1506
CA Lake Arrowhead, Apex Microtechnlg. 714-337-5637
CA Los Altos, Kolm Mktg. 415-948-2635
CA Los Altos, KOLM 415-948-2635
AZ Mesa, B.F. Entprs. 602-345-7799
CT Southbury, Dynamic Technlgs. 203-262-6220
DE Elicott City, Nelson Elctrns. 301-747-7887
FL Orlando, Currie, Peak & Frazier, Inc. ... 305-855-0843
GA Norcross, Currie, Peak & Frazier, Inc. 404-449-7662
IL Chicago, L.G.S. Sls. 312-456-0616
IL Chicago, LGS Electron 312-456-9616
IN Ft. Wayne, TX Sls. 219-489-4447
MD Ellicot City, Nelson Elctrns. 301-747-7887
MD Ellicott City, Nelson Elctrns. 301-747-7887
NH Bedford, Signal Sls. Engrg. 603-472-7383
NY Fairport, bbd Elctrns. 716-425-4101
NY Smithtown, T & K Sls. 516-724-3456
NY Smithtown, T&K Sls. 516-724-3456
NC Greenboro, Currie, Peak & Frazier Inc. 919-373-0380
OH Fort Wayne, TX Sales 219-489-4447
OR Beaverton, Quest Mktg. 503-641-7377
TX Dallas, Repmasters 214-247-6236
TX Houston, Repmaster 713-680-0215
TX Sherman, Repmaster 214-247-6236
WA Bellevue, Quest Mktg. 206-747-9424

Local Distributors
Intl India, Bombay, Elmatronic Dvs. 362421

APM-HEXSEAL, 44 Honeck St., Englewood, NJ 07631, Tel: 201-569-5700, Telex: 13-3403; FSC No.: 97539; Empl.: 47; *Sls. Mgr.:* Charles Lentini; *Dist. Mgr.:* Charles Lentini

APOLLO LASERS, INC., 20977 Knapp St., Chatsworth, CA 91311, Tel: 818-407-3000, Telex: 66-2278; Empl.: 40; *Sls. Mgr.:* Fred Houston; *Dist. Mgr.:* Ralph Page

APOLLO MAGNETICS CORP., 2720 W. Beverly Blvd., Los Angeles, CA 90057, Tel: 213-381-2500, TWX: 910-321-4348; Empl.: 420 ..... **D•1074**

APPLETON PAPERS INC., P.O. Box 359, Appleton, WI 54912, Tel: 414-734-9841; Empl.: 3,500; *Sls. Mgr.:* Doug Adams

APPLIED CIRCUITS, INC., 36-06 43rd. Ave., Long Island City, NY 11101, Tel: 212-786-7200; Empl.: 20

APPLIED CIRCUIT TECHNOLOGY (ACT), 2931 La Jolla St., Anaheim, CA 92806, Tel: 714-632-9230, Telex: 182885; Empl.: 150; *Sls. Mgr.:* Hank Pselos; *Dist. Mgr.:* Jack Hahn

APPLIED COMMUNICATIONS, Amstar Electronics Group, 5300 Spectrum Dr., Frederick, MD 21701, Tel: 301-694-5300, TWX: 701-828-9706; Empl.: 200; *Sls. Mgr.:* Richard W. Smith

APPLIED CONTROLS CO., INC., 1275 Bloomfield Ave., Fairfield, NJ 07006-2828, Tel: 201-227-5454; FSC No.: 4A725; Empl.: 20; *Sls. Mgr.:* W. Merel

APPLIED DATA COMMUNICATIONS, 14272 Chambers Rd., Tustin, CA 92680, Tel: 714-731-9000; Empl.: 85

APPLIED DIGITAL DATA SYSTEMS INC., 100 Marcus Blvd., Hauppauge, NY 11787, Tel: 516-231-5400, TWX: 510-227-9886; Empl.: 760; *Sls. Mgr.:* Dennis O'Donnell

APPLIED ELECTRO TECHNLG., INTL, See STI-Control Components Div.

APPLIED ENGRG. PRODS., P.O. Box A-D, Amity Sta., New Haven, CT 06525, Tel: 203-387-5282, TWX: 710-465-1173; FSC No.: 19505; Empl.: 85; *Sls. Mgr.:* C. Goff; *Dist. Mgr.:* C. Goff

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MD	Beltsville, Resco	301-937-9100
MA	Lowell, Colonial Wire & Cable	617-459-6400
NY	Commack, Microwave Distrs.	516-543-4771
Can	Brockville, Ont., RF Specialists	613-345-2343
Can	Montreal, PQ, Ferro Technique	514-341-3450

APPLIED INFORMATION SYSTEMS, INC., 500 Eastowne Dr., Suite 207, Chapel Hill, NC 27514, Tel: 919-942-7801, 800-334-5510, Telex: 701365; *Sls. Mgr.:* Elizabeth Epermanis

APPLIED MAGNETICS, 75 Robin Hill Rd., Goleta, CA 93117, Tel: 805-683-5353, TWX: 910-334-1195; FSC No.: 11935; Empl.: 4000; *Sls. Mgr.:* O. M. Fundingsland

APPLIED MICRO CIRCUITS CORP., 5502 Oberlin Dr., San Diego, CA 92121, Tel: 619-450-9333, TWX: 910-337-1136; FSC No.: 367 4112; Empl.: 235; *Sls. Mgr.:* Neil Rappaport

APPLIED MICROSYSTEMS CORP., 5020 148th Ave. N.E., Redmond, WA 98073, Tel: 206-882-2000, 800-426-3925, Telex: 185196APMCRO UT; Empl.: 170; *Sls. Mgr.:* Joe Gomula

APPLIED MICRO TECHNLG., A Burr Brown Co., 3669 E. 44th Street, Tucson, AZ 85713, Tel: 602-622-8605, TWX: 910-952-1164; Empl.: 15; *Sls. Mgr.:* Lee Davis

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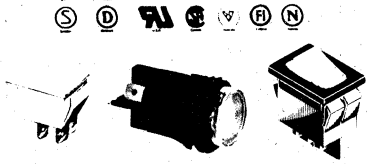

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APPLIED POWER CONVERSION, Technology Dynamics, Inc., 100 School St., Bergenfield, NJ 07621, Tel: 201-385-0500; Empl.: 50 ..... **D•1554-1566**

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UT	Salt Lake City, Sunbird Inds.	801-272-1303
VA	Reston, Stinson Assocs., Inc.	703-620-0088

APPLIED RESEARCH, INC., 160 Dupont St., Plainview, NY 11803, Tel: 516-349-9200, Telex: 550 882; Empl.: 50; *Sls. Mgr.:* S. Klipper ..... **A•1778-1779**

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CA	Orange, E. Bell Assocs.	714-857-6079
MA	Lowell, Russell Engrg.	617-458-7146
VA	Fairfax, Schibley Assocs. Inc.	703-591-3008

APPLIED RESEARCH LABS, 9545 Wentworth, P.O. Box 129, Sunland, CA 91040, Tel: 818-352-6011, Telex: 4720130, ESYLNK: 818-352-8241; Empl.: 300 (USA); *Sls. Mgr.:* Charles E. Eichten

APPLIED SYSTEMS CORP., 26401 Harper Ave., St. Clair Shores, MI 48081, Tel: 313-779-8700; Empl.: 15; *Sls. Mgr.:* Marty Wyrod

A P PRODUCTS/3M, Associated Electronics, 9325 Progress Pkwy., Box 540, Mentor, OH 44060, Tel: 216-354-2101, TWX: 810-425-2250; Empl.: 84; *Sls. Mgr.:* Keith Wigman; *Dist. Mgr.:* Pat McIntyre

APSCO, INC., 5976 Heisley Road, Mentor, OH 44060, Tel: 216-352-8961, Telex: 284580, FAX: 216-354-7306; Empl.: 200; *Sls. Mgr.:* Robert G. Borgia

APTEK MICROSYSTEMS, 700 N. W. 12th Ave., Deerfield Beach, FL 33442, Tel: 305-421-8450, Telex: 441020, ESYLNK: 305-421-8044; Empl.: 150; *Sls. Mgr.:* Joseph F. Centeno, Dir. of Sls.

A.P.W. CO., INC., 72 W. Main, Rockaway, NJ 07866, Tel: 201-627-0643; Empl.: 18

AQ SYS., 1736 Front St., Yorktown Hgts., NY 10598, Tel: 800-431-2104; Empl.: 15; *Sls. Mgr.:* Charles E. Fitzsimmons; *Dist. Mgr.:* Charles E. Fitzsimmons

AQUALARM, Marine Safety Systems, Inc., 1151 D. Bay Blvd., Chula Vista, CA 92011, Tel: 619-575-4011; FSC No.: 2V373; Empl.: 8

ARCO ELCTRNS., 400 Moreland Rd., Commack, NY 11725, Tel: 516-864-7000, TWX: 510-226-0241; FSC No.: 84171; Empl.: 40; *Sls. Mgr.:* Abe Kosakowsky

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ARCOLECTRIC CORP., 9001 Canoga Ave., Canoga Park, CA 91304, Tel: 818-700-1933, Telex: 19-4645, ESYLNK: 818-700-9541; Empl.: 20; *Sls. Mgr.:* L. Lewis; *Dist. Mgr.:* Carrie Donze ..... **B•1040-1045, 1544-1555**

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MA	Burlington, Excalibur Elctrns.	617-273-5858
OR	Eugene, Larsco	503-484-7491

ARC SYSTEMS, INC., 2090 Joshuas Path, Hauppauge, NY 11788, Tel: 516-582-8020, Telex: 230199 SWIFT UR ARC; *Sls. Mgr.:* Robert Miller

AREMCO PRODUCTS, INC., Box 429, Ossining, NY 10562, Tel: 914-762-0685, Telex: 13-7442; Empl.: 30; *Sls. Mgr.:* Brian Miles

A.R.F. PRODS., 2559 75th St., Boulder, CO 80301, Tel: 303-443-4844, TWX: 910-940-3446; Empl.: 65; *Sls. Mgr.:* Tersh Clark

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MO	St. Louis, Engineering Svcs. Co.	314-726-2233
OK	Tulsa, Kemp Engrg. Svcs.	918-663-4501
TX	Addison, Kemp Engrg. Svcs.	214-931-7100
TX	Houston, Kemp Engrg. Svcs.	713-466-1465

ARGENT ELCTRNS., 3245 S. County Rd., 25A, Troy, OH 45373, Tel: 513-335-0031; FSC No.: 55901; Empl.: 20; *Sls. Mgr.:* J. A. Worley

ARGOS PRODS., 600 S. Sycamore St., Genoa, IL 60135, Tel: 815-784-5118; Empl.: 50; *Sls. Mgr.:* Ron Evers

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IL	Chicago, G. Mcl. Cole	312-774-3535
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MA	North Scituate, W.A. Hendrickson	617-545-0652
MI	Pontiac, Ted Firaneck Sls.	313-373-9595
MN	Edina, Foster Tech. Sls.	612-941-9800
MO	Kansas City, Nevco	816-421-1751
NJ	Fort Lee, TMC Sls.	201-944-5665
NY	Syracuse, Lewis & Dunnigan	315-446-5522
OH	Dayton, Shamrock Elctrn	513-258-1227
PA	Wynnewood, Stinson Assocs.	215-896-7378
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EXP	N.Y., New York, Roburn Agencies	212-989-5939

ARGO TRANSDATA CORP., Box 554, Clinton, CT 06413, Tel: 203-669-2233; Empl.: 15

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MI	St. Joseph, OBE, Inc.	616-429-7788
MI	W. Bloomfield, OBE, Inc.	313-332-4900
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MO	Florissant, Delltron Co. Inc.	314-839-0033
MO	Flourissant, Delltron Co.	314-839-0033
MO	Kansas City, Delltron Co.	816-436-6445
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NH	Nashua, Bell Controls	603-882-6984
NJ	Ho-Ho-Kus, DJ Fisher Co.	201-652-0090
NM	Albuquerque, Trembly Assocs.	505-266-8616
NY	Fairport, TAC Sls., Inc.	716-377-2250
NC	Matthews, CSR	704-847-1927

NC Raleigh, CSR 919-878-9200
OH Akron, Augnat Assocs. 216-273-1211
OH Cincinnati, Augnat Assocs. 513-791-6720
OH Dayton, Augnat Assocs. 513-298-1507
OH Mansfield, Augnat Assocs. 419-526-1488
OK Tulsa, Rem-Air Comps. 918-742-2559
OR Forest Grove, Doran Sls. Assocs. 503-357-3333
PA Harleysville, Thomas Jackson Assocs. 215-643-5560
PA Harrison City, Augnat Assocs. 412-281-8283
PA Harrison City, Augnat Assocs. 421-281-8283
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NC Matthews, CSR 704-847-5806
TN Knoxville, CSR 615-673-0222
TX Dallas, Rem-Air Comps. 214-234-1069
WA Greenacres, Doran Sls. Assocs. 509-922-2317
WA Redmond, Doran Sls. Assocs. 206-885-1885

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AZ Tempe, Harper S.I.D. 602-967-1464
AZ Tucson, Inland Elctrns. Supp. 602-294-2628
AZ Tucson, Southwest Sls. 602-628-1613
AR Little Rock, Component Distrs. 501-227-6278
CA Compton, Harper S.I.D. 213-979-5090
CA Fullerton, Pyramid 213-691-0561
CA Gardena, Cal. Switch & Signal 213-770-2330
CA San Diego, Harper S.I.D. 619-578-2500
CA San Diego, Neumann 619-695-3005
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CT Danbury, Pilgrim Elec. 203-792-7274
CT Norwalk, Cobra Comps. 203-847-6442
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FL Ft. Lauderdale, KSM 305-971-5900
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MS Eden Prairie, Magnuson Elctrns. 612-829-0583
MO Valley Park, Beckwith Computer Elctrns. 314-825-2237
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NJ Moorestown, Marlac Elctrns. 609-234-0672
NM Albuquerque, Intl. Elctrns. 505-345-8120
NY Rochester, Simcona Elctrns. 716-328-3230
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NC Raleigh, Comp. Distrs. 919-834-9465
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OH Dayton, Stotts-Friedman 513-298-5555
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TX Dallas, CDI 214-644-0373
TX Dallas, Off The Shelf 214-247-0052
TX El Paso, Intl. Elctrns. 915-598-3406
TX Fort Worth, Indl. Elctrns. 817-731-7321
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TX Houston, Ralph's 713-748-4902
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WI Milwaukee, Magnuson Elctrns. 414-933-8344
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ARISTO GRID LAMP PRODS., 65 Harbor Rd., Port Washington, NY 11050, Tel: 516-944-3030; Empl.: 21

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ARIUM CORPORATION, 1931 Wright Circle, Anaheim, CA 92806-6052, Tel: 714-978-9531, TWX: 75493; Empl.: 40; *Sls. Mgr.:* Dave Blakemore ..... **D•1210-1211**

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MD Baltimore, Rep-tron 301-799-7490
MA North Reading, Tri-Logic Assocs. 617-664-4629
NJ Pennsauken, Scientific Reps. 609-662-5222
NJ Ridgefield, Rical Assocs. 201-945-5250
NY Syracuse, Martindale-Paul, Inc. 315-487-0515
OH Highland Heights, Comtel Instrs. 216-442-8080
OR Lake Oswego, Syntech 503-636-6793
TX Richardson, Testech 214-644-5010
UT Ogden, AZTEC Entprs. 801-621-1655
WA Kirkland, Syntech 206-488-0394
Can No. Vancouver, B.C., Jerome & Francis Co. Ltd. 604-986-1286
Can Ottawa, Ont., A.I.M. Elctrns. 613-722-8286

ARKAY ENGRAVERS, INC., 2073 Newbridge Road, Bellmore, NY 11710, Tel: 516-781-9859/9753, FAX: 516-221-0290; FSC No.: 6Z099; *Sls. Mgr.:* Kenneth Kaplan

ARK ELCTRNS. CORP., 1325 Industrial Hwy., Southampton, PA 18966, Tel: 215-322-6510; *Sls. Mgr.:* S. Kalos

ARK-LES, 51 Water St., Watertown, MA 02172, Tel: 617-924-2330, Telex: 24-4659; Empl.: 700; *Sls. Mgr.:* Bruce MacNeil

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NJ Brielle, EMC Technlgsts. 201-223-6699
NY Islip, EMC Technlgsts. 516-277-2395

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CT Madison, United Comps. 203-245-4810
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GA Atlanta, Beacon Elctrns. Assoc. 404-256-9640
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IN Indianapolis, J & W Sls. Co. 317-842-3740
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MI Redford, R. P. Urban & Assocs. 313-535-2355
MN Bloomington, Northport Engrg. 612-854-5556
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NJ W. Caldwell, Mariniello Tech. Sls. Co. 201-228-4418
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NY W. Henrietta, Rochester Comp. 716-546-4766
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TX Houston, Ultra Rep 713-961-1262
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CT Wallingford, Cronin Elctrns. 203-265-3134
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FL Longwood, Dielco 305-831-3224
GA Norcross, Bell Inds. 404-662-0923
GA Norcross, Pioneer Technlgs. 404-448-1711
IL Elk Grove, R. M. Elctrns. 312-364-6622
IL Elk Grove Vl, Bell Inds. 312-640-1910
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IL Mt. Prospect, Magnuson Elctrns., Inc. 312-956-0700
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IN Ft. Wayne, Bell Inds. 219-423-3422
IN Indianapolis, Bell Inds. 317-634-8202
IN Indianapolis, Magnuson Elctrns. 317-247-5108
IN Indianapolis, R. M. Elctrns. 317-291-7110
IA Cedar Rapids, Ragon Elctrns. 319-393-4093
KS Derby, Ragon Elctrns. 816-254-3410
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MA Canton, Impact Sls. Co. 617-821-1500
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MN Hopkins, Joel Co. 612-935-6202
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OK Tulsa, Norvell Elctrns. 918-254-8606
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TN Gray, Dixie Elctrns. 615-477-3838
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ARRA INC., 15 Harold Ct., Bay Shore, NY 11706, Tel: 516-231-8400, TWX: 510-227-6231; FSC No.: 09992; Empl.: 50; *Sls. Mgr.:* M. V. Geraci ..... **A•1781**

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MN Minneapolis, Sterling Elec. 612-332-4571
MN St. Paul, Gopher Elctrns. Co. 612-483-4450
MS Jackson, Ellington Elctrns. 601-355-0561
MO Kansas City, LComp 816-221-2400
MO Maryland Heights, LComp 314-291-6200
NE Lincoln, Scott Elctrns. 402-466-8221
NH Nashua, Brevan Elec. Inc. 603-889-7230
NJ Camden, General Radio Sys. Co. 609-964-8560
NJ East Hanover, State Elctrn. Parts 201-887-2550
NJ Manasquan, Kulka Smith 201-223-9400
NJ Prospect Park, Kappe 201-790-1999
NM Albuquerque, Walker Radio 505-247-2288
NY Buffalo, Genesee Radio & Parts 716-873-9661
NY Buffalo, Summit Distrs. 716-884-3450
NY Farmingdale, S.A.I. 516-293-2710
NY Hauppauge, Sager Elec. 516-348-1300
NY Hempstead, Electronic Equip. 516-538-5510
NY Lynbrook, Peerless Radio Corp. 516-593-2121
NY Rochester, Aquas Elec. 716-454-7800
NY Woodside, Switches Unltd. 212-478-5000
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
OH Cincinnati, Cincinnati Controls Inc. 513-421-4460
OH Cincinnati, Hughes-Peters 513-351-2000
OH Cleveland, Midland Elec. 216-248-3800
OH Cleveland, Pioneer/Cleveland 216-587-3600
OH Columbus, Hughes-Peters 614-294-5351
OH Dayton, Pioneer/Dayton 513-236-9900
OR Portland, Johnstone Corp. 503-231-4833
PA Philadelphia, Philadelphia Elctrns. 215-568-7444
RI Providence, W. M. Dandreta 401-861-2800
TN Memphis, Bluff City Elctrns. 901-345-9500
TN Nashville, Carlton-Bates 615-244-3562
TN Nashville, Randolph & Rice 615-255-5602
TX Austin, Harrison Equip. 512-458-3555
TX Carrollton, B G Elctrns. 214-492-7878
TX Dallas, Assocd. Aircraft Supp., Inc. 214-331-4381
TX Dallas, Associated Aircraft 214-331-4381
TX Dallas, Consolidated Elec. Distrs. 214-358-1212
TX Dallas, Harrison Equip. 214-239-2750
TX Dallas, Integrated Elec. Supp. 214-328-5873
TX El Paso, Midland Specialty 915-533-9555
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Garland, Newark Elctrns. 214-494-5911
TX Grand Prarie, Amistad Elctrns. 214-264-9701
TX Houston, Harrison Equip. 713-879-2600
TX Irving, Fisher/Brownell 214-621-0500
TX Lubbock, Texas Elctrn. Sys. Corp. 806-765-8456
TX San Antonio, Blackburn Drives & Controls Inc. 512-349-2621
TX San Antonio, Sherman Elctrns. 512-224-1004
UT Salt Lake City, Standard Supp. 801-486-3371
VA Charlottesville, Virginia Radio Sys. 804-296-4184
VA Richmond, Sterling Elctrns. 804-226-2190
WA Bellevue, Bell Ind. 206-747-1515
WA Bellevue, Integrated/Jaco 206-455-2727
WA Seattle, Campbell H. D. 206-433-1900
WA Seattle, Radar Elec. 206-282-2511
WI Mequon, Taylor Elec. Co. 414-241-4321

ARSTAN

ARSTAN PRODUCTS INTERNATIONAL INC., 99 Jericho Tpke., Jericho, NY 11753, Tel: 516-333-8100, Telex: 4973964 (ARSTAN is answer back), FAX: 516-333-8911; Empl.: 300; *Sls. Mgr.:* Stan Shapiro ..... **A•2190-2193; D•1572-1573**

Local Sales Offices & Reps

CA San Diego, S & A Tech. Sls. 619-560-1888
GA Atlanta, Electro Sls. 404-394-1122
NC Raleigh, KZJ Component Sales 919-852-5990
PA Allison Park, KW Elctrns. Sls., Inc. 412-487-4300
PA Philadelphia, Check Assocs., Inc. 215-487-3007
TX Dallas, Rem-Air 214-234-1069

Local Distributors

CA Pasadena, EMI 818-795-7193
CA Santa Clara, C-Com Sls. 408-727-2266
IA Cedar Rapids, Hitec Central, Inc. 319-396-3228
MA Wellesly, Brownstone Assocs. 617-239-8204
MO Florissant, Hitec Central 314-831-9377
MO Independence, Hitec Centeral, Inc. 816-796-6684
NC Raleigh, Century Elctrns. 919-872-2203
OR Portland, Electronic Mktg. Grp., Inc. 503-684-5935
PA Norristown, Century Elctrns. 215-631-5400
WA Portland, Electronic Mktg. Grp., Inc. 509-922-2718
WA Redmond, Electronic Mktg. Grp., Inc. 206-882-0962

ARTEL COMMUNICATIONS CORP., 93 Grand St, Worcester, MA 01610, Tel: 617-752-5690, Telex: 940103, FAX: 617-752-4500; Empl.: 80; *Sls. Mgr.:* Frnak Baker, Dir. of Sls.

ARTISAN CONTROLS CORP., P.O. Box 233, 5 Eastmans Rd., Ste. 100, Parsippany, NJ 07054, Tel: 201-428-1770, Telex: 881107; Empl.: 100; *Sls. Mgr.:* Gail Norton; *Dist. Mgr.:* Gail Norton

ARTRONIC INSTRUMENT CO., INC., 9 Division St, Sidney, NY 13838, Tel: 607-563-8444; FSC No.: 09446; Empl.: 12

ARTRONICS CORPORATION, 124 Heritage Dr., P.O. Box 5070, Portsmouth, NH 03801, Tel: 603-433-3111, Telex: 312097; Empl.: 20; *Sls. Mgr.:* Anthony Santomango

ART WIRE/DODUCO, 9 Wing Dr., Cedar Knolls, NJ 07927, Tel: 201-428-4880, Telex: 13-6455; Empl.: 100; *Sls. Mgr.:* Kenneth de Graaf

ASACA SHIBASKU CORP. OF AMER., 12509 Beatrice St., Los Angeles, CA 90066, Tel: 827-7144, Telex: 182089; *Sls. Mgr.:* Alan R. Davis; *Dist. Mgr.:* Susan Grossinger

ASELCO, INC., 429 E. Diamond Ave., Suite E, Gaithersburg, MD 20877, Tel: 301-863-1937, Telex: 898484, FAX: 301-840-1382; Empl.: 7; *Sls. Mgr.:* Yoon Kim ..... **A•1020-1022**

Local Sales Offices & Reps

AL Huntsville, Alpha Mktg. 205-533-0766
CT Southington, The Orion Group 203-621-8371
GA Tucker, Alpha Mktg. 404-491-9430
IL Chicago, B. N. I. Elctrns. 312-775-1717
MN Minneapolis, O. E. M. Prods. 612-541-0236
NC Apex, Wolff's Comp. Sls. 919-362-5022
OH Cleveland, L. H. Kaiser & Assocs. 216-461-4930
TN Oakridge, Alpha Mktg. 615-482-4681
WA Seattle, Vesco 206-244-3905

Local Distributors

IL Hilside, Schuten Elctrns. 312-449-5430
MA Wakefield, Hunter Elctrns. 617-245-5220
WA Kent, Shannon Elctrns. 206-575-8600
Can Toronto, Aselco, Ltd. 416-787-0143

ASGALIUM S.A., P.O. Box 906, La Chaux-de-Fonds, Switzerland CH-2301, Tel: 01141 39 281 351, Telex: 952 207; Empl.: 12; *Sls. Mgr.:* Marc Heyraud; *Dist. Mgr.:* Marc Heyraud

ASHLAND ELEC. PRODS., 80 39th Street, Brooklyn, NY 11232, Tel: 718-965-0770; FSC No.: 04810; Empl.: 50; *Sls. Mgr.:* F. J. von Mering

Local Sales Offices & Reps

CA Burlingame, Wm. J. Purdy Co. 415-347-7701
CA Culver City, De Angelo, Rothman & Co. 213-827-2202
CO Denver, Wm. J. Purdy Co. 303-753-6800
CT Woodbridge, A.B. Assocs. 203-387-8211
IL La Grange, Bierhaus Sls. 312-354-5100
MI Warren, Dem Elctrn. Sls. 313-575-9444
MN Edina, Automated Controls 612-941-4092
NY Orchard Pk., SHR Inc. 716-662-0555
OH Akron, Augnat Assocs. .. 215-273-1211,216-239-2499
WA Spokane, Cripe Co. 509-448-5349
Can St. Laurent, Que., Vitel Elctrns. 514-331-7393

ASM, 525 Truck La., Smithfield, NC 27577, Tel: 919-934-3104; FSC No.: 31336; Empl.: 12; *Sls. Mgr.:* P. A. Medicks

ASMD, INC., 11030-C Roselle St., San Diego, CA 92121, Tel: 619-453-8111; Empl.: 24

Local Sales Offices & Reps

CA Cupertino, Epsilon 408-973-1890
CA San Diego, Added Value Elec. Dist. 619-278-1990
CA Tustin, Added Value Elctrns. Dist. 714-259-8258
MA Hanover, Newby, Inc. 617-878-1512
PA Rydal, Espy Sls. Co. 215-576-0780

ASPECT ELECTRONICS INC., 725 San Aleso, Sunnyvale, CA 94086, Tel: 408-737-2290; Empl.: 40; *Sls. Mgr.:* Donald Roelands

ASPEN RIBBONS INC., 555 Aspen Ridge Dr., Lafayette, CO 80026, Tel: 303-666-5750, 800-525-0646/9966, 800-228-3073 (in CO), Telex: 45-0055; FSC No.: 84-0724829; Empl.: 300; *Sls. Mgr.:* Peter C. Williams; *Dist. Mgr.:* Alexis Polet

A. S. R. SERVOTRON, INC., (Sub. Baldor Elec. Co.), 7945 Deering Ave., Canoga Park, CA 91304, Tel: 818-999-6193, Telex: 181213 ASR USA CNPK; Empl.: 2400; *Sls. Mgr.:* Robert W. Ferran

ASSEMBLY SPECIALISTS, 914 Main St., Box 965, Acton, MA 01720, Tel: 617-263-9100; *Sls. Mgr.:* George L Boyden

ASSEM-PRO INSTRS., See Overnight Engineering, Inc.

ASSOCIATED RESEARCH, INC

ASSOCIATED RESEARCH, INC., 905 Carriage Pk. Ave., Lake Bluff, IL 60044, Tel: 312-295-3312, Telex: 28-3511; FSC No.: 04273; Empl.: 58; *Sls. Mgr.:* Joe Guerriero; *Dist. Mgr.:* Joseph Guerriero ..... **D•1212**

Local Sales Offices & Reps

CO Lakewood, Technical Mktg. 303-232-1516
GA Marietta, Tanner & Assocs., Inc. 404-952-7773
IL Columbia, R. L. Weisheimer & Assocs. 618-281-4148
IL Streamwood, Fortier Testing & Sls. 312-837-5407
MN Minneapolis, Minnkota Elec. Sls. 612-871-7838
NC Charlotte, W. R. Daniel & Assocs. 704-376-8603
TX Houston, E.V. Smith Sls. Co. 713-649-5756

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ASSMANN COMPONENTS, Div. of ebm Industries, Inc., 525 New Britain Ave., Unionville, CT 06085, Tel: 203-674-1515, TWX: 710-423-8723; *Sls. Mgr.:* Robert S. Sobolewski; *Dist. Mgr.:* David Cease

ASSOCIATED CIRCUITS INC., 621 Old County Rd., San Carlos, CA 94070, Tel: 415-592-7528, Telex: 415-595-8927, TWX: 415-595-0762; Empl.: 34; *Sls. Mgr.:* Steve Trovato; *Dist. Mgr.:* Steve Trovato

ASSOCIATED ELECTRONICS & MFG. CORP., 546 Valley Rd., Upper Montclair, NJ 07043, Tel: 201-783-7800, Telex: 138866, ESYLNK: 201-783-7495; Empl.: 69; *Sls. Mgr.:* Ronald A. Fox

ASSOCIATED ENVIRONMENTAL SYSTEMS, Craig Systems, 10 Industrial Way, Amesbury, MA 01913-4848, Tel: 617-388-5662, TWX: 710-347-0590; Empl.: 300; *Sls. Mgr.:* Thomas Maran; *Dist. Mgr.:* Thomas Maran

ASSOCIATED SPECIALTIES, 1751 Main St., Orefield, PA 18069, Tel: 215-395-9172; *Sls. Mgr.:* V. Laudenslager; *Dist. Mgr.:* V. Laudenslager

ASSOCIATED SPRING, BARNES GRP., 10 Main St., Bristol, CT 06010, Tel: 203-583-1331, Telex: 962449, TWX: 710-454-0592; Empl.: 1850; *Sls. Mgr.:* O. R. Hornish

ASTEC USA, LTD., A BSR Intl. Co., 2880 San Tomas Expwy., #200, Santa Clara, CA 95051, Tel: 408-748-1200, Telex: 4745018 ASTEC UI, TWX: 310-474-5018; Empl.: 100; *Dist. Mgr.:* R. Sinagra

ASTON ELECTRONICS, INC., Aston Electronic Designs, Ltd., 346 N. Lindenwood, Olathe, KS 66062, Tel: 913-782-4007, Telex: 361 265; Empl.: Paul Stewart, Ellen Morehead; *Sls. Mgr.:* D. MacClymont

ASTRO DYNAMICS, INC., 2 Gill St., Woburn, MA 01801, Tel: 617-935-4944; Empl.: 50; *Sls. Mgr.:* Leo Donahue

ASTRO-GEO-MARINE, INC., 202 E. Cota St., Santa Barbara, CA 93101, Tel: 805-965-7005; FSC No.: 51473; Empl.: 15

ASTRO INSTRUMENT CORP., 2501 NW 17th Ln., Pompano Beach, FL 33064, Tel: 305-973-8900, TWX: 510-956-9601; FSC No.: 51761; *Sls. Mgr.:* Peter J. Sinatra, Jr.

ASTROMEC, INC., 1780 Forrest Way, Carson City, NV 89701, Tel: 702-883-9226, FAX: 702-883-9228; Empl.: 24; *Sls. Mgr.:* J. Paul Sutton

ASTRO-MED, INC., 600 East Greenwich Avenue, W. Warwick, RI 02893, Tel: 401-828-4000, TWX: 710-382-6409; Empl.: 181; *Sls. Mgr.:* Everett V. Pizzuti; *Dist. Mgr.:* Vincent A. Paolino ..... **D•1406**

Local Distributors

Can	Toronto, Ont., RCC Elctrns.	416-252-5094

ASTRON CORP., 9 Autry, Irvine, CA 92718, Tel: 714-458-7277; *Sls. Mgr.:* William Pochirowski; *Dist. Mgr.:* William Pochirowski ..... **D•1574**

Local Distributors

CA	Hayward, Argus Elctrns.	415-887-1440
CA	Los Angeles, Henry Radio	213-820-1234
CA	Van Nuys, CMC Distrbg.	818-994-4455
CO	Aurora, Electro Tech Sls.	303-343-8937
CO	Denver, CW Elctrns.	303-832-1111
GA	Marrietta, NBC Mktg.	404-424-9097
IL	Joliet, Communications Assoc.	815-744-6444
IL	Joliet, Primus Elctrns.	815-436-8945
MD	Cockleysville, Tessco.	301-785-5300
MA	N. Scituate, Two Comm Inc.	800-343-5519
MA	Reading, Graham Radio	617-944-4000
MA	Westport, Com Mar Inc.	617-636-6961
MN	St. Paul, Capital Sls.	612-642-1120
NJ	Clifton, Meridian Comms.	201-473-1623
OH	Cincinnati, Cartwright Comms.	513-489-1755
TX	Dallas, M. Hutton Co.	214-484-0580
WA	Bellevue, Arva Pacific	206-453-2132
WI	Madison, Elmquist Elctrns.	608-222-0900
Can	Weston, Ont., Eastcom Inds.	416-743-7801

ASTRO PACKAGING, INC., 100 Thomas Road North, Hawthorne, NJ 07507, Tel: 201-423-3000, Telex: 130545, FAX: 1-201-423-1987; Empl.: 160; *Sls. Mgr.:* Phillip L. Steiner



ASTROSYSTEMS, 6 Nevada Dr., Lake Success, NY 11042, Tel: 516-328-1600, TWX: 510-223-0411; Empl.: 220; *Sls. Mgr.:* Howard Lazarus ..... **D•1575**

Local Sales Offices & Reps

CA	Cerritos, Foxco Equip.	213-921-3421
CO	Englewood, Dynatech	303-773-2830
DE	Garrison Lake, Broge-Matarese, Inc.	302-653-5005
FL	Melbourne, Reynolds & Assocs.	305-259-7000
IL	Elgin, JHS Assocs.	312-741-9070
IN	Mishawaka, Engineered Sls.	219-255-5111
IA	Cedar Rapids, Di-Tronix, Inc.	319-377-8275
KS	Wichita, Di-Tronix, Inc.	316-838-0884
MA	Ashland, Polytek Assocs., Inc.	617-881-4741
MO	Bridgeton, Di-Tronix, Inc.	314-291-4777
MO	Raytown, Di-Tronix, Inc.	816-365-6340
NC	Charlotte, Jake Rudisill Assoc. Inc.	704-377-6901
OH	Cleveland, Instr. Sys.	216-845-8800
OH	Dayton, Instr. Sys.	513-294-2838
OR	Portland, Frys Controls, Inc.	503-226-2620
PA	Pittsburgh, Instrumentation Sys.	412-823-7005
PA	Warminster, Multi-Measurements	215-675-3082
TX	Dallas, Data Mktg. Assocs., Inc.	214-661-0330
WA	Bellevue, Fry Controls, Inc.	206-282-9270
WA	Seattle, Datacom & Assocs., Inc.	206-285-2525
WI	Appleton, Bu-Nell Eng. Co.	414-733-4242
WI	Waukesha, Bu-Nell Eng. Co.	414-784-0994
Can	Willowdale, Ont., Arthur Rosenblum Sls.	416-224-1177

ASTRO TOOL CO., INC., 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006, Tel: 503-642-9853

A-SYSTEMS INC., 1500 Avon St. Extd., Charlottesville, VA 22901, Tel: 804-295-7200; *Sls. Mgr.:* F. M. Artrip



AT&T, 555 Union Blvd., Allentown, PA 18103, Tel: 1-800-372-2447
..... **A•1023-1032, 1334-1337, 1733-1743, 2194-2199; B•1322-1324; C•1713-1715; D•1576-1578, 2026-2027**

Local Sales Offices & Reps

AL	Huntsville	205-837-6062
AZ	Phoenix	602-231-0639
CA	Cypress	714-220-6100
CA	Los Angeles	213-726-5184
CA	Sunnyvale	408-522-5555
CA	VanNuys	818-785-4911
FL	Orlando	305-345-7296
GA	Norcross	404-446-4710
IL	Itasca	312-250-9777
MA	Framingham	617-626-2161
MN	Minneapolis	612-724-2019
NJ	Berkeley Hgt.	201-771-2601
NC	Raleigh	919-790-9004
OR	Portland	503-244-3883
PA	King of Prussia	215-768-2626
TX	Bedford	817-354-9798

ATC POWER SYSTEMS, INC., 472 Amherst Street, Nashua, NH 03063, Tel: 603-882-1366, Telex: 756779; FSC No.: 61814; Empl.: 35; *Sls. Mgr.:* Thomas J. Mealey

ATEC, INC., 8219 Kempwood Dr., Houston, TX 77055, Tel: 713-468-7971, Telex: 77-4132 FLEKS HOU; FSC No.: 09552; Empl.: 70; *Sls. Mgr.:* F. Sawberger

ATEC SYS., 107 N. Washington St., E. Rochester, NY 14445, Tel: 716-381-4740; Empl.: 6; *Sls. Mgr.:* Harry Turner

ATHENA CONTROLS, INC., 5145 Campus Dr., Whitemarsh Ind. Campus, Plymouth Meeting, PA 19462, Tel: 215-828-2490, Telex: 50-3309; Empl.: 70; *Sls. Mgr.:* David A. Tryon; *Dist. Mgr.:* Allen Breckenridge, Prod. Mgr.

ATKINS TECHNOLOGY, 3321 S.W. 40th Blvd., Gainesville, FL 32608, Tel: 904-378-5555, Telex: 51-4736-HALA; Empl.: 30; *Sls. Mgr.:* Robert M. Atkins; *Dist. Mgr.:* Liddon Dell

ATLANTIC MAGNETICS, INC., 1441 S.W. 30th Ave., Pompano Beach, FL 33069, Tel: 305-979-7920; Empl.: 37; *Sls. Mgr.:* Edward Cammarata; *Dist. Mgr.:* Scott Thompson

ATLANTIC OPTICAL MOULDING, Ellis St., P.O. Box 309, Dudley, MA 01570, Tel: 617-943-1746; Empl.: 6

ATLANTIC RESEARCH, 5390 Cherokee Ave., Alexandria, VA 22312, Tel: 703-642-4000, Telex: 248893; FSC No.: 95335; Empl.: 2400

ATLANTIC SCIENTIFIC CORPORATION, 2711 S. Harbour City Blvd., Melbourne, FL 32901, Tel: 1-800-544-4737, ESYLNK: 755959, FAX: 305-727-0736; Empl.: 100; *Sls. Mgr.:* Jim Owens ..... **B•1235**

ATLANTIC SOLAR POWER, INC., 6455 Washington Blvd., Baltimore, MD 21227, Tel: 800-237-6527, Telex: 87-545-ALB ENG PO BAL, FAX: 301-796-8094; Empl.: 14; *Sls. Mgr.:* Doug Keller; *Dist. Mgr.:* Bruce Wilson

Local Sales Offices & Reps

MA	Reading, Atlantic Solar Power, Inc.	617-944-2250
MI	Livonia, Atlantic Solar Power, Inc.	313-591-7745

ATLAS ENERGY SYSTEMS, 16872 Milliken Ave., P. O. Box 19129, Irvine, CA 92713, Tel: 714-863-0900, FAX: 714-553-8191; Empl.: 35

ATLAS ENGINEERING CORP., 10 Cheney St., Dorchester, MA 02121, Tel: 617-445-7100; FSC No.: 07001; Empl.: 75; *Sls. Mgr.:* Norman Scotch

ATLAS/SOUNDOLIER, 1859 Intertech Dr., Fenton, MO 63026, Tel: 314-349-3110, TWX: 910-760-1650; Empl.: 350; *Sls. Mgr.:* Paul Grote; *Dist. Mgr.:* Andy Musci ..... **C•1016**

Local Sales Offices & Reps

MO	Fenton, Atlas/Soundolier (Western Sls. Off.)	314-349-3110
NJ	Parsippany, Atlas/Soundolier (Eastern Sls. Off.)	201-887-7800



ATLEE INC., 10 Bayfield Dr., North Andover, MA 01845, Tel: 617-681-1003, Telex: 928252; FSC No.: 99378; Empl.: 40; *Sls. Mgr.:* John J. Casey ..... **B•1236; C•1017, 1716-1717, 1743**

Local Sales Offices & Reps

FL	Deerfield Bch., Cartwright & Bean	305-429-3400
IL	Elk Grove Vl, Loren Green Assocs.	312-593-0282
IN	Carmel, Berndt Assocs., Inc.	317-844-0114
LA	Covington, Cartwright & Bean	504-892-1780
MN	St. Paul, Countryman Assoc	612-645-9151
MS	Jackson, Cartwright & Bean	601-981-1170
MO	Grandview, Harris Hanson	816-763-6200
MO	St. Louis, Harris Hanson	314-432-3611
NY	Binghamton, Empire Tech. Sls.	607-772-0651
NY	Skaneateles, Empire Tech. Assocs.	315-685-5703
NC	Charlotte, Cartwright & Bean	704-536-0303
NC	Raleigh, Cartwright & Bean	919-876-4130
OH	Centerville, Micro Sls.	513-433-8171
OR	Beaverton, Evergreen Mktg. Corp.	503-643-8020
TN	Knoxville, Cartwright & Bean	615-693-7450
TN	Memphis, Cartwright & Bean	901-362-8345
WA	Seattle, Evergreen Mktg. Grp.	206-633-3160
WI	Milwaukee, Loren Green Assocs.	414-344-0637

Local Distributors

AZ	Phoenix, EGR	602-840-0320
CA	Granada Hills, Acort Inds., Inc.	818-368-4474
CA	San Jose, Bisco Inds.	408-946-8980
IL	Franklin Pk., Bisco Inds.	312-451-1230
IN	Ft. Wayne, Graham Elec. Supp.	219-423-3422
IN	Indianapolis, Graham Elec. Supp.	317-634-8202
IA	Cedar Rapids, Deeco	319-365-7551
MA	Marlboro, Hardware Specialties	617-481-8622
MA	Winchester, Rush Inds.	617-729-5800
MN	Minneapolis, Aerospace Computer	612-884-4725
NJ	Nutley, Essex Electric	201-661-2600
NJ	Paramus, N.Y. Fastener	201-265-8770
NY	Bayshore, Merrit Fastener	516-242-1800
NY	Bohemia, Car-Lac	516-567-4200
NY	Buffalo, Summit Dist.	716-887-2800
NY	Long Island City, Hardware Specialty	212-361-9393
NY	Plainview, Elctrn. Precepts	516-293-7441
NY	Plainview, G & B Fasteners	516-694-0990
NY	Rochester, Summitt Elec.	716-334-8110

TX Dallas, National Precision 214-357-3921
TX Houston, The Altair Co. 713-462-3029
TX Richardson, Altair Co. 214-231-5166
VA Charlottesville, Virginia Radio Supp. Co. 804-296-4184

ATOMERGIC CHEMETALS CORP., 91 Carolyn Blvd., Farmingdale, NY 11735-1527, Tel: 516-694-9000, Telex: 144612, TWX: 6852289; *Sls. Mgr.:* H. J. Gary

ATV RESEARCH, INC., 1301 Broadway, Dakota City, NE 68731, Tel: 402-987-3771; *Sls. Mgr.:* Mel Shadbolt

AUBURN MFG., Pease Ave. & Stack St., Middletown, CT 06457, Tel: 203-346-6677; Empl.: 45; *Sls. Mgr.:* Philip L Balicki

AUDIOSEARS, South St., Stamford, NY 12167, Tel: 607-652-7305; FSC No.: 97101; Empl.: 120; *Sls. Mgr.:* D. Hartwell

AUDIOSONE, INC., 617 Fan Hill Rd., Monroe, CT 06468, Tel: 203-268-4372/6703, 203-261-7106; *Sls. Mgr.:* Rudolph Duris

AUDIOTRONICS CORP., 7428 Bellaire Ave., N. Hollywood, CA 91605, Tel: 818-765-2645, Telex: 69-1241; Empl.: 300; *Sls. Mgr.:* Roy Schaub

AUGAT INC., 33 Perry Ave., Box 779, Attleboro, MA 02703, Tel: 617-222-2202, TWX: 710-391-0644; FSC No.: 91506; Empl.: 3,200; *Sls. Mgr.:* Jim Fuchs/Jeff Mahall; *Dist. Mgr.:* William Hall

AUGAT BROADBAND COMM. GRP., 710 Narragansett Pk. Dr., Pawtucket, RI 02861, Tel: 401-724-4400

AUGAT/ES P. INC., Augat, Inc., 741 Flynn Road, Camarillo, CA 93010-8056, Tel: 805-987-0909, Telex: 66-4467; FSC No.: 219-0430; Empl.: 135; *Sls. Mgr.:* Eugene Sequiera

AUGAT COMMUNICATIONS GROUP, Augat Inc., P.O. Box 1110, Seattle, WA 98111, Tel: 206-223-1110, TWX: 910-443-3040; *Sls. Mgr.:* Bill Jensen & Chris Sirianni

AUGAT, INC., Interconnection Components Div., 33 Perry Ave.,P.O. Box 779, Attleboro, MA 02703, Tel: 617-222-2202, TWX: 710-391-0644

AUGAT, INC., Interconnection Systems Div., 40 Perry Ave., P. O. Box 1037, Attleboro, MA 02703, Tel: 617-222-2202, TWX: 710-391-0644 ..... **C•1718-1721**

Local Sales Offices & Reps

AL Huntsville, Glen White Assocs. 205-883-7938
AZ Phoenix, Spectrum Mktg. Assocs. 602-224-0950
CA Los Angeles, Wiley Co. 213-666-1611
CA San Diego, Wiley Co. 619-571-2881
CA San Jose, Augat Sls. 408-249-8801
CO Littleton, Simpson Assocs., Inc. 303-794-8381
FL Coral Springs, HAI Elctrns. 305-752-7520
FL Melbourne, HAI Elctrns. 305-752-7520
FL Tampa, HAI Elctrns. 305-752-7520
GA Norcross, Glen White Assocs. 404-441-1447
HI Honolulu, Hawaii Elctrns. 808-845-8207
IN Indianapolis, Allen Nace Co., Inc. 317-849-7038
IA Blue Grass, Ensco-Rep, Inc. 319-381-1466
KS Olathe, Ensco-Rep, Inc. 913-782-3626
KS Wichita, Ensco-Rep, Inc. 316-683-1070
MA Attleboro Falls, Augat Sls. 617-699-7653
MI Detroit, Rathsburg Assocs. 313-882-1717
MN Minneapolis, Comprehensive Tech. Sls. 612-888-7011
MS Jackson, Glen White Assocs. 601-957-2776
MO Maryland Heights, Ensco-Rep, Inc. 314-423-3935
NJ Cherry Hill, Trinkle Sls., Inc. 609-795-4200, 800-257-8210
NY Syracuse, Leonard D. Allen, Inc. 315-437-8387
NY Yonkers, David Sonkin Assocs. 914-968-8282
NC Raleigh, Glen White Assocs. 919-848-1931
OH Englewood(Dayton), Allen Nace Co., Inc. 513-836-0931
OH Richfield, Allen Nace Co., Inc. 216-659-7178
OR Portland, Elctrn. Mktg. Grp., Inc. 503-684-5935
PA Philadelphia, Trinkle Sls., Inc. 215-992-2080
TN Gray, Glen White Assocs. 615-447-8850
TX Dallas, Augat Sls. 214-788-4211
TX Houston, Augat Sls. 713-495-3100
UT Odgen, Spectrum Mktg. Assocs., Inc. .. 801-972-8552
VA Lynchburg, Glen White Assocs. 804-384-0173
WA Redmond, Elctrn. Mktg. Grp. 206-882-0962
WI Wauwatosa, Larsen Assocs., Inc. 414-258-0529

Local Distributors

CA Chatsworth, Hamilton Electro Sls. 213-558-2323
CA Culver City, Hamilton Electro Sls. 213-558-2020
CA Monrovia, Erik-A-Elctrns. 213-574-1020
CA Ontario, Hamilton/Avnet Elctrns. 714-989-4602
CA Santa Clara, Wyle Distbn. Grp. 408-727-2500
IL Chicago, Newark Elctrns. 312-638-4411
IN Fort Wayne, Graham Elctrns. 219-423-3422
MD Gaithersburg, Pioneer/Washington ... 301-921-0660
MA Norwood, Gerber Elctrns. 617-769-6000
MA Peabody, Time Elctrns.-New Eng. 617-532-6200
MN Minneapolis, Merit Elctrns. Corp. 612-546-5383
MO St. Charles, Lectronix, Inc. 314-946-6424
NJ Clifton, J-Mar Elctrns. 201-772-6400
NY Bohemia, Car-Lac Elctrn. Indl. Sls., Inc. 516-567-4200
NY Farmingdale, Milgray Elctrns. 516-420-9800
NY Melville, Arrow Elctrns. 516-694-6800
OH Cleveland, Pioneer 216-587-3600
OH Columbus, Thompson Elctrn. Supp., Inc. 614-228-6191
TX El Paso, Ideal Elctrns. 915-779-6647
TX Houston, Sterling Elctrns. 713-627-9800

AUGAT, INC., Packaged Products Div., 33 Perry Ave., P. O. Box 659, Attleboro, MA 02703, Tel: 617-222-9635, Telex: 710-391-0644

AUGAT/PYLON CO., INC., P.O. Box 2510, Attleboro Falls, MA 02763, Tel: 617-699-7646, TWX: 948095; Empl.: 200; *Sls. Mgr.:* Chuck Harris

AUGAT TELZON, Augat Inc., 1111 Third Ave., Ste. 950, Seattle, WA 98111, Tel: 206-223-1110, TWX: 910-443-3040, FAX: 206-583-2753; Empl.: 130; *Sls. Mgr.:* Bill Jensen, C. Sirianni ..... **B•1145**

For Telzon prods., call your local off. of Anixter Comm.;Graybar;North Supp.;Alltel;Walker & Assocs.

AULT, INCORPORATED, 1600 Freeway Blvd., Minneapolis, MN 55430, Tel: 612-560-9300, TWX: 910-576-3435, FAX: 612-560-4099; Empl.: 300; *Sls. Mgr.:* John Newhouse ..... **D•1580-1581**

Local Sales Offices & Reps

AL Huntsville, L & D, Inc. 205-837-1469
MN Minneapolis, Ault, Inc. 612-560-9300
CA Los Angeles, A-F Sls. Engrg. Inc. 213-681-5631
CA Orange County, A-F Sls. Engrg. Inc. 714-641-2903
CA San Diego, A-F Sls. Engrg. inc. 619-226-8424
CA Santa Clara, Magna Sls. 408-727-8753
CO Denver, William J. Purdy 303-753-6800
CO Denver, William J. Purdy 303-777-1411
CT Wallingford, Marathon Sls., LTD 617-875-3566
FL Deerfield Bch., Sls. Engrg. Concepts Inc. 305-426-4601
GA Atlanta, L & D, Inc. 404-455-3483
IL Arlington Hgts., MSI 312-956-1000
IA Des Moines, Beams Co. 515-255-1148
KS Shawnee Mission, Beams Co. 913-631-0300
MD Columbia, Delta III Assocs. 301-730-4700
MA Framingham, Marathon Sls., LTD 617-875-3566
MI Plymouth, Jay Mktg. Assocs. 313-459-1200
MO St. Louis, Beams Co. 314-434-8448
NV Carson City, Magna Sls. 702-883-1471
NJ Ocean, P. Saftler Assocs. 201-922-3014
NY Lynbrook, P. Saftler Assocs. 516-593-7880
NC Greensboro, L & D, Inc. 919-292-3201
OH Cleveland, Lyons Corp. 216-659-9224
OH Dayton, E. Lyons Co. 513-278-0714
OR Portland, Jas. J. Bacher Co. 503-297-8744
PA Philadelphia, Alta Elctrns. 609-795-4467
TX Austin, R. F. Kimball Co. 512-443-5284
TX Houston, R. F. Kimball Co. 713-890-8810
TX Houston, R. F. Kimball Co. 713-840-0590
TX Richardson, R. F. Kimball Co. 214-231-3447
WA Seattle, Jas. J. Backer Co. 206-285-1300

Local Distributors

CA Cincinnati, Hughes Peters 513-351-2000
CA Long Bch., Power Sys. Distrs. 213-597-6957
CA Milpitas, Power Sys. Distrs. 408-263-1063
CA Mountain View, USI Elctrn. Comps. ... 415-969-5420
CA San Diego, Tauber Elctrns. 619-274-7242
CA Santa Monica, Distr. Specialists 213-393-9666
CA Van Nuys, Natl. Electro Sls. Corp. 213-781-0505
MA Sharon, Adcour 617-784-8123
MO St. Charles, Finnigan Elctrns. 314-946-6201
UT Salt Lake City, Std. Supp. Co. 801-453-3371
Can St. Laurent, Que., Tech-Rep Elctrns., Ltd. 514-337-6046

AURIC CORP., 470 Frelinghuysen Ave., Newark, NJ 07114, Tel: 201-242-4100; Empl.: 35

AUSTIN ELECTRONICS, The Austin Co., 17-01 Pollitt Drive, Fair Lawn, NJ 07410, Tel: 201-794-0200, TWX: 710-988-2262; Empl.: 100; *Sls. Mgr.:* Frank J. Cerven



AUSTRON, INC., P.O. Box 14766, Austin, TX 78761-4766, Tel: 512-251-2341, TWX: 910-874-1356; FSC No.: 24672; Empl.: 130; *Sls. Mgr.:* R. Ellis ..... **A•1338-1339**

Local Sales Offices & Reps

AL Huntsville, Sci. Devices - SE 205-536-1969
AZ Scottsdale, Territorial Mktg. 602-994-8665
CA Goleta, Thorsen Co. 805-964-8751
CA Mtn. View, N.S. Assocs. 415-960-1111
CA Signal Hill, Thorson Co. 213-595-0361
CO Englewood, Sierra Tech. Grp. 303-790-1700
FL Coral Springs, Scientific Dvcs.-S.E. 305-755-4453
FL Orlando, Sci. Devices - SE 305-841-8180
FL Shalimar, Sci. Devices - SE 904-651-4407
GA Snellville, Sci. Devices-SE 404-979-7971
IL Elk Grove, Loren Green Assoc. 312-593-0282
IN Indianapolis, Loren Green Assoc. 317-293-9827
MA Reading, Scheinfein Assocs. 617-944-2304
MI Union Lake, Ashby Assocs. 313-363-1100
MN Minneapolis, Loren Green Assoc. 612-571-6666
NY Frankfort, Kapital Instr. Sls. 315-894-4245
NY Huntington, CDB Entprs. 516-692-5200
NC Winston Salem, Sci. Devices-SE 919-765-5776
OH Dayton, Ashby Assocs. 513-461-2668
OH Lyndhurst, Ashby Assocs. 216-461-0826
OK Park Hill, Scientific Dvcs.-S.W. 918-457-4888
OR Beaverton, Cascade Data Mktg. 503-641-9266
PA N. Wales, Sci. Devices - Phila. 215-699-7707
TX Austin, Scientific Dvcs.-S.W. 512-442-6215
TX Houston, Sci. Devices - Gulfcoast 713-864-1711
TX Richardson, Sci. Devices - SW 214-231-8106
TX San Antonio, Scientific Dvcs.-S.W. 512-736-3164
VA Reston, Austron 703-471-7963
WA Kirkland, Cascade Data Mktg. 206-747-6190

AUTODESK, 2320 Marinship Way, Sausalito, CA 94965, Tel: 415-332-2344; Empl.: 295; *Sls. Mgr.:* Richard Cuneo, Dir. of Sls.; *Dist. Mgr.:* Bud Runnels

AUTOMATED PRODUCTION CONCEPTS, 8 E. Garden Pl., Pompton Plains, NJ 07444, Tel: 201-831-8300, Telex: 130120; Empl.: 8

AUTOMATED PROD. EQUIP. CORP., 142 Peconic Ave., Medford, NY 11763, Tel: 516-654-1197, TWX: 510-228-2120; FSC No.: 57216; *Sls. Mgr.:* Peter Clancy

AUTOMATIC COIL CORP., Sub. Designatronics, Inc., 455 E. 10th Ave., Hialeah, FL 33010, Tel: 305-883-5311, TWX: 810-848-8097; Empl.: 245 ..... **A•1203-1205, 1494-1497**

Local Sales Offices & Reps

AL Huntsville, Hughes Assocs. 205-533-9108
CA Huntington Beach, Mil-Com Sls. 714-840-2424
CA Mtn. View, Fetty/Schoenduve 415-962-8330
GA Norcross, Hughes Assocs. 404-662-1587
IL Downers Grove, Rockford Controls Co. 312-896-3184
MD Laurel, CSDS, Inc. 301-490-3800
MA Lowell, Underwood Sls. Corp. 617-256-8191
MN Minneapolis, Holmgren Assocs. 612-786-7641
MS Corinth, Hughes Assocs. 601-287-2915
NC Cary, Hughes Assocs. 919-467-7029
OH Dayton, Rockford Controls Ohio, Inc. .. 513-898-5452
OH Euclid, Rockford Controls Ohio, Inc. ... 216-731-5250
OH Reynoldsburg, Rockford Controls Ohio, Inc. 614-868-5577
OK Tulsa, MGR Elctrns. 918-369-5186
TN Nashville, Hughes Assocs. 615-871-0908
TX Austin, MGR Elctrns. 512-250-0926
TX Dallas, MGR Elctrns. 214-238-5246
TX Houston, MGR Elctrns. 713-497-8306

AUTOMATIC CONNECTOR, INC., 400 Moreland Rd., Commack, NY 11725, Tel: 516-543-5000, TWX: 510-226-3744; FSC No.: 94375; Empl.: 250; *Sls. Mgr.:* William Pitcher

AUTOMATIC SWITCH CO., 50-60 Hanover Road, Florham Park, NJ 07932, Tel: 1-201-966-2000, Telex: 136422; Empl.: 1,200; *Sls. Mgr.:* Wayne Bouchard

AUTOMATIC TIMING & CONTROLS CO., 201 So. Gulph Rd., King of Prussia, PA 19406, Tel: 215-337-5500, 800-441-8245, Telex: 84-6437; Empl.: 300; *Sls. Mgr.:* R. L. Swanson ..... **D•1120**

Local Sales Offices & Reps

AZ Phoenix, Arid Controls 602-947-4379
CA Gardena, Instrument Lab. 213-327-3282

CA San Francisco, Automated Proc. Controls 415-467-6162
CO Englewood, E & M Sls. 303-761-6202
FL Lakeland, AA. Elec. Div. 813-665-6941
GA Norcross, AA.Electric Div. of AEC 404-449-8670
IL Downers Grove, Rockford Controls ... 312-960-2046
IN Indianapolis, Rockford Controls 317-248-2518
KY Louisville, Air-Hydro Power 502-451-1000
LA New Orleans, Mid South Sls. 504-641-7480
MD Baltimore, Jobe & Co. 301-327-0220
MA Hingham, Hingham Bay Corp. 617-749-8700
MI Brighton, H. H. Barnum Co. 313-229-2961
MN Minneapolis, Automated Controls 612-941-4092
MO Kansas City, Duncan Sls. & Engrg. 816-356-1888
MO St. Louis, E. Mooney Co. 314-878-9910
NE Omaha, Lakeland Engrg. Equipt. 402-734-2600
NJ Newark, KLS Assocs. 201-785-4450
NM Albuquerque, E & M Sls. 505-883-8955
NY Buffalo, Niagara Electric Sls. 716-825-3100
NY Rochester, Niagara Electric Sls. 716-271-1223
NY Syracuse, Niagara Elec. Sls. 315-437-1656
NC Charlotte, Brown & Morrison 704-554-8570
OH Cincinnati, Anderson-Bolds 513-528-5680
OH Cleveland, Anderson-Bolds 216-229-4700
OH Worthington, Anderson-Bolds 614-885-3933
OK Tulsa, Driscoll Auto. Control 918-747-6625
OR Portland, Coons Western 503-295-0411
PA King of Prussia, Applied Controls 215-265-3832
PA Pittsburgh, Gilson Engrg. Sls. 412-931-6114
TX Houston, GEA of Texas 713-781-3005
UT Salt Lake City, Control Equip. 801-487-7741
VA Richmond, Jobe & Co. 804-282-6508
WA Seattle, J. A. Tudor & Assocs. 206-441-7444
WA Spokane, J. A. Tudor & Assocs. 509-327-3328
WI Cedarburg, Automation Engrg. 414-377-7500

AUTOMATION DISPLAYS INC., 3533 N. White Ave., Eau Claire, WI 54703, Tel: 715-834-9595; Empl.: 19

AUTOMATION PRODS., INC., 3030 Max Roy, Houston, TX 77008, Tel: 713-869-0361, Telex: 775-959

AUTOMATION UNLIMITED, Icon Corporation, 134 New Boston St., Woburn, MA 01801, Tel: 617-933-7288, Telex: 949329; *Sls. Mgr.:* Rich Farley; *Dist. Mgr.:* Kevin Bagaline

AUTOROLL MACHINE CORPORATION, 11 River St., Middleton, MA 01949, Tel: 617-777-2160, Telex: 940250; Empl.: 85

Local Sales Offices & Reps
CA Woodland Hills, Autoroll West 818-340-5098
IL Schaumburg, Autoroll Central 312-894-4474
MA Middleton, Autoroll Northeast 617-777-2160
WI Green Bay, Autoroll Central 414-494-5166

AUTOSPLICE, INC., 59-12, 37th Ave, Woodside, NY 11377, Tel: 718-429-0500, Telex: 420902, TWX: 968171; Empl.: 115; *Sls. Mgr.:* O. Nedelkovich

Local Sales Offices & Reps
CA San Diego, Autosplice West 619-530-0077
CA San Jose, Autosplice N.W. 408-224-8673
IL Chicago, Schiffer Assoc. 312-847-2400
IN Fort Wayne, Menze Sls. 219-747-5616
MA Cambridge, Autosplice Northeast 617-494-8430

AUTO-SWAGE PRODS., 726 River Rd., Shelton, CT 06484, Tel: 203-929-1401, Telex: 963-542; Empl.: 170; *Sls. Mgr.:* H. K. Feaster

AUTOTROL, P.O. Box 557, Crystal Lake, IL 60014, Tel: 815-459-3080, Telex: 72-2417; Empl.: 140; *Sls. Mgr.:* Thomas Heldt

AUTRONICS CORP., 314 E. Live Oak, Ste. A, Arcadia, CA 91006, Tel: 818-445-5470, TWX: 910-582-3216; FSC No.: 03972; Empl.: 80; *Sls. Mgr.:* Annabelle Cloud ... **D•1121**

Local Sales Offices & Reps
TX Richardson, Scientific Sls. & Svcs. 214-231-6541

AVA INSTRUMENTATION, INC., 8010 Highway 9, Ben Lomond, CA 95005, Tel: 408-336-2281, Telex: 5101007906 AVA; FSC No.: 61933; Empl.: 7; *Sls. Mgr.:* Allan Hughes

AVANTEK, INC., 3175 Bowers Ave., Santa Clara, CA 95054, Tel: 408-727-0700, Telex: 34-6337, TWX: 310-371-8717; Empl.: 3200

Local Sales Offices & Reps
AZ Tempe, Cain Technlg. 602-894-9405
CA Los Altos, Cain-White & Co. 415-948-6533
CA Orange, Avantek, Inc. 714-978-8076
CA Orange, Cain Technlg. 714-997-7311
CA Santa Clara, Avantek, Inc. 408-986-8644
CA Van Nuys, Cain Technlg. 818-904-9392
CA Westlake Vl, Avantek, Inc. 805-373-3870
CO Aurora, Avantek, Inc. 303-367-1000
FL Dunedin, Avantek, Inc. 813-787-3218
GA Atlanta, Avantek, Inc. 404-493-7815
IL Palatine, Avantek, Inc. 312-358-8963
IN Ft. Wayne, Avantek, Inc. 219-432-4965
MD Beltsville, Applied Engrg. Consits. 301-595-5393
MD Columbia, Avantek, Inc. 301-381-2600
MA Chelmsford, Avantek, Inc. 617-453-8846
MA Lexington, R. J. Sickles Assocs. 617-862-5100
MI Southfield, Comtel Instrs. 313-358-2505
MN Bloomington, Elctrn. Sls. Agys. 612-884-8291
MO Villa Ridge, Avantek, Inc. 312-358-8963
NJ Teterboro, Tech. Mktg. Assocs. 201-393-9330
NY Skaneateles, Robtron 315-685-5731
NY Syosset, Avantek, Inc. 516-496-4500
OH Cleveland, Comtel Instrs. 216-442-8080
OH Dayton, Comtel Instrs. 513-426-5310
OH Hilliard, Comtel Instrs. 614-876-8305
PA Pittsburgh, Comtel Instrs. 412-922-5720
PA Wayne, Avantek, Inc. 215-254-9440
TX Austin, Thorson Southwest 512-345-1985
TX Dallas, Thorson S.W. 214-233-5744
TX Houston, Thorson S.W. 713-558-8204
WA Bellevue, Cain White/Northwest 206-462-2118
Can Georgetown, Ont., Sheppard Agencies, Ltd. 416-877-9846

Local Distributors
AL Huntsville, CDI Branch Off. 205-883-7501
AZ Tempe, Sertek, Inc. 602-968-5132
CA Los Altos, Pen Stock Co. 415-948-6552
CA Orange, Sertek, Inc. 714-997-7311
CA Westlake Vl, Sertek, Inc. 818-707-2872
FL Largo, Applied Specialties of FL. 813-531-2099
FL Melbourne, Component Distrs. 305-727-9981
GA Norcross, Comp. Distrs., Inc. 404-441-3320
IL Palatine, Penstock Midwest 312-934-3700
MD Beltsville, Applied Specialties 301-595-5393
MA Lexington, Sickles Distbn. Sls. 617-862-5100
NJ Teterboro, TMA/RF 201-393-9330
NC Raleigh, Comp. Distrs., Inc. 919-834-9465
TX Dallas, Thorson Distbg. Co. 214-233-5744

AVEL-LINDBERG, INC., 1 Rowan Street, Danbury, CT 06810, Tel: 203-797-8698, TWX: 710-456-9984, FAX: 203-790-7081; Empl.: 8; *Sls. Mgr.:* Rowland Mattin ..... **A•2201**

Local Sales Offices & Reps
CA Buena Park, Chuck Cooper Co., Inc. .. 714-739-8526

Local Distributors
CT Wallingford, Sager Elctrl. Supp. Co. 203-265-4600
MA Hingham, Sager Elctrl. Supp. Co. 617-749-6700
MA Hingham, Sager Electrical Supp. Co. .. 617-749-6700
NY New York, Martin Audio/Video Corp. 718-541-5900

AVEX ELCTRNS., 1683 Winchester Rd., P.O. Box 1026, Bensalem, PA 19020, Tel: 215-638-1515, FAX: 215-638-9108; FSC No.: 58414; *Sls. Mgr.:* Mike Battery Batley; *Dist. Mgr.:* Mike Batley ..... **D•1422-1424**

Local Sales Offices & Reps
CO Denver, Tessco 303-778-1119

AVIBANK MFG., INC., 210 S. Victory Blvd., Burbank, CA 91503, Tel: 818-843-4330, TWX: 910-498-2215; FSC No.: 84256; Empl.: 425; *Sls. Mgr.:* D. Ladin

Avionic Instruments, Inc.

AVIONIC INSTRUMENTS, 1414 Randolph Ave., Avanel, NJ 07001, Tel: 201-388-3500, Telex: 844413; Empl.: 120; *Sls. Mgr.:* Bryce Wiedeman; *Dist. Mgr.:* George Kostick ..... **D•1582-1583, 2028-2033**

Local Sales Offices & Reps
AZ Phoenix, CPS Assocs., Inc. 602-246-1097
CA San Jose, By-Tec Sls., Inc. 408-629-4769
MA Needham Heights, Shain Assocs. 617-449-4380
MO St. Louis, Harris Hanson Co. 314-432-3611
NJ Rahway, Avionic Instrs. Inc. 201-388-3500
NY Great Neck, Industron Assocs. 516-487-2620
WA Seattle, Rep West 206-283-8351
EXP NJ, Rahway, REA Intl. Ltd. 201-382-7100
Can Toronto, Norgay Entprs. Ltd. 416-239-3025

AVTEL DIV., UNITRON INC., 10925 Miller Rd., Dallas, TX 75238, Tel: 214-340-8600, Telex: 882511; FSC No.: 6130; Empl.: 113; *Sls. Mgr.:* R. L. Beutel

AVX

AVX CORPORATION, Box 867, Myrtle Bch., SC 29577, Tel: 803-448-9411, TWX: 810-661-2252, FAX: 803-626-2442; FSC No.: 9K916; *Sls. Mgr.:* Allan Cole; *Dist. Mgr.:* John Stinneford ..... **A•1034-1036; B•1009**

Local Sales Offices & Reps
AL Huntsville, Beacon Elctrns. 205-881-5031
AZ Scottsdale, Interstate Mktg. 602-244-9050
CA San Diego, Interstate Mktg. 619-693-3220
CA San Jose, Quadrep Inc. 408-432-3300
CA Woodland Hills, Interstate Mktg. Assocs. 818-883-7606
CO Englewood, Thorson Rocky Mt. Inc. ... 303-779-0666
FL Clearwater, Dyne-a-Mark 813-441-4702
FL Fort Lauderdale, Dyne-a-Mark 305-771-6501
FL Maitland, Dyne-a-Mark 305-629-5557
GA Atlanta, Beacon Elctrns. 404-256-9640
IL Itasca, Janus, Inc. 312-250-9650
IL Waukeska, Janus, Inc. 414-542-7575
IN Ft. Wayne, F.J. Campisano Co. 219-747-2633
IN Indianapolis, Frank J. Campisano 317-253-7651
IA Cedar Rapids, R. F. Welch 319-377-1575
KS Spring Hill, Beneke & McCaul 913-686-3479
MD Baltimore, Burgin-Kreh Assocs. 301-265-8500
MA Chelmsford, J.E. Boeing Co. 617-256-5800
MI Southfield, J.L. Montgomery 313-358-2616
MN Minneapolis, Comstrand Inc. 612-788-9234
MO Grandview, Beneke & McCaul 816-765-2998
NJ Bellmawr, Thomas Assocs., Inc. 609-933-2600
NM Albuquerque, Desert States, Inc. 505-293-8555
NY Ithaca, Bob Dean, Inc. 607-257-1111
NY Melville, Comtronic Assocs. 516-249-0505
NY Wappingers Falls, Bob Dean, Inc. 914-297-6406
NC Raleigh, Tingen Technical Sales 919-878-4440
OH Cincinnati, F.J. Campisano Co. 513-574-7111
OH Cleveland, Frank J. Campisano 216-749-5550
OH Columbus, Frank J. Campisano 614-876-5405
OH Dayton, Schmidt & Assoc. 513-293-6652
OK Tulsa, Ammon & Rizos 918-663-8788
OR Hillsboro, Western Tech. Sls. 503-640-4621
PA Coraopolis, F.J. Campisano Co. 412-264-5151
TX Austin, Ammon & Rizos Co. 512-454-5131
TX Houston, Ammon & Rizos Co. 713-781-6240
TX Richardson, Ammon & Rizos Co. 214-644-5591
UT Salt Lake City, Thorson Rocky Mt. Inc. 801-973-7969
VA Lynchburg, Burgin-Kreh Assoc. 804-239-2626
WA Bellevue, Western Tech. Sls. 206-641-3900
WA Spokane, Western Techn. Sls. 509-922-7600
PR Santurce, John E. Boeing Co. 809-722-6942
Can British Columbia, Longman Sls. 604-931-4744
Can Kirkland, Que., Longman Sls. 514-694-3911
Can Mississauga, Ont., Longman Sls. 416-677-8100
Can Ottawa, Ont., Longman Sls. 613-226-1614

Local Distributors
AL Huntsville, R. M. Elctrns. 800-633-2046
AZ Phoenix, Kierulff Elctrns. 602-437-0750
AZ Phoenix, Wyle Elctrns. 602-249-2232
AZ Tempe, Arrow Elctrns. 602-968-4800
CA Chatsworth, Arrow Elctrns. 818-701-7500
CA Chatsworth, IEC 818-998-2200
CA Chatsworth, QC Comps. 800-344-3366
CA Cypress, Kierulff 714-220-6300
CA El Monte, Marshall Elctrns 818-459-5500
CA El Segundo, Wyle Elctrns. 213-322-8100
CA Hayward, Arrow Elctrns. 415-487-4600
CA Irvine, IEC 714-837-9960
CA Irvine, Wyle Elctrns. 714-863-9953
CA Los Angeles, Kierulff Elctrns. 213-725-0325
CA Rancho Cordous, Wyle Elctrns. 916-638-5282
CA Sacramento, IEC 916-424-5297
CA San Diego, Arrow Elctrns. 619-565-4800
CA San Diego, Kierulff Elctrns. 619-278-2112
CA San Diego, Wyle Elctrns. 619-565-9171
CA San Jose, Eric Elctrns. 408-432-1111
CA San Jose, IEC 408-435-1000
CA Santa Clara, Wyle Elctrns. 408-727-2500
CA Southgate, Cetec Elctrns. 213-773-6521
CA Sunnyvale, Arrow Elctrns. 408-745-6600
CA Tustin, Arrow Elctrns. 714-838-5422
CA Tustin, Kierulff Elctrns. 714-731-5711
CO Denver, IEC 303-292-5537
CO Thornton, Wyle Dist. Gp. 303-457-9953
CT E. Haven, J. V. Elctrns. 203-469-2321
CT Wallingford, Arrow Elctrns. 203-265-7741
CT Wallingford, Kierulff Elctrns. 203-265-1115
CT Wallingford, Marshall Elctrns. 203-265-3822
FL Ft. Lauderdale, NRC Elctrns. 305-772-4500
FL Orlando, Marshall Elctrns. 305-841-1878
FL Palm Bay, Arrow Elctrns. 305-725-1480
FL St. Petersburg, Kierulff Elctrns. 813-576-1966
GA Norcross, Arrow Elctrns. 404-449-8252
GA Norcross, Kierulff Elctrns. 404-449-5252
GA Norcross, Marshall Elctrns. 404-423-5750
IL Schaumburg, Arrow Elctrns. 312-397-3440
IL Schaumburg, Marshall Elctrns. 312-490-0155
IN Indianapolis, Arrow Elctrns. 317-253-9353
IN Indianapolis, RM Elctrns. 317-291-7110

MD Gaithersburg, Marshall Elctrns. 301-235-4464
MD Rockville, M.S. Elctrns. 301-921-0200
MA Wakefield, MCI 617-245-5967
MA Westboro, Future Elctrns. 617-366-2400
MA Woburn, Arrow Elctrns. 617-933-8130
MI Ann Arbor, Arrow Elctrns. 313-971-8220
MI Grand Rapids, Arrow Elctrns. 616-243-0912
MI Grand Rapids, RM Elctrns. 616-531-9300
MI Livonia, Marshall Elctrns. 313-525-5850
MN Edina, Arrow Elctrns. 612-941-7500
MN Plymouth, Marshall Elctrns. 612-559-2211
MO Maryland Hgts., Kierulff Elctrns. 314-997-4956
MO St. Louis, Arrow Elctrns. 314-567-6888
NH Manchester, Arrow Elctrns. 603-668-6968
NJ Camden, General Radio 609-964-8560
NJ Clifton, J-Mar Elctrns. 201-772-6400
NJ Fairfield, Arrow Elctrns. 201-575-5300
NJ Fairfield, Marshall Elctrns. 201-882-0320
NJ Marlton, Arrow Elctrns. 609-596-8000
NJ Mt. Laurel, Marshall Elctrns. 609-234-9100
NM Albuquerque, Arrow Elctrns. 505-243-4566
NY Hauppague, Arrow Elctrns. 516-231-1000
NY Hauppauge, Jaco Elctrns. 516-273-5500
NY Lynbrook, Patriot 516-599-8881
NY Melville, Arrow Elctrns. 516-694-6800
NY Rochester, Arrow Elctrns. 716-427-0300
NY Rochester, Marshall Inds. 716-235-7620
NY Rome, Rome 315-337-5400
NY Ronkonkama, Tri-Start 516-737-2200
NC Raleigh, Arrow Elctrns. 919-876-3132
NC Raleigh, Kierulff Elctrns. 919-872-8410
OH Akron, Akron 216-762-8818
OH Centerville, Arrow Elctrns. 513-435-5563
OH Cleveland, Kierulff Elctrns. 216-587-6558
OH Dayton, Marshall Elctrns. 513-236-8088
OH Solon, Arrow Elctrns. 216-248-3990
OK Tulsa, Arrow Elctrns. 918-665-7700
OK Tulsa, Kierulff Elctrns. 918-252-7537
OR Portland, Arrow Elctrns. 503-684-1690
PA Monroeville, Arrow Elctrns. 412-856-7000
PA Philadelphia, Almo Elctrns. 215-698-4000
TX Austin, Arrow Elctrns. 512-835-4180
TX Austin, Kierulff Elctrns. 512-835-2090
TX Dallas, Kierulff Elctrns. 214-343-2400
TX Dallas, R.M. Elctrns. 214-235-3100
TX Richardson, Jaco 214-235-9575
UT Salt Lake City, Arrow Elctrns. 801-972-0404
UT Salt Lake City, Kierulff Elctrns. 801-973-6913
WA Bellevue, Almac 206-643-9992
WA Bellevue, Arrow Elctrns. 206-643-4800
WA Bellevue, Wyle Elctrns. 206-453-8300
WI Brookfield, Arrow Elctrns. 414-762-6600

AXEL ELCTRNS., General Signal Corp., 134-20 Jamaica Ave., Jamaica, NY 11418, Tel: 718-291-3900, TWX: 710-582-2618; FSC No.: 13058; Empl.: 250; *Sls. Mgr.:* J. Alaimo, VP Sls.

AXIAL MAGNETICS, Tencal Inc., 450 W. Los Angeles Ave., Simi Valley, CA 93065, Tel: 818-998-4850, Telex: 551891; *Sls. Mgr.:* K. G. Kroll ..... **B•1166**

AXIS CORPORATION, 7825 Engineer Rd., Ste. 208, San Diego, CA 92111, Tel: 619-560-7737, Telex: 325144; FSC No.: 9S849; Empl.: 12; *Sls. Mgr.:* Mark J. Prager

AYDIN CORP., 700 Dresher Rd., Horsham, PA 19044, Tel: 215-657-7510, Telex: 685 1211, ESYLNK: 215-657-3830; Empl.: 2,000; *Sls. Mgr.:* B. Jack Miller

AYDIN CONTROLS, 414 Commerce Dr., Ft. Washington, PA 19034, Tel: 215-542-7800, Telex: 6851057, TWX: 510-661-0518; Empl.: 533; *Sls. Mgr.:* Joseph J. Taylor

AYDIN MICROWAVE, 75 East Trimble Rd., San Jose, CA 95131, Tel: 408-946-5600, Telex: 4990756, TWX: 910-338-0216; Empl.: 200; *Sls. Mgr.:* Dan Davis

AYDIN RADAR & EW DIVISION, Div. of Aydin Corporation, 32 Great Oaks Boulevard, San Jose, CA 95119-1371, Tel: 408-629-1100, TWX: 910-373-1238; FSC No.: ZV23-1686808; *Sls. Mgr.:* D. Rutledge

AYDIN VECTOR DIV., Box 328, Newtown, PA 18940-0328, Tel: 215-968-4271, TWX: 510-667-2320, FAX: 215-968-3214; FSC No.: 13923; Empl.: 400

AZIMUTH ELECTRONICS, INC., 2605 So. El Camino Real, San Clemente, CA 92672, Tel: 714-492-6481; *Sls. Mgr.:* Kenneth C. Johnsen

BABCOCK, INC., 1717 West Collins Ave., Orange, CA 92667, Tel: 714-633-3700, TWX: 910-595-1517; FSC No.: 56623; Empl.: 270; *Sls. Mgr.:* Albin Gudis; *Dist. Mgr.:* Albin Gudis

Local Sales Offices & Reps
CA Palo Alto, Horne Electro Sls. 415-494-6777
TX Houston, Barry Sls. 713-784-5860

Local Distributors
CA Santa Ana, Norstan Elctrns. 714-667-7826

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DISPLAY PRODUCTS, INC.

BABCOCK DISPLAY PRODUCTS, INC., A Subsidiary of Babcock, Inc., 1051 S. East St., Anaheim, CA 92805-5799, Tel: 714-491-5121, Telex: 249646; Empl.: 150; *Sls. Mgr.:* John Hackney; *Dist. Mgr.:* John Hackney ..... **B•1046-1047**

Local Sales Offices & Reps
AL Huntsville, Elctrn. Sls., Inc. 205-533-1735
CA Pasadena, A-F Sls. Engrg., Inc. 818-795-7081, 714-641-2903
CA San Jose, Richards Assocs. 408-297-3010
CO Denver, Lindberg Co. 303-758-9033
FL Orlando, OEM Mktg. Corp. 305-299-1000
IL Elk Grove Village, Carlson Elctrn. Sls. 312-956-8240
IN Indianapolis, J & W Sls. 317-842-3740
IA Cedar Rapids, R. F. Welch Co. 319-377-1575
KS Wichita, BAKA Corp. 316-682-8411
MD Columbia, Robert Elctrn. Sls. 301-995-1900
NH Lake Port, Babcock Display Prods. 603-524-4284
NJ Springfield, F. F. Sylvester Assocs. 201-376-3324
NM Albuquerque, Reptronix, Ltd. 505-292-1718
NY Rochester, Ossmann Comp. Sls. Corp. 716-424-4460
NY Syracuse, Ossmann Comp. Sls. Corp. 315-437-7052
NY Vestal, Ossmann Comp. Sls. Corp. 607-754-3264
OH Centerville, SAI Mktg. Corp. 513-435-3181
OH Columbus, SAI Mktg. Corp. 614-876-8650
OH Shaker Heights, SAI Mktg. Corp. 216-751-3633
OK Tulsa, Norcom, Inc. 918-832-7747
PA West Conshohocken, Eastern Comps. Sls. Corp. 800-223-3850,215-825-8610
TX Dallas, Pro-Comp Sls. Corp. 214-276-1948
TX Hurst, Pro-Comp Sls. Corp. 817-589-0336
TX San Antonio, Norcom, Inc. 512-680-4513
UT Salt Lake City, Lindberg Co. 801-277-2643
WA Everett, Huntley Assocs. 206-353-1833
WI Milwaukee, Carlson Elctrn. Sls. Assocs. 414-476-2790
Can Downsview, Ont., Designtronics 416-747-1171
Can West Vancouver, B. C., Blakewood Elctrns., Inc. 604-926-8000

Local Distributors
CA Santa Ana, Norstan Elctrns., Inc. 714-667-7826
CT East Haven, JV Elctrns. 203-469-2321
CT Orange, Milgray Elctrns., Inc. 203-795-0711
FL Clearwater, Lynch-Gentry 813-443-2697
FL Winter Park, Milgray Elctrns. 305-647-5747
GA Atlanta, Milgray Elctrns., Inc. 404-393-9666
ID Spirit Lake, A-I Elctrns. 208-623-3111
IL Bensenville, Milgray Elctrns., Inc. 312-350-0490
IL Elk Grove Village, RM Elctrns. Co., Inc. 312-364-6622
IL Mt. Prospect, Magnuson Elctrns., Inc. 312-956-0700
IN Indianapolis, Magnuson Elctrns., Inc. 317-247-5108
IN Indianapolis, RM Elctrns. Co., Inc. 317-291-7110
KS Overland Park, Milgray Elctrns., Inc. 913-236-8800
MD Columbia, Milgray Elctrns., Inc. 301-621-6169
MA Burlington, Milray Elctrns., Inc. 617-272-6800
MI Grand Rapids, RM Elctrns. Co., Inc. 616-531-9300
MI Niles, Magnuson Elctrns., Inc. 616-684-5971
MN Eden Prairie, Magnuson Elctrns., Inc. 612-829-0583
MT Missoula, Northwest Distrs. 406-543-5181
NJ Marlton, Milgray Elctrns., Inc. 609-983-5010
NM Albuquerque, Betatron Elctrns. 505-344-2381
NY Farmingdale, Milgray Elctrns. 516-420-9800
NY Hauppauge, Fairmont Elctrn. Sls. Corp. 516-231-3313
NY Pittsford, Milgray Elctrns. 716-385-9330
NC Winston-Salem, M & C Sls. 919-722-9445
OH Cleveland, Milgray Elctrns., Inc. 216-447-1520
OK Tulsa, Norvell 918-254-8606
PA Exton, V. S. H. Elctrns. 215-363-2250
RI Pawtucket, Major Edwards Elctrns. 401-727-1430
TX Austin, Norvell Elctrns., Inc. 512-458-8106
TX Dallas, Milgray Elctrns., Inc. 214-248-1603
TX Dallas, Norvell Elctrns., Inc. 214-233-0020
TX Houston, Norvell Elctrns., Inc. 713-777-1666
WI Milwaukee, Magnuson Elctrns., Inc. 414-933-8344
Can Edmonton, Alte, L. A. Varah, Ltd. 403-461-2222
Can Mississauga, Ont., Ferro Technique, Ltd. 416-624-2770
Can Montreal, Que., Ferro Technique, Ltd. 514-341-3450

BACON INDUSTRIES, 192 Pleasant St., Watertown, MA 02172-2399, Tel: 617-926-2550, TWX: 710-327-6518; FSC No.: 99098; Empl.: 23; *Sls. Mgr.:* R. S. Cass

BAHR TECHNOLOGIES, INC., 1842 Hoffman St., Madison, WI 53704, Tel: 608-244-0500; Empl.: 9

BAILEY CONTROLS CO., Div. of Babcox & Wilcox, 29801 Euclid Ave., Wickliffe, OH 44092, Tel: 216-585-8500, Telex: 980621, TWX: 216-944-4160; Empl.: 2300; *Sls. Mgr.:* D. Stamford; *Dist. Mgr.:* D. Bohm

BAKER CO., INC., Drawer E - Sanford Airport, Sanford, ME 04073, Tel: 1-800-992-2537; Empl.: 150

BAKNOR INDUSTRIES LIMITED, 2215 Dunwin Drive, Mississauga, Ont., Canada L5L 1X1, Tel: 416-828-2400, Telex: 06-961252, TWX: 06-218826; Empl.: 25; *Sls. Mgr.:* M. E. Sawicki

BALDOR ELECTRIC COMPANY, P.O. Box 2400, Fort Smith, AR 72902, Tel: 501-646-4711, Telex: 53-7425

BALLANTINE LABORATORIES, INC., P. O. Box 97, Boonton, NJ 07005, Tel: 201-335-0900, TWX: 710-987-8380; FSC No.: 50423; Empl.: 95; *Sls. Mgr.:* Robert Kerzman; *Dist. Mgr.:* Robert Kerzman ..... **D•1218**

Local Sales Offices & Reps
AZ Tempe, Fry-Gates, Inc. 505-262-1525
CA Laguna Hills, Elotek Sys. Inc. 714-830-4856
CA Laguna Hills, Elotek Sys., Inc. 714-830-4856
CA Rancho Cordova, Rohrer Instr. Sls. 916-635-2066
CO Commerce City, MC2 Consultants & Controls 303-286-1414
CT Plantsville, Scheinfein Assocs., Inc. 203-621-3492
FL Orlando, Micro Spec, Inc. 305-299-6508
GA Dunwoodie, Microspec, Inc.
GA Lilburn, Micro Spec, Inc. 404-921-3840
IL Schaumburg, Kenneth W. Meyers Co. 312-882-4808
IN Indianapolis, Kenneth W. Meyers Co. 317-783-1030
MA Reading, Scheinfein Assocs. 617-944-2304
MI Madison Hgts., WKM Assocs. 313-588-2300
MN Minneapolis, Kenneth W. Meyers 505-262-1525
MO St. Louis, JNM 314-991-1399
NJ Elmwood Park, L & M Assocs. 201-797-0441
NM Albuquerque, Fry-Gates, Inc. 505-262-1525
NY Canandaigua, Mamula Sls. 716-394-5560
NY New York, L & M Assocs. 212-243-6155
OH Dayton, WKM Assoc. 513-434-7500
OH Independence, WKM Assocs. 216-524-5930
OR Portland, Westcon 503-283-0132
PA Andalusia, L & M Assocs. 215-245-6658
PA Pittsburgh, WKM Assoc. 412-292-2953
PA Reading, L & M Assocs. 215-775-9559
SC Rock Hill, Micro Spec, Inc. 803-366-3015
SC Rock Hill, Microspec, Inc. 803-366-3015
TN Nashville, Micro Spec. Inc. 615-383-4064
TX Houston, Lear Assocs. 214-231-5388
TX Richardson, Lear Assocs. 214-231-5388
UT Salt Lake City, MC2 Consultants & Controls 801-364-3174
VA Alexandria, Dyna Rep Co. 703-354-1222
WA Woodinville, Weston, Inc. 503-283-0132
WI Brookfield, Kenneth W. Meyers 414-784-3790
Can St. Laurent, Que., Techmatron 514-689-5889

Local Distributors
NJ Belmar, Accutest 201-681-6560

BALL ELCTRN. SYS. DIV., Ball Corp., P. O. Box 589, Bloomfield, CO 80020, Tel: 303-460-5260, TWX: 910-563-3552; FSC No.: 612-786-4577; Empl.: 150; *Sls. Mgr.:* Bud Urling

BALL ELECTRONIC, Systems Div., P. O. Box 589, Broomfield, CO 80020, Tel: 303-460-5260, Telex: 244826; Empl.: 500; *Sls. Mgr.:* Bud Urling

BALLY ELECTRONICS, Bally Mfg., 10750 W. Grand Ave., Franklin Park, IL 60131, Tel: 312-451-7223, TWX: 190282; Empl.: 300; *Sls. Mgr.:* Lam McGannon

BALSTON, 703 Massachusetts Ave., Lexington, MA 02173, Tel: 617-861-7240, Telex: 92-3481; Empl.: 50; *Sls. Mgr.:* J. Alpert

BALZERS OPTICAL CORPORATION, 170 Locke Dr., Marlboro, MA 01752, Tel: 617-481-9860, Telex: 556-480, FAX: 617-485-0526; Empl.: 136; *Sls. Mgr.:* C. A. Burke

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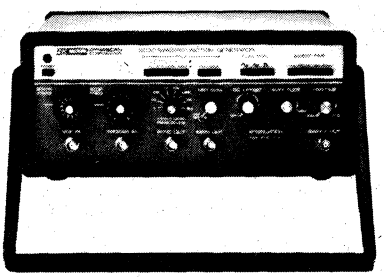

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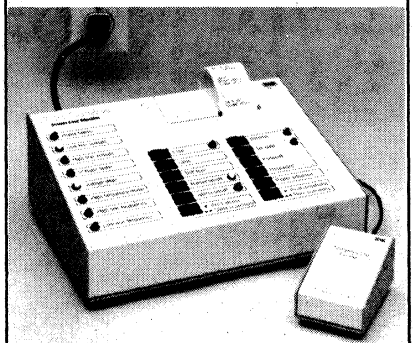

Model GS-3

B & B MOTOR & CONTROL CORP., Apple Hill Commons, Burlington, CT 06013, Tel: 203-673-7151, 800-638-7807, Telex: 14-1484; Empl.: 90; *Sls. Mgr.:* John J. Boyle

Local Sales Offices & Reps

CT	Berlin, B & B Motor & Control Corp.	203-828-8550
FL	Clearwater, B & B Motor & Control Corp.	800-845-1020
GA	Atlanta, B & B Motor & Control Corp.	800-845-1020
IL	Chicago, B & B Motor & Control Corp.	312-681-0089
IN	Indianapolis, B & B Motor & Control Corp.	317-248-0396
KY	Louisville, B & B Motor & Control Corp.	502-589-7753
MA	Boston, B & B Motor & Control Corp.	617-890-4944
MI	Detroit, B & B Motor & Control Corp.	313-534-7780
NH	Nashua, B & B Motor & Control Corp.	603-883-1062
NJ	Piscataway, B & B Motor & Contol Corp.	201-572-0500
NY	Elmira, B & B Motor & Control Corp.	607-732-6599
NY	Long Island City, B & B Motor & Control Corp.	718-784-1313
NY	Rochester, B & B Motor & Control Corp.	716-424-7040
NC	Charlotte, B & B Motor & Control Corp.	704-375-0577
OH	Cincinnati, B & B Motor & Control Corp.	513-381-1885
PA	Allentown, B & B Motor & Control Corp.	215-439-8353
SC	Greenville, B & B Motor & Control Corp.	803-268-5702
TX	Dallas, B & B Motor & Control Corp.	214-641-0857
TX	Houston, B & B Motor & Control Corp.	713-820-7931

B & K PRECISION, INDUSTRIAL ELECTRONICS PRODUCT GROUP, Dynascan Corporation, 6460 W. Cortland, Chicago, IL 60635, Tel: 312-889-9087, Telex: 253475; FSC No.: 08098, 18110, 48560, 30678; Empl.: 250; *Sls. Mgr.:* Dennis Hoy ..... **D•1213-1217, 1390-1392, 1585**

Local Sales Offices & Reps

AL	Birmingham, Maitland K. Smith, Inc.	205-853-4991
AR	Little Rock, Erickson Sls., Inc.	501-455-0618
CA	Pleasanton, Moulthrop Sls.	415-463-0450
CA	Santa Ana, Mike Roth Sls.	714-647-0606
CO	Denver, The Lindberg Co.	303-758-9033
FL	Altamonte Springs, Dynamic Mktg.	305-788-1870
GA	Tucker, Maitland K. Smith	404-939-3322
HI	Honolulu, Omega Hawaii, Inc.	808-732-7900
IL	Arlington Hgts., Brainard-Wilson Mktg.	312-437-2700
IN	Indianapolis, Elctrn. Reps. Inc.	317-894-1414
IN	Mishawaka, Elctrn. Reps. Inc.	219-259-9365
KS	Shawnee Mission, Lowell-Kangas & Assocs.	913-631-3515
LA	Chalmette, Erickson Sls.	504-271-1976
MD	Joppa, Electra-Tech	301-877-0344
MA	Woburn, W & D Mktg.	617-935-5610
MI	Southfield, Robert Milsk Co., Inc.	313-354-3310
MN	Minneapolis, HMR, Inc.	612-888-2122
MO	St. Louis, Lowell-Kangas Assocs.	314-821-4050
NJ	Medford, Champion Elctrn. Sls. Co.	609-983-0932
NY	Bellmore, Selectra Sls.	516-221-7865
NY	East Greenbush, Warren Kaufman & Assocs.	518-477-9864
NY	Rochester, Warren Kaufman & Assocs.	716-266-2728
NC	Charlotte, Maitland K. Smith, Inc.	704-372-2681
OH	Cleveland, Marlow Assocs.	216-991-6500
OH	Dayton, Marlow Assocs.	513-274-9666
OK	Broken Arrow, Erickson Sls., Inc.	918-455-4276
OR	Portland, Dussault & Assocs.	503-641-8540
PA	Pittsburgh, Marlow Assocs.	412-367-8886
TX	Austin, Erickson Sls., Inc.	512-244-3068
TX	Dallas, Erickson Sls.	214-739-5833
TX	Houston, Erickson Sls., Inc.	713-266-1604
VA	Dumfries, Electra-Tech	703-670-6962
WA	Seattle, Dussault & Assocs.	206-281-4025
WI	Waukesha, Brainard-Wilson Mktg.	414-797-7940
EXP	NY, Plainview, Empire Exporters	516-293-5582
Can	Toronto, Ont., Atlas Elctrns.	416-789-7761

BANNER ENGINEERING CORP., 9714 - 10th Ave. N., Minneapolis, MN 55441, Tel: 612-544-3164, FAX: 612-544-3213; *Sls. Mgr.:* Floyd Schneider

BARBER-COLMAN CO., Indl. Instrs. Div., P.O. Box 2940, 1354 Clifford Ave., Loves Park, IL 61132, Tel: 815-877-0241, Telex: 4330175 BC11; Empl.: 5000; *Sls. Mgr.:* John Parry

BARBER-COLMAN CO., Motor Div., P.O. Box 2940, Loves Pk., IL 61132-2940, Tel: 815-968-0660, Telex: 4330367; Empl.: 600

BARCEL WIRE & CABLE CORP., Electronics Div., 2851 Aton Ave., Irvine, CA 92714, Tel: 714-863-0300, Telex: 910-595-1959; FSC No.: 28427; Empl.: 100; *Sls. Mgr.:* R. N. Hendricks

BARKSDALE CONTROLS DIV., Imo Delaval Inc., 3211 Fruitland Ave., P.O. Box 58843, Los Angeles, CA 90058, Tel: 213-589-6181; Empl.: 325; *Sls. Mgr.:* R. C. Wolf

BARNES & REINECKE, INC., 2375 Estes Ave., Elk Grove Village, IL 60007, Tel: 312-640-7200; FSC No.: 85336; Empl.: 345

BARNES ENGRG., 1645 So. Claudina Way, Anaheim, CA 92805, Tel: 714-533-7530; FSC No.: FSCM 53823 S.I.C. 3469; Empl.: 38; *Sls. Mgr.:* Gordon Mackenzie

BARNES ENGINEERING DIV., EDO Corporation, 44 Commerce Rd., P.O. Box 53, Stamford, CT 06904-0053, Tel: 203-348-5381, Telex: 6819115, TWX: 710-474-3367; Empl.: 250; *Sls. Mgr.:* P. Swan

BARON WIRE & CABLE, 1811 W. Bryn Mawr Ave., Chicago, IL 60660, Tel: 312-728-7480, Telex: 72-4322; Empl.: 50; *Sls. Mgr.:* Al Desaluo

BARSOM INC., See IR Scientific

BARTLETT INSTRUMENT CO., 14th & Ave. 'M', P.O. Box 445, Ft. Madison, IA 52627, Tel: 319-372-8366; Empl.: 25; *Sls. Mgr.:* P. R. Bartlett

BASCOM-TURNER INSTRUMENTS, 111 Downey St., Norwood, MA 02062, Tel: 617-769-9660, Telex: 92-2413; Empl.: 35; *Sls. Mgr.:* D. Weise

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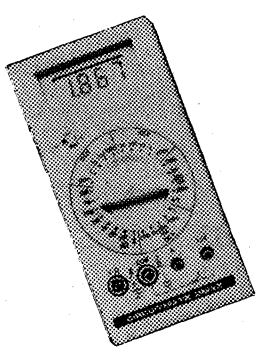

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BELDEN ELECTRICAL WIRE PRODUCTS, Div. of Cooper Industries, 2000 S. Batavia Ave., Geneva, IL 60134, Tel: 312-232-8900, TWX: 910-237-1681; Empl.: 1500; *Sls. Mgr.:* Ed Stull

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BEL FUSE, 198 Van Vorst St., Jersey City, NJ 07302, Tel: 201-432-0463, TWX: 710-730-5301; Empl.: 225; *Sls. Mgr.:* A. Sutta; *Dist. Mgr.:* S. Rader .... **A•1499-1531; B•1237-1239**

Local Sales Offices & Reps

Fuses

AL Huntsville, Beacon Elect. 205-881-5031
AZ Phoenix, More Sls. 602-265-9201
CA Redwood City, James S. Heaton Co. .. 415-367-9000
FL Maitland, Beacon Elect. 305-647-3498
FL Boca Raton, Beacon Elect. 305-392-3500
IL Chicago, MGA 312-775-1151
FL Clearwater, Beacon Elect. 813-769-2378
FL Melbourne, Beacon Elect. 305-724-8010
GA Atlanta, Beacon Elect. 404-256-9640
MN St. Paul, Northport Engrg. 612-457-8000
IN Indianapolis, Insul. Reps., Inc. 317-842-5203

NH Amherst, David A. Cowley Assoc. 603-673-7050
NY Fayetteville, TR-Tech Elect. 315-446-2881
NC Raleigh, Beacon Elect. 919-787-0330
OH Medina, J.C. Hofstetter 216-241-4880
PA Hickory, J. C. Hofstetter 412-356-2305
TN Knoxville, Insul-Reps., Inc. 615-691-7586
WA Kirkland, A/D Elctrns., Inc. 201-821-3205
PR Hato Rey, Max Anderson Co., Inc. 809-751-2026

Delay Lines
AL Hunstville, Beacon Elect. 205-881-5031
AZ Scottsdale, SMS & Assoc. 602-998-0831
CA Escondido, Cirolia Elec. Sls. 619-743-3015
CO Boulder, Front Range Mktg. 303-443-4780
FL Altamonte Springs, Semtronics Assoc. 305-831-8233
FL Boca Raton, Beacon Elect. 305-392-3500
FL Clearwater, Semtronics Assocs. 813-461-4675
FL Ft. Lauderdale, Semtronics Assoc. 305-731-2484
FL Houston, Oeler & Menelaides 713-682-1083
FL Maitland, Beacon Elect. 305-647-3498
FL Melbourne, Beacon Elect. 305-724-8010
CA Redwood City, James S. Heaton Co. .. 415-367-9000
FL Clearwater, Beacon Elect. 813-769-2378
IL Chicago, MGA 312-775-1151
GA Atlanta, Beacon Elect. 404-256-9640
MN S. St. Paul, Newport Engrg. 612-457-8000
IN Indianapolis, Insul. Reps., Inc. 317-842-5203
NH Amherst, David A. Cowley Assocs. 603-673-7050
NM Albuquerque, SMS & Assocs. 505-863-9765
NJ E. Brunswick, Winch Sls. Assoc 201-828-4615
MO St. Louis, Lowell-Kangas Assoc. 314-821-4050
NY E. Rochester, Tri-Tech Elect. 716-385-6600
PA Hatsboro, J. S. Wurts Co. 215-674-3562
NC Raleigh, Beacon Elect. 919-787-0330
TX Austin, Oeler & Menelaides 512-453-0275
TX Dallas, Oeler & Menelaides 214-361-8876
UT Salt Lake City, Front Range Mktg. 801-364-6481
TN Knoxville, Insul. Reps. 615-691-7586
PR Hato Rey, M. Anderson Co., Inc. 809-751-2020

Local Distributors

Fuses
FL Boca Raton, D & R 305-395-2341
NJ N. Bergen, Cefco 201-869-7777

Delay Lines
AL Huntsville, CDI 205-883-7501
AZ Phoenix, Lion Elctrns. 602-869-9611
CA Anaheim, Deco 714-630-8252
CA Chatsworth, West Valley Inds. 818-700-0700
CA City of Industry, Ital Elctrns. 818-968-8515
CA El Segundo, Force Elctrns. 213-772-1324
CA Fullerton, Pyramid 213-691-0561
CA Hayward, Kea Elctrns. 415-887-2900
CA San Diego, Deco 619-693-1695
CA San Diego, Sigma Elctrns. 619-565-2000
CA San Jose, Force Elctrns. 408-943-1324
CA Santa Clara, Pyramid 408-727-9810
CT Norwalk, Cobra Comps. 203-847-5442
FL Ft. Lauderdale, CDI 305-971-4950
GA Norcrosss, CDI 404-441-3320
IN Indianapolis, Mar Elctrns. 317-875-4510
MD Columbia, DK Elctrns. 301-995-1950
MD St. Charles, Finnigan Elctrns. 314-946-6201
MA Canton, EPC Labs. 617-821-2111
MA Marlboro, Hardware Specialty 617-481-8622
MN New Brighton, Chris Elctrns. 612-631-2647
NH Hudson, C & H Elctrns. 603-882-1133
NY Bohemia, Key Comps. 516-557-7500
NY Buffalo, Summit Distrs. 716-887-2800
NC Raleigh, CDI 919-834-9465
OR Beaverton, Comp. Resources 503-641-8488
PA Cornwall Hgts., Reliance Merchandising 215-638-8200
PA Harrisburg, Cumberland Elctrns. 717-232-9715
PA Lyndora, Seneca Elctrns. 614-895-2631
TX Dallas, Fuses Inc. 214-341-6407
VA Falls Church, CDI 703-241-8227
WA Kent, Pyramid 206-872-5800

BELL, FLOYD, ASSOCS., INC., 897 Higgs Ave., Columbus, OH 43212, Tel: 614-488-3193, TWX: 810-482-1763; FSC No.: 56493; *Sls. Mgr.:* Tom Shain ... **D•1031**

Local Sales Offices & Reps
IL Mt. Prospect, Robert Adams Sls. Co. .. 312-297-8733
MD Columbia, Tyler Griffin Co. 301-995-1215
PA Paoli, Tyler Griffin Co. 215-647-1550

F.W. BELL

BELL, F. W., INC., 6120 Hanging Moss Rd., Orlando, FL 32807, Tel: 305-678-6900, TWX: 810-853-3115; FSC No.: 18479; *Dist. Mgr.:* Edward S. Wilush ..... **B•1776; D•1122-1123, 1222-1224**

Local Sales Offices & Reps
CA Milpitas, Maxim Elctrn. Sls. 408-946-6001
CO Denver, Moss Mktg. 303-455-7205
IL Palatine, Golbec Milota 312-705-0602
MA Needham Hgts., Shain Assoc. 617-633-6651
MO Grandview, Harris-Hanson Co. 816-763-6200
NM Albuquerque, Moss Mktg. 505-292-7505
NY White Plains, Channel 914-694-9240
TX Carrollton, Seaton Corp. 214-380-0414

Local Distributors
AZ Phoenix, Jensen Tools & Alloys 602-968-6231
CA Milpitas, Maxim Elctrn. Sls. 408-946-6001
CA Pasadena, Pasadena Elctrns. 818-796-7481
CA San Marcos, Mitchell Instrs. 619-744-2690
CA Santa Ana, W.H.T. 714-754-6822
CO Denver, Moss Mktg. 303-455-7205
CT Plainville, TDI Catalog Sls. 203-747-4788
FL Indian Rocks Bch., P & R Instr. Supp. 813-596-8841
GA Atlanta, P.R. Instr. Supp. 404-391-9117
IL Palatine, Golbeck Milota Assocs. 312-705-0602
MA Hingham, Shain Assocs. 617-740-2334
MO St. Louis, Harris Hanson Co. 314-432-3611
NY Rochester, Transcat 716-458-4801
OH Dayton, Electro Entprs. 513-426-5551
PA Horsham, BEC 215-672-2900
TX Dallas, Seaton Corp. 214-380-0414
TX Houston, American Analog 713-524-0528

J. W. Miller Division
BELL INDUSTRIES

BELL INDS., J. W. Miller Div., 19070 Reyes Ave., P.O. Box 5825, Rancho Dominguez, CA 90224, Tel: 213-537-5200, TWX: 910-346-6740; FSC No.: 76493; Empl.: 55 ..... **A•1207-1213**

Local Sales Offices & Reps
AZ Scottsdale, Sls. Engrg., Inc. 602-994-3230
AR Little Rock, S. L. Welch & Assocs., Inc. 501-455-2199
CA Los Angeles, Landa/Minyard, Inc. 213-879-0770
CA Santa Ana, Jones-McGeoy, Inc. 714-547-6466
CA Santa Clara, Logan Sls. Co. 408-496-0660
CA Santa Clara, SMI Reps. Grp. 408-986-1610
CO Denver, Waugaman Assocs., Inc. 303-423-1020
CO Denver, West High-Tech 303-477-8180
CT Madison, Conti-Younger Assocs., Inc. 800-343-5019
FL Clearwater, HHP Assocs., Inc. 813-797-4447
FL Ft. Lauderdale, Hutto-Hawkins-Peregoy 305-971-5750
FL Maitland, Hutto-Hawkins-Peregoy 305-831-2474
FL Maitland, HHP Assocs., Inc. 305-831-7404
FL Pompano Bch., HHP Assocs., Inc. 305-971-5750
GA Atlanta, Millar Elctrns. 404-261-6160
GA Atlanta, Millar Elctrns., Inc. 404-634-3350
IL Chicago, Ken Levy & Assocs. 312-763-5000
IL Itasca, Janus, Inc. 312-250-9650
IN Indianapolis, Elctrn. Reps. 317-894-1414
IN Indianapolis, Elctrn. Reps., Inc. .. 317-894-1414/1415
IN Mishawaka, Elctrn. Reps., Inc. 219-259-9365
KS Overland Pk., Thomas L. Dowell & Assocs., Inc. 913-648-7373
LA Metairie, S. L. Welch & Assocs., Inc. ... 504-888-9733
MA Burlington, Conti-Younger Assocs., Inc. 617-273-1582
MA N. Scituate, W. A. Hendrickson Co. 617-545-0652
MI E. Detroit, Jack M. Thorpe Co. 313-779-6363
MN Eden Prairie, Electro Mark, Inc. 612-944-5850
MS Jackson, S. L. Welch & Assocs., Inc. .. 601-932-5534
MO Raytown, Marty Taraski Sls. Co. 816-358-1442
MO St. Louis, Thomas L. Dowell & Assocs., Inc. 314-849-4234
NJ Englewood, Epstein & Siebel Assoc. .. 201-569-7600
NJ W. Caldwell, Grimm, Siegel Assocs., Inc. 201-575-9300
NM Albuquerque, S & S Technlgs., Inc. 505-255-5599
NY New York, Roburn Agencies, Inc. 212-989-5939
NY Syracuse, PI'Tronics, Inc. 315-455-7346
NC Raleigh, Millar Elctrns. 919-787-9585
NC Raleigh, Millar Elctrns., Inc. 919-828-8840/8916
OH St. Mary's, Thomas Shelby & Co., Inc. 419-394-3377
OH St. Marys, T. Shelby & Co. 419-394-3377
OK Tulsa, Beacon Elctrns. Assocs. 918-622-1494
OR Portland, Earl & Brown Co. 503-245-2283
OR Portland, Earl & Brown Co., Inc. 503-245-2283
PA Trevose, PSA, Inc. 215-245-0513
PA Washington Crossing, DVS Co. 215-493-4642
TX Austin, Beacon Elctrns. Assocs. 512-345-3543
TX Dallas, Beacon Elctrns. Assocs. 214-437-1505
TX Ft. Worth, Chet Wells & Co. 817-284-0261
UT Salt Lake City, Waugaman Assocs. of Utah, Inc. 801-261-0802
WA Redmond, Earl & Brown Co., Inc. 206-885-5064
WA Seattle, Earl & Brown Co. 206-284-1121
WI Waukesha, Janus, Inc. 414-542-7575/4225
EXP NY, New York, Roburn Agencies 212-989-5939
Can Rexdale, Ont., Bestec Elctrns., Ltd. 416-674-1330

Local Distributors
AZ Phoenix, Arizona Comps. Co., Inc. 602-269-5655
AZ Tempe, Bell Industries/EDD 602-966-7800
AZ Tempe, Circuit Specialists 602-966-0764
CA Buena Park, Cypress/RPS Elctrns. ... 714-521-5230
CA Garden Grove, Bell Industries/EDD ... 714-220-0681
CA Gardena, Bell Industries/EDD 213-515-1800
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Riverside, Elctrn. Supp. 714-683-7300
CA Roseville, Bell Inds./EDD 916-969-3100
CA San Diego, Bell Industries/EDD 619-268-1277
CA San Jose, Quement Elctrns. 408-998-5900
CA Santa Clara, Cypress Elctrns. 408-980-2500
CA Sunnyvale, Abacus Elctrns. 408-732-2000
CA Sunnyvale, Bell Industries/EDD 408-734-8570
CA Thousand Oaks, Bell Inds./Ventura/EDD 805-499-6821
CO Denver, Bell Industries/EDD 303-424-1985
CO Denver, Ragon Elctrn. Parts 303-744-3601
CT Danbury, Pilgrim Elctrns. 203-792-7274
CT New Haven, Greene-Shaw Co. 203-397-0710
CT Wallingford, Sager Elctrcl. Supp. 203-265-4600
FL Largo, Graham Elctrns. 813-541-4434
FL West Palm Beach, Nurmi Elctrns. 305-686-8553
GA Norcross, Graham Elctrns. 404-662-0923
IL Chicago, Bell Industries/EDD 312-640-1910
IL Chicago, Newark Elctrns. 312-784-5100
IL Palatine, Ohm/Elctrns, Inc. 312-359-5500
IL Urbana, Graham Elctrns. 217-328-1077
IN Fort Wayne, Graham Elect./Div. Bell Ind. 219-423-3422
IN Indianapolis, Graham Elect./Div. Bell Ind. 317-634-8202
IN Indianapolis, Meunier Elctrn. Supp. 317-635-3511
IA Cedar Rapids, Bell Industries/EDD ... 319-395-0730
MD Gaithersburg, MS Elctrns. 301-921-0200
MA Hingham, Sager Elctrcl. Supp. 617-749-6700
MA Newton, Greene-Shaw Co. 617-969-8900
MI Ann Arbor, Graham Elctrns. 313-971-9093
MN Minneapolis, Ind. Comps., Inc. 612-831-2666
MN Thief River Falls, Digi-Key Corp. 218-681-6674
MO Kansas City, Walters Radio Supp. 816-531-7015
MO Saint Louis, Olive Elctrns. 314-426-4500
NH Hudson, Bell Inds. 603-882-1133
NJ Camden, General Radio 609-964-8560
NJ East Hanover, State Elctrn. Parts 201-887-2550
NM Albuquerque, Bell Industries/EDD 505-292-2700
NY Bohemia, Key Comps. 516-567-7500
NY Buffalo, Summit Elctrns. 716-887-2800
NY Melville, Arrow Elctrns./EDD 516-694-6800
NY Rome, Rome Elctrns. 315-337-5400
NC Raleigh, Southeastern Elctrns. 919-828-2311
OH Columbus, Hughes-Peters, Inc. 614-294-5351
OH Dayton, Bell Inds./EDD 513-435-8660
OH Dayton, Bell Industries/Micro-Mil Div. 513-434-8231
OK Tulsa, Radio, Inc. 918-587-9123
OR Portland, Bell Industries/EDD 503-241-4115
PA Allentown, P. A. Peters, Inc. 215-434-5237
PA Braddock, Leff Elctrns. 412-351-5000
PA Drexel, Kass Distrs. 215-528-6120
PA Philadelphia, PEI Genesis 215-568-7400
TN Hixson, Techni-Tronics, Inc. 615-842-0514
TN Nashville, Graham Elctrns. 615-367-4400
TX Dallas, Wholesale Elctrns./Ind. Div. ... 214-824-3001
TX Houston, Lenert Co. 713-225-1465
TX Richardson, Bell Inds./EDD 214-690-0466
UT Salt Lake City, Bell Industries/EDD ... 801-972-6969
VA Charlottesville, Elctrn. Comps. Inc. 804-296-4184
WA Bellevue, Bell Industries/EDD 206-747-1515
WI Milwaukee, Bell Industries/EDD 414-547-8879
WI Milwaukee, Marsh Elctrns. 414-475-6000
Can Willowdale, Ont., Electro Sonic, Inc. ... 416-494-1666

BELLOFRAM CORPORATION, 30 Blanchard Rd., Burlington, MA 01803, Tel: 617-272-2100, 800-225-1031, Telex: 94-9457; Empl.: 400; *Sls. Mgr.:* James Diegnan; *Dist. Mgr.:* James Diegnan

BELTING INDUSTRIES CO., INC., 20 Boright Ave., Kenilworth, NJ 07033, Tel: 201-272-8591, Telex: 229854; Empl.: 125

BEMCO, 9908 San Fernando Rd., Pacoima, CA 91331, Tel: 818-899-5296, TWX: 910-496-1520; Empl.: 70; *Sls. Mgr.:* Drew Dias; *Dist. Mgr.:* Paul Horkin

BENCHMARK TECHNOLOGY, 200 S. Turnbull Canyon Rd., City of Industry, CA 91745, Tel: 818-333-1201, TWX: 910-584-1861; Empl.: 185; *Sls. Mgr.:* James Kirby

BENDIX CONNECTOR OPERATIONS, See Amphenol Products

BENDIX CORP., Electrodynamics Div., 11600 Sherman Way, N. Hollywood, CA 91605, Tel: 818-765-1010, TWX: 910-499-2151; Empl.: 1200

BENDIX CORP., MOTOR COMPS. DIV., See Facet Entprs.

BENJAMIN INTERNATIONAL, INC., 1460 Old Country Rd., Plainview, NY 11803, Tel: 516-753-0700, Telex: Telex 221500

BENTLY NEVADA CORP., P.O. Box 157, Minden, NV 89423, Tel: 702-782-3611, Telex: 354437; FSC No.: 1561105

BERG, W. M., INC., 499 Ocean Ave., East Rockaway, NY 11518, Tel: 516-599-5010; Empl.: 150; *Sls. Mgr.:* C. Keenan

BERGER-LAHR CORP., Fitzgerald Dr., Jaffrey, NH 03452, Tel: 603-532-7701, Telex: 92-8445; Empl.: 15; *Sls. Mgr.:* Steven R. Seabaugh

Local Sales Offices & Reps

CA	San Jose, Motion Control	408-997-0544
CT	Hamden, JBL Assocs.	203-281-3161
IL	Hinsdale, Patton Sls. Co.	312-325-2170
IN	Indianapolis, Motion Control, Inc.	317-849-3381
MA	Wellesley, Electro Kinetics	617-235-9415
MA	Wenham, Electro Kinetics	617-468-4166
NJ	Williamstown, Precision Motion Sls.	516-676-1645, 609-629-4757
NY	Moravia, Electrotech Sys.	315-497-1598

BERGQUIST

When Performance Counts

BERGQUIST, 5300 Edina Ind'l, Minneapolis, MN 55435, Tel: 800-328-3882, TWX: 910-576-2423; FSC No.: 55285; Empl.: 125; *Sls. Mgr.:* Bob Savage; *Dist. Mgr.:* Larry Kocon ..... **B•1702, 1705; C•1704**

Local Sales Offices & Reps

CA	Palo Alto, Shaw-Tech	415-961-4775
CA	San Diego, OMNI, Inc.	619-268-9606
CA	Santa Ana, Bergquist Co.	714-542-3383
CO	Broomfield, Connors Co.	303-466-9628
DE	Wilmington, Electro Tech. Sls.	302-764-2189
DC	Macrotech Assocs., Ltd.	301-766-1111
FL	Clearwater, Tech-Rep	813-530-1619
IL	Cary, Ellinger Sls.	800-328-3882
IA	Atkins, Bergquist	319-446-7456
IA	Cedar Rapids, Bergquist	319-366-8733
MA	Brookline, Harman Assocs.	617-232-6687
MO	St. Charles, Bergquist	314-946-8004
NM	Albuquerque, RonTek	505-299-4124
NY	Lynbrook, P. Saftler Assocs.	516-593-7880
NY	No. Syracuse, Leonard D. Allen	315-458-7470
OH	Cleveland, Staff Co.	216-331-5100
OR	Tigard, Elctrn. Comp. Sls.	503-245-2342
TX	Richardson, Logic 1	214-234-0765
WA	Mercer Island, Elctrn. Comp. Sls.	206-232-9301

BNC DIGITAL DELAY AND LIGHT PULSE GENERATORS

BERKELEY NUCLEONICS CORP., 1101 Regatta Sq., Richmond, CA 94804, Tel: 415-527-1121, Telex: 677-1167; Empl.: 30; *Sls. Mgr.:* E. J. Buchs ..... **D•1225**

All sales engineering services in the U.S. and Canada are provided by our factory-direct sales and applications staff. For immediate assistance please contact: Telesales Department (415) 527-1121

BERKELEY PROCESS CONTROL, INC., 5327-K Jacuzzi St., Richmond, CA 94804, Tel: 415-526-3333; Empl.: 14; *Sls. Mgr.:* Theodore Arbuckle; *Dist. Mgr.:* Theodore Arbuckle

BERKSHIRE TRANSFORMER CORP., Route 341, P.O. Box 129, Kent, CT 06757, Tel: 203-927-3541; FSC No.: 89870; Empl.: 105; *Sls. Mgr.:* Janis R. Donovan

BERK TEK, INC., Box 888, RD 1, New Holland, PA 17557, Tel: 717-354-6200, TWX: 510-651-0511; Empl.: 350; *Sls. Mgr.:* Chester Klinke, Natl. Sls. Mgr.; *Dist. Mgr.:* Sarah Stech

BERMAR CORP., P.O. Box 12844, Research Triangle Park, NC 27709, Tel: 919-489-4316, TWX: 510 601-7697; *Sls. Mgr.:* M. Conland

BA

BERTAN ASSOCS., 121 New South Rd., Hicksville, NY 11801, Tel: 516-433-3110, TWX: 510-221-2144, FAX: 516-935-1766; FSC No.: 6130; Empl.: 140; *Sls. Mgr.:* Jim Donley ..... **D•1586-1589**

Local Sales Offices & Reps

AL	Huntsville, Electramark	205-883-9948
AZ	Phoenix, Thor Engrg.	602-437-1463
CA	Encino, King-Way Assoc.	818-788-4124
CA	Los Altos, Cain-White & Co.	415-948-6533
CO	Boulder, H. Bass Assocs.	303-530-7509
CT	Farmington, Ray Perron & Co., Inc.	203-673-4825
GA	Norcross, Electramark, Inc.	404-446-7915
IL	Arlington Hgts., Coombs Assocs.	312-439-9810
MD	Randallstown, Beacon North	703-591-1300
MA	Needham, Ray Perron & Co., Inc.	617-449-6162
MI	Farmington Hills, Carter, McCormic & Peirce	313-477-7700
MN	Minneapolis, Electronic Instrs.	612-374-5628
MO	St. Louis, Acorn Elctrns., Inc.	314-644-2510
NH	Dover, Ray Perron & Co., Inc.	603-742-2321
NM	Albuquerque, Thorson/Desert States Co.	505-293-8555
NY	Elmont, Crane & Egert Corp.	516-872-0800
NY	Hicksville, Bertan Assocs., Inc.	516-433-3110
NY	Liverpool, Northern Tech. Sls. Co.	315-451-1091
OH	Cleveland, Geotronix	216-659-6100
PA	Audubon, Holmes Assocs.	215-666-0636
TX	Dallas, Automated Motion Control	214-340-4192
UT	Bountiful, H. Bass Assoc.	801-295-7100
VA	Fairfax, Beacon North	703-591-1300
WA	Bellevue, Cain-White & Co., Inc.	206-462-2118
WI	Milwaukee, Coombs Assocs.	414-351-6123
Can	Downsview, Ont., Rayonics Sci., Inc.	416-736-1600

BERTSCH U.S., SYCAMORE RESCH. CTR., 2142F Industrial Ct., Vista, CA 92083, Tel: 619-727-7420; FSC No.: 619-727-4436; Empl.: 25; *Sls. Mgr.:* B. Linko

BEST POWER TECHNOLOGY, P.O. Box 280, Necedah, WI 54646, Tel: 608-565-7200, 800-356-5794, Telex: 701934; Empl.: 125; *Sls. Mgr.:* William L. Paul

BEST TECHNOLOGY INC., 400 Boren Ave. North, Seattle, WA 98109, Tel: 206-382-1300, TWX: 910-444-2154, FAX: 206-382-0186; Empl.: 8 ..... **B•1731**

Local Sales Offices & Reps

CA	Mountain View, Straube Assocs.	415-969-6060
CO	Westminster, Straube Assocs.	303-426-0890

BETA AUTOMATION, INC., 3541 Old Conejo Rd., Newbury Park, CA 91320, Tel: 805-499-5785; Empl.: 8; *Sls. Mgr.:* James Valentino

BETATHERM CORP., 910 Turnpike Rd. (Rte. 9), Shrewsbury, MA 01545, Tel: 617-393-7525, Telex: 374-8389; Empl.: 25

BEY ELECTRIC, INC., 362 Main St., Box 548, Lincoln Park, NJ 07035, Tel: 201-694-5000; *Sls. Mgr.:* Fred DeMauro, Gen. Mgr. ..... **A•2202-2203**

BG ELECTRONICS, 30 South St., Mt. Vernon, NY 10550, Tel: 914-664-5591, Telex: 6818048; FSC No.: 33791; Empl.: 26

B-G INSTRUMENTS, P.O. Box 67, Alta Loma, CA 91701, Tel: 714-989-4802, 980-2826, Telex: 517174; *Sls. Mgr.:* John Baum ..... **D•1075**

Local Sales Offices & Reps

WA	Spokane, B-G Instrs., Inc.	509-238-4757

B. G. LABORATORIES, INC., 75 Travis Ave., Binghamton, NY 13904, Tel: 607-722-2376, FAX: 607-722-4204; FSC No.: 26522; Empl.: 150; *Sls. Mgr.:* Marj Jayne

BLACK BOX™ A MICOM COMPANY

BH ELECTRONICS, INC., 12219 Wood Lk. Dr., Burnsville, MN 55337, Tel: 612-894-9590, Telex: 62775233, FAX: 001-612-894-9380; FSC No.: 3677; Empl.: 300; *Sls. Mgr.:* Fred LaMarche ..... **A•1214-1215, 2204-2207**

Local Sales Offices & Reps

AZ	Fountain Hills, Halbar Assocs.	602-837-2464
CA	Glendale, Halbar Assocs.	818-246-8263
CA	San Mateo, Halbar Assocs.	415-349-4700
CO	Denver, Electro Comp. Sys.	303-797-0894
IL	Chicago, I. E. Hampton & Assocs.	312-634-8890
MA	Norwood, Tom Maguire Assocs.	617-551-0500
MI	Detroit, I. E. Hampton & Assocs.	313-348-7714
MI	St. Joseph, I. E. Hampton & Assocs.	616-983-0862
MN	Osseo, Gaffney Sls. Co.	612-425-5484
NJ	Dunellen, J. A. Maguire	201-752-8480
OR	Portland, Halbar & Assocs.	206-696-0170
PA	Broomall, TCA Assocs.	215-692-6853
TX	Austin, Swearingen Sls.	512-339-8663
TX	Dallas, Swearingen Sls.	214-418-1817
TX	Houston, Swearingen Sls.	713-933-3517
WA	Redmond, Halbar Assocs.	206-882-0990
WI	Theinsville, TFL Assoc.	414-242-6800

B.H. INDS., INC., 5784 Venice Blvd., Los Angeles, CA 90019, Tel: 213-937-4763; Empl.: 6

BICC-VERO ELECTRONICS, INC., 1000 Sherman Ave, Hamden, CT 06514, Tel: 203-288-8001, TWX: 510-227-8890, FAX: 203-287-0062; Empl.: 50; *Sls. Mgr.:* David Sargent; *Dist. Mgr.:* Christine A. Martin

BICRON™

BICRON ELECTRONICS, 100 Barlow Street, Canaan, CT 06018, Tel: 203-824-5125, Telex: 5101013050; FSC No.: 10617; Empl.: 110; *Sls. Mgr.:* Peter B. Kent ..... **A•2208-2209**

Local Sales Offices & Reps

CA	San Clemente, ATA Assocs.	714-498-7180
CA	Santa Clara, Ross Mktg.	408-988-8111
CO	Denver, Omega, Ltd.	303-762-1921
IN	Indianapolis, J & W Sls.	317-842-3740
MA	Framingham, Sullivan Tech. Sls.	617-620-0195
MN	Minneapolis, PSI	612-944-8545
NY	Hollis Hills, SAM Assocs.	718-464-1595
OH	Cleveland, Arthur H. Baier Co.	216-461-6161
OH	Dayton, Arthur H. Baier Co.	513-276-4128
PA	Media, Homer Smith Co.	215-543-2434
PA	Pittsburg, Gormley Elec.	412-795-8010
UT	Salt Lake City, Omega, Ltd.	303-762-1921
VA	Salem, Homersmith, Inc.	703-387-1600
WI	Milwaukee, KMA Sls. Co.	414-259-1771
Can	Ottawa, Ellam & Assocs.	613-727-3892

BIDDLE INSTRUMENTS, A Thorn EMI Co., 510 Township Line Rd., Blue Bell, PA 19422, Tel: 215-646-9200, Telex: 685 1045 JGBCO; Empl.: 285

BIKOR, 1504 W. 228th St., Torrance, CA 92718, Tel: 213-539-6320, TWX: 910-349-6667; Empl.: 50; *Sls. Mgr.:* James Rorke

BINDICATOR, Berwind Corp., P.O. Box 9, 1915 Dove St., Port Huron, MI 48060, Tel: 313-987-2700, TWX: 810 231 5261 BINDCATOR P TH Y, ESYLNK: 313-987-4476; Empl.: 50; *Sls. Mgr.:* Rick Secord; *Dist. Mgr.:* Rick Secord

BIRD ELECTRONIC CORP., 30303 Aurora Rd., Cleveland, OH 44139, Tel: 216-248-1200, Telex: 706898 Bird Elec. UD; FSC No.: 70998; Empl.: 250; *Sls. Mgr.:* W. F. Kail; *Dist. Mgr.:* Greg Johns

BIRTCHER CORP., See EG & G Birtcher

BISHOP ELECTRONICS CORP., 3729 San Gabriel River Pkwy., Pico Rivera, CA 90660, Tel: 213-695-0446, 213-692-9391, TWX: 910-586-1922

BISHOP GRAPHICS, INC., 5388 Sterling Center, Westlake Village, CA 91359, Tel: 818-991-2600, Telex: 66-2400 BISHOP WKVG, ESYLNK: 818 889 3744; Empl.: 140; *Sls. Mgr.:* Fred Kern

BIT 3 COMPUTER CORPORATION, 8120 Penn Avenue S., Minneapolis, MN 55431, Tel: 612-881-6955, Telex: 4997016; FSC No.: 7Y590; *Sls. Mgr.:* Gordon Mitchell

Local Sales Offices & Reps

AZ	Scottsdale, Compware Mktg.	602-998-8650
CA	Los Gatos, Datarep, Inc.	409-395-1212
CA	Riverside, Cal Tech Pro, Inc.	714-682-8506
CO	Parker, Advanced Digital Mktg.	303-841-4903
FL	Longwood, Daturonix	305-774-0014
IA	Des Moines, The Beams Co.	515-255-1148
MA	Framingham, Tech. Applications Assocs.	617-875-3586
NJ	Springfield, Gebhardt Mktg.	201-376-4415
OH	Cincinnati, Applied Data Mgt.	513-579-8108
WA	Bellevue, Tasco, Inc.	206-453-1414
WI	Milwaukee, Sector Engrg.	414-352-8280

BIVAR, INC., 4 Thomas, Irvine, CA 92718, Tel: 714-951-8808, Telex: 852348, TWX: 910-350-1746; FSC No.: 32559; Empl.: 22; *Sls. Mgr.:* Bill Muldoon; *Dist. Mgr.:* Bill Muldoon ..... **C•1018**

Local Sales Offices & Reps

CA	San Diego, Qualtronics Co.	619-695-0118
CO	Westminster, D. Barth	303-427-8679
IL	Chicago, Berndt Assocs., Inc.	312-283-0713
IN	Indianapolis, Wilson Tech. Sls.	317-298-3345
MN	Minneapolis, Berndt Assocs.	612-546-2021
NJ	Berkeley Heights, Cambridge-Allen	201-464-0203
NY	Syracuse, T-Squared Elctrns.	315-463-8592
NC	Raleigh, B. T. Funderburk	919-782-3493
OH	Cincinnati, Tri-State Mktg.	513-761-7993
OR	Beaverton, Eclipse Mktg. Grp.	503-642-1661
PA	Elkins Park, K. B. Erdman Co.	215-224-1833
TX	Richardson, Laine Entprs.	214-239-7961
WA	Redmond, Eclipse Mktg. Grp.	206-885-6991
WI	Milwaukee, Berndt Assocs.	414-545-8400
Can	Mississauga, Ont., Wilson Sls.	416-677-8200

Local Distributors

AZ	Phoenix, EKO Sales	602-437-4646
CA	Fountain Valley, Components Ctr.	714-979-0433
CA	Fremont, Alatec	415-657-7701
CA	Manhattan Beach, Prime Electro Prods.	213-379-3642
CA	San Diego, Sigma Elctrns.	619-565-2000
CA	San Diego, Southland Fasteners	619-578-6630
CA	Santa Fe Springs, F T R Fasteners	714-957-0202, 213-946-6464
CA	Sunnyvale, R. C. Dudek	408-734-3830
CA	Sunnyvale, Vic/Tal Sls.	408-738-3450
CA	Westlake Village, R. C. Dudek	818-707-1310
CO	Englewood, Indus. Elctrns.	303-694-9444
CT	Milford, Plastic & Metal Comps. Co.	203-877-2723
GA	Norcross, Atlanta Hardware Specialty	404-449-3000
GA	Peachtree City, Spyraflo, Inc.	404-487-7600
IL	Chicago, EMF ... 800-621-0080,	312-889-8323
IL	Elmhurst, Miltex Sls.	312-941-7100
IN	Carmel, Altex Elctrns.	317-848-1323
MD	Beltsville, Petricko Sls.	301-937-4960
MD	Gaithersburg, Capitol Fasteners	301-948-9310
MA	Ashland, Quality Comps.	617-881-6504
MA	Waltham, Electronic Fasteners	617-890-7780
MA	Winchester, RUSH	617-729-5800
MI	Detroit, Tri-West Prods.	313-273-0400
MN	Eden Prairie, S. W. Anderson Co.	612-941-4198
NH	Londonderry, E.P.E. Corp.	603-669-9181
NJ	So. Hackensack, Fastbolt Corp.	201-440-9100
NY	Bohemia, Key Comps.	516-567-7500
NY	Long Island City, Hardware Specialty Co.	718-361-9393
NY	Mt. Vernon, QAR Elctrns.	914-699-2224
NY	Plainview, Tower Fastener Co.	516-289-8800
NY	Rochester, Masline Elctrns.	716-546-5373
NC	Raleigh, Century Elctrn. Comps.	919-872-2203
NC	Raleigh, Century Fasteners	919-787-1800
OH	Cincinnati, Hughes-Peters	513-351-2000
OH	Columbus, Hughes-Peters	614-294-5351
OH	Englewood, Argent Inds.	513-836-8633
OH	Solon, Repco	216-248-8900
OR	Beaverton, Component Resources	503-641-8488
OR	Beaverton, Murphy Elctrns.	503-642-2001
PA	Huntingdon Valley, Plastic & Metal Prods.	215-322-2000
PA	Norristown, Century Elctrns.	215-631-5400
TX	Dallas, Global Fasteners	214-340-6068
TX	Grand Prairie, Tech Supp.	214-660-4888
WA	Redmond, Murphy Elctrns.	206-881-1234
WA	Seattle, Component Resources	206-454-8666
WA	Seattle, Pacific Elctrns.	206-575-1050
EXP	USA/Irvine, CA, Products Supp. Co.	714-250-0622
Can	Mississauga, Ont., Rush/Ontario	416-677-7280

BIW CABLE SYSTEMS, INC., 65 Bay St., Dorchester, MA 02125, Tel: 617-265-2102, Telex: 94-0604; FSC No.: 71102; Empl.: 600; *Sls. Mgr.:* L. Latino, Mktg. Mgr./Elctrns.

BLACK & WEBSTER, 219 Bear Hill Rd., Waltham, MA 02254, Tel: 617-890-9100, Telex: 951102; Empl.: 50; *Sls. Mgr.:* Andy Anderson

BLACKBURN, Division of FL Industries, 1525 Woodson Rd., St. Louis, MO 63144, Tel: 314-993-9430, Telex: 4312046; Empl.: 500; *Sls. Mgr.:* T. T. Latanision

BLACKHAWK NETWORKS CORP., 14 N. Parker Dr., P.O. Box 919, Janesville, WI 53545, Tel: 608-752-8701, TWX: 910-350-8266; FSC No.: 12724; Empl.: 10; *Sls. Mgr.:* D. Adee

Local Sales Offices & Reps

CA	N. Hollywood, Crown Elctrns.	213-877-3550
CA	Santa Clara, Quorum Tech. Sls.	408-980-0812
FL	Longwood, Mathias Assocs., Inc.	305-682-1700
GA	Atlanta, Grady Duckett Sls. Co.	404-451-3529
IA	Cedar Rapids, Snider Sls. Co.	319-362-4410
MA	Burlington, Dynamic Sls.	617-272-5676
MN	Brooklyn Center, Willman Assocs.	612-566-5010
MO	Ellisville, Gateway Tech. Sls.	314-391-6543
NY	Syracuse, Murcan Sls. Corp.	315-437-0734
TX	Richardson, Precision Technlg. Assocs.	214-234-8071
VA	Arlington, H. J. Heffernan Co.	703-522-6666
Can	Scarborough, Banke Elctrns. Ltd.	416-292-5162

Local Distributors

MN	Hopkins, Joel Co.	612-935-6202

BLATEK INDUSTRIES, INC., Box 574, Bellefonte, PA 16823, Tel: 814-355-4910; Empl.: 20; *Sls. Mgr.:* Linda C. Feltman ..... **B•1777**

Local Sales Offices & Reps

CA	Burbank, Modco	818-848-2215
CT	Woodbridge, Elctrn. Mktg.	203-397-1461
MI	Benton Harbor, McNabb & Assocs.	616-925-2166

BLH ELCTRNS., 75 Shawmut Road, Canton, MA 02021, Tel: 617-821-2000, Telex: 92-3413, TWX: 710-324-0683; FSC No.: 03089; Empl.: 150; *Sls. Mgr.:* C. Wesley

BLILEY ELECTRIC CO., 2545 W. Grandview Blvd., Erie, PA 16506, Tel: 814-838-3571, Telex: 510-696-6886; FSC No.: 71034;3098; Empl.: 170 ..... **A•1341-1349**

Local Sales Offices & Reps

AL	Huntsville, R. W. Mitscher Co.	205-882-6050
AZ	Tempe, Cain Technlg., Inc.	602-966-4322
CA	Mountain View, Gene C. Woempner Co.	415-964-5454
CA	Orange, Cain Technology, Inc.	714-997-7311
CA	Van Nuys, Cain Technology, Inc.	818-904-9392
FL	Boca Raton, R. W. Mitscher Co.	305-368-3841
FL	Tarpon Springs, R.W.Mitscher Co.	813-934-9440
GA	Lawrenceville, R. W. Mitscher Co.	404-923-3239
MD	Laurel, R. W. Mitscher Co.	301-498-6090
MA	Needham, Sturgeon Co.	617-444-6603
NM	Albuquerque, C. T. Carlberg & Assocs., Inc.	505-888-3883
NY	Clarence, R.W.Mitscher Co.	716-759-2350
NY	Pittsford, R. W. Mitscher Co.	716-586-4012
NY	Red Hook, R. W. Mitscher Co.	914-758-8375
NY	Rochester, R. W. Mitscher Co.	716-227-0839
NY	Utica, R. W. Mitscher Co.	315-738-0383
NY	West Hempstead, Schmitt Indl. Mktg. Corp.	516-486-3510
NC	Charlotte, R. W. Mitscher Co.	704-563-8884
NC	Raleigh, R. W. Mitscher Co.	919-848-0941
OH	Bellbrook, Thomas Herman & Assocs., Inc.	513-372-6349
OR	Portland, Dussault & Assocs. Inc.	503-641-8780
PA	Huntingdon Valley, R. W. Mitscher Co.	215-355-4452
TN	Johnson City, R. W. Mitscher Co.	615-929-7258
TX	Richardson, Vector Sls. Co.	214-234-4291
VA	Shipman, R.W. Mitscher Co.	804-263-5154
WA	Seattle, Dussault & Assocs., Inc.	206-281-4025
EXP	CT, Stamford, Dage Corp.	203-324-3123

BLOXCOM CORP./SIEMENS RELAYS, 1130 Larkin Dr., Wheeling, IL 60090, Tel: 312-520-8010, Telex: 297156; *Sls. Mgr.:* Joe Smiesko

BLUE M

A UNIT OF GENERAL SIGNAL

BLUE M, A UNIT OF GENERAL SIGNAL, 138th & Chatham Sts., Blue Island, IL 60406, Tel: 312-385-9000, TWX: 910-689-3398; Empl.: 375; *Sls. Mgr.:* H. G. Mathews; *Dist. Mgr.:* George Dixey ..... **D•1186**

Local Sales Offices & Reps

AZ	Tempe, Blue M	602-894-2305
CA	El Monte, Blue M	818-442-6672
CA	Sunnyvale, Blue M	408-734-8734
DE	Wilmington, Blue M	302-478-6983
FL	Longwood, Blue M	305-774-5455
GA	Atlanta, Blue M	404-455-3452
KS	Overland Park, Blue M	913-888-6483
MA	Millis, Blue M	617-376-4727
MI	Livonia, Blue M	313-474-4312
NY	Nanuet, Blue M	914-623-0900
NY	Syracuse, Blue M	315-437-0192
NC	Charlotte, Blue M	704-527-2492
OH	Cincinnati, Blue M	513-821-6278
OH	Hudson, Blue M	216-656-1177
TX	Garland, Blue M	214-272-2509
WA	Seattle, Blue M	206-763-1030

BLUFFTON PRODUCTS, INC., Tegam, Inc., 7230 North Ridge Road, Madison, OH 44057, Tel: 216-946-3572; *Sls. Mgr.:* Doug Bradley

BMW ATLAS, 17 Willow St., Lynn, MA 01903, Tel: 617-581-9241; Empl.: 12; *Sls. Mgr.:* William J. Valles

Local Sales Offices & Reps

IL	Chicago, E.C. Rowell & Co.	312-238-3401

BODINE®
ELECTRIC
COMPANY

BODINE ELEC. CO., 2500 W. Bradley Pl., Chicago, IL 60618, Tel: 312-478-3515, Telex: 25-3646; Empl.: 800; *Sls. Mgr.:* R. J. Stuchly; *Dist. Mgr.:* R. J. Stuchly ..... **B•1167**

Local Sales Offices & Reps

CA	Alhambra, C. E. Mello	818-282-2000
CA	Saratoga, E. W. Duemmlein	408-253-1201
GA	Norcross, William A. Sokol	404-496-0325
KS	Shawnee Mission, J. F. Gleeson & Assocs.	913-362-4422
MA	Andover, L. R. Cascino	617-470-0050
MI	Plymouth, Steve Cavender	313-453-2730

BLILEY REPRESENTATIVES COVER THESE STATES:

Southern California, Arizona
Colorado, Utah
CAIN TECHNOLOGY, INC.

Northern California, Northwestern Nevada
GENE C. WOEMPNER COMPANY

Massachusetts, Maine
New Hampshire, Vermont
STURGEON COMPANY

New York (Metropolitan NYC), Northern New Jersey
SCHMITT INDUSTRIAL MARKETING CORP.

New York State (excluding Metropolitan NYC), Connecticut, Rhode Island, Virginia, North & South Carolina, Georgia, Mississippi, Alabama, Tennessee, Maryland, Delaware, Florida, Eastern Pennsylvania, Southern New Jersey, Canadian Provinces of Ontario & Quebec
R.W. MITSCHER CO., INC.

Washington, Oregon
DUSSAULT & ASSOCIATES, INC.

Texas, Louisiana, Arkansas, Oklahoma
VECTOR SALES CO., INC.

DESC/Dayton, Ohio
THOMAS HERMAN & ASSOCIATES, INC.

New Mexico, El Paso County Texas
C. T. CARLBERG & ASSOC. INC.

See adjacent listing for the address and telephone number of your Bliley representative.

Bliley
ELECTRIC COMPANY

MN Mound, John F. Rynkar 612-472-4252
NY Massapequa, D. V. Mayorga 516-541-1611
NY Rochester, Application Specialists 716-586-6226
NY Syracuse, Application Specialists 315-437-2813
OH Hudson, J. H. Basten 216-656-4226
OR Portland, D. E. Johnson 503-246-3131
TX Dallas, General Power Equip. 214-350-5153
VA McLean, J. S. Hsia 703-734-1739
EXP IL, Chicago, Export Dept., Bodine Elec. 312-478-3515
Can Vancouver, BC, Madison Indl. Equip. Ltd. 604-872-8155

Local Distributors

AL Mobile, Brownell Instrs. & Conts. Co. .. 205-479-5405
AK Anchorage, Amoco Supp., Inc. 907-272-0544
AZ Phoenix, Minarik Elec. Co. 602-233-3000
CA Benicia, Republic Supp. Co. 707-746-6960
CA Carson, Power Trans. Specialties 213-631-7502
CA Fremont, Elec. Motor Svc. 415-651-2706
CA Los Angeles, Minarik Elec. Co. 213-624-3161
CA Mountain View, King Bearing, Inc. 415-968-8316
CA San Diego, Minarik Elec. Co. 619-560-6632
CA San Jose, King Bearing, Inc. 408-998-5464
CA San Jose, Republic Supp. Co. 408-436-1460
CA Santa Clara, Minarik Elec. Co. 408-727-0575
CO Denver, Wazee Elec. Co. 303-623-8658
CT Berlin, B & B Motor & Control 203-828-8550
CT Hartford, Machine Drives & Controls .. 203-728-0403
CT Norwalk, Machine Drives & Controls .. 203-846-2007
FL Hialeah, Condo Elec. & Ind. Supp., Inc. 305-691-5400
FL Jacksonville, Electrical-Mech. Dr., Inc. 904-783-2730
FL Orlando, Brownell Instrs. & Conts. Co. 305-843-6770
FL Tampa, Electrical-Mech. Dr., Inc. 813-621-8675
GA Hapeville, Brownell Instrs. & Conts. Co. 404-762-5181
GA Tucker, Research Designs, Inc. 404-491-0745
IL Chicago, Excel Elec. Svc. Co. 312-421-7220
IL Franklin Pk., Flolo Elec. Co. 312-595-1010
IL Rockford, Tek-Matic, Inc. 815-282-1775
IN Indianapolis, B & B Motor & Control ... 317-248-0396
IA Cedar Rapids, Precision Bearing Co. .. 319-365-5276
IA Des Moines, Precision Bearing Co. ... 515-265-9811
KS Kansas City, Kornfeld Thorp Elec. 913-321-7070
MA Medford, Empire Elctrl. Co. 617-395-5000
MA Somerville, Electro Sls. Co., Inc. 617-666-0500
MI Detroit, Howard Elec. Co. 313-923-0430
MI Grand Rapids, MacKay Ind. Sls. 616-241-1671
MN Minneapolis, Boustead Elec. & Mfg. ... 612-544-9131
MO St. Louis, State Elec. Co. 314-569-2140
MO St. Louis, Zeller Elec., Inc. 314-638-9641
NE Omaha, Precision Bearing Co. 402-444-3939
NH Manchester, Empire Elctrl. 603-627-6630
NJ Cherry Hill, Jos. T. Fewkes & Co. 609-424-5810
NJ Piscataway, B & B Motor & Control ... 201-572-0500
NY Binghamton, K. J. Elec. Corp. 607-772-1760
NY East Syracuse, K. J. Elec. Corp. 315-437-2826
NY Long Island City, B & B Motor & Control 718-784-1313
NY Rochester, B & B Motor & Control 716-424-7040
NC Charlotte, Brownell Instrs. & Conts. Co. 704-597-1270
NC Charlotte, Service Technlg. 704-333-2016
OH Dayton, Thal Mor Assoc., Inc. 513-298-9939
OH Middleburg Hgts., Reserve Motion Control Sys. 216-826-0290
OK Oklahoma City, Evans Elec. Mtr. Ctrs., Inc. 405-631-1344
OK Tulsa, Southwest Drives, Inc. 918-665-1455
OR Portland, Campbell Ind. Supp. 503-231-4820
PA Altoona, Miller Elec. Svc. & Supp. 814-942-9943
PA Pittsburgh, Braunlich-Roessle 412-471-6995
SC Taylors, B & B Motor & Control 803-268-5702
TN Memphis, Brownell Instrs. & Conts. Co. 901-795-8487
TN Nashville, Tennessee Machinery Co. .. 615-244-8150
TX Dallas, Motion Inds. 214-351-2211
TX Fort Worth, Motion Inds. 817-335-8131
TX Houston, B & B Motor & Control 713-820-7931
TX Houston, Research Des., Inc. 713-995-8591
VA Richmond, Ind. Supp. Corp. 804-355-8041
WA Seattle, Campbell Ind. Supp. Co. 206-447-7100
WA Seattle, Indl. Elec. Mtr. & Mach., Inc. ... 206-329-3900
WA Spokane, Campbell Ind. Supp. Co. 509-838-8288
WA Tacoma, Campbell Ind. Supp. Co. 206-383-2431
WI Milwaukee, Trester Svc. Elec. 414-264-8170
WI New Berlin, Elec. Sls. & Engrg. 414-782-2400
Can Brantford, Ont., Renold Canada 800-265-9970
Can Edmonton, Soper's Supp. Ltd. 403-423-4066
Can Mt. Royal, Que., Renold Canada 514-731-3591
Can Scarborough, Ont., Toronto Elec. 416-755-7716
Can Vancouver, B.C., Armature Elec. 604-879-6141
Can Vancouver, BC, Renold Canada Ltd. .. 604-255-8455

BOEING ELECTRONICS CO., P.O. Box 24969, M/S 9N-41, Seattle, WA 98124-6269, Tel: 206-657-7474, Telex: 329430, FAX: 206-657-8883; Empl.: 5434; *Sls. Mgr.:* J. B. Ewell

BOGEN®
COMMUNICATIONS, INC.

BOGEN COMMUNICATIONS, INC., 50 Spring St., Ramsey, NJ 07446, Tel: 201-934-8500, TWX: 710-990-5047, FAX: 201-934-9832; *Sls. Mgr.:* Lou Asighieri/Charlotte Stalker ..... **C•1193**

Local Sales Offices & Reps

AL Huntsville, REP Inc. 205-881-9270
AZ Scottsdale, Dar-C Inc. 602-948-2240
CA Pleasonton, Moulthrop Sls. 415-463-0450
CA San Diego, Tauber Assocs. 619-274-7242
CO Englewood, Comp. Sls. 303-779-8060
GA Tucker, Rep., Inc. 404-938-4358
IL Palatine, Technlg. Sls. 312-991-6600
IN Indianapolis, Marketing Engrg. 317-872-5665
KS Olathe, Rush & West 913-764-2700
MD Ellicot City, Mktg. Technlg. Inc. 301-465-5944
MA Burlington, Conti Younger 617-273-1582
MI Brighton, A. P. Assocs. 313-229-6550
MN Eden Prarie, Electro Mark 612-944-5850
MO Ballwin, Rush West 314-394-7271
NJ Berkeley Hgts., Cambridge Allen & Assocs. 201-464-0203
NY Pittsford, Andres Comp. 716-381-3818
NY Pittsford, Andres Comp. Sls. 716-381-3818
NC Raleigh, Rep., Inc. 919-851-3007
OR Beaverton, Advanced Power Prods. ... 503-646-0994
PA Philadelphia, Samuel K. McDonald Inc. 215-545-1205
TN Jefferson City, Rep., Inc. 615-475-9012
TX Dallas, Dunbar 214-239-7151
UT Salt Lake City, Comp. Sls. 801-268-8440
WA Advanced Power Prods. 206-852-9558
WI Waukesha, Technlg. Sls. 414-786-5015

Local Distributors

AL Huntsville, Resistacap, Inc. 205-883-4270
AZ Scottsdale, Electro Mark 602-991-0110
CA Burlingame, Rose Elec. 415-348-0483
CA San Diego, Tauber Elec. 619-272-7242
CA San Jose, Cypress Elec. 408-945-8400
CA Van Nuys, Nesco 213-781-0505
CO Englewood, Indl. Elctrns. 303-694-9444
FL Boca Raton, Plainview Elctrns. 305-997-7705
FL Dania, Summit Distr. 305-920-6253
GA Atlanta, Prehler Inc. 404-447-5540
IL Chicago, Prehler Elec. 312-384-6100
IL Morton Grove, Power Pak 312-966-6000
IN Indianapolis, Graham Elec. 317-634-8202
MA Canton, Impact Sls. 617-821-1500
MA Sharon, Adcour 617-784-8123
MI Brighton, A. P. Sls. 313-229-6550
MI Farmington Hills, Prehler Elec. 313-473-7200
MN Richfield, Power Grp. Intl. 612-890-1360
MN Thief River Falls, Digi Key 218-681-6674
NJ Bellmawr, Mid-Atlantic 609-931-5303
NJ Camden, Gen. Radio Supp. 609-964-8560
NJ Plainfield, Mars Elec. 201-757-4332
NY Buffalo, Summit Dist. 716-887-2800
NC Cary, Powell Elctrns. 919-467-1212
OH Cincinnati, Hughes Peters 513-351-2000
OH Columbus, Hughes Peters 614-294-5351
OR Beaverton, Almac Elctrns. 503-629-8090
OR Wilsonville, Micro Power 503-694-5353
TX Dallas, Computer Comps. 214-239-0271
UT Salt Lake City, Salt Lake Beta Wintronics 801-483-1882

BOKER'S, INC., 3104 Snelling Ave., Minneapolis, MN 55406, Tel: 612-729-9365; FSC No.: 85446; *Sls. Mgr.:* Joseph Basara

BOLT INDUSTRIAL CONTROLS, INC., 4645-2C Industrial St., Simi Valley, CA 93063, Tel: 818-716-5169; Empl.: 30; *Sls. Mgr.:* Judy Williams; *Dist. Mgr.:* Judy Williams

BOMAR CRYSTAL, 201 Blackford Ave., Middlesex, NJ 08846, Tel: 201-356-7787, 800-526-3935, TWX: 710-480-4560, FAX: 1-201-356 7362; Empl.: 75; *Sls. Mgr.:* Phil Casciano

BOMCO, See MuShield Co.

BOONTON

BOONTON ELECTRONICS CORP., 791 Route 10, Randolph, NJ 07869, Tel: 201-584-1077, TWX: 710-986-8215 BOONTRONICS; FSC No.: 04901; Empl.: 180; *Sls. Mgr.:* R. Morrell ..... **D•1226**

Local Sales Offices & Reps

AL Huntsville, Sci. Devices 205-536-1969
AZ Phoenix, Aztec Entprs. 602-944-9185
CA North Hollywood, O'Halloran Assocs. 213-877-0173
CA Palo Alto, O'Halloran Assocs. 415-969-1600
CO Denver, Aztec Entprs. 303-779-5285
CT Mt. Carmel, Sci. Devices 203-248-9361
FL Coral Springs, Sci. Devices 305-755-4453
FL Orlando, Sci. Devices 305-841-8180
IL Elmhurst, Sector Engrg. Sls., Inc. 312-530-7850
IN Indianapolis, Sector Engrg. Sls., Inc. ... 317-842-1120
KS Lenexa, Ramsey Assoc. 913-541-1007
MD Lanhan, Sel-Tronics 301-731-8080
MA Lexington, R. J. Sickles 617-862-5100
MN Minneapolis, Sector Engrg. Sls., Inc. ... 612-593-1809
MO Maryland Hgts., Ramsey Assoc. 314-878-5042
NJ Teaneck, Sci. Devices 201-837-1004
NM Albuquerque, Aztec Entprs. 505-262-1688
NY Rochester, Sci. Devices 716-334-2445
NC Winston-Salem, Sci. Devices 919-765-5776
OH Centerville, Micro Sls. 513-433-8171
OH N. Olmsted, Micro Sls. 216-734-3080
PA Melrose Park, R. Meyers 215-224-1663
TX Austin, Testech 512-327-7033
TX Houston, Testech 713-956-0837
TX Richardson, Testech 214-644-5010
UT Ogden, Aztec Entprs. 801-621-1655
WA Bellevue, Sci. Devices 206-747-5169
WI Milwaukee, Sector Engrg. Sls., Inc. 414-352-8280

BOPLA ENCLOSURES, 12140 Parklawn Dr., Rockville, MD 20852, Tel: 301-770-2225, FAX: 301-984-8670; FSC No.: 4Y520; Empl.: 30 ..... **C•1019**

BORG-WARNER THERMOELECTRICS, BORG-WARNER CORP., See TECA, ThermoElectric Cooling America Corp.

BOSCH, ROBERT, CORP., 2800 S. 25th Ave., Broadview, IL 60153, Tel: 312-865-5200, Telex: 23-5563; *Sls. Mgr.:* Dieter Bloecks; *Dist. Mgr.:* Dave Robson

COMPUTER PRODUCTS™
BOSCHERT INCORPORATED

BOSCHERT, INC., See Computer Products, Inc.

BOSCHERT INC., 384 Santa Trinita Ave., Sunnyvale, CA 94086, Tel: 408-732-2440, TWX: 910-339-9241; Empl.: 1500; *Sls. Mgr.:* Lloyd Schiller; *Dist. Mgr.:* Lloyd Schiller

BOURNS, INC., Resistive Components Group, 1200 Columbia Ave., Riverside, CA 92507, Tel: 714-781-5050, TWX: 910-332-1252; Empl.: 6000; *Sls. Mgr.:* David Labuda; *Dist. Mgr.:* Dennis Lause ..... **A•1878-1879, 2084-2087**

Local Sales Offices & Reps

AL Huntsville, CSR Elctrns. 205-533-2444
AZ Phoenix, Shefler-Kahn 602-257-9015
CA Calabasas, Quad Rep. Inc. 818-887-4219
CA Irvine, Quad Rep. Inc. 714-261-6706
CA San Diego, SR Elctrns. 619-560-8330
CA San Jose, QuadRep, Inc. 408-946-4000
CO Parker, Parker Webster 303-841-4888
FL Altamonte Springs, Dyne-A-Mark 305-831-2097
FL Clearwater, Dyne-A-Mark 813-441-4702
FL Ft. Lauderdale, Dyne-A-Mark 305-771-6501
FL Palm Bay, Dyne-A-Mark 305-727-0192
GA Atlanta, CSR Elctrns. 404-396-3720
ID Boise, Intermountain Technlg. 208-322-5022
IL Elk Grove Vl., Parcom, Inc. 312-228-6360
IN Carmel, Technlg. Mktg. Corp. 317-844-8462
IN Ft. Wayne, Technlg. Mktg. Corp. 219-432-5553
IA Cedar Rapids, REP Assocs. Corp. 319-373-0152
KY Louisville, Technlg. Mktg. Corp. 502-499-7808
MD Baltimore, Micro-Comp. 301-247-0400
MA Lexington, John E. Boeing Co. 617-862-2500

MI Detroit, Rathburg Assocs. 313-882-1717
MN Edina, Mel Foster 612-941-9790
MO Bridgeton, Centech 314-291-4230
MO Raytown, Centech 816-358-8100
NJ Bellmawr, Thomas Assocs. 609-933-2600
NM Albuquerque, Shefler-Kahn Co. 505-296-0749
NY Ithaca, B. Dean 607-257-1111
NY Melville, Comtronic Assocs. 516-249-0505
NY Wappingers Falls, Bourns 914-297-1180
NC Raleigh, CSR Elctrns. 919-878-9200
OH Richfield, Bear Mktg. 216-659-3131
OK Oklahoma City, Ammon & Rizos 405-942-2552
OR Portland, J. J. Backer 503-297-8744
OR Salem, J. J. Backer 503-362-0717
TX Austin, Ammon & Rizos 512-454-5131
TX Dallas, Ammon & Rizos 214-644-5591
TX Houston, Ammon & Rizos 713-781-6240
UT Salt Lake City, Parker Webster 801-266-9939
VA Huddleston, Micro-Comp 301-247-0400
WA Seattle, J. J. Backer 206-285-1300

Local Distributors

AL Huntsville, Hall-Mark Elctrns. 205-837-8700
AL Huntsville, Hamilton/Avnet Elctrns. 205-837-7210
AL Huntsville, Pioneer/Washington 205-837-9300
AL Huntsville, Schweber 205-882-2200
AZ Phoenix, Hall-Mark Elctrns. 602-243-6601
AZ Phoenix, Schweber Elctrns. 602-997-4874
AZ Phoenix, TTI 602-861-0222
AZ Tempe, Bell Inds. 602-966-7800
AZ Tempe, Elctrn. Supp. 602-258-4769
AZ Tempe, Hamilton/Avnet 602-231-5100
CA Canoga Park, Schweber Elctrns. 213-999-4702
CA Chatsworth, Avnet Elctrns. 213-700-2600
CA Chatsworth, TTI 818-709-1010
CA Citrus Hts, Hall-Mark Elctrns. 916-443-7282
CA Compton, Harper S.I.D. 213-979-5090
CA Costa Mesa, Avnet Elctrns. 213-558-2313
CA Costa Mesa, Avnet Elctrns. 714-754-6111
CA Costa Mesa, Hamilton Elctrns. 714-641-4100
CA Culver City, Hamilton Electro Sls. 213-558-2883/84
CA Culver City, Hamilton Electro Sls. 213-558-2121
CA El Segundo, Hall-Mark Elctrns. 213-643-9101
CA Garden Grove, Bell Inds. 213-444-0301
CA Gardena, Bell Inds. 213-515-1800
CA Irvine, Schweber Elctrns. 714-556-3880
CA Irvine, Schweber Elctrns. 714-863-0261
CA Oakland, Brill Elctrns. 415-834-5888
CA Riverside, Elctrn. Supp. Corp. 714-787-9220
CA Roseville, Bell Inds. 916-969-3100
CA Sacramento, Hamilton/Avnet 916-920-3150
CA Sacramento, Schweber Elctrns. 916-929-9732
CA San Diego, Bell Inds. 619-268-1277
CA San Diego, Elctrn. Supp. 619-278-5020
CA San Diego, Hall-Mark Elctrns. 619-268-1201
CA San Diego, Hamilton/Avnet 619-571-7500
CA San Jose, TTI 408-943-9155
CA Santa Ana, Teknopak 714-558-8840
CA Santa Clara, Schweber Elctrns. 408-748-4700
CA Santa Clara, Schweber Elctrns. 408-496-0200
CA Sunnyvale, Bell Inds. 408-734-8570
CA Sunnyvale, Hall-Mark Elctrns. 408-773-9990
CA Sunnyvale, Hamilton/Avnet 408-743-3300
CA Tustin, Hall-Mark Elctrns. 714-669-0681
CA Woodland Hills, Avnet Elctrns. 213-884-3322
CO Denver, Newark Elctrns. 303-757-3351
CO Englewood, Hall-Mark Elctrns. 303-790-1662
CO Englewood, Hamilton/Avnet 303-779-9998
CO Wheat Ridge, Bell Inds. 303-424-1985
CT Danbury, Hamilton/Avnet 203-797-2856
CT Danbury, Schweber Elctrns. 203-792-3500
CT Hamden, Almo Elctrns. Corp. 203-288-6556
CT Norwalk, Pioneer Std. 203-853-1515
CT Statford, TTI 203-375-1400
CT Wallingford, Midan Elctrns. 203-265-2077
FL Altamonte Springs, Pioneer Std. 305-834-9090
FL Altamonte Springs, Schweber Elctrns. 305-331-7555
FL Clearwater, Hall-Mark Elctrns. 813-530-4543
FL Dania, Summit Distrs. 305-920-6253
FL Ft. Lauderdale, Hall-Mark Elctrns. 305-971-9280
FL Ft. Lauderdale, Hamilton/Avnet 305-971-2900
FL Ft. Lauderdale, Hammond Elctrns. 305-973-7103
FL Ft. Lauderdale, Pioneer/Washington 305-771-7520
FL Hollywood, Schweber Elctrns. 305-927-0511
FL Largo, Graham Elctrns. 813-541-4434
FL Orlando, Hall-Mark 305-855-4020
FL Orlando, Hammond Elctrns. 305-849-6060
FL Orlando, Pioneer/Orlando 305-834-9090
FL Orlando, TTI 305-859-1000
FL St. Petersburg, Hall-Mark Elctrns. 813-576-8691
FL St. Petersburg, Hamilton/Avnet 813-576-3930
FL Winter Park, Hamilton/Avnet 305-628-3888
GA Norcross, Hall-Mark Elctrns. 404-447-8000
GA Norcross, Hamilton/Avnet 404-447-7500
GA Norcross, Hammond Elctrns. 404-449-1996
GA Norcross, Pioneer/Washington 404-448-1711
GA Norcross, Schweber Elctrns. 404-449-9170
GA Norcross, TTI 404-662-0911
IL Bensenville, Hall-Mark Elctrns. 312-860-3800
IL Bensenville, Hamilton/Avnet 312-860-8523
IL Chicago, Bell Inds. 312-982-9210
IL Chicago, Newark Elctrns. 312-638-4411
IL Elk Grove Village, Pioneer Std. 312-437-9680
IL Elk Grove Village, Schweber Elctrns. 312-364-3750
IL Palatine, Ohm Elctrns. 312-359-5500
IN Carmel, Hamilton/Avnet 317-844-9333
IN Fort Wayne, Graham Elctrns. 219-423-3422
IN Indianapolis, Graham Elctrns. 317-634-8202
IN Indianapolis, Pioneer Std. Elctrns. 317-849-7300
IN Lafayette, Graham Elctrns. 317-423-5564
IA Cedar Rapids, Bell Inds. 319-395-0730
IA Cedar Rapids, Hamilton/Avnet 319-362-4757
IA Cedar Rapids, Schweber Elctrns. 319-373-1417
KS Lenexa, Hall-Mark Elctrns. 913-888-4747
KS Overland Park, Schweber Elctrns. 913-492-2921
KS Overland Pk., Hamilton/Avnet Elctrns. 913-888-8900
MD Baltimore, Radio Elec. Svc. Co. 301-529-0500
MD Beltsville, Radio Elec. Svc. Co. 202-937-9100
MD Columbia, Hall-Mark Elctrns. 301-796-9300
MD Columbia, Hamilton/Avnet 301-995-3500
MD Gaithersburg, Almo Elctrns. Corp. 301-670-0090
MD Gaithersburg, Pioneer/Washington 301-921-0660
MD Gaithersburg, Schweber Elctrns. 301-840-5900
MA Bedford, Schweber Elctrns. 617-275-5100
MA Canton, Almo Elctrns. Corp. 617-821-1450
MA Lexington, Pioneer Std. 617-863-1200
MA Norwood, Gerber Elctrns. 617-769-6000
MA Woburn, Hall-Mark Elctrns. 617-935-9777
MA Woburn, Hamilton/Avnet 617-273-7500
MI Flint, RS Elctrns. 313-762-5800
MI Grand Rapids, Hamilton/Avnet 616-243-8805
MI Grand Rapids, RS Elctrns. 616-241-3483
MI Kalamazoo, RS Elctrns. 616-381-5470
MI Livonia, Hamilton/Avnet 313-522-4700
MI Livonia, Pioneer Std. Elctrns. 313-525-1800
MI Livonia, RS Elctrns. 313-525-1155
MI Livonia, Schweber Elctrns. 313-525-8100
MI Roseville, RS Elctrns. 313-779-2450
MI Wyandotte, RS Elctrns. 313-AV2-5880
MN Bloomington, Hall-Mark Elctrns. 612-854-3223
MN Eden Prairie, Schweber Elctrns. 612-941-5280
MN Edina, Schweber Elctrns. 612-941-5280
MN Minneapolis, Newark Elctrns. 612-331-6350
MN Minnetonka, Hamilton/Avnet 612-932-0600
MN Minnetonka, Pioneer Std. Elctrns. 612-935-5444
MO Earth City, Hamilton/Avnet 314-344-1200
MO Earth City, Schweber Elctrns. 314-739-0526
MO Maryland Hts, Hall-Mark Elctrns. 314-291-5350
NH Hudson, C&H Elctrns. 603-882-1133
NH Manchester, Schweber Elctrns. 603-625-2250
NJ Camden, General Radio 609-964-8560
NJ Cherry Hill, Hall-Mark Elctrns. 609-424-7300
NJ Cherry Hill, Hamilton/Avnet 609-424-0110
NJ Clifton, J-Mar Elctrns. 201-772-6400
NJ Fairfield, Hall-Mark Elctrns. 201-575-4415
NJ Fairfield, Hamilton/Avnet 201-575-3390
NJ Fairfield, Schweber Elctrns. 201-227-7880
NJ Pine Brook, Pioneer Std. 201-227-1262
NM Albuquerque, Bell Inds. 505-292-2700
NM Albuquerque, Hamilton/Avnet Elctrns. 505-765-1500
NY Bohemia, TTI 516-567-1500
NY Buffalo, Summit Distrs. 716-884-3450
NY E. Syracuse, Hamilton/Avnet 315-437-2647
NY Fairport, Pioneer-Harvey 716-381-7070
NY Hauppauge, Hamilton/Avnet 516-231-9800
NY Hauppauge, Mast Distrs. 516-273-4422
NY Hauppauge, Pioneer-Harvey 516-231-9200
NY Melville, Hamilton/Avnet 516-454-6000
NY Rochester, Hamilton/Avnet Elctrns. 716-475-9130
NY Rochester, Schweber Elctrns. 716-424-2222
NY Rochester, Summit Distrs. 716-334-8110
NY Ronkonkoma, Hall-Mark Elctrns. 516-737-0600
NY Vestal, Pioneer Std. 607-748-8211
NY Westbury, Schweber Elctrns. 516-334-7474
NC Charlotte, Pioneer/Washington 704-527-8188
NC Greensboro, Hammond Elctrns. 919-275-6391
NC Raleigh, Hall-Mark Elctrns. 919-872-0712
NC Raleigh, Hall-Mark Elctrns. 919-872-6286
NC Raleigh, Hamilton/Avnet 919-878-0819
NC Raleigh, Schweber Elctrns. 919-876-0000
OH Beachwood, Schweber Elctrns. 216-464-2970
OH Cincinnati, Hall-Mark Elctrns. 513-563-5980
OH Cincinnati, Hughes-Peters 513-351-2000
OH Cleveland, Hamilton/Avnet 216-831-3500
OH Cleveland, Pioneer Std. 216-587-3600
OH Columbus, Graham Elctrns. 614-895-1590
OH Columbus, Hughes-Peters 614-294-5351
OH Dayton, Bell Inds. 513-434-8213
OH Dayton, Hamilton/Avnet 513-433-0610
OH Dayton, Pioneer Std. 513-236-9900
OH Dayton, Schweber Elctrns. 513-439-1800
OH Maumee, RS Elctrns. 419-893-0721
OH Solon, Hall-Mark Elctrns. 216-349-4632
OH Westerville, Hall-Mark Elctrns. 614-891-4555
OK Tulsa, Hall-Mark Elctrns. 918-665-3200
OK Tulsa, Schweber Elctrns. 918-622-8000
OR Beaverton, Almac Elctrns. 503-641-9070
OR Lake Oswego, Bell Inds. 503-241-4115
OR Lake Oswego, Hamilton/Avnet Elctrns. 503-635-8831
PA Horsham, Pioneer/Washington 215-674-4000
PA Horsham, Schweber Elctrns. 215-441-0600
PA Philadelphia, Almo Elctrns. Corp. 215-698-4000
PA Pittsburgh, Almo Elctrns. Corp. 412-931-5990
PA Pittsburgh, Pioneer Std. Elctrns. 412-782-2300
PA Pittsburgh, Schweber Elctrns. 412-782-1600
SC Greenville, Hammond Elctrns. 803-233-4121
TN Nashville, Graham Elctrns. 615-242-2682
TX Austin, Hall-Mark Elctrns. 512-258-8848
TX Austin, Hamilton/Avnet 512-837-8911
TX Austin, Harrison Equip. Co. 512-458-3555
TX Austin, Pioneer Std. Elctrns. 512-835-4000
TX Austin, Schweber Elctrns. 512-458-8253
TX Dallas, Hall-Mark Elctrns. 214-343-5000
TX Dallas, Hall-Mark Elctrns. 214-341-1147
TX Dallas, Harrison Equip. Co. 214-239-2750
TX Dallas, Pioneer Std. Elctrns. 214-386-7300
TX Dallas, Schweber Elctrns. 214-661-5010
TX El Paso, Ideal Indl. Elctrn. Supp. 915-779-6647
TX Fort Worth, TTI 214-429-1440
TX Houston, Hall-Mark Elctrns. 713-781-6100
TX Houston, Hamilton/Avnet 713-975-3501
TX Houston, Harrison Equip. Co. 713-879-2600
TX Houston, Pioneer Std. 713-988-5555
TX Houston, Pioneer Std. Elctrns. 214-386-7300
TX Houston, Schweber Elctrns. 713-784-3600
TX Irving, Hamilton/Avnet 214-659-4100
TX Stafford, Harrison Equip. 713-879-2600
UT Salt Lake City, Bell Inds. 801-972-6969
UT Salt Lake City, Hamilton/Avnet 801-972-2800
WA Bellevue, Almac Elctrns. 206-643-9992
WA Bellevue, Bell Inds. 206-747-1515
WA Bellevue, Hamilton/Avnet 206-643-3950
WI Brookfield, Schweber Elctrns. 414-784-9020
WI Mequon, Taylor Elec. 414-241-4321
WI Milwaukee, Electronic Expd. 414-228-8100
WI New Berlin, Hamilton/Avnet 414-784-4510
WI Oak Creek, Hall-Mark Elctrns. 414-761-3000
WI Waukesha, Bell Inds. 414-547-8879

BOURNS INSTRUMENTS INC., 6135 Magnolia Ave., Riverside, CA 92506, Tel: 714-781-5148, TWX: 910-332-6103; Empl.: 220; *Sls. Mgr.:* Dennis Dalbeck

BOWMAR/ALI, Bowmar Instr. Corp., 531 Main St, Acton, MA 01720, Tel: 617-263-8365, TWX: 710-347-1441, FAX: 617-263-3358; Empl.: 200; *Sls. Mgr.:* Allen Warner

BOWMAR INSTRUMENT CORP., Aerospace Div., 8000 Bluffton Rd., Ft. Wayne, IN 46809, Tel: 219-747-3121, TWX: 810-332-1510; FSC No.: 99479; Empl.: 215; *Sls. Mgr.:* Herb Black

BOWMAR INSTRUMENT CORP., Data Entry Division, 4640 126th Ave. N., Clearwater, FL 33520-4796, Tel: 813-576-2525, TWX: 810-863-0375; Empl.: 127

Local Sales Offices & Reps

CA Northridge, XBX Sls., Inc. 818-368-3503, 800-874-3821
CA Orange, XBX Sls., Inc. 714-998-8200
CA San Diego, XBX Sls., Inc. 619-586-1577
CA San Jose, Bytec Sls. 408-243-7100
CO Littleton, TMC 303-773-0643
IL Berkeley, ESA Tech. Mktg. 312-544-0120
IA Cedar Rapids, Tech. Elctrns., Inc. 319-366-5443
MA Waltham, Betronic Assocs., Inc. 617-894-8400
NV Reno, Bytec Sls. 702-852-4006
NM Albuquerque, S & S Technlgs., Inc. 505-255-5599
NY Bay Terrace, JLH Sls., Inc. 718-428-5658
NY Syracuse, Pi'tronics, Inc. 315-455-7346
OR Portland, Harry Levinson Co. 503-245-1902
PA Willow Grove, Delta Tech. Sls. 215-657-7250
TX Austin, J. Clay Co. 512-250-9427
TX Dallas, J. Clay Co. 214-484-9933
VA Front Royal, Eltron Sls.,Ltd. 703-635-7201
WA Seattle, Harry Levinson Co. 204-382-1300

BRADY CO., 63 Middlesex Ave., Iselin, NJ 07083, Tel: 201-283-0400; *Sls. Mgr.:* Ed Brady; *Dist. Mgr.:* John Blaze

BRADY, W. H., CO., Indl. Prods. Div., 2221 W. Camden Rd., Milwaukee, WI 53201, Tel: 414-351-6630, Telex: 26-677, TWX: 910-262-3151; *Sls. Mgr.:* G. W. Gyllstrom; *Dist. Mgr.:* G. W. Gyllstrom

BRADY, W.H., CO. NAMEPLATE DIV., See Brady, W.H., Co., Elctrn. Prods. Div

BRADY, W. H., CO., Xymox Div., 8225 W. Parkland Ct., P.O. Box 571, Milwaukee, WI 53201, Tel: 414-355-8300, Telex: 26-677, TWX: 910-262-3151, FAX: 414-354-0453; FSC No.: 85480; *Sls. Mgr.:* Glenn R. Manich

BRAEMAR CORP., 11400 Rupp Drive, Burnsville, MN 55337, Tel: 612-890-5135; Empl.: 130; *Sls. Mgr.:* A. J. Chan

Local Sales Offices & Reps

CA	Laguna Hills, Braemar Corp.	714-472-2242
MA	Dunstable, Braemar Corp.	617-649-3809
MN	Burnsville, Braemar Corp.	800-328-2719
OR	Portland, Tasco	503-245-8168
WA	Bellevue, Tasco	206-453-1414
EXP	MA, Waltham, Techexport	617-661-9424

BRAILSFORD & CO., 670 Milton Rd., Rye, NY 10580, Tel: 914-967-1820; Empl.: 25

BRAND DIELECTRICS, INC., Route 203, N. Windham, CT 06256, Tel: 203-423-6321; Empl.: 5; *Sls. Mgr.:* Philip Harvey

BRANDEN, T. G., CORP., 15822 S.W. Upper Bns. Fry. Rd., Lake Oswego, OR 97034, Tel: 503-659-9366; Empl.: 8; *Sls. Mgr.:* Ted Brandt

BRANDT ELCTRNS., INC., 1220 Alderwood Ave., Sunnyvale, CA 94086, Tel: 408-734-8310, TWX: 910-339-9560; FSC No.: 57837; *Sls. Mgr.:* Frank D. Brandt

BRAXTON MFG., Echo Lake Rd. N., P.O. Box 429, Watertown, CT 06795, Tel: 203-274-6781, TWX: 710-477-0621; Empl.: 115; *Sls. Mgr.:* Richard Rosa

BREEZE-ILLINOIS, Trans Technology Corp., 8823 North Industrial Rd., Peoria, IL 61615-1584, Tel: 309-693-3322, TWX: 510-390-3691; Empl.: 180; *Sls. Mgr.:* Patrick Banakis ..... **C•1818-1819**

Local Sales Offices & Reps

CA	Newport Beach, Camda	714-642-7281
CA	San Diego, Camda	619-571-4818
CA	San Jose, Camda	408-978-6718
CA	Woodland Hills, Cal Ward Sls.	818-883-2202
CO	Longmont, Todd & Fry Assocs.	303-776-7331
GA	Atlanta, Pro Mark Prof. Mktg. Svcs.	404-393-2923
IL	Hillside, Cadre Tech. Rep., Inc.	312-449-3900
MD	Glen Burnie, Macrotech Assoc.	301-766-1111
MA	Tewksbury, Sequel Assoc., Inc.	617-851-4010
MI	Madison Heights, Pine Sls., Inc.	313-589-0350
MO	St. Louis, Roth Kopf & Assoc., Inc.	314-961-4485
NJ	Roebling, J. A. Kais Assoc.	609-499-9488
OH	Bandalia, Cleary Sls. Co.	513-890-8642
OH	Chagrin Falls, Pine Sls., Inc.	216-247-6198
PA	Pittsburgh, Pine Sls., Inc.	412-456-7471
TX	Collinsville, DeArmond Entprs.	817-267-2048
WA	Bellevue, Lehr Assocs.	206-453-9993

BREN-TRONICS, INC., 10 Brayton Ct., Commack, NY 11725, Tel: 516-499-5155, Telex: 22-1213 TTCUR; FSC No.: 51828; Empl.: 75; *Sls. Mgr.:* D. Fagon

BREVEL MOTORS, INC., Sub. Vernitron Corp., Broad & 16th Sts., Carlstadt, NJ 07072, Tel: 201-933-0220, Telex: 642-606; Empl.: 300; *Sls. Mgr.:* Jack Dominice ..... **B•1168**

Local Sales Offices & Reps

AR	El Dorado, Industrial Control Assocs.	501-862-2051
CA	Los Angeles, Electric Motor Engrg.	213-469-7393
CO	Denver, Tech Rep Sls. Co.	303-758-7031
CT	Old Saybrook, M. L. Assocs.	203-388-9718
FL	Altamonte Springs, Machine Controls	305-788-6607
IL	Chicago, Jerry Golten Co.	312-792-1991
KS	Prairie Village, Darco Sls.	913-381-7913
MA	Ashland, M. L. Assocs.	617-485-6190
MN	St. Paul, Vikeland Sls.	612-645-4647
NJ	Teaneck, Herbert Rude & Assocs.	201-836-6778
NY	Penfield, Upstate Comps.	716-381-6070
NC	Raleigh, Leigh Sls.	919-872-1484
OH	Bucyrus, Sissler & Assocs.	419-562-9311
OH	Columbus, Sissler & Assocs.	614-488-4455
PA	Exton, Kiley Elec. Co.	215-363-8550
TN	Cleveland, Hicks Sls.	615-472-7398

Local Distributors

AZ	Phoenix, Johnstone	602-269-9354
CA	Baldwin Park, Johnstone	213-962-7138
CA	Los Angeles, Minarik	213-624-3161
CO	Denver, Johnstone	303-573-5626
CT	Hartford, Brownell Electro	203-278-9000
FL	Ft. Lauderdale, Johnstone	305-971-9350
GA	Norcross, Johnstone	404-446-0400
ID	Boise, Johnstone	208-377-1600
IL	Chicago, Johnstone Supply	312-226-3033
KS	Wichita, Johnstone	316-267-3629
LA	New Orleans, Johnstone Supply	504-733-1495
MD	Rockville, Johnstone	301-251-0281
MA	Medford, Empire	617-395-5000
MI	Farmington Hills, Universal Elec. Prod.	313-476-9500
MO	Kansas City, Johnstone Corp.	816-842-3250
MT	Billings, Johnstone Corp.	406-252-1207
NE	Omaha, Johnstone Corp.	402-339-2342
NV	Sparks, Johnstone Corp.	702-356-6668
NJ	Cherry Hill, Motor and Control Sys.	609-424-5810
NY	Woodside, Johnstone Supply	718-545-4896
OH	Cleveland, Reserve Elec.	216-771-5764
OK	Oklahoma City, Johnstone Corp.	405-232-8576
OR	Portland, Johnstone Corp.	503-233-1151
TN	Memphis, Johnstone Supply	901-324-1111
TX	Dallas, Johnstone Supply	214-357-0835

BRIGGS, C. A., CO., P.O. Box 151, Glenside, PA 19038, Tel: 215-885-2244, Telex: 83-4753; Empl.: 10; *Sls. Mgr.:* C. A. Briggs, Jr.

BRIM ELECTRONICS, 120E Home Pl., Lodi, NJ 07644, Tel: 201-796-2886; FSC No.: 57834 ..... **C•1820-1829**

Local Sales Offices & Reps

MA	Stow, R G Assocs.	617-897-7146
EXP	NY, N.Y.C., Roburn Agencies	212-989-5939

Local Distributors

AL	Dothan, Carmichael Whls. Supp.	205-793-7066
CA	Canoga Park, Tim-Co. Sls.	213-992-5040
CA	San Diego, Shanks & Wright	619-239-0176
CT	Manchester, IMS	203-649-4415
CT	Waterbury, Century Elec.	203-755-0405
FL	Lake Mary, Electronic Fasteners	305-321-4000
KS	Topeka, Acme Radio Supp. Co.	913-235-1363
LA	New Orleans, Radio Parts	504-581-5959
MA	Billerica, Eastern Video Sys.	617-667-0009
MA	Lexington, Wholesale Elect. Supp.	617-862-3590
MA	Springfield, Electro-Term	413-734-6469
MA	Waltham, Linear Elect.	617-894-7300
NH	Dover, American Radio Corp.	603-742-6800
NJ	Hackensack, Milcor	201-489-1313
NY	LIC, H.L. Dalis	212-361-1100
NY	N.Y.C., Center Indl.	212-YU9-6363
OK	Tulsa, Radio	918-587-9123
RI	Newport, J & S Elctrn. Distb.	401-847-2977
TN	Knoxville, Bondurant Bros. Co.	615-573-9151
TX	Grand Prairie, Southwest Hardware & Fastever	214-264-4711
TX	Texarkana, Lavender Elec.	501-773-4631
TX	Texarkana, McCulloch Elctrns.	214-792-6923
VT	Cavendish, C S Svc. & Supp. Co.	802-226-7582
VA	Norfolk, Todd Elec.	804-855-3111
WA	Seattle, Amateur Radio Supp.	206-767-3222

BRINTEC CORP., Brand-Rex Cable Systems Division, 1600 W. Main St., Willimantic, CT 06226-1128, Tel: 203-456-8000, Telex: 99-4444, TWX: 710-440-2247; FSC No.: 71124; Empl.: 1000; *Sls. Mgr.:* J. F. Cichy

Local Sales Offices & Reps

AZ	Phoenix, Ken maynard & Assocs.	602-482-2472
CA	Laguna Hills, Brand-Rex	714-830-4278
CA	Palo Alto, Baribeault Assocs.	415-493-4441
CA	San Jose, Brand-Rex	408-247-9811
CO	Boulder, Component Prod. Sls., Inc.	303-530-2800
CT	Manchester, Manu-Rep, Inc.	203-646-6064
FL	Maitland, Design Mktg.	305-660-0224
IL	Elmhurst, Circuit Sls. Inc.	312-833-2242
IN	Indianapolis, Insulation Reps.	317-251-1994
MD	Hanover, J. A. Maguire & Co.	301-796-0970
MA	Clinton, CWS, Inc.	617-368-8753
MI	Farmington Hills, Joseph H. Clark Sls. Co.	313-553-0610
MN	Edina, Grayden & Flemmer	612-941-1120
MO	Chesterfield, Durnin & Assocs.	314-532-9774
NJ	Dunellen, J. A. Maguire & Co.	201-752-8480
NJ	Pennsauken, J. A. Maguire & Co.	609-665-5136
NY	Mohegan Lake, Tavano & DePalma Assocs.	914-245-5269
NY	Victor, Kirby Mktg.	716-248-8750
OH	Chagrin Falls, Joseph H. Clark Sls.	216-247-7848
OR	Beaverton, Eclipse Mktg. Grp.	503-642-1661
SC	Greenwood, Bamco	803-229-6801
TN	Knoxville, Insul-Reps	615-691-7586
TX	Plano, C. J. Tellier Co.	214-231-6348
VA	Portsmouth, J. A. Maguire & Co.	804-398-0202
WA	Redmond, Eclipse Mktg. Grp.	206-885-6991

Local Distributors

AZ	Tucson, A.E. Petsche Co., Inc.	602-746-3128
CA	Carson, A. E. Petsche Co., Inc.	213-639-9500
CA	El Segundo, Standard Wire & Cable	213-536-0006
CA	Inglewood, Storm Prods.	213-649-6141
CA	Menlo Pk, Bay Assocs.	415-321-2940
CT	New Haven, Newcon Wire & Cable	203-787-5733
FL	Ft. Lauderdale, K.S.M. Elctrns.	305-971-5900
FL	Orlando, Cablematic	305-639-1640
GA	Norcross, A. E. Petsche Co., Inc.	404-441-1709
IL	Addison, K.S.M. Elctrns.	312-953-9473
IL	Rosemont, Dearborn Wire & Cable	312-696-1000
KS	Wichita, A.E. Petsche Co., Inc.	316-943-9358
MA	Lowell, Colonial Wire & Cable	617-459-0410
MA	Woburn, Pacer Elctrns.	617-935-8330
MN	Minneapolis, Bergquist Co.	612-835-2322
NH	Amherst, North Country Wire Supp.	603-889-0063
NY	Fairport, Pacer Elctrns.	716-377-0462
NY	Farmingdale, Milgray	516-420-0400
NY	Farmingdale, Vertx Elctrns.	516-293-9880
NY	Farmingdale, Weico Elctrns.	516-293-0050
NY	Rye, Seacoast Elec. Co.	914-921-0400
OR	Beaverton, Murphy Elctrns.	215-534-3900
PA	Folcroft, Delphi Elctrns.	215-534-3900
PA	Philadelphia, Janor Wire & Cable	215-674-8200
TX	Ft. Worth, WADCO	817-483-9111
TX	Houston, A.E. Petsche Co., Inc.	713-641-3386
TX	Houston, Seacoast Elec. Co.	713-868-3636

BRISTOL BABCOCK INC., 40 Bristol St., Waterbury, CT 06708, Tel: 203-575-3000, Telex: 962417, TWX: 203-754-1477; Empl.: 600; *Sls. Mgr.:* Carlos Batista

BROOKS INSTRUMENT DIV., Emerson Elec. Co., 407 W. Vine St., Hatfield, PA 19440, Tel: 215-362-3500, Telex: 846-181, FAX: 215-362-3745; Empl.: 1500; *Sls. Mgr.:* H. T. Lund, Jr.

Local Sales Offices & Reps

CA	Buena Park	714-994-2300
GA	Norcross	404-446-9188
IL	Willow Brook	312-655-3420
TX	Houston	713-784-4930

BROOKS MANUFACTURING CORP., 4001 N. American St., Philadelphia, PA 19140, Tel: 215-228-4433; Empl.: 70; *Sls. Mgr.:* G. Brooks; *Dist. Mgr.:* G. Brooks

BROOKS POWER SYSTEMS, 3569 Bristol Pike Bldg. 2 Ste 102, Bensalem, PA 19020, Tel: 215-244-0264, 1-800-523-1551; Empl.: 90; *Sls. Mgr.:* Joan LaRocca

BROWN BOVERI ELEC., Norristown Rd., Spring House, PA 19477, Tel: 215-628-7400, TWX: 510-661-0168; Empl.: 3,500

BRUEL & KJAER INSTRS. INC., 185 Forest St., Marlboro, MA 01752-3093, Tel: 617-481-7000, TWX: 710-347-1187; FSC No.: 617-485-0519; Empl.: 80

BRUNING COMPUTER GRAPHICS, P.O. Box 3020, 777 Arnold Dr., Martinez, CA 94553, Tel: 415-372-7568, TWX: 910-481-5951 ZETAPLOTS MART; FSC No.: 52893; Empl.: 200; *Sls. Mgr.:* Gary Hasenfus

BRUSH INDUSTRIES INC., 3rd & Reagan Sts., P.O. Box 638, Sunbury, PA 17801-0638, Tel: 717-286-5611, 800-233-0362, TWX: 510-655-0222; FSC No.: 19418; Empl.: 80

BTU ENGINEERING CORP., 23 Esquire Rd., N. Billerica, MA 01862, Tel: 617-667-4111, Telex: 94-7489; Empl.: 600; *Sls. Mgr.:* D. Barry/T. Campbell

BUBBL-TEC, 6800 Sierra Ct., Dublin, CA 94566, Tel: 415-829-8705, TWX: 910-389-6890; Empl.: 19; *Sls. Mgr.:* T. J. Netoff

BUCKBEE-MEARS CO., Nashua Div., 100 Northeastern Blvd., P.O. Box 888, Nashua, NH 03062, Tel: 603-883-5541, Telex: 94-0340; *Sls. Mgr.:* Randolph Roody

BUCKEYE STAMPING CO., 555 Marion Rd., Columbus, OH 43207, Tel: 614-445-8433, FAX: 614-445-8224; Empl.: 85; *Sls. Mgr.:* Jim Willcox ..... **C•1020**

Local Sales Offices & Reps

CA	Irvine, Vale Elctrns. Assocs.	714-551-4821
CA	Pasadena, P. Nurches Co.	213-681-8957
CA	Santa Clara, Engrg. Assocs.	408-988-5001
CO	Denver, Moss Mktg.	303-455-7205
FL	Indian Rock Bch., PAR Assocs., Inc.	813-596-8841
GA	Atlanta, Par Assoc.	404-391-9117
IL	Mt. Prospect, Robert Adams Sls.	312-297-8733
KS	De Soto, Midtec Assoc.	913-441-6565
MD	Columbia, Tyler Griffin Co.	301-995-1215
MA	Belmont, Elctrn. Comps. & Svc.	617-484-8680
MN	Minneapolis, A. J. Warner Co.	612-729-7371
MO	Florissant, Midtec Assocs., Inc.	314-837-5200
NJ	Ocean, P. Saftler Assocs.	201-922-3014
NM	Albuquerque, Moss Mktg.	505-292-7505

NY Fulton, P. Saftler Assocs. 315-592-7184
NY Lynbrook, P. Saftler Assoc. 516-593-7880
OH Beechwood, Elctrn. Sls. Masters, Inc. .. 800-321-1848
OH Columbus, McFadden Sls. 614-761-3177
OK Tulsa, Advance Tech. Sls. 918-664-0482
OR Forest Grove, Doran Sls. Assocs., Inc. 503-357-3333
PA Paoli, T. Griffin Co. 215-647-1550
TX Austin, Advance Tech. Sls. 512-440-7677
TX Dallas, Advance Tech. Sls. 214-340-1300
TX Houston, Advance Tech. Sls. 713-440-3888
WA Redmond, Doran Sls. Assocs., Inc. 206-885-1885

Local Distributors

CA Los Angeles, Elect. Switches 213-664-1141
CA Redwood City, Hi-Cor 415-368-3849
GA Atlanta, Lakeland Engrg. Equip. 404-696-7334
MI Ann Arbor, Wedemeyer Elctrns. 313-665-8611
MN Albuquerque, Ideal Elctrn. Supp. 505-345-7887
NY Hauppauge, Broadline Elctrn. Dist. 516-231-4100
OR Portland, Radar Elec. 503-232-3404
TX El Paso, Ideal Indl. Elctrn. 915-779-6647
WA Seattle, Radar Elec. 206-282-2511
WA Spokane, Radar Elec. 509-747-3053

BUD EAST, INC., 4605 E. 355th St., Willoughby, OH 44094-0431, Tel: 216-946-3200, Telex: 810-427-2604; FSC No.: 71218; Empl.: 200; *Sls. Mgr.:* B. K. Haas; *Dist. Mgr.:* B. K. Haas

BUDWIG MFG., P.O. Box 829, Ramona, CA 92065-0829, Tel: 619-789-0900; Empl.: 7

BUEHLER PRODUCTS, INC., P. O. Box 33400, Raleigh, NC 27606, Tel: 919-469-8522, TWX: 510-924-2474; Empl.: 400; *Sls. Mgr.:* D. Frank Slightom ..... **B•1169**

BUGGIE H. H., See Caton Connector Corp.

BULBTRONICS, INC., 45 Banfi Plaza, Farmingdale, NY 11735, Tel: 516-249-2272, 1-800-654-8542; Empl.: 31; *Sls. Mgr.:* Elaine Grey; *Dist. Mgr.:* Diana Jacobson

BULOVA WATCH CO., See Frequency Control Prods., Inc., American Time Prods. Div.

BUMPER PRODUCTS CORP., 14 King St., P.O. Box 45, Mt. Holly, NJ 08060, Tel: 609-261-8100, 800-541-2500, Telex: 244437 ACTP-UR; *Sls. Mgr.:* Ed Rosenthal

BUNTING MAGNETICS, 500 So. Spencer Rd., Newton, KS 67114, Tel: 316-284-2020, 800-835-2526, Telex: 437264; Empl.: 100; *Sls. Mgr.:* Robert J. Bunting

BURGESS SWITCH CO., INC., 638 Anthony Trail, North Brook, IL 60062, Tel: 312-291-1760, Telex: 206774; FSC No.: 6U850; *Sls. Mgr.:* Robin Dick; *Dist. Mgr.:* Robin Dick ..... **B•1562**

Local Sales Offices & Reps

CA Mountain View, Westech Sls. 415-961-1422
CA Tustin, Sierra Pacific Engrg. 714-731-3411
FL Casselberry, SEMI 305-831-2822
FL Ft. Lauderdale, SEMI 305-475-3686
GA Atlanta, Murphy and Cota 404-875-2525
IL Des Plaines, Lincoln, Hodges and Assocs. 312-297-3810
KS Mission, Mertens Co. 913-432-9323
MA Cambridge, R.J.C. Assocs. 617-492-5858
MI Ferndale, Hilltronics 313-398-5556
MN St. Paul, Kencotronics 612-645-7717
MO St. Louis, Mertens Co. 314-993-6600
NJ Palisades Park, A. P. Technical Sls. ... 201-461-8875
NY Albany, Niagara Elec. Sls. 518-869-0130
NY Buffalo, Niagara Elec. Sls. 716-886-4000
NY East Syracuse, Niagara Elec. Sls. 315-437-1656
NY Rochester, Niagara Elec. Sls. 716-271-1223
NC Burlington, Murphy & Cota 919-584-6450
OH Cincinnati, Anderson-Bolds, Inc. 513-528-5680
OH Cleveland, Anderson-Bolds, Inc. 216-229-4700
OH Worthington, Anderson-Bolds Inc. 614-885-3933
PA Philadelphia, Kenneth B. Erdman, Co. 215-224-1833
TX Dallas, William Reese Assocs. 214-351-0703
TX Houston, William Reese Assocs. 713-463-1453
WA Seattle, Anthem Corp. 206-824-3399
WI Janesville, Antek Mktg. Corp. 608-754-4214
WI Waukesha, Lincoln, Hodges and Assocs. 414-542-3087

Local Distributors

AL Muscle Shoals, Jones Elctrns., Inc. 205-383-1241
CA Burlingame, Elec. Control Devices 415-348-0791
CA Redondo Beach, Elctrl. Power & Controls 213-498-6699
FL Miami, B & R Elctrns. Supp. Inc. 305-255-4510
FL Miami, Electro-Standards Labs 305-593-6060
IL Chicago Heights, Helsel-Jepperson ... 312-756-5600
MA Fall River, Broadway Elec. Sls. 617-673-3339
MA Holyoke, Falcetti & Clark Elec. 413-532-9402
MA Springfield, Yankee Elec. 413-739-2101
MI Grand Rapids, S & F Elctrns. Supp. ... 616-459-0216
MI St. Clair Shores, Spemco 313-771-2700
MN Minneapolis, Elctrn. Center Inc. 612-371-5200
NH Manchester, Cohen Machinery Co. Inc. 603-624-4324
NJ Fairlawn, Relay Specialties 201-797-3313
NY Gloversville, Montano Elctrl. Supp. 518-725-3139
NY Woodside, Switches Unlimited 212-478-5000
NC Durham, Triangle Elec. Motor 919-596-1333
NC Gastonia, JMT Elctrns. & Control 704-867-4401
OH Cincinnati, Richards Elec. Supp. 513-242-8800
PA Harrisburg, Cumberland Elctrns. 717-233-5883
PA Philadelphia, Esco Elctrl. Supp. 215-923-6050
RI Providence, J & H Elec. Co., Inc. 401-421-7840
TX San Antonio, Sherman Elec. Supp. Inc. 512-224-1001
VA Roanoke, Peoples Elctrn. Supp. 703-342-8933

BURLEIGH INSTRS., Burleigh Pk., Fishers, NY 14453, Tel: 716-924-9355, Telex: 978379; Empl.: 57; *Sls. Mgr.:* Timothy Van Slambrouck; *Dist. Mgr.:* Timothy Van Slambrouck

BURLING INSTRUMENTS, P.O. Box 298, Chatham, NJ 07928, Tel: 201-635-9481; Empl.: 29; *Sls. Mgr.:* Roger Nation

BURNDY/BERCO, 226 Brookside Road, Waterbury, CT, Tel: 203-574-4766

BURNDY CORPORATION, Richards Ave., Norwalk, CT 06852, Tel: 203-838-4444, TWX: 710-468-2546; Empl.: 3500; *Sls. Mgr.:* Stan Suszek

BURR-BROWN CORP., P.O. Box 11400, Tucson, AZ 85734, Tel: 602-746-1111, Telex: 66-6491, TWX: 910-952-1111; Empl.: 1500; *Sls. Mgr.:* T.W. Fern

BURTON ELECTRICAL ENGINEERING, Wyle Laboratories, 111 Maryland Street, P.O. Box 217, El Segundo, CA 90245-0217, Tel: 213-772-1406, Telex: 858485, TWX: 910-348-6699; FSC No.: 81861; Empl.: 55; *Sls. Mgr.:* Howard Doty

BUSSCO INC., 119 Standard St., El Segundo, CA 90245, Tel: 213-322-6580, TWX: 910-348-6295; FSC No.: 29593; Empl.: 87

BUSSMANN, P.O. Box 14460, St. Louis, MO 63178, Tel: 314-394-2877, Telex: 44 841; FSC No.: ;Multiple; Empl.: 3000; *Sls. Mgr.:* George Ockuly; *Dist. Mgr.:* George Ockuly ..... **C•1194**

BYTEK CORP., Instrument Systems Div., 1021 S. Rogers Circle, Boca Raton, FL 33431, Tel: 305-994-3520, Telex: 510-952-7637; Empl.: 45; *Sls. Mgr.:* Madeline Selwitz

BYTEX CORP., 120 Turnpike Rd., Southborough, MA 01772, Tel: 617-480-0840, Telex: 951151; Empl.: 230; *Sls. Mgr.:* Tom Mackinson

CABLESCAN, INC., Subsidiary of Eubanks Engrg. Co., 145 E. Emerson Ave., Orange, CA 92665, Tel: 714-998-1961, Telex: 291693; *Sls. Mgr.:* Dean Handley

CABLE SYSTEMS, INC., 210 Broadway, Everett, MA 02149, Tel: 617-389-7080, TWX: 710-348-1760; FSC No.: 33426; Empl.: 175; *Sls. Mgr.:* Darrell Fernald ... **C•1831**

Local Sales Offices & Reps

CA Santa Ana, Interconnect Engrg. Assoc. 714-852-1947
CA Santa Clara, Caltronic Sls. 408-727-7552
CT Tolland, TMR Corp. 203-872-3624
IL Schaumburg, Phase II Mktg. 312-303-5092
MD Ellicott City, Marketing Technlg. 301-465-5944
MA Holden, G. T. Joyce 617-829-6521
NY Commack, MTR Technlg. 516-543-1200
NY Islip, ABS Assocs. 516-277-7101

CABLETEST PRODUCTS CO., 81 W. Wyoming Ave., Melrose, MA 02176, Tel: 617-665-2932; Empl.: 28; *Sls. Mgr.:* H. E. Holley; *Dist. Mgr.:* H. E. Holley

CABLEWAVE SYS., Celwave Systems, Inc., 60 Dodge Ave., North Haven, CT 06473, Tel: 203-239-3311, TWX: 710-465-0244; Empl.: 250; *Sls. Mgr.:* William Meola/Wally Brooks; *Dist. Mgr.:* Wally Brooks

CABLEX, INC., 14 Inverness Dr. E. H-136, Englewood, CO 80112, Tel: 303-792-5760; Empl.: 50; *Sls. Mgr.:* Reed C. Mulder; *Dist. Mgr.:* Reed C. Mulder

CABOT BERYLCO, DIV. OF CABOT CORP., See NGK Berylco, Div. of NGK Metals Corp.

CABTRON SYSTEMS INC.

CABTRON SYSTEMS, INC., 200 N. Anets Dr., Northbrook, IL 60062, Tel: 312-498-6090; Empl.: 60; *Sls. Mgr.:* Jean-Claude Avenel ..... **C•1021-1025**

Local Sales Offices & Reps

AL Huntsville, R.E.M.C.O. 205-533-3763
AZ Tempe, Trembly Assocs. 602-967-2058
CA Northridge, XBX Sls., Inc. 800-874-3821
CA Orange, XBX Sls., Inc. 714-998-8200
CA San Diego, XBX Sls., Inc. 619-586-1577
CA Santa Clara, Warren Assocs. 408-988-7762
CO Wheat Ridge, Trembly Assocs. 303-421-8900
CT Cheshire, Meco, Inc. 800-225-3409
FL Maitland, E.I.R. 305-660-9600
GA Atlanta, REMCO 404-447-6937
IN Carmel, Berndt Assocs. 317-844-0114
KS Wichita, Buckman & Assocs. 316-267-2052
MD Silver Spring, Ansell Engrg. 301-949-1655
MA Reading, Meco, Inc. 617-944-6660,800-225-3409
MI Livonia, Lowell-Wendt 313-464-2722
MN St. Paul, Countryman Assocs. 612-645-9151
MO St. Charles, Buckman & Assocs. 314-947-4727
NV Las Vegas, Trembly Assocs. 702-739-9770
NV Reno, Warren Assocs. 408-988-7762
NJ Camden Area, Sci-Rep 609-662-5222
NJ Mt. Lakes, N.J. Comps. for Elctrns. 201-334-2921
NM Albuquerque, Trembly Assocs. 505-266-8616
NY Johnson City, Tech-Mark 607-729-6340
NY Mendon, Tech-Mark 716-624-3840
NY Utica, Tech-Mark 315-733-0575
OH Cleveland, Geotronix 216-659-6100
OH Dayton, Geotronix 513-854-5939
OR Portland, McLaren, Inc. 503-297-2248
PA Albrightville, Geotronix 412-487-1770
TX Dallas, Dunbar Assocs. 214-239-7151
TX El Paso, Trembly Assocs. 915-533-9380
UT Salt Lake City, Trembly Assocs. 801-486-5292

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CAC MICROCIRCUITS INC., 2 Southgate Dr., Mt. Carmel, IL 62863, Tel: 618-263-4343; Empl.: 95; *Sls. Mgr.:* Lloyd E.Dustmann ..... **A•1744**

Local Sales Offices & Reps

AZ Scottsdale, Arcom Sls. 602-947-5745
CO Boulder, Front Range Mktg. 303-443-4780
IA Cedar Rapids, Dy-Tronix 319-377-8275
KS Wichita, Dy-Tronix Inc. 316-838-0884
MO Raytown, Dy-Tronix 816-356-6340
MO St. Louis, Dy-Tronix 314-291-4777
NH Amherst, D. A. Crowley & Assocs., Inc. 603-673-7050
TX Austin, Barry Sls. 512-837-3616
TX Richardson, Barry Sls. 214-234-0255
UT Salt Lake City, Front Range Mktg. 801-364-6481

CADDELL-BURNS MFG., 258 E. 2nd St., Mineola, NY 11501-3508, Tel: 516-746-2310; Empl.: 30 ..... **A•1218-1231**

CADDELL COIL CORP., 35M Main St., Poultney, VT 05764, Tel: 802-287-4055; Empl.: 6; *Sls. Mgr.:* James Caddell ..... **A•1232**

Local Sales Offices & Reps

FL Vero Bch., R.B. Caddell 305-562-4496

CADDOCK ELECTRONICS, INC., 1717 Chicago Ave., Riverside, CA 92507, Tel: 714-788-1700, TWX: 910-332-6108; FSC No.: 19647; Empl.: 300 ..... **A•1880-1903**

Local Sales Offices & Reps

OH Cleveland, Arthur H. Baier Co. 216-461-6161
OH Dayton, Arthur H. Baier Co. 513-276-4128
OR Beaverton, Elctrn. Sources 503-627-0830
WA Bellevue, Elctrn. Sources 206-451-3500

Local Distributors

TX Houston, Lenert Co. 713-225-1465

CADILLAC PLASTIC & CHEM. CO., Day International, 530 Stephenson Hwy., Troy, MI 48007, Tel: 313-583-1200, TWX: 810-232-1886; Empl.: 1000

CAIG LABS., 1175-0 Industrial Ave., Escondido, CA 92025, Tel: 619-743-7143; Empl.: 15

CALABRO INDS., INC., See UNITRACK Div., Calabro Inds., Inc.

CAL-AV, INC., 515B Westchester Drive, Campbell, CA 95008, Tel: 408-371-0666; Empl.: 8

CALAY SYSTEMS, INC., 2698 White Road, Irvine, CA 92714, Tel: 714-863-1700, Telex: 6711321; Empl.: 80

CAL COUNT, 101 H Executive Dr., Sterling, VA 22170, Tel: 703-471-0450, Telex: 440732, TWX: 440733; Empl.: 35

CAL CRYSTAL LAB., INC., 1142 N. Gilbert, Anaheim, CA 92801, Tel: 714-991-1580, 800-854-XTAL, TWX: 910-591-1892; Empl.: 25; *Sls. Mgr.:* Herb Plumhoff

CALEX MFG. CO., INC., 3355 Vincent Rd., Pleasant Hill, CA 94523, Tel: 415-932-3911, Telex: 269888, FAX: 415-932-6017; FSC No.: 29988; Empl.: 50; *Sls. Mgr.:* Stephen Corbett ..... **C•1723; D•1008, 1590-1594**

Local Sales Offices & Reps

AZ Glendale, Adtek Inc. 602-931-9289
CA Carson, AMASCO 213-516-8561
CA Huntington, Transducer Sys. 714-969-7690
CA Sunnyvale, AMASCO 408-733-8690
CT Tolland, R.G. Assocs. 203-875-4201
MA Marshfield, R.G. Assocs. 617-837-3290
NJ Elmwood Pk., Analectro Tech. Rep., Inc. 201-796-3899
NJ Marlton, Analectro Tech. Rep., Inc. 609-424-2883
NM Albuquerque, Adtek Inc. 505-292-1583
NC Raleigh, Geotronix 216-659-6100
OH Richfield, Geotronix 216-659-6100
OH Trottwood, Geotronix 201-796-3899
OR Portland, Topp Engrg. 503-244-7265
PA Allison Pk., Geotronix 412-487-1770
VA Alexandria, Analectro Tech. Rep., Inc. 703-823-1703
WA Bellevue, Topp Engrg. Sls. Co. 206-747-5401

Local Distributors

OH Richfield, Alpha Distr. 216-659-7100

CALIBRON INSTRS., Burton-Rogers Co., 220 Grove St., Waltham, MA 02154, Tel: 617-894-6440; Empl.: 14; *Dist. Mgr.:* W. Burton

CALIFORNIA AUTOMATION INC., 11815 Sorrento Valley Rd., San Diego, CA 92121, Tel: 619-452-1341

CALIFORNIA AVIONICS LABS., See Cal-Av, Inc.

CALIFORNIA DC, 2150 Anchor Ct., Newbury Park, CA 91320, Tel: 805-499-3621; Empl.: 100; *Sls. Mgr.:* C. Paton; *Dist. Mgr.:* C. Paton ..... **D•1595**

Local Sales Offices & Reps

AZ Phoenix, Relcom 602-893-1209
CA Calabasas, Quadrep Cen. 818-887-3711
CA Irvine, Quadrep S. 714-261-8141
CA San Diego, Power Assocs. 619-275-0641
CA San Diego, SR Elctrns. 619-560-8330
CA San Jose, Quad Rep 408-946-4000
IL Arlington Hgts., Coombs & Assocs. ... 312-439-9810
MA Lexington, Jebco 617-862-2500
NY Hicksville, L-Tronix 516-935-0220
OR Portland, Crown Elctrns. 503-620-8320
TX Austin, Technlg. Sls. 214-346-9940
TX Dallas, Technlg. Sls. 214-437-5881
TX Houston, Technlg. Sls. 713-266-2473
WA Bellevue, Crown Elctrns. 206-643-8100

Local Distributors

CA S. Gate, Cetec Elctrns. 213-773-6521
IL Arlington, Coombs & Assocs. 312-439-9810
MA Lexington, Sebco 617-862-2500
NY Hicksville, L-Tronix 516-935-0220
OR Wilsonville, Micro Power 503-694-5353
Can Ontario, RD Assocs. 416-444-0959

CALIFORNIA EASTERN LABS. INC., 3260 Jay St., Santa Clara, CA 95054, Tel: 408-988-3500, Telex: 346393, TWX: 171197; Empl.: 100; *Sls. Mgr.:* Bob Magill; *Dist. Mgr.:* Jim McAuley

CALIFORNIA INSTRUMENTS, A Div. of Amstar Tech. Prods. Co., Inc., 5125 Convoy St., Ste. 201, San Diego, CA 92111, Tel: 619-279-8620, 800-356-2244, 800-821-1634, Telex: 695047 CALICO SDG; FSC No.: 16067; Empl.: 102; *Sls. Mgr.:* Don Chilcoat (Int'l) ..... **D•2042**

Local Sales Offices & Reps

AZ Phoenix, Aztec Ent., Inc. 602-944-9185
CA Huntington Beach, Sci. Dvcs. West ... 714-840-3501
CA San Jose, Scientific Dvcs. 408-554-0455
CO Denver, Aztec Entprs. 303-779-5285
FL Melbourne, Saber Assocs. 800-327-0853
IL Chicago, EIA, Inc. 312-298-2290
IN Indianapolis, EIA, Inc. 317-257-7231
KS Lenexa, Ramsey Assocs. 913-541-1007
LA Metairie, Data Mktg. Assocs. 504-833-3655
MD Rockville, Creative Mktg. Assocs. 301-251-4100
MA Waltham, McBar Assocs. 617-890-0233
MN Minneapolis, Hei-Lite Sls., Inc. 612-861-6051
MO Maryland Hgts., Ramsey Assocs. 314-878-5042
NJ Teaneck, Sci. Dvcs. East, Inc. 201-837-1004
NM Albuquerque, Aztec Entprs. 505-262-1688
NY Albany, The Robert F. Lamb Co., Inc. 518-869-3355
NY Buffalo, The Robert F. Lamb Co., Inc. 716-827-1111
NY Rochester, The Robert F. Lamb Co., Inc. 716-323-1250
NY Syracuse, The Robert F. Lamb Co., Inc. 315-455-2469
OH Dayton, Hocker Assocs. 513-253-3642
OK Tulsa, Data Mktg. Assocs. 918-494-2711
OR Oswego, Syntek 503-636-6793
PA Springhouse, Sci. Dvcs. East. 215-643-3335
TX Austin, Data Mktg. Assocs. 512-443-7722
TX Dallas, Data Mktg. Assocs. 214-661-0300
TX Houston, Data Mktg. Assocs. 713-780-2511
TX San Antonio, Data Mktg. Assocs. 512-342-3031
UT Ogden, Aztec Ent., Inc. 801-621-1655
WA Kirkland, Syntek 206-488-0394
Can N. Vancouver, B.C., Jerome & Francis Co., Ltd. 604-986-1286
Can Ottowa, Ont., A.I.M. 613-722-8286

CALIFORNIA MICRO DEVICES, INC., 215 Topaz Street, Milpitas, CA 95035, Tel: 408-263-3214, TWX: 910-338-2304; FSC No.: 56427; Empl.: 125; *Sls. Mgr.:* Anu Shukla

CALIFORNIA MICROWAVE, 990 Almanor Ave., Sunnyvale, CA 94086, Tel: 408-732-4000, Telex: 35 2016, TWX: 910-339-9231; Empl.: 900

CALMARK CORPORATION

CALMARK CORP., 4915 Walnut Grove Ave., San Gabriel, CA 91776, Tel: 818-287-0451, TWX: 910-589-1540; FSC No.: 52094; Empl.: 70; *Sls. Mgr.:* Bruce Rockwell; *Dist. Mgr.:* Bruce Rockwell ..... **C•1027**

Local Sales Offices & Reps

AL Huntsville, Par Mktg. 205-859-5702
AZ Tempe, Delta Elctrn. Sls. 602-252-4222
CA Oceanside, Noo Rep. Tech. Sls. 619-941-0558
CA San Gabriel, Calmark Corp. 818-287-0451
CA Santa Clara, Calmark Corp. 408-984-2618
CO Lakewood, Cristee-Meade 803-232-0287
FL Goldenrod, Sunland Assocs. 305-365-9533
GA Alpharetta, Par Mktg. 404-442-8858
IL Elk Grove, Martec 312-956-8090
KS Lenexa, Midtec Assocs. 913-541-0505
MA Needham, Component Technlgy. 617-449-8490
MI Farmington Hills, W.R.Hummon 313-474-0661
MN Minneapolis, Comps. Grp. 612-374-1250
MO St. Louis, Midtec Assocs. 314-275-8666
NJ Madison, Livera-Polk Assocs. 201-377-3220
NY Cooperstown, Fitzelle Assocs. 607-547-9333
NY Glen Head, Livera-Polk Assocs. 516-759-9300
OH Cleveland, Electronic Comps. 216-261-4103
OH Miamisburg, Electronics, Inc. 513-866-3340
OR Beaverton, B & P Sls. 503-641-3486
PA Telford, Dalbrook Corp. 215-723-3300
TX Houston, Zonk & Assocs. 713-895-9131
TX Richardson, Zonk Assocs. 214-238-7651
WA Bellevue, B & P Sls. 206-454-6571
EXP Ireland/Cappoquin, Calmark Ireland, Ltd. ..... TLX 80066
EXP San Gabriel, CA, Calmark Corp. 818-287-0451
PR Santruce, SISCO 809-726-3137
Can Islington, Ont., Pipe-Thompson Ltd. ... 416-236-2355

Local Distributors

AZ Phoenix, Aero-Space Computer Supps. 602-582-2779
CA Buena Park, Cypress Elctrns. 714-521-5230
CA Fremont, Terminal Sls. Corp. 415-656-7722
CA Santa Clara, Cypress Elctrns. 408-980-2500
CO Denver, Solder Tec. 303-922-6214
FL Largo, Lo-Dan 813-586-2851
FL Longwood, Intertec Comps. 305-834-7777
IL Elk Grove, Martec Assocs. 312-956-8090
MD Beltsville, Petricko, Inc. 301-937-4960
MA Haverhill, Cord 617-374-0100
MN Minneapolis, Aero-Space Computer Supp. 612-884-4725
NJ Sicklerville, Index 609-629-3158
NM Albuquerque, Betatron 505-344-2381
NY Elmsford, Multimetrics Co. 914-347-3666
TX Dallas, Cypress Elctrns. 214-869-1435
TX El Paso, International Elex. 915-598-3406
TX Richardson, Zec Sls. 214-669-0895
Can Mississauga, Ont., Rush Elex. Ltd. 416-677-7280

CALMAX CORP., 3410-C W. MacArthur Blvd., Santa Ana, CA 92704, Tel: 714-957-1299, Telex: 67-8389, ESYLNK: 714-957-3349; Empl.: 5; *Sls. Mgr.:* Yoshi Fukuda

CALMOS SYSTEMS INC., 20 Edgewater Street, Kanata, Ontario, Canada K2L 1V8, Tel: 613-836-1014, 800-267-7231, Telex: 053-4501, FAX: 613-831-1742; Empl.: 29; *Sls. Mgr.:* Barry Millett; *Dist. Mgr.:* Barry Millett

CAL-POWER CORP., 140 Kansas St., El Segundo, CA 90245, Tel: 213-772-2171, TWX: 910-348-6678; Empl.: 30; *Sls. Mgr.:* James L. Dragomir

CAL-R is a subsidiary of

ULTRONIX
SFERNICE, INC.

CAL-R, INC., P.O. Box 1397, Santa Monica, CA 90406, Tel: 213-450-1761, TWX: 910-343-6966; FSC No.: 14193; Empl.: 130; *Sls. Mgr.:* J. F. Catrambone

CAL-TEK ENGINEERING, 36 Riverside Drive, Kingston, MA 02364, Tel: 617-585-5666; Empl.: 5

CAMBRIDGE AEROFLO INSTRUMENTS, INC., 900 Mount Laurel Circle, Shirley, MA 01464, Tel: 617-425-2346, Telex: 948503, FAX: 617-425-2338; Empl.: 25 ... **C•1617**

Local Sales Offices & Reps

CO	Denver, Comp. Technlg., Inc.	303-758-5750
CT	Canton, Motoreps of New England	203-693-6366
MA	Needham, Motoreps of New England	617-449-3252
NJ	Springfield, F. F. Sylvester Assocs.	201-376-3324
NY	Rochester, Talty Assocs.	716-323-1210
WI	Racine, KMG Assocs.	414-639-9005

CAMBRIDGE FILTER CORP., P.O. Box 4906, Syracuse, NY 13221-4906, Tel: 315-457-1000, Telex: 322096; Empl.: 400-500

CAMBRIDGE PRODUCTS, 244 Woodland Ave., Bloomfield, CT 06002, Tel: 203-243-1761, 800-243-8814; Empl.: 32; *Sls. Mgr.:* J.Johnson

CAMBRIDGE TECHNOLOGY, INC., 2464 Massachusetts Ave., Cambridge, MA 02140, Tel: 617-876-0891, Telex: 955439 ATTN: CAMBRIDGE; Empl.: 20; *Sls. Mgr.:* Bruce Rohr

CAMELCO ASSEMBLY, 605136 Ontario Limited, 7400 Victoria Park Avenue, No. 1, Markham, Ontario, Canada L3R 2V4, Tel: 416-477-8269; Empl.: 39

C.A.M. GRAPHICS CO., INC., 15 Panick Dr. W., Amityville, NY 11701, Tel: 516-842-3400, TWX: 510-224-6181, FAX: 516-842-1005; FSC No.: 63203; *Sls. Mgr.:* Tracy Delorio

CANADA WIRE AND CABLE LIMITED, 250 Ferrand Dr., Don Mills, Ontario, Canada M3C 3J4, Tel: 416-424-5000, Telex: 065-24120, FAX: 416-424-1008; Empl.: 5,000; *Sls. Mgr.:* John Murphy (Long Beach) .... **C•1832-1833**

Local Sales Offices & Reps

CA	Long Bch.	213-436-1156
GA	Atlanta	404-436-1302
Can	Calgary, Alber.	403-278-1656
Can	Edmonton, Alber.	403-454-2416
Can	Halifax, N.S.	902-835-7383
Can	Hamilton, Ont.	416-527-4591
Can	London, Ont.	519-453-6610
Can	Montreal, Que.	514-636-7920
Can	Quebec, Que.	418-683-0914
Can	Regina, Sask.	306-543-3866
Can	Toronto, Ont.	416-421-7400
Can	Toronto, Ont., Canada Wire Intl.	416-424-5000
Can	Vancouver, BC	604-687-8551
Can	Winnipeg, Man.	204-775-8801

CANADIAN THERMOSTATS & CONTROL DEVICES LTD., 8415 Mountian Sights, Montreal, PQ, Canada H4P2B8, Tel: 514-739-3274, Telex: 05-825619; Empl.: 20; *Sls. Mgr.:* A. Brunelle

CANBERRA IND., One State St., Meriden, CT 06450, Tel: 203-238-2351, Telex: 643251, TWX: 710-461-0192; Empl.: 600; *Sls. Mgr.:* Peter Devecchis; *Dist. Mgr.:* Peter Devecchis

C & C JETRONIC, INC., Research Pk. 318 Wall St., Princeton, NJ 08540, Tel: 609-921-8540, Telex: 4971717, FAX: 609-921-7971; Empl.: 150; *Sls. Mgr.:* C. Jerry Chiang ..... **A•2210; C•1110, 1198**

C&D POWER SYSTEMS, 3043 Walton Rd., Plymouth Meeting, PA 19462, Tel: 215-828-9000; Empl.: 500

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The Primary Source Worldwide...

C & K COMPONENTS, INC., 15 Riverdale Ave., Newton, MA 02158-1082, Tel: 617-964-6400, Telex: 92-2544, TWX: 710-335-1163; FSC No.: 09353; Empl.: 600; *Sls. Mgr.:* P. Kincaid; *Dist. Mgr.:* J. DeMarco ..... **B•1564-1566**

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns.	205-881-5031
AZ	Scottsdale, Sls. Engrg.	602-994-3230
CA	Los Altos, Ewing-Foley	415-941-4525
CA	Los Angeles, Universal Comps.	213-641-4255
CA	Roseville, Ewing-Foley, Inc.	916-969-2672
CO	Boulder, Front Range Mktg.	303-443-4780
CT	Glastonbury, Barton Assoc.	203-633-9417
FL	Boca Raton, Beacon Elctrns.	305-392-3500
FL	Clearwater, Beacon Elctrns.	813-796-2378
FL	Maitland, Beacon Elctrns.	305-647-3498
GA	Atlanta, Beacon Elctrns.	404-256-9640
IL	Elk Grove Vlg., Control Sls.	312-595-2110
IN	Carmel, Technlg. Mktg. Corp.	317-844-8462
IN	Ft. Wayne, Technlg. Mktg. Corp.	219-432-5553
KS	Wichita, Dy-Tronix, Inc.	316-838-0884
KY	Louisville, Technlg. Mktg. Corp.	502-499-7808
MA	Monson, Gerber Sls.	413-267-5051
MA	Waltham, Gerber Sls. Corp.	617-890-3334
MI	Southfield, Rathsburg Assoc.	313-559-9700
MN	Minnetonka, Gibb Elctrns.	612-935-4600
MO	Bridgeton, Dy-Tronix	314-291-4777
MO	Raytown, Dy-Tronix	816-356-6340
NJ	Cherry Hill, Quality Comps.	609-428-6266
NM	Albuquerque, Reptronix	505-292-1718
NY	Elmont, Ashtec, Inc.	516-775-6650
NY	Farmington, L-Tron Corp.	518-785-5032
NY	Latham, L-Tron Corp.	518-785-5032
NC	Raleigh, Beacon Elctrns.	919-787-0330
OH	Beachwood, Thompson & Assocs.	216-831-6277
OH	Dayton, Thompson & Assocs.	513-435-7733
OH	Orient, Thompson & Assocs.	614-272-2086
OR	Tigard, LD Elctrns.	503-684-8221
PA	Wayne, Quality Comps.	215-687-3553
TX	Austin, R. F. Kimball Co., Inc.	512-443-5284
TX	Houston, R. F. Kimball Co.	713-890-8810
TX	Richardson, R. F. Kimball Co.	214-231-3447
TX	Richardson, R. F. Kimball Co., Inc.	214-231-3447
UT	Salt Lake City, Front Range Mktg.	801-364-6481
VA	Forest, Beacon North	804-239-8486
VA	Sterling, Beacon North	703-478-2480
WA	Snohomish, LD Elctrns.	206-568-0511
WA	Spokane, LD Elctrns.	509-922-4883
WI	Thiensville, Control Sls.	414-242-4580
Can	Markham, Ont., Avotronics, Ltd.	416-475-2024

C&K / Unimax™

C & K/UNIMAX, INC., Ives Rd., P.O. Box 152, Wallingford, CT 06492, Tel: 203-269-8701, Telex: 96-3485, TWX: 710-476-1397; FSC No.: 80207; Empl.: 300; *Sls. Mgr.:* P. Kincaid ..... **B•1567**

Local Sales Offices & Reps

CA	Los Altos, Ewing-Foley	415-941-4525
CA	Los Angeles, Ewing-Foley	213-641-4255
CO	Englewood, CompuTech Mktg.	303-773-3981
CT	Glastonbury, Barton Assocs.	203-633-9417
FL	Longwood, Beacon Elctrns.	305-332-1940
IL	Lisle, W.G. Controls	312-963-8331
MA	Waltham, Gerber	617-890-3334
MI	Southfield, Rathsburg	313-559-9700
MN	Minnetonka, Gibb Elctrn. Sls.	612-435-4600
MO	St. louis, Hill & Co.	314-432-1136
NY	Elmont, Ashtech	516-775-6650
NY	Latham, L-Tron	518-785-5032
NC	Raleigh, JLS	919-787-8611
OH	Cincinnati, O. H. Bromberg & Assocs.	513-771-9333
NJ	Cherry Hill, Quality Comps.	609-428-6266
TX	Richardson, R. F. Kimball	214-231-3447
VA	Fairfax, Beacon North	703-478-2480
WA	Mercer Island, J. H. Andersen	206-232-0484
Can	Markham, Ont., Avotronics, Ltd.	416-475-2019

CANOGA-PERKINS, Div. of Inductotherm Industries, Inc., 21218 Vanowen St., Canoga Park, CA 91303, Tel: 213-888-2003, Telex: 182341; Empl.: 107; *Sls. Mgr.:* Larry Totter; *Dist. Mgr.:* Larry Totter

CANON U.S.A., Elctrn. Comps. Div., One Canon Plaza, Lake Success, NY 11042, Tel: 516-488-6700, Telex: 96-1333; Empl.: 500; *Sls. Mgr.:* P. Specter ..... **B•1170**

CANRAD-HANOVIA, 100 Chestnut St., Newark, NJ 07105, Tel: 201-589-4300, Telex: 13-8531; Empl.: 250; *Sls. Mgr.:* George Baer

CANSTAR COMMUNICATIONS, Canada Wire & Cable, Ltd., 1240 Ellesmere Rd., Scarborough, ON, Canada M1P2X4, Tel: 416-293-9722, Telex: 065-25403, FAX: 416-293-5756

CANYON ELCTRNS., 2001 W. North Lane, Phoenix, AZ 85021, Tel: 602-944-4421; *Sls. Mgr.:* George J. Mitlak ..... **B•1048**

CAPACITOR SPECIALIST, See CSI Capacitors

CAPACITOR TECHNOLOGY, INC., 5015 Speedway Dr., Ft. Wayne, IN 46825, Tel: 219-484-9054; *Dist. Mgr.:* Norm Myers

CAPAR COMPONENTS CORPORATION

CAPAR COMPONENTS CORP., Div. of Diplomat Electronics, 110 Marcus Blvd., Melville, NY 11747, Tel: 516-454-6390, Telex: 221794; Empl.: 20; *Sls. Mgr.:* Edwin Welch; *Dist. Mgr.:* Bruce Parris .... **A•1038-1039, 2144**

Local Sales Offices & Reps

CA	Glendale, Capar West	818-848-0300
CA	Orange, El Dorado Sls.	714-538-7252
CA	San Jose, Class One	408-297-8666
CO	Lakewood, Electrophase	303-238-3896
FL	Altamonte Springs, C-Assocs.	305-831-1717
FL	Boca Raton, C Assocs.	305-488-6090
GA	Norcross, Futron, Inc.	404-587-3853
IN	Indianapolis, CC Electro Sls., Inc.	317-255-1508
IA	Marion, M-S-B Assocs., Inc.	319-377-6261
KS	Shawnee Mission, M-S-B Assocs., Inc.	913-432-2131
MA	Norwood, The Mac Innis Co.	617-762-8090
MN	Minneapolis, DeBeck-Hays Assocs.	612-835-3610
MO	St. Charles, M-S-B Assocs., Inc.	314-946-5577
NJ	Fort Lee, Neeco	201-461-2789
NY	Rochester, Ontec	716-464-0122
OH	Westchester, KT/DEPCO	614-262-9151
PA	Pittsburgh, KT/DEPCO	412-487-8777
TX	Plano, B & R Electrnc. Sls. Corp.	214-985-0028
UT	Salt Lake City, Charles Fields & Assocs.	801-531-6177
Can	St. Laurent, Que., Componetics	514-334-1464

Western states call Capar West at 714-547-7034 for distributor information. All other states call Capar East at 516-454-6390 for distributor information

CAPCO, Box 1028, Grand Junction, CO 81502, Tel: 303-243-8751, TWX: 910-929-6989; Empl.: 110

CAPCON, INC., 147 West 25th Street, New York, NY 10001, Tel: 212-243-6275; *Sls. Mgr.:* Ed Reeves; *Dist. Mgr.:* B. Cameron

CAPINTEC INSTRUMENTS, 6 Arrow Rd., Ramsey, NJ 07446, Tel: 201-825-9500, Telex: 642375; FSC No.: 6666;6685; Empl.: 150; *Sls. Mgr.:* John E. Galbraith

CAPITOL MAGNETIC PRODS., 6902 Sunset Blvd., Hollywood, CA 90028, Tel: 213-461-2701, Telex: 4720854, FAX: 213-461-1543; Empl.: 700

CAPITOL SWITCH INC., Box 890, Danbury, CT 06810, Tel: 203-744-3300; FSC No.: 01548; Empl.: 30; *Sls. Mgr.:* R. E. Brodeur

CAPTOR CORP., 5040 S. County Rd. (25A), Tipp City, OH 45371, Tel: 513-667-8484; FSC No.: 23939; Empl.: 115; *Sls. Mgr.:* Omer B. Bruns

CAPULUM CABLE TECHNOLOGY, LTD., 106-195 Stafford Road, Nepean, Ontario, Canada K2H 9C1, Tel: 613-726-1966, FAX: 613-726-9059; Empl.: 25; *Sls. Mgr.:* Wayne Lancaster

CARBONE-FERRAZ, INC., 14 Eastmans Rd., Parsippany, NJ 07054, Tel: 201-428-8400, 800-526-9067, Telex: 136045, FAX: 201-428-0599; Empl.: 80; *Sls. Mgr.:* M. Randall Quarles; *Dist. Mgr.:* M. Randall Quarles

CARBONE LORRAINE INDS., 400 Myrtle Ave., Boonton, NJ 07005, Tel: 201-DE4-0700, Telex: 136407; Empl.: 450

CARCO ELECTRONICS, 195 Constitution Drive, Menlo Pk., CA 94025-1106, Tel: 415-321-8174, Telex: 348482, FAX: 415-321-1890; FSC No.: 21875; Empl.: 73; *Sls. Mgr.:* John M. Carter

CARDINAL CONTROL CO., 110 Kensington Rd., Kensington, CT 06037, Tel: 203-828-6379; *Sls. Mgr.:* L.E.P. Beatman; *Dist. Mgr.:* L.E.P. Beatman

CARDION ELCTRNS., See ISC Cardion Electronics, Inc.

CARDON CORP., One Exeter Plaza, Boston, MA 02116, Tel: 617-267-1760; Empl.: 10

CAREY ELECTRONIC ENGINEERING, 1880 Clifton Ave., Springfield, OH 45505, Tel: 513-323-6300; Empl.: 10-25

CARISTRAP INTERNATONAL, INC., 1760 Fortin Blvd., Chomedey, Lavac, Quebec, Canada H7SIN8, Tel: 514-667-4700, Telex: 05-24463; Empl.: 50; *Sls. Mgr.:* Audrey Karass; *Dist. Mgr.:* Audrey Karass

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CARLINGSWITCH, INC., 60 Johnson Avenue, Plainville, CT 06062-1156, Tel: 203-793-9281, TWX: 710-425-0034; Empl.: 1200; *Sls. Mgr.:* Robert Stutz; *Dist. Mgr.:* Rad Smith ..... **B•1240, 1568-1569**

Call toll free 1-800-243-8556 for locations of Representatives and Distributors.

Local Sales Offices & Reps

AL	Huntsville, CSR Elctrn.	205-533-2444
AZ	Scottsdale, Advent Comp. Corp.	602-481-0044
CA	Pleasant Hill, David Berryman	415-676-7788
CA	San Rafael, Wright Assocs.	415-457-9940
CA	West Lake Village, Scott Johnson	805-497-0658
CO	Denver, Quorum 3 Sls. Grp.	303-696-8480
CT	Plainville, Carlingswitch, Inc.	203-793-9281
FL	Tampa, J-R Controls	813-961-9478
GA	Atlanta, CSR Elctrns.	404-396-3720
IL	Schiller Park, Wm. Bolles Assocs.	312-678-7888
IN	Indianapolis, D-M Assoc.	317-842-4424
KS	Mission, Mertens Co.	913-432-9323
MD	Gaithersburg, Naudain Assocs.	301-258-5040
MA	Hopkinton, Berkshire Elctrns.	617-435-9356
MI	Lathrup Village, R. C. Nordstrom & Co.	313-559-7373
MN	Minneapolis, Technical Comp.	612-566-0684
MS	Jackson, Welch & Dolby	601-932-5534
MO	Clayton, Mertens Co.	314-993-6600
NH	Gonic, Berkshire Elctrns.	603-335-1897
NJ	Burlington, VDE Elctrns.	609-387-9331
NJ	Union, Pacent Engrg.	201-687-7197
NY	Great Neck, Pacent Engrg.	516-482-4678
NY	Rochester, VDE Elctrns.	716-473-5015
NC	Raleigh, Crossroads Elctrns.	919-859-1033
OH	Columbus, Gerry Bryant	614-294-7103
OH	Dayton, D-M Assocs.	513-298-1417
PA	Carnegie, Brown-Yates	412-279-1101
SC	W. Columbia, Crossroads Elctrns.	803-859-1033
TX	Dallas, Control Comps.	214-458-8877
UT	Salt Lake City, Quorum 3 Sls. Grp.	801-943-9227
WA	Kirkland, Carlingswitch, Inc.	206-822-8834
WI	Mequon, Wm. Bolles Assocs.	414-241-3320
Can	Markham, Ont., Deskin Sls.	416-475-1412

Local Distributors

CA	Anaheim, Electro Comps.	714-666-0180
CA	Hayward, Electro Comps.	415-783-5800
CA	Los Angeles, Electric Switches	213-660-1310
CA	Van Nuys, Pacific Switch Controls	213-873-4802
CT	Hartford, Atlantic Switch Controls	203-527-7705
FL	Lakeland, Switch Controls	813-644-7564
IL	Carol Stream, Conectrix	312-653-1460
MI	St. Clair Shores, Spemco	313-771-2700
MN	Minneapolis, Carl Bergquist Co.	612-835-2322
NJ	Fair Lawn, Relay Specialties	201-337-1000
NJ	Mt. Laurel, Jerseyswitch	609-778-8190
NY	Rochester, Simcona Elctrns. Corp.	716-328-3230
NY	Woodside, Switches Unltd.	718-478-5000
OH	Columbus, Ohioswitch	614-885-0319
SC	Columbia, Dixie Elctrns.	803-779-5332
TX	Dallas, Texaswitch	214-357-1768

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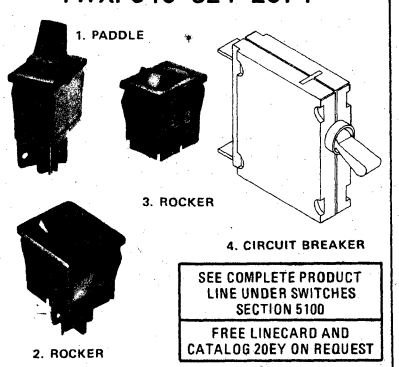

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Local Sales Offices & Reps

AL	Huntsville, Cartwright & Bean	205-830-1540
AZ	Phoenix, J. R. Morgan	602-268-3464
CA	Aptos, West Cal Sls./Ind.	408-688-6568
CA	Costa Mesa, Berman-Gravley	714-549-2122
CO	Denver, William J. Purdy Co.	303-753-6800
FL	Maitland, Hutto, Hawkins, Assoc.	305-831-2474
GA	Atlanta, Cartwright & Bean	404-233-2939
HI	Honolulu, West Pacific Agy.	808-395-3152
IL	Skokie, IRI, Inc.	312-967-8430
IN	Indianapolis, Mktg. Engrs.	317-872-5665
KS	Shawnee Mission, Lowell-Kangas	913-631-3515
LA	Covington, Cartwright & Bean	504-892-1780
MA	Seekonk, Rudolph Mktg.	617-399-6270
MI	E. Detroit, J. M. Thorpe	313-779-6363
MN	Minneapolis, ECS	612-933-2594
MO	St. Louis, Lowell-Kangas	314-821-4050
NJ	E.Orange, Willgold Sls.	201-678-7700
NY	Tuckahoe, L-C-A Sales	914-961-4700
NC	Raleigh, Cartwright & Bean	919-876-4130
OH	Cleveland, Marlow Assoc.	216-991-6500
OR	Beaverton, Wm. J. Purdy Co.	503-641-9373
PA	Broomall, L. D. Lowery	215-356-5300
TN	Knoxville, Cartwright & Bean	615-693-7450
TX	Dallas, J. Y. Schoonmaker Co.	214-349-1650
TX	Houston, J. Y. Schoonmaker Co.	713-738-2427
VA	Mechanicsville, Lowery & Assoc.	804-746-2655
WA	Redmond, William J. Purdy Co.	206-882-3144
WI	Milwaukee, IRI, Inc.	414-259-0966

CAROLINA STEEL & WIRE, I-20 & S.C. 6, Lexington, SC 29072, Tel: 803-359-5501, Telex: 573355; FSC No.: 72954; Empl.: 125

CARPENTER TECHNOLOGY CORP., P.O. Box 14662, Reading, PA 19612, Tel: 215-371-2000, Telex: 836-432; Empl.: 4500; *Sls. Mgr.:* R. J. Weiler

CARROLL TOUCH, INC., P.O. Box 1309, Round Rock, TX 78680, Tel: 512-244-3500; Empl.: 200; *Sls. Mgr.:* Pat Short

Carrot Components Corporation

CARROT COMPONENTS CORPORATION, 750 West Ventura Blvd., Camarillo, CA 93010, Tel: 805-484-0540, Telex: 18 1095; Empl.: 9; *Sls. Mgr.:* Kenneth E. Rhines; *Dist. Mgr.:* Kenneth E. Rhines .... **C•1195-1197**

Local Sales Offices & Reps

AL	Huntsville, EMF	205-233-2947
AZ	Phoenix, Jarco Assocs.	602-243-4387
CA	Los Altos, Nickerson-Gray	415-941-5777
CA	Newport Beach, SPA	714-547-5177
CO	Littleton, Megatronix	303-978-9182
FL	Tampa, SRT Mktg.	813-884-4805
GA	Atlanta, EMF	404-925-2060
ID	Boise, N. R. Schultz Co.	208-377-8686
IL	Cary, Ellinger Sls.	312-639-1850
IN	Indianapolis, Midstates Mktg.	317-639-9999
MD	Gaithersburg, Carwithen Assocs., Inc.	301-921-9545
MI	Troy, C. B. Jensen & Assocs.	313-643-0506
MN	Minneapolis, Microelectronic Sls.	612-829-0948
MO	St. Louis, Rothkopf & Assocs., Inc.	314-961-4485
NH	Nashua, Carrot Reg. Office	603-880-6233
NJ	New Brunswick, Synergy Sls.	201-828-5090
NY	Mendon, Marchese,Marsey & Barden, Inc.	716-582-2240
NC	Lillington, Effective Mktg. Force	919-893-9650
OH	Willoughby, Vartek Indl. Sls.	216-942-6021
OK	Edmund, Total Circuit Sls.	405-341-9062
OR	Beaverton, N.R. Schultz Co.	503-643-1644
PA	Horsham, John Jacobson Assocs.	215-674-2937
RI	Cumberland, Coastal Comp. Sls.	401-333-5098
TX	Dallas, Total Circuit Sls.	214-351-4578
WA	Bellevue, N. R. Schultz Co.	206-454-0300
EXP	Camarillo, CA, Carrot Components, Inc.	805-484-0540

Local Distributors

AL	Huntsville, Diversified Elctrns.	205-536-0522
AZ	Scottsdale, Horizon Comps., Inc.	602-483-1112
CA	Fullerton, California Indl. Comp. Co.	714-525-4300
CA	Manhattan Beach, Prime Electro Prods. Co.	213-379-3642
CA	San Carlos, Logan Elctrns.	415-594-0700
CA	San Jose, Cypress Elctrns.	408-945-8400
CT	Wallingford, Midstate Elctrns.	203-265-9900
FL	Longwood, Intertec Comps., Inc.	305-834-7777
GA	Norcross, Connections	404-948-6023
HI	Honolulu, Integrated Circuit Supp.	808-841-4175
IL	Downers Grove, Illinois Computer Cable	312-810-0200
KY	Glasgow, Cable Craft, Inc.	502-651-9846
MD	Jessup, Treeko Sls., Inc.	301-937-8260
MA	North Adams, Shine Elctrns.	413-664-9933
MI	Sterling Heights, Energy Elect. Cable	800-521-6520
MI	Troy, Northern Wire & Cable	313-589-0510
MN	Eden Prairie, Custom Computer Cable	612-941-5651
NH	Nashua, Brevan Elctrns.	603-889-7230
NJ	Greenbrook, Greenbrook Elctrns.	201-968-3500
NY	Farmingdale, Addem Distrbg.	516-752-9303
NY	Farmingdale, Vertex Elctrns.	516-420-4120
NY	Ithaca, Rad-Tronics	607-273-8026
NY	Wappinger Falls, Norex Elctrns.	914-298-8929
NC	Raleigh, Carolina Cable & Connector	919-876-9100
OH	Cincinnati, Schuster Elctrns.	216-425-8134
OH	Wickliffe, Gateway Megatech	216-944-5801
OK	Tulsa, Computer Cable of Okla.	918-254-8826
OR	Woodburn, Contech	503-981-3807
PA	Bristol, AIM Elctrns.	215-785-3500
RI	Warwick, ARC Elctrns.	401-732-4038
TN	Nashville, Randolph & Rice	615-255-5601
TX	Carrollton, TMMI	214-306-8407
TX	Richardson, Captronics	214-234-1555
VA	Alexandria, Virginia Cable	703-549-2116
WA	Seattle, Carlyle Tech. Sls.	206-575-6750
EXP	Camarillo, Carrot Comps.	805-484-0540
Can	Montreal, Shelly Newman	514-486-6984

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CARTER MANUFACTURING CORPORATION, 237 Sugar Road, Bolton, MA 01740, Tel: 617-779-5501; FSC No.: 03929; Empl.: 30; *Sls. Mgr.:* Leo T. Nichols, VP Sls.

CARTER MOTOR, 2707 W. George St., Chicago, IL 60618-7898, Tel: 312-588-7700

CASEMAKER DIVISION, Stebco Industries, Inc., 1020 West 40th Street, Chicago, IL, Tel: 312-254-1221, TWX: 9102212470; FSC No.: 36-2405334; Empl.: 25; *Sls. Mgr.:* Richard E. Allen

CASSO-SOLAR, P.O. Box 163, U.S. Route 202, Pomona, NY 10970, Tel: 914-354-2500, Telex: 475-4099; Empl.: 50; *Sls. Mgr.:* D. Canfield

CATALYST RESEARCH, Mine Safety Appliances Co., 1421 Clarkview Rd., Baltimore, MD 21209, Tel: 301-296-7000, Ext. 304, Telex: 87-768; Empl.: 400; *Sls. Mgr.:* Edward S. Hatch, Jr.; *Dist. Mgr.:* Edward Hatch ..... **A•1745; D•1426**

Local Sales Offices & Reps

AL	Huntsville, Montgomery Mktg.	205-830-0498
CA	Los Angeles, Power Partners	213-215-0800
CA	San Diego, Power Partners	800-468-5400
CA	San Jose, M.T.S.R.& Co.	408-297-4620
CA	Santa Barbara, Power Partners	800-468-5400
FL	Lighthouse Point, R. C. Simon & Co.	305-941-2757
FL	Melbourne Beach, R.C.Simon & Co.	305-676-0140
FL	Riverview, R.C.Simon & Co.	813-689-6524
GA	Norcross, Montgomery Mktg.	404-447-6124
IL	Palatine, T-Squared Assocs.	312-991-2144
MD	Annapolis, Vince Iorio Assocs.	301-261-1716
MA	Lincoln, W.H. Assocs.	617-259-8103
MI	Farmington Hills, W. R. Hummon & Assoc. Inc.	313-474-0661
MN	Minneapolis, Hei-Lite Sls.	612-861-6051
NY	Jamaica, S-J Assocs.	718-291-3232
NC	Cary, Montgomery Mktg.	919-467-6319
OH	Dayton, J. C. Hofstetter Co.	513-296-1010
OH	Medina, J. C. Hofstetter Co.	216-241-4880
OR	Tigard, Components West	503-684-1671
PA	Hickory, J.C.Hofstetter	412-356-2305
TN	Friendsville, Montgomery Mktg.	615-995-9397
TX	Austin, Kruvand Assocs.	512-441-6777
TX	Dallas, Kruvand Assocs.	214-437-3355
TX	Houston, Kruvand Assocs.	713-780-9710
WA	Redmond, Components West	206-885-5880

Local Distributors

MD	Savage, Pyttronic	301-792-0780

CATEL TELECOMMUNICATIONS, 4050 Technology Pl, Fremont, CA 94537, Tel: 415-659-8988, TWX: 910-338-2263; Empl.: 150; *Sls. Mgr.:* George Benton, V. P. Sls. & Mktg.; *Dist. Mgr.:* Wendell Woody

CATON

CATON CONNECTOR CORP., Jones River Indl. Pk., 20 Wapping Rd., Kingston, MA 02364, Tel: 617-585-4315, TWX: 710-391-7546; FSC No.: 52196; Empl.: 28; *Sls. Mgr.:* D. Galambos **C•1199-1203**

Local Sales Offices & Reps

CA	Fullerton, ISI	714-773-0411
GA	Marrietta, Electro-Comp Sls., Inc.	404-992-2344
IL	Carol Stream, Chemistry, Ltd.	312-690-1736
MD	Ellicott City, Technical Sls.	301-461-2400
MA	Tewksbury, Sequal Assocs.	617-851-4010
MN	Minneapolis, Parker Shoap & Assocs.	612-934-5812
NM	Albuquerque, Westfahl & Assocs.	505-881-0995
OH	Cincinnati, Delta Sales	513-271-5444
OK	Tulsa, Barry Sls.	918-749-7775
OR	Portland, SPS Elctrns.	503-297-6919
TX	Houston, Barry Sls.	713-784-5860
TX	Richardson, Barry Sls.	214-234-0255
WA	Redmond, SPS ELctrns.	206-323-4140
Can	Thornhill, Ont., RFQ, Ltd.	416-881-1976

CATRONIX CORP., 2298 Lower Roswell Rd. SE, Marietta, GA 30067, Tel: 404-977-8220; Empl.: 11; *Sls. Mgr.:* Dr. Charls Pearson

CCD IMAGING, Fairchild Weston Systems, Inc., 810 W. Maude Ave., Sunnyvale, CA 94086, Tel: 408-720-7600; *Sls. Mgr.:* Jim Johnson

C-COR ELCTRNS., 60 Decibel Rd., State College, PA 16801, Tel: 814-238-2461, TWX: 510-670-3513; FSC No.: 12775; Empl.: 385; *Sls. Mgr.:* A. B. McGuire

CDRL DATA, INC., 21642 North 9th Ave., Suite 101, Phoenix, AZ 85027-2823, Tel: 602-582-8844; FSC No.: 56060; Empl.: 25; *Sls. Mgr.:* James J. Edwards

CDS - COLORADO DATA SYS., 3301 W. Hampden, Unit C, Englewood, CO 80110, Tel: 303-762-1640, 800-CDS-ATE1, TWX: 910-933-0193; Empl.: 60; *Sls. Mgr.:* Louis Klahn

CEA DIVISION OF BERKLEONICS, INC., A Subsidiary of EG & G, 1 Aerovista Pk., San Luis Obispo, CA 93401, Tel: 805-544-5454, TWX: 910-351-6705; FSC No.: 04932; Empl.: 120; *Sls. Mgr.:* Jerry Satuloff

CEAG ELECTRIC CORP., 1324 Motor Pkwy., Hauppauge, NY 11788, Tel: 516-582-4422, TWX: 510-227-4904; FSC No.: 57973; Empl.: 120; *Sls. Mgr.:* Hank Striegl; *Dist. Mgr.:* Bryce Wiedeman

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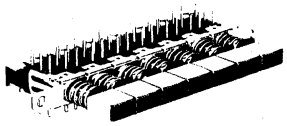

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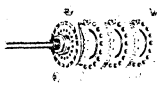

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CELCO, 70 Constantine Dr., Mahwah, NJ 07430, Tel: 201-327-1123, TWX: 710-988-1018; FSC No.: 05954; Empl.: 45; *Sls. Mgr.:* P. S. Christaldi

CELESCO TRANSDUCER PRODS., INC., 7800 Deering Ave., Canoga Pk., CA 91304, Tel: 818-884-6860, Telex: 499-8137; *Sls. Mgr.:* Bart Gudmundson, Patrick McFarland, Doug Vondenbenken

CELESTION INDUSTRIES, INC., Kuniholm Dr., Box 521, Holliston, MA 01746, Tel: 617-429-6706, Telex: 948417

CENTECH CORP., 200 W. 88th St., Minneapolis, MN 55420, Tel: 612-881-8245, TWX: 431-0015-L8M, FAX: 612-888-3073; *Sls. Mgr.:* Norton G. Saude

CENTENT CO., 3879 S. Main St., Santa Ana, CA 92707, Tel: 714-979-6491; Empl.: 12; *Sls. Mgr.:* A. Freimanis

CENTERFLEX TECHN. CORP., 221 Seventh Ave., P.O. Box 21, Hawthorne, NJ 07507, Tel: 201-423-0505, TWX: 710-988-4147; Empl.: 50; *Sls. Mgr.:* Rolf Fasth

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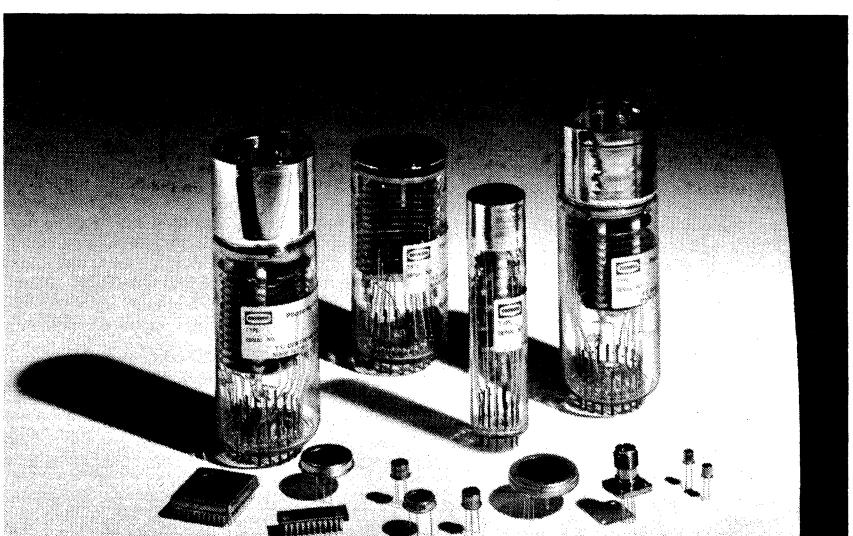
CENTRAL MICROWAVE CO., Alpha Inds., Inc., 12180 Prichard Farm Rd., Maryland Heights, MO 63043, Tel: 314-291-5270, Telex: 949436, TWX: 910-762-0649; FSC No.: 55729; Empl.: 120; *Sls. Mgr.:* William A. Ruff

CENTRE ENGINEERING, 2820 E. College Ave., State College, PA 16801, Tel: 814-237-0321, TWX: 510-670-3517; FSC No.: 51642; Empl.: 278; *Sls. Mgr.:* Roger Guisewite, Natl. Sls. Mgr.

CENTRONIC, INC., Morgan Crucible Co., Electronics Div., 1829 B DeHavilland Dr., Dept. E , Newbury Park, CA 91320-1702, Tel: 805-499-5902, FAX: 805-499-7770; FSC No.: 63334; Empl.: 20; *Sls. Mgr.:* George Pankau



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Local Sales Offices & Reps

CA	Newbury Pk, Centronic, Inc., E-O Comps. Div.	805-499-5902
MO	Ellisville, Advanced Indl. Sys.	314-391-0366
NY	Comack, R.C. Engrg. Sls.	516-543-3325

Local Distributors

MO	Ellisville, Advanced Indl. Sys.	314-391-0366
NY	Comack, R.C. Engrg.	516-543-3325

C. E. PRECISION ASSEMBLIES, 1031 W. Fremont Dr., Tempe, AZ 85282, Tel: 602-820-5596; FSC No.: 67810; Empl.: 5; *Sls. Mgr.:* Henry Richards

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Advanced Ceramic/Metal Technology

CERAMASEAL, Box 260, New Lebanon, NY 12125, Tel: 518-794-7800, Telex: 14-5442; FSC No.: 07601; Empl.: 89; *Sls. Mgr.:* Gene D. Sawin ..... **C•1204**

Local Sales Offices & Reps

AL	Huntsville, Physimetrics	205-881-8483
AZ	Phoenix, Wadsworth/Bryant	602-275-7366
CA	Atherton, Wadsworth/Bryant	415-321-3619
CA	Hacienda Hgts., Wadsworth/Bryant	818-330-5592
CO	Golden, J. F. Hurlbut Co.	303-279-7796
FL	Orlando, Physimetrics	305-894-8081
GA	Atlanta, Physimetrics	464-955-0155
IL	Mt. Prospect, Automation Equip. Co.	312-398-7550
KS	Lenexa, Midtec Assocs.	913-541-0505
MD	Baltimore, R. A. Wafer Assoc.	301-744-1133
MA	Boston, P-J Engrg. Sls.	617-783-0510
MO	St. Louis, Midtec Assocs.	314-275-8666
NY	Farmington, Canavan-Scanlon Assoc.	716-924-7450
NY	Syracuse, Canavan-Scanlon Assoc.	315-437-1271
NC	Charlotte, JWL Assoc.	704-541-5750
PA	Feasterville, Knowles Assocs.	215-322-7100
PA	Pittsburgh, Kurt J. Lesker Co.	412-892-2996
TN	Knoxville, Physimetrics	615-966-7553
TX	Richardson, Spectra Sls.	214-234-3600
WA	Seattle, J.J. Assocs.	206-246-6619

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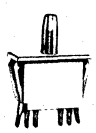
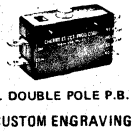

3. COMMERCIAL

4. KEYBOARD

5. LIGHT FORCE

2. DOUBLE POLE P.B.
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CERAMIC MAGNETICS, INC., 87 Fairfield Rd., Fairfield, NJ 07006, Tel: 201-227-4222, Telex: 138 730; Empl.: 70

CERA-MITE CORP., 1327 Sixth Ave., Grafton, WI 53024, Tel: 414-377-3500, Telex: 62916271; Empl.: 215; *Sls. Mgr.:* Claude Marquardt

CERMETEK MICROELECTRONICS INC., 1308 Borregas Ave., Sunnyvale, CA 94088, Tel: 408-752-5000, TWX: 910-379-6931; Empl.: 110; *Sls. Mgr.:* Ken Archbold

CES ELCTRNS., 2968 Avenue Z, Brooklyn, NY 11235; Empl.: 20

CETEC RAYMER, 7315 Fulton Ave., No. Hollywood, CA 91605, Tel: 213-875-0423; Empl.: 56; *Sls. Mgr.:* Hugh T. Wilcox

CGRS MICROTECH, P.O. Box 102L, Langhorne, PA 19047, Tel: 215-757-0284; Empl.: 5; *Sls. Mgr.:* J. Swope; *Dist. Mgr.:* J. Swope

CGTI, 2 Windward Ave., White Plains, NY 10605, Tel: 914-949-3719, TWX: 710-568-1305; Empl.: 170; *Sls. Mgr.:* G. N. Snider

CHABIN CORP., 890 Fortress St., Chico, CA 95926, Tel: 916-891-6410, TWX: 910-536-1001; *Sls. Mgr.:* Peter Tunis

CHA INDUSTRIES, 3565 Haven Avenue, Menlo Park, CA 94025, Tel: 415-363-8011, Telex: 334426; *Sls. Mgr.:* Jack Patten

CHALCO ENGRG. CORP., Chalco Industries, Inc., 15126 S. Broadway, Gardena, CA 90248, Tel: 213-321-0121, TWX: 910-346-7026; Empl.: 95; *Sls. Mgr.:* Steven Kierman, Dir. Sls.

CHANNEL INDUSTRIES, 839 Ward Dr., Santa Barbara, CA 93111, Tel: 805-967-0171, Telex: 658416; Empl.: 75

CHAPMAN CORP., P.O. Box 10700, 125 Presumpscot St., Portland, ME 04104, Tel: 207-773-4726, Telex: 294139 CHAPUI, FAX: 207-781-4383; Empl.: 35; *Sls. Mgr.:* David Hall

CHARLES RIVER DATA SYSTEMS, INC., 983 Concord St., Framingham, MA 01701, Tel: 617-626-1000, Telex: 681-7373; Empl.: 170; *Sls. Mgr.:* Jim McKenna

CHARTPAK, 1 River Rd., Leeds, MA 01053, Tel: 413-584-5446; Empl.: 195

CHASSIS-TRAK, See General Devices

CHATHAM CONTROLS, 33 River Rd., Chatham, NJ 07928, Tel: 201-635-8892; FSC No.: 04814; Empl.: 11

CHATSWORTH DATA CORPORATION, 20710 Lassen St., Chatsworth, CA 91311, Tel: 818-341-9200; Empl.: 65; *Sls. Mgr.:* Hank Boehm ..... **D•1227**

CHEMTRONICS INC., 681 Old Willets Path, Hauppauge, NY 11788, Tel: 516-582-3322, 800-645-5244, Telex: 968567, FAX: 516-582-3046; FSC No.: 21267; Empl.: 112; *Sls. Mgr.:* Louis Friedman; *Dist. Mgr.:* Scott Friedman



CHEROKEE INTERNATIONAL, INC., Core Industries, 8 Autry Dr., Irvine, CA 92718, Tel: 714-951-9679, TWX: 510-101-0493; Empl.: 225; *Sls. Mgr.:* Lonnie Friend ..... **D•1597-1599**

Local Sales Offices & Reps

AL	Huntsville, Naylor Assocs.	205-881-5955
AZ	Scottsdale, Luscombe Engrg.	602-949-9333
CA	Pasadena, Luscombe Engrg.	213-684-2000
CA	Santa Clara, Cindel, Inc.	408-988-8331
CO	Denver, Butler Tech. Sls.	303-343-3787
FL	Largo, Burke Assocs.	813-584-5699
IL	Downers Grove, Richmar Elctrns.	312-968-0118
MA	Framingham, Sullivan Tech. Sls.	617-620-0195
MN	Minneapolis, Robt. W. Marshall Co., Inc.	612-929-0457
MO	Kansas City, Lima & Assocs.	816-444-1644
NJ	Englewood, Sprung/Nussbaum	201-569-5666
NJ	Lawrenceville, DVS Co.	609-896-1112
NY	Morrisville, Naylor Elctrns.	315-684-9620
NC	Research Triangle Park, Naylor Assocs.	919-286-7007
OH	Richfield, Geotronix	216-659-6100
OR	Beaverton, Elctrns. N.W.	503-629-9241
OR	Portland, Sinclair Reps.	503-295-2429
TX	Plano, Richmar Elctrns.	214-867-8224
WA	Redmond, Elctrns. N.W.	206-883-1959
Can	Downsview, Ont., Elbit Elctrns.	416-633-5050

CHERRY

CHERRY ELECTRICAL PRODUCTS, 3600 Sunset Ave., Waukegan, IL 60087, Tel: 312-360-3500, TWX: 910-235-1572; Empl.: 2000; *Sls. Mgr.:* John Cotton; *Dist. Mgr.:* George DiMartino ..... **B•1049, 1570-1575; D•1076**

Local Sales Offices & Reps

AL	Huntsville, CSR Elec.	205-533-2444
AZ	Phoenix, O'Donnell Assocs. S.W.	602-944-9542
CA	San Diego, O'Donnell Assocs.	619-578-1645
CA	San Jose, O'Donnell Assoc. No.	408-263-6500
CA	Torrance, O'Donnell Assocs.	213-539-9664
CO	Boulder, Front Range Mktg.	303-443-4780
CT	North Haven, Coakley, Boyd & Abbett	203-239-6217
FL	Stuart, Cahill Assoc.	305-288-3113
GA	Atlanta, CSR Elctrns.	404-396-3720
IL	Waukegan, Cherry Elec. Prod.	312-360-3500
IN	Ft. Wayne, Menze Sls.	219-747-5616
IA	Cedar Rapids, Dy-Tronix	319-377-8275
IA	Wichita, Dy-Tronix, Inc.	316-838-0884
MA	Needham Hgts., Coakley, Boyd & Abbett	617-444-5470
MA	Needham Hts., Coakley, Boyd, & Abbett	617-444-5470
MI	Farmington Hills, Cherry Elec. Prod.	313-477-4477
MI	Grand Rapids, Miltimore Sls.	616-942-9721
MI	Novi, Miltimore Sls.	313-349-0260
MN	St. Paul, Cahill, Schmitz & Cahill	612-646-7217
MO	Bridgeton, Dy-Tronix	314-291-4777
MO	Raytown, Dy-Tronix, Inc.	816-356-6340
NJ	Pitman, Colrud Corp.	609-589-5866
NM	Albuquerque, O'Donnell Assocs. N.W.	505-883-1030
NY	Rochester, Elcom Sls.	716-385-1400
NY	Syracuse, Elcom Sls.	315-685-8245
NY	W. Hempstead, Schmitt Indl. Mktg. Corp.	516-486-3510
NC	Mathews, CSR Elctrns.	704-847-5806
NC	Raleigh, CSR Elctrns.	919-878-9200
OK	Tulsa, Comptech Sls., Inc.	918-622-7744
OR	Portland, Jas. J. Bacher Co.	503-297-8744
TN	Knoxville, CSR Elctrns.	615-673-0222
TX	Arlington, Comptech Sls., Inc.	817-265-6007
TX	Austin, Comptech Sls., Inc.	512-331-8922
TX	Houston, Comptech Sls., Inc.	713-776-8330
UT	Salt Lake City, Front Range Mktg.	801-364-6481
VA	Reston, Colrud Corp.	703-620-6612
WA	Seattle, Jas. J. Bacher Co.	206-285-1300

Local Distributors

AL	Birmingham, Ack Radio Supp. Co.	205-322-0588
AL	Huntsville, Powell Elctrns.	205-539-2731
AZ	Phoenix, Cetec Future Elctrns.	602-272-7951
AZ	Phoenix, Elctrn. Parts	602-277-7281
AZ	Tempe, Harper S.I.D.	602-967-1464
CA	Alhambra, Harper S.I.D.	818-289-0255
CA	Chatsworth, Cetec Future Elec.	818-700-0914
CA	Fullerton, Pyramid Elec.	714-773-0781
CA	Gardena, Cal Switch	213-770-2330
CA	Irvine, Cetec Future Elctrns.	714-250-4141
CA	Los Angeles, Electric Switches	213-660-1310
CA	Oakland, Brill Elctrns.	415-834-5888
CA	Sacramento, Integrated Elec.	916-424-5297
CA	San Diego, Cetec Future Elctrns.	619-278-5020
CA	San Diego, Harper S.I.D.	619-560-8454
CA	Santa Clara, Cetec Future Elec.	408-980-0110
CA	Santa Clara, Pyramid Elec.	408-727-9810
CA	Southgate, Cetec Future Elctrns.	213-773-6521
CA	Sunnyvale, Harper S.I.D.	408-747-0333
CA	Sunnyvale, Target Elec.	408-734-5611
CO	Arvada, Denver/Beta Wintronics	303-431-7161
CO	Denver, Integrated Elec.	303-292-6121
CT	Wallingford, Midan Elec.	203-265-2077
FL	Ft Lauderdale, Powell Elec.	305-972-4300
FL	Ft. Lauderdale, KSM Elctrns.	305-971-5900
FL	Ft. Lauderdale, Reptron Elec.	305-979-8227
FL	Tampa, Reptron Elec.	813-855-4656
GA	Atlanta, Ack Radio Supp. Co.	404-351-6340

GA	Atlanta, KSM Elctrns.	404-458-2013
IL	Champaign, Klaus Radio	217-356-1896
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Palatine, OHM Elctrns.	312-359-5500
IL	Wheeling, Hawk Elctrns.	312-459-4030
IN	Ft. Wayne, Bell Ind/Graham	219-423-3422
IN	Ft. Wayne, Graham	219-423-3422
IN	Indianapolis, P. E. I. Genesis Elctrns.	317-637-5571
IN	South Bend, P.E.I. Genesis Elctrns.	219-287-2911
IA	Cedar Rapids, Advent Elctrn.	319-363-0221
KS	Edwardsville, C. Tennant Sons & Co.	913-441-1801
MD	Columbia, Maryland	301-621-8080
MD	Savage, Pyttronic Ind.	301-792-0780
MA	Needham, Cronin Elctrns.	617-449-5000
MA	Newton, Greenshaw Co.	617-969-8900
MI	Livonia, Rep-Tron Elctrns.	313-525-2700
MN	Minneapolis, Indl. Comps.	612-831-2666
MN	Minneapolis, Newark Elec.	612-331-6350
MN	Minneapolis, Stark Elctrns.	612-332-1325
MO	Kansas City, Walters Radio Supp.	316-531-7015
MO	St. Charles, Finnigan Elctrns.	314-946-6201
NJ	Bellmawr, Mid-Atlantic Elec.	609-931-5303
NJ	Clifton, J-Mar Elec., Inc.	201-772-6400
NJ	Kenilworth, Federated Purchaser	201-272-0505
NM	Albuquerque, Elctrn. Parts	505-293-6161
NM	Albuquerque, Walker Elctrns. Supp.	505-883-2992
NY	Buffalo, Summit Distr.	716-887-2800
NY	Hauppage, C. Tennant Sons & Co.	516-434-8200
NY	Hempstead, Davis Elec.	516-483-9200
NY	Rochester, Summit Distr.	716-334-8110
NC	Cary, Powell Elctrns.	919-467-1212
NC	Winston-Salem, Kirkman Elctrn.	919-722-9131
OH	Cincinnati, Hughes-Peters	513-351-2000
OH	Columbus, Hughes-Peters	614-294-5351
OH	Dayton, Bell Ind.	513-435-8660
OH	Middlesburg Hts., Selectronics	216-243-9700
OH	Worthington, Reptron	614-436-6675
OK	Tulsa, Radio, Inc.	918-587-9123
OR	Portland, Radar Elctrns.	503-232-3404
OR	Portland, Tekelectric Control	503-246-5451
PA	Montgomeryville, Pyttronic Ind.	215-643-2850
PA	Philadelphia, Powell Elec.	215-365-1900
TN	Nashville, Bell Ind./Graham Div.	615-367-4400
TX	Dallas, Force Elctrns.	214-351-2050
TX	Dallas, Southwest Elec.	214-234-3050
TX	Dallas, Wallace Elec. Co.	214-340-0400
TX	Houston, Force Elec.	713-561-8644
TX	Irving, Harper S.I.D.	214-621-0500
TX	San Antonio, Sherman Elctrns. Supp.	512-224-1004
TX	Stafford, Southwest Elctrn.	713-240-4000
UT	North Salt Lake City, Integrated Circuits	801-298-1869
UT	Salt Lake City, Standard Supp. Co.	801-486-3371
VA	Richmond, Sterling Elctrns.	804-226-2190
WA	Bellevue, Integrated Elec., Inc.	206-455-2727
WA	Kent, Pyramid Elec.	206-872-5800
WA	Seattle, Radar Elctrns.	206-282-2511
WI	Milwaukee, Marsh Elctrns.	414-475-6000
Can	Burnaby, B.C., Rae Ind. Elec., Ltd.	604-291-8866
Can	Concord, Ont., Trade Elctrns. Supp.	416-661-7111
Can	Edmonton, Alb., Rae Ind. Elec., Ltd.	403-451-4001
Can	London, Ont., C. M. Peterson Co., Ltd.	519-434-3204
Can	Mississauga, Ont., Prelco Elec., Ltd.	416-678-0401
Can	Montreal, Que., Prelco Elec., Ltd.	514-389-8051
Can	Nepean, Ont., Prelco Elec., Ltd.	613-726-1800

CHERRY SEMICONDUCTOR CORP, 2000 S. County Trail, East Greenwich, RI 02818, Tel: 401-885-3600, Telex: WUI 6817157; Empl.: 300

CHESSELL CORP., 1 Pheasant Run, Newtown, PA 18940, Tel: 215-968-0660, Telex: 83-1701; Empl.: 50; *Sls. Mgr.:* D. Neal

CHESTER CABLE, Celwave Sys. Inc., Oakland Ave., Chester, NY 10918, Tel: 914-469-2141, TWX: 510-249-4813; *Sls. Mgr.:* F. Leibold

CHESTERFIELD PRODUCTS, 37 Midland Ave., Elmwood Park, NJ 07407, Tel: 201-797-9655; Empl.: 35; *Sls. Mgr.:* M. Perry ..... **A•1649**

Local Sales Offices & Reps

AZ	Tucson, WJM Sls.	602-888-4847
CA	Palo Alto, J M Assocs.	415-857-1260
CA	San Diego, MTM Intl., Inc.	619-563-8520
CO	Loveland, Morbak Mktg.	303-669-8900
MD	Towson, Holden Engrg.	301-823-3763
MA	Framingham, Bengal Assocs.	617-877-2639
MA	Randolph, Bengal Assocs.	617-961-4120
MN	Chanhassen, Barnes Sls. Assocs.	612-934-2907
NJ	Elmwood Park, L & M Assocs.	201-797-0441
NY	New York, L & M Assocs.	212-243-6155
PA	Andalusia, L & M Assocs.	215-245-6658
TX	Richardson, Carl Tinch Sls. Co.	214-231-1322
WA	Seattle, Datacom Assocs., Inc.	206-285-2525

CHICAGO CONDENSER CORP., 2900 West Chicago Ave., Chicago, IL 60622, Tel: 312-227-7070

CHICAGO LASER SYSTEMS, INC., 4034 N. Nashville Ave., Chicago, IL 60634, Tel: 312-282-2710, Telex: 671-1269; *Sls. Mgr.:* Bernard Alpiner, V.P.

CHICAGO LOCK CO.

CHICAGO LOCK CO., 4311 W. Belmont Ave., Chicago, IL 60641, Tel: 312-282-7177, Telex: ITT 4994023; Empl.: 375; *Sls. Mgr.:* Dale N. Padjen ..... **B•1577**

Local Sales Offices & Reps

CA	Oceanside, Sales Engineer	619-726-9499
IN	Portage, Reg. Sales Engineer	219-762-0097

CHICAGO SWITCH, INC., 1714 N. Damen, Chicago, IL 60647, Tel: 312-489-5500, TWX: 910-221-5252; Empl.: 250; *Sls. Mgr.:* A. Steiner; *Dist. Mgr.:* A. Steiner

CHINA STORAGE BATTERY CO. LTD., Automotive Accessories Marketing Corp., 247 William St, Bensenville, IL 60106, Tel: 312-595-3690 ..... **D•1427**

CHLORIDE POWER ELECTRONICS, 10931 Pellicano Drive, El Paso, TX 79935, Tel: 915-592-9985, Telex: 910-964-1364; FSC No.: 08715; Empl.: 1000; *Sls. Mgr.:* Robin Lee

CHOMERICS, INC., 77 Dragon Ct, Woburn, MA 01888, Tel: 617-935-4850, TWX: 710-393-0173; Empl.: 500; *Sls. Mgr.:* Kevin A. Dunne

CHR INDUSTRIES, INC., 407 East St, P.O. Box 1911, New Haven, CT 06509, Tel: 203-777-3631, TWX: 710-465-0264; Empl.: 116; *Sls. Mgr.:* Frank Reilly; *Dist. Mgr.:* Frank Reilly

CHRISTIANSEN RADIO INC., 1950 San Remo, Laguna Beach, CA 92651, Tel: 714-497-1506; Empl.: 9

CHRISTIE ELECTRIC CORP

CHRISTIE ELECTRIC CORP., 20665 Manhattan Pl, Torrance, CA 90501, Tel: 213-320-0808, TWX: 910-349-6260; FSC No.: 02294; Empl.: 70; *Sls. Mgr.:* Kurt Shafer ..... **D•1428, 1600-1601**

Local Sales Offices & Reps

CA	Mission Viejo, Freben Intl, Inc.	714-770-1072
CA	Santa Clara, Sourcetronics	408-988-8801
CO	Colorado Springs, Data Specialties	303-630-0550
FL	Orlando, Newco, Inc.	305-293-7700
GA	Lithia Springs, Newco, Inc.	404-941-6077
MD	Laurel, CSDS	301-490-3800
MA	Needham, Shain Assocs.	617-740-2334
NM	Albuquerque, Brytec Sls., Inc.	505-884-1123
PA	Cheltenham, Stein Instrumentation	215-379-1990
TX	Richardson, Carl Tinch Sls. Co.	214-231-1322
UT	Murray, Butterworth Mktg.	801-268-2244

Chromalox
INSTRUMENTS AND CONTROLS

CHROMALOX INSTRS. & CONTROLS, 100 Heil-Quaker Blvd., La Vergne, TN 37086-3536, Tel: 615-793-3900, Telex: 55-5129, ESYLNK: 615-793-3563; Empl.: 110; *Sls. Mgr.:* John Cox ..... **D•1126**

CHROMATICS, 2558 Mountain Ind. Blvd, Tucker, GA 30084, Tel: 404-493-7000, TWX: 810-766-8099

CHRONO-LOG CORP., 2 W. Park Rd., Havertown, PA 19083, Tel: 215-853-1130, Telex: 831579; Empl.: 20; *Sls. Mgr.:* John Glazier ..... **D•1077**

CHRONOMITE LABS, 21011 S. Figueroa St, Carson, CA 90745, Tel: 213-320-9452; Empl.: 15

CHURCHILL CORP., 344 Franklin St, Box G, Melrose, MA 02176, Tel: 617-665-4700; FSC No.: 94867; Empl.: 30; *Sls. Mgr.:* W. Schermerhorn

CIMCO WIRE & CABLE, INC., See Specialty Cable Corp.

CINCH, See TRW Connector Div.

CINCINNATI ELCTRNS., 2630 Glendale Milford Rd, Cincinnati, OH 45241, Tel: 513-733-6100, Telex: 21-4452, TWX: 810-464-8151; FSC No.: 80045; Empl.: 800; *Sls. Mgr.:* Kenneth Gilkey

Local Sales Offices & Reps

NC	Fayetteville, Cincinnati Elctrns. Corp.	919-864-6236

CINCINNATI ELECTROSYS., 420 Wards Corner Rd, Loveland, OH 45140, Tel: 513-831-4347

CINCINNATI SUB-ZERO PRODS., 12011 Mosteller Rd, Cincinnati, OH 45241, Tel: 513-772-8810, Telex: 214390 SUBZERO CIN; Empl.: 80; *Sls. Mgr.:* George Molenaar

CIPHER DATA PRODS., INC., P.O. Box 85170, San Diego, CA 92138, Tel: 619-578-9100, TWX: 910-335-1251, FAX: 619-549-8037; Empl.: 2000; *Sls. Mgr.:* Wes Bankston, VP Sls.; *Dist. Mgr.:* Wes Bankton

CIPRICO INC., 2955 Xenium Lane, Plymouth, MN 55441, Tel: 612-559-2034; Empl.: 71; *Sls. Mgr.:* Stu Reile

CIRCLE ELECTRONICS, A Division of F-Dyne Elctrns., 3501 Electronics Way, W. Palm Beach, FL 33407, Tel: 305-844-1310; *Sls. Mgr.:* John Strickland

CIRCUIT ASSEMBLY CORP., 18 Thomas St, Irvine, CA 92718-2703, Tel: 714-855-7887, Telex: 183109UD; FSC No.: 52072; Empl.: 275; *Sls. Mgr.:* Edward Cadden; *Dist. Mgr.:* Richard E. Foringer

Local Sales Offices & Reps

AL	Huntsville, K & E Assocs., Inc.	205-883-9720
CA	San Diego, Varigon Assocs.	619-576-0100
CO	Denver, Delltron Co.	303-373-0300
CT	Wallingford, Com Sls.	203-269-7964
FL	Clearwater, Tech-Rep Assocs.	813-530-1619
GA	Doraville, K & E Assocs., Inc.	404-448-7025
IL	Itasca, LTD Technlgs.	312-773-2900
IN	Indianapolis, Frank Kahsar Sls.	317-888-8396
MA	Needham, Com Sls.	617-444-8071
MI	Grand Haven, Frank Kahsar Sls.	616-846-7590
MN	Osseo, Gaffney Sls.	612-425-5484
MO	Grandview, Harris Hanson Co.	816-763-6200
MO	St. Louis, Harris-Hanson Co.	314-432-3611
NJ	Berkely Hgts., Cambridge Allen & Assocs.	201-464-0203
NJ	Palmyra, LHR Assocs.	609-722-8282
NM	Albuquerque, Syntech	505-266-7951
NY	Kingston, Apex Assocs.	716-254-6050
NY	Rochester, Apex Assocs., Inc.	716-254-6050
OH	Cincinnati, Frank Kahsar Sls.	513-922-3133
OH	Columbus, Frank Kahsar Sls.	614-252-4009
OH	Hudson, Frank Kahsar Sls.	216-650-1089
OR	Portland, General Elctrns.	503-297-8500
TX	Dallas, Promark	214-699-9770
UT	Salt Lake City, Delltron	800-692-2069
UT	Sandy, Delltron Co.	801-942-4678
WA	Renton, General Elctrns.	206-228-9505
WI	Milwaukee, LTD Technlgs.	414-774-1000
Can	Toronto, Ont., Continental Elec. Assocs.	416-231-9717

Local Distributors

AZ	Phoenix, Arizona Comps.	602-279-9446
AZ	Phoenix, Tri-Tek	602-995-9352
AZ	Tempe, Circuit Specialist	602-966-0764
CA	San Diego, Mann San Diego	619-578-1550
CA	San Diego, Ryno Elctrns.	619-453-8430
CA	San Jose, Rose Elctrns.	408-263-9700
CA	Santa Ana, Mann Southwest Corp.	714-558-3202
CA	Santa Ana, Vision Elctrns. Corp.	714-261-6777
CA	Santa Clara, Mann Elctrns.	408-988-6061
CA	Santa Clara, Vision Elctrns. Corp.	408-720-1411
CO	Denver, C.S.I.D.	303-292-9594
CO	Englewood, Indl. Elctrns.	303-694-9444
CT	Norwalk, Park Distrs.	800-243-5006
CT	Wallingford, Midstates Elctrns.	203-265-9900
FL	Miami, Electronic Equip.	305-871-3500
FL	W. Palm Beach, Nurmi Elctrn. Supp.	305-684-0321
ID	Spirit Lake, Al Elctrns.	208-623-3111
IL	Chicago, Bell Inds.	312-982-9210
IL	Elk Grove Village, GBL Goold Elctrns.	312-593-3220
IL	Melrose Park, Belford Elctrns.	312-865-2400

IA Marion, Brenneman & Assoc. 319-377-6394
MA Newton Upper Falls, In Stock Prods. .. 617-964-6200
MA Norwood, Gerber Elctrns. 617-329-2400
MN Minneapolis, Cassidy Elctrns. 612-944-0100
MN St. Paul, Connectron 612-481-0320
MO St. Louis, Gateway Elctrns. 314-427-6116
MO Valley Pk, Beckwith Computers & Elec. 314-825-2237
NH Manchester, Yankee Elctrns. 603-625-9746
NJ Bellmawr, Mid Atlantic Elctrn. Corp. ... 609-931-5303
NJ E. Hanover, State Elctrns. 201-887-2550
NJ Englewood, Technical Elctrn. Distr. 201-894-0800
NM Albuquerque, Betatron Elec., Inc. 505-344-2381
NM Albuquerque, Connecting Comps. 505-345-8921
NY Bohemia, CAR Lac Indl. 516-567-4200
NY Bohemia, Key Comp. 516-567-7500
NY Farmingdale, Pride Elctrns. 516-293-4020
NY Mt. Vernon, QAR 914-699-2224
OR Lake Oswego, Rose Elctrns. 503-635-8823
PA Levittown, G.W. Elctrns. 215-547-7422
TX Dallas, Off the Shelf Comps. 214-247-0052
TX McKinney, Prime Distrbg. 214-231-0170
TX Richardson, Off the Shelf Comps. 214-238-0808
UT Provo, Omega Elctrns. 801-375-4664
UT Salt Lake City, Standard Supp. 801-486-3371
WI Waukesha, Bell Inds. 414-547-8879

CIRCUITECH, INC., Division of Heyco, Inc., 542 Industrial Way West, Eatontown, NJ 07724, Tel: 201-542-6550, TWX: 710-723-4620; Empl.: 80; *Sls. Mgr.:* Jim Harrison

CIRCUITS, INC., 59 Deming Rd., Berlin, CT 06037, Tel: 203-828-3526; Empl.: 105

CIRCUIT TECHNOLOGY, INC., 160 Smith St, Farmingdale, NY 11735, Tel: 516-293-8686, TWX: 510-224-6555; Empl.: 600; *Sls. Mgr.:* Mel Spitz

CIR-Q-TEL, INC., 10504 Wheatley St, Kensington, MD 20895, Tel: 301-946-1800, TWX: 710-828-0521, FAX: 301-949-1874; Empl.: 45; *Sls. Mgr.:* Norman R. Selinger

CIRRIS SYSTEMS, 1864 S. State, Ste 90, Salt Lake City, UT 84115, Tel: 801-466-6600, 800-424-7747; *Sls. Mgr.:* Brent Stringham

CIRTECH, EG & G, 15237 Cherry St, Stanley, KS 66223, Tel: 913-681-2801, TWX: 910-749-6806; FSC No.: 5915; Empl.: 100; *Sls. Mgr.:* Wallace C. Wilson

CITIZEN

CITIZEN BUSINESS MACHINES, 2999 Overland Ave., Los Angeles, CA 90064, Tel: 213-558-0961, 800-421-6516, Telex: 2020668, FAX: 213-836-1140; Empl.: 10; *Dist. Mgr.:* Robin Pierce ..... **D•1079-1081**

Local Distributors

CA Los Angeles, Melfess V, Inc. 213-826-8133
NY Brooklyn, Metropolitan Sls. Co. 718-336-7600

CLAIREX ELECTRONICS, Clairex Corporation, 560 S. 3rd Ave., Mt. Vernon, NY 10550, Tel: 914-664-6602, Telex: 137308; Empl.: 192; *Sls. Mgr.:* Gerald Smith ..... **B•1222**

Local Sales Offices & Reps

AL Huntsville, K & E Assocs. 205-883-9720
FL Boca Raton, Sales Specialists 305-395-5371
FL Plant City, Sales Specialists 813-754-1329
CA Escondido, Clairex Elctronics 619-749-8474
IL Chicago, Berndt Assoc. 312-283-0713
IN Carmel, Berndt Assoc. 317-884-0114
MA Bolton, Key Sales Assocs. 617-779-2780
MI Ferndale, Hilltronics 313-398-5556
MN Minneapolis, H.M.R. 612-920-8200
MO Bridgeton, Cen Tech, Inc. 314-291-4230
MO Raytown, Cen Tech, Inc. 816-358-8100
NY Seaford, Abbott Assoc. 516-781-5256
OH Richfield, Geotronix 216-659-6100
OH Trotwood, Geotronix Inc. 513-854-5939
PA Allison Park, Geotronics, Inc. 412-487-1770
PA Newtown Square, W. Reeves Assoc. .. 215-356-7500
TX Austin, J. B. Guenther 512-258-0004
TX Dallas, J. B. Guenther 214-691-8500
UT Sandy, GTM Assocs.,Inc. 801-483-4103
WA Seattle, H. Levinson 206-323-5100
WI Milwaukee, Berndt Assoc. 414-545-8400
EXP NJ, Oradell, Sylvan Ginsbury 201-261-3200

Local Distributors

CA Culver City, EV Roberts 213-870-9561
CA Hayward, KEA Elctrns. 415-887-2900
CA Laguna Hills, Opto Plus 714-380-8654
CA San Carlos, Control Design Supp.,Inc. 408-996-9197
CT Wallingford, Sager Elctrns. 203-265-4600
FL Miami, Elctrn. Equip. 305-871-3500
IL Chicago, Bell Indus. 312-982-9210
IN Indianapolis, Graham Elctrns. 317-634-8486
MD Rockville, All American Transistor 301-251-1205
MA Hingham, Sager Elctrns. 617-749-6700
MA Norwell, Bordewieck Eng. Sls. 617-659-4915
MI Ann Arbor, Wedemeyer Elctrn. 313-665-8611
MN Minneapolis, Stark Elctrns. 612-332-1325
MO St. Louis, Van Sickle Radio Elect. 314-621-5000
NJ Mt. Laurel, D.F. Assocs. 609-234-5324
NY Buffalo, Summit Distr. 716-884-3450
NC Charlotte, Dixie Elctrns. 704-377-4348
OH Columbus, Hughes Peters 614-294-5351
OK Tulsa, Altair 918-665-0523
SC Columbia, Dixie Radio 803-779-5332
TN Knoxville, Dixie Elctrns. 615-938-4131
TX Houston, Altair 713-462-2410
TX Richardson, Altair 214-231-5166
WA Seattle, Radar Elec. 206-282-2511
Can Willowdale, Ont., Electro Sonic 416-494-1666

GENERAL INSTRUMENT

CLARE DIVISION, General Instrument Corp., 3101 W. Pratt Blvd., Chicago, IL 60645, Tel: 312-262-7700, Telex: 210075; Empl.: 2400; *Sls. Mgr.:* Dermot Brereton; *Dist. Mgr.:* Dermot Brereton ..... **B•1284, 1326-1327**

Local Sales Offices & Reps

AL Huntsville, Electramark Assocs. 205-539-7040
AZ Scottsdale, Summit Sls. 602-998-4850
CA El Toro, Gen. Instr., Clare Div. 714-586-0650
CA San Jose, Ruppert Sls. & Engrg. 408-998-8717
CO Westminster, Western Region Mktg. .. 303-430-8883
CT Brookfield, Kanan Assocs. 203-775-0494
FL Altamonte Springs, Sls. Engrg. Concepts 305-682-0491
FL Deerfield Beach, Sales Engrg. Concepts 305-426-4601
GA Norcross, Electramark 404-446-7915
IL Arlington Heights, General Instr., Clare Div. 312-981-0630
IN Indianapolis, Schank Elctrn. Mktg. 317-842-6234
IA Cedar Rapids, Lorenz Sls. Inc. 319-377-4666
MA Needham Heights, Kanan Assocs. 617-449-7400
MO Bridgeton, Lorenz Sls. 314-997-4558
NE Lincoln, Lorenz Sls. 402-475-4660
NJ Palisades Park, Janco Technlg. 201-941-4008
NY Hicksville, General Instr., Clare Div. 516-933-3645
NY Rochester, Electra Sls. Corp. 716-427-1722
NY Syracuse, Electra Sls. Corp. 315-463-1248
NC Raleigh, Zucker Assocs. 919-782-8433
OH Columbus, Baehr, Greenleaf & Assoc. 614-486-4046
OH Dayton, Baehr-Greenleaf & Assocs. 513-439-0724
OH Lakewood, Baehr, Greenleaf & Assoc. 216-892-1770
OR Portland, Dussault & Assocs. 503-641-8780
PA Erdenheim, Omni Sls. 215-233-4600
PA Evans City, Baehr-Greenleaf & Assocs. 412-776-2151
TX Dallas, Electra Reps 214-248-3852
TX Houston, Electra Reps 512-339-1163
UT Salt Lake City, Western Region Mktg. 801-486-1646
VA Forest, Beacon North, Inc. 804-239-8486
VA Sterling, Beacon North, Inc. 703-478-2480
WA Seattle, Dussault & Assocs. 206-281-4025
Can Toronto, Ont., Generl Instr. Of Can., Ltd. 416-789-7831

CLARKE-HESS COMMUNICATIONS RESEARCH CORP., 220 West 19th St., New York, NY 10011, Tel: 212-255-2940, Telex: 971308 RAPID NYK ATT: CH, TWX: 710-582-2292 RAPID NYK ATT: CH; FSC No.: 34423; Empl.: 14 ..... **D•1228-1229**

Local Sales Offices & Reps

AL Huntsville, Teqstec 205-883-6699
CT Manchester, ICS Assocs. 203-649-3765
FL Cocoa Bch., Teqstec 305-783-3444
FL Ocala, Teqstec 904-347-1707
FL Palm Harbor, Teqstec 813-785-2276
GA Norcross, Teqstec 404-242-7215
IL Chicago, Pat Lind Elctrns. 312-726-3513
IN Indianapolis, Pat Lind Elctrns. 317-632-7444
MA Westford, ICS Assocs. 617-692-3545
MN Circle Pines, Pat Lind Elctrns. 612-786-5770
NY Tarrytown, IAG Assocs. 914-332-5290
NC Winston-Salem, Teqstec 919-723-8102
WI Milwaukee, Pat Lind Elctrns. 414-224-0146

CLAROSTAT MFG. CO., INC., 3 Washington St., Dover, NH 03820, Tel: 603-742-1120, Telex: MCI 6713344; FSC No.: 12697; Empl.: 600; *Sls. Mgr.:* A. Whitten, (OEM); *Dist. Mgr.:* H. E. Taylor

CLARY CORP., Precision Instrs. Div., 320 W. Clary Ave., San Gabriel, CA 91776, Tel: 818-287-6111, TWX: 910-589-3369; Empl.: 70; *Sls. Mgr.:* Al Hedges

CLAUSS CUTLERY CO., Alco Industries, 223 N. Prospect St, Fremont, OH 43420, Tel: 419-332-7344; Empl.: 90

CLEAN ROOM PRODS., 1800 Ocean Ave., Ronkonkoma, NY 11779-6528, Tel: 516-588-7000, Telex: 645151; Empl.: 110; *Sls. Mgr.:* Robert S. Kearton

CLEVELAND CRYSTALS, Box 17157, Euclid, OH 44117, Tel: 216-486-6100, TWX: 810-421-8031, FAX: 216-486-6103; FSC No.: 8K400; Empl.: 45; *Sls. Mgr.:* P. D. Marlowe

CLIFTON PRECISION, Litton Systems, Inc., Marple at Broadway, Clifton Hgts., PA 19018, Tel: 215-622-1000, TWX: 510-669-9782; FSC No.: 86197; Empl.: 1000; *Sls. Mgr.:* C.Scalies ..... **B•1171**

Local Sales Offices & Reps

AZ Phoenix, Clifton Precision 602-242-0910
CA Cupertino, Clifton Precision 408-996-7507
CA Norco, Clifton Precision 714-736-6515
CA San Clemente, Clifton Precision 714-492-6904
CA Woodland Hills, Clifton Precision 818-347-0603
FL Longwood, Boetto Corp. 305-331-1771
IA Cedar Rapids, Midwest Meridian 319-365-6561
MA W. Newton, Larcom Inc. 617-244-2053
MN Bloomington, PWC, Inc. 612-831-5999
MO St. Louis, Midwest Meridian 314-878-4441
NY Greenlawn, Reflex Elctrn. 516-549-1888
OH Fairborn, Midwest Meridian 513-879-7100
PA Clifton Heights, Eastern Sls. 215-622-1000
TX Austin, Carey, McMahill & Assocs. 512-255-1663
TX Garland, Carey, McMahill & Assocs. ... 214-681-1414
MI Grand Rapids, Midwest Meridian 616-698-7391

CLIMATRONICS, 140 Wilbur Pl., Bohemia, NY 11716, Tel: 516-567-7300, Telex: 5101007669; Empl.: 46; *Sls. Mgr.:* David Gilmore

CLIPLITE, See Visual Communications

CML MACARR DIV., Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217, Tel: 718-857-2400, Telex: 12-5327; FSC No.: 00062; Empl.: 100; *Sls. Mgr.:* Gary Mandell ..... **D•2043**

Local Sales Offices & Reps

WI Prembine, The Winn Agy. 715-324-6129
WA Tacoma, Bar-None Inds. 206-922-1489
MI Detroit, Bill Teplitz Associates 216-439-3265
OH Cincinatti, Teplitz Assocs. 513-481-1648
OH Cleveland, Teplitz Assocs. 216-439-3265
Can Montreal, Can-Rep. 514-933-6741

CMV SOFTWARE SPECIALISTS INC., 2720 W. 12th Street, Sioux Falls, SD 57104, Tel: 605-338-6645

COAST COIL CO., Coast Magnetics, 5333 W. Washington Blvd., Los Angeles, CA 90016, Tel: 213-936-6188, Telex: 686103 AMI SPACE ASA; FSC No.: 05254; Empl.: 50

COASTCOM, P.O. Box 27068, Concord, CA 94527, Tel: 415-825-7500, TWX: 910-481-5781; FSC No.: 415 682-2015; Empl.: 100; *Sls. Mgr.:* Rick Stroupe, VP Sls.

Local Sales Offices & Reps

CA Cupertino, Dan Balfe, Coastcom 408-730-9666
GA Lawrenceville, W. Larry Shaffer, Coastcom 404-266-4310
NJ Summit, Edward Schowalter, Coastcom 201-273-0093
TX Grandbury, Grady Gibson, Coastcom 817-573-4812

COAXIAL DYNAMICS, 15210 Industrial Parkway, Cleveland, OH 44135, Tel: 216-267-2233, Telex: 980630; Empl.: 36; *Sls. Mgr.:* R. J. Scott; *Dist. Mgr.:* J. R. Ittel

COBER ELECTRONICS, 102 Hamilton Ave., Stamford, CT 06902, Tel: 203-327-0003, TWX: 710-474-3371; FSC No.: 28909; Empl.: 100; *Sls. Mgr.:* Saul Haffner

CODAR TECHNOLOGY, INC., 1500 Kansas Ave., Bldg. 2E, Longmont, CO 80501, Tel: 303-776-0472, Telex: 4947090 Codar; Empl.: 18; *Sls. Mgr.:* D. Bradley

CODENOLL TECHNOLOGY CORP., 1086 N. Bwy., Yonkers, NY 10701, Tel: 914-965-6300, Telex: 646159; Empl.: 65; *Sls. Mgr.:* R.E. McInnis; *Dist. Mgr.:* E.H. Sakaguchi

CODI SEMICONDUCTOR, INC., 144 Market St., Kenilworth, NJ 07033, Tel: 201-298-0400, Telex: 844-796; FSC No.: 16352;19500; Empl.: 48; *Sls. Mgr.:* Joe LaBruna; *Dist. Mgr.:* Joe LaBruna

CODY ELECTRONICS, INC., 2284-C Ringwood Ave., San Jose, CA 95131, Tel: 408-432-7570; Empl.: 15; *Sls. Mgr.:* Scott Cody

COGNITRONICS, 25 Crescent St., Stamford, CT 06906, Tel: 203-327-5307, TWX: 710-474-3523; Empl.: 225; *Sls. Mgr.:* Vincent Harrison, Mike Novakowski

COHERENT COMMUNICATIONS SYS. CORP., 60 Commerce Dr., Hauppauge, NY 11788, Tel: 516-231-1550, Telex: 94-1439; Empl.: 175; *Sls. Mgr.:* Bertram J. Ralph

COHERENT GENERAL, INC., Picker Rd., Sturbridge, MA 01566, Tel: 617-347-2681, Telex: 95-1806; Empl.: 200; *Sls. Mgr.:* William H. Shiner

COHERENT, INC., 3210 Porter Dr., Palo Alto, CA 94304, Tel: 415-493-2111, Telex: 34-8304; Empl.: 1502; *Sls. Mgr.:* William Shiner/Paul Crosby

COILCRAFT, 1102 Silver Lake Rd., Cary, IL 60013, Tel: 312-639-2361, Telex: 216378, TWX: 910-651-2251, FAX: 312-639-2366; Empl.: 1200; *Sls. Mgr.:* Larry Thompson ..... **A•1233-1238**

Local Sales Offices & Reps

AZ	Lake Havasu City, T. J. Mktg.	602-453-3233
CA	San Jose, Westron	408-997-7332
FL	Lauderhill, Innovative Mktg.	305-485-6869
KS	Olathe, Advanced Tech. Sls.	913-782-8702
MA	Braintree, Coilcraft	617-848-9194
MI	Clark Lake, Dick Trull	517-529-9285
MO	St. Louis, Advanced Tech. Sls.	314-878-2921
NC	Raleigh, Rick Burns Assoc.	919-876-2224
TX	El Paso, Coilcraft	915-592-7891
VA	Lynchburg, M & S Mfg. Svcs.	801-272-5643
WA	Kirkland, DMI, Inc.	206-823-4798
Can	Oakville, Ont., Haltronics	800-387-7955

COIL-Q CORP., 340 Bronxville Rd., Bronxville, NY 10708, Tel: 914-337-4775; Empl.: 12

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COILTRONICS INC., 984 S.W. 13th Court, Pompana Beach, FL 33069, Tel: 305-781-8900, FAX: 305-782-4163; Empl.: 200; *Sls. Mgr.:* Lynn Hayden

the Colber Corporation

COLBER CORP., 26E Buffington St., Irvington, NJ 07111, Tel: 201-371-9500, TWX: 710-995-4416; Empl.: 50; *Sls. Mgr.:* Roberta Bryner ..... **A•1906-1907**

Local Sales Offices & Reps

IN	Fort Wayne, Walter W. Bieberich	219-432-2537
MI	Grosse Pointe Farms, Ed Walter	313-882-3746
TN	Fairview, Walter W. Bieberich	615-799-0120

COLE-HERSEE CO., 20 Old Colony Ave., Boston, MA 02127-2467, Tel: 617-268-2100, Telex: 94-0901; *Sls. Mgr.:* Wesley L. Peterson

COLE INSTRUMENT CORP

COLE INSTRUMENTS, 2650 S. Croddy Way, Santa Ana, CA 92704, Tel: 714-556-3100; Empl.: 50; *Sls. Mgr.:* P. Hanson ..... **B•1578**

Local Sales Offices & Reps

AL	Huntsville, Rakes Engrg. & Mktg.	205-533-3763
AZ	Scottsdale, Advent Comps.	602-481-0044
CA	Anaheim, Gabriel & Assocs.	714-666-0660
CA	Los Altos, Nickerson-Gray & Assocs.	415-941-5777
CT	Glastonbury, Barton Assocs.	203-633-9417
IL	Wheaton, Chadra Schilke & Assocs.	312-653-8126
KS	Merriam, Midwest Technical Sls.	913-236-8555
MD	Silver Spring, Carwithen Assocs.	301-589-9040
MA	Salem, Barton Asscos.	617-745-4310
MI	Birmingham, Forand Sls. Co.	313-644-0087
MN	Minneapolis, Voltage Control Sls.	612-553-1051
MO	St. Charles, Midwest Technical Sls.	314-441-1012
NJ	Garwood, E.R. Mertz & Assocs.	201-232-4643
PA	Broomall, TCA	215-353-2022
TX	Dallas, Control Components Inc.	214-458-8877

COLLINS AVIONICS DIVISIONS, Rockwell Intl., 400 Collins Rd. NE, Cedar Rapids, IA 52498, Tel: 319-395-1000, Telex: 464-421, TWX: 910-525-1321; Empl.: 4,325; *Sls. Mgr.:* R.N. Thorpe

Collmer Semiconductor, Inc.

COLLMER SEMICONDUCTOR, INC., 14368 Proton Rd., Dallas, TX 75244, Tel: 214-233-1589, TWX: 910-860-5462; Empl.: 60; *Sls. Mgr.:* Gene Uecker ..... **A•2145-2147**

Local Sales Offices & Reps

AL	Huntsville, MacKay, Smith & Assocs.	205-539-8000
CA	Mission Viejo, Collmer Semiconductor	714-582-2188
CA	San Jose, ComTech Mktg.	408-293-0894
CO	Golden, J. F. Hurlbut Co.	303-279-7796
CT	Madison, Omni-Rep.	203-421-4561
FL	Oldsmar, Boggs & Assocs.	813-855-1812
GA	Norcross, MacKay, Smith & Assocs.	404-449-7444
IL	Des Plaines, Electron Mktg. Corp.	312-298-2330
IN	Ft. Wayne, Arete Sls., Inc.	219-423-1478
IN	Indianapolis, Arete Sls. Inc.	317-882-4407
MA	Burlington, Omni-Rep.	617-245-4511
MN	Minneapolis, Loren Green Assocs.	612-571-6666
NJ	Nutley, Falk-Baker Assocs.	201-661-2430
NY	Buffalo, NRM Mktg. Group Inc.	716-634-4300
NY	Skaneateles, NRM Mktg. Grp. Inc.	315-685-8991
NC	Cary, MacKay, Smith & Assocs.	919-481-3800
NC	Charlotte, MacKay, Smith & Assocs.	704-372-1188
OH	Beachwood, Electronic Salesmasters, Inc.	216-831-9555
OR	Portland, Elctrn. Engrg. Sls.	503-639-3978
PA	Harrison City, NRM Mktg. Group Inc.	412-327-0858
PA	Hatboro, Electro Rep	215-674-4421
RI	Cumberland, Omni-Rep	401-333-2353
TX	Dallas, Blackburn Assocs.	214-750-8484
UT	Salt Lake City, J. F. Hurlbut Co.	801-595-8818
WA	Redmond, Elctrn. Engrg. Sls.	206-883-3374
WI	Waukesha, Electron Mktg. Corp.	414-547-1505

Local Distributors

IN	Carmel, Altex Elctrns., Inc.	317-848-1323
IL	Chicago, NEP Elctrns., Inc.	312-625-8400

COLORADO CRYSTAL CORP.

COLORADO CRYSTAL CORP., 2303 W. 8th St., Loveland, CO 80537, Tel: 303-667-9248; FSC No.: 33096; Empl.: 135; *Sls. Mgr.:* David Lind ..... **A•1351-1353**

Local Sales Offices & Reps

CA	Calabasas, Shel Schreiber Assocs.	805-497-3561
CA	Los Altos, Kolm Mktg. Assoc.	415-948-2635
IA	Cedar Rapids, Barnes Midwest Sls.	319-393-9790
KS	Overland Park, Barnes Midwest Sls.	913-469-9688
MA	Randolph, Bengal	617-961-4120
OR	Beaverton, L. D. Elctrns.	503-649-6177
TX	Austin, Oeler & Menelaides	512-453-0275
TX	Dallas, Oeler & Menelaides	214-361-8876
TX	Houston, Oeler & Menelaides	713-682-7001
WA	Spokane, L. D. Elctrns.	509-922-4883

COLORADO DATA SYSTEMS, INC., 3301 W. Hampden Ave., Unit C, Englewood, CO 80110, Tel: 303-762-1640, TWX: 910-933-0193; Empl.: 70; *Sls. Mgr.:* Louis J. Klahn, Jr.

Local Sales Offices & Reps

AZ	Phoenix, Odyssey 1	602-246-9951
NY	Rochester, Scientific Dvcs., New York, Inc.	716-334-2445
CA	Santa Clara, Proactive Mktg., Inc.	408-727-4044
CT	Mt. Carmel, Scientific Dvcs.-CT.	203-248-9361
PA	Springhouse, Pennsylvania Sci. Dvcs.	215-643-3335
WA	Bellevue, Showalter Instrs., Inc.	206-746-7970
MA	Waltham, Scientific Dvcs.-New Eng., Inc.	617-890-2252
MO	Maryland Heights, Dytec/South, Inc.	314-739-0665
Can	N. Vancouver, B.C., Jerome & Francis Co., Ltd.	604-986-1286
NJ	Teaneck, Scientific Dvcs. East, Inc.	201-837-1004
NM	Albuquerque, Odyssey 1	505-265-6645
CA	Santa Ana, Proactive Mktg.	714-966-0764
OH	Dayton, WKM, Inc.	513-434-7500
CO	Englewood, Odyssey 1	303-773-8176
TX	Dallas, Data Mktg. Assocs., Inc.	214-661-0300
FL	Melbourne, Saber Assocs., Inc.	800-327-0853
IL	Arlington Heights, Dytec/Central, Inc.	312-394-3380
MD	Rockville, Creative Mktg. Assocs., Ltd.	301-251-4100
MN	Minneapolis, Dytec Instruments, Inc.	612-831-7169
Can	Toronto, Ont., Multitest	416-665-6047

COLORADO VIDEO, INC., Box 928, Boulder, CO 80306, Tel: 303-444-3972, TWX: 910-940-3248, FAX: 303-449-5472; Empl.: 40; *Sls. Mgr.:* Jim Dole

COLORGRAPHIC COMMUNICATIONS CORP., New Peachtree Rd., P.O. Box 80448, Atlanta, GA 30366, Tel: 404-455-3921, Telex: 700574; Empl.: 50; *Sls. Mgr.:* H. Woody Pritchett

COLUMBIA CHASE CORP., HUMISEAL DIV., See HumiSeal Div.

COLUMBIA COMPONENTS, 9 Division St., Sidney, NY 13838, Tel: 607-563-3520; FSC No.: 59178; Empl.: 12; *Sls. Mgr.:* Helen Montren

COLUMBIA ELEC. MFG., 4519 Hamilton Ave. N.W., Cleveland, OH 44114, Tel: 216-361-8060; Empl.: 60; *Sls. Mgr.:* H. W. Sussman

COLUMBIA ELCTRN. CABLES DIV., See Carol Cable Co., Inc., Columbia Elctrn. Cables Div.

COLUMBIA RESCH. LABS., Macdade Blvd. & Bullens La., Woodlyn, PA 19094, Tel: 215-872-3900, TWX: 510-669-3625; FSC No.: 07571; Empl.: 95; *Sls. Mgr.:* Jack Sarty

COLUMBUS ELECTRIC MFG. CO., Switch Division, Route 3, Box 90, Piney Flats, TN 37686, Tel: 1-800-251-7828, Telex: 533090 CEMCO USA; Empl.: 160; *Sls. Mgr.:* John P. Lipscomb

COLUMBUS INSTRUMENTS, 950 N. Hague Ave., Columbus, OH 43204, Tel: 614-488-6176, Telex: 246514; *Sls. Mgr.:* Jan Czekajewski

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Local Sales Offices & Reps

AL	Huntsville, Montgomery Mktg., Inc.	205-830-0498
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Hadden Assocs.	619-565-9444
CA	Santa Clara, Westrep	408-988-8833
CO	Littleton, Lange Sls., Inc.	303-795-3600

CT Stamford, Circuit Sls. 203-322-0240
FL Altamonte Springs, Semtronics 305-831-3233
FL Clearwater, Semtronics 813-461-4675
GA Norcross, Montgomery Mktg., Inc. 404-447-6124
IL (Northern), Sumer, Inc. 312-991-8500
IN Ft. Wayne, Frank J. Campisano Co. ... 219-747-2633
IN Indianapolis, Frank J. Campisano 317-253-7651
IA Cedar Rapids, S & O Sls. 319-393-1845
MD Columbia, L. D. Lowery, Inc. 301-964-0225
MA Lexington, Circuit Sls. Co. 617-861-0567
MI Southfield, Rathsburg Assocs., Inc. 313-559-9700
MN Mendota Hgts., GHI Sls., Inc. 612-454-3086
MO Bridgetown, Cen Tech, Inc. 314-291-4230
MO Raytown, Cen Tech, Inc. 816-358-8100
NJ Springfield, F. F. Sylvester Assocs. 201-376-3324
NY Saugerties, Comair Rotron, Inc. 914-246-3615
NC Cary, Montgomery Mktg., Inc. 919-467-6319
OH Cincinnati, Frank J. Campisano Co. ... 513-574-7111
OH Cleveland, Components, Inc. 216-243-9200
OK Tulsa, Ammon & Rizos Co. 918-663-8788
OR Beaverton, Evergreen Mktg. Grp. 503-643-8020
PA Broomall, L. D. Lowery, Inc. 215-356-5300
TX Austin, Ammon & Rizos Co. 512-454-5131
TX Houston, Ammon & Rizzos Co. 713-781-6240
TX Richardson, Ammon & Rizos Co. 214-644-5591
UT Salt Lake City, Lange Sls., Inc. 801-487-0843
WA Seattle, Evergreen Mktg. Grp. 206-633-3160
WI Brookfield, Sumer, Inc. 414-784-6641
PR Hato Rey, Semtronics 809-766-0700
Can Hamilton, Ont., Cartwright/Southall Assocs., Inc. 416-528-0294
Can Montreal, PQ, McIntyre Agencies Ltd. 514-731-9617

Local Distributors

CA Cypress, Kierulff Elctrns. 818-341-2211
CA Garden Grove, Richey/Impact Elctrns. Ltd. 714-895-0060
CA South Gate, Cetec/Future 213-923-0811
IL Chicago, Newark Elctrns. 312-784-5100
MI Livonia, RS Elctrns. 313-525-1155
MN Minneapolis, Indl. Comps., Inc. 612-831-2666
NY Buffalo, Summit Distrs., Inc. 716-887-2800
NY Westbury, Schweber Elctrns. 516-334-7474
PA Philadelphia, Almo Elctrns., Inc. 215-698-4000
TX Dallas, Hall-Mark Elctrns. 214-553-4300
TX Ft. Worth, Allied Elctrns. 817-336-5401
WA Bellevue, Almac Elctrns. Corp. 206-643-9992
Can Montreal, Que., Prelco Elctrns., Ltd. 613-726-1800
Can Scarborough, Ont., Carsten Elctrns. ... 416-495-7705
Can Willowdale, Ont., Electrosonic 416-494-1666

COMARK CORP., 93 W St., P. O. Box 474, Medfield, MA 02052, Tel: 617-359-8161, Telex: 703156; Empl.: 50

COMATEL USA, INC., 87 Sand Pit Rd., Danbury, CT 06810, Tel: 203-797-9445, Telex: 643-011, FAX: 203-790-9298; *Sls. Mgr.:* Tim Papp

Local Sales Offices & Reps

CA San Diego, Alexander & Assocs. 619-566-2074
CA San Jose, West Engrg., Inc. 408-272-8881
FL Deerfield Beach, Newell-Hynes Assocs., Inc. 305-429-3207
IL Woodridge, Trend-Tronics, Inc. 312-985-0626
MA Newton, Normell Assocs. 617-969-5478
TX Dallas, Merino Sls. Co. 214-233-6002
WA Seattle, Demarest Assocs., Inc. 206-523-3210
Can St. Laurent, Que., Overseas Consulting & Sls. 514-331-0774

COMCLOK, INC., 1142 N. Gilbert St., Anaheim, CA 92801, Tel: 714-991-1580, 800-854-XTAL, TWX: 910-591-1892; Empl.: 27; *Sls. Mgr.:* Herb Plumhoff ..... **A•1354**

Local Sales Offices & Reps

AZ Scottsdale, Western High Tech Mktg. 602-949-0873
CA Arcadia, HMC 818-447-0958
MA Malden, J-K Assocs. 617-321-2922
NM Albuquerque, Western High Tech Mktg. 505-262-2461

Local Distributors

CA Sunnyvale, Target Elctrns. 408-734-5611

COMDATA CORP., 7900 N. Nagle Ave., Morton Grove, IL 60053, Tel: 312-470-9600, Telex: 4931765

COMLINEAR CORP., 4800 Wheaton Drive, Fort Collins, CO 80525, Tel: 303-226-0500, Telex: 45-0881; FSC No.: 62839; Empl.: 100; *Sls. Mgr.:* John Perzow

COMMUNICATION CABLES & CONNECTORS, The Dutton Co., 8255 Black Run Rd., Nashport, OH 43830, Tel: 614-828-2468; Empl.: 30; *Sls. Mgr.:* Don Ritterbusch; *Dist. Mgr.:* Don Ritterbusch

COMMUNICATIONS INSTRUMENTS, INC., Box 520, Fairview, NC 28730, Tel: 704-628-1711, Telex: 577436; FSC No.: 58614; Empl.: 450; *Sls. Mgr.:* R. McClinton ..... **B•1328-1333**

Local Sales Offices & Reps

AL Huntsville, Macro Mktg. Assoc. 205-883-9630
AZ Phoenix, CPS Assocs. 602-246-1097
CA Marina Del Ray, Spec Rep. 213-827-7767
CA Santa Clara, Ross Mktg. 408-988-8111
CO Denver, AKI Entprs. 303-388-4488
CT Ridgefield, Phoenix Sls. 203-438-9644
FL Oviedo, Conley & Assocs. 305-365-3283
IL Arlington Hts., NB Sls. 312-392-9499
IN Ft. Wayne, Denton Mktg. 219-486-0665/1264
IA Cedar Rapids, C. H. Horn & Assocs. .. 319-393-8703
KS Lenexa, Midwest Tech. Sls. 913-888-5100
MD Ellicott City, Doss Elctrns. 301-465-1336
MA Needham, Component Technlg., Inc. .. 617-449-8490
MI Grosse Pointe Park, Greiner Assocs., Inc. 313-499-0188
MN North Mankato, E.I. Microcircuits, Inc. 507-345-5786
NJ Englewood Cliffs, Masin-Esco 201-569-8868
NY Hauppauge, Masin-Esco 516-273-3500
NY Lynbrook, HLJ Comp. Tech. 516-599-2999
NY Syracuse, M. M. Hare Co. 315-457-6859
NC Raleigh, Goodwin Assocs. 919-878-8000
OH Cleveland, Arthur H. Baier Co. 216-461-6161
OH Dayton, Arthur H. Baier Co. 513-276-4128
OR Beaverton, Quest Mktg., Inc. 503-641-7377
TX Round Rock, Semco 512-244-3727
WA Bellevue, Quest Mktg. 206-747-9424
Can Montreal, Que., Empro Sls. Co. 514-341-6420
Can Toronto, Ont., Renmark Elctrns., Ltd. (Off. No. 1) 416-494-5445

Local Distributors

CA Los Angeles, Master Distrs. 213-452-1229
CA San Diego, Norstan Elctrns., Inc. 619-481-5602
CA San Jose, Cypress Elctrns. 408-945-8400
CA Santa Ana, Norstan Elctrns., Inc. 213-924-7651, 800-854-8344
CA Torrance, Cypress Elctrns. 213-533-6005
FL Orlando, T & T Prods., Inc. 305-857-2282
FL Oviedo, Dixie Sls. 305-365-5211
IL Chicago, Newark Elctrns. 312-784-5100
IL Palatine, Ohm Elctrns. 312-359-5500
KS Wichita, Airtechnics, Inc. 316-267-2849
MD Jessup, Treeko Sls., Inc. 301-792-0112
MD Owing Mills, Cameo Elctrns. Co., Inc. .. 301-363-6161
MI Livonia, R. S. Elctrns. 313-525-1155
MN Minneapolis, Merit Elctrns. 612-546-5383
NJ Fair Lawn, Relay Specialties 201-797-3313
NJ Hackensack, ACI Elctrns. Corp. 201-740-0334
NY Buffalo, Summit Distrs. 716-887-2800
NY Hauppauge, Sherburn Elctrns. 516-231-4300
NY Rochester, Simcona Elctrns. 716-328-3230
OH Dayton, Pioneer Elctrns. 513-236-9900
PA Philadelphia, Powell Elctrns. 215-365-1900
TX Dallas, Associated Aircraft Supp. Co., Inc. 214-331-4381
TX Stafford, Southwest Elctrns. 713-491-4900
WA Bellevue, Almac Elctrns. 206-643-9992
Can Montreal, Que., Ferro-Technique, Ltd. 514-341-3450

COMMUNICATION TECHNIQUES INC., 36 Route 10, East Hanover, NJ 07936, Tel: 201-884-2580, TWX: 710-986-8265; FSC No.: 53213; *Sls. Mgr.:* Louis R. Trummel

COMPAC™

COMPAC, 1320-13 Lincoln Ave., Holbrook, NY 11741, Tel: 516-585-3400, TWX: 510-227-1064; FSC No.: 62099; Empl.: 35; *Sls. Mgr.:* Peter C. Rao ..... **B•1579; C•1028-1031**

Local Sales Offices & Reps

GA Atlanta, EMA Inc. 404-448-1215
TX Dallas, Talo Products 214-644-6010
SC Greenville, EMA Inc. 803-233-4637
CA Westlake Village, CAL-Rep. 818-991-1940
AL Huntsville, EMA Inc. 205-837-7363
AZ Scottsdale, Territorial Mktg. 602-994-8665
CA Cupertino, Dura Elctrn. Sls. 408-255-2684
FL Melbourne, EMS Inc. 305-724-1027
IL Palatine, R-Tek 312-459-6170
IL Prospect Heights, R-Tek, Inc. 312-459-6170
IN Ft. Wayne, R-Tek, Inc. 219-432-8783
MA Haverill, L-K Assoc. 617-373-1313
MO St. Louis, Abrams & Assocs. 314-569-0447
NJ Haddonfield, Mills-Brown Assoc. 609-429-1005
NJ Sicklerville, Brown & Assocs. 609-629-2254
NY Utica, B. D. Hummel Co. 315-736-7821
NC Raliegh, EMA Inc. 919-847-8800
VA Fairfax, Schibley Assocs. 703-591-3008

Local Distributors

CA Cupertino, Elctrn. Resources 408-996-8858
NY Utica, B. D. Hummel Co. 315-736-7821

COMPACT POWER COMPANY, 17282 Orange Drive, Yorba Linda, CA 92686, Tel: 714-996-5826; *Sls. Mgr.:* Charles Lindberg ..... **D•2044**

COMPACT SOFTWARE, INC., 483 McLean Boulevard, Paterson, NJ 07504, Tel: 201-881-1200, Telex: 130073, FAX: 201-881-8361; *Sls. Mgr.:* Carmine D'Elio

COMPAR, D.G.W. Electronics Corporation, 85 Spy Ct., Markham, Ontario, Canada L3R 4Z4, Tel: 416-475-8500, Telex: 06-966600; *Sls. Mgr.:* Barb Bezener

COMPEX CORP., Taunton Professional Park, 238 Taunton Blvd., Medford, NJ 08055, Tel: 609-596-9388; Empl.: 24

Local Sales Offices & Reps

AZ Phoenix, Odyssey 1 602-246-8846
CA North Hollywood, Crown Elctrns., Inc. 213-877-3550
CA Saratoga, E. Reid Miller, Corp. 408-257-6927
NH Amherst, Callahan & Tremblay 603-883-9000
NJ Englewood, Cooper Assocs. 201-871-4985
NJ Morrestown, Stern Assocs. 609-234-0661
OH Lancaster, Cain-Forlaw Co., Inc. 614-654-4800
TX Dallas, Texas Avionics 214-363-6324
Can Neapean, Ont., Intrade Canada, Inc. ... 613-727-1272

COMPLEXX SYSTEMS, INC., Astrocom Corp., 4930 Research Dr., Huntsville, AL 35805, Tel: 205-830-4310; Empl.: 30; *Sls. Mgr.:* Kent Johnson; *Dist. Mgr.:* Bob Clacys

COMPLIANCE DESIGN INC., 593 Massachusetts Ave., Boxboro, MA 01719, Tel: 617-264-4668; *Sls. Mgr.:* Ira Barry

COMPONENT GENERAL, INC., 13620 Wright Cir., Tampa, FL 33625, Tel: 813-855-6655; Empl.: 30; *Sls. Mgr.:* James A. Cook

Local Sales Offices & Reps

CA Irvine, EBA 714-857-6079
CA Los Angeles, EBA 213-822-7510
CA Palo Alto, Mollard Mktg. 415-961-0456
DC Washington, M. Lader Co. 202-296-2497
MA Andover, Bee Assoc. 617-475-2124
MN Minneapolis, Comstrand 612-788-9234
MO Grandview, R. R. Burton 816-763-5385
NY Buffalo, Ed Westgren Assoc. 716-632-0011
NY New Rochelle, Robert Diamond Inc. .. 914-632-2828
PA Lafayette Hill, M. Lader Co. 215-825-3177
PA Murrysville, Pittsburgh Sls. Assoc. 412-327-3268
EXP CT, Stamford, Control Devices 203-322-7300

COMPONENT MFG. SVC., INC., 1 Component Park, W. Bridgewater, MA 02379, Tel: 617-580-0111, TWX: 710-390-1081; Empl.: 500; *Sls. Mgr.:* R. E. Owens; *Dist. Mgr.:* R. E. Owens ..... **C•1205**

COMPONENT RESEARCH CO. INC., 1655-26 St., Santa Monica, CA 90404, Tel: 213-829-3615, TWX: 910-343-6864; FSC No.: 12517;Multiple; Empl.: 230; *Sls. Mgr.:* Sylvia Kellerman ..... **A•1040-1073**

COMPONENTS CORP., 6 Kinsey Pl., Denville, NJ 07834, Tel: 201-627-0290; FSC No.: 26364; Empl.: 20; *Sls. Mgr.:* W. H. Gordon

Local Sales Offices & Reps

CA San Dimas, JPE Assocs. 714-541-2629
CA Santa Cruz, LeRep 408-458-0667
CT Bethany, The Reps. Corp. 203-393-0024
FL Orlando, EAB, Inc. 305-898-7444
IL Rolling Meadows, Heartland Tech. Mktg. 312-577-9222
MA Wellesley, The Reps. Corp. 617-237-6476
MI Brighton, Michigan Mktg. & Sls. 313-229-6218
MN Hopkins, S. J. Collins & Assocs. 612-933-7661
NJ New Brunswick, Synergy Sls. 201-828-5090
OH Worthington, The Dynel Co. 614-436-9452
OR Beaverton, LeRep 503-626-7978
Can Mississauga, Ont., ASG/Wilson Sls. 416-677-8200

Local Distributors

AL Decatur, MG Elctrns. & Equip. 800-633-3200
AZ Tempe, Control Design Supp. 602-829-7981
CA Anaheim, Control Design Supp. 213-802-2429
CA Los Angeles, Strassner Sls. Co. 213-242-8823
CA Manhattan Bch., Prime Electro Prods. 213-379-3642
CA San Carlos, Control Design Supp. 415-592-4808

FL Altamonte Springs, Control Design Supp. 305-788-3220
GA Stone Mtn., Control Design Supp. 404-979-3502
IL Genoa, Control Design Supp. 815-784-6519
IN Indianapolis, Control Design Supp. 317-788-0551
IA Marion, Control Design Supp. 319-373-2923
MA Northboro, Papi Supp. Co. 617-393-3127
MN Minneapolis, Control Design Supp. 612-721-1628
MO St. Louis, Control Design Supp. 314-426-3150
NJ Englewood, QC Elctrns. 201-569-0975
NY Mt. Vernon, QAR Indl. Elctrns. 914-699-2224
NC Charlotte, Control Design Supp. 704-588-4410
PA Malvern, Control Design Supp. 215-296-0150
TX Dallas, Control Design Supp. 214-358-0489
WI New Berlin, Control Design Supp. 414-784-1016

COMPONENTS DIV., Sangamo Weston, Inc., Box 128, Pickens, SC 29671, Tel: 803-878-6311, Telex: 57-0441, TWX: 810-397-2496; FSC No.: 00853; *Sls. Mgr.:* Bob Hand

COMPONENT SPECIALTIES CORP., 9143 E. La Rosa Dr., Temple City, CA 91780, Tel: 213-283-0015; FSC No.: 28984; Empl.: 45; *Sls. Mgr.:* D.R. Heins

COMPUCART, Versa Tec Corp., 107 N. Rome Ave., Tampa, FL 33606, Tel: 800-237-9024, 813-251-2431; Empl.: 25

COMPUTALKER, Compuvoice, Inc., 1119 Colorado Ave., Ste. 115, Santa Monica, CA 90401, Tel: 213-393-7781; Empl.: 5; *Sls. Mgr.:* Lloyd Rice; *Dist. Mgr.:* Lloyd Rice

COMPUTER AVIONICS, See CAC Microcircuits, Inc.

COMPUTER CABLE & PRODS., INC., Vertex Computer Cable & Products

COMPUTER COMPONENTS INC.

COMPUTER COMPONENTS, INC., 629 Fifth Ave., Pelham, NY 10803, Tel: 914-738-1611; FSC No.: 12965; Empl.: 25; *Sls. Mgr.:* G. Tsokris ..... **B•1334**

COMPUTER CONVERSIONS CORP., 6 Dunton Ct., E. Northport, NY 11731, Tel: 516-261-3300, TWX: 510-226-0448; FSC No.: 51086; Empl.: 100; *Sls. Mgr.:* S. J. Renard ..... **D•1142-1143**

Local Sales Offices & Reps
AR El Dorado, Industrial Controls Assoc. 501-862-2051
CA Cerritos, Foxco Equip. 213-921-3421
CA N. Hollywood, Crown Elctrns. 213-877-3550
CA San Carlos, Cymatix 415-592-8076
IL Westmont, GnH Sls. 312-654-2535
MA Brookline, Technology Prod. Grp. 617-731-0858
MA Brookline, Technology Prods. 617-731-0858
MI Newport, Industrial Sensors 313-289-3374
MI Newport, Industrial Sensors, Inc. 313-289-3374
MN Minneapolis, Busch Elctrns. 612-835-2044
MN Minneapolis, Busch Elec. 612-835-2044
NM Albuquerque, Fry-Gates 505-262-1525
NC Kanapolis, Bass & Assocs. 704-933-1762
NC Kannapolis, Bass & Assocs. 704-933-1762
OH Lakewood, NRS Control Dvcs. 216-228-2953
PA Ingoma, Greye Glass 412-366-6664
PA Ingomar, Greye Glass

COMPUTER DESIGN & APPLICATIONS INC., 411 Waverly Oaks Rd., Waltham, MA 02154, Tel: 617-647-1900, Telex: 232-2240; *Sls. Mgr.:* Thomas Goliash

COMPUTER DEVICES, 749 Middlesex Turnpike, Nutting Lake, MA 01865, Tel: 617-663-4980, Telex: 949398; Empl.: 60; *Sls. Mgr.:* Sandra R. Clark; *Dist. Mgr.:* Dick Leeman

COMPUTER DEVICES CORP., 63 Austin Blvd., Commack, NY 11725, Tel: 516-543-4220; Empl.: 50 ..... **A•1532**

Local Sales Offices & Reps
MD Baltimore, R. A. Wafer Assocs. 301-744-1133
EXP NY, New Rochelle, Montclair Elctrns. 914-576-1400

COMPUTER DYNAMICS SALES, 107 S. Main St., Greer, SC 29651, Tel: 803-877-8700; *Sls. Mgr.:* Kurt Priester

COMPUTER INSTRUMENTS, 100 Madison Ave., Hempstead, NY 11550, Tel: 516-483-8200, TWX: 510-222-4189; Empl.: 50; *Sls. Mgr.:* B. Peskin

COMPUTER MAINTENANCE CORP., 405 Murray Hill Pkwy, East Rutherford, NJ 07073, Tel: 201-896-0707, Telex: 132-158; Empl.: 73; *Sls. Mgr.:* Arthur Young

COMPUTER OPTICAL PRODUCTS, INC.
Subsidiary of Hathaway Corp

COMPUTER OPTICAL PRODS., INC., Sub. of Hathaway Corp., 9353 Eton Ave., Chatsworth, CA 91311-6910, Tel: 818-882-0424, Telex: 18-33-73-UD, FAX: 818-882-0492; Empl.: 150; *Sls. Mgr.:* Brian Gillespie ..... **B•1778**

Local Sales Offices & Reps
AL Huntsville, A.B. Andrews & Co., Inc. ... 205-539-6817
AZ Phoenix, Jarko Assocs. 602-243-4387
CA Laguna Bch., English Damco Sls. 714-837-3801
CA Santa Clara, Fahrner-Miller Assocs. ... 408-727-9800
CO Englewood, Dynatech, Inc. 303-773-2830
CT Wethersfield, Underwood Sls., Corp. .. 203-563-3046
FL Maitland, EIR, Inc. 305-660-9600
IL Addison, Vikeland Sls. 312-832-8425
IN Fort Wayne, Denton Mktg. 219-486-0665
MA Lowell, Underwood Sls. Corp. 617-256-8191
MN St. Paul, Vikeland Sls. 612-645-4647
NY Endicott, Noeth-Honsinger Assocs., Inc. 607-754-3214
NY Pittsford, Noeth-Honsinger Assocs., Inc. 716-586-9002
NC Research Triangle Park, A.B. Andrews & Co., Inc. 919-544-1762
OH Cincinnati, Stegman-Blaine Mktg., Inc. 513-729-1969
OH Cleveland, Stegman-Blaine Mktg., Inc. 216-475-1515
OH Vandalia, Stegman-Blaine Mktg., Inc. .. 513-890-7975
OR Beaverton, General Elctrns. 503-641-5288
TX Austin, R.F. Kimball Co., Inc. 512-443-5284
TX Houston, R.F. Kimball Co., Inc. 713-840-0590
TX Richardson, R.F. Kimball Co., Inc. 214-231-3447
UT Layton, Dynatech, Inc. 801-546-4837
VA Vinton, A.B. Andrews & Co., Inc. 703-890-1128
WA Renton, General Elctrns. 206-228-9505

COMPUTER PERIPHERALS INC., 2635 Labery Ct., Ste. 5, Newbury Pk., CA 91320, Tel: 805-499-5751, 800-854-7600, Telex: 759299CPI, FAX: 805-498-8848; *Sls. Mgr.:* Mike Shaw

COMPUTER POWER INC., 124 W. Main St., High Bridge, NJ 08829, Tel: 201-638-8000, 800-526-5088, Telex: 847481; FSC No.: 3643; Empl.: 185; *Sls. Mgr.:* J. Robert Hoeffler; *Dist. Mgr.:* J. Robert Hoeffler

COMPUTER PRODUCTS™
POWER CONVERSION GROUP

COMPUTER PRODS. INC., Power Conversion Grp., 2900 Gateway Drive, Pompano Bch., FL 33069-4803, Tel: 305-974-5500, TWX: 510-956-3098; FSC No.: 62125; Empl.: 1100; *Sls. Mgr.:* Norm S. Berkowitz; *Dist. Mgr.:* Sydele Petch ..... **D•1092-1094, 1482, 1603-1628, 1637-1638**

Local Sales Offices & Reps
AL Huntsville, Electro-Mech Sls. Engrg. ... 205-880-0592
AZ Scottsdale, Summit Sls. 602-998-4850
CA Los Angeles, Wiley Co. 213-666-1611
CA Ontario, Bytewide Mktg., Inc. 416-675-1868
CA Santa Clara, Criterion Mfrs. Reps. 408-988-6300
CO Electromech Sls. Engrg. Co. 303-695-8903
FL Oviedo, Conley & Assocs. 305-365-3283
GA Atlanta, Electro-Mech Sls. Engrg. 404-447-6478
IL Itasca, Janus, Inc. 312-250-9650
IN SAI Mktg. Corp. 317-241-9276
KS Overland Park, Ensco-Rep., Inc. 316-683-1070
MD Columbia, Professional Reps. 301-992-7460
MA Woburn, Alpha Omega Sls. 617-933-0237
MI Brighton, SAI Mktg. Corp. 313-227-1518
MN Minnieapolis, Stan Clothier Co. 612-944-3456
MO Maryland Hgts., Ensco-Rep., Inc. 314-423-3935
NJ Hasbrouch Hgts., Comp-Tech. Sls. 201-228-7400
NY Binghamton, Empire Tech. Assocs. ... 607-772-0651
NY Great Neck, F & F Metro, Inc. 516-482-4080
NC Zucker Assocs., Inc. 919-782-8433
NC Raleigh, Zucker Assocs., Inc. 919-782-8433
OH SAI Mktg. Corp. 614-876-1443
OH SAI Mktg. Corp. 216-751-3633
OH SAI Mktg. Corp. 513-435-3181
OK Ammon & Rizos 918-663-8788
OR Aloha, Micro Sls. 503-642-1818
PA Erdenheim, Omni Sls., Inc. 215-233-4600
TN Electromech Sls. Engrg. Co. 615-753-2964
TX Ammon & Rizos 713-781-6240
TX Ammon & Rizos 512-454-5131
TX Richardson, Ammon & Rizos 214-644-5591
UT Salt Lake City, Electrodyne, Inc. 801-486-3801
WA Bellevue, Micro Sls., Inc. 206-451-0568
WI Milwaukee, Janus, Inc. 414-542-7575
Can Lachine,Quebec, Bytewide Mktg., Inc. 514-636-4121
Can West Vancouver B.C., Blakewood Elctrns. Sys., Inc. 604-261-8099

Local Distributors
AL Huntsville, Marshall Inds. 205-881-9235
AL Huntsville, Schweber Elctrns. 205-895-0480
AZ Phoenix, Schweber Elctrns. 602-997-4874
AZ Tempe, Anthem Elctrns. 602-966-6600
AZ Tempe, Bell Inds. 602-996-7800
AZ Tempe, Marshall Inds. 602-968-6181
CA Canoga Park, Schweber Elctrns. 818-999-4702
CA Chatsworth, Anthem Elctrns. 818-700-1000
CA Chatsworth, Marshall Inds. 818-407-4100
CA El Monte, Marshall Inds. 818-442-7204
CA Garden Grove, Bell Inds. 714-220-0681
CA Gardena, Bell Inds. 213-515-1800
CA Gardena, Schweber Elctrns. 213-327-8409
CA Irvine, Anthem Elctrns. 714-768-4444
CA Irvine, Marshall Inds. 714-458-5395
CA Irvine, Schweber Elctrns. 714-863-0200/213-537-4321
CA Los Angeles, Bell Inds. 213-826-6778
CA Milpitas, Marshall Inds. 408-943-4600
CA Milpitas, Power Systems Distrs. 408-263-1063
CA N. Hollywood, B. J. Wolfe Entprs. 213-877-5518
CA Rancho Cordova, Marshall Inds. 916-635-9700
CA Roseville, Bell Inds. 916-969-3100
CA Sacramento, Anthem Elctrns. 916-922-6800
CA Sacramento, Schweber Elctrns. 916-929-9732
CA San Diego, Anthem Elctrns. 619-453-9005
CA San Diego, Bell Inds. 619-268-1277
CA San Diego, Marshall Inds. 619-578-9600
CA San Diego, Schweber Elctrns. 619-450-0454
CA San Jose, Anthem Elctrns. 408-295-4200
CA San Jose, Schweber Elctrns. 408-916-7171
CA Sunnyvale, Bell Inds. ... 408-734-1100/408-773-1100
CA Thousand Oaks, Bell Inds. 805-499-6821
CO Denver, Marshall Inds. 303-427-1818
CO Englewood, Anthem Elctrns. 303-790-4500
CO Englewood, Schweber Elctrns. 303-799-0258
CO Thornton, Marshall Inds. 303-451-8383
CO Wheat Ridge, Bell Inds. 303-424-1985
CT Danbury, Schweber Elctrns. 203-748-7080
CT Meriden, Lionex Corp. 203-237-2282
CT Milford, R. C. Comps. 203-847-0006
CT Wallingford, Marshall Inds. 203-265-3822
FL Altamonte Springs, Schweber Elctrns. 305-331-7555
FL Ft. Lauderdale, Marshall Inds. 305-928-0661
FL Largo, Bell Inds. 813-541-4434
FL Orlando, Marshall Inds. 305-841-1878
FL Ovieda, Aztech Elctrns. 305-365-2241
FL Pompano Bch., Schweber Elctrns. 305-977-7511
FL St. Petersburg, Marshall Inds. 813-576-1399
GA Norcross, Bell Inds. 404-662-0923
GA Norcross, Marshall Inds. 404-923-5750
GA Norcross, Schweber Elctrns. 404-449-9170
IL Elk Grove, Bell Inds. 312-640-1910
IL Elk Grove, Schweber Elctrns. 312-364-3750
IL Schaumburg, Marshall Inds. 312-490-0155
IL Urbana, Bell Inds. 217-328-1077
IN Fort Wayne, Bell Inds. 219-423-3422
IN Indianapolis, Bell Inds. 317-634-8202
IN Indianapolis, Marshall Inds. 317-297-0483
IA Cedar Rapids, Bell Inds. 319-395-0730
IA Cedar Rapids, Schweber Elctrns. 319-373-1417
KS Lexena, Marshall Inds. 913-492-3121
KS Overland Park, Schweber Elctrns. 913-492-2922
MD Columbia, Aztech Elctrs. 301-995-6800
MD Columbia, Lionex Corp. 301-964-0040
MD Gaithersburg, Marshall Inds. 301-840-9450
MD Gaithersburg, Schweber Elctrns. 301-840-5900
MA Bedford, Schweber Elctrns. 617-275-5100
MA Wilmington, Lionex Corp. 617-657-5170
MA Wilmington, Marshall Inds. 617-658-0810
MA Wilmington, RC Comps. 617-273-1860
MA Winchester, Bell Inds. 617-729-5800
MI Ann Arbor, Bell Inds. 313-971-9093
MI Livonia, LWC Distrs. 313-464-7700
MI Livonia, Marshall Inds. 313-525-5850
MI Livonia, Schweber Elctrns. 313-525-8100
MN Edina, Schweber Elctrns. 612-941-5280
MN Plymouth, Marshall Inds. 612-559-2211
MO Earth City, Schweber Elctrns. 314-739-0526
NH Hudson, Bell Inds. 603-882-1133

NH	Manchester, Schweber Elctrns.	603-625-2250
NJ	Fairfield, Lionex Corp.	201-227-7960
NJ	Fairfield, Marshall Inds.	201-882-0320
NJ	Fairfield, Schweber Elctrns.	201-227-7880
NJ	Mt. Laurel, Marshall Inds.	609-234-9100
NM	Albuquerque, Bell Inds.	505-292-2700
NY	Hauppauge, Lionex Corp.	516-273-1660
NY	Hauppauge, Marshall Inds.	516-273-2424
NY	Johnson City, Marshall Inds.	607-798-1611
NY	Rochester, Marshall Inds.	716-235-7620
NY	Rochester, Schweber Elctrns.	716-424-2222
NY	Westbury, Schweber Elctrns.	516-334-7474
NC	Raleigh, Century Elctrns.	919-782-2116
NC	Raleigh, Marshall Inds.	919-878-9882
NC	Raleigh, Schweber Elctrns.	919-876-0000
OH	Beechwood, Schweber Elctrns.	216-464-2970
OH	Dayton, Bell Inds.	513-435-8660/513-434-8231
OH	Dayton, Marshall Inds.	513-236-8088
OH	Dayton, Schweber Elctrns.	513-439-1800
OH	Solon, Marshall Inds.	216-248-1788
OK	Tulsa, Norvell Elctrns.	918-254-8606
OK	Tulsa, Schweber Elctrns.	918-622-8000
OR	Beaverton, Bell Inds.	503-643-1114
OR	Beaverton, Marshall Inds.	503-644-5050
OR	Lake Oswego, Anthem Elctrns.	503-684-2661
PA	Horsham, Lionex Corp.	215-443-5150
PA	Horsham, Schweber Elctrns.	215-441-0600
PA	Norristown, Century Elctrn. Comps.	215-631-5400
PA	Pittsburg, Schweber Elctrns.	412-782-1600
PA	Pittsburgh, Marshall Inds.	412-963-0441
TN	Nashville, Bell Inds.	615-367-4400
TX	Austin, Marshall Inds.	512-837-1991
TX	Austin, Norvell Elctrns.	512-837-5555
TX	Austin, Schweber Elctrns.	512-458-8253
TX	Carrollton, Marshall Inds.	214-233-5200
TX	Dallas, Norvell Elctrns.	214-233-0020
TX	Dallas, Schweber Elctrns.	214-661-5010
TX	Houston, Marshall Inds.	713-895-9200
TX	Houston, Norvell Elctrns.	713-777-1666
TX	Houston, Schweber Elctrns.	713-784-3600
TX	Richardson, Bell Inds.	214-690-0466
UT	Salt Lake City, Anthem Elctrns.	801-973-8555
UT	Salt Lake City, Bell Inds.	801-972-6969
UT	Salt Lake City, Marshall Inds.	801-485-1551
WA	Bellevue, Bell Inds.	206-747-1515
WA	Bellevue, Marshall Inds.	206-747-9100
WA	Redmont, Anthem Elctrns.	206-881-0850
WI	Brookfield, Marshall Inds.	414-797-8400
WI	Brookfield, Schweber Elctrns.	414-784-9020
WI	Waukesha, Bell Inds.	414-547-8879
Can	Brampton, Ont., Zentronics	416-451-9600
Can	Calgary, Alta., Future Elctrns.	403-235-5325
Can	Calgary, Alta., Zentronics	403-272-1021
Can	Downsview, Ont., Future Elctrns.	416-638-4771
Can	Edmonton, Alta., Future Elctrns.	403-438-2858
Can	Montreal, Que., Zentronics	514-737-9700
Can	Ottawa, Ont., Future Elctrns.	613-920-8313
Can	Ottawa, Ont., Zentronics	613-226-8840
Can	Pointe Claire, Que., Future Elctrns.	514-694-7710
Can	Richmond, B.C., Zentronics	604-273-5575
Can	Vancouver, B.C., Future Elctrns.	604-438-5545
Can	Winnipeg, Mani., Future Elctrns.	204-339-0554
Can	Winnipeg, Mani., Zentronics	204-694-1957

COMPUTER SYSTEM ASSOCS., 7564 Trade St, San Diego, CA 92121, Tel: 619-566-3911, Telex: 333693; Empl.: 15; *Sls. Mgr.:* Patricia Chouinard; *Dist. Mgr.:* Patricia Chovinard

COMPUTER SYSTEMS PRODUCTS, 740 Washington Ave N, Minneapolis, MN 55401, Tel: 612-338-0995, 800-422-2537, FAX: 612-338-1512; Empl.: 30+; *Sls. Mgr.:* Dave Olson; *Dist. Mgr.:* Gary Doan

COMPUTER TERMINAL SYSTEMS, INC., 75 Mall Drive, Commack, NY 11725-5703, Tel: 516-864-5260, Telex: 291411, FAX: 516-864-5878; Empl.: 50; *Sls. Mgr.:* Paul Onish

COMPUTERWARE, INC., 8480-I Tyco Rd., Vienna, VA 22180, Tel: 703-821-8200; Empl.: 18; *Sls. Mgr.:* Betsy Henderson

COMPUTERWISE, 302 N. Winchester, Olathe, KS 66062, Tel: 913-829-0600, Telex: 705337; Empl.: 20; *Sls. Mgr.:* William W. Brown; *Dist. Mgr.:* William W. Brown

COMPUTRON DISPLAY SYSTEMS, XCEL CORPORATION, See Digitran Co., Xcel Corporation

COMSPEC INC., 10700 Hammerly, Suite 120, Houston, TX 77043, Tel: 713-461-4487; Empl.: 15; *Sls. Mgr.:* T. A. Paine; *Dist. Mgr.:* T. A. Paine

COMSTRON CORP., 10 Hub Dr., Melville, NY 11747, Tel: 516-756-1100, TWX: 310-497-3525, FAX: 516-756-1167; Empl.: 120 ..... **A•1355, 1651; D•1230-1231**

Local Sales Offices & Reps

AL	Huntsville, W. A. Brown Instrs.	205-883-8660
AZ	Phoenix, Zeus Elctrns.	602-263-6022
CA	Anaheim, Blair Assocs.	714-220-1201
CA	Mtn. View, Peninsula Tech. Sls.	415-965-3636
CA	Santa Clara, Ward Davis Assocs.	408-245-3700
CA	Woodland Hills, Southern CA Tech. Sls.	818-704-9087
CO	Denver, Zeus Elctrns.	303-477-5161
FL	Clearwater, W. A. Brown Instrs., Inc.	305-799-4830
FL	Ft. Lauderdale, W. A. Brown Instrs., Inc.	305-776-6661
FL	Melbourne, W. A. Brown Instrs., Inc.	305-723-0766
FL	Orlando, W. A. Brown Instrs., Inc.	305-425-5505
FL	Tampa, W. A. Brown Instrs., Inc.	813-963-7735
GA	Marietta, Comstron/Southeast	404-973-3325
GA	Norcross, W. A. Brown Instrs., Inc.	404-441-2980
IL	Arlington Hgts., Dytec Central	312-394-3380
IN	Indianapolis, Dytec Central	317-297-5988
KS	Lenexa, Dytec South	913-888-0215
LA	Mandeville, W. A. Brown Instrs., Inc.	504-626-9701/9702
MD	Rockville, Creative Mktg. Assocs.	301-251-4100
MA	Lexington, R.J. Sickles Assocs.	617-862-5100
MI	Madison Hgts., WKM Assocs.	313-588-2300
MN	New Hope, Baltz Assocs.	612-546-8520
MO	Maryland Hgts., Dytec South	314-739-0665
NJ	Teaneck, Sci. Dvcs. East	201-837-1004
NM	Albuquerque, Zeus Elctrns.	505-256-9831
NY	Melville, Carnes Assocs.	516-694-1600
NC	Durham, W. A. Brown Instrs., Inc.	919-479-5200
OH	Dayton, WKM Assocs., Inc.	513-434-7500
OH	Independence, WKM Assocs., Inc.	216-524-5930
PA	Pittsburgh, WKM Assocs., Inc.	412-892-2953
PA	Springhouse, Pennsylvania Sci. Dvcs., Inc.	215-643-3335
TN	Knoxville, W. A. Brown Instrs., Inc.	813-963-7735
UT	Salt Lake City, Zeus Elctrns., Inc.	801-534-0503
WA	Bellevue, Arva Hudson, Inc.	206-455-0773
WI	Brookfield, Dytec Central, Inc.	414-792-0320
Can	Ottawa, Ont., AIM Elctrns.	613-722-8286

COMTECH MICROWAVE CORP., Comtech Corp., 63 Oser Ave., Hauppauge, NY 11788, Tel: 516-435-4646, Telex: 971403 COMMIC HAUP; FSC No.: 61381; *Sls. Mgr.:* M. Javits

COM/TECH SYSTEMS, 505 Eighth Ave., New York, NY 10018, Tel: 212-594-5377; Empl.: 10

COMTEC INFORMATION SYSTEMS, INC., 53 John St., Cumberland, RI 02864, Tel: 401-724-8500, TWX: 710-387-1171; Empl.: 75; *Sls. Mgr.:* R. A. Hamilton

CONCEPT INDUSTRIES, App-Rep, Inc., 3641 San Gabriel River Pkwy., Pico Rivera, CA 90660, Tel: 213-699-0918, 800-255-2666, Telex: 883123; Empl.: 15; *Sls. Mgr.:* Rosemary Martinez; *Dist. Mgr.:* Kathy Sawyer

CONCORD ELECTRONICS CORPORATION, 30 Great Jones St., New York, NY 10012, Tel: 1-212-777-6571, TWX: 710-581-4930, FAX: 1-212-995-0161; FSC No.: 18310; Empl.: 225; *Sls. Mgr.:* Josie Wheaton ..... **C•1206-1207, 1697**

CONDENSER PRODUCTS, 2131 Broad St, Brooksville, FL 33512, Tel: 904-796-3561; Empl.: 30; *Sls. Mgr.:* Bill Mason

CONDOR INC.
D.C. POWER SUPPLIES

CONDOR D.C. POWER SUPPLIES, INC., 2311 Statham Pkwy., Oxnard, CA 93033, Tel: 805-486-4565,, Telex: 910-333-0681; Empl.: 250; *Sls. Mgr.:* Dan Horan, VP Mktg.; *Dist. Mgr.:* Donna Ellis ..... **D•1640-1659**

Local Sales Offices & Reps

AZ	Phoenix, CPS Assocs. Inc.	602-246-1097
CA	Brea, Masco Elctrns.	714-529-0866
CA	Santa Clara, Nova-Tronix	408-727-9530
CO	Denver, AKI Entprs.	303-388-4488
GA	Roswell, Action Comp. Sls.	404-998-7227
IL	Schaumberg, Engrg. Prods.	312-882-7640
IN	Greenfield, Engrg. Prods.	317-894-7156
IA	Cedar Rapids, Palatine	319-365-8071
MA	Lexington, Hathaway Elctrns.	617-861-7010
MI	Southfield, L. H. Dickelman	312-353-8210
MN	Edina, Engrg. Prods.	612-835-9022
MO	Blue Springs, Palatine	816-229-4007
NJ	Palmyra, Eltron Sls.	609-866-3866
NY	Pittsford, C. W. Beach	716-586-3200
NY	Yonkers, Sonkin Assocs.	914-968-8282
OH	Cincinnati, Stegman Blaine	513-729-1969
TX	Bedford, W. Pat Fralia & Assocs.	817-267-3577
UT	Salt Lake City, R2 Mktg.	801-595-0631
Can	N. Vancouver, BC, Jerome & Francis	604-986-1286

Local Distributors

AL	Huntsville, T.E. Southeast	205-830-0808
AZ	Phoenix, Aerospace S.W.	602-582-2779
CA	Chatsworth, Diplomat	818-700-8700
CA	Costa Mesa, FLW	714-751-7512
CA	Fullerton, Power Plus	714-870-1350
CA	Glendale, Diplomat	818-841-4573
CA	Hayward, FLW	415-786-9070
CA	Sunnyvale, Diplomat	408-737-0204
CA	Sunnyvale, Sierra West	408-747-1188
FL	Clearwater, Diplomat	813-443-4514
FL	Ft. Lauderdale, Allied	305-486-0500
FL	Ft. Lauderdale, Diplomat	305-974-8700
GA	Decator, Allied	404-377-3555
IL	Elgin, Allied	312-697-8200
IL	Schaumberg, Engrg. Prods.	312-882-7640
MD	Columbia, Diplomat	301-995-1226
MD	Columbia, Vantage	301-621-8555
MD	Marlow Hgts., Allied	301-423-0161
MD	Wheaton, Brimberg Sls.	301-946-2760
MA	Billerica, Diplomat	617-667-4670
MA	Wilmington, Allied	617-942-0150
MI	Ann Arbor, McNaughton-McKay	313-995-9515
MI	Madison Heights, McNaughton-McKay	313-399-7500
MN	Eden Prarie, Cassidy	612-944-0100
MN	Edina, Engrg. Prods.	612-835-9022
MN	Minneapolis, Aerospace Comp. Prod.	612-884-4725
NJ	Totowa, Diplomat	201-785-1830
NY	Buffalo, Summit Distr.	716-887-2800
NY	Melville, Diplomat	516-454-6334
NY	Yonkers, Kintronics	914-968-7736
TX	Carrollton, Diplomat	214-980-1888
TX	Fort Worth, Allied Elctrns.	817-336-5401
UT	Salt Lake City, Diplomat	801-486-4134
WA	Bellevue, Al Smith Co.	206-746-6770
WA	Seattle, Allied	206-547-2827
Can	Toronto, Ont., Duncan Inst. Ltd.	416-742-4448

CONDOR PACIFIC INDS., INC., 8053 Deering Ave., Canoga Park, CA 91304, Tel: 818-347-8331, Telex: 65-1442, FAX: 818-713-0162; Empl.: 70

CONDOR SYSTEMS, INC., 2133 Branham Lane, San Jose, CA 95124, Tel: 408-371-9580, Telex: 184819 Systems SANTA; FSC No.: 62065; Empl.: 120; *Sls. Mgr.:* Dick Keenly; *Dist. Mgr.:* Ed Brown

CONDUCTIVE RUBBER TECHNLG., 1235 Coast Village Rd., Santa Barbara, CA 93108, Tel: 805-969-5805, Telex: 658-305

CONFORMING MATRIX, Box 5126, Pt. Pl. Sta., Toledo, OH 43611, Tel: 419-729-3777; Empl.: 35

CONKLIN INSTRUMENT CORP., West Rd., Pleasant Valley, NY 12569, Tel: 914-635-2136; FSC No.: 914-635-2510; Empl.: 75; *Sls. Mgr.:* Tom Dolan

CONNECT-AIR INTERNATIONAL, INC., 50 37th St. N.E., Auburn, WA 98002, Tel: 206-939-4880, FAX: 206-939-4882; Empl.: 50; *Sls. Mgr.:* Ron Jones

CONNECTICUT HARD RUBBER CO., See CHR Inds.

CONNECTICUT MICROWAVE CORP., 106 Powder Mill Rd., Box 389, Canton, CT 06019, Tel: 203-693-4247; FSC No.: 50974; Empl.: 16; *Sls. Mgr.:* Michael DePalo

CC®

CONNECTOR CORP., 6025 N. Keystone Ave., Chicago, IL 60646, Tel: 312-539-3108, TWX: 910-221-6059; *Sls. Mgr.:* Diane Racana ..... **C•1208-1209**

CONNECTOR INDUSTRIES OF AMERICA DIV., Microdot Mfg., 639 N. Wayne, Cincinnati, OH 45215, Tel: 513-733-3680; FSC No.: 32076; Empl.: 35; *Sls. Mgr.:* K. C. Neal

CONNOR-WINFIELD CORP., 114 W. Washington St, Box L, W. Chicago, IL 60185, Tel: 312-231-5270, Telex: 270244, FAX: 312-231-3418; FSC No.: 21022; Empl.: 35; *Sls. Mgr.:* John Hoag ..... **A•1356-1359**

Local Sales Offices & Reps

AL	Huntsville, Reynolds & Assocs.	205-881-9362
CA	Agoura Hills, C.D.H. Assocs.	818-707-1970
CA	Los Altos, Frauman Assocs.	415-941-0660
FL	Melbourne, Reynolds & Assocs.	305-259-7000

CONOLOG CORP., 5 Columbia Rd., Somerville, NJ 08876, Tel: 201-722-8081, Telex: 833281, TWX: 710-480-9340

CONRAC DISPLAY PRODUCTS GRP., 600 N. Rimsdale Ave., Covina, CA 91722, Tel: 818-966-3511, Telex: 67-0437; Empl.: 450; *Sls. Mgr.:* William Ems, Dir. of Sls.; *Dist. Mgr.:* Scott Newton, Dir. of Var. Sls.

CONSOLIDATED CONTROLS, 15 Durant Ave., Bethel, CT 06801, Tel: 203-743-6721, Telex: 969615, TWX: 710-456-0446; FSC No.: 02750; Empl.: 926; *Sls. Mgr.:* A.F. Jakubauskas

CONSOLIDATED ELECTRONIC WIRE & CABLE, 11044 King St., Franklin Park, IL 60131-1412, Tel: 312-455-8830, TWX: 910-227-1705, FAX: 312-455-8837; FSC No.: 73612; Empl.: 79; *Sls. Mgr.:* Karl Rankin; *Dist. Mgr.:* Steve Boynton ..... **C•1835-1843**

Local Sales Offices & Reps

AL	Mobile, Hollingsworth & Still	205-344-1641
AZ	Tempe, C.T. Carlberg & Assocs.	602-277-2808
CA	(So.) Downey, Buffa Co., Inc.	213-923-4618
CA	San Francisco, Technical Sls. Assocs.	415-467-1434
CO	Golden, Candal, Inc.	303-654-6626
FL	Orlando, C & S Sls.	305-894-5232
IL	Highland Pk, Bransky Sls.	312-433-2375
IN	Bloomington, Repptronics	812-334-0383
IA	Cedar Rapids, R. W. Kunz & Assocs.	319-396-5386
KS	Prairie Village, R. W. Kunz & Assocs.	913-648-3535
LA	Slidell, S. L. Welch & Assocs.	601-932-5534
MI	Warren, Burcaw & Assocs.	313-573-4605
MN	Minneapolis, Microelectronic Sls.	612-829-0948
MS	Jackson, S. L. Welch & Assocs.	601-932-5534
MO	St. Louis, R. W. Kunz & Assocs.	314-966-4977
NM	Albuquerque, C.T. Carlberg & Assocs.	505-888-3883
NY	Buffalo, NRM Mktg. Group	716-634-4300
NY	Skaneateles, NRM Mktg. Group	315-685-8991
NY	Whitestone, Jack Brown Elctrns.	718-767-6319
OH	Beachwood, Elctrn. Salesmasters, Inc.	216-831-9555
OR	Milwaukie, Comtec Intl.	503-654-6626
PA	Birchrunville, Jadelectronic Assocs.	215-827-7122
WA	Bellevue, Comtec Intl.	206-453-1189
WI	Waukesha, Brainard-Wilson Mktg.	414-797-7940
EXP	Plainview,NY, Morhan Exporting Corp.	516-293-5582

Local Distributors

CA	Redwood City, HDB Elctrns.	415-368-1388

CONSOLIDATED RESISTANCE CO. AMERICA, 222 Lake Ave., Yonkers, NY 10701, Tel: 914-YO3-5900; Empl.: 20

CONSOLINK CORP., 1275 S. Sherman Dr., Longmont, CO 80501, Tel: 303-651-2014, TWX: 910-320-0786; Empl.: 40; *Sls. Mgr.:* Dan Zec

CONTACT, INC., 5 Elm Ave., Hudson, NH 03051, Tel: 603-883-7708; FSC No.: M07015; Empl.: 11; *Sls. Mgr.:* T. Foresta; *Dist. Mgr.:* R. Reid

CONTACT EAST, 335 Willow St. S., P.O. Box 786, N. Andover, MA 01845, Tel: 617-682-2000, Telex: 383088, FAX: 617-688-7829; *Sls. Mgr.:* Richard Sullivan

CONTACT ELECTRONICS, INC., 30 Plymouth St, Fairfield, NJ 07006, Tel: 201-575-7660, 800-221-1451, Telex: 130-216; Empl.: 50; *Sls. Mgr.:* Thomas E. Bodnar; *Dist. Mgr.:* Jaime N. Korosler

CONTINENTAL ELECTRONICS, Division of Varian Associates, Inc., P.O. Box 270879, Dallas, TX 75227, Tel: 214-381-7161, Telex: 73-398; FSC No.: 52151; Empl.: 425; *Sls. Mgr.:* R. L. Floyd, Domestic Broadcast

CONTINENTAL SPECIALTIES CORP., See Global Specialties Corp.

CONTINENTAL WIRE & CABLE, Gulton Rd., P. O. Box 1863, York, PA 17405, Tel: 717-792-2644, Telex: 84-0437; Empl.: 250; *Sls. Mgr.:* Edward W. Holland III; *Dist. Mgr.:* Shirley A. Eisenhart

CONTOURS, INC., P.O. Box 1041, Middletown, CT 06457, Tel: 203-347-5694; FSC No.: 033501; *Sls. Mgr.:* Peter L. DeVit

CONTRAVES GOERZ CORP., 610 Epsilon Dr., Pittsburgh, PA 15238, Tel: 412-967-7700, Telex: 86-6237, TWX: 710-664-2082; FSC No.: 51261; *Sls. Mgr.:* Henry M. Voss; *Dist. Mgr.:* Ronald L. Ekas

CONTROL CABLE, INC., 7261 Ambassador Rd, Baltimore, MD 21207, Tel: 301-298-4411; FSC No.: 510124759; Empl.: 90; *Sls. Mgr.:* Greg Jones; *Dist. Mgr.:* Greg Jones

CONTROL CONCEPTS CORP., P.O. Box 1380, Binghamton, NY 13902-1380, Tel: 607-724-2484, Telex: 62224380; Empl.: 41; *Sls. Mgr.:* Pat Gillette, VP Sls.

CONTROL DATA CORP., P.O. Box O, Minneapolis, MN 55440, Tel: 1-800-828-8001 Operator 82, In MN 612-921-4400; Empl.: 8000; *Sls. Mgr.:* P. E. McMahon; *Dist. Mgr.:* J. L. Phelps

CONTROL DISPLAYS, INC., 3075 Advance Lane, P.O. Box 227, Colmar, PA 18915, Tel: 215-822-3383, TWX: 510-661-4510; FSC No.: 27878; Empl.: 65; *Sls. Mgr.:* R. McCafferty

CONTROL ELECTRONICS, Neurotech Corp., 139 Florida St., Farmingdale, NY 11735, Tel: 516-694-0125; FSC No.: 95924; Empl.: 60; *Sls. Mgr.:* Harold Goldstein; *Dist. Mgr.:* Barbara Kilroy ..... **A•1533**

Local Sales Offices & Reps

CA	Sherman Oaks, R.T. Assocs.	213-788-7588
FL	Melbourne, VPI	305-768-9349
FL	Tampa, VPI	813-832-2041
IL	Chicago, Electro-Tech Mktg. Assoc.	312-676-3151
MD	Ellicott City, VPI	301-461-2525
MA	W. Medway, J. Gallagher	617-533-7292
PA	Montgomeryville, Rufo Sys. Comp.	215-368-8495
TX	Dallas, Texas Avionics Co.	214-363-6324
WI	Brookfield, Electro-Tech Mktg. Assocs.	414-785-9554
EXP	FL, Hallandale, Emec	305-925-6366

CONTROL ENGRG., INC., 1686 Riverdale St., West Springfield, MA 01089, Tel: 413-781-1330; Empl.: 7; *Sls. Mgr.:* Mark Kimball

CONTROLEX, INC., Francestown Turnpike, New Boston, NH 03070, Tel: 603-487-5512, Telex: 174094 FNB PETERBORO on TRT; Empl.: 7

CONTROLEX/EANCO, See Fincor

CONTROL INDS. INC., 530 Burnside Ave., Inwood, NY 11696, Tel: 212-471-9800; Empl.: 40

CONTROL LASER CORP., 7503 Chancellor Dr., Orlando, FL 32809, Tel: 305-438-2500, Telex: 514215; Empl.: 130; *Sls. Mgr.:* John Fitzgerald

CONTROLLED ENVIRONMENTAL EQUIPMENT CORP., 3 Delta Drive, Westbrook, ME 04092, Tel: 207-854-9126; Empl.: 5; *Sls. Mgr.:* M. F. Peck

CONTROLLED POWER COMPANY

CONTROLLED POWER CO., 1955 Stephenson Hwy., Troy, MI 48083, Tel: 313-528-3700, 1-800-521-4792, TWX: 810-232-3401; Empl.: 120; *Sls. Mgr.:* Ken Krause ..... **D•2016, 2045-2049**

CONTROL LOGIC, See Hancock Electronics Corp.

CONTROL MODULE, 380 Enfield St., Enfield, CT 06082, Tel: 203-745-2433, Telex: 643167; Empl.: 160; *Sls. Mgr.:* Peter C. DiMaria

CONTROL-O-MATION, INC, 7300 W. Huron River Dr., Dexter, MI 48130, Tel: 313-426-3935; Empl.: 65; *Sls. Mgr.:* Dennis Salamin

CONTROL PRODUCTS, INC., 280 Ridgedale Ave., E. Hanover, NJ 07936, Tel: 201-887-9400; FSC No.: 81901; Empl.: 62; *Sls. Mgr.:* J. R. Nile

CONTROL PRODUCTS, P.O. Box 589, Bridgeport, CT 06601, Tel: 203-368-6751, Telex: 96-4234; Empl.: 80; *Sls. Mgr.:* T. W. Tomasko

CONTROL SCIENCES, INC., 9509 Vassar Ave., Chatsworth, CA 91311, Tel: 818-709-5510, Telex: 4970496(CSI); FSC No.: 53317; Empl.: 14; *Sls. Mgr.:* Rhod Zimmerman ..... **D•1145-1149**

Local Sales Offices & Reps

AZ	Tempe, Trembly Assocs.	602-967-2058
CO	Wheat Ridge, Trembly Assocs.	303-421-8900
IN	Ft. Wayne, J & B Engrg.	219-483-2813
MA	Wellesley, Electro-Kinetics	617-235-9415
MN	St. Paul, Northstar Motion & Control	612-770-5311
MO	Peculiar, PEM Sales	816-884-4784
MO	St. Louis, PEM Sales	314-427-7200
NV	Las Vegas, Trembly Assocs.	702-739-9770
NM	Albuquerque, Trembly Assocs.	505-266-8616
NY	Victor, A & D Devices	716-924-9171
PA	Media, Horner Smith Sls.	215-543-2434
NY	Albertson, DOL Engrg.	516-294-9071
TX	Dallas, McDonald Assocs.	214-238-1858
UT	Salt Lake City, Trembly Assocs.	801-486-5292

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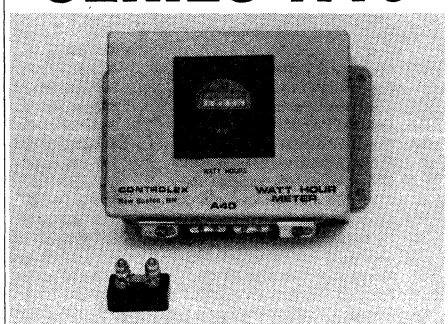

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New Boston, NH 03070
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CONTROLS DIVISION, Ametek, Inc., 820 Pennsylvania Blvd., Feasterville, PA 19047, Tel: 215-355-6900, Telex: 29-1769; Empl.: 100; *Sls. Mgr.:* R. Torsiello

CONTROLS UNLIMITED, INC., 4823 North Ridge Rd., Perry, OH 44081, Tel: 216-259-2500; Empl.: 35

CONTROL TECHNOLOGY CO., 41-16 29th St., Long Island City, NY 11101, Tel: 718-361-2133; FSC No.: 14545; Empl.: 35; *Sls. Mgr.:* H. Cooper ..... **D•2122-2123**

Local Sales Offices & Reps

CA	Claremont, W. Roth & Assocs.	714-621-1019
Can	Montreal, Que., Control Tech. Elctrns. CTC Canada, Ltd.	514-733-3279

CONTROL TECHNOLOGY, INC., 8200 N. Classen Blvd., Ste. 101, Oklahoma City, OK 73114, Tel: 405-840-3163; *Sls. Mgr.:* Charles Weddington; *Dist. Mgr.:* Charles Weddington

CONVER CORP., 916 W. Maude Ave., Sunnyvale, CA 94086, Tel: 408-739-9111, TWX: 910-338-2036; Empl.: 40; *Sls. Mgr.:* Robert Lloyd; *Dist. Mgr.:* Karen Clendening ..... **D•1639**

Local Sales Offices & Reps

CA	Irvine, Groh Assoc.	714-837-9871
CA	Sunnyvale, Conver	408-739-9112
CO	Denver, West High-Tech	303-477-8180
MD	Colombia, Stein Instrmn.	301-596-3748
MA	Boston, Dynamic Sales	617-272-5676
NJ	Medford, Component Consultants	609-654-5300
TX	Plano, G. W. Prods.	214-422-1746
WA	Seattle, Datacom	206-285-2525

Local Distributors

CA	Buena Pk., Cypress Elctrns.	714-521-5230
CA	Buena Pk., Cypress Elctrns.	213-744-0355
CA	Santa Clara, Cypress Elctrns.	408-980-2500
CO	Wheatridge, Cypress Elctrns.	303-431-2622
TX	Dallas, Cypress Elctrns.	214-869-1435
Can	Burnaby, BC, R.A.E. Indl. Elec.	604-291-8866
Can	Edmonton, Alberta, R.A.E. Indl. Elec.	403-451-4001

CONVERSION EQUIP. CORP., 330 W. Taft Avenue, Orange, CA 92665, Tel: 714-637-2970; Empl.: 50; *Sls. Mgr.:* Patrick M. D'Acre

CONVERTER CONCEPTS INC

CONVERTER CONCEPTS, INC., Industrial Pkwy., Pardeeville, WI 53954, Tel: 608-429-2144, TWX: 910-280-2630; Empl.: 125; *Sls. Mgr.:* William A. Pearson; *Dist. Mgr.:* Darrell Gilbertson ..... **D•1660-1667**

Local Sales Offices & Reps

AZ	Tempe, Cantec Sls.	602-829-0191
CA	Hayward, Pacific Mktg.	415-887-1620
CA	Lake Forest, G. R. Stoesser & Assocs.	714-859-3105
CO	Englewood, Dynatech Inc.	303-773-2830
FL	Boca Raton, Perrott Assocs.	305-792-2211
FL	Clearwater, Perrott Assocs.	813-443-5214
FL	Orlando, Perrott Assoc.	305-298-7748
GA	Norcross, Futron Inc.	414-263-9688
IL	Rolling Meadows, KMA Sls.	312-398-5300
MA	Natick, Wayland Engrg. Sls.	617-655-6080
MI	Spring Lake, Jim Finnegan & Co.	616-846-4980
MN	Minneapolis, Microelectronic Sls.	612-829-0948
NY	Syracuse, Pi-Tronics	315-455-7346
OH	Cleveland, Jim Finnegan & Co.	216-238-5905
OH	Dayton, Jim Finnegan & Co.	513-890-8322
OR	Portland, Power Sources Unltd.	503-292-0918
PA	Glenside, Koebert Assoc.	215-887-2310
PA	Pittsburgh, Jim Finnegan & Co.	412-823-5400
TX	Austin, Tesco	512-834-8374
TX	Garland, Tesco	214-681-1376
UT	Layton, Dynatech	801-546-4837
WA	Lynnwood, Power Sources Unltd.	206-783-6641
WV	Inwood, Koebert Assocs.	304-229-8401
WI	Milwaukee, KMA Sales	414-259-1771
Can	Rexdale, Ont., Electro-Source, Inc.	416-675-4490
Can	Vancouver, BC, Davetek Mktg.	604-430-3680

CONVEX CORP., P.O. Box 17225, Dulles Intl. Airport, Washington, DC 20041, Tel: 703-661-8900; Empl.: 24

THE COOL-AMP CONDUCTO-LUBE CO., 8603 S.W. 17th Avenue, Portland, OR 97219, Tel: 503-244-2230; Empl.: 7; *Sls. Mgr.:* Marian Bomber

COONER WIRE CO., 9186 Independence Ave., Chatsworth, CA 91311, Tel: 818-882-8311, Telex: 353734 Cooner Wire UD, TWX: 818-709-8281; *Sls. Mgr.:* Steven W. Smith

COOPER GROUP, PO Box 30100, Raleigh, NC 27622, Tel: 919-781-7200, Telex: 579497

C0-ORD SWITCH DIV., See LVC Inds., Inc.

COORS CERAMICS CO., 600 Ninth St., Golden, CO 80401, Tel: 303-278-4000, Telex: 4322017; Empl.: 1700

Local Sales Offices & Reps

CT	Guilfort, Herb Larisch	203-453-9581
IL	Lombard, Ken Petersen	312-627-0470
NJ	W. Milford, Lon Atkins	201-526-9050
PA	Westchester, Bob R. White	215-431-2553
TX	Euless, Art Deter	214-890-2502

COORS COMPONENTS, INC., Coors Porcelain Co., 800 Hoyt St., Arvada, CA 80020, Tel: 303-469-2161, TWX: 510-601-5396, FAX: 303-469-2161 (ext. 304); Empl.: 140; *Sls. Mgr.:* Robert H. Werner; *Dist. Mgr.:* Patrick J. Gormley

COOSOL, INC., 3013 Harbor Blvd., Costa Mesa, CA 92626, Tel: 714-545-2216; Empl.: 20; *Sls. Mgr.:* A. Solomonian; *Dist. Mgr.:* Jim Cook

CORBY INDUSTRIES, INC., P.O.Box 6008, Allentown, PA 18001, Tel: 215-433-1412, Telex: 847318 CORBYUHL; Empl.: 15; *Sls. Mgr.:* Glenn M. Matz; *Dist. Mgr.:* Lewis S. Walters

CORCOM, INC., 1600 Winchester Rd., Libertyville, IL 60048, Tel: 312-680-7400, TWX: 687-1058; FSC No.: 05245; Empl.: 1000; *Sls. Mgr.:* Dale Van Scoyk, Dir. OEM Sls.; *Dist. Mgr.:* Joe Emma ..... **A•1652-1653; C•1211**

Local Sales Offices & Reps

AL	Huntsville, Robert O. Whitesell	205-883-5110
AZ	Phoenix, I.S.D.S.	602-971-6250
CA	Anaheim, Westrep	714-527-2822
CA	Los Angeles, I.S.D.S.	213-478-0183
CA	Mountain View, Straube Assocs.	415-969-6060
CA	San Diego, Westrep	619-566-6580
CO	Arvada, Straube Assocs.	303-426-0890
CT	Madison, Conti-Younger Assocs.	203-245-1136
CT	Norwalk, Wincor Sls.	203-348-7444
FL	Maitland, E.I.R. Inc.	305-660-9600
FL	Oldsmar, E.I.R. Inc.	813-786-2156
FL	Plantation, E.I.R. Inc.	305-581-6905
FL	Plantation, E.I.R. Inc.	305-791-8243
GA	Norcross, Robert O. Whitesell Assocs.	404-449-9190
ID	Boise, Cascade Comps.	208-343-9886
IL	Rolling Meadows, Sumer, Inc.	312-991-8500
IN	Ft. Wayne, Robert O. Whitesell	219-432-5591
IN	Indianapolis, Robert O. Whitesell	317-359-9283
IN	Kokomo, Robert O. Whitesell	317-457-9127
IA	Cedar Rapids, PMR, Inc.	319-362-9177
KS	Overland Park, PMR, Inc.	913-381-0004
KS	Wichita, PMR, Inc.	316-684-4141
KY	Peewee Valley, Robert O. Whitesell	502-241-1441
MD	Ellicott City, Marketing Technlg.	301-465-5944
MA	Burlington, Conti-Younger Assocs.	617-273-1582
MI	Grand Rapids, Robert O. Whitesell	616-942-5420
MI	Southfield, Robert O. Whitesell	313-559-5454
MI	St. Joseph, Robert O. Whitesell	616-983-7337
MN	Edina, Mel Foster Co.	612-941-9790
MO	St. Louis, PMR, Inc.	314-569-1220
NY	Manhasset, Win-Cor Elctrn. Sls.	516-627-9474
NY	Pittsford, Noeth-Honsinger Assocs.	716-586-9002
NC	Raleigh, Zucker Assoc.	919-782-8433
OH	Cincinnati, Robert O. Whitesell	513-521-2290
OH	Cleveland, Robert O. Whitesell	216-447-9020
OH	Columbus, Robert O. Whitesell	614-888-9396
OH	Dayton, Robert O. Whitesell	513-298-9546
OR	Portland, Jas. J. Backer Co.	503-297-8744
PA	Pittsburgh, Robert O. Whitesell	412-963-6161
PA	Trevose, Professional Svc. Assoc.	215-245-0513
TN	Knoxville, Robert O. Whitesell	615-694-9476
TX	Plano, K & H Sls.	214-423-6520
UT	Salt Lake City, Straube Assocs.	801-263-2640
WA	Seattle, Jas. J. Backer Co.	206-285-1300
WI	Brookfield, Sumer, Inc.	414-784-6641

Local Distributors

AL	Huntsville, Pioneer	205-837-9300
AZ	Phoenix, Cetec Elctrns.	602-272-7951
AZ	Phoenix, Marshall Inds.	602-968-6181
CA	Canoga Park, Marshall Inds.	818-407-0101
CA	Chatsworth, Cetec Elctrns.	818-700-0914
CA	Gardena, Schweber	213-327-8409
CA	Irvine, Cetec Elctrns.	714-250-4141
CA	Irvine, Marshall Ind.	714-458-5395
CA	Irvine, Schweber	714-863-0200
CA	Milpitas, Marshall Ind.	408-943-4600
CA	San Diego, Cetec Elctrns.	619-278-5020
CA	San Diego, Marshall Ind.	619-578-9600
CA	San Diego, Schweber	619-450-0454
CA	San Jose, Schweber	408-946-7171
CA	Santa Clara, Cetec Elctrns.	408-980-0110
CO	Denver, Marshall Ind.	303-451-8444
CT	E. Haven, J.V. Elctrns.	203-499-2457
FL	Deerfield Beach, Pioneer	305-771-7520
FL	Ft. Lauderdale, Hammond Elctrns.	305-973-7103
FL	Orlando, Hammond Elctrns.	305-849-6060
FL	Orlando, Pioneer	305-834-9090
GA	Atlanta, Marshall Ind.	404-923-5750
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Elk Grove Village, Pioneer/Chicago	312-437-9680
IL	Palatine, OHM Elctrns.	312-359-5500
IN	Indianapolis, Pioneer	317-849-7300
MD	Baltimore, Resco/Baltimore	301-529-0500
MD	Beltsville, Resco/Washington	301-937-9100
MD	Gaithersburg, Pioneer	301-921-0660
MA	Burlington, Marshall Ind.	617-658-0810
MA	Newton, Greene Shaw	617-969-8900
MA	Norwood, Gerber Elctrns.	617-769-6000
MI	Livonia, Pioneer	313-525-1800
MI	Livonia, R.S. Elctrns.	313-525-1155
MN	Minnetonka, Pioneer/Twin Cities	612-935-5444
MN	St. Paul, Gopher Elctrns.	612-483-3322
MO	St. Louis, Olive Elctrns.	314-426-4500
NJ	Bellmawr, Mid Atlantic Elctrns. Corp.	609-931-5303
NJ	Fairfield, Marshall Inds.	201-882-0320
NY	Buffalo, Summit Distrs.	716-887-2800
NY	Lynbrook, Peerless Radio Corp.	516-593-2121
NY	Mt. Vernon, QAR Indl. Elctrn. Sls.	914-699-2224
NY	Rochester, Simcone	716-328-3230
NY	Rochester, Summit Distrs.	716-334-8110
NC	Charlotte, Pioneer	704-527-8188
NC	Raleigh, Resco	919-781-5700
OH	Cleveland, Pioneer	216-587-3600
OH	Columbus, Elctrns. Mktg. Corp.	614-299-4161
OH	Dayton, Pioneer	513-236-9900
OR	Beaverton, Almac Elctrns.	503-629-8090
OR	Beaverton, Marshall Inds.	503-644-5050
PA	Philadelphia, Almo Elctrns. Corp.	215-698-4000
PA	Pittsburgh, Pioneer	412-782-2300
TX	Austin, Marshall Inds.	512-837-1991
TX	Austin, Pioneer	512-835-4000
TX	Carrollton, Marshall Inds.	214-233-5200
TX	Dallas, Pioneer	214-386-7300
TX	Houston, Marshall Inds.	713-789-6600
TX	Houston, Pioneer	713-988-5555
WA	Bellevue, Almac Elctrns.	206-643-9992
WA	Bellevue, Marshall Inds.	206-747-9100
WI	Milwaukee, Marsh Elctrns.	414-475-6000

CORD ELECTRONICS INCORPORATED

CORD ELECTRONICS, INC., 177 Cantiague Rock Rd., Westbury, NY 11590, Tel: 516-935-3640, Telex: 475-8020; FSC No.: 516-935-0780; Empl.: 34; *Sls. Mgr.:* Barry Miller ..... **A•2088; B•1050; C•1845; D•1033-1035, 1668**

Local Sales Offices & Reps

AL	Huntsville, Glen White Assocs.	205-533-2002
AZ	Phoenix, Syntech	602-893-7776
CA	Fountain Valley, Sy Prevulsky Assocs.	714-547-5177
CA	San Diego, Pathfinder Elctrn. Reps.	619-578-2555
CA	Santa Clara, SMI Reps	408-986-1610
CT	Brookfield, M & M Assocs.	203-775-6888
FL	Coral Springs, HAI Elctrns.	305-752-7520/50
GA	Norcross, Glen White Assocs.	404-441-1447
IL	Elgin, RHI Sls. Corp.	312-888-0099
IA	Bettendorf, Weisler & Assocs., Inc.	319-344-0566
MA	Framingham, G.M. Assocs.	617-872-4871
MI	Adrian, Elctrn. Salesmasters, Inc.	517-263-2500
MI	Livonia, Elctrn. Salesmasters, Inc.	313-421-2520
MN	Minneapolis, O.E.M. Elctrl. Sls., Inc.	612-559-2448
MS	Jackson, Doby Assocs.	601-981-1138
MO	Ellisville, Weisler & Assocs.	314-394-4543
MO	N. Kansas City, Weisler & Assocs.	816-421-1679
NJ	Medford, Champion Elctrn. Sls.	609-983-0932
NM	Alburquerque, Syntech	505-266-7951
NY	Jericho (Downstate), J-Square Mktg., Inc.	516-935-3200
NY	Rochester, J. G. Welch Assocs., Inc.	716-244-1100
NC	Raleigh, Glen White Assocs.	919-848-1931
OH	Beachwood, Elctrn. Salesmasters	216-831-9555
OR	Portland, Elctrn. Mktg. Grp.	503-684-5935
TN	Gray, Glen White Assocs.	615-477-8850
TX	Houston, Weisler & Assocs.	713-467-1847
TX	Plano, Weisler & Assocs.	214-424-3135
VA	Charlottesville, Elctrn. Sources	804-973-3967
WA	Spokane, Elctrn. Mktg. Grp.	509-922-2718

CORECO, INC., 555 St-Thomas Street, Longueuil, Quebec, Canada J4H 3A7, Tel: 800-361-4997, 514-651-3100, Telex: 76001120 COR UC; Empl.: 23; *Sls. Mgr.:* Pat Urbain

CORLUND ELECTRONICS CORP., 3543 Old Conejo Rd., Newbury Park, CA 91320, Tel: 805-499-6877, FAX: 818-706-8986; Empl.: 45; *Sls. Mgr.:* Mike Perry

Local Sales Offices & Reps

CA San Pedro, Antares Mktg. 213-548-4436
CA Thousand Oaks, CSR Assocs. 805-493-2917

CORNELL-DUBILIER ELECTRONICS, 1605 E. Rodney-French Blvd., New Bedford, MA 02741, Tel: 617-996-8561, Telex: 03-8366; Empl.: 500+; *Sls. Mgr.:* Anthony M. Cavuto, VP Sls.; *Dist. Mgr.:* Carl Rode

CORNELL-DUBILIER ELCTRNS., Wayne Interchange, Plaza 1, Wayne, NJ 07470, Tel: 201-256-2000; *Sls. Mgr.:* A. Cavuto

CORNELL MANUFACTURING, An Elgin Co., 25 Ramland Road, Orangeburg, NY 10962, Tel: 914-365-0400, Telex: 13-1572; Empl.: 50; *Sls. Mgr.:* Lou Schnur

CORNING GLASS WORKS, Corning Elctrns., Houghton Pk., Bldg. A-2, Corning, NY 14830, Tel: 607-974-8725, Telex: 932481; Empl.: 8000; *Sls. Mgr.:* Graham Wells; *Dist. Mgr.:* Betsey Murray

CORNING GLASS WORKS, Materials Business, Main Plant, MP 21-3, Corning, NY 14831, Tel: 607-974-4102, Telex: 932-499; Empl.: 30000; *Sls. Mgr.:* Bryan Lanahan; *Dist. Mgr.:* Richard J. Maxa

Local Distributors

CA Los Angeles, Leed Plastics Corp. 213-746-5984
CA Santa Clara, San Jose Delta Assocs., Inc. 408-727-1448
IL Addison, Circle Fabrication, Inc. 312-543-4440
NJ Palisades Pk., Duramic Prods., Inc. 201-947-8313
NJ Washington, Accuratus Ceramic Corp. 201-689-0880
OH Cincinnati, Astro Met Assocs., Inc. 513-772-1242
TX Houston, EGC Corp. 713-447-8611
WI Germantown, Tech. Prods., Inc. 414-255-7355
Can Ontario, Johns Sci. 416-699-1731

CORNING GLASS WORKS, Telecommunications Products Division, MP-RO-03, Corning, NY 14831, Tel: 607-974-7741, Telex: 932498; Empl.: 28,000

CORTEC, INC., 15811 Chemical La., Huntington Bch., CA 92649, Tel: 714-897-2529; Empl.: 35

CORTRON DIV., See ITW Cortron,Illinois Tool Works

COSAR, 3121 Benton St., Garland, TX 75042, Tel: 214-276-9487, 800-527-1207, Telex: 506973; FSC No.: 20891; Empl.: 50; *Sls. Mgr.:* Jerry Jarka

COSMO

COSMO CORPORATION, 3239 W. 14th St., Cleveland, OH 44109, Tel: 216-861-5594; Empl.: 500; *Sls. Mgr.:* B. Gordon ..... **A•1239; C•1570-1571**

COST EFFECTIVE SYSTEMS, INC., Two LeMans Pl., Pine Brook, NJ 07058, Tel: 201-575-5514, Telex: 4944668; *Sls. Mgr.:* Phyllis Gross

COTO CORPORATION

COTO CORPORATION, 55 DuPont Drive, Providence, RI 02907, Tel: 401-943-2686, TWX: 710-381-8016; Empl.: 200; *Sls. Mgr.:* W. Poisson ..... **B•1335**

Local Sales Offices & Reps

CA Saratoga, Testco Inc. 408-253-1900
CO Denver, Spectrum Sls. 303-480-9991
IL Downers Grove, Richmar Elctrns. 312-968-0118
IN Indianapolis, Richmar Elctrns. 317-846-6383
OR Portland, Ecco Mktg. 503-254-5588
TX Plano, Richmar Elctrns. 214-867-8224
WA Seattle, Ecco Mktg. 206-364-0200
WA Spokane, Ecco Mktg. 509-924-4410
WI Butler, Richmar Elctrns. 414-781-1730
EXP Tokyo, Jepico Corp. 03-348-0611

Local Distributors

CA Los Angeles, Master Distrs. 408-452-1229
CA Saratoga, Testco Inc. 408-253-1900
CO Denver, Spectrum Distrbn. 303-480-9991

COTRONICS, 3379 Shore Pkwy., Brooklyn, NY 11235, Tel: 718-646-7996; Empl.: 15; *Sls. Mgr.:* Alan Marks

COVER CRAFT CORP., See Amherst International Corp., Cover Craft Div.

COVOX, INC., 675 D Conger St., Eugene, OR 97402, Tel: 503-342-1271, Telex: 706017; Empl.: 25; *Sls. Mgr.:* M. R. Stewart

CPS

CPS, INC., 1362 Borregas Ave., Sunnyvale, CA 94086, Tel: 408-738-0530, Telex: 35-7450; FSC No.: 31640; Empl.: 30; *Sls. Mgr.:* Clifford Gaw ..... **D•1669**

Local Sales Offices & Reps

GA Roswell, Electro Comp Sls., Inc. 404-992-2344
MA Burlington, Intersell 617-273-3844
NM Albuquerque, West Faul & Assocs. ... 505-881-0995
NY Hartsdale, Spectrum Sls., Inc. 914-472-8600

CP TECHNOLOGY, INC., 21143 Christensen Drive, Cupertino, CA 95014, Tel: 408-996-8069; Empl.: 7

CRAIG SYSTEMS CORP., 10 Industrial Way, Amesbury, MA 01913-4848, Tel: 617-388-5662, TWX: 710-347-0590; FSC No.: 81902; Empl.: 441; *Sls. Mgr.:* A. E. Koptuck; *Dist. Mgr.:* A. E. Koptuck

CRAMER COIL & TRANSFORMER CO., INC., 401 Progress Dr., Saukville, WI 53080, Tel: 414-284-9425; Empl.: 65; *Sls. Mgr.:* Carol Bufton

CRAMER CO., Mill Rock Rd., Old Saybrook, CT 06475, Tel: 203-388-3574, Telex: 966-453; Empl.: 210; *Sls. Mgr.:* G. Willis; *Dist. Mgr.:* E. Latourette

CREARE, INC., Etna Rd., P.O. Box 71, Hanover, NH 03755, Tel: 603-643-3800, Telex: 953101; Empl.: 85; *Sls. Mgr.:* R. M. Zieserl

CREATIVE MICRO SYSTEMS, 3822 Cerritos Ave., Los Alamitos, CA 90720, Tel: 213-493-2484; Empl.: 40; *Sls. Mgr.:* Elaine Prossen

CRESTRONICS DIV., APPLIED ELECTRO TECHNLG., See STI-Crestronics Div.

CROMEMCO, INC., Dynatech Corp., 280 Bernardo Ave., P.O. Box 7400, Mountain View, CA 94039-7400, Tel: 415-964-7400, TWX: 910-379-6988, FAX: 415-969-3350; Empl.: 200; *Sls. Mgr.:* J. C. Depew, VP Sls.; *Dist. Mgr.:* Tom Keating

CROMPTON INSTRS., 2763 Higgins Road, Elk Grove Village, IL 60007, Tel: 714-841-2901, Telex: 280540, TWX: 692309; FSC No.: 53498; *Sls. Mgr.:* J. Berger

CROMPTON INSTRS., Hawker Siddley, 2763 Old Higgins Rd., Elk Grove Village, IL 60007, Tel: 312-593-1107, Telex: 210295, FAX: 312-439-5747; Empl.: 38; *Sls. Mgr.:* Wayne Bordelon

CROSS BROTHERS, INC., 5255 Sheila St., Los Angeles, CA 90040, Tel: 213-266-2000; Empl.: 17; *Sls. Mgr.:* Steven S. Krause

CROSS ELECTRONICS, 100 Commonwealth Dr., Warrendale, PA 15086, Tel: 412-776-1591; Empl.: 35; *Sls. Mgr.:* L. R. Craig

CROSSPOINT
THE PROGRAMMING PRODUCTS DIVISION OF INFO-LITE CORPORATION

CROSSPOINT, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022, Tel: 201-941-4455; FSC No.: FSCM 52116; Empl.: 13; *Sls. Mgr.:* Joseph M. Cartelli; *Dist. Mgr.:* Joseph M. Cartelli ..... **B•1580**

Local Sales Offices & Reps

CA No. Hollywood, Crown Elctrns. 213-877-3550
CA Redwood City, Caltronic Assocs. 415-365-2545
CT Weston, CJA Assoc. 203-226-4317
MI Brighton, Michigan Mktg. & Sls. 313-229-6218
NY Syracuse, Lenard Co. 315-479-9191
OH Cleveland, A.S.A. 216-232-4946
OH Dayton, Mohawk Intronics 513-434-8873

CROUZET CONTROLS, INC., 1083 State Pkwy., Schaumburg, IL 60173, Tel: 312-843-2200, Telex: 210 219, FAX: 312-310-8330; Empl.: 18; *Sls. Mgr.:* Benoit Delcourt ..... **B•1172, 1581**

Local Sales Offices & Reps

AL Birmingham, Modern Sls. Inc. 205-870-1340
CA San Marino, Motion Control of So. CA 818-796-0189
CA San Ramon, C. F. M. Sls. 415-866-1705
CO Denver, Ralph R. Pence & Assocs. 303-936-3464
FL Jupiter, Southern Elctrn. Sls. Corp. 305-744-0028
MA Wellesley, Electro Kinetics 617-235-9415
MI Warren, Michigan Romax Sls. Inc. 313-979-2450
MN Minneapolis, Dr. Beck-Hays Assocs. .. 612-835-3610
MO Webster Grove, Schutz & Assocs. Ind. Sls., Inc. 314-962-2622
NY Fairport, Tac Sls. 716-425-1070
NY Syosset, Motion Control Sls. 516-921-5656
OH Cincinnati, Bob Gilbert & Assocs. 513-574-1932
PA Bensalem, William D. Staats Co. 215-639-5231
TX Dallas, Automated Motion Control 214-340-4192
UT Salt Lake City, Control Agency 801-328-4305
WA Bellevue, Sea Inc. 206-883-4999
WA Vancouver, Sea Inc. 206-573-5161
Can St. Hubert, Que., Decofer 514-678-2252

Local Distributors

CA Los Angeles, Master Distr. 213-452-1229
CO Colorado Springs, Summit Fasteners & Elec. Hdwe. 303-593-7700
FL Hollywood, M.P. Assocs. 305-962-5751
FL Lakeland, A. A. Elec. 813-665-6941
IN Ft. Wayne, Graham Elctrns. 219-423-3422
IN Indianapolis, Graham Elctrns. 317-634-8202
IN Indianapolis, Vonnegut Indl. Prods. 317-899-8800/8877
IA Bettendorf, Custom Controls Ltd. 319-335-4787
MA Wellesley, Electro-Mechanical Distr. ... 617-235-1565
MI Comstock Park, Mor Elec. 616-784-1121
MI Grand Rapids, S-F Electronics 616-459-0216
MI Royal Oak, George Instr. Co. 313-280-1111
MI Saginaw, Fischer-Flack 517-752-4181
MN St. Paul, Powermation 612-645-0781
NE Omaha, Lakeland Engrg. 402-734-2600
NJ Edison, Howman Applied Control Prods. 201-797-3313
NJ Fair Lawn, Relay Specialties 201-797-3313
NY Commack, Monarch Comps. 516-499-1770
NC Asheville, Electric Supply Co. 704-255-8899
NC Gastonia, J.M.T. Elctrn. Supp. 704-867-4401
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
ND Bismarck, Border States Elec. 701-258-6060
OH Cincinatti, Hughes-Peters. 513-351-2000
OH Cleveland, Reserve Motion Control Sys. 216-826-0290
OH Columbus, Hughes-Peters. 614-294-5351
OH Dayton, Duellman Elctrns. 513-461-5010
OK Tulsa, Radio. 918-587-9123
OR Portland, Familian Automated Valve .. 503-287-8383
PA Allentown, P. A. Peters. 215-434-5237
PA Philadelphia, Herbach & Rademan 215-426-1700
SC Greenville, Holder Elec. Supp. 803-271-7111
TX Ft. Worth, Swieco. 817-335-6521
WA Kent, Motors & Controls Corp. 206-872-8010
WA Seattle, Eicher-Richards Co. 206-523-7888
WI Waukesha, Powermation 414-542-2868
Can Mississauga, Ont., Tracan Elctrns. Corp. 416-625-7752
Can St. Hubert, Que., Decofer 514-678-2252
Can Willowdale, Ont., PS Comps. 416-498-0214

CROVEN CRYSTALS, 500 Beech St., Whitby, ON, Canada L1N 5S5, Tel: 416-668-3324, Telex: 06981246, TWX: 610-384-2750, FAX: 416-668-5003; FSC No.: 00809; Empl.: 250; *Sls. Mgr.:* R. McCormick ..... **A•1361**

Local Sales Offices & Reps

AZ Mesa, Sedco Sls. 602-835-6281
CA San Mateo, Melvin Sls. 415-349-7444
CA Van Nuys, R.L. Assocs. 213-782-7826
CO Loveland, Morbak Mktg. 303-669-8900
FL Palm Bay, Spartech Assocs. 305-727-8045
GA Smyrna, Spartech Assocs. 404-432-3644
MA Milton, Naton Assoc. 617-698-0670
MO Blue Springs, Cairns Sls. Co. 816-229-1404
MO St. Charles, Hayes Elec. Sls. 314-946-6677
NJ Cherry Hill, Harry J. White 609-428-4544
NY Melville, Carnes Assocs. 516-694-1600
OH Englewood, Clayton-Ellier Co. 513-836-3556

TX Arlington, W. Pat Fralia 817-640-9101
VA Springfield, Tech Reps Inc. 703-569-6868
WI Oconomowoc, Artmor Ltd. 414-367-8789

IOR CRYDOM
A DIVISION OF INTERNATIONAL RECTIFIER

CRYDOM DIVISION, International Rectifier, 1521 Grand Ave., El Segundo, CA 90245, Tel: 213-322-4987, TWX: 910-348-6283; Empl.: 350; *Sls. Mgr.:* Stan Schneider; *Dist. Mgr.:* Bob Arnstein ..... **B•1336-1338**

Local Sales Offices & Reps

AL Huntsville, EMA, Inc. 205-830-4030
AZ Tempe, Toribre Entprs. 602-820-5866
AR Ft. Smith, Electra Reps, Inc. 501-452-7822
CA Pleasanton, Sierra Sls. Engrg. 415-463-2250
CA Redwood City, Sierra Sls. Engrg. 415-594-1457
CA San Diego, Cerco 619-450-1754
CA Stockton, Sierra Sls. Engrg. 209-477-6122
CA Tustin, Morgan Johnson Co., Inc. 714-832-7282
CO Westminster, Control Agy. 303-427-4179
FL Deerfield Bch., EMA Inc. 305-428-8746
FL Longwood, EMA, Inc. 305-682-1202
GA Roswell, EMA, Inc. 404-992-7240
ID Boise, N.R. Schultz Co. 208-377-8686
IL Elk Grove Village, Control Sls. 312-595-2110
IN Carmel, Technology Mktg. Corp. 317-844-8462
IN Ft. Wayne, Technology Mktg. Corp. ... 219-432-5553
IA Cedar Rapids, Advanced Tech. Sls. ... 319-365-3150
KS Olathe, Advanced Tech. Sls. 913-782-8702
KS Wichita, Advanced Tech. Sls. 316-682-2769
KY Louisville, Technology Mktg. Corp. 502-449-7808
MD Baltimore, McCourt & Comp., Inc. 301-944-8400
MA Woburn, Alpha Omega Sls. 617-933-0237
MI Livonia, Luebba Sls. 313-477-3131
MN Eden Prairie, Electronic Innovators, Inc. 612-941-0830
MO St. Louis, Advanced Tech. Sls. 314-878-2921
NV Reno, Unitronics Mktg., Inc. 702-825-1978
NJ Wyckoff, North East Comps. Co., Inc. .. 201-848-1100
NY Binghamton, GEN-TECH Elctrns. 607-648-8833
NY Commack, Kaelber & Mack 516-499-2924
NY Liverpool, GEN-TECH Elctrns. 315-451-3480
NY Penfield, GEN-TECH Elctrns. 716-381-5159
NY Pleasant Valley, GEN-TECH Elctrns. .. 914-635-3233
NY Rochester, Gen-Tech 716-467-5016
NC Charlotte, EMA, Inc. 704-365-0547
NC Raleigh, EMA, Inc. 919-846-6888
OH Cincinnati, Luebbe Sls. Co. 513-891-5770
OH Cleveland, Cleveland Luebbe Sls. 216-333-0425
OH Columbus, Luebbe Sls. Co. 614-431-0474
OH Dayton, Luebbe Sls. Co. 513-294-0426
OR Beaverton, N.R. Schultz Co. 503-643-1644
PA Chestnut Hill, Deltatronics Inc. 215-248-0294
PA Pittsburgh, Luebbe Sls. Co. 412-364-0490
TX Austin, Electra Reps. 512-339-1163
TX Dallas, Electra Reps. 214-248-3852
UT Salt Lake City, Control Agy. 801-972-8787
VA Richmond, McCourt Co., Inc. 804-741-3253
WA Bellevue, N.R. Schultz Co. 206-454-0300
WI Thiensville, Control Sls. 414-242-4580

Local Distributors

CA Los Angeles, Kierulff Electronics 213-725-0325
CA Los Angeles, Master Distrs. 213-452-1229
CA S. San Francisco, Steven Engineering 415-588-9200
FL Ft. Lauderdale, Hammond Elctrns. 305-973-7103
IL Chicago, Newark Elect. 312-784-5100
IL Palatine, OHM Elctrns. 312-359-5500
IN Indianapolis, Graham Elctrns. 317-634-8202
KY Louisville, Peerless Elctrns. 502-637-7674
MA Hingham, Sager Electric 617-749-6700
MI Livonia, RS Elctrns. 313-525-1155
MI Royal Oak, George Instr. Co. 313-280-1111
MN Fridley, Voyager Elect. Corp. 612-571-7766
NJ Fair Lawn, Relay Specialties 201-797-3313
NY Buffalo, Summit Distrs. 716-884-3450
NY Farmingdale, Milgray Elctrns. 516-420-9800
NY Melville, Arrow Elctrns. 516-694-6800
NY Westbury, Schweber Electronics 516-334-7474
OH Cincinnati, Hughes Peters 513-351-2000
OH Cincinnati, Schlemmer Assocs., Inc. ... 513-522-8340
OR Portland, Radar Elect. 503-233-3091
PA Pittsburgh, Cam/RPC 412-782-3770
SC Columbia, Dixie Elctrns. 803-779-5332
TN Memphis, The Genie Grp., Inc. 901-345-9595
TX Austin, Harrision Equip. 512-458-3558
WA Seattle, Radar Elect. 206-282-2511

CRYOMAGNETICS, INC., 739 Emory Valley Rd., Oak Ridge, TN 37830, Tel: 615-482-9551, Telex: 883 945; *Sls. Mgr.:* D. Michael Coffey

CRYSTAL MARK, INC., Forslund Division, 613 Justin Avenue, Glendale, CA 91201, Tel: 818-240-7520, Telex: 279974

CRYSTALOID ELECTRONICS, Box 628, Hudson, OH 44236, Tel: 216-655-2429, Telex: 241-244; Empl.: 130; *Sls. Mgr.:* Sharon Werstler

CRYSTEK CORP, P.O. Box 06135, Ft. Myers, FL 33906, Tel: 813-936-2109, TWX: 510-951-7448; FSC No.: 13454; Empl.: 60

CSI Capacitors

CSI CAPACITORS, CSI Technologies, 810 Rancheros Dr., San Marcos, CA 92069, Tel: 619-747-4000, Telex: 697832; FSC No.: 10026; Empl.: 50; *Sls. Mgr.:* J. D. Kowalsky ..... **A•1074**

Local Sales Offices & Reps

AL Huntsville, Glenn Technical 205-883-2870
AZ Paradise Valley, Astrocom Mktg. 602-991-6646
CA San Jose, Comtech Mktg. 408-365-7474
FL Orlando, Glenn Tech. Sls. Co. 305-299-8700
IL Chicago, Esco Assocs. 312-298-5310
KY Louisville, K. W. Elctrn. Sls. 614-888-0483
MD Middletown, ST/Woolard 301-371-4500
MA E. Sandwich, Radco, Inc. 617-888-7397
NJ Lawrenceville, DVS Co. 609-896-1112
NJ Leonia, Peter E. Schmitt Co. 201-944-2806
NM Albuquerque, Cleveland Entprs. 505-265-7893
NY Cazenovia, S. T. Woolard 315-655-8145
OH Dayton, K. W. Elctrn. Sls. 513-890-2150
OR Tigard, Components West 503-684-1671
TX Dallas, Cunningham Comps. 214-669-9706
TX Houston, Cunningham Comps. 713-461-4197
VA Lynchburg, ST/Woolard 804-528-5421
WA Redmond, Components West 206-885-5880
Can Richmond, BC, Macom Agencies 604-271-2661
Can Toronto, Ont., Anbak Sls. 416-253-0243

C-TEK INCORPORATED

C-TEK INC., 4 Railroad Ave., Wakefield, MA 01880, Tel: 617-246-1720, Telex: 882485; Empl.: 15; *Sls. Mgr.:* John Vanaman; *Dist. Mgr.:* John Vanaman .... **D•1124-1125**

Local Sales Offices & Reps

AZ Phoenix, Thor Eng. 602-437-1463
CT Ansonia, R. H. Sturdy Co. 203-734-2186
IL Hillside, Cadre Tech. Reps. 312-449-3900
MA Wellesley Hills, R. H. Sturdy Co. 617-235-2330
MI Southfield, Fred H. Gehrke & Assocs. 313-559-5363
MN Minneapolis, Northstar Motion & Control 612-571-9600
MN St. Paul, Northstar Motion & Control .. 612-770-5311
NJ Sparta, E.S. Williams 201-729-4049
NY Pittsford, Controlled Motion Sls. 716-381-1933
NC Charlotte, Jake Rudisill Assocs. 704-377-6901
OH Cincinatti, KCH Co. 513-931-1686
PA Paoli, Tyler Griffin 215-647-1550
VA Richmond, Jake Rudisill Assocs. 804-320-0201

Local Distributors

NY Clarence, Trott Elctrns. 716-634-8500
NY Pittsford, Trott Elctrns. 716-586-8251
NY Syosset, Motion Control Sls. 516-921-5656
NC Charlotte, Joyce Sls. 704-377-6901
WA Seattle, Eicher-Richards Co. 206-523-7888
Can Montreal, Premier Automation 514-684-6610

CTI ELECTRONICS, 10 Sasco Hill Rd., Fairfield, CT 06430, Tel: 203-366-9444, TWX: 710-465-6349, FAX: 203-254-3599; Empl.: 19 ..... **D•1083**

Local Sales Offices & Reps

AZ Phoenix, Western Automation 602-973-2384
CA Laguna Hills, Western Automation 714-859-6988
CA San Diego, MACS 619-268-1199
CA San Jose, Motion Sys., Inc. 408-246-0641
CT Bridgeport, CTI Elctrns. 203-366-9444
NH Manchester, Northeast Comps. 603-627-7242
NY New Hartford, PDQ Assocs. 315-793-0301

CTS CORPORATION*

CTS CORPORATION, 905 North West Blvd., Elkhart, IN 46514, Tel: 219-293-7511, TWX: 810-294-2167; Empl.: 6,500; *Dist. Mgr.:* R. B. Gooch ..... **A•1746-1747**

Local Sales Offices & Reps

AL Huntsville, Elctrn. Mfrs. Agts., Inc. 205-830-4030
AL Huntsville, Interep Assocs. 205-533-1730
AL Mobile, Interep Assocs., Inc. 205-478-1036
AZ Phoenix, Compass Mktg. & Sls. 602-996-0635
AZ Tucson, Compass Mktg. & Sls., Inc. ... 602-293-1220
CA Fremont, CTS Corp. 415-659-1704
CA Los Altos, Ewing & Foley, Inc. 415-941-4525
CA Newberry Springs, Eltronics 619-257-3610
CA Saratoga, Ed King & Assocs. 408-867-2111
CA South Pasadena, CTS Corp. 213-682-1137
CO Denver, ELCOM 303-337-2300
CT Danbury, CTS Corp. 203-743-3681/1964
CT Wallingford, Apex Assocs., Inc. 203-269-8401
CT Wallingford, CompRep Assocs. 203-269-1145
FL Deerfield Beach, Electrocomp Assocs. 305-429-0802
FL St. Petersburg, Electrocomp Assocs. .. 813-327-9677
GA Norcross, Interep Assocs. 404-449-8680
GA Roswell, Elctrn. Mfrs. Agts., Inc. 404-992-7240
IL Addison, CTS Corp. 312-543-5021
IN Arlington, Brainard-Wilson Mktg. 317-844-2800
IN Indianapolis, Elctrn. Reps. 317-894-1414
IA Cedar Rapids, Seltec Sls. Corp. 319-393-1114
KS Olathe, Advanced Tech. Sls. 913-782-8702
KS Olathe, C-Tron, Inc. 913-829-0073
KS Wichita, Advanced Tech. Sls., Inc. 316-682-2769
MD Columbia, Professional Reps. 301-992-7460
MA Westwood, Apec Assocs., Inc. 617-326-5042
MA Westwood, CompRep Assocs. 617-329-3454
MI Southfield, J. L. Montgomery Assocs. 313-358-2616
MN Minneapolis, Robert W. Marshall Co. .. 612-929-0457
MN Minneapolis, S & R Sls. 612-559-3090
MO St. Charles, C-Tron, Inc. 314-928-8078
MO St. Louis, Advanced Tech. Sls. 314-878-2921
NM Albuquerque, Compass Mktg. & Sls. .. 505-888-0800
NY E. Syracuse, Nycom 315-437-8343
NY Jamaica, S-J Sales Assocs. 212-291-3232
NY Pittsford, Kirby Mktg., Inc. 716-248-8750
NC Raleigh, Zucker Assocs. 919-782-8433
OH Columbus, Baehr, Greenleaf & Assocs. 614-486-4046
OH Dayton, Baehr, Greenleaf & Assocs. .. 513-439-0724
OH Westlake, Baehr, Greenleaf & Assocs. 216-892-1770
OR Tigard, Vantage Corp. 503-620-3280
PA Evans City, Baehr, Greenleaf & Assocs. 412-776-2151
PA Trevose, P.S.A. Inc. 215-245-0513
TN Greeneville, Interep Assocs. 615-639-3491
TX Austin, Southern States Mktg. 512-452-9459
TX Houston, Southern States Mktg. 713-480-9830
TX Richardson, Southern States Mktg. ... 214-238-7500
UT Salt Lake City, ELCOM 801-485-7415
WA Bellevue, Vantage Corp. 206-455-3460
WA Spokane, Vantage Corp. 509-924-4410
PR Caguas, CompRep de Puerto Rico 809-746-6550
Can Streetsville, Ont., CTS of Canada, Ltd. 416-826-1141

Local Distributors

AL Huntsville, Hall-Mark/Huntsville 205-837-8700
AL Huntsville, RM Elctrns. Co., Inc. 205-852-1550
AZ Tempe, Arrow Elctrns., Inc. 602-968-4800
AZ Tempe, Bell Inds. 602-966-7800
AZ Tempe, Marshall Inds. 602-968-6181
CA Canoga Park, Marshall Inds. 213-999-5001
CA Chatsworth, Arrow Elctrns., Inc. 213-701-7500
CA Garden Grove, Bell Inds. 714-895-7801
CA Garden Grove, Richey/Western Elctrns., Inc. 714-895-0060
CA Gardena, Bell Inds. 213-515-1800
CA Gardena, Cal Switch 213-538-9830
CA Irvine, Marshall Inds. 213-443-3724,714-556-6400
CA Irvine, Ratel Elctrns. 714-768-0855,213-637-0839
CA Milpitas, Marshall Inds. 408-943-4600
CA Orange, Richey/Western Elctrns., Inc. 714-634-2811
CA Roseville, Bell Inds. 916-969-3100
CA San Diego, Arrow Elctrns., Inc. 714-565-4800
CA San Diego, Marshall Inds. 714-578-9600
CA San Diego, Richey/Western Elctrns., Inc. 714-271-4511
CA San Jose, Ratel Elctrns. 408-946-4300
CA San Jose, Rose Elctrns. 408-263-9700
CA Santa Clara, Richey/Western Elctrns., Inc. 408-727-7411
CA Sunnyvale, Arrow Elctrns., Inc. 408-745-6600
CA Sunnyvale, Bell Inds. 408-734-8570
CA Thousand Oaks, Bell Inds. 805-499-6821
CA Tustin, Arrow Elctrns., Inc. 714-838-5422
CO Aurora, Arrow Elctrns., Inc. 303-696-1111
CO Denver, Integrated Elctrns. Co., Inc. ... 303-292-6121
CO Englewood, Industrial Elctrns., Inc. 303-694-9444

CT New Haven, The Green-Shaw Co., Inc. 203-393-0710
CT Wallingford, Arrow Elctrns., Inc. 203-265-7741
CT Wallingford, Marshall Inds. 203-265-3822
CT Wallingford, MIDAN Elctrns., Inc. 203-265-2077
FL Clearwater, Hall-Mark Elctrns. Corp. ... 813-530-4543
FL Deerfield Beach, Arrow Elctrns., Inc. ... 305-429-8200
FL Ft. Lauderdale, Arrow Elctrns., Inc. 305-776-7790
FL Largo, Graham Elctrns./Bell Inds. 813-541-4434
FL Orlando, Hall-Mark/Orlando 305-855-4020
FL Orlando, Marshall Inds. 305-841-1878
FL Palm Bay, Arrow Elctrns., Inc. 305-725-1480
FL Pompano Bch., Hall-Mark Elctrns., Inc. 305-971-9280
GA Norcross, Arrow Elctrns., Inc. 404-449-8252
GA Norcross, Graham Elctrns./Bell Inds. 404-662-0923
GA Norcross, Hall-Mark/Georgia 404-447-8000
GA Norcross, Marshall Inds. 404-923-5750
IL Elk Grove, Bell Inds. 312-640-1910
IL Elk Grove, RM Elctrns. Co., Inc. 312-364-6622
IL Schaumburg, Arrow Elctrns., Inc. 312-397-3440
IL Shaumburg, Marshall Inds. 312-490-0155
IL Wooddale, Hall-Mark Elctrns. Corp. 312-860-3800
IN Fort Wayne, Graham Elctrns./Bell Inds. 219-423-3422
IN Indianapolis, Arrow Elctrns., Inc. 317-243-9353
IN Indianapolis, Graham Elctrns./Bell Inds. 317-634-8202
IN Indianapolis, RM Elctrns. Co., Inc. 317-291-7110
IN Lafayette, Graham Elctrns./Bell Inds. 317-423-5564
IA Cedar Rapids, Bell Inds. 319-395-0730
KS Lenexa, Hall-Mark/Kansas City 913-888-4747
KS Lenexa, Marshall Inds. 913-492-3121
MD Baltimore, Arrow Elctrns., Inc. 301-247-5200
MD Columbia, Hall-Mark/Baltimore 301-988-9800
MD Gaithersburg, Axis Elctrns., Inc. 301-840-9640
MD Gaithersburg, Marshall Inds. 301-840-9450
MA Newton, The Greene-Shaw Co., Inc. .. 617-969-8900
MA Woburn, Arrow Elctrns., Inc. 617-933-8130
MI Ann Arbor, Arrow Elctrns., Inc. 313-971-8220
MI Ann Arbor, Graham Elctrns./Bell Inds. 313-971-9093
MI Grand Rapids, RM Elctrns. Co., Inc. 616-531-9300
MI Livonia, Marshall Inds. 313-525-5850
MI Livonia, RS Elctrns. 313-525-1155
MN Bloomington, Hall-Mark/Minneapolis 612-854-3223
MN Edina, Arrow Elctrns., Inc. 612-830-1800
MN Minneapolis, Industrial Comps., Inc. 612-831-2666
MN Plymouth, Marshall Inds. 612-559-2211
MO Maryland Hgts., Hall-Mark/St. Louis ... 314-291-5350
MO St. Louis, Arrow Elctrns., Inc. 314-567-6888
MO St. Louis, Graham Elctrns./Bell Inds. .. 314-821-1541
MO St. Louis, Olive Elctrns., Inc. 314-426-4500
NE Lincoln, Scott Elctrn. Supp. Corp. 402-466-8221
NH Manchester, Arrow Elctrns., Inc. 603-668-6968
NJ Cherry Hill, Hall-Mark/Cherry Hill 215-355-7300
NJ Clifton, Vantage Comps., Inc. 201-667-1840
NJ Fairfield, Arrow Elctrns., Inc. 201-575-5300
NJ Fairfield, Marshall Inds. 201-882-0320
NJ Moorestown, Arrow Elctrns., Inc. 609-235-1900
NJ Mt. Laurel, Marshall Inds. 609-234-9100, 215-627-1920
NM Albuquerque, Arrow Elctrns., Inc. 505-243-4566
NM Albuquerque, Bell Inds. 505-292-2700
NY Buffalo, Summit Distrs. 716-884-3450
NY Farmingdale, Semispecialists of America, Inc. 516-293-2710
NY Hauppauge, Arrow Elctrns., Inc. 516-231-1000
NY Hauppauge, Marshall Inds. 516-273-2424
NY Jamaica, Archer Ind. Distrs., Inc. 212-291-3232
NY Johnston City, Marshall Inds. 607-798-1611
NY Liverpool, Arrow Elctrns., Inc. 315-652-1000
NY Melville, Arrow Elctrns., Inc. 516-694-6800
NY Mt. Vernon, QAR Ind. Elctrn. Sls., Inc. .. 914-699-2224
NY Rochester, Arrow Elctrns., Inc. 716-427-0300
NY Rochester, Marshall Inds. 716-235-7620
NY Rome, Rome Elctrns., Inc. 315-337-5400
NC Raleigh, Arrow Elctrns., Inc. 919-876-3132
NC Raleigh, Hall-Mark/Raleigh 919-872-0712
NC Raleigh, RESCO/Raleigh 919-781-5700
NC Winston Salem, Arrow Elctrns., Inc. 919-725-8711
OH Centerville, Arrow Elctrns., Inc. 513-435-5563
OH Dayton, Bell Inds. 513-435-8660
OH Dayton, Marshall Inds. 513-236-8088
OH Solon, Arrow Elctrns., Inc. 216-248-3990
OH Solon, Hall-Mark/Cleveland 216-349-4632
OH Solon, Marshall Inds. 216-248-1788
OH Worthington, Hall-Mark Elctrns. Corp. 614-888-3313
OK Tulsa, Hall-Mark/Tulsa 918-665-3200
OR Tigard, Moore Elctrns. 503-684-3100
PA McKean, ADVACOM/Erie 814-476-7774
PA Monroeville, Arrow Elctrns., Inc. 412-856-7000
PA Philadelphia, Philadelphia Elctrns., Inc. 215-568-7400
TN Nashville, Graham Elctrns./Bell Inds. 615-242-2682
TX Austin, Arrow Elctrns., Inc. 512-835-4180
TX Austin, Hall-Mark/Austin 512-258-8848
TX Austin, Marshall Inds. 512-837-1991
TX Austin, Southwest Elctrns., Inc. 512-837-8971
TX Dallas, Arrow Elctrns., Inc. 214-386-7500
TX Dallas, Hall-Mark Elctrns., Inc. 214-553-4300
TX Dallas, Marshall Inds. 214-233-5200
TX Houston, Arrow Elctrns., Inc. 713-491-4100
TX Houston, Hall-Mark/Houston 713-781-6100
TX Houston, Marshall Inds. 713-789-6600
TX Richardson, Southwest Elctrns., Inc. 214-234-3050
TX Stafford, Southwest Elctrns., Inc. 713-491-4900
UT Salt Lake City, Bell Inds. 801-972-6969
WA Bellevue, Arrow Elctrns., Inc. 206-643-4800
WI Brookfield, Arrow Elctrns., Inc. 414-792-0150
WI New Berlin, Hall-Mark Elctrns. 414-797-7844
WI New Berlin, RM Wisconsin 414-244-6311
WI Waukesha, Bell Inds. 414-547-8879

CTS CORPORATION, Berne Division, 406 Parr Rd., Berne, IN 46711, Tel: 219-589-3111, TWX: 810-323-1580; Empl.: 1100; *Sls. Mgr.:* D. L. Akers; *Dist. Mgr.:* Cliff Stults ..... **A•1908-1917**

'Refer to CTS Corp., Elkhart, IN, for sales offices & representatives & for distributor listings.'

CTS OF CANADA, LTD., 80 Thomas St., Streetsville, Ontario, Can. L5M 1Y9, Tel: 416-826-1141

Refer to CTS Corp., Elkhart, IN, for sales offices and representatives and for distributor listings.

CTS ELECTRONICS CORP., PASO ROBLES DIV., Electromechanical Gp., 500 Linne Rd., Paso Robles, CA 93446, Tel: 805-238-0350, TWX: 910-351-6796; *Sls. Mgr.:* Jack Bell; *Dist. Mgr.:* Bob Tarkenton ..... **B•1582-1586**

'Refer to CTS Corp., Elkhart, IN, for sales offices & representatives & for distributor listings.'

CTS FABRI-TEK CONNECTOR INC., 9210 Science Center Dr., New Hope, MN 55428, Tel: 612-533-3533, TWX: 910-576-2717; FSC No.: 16512; Empl.: 300; *Sls. Mgr.:* Steve Otto

'Refer to CTS Corp., Elkhart, IN, for sales offices & representatives & for distributor listings.'

CTS FABRI-TEK, INC., 6900 Shady Oak Rd., Eden Prairie, MN 55344, Tel: 612-941-9100, TWX: 910-576-2913; FSC No.: 21542; Empl.: 1400; *Sls. Mgr.:* S. Beyl

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CTS CORPORATION, Elkhart Division, 1142 W. Beardsley Ave., Elkhart, IN 46514, Tel: 219-295-3575; *Sls. Mgr.:* R. G. Sumrak

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CTS ELECTRONICS CORP.,, Knights Division, 400 Reimann Ave., Sandwich, IL 60548, Tel: 815-786-8411, TWX: 910-642-0860, FAX: 815-786-9743; Empl.: 450; *Sls. Mgr.:* Larry Shaum, Act. Sls. Mgr. ..... **A•1362-1385**

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CTS CORPORATION, Microelectronics Div., 1201 Cumberland Ave., W. Lafayette, IN 47906, Tel: 317-463-2565, TWX: 810-342-1882; Empl.: 505; *Sls. Mgr.:* Ron Huber ..... **A•1746-1747**

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CTS CORPORATION, Metal Products Group, Highway 16 West, Monon, IN 47959, Tel: 219-253-6666, Telex: 219-253-6570; *Sls. Mgr.:* Kirk Kirlin; *Dist. Mgr.:* Duane Nagel ..... **C•1033-1037**

Local Sales Offices & Reps

AL Huntsville, DHR Mktg., Inc. 205-533-5165
CA Newhall, Lessing Assocs. 805-254-0278
CA Saratoga, Ed King & Assocs. 408-867-2111
CT North Haven, CompRep Assocs. 203-239-9762
FL Tampa, SRT Mktg. 813-884-4805
GA Atlanta, DHR Mktg., Inc. 404-451-9848
IL Arlington Heights, Brainard-Wilson Mktg. 312-437-2700
IN Indianapolis, Elctrn. Reps., Inc. 317-894-1414
MA Westwood, CompRep Assocs. 617-329-3454
MI Warren, Burcaw Co. 313-573-4605
MN Minneapolis, Robert W. Marshall 612-929-0457
NY West Hempstead, Schmitt Indl. Mktg. 516-486-3510
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OR Portland, James J. Backer Co. 503-297-8744
SC Greenville, DHR Mktg. 803-235-3594
TX Dallas, S. W. Mktg., Inc. 214-341-8631
WA Seattle, James J. Backer Co. 206-285-1300
WI Waukesha, Brainard-Wilson Mktg. 414-797-7940

Local Distributors

CA Chatsworth, Marshall Inds. 818-999-5001
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CA Palo Alto, Zack Elctrns. 415-326-5432
CA San Jose, Quement Elctrns. 408-998-5900
CT Bridgeport, Park Distrs. 203-366-7200
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IL Elgin, Allied Elctrns. 312-697-8200
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WA Seattle, Radar Elec. 206-282-2511

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CTS CORPORATION, Tool, Die & Machine Division, 3000 Engle Rd., Fort Wayne, IN 46809, Tel: 219-747-0531

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CUBIT, Div. of Proteus Industries. Inc., 190 S. Whisman Rd., Mountain View, CA 94041, Tel: 415-962-8237, Telex: 62909639; Empl.: 27; *Sls. Mgr.:* Jon Heiner

CUESTA SYSTEMS CORPORATION, 3440 Roberto Ct., San Luis Obispo, CA 93401, Tel: 805-541-4160; *Sls. Mgr.:* David V. Dickey

CUNO, INC., Process Filtration Products, 400 Research Pkwy., Meriden, CT 06450, Tel: 203-237-5541, Telex: 221083; Empl.: 700; *Sls. Mgr.:* Dan O'Connor

CUPLEX, INC., 1500 E. Hwy. 66, Garland, TX 75040, Tel: 214-276-0333, TWX: 910-860-5098; Empl.: 155; *Sls. Mgr.:* Grady C. Young

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CURTIS

CURTIS INDUSTRIES, 7400 W. Douglas Ave., P.O. Box 18699, Milwaukee, WI 53218-0699, Tel: 414-535-1500, TWX: 910-262-3035, FAX: 414-535-1150; FSC No.: 73631; Empl.: 160; *Sls. Mgr.:* R. R. Hartt; *Dist. Mgr.:* Barbara Krieger ..... **A•1654-1655; C•1212-1213; D•2112**

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FL Clearwater, Tech-Rep Assocs. 813-576-9900
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MN Minneapolis, Holmgren Assocs. Inc. of MN 612-786-7641
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IN Indianapolis, Nationwide Comp., Inc. .. 317-872-7202
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CA Orange, County Wholesale Elec. 714-633-6440
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CT Hartford, Electrical Supp. 203-527-7111
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IN Indianapolis, Peerless Elctrn. 317-635-2361
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IN Mishawaka, Panel Parts 219-259-0026
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IN Wabash, Wabash Elec. Supp. 219-563-4146
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KY Louisville, Peerless Elctrn. Equip. 502-637-7677
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MO St. Louis, Shelley-Ragon, Inc. 314-454-0480
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NY Albany, Adirondack Elctrns. 518-456-0203
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NY Bohemia, Shelley-Ragon, Inc. 516-567-7751
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NY Mamaroneck, Logicomp Elec. 914-698-9332
NY Mt. Vernon, QAR/Indl. 914-699-2224
NY Rochester, Masline Elctrns. 716-546-5373
NY Rochester, Wehle Elec. 716-461-0200
MN St. Paul, Shelley-Ragon 612-642-2828
NC Charlotte, Control Design Supp. 704-588-4410
NC Charlotte, Dixie Elctrns. 704-377-5413
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Can Markham, Ont., Chartwell Elec. 416-731-3400
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MI Grand Rapids, Gateway Megatech 616-538-7925
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OK Tulsa, Altair Co. 918-252-5781
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SC Greenville, Emsco Elctrns. 803-233-4121
TX Austin, Altair Co. 512-837-4970
TX Dallas, Control Design 214-358-1441
TX Fort Worth, Allied Elctrns. 817-336-5401
TX Houston, Altair Co. 713-462-3029
TX Richardson, Altair Co. 214-231-5166
UT Salt Lake City, Kimball Elctrn. 801-328-2075
WA Bellevue, Integrated Elctrns. 206-455-2727
WA Kent, C. B. Parsons & Co. 206-762-7373
WA Seattle, Shelley-Ragon, Inc. 206-241-1980
WI Cedarburg, A-A Electric 414-377-8000
WI Green Bay, A-A Elec. 414-499-0258
WI Milwaukee, Marsh Elctrns. 414-475-6000
WI Milwaukee, Midwestern Elec. 414-449-1500
WI New Berlin, Control Design 414-784-1015

CURTIS

CURTIS INSTRUMENTS, INC., 200 Kisco Ave., Mt. Kisco, NY 10549, Tel: 914-666-2971, TWX: 710-571-2163; FSC No.: 18530; Empl.: 95; *Sls. Mgr.:* Jim Story ..... **D•1127**

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CA Burlingame, Polach & Bensinger 415-697-2525
CA Seal Beach, Texel Engrg. 213-596-9411
CO Littleton, Grifco 303-795-1989
FL Longwood, NSL Assocs. 305-629-5226
IL La Grange Park, Bierhaus Sls. 312-354-5100
IN Ft. Wayne, Aktron Sls. 219-747-3650
MA Brookline, Harman Assocs. 617-232-6687
MN Minnetonka, S. J. Collins 612-933-7661
NY Manhasset, WinCor Elctrn. Sls. Corp. 516-627-9474
OH Chagrin Falls, K. F. Naverz 216-338-8450
WA Seattle, Evergreen Mktg. 206-633-3160
WI Milwaukee, Bierhaus Sls. 414-963-0318

Local Distributors

MO St. Louis, Acorn Elctrns. Inc. 314-644-2510
PA Newton Sq., W. Reeves Assocs. 215-356-7500
TX Carrollton, Lektron 817-464-7784

CUSTOM CABLE, 242 Butler, Westbury, NY 11590, Tel: 516-334-3600, Telex: 269301; Empl.: 15; *Sls. Mgr.:* J. Michelman; *Dist. Mgr.:* D. Pollack

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MD Hunt Valley, Eagle Sls. Corp. 301-666-3930
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CA	Los Altos, Cain-White & Co.	415-948-6533
CA	Los Angeles, Midwin & Olifson	213-838-3455
CA	San Diego, Midwin & Olifson, Inc.	619-571-0177
FL	Palm Bay, Spartech Assocs.	305-727-8045
GA	Smyrna, Spartech Assocs.	404-446-7300
IL	Mt. Prospect, Cain-Forlaw Co.	312-253-3578
ME	Ogunquit, Micronic Assocs.	617-933-2121
MD	Burtonsville, Eastern Instrmn.	301-384-8500
NJ	Hackensack, Technical Mktg. Assocs.	201-342-4008
OH	Lancaster, Cain-Forlaw Co.	614-654-4800
PA	Newtown Square, SWR Assocs.	215-353-6711
TX	Dallas, McDonald Assocs.	214-238-1858
Can	St. Laurent, Que., RF Microwave, Ltd.	514-335-2335

DAI-ICHI SHOJI OF AMER., INC., 150 Fifth Ave., Suite 845, New York, NY 10011, Tel: 212-691-9050, Telex: 429120 DSANY, FAX: 212-807-1598; Empl.: 3; *Sls. Mgr.:* A. Takayama ..... **B•1587; C•1215**

Local Sales Offices & Reps

NY	New York, Dai-Ichi Shoji of America, Inc.	212-691-9050

DALE®

DALE ELECTRONICS, INC., Columbus Div., Box 609, 2064 12th Ave., Columbus, NE 68601, Tel: 402-564-3131; FSC No.: 91637; Empl.: 2800; *Sls. Mgr.:* Darrell Smejkal; *Dist. Mgr.:* Jerry Jilek ..... **A•1929-1937; B•1051-1053**

Local Sales Offices & Reps

AL	Huntsville, JWL Assocs.	205-883-1712
AZ	Tempe, Dale Elctrns. Sls.	602-966-0291
CA	Los Alamitos, Reed Elctrn. Mktg.	213-598-6676
CA	Redwood City, J. S. Heaton Co.	415-367-9000
CA	San Diego, Vishay District Office	619-690-5112
CO	Colorado Springs, Dale Elctrns., Inc. Sls.	303-593-7529
CO	Loveland, Dale Elctrns. Sls.	303-667-7500
FL	Coral Springs, Graham Assocs., Inc.	305-755-6733
FL	Lake Park, Graham Assocs.	305-622-4049
FL	Melbourne, Graham Assocs.	305-773-6631
FL	Winter Garden, Graham Assocs.	305-656-9369
GA	Marietta, JWL Assocs.	404-429-8010
IL	Skokie, Indl. Reps.	312-967-8430
IN	Fort Wayne, Scott Elctrns.	219-484-7865
IN	Greenwood, Scott Elctrns.	317-882-7388
KS	Shawnee Mission, Dale Sls.	913-432-9140
MD	Glen Burnie, Tri-Mark	301-761-6000
MA	Wakefield, Howard C. Jappe Co.	617-245-9359
MI	Plymouth, Jay Mktg. Assocs.	313-459-1200
MN	Bloomington, Merrill Franklin Co.	612-854-8020
NJ	Fairlawn, Kaelber & Mack	201-797-7782
NY	Commack, Kaelber & Mack	516-499-2924
NY	Liverpool, Dale Elctrns. Sls.	315-457-1401
NC	Pineville, JWL Assocs.	704-541-5750
NC	Raleigh, JWL Assocs.	919-787-4826
OH	Cincinnati, Scott Elctrns.	513-791-2513
OH	Cleveland, Scott Elctrns.	216-473-5050
OH	Dayton, Scott Elctrns., Inc.	513-294-0539
OH	Reynoldsburg, Scott Elctrns.	614-863-1281
OR	Beaverton, LD Elctrns.	503-684-8221
PA	Horsham, TMI	215-441-4300
TX	Dallas, E. F. Aymond Co.	214-826-7620
TX	San Antonio, E. F. Aymond Co.	512-366-1526
WA	Snohomish, LD Elctrns.	206-568-0511
WA	Spokane, LD Elctrns.	509-922-4883
WI	Milwaukee, Indl. Reps.	414-259-0965

Local Distributors

AL	Huntsville, Hamilton/Avnet	205-837-7210
AL	Huntsville, Pioneer Technlgs.	205-837-9300
AZ	Phoenix, T.T.I., Inc.	602-966-1616
AZ	Tempe, Acacia, Div. of Univar	602-894-2874
AZ	Tempe, Hamilton/Avnet	602-231-5100
AZ	Tempe, Shelley-Ragon, Inc.	602-894-2058
CA	Chatsworth, Hamilton/Avnet	818-700-6516
CA	Chatsworth, Shelley-Ragon, Inc.	818-998-3333
CA	Chatsworth, T.T.I., West	818-709-1010
CA	Costa Mesa, Avnet Elctrns.	714-754-6021
CA	Costa Mesa, Hamilton Electro Sls.	714-641-4100
CA	Culver City, Hamilton/Avnet	213-217-6750
CA	Gardena, Hamilton Electro Sls.	213-217-6750
CA	Inglewood, Newark Elctrns.	213-671-7370
CA	Irvine, Acacia Div. of Univar	213-971-2428
CA	Milpitas, T. T. I., Inc.	408-943-9155
CA	Ontario, Hamilton/Avnet	714-989-8816
CA	Rancho Cordova, Acacia Div. of Univar	916-638-1861
CA	Sacramento, Hamilton/Avnet	916-920-3150
CA	San Diego, Acacia Div. of Univar	619-565-4365
CA	San Diego, Hamilton/Avnet	619-571-7536
CA	San Diego, Shelley-Ragon, Inc.	619-453-7133
CA	San Diego, T.T.I., Inc.	619-587-4888
CA	San Jose, Shelley-Ragon, Inc.	408-942-9111
CA	Sunnyvale, Acacia Div. of Univar	408-745-7200
CA	Sunnyvale, Hamilton/Avnet	408-743-3358
CO	Commerce City, Waco Elctrns.	303-289-4743
CO	Denver, Newark Elctrns.	303-757-3351
CO	Englewood, Hamilton/Avnet	303-740-1020
CO	Englewood, Shelley-Ragon, Inc.	303-762-0670
CO	Lakewood, Acacia Div. of Univar	303-232-2882
CO	Westminister, T. T. I, Inc.	303-429-6806
CT	Danbury, Hamilton/Avnet	203-797-2854
CT	Norwalk, Pioneer Std.	203-853-1515
CT	Stratford, Electro/Comp.	203-375-5811
CT	Stratford, T. T. I, Inc.	203-375-1400
FL	Alamonte Springs, Pioneer Technlgs.	305-834-9090
FL	Deerfield Beach, Pioneer Technlgs.	305-428-8877
FL	Ft. Lauderdale, Hamilton/Avnet	305-979-5211
FL	Orlando, T.T.I., Inc.	305-859-1000
FL	St. Petersburg, Hamilton/Avnet	813-576-3930
FL	Tampa, Shelley-Ragon, Inc.	813-623-6560
FL	Winter Park, Hamilton/Avnet	305-628-3888
GA	Norcross, Hamilton/Avnet	404-447-7523
GA	Norcross, Pioneer Technlgs.	404-448-1711
GA	Norcross, Specialty Distr. Co., Inc.	404-458-6341
GA	Norcross, T.T.I., Inc.	404-662-0911
IL	Bensenville, Hamilton/Avnet	312-860-8558
IL	Chicago, Newark Elctrns.	312-785-5100
IL	Elk Grove, Bell Ind.	312-640-1910
IL	Elk Grove Village, Pioneer Std.	312-437-9680
IL	Lombard, Shelley-Ragon, Inc.	312-629-8833
IL	Palatine, Ohm Elctrns.	312-359-5500
IN	Carmel, Hamilton/Avnet	317-844-9333
IN	Ft. Wayne, Bell Ind.,Graham Div.	219-423-3422
IN	Indianapolis, Bell Ind., Graham Div.	317-634-8202
IN	Indianapolis, Pioneer Std.	317-849-7300
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
IA	Cedar Rapids, Hamilton/Avnet	319-362-4757
KS	Overland Park, Hamilton/Avnet	913-541-7924
KY	Lexington, Hamilton/Avnet	606-259-1475
MD	Baltimore, RESCO	301-529-0500
MD	Beltsville, RESCO	301-937-9100
MD	Columbia, Hamilton/Avnet	301-995-3525
MD	Columbia, T. T. I., Inc.	301-995-1331
MD	Gaithersburg, Pioneer Technlgs.	301-921-0660
MA	Billerica, A. W. Mayer Co.	617-229-2255
MA	Lexington, Pioneer Std.	617-861-9200
MA	Peabody, Hamilton/Avnet	617-532-3701
MA	Woburn, Sterling Elctrns.	617-938-6200
MA	Woburn, T.T.I., Inc.	617-938-8800
MI	Grand Rapids, Hamilton/Avnet	616-243-8805
MI	Grand Rapids, S-F Elctrn. Supp.	616-459-0216
MI	Livonia, Hamilton/Avnet	313-522-4700
MI	Livonia, Pioneer Std.	313-525-1800
MI	Livonia, R-S Elctrns.	313-525-1155
MI	Livonia, Reptron Elctrns.	313-525-2700
MN	Eden Prairie, T. T. I, Inc.	612-944-5080
MN	Minneapolis, Stark Elctrns.	612-332-1325
MN	Minnetonka, Hamilton/Avnet	612-932-0600

MN	Minnetonka, Pioneer Std.	612-935-5444
MN	St. Paul, Shelley-Ragon, Inc.	612-642-2828
MO	Earth City, Hamilton/Avnet	314-344-1254
MO	Independence, Shelley-Ragon, Inc.	816-254-3410
NH	Manchester, Hamilton/Avnet	603-524-9400
NJ	Cherry Hill, Hamilton/Avnet	609-424-0117
NJ	Cranford, G.S.I. Elec.	201-272-6400
NJ	Fairfield, Hamilton/Avnet	201-575-3490
NJ	Kenilworth, Federated Purchaser	201-272-0505
NJ	Pine Brook, Pioneer Std.	201-575-3510
NM	Albuquerque, Hamilton/Avnet	505-765-1500
NY	Bohemia, Shelley Elctrns., Inc.	516-567-7751
NY	Buffalo, Summit Distr.	716-887-2800
NY	Endwell, A.S.I. Elctrns.	607-754-3823
NY	Fairport, Pioneer Std.	716-381-7070
NY	Farmingdale, Command Elctrns.	516-293-1212
NY	Hauppauge, Fairmont	516-231-3313
NY	Hauppauge, Hamilton/Avnet	516-231-9800
NY	Rochester, Hamilton/Avnet	716-475-9130
NY	Rochester, Simcona Elctrns.	716-328-3230
NY	Rome, Rome Elctrns.	315-337-5400
NY	Ronkonkoma, T.T.I., Inc.	516-737-2000
NY	Syracuse, Hamilton/Avnet	315-437-2641
NY	Valley Stream, L&S Elctrns.	516-561-2474
NY	Vestal, Pioneer Std.	607-748-8211
NY	W. Hempstead, March Elctrns.	516-485-4700
NY	Woodbury, Pioneer Std.	516-921-8700
NC	Charlotte, Pioneer Technlgs.	704-527-8188
NC	Raleigh, Hamilton/Avnet	919-878-0819
NC	Raleigh, RESCO	919-781-5700
NC	Winston-Salem, Kirkman Elctrns.	919-722-9131
OH	Cleveland, Hamilton/Avnet	216-831-3500
OH	Cleveland, Pioneer Standard	216-587-3600
OH	Dayton, Bell Inds.	513-435-8660
OH	Dayton, Bell Inds., Military Div.	513-434-8231
OH	Dayton, Hamilton/Avnet	513-439-6700
OH	Dayton, Pioneer Standard	513-236-9900
OH	Dayton, Stotts-Friedman Co.	513-298-5555
OH	Valley View, Trexon Elctrns.	216-447-8860
OH	Westerville, Hamilton/Avnet	614-882-7004
OK	Tulsa, Hamilton/Avnet	918-252-7297
OK	Tulsa, Radio, Inc.	918-587-9123
OR	Beaverton, Acacia Div. of Univar	503-646-3377
OR	Lake Oswego, Hamilton/Avnet	503-635-8831
OR	Portland, Radar Elec.	503-232-3404
PA	Horsham, Pioneer Technlgs.	215-674-4000
PA	McKean, Advacom	814-476-7774
PA	Philadelphia, H & R Elctrns.	215-426-1700
PA	Pittsburgh, Hamilton/Avnet	412-281-4150
PA	Pittsburgh, Pioneer Std.	412-782-2300
PA	York, E.C.I., Inc.	717-846-5334
TX	Austin, Hamilton/Avnet	512-837-8911
TX	Austin, Pioneer Std.	512-835-4000
TX	Dallas, Pioneer Std.	214-386-7300
TX	Dallas, Sterling Elctrns.	214-243-1600
TX	Ft. Worth, T.T.I., Inc.	817-831-0441
TX	Houston, Lenert Co.	713-225-1465
TX	Houston, Pioneer Std.	713-988-5555
TX	Houston, Sterling Elctrns.	713-627-9800
TX	Irving, Hamilton/Avnet	214-550-6155
TX	Stafford, Hamilton/Avnet	713-274-9336
UT	Salt Lake City, Hamilton/Avnet	801-974-9649
WA	Bellevue, Hamilton/Avnet	206-453-5842
WA	Seattle, Radar Elec.	206-282-2511
WA	Seattle, Shelley-Ragon, Inc.	206-241-1980
WI	Milwaukee, Marsh Elctrns.	414-475-6000
WI	New Berlin, Hamilton/Avnet	414-784-4510

DALE ELECTRONICS, INC., El Paso Div., P.O. Box 26728, El Paso, TX 79926, Tel: 915-592-3253; FSC No.: 91637; Empl.: 272; *Sls. Mgr.:* Douglas Wagenknecht; *Dist. Mgr.:* Jerry Jilek ..... **A•1918-1921; B•1732-1733**

Refer to Dale Electronics, Inc., Columbus, NE for sales office and distributor information.

DALE ELECTRONICS, INC., Norfolk Div., 2300 Riverside Blvd., Norfolk, NE 68701, Tel: 402-371-0080; FSC No.: 91637; Empl.: 1200; *Sls. Mgr.:* Jim Filips; *Dist. Mgr.:* Jerry Jilek ..... **A•1922-1929, 1934-1937**

Refer to Dale Electronics, Inc., Columbus, NE for sales office and distributor information.

DALE ELECTRONICS, INC., Specialty Div., P. O. Box 1179, Robbinsville, NC 28771, Tel: 704-479-6451; FSC No.: 69274; Empl.: 140; *Sls. Mgr.:* Larry Viar; *Dist. Mgr.:* Jerry Jilek ..... **A•1934-1937**

Refer to Dale Electronics, Inc., Columbus, NE for sales office and distributor information.

DALE ELECTRONICS, INC., Tempe Div., 1155 W. 23rd St., Tempe, AZ 85282, Tel: 602-967-7874; FSC No.: 22929; Empl.: 139; *Sls. Mgr.:* Bob Klug; *Dist. Mgr.:* Jerry Jilek ..... **A•1387-1389, 2089**

Refer to Dale Electronics, Inc., Columbus, NE for sales office and distributor information.

DALE ELECTRONICS, INC., Yankton Div., E. Hwy. 50, Box 180, Yankton, SD 57078, Tel: 605-665-9301; FSC No.: 09969; Empl.: 400; *Sls. Mgr.:* John Elliot; *Dist. Mgr.:* Jerry Jilek .... **A•1240-1247, 2211-2219; C•1216-1219**

Refer to Dale Electronics, Inc., Columbus, NE for sales office and distributor information.

DALE WESTERN THERMISTOR DIVISION, See Dale Norfolk Division

DAMON ELECTRONICS DIV., 80 Wilson Way, Westwood, MA 02090, Tel: 617-329-2460, TWX: 710-348-6722; Empl.: 90; *Sls. Mgr.:* Edward J. Doherty ... **A•1390**

Local Sales Offices & Reps

AZ	Phoenix, Sanford Sls. Assocs.	602-957-3570
CA	N. Hollywood, Jewett Co.	213-789-8103
CA	Palo Alto, Waldman Assocs.	415-961-4100
DC	Washington, Stemler Assocs.	301-944-8262
FL	Melbourne, Repcom	305-254-1877
MD	Baltimore, Stemler Assocs.	301-944-8262
MA	Waltham, Del Tech Sls.	617-890-1020
NJ	Cherry Hill, Stemler Assocs.	609-966-4070
NJ	Hackensack, T.M.A. Assoc.	201-342-4008
NY	Cazenovia, S. T. Wollard Co.	315-655-8145
TX	Ft. Worth, El-Tec Sls.	817-268-2896

D & B POWER, INC.

D & B POWER, INC., 204 N. Fehr Way, P.O. Box 40M, Bayshore, NY 11706, Tel: 516-586-5955; FSC No.: 54337; Empl.: 25; *Sls. Mgr.:* Gordon Best; *Dist. Mgr.:* Dan Hall ..... **D•1672-1673**

Local Sales Offices & Reps

AL	Mobile, Hollingsworth & Still	800-241-5712
CA	Pasadena, Electro Mecha. Instrs.	818-795-7193
CA	Santa Clara, SMI, Corp.	408-986-1610
FL	Ft. Lauderdale, Hollingsworth & Still	305-753-3136
GA	Norcross, Hollingsworth & Still	404-447-1700
KS	Lenexa, Spectrum Sls.	913-492-3903
MD	Hunt Valley, Phoenix Elctrns.	301-628-2066
MA	Sharon, Adcour, Inc.	617-784-8123
MO	St. Louis, Spectrum Sls.	314-831-1775
NY	East Setauket, Edgerton Elctrn.	516-751-7089
NY	Rochester, Technical Comp. Sls.	716-342-2406
NC	Charlotte, Hollingsworth & Still	800-241-5712

Local Distributors

MA	Shannon, Adcour, Inc.	617-784-8123

DMC DANIELS MANUFACTURING CORPORATION

DANIELS MFG. CORP., 6103 Anno Ave., Orlando, FL 32809, Tel: 305-855-6161, Telex: 564321, ESYLNK: 564321, FAX: 305-855-6884; FSC No.: 11851; Empl.: 180; *Sls. Mgr.:* Dave Kelly; *Dist. Mgr.:* Ralph R. Recht ..... **C•1757**

Local Sales Offices & Reps

CA	Yorba Linda, DMC Western Regional	714-996-5881
CO	Englewood, Columbine Fab.	303-761-2121
CT	Orange, DMC Northeastern Sls. Off.	203-799-2343
TX	Fort Worth, Wadco	817-483-9111
VA	Virginia Beach, Summit Inds. & Marine	804-463-8820
WA	Redmond, Pan Pacific Electronics	206-881-7252

Local Distributors

CO	Englewood, Columbine Fabricators	303-761-2121
CT	Hamden, Connector Company	203-288-0044
TX	Fort Worth, Wadco	817-284-4445
VA	Virginia Beach, Summit Inds. & Marine	804-463-8820
WA	Redmond, Pan Pacific Electronics	206-881-7252
Can	Ontario, Patlon Aircraft	416-624-5572

DAN-L INC., 229 Laurel Rd., E. Northport, NY 11731, Tel: 516-757-8000; FSC No.: 28327; Empl.: 22

DANMAR INDS., 9705 Lurline Ave., Chatsworth, CA 91311, Tel: 818-882-7979/5280; FSC No.: 31690; Empl.: 10; *Sls. Mgr.:* Mukund Patel

DANTEL, 2991 N. Argyle Ave., Fresno, CA 93727, Tel: 209-292-1111, FAX: (209)292-9355; FSC No.: 56960; Empl.: 110

DANTRONICS, INC., 3175 Hafner Ct., St. Paul, MN 55126, Tel: 612-484-2108; Empl.: 22

DASOFT DESIGN SYSTEMS, INC., 1827-B Fifth St., Berkeley, CA 94710, Tel: 415-486-0822, Telex: 4945245; Empl.: 8

DATA, INC., 7702 Emerald Ave., Box 2071, Ft. Collins, CO 80525, Tel: 303-493-1222; Empl.: 3; *Sls. Mgr.:* Sharon Shilling; *Dist. Mgr.:* Sharon Shilling

D.A.T.A., INC., International Thomson Organization, P.O. Box 26875, San Diego, CA 92126, Tel: 619-578-7600, TWX: 910-322-1340; Empl.: 39

DATA CAPTURE TECHNOLOGY, Hathaway Corp., 10837 E. Marshall, Tulsa, OK 74116, Tel: 918-438-5366, Telex: 796355; FSC No.: 7E812; Empl.: 30; *Sls. Mgr.:* Gary DeShazer/W. E. Bradbury

DATA CHECK CORPORATION, 9918 Via Pasar, San Diego, CA 92126, Tel: 619-578-0101, Telex: 910-335-1596; FSC No.: 55792; Empl.: 33; *Sls. Mgr.:* Bill Acosta

DATACHRON INC., 1150 E. Stanford Court, Anaheim, CA 92805, Tel: 714-385-1705, Telex: 678401; FSC No.: 56259; Empl.: 16; *Sls. Mgr.:* Clyde Davis

DATACOM, INC., Box 278, Ft. Walton Beach, FL 32548, Tel: 904-244-6121, TWX: 510-730-7693; Empl.: 50

DATACON, INC., 60 Blanchard Rd., Burlington, MA 01803, Tel: 617-273-5800, Telex: 951651; Empl.: 400; *Sls. Mgr.:* Stephen J. Day

Local Sales Offices & Reps

CA	Chatsworth, DataCon	818-700-0600
IL	Schaumburg, DataCon	312-529-7690
NY	Bohemia, DataCon	516-589-1100

DATACOPY CORP., 1215 Terra Bella Ave., Mountain View, CA 94043, Tel: 415-965-7900, Telex: 701994 DATACOPY UO; Empl.: 80; *Sls. Mgr.:* Charles Joseph

data delay devices, inc.

DATA DELAY DEVICES, 385 Lakeview Ave., Clifton, NJ 07011, Tel: 201-772-1106 ..... **A•1535-1549**

Local Sales Offices & Reps

AL	Huntsville, Mountain Electro Prods.	205-533-0084
AZ	Phoenix, Tech Sls., Inc.	602-246-1614
AR	Coulomb Elec.	713-820-3210
CA	El Toro, Martronix	714-858-0632
CA	Mountain View, Weseloh/Swanson & Assocs.	415-961-0565
CT	Dynamic Sls., Inc.	617-272-5676
DE	Jack McCoy Assocs.	215-363-0350
FL	Casselberry, Southern Elctrns. Mktg.	305-831-2822
GA	Stone Mountain, Mountain Electro Prods., Inc.	404-448-5594
IN	J. M. Finnegan & Co.	216-238-5905
KY	J. M. Finnegan & Co.	216-238-5905
LA	Coulomb Elec.	713-820-3210
ME	Dynamic Sls., Inc.	617-272-5676
MA	Burlington, Dynamic Sls., Inc.	617-272-5676
MI	Spring Lake, Jim Finnegan & Co.	616-846-4980
MS	Mountain Electro Prods.	404-448-5594
NH	Dynamic Sls., Inc.	617-272-5676
NJ	Medford, Jack McCoy Assocs.	609-953-0770
NY	Pittsford, James E. Zimmmerman Sls.	716-381-3186
NC	Durham, Mountain Electro Prods.	919-383-9839
OH	Cleveland, Jim Finnegan & Co.	216-238-5905
OK	Coulomb Elec.	617-272-5676
OR	Beaverton, ES/Chase Co., Inc.	503-641-4111
PA	Downingtown, Jack McCoy, Inc.	215-363-0350
PA	Pittsburgh, Jim Finnegan & Co.	412-823-5400
RI	Dynamic Sls., Inc.	617-272-5676
SC	Mountain Electro Prods.	404-448-5594
TN	Mountain Electro Prods.	404-448-5594
TX	Houston, Coulomb Elec.	713-820-3210
VT	Dynamic Sls., Inc.	617-272-5676
VA	Jim Finnegan & Co.	216-238-5905
WA	Kirkland, ES/Chase Co., Inc.	206-823-9535
Can	Ont., Source Elctrns.	416-675-6235

Local Distributors

CA	Sunnyvale, Target Elctrns.	415-961-1170

DATA-DESIGN LABS., P.O. Box 711, 7925 Center Ave., Cucamonga, CA 91730, Tel: 714-987-2511; Empl.: 1100; *Sls. Mgr.:* M. L. Sneller

DATA DEVICE CORP., See ILC Data Device Corp.

DATA DISPLAY PRODUCTS, Box 91072, Los Angeles, CA 90009, Tel: 213-640-0442, Telex: 664690; FSC No.: 15513; Empl.: 27; *Sls. Mgr.:* Qamar Lodhie

DATA ENGINEERING, INC., 2515 N. State Rd. 7 Ste. 207, Margate, FL 33063, Tel: 305-971-0400

DATA GENERAL, 4400 Computer Dr., Westboro, MA 01581, Tel: 617-366-8911, Telex: 920-329, TWX: 710-390-1217; Empl.: 17,000; *Sls. Mgr.:* Frank Keaney

DATA INSTRUMENTS, INC., 100 Discovery Way, Acton, MA 01720, Tel: 617-264-9550, Telex: 200081; Empl.: 285; *Sls. Mgr.:* Ernest C. Lutfy ..... **B•1779**

Local Sales Offices & Reps

AL	Huntsville, FLW Southeast, Inc.	205-536-6207
AZ	Scottsdale, Williams Assocs.	602-947-4297
CA	Laguna Hills, Elotek Sys., Inc.	714-830-4856
CA	San Carlos, Elctrn. Engrg. Assocs.	415-593-2189
CO	Englewood, Dynatech, Inc.	303-773-2830
FL	Orlando, FLW Southeast, Inc.	305-894-1100
GA	Marietta, FLW Southeast, Inc.	404-424-1731
IL	Addison, Robert Kanter	312-620-8701
MA	Acton, Data Instrs., Inc.	617-264-9550
MA	Acton, Dave Hannon	617-264-9550
MI	Westland, Dave Miller	313-451-0882
MN	S. St. Paul, Northport Engrg.	612-457-8000
MO	Florissant, Delltron Co.	314-839-0033
MO	Gladstone, Delltron Co.	816-436-6445
NM	Albuquerque, Williams Assocs.	505-255-1638
NY	Albany, Robert F. Lamb Co., Inc.	518-869-3355
NY	Buffalo, The Robert F. Lamb Co.	716-827-1111
NY	Great Neck, F. & F. Metro, Inc.	516-482-4080
NY	Rochester, Robert F. Lamb Co., Inc.	716-323-1250
NY	Syracuse, Robert F. Lamb Co., Inc.	315-455-2469
NC	Charlotte, Emco, Inc.	704-372-8281
OH	Sharonville, Production Resources, Inc.	513-777-0400
OH	Worthington, Bob Young	614-431-0412
OK	Tulsa, Bauman Instr. Corp.	918-492-8086
PA	Springfield, Robert Snyder	215-328-6313
TN	Memphis, FLW Southeast, Inc.	901-345-3563
TX	Arlington, Collinsystems, Inc.	817-261-2703
TX	Houston, Collinsystem Corp.	713-464-9428
UT	Layton, Dynatech, Inc.	801-546-4837
WA	Redmond, S.E.A. Sls.	206-883-4999
WA	Vancouver, S.E.A. Sls.	206-573-5161
Can	Don Mills, Ontario, Intertechnology	416-445-5500

DATA I/O CORP., 10525 Willows Rd. N.E., Redmond, WA 98073-9746, Tel: 206-881-6444, Telex: 15-2167; Empl.: 550

DATAK CORP., 3117 Paterson Plank Rd., N. Bergen, NJ 07047, Tel: 201-863-7667; *Sls. Mgr.:* Theresa Pflueger ..... **C•1572, 1739, 1859**

Local Sales Offices & Reps

AL	Birmingham, Henry W. Phillips Co., Inc.	205-979-3572
CA	Burlingame, Polach & Bensinger	415-697-2525
CA	West Covina, Don Forth Assocs.	818-919-2322
CO	Denver, MKP Mktg., Inc.	303-759-5661
FL	Sarasota, Elctrn. Reps., Inc.	813-351-4307
GA	Roswell, Henry W. Phillips Co.	404-992-3070
IL	Wheaton, Archie Joyner Assocs.	312-665-6222
IN	Indianapolis, Elmarcon, Inc.	317-846-0221
MI	Grand Blanc, Inter-Comm, Inc.	313-695-0666
MO	Raytown, Marty Taraski Sls.	816-358-1442
NJ	Willingboro, Austin Assocs.	609-871-9290
NC	Statesville, Henry W. Phillips Co., Inc.	704-876-0730
OH	Jamestown, Buckeye Mktg. Grp.	513-675-2059
OR	Portland, Dussault & Assocs., Inc.	503-641-8780
PA	Philadelphia, Instrmn. Specialties	215-742-0898
PA	Pittsburgh, Buckeye Mktg. Grp.	513-675-2059
RI	Lincoln, Adams-McGregor	401-726-1300
RI	West Warwick, Adams-McGregor	401-821-1320
TX	Dallas, J & J Sls. Co.	214-328-9739
WA	Seattle, Dussault & Assocs., Inc.	206-281-4025

Local Distributors

AL	Birmingham, ACK Radio Supp. Co.	205-322-0588
AZ	Tempe, Circuit Specialists	602-966-0764
AZ	Tucson, Inland Elctrns.	602-889-5301
CA	Berkeley, Al Lasher's Elec.	415-843-5915
CA	El Cerrito, Trumbull Co.	415-525-7242
CA	Los Angeles, Dick Smith Elctrns.	408-241-2266
CA	Palo Alto, Zack Elctrns.	415-326-5432
CA	Pasadena, Dow Radio	818-793-1196
CA	San Francisco, Zack Elctrns.	415-626-1444
CA	San Jose, Quement Elctrns.	408-998-5900
CO	Denver, Gateway Elctrns.	303-458-5444
CT	Greenwich, Wise Comps.	203-531-4880
CT	Hartford, Hatry Elec.	203-527-1881
CT	Wallingford, Tron Town U.S.A.	203-237-5598
DE	Wilmington, Wholesale Elctrns.	302-656-9988
FL	Miami, Elctrn. Equip.	305-871-3500
FL	Orlando, Orlando Frame & Art	305-898-6271
GA	Atlanta, Ack Elctrn. Supp.	404-351-6340
GA	Atlanta, Specialty Distrb. Co.	404-873-2521
IL	Berwyn, B-B & W, Inc.	312-749-1710
IL	Mt. Prospect, Tri-State Elec.	312-255-0600
IL	Niles, Joseph Elec.	312-297-4200
IL	Peoria, Klaus Radio, Inc.	309-691-4840
IN	Evansville, Hutch & Son	812-425-7201
IN	Indianapolis, Graham Elec.	317-634-8202
IA	Cedar Rapids, Deeco, Inc.	319-365-7551
KS	Wichita, RSC	316-267-5213
KY	Louisville, Peerless Elec.	502-637-7674
LA	Lafayette, Ralph's	318-233-0105
LA	New Orleans, Southern Radio Supp.	504-524-2343
MD	Baltimore, A S I Elec.	301-265-5100
MD	Rockville, Capitol Radio Whlsrs.	301-881-2270
MA	Hingham, Sager Elctrl. Supp.	617-749-6700
MA	Lynn, Land Elctrns. Supp.	617-592-2220
MA	Norwood, Gerber Elec.	617-769-6000
MI	Flint, Shand Elctrns.	313-743-8940
MI	Livonia, Norwest Elctrns.	313-261-4551
MN	Minneapolis, Acme Elctrns.	612-338-4754
MO	Kansas City, Elctrn. Supp.	816-931-0250
MO	St. Louis, Gateway Elec.	314-427-6116
MO	St. Louis, Van Sickle	314-621-5000
NE	Lincoln, Scott Elec. Supp.	402-466-8221
NV	Las Vegas, Hurley Elec.	702-384-5666
NV	Reno, Elect. Distr. Co.	702-323-2766
NH	Dover, American Radio	603-742-6800
NH	Pelham, Radio Kit	603-635-2235
NJ	Greenbrook, Greenbrook Elctrns.	201-968-3500
NJ	Rahway, RSR Elctrns.	201-381-8777
NY	Buffalo, Summit Distr.	716-887-2800
NY	Hauppauge, Broadline Elctrns.	516-231-4100
NY	Long Island City, H. L. Dalis, Inc.	212-361-1100
NC	Raleigh, Southeastern Elctrns.	919-828-2311
OH	Cincinnati, URI Elec.	513-761-4030
OH	Columbus, Whitehead Elctrns.	614-224-1186
OK	Tulsa, Elctrn. Design	918-438-2349
OR	Beaverton, Norvac Elec.	503-644-1025
OR	Portland, Portland Radio Supp.	503-228-8647
PA	Braddock, Leff Elctrns.	412-351-5000
PA	Drexel Hill, Kass Elctrns.	215-449-2300
PA	Philadelphia, A.C. Radio	215-462-9379
PA	Reading, Barbey Elctrns.	215-376-6116
RI	Providence, W. Dandreta & Co.	401-861-2800
SC	Charleston, Wholesale Inds. Elctrns.	803-722-2634
TN	Memphis, Bluff City Distr.	901-345-9500
TX	Dallas, Electrotex Elect. Corp. of TX	214-234-0433
TX	El Paso, Ideal Indl. Elec. Supp.	915-779-6647
TX	Houston, Gateway Elctrns.	713-978-6575
UT	Salt Lake City, Kimball Elec.	801-328-2075
UT	Salt Lake City, Standard Supp. Co.	801-486-3371
VA	Arlington, Arlington Elec. Whlse.	703-524-2412
VA	Norfolk, Priest Elctrns.	804-855-0105
WA	Seattle, Seattle Art	206-625-0711
WV	Huntington, Elctrn. Supp.	304-523-6443
WI	Milwaukee, Indl. Elctrns.	414-276-1212

DATALINEAR, Hybrid Systems Corp., 491 Fairview Way, Milpitas, CA 95035, Tel: 408-943-1079; Empl.: 50

DATAMETRICS CORP., 8966 Comanche Ave., Chatsworth, CA 91311, Tel: 818-341-2901, TWX: 910-495-2009; FSC No.: 19059; Empl.: 275; *Sls. Mgr.:* Jim Foti

DATAMETRICS INC., 340 Fordham Road, Wilmington, MA 01887, Tel: 617-658-5410, TWX: 710-347-7672; Empl.: 150; *Sls. Mgr.:* A. W. Siff ..... **B•1781**

Local Sales Offices & Reps

AL	Birmingham, Motion Technlg.	205-823-6506
AZ	Phoenix, Flexible Technlg.	602-996-6421
CA	Helmet, Flexible Technlg.	714-652-6288
CA	Irvine, Flexible Technlg.	714-786-8580
CO	Denver, Motion Technlg.	303-692-9649
CT	Guilford, OEM Mktg. & Sls.	203-453-5424
FL	Palm Bay, Motion Technlg.	305-676-0445
GA	Liburn, Motion Technlg.	404-921-3585
IL	Villa Pk., Applied Kinetic Sys.	312-530-1885
MA	Franklin, OEM Mktg. & Sls.	617-528-4983
MI	Lamont, Xanthus	616-677-3103
MI	Troy, Xanthus	313-528-2000
NH	Salem, OEM Mktg. & Sls.	603-893-0009
NJ	Williamstown, Precision Motion Sls.	609-629-4757
NY	Clark Mills, KLM-Garner	315-853-6126
NY	Glen Cove, Precision Motion Sls.	516-676-1645
NY	Pittsford, KLM-Garner	716-381-8350
NC	Charlotte, Motion Technlg.	704-525-9855
OH	Chagrin Falls, K. F. Nauerz	216-338-8450
OH	West Chester, G. R. Fehr	513-777-4248
TX	Dallas, Automated Motion Control	214-340-4192
WI	Milwaukee, KMA Sls.	414-259-1771

DATAPOWER INC., Power Systems Div., 3545 Cadillac Ave., Costa Mesa, CA 92626, Tel: 714-754-4400, TWX: 910-595-1560, FAX: 714-774-5407; Empl.: 120; *Sls. Mgr.:* Edward Blackman; *Dist. Mgr.:* Edward Blackman ..... **D•1671**

Local Sales Offices & Reps

AL	Huntsville, Magaro & Assocs.	205-882-0827
CO	Denver, Lindberg Co.	303-758-9033
FL	Tampa, A. P. M. Assocs.	813-886-2457
GA	Atlanta, Magaro & Assocs.	404-451-8862
IL	Schaumburg, Phase II Mktg.	312-303-5092
MA	Chelmsford, Interstate Sls. Assocs.	617-256-2287
MN	Edina, Engrg. Prods.	612-835-9022
NJ	Fairfield, G & A Sls.	201-575-8080
NM	Albuquerque, Lindberg Co.	505-881-1006
NY	Rochester, Apex Assocs.	716-254-6050
NC	Greensboro, Magaro & Assocs.	919-294-4783
OH	Dayton, Tech. Dvcs. Inc.	513-890-6811
OR	Beaverton, Quest Mktg.	503-641-7377
TX	Plano, GW Prods.	214-422-1746
UT	Salt Lake City, Lindberg Co.	801-277-2643
VA	Reston, Tytronics, Inc.	703-620-4600
WA	Bellevue, Quest Mktg.	206-747-9424

DATA POWER, See Beaver Labs

DATA PRECISION CORP., Analogic Corp., Electronics Ave., Danvers, MA 01923, Tel: 617-246-1600, Telex: 6817144; Empl.: 140; *Sls. Mgr.:* Jay Long

DATAPRINTER CORP., Printronix, 99 Middlesex St., Malden, MA 02148, Tel: 617-321-2400; Empl.: 175; *Sls. Mgr.:* Joseph Marolda, Corp. Sls. Mgr.

DATAPROBE, 110 Palisades Blvd., Palisades Park, NJ 07650, Tel: 201-947-9500, Telex: 642-165; Empl.: 20; *Sls. Mgr.:* D. Weiss; *Dist. Mgr.:* S. Weiss

DATAPRODUCTS CORPORATION, 6200 Canoga Ave., Woodland Hills, CA 91365, Tel: 818-888-4014, Telex: 67-4734; Empl.: 4200; *Sls. Mgr.:* Keith Bauserman; *Dist. Mgr.:* Keith Bauserman

DATAPRODUCTS NEW ENGLAND, INC., 50 Barnes Park North, Wallingford, CT 06492, Tel: 203-265-7151, TWX: 203-265-7151, FAX: 203-265-9101; Empl.: 450; *Sls. Mgr.:* Louis Jurgens

Local Sales Offices & Reps

CA	Rancho Murieta, Dataproducts New England	916-354-2180
IL	Hinsdale, Dataproducts New England	312-654-1180
VA	Reston, Dataproducts New England	703-648-0940

DATAQ INSTRUMENTS, INC., 825 Sweitzer Ave., Akron, OH 44311, Tel: 216-434-4284, Telex: 6502817028

DATA RACE, INC., 12758 Cimarron Path, San Antonio, TX 78249, Tel: 512-692-3909, Telex: 517659 RTS TX; Empl.: 28; *Sls. Mgr.:* Chuck Webster

DATARAM CORP., P. O. Box 7528, Princeton, NJ 08543-7528, Tel: 609-799-0071, TWX: 510-685-2542; Empl.: 110; *Sls. Mgr.:* James D. Tropp

DATA RAY CORP., 452 Burbank Street, Broomfield, CO 80020, Tel: 303-469-5173; FSC No.: 303-466-9524; Empl.: 50; *Sls. Mgr.:* Dr. Yoshio Kaneda

DATA RENTALS/SLS., INC, P. O. Box 3257, Culver City, CA 90230, Tel: 213-559-3822; Empl.: 140; *Sls. Mgr.:* Steven Beaver, VP Mktg.

DATA SET CABLE CO., INC., 722 Danbury Rd., Ridgefield, CT 06877, Tel: 203-438-9684, TWX: 710-467-0668; *Sls. Mgr.:* T. Busch

DATASOUTH COMPUTER CORP., 4216 Stuart Andrew, P.O. Box 240947, Charlotte, NC 28224, Tel: 704-523-8500, Telex: 6843018; FSC No.: 704 523-9298; Empl.: 160; *Dist. Mgr.:* Ann Vetas

DATA SPECIALTIES, INC., See Zebra Technologies Corp.

DATA TECH, DIV. OF PENRIL CORP., See Moisture Register Products Div., Aqua Measure Instrument Co.

DATA TECHNOLOGY, INC., 4 Gill St, Woburn, MA 01811, Tel: 617-935-8820, Telex: 95-1351; Empl.: 40; *Sls. Mgr.:* D. Skenderian

DATATRAN CORP., 355 Yuma St, Denver, CO 80223, Tel: 303-778-0870; Empl.: 17; *Sls. Mgr.:* Cindi L. Kemper; *Dist. Mgr.:* Cindi L. Kemper

DATA TRANSLATION, INC., 100 Locke Dr., Marlboro, MA 01752, Tel: 617-481-3700, Telex: 951646, FAX: 617-481-8620; FSC No.: 61867; Empl.: 200; *Sls. Mgr.:* Ellen Wirka

DATATROL, Division of Data Card Corporation, Brent Dr., Hudson, MA 01749, Tel: 617-568-1411; Empl.: 350; *Sls. Mgr.:* Howard Cantor

DATATRON, INC., 2942 Dow Ave., Tustin, CA 92680, Tel: 714-544-9970, TWX: 910-595-1589; Empl.: 125

"Refer to Shelly Assocs. Datatron Inc. for Sales Office and distributor information"

DATATRONICS, LTD., P. O. Box 2839, Blue Jay, CA 92317, Tel: 714-336-3561, TWX: 910-595-1578 DATAN US LKARW

DATATRONIC SYSTEMS CORP., Computer Sciences Div., Bx 44128 EEM/NMR, Panorama City, CA 91412-0128, Tel: 818-988-5290; Empl.: 150

DATAWEST, 7333 E. Helm Dr., Scottsdale, AZ 85260, Tel: 602-948-3280, TWX: 910-950-1289

DATA WORLD PRODUCTS, Second N.H. Tpke., Francestown, NH 03043, Tel: 603-588-3746; *Sls. Mgr.:* Stephen Berry

DATAWRAP, INC., 37 Water St., Wakefield, MA 01880, Tel: 617-246-5757; Empl.: 16; *Sls. Mgr.:* Tony Lockwood

DATEC, INC., 200 Eastowne Dr., Ste. 116, Chapel Hill, NC 27514, Tel: 919-929-2135; Empl.: 75; *Sls. Mgr.:* Walt Lovett

DA-TECH CORP., 92 Steamwhistle Dr., Ivyland, PA 18974, Tel: 215-322-9410; Empl.: 110; *Sls. Mgr.:* Bradford W. Bentz

DATEL

DATEL, General Electric Co., 11 Cabot Blvd., Mansfield, MA 02048, Tel: 617-339-9341, Telex: 95-1340, TWX: 710-346-1953; Empl.: 650; *Sls. Mgr.:* N. Renaud ..... **D•1107, 1150-1152, 1340**

Local Sales Offices & Reps

AL	Hunstville, Electronic Mfrs' Agts.	205-830-4030
AZ	Phoenix, Tech. Sls.	602-246-1614
CA	Santa Ana, Datel	714-835-2751
CA	Sunnyvale, Datel	408-733-2424
CO	Denver, Elcom, Inc.	303-337-2300
CT	Wallingford, Comp. Rep. Assocs., Inc.	203-269-1145
FL	Coral Springs, H. A., Inc.	305-752-7520
GA	Roswell, Electronic Mfrs' Agts.	404-992-7240
HI	Honolulu, Adtech.	808-941-0708
IL	Elmhurst, Sector Engrg. Sls., Inc.	312-530-7850
IN	Indianapolis, Sector Engrg. Sls., Inc.	317-842-1120
IA	Bluegrass, Ensco-Rep, Inc.	319-381-1466
KS	Wichita, Ensco-Rep Inc.	316-683-1070
MA	Mansfield, Datel	617-339-9341
MI	Auburn Hgts., Infinity, Inc.	313-853-9880
MN	Minneapolis, Sector Engrg. Sls.	612-593-1809
MO	Maryland Heights, Ensco-Rep, Inc.	314-423-3935
NJ	Perth Amboy, Astrorep, Inc.	201-826-8050
NM	Albuquerque, Cleveland Entprs.	505-265-7893
NY	Babylon, Astrorep	516-422-2500
NY	Clark Mills, KLM-Garner	315-853-6126
NY	Pittsford, KLM-Garner	716-381-8350
OH	Cleveland, Instrmn Sys., Inc.	216-845-8800
OH	Dayton, Instrmn Sys., Inc.	513-294-2838
OR	Portland, TASCO, Inc.	503-292-1910
PA	Glenside, Wyncote Instrmn.	215-572-6500
PA	Pittsburgh, Instrmn. Sys., Inc.	412-823-7005
TX	Carrollton, Tech. Mktg., Inc.	214-387-3601
TX	Houston, Technical Mktg., Inc.	713-783-4497
TX	Round Rock, Technical Mktg., Inc.	512-244-2291
UT	Salt Lake City, Elcom, Inc.	801-485-7415
VA	Arlington, H. J. Heffernan	703-522-6666
WA	Bellevue, TASCO, Inc.	206-453-1414
WI	Milwaukee, Sector Engrg. Sls., Inc.	414-352-8280

Local Distributors

AL	Huntsville, Schweber Elctrns.	205-895-0480
AZ	Phoenix, Schweber Elctrns.	602-997-4874
CA	Canoga Pk., Schweber Elctrns.	818-999-4702
CA	Gardena, Schweber Elctrns.	213-327-8409
CA	Irvine, Schweber Elctrns.	714-863-0200
CA	Sacramento, Schweber Elctrns.	916-929-9732
CA	San Diego, Schweber Elctrns.	619-450-0454
CA	San Jose, Schweber Elctrns.	408-946-7171
CO	Englewood, Schweber Elctrns.	303-799-0258
CT	Danbury, Schweber Elctrns.	203-748-7080
FL	Altamonte Springs, Schweber Elctrns.	305-331-7555
FL	Pompano Bch., Schweber Elctrns.	305-977-7511
GA	Norcross, Schweber Elctrns.	404-449-4600
IL	Elk Grove Vl., Schweber Elctrns.	312-364-3750
IA	Cedar Rapids, Schweber Elctrns.	319-373-1417
KS	Overland Pk., Schweber Elctrns.	913-492-2922
MD	Gaithersburg, Schweber Elctrns.	301-840-5900
MA	Bedford, Schweber Elctrns.	617-275-5100
MI	Livonia, Schweber Elctrns.	313-525-8100
MN	Edina, Schweber Elctrns.	612-941-5280
MO	Earth City, Schweber Elctrns.	314-739-0526
NJ	Fairfield, Schweber Elctrns.	201-227-7880
NY	Rochester, Schweber Elctrns.	716-424-2222
NY	Westbury, Schweber Elctrns.	516-334-7474
NC	Raleigh, Schweber Elctrns.	919-876-0000
OH	Beachwood, Schweber Elctrns.	216-464-2970
OH	Dayton, Schweber Elctrns.	513-439-1800
OK	Tulsa, Schweber Elctrns.	918-622-8000
PA	Horsham, Schweber Elctrns.	215-441-0600
PA	Pittsburgh, Schweber Elctrns.	412-782-1600
TX	Austin, Schweber Elctrns.	512-458-8253
TX	Dallas, Schweber Elctrns.	214-661-5010
TX	Houston, Schweber Elctrns.	713-784-3600
WI	New Berlin, Schweber Elctrns.	414-784-9020

DATRON INSTRS., INC., 3401 SW 42nd Ave., Stuart, FL 33497, Tel: 305-283-0935, Telex: 525724; FSC No.: 66-15b,66-23F,66 Part II SECT H, J; Empl.: 120; *Sls. Mgr.:* Irene Bugno

DATRON SYSTEMS, INC., 200 West Los Angeles Ave., Simi Valley, CA 93065-1650, Tel: 805-584-1717, TWX: 910-494-2787; FSC No.: 32255; Empl.: 122

datum

DATUM INC., Timing/Aacom Divisions, 1363 S. State College Blvd., Anaheim, CA 92806-5790, Tel: 714-533-6333, Telex: 4722045 (intl.), TWX: 910-592-1289; FSC No.: 31160; Empl.: 280; *Sls. Mgr.:* Charles Neumann ..... **D•1063, 1153**

Local Sales Offices & Reps

AL	Huntsville, HICO	205-837-9627
CA	Anaheim, Datum	714-533-6333
CA	San Diego, M. Ficken	619-292-9392
CA	Santa Clara, Ward/Davis Assocs.	408-245-3700
CO	Englewood, BFA	303-771-7474
CT	Mt. Carmel, Scientific Dvcs.- Connecticut	203-248-9361
FL	Sarasota, RAM-Z	813-957-4900
IL	Des Plaines, Marsland Assocs.	312-298-2620
IN	Indianapolis, Marsland Assocs.	317-293-5437
IA	Cedar Rapids, Marsland Assocs.	319-365-1908
MA	Waltham, Scientific Devices-New England	617-890-2252
MA	Wayland, Daner-Hayes	617-655-0888
WI	New Berlin, Marsland	414-786-6611
MN	Minneapolis, Marsland Assocs.	612-545-4481
MO	St. Louis, Marsland Assocs.	314-991-1399
NJ	Haddonfield, G. L. Williams Assocs.	609-428-6060
NM	Albuquerque, BFA	505-292-1212
NM	Las Cruces, BFA	505-524-9693
OH	Centerville, Micro Sls. Corp.	513-433-8171
OH	No. Olmsted, Micro Sls. Corp.	216-734-3080
OK	Tulsa, Data Mktg. Assocs.	918-494-2711
TX	Austin, Data Mktg. Assocs.	512-443-7722
TX	Dallas, Data Mktg. Assocs.	214-661-0300
TX	Houston, Data Mktg. Assocs.	713-780-2511
TX	San Antonio, Data Mktg. Assocs.	512-342-3031
MD	Rockville, Creative Mktg. Assocs.	301-251-0654
WA	Seattle, Comptronics	206-284-4842

DAVIDGE CORPORATION, 94 Commerce Dr., Buellton, CA 93427, Tel: 805-688-9598, Telex: 62001250; *Sls. Mgr.:* Dean Davidge

THE DAVID HAFLER CO., 5910 Crescent Blvd., Pennsauken, NJ 08109, Tel: 609-662-6355, Telex: 1561119, FAX: 609-662-9173; Empl.: 38; *Sls. Mgr.:* R. H. Tucker

DAVIDSON ELCTRN. DEV. CO., 113 E. 13th St., Erie, PA 16512, Tel: 814-454-6448; Empl.: 27

DAVIES, HARRY, MOLDING CO., 4920 Bloomingdale Ave., Chicago, IL 60639, Tel: 312-622-8966; FSC No.: 72512; Empl.: 120; *Sls. Mgr.:* Leo A. Sera; *Dist. Mgr.:* Leo A. Sera

DAVIS ELEC. CO., Box 38, Cape Girardeau, MO 63701, Tel: 314-335-5547; Empl.: 40

DAYCO PRODUCTS, INC., 333 W. First St., Dayton, OH 45401, Tel: 513-226-5923, Telex: 288219, TWX: 810-459-1822; Empl.: 10000

DAYTRONIC
Manufacturer of Intelligent Instrument Systems

DAYTRONIC CORP., Hawker Siddeley, 2589 Corporate Pl., Miamisburg, OH 45342, Tel: 513-866-3300, TWX: 810-473-2978; Empl.: 150; *Sls. Mgr.:* John A. Perkins ..... **D•1154-1156**

Local Sales Offices & Reps

AL	Huntsville, FLW Southeast, Inc.	205-536-6207
AZ	Tempe, Trembly Assocs.	602-967-2058
CA	Long Beach, Saber Entprs.	213-595-5646
CA	Mountain View, Saber Entprs., Inc.	415-968-0427
CO	Wheat Ridge, Trembly Assocs.	313-421-8900
CT	Meriden, Di Ana Sls. Co.	203-235-3393
FL	Orlando, FLW Southeast, Inc.	305-894-1100
GA	Marietta, FLW Southeast, Inc.	404-424-1731
IL	Chicago, Comtel Midwest Co.	312-539-4838
IN	Indianapolis, Comtel Midwest Co.	317-253-1681
IA	Cedar Rapids, Comtel Midwest Co.	319-377-9434
MA	West Newbury, Di Ana Sls. Co.	617-363-5420
MI	Southfield, Comtel Instrs. Co.	313-358-2505
MN	Wayzata, Comtel Midwest Co.	612-476-1551
MO	Manchester, Vertec Assocs., Inc.	314-394-6242
NH	Randolph, Di Ana Sls. Co.	603-466-3996
NJ	Scotch Plains, RJM Sls., Inc.	201-322-7880
NM	Albuquerque, Trembly Assocs.	505-266-8616
NY	Williamsville, Maxwell Bennett Assocs.	716-634-2107
OH	Cleveland, Comtel Instrs. Co.	216-442-8080
OH	Dayton, Comtel Instrs. Co.	513-298-7573
PA	Radnor, Roberts Engrg. Sls. Co.	215-688-6525
SC	Spartanburg, Henry Cook Assocs.	803-576-8594
TN	Memphis, FLW Southeast, Inc.	901-345-3563
TX	Bellaire, Seaton Corp.	713-731-2649
TX	Carrollton, Seaton Corp.	214-380-0414
UT	Salt Lake City, Trembly Assocs.	801-486-5292
VA	Richmond, Advance Control Equip.	804-264-7100
WA	Seattle, Brett Assocs., Inc.	206-431-8090
WI	New Berlin, Comtel Midwest Co.	414-544-6042
Can	Pickering, Ont., Durham Instruments	416-839-9960

D-B-DEVELOPMENTS, 7709 Kilbourne Rd., Rome, NY 13440, Tel: 315-339-1265; Empl.: 3

D-CEMCO, 3200 N. San Fernando Blvd., Burbank, CA 91504, Tel: 213-849-6341, TWX: 970-498-2228; Empl.: 50; *Sls. Mgr.:* Cliff Crowder

DCI INC., 14812 W. 117th Street, P.O. Box 215, Olathe, KS 66061, Tel: 913-782-5672, Telex: 988700; FSC No.: 58677; Empl.: 15; *Sls. Mgr.:* Rob Steffens ..... **B•1055; D•1338-1339**

Local Sales Offices & Reps

AL	Huntsville, Saber Assocs.	800-327-0853
AZ	Phoenix, J. Smith & Assoc.	602-267-0981
CA	Redwood City, N-S Assocs.	415-851-2703
CA	San Diego, Mesa Engrg.	619-278-8037
CA	Torrance, Cutlass Elctrns. Inc.	714-549-9358
CO	Colorado Springs, J. Smith & Assoc.	303-597-5343
CT	Tolland, R. G. Assoc.	203-875-4201
FL	Melbourne, Saber Assocs.	305-724-0920
GA	Lawrenceville, Saber Assocs.	800-327-0853
IL	Chicago, Commodore I	312-394-5441
IN	Indianapolis, Commodore I	317-636-3318
KS	Shawnee Mission, Vertec	816-737-0377
MA	Danvers, R. G. Assocs.	617-837-3290
MN	Minneapolis, Trask Engrg.	612-537-2434
MO	St. Louis, Vertec	314-394-6242
NJ	Cherry Hill, Analectro, Inc.	609-424-2883
NJ	Parsippany, Analectro	201-386-9677
NM	Albuquerque, J. Smith & Assoc.	505-265-3406
NY	Latham, L-Tron	518-785-5032
NC	Clayton, Saber Assocs.	800-327-0853
OH	Dayton, Bradcor	513-294-5477
OH	Euclid, Bradcor	216-261-0888

TX Richardson, Meas. Sys. & Sls. 214-644-4954
VA Alexandria, Analectro 703-823-1703
Can St. Lambert, Que., CTH Elctrns. 514-671-2181

DEAK TECHNOLOGY, INC., See Elpaz Instruments, Inc.

DEARBORN WIRE & CABLE, INC., 250 W. Carpenter, Wheeling, IL 60090, Tel: 312-459-1000, TWX: 910-253-0343, FAX: 312-459-0170; FSC No.: 28105; Empl.: 90; *Sls. Mgr.:* Ray Grabowski; *Dist. Mgr.:* Donna Kudlicki

DE COURSEY ENGINEERING LABORATORY, 11828 W. Jefferson, Culver City, CA 90230, Tel: 213-EX7-9668; Empl.: 7

DEGUSSA CORP., 104 New Era Drive, So. Plainfield, NJ 07080, Tel: 201-757-6500, Telex: 4754247; FSC No.: 630673043; *Sls. Mgr.:* Stacey A. Mack

DEGUSSA ELECTRONICS, Hybrid Division, 2155 North Forbes Blvd., Tucson, AZ 85745, Tel: 602-622-1278; Empl.: 100; *Sls. Mgr.:* Steve McComb

DEI, 230 N. Market Pl., Escondido, CA 92025, Tel: 619-743-8344; Empl.: 30; *Sls. Mgr.:* Matt Pedote

DEK, INC., 3480 Swenson Ave., St. Charles, IL 60174, Tel: 312-377-2575, Telex: 297284 DEK UR; FSC No.: 312-377-0372; Empl.: 115; *Sls. Mgr.:* L. R. Pappone

DELBERT BLINN CO., Box 2007, Pomona, CA 91769, Tel: 714-629-3900; Empl.: 10

DELCAP, Div. of American Precision Industries, Inc., 274 Sandusky Road, P. O. Box 38, Arcade, NY 14009, Tel: 716-652-3600, Telex: 91-293; FSC No.: 5910; Empl.: 6; *Sls. Mgr.:* Denis Kohlhagen; *Dist. Mgr.:* Denis Kohlhagen

DELCO WIRE & CABLE, INC., 257 Rittenhouse Cir., Bristol, PA 19007, Tel: 215-785-0511, Telex: 06-964523, TWX: 510-667-0968; *Sls. Mgr.:* T. Blick

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DEL ELCTRNS. CORP., 250 E. Sandford Blvd., Mt. Vernon, NY 10550, Tel: 914-699-2000, TWX: 710-562-0130; FSC No.: 01378; Empl.: 125 ..... **A•1075, 2220; D•1675-1677**

Local Sales Offices & Reps

AZ Tempe, Trembly Assocs. 602-967-2058
CA Los Alamitos, Power Specialists, Inc 213-594-9418
CA Mountain View, Leddy Assocs., Inc. 415-969-6313
CO Wheatridge, Trembly Assocs. 303-421-8900
IL Elmhurst, Scott Assocs. 312-279-5681
MA Burlington, TriTek 617-272-4550
MI Dearborn, Pitcher-Poulin 313-582-5450
MN Burnsville, Allied Comps. Reps., Inc. 612-435-7876
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assocs. 505-266-8616
NY E. Syracuse, Nycon Inc. 315-437-8343
PA Ardmore, Martin Assocs. 215-649-6332
TX Richardson, Barry Sls. 214-234-0255
UT Salt Lake City, Trembly Assocs. 801-486-5292

DELEVAN DIV., American Precision Inds. Inc., 270 Quaker Rd., E. Aurora, NY 14052, Tel: 716-652-3600, Telex: 91-293; FSC No.: 99800; Empl.: 300; *Sls. Mgr.:* R. Sbert ..... **A•1077, 1249-1251**

Local Sales Offices & Reps

AZ Phoenix, Toward Engrg. 602-955-3193
CA Del Mar, Galaxie Sls. Int'l. 619-480-5540
CA El Toro, Delevan 714-768-5522
CA Freemont, Advanced Technlg. Sls. 415-651-6402
CA Santa Ana, Galaxie Sls. Int'l. 714-541-5793
CO Aurora, High Tech Assocs. 303-695-1990
IL Downers Grove, Momak Sls. 312-963-6400
IN Fort Wayne, Walter W. Bieberich 219-432-2537
IN New Albany, Walter W. Bieberich 812-945-3187
IA Cedar Rapids, Lorenz Sls. 319-377-4666
KS Parker, S. W. Wollard 913-898-6552
MD Lutherville, D. A. Dougherty Sls. Co. 301-321-7890
MA Sterling, Compatible Comps. 617-422-6762
MN Mendota Hgts., G-II Sls. 612-454-3086
NJ Bellmawr, TAI 609-933-2600
NY Endicott, Tech-Mark 607-748-7473
NY Manhassett, Martech Assocs. 516-627-1151
NY Mendon, Tech-Mark 716-624-3840
NY Utica, Tech-Mark 315-733-0575
OH Beachwood, Electronic Salesmasters 216-831-9555
TX Irving, Kite Elctrn. Sls. Co. 214-986-0321
Can Mississauga, J. G. Weiss Co. Ltd. 416-673-0011
Can Nepean, J. G. Weiss Co. Ltd. 613-825-0545
Can St. Laurent, J. G. Weiss Co. Ltd. 514-337-5022
Can Vancouver, J. G. Weiss Co. Ltd. 604-873-1112
Can Winnipeg, J. G. Weiss Co. Ltd. 204-783-4387

Local Distributors

CA Chatsworth, IEC 213-998-2200
CA Fountain Valley, Comp. Center 714-979-0433
CA Santa Ana, ITT Multicomponents 714-835-9019
CA Santa Clara, WDG/Santa Clara 408-727-2500
FL West Palm Beach, Nurmi Elctrn. Supp. Co. 305-686-8553
MD Savage, Pyttronics Inds. Inc. 301-792-0780
MA Boston, P. J. Engrg. Supp. 617-783-0510
MN Fridley, Voyager Elctrns. Corp. 612-571-7766
NJ E. Brunswick, Brothers Elctrns. 201-238-2200
NY Bohemia, Car-Lac 516-567-4200
NY Bohemia, Justin Elctrns. Corp. 516-589-4000
NY Buffalo, Summit Distrs. 716-884-3450
NY Farmingdale, Milgray/New York 516-420-9800
PA Norristown, Century Elctrn. Comp. 215-631-5400
TX Fort Worth, Patco Supply 817-429-8596
Can Burnaby B.C., R-A-E Indl. Elctrns. Ltd. 604-291-8866
Can Don Mills, Ontario, Saynor Varah Elctrns. 416-445-2347
Can Montreal, Quebec, Prelco Elctrns. Ltd. 514-389-8051
Can Pointe-Claire Quebec, Future Elctrn. 514-694-7710

DELTA DESIGN, 5775 Kearny Villa Rd., San Diego, CA 92123-1111, Tel: 619-292-5000, TWX: 910-335-1215, FAX: 619-277-7884; Empl.: 170; *Sls. Mgr.:* Bob Williams

DELTA ELCTRNS., 145 Fayette St., Winston-Salem, NC 27101, Tel: 919-725-4122; Empl.: 55; *Sls. Mgr.:* L. E. Hancock

DELTA ELECTRONICS MFG. CORP., 416 Cabot St., Beverly, MA 01915, Tel: 617-927-1060, Telex: 710-347-0631; FSC No.: 00795; Empl.: 210; *Sls. Mgr.:* S. J. Somerset; *Dist. Mgr.:* K. Amos

DELTA M CORPORATION, 525 Warehouse Rd., Oak Ridge, TN 37830, Tel: 615-483-1569; *Sls. Mgr.:* Eugene F. Szafranski

DELTA PRODUCTS CORPORATION, 361 Fairview Way, Milpitas, CA 95035, Tel: 408-262-2002, Telex: 4992342 DELTAITTHY; Empl.: 12 Local/1500 Overseas; *Sls. Mgr.:* Elson Chang; *Dist. Mgr.:* Elson Chang ..... **A•1551, 1656-1657, 2221; D•1678-1679**

Local Sales Offices & Reps

AL Huntsville, Technlg. Mktg. Assocs. Inc. 205-883-7893
CA San Jose, K-Lectron 408-435-8282
CA Westminster, West Elctrns. 714-898-0120
CO Wheatridge, Wescom 303-422-8957
CT North Haven, Kitchen & Kutchen 203-239-0212
GA Atlanta, Technlg. Mktg. Assocs., Inc. 404-257-0374
FL Largo, Technlg. Mktg. Assocs., Inc. 813-536-3796
FL Melbourne, Technlg. Mktg. Assocs., Inc. 305-676-3776
FL Orlando, Technlg. Mktg. Assocs., Inc. 305-857-3760
FL Pompano Beach, Technlg. Mktg. Assocs., Inc. 305-977-9006
IL Chicago, United Prods. Co. 312-459-1222
IN Indianapolis, Electronic Sls. & Engrg., Inc. 317-849-4260
MA Burlington, Kitchen & Kutchen 617-229-2660
MN Edina, Hanna Lind Ltd. 612-925-5700
NJ Berkley Hgts., Allen Cambridge 201-464-0203
NY Penfield, Tech. Assocs., Inc. 716-385-4240
NC Charlotte, Robert W. Chapman & Co. 704-525-2421
NC Raleigh, Robert W. Chapman 919-782-2624
OH Centerville, Omega Sls., Inc. 513-434-5507
OH University Hgts., Omega Sls., Inc. 216-381-1404
OR Beaverton, A/D Elctrns. 503-641-6469
PA Chestnut Hill, Deltatronics 215-248-0294
SC Greenville, Robert W. Chapman & Co. 803-288-8821
TX Dallas, Ultra Rep 214-783-8831
TX Houston, Texoma Tech. Sls. 713-462-1432
TX Houston, Ultra Rep 713-961-1262
UT Salt Lake City, Wescom 801-466-9594
VA Richmond, Glasscook Assocs. 804-270-7067
WA Kirkland, A/D Elctrns. 206-821-8422
PR San Juan, Elctrn. Tech. Sls. 809-720-1300
Can Quebec, Componetics 514-331-9930

Local Distributors

CA Buena Park, Cypress Elctrns. 714-521-5230
CA San Jose, Caps. Unlimited 408-946-7676
CA San Jose, Cypress Elctrns. 800-538-5112
CO Englewood, Industrial Elctrns. 303-694-9444
FL Tampa, Reptron 813-855-4656
IL Chicago, Upco Distrs., Ltd. 312-459-1222
MA Needham, Cronin 617-449-5000
MA Wilmington, JV Elctrns. 617-273-4300
MN Minneapolis, Berquist Co. 612-835-2322
NJ Rockaway, Tonar Inds. 201-586-9000
NC Greensboro, Hammond Elctrns. 919-275-6391
OH Cincinnati, Schuster 513-489-1400
OH Twinsburg, Schuster 216-425-8134
PA McKean, Advacom, Inc. 814-476-7774
TX Allen, Prime Distrbg. Co. 800-526-7478
TX Dallas, Cypress 214-869-1435
Can Quebec, Prelco Elctrns. 514-389-0047

DELTA WIRE & CABLE CO., 1260 Neil Ln., North Chicago, IL 60064, Tel: 312-473-4990; Empl.: 12; *Sls. Mgr.:* Perry Stein

DELTEC CO., 12160 Gridley Rd., Norwalk, CA 90650, Tel: 213-929-1775; Empl.: 7; *Sls. Mgr.:* Dennis Orman

DEL-TELEPRODUCTS, See DEI

DELTROL

DELTROL CONTROLS, 2745 S. 19th St., Milwaukee, WI 53215, Tel: 414-671-6800, Telex: 26871; Empl.: 300; *Sls. Mgr.:* D. Uhen; *Dist. Mgr.:* D. Uhen ..... **B•1340-1341, 1510-1513**

Local Sales Offices & Reps

AL Huntsville, JWL Assocs. 205-883-1712
AZ Scottsdale, Bill Earl Assocs. 602-994-3813
CA Brea, Masco Elctrns. 714-529-0866
CA Santa Clara, Gagner-Toomey Assocs. 408-244-2200
CO Boulder, Front Range Mktg. 303-443-4780
CT Bloomfield, Wood Sls. Corp. 203-243-0457
FL Deerfield Bch., Jack Krutek & Assocs. 305-427-4202

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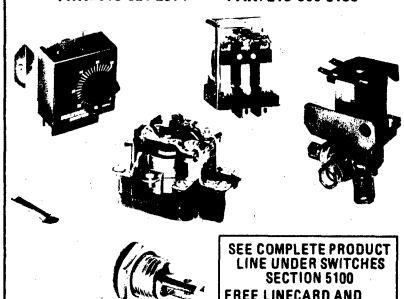

SEE COMPLETE PRODUCT LINE UNDER SWITCHES SECTION 5100
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GA	Marietta, JWL Assocs.	404-429-8010
IL	Glenview, E. J. McCaffrey & Assocs.	312-272-2820
IN	Wannamaker, Nationwide Comps.	317-872-7207
MA	Wakefield, Wood Sls. Corp.	617-245-8300
MI	Farmington Hills, W. R. Hummon & Assocs.	313-474-0661
MN	St. Paul, Kencotronics, Inc.	612-645-7717
MO	Ellisville, Weisler & Assocs.	314-394-4543
NJ	Perth Amboy, Astrorep, Inc.	201-826-8050
NY	Babylon, Astrorep., Inc.	516-422-2500
NY	Rochester, Omni Sls.	716-342-5270
NC	Pineville, JWL Assocs.	704-541-5750
OH	Willoughby, Nationwide Comps.	216-946-3226
OR	Lake Oswego, Control Dvcs. N.W.	503-244-7272
PA	Jeffersonville, Providence Mktg.	215-630-0629
TX	Houston, Weisler & Assocs.	713-467-1862
UT	Salt Lake City, Front Range Mktg.	801-364-6481
WA	Bellevue, Control Dvcs. N.W.	206-451-8552
WI	Milwaukee, Werking Ind. Sls.	414-964-2225
Can	Pointe Claire, Que., Elcom GBM, Inc.	514-697-4556

Local Distributors

AL	Birmingham, American Elctrn. Supp.	205-942-4656
AL	Montgomery, Southern Controls	205-277-5030
AR	Little Rock, Carlton-Bates Co.	501-562-9100
CA	Buena Park, Control Design	213-802-2429
CA	Canoga Park, C & A Elctrns.	213-340-6022
CA	Los Angeles, Electric Switches	213-660-1310
CA	San Jose, Consolidated Parts	408-263-9521
CA	Tustin, Western Switches	714-259-8144
CO	Denver, Integrated Elctrns.	303-534-6121
CT	New Haven, Hatry Elctrns.	203-787-5921
CT	Shelton, Century Elec.	203-736-2684
FL	Altamonte Springs, Control Des.	305-788-3220
FL	Ft. Lauderdale, SE Elctrns.	305-563-4131
FL	Lakeland, Wes-Garde Comps.	813-644-7564
FL	Orlando, EMSCO	305-849-6362
GA	Atlanta, Georgia Control Ctr.	404-876-8833
ID	Pocatello, Kimball Elctrns.	208-232-2201
IL	Elk Grove Village, GBL/Gould Elctrns.	312-593-3220
IL	Genoa, Control Design	815-784-6515
IN	Indianapolis, Control Design	317-788-4559
IA	Cedar Rapids, Iowa Radio Supp.	319-393-4510
IA	Davenport, Warren Radio	319-322-5301
IA	Dubuque, Miller Elec. Supp.	319-588-1469
IA	Marion, Control Des.	319-373-2923
IA	West Des Moines, Ramco Co.	515-225-6933
KS	Kansas City, Kornfield Thorp Elec.	913-321-7070
KY	Louisville, Peerless Elctrn. Equip.	502-637-7674
MD	Aberdeen, Harco Elctrns.	301-838-7990
MA	Brighton, Interstate Elctrns. Equip.	617-782-9000
MA	Newton Upper Falls, In Stock Prods.	617-964-6200
MI	Jackson, Fulton Radio Supp.	517-784-6107
MN	Minneapolis, Control Design	612-721-6555
MO	St. Louis, Van Sickle Radio Elctrns.	314-621-5000
NH	Keene, Tradesmen Elctrl. Supp.	603-352-1205
NJ	Oakland, Relay Specialties	201-337-1000
NJ	Paterson, Feldman Brothers	201-742-7329
NJ	Raritan, Masters Elctrn.	201-725-3533
NY	Hauppauge, Broadline Elctrns.	516-231-4100
NY	Lynbrook, Peerless Radio Corp.	516-593-2121
NY	Rochester, Masline Elctrns.	716-546-5373
NY	Vestal, Wholesale Elec. Supp.	607-729-1526
ND	Grand Forks, Border States	701-772-3477
OH	Warren, Rem Elctrns.	216-373-1300
OH	Wickliffe, Gateway Megatech	216-944-5801
OK	Ardmore, Ardmore Elec. Supp.	405-223-3571
OK	Tulsa, Radio, Inc.	918-587-9123
OR	Portland, Dunn Elec.	503-285-0214
PA	Malvern, Control Design	215-296-0150
PA	Philadelphia, Lindley Elec.	215-329-7005
SD	Aberdeen, Plainsco	605-225-7100
TN	Knoxville, CED	651-521-6262
TX	Dallas, Control Design	214-358-1441
TX	Dallas, Watson Elec. Supp.	214-742-8441
TX	Lubbock, R & R Elec. Co.	806-765-7727
TX	San Antonio, Blackburn Drives Controls	512-349-2621
UT	Salt Lake City, Kimball Elctrns.	801-328-2075
VA	Glen Allen, Hermitage Distrs.	804-798-3830
VA	Staunton, Southern Elec.	703-886-6218
WI	Manitowoc, Englewood Elec.	414-684-6653
WI	Milwaukee, Marsh Elctrns.	414-475-6000
WI	New Berlin, Control Design	414-784-1015

DELTRON, INC., P.O. Box 1369, Wissahickon Ave., N. Wales, PA 19454-9990, Tel: 215-699-9261, FAX: 1 215 699 2310; Empl.: 175-180; *Sls. Mgr.:* Jack Phillips

DENNIS CHEMICAL, 2700 Papin St., St. Louis, MO 63103, Tel: 314-771-1800; Empl.: 70; *Sls. Mgr.:* Charles F. Seger III; *Dist. Mgr.:* Charles F. Seger III

DENNISON MFG. CO., 300 Howard St., Framingham, MA 01701, Tel: 617-879-0511, Telex: 948-478; FSC No.: 5975;2310; Empl.: 8000; *Sls. Mgr.:* Dan Shearn; *Dist. Mgr.:* Marlene Hurley

Local Sales Offices & Reps

FL	Altamonte Springs	305-830-1549
IL	Des Plaines	312-298-8870
MI	Birmingham	313-258-6970
MO	St. Louis	314-569-3050
NY	Armonk	914-273-6550
OH	Cincinnati	513-621-0865
PA	Wayne	215-687-9117
TX	Dallas	214-680-9846

DENSEPAC MICROSYSTEMS, INC., 7321 Lincoln Way, Garden Grove, CA 92641-1428, Tel: 714-898-0007, 800-64-CHIPS, TWX: 510-601-1045; Empl.: 100; *Sls. Mgr.:* Robert T. Hill

DENSITRON CORPORATION, 2540 W. 237th St., Torrance, CA 90505, Tel: 213-530-3530, TWX: 910-349-6200; FSC No.: 62483; Empl.: 65; *Sls. Mgr.:* Robert Turner; *Dist. Mgr.:* Robert Turner ..... **B•1056-1057**

Local Sales Offices & Reps

AL	Huntsville, Elctrn. Mktg., Inc.	205-837-7363
AZ	Phoenix, Chaparral Elctrn., Inc.	602-252-0897
CA	Laguna Hills, Comp. Mktg. Assocs.	714-951-6046
CA	Lomita, Comp. Mktg. Assocs.	213-326-1460
CA	San Mateo, Comp. Mktg. Assocs.	415-345-7373
CO	Arvada, Delconec	303-422-7023
FL	Margate, E.P.M. Corp.	305-977-0331
GA	Atlanta, Elctrn. Mktg. Assoc., Inc.	404-448-1215
IL	Northbrook, H. Benjamin & Assoc.	312-272-2900
IA	Marion, Ensco-Rep, Inc.	319-377-8551
KS	Wichita, Ensco-Rep, Inc.	316-683-1071
MA	Braintree, Nova Assocs.	617-848-9330
MI	Southfield, R. C. Nordstrom & Co.	313-559-7373
MN	Minneapolis, Electro-Serv	612-338-3475
MO	Maryland Heights, Ensco-Rep, Inc.	314-423-3935
NY	Marcellus, J. G. Welch Assocs.	315-685-6280
NY	Mastic, Optimum Sls. Co.	516-589-4664
NY	Rochester, J. G. Welch Assocs.	716-244-1100
NC	Raleigh, Elctrn. Mktg. Assoc., Inc.	919-847-8800
OH	Worthington, Dynel Corp.	614-436-9452
PA	Wynnewood, Metz-Benham Assocs., Inc.	215-896-7300
SC	Greenville, Elctrn. Mktg. Assoc., Inc.	803-233-4637
TX	Seagoville, Delta Comp., Inc.	214-287-6333
WA	Seattle, J. J. Assocs., Inc.	206-246-6619

DERINGER MFG. CO., 1250 Townline Road, Mundelein, IL 60060, Tel: 312-566-4100, TWX: 910 685 4321, FAX: 312-566-5370; *Sls. Mgr.:* R. Davis

DESIGNATRONICS, INC., See Automatic Coil Corp., Sub. Designatronics, Inc.

DESIGN AUTOMATION, INC., 809 Massachusetts Ave., Lexington, MA 02173-3992, Tel: 617-862-8998, Telex: 247346 SBSB UR; FSC No.: 4D417; Empl.: 7

DESIGN COMPONENTS, INC., 1 Kenwood Circle, Franklin, MA 02038, Tel: 617-528-7300, 800-341-4811; Empl.: 75; *Sls. Mgr.:* James Boyd

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CA	Chatsworth, Motion Technlg., Inc.	818-700-8868
CO	Littleton, Integrated Motion Sys.	303-794-7975
GA	Norcross, Meas. Center	404-242-1651
IN	Elkhart, Shaum Mfg. Inc.	219-264-0771
MA	Andover, Servo Comps. & Sys.	617-975-2451
MI	Troy, Xanthus, Inc.	313-528-2000
MN	Cottage Grove, Applied Motion Technlg.	612-459-0600
NY	Pittsford, Controlled Motion Prods.	716-381-1933
NY	Syosset, Motion Control Sys.	516-921-5656
TX	Denton, Texonics	817-382-4159

DESIGN TECHNOLOGY, 5710 Ruffin Rd., San Diego, CA 92123, Tel: 619-268-8194, Telex: 503476; Empl.: 50; *Sls. Mgr.:* Pamela Hamilton; *Dist. Mgr.:* Michael Golden

DESPATCH INDUSTRIES, 619 S.E. 8th St., P.O. Box 1320, Minneapolis, MN 55440-1320, Tel: 612-331-1873, Telex: 29-0704, TWX: 6288-5512; Empl.: 525; *Sls. Mgr.:* T. Toner/P. Olson

DETORONICS CORPORATION, 10660 E. Rush St., S. El Monte, CA 91733, Tel: 818-579-7130, TWX: 910-587-3436; FSC No.: 29867; Empl.: 45

DEUTSCH CO., Deutsch Fiber Optics Div., 7001 W. Imperial Hwy., Los Angeles, CA 90045, Tel: 213-649-1400; *Sls. Mgr.:* Ken Ahmad

DEUTSCH RELAYS, INC., 65 Daly Road, East Northport, NY 11731, Tel: 516-499-6000, TWX: 510 226 0233; FSC No.: 516-499-6000-254; Empl.: 400; *Sls. Mgr.:* Jack Riley; *Dist. Mgr.:* Steve Salonitis

DEVCO ENGINEERING, 36 Pier Lane West, Fairfield, NJ 07006, Tel: 201-CA8-0321, Telex: 139-340; Empl.: 36

DEVELCO, INC., 175 Nortech Pkwy., San Jose, CA 95134-2306, Tel: 408-945-6500, TWX: 910-339-9295; Empl.: 50; *Sls. Mgr.:* W. J. Baker

DEXTER RESEARCH CTR., INC., 7300 Huron River Dr., Dexter, MI 48130, Tel: 313-426-3921, Telex: 757075 DEXTER RES UD; Empl.: 22; *Sls. Mgr.:* Robert Toth Jr.

DEYOUNG MANUFACTURING, INC., 12920 N.E. 125th Way, Kirkland, WA 98034, Tel: 206-823-4798, Telex: 62919956; FSC No.: 54937; Empl.: 50; *Sls. Mgr.:* Ted Johnson; *Dist. Mgr.:* Bob Palmer

DGH CORPORATION, P. O. Box 5638, Manchester, NH 03108, Tel: 603-622-0452, TWX: 510 601 6112; Empl.: 6

DIALIGHT CORP., 1913 Atlantic Ave., Manasquan, NJ 08736, Tel: 201-223-9400, Telex: 244536; Empl.: 400; *Sls. Mgr.:* I. Jaffe ..... **B•1028, 1058-1064, 1588-1589**

Local Sales Offices & Reps

AL	Huntsville, Cartwright & Bean	205-830-1540
AZ	Phoenix, Shefler-Kahn Co.	602-257-9015
CA	Los Angeles, Landa & Assocs.	213-879-0770
CA	Pleasanton, Moulthrop Sls.	415-463-0450
CA	San Diego, Landa & Assocs.	614-457-0219
CA	Santa Ana, Landa & Assocs.	714-543-7805
CO	Boulder, Comp. Prods. Sls.	303-530-2800
FL	Ft. Lauderdale, Panamtech, Inc.	305-587-3769
GA	Atlanta, Cartwright & Bean	404-233-2939
IL	Chicago, Dialight Corp.	312-991-3472
IN	Indianapolis, Elctrn. Reps.	317-894-1414
KS	Shawnee Mission, Lowell Kansas & Assocs.	913-631-3515
LA	Covington, Cartwright & Bean	504-892-1780
MI	Royal Oak, Hilltronics	313-495-0920
MN	Minneapolis, Professional Sales For Ind.	612-944-8545
MS	Jackson, Cartwright & Bean	601-981-1170
MO	St. Louis, Lowell Kangas & Assocs.	314-821-4050
NY	Liverpool, Gen-Tech	315-451-3480
NC	Charlotte, Cartwright & Bean	704-536-0303
NC	Raleigh, Cartwright & Bean	919-876-4130
OH	Columbus, Baehr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Baehr, Greenleaf & Assocs.	513-439-0724
OH	Westlake, Baehr, Greenleaf & Assocs.	216-892-1770
OR	Portland, Earl & Brown Assocs.	503-245-2283
PA	Broomall, L.D. Lowery	215-356-5300
PA	Evans City, Baehr, Greenleaf & Assocs.	412-776-2151
TN	Knoxville, Cartwright & Bean	615-693-7450
TN	Memphis, Cartwright & Bean	901-362-8345
TX	Austin, Tesco	512-834-8374
TX	Garland, Tesco	214-681-1376
UT	Woodscross, Comp. Prods. Sls.	801-292-8882
WA	Redmont, Earl & Brown Assocs.	206-885-5064

Local Distributors

AZ	Tempe, Harper S.I.D.	602-967-1464
AR	Little Rock, Carleton-Bates Co.	501-562-9100
CA	Alhambra, Harper S.I.D.	213-289-0255
CA	Buena Pk., Cypress Elect.	213-744-0355
CA	Garden Grove, Bell Inds.	714-895-7801
CA	Garden Grove, Richey Western Elec.	714-895-0060
CA	Gardena, Bell Indus.	213-515-1800
CA	Gardena, Cal Switch & Signal	213-770-2330
CA	Inglewood, Newark Elctrns.	213-671-7378
CA	Roseville, Bell Inds.	916-969-3100
CA	Sacramento, Sacramento Elctrns.	916-441-4821
CA	San Diego, Harper S.I.D.	714-560-8545
CA	San Diego, Richey Western Elctrns.	619-271-4511
CA	Santa Clara, Cypress Elctrns.	408-435-8400
CA	Santa Clara, Harper S.I.D.	408-988-6041
CA	Santa Clara, Richey Western Elctrns.	408-727-7411
CA	Sun Valley, Richey Western Elec. Inc.	213-768-3800
CA	Sunnyvale, Bell Indus.	408-734-8570
CA	Sunnyvale, Time Elect.	408-734-9888
CA	Thousand Oaks, Bell Inds.	805-499-6821
CO	Denver, CSID Inc.	303-292-9594
CO	Denver, Newark Denver Elctrns.	303-757-3351
CT	Wallingford, Sager Elctrl. Supply	203-265-4600
FL	Ft. Lauderdale, Peerless Radio	305-973-4141
FL	Orlando, Hammond Elctrns.	305-849-6060
FL	Pompano Bch., Peerless Radio	305-947-8658
GA	Atlanta, Specialty Dist.	404-873-2521

IL Chicago, Newark Elctrns. 312-784-5100
IL Northbrook, Classic Comps. Supp. 312-272-9650
IL Palatine, OHM Elctrns. 312-359-5500
IL Peoria, Klaus Radio & Elect. 309-691-4840
IN Ft. Wayne, Bell Inds./Graham Elctrn. Div. 219-423-3422
IN Indianapolis, Bell Inds./Graham Elctrn. Div. 317-634-8202
IN Indianapolis, PEI-Genesis 317-637-5571
IN South Bend, PEI-Genesis 219-287-2911
KY Louisville, P.I. Burks 502-589-3960
LA Lafayette, Ralph's of Lafayette 318-234-4507
LA New Orleans, Southern Radio Supp. .. 504-524-2343
MD Gaithersburg, Pioneer Washington Elec. 301-948-0710
MD Rockville, Capitol Radio Whlsrs. 301-881-2270
MD White Marsh, Resco/Baltimore 301-529-0500
MA Hingham, Sager Elec. Supp. 617-749-6700
MA Norwood, Gerber Elctrns. 617-769-6000
MA Springfield, T.F. Cushing 413-788-7341
MA Wilbraham, Ind'l. Comps. 413-596-3854
MI Ann Arbor, Wedemeyer Elctrn. Supp. .. 313-665-8611
MI Livonia, RS Elctrns. 313-525-1155
MI Oak Park, Newark Elctrn. 313-967-0600
MN St. Paul, Gopher Elctrns. 612-483-3322
MO Kansas City, LCOMP 816-221-2400
MO Kansas City, Walters Radio Supp. 816-531-7015
MO Maryland Hgts., LCOMP 314-291-6200
NE Lincoln, Scott Elctrn. Supp. 402-466-8221
NJ Hanover, State Elctrns. 201-887-2550
NJ Kenilworth, Federated Purchaser 201-272-0505
NJ Pennsauken, Resco Elctrns. 609-662-4000
NY Buffalo, Summit Dists. 716-884-3450
NY Elmsford, Ancar Elctrns. Supp. 914-592-7100
NY Endwell, ASI Elect. 607-754-3823
NY Hauppauge, Broadline Elec. Dists. 516-231-4100
NY Long Island City, Dalis Indl. Elect. 718-361-1100
NY Lynbrook, Peerless Radio 516-593-2121
NY Melville, Arrow Elctrns. 516-694-6800
NY Rochester, Summit Elctrns. 716-334-8110
NY Rome, Rome Elctrns. 315-337-5400
NY Woodbury, Pioneer/Harvey 516-921-8700
NC Greensboro, Hammond Elctrns. 919-275-6391
NC Raleigh, Southeastern Elctrns. 919-828-2311
OH Akron, Akron Elctrn. Supp. 216-762-8818
OH Akron, Sun Radio 216-434-2171
OH Cincinnati, Hughes-Peters 513-351-2000
OH Cincinnati, URI Elctrns. 513-761-4030
OH Cleveland, Pioneer-Cleveland 216-587-3600
OH Columbus, Hughes-Peters 614-294-5351
OH Dayton, Pioneer/Dayton 513-236-9900
OH Dayton, Stotts-Friedman 513-298-5555
OH Solon, REPCO Elctrn. 216-248-8900
OK Tulsa, Norvell Elect. 918-254-8606
OK Tulsa, Radio, Inc. 918-587-9123
OR Beaverton, Almac Elctrns. 503-641-9070
OR Lake Oswego, Bell Inds. 503-241-4115
PA McKean, Advacom 814-476-7774
PA Montgomeryville, Pyttronic Indus. 215-643-2850
PA Philadelphia, Almo Elctrns. 215-698-4000
PA Philadelphia, PEi-Genesis Elctrn. 215-568-7400
PA Pittsburgh, Cam RPC Elect. 412-782-3770
PA Reading, Barbey Elctrns. 215-376-6116
RI Providence, Wm. Dandreta 401-861-2800
SC Greenville, Hammond Elctrns. 803-233-4121
TN Kingsport, Radio Elec. Supp. 615-247-8111
TN Nashville, Carlton-Bates Co. 615-244-3562
TN Nashville, Electra Dist. 615-329-3971
TX Austin, Harrison Equip. 512-458-3555
TX Austin, Norvell 512-458-8106
TX Dallas, Norvell Elctrns. 214-233-0020
TX Garland, Newark Elctrns. 214-494-5911
TX Houston, Newark Elctrns. 713-782-4800
TX Stafford, Harrison Equip. 713-879-2727
UT Salt Lake City, Standard Supp. 801-486-3371
VA Norfolk, Priest Elctrns. 804-855-0105
VA Richmond, Sterling Elctrns. 804-226-2190
WA Bellevue, Almac Elctrns. 206-643-9992
WA Bellevue, Bell Inds. 206-747-1515
WI Milwaukee, Elctrn. Expeditors 414-228-8100
WI Milwaukee, Indl. Elect. 414-276-1212
WI Milwaukee, Marsh Elctrns. 414-475-6000

DIALIGHT CORP. (KULKA SMITH, INC), 1913 Atlantic Ave., Manasquan, NJ 08736, Tel: 201-223-9400, TWX: 244536; Empl.: 500; *Sls. Mgr.:* Ivan Jaffe

DIAL PRODUCTS CO., 19-21 Cottage St., Bayonne, NJ 07002, Tel: 201-HE7-0720; Empl.: 100; *Sls. Mgr.:* Beverly Malen

DIAMOND MAGNETICS, 235 Tank Farm Rd., Ste. G, San Luis Obispo, CA 93401, Tel: 805-544-4019; Empl.: 20; *Sls. Mgr.:* Steven A. Maxwell

DIANACHART INC., 129 Hibernia Ave., Rockaway, NJ 07866, Tel: 201-625-2299; Empl.: 10; *Sls. Mgr.:* S. Byrom

DI/AN CONTROLS, INC., 944 Dorchester Ave., Boston, MA 02125, Tel: 617-288-7700; FSC No.: 06900; Empl.: 60; *Sls. Mgr.:* Robert D. Kodis

DIA-NETICS, INC., 18823 Napa St., Northridge, CA 91324, Tel: 818-886-2616; Empl.: 35

DIEGO POWER

DIEGO POWER, 5350 Eastgate Mall, San Diego, CA 92121, Tel: 619-587-1925; Empl.: 12; *Sls. Mgr.:* Jack Jaquay ..... **D•2050-2052**

Local Sales Offices & Reps
AZ Phoenix, Odyssey I 602-246-8846
CO Englewood, Odyssey I 303-773-8176
IL Elmhurst, Sector Engrg. Sls. 312-530-7850
IN Indianapolis, Sector Engrg. Sls. 317-842-1120
MD Wheaton, Brimberg Sls. Co. 301-946-2670
MA Bedford, Eastronix 617-275-5775
MI Southfield, Comtel Instrs. 313-358-2505
MN Minneapolis, Sector Engrg. Sls. 612-593-1809
NM Albuquerque, Odyssey I 505-265-6645
NC Greensboro, Southeast Sys. Grp. Inc. 919-854-1018
OH Cleveland, Comtel Instrs. 216-442-8080
OH Dayton, Comtel Instrs. 513-426-5310
OK Tulsa, Spectra Sls. 918-663-7188
PA Pittsburgh, Comtel Instrs. 412-922-5720
TX Houston, Spectra Sls. 713-747-2798
TX Richardson, Spectra Sls. 214-234-3600
WA Seattle, Datacom 206-285-2525
WI Milwaukee, Sector Engrg. Sls. 414-352-8280
Can Lachine, Que., Electro Design 514-636-4838

DIELECTRIC COMMUNICATIONS, General Signal, Tower Hill Rd., Raymond, ME 04071, Tel: 207-655-4555, 800-341-9678, Telex: 710-229-6890; FSC No.: 08441; Empl.: 270; *Sls. Mgr.:* Rolf Olsen

DIELECTRIC INSTRUMENT CORP., 761 Franklin Ave., Pittsburgh, PA 15221, Tel: 412-731-6566; Empl.: 5

DIELECTRIC LABS., Rte. 20 E., Cazenovia, NY 13035, Tel: 315-655-8710, Telex: 882-691 Dielectric Labs.; FSC No.: 55153; Empl.: 75; *Sls. Mgr.:* Gunter Vorlop

DIETZ DESIGN, INC., 100 Electronics Pkwy., Belton, MO 64012, Tel: 816-331-4911; Empl.: 75

DIGIAC CORP., 19 Power Drive, Hauppauge, NY 11788, Tel: 516-234-2100; Empl.: 25; *Sls. Mgr.:* Cathy R. Gonzalez

DIGI-DATA CORP., 8580 Dorsey Run Rd., Jessup, MD 20794, Tel: 301-498-0200, Telex: 87-580; Empl.: 75; *Sls. Mgr.:* Allen Grams

DIGITAL COMMUNICATIONS ASSOCIATES, INC., 1000 Alderman Dr., Alpharetta, GA 30201, Tel: 404-442-4000, Telex: 261375 DCA UR; Empl.: 1025; *Dist. Mgr.:* Jerry Buran

DIGITAL DATA SYSTEMS, 1551 N.W. 65 Ave., Plantation, FL 33313, Tel: 305-792-3290, Telex: 9109974751 (DIGITAL); FSC No.: 65136; Empl.: 20; *Sls. Mgr.:* Floyd Simon; *Dist. Mgr.:* Floyd Simon

DIGITAL DYNAMICS, INC., 275 Technology Circle, Scotts Valley, CA 95066, Tel: 408-438-6823, ESYLNK: EIC021608; FSC No.: (S.I.C. Code – 3823); Empl.: 15; *Sls. Mgr.:* R. Palmer

DIGITAL ELCTRNS. CORP., 26142 Eden Landing Rd., Hayward, CA 94545, Tel: 415-786-0520, Telex: 172073 DIGELEC HYWD; FSC No.: (415)-786-1040; *Sls. Mgr.:* John W. McKinney, Mktg. VP

DIGITAL EQUIP., One Iron Way, Marlborough, MA 01752

DIGITAL EQUIPMENT CORP., 33 Cabot Rd., Woburn, MA 01801, Tel: 800-225-5385

DIGITAL GRAPHIC SYS., 2629 Terminal Blvd., Mountain View, CA 94043, Tel: 415-962-0200

DIGITAL MEDIA, 11770 Warner Ave., Ste. 225, Fountain Valley, CA 92708, Tel: 714-751-1373; *Sls. Mgr.:* Ed Burg

DIGITAL PATHWAYS, INC., 201 Ravendale Dr., Mountain View, CA 94043, Tel: 415-964-0707, TWX: 910-379-5034; Empl.: 75; *Sls. Mgr.:* Robert Lewin

DIGITAL PRODUCTS, INC., 108 Water Street, Watertown, MA 02172, Tel: 617-924-1680, Telex: 312345; Empl.: 45; *Sls. Mgr.:* Janis Harvey

DIGITAL RADIO CORP., 601 S. Pacific Coast Hwy., Redondo Beach, CA 90277, Tel: 213-316-9114; Empl.: 27; *Sls. Mgr.:* Arvin L. Perry

DIGITEC CORP., 959 Cheney Ave., Marion, OH 43302, Tel: 614-387-3444, Telex: 3775688; FSC No.: 16152; Empl.: 45; *Sls. Mgr.:* Jerry Rozek; *Dist. Mgr.:* Jerry Rozek ..... **D•1344**

Local Sales Offices & Reps
AL Adamsville, Southrep 205-674-3056
AZ Tempe, Trembly Assocs. 602-967-2058
CA Bakersfield, AWC, Inc. 805-322-2416
CA Huntington Beach, AWC 714-969-2468
CA Santa Clara, Johnson Assocs. 408-984-4626
CO Wheatridge, Trembly Assocs. 303-421-8900
FL Clearwater, Structural Engrg./Testing Co. 813-442-7767
IL Des Plaines, Marsland Assocs. 312-298-2620
IN Indianapolis, Marsland Assocs. 317-293-5437
IA Cedar Rapids, Marsland Assocs. 319-365-1908
LA Baton Rouge, Process Meas. & Monitors, Inc. 504-927-9416
MD Baltimore, Cavalier Controls, Inc. 301-337-8378
MA Lexington, R. J. Sickles Assocs. 617-862-5100
MA Needham, Carl Lueders & Co. 617-449-0345
MI Southfield, Comtel-Instr. 313-358-2505
MN Minneapolis, Marsland Assocs. 612-545-4481
MO St. Louis, Marsland Assocs. 314-991-1399
NV Las Vegas, Trembly Assocs. 702-739-9770
NJ Cedar Grove, KLS 201-785-4450
NJ Pennsauken, Scientific Reps., Inc. 609-662-5222
NM Albuquerque, Fry-Gates 505-262-1525
NY Parish, Glen Instrs. 315-625-4426
NY Rochester, Glen Instrs. 716-338-7148
NC Charlotte, Metrodyne, Inc. 704-563-2474
OH Cleveland, Comtel-Instr. 216-442-8080
OH Hillard, Comtel-Instr. 614-876-8305
OK Tulsa, Ernie Graves Co., Inc. 918-584-4707
OR Portland, Showalter Instrs., Inc. 503-629-9254
PA Pittsburgh, Comtel-Instr. 412-922-5720
TN Knoxville, J R B Controls, Inc. 615-588-2937
TX Houston, Dixon Engrg., Inc. 713-644-8052
TX Longview, Control Devices/Jack Fair Co. 214-759-6471
UT Centerville, M.C. Squared, Inc. 801-298-3380
VA Richmond, Cavalier Controls 804-271-5226
WA Bellevue, Showalter Instrs., Inc. 206-746-7970
WI New Berlin, Marsland Assocs., Inc. 414-786-6611
Can Weston, Ont., Megatronix Corp. 514-878-8000

DIGITECH INDUSTRIES, INC., 66 Grove St., P.O. Box 547, Ridgefield, CT 06877, Tel: 203-438-3731, Telex: 969-623; Empl.: 70

DIGITEK INC., Block & Co., Inc., P.O. Box 468, Kenmore, WA 98028, Tel: 206-485-6571; Empl.: 14; *Sls. Mgr.:* Herb Vernon

DIGITRAN®

DIGITRAN CO., Xcel Corporation, 3100 New York Dr., Pasadena, CA 91107, Tel: 818-791-5600, Telex: 67-5485, TWX: 910-588-3794; FSC No.: 07126; Empl.: 300; *Sls. Mgr.:* R. Van Horn; *Dist. Mgr.:* D. Hayward ..... **B•1065, 1590, 1706**

Local Distributors
AL Huntsville, Comp. Distrs. 205-883-7501
AL Huntsville, Powell Elec. 205-539-2731
AZ Tempe, Powell Elctrns. 602-967-7538
AR Little Rock, Comp. Distrs. 501-227-6278
CA Cerritos, El-Com 213-404-2961
CA Fullerton, Pyramid 714-773-0781, 213-691-0561
CA San Diego, El-Com 619-578-0900
CA San Jose, Powell Elctrns. 408-943-9020
CA Santa Clara, Pyramid Elec. 408-727-9810
CT Hamden, Impact Elctrns. 203-281-1331
FL Ft. Lauderdale, Comp. Distrs. 305-971-4950
FL Ft. Lauderdale, Powell Electr./Fla. 305-972-4300
GA Norcross, Comp. Distrs. 404-441-3320
IL Mt. Prospect, Magnuson Elctrns. 312-956-0700
IN Indianapolis, Graham Elec. 317-634-8202
MD Columbia, Powell Electr. 301-621-4070
MA Canton, Impact Sls. Co. 617-821-1500
MA West Borough, Powell Electrns. 617-336-6100
MI Livonia, Pioneer/Michigan 313-525-1800
MI St. Clair Shores, Specialties Mfg. 313-771-2700

MN St. Paul, Magnuson Elec. 612-227-8495
NJ Hasbrouck Hgts., Tory Sls. 201-288-5656
NY Rochester, Modutex Corp. 716-647-9700
NC Cary, Powell Elec. 919-467-1212
NC Raleigh, Comp. Distrs. 919-834-9465
OH Cleveland, Pioneer-Cleveland 216-587-3600
OH Columbus, Elctrns. Mktg. Corp. 614-299-4161
OH Dayton, Pioneer/Dayton 513-236-9900
OK Tulsa, Norvell Elctrns. 918-663-1247
PA Philadelphia, Powell Electr. 215-365-1900
PA Pittsburgh, Pioneer/Pittsburgh 412-782-2300

DILLON, W. C., & CO., National Controls, Inc., 2320 Airport Blvd., Santa Rosa, CA 95401, Tel: 707-527-5555, Telex: 4979910; Empl.: 500; *Dist. Mgr.:* Dennis Bartolomei

DILOG, 1555 S. Sinclair St., Anaheim, CA 92806, Tel: 714-937-5700, Telex: 6836051; FSC No.: 95-3205555; Empl.: 105; *Sls. Mgr.:* Dennis Edwards; *Dist. Mgr.:* Steve Ferrari

DIMCO-GRAY, 8200 S. Suburban Rd., Dayton, OH 45459, Tel: 513-433-7600, FAX: 513-433-0520; Empl.: 120; *Sls. Mgr.:* R. L. Woehrmyer

DIMENSIONAL SWISS PRODUCTS, 424 Roberson Lane, San Jose, CA 95112, Tel: 408-436-0361; Empl.: 18; *Sls. Mgr.:* D. R. Zamzow

DIMENSIONS UNLIMITED, INC., 1636 Gervais Ave., St. Paul, MN 55109, Tel: 612-770-5630; *Sls. Mgr.:* David Flod

DIODES INC., 9957 Canoga Ave., Chatsworth, CA 91311, Tel: 818-882-4920, 800-821-1178; Empl.: 30; *Sls. Mgr.:* Tim Regan; *Dist. Mgr.:* Tim Regan

DIONICS, 65 Rushmore St., Westbury, NY 11590, Tel: 516-997-7474, TWX: 510-222-0974, FAX: 516-997-7479; Empl.: 63; *Sls. Mgr.:* Mel Geffner

DIO-REY, Div. of Info-Lite, 422 Cliff St., Fairview, NJ 07022, Tel: 201-941-4455; FSC No.: FSCM 52116; Empl.: 13; *Sls. Mgr.:* Joseph M. Cartelli; *Dist. Mgr.:* Joseph M. Cartelli ..... **B•1066-1072**

Local Sales Offices & Reps

CA No. Hollywood, Crown Elctrns. 213-877-3550
CA Redwood City, Caltronic Assocs. 415-365-2545
CT Weston, CJA Assoc. 203-226-4317
MI Brighton, Michigan Mktg. & Sls. 313-229-6218
NY Syracuse, Lenard Co. 315-479-9191
OH Cleveland, A.S.A. 216-232-4946
OH Dayton, Mohawk Intronics 513-434-8873

DIRECT AID, 31332 Via Colinas, Ste. 102, Westlake Vl, CA 91362, Tel: 818-889-1013, 800-443-8080; *Sls. Mgr.:* Todd Smith; *Dist. Mgr.:* Todd Smith

Honeywell
Disc Instruments Subsidiary

DISC INSTRUMENTS, Honeywell, 102 E. Baker St., Costa Mesa, CA 92626, Tel: 714-979-5300, TWX: 910-595-1987; Empl.: 150 ..... **B•1782-1784**

Local Sales Offices & Reps

CA Costa Mesa, Disc Instrs. 714-979-5300
CA San Jose, Honeywell/Disc Instrs. 408-433-3025
CT Glastonbury, Honeywell/Disc Instrs. 203-659-4011
GA Dunwoody, Hilco, Inc. 404-393-1771
MD Glen Burnie, Macrotech Assocs. Ltd. 301-437-5588
MI Troy, Disc Instr. 313-649-1340
MN Edina, J. H. Hanson Co. 612-893-9960
NC Cary, Hilco, Inc. 919-481-0321
OR Portland, Controltek Sls. Ltd. 503-641-0877
SC Mount Pleasant, Hilco, Inc. 803-884-0289
TX Dallas, Measurement Sys. & Sls., Inc. 214-243-5781
WA Redmond, Controltek Sls. 206-883-8844
Can Willowdale, Ont., Honeywell Comp. Div. 416-499-6111

DISPLAY DEVICES, INC., Box 667, Encinitas, CA 92024, Tel: 619-753-0113; FSC No.: 26107

DISPLAYS, INC., Mifflin Countey Indl. Pk., Rte. 4, Box 6AAA, Lewistown, PA 17044, Tel: 717-242-2541, Telex: 842540; Empl.: 65

Local Sales Offices & Reps

IL Des Plaines, Esco Assocs. 312-298-5310
MA Framingham, Bay Colony Reps. 617-620-0607
PA Flourtown, C. H. Newson & Assocs. 215-233-0333
Can Ottawa, Ont., Intrade 613-727-1272

DISPLAYTECH, INC., 2200 Central Ave., Ste. C, Boulder, CO 80301, Tel: 303-449-8933, FAX: 303-449-8934; *Sls. Mgr.:* Ann Perry

DISPLEX, INC.
A SUBSIDIARY OF NORTH HILLS ELECTRONICS INC

DISPLEX, INC., North Hills Electronics, Inc., Alexander Place, Glen Cove, NY 11542, Tel: 516-671-4400, Telex: 46-6886 NOHILL CI; Empl.: 12; *Sls. Mgr.:* Jay Mohr; *Dist. Mgr.:* Ron Frates ..... **D•1680, 2053**

Local Sales Offices & Reps

AZ Glendale, Adtek, Inc. 602-931-9289
CA Huntington Bch., Mil-Com Sls., Inc. 714-840-2425
CA San Diego, Mil-Com Sls., Inc. 619-484-3402
CA Thousand Oaks, Mil-Com Sls., Inc. 805-647-8569
CT Hathaway Elctrns., Inc. 617-861-7010
GA Roswall, Henry W. Phillops Co., Inc. 404-992-3070
IL St. Charles, XYZ Mktg. 312-584-3001
IN Indianapolis, Midstates Mktg. 317-639-9999
MA Lexington, Hathaway Elctrns., Inc. 617-861-7010
NJ Parlin, Eastland Sls., Inc. 201-721-5116
NY Centerport, Big Apple Reps. 516-261-3012
NC Cary, A.W. Asscocs. 919-469-9592
OH Dayton, Bob Hocker Assocs. 513-253-3642
OR Lake Oswego, Synergistic Technlgs. 503-636-6793
PA Chester, R. J. Geary 215-876-0330
TX Austin, Swearingen Sls., Inc. 512-339-8663
WA Kirkland, Synergistic Technlgs. 206-488-0394

DISTRIBUTED LOGIC CORP., See DILOG

DISTRIBUTED PROCESSING TECHNLGY., Div. of S. I. Goldman Mechanical Contractors, 132 Candace Drive, Maitland, FL 32751, Tel: 305-830-5522, Telex: 494 7078; *Sls. Mgr.:* Steve Holler

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DIVERSIFIED TECHNLG., P.O. Box 748, Ridgeland, MS 39157, Tel: 601-856-4121, Telex: 585326, TWX: 810-966-2626; Empl.: 65; *Sls. Mgr.:* Bill Long; *Dist. Mgr.:* Bill Long

DIXON INDS., 386 Metacom Ave., Bristol, RI 02809, Tel: 401-253-2000, Telex: 927706

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DIXSON, INC., INSTRUMENT DIV., Box 1449, Grand Junction, CO 81502, Tel: 303-242-8863 (ext 223), TWX: 910-929-6991, FAX: 303-245-6267; Empl.: 250; *Sls. Mgr.:* Ray Carlson ..... **D•1341-1343**

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AL Birmingham, Sesco-Birmingham 205-988-8304
AZ Phoenix, Finn-Pat Co. Inc. 602-954-0301
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CA Newark, Jacobson & Assocs. 415-791-2336
CA San Diego, Van Gott & Assocs. 619-931-8152
CO Lakewood, Loritz Controls 303-232-7803
CT Hamden, Pond Tech. Sls. 203-281-0005
FL St. Petersburg, Sesco-St. Petersburg 813-576-6991
GA Atlanta, Sesco-Atlanta 404-458-6423
IL Lombard, Patrick & Douglas 312-971-1800
LA Baton Rouge, Sesco-Baton Rouge 504-928-4951
ME W. Buxton, Pond Tech. Sls. 207-637-2200
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MI Troy, R. H. Jackson Co. 313-689-9950
MN Minneapolis, Trash Engrg. 612-537-2434
MO Manchester, Control Sys. Des. 314-227-4212
NJ Emerson, Techtrol, Inc. 201-967-7640
NC Cary, Sesco-Raleigh 919-467-7482
OH Cleveland, Marlowe Assocs., Inc. 216-991-6500
OH Dayton, Marlow & Assocs. 513-274-9666
OK Tulsa, Sesco-Tulsa 918-622-3868
OR Portland, Brett-Ross 503-256-9727
PA Frazer, FLW of PA, Inc. 215-251-9700
PA Pittsburgh, Marlow & Assocs. 412-367-8886
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TN Knoxville, Sesco-Knoxville 615-588-5455
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TX Dallas, Sesco-Dallas 214-231-9364
TX Houston, Sesco-Houston 713-999-3510
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VA Richmond, Dynamation 804-794-7667
WA Kirkland, Brett-Ross 206-821-4903

Local Distributors

OH Cleveland, Pioneer-Standard Elctrns. 800-262-3600,800-362-9127

D. O. INDUSTRIES, 317 E. Chestnut St., E. Rochester, NY 14445, Tel: 716-385-4920, Telex: 200802; FSC No.: 716-381-7032; *Sls. Mgr.:* Jeremy Goldstein

DOLAN-JENNER INDS., Box 1020, Woburn, MA 01801, Tel: 617-935-7444, Telex: 94-8161; Empl.: 120; *Sls. Mgr.:* S. Futran; *Dist. Mgr.:* S. Futran

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MI Detroit, Qualitron 313-534-1511
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NJ Medford, Speck Controls Engrg. 609-654-6976
NJ Tenafly, Budd-Tronics 201-567-4888
NY Utica, Fiber Instr. Sls. 315-735-1691
NC Greensboro, Ron Ingle 919-273-4042
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TN Knoxville, Stephenson Controls & Sys. 615-588-7473

DOLCH LOGIC INSTRS., 2029 O'Toole Avenue, San Jose, CA 95131, Tel: 408-435-1881, TWX: 910-338-2023; *Sls. Mgr.:* Greg Hayes

DOLPH, JOHN C., CO., New Rd., Monmouth Junction, NJ 08852, Tel: 201-329-2333; *Sls. Mgr.:* J. E. Rooze

DONTECH, INC., 700 Airport Blvd., Doylestown, PA 18901, Tel: 215-348-5010, Telex: 685 1155 DONTK; FSC No.: 63009; *Sls. Mgr.:* Jordan C. Miller, Sls. Engr.

DORAN MANUFACTURING CO., 2834 Sidney Ave., Cincinnati, OH 45225, Tel: 513-681-5424; Empl.: 40; *Sls. Mgr.:* Russ DeMar/Jeff Stegman ..... **C•1220**

DORMAN BOGDONOFF CORP., Corp. Center, Willow Pond, Andover, MA 01810, Tel: 617-470-0001, Telex: 710-347-0333; *Sls. Mgr.:* Charles P. Centore

DORMEYER INDS., A. F. Dormeyer Mfg. Co., Inc., 3418 N. Milwaukee, Chicago, IL 60641, Tel: 312-283-4000, FAX: 312-283-4927; Empl.: 400; *Sls. Mgr.:* Richard Henry ..... **A•2223; B•1514-1515**

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CA Garden Grove, Elsco Elctrns. 714-891-4621
IL Chicago, Dormeyer Inds. 312-283-4000
IA Marion, J. Taylor Hersey Co. 319-366-3402
NY Rochester, H.C. Johnson Agencies 716-586-0777

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FL Lakeland, AA Electric 800-237-8274
GA Norcross, A A Electric 404-449-8670
MA Lynn, Land Elctrns. 617-592-2220
NY Buffalo, Summit Distrs. 716-887-2800
NY Mamaroneck, Logicomp Elctrns. 914-698-9332
NY Rochester, Summit Distrs. 716-334-8110

OH Akron, Sun Radio Co. 216-434-2171
OH Dayton, Stotts Friedman 513-298-5555
PA Montgomeryville, Pyttronic Inds., Inc. .. 215-643-2850
TX Corpus Christi, Douglas Elctrns. 512-883-5103
WI Milwaukee, Elctrn. Expeditors, Inc. 800-558-8547

DOTRONIX, 160 First St. SE, New Brighton, MN 55112, Tel: 612-633-1742, TWX: 910-563-3541, FAX: 612-633-7025; Empl.: 250; *Sls. Mgr.:* L. R. Lemke

DOUGLAS ELECTRONICS, 718 Marina Blvd., San Leandro, CA 94577, Tel: 415-483-8770

DOUGLAS RANDALL, 6 Pawcatuck Ave., Pawcatuck, CT 06379, Tel: 203-599-2075, Telex: 6814060, FAX: 203-599-1750; Empl.: 125; *Sls. Mgr.:* D. Aves ..... **B•1342-1350**

Local Sales Offices & Reps
AZ Tempe, Trembly Assoc. 602-967-2058
CA Oakland, Powermatic Assoc. 415-635-6825
CO Wheat Ridge, Trembly Assoc. 303-421-8900
CT Yalesville, JMG-Glynn Connecticut 203-265-9452/2498
FL Oldsmar, Boggs & Assocs. 813-855-1812
GA Marietta, Micro Sls., Inc. 404-992-4350
IL Chicago, Ropek-Cahill-Vogt 312-806-0066
IN Carmel, Berndt Assocs., Inc. 317-844-0114
MA Norwood, JMG, Inc. 617-762-5333
MN Osseo, Gaffney Sls. Co. 612-425-5484
MO Kansas City, Delltron Co., Inc. 816-436-6445
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NV Las Vegas, Trembly Assoc. 702-739-9770
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NJ Morristown, Andrews & Andrews 201-569-8800
NM Albuquerque, Trembly Assoc. 505-266-8616
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NY Glen Head, Andrews & Andrews 516-692-8686
NY Poughkeepsie, C. W. Floring & Assoc. 716-889-4614
NY Roochester, J. G. Welch Assoc. 716-244-1100
NC Raleigh, Micro Sls. 919-872-7922
OH Cleveland, Geotronix Mktg. Assoc. 216-659-6100
OH Trotwood, Geotronix, Inc. 513-252-6700
TX Dallas, Paramount Controls 214-341-4561
Can Mont., Que., Solid State Engrg. Co. 514-481-3313

Local Distributors
CA Chatsworth, Mill-Comm Dist. 213-998-3111
CA S. San Francisco, Steven Engrg. 415-588-9200
FL Hollywood, MAO Elctrn. Distrs. 305-966-4847
MA Middleboro, Glynn Elect. 617-947-4262
OH Cleveland, Alpha Corp. 216-659-7100
TX Houston, Butler & Land 713-896-0808

DOVA CONTROLS, 4052 148th Ave. N.E., Redmond, WA 98052, Tel: 206-881-7414, Telex: 361 582, ESYLNK: 710 111 3001, FAX: 206 883 9054; Empl.: 7; *Sls. Mgr.:* Lynn Myers

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WA Spokane, Tech. Sls. 509-466-1532

Local Distributors
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DOW CHEMICAL CO., 2020 Dow Center, Midland, MI 48674, Tel: 517-636-1000, Telex: 227455, TWX: 810-266-9490; Empl.: 51,300

DOW CORNING CORP., Box 0994, Midland, MI 48686-0994, Tel: 517-496-4000, Telex: 227450, TWX: 810-266-9006; Empl.: 6,100

DOW-KEY MICROWAVE CORPORATION, 1110 Mark Ave., Carpinteria, CA 93013-2918, Tel: 805-684-0427, TWX: 910-380-4327; FSC No.: 00471; Empl.: 130; *Dist. Mgr.:* Jack Dysart

DOW SWITCH, Screenprint/Dow, 271 Ballardvale St., P.O. Box 1332, Wilmington, MA 01887, Tel: 617-935-6395, Telex: 948227; Empl.: 15; *Sls. Mgr.:* Toni Stevens

DOWTY RFL INDS. INC./COMMUNICATIONS DIV., The Dowty Grp. PLC, Powerville Rd., Boonton, NJ 07005-0239, Tel: 201-334-3100, TWX: 710-987-8352; FSC No.: 49673; Empl.: 300

DOWTY RFL INDS. INC./INSTRUMENTATION DIV., The Dowty Grp. PLC, Powerville Rd., Boonton, NJ 07005-0239, Tel: 201-334-3100, TWX: 710-987-8352; FSC No.: 49673; Empl.: 300

DOWTY ELECTRONICS CO., Thermocontrol Div., W. Prospect St., P.O. Box 250, Brandon, VT 05733, Tel: 802-247-6811, TWX: 710-987-8352; Empl.: 150; *Sls. Mgr.:* Bob Berman; *Dist. Mgr.:* Bob Berman

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DRANETZ TECHNOLOGIES, INC., 1000 New Durham Rd., P.O. Box 4019, Edison, NJ 08818-4019, Tel: 201-287-3680, Telex: 499-7808, TWX: 710-997-9553; FSC No.: 23207; Empl.: 230; *Sls. Mgr.:* A. Orlacchio ..... **D•1233**

DRAWN METAL PRODUCTS, 6143 W. Howard St., Niles, IL 60648, Tel: 312-647-8941; Empl.: 60; *Sls. Mgr.:* Tom Amundsen

DREEFS SWITCH, INC., 3782 Hawthorn Ct., Waukegan, IL 60087, Tel: 312-662-7667, 800-323-9605, Telex: 703784 MTL DREEFS UD; Empl.: 63; *Sls. Mgr.:* Ed Magiera; *Dist. Mgr.:* Ed Magiera

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CO Denver, Donohue Sls. Co. 303-455-1719
CT Madison, Reptron Sls. 203-245-2242
GA Lawrenceville, Engrg. Reps. Assocs. .. 404-564-3308
IL Waukegan, DSI 312-662-7667
MA Newton Highlands, WM. Valle Assocs., Inc. 617-965-0002
MO St. Louis, Delltron Co., Inc. 314-839-0033
NV Las Vegas, Trembly Assocs., Inc. 702-739-9770
NJ Ocean, P. Saftler Assocs.,Inc./Gordon 201-922-3014
NM Albuquerque, Trembly Assocs., Inc. ... 505-266-8616
NY Fulton, P. Saftler Assocs. 315-592-7184
NY Lynbrook, P. Saftler Assocs. 516-593-7880
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PA Malvern, Stitzer Assocs. 215-644-5500
TX Dallas, Blackburn Assocs. 214-750-8484
VA Martinsville, Engrg. Reps. Assocs. 703-632-2365
WI Mequon, Badgerep, Inc. 414-241-9200
EXP Waukegan,IL, Dreefs Switch, Inc. 312-662-7667
Can Concord, Astec Comps. 416-669-4022

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CA Santa Clara, Cypress Elctrns. 408-980-2500
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IL Wheeling, Hawk Elctrns. 213-459-4030, 800-843-4295
NY Hempstead, Elctrn. Equip. Co. Ltd. 516-538-5510
TX McKinney, Sunbelt Elctrns. 214-542-1432
EXP Waukegan, IL, Dreefs Switch Inc. 312-662-7667
Can Mississauga, Ont., Prelco Elctrns., Ltd. 416-745-9370,800-387-3874

DRESSEN-BARNES ELCTRNS., 1600 E. Valencia Dr., Fullerton, CA 92631, Tel: 714-871-3020, TWX: 910-592-1256; FSC No.: 89321; Empl.: 220; *Sls. Mgr.:* B. Guy

DRESSER INDS., 1505 Elm St., Dallas, TX 75201, Tel: 214-746-6000, Telex: 73-2489, TWX: 910-861-4136; Empl.: 55,000

DSP TECHNOLOGY, 48500 Kato Rd., Fremont, CA 94538, Tel: 415-657-7555, Telex: 263608, FAX: 415-657-7576; Empl.: 60; *Sls. Mgr.:* Andrew Keyser

DUBBLEDEE DIAMOND CORPORATION, D. Drukker & Zn., N.V., 100 Stierli Ct., Mt. Arlington, NJ 07856, Tel: 201-770-1420, Telex: RCA 236064, FAX: 201-770-1549; *Sls. Mgr.:* Keith Harris

DUKANE CORP., Communications Sys. Div., 2900 Dukane Dr., St. Charles, IL 60174-9984, Tel: 312-584-2300, Telex: 720426; Empl.: 700; *Sls. Mgr.:* Jim Shane; *Dist. Mgr.:* Jim Shane

DUMONT OSCILLOSCOPE LABS., 40 Fairfield Pl., W. Caldwell, NJ 07006, Tel: 201-575-8666, Telex: 219236 DOLI-UR; FSC No.: 30669; Empl.: 30; *Sls. Mgr.:* John Carter, Jr.

DUNCAN ELECTRONICS, INC., 2865 Fairview Rd., Costa Mesa, CA 92626, Tel: 714-545-8261, TWX: 910-595-1128; FSC No.: 5905;Multiple; Empl.: 160; *Sls. Mgr.:* J. Colligan; *Dist. Mgr.:* J. Colligan

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AZ Tempe, Southwest E/M Engrg. 602-941-2828
AR El Dorado, Kemp Engrg. Co., Inc. 501-862-5869
CA Costa Mesa, Comar Co. 714-250-0140
CA Mountain View, Caltron Comps. 415-964-3244
CO Denver, Elcom 303-337-2300
CT Cheshire, A & M Elctrn. 203-271-3065
FL Ft. Lauderdale, ElectroComp Assocs. 305-491-4141
FL St. Petersburg, ElectroComp Assocs. 813-822-9677
GA Atlanta, L. & D., Inc. 404-395-7079
IL Rolling Meadows, KMA Sales Co. 312-398-5300
IN Indianapolis, Mktg. Engrs., Inc. 317-872-5665
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LA Lafayette, Kemp Engrg. Co. 318-269-9452
MA Needham, A & M Elctrn. 617-444-8170
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MN St. Paul, J. J. Exon Co. 612-636-5533
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NY N. Syracuse, Advanced Comps. 315-699-2671
NY Scottsville, Advanced Comps. 716-889-1429
NC Greensboro, L. & D., Inc. 919-292-3201
NC Raleigh, L. & D., Inc. 919-876-5301
OH Dayton, Dolfuss-Root & Co. 513-433-6776
OH Strongville, Dolfuss-Root & Co. 216-238-0300
OK Tulsa, Kemp Engrg. Co. 918-663-4501
OR Portland, Elctrn. Mktg. Grp. 503-684-5935
PA Birchrunville, Jadelectronic Assocs., Inc. 215-296-3800
PA Bridgeville, Dolfuss-Root & Co. 412-221-4420
TN Seymour, Tennessee 615-573-6511
TX Addison, Kemp Engrg. Co. 214-931-7100
TX Austin, Kemp Engrg. Co., Inc. 512-263-3322
TX Houston, Kemp Engrg. Co. 713-466-1465
UT Salt Lake City, Elcom 801-485-7415
VA Richmond, L & D, Inc. 804-257-7717
WA Redmond, Elctrn. Mktg. Grp. 206-882-0962
WI Milwaukee, KMA Sales Co. 414-259-1771

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CA Sacramento, Zack Elctrns. 916-446-3131
CA San Francisco, Zack Elctrns. 415-626-1444
CO Englewood, Industrial Elctrns. 303-694-9444
IL Elk Grove Village, GBL Elctrns. 312-593-3220
LA Baton Rouge, Industrial Elctrn. Supp. 504-926-0513
LA Shreveport, Industrial Elctrn. Supp. 318-222-9459
MA Woburn, Sterling Elctrns. 617-938-6200
MN Minneapolis, The Bergquist Co. 612-835-2322
NY Elmsford, Ancar Elctrns. Supp., Inc. 914-592-7100
NY Hauppauge, Broadline Elctrns. 516-231-4100
NY Yonkers, Kin-Tronics 914-968-7736
OH Akron, Akron Elctrns. Supp. 216-762-8818
OH Cincinnati, URI Elctrns. 513-761-4030
OR Portland, Radar Elec. 503-232-3404
PA Erie, REM Elctrns. Supp. 814-453-5626
PA McKeesport, Barno Radio 412-751-5966
TX Arlington, Bell Comps. 817-461-5303
UT Salt Lake City, Standard Supp. Co. 801-486-3371
WA Richland, Radar Electric 509-943-8336
WA Seattle, Pacific Elctrns. 206-575-1050
WA Seattle, Radar Elec. 206-282-2511
WI Mequon, Taylor Elec. 414-241-4321
WI Oconomowoc, GW Elctrns. 414-367-6003

DUNEGAN CORPORATION, Physical Acoustics Corp., 19-B Thomas, Irvine, CA 92718, Tel: 714-380-1544, Telex: 68-3430; FSC No.: 66; Empl.: 35; *Sls. Mgr.:* S. Slykhous

DUOTONE, 6875 S.W. 81st St., S. Miami, FL 33143, Tel: 305-665-1121; Empl.: 20; *Sls. Mgr.:* S. Nester; *Dist. Mgr.:* S. G. Nester

DU PONT CONNECTOR SYSTEMS, 30 Hunter La., Camp Hill, PA 17011, Tel: 800-237-2374, TWX: 510-650-3538; *Sls. Mgr.:* F. Wigfield; *Dist. Mgr.:* E. Abbott (W. Coast)/R. Hoffman (E. Coast)

DUPONT DE NEMOURS, E. I., & CO., 1007 Market St., Wilmington, DE 19898, Tel: 302-773-3218; Empl.: 130,000

DUPREE, INC., 14395 Romona Ave., Chino, CA 91710, Tel: 714-597-4889, TWX: 510-100-0281; Empl.: 60; *Sls. Mgr.:* J. Bonderud; *Dist. Mgr.:* Jean Bonderud

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DURACELL TECHNICAL SALES & MARKETING, INC., Berkshire Industrial Park, Bethel, CT 06801, Tel: 203-791-3274, Telex: 6972165, TWX: 710-456-9755; Empl.: 4000 ..... **D•1429-1431**

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CA Irvine 714-476-1811
CT Bethel 203-796-4271
IL Oak Brook 312-954-2714

DURAKOOL INC.
An American Electronic Components Company

DURAKOOL, INC., American Electronic Components, 1010 N. Main St, Elkhart, IN 46514, Tel: 219-264-1116, Telex: 25-8482; Empl.: 200; *Sls. Mgr.:* Stan Kalin; *Dist. Mgr.:* Larry Hedeen/Dave Deuel .... **B•1591**

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CA	Burlingame, Campbell & George	415-697-2965
CA	Glendale, Hundley Co.	213-240-3600
CO	Englewood, E & M Sls.	303-761-6202
GA	Atlanta, A. Brown Assocs.	404-455-1216
IL	Rock Island, Carlin Automation	309-788-1275
IA	Davenport, Volco Co.	319-326-5233
KS	Overland Park, R. Greene Co.	913-492-6886
LA	Chalmette, L. Elliott Co.	504-737-1895
MD	Glen Burnie, E.J. Varholy & Son	301-760-3344
MA	Needham, Northeast Reps.	617-449-3034
MI	Farmington, CMP Engrg. Sls.	313-477-7700
MN	Minneapolis, Volco Co.	612-933-4671
MO	St. Louis, R. Greene Co.	314-994-0222
NE	Omaha, Volco Co.	402-346-2203
NY	Wantagh, DONY Tech. Sls.	516-826-5550
NC	Charlotte, Mel Sls.	704-364-3177
OH	Cleveland, CMP Engrg. Sls.	216-779-9660
OH	Dayton, CMP Engrg. Sls.	513-222-7700
OK	Tulsa, L. Elliott Co.	918-743-7794
OR	Portland, Branom Instr. Co.	503-283-2555
PA	Monroeville, CMP Engrg. Sls.	412-372-4415
PA	Narberth, Power Modules Inc.	215-839-1331
TN	Brentwood, A. Brown Assocs	615-373-2068
TN	Memphis, R. M. Jordan & Assoc.	901-452-4516
TX	Addison, L. Elliott Co.	214-239-8533
TX	Missouri City, L. Elliott Co.	713-499-1571
TX	Odessa, Lynn Elliott Co.	915-332-4392
UT	Salt Lake City, Western Controls	801-266-1500
WA	Ill., Hinsdale, Worldwide Exports	312-654-1315
WA	Richland, Branom Instr.	509-943-6664
WA	Seattle, Branom Instr. Co.	206-762-6050

Local Distributors

PA	Narberth, Power Modules	215-839-1331

DURALITH, 525 Orange St., Millville, NJ 08332, Tel: 609-825-6900, TWX: 510-687-7520; Empl.: 500; *Sls. Mgr.:* James Potter

DURGIN & BROWNE, See Tridyne Process Systems, DBI Inds.

DVE/CALTRONIC CO., LTD., A Sub. of Dee Van Entrp. Co., Ltd., 407 S. Palm Ave., Alhambra, CA 91803, Tel: 818-289-0310

DY-4 SYSTEMS INC., 21 Credit Union Way, Nepean, Ontario, Canada K2H 9G1, Tel: 613-596-9911, Telex: 053 4111, TWX: FAX: 596-0574; Empl.: 190; *Sls. Mgr.:* Mitch Robinson

DYLON, A DIV. OF LIKEN INDS. INC., 130 McCormick Ave., Ste. 112, Costa Mesa, CA 92626, Tel: 714-540-2205, Telex: 295-603 PTBX-MLBX; Empl.: 10; *Sls. Mgr.:* A. Lichen

DYLON GRAPHITE CORP., 124 First Avenue, Berea, OH 44017, Tel: 216-234-1600; Empl.: 35; *Sls. Mgr.:* K. A. Partee

DYMA ENGINEERING, Box 1535, Los Lunas, NM 87031, Tel: 505-865-6700; Empl.: 14; *Sls. Mgr.:* Wiley R. Cunningham; *Dist. Mgr.:* Thom Johnson

DYMEC, INC., 8 Lowell Ave., Winchester, MA 01890, Tel: 617-729-7870, 800-225-1151, TWX: 710-348-6596; Empl.: 50; *Sls. Mgr.:* J. Dennis Santucci ..... **A•1748; B•1146; D•1157**

Local Sales Offices & Reps

AZ	Phoenix, Southwest Tech. Sls.	602-893-1209
CA	San Diego, California Elctrn. Mktg., Inc.	619-265-8331
CA	San Ramon, Technical Consultants	415-830-0829
CA	Santa Ana, California Elctrn. Mktg., Inc.	714-835-2702
MD	Linthicum Heights, KD Assocs.	301-859-5151
MA	Marblehead, Electronic Microtech Assocs.	617-631-2886
MI	Livonia, Lowell Wendt Mktg. Co.	313-464-2722
MI	Wyoming, Lowell Wendt Mktg. Co.	616-531-4499
MO	St. Louis, Ozark Elctrn. Mktg., Inc.	314-423-7200
NM	Albuquerque, Reptronix, Ltd.	505-292-1718
NY	New Rochelle, Repco Assocs., Inc.	914-235-6405
NY	Syracuse, Labtronics, Inc.	315-455-7314
OH	Chagrin Falls, Midwest Mktg. Assocs.	216-247-6655
OH	Dayton, Midwest Mktg. Assocs.	513-433-2511
PA	Norristown, Denco Elctrn. Corp.	215-630-8990
TX	Dallas, J. Clay Co.	214-458-8833
WA	Everett, Cunningham Sls., Inc.	206-348-4800

DYNACIRCUITS INC., 11230 W. Addison, Franklin Park, IL 60131, Tel: 312-451-1700; *Sls. Mgr.:* Dan Ciesla (Western U.S.), Carl Morahan (Eastern U.S.); *Dist. Mgr.:* James Powers

DYNAGE/CONTROLS, INC., 2 Willowbrook Rd., Cromwell, CT 06416, Tel: 203-635-6257, Telex: 753243 (OAKLEAFINC); Empl.: 12; *Sls. Mgr.:* Linda St. Peter

DYNAGE/POWER & MAGNETICS, Division Of Oakleaf, Inc., 2 Willowbrook Road, Cromwell, CT 06416, Tel: 203-635-3510, Telex: 753243 (OAKLEAFINC); Empl.: 14; *Sls. Mgr.:* Linda St. Peter ... **A•2224-2225; D•1681**

DYNALOY, INC., 7 Great Meadow La., Hanover, NJ 07936, Tel: 201-887-9270, Telex: 642-033; FSC No.: 27908; Empl.: 19; *Sls. Mgr.:* Jay Parton

DYNAMIC AIR ENGRG., INC., 620 E. Dyer Rd., Santa Ana, CA 92705-5697, Tel: 714-540-1000, TWX: 910-595-2588; FSC No.: 4140-6105

DYNAMICS, Div. of Waugh Controls Corp., 9001 Fullbright Ave., Chatsworth, CA 91311, Tel: 818-998-8281, Telex: 69-6171; Empl.: 100; *Sls. Mgr.:* Tony Mastroianni

DYNAMICS RESEARCH CORP., Encoder Division, 60 Concord St., Wilmington, MA 01887-2193, Tel: 617-658-6100, Telex: 710-347-6711 (DRC ENCDR); Empl.: 125; *Sls. Mgr.:* Dave Silva

DYNAMIC TIME SYSTEMS, INC., 1331 S. State, Provo, UT 84601, Tel: 801-377-9154; *Sls. Mgr.:* Graham Hawkins; *Dist. Mgr.:* Graham Hawkins

DYNAPAR, 1675 Delany Rd., Gurnee, IL 60031, Tel: 312-662-2666, TWX: 910-235-1865; Empl.: 100

DYNAPLEX INC., Interplex, 120-12 28th Ave., Flushing, NY 11354, Tel: 212-961-6750, TWX: 710-582-3048; *Sls. Mgr.:* Lester Zimmerman; *Dist. Mgr.:* Lester Zimmerman

DYNAPOWER
THE LEADER IN POWER CONVERSION
CORPORATION

DYNAPOWER CORPORATION, 29199 Orchard Lake Road, Farmington Hills, MI 48018, Tel: 313-553-4300, TWX: 810-242-8804, ESYLNK: 62771577, FAX: 313-553-9096; Empl.: 100 ..... **D•1682-1685**

DYNATECH CORP., 1225 E. Wakeham Ave., P.O. Box 1019, Dept. E, Santa Ana, CA 92702, Tel: 714-558-8755, TWX: 910-595-1951; Empl.: 340; *Sls. Mgr.:* Rick Burbank

DYNATEC INTERNATIONAL, 3594 West 1820 South, Salt Lake City, UT 84104, Tel: 801-973-9500, 800-722-7425; *Sls. Mgr.:* Robert Checketts; *Dist. Mgr.:* Robert Checketts

DYNISCO, 10 Oceana Way, Norwood, MA 02062, Tel: 617-769-6600, Telex: 174-292; FSC No.: 15687; Empl.: 153

DYTRONICS CO., See Ryan Intl. Corp.

DZUS FASTENER, 425 Union Blvd., W. Islip, NY 11795, Tel: 516-669-6000, Telex: 96-1454; FSC No.: 72794; Empl.: 100; *Sls. Mgr.:* Victor Cappetta

EAGLE, P.O. Box 911, Fallbrook, CA 92028, Tel: 619-728-6000 ..... **A•1658**

EAGLE MAGNETIC COMPANY, INC., P.O. Box 24283, Indianapolis, IN 46224, Tel: 317-297-1030, FAX: 317-299-1323; Empl.: 44; *Sls. Mgr.:* Robert Jackson ..... **C•1744**

EAGLE PICHER
ELECTRONICS DIVISION

EAGLE-PICHER INDUSTRIES, INC., P. O. Box 130, Seneca, MO 64865, Tel: 417-776-2256, TWX: 910-774-4533, FAX: 417-776-2257; FSC No.: 3L498; Empl.: 400; *Sls. Mgr.:* H. M. York; *Dist. Mgr.:* H. M. York ..... **D•1433-1435**

Local Sales Offices & Reps

AL	Huntsville, L & D Inc.	205-837-1469
AZ	Tucson, WJM Sls.	602-888-4847
AR	Hot Springs, Automation Supp. Inc. (ASI)	501-767-5444
CA	Anaheim, Spectrum Assocs.	714-630-6977
CA	San Jose, O'Donnell Assocs.-North	408-263-6500
CT	Bloomfield, Zaslow Sls. Co.	203-242-7781
FL	Longwood, NSL Assocs., Inc.	305-629-5226
GA	Atlanta, L & D Inc.	404-395-7070
ID	Elk Grove Vl., Parcom, Inc.	312-228-6360
IA	Des Moines, SPS Assocs., Ltd.	515-225-0607
KS	Olathe, SPS Assocs., Ltd.	913-764-4460
MA	Westboro, Zaslow Sls. Co.	617-393-8150
MN	Minneapolis, Ohlin Sls. Co.	612-929-6924
MO	Earth City, SPS Assocs., Ltd.	314-291-0520
NE	Panama, SPS Assocs., Ltd.	402-788-2536
NH	Londonderry, Zaslow Sls. Co.	603-432-8907
NM	Albuquerque, WJM Sls.	505-268-9499
NY	Massapequa Pk., HC Assocs.	516-541-0262
NY	Morrisville, Naylor Elec. Co.	315-684-9620
NC	Raleigh, L & D Inc.	919-876-5301
OH	Dayton, Lyons Corp.	513-278-0714
OR	Beaverton, William J. Purdy Co.	503-641-9373
PA	Exton, Kiley Elec. Co.	215-363-8550
TN	Seymour, L & D Inc.	615-573-6511
TX	Dallas, Rem Air Comps.	214-234-1069
VA	Richmond, L & D Inc.	804-359-0125
WA	Redmond, William J. Purdy Co.	206-882-3144

Local Distributors

AZ	Tempe, ANJON Entprs.	602-894-1332
AR	Hot Springs, Automation Supp. Inc.	501-767-5444
CA	Anaheim, Carefree Unltd.	714-630-3433
CA	San Jose, The Power Source, Inc.	408-943-0130
CO	Denver, J & B Sls.	303-698-2211
FL	Palm Harbor, Battery Powered Lighting & Sys.	813-784-0182
GA	Austell, DC Power Prods.	404-948-2593
IL	Arlington Hgts., Lodan Elctrns.	312-398-5311
KS	Wichita, RSC Elctrns.	316-267-5213
LA	Shreveport, Indl. Elctrn. Supp. Inc.	318-222-9459
MD	Baltimore, Professional Elctrns.	301-661-2126
MA	Sharon, Adcour	617-784-8123
MN	Minneapolis, Ohlin Sls. Co.	612-929-6924
NE	Lincoln, Spectronics Corp.	402-467-3651
NH	Nashua, Sentinel Battery	603-882-9022
NJ	E. Brunswick, Brothers Elctrns.	201-238-2200
NY	Amityville, Battery Power of L.I.	516-691-1993
NY	Brewster, WHI Batteries	914-278-6151
NC	Greensboro, Indl. Elecs.	919-274-3251
OH	Cleveland, Battery Empire	216-266-2244
OH	Dayton, Emergency Power & Battery	513-294-4221
OK	Tulsa, Altair Co.	918-252-5781
PA	Bensalem, Scotts Emergency Lighting	215-639-1777
SC	Greenville, EMSCO	803-233-4121
TN	Goodlettsville, Waller Sls.	614-859-0039
TX	Stafford, Southwest Elctrns.	713-240-4000
VA	Portsmouth, Indl. Parts Corp.	804-393-4033
WA	Tacoma, C & G Elctrns.	206-272-3181
Can	Winnipeg, Manitoba, Westrock Battery Supp. Ltd.	204-786-6034

EAGLE-PICHER INDS., INC., Elctrns. Div., Box 47, Joplin, MO 64801, Tel: 417-623-8000, TWX: 910-774-4508; Empl.: 700

EAGLE SIGNAL CONTROLS, A Wickes Mfg. Co., Box 16100, Austin, TX 78761, Tel: 512-837-8300; Empl.: 600

EALING ELECTRO-OPTICS, 22 Pleasant St., S. Natick, MA 01760, Tel: 617-655-7000, Telex: 948339; *Sls. Mgr.:* John Wilson

E & L INSTRUMENTS, INC., 70 Fulton Terrace, New Haven, CT 06512, Tel: 203-624-3103, TWX: 710-465-1227; Empl.: 46

EAO SWITCH CORP., 198 Pepe's Farm Rd., P.O. Box 552 MO, Milford, CT 06460, Tel: 203-877-4577, Telex: 96-4347; FSC No.: 61706; Empl.: 19; *Sls. Mgr.:* George T. Bracci ..... **B•1597**

Local Sales Offices & Reps

AL Huntsville, Macro Mktg. Assocs., Inc. .. 205-883-9630
AZ Scottsdale, Luscombe Engrg. Co. of AZ 602-949-9333
CA Campbell, Luscombe Engrg. Co. of S.F. 408-370-2020
CA Pasadena, Luscombe Engrg. Co. of LA. 213-684-2000
CA San Diego, Luscombe Engrg. Co. of S.D. 619-295-4300
CO Boulder, Luscombe Engrg. Co. of CO 303-772-3342
CT Farmington, Ray Perron & Co., Inc. 203-673-4825
FL Tampa, J-R Controls, Inc. 813-961-9478
GA Norcross, Macro Mktg. Assocs., Inc. 404-662-5580
IL Arlington Hgts., Brainard-Wilson Mktg., Inc. 312-437-2700
IN Ft. Wayne, M/S Sls. & Assocs. 219-436-3023
IN Indianapolis, M/S Sls. & Assocs. 317-257-8915
MD Columbia, Delta III Assocs., Inc. 301-730-4700
MA Needham, Ray Perron & Co., Inc. 800-225-4280, 617-449-6162
MI Plymouth, Jay Mktg. Assocs., Inc. 313-459-1200
MN Golden Valley, Highland Elctrn. Sls. ... 612-546-2123
MO Gladstone, Delltron Co., Inc. 816-436-6445
MO St. Louis, Delltron Co., Inc. 314-869-4779
NH Merrimack, Ray Perron & Co., Inc. 603-424-4423
NJ Englewood, Sprung/Nussbaum 201-569-5666
NY Rochester, Apex Assocs., Inc. 716-254-6050
NC Raleigh, Sls. Engrg., Inc. 919-847-0202
OH Mentor, Jay Mktg. Assocs., Inc. 216-257-5244
OR Lake Oswego, Luscombe Engrg. Northwest 503-636-6664
PA Horsham, Jacobsen Assocs. 215-674-2937
PA Pittsburgh, R. W. Kneip 412-823-0169
SC Matthews, Sls. Engrg., Inc. 704-847-1927
TX Dallas, Glidden Electro Equip. Co 214-341-0610
TX Houston, Glidden Electro Equip. Co. .. 713-681-1415
WI Mequon, Badgerep 414-241-9200

Local Distributors

AZ Phoenix, Minarik Elec. 602-233-3000
AZ Tempe, Harper SID 602-967-1464
CA Compton, Harper SID 213-979-5090
CA Gardena, California Switch & Sig. 213-770-2330
CA Hawthorne, Electrosonic Co. 213-970-0997
CA Hawthorne, Electrosonic Comps. 213-970-0997
CA Los Angeles, Minarik Elec. Co. 213-624-3161
CA San Diego, Harper SID 619-578-2500
CA San Diego, Minarik Elec. Co. 619-560-6632
CA San Jose, Dansco Comp. Sls., Inc. 408-292-9740
CA Santa Clara, Minarik Elec. Co. 408-727-0575
CA Santa Minica, Master Distrs. 213-452-1229
CA Sunnyvale, Harper SID 408-747-0333
CO Denver, CSID, Inc. 303-292-9594
CO Denver, Minarik Elec. Co. 303-329-3525
CT Madison, LDB Corp. 203-245-2242
CT Stonington, Mystic Controls Prods. & Svcs. 203-535-0661
CT Wallingford, Sager Elec. Supp. co. 203-265-4600
CT Waterbury, Century Elec. Supp. 203-755-0405
FL Oviedo, Dixie Sls. 305-365-5211
IL Crystal Lake, Sub-Sem, Inc. 312-782-3954
IL Elk Grove, Martec Assoc. 312-956-8090
IL Elk Grove Vl., R.M. Illinois 312-364-6622, 800-325-1433
IL Rosemont, Advent Elctrns., Inc. 312-297-6200
IN Indianapolis, Mar Elctrns. 317-633-6699
IN Indianapolis, R.M. Indiana 317-291-7110
IA Cedar Rapids, Advent Elctrns. Inc. 319-363-0221
IA Cedar Rapids, Advent Elctrns., Inc. 319-363-0221
KS Wichita, Radio, Inc. 316-264-2798
KY Louisville, Peerless Elctrns. 502-637-7674
LA Baton Rouge, Menard Elctrns. 504-355-0323
LA Harahan, Gulfside Co., Inc. 504-733-4481
ME W. Buxton, Nelson & Wright 207-929-8238
MD Gaithersburg, Axis Elctrns. 301-840-9640, 800-492-3190
MA Canton, Impact Sls. Co. 617-821-1500
MA Hingham, Sager Elec. Supp. Co. 617-749-6700
MI Grand Rapids, R. M. Elctrns. Co. 616-531-9300
MI St. Claire Shores, SPEMCO Switches 313-771-2700
MN Minneapolis, Electronic Ctr., Inc. 612-371-5200
MO Valley Pk., Beckwith, Inc. 314-225-4846
NH Salem, Sager Elec. Supp. Co. 603-898-1348
NJ Cranford, Garden State Indl. Elctrns., Inc. 201-272-6400
NJ Oakland, Relay Specialists 201-337-1000
NY Bohemia, Key Comps., Inc. 516-567-7500
NY Buffalo, Summit Distrs., Inc. 716-887-2800
NY E. Syracuse, Ossmann Assocs. 315-437-7052
NY Hauppauge, Sager Elec. Supp. Co. 516-348-1300
NY New York, Martin-Audio/Video 212-541-5900
NY Rochester, Summit Elctrns., Inc. 716-334-8110
NY Woodside, Switches Unlimited 718-478-5000
NC Charlotte, Elctrns. Mktg. Corp. 704-394-6195
NC Winston-Salem, Kirkman Elctrns., Inc. 919-722-9131,800-334-8688
OH Columbus, Electronics Mktg. Corp. 614-299-4161
OH Highland Hgts., Electronics Mktg. Corp. 216-442-3441
OK Tulsa, Radio, Inc. 918-587-9123
OR Portland, Minarik Elc. Co. 503-253-3402
PA McKean, Advacom 814-476-7774
PA Mechanicsburg, Ad-Tech Elctrns. 717-737-1375
PA Norristown, Kimberly-James Co. 215-666-7286
PA Pittsburgh, Grant Indl. Controls, Inc. ... 412-787-9770
PA Wayne, Peak Elctrns. Corp. 215-293-9000
TX Garland, Indl. Equip. Co. of Dallas 214-271-5494
TX Irving, Harper SID 214-621-0500
TX Irving, Minarik Elec. Co. 214-255-5465
TX San Antonio, Minarik Elec. Co. 512-822-7097
WA Seattle, Platt Elec. 206-624-4083
WI Milwaukee, Marsh Elctrns. Corp. 414-475-6000

E-A-R DIV., Cabot Corp., 7911 Zionsville Rd., Indianapolis, IN 46268, Tel: 317-872-1111, TWX: 810-341-3412; *Sls. Mgr.:* Lawrence K. Landers

EASCO/K D TOOLS, See Hunter Tools, Easco/K D Tools

EASTERN AIR DEVICES, INC., 1 Progress Dr., Dover, NH 03820, Tel: 603-742-3330, TWX: 510-297-4454; Empl.: 200 ..... **B•1173**

Local Sales Offices & Reps

CA San Jose, Motion Sys. 408-246-0641
CA Tustin, Schoenbachler-Dobson Co. ... 714-544-1888
CO Boulder, R. G. Entprs. 303-447-9211
FL Orlando, Perrott Assoc. 305-275-1132
IL Chicago, Berndt Assocs. 312-283-0713
IN Carmel, Berndt Assocs. 317-844-0114
MA Marlborough, Gerald Rosen Co. 617-481-9277
MN St. Paul, REPCO 612-488-0201
NJ Ridgefield, Rical Assocs. 201-945-5250
NY Rochester, Elcom Sls. 716-385-1400
NY Syracuse, ELCOM Sls. 315-685-8245
NC Charlotte, Jake Rudisill Assocs. 704-377-6901
OH Cincinnati, KCH Co. 513-931-1686
PA Paoli, ETC Sales 215-296-3527
TX Austin, Oeler & Menelaides Inc. 512-453-0275
TX Dallas, Oeler & Menelaides Inc. 214-361-8876
WA Seattle, Eltech 206-767-4330
WI Milwaukee, Berndt Assocs. 414-545-8400

Local Distributors

NC Charlotte, Joyce Sls. Co. 704-377-6901

EASTERN ELECTRONICS MFG. CORP., National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108, Tel: 203-528-9821; FSC No.: 203-289-7639; Empl.: 200; *Sls. Mgr.:* Wayne M. Baker

EASTERN MARKING MACHINES, 422 S Franklin St., Hempstead, NY 11550, Tel: 516-483-7070, Telex: 968095; Empl.: 8; *Sls. Mgr.:* George Rosales; *Dist. Mgr.:* L. Sherman

EASTERN MICROWAVE, 40 Ray Ave., Burlington, MA 01803, Tel: 617-273-4700; FSC No.: 30616; Empl.: 45; *Sls. Mgr.:* S. C. Lowe

EAST PENN. MFG. CO., INC., Main Office, Lyon Station, PA 19536, Tel: 215-682-6361; Empl.: 1500; *Sls. Mgr.:* Stanley Glass

EASY HEAT WIREKRAFT, See Electrical Systems, Div. of Bristol Corp.

EATON CORP., Aerospace Controls/Systems Div., 2074 Whitfield Ave., East, Sarasota, FL 33578, Tel: 813-758-7726

EATON CORP., AIL, Commack Rd., Deer Park, NY 11729, Tel: 516-595-3094, TWX: 510-227-6073; FSC No.: 00752; Empl.: 5000; *Sls. Mgr.:* H. N. Kreisberg

EATON CORP, Durant Products, 901 S. 12th St., Watertown, WI 53094, Tel: 414-261-4070, TWX: 910-260-3713; Empl.: 400; *Sls. Mgr.:* H. L. Sisson; *Dist. Mgr.:* Dennis G. Walz

EATON CORP., Electronic Instrument Div., 5340 Alla Rd., Los Angeles, CA 90066, Tel: 213-822-3061, TWX: 910-343-6969; Empl.: 250; *Sls. Mgr.:* Jeff Shahan, VP Sls.

EATON CORPORATION, Microwave Products Division, 935 Benicia Avenue, Sunnyvale, CA 94086, Tel: 408-730-6400, TWX: 910-339-9556; FSC No.: 27338; Empl.: 495; *Sls. Mgr.:* Anton Schaffer

EATON CORP., Microwave Products Division, 785 Palomar Ave., Sunnyvale, CA 94086, Tel: 408-773-3700, TWX: 910-339-9395; FSC No.: 27338; Empl.: 495; *Sls. Mgr.:* J. R. Campbell

EATON CORP./MSC PRODS., 1640 Monrovia St., Costa Mesa, CA 92627, Tel: 714-642-2427, Telex: 67-8433; Empl.: 500+; *Sls. Mgr.:* J. R. McDonough

EATON CORP., Printer Prods Oper., Technical Research Park, Riverton, WY 82501, Tel: 307-856-4821, Telex: 910 949 4864; Empl.: 185; *Sls. Mgr.:* Rich Phillips; *Dist. Mgr.:* Rich Phillips

EATON (LORLIN) CORP., See Lorlin, Div. of Axiam, Inc.

EATON CORP./CUTLER-HAMMER PRODS, Aerospace & Commercial Controls Div., 4201 N. 27th St., Milwaukee, WI 53216, Tel: 414-449-7487, Telex: 26-716; FSC No.: 81640; *Sls. Mgr.:* J. R. McDonough

EBERHARD MFG. CO., DIV., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136, Tel: 216-238-9720, Telex: 98-5301; FSC No.: 19220; *Sls. Mgr.:* Edward Hongosh

EBM INDS., INC., 525 New Britain Ave., Unionville, CT 06085, Tel: 203-674-1515, TWX: 710-423-8723; FSC No.: 62292; *Sls. Mgr.:* Robert Sobolewski ..... **C•1606, 1621-1625**

Local Sales Offices & Reps

AL Huntsville, Raycom 205-859-2017
AZ Scottsdale, Harris And Croy 602-951-9121
AZ Tucson, Harris and Croy 602-888-0642
CA Los Angeles, Wiley Co. 213-666-1611
CA San Diego, Wiley Co. 619-453-9018
CA Santa Clara, Ross Mktg. Assocs. 408-988-8111
CO Littleton, Simpson Assocs. 303-794-8381
CT Clinton, Selmark Assocs. 203-573-9088
FL Melbourne, Raycom, Inc. 305-259-7988
FL Orlando, Raycom, Inc. 305-859-5504
FL Wellborn, Raycom, Inc. 904-963-5023
GA Marietta, Raycom 404-952-6061
IL Glendale Hgts., Beta Technlg. Sls. 312-790-9886
IN Indianapolis, Technical Reps. 317-882-4407
IA Des Moines, Houk & Assocs., Inc. 515-276-6741
KS Overland Park, Web Elctrns. 913-381-7986
MD Columbia, Delta III 301-730-4700
MA Millis, Selmark Assocs. 617-376-2914
MI Grand Rapids, Burcaw 313-573-4605
MI Warren, Burcaw Co. 313-573-4605
MN St. Paul, Arkco Sls. 612-777-7454
MO Florissant, Web Elctrns. 314-921-5720
NH Hopkinton, Selmark Assocs. 603-746-3299
NJ Marlton, b.g.r. Assocs. 609-983-1020
NY Buffalo, NRM Mktg. Grp. 716-634-4300
NY Frankilin Sq., Cooper-Simon & Co., Inc. 516-489-0404
NY Skaneateles, NRM Mktg. Grp. 315-685-8991
NC Raleigh, Raycom 919-847-8276
OH Maple Hgts., Versatron 216-581-0090
OK Tulsa, Bonser-Philhower Sls. 918-744-9964
OR Portland, Earl & Brown Co. 503-245-2283
PA Harrison City, NRM Mktg. Grp. 412-327-0858
TX Austin, Bonser-Philhower Sls. 512-346-9186
TX Houston, Bonser-Philhower Sls. 713-782-4144
TX Richardson, Bonser-Philhower Sls. 214-234-8438
UT Midvale, Simpson Assocs. 801-566-3691
WA Redmond, Earl & Brown Co. 206-885-5064
WI Milwaukee, Beta Technolg. Sls., Inc. 414-543-6609
PR Bayamon, Selmark 809-725-8576

Local Distributors

AL Huntsville, Powell Elec. 205-539-2731
AZ Phoenix, Arizona Comps. Co. 602-269-5655
AZ Scottsdale, Prime Inds. 602-946-9977
AZ Tucson, Southwest Sls. 602-628-1613
CA Anaheim, Deco Elec. 714-630-8252
CA Costa Mesa, Powell 714-754-1717
CA Fullerton, Pyramid/Fullerton 714-773-0781
CA Fullerton, Young Sls. Co. 714-871-5355
CA Hollywood, Yale Elctrns. 818-465-3186
CA Irvine, Integrated Elctrns. 714-837-9960
CA San Diego, Deco Elctrns. 619-693-1595
CA San Jose, Integrated 408-435-1000
CA San Jose, Powell Elec. 408-943-9020
CA Santa Clara, Pyramid Elctrns. 408-727-9810
CO Denver, Integrated Elctrns. 303-292-6121
CO Englewood, Indl. Elctrns. 303-694-9444
CT Danbury, Pilgrim Elctrns. 203-792-7274
CT E. Haven, J. V. Elctrns. 203-469-2321
CT Wallingford, Cronin Elec. 203-265-3134
CT Yalesville, Glynn Elctrns. 203-265-2498
FL Ft. Lauderdale, Powell Elec. 305-979-5000
FL Ft. Lauderdale, Reptron 305-735-1112
FL Tampa, Reptron 813-855-4656
GA Atlanta, ACK Radio Supp. 404-351-6340
GA Fayetteville, Frankland 404-461-4026
GA Norcross, Reptron 404-446-1300
IL Hoffman Estates, I.E.C. Intercomp 312-843-2040
IL Rosemont, Advent Elctrns. 312-297-6200
IL Schaumburg, Reptron/Illinois 312-882-1700

IN Indianapolis, Advent Elctrns. 317-872-4910
IA Atkins, Bergquist 319-446-7305
IA Cedar Rapids, Advent Elctrns. 319-363-0221
MD Baltimore, Resco/Baltimore 301-529-0500
MD Beltsville, Resco/D.C. 301-937-9100
MD Columbia, Powell 301-621-4070
MA Burlington, Excalibur Elctrns. 617-273-5858
MA Canton, Impact Sls. Co. 617-821-1500
MA Middleboro, Glynn Elctrns. 617-947-4262
MA Needham, Cronin 617-449-5000
MA Westborough, Powell 617-366-6100
MA Wilmington, Heilind Elctrns. 617-657-4870
MI Battle Creek, Great Lakes Elctrns. 616-731-4156
MI Farmington Hills, Advent Elctrns. 313-477-1650
MI Grand Rapids, S.F. Elctrns. 616-459-0216
MI Grand Rapids, T & W Elctrns. 616-241-3645
MI Lansing, Fulton Radio Supp. Co. 517-394-5020/2
MI Livonia, Reptron 313-525-2700
MN Minneapolis, Bergquist 612-835-2322
MN Minneapolis, Control Des. Supp. 612-721-1628
MN Minneapolis, Reptron 612-938-0000
MO Kansas City, L Comp 816-221-2400
MO Maryland Hgts., L Comp 314-291-6200
NV Carson City, Integrated Elctrns. 702-883-9399
NH Amherst, Brevan Elctrns. 603-889-7230
NH Salem, Cronin 603-898-4440
NH Salem, Glynn Elctrns. 603-893-8313
NJ Englewood, Powell Elec. 201-894-0800
NJ Rockaway, Tonar Indus. 201-586-9000
NJ W. Berlin, General Comps. 609-768-6767
NY Central Islip, Domino Comps. 516-582-3050
NY Farmingdale, Addem Sls. 516-752-9303
NY Hauppauge, Broadline Elec. Distr. 516-231-4100
NY Lynbrook, Peerless Radio 516-593-2121
NY Mt. Vernon, Janesway Elctrns. 914-699-6710
NY Rochester, Simcona 716-328-3230
NY Suffern, Nobel Elctrns. 914-357-4500
NC Cary, Powell Elec. 919-467-1212
NC Raleigh, Century 919-782-2116
OH Akron, Akron Elctrns. 216-762-8818
OH Broadview Hgts., Related Comp. 216-838-4838
OH Dayton, Related Comps. 513-253-6116
OH Twinsburg, Advacom 216-425-8477
OH Worthington, Reptron Ohio 614-436-6675
OR Beaverton, Integrated Elctrns. 503-641-1690
PA Lancaster, Advacom 717-299-5615
PA Malvern, Control Design Supp. 215-296-0150
PA McKean, Advacom/Erie 814-476-7774
PA Norristown, Century Elctrn. Comp. Co. 215-631-5400
PA Philadelphia, Powell 215-365-1900
TN Hixson, Techni-Tronics 615-842-0514
TX Carrollton, TMMI 214-306-8407
TX Irving, Powell Elctrns. 214-550-0547
TX Richardson, Janesway Elctrns. 214-437-5125
UT N. Salt Lake, Integrated Elctrns. 801-298-1868
UT Salt Lake City, Standard Supp. Co. 801-486-3371
WA Bellevue, Integrated Elctrns./Jaco ... 206-455-2727
WI Mequon, Taylor Elec. Co. 414-241-4321
WI New Berlin, Control Design Supp. 414-784-1015
WY Mequon, Lakeview Elctrns. 414-377-8250
EXP Pennsylvania, Advacom 412-733-5400

EBY COMPANY, The Pullman-Peabody Co., 2751 Southampton Rd., Philadelphia, PA 19154, Tel: 215-969-4200, TWX: 710-670-0452; FSC No.: 72825; Empl.: 92 ..... **C•1221**

Local Sales Offices & Reps

CA Cardiff, Cornerstone Sls. 619-436-2292
CA San Jose, Signet Tech. Sls. 408-292-0111
CO Boulder, R. F. Mayo Assocs. 303-442-2155
FL Tampa, APM Assocs. 813-886-2457
GA Marietta, George Whitfield Co. 404-992-5931
IL Skokie, Rendell Sls. Co. 312-967-1513
IN Ft. Wayne, Alpha Tech 219-447-0040
MD Glen Burnie, Macrotech Assocs. 301-766-1111
MI Brighton, Electronic Sources, Inc. 313-227-3598
MN Edina, Grayden & Flemmer 612-941-1120
NM Albuquerque, Lindberg Co. 505-881-1006
NY Fairport, Bastian Sls. Agy., Inc. 716-223-0237
NY Great Neck, MOS Assocs. 516-487-3966
NY Syracuse, Bastian Sls. Agency, Inc. ... 325-437-1482
NC Raleigh, George Whitfield Co. 919-783-7784
OH Brunswick, J. N. Bailey 216-273-3798
OH New Lebanon, J. N. Bailey & Assocs. 513-687-1325
OR Forest Grove, Doran Sls. Assocs. 503-357-3333
TX Denton, Stevens Sls. Co. 817-382-4735
UT Salt Lake City, J & E Sls. 801-972-9533
WA Redmond, Doran Sls. Assocs. 206-885-1885
Can Markham, Ont., Deskin Sls. 416-475-1412

Local Distributors

AL Birmingham, American Elec. Supp. Co. 205-942-4656
AL Huntsville, Contact Elctrns. 205-881-9321
AZ Phoenix, Dawn Engrg. 602-869-9611
CA City of Industry, Ital Elctrn. Sls. 213-968-8515
CA Fountain Valley, Amcotec Elec. Comp. Sls. 714-957-3003
CA Irvine, AMC Milliken 714-863-0811
CA San Carlos, Logan Elctrns. 415-594-0700
CO Denver, Hardware Specialties 303-322-3700
FL Miami, Alpeco Intl. 305-592-2985
FL W. Palm Beach, Nurmi Elctrn. Supp. .. 305-686-8553
GA Atlanta, Accu-Tech Cable, Inc. 404-455-6422
GA Atlanta, ACK Radio Supp. 404-351-6340
GA Atlanta, Prehler Elctrns. 404-447-5540
GA Atlanta, Specialty Dist. Co., Inc. 404-873-2521
GA Norcross, Atlanta Hardware Specialties 404-449-3000
IL Carol Stream, Lectro Comps. 800-323-2282
IL Chicago, Prehler Elctrns. 312-384-6100
IN Indianapolis, Prehler Elctrns. 317-841-0018
KY Bowling Green, Randolph, Hale & Meredith 502-781-1460
KY Hopkinsville, Randolph & Hale 502-885-5357
KY Louisville, P.I. Burkes Co. 502-589-3960
MD Columbia, Aztech Elctrns., Inc. 301-995-1760
MA Avon, Positive Comps. 617-588-6400
MA Marlborough, Hardware Specialties ... 617-481-8622
MI Farmington Hills, Prehler Elctrns. 313-473-7200
MI Grand Rapids, S-F Elctrn. Supp. Co. .. 616-459-0216
MN Bloomington, Prehler Elctrns. 612-854-4106
NJ Camden, General Radio 609-964-8560
NJ Cherry Hill, hardware Specialties 609-663-0034
NM Albuquerque, Betatron 505-589-3960
NY Albany, E.E. Taylor 518-438-7811
NY Jamaica, Eby Sls. Co. of NY 212-291-3232
NY Long Island City, Hardware Specialty Co. 212-361-9393
NY Rome, Rome Elctrns. 315-337-5400
NC Raleigh, Prehler Elctrns. 919-876-9111
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
OH Dayton, Televox, Inc. 513-294-4499
OH Middleburg Heights, Prehler Elctrns. .. 216-243-5510
PA Allentown, Lehigh Elctrns. 215-433-3045
PA York, Electronic Comps. for Ind. 717-843-8971
SC Columbia, Dixie Elec. 803-779-5332
TN Chattanooga, Curle Elctrns. 615-266-4727
TN Chattanooga, Indl. Elec. Dist., Inc. 615-698-3413
TN Clarksville, Randolph, Hale & Matthews 615-647-2325
TN Cookville, Randolph & Parks 615-526-6184
TN Memphis, Bluff City Distrs. 901-345-9500
TN Nashville, Randolph & Rice 615-255-5602
TN Tullahoma, Randolph, Rice & Williams 615-455-4531
TX Dallas, Aeroamerica 214-484-7058
TX El Paso, Midland Specialty Co. 915-533-9555
VA Roanoke, Peoples Elctrn. Supp. 703-342-8933
WA Kent, Pyramid Elctrns. 206-872-5800

ECO INSTRS. DIV., Sea Data Corp., 1 Bridge St, Newton, MA 02158, Tel: 617-964-8360, Telex: 951107; Empl.: 40; *Sls. Mgr.:* Jill Shipman

ECOSOFT, INC., 6413 N. College Ave., Indianapolis, IN 46220, Tel: 317-255-6476; Empl.: 6; *Sls. Mgr.:* Emma Alkire

ECS COMPOSITES, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, Tel: 503-476-8871, TWX: 510-755-0777; FSC No.: 24995; Empl.: 135; *Sls. Mgr.:* John L. Smith ..... **C•1051**

Local Sales Offices & Reps

AL Huntsville, EMA 205-830-4030
CA Laguna Hills, WESTEC 714-770-6229
CA Mtn. View, Kim Buurma 415-494-8343
CO Littleton, Electronic Comp. Sys. 303-797-0894
FL Orlando, OEM Mktg. 305-299-1000
MD Baltimore, Burgin-Kreh Assocs. 301-265-8500
MA Westwood, Apex Assocs. 617-326-5042
NJ Teaneck, Noreast Tech. Sls. 201-833-2044
OR Grants Pass, ECS Inc. 503-476-8871
PA Horsham, Jacobsen Assocs. 215-674-2937
TX Dallas, Advance Tech. Sls. 214-340-1300
WA Bellevue, Comtec 206-453-1188
Can Stittsville, Ont., Production Case Co. .. 613-836-2248

Ectron CORPORATION

ECTRON CORP., 8159 Engineer Rd., San Diego, CA 92111, Tel: 619-278-0600, TWX: 910-335-1259; FSC No.: 24856; Empl.: 50; *Sls. Mgr.:* W. W. Hanford ..... **D•1009**

Local Sales Offices & Reps

AZ Phoenix, Aztec Entprs. 602-944-9185
CA Carlsbad, FLW Inc. 619-434-5251
CA Costa Mesa, FLW Inc. 714-751-7512
CA Hayward, FLW Inc. 415-786-9070
CA Van Nuys, FLW Inc. 818-989-5238
CO Denver, Aztec Entprs. 303-779-5285
FL Melbourne, Saber Assocs. 305-724-0920
GA Norcross, Saber Assoc. Inc. 800-327-0853
IL Elmhurst, Sector Engrg. Sls. 312-530-7850
IN Indianapolis, Sector Engrg. Sls. 317-842-1120
KS Lenexa, Ramsey Assocs. 913-541-1007
LA Baton Rouge, Sesco 504-928-4951
MD Laurel, Elctrn. Mktg. Assoc. 301-792-9300
MA Needham, Addelco Corp. 617-444-4754
MI Troy, Satullo 313-585-4300
MN Minneapolis, Sector Eng. Sls. Inc. 612-593-1809
MO Maryland Hgts., Ramsey Assocs. 314-878-5042
NM Albuquerque, Aztec Entprs. 505-262-1688
NY East Syracuse, Ossmann Instrs. 315-437-7052
NY Plainview, Eastern-Metro Assoc. 516-931-1414
NY Rochester, Ossmann Instrs. 716-424-4460
NC Clayton, Saber Assocs. 800-327-0853
OH Cleveland, Instrmn. Sys. 216-845-8800
OH Dayton, Instrmn. Sys. 513-294-2838
OK Tulsa, Sesco 918-622-3868
PA Pittsburgh, Instrmn. Sys. 412-823-7005
PA Plymouth Meeting, Elctrn. Mktg. Assoc. 215-828-7400
SC Columbia, Saber Assoc. Inc. 800-327-0853
TX Dallas, Sesco 214-231-9364
TX Houston, Sesco 713-999-3510
UT Ogden, Aztec Entprs. 801-621-1655
WA Seattle, Datacom Assoc. Inc. 206-285-2525
WI Milwaukee, Sector Eng. Sls. Inc. 414-352-8280

EDAC INC., 20 Railside Rd., Toronto, ON, Canada M3A 1A4, Tel: 416-445-2292, TWX: 610-492-1398, FAX: 416-445-4394; FSC No.: 31781; Empl.: 120; *Sls. Mgr.:* Alan Little; *Dist. Mgr.:* Alan Little

EDA INSTRUMENTS, INC., 4 Thorncliffe Park Dr., Toronto, ON, Canada M4H1H1, Tel: 416-425-7800, Telex: 06 23222 FEDA TOR, FAX: 416-425-8135; Empl.: 70; *Sls. Mgr.:* Scott Hepburn

EDCLIFF, Div. of Systron Donner, 1711 So. Mountain Ave., Monrovia, CA 91016, Tel: 818-358-4571, TWX: 910-585-3248; FSC No.: 00153; Empl.: 110; *Sls. Mgr.:* Cosmo L. Avellis ..... **B•1785**

Local Sales Offices & Reps

CA Panorama City, Sentenac Assocs. 818-988-2671
CO Longmont, Todd & Fry Assocs., Inc. ... 303-447-9358
CT Bloomfield, Zaslow Sls. Co., Inc. 203-242-7781
IL Elk Grove Village, Carlson Elctrn. Sls. 312-956-8240
KS Wichita, Lee Prods., Inc. 316-264-2172
MD Silver Spring, H. R. Sieber Co. 301-681-3770
MA Westboro, Zaslow Sls. Co., Inc. 617-393-8150
MN St. Paul, John J. Exon Co., Inc. 612-636-5533
PA Huntingdon Valley, Rabal Assocs. 215-947-4825
TX Dallas, D & O Engrg. Co., Inc. 214-241-3099
WA Kirkland, The Norwest Co., Inc. 206-827-9562

EDL, INC., 385 Oser Ave., Hauppauge, NY 11788, Tel: 516-435-2808, 1-800-DIAL EDL; Empl.: 50; *Sls. Mgr.:* Ann Marie Capuanno

EDMAN CORP., Subsidiary of Rospatch, 7500 Main St, P.O. Box 750, Fishers, NY 14453-0750, Tel: 716-924-4000, TWX: 510-254-2896; Empl.: 170; *Sls. Mgr.:* Howard Potter

EDO CORP./ELINCO DIV., See Electrical Indicator Co., Inc.

EDO WESTERN CORP., EDO Corp., 2645 South 300 W., Salt Lake City, UT 84115, Tel: 801-486-7481/3846, Telex: 388-315; Empl.: 360; *Sls. Mgr.:* Ken Etulain

EDSYN, INC., 15958 Arminta Ave., Van Nuys, CA 91406, Tel: 818-989-2324, 213-873-5115, Telex: 65-1469; *Sls. Mgr.:* Wayne Murry

EDWARDS CO., Signaling Prods. Div., P.O. Box 1188, Farmington, CT 06034, Tel: 203-678-0410; Empl.: 1000; *Sls. Mgr.:* Al Canevari; *Dist. Mgr.:* Al Canevari

EECO INCORPORATED, 1601 E. Chestnut Ave., P.O. Box 659, Santa Ana, CA 92702-0659, Tel: 714-835-6000, Telex: 67-8420, TWX: 910-595-1550; Empl.: 850; *Sls. Mgr.:* Tom Murphy; *Dist. Mgr.:* Tom Murphy ..... **B•1594-1596, 1707**

Local Sales Offices & Reps

CA Santa Ana, Jones & McGeoy Sls., Inc. 714-547-6466
AL Huntsville, Montgomery Mktg. 205-830-0498
AZ Phoenix, More Sls., Inc. 602-265-9201

CA Los Altos, Recht Assocs. 415-964-6321
CA San Diego, Harvey King Inc. 619-587-9300
CO Denver, Delltron Co. 303-373-0300
CT S. Windsor, Northeast Reps. 203-644-3728
FL Pompano Beach, Engrg. Mktg. Assocs. 305-943-3732
FL Winter Park, Engrg. Mktg. Assocs. 305-671-6800
GA Norcross, Montgomery Mktg. 404-447-6124
IL Elk Grove Village, John G. Twist Co. .. 312-593-0200
IN Fort Wayne, M/S Sls. & Assoc. 219-436-3023
IN Indianapolis, M/S Sls. & Assocs. 317-257-8915
IA Cedar Rapids, Palatine Sls. 319-365-8071
KS Blue Springs, Palatine Sls. 816-229-4007
KS Wichita, Palatine Engrg. 316-262-1020
MD Laurel, EMA, Inc. 301-953-7800
MA Hingham, Northeast Reps. 617-749-8700
MN Minneapolis, R.K. Sls. Assocs. 612-571-1001
MO Hazelwood, Palatine Sls. 314-839-0800
NH Milford, Northeast Reps., Inc. 603-673-1406
NJ Englewood, Tecnimat 201-569-4200
NY Endicott, Tech-Mark, Inc. 607-748-7473
NY Mendon, Techmark, Inc. 716-624-3840
NY Utica, Techmark, Inc. 315-733-0575
NC Cary, Montgomery Mktg. 919-467-6319
OH Aurora, Engrg. Mktg. Assocs. 216-562-6104
OH Centerville, Elctrn. Mktg. Assocs. 513-433-2800
OK Tulsa, West Assocs. 918-665-3465
OR Beaverton, Blair Hirsh Co. 503-641-1875
PA Huntingdon Valley, Omega Elctrn. Sls. 215-947-4135
TX Austin, West Assocs. 512-454-3681
TX Houston, West Assocs. 713-777-4108, 714-621-5983
TX Richardson, West Assocs. 214-680-2800
UT Salt Lake City, Delltron Co. 801-942-4678
WA Lynnwood, Blair Hirsh Co. 206-774-8151
WI Brookfield, John G. Twist Co. 414-782-2670
Can Montreal, EECO Incorporated 514-286-7105
Can Napean, Ont., Renmark Elctrns. Ltd. ... 613-727-0320
Can Toronto, Ont., Renmark Elctrns. Ltd. ... 416-494-5445

Local Distributors

CA Santa Monica, Master Distrs. 213-452-1336
AL Huntsville, Hall-Mark Elctrns. 205-837-8700
AL Huntsville, Marshall Inds. 205-881-9235
AZ Phoenix, Hall-Mark Elctrns. 602-437-1200
AZ Tempe, Harper SID 602-967-1464
AZ Tempe, Marshall Inds. 602-968-6181
CA Canoga Park, Hall-Mark Elctrns. 818-716-7300
CA Chatsworth, Marshall Inds. 818-407-0101
CA Crompton, Harper SID 213-979-5090
CA El Monte, Marshall Inds. 818-459-5500
CA Irvine, Marshall Inds. 714-859-5050
CA Rancho Cordova, Marshall Inds. 916-635-9700
CA San Diego, Hall-Mark Elctrns. 619-268-1201
CA San Diego, Harper SID 619-578-2500
CA San Diego, Marshall Inds. 619-578-9600
CA San Jose, Hall-Mark Elctrns. 408-946-0900
CA Santa Fe Springs, Micro Net 213-921-0068
CA Sunnyvale, Harper SID 408-747-0333
CA Sunnyvale, Marshall Inds. 408-943-4600
CA Sunnyvale, Time Electronics 408-734-9888
CA Torrance, Hall-Mark Elctrns. 213-217-8400
CA Tustin, Hall-Mark Elctrns. 714-669-4700
CO Englewood, Hall-Mark Elctrns. 303-790-1662
CO Thornton, Marshall Inds. 303-451-8444
CT Wallingford, Hall-Mark Elctrns. 203-269-0100
CT Wallingford, Marshall Inds. 203-265-3822
CT Wallingford, Sager Electrical Supply Co. 203-265-4600
FL Clearwater, Hall-Mark Elctrns. 813-576-8691
FL Orlando, Hall-Mark Elctrns. 305-855-4020
FL Orlando, Marshall Inds. 305-841-1878
FL Pompano Beach, Hall-Mark Elctrns. ... 305-971-9280
GA Atlanta, Marshall Inds. 404-923-5750
GA Norcross, Hall-Mark Elctrns. 404-447-8000
IL Schaumburg, Marshall Inds. 312-490-0155
IL Wood Dale, Hall-Mark Elctrns. 312-860-3800
IN Indianapolis, Hall-Mark Elctrns. 317-872-8875
IN Indianapolis, Mar Elctrns., Inc. 317-633-6699
IN Indianapolis, Marshall Inds. 317-297-0483
KS Lenexa, Hall-Mark Elctrns. 913-888-4747
KS Lenexa, Marshall Inds. 913-492-3121
MD Baltimore, Hall-Mark Elctrns. 301-988-9800
MD Gaithersburg, Marshall Inds. 301-840-9450
MD Hunt Valley, Micro Whlsrs. 301-785-6300
MA Billerica, Hall-Mark Elctrns. 617-667-0902
MA Hingham, Sager Elctrn. Supp. Co. 617-749-6700
MA Wilmington, Marshall Inds. 617-658-0810
MI Livonia, LWC Distrs. 313-464-7700
MN Eden Prairie, Hall-Mark Elctrns. 612-941-2600
MN Plymouth, Marshall Inds. 612-559-2211
MO Earth City, Hall-Mark Elctrn. 314-291-5350
MO St. Louis, Olive Elctrns. 314-426-4500
NJ Cherry Hill, Hall-Mark Elctrns. 609-424-7300
NJ Fairfield, Hall-Mark Elctrns. 201-575-4415
NJ Fairfield, Marshall Inds. 201-882-0320
NM Albuquerque, International Elctrns. 505-345-8127
NY Buffalo, Summit Distrs. 716-887-2800
NY Endwell, Marshall Inds. 607-754-1570
NY Hauppauge, Marshall Inds. 516-273-2424
NY Lynbrook, L.I., Peerless Radio Corp. ... 516-593-2121
NY Rochester, Marshall Inds. 716-235-7620
NY Ronkonkoma, Hall-Mark Elctrns. 516-737-0600
NC Raleigh, Hall-Mark Elctrns. 919-872-0712
NC Raleigh, Marshall Inds. 919-878-9882
OH Dayton, Marshall Ind. 513-236-8088
OH Solon, Hall-Mark Elctrns. 216-349-4632
OH Solon, Marshall Inds. 214-248-1788
OH Worthington, Hall-Mark Elctrns. 614-888-3313
OR Beaverton, Almac/Stroum 503-629-8090
OR Beaverton, Marshall Inds. 503-644-5050
TX Austin, Hall-Mark Elctrns. 512-258-8848
TX Austin, Marshall Inds. 512-837-1991
TX Carrollton, Marshall Inds. 214-233-5200
TX Dallas, Hall-Mark Elctrns. 214-341-1147
TX El Paso, International Elctrns. 915-598-3406
TX Houston, Hall-Mark Elctrns. 713-781-6100
TX Houston, Marshall Inds. 713-895-9200
TX Irving, Harper Sls. 214-621-0500
UT Murray, Hall-Mark Elctrns. 801-268-3779
UT Salt Lake City, Marshall Inds. 801-485-1551
WA Bellevue, Almac Elctrns. 206-643-9992
WA Bellevue, Marshall Inds. 206-747-9100
WA Spokane, Almac Elctrns. 509-924-9500
WI New Berlin, Hall-Mark Elctrns. 414-797-7844
Can Burnaby, BC, RAE Indl. Elec. Ltd. 604-291-8866
Can Calgary, Alb., Cardinal Ind. Elec. Ltd. .. 403-259-6817
Can Calgary, Alta., Future Elctrns. 403-235-5325
Can Downsview, Ont., Future Elctrns. 416-638-4771
Can Edmonton, Alb., Cardinal Ind. Elec. Ltd. 403-483-6266
Can Edmonton, Alta., Future Elctrns. 403-438-2858
Can Guelph, Ont., EMJ Data Sys. Ltd. 416-454-2940
Can Montreal, Que., EMJ Data Sys. Ltd. 514-849-4171
Can Ottawa, Ont., Carsten Elctrns., Ltd. 613-726-5138
Can Ottawa, Ont., Future Elctrns. 613-820-8313
Can Pointe Claire, Que., Future Elctrns. 514-694-7710
Can Scarborough, Ont., Carsten Elctrns., Ltd. 416-751-5002
Can St. Laurent, Que., Carsten Elctrns., Ltd. 514-334-8321
Can Vancouver, BC, EMJ Data Sys. Ltd. ... 604-732-7268
Can Vancouver, BC, Future Elctrns. 604-438-5545
Can Winnipeg, Manitoba, Future Elctrns. ... 204-339-0554

EEMCO DIV., Datron Systems Inc., 4585 Electronics Pl, Los Angeles, CA 90039, Tel: 818-247-7060, TWX: 910-497-2269; FSC No.: 72121; Empl.: 300; *Sls. Mgr.:* Russell Johnson; *Dist. Mgr.:* Karl Urban

Local Sales Offices & Reps

CA San Jose, ASI Valve Div.;Allsurv Instrs. Co. 408-263-5717
IL Chicago, J Golten Co. 312-792-1991
MN St. Paul, Vikeland Sls. 612-645-4647
NY Huntington, J. A. Keeneth Co., Inc. 516-351-7008
NY Syracuse, Trol-Mation 315-437-4100
OH Cincinnati, The Hardman Co. 513-871-9509
OH Westlake, H.J. Kirby Corp. 216-835-3440
PA Warminster, Air Hydraulics Sales Co. 215-674-8488
TX Hurst, CTR, Inc. 817-280-9999

EEV INC., 4 Westchester Plaza, Elmsford, NY 10523, Tel: 914-592-6050, Telex: 6818096, ESYLNK: 914 682 8922; Empl.: 42; *Sls. Mgr.:* Tom Soldano

EFECTOR, INC., 201 So. Gulph Rd., King of Prussia, PA 19406, Tel: 215-337-5500, 800-441-8246, Telex: 84-6437; Empl.: 200; *Sls. Mgr.:* J. Kelly

EFI CORPORATION, 350 West 2700 South, Salt Lake City, UT 84115, Tel: 801-486-5871, 800-221-1174; Empl.: 35; *Sls. Mgr.:* Sam Kershaw

EFRATOM, a division of Ball Corp., 18851 Bardeen Ave, Irvine, CA 92715, Tel: 714-752-2891, Telex: 68-5635; Empl.: 105 ..... **A•1391**

Local Sales Offices & Reps

AL Huntsville, Hughes Assocs., Inc. 205-533-9108
CA Los Altos, Kolm Mktg. Assoc. 415-948-2635
FL Sarasota, Bass Assocs. 813-922-9538
GA Norcross, Hughes Assocs., Inc. 404-662-1587
IL Bannockburn, GMR Sls., Inc. 312-295-8440
IN Fort Wayne, TX Sls. Indiana 219-489-4447
MA Natick, Wayland Engrg. Sls. 617-655-6080
NJ Pennsauken, Sci. Reps.-North 609-662-5222
NY Huntington, CDB Entprs. 516-692-5200
TN Nashville, Hughes Assocs., Inc. 615-871-0908
TX Houston, Sci. Devices 713-864-1711
TX Richardson, Sci. Devices 214-231-8106
VA Fairfax, Sci-Reps.-South 703-385-0600

EG&G, INC., Electro-Optics Div., 35 Congress St, Salem, MA 01970, Tel: 617-745-3200, Telex: 681-7405 EGGSA; FSC No.: 25506; Empl.: 500; *Sls. Mgr.:* J. Murachver

EG & G ALMOND INSTRUMENTS, 1330 E. Cypress St., Covina, CA 91724, Tel: 818-967-9521, TWX: 910-584-1320; Empl.: 380; *Sls. Mgr.:* Dave Adams ..... **D•1686-1687**

Local Sales Offices & Reps

FL Orlando, Truex Assocs. 305-859-2160
MA Lexington, Circuit Sls. Co. 617-861-0567
NY Yonkers, Sonkin Assocs. 914-968-8282

EG & G BIRTCHER, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, Tel: 818-442-2572, Telex: 247345 EGGUR; FSC No.: 18915; *Sls. Mgr.:* H. Robert Sproul; *Dist. Mgr.:* H. Robert Sproul ..... **C•1038-1039**

Local Sales Offices & Reps

AL Huntsville, Remco 205-533-3763
AZ Phoenix, Mercury Engrg. Sls. 602-244-0123
CA Brea, Masco 714-529-0866
CA San Diego, Masco 619-234-6905
CA Santa Clara, Nova-Tronix, Inc. 408-727-9530
CO Broomfield, Connors Co. 303-466-9628
FL Clearwater, HHP, Assocs. 813-797-4447
FL Maitland, HHP, Assocs., Inc. 305-831-2474
FL Pompano Beach, HHP Assocs., Inc. ... 305-971-5750
GA Atlanta, Remco 404-447-6937
IL Rollings Meadows, Heartland Technlg. Mktg., Inc. 312-577-9222
KS Shawnee Mission, M-S-B Assocs., Inc. 913-262-5500
MD Baltimore, Burgin Kreh Assocs., Inc. ... 301-265-8500
MA Burlington, Conti-Younger Assocs., Inc. 617-273-1582
MI Spring Lake, Jim Finnegan & Co. 616-846-4980
MN Minneapolis, Hei-Lite Sls., Inc. 612-861-6051
NJ Haddonfield, Tritek Sls., Inc. 609-429-1551
NY Great Neck, Frank Tylinski Co., Inc. ... 516-466-9070
NY Syracuse, IA Hotze Assocs. 315-479-6641
NC Raleigh, Remco 919-787-2112
OH Cleveland, Jim Finnegan & Co. 216-238-5905
OH Dayton, Jim Finnegan & Co. 513-890-8322
OR Beaverton, Eclipse Mktg. Grp. 503-642-1661
PA Pittsburgh, Jim Finneagan & Co. 412-823-5400
TX Dallas, El-Com Mktg., Inc. 214-241-2166
TX Houston, El-Com Mktg. 713-350-8064
VA Lynchburg, Burgin Kreh Assocs., Inc. .. 804-239-2626
WA Redmond, Eclipse Mktg. Grp. 206-885-6991
WI Milwaukee, Heartland Technlg. Mktg., Inc. 414-931-0606
Can Markham, Ont., P. J. Heenan, Ltd. 416-474-0111

Local Distributors

CA Anaheim, Bisco Inds. 714-635-0380
CA Fullerton, Pyramid Elctrns. 714-773-0781
CA Manhattan Beach, Prime Electro Prods. 213-379-1724
CA San Jose, Bisco Inds. 408-946-8980
CA Santa Ana, El-Com, Inc. 213-404-2961
CA Santa Clara, Pyramid Elctrns. 408-727-9810
CO Aurora, Jet Elctrns. Supp. Co., Inc. 303-364-5487
CT S. Windsor, Car-Lac Elctrns. 203-282-0631
FL Pompano Beach, Peerless Radio Corp. of FL 305-973-4141
IL Franklin Park, Bisco Inds. 312-451-1230
MA Milford, Car-Lac Elctrns. 617-478-7797
MA Winchester, Rush Inds., Inc. 617-729-5800
MA Woburn, Bisco Inds. 617-938-8590
MN Minneapolis, Stark Elctrns., Inc. 612-332-1325
NH Hudson, C & H Elctrns., Inc. 603-882-1133
NY Bohemia, Car Lac Inds. Sls., Inc. 516-567-4200
NY Buffalo, Summit Distrs. 716-884-3450
NY Lynbrook, Peerless Radio Corp. 516-593-2121
NY Rochester, Summit Distrs. 716-334-8110
OH Englewood, Argent Inds. 513-836-8633
OR Beaverton, Murphy Elctrns. 503-642-2001
TX Arlington, Bisco Inds. 817-640-7046
TX Farmers Branch, Force Elctrns. 214-247-9955
TX Ft. Worth, Industrial Elctrns. 817-731-7321
TX Houston, Force Elctrns. 713-561-8644
WA Kent, Pyramid Elctrns. 206-872-5800
WA Redmond, Murphy Elctrns. 206-881-1234
Can Mississauga, Ont., Rush Elctrns. 416-677-7280

EG&G GAMMA SCIENTIFIC, Div. of EG&G Inc., 3777 Ruffin Rd., San Diego, CA 92123, Tel: 619-279-8034, Telex: 697938, FAX: 619-576-9286; Empl.: 75; *Sls. Mgr.:* Robert Ruff

EG&G GEOMETRICS, Div. of EG&G Inc., 395 Java Dr., Sunnyvale, CA 94089, Tel: 408-734-4616, Telex: 357435; FSC No.: 34314; *Dist. Mgr.:* Doug Crice

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EG & G ROTRON, Custom Div., Hasbrouck La., Woodstock, NY 12498, Tel: 914-679-5201, TWX: 510-247-9033; FSC No.: 82877; *Sls. Mgr.:* Mike Lyon; *Dist. Mgr.:* Mary Fellows

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Local Sales Offices & Reps

AZ	Scottsdale, Interstate Mktg.	602-244-9050
CA	Encino, King-Way Assocs.	818-788-4124
CA	Redwood City, Ault Assocs.	415-367-1710
CO	Buena Vista, C-Tech	303-395-2025
CT	Gilford, A & M Elctrn. Reps.	203-271-3065
FL	Orlando, EAB Assocs.	305-898-7444
IL	Highland Park, T. B. Hunter Assocs.	312-433-7000
IN	Fort Wayne, Scott Elctrns.	219-484-7865
IN	Indianapolis, Scott Elctrns.	317-897-9976
MD	Laurel, R. W. Mitscher Co.	301-498-6090
MA	Needham, A & M Elctrn. Reps.	617-444-8170
MI	Southfield, O.E.M. Technical Sls.	313-444-1680
MN	Eden Prairie, Rockmore Sls.	612-941-1390
MO	St. Louis, Acorn Elctrns.	314-644-2510
NJ	Marlton, B.G.R. Assocs.	609-428-2440
NY	Pittsford, C. W. Beach Co.	716-586-3200
NY	Syracuse, C. W. Beach Co.	315-446-9587
OH	Cincinnati, Scott Elctrns.	513-791-2513
OH	Cleveland, Scott Elctrns.	216-473-5050
OH	Dayton, Scott Elctrns.	513-294-0539
OH	Reynoldsburg, Scott Elctrns.	614-863-1281
TX	Dallas, S. W. Mktg. Assocs.	214-341-8631
VA	Shipman, R. W. Mitscher Co.	804-263-5154
WA	Bellevue, N. R. Schultz Co.	206-454-0300

Local Distributors

CA	Encino, King Way West	818-788-4124
CA	Palo Alto, Zack Elctrns.	415-326-5432
CA	Santa Clara, Allied Elctrns.	408-727-1690
FL	Orlando, Nico	305-898-7444
IL	Chicago, Newark Elctrns.	312-638-4411
IL	Elgin, Allied Elctrns.	312-697-8200
MO	St. Louis, Olive Indl. Elec.	314-426-4500
OH	Dayton, Televox, Inc.	513-294-4499
TX	Fort Worth, Allied Elctrns.	817-336-5401

EG & G WAKEFIELD ENGINEERING, 60 Audubon Rd., Wakefield, MA 01880, Tel: 617-245-5900, TWX: 710-348-6713; Empl.: 250; *Sls. Mgr.:* Frank Casdia; *Dist. Mgr.:* Carl Swanson ..... **C•1627**

Local Sales Offices & Reps

AL	Huntsville, Over & Over, Inc.	205-837-7105
AZ	Tempe, B.F. Designs	602-345-7799
CA	Huntington Bch., EG & G Wakefield	714-847-8588
CA	Los Altos, Recht Assocs.	415-964-6321
CA	San Diego, Mesa Elctrns.	714-278-8021
CO	Denver, Delltron Co.	303-373-0300
FL	Tampa, Over & Over Inc.	813-626-9100
GA	Norcross, Over & Over, Inc.	404-449-6205
IL	Rolling Meadows, Sumer, Inc.	312-991-8500
IA	Cedar Rapids, C. H. Horn Assocs.	319-393-8703
MD	Columbia, Bresson Assocs.	215-664-6460
MI	Livonia, Luebbe Sls.	313-477-3131
MN	Mendota Heights, G-II Sls.	612-454-3086
MO	St. Louis, John Macke Co.	314-432-2830
NY	Commack, ERA, Inc.	516-543-0510
NY	E. Rochester, Tri Tech Elctrns.	716-385-6500
NY	Fayetteville, Tri Tech Elctrns.	315-446-2881
NC	Charlotte, Over & Over, Inc.	704-542-9111
OH	Cincinnati, Luebbe Sls. Co.	513-891-5770
OH	Cleveland, Luebbe Sls. Co.	215-333-0425
OR	Aloha, Huntley Assocs.	503-591-7753
PA	Narbeth, Bresson Assocs.	215-664-6460
TX	Richardson, Milco Mktg.	214-783-2716
TX	Stafford, Milco Mktg.	713-723-5003
UT	Sandy, Delltron Co.	801-942-4678
VA	Lynchburg, Bresson, Assocs.	215-664-6460
WA	Everett, Huntley Assocs.	206-337-5594
WI	Brookfield, Sumer, Inc.	414-784-6641

Local Distributors

AL	Birmingham, Newark	205-942-4044
AZ	Phoenix, Wyle	602-249-2232
AZ	Tempe, Bell	602-966-7800
AZ	Tempe, Newark	602-968-7441
CA	Cypress	213-744-0355
CA	El Segundo, Wyle	213-322-8100
CA	Foster City, Newark	415-572-8300
CA	Fountain Valley, Comp. Center	714-979-0433
CA	Garden Grove, Bell	714-220-0681
CA	Gardena, Bell	213-515-1800
CA	Inglewood, Newark	213-678-0441
CA	Irvine, Wyle	714-863-9953
CA	Oakland, Brill	415-321-4334
CA	Rancho Cordova, Wyle	916-638-5282
CA	Roseville, Bell	916-969-3100
CA	San Diego, Bell	619-268-1277
CA	San Diego, Cypress	619-292-5611
CA	San Diego, Newark	619-481-1251
CA	San Diego, Wyle	619-565-9171
CA	Santa Ana, Elcom	213-404-2961
CA	Santa Ana, Wyle	408-727-2500
CA	Santa Clara, Cypress	408-435-8400
CA	Sunnyside, Bell	408-734-8570
CA	Thousand Oaks, Bell	805-499-6821
CO	Denver, Newark	303-757-3351
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CO	Wheat Ridge, Bell	303-424-1985
CO	Wheat Ridge, Cypress	303-431-2622
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FL	Graham/Largo, Bell	813-541-4434
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IL	Elk Grove Vl., GBL Elec.	312-593-3220
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IN	Ft. Wayne, Bell	219-423-3422
IN	Indianapolis, Bell	317-634-8202
IN	Indianapolis, Newark	317-298-7070
IN	Lafayette, Bell	317-423-5564
IA	Cedar Rapids, Bell	319-395-0730
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
IA	Cedar Rapids, Newark	319-362-1171
KS	Lenexa, Newark	913-492-6000
KS	Wichita, RSC	316-267-5213
KY	Louisville, Newark	502-423-0280
KY	Metarie, Newark	504-888-5174
LA	Shreveport, Indl. Elec. Supp.	318-222-9459
MD	Beltsville, Newark	301-937-5085
MD	Columbia, Gen. Radio	301-995-6744
MD	Rockville, Capitol Radio Whlsrs.	301-881-2270
MA	Canton, Impact Sls.	617-821-1500
MA	Norwood, Emtel Elctrns.	617-769-9500
MA	Winchester, Rush Inds.	617-729-5800
MA	Woburn, JACO	617-933-7760
MA	Woburn, Newark	617-935-8350
MI	Ann Arbor, Bell	313-971-9093
MI	Ann Arbor, Wedemeyer	313-665-8611
MI	Grand Rapids, Newark	616-241-6681
MI	Livonia, RS Elec.	313-525-1155
MN	Minneapolis, Newark	612-331-6350
MN	St. Paul, Gophers	612-483-3322
MO	Hazelwood, Newark	314-731-1204
NE	Omaha, Newark	402-392-1221
NJ	Camden, Gen. Radio	609-964-8560
NJ	Clifton, Engrd. Assemblies	201-340-0600
NJ	E. Hanover, Delburn	201-884-0800
NJ	Kenilworth, Newark	201-272-8410
NJ	Penshauken, Newark	609-663-9490
NJ	Springfield, Route Elec.	201-379-7710
NM	Albuquerque, Bell	505-292-2700
NY	Bohemia, Car-Lac	516-567-4200
NY	Buffalo, Genesee Radio	716-873-9661
NY	Buffalo, Summit	716-884-3450
NY	Farmingdale, Semispecialists	516-293-2710
NY	Hauppauge, JACO	516-273-5500
NY	Henrietta, CAM/RPC	716-334-5600
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NY	Rochester, Summit	716-334-8110
NY	Suffern, Nobel Elec.	914-357-4500
NY	Valley Stream, Newark	516-887-2100
NC	Greensboro, Newark	919-292-7240
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NC	Winston-Salem, Kirkman Elec.	919-722-9131
OH	Cincinnati, Bell	513-772-1661
OH	Cincinnati, Hughes Peters	513-351-2000
OH	Cleveland, CAM/Ohio	216-461-4700
OH	Cleveland, Darrah	216-631-0912
OH	Columbia, Newark	614-451-0002
OH	Columbus, Bell	614-895-1590
OH	Columbus, Hughes Peters	614-294-5351
OH	Dayton, Bell	513-434-8231
OH	Dayton, Stotts Friedman	513-298-5555
OH	Warren, REM Elec.	216-373-1300
OK	Oklahoma City, Newark	405-495-5000
OK	Tulsa, Altair	918-252-5781
OK	Tulsa, Radio Inc.	918-587-9123
OR	Beaverton, Comp. Resources	503-641-8488
OR	Hillsboro, Wyle	503-640-6000
OR	Lake Oswego, Bell	503-241-4115
OR	Portland, Newark	503-620-1614
OR	Wilsonville, Shelley-Ragon	503-682-2929
PA	Allentown, Newark	215-434-7171
PA	Montgomeryville, Pyttronic	215-643-2850
PA	Pittsburgh, CAM-RPC	412-782-3770
PA	Pittsburgh, Newark	412-787-7740
PA	Reading, Barbey	215-376-7451
RI	Knoxville, Newark	615-588-6493
RI	Warwick, Newark	401-738-4010
TN	Nashville, Bell	615-367-4400
TX	Austin, Wyle	512-834-9957
TX	Dallas, Cypress	214-869-1435
TX	Dallas, Newark	214-494-5911
TX	Houston, Altair	713-462-3029
TX	Houston, Newark	713-782-4800
TX	Houston, Wyle	713-879-9953
TX	Richardson, Altair	214-231-5166
TX	Richardson, JACO	214-235-9575
TX	Richardson, Wyle	214-235-9953
TX	Stafford, Harrison Equip.	713-879-2660
TX	Sugarland, Quality Comps.	713-491-2255
UT	Salt Lake City, Bell	801-972-6969
UT	Salt Lake City, Newark	801-484-8611
UT	Salt Lake City, Wyle	801-974-9953
VA	Arlington, Newark	703-522-0880
VA	Charlottesville, Virginia Elec.	804-296-4184
WA	Bellevue, Bell	206-747-1515
WA	Bellevue, Newark	206-641-9800
WA	Bellevue, Wyle	206-453-8300
WA	Seattle, Shelley-Ragon	206-241-1980
WI	Milwaukee, Indl. Elec.	414-276-1212
WI	Milwaukee, Newark	414-781-2450
WI	Ocomonowoc, GW Elec.	414-567-9445
WI	Waukesha, Bell	414-547-8879

EGIS CORPORATION, P. O. Box 751, Barrington, IL 60010, Tel: 312-639-4448, Telex: 72 84 44, TWX: 62 85 06 83; Empl.: 14; *Sls. Mgr.:* Tim Neale; *Dist. Mgr.:* Glenn P. Antonic

EH ELECTRONICS, INC., Sub. EH Intl., Inc., 48507 Milmont Drive, Fremont, CA 94538, Tel: 415-651-2340, TWX: 910-366-7258; FSC No.: 13488; Empl.: 67; *Sls. Mgr.:* Donald F. Smith

EHRHORN TECHNOLOGICAL OPERS., INC., P.O. Box 888, Canon City, CO 81212, Tel: 303-275-1613; Empl.: 50; *Sls. Mgr.:* Steve Christensen

EIKONIX CORP., Eastman Kodak, 23 Crosby Dr., Bedford, MA 01730, Tel: 617-275-5070, Telex: 951231; Empl.: 240; *Sls. Mgr.:* Ronald Avery

EI MICROCIRCUITS, INC., 1650 Madison Ave., Mankato, MN 56001, Tel: 507-345-5786; Empl.: 18; *Sls. Mgr.:* Perry Eimers

EI NORTH AMERICA, 435 E. 79th St., New York, NY 10021, Tel: 212-517-5622, Telex: 803347 'EINA'

EIP MICROWAVE, INC., 2731 North First St., San Jose, CA 95134, Tel: 408-433-5900, TWX: 910-338-0155, FAX: 408-434-0258; FSC No.: 34257; Empl.: 200; *Sls. Mgr.:* Stanley J. Brock

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ELCO, KTRONICS, 1333 Lawrence Expwy., Suite 145, Santa Clara, CA 95051, Tel: 408-241-3024, FAX: 408-241-6546

ELCO CORP., Electronic Connector Div., Huntingdon Ind'l. Park, Huntingdon, PA 16652, Tel: 814-643-0700, TWX: 510-691-3117; Empl.: 500; *Sls. Mgr.:* J. J. Smith; *Dist. Mgr.:* John J. Galiney, Jr.

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ELCOM SYSTEMS, INC., 932 Clint Moore Rd., Boca Raton, FL 33431, Tel: 305-994-1774; FSC No.: 32424; Empl.: 5; *Sls. Mgr.:* D. Pollachek

ELCON PRODUCTS INTERNATIONAL COMPANY, 42700 Lawrence Place, Fremont, CA 94538, Tel: 415-490-4200, FAX: 415-490-3740; FSC No.: 85901; Empl.: 25; *Sls. Mgr.:* Shirlee Gendreau (inside Sls. Mgr.)

ELDEC CORP., Monitor & Control Div., 16700 13th Ave. W., P.O. Box 100, Lynnwood, WA 98046-0100, Tel: 206-743-1313, Telex: 32-8959, TWX: 910-449-2855; Empl.: 1321

ELDEC CORP., Power Conversion Div., 16700 13th Ave. W., P.O. Box 100, Lynnwood, WA 98046-0100, Tel: 206-743-1313, Telex: 497-0640, TWX: 910-449-2855; Empl.: 1400

ELDEC CORPORATION, Sensing Systems Div., 22000 Bothell Way-S.E., Bothell, WA 98041-3002, Tel: 206-487-4000, Telex: 910-449-0873

ELDRE CORPORATION, 1500 Jefferson Rd., Rochester, NY 14623, Tel: 716-427-7280, TWX: 510-253-4347; FSC No.: 19648; Empl.: 220; *Sls. Mgr.:* James N. Fitzpatrick

ELEC-TEK, INC., 10280 Alliance Rd., Cincinnati, OH 45242, Tel: 513-793-7937; FSC No.: 5U373; Empl.: 10; *Sls. Mgr.:* Rick Groth

ELECTRAC, INC., 1614 Orangethrope Way, Anaheim, CA 92801, Tel: 714-879-6021, Telex: 692433; FSC No.: 016154; Empl.: 35; *Sls. Mgr.:* Vincent B. Ruggiero

ELECTRICAL INDUSTRIES, North American Philips Corp., 691 Central Ave., Murray Hill, NJ 07974, Tel: 201-464-3200, TWX: 710-984-7979; FSC No.: 20093; Empl.: 300; *Sls. Mgr.:* D.V. Wilson

ELECTRICAL INSTRUMENT SERVICE, 25 Dock St., Mt. Vernon, NY 10550, Tel: 914-699-9717; FSC No.: 32590;16034A; Empl.: 35 ..... **D•1312-1314**

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CO	Commerce City, Williams Assocs.	303-289-5647
DC	Washington, Whitcomb Assocs.	202-737-0763
IL	Lincolnwood, Saffro & Assocs.	312-677-9720
KS	Shawnee Mission, Comtel - Midwest	913-722-1030
MD	Baltimore, Whitcomb Assocs.	301-889-1245
MA	Lexington, Zieco	617-861-8300
MI	Southfield, Comtel Instrs. Co.	313-358-2505
MN	Minneapolis, Hei-Lite Sls.	612-861-6051
MO	St. Louis, Comtel - Midwest	314-991-5363
NM	Albuquerque, Williams Assocs.	505-255-1638
NY	Mount Vernon, Elctrl. Instr. Svc.	914-699-9717
OH	Cleveland, Comtel Instrs. Co.	216-442-8080
OH	Dayton, Comtel Instrs. Co.	513-426-5310
OH	Hilliard, Comtel Instrs. Co.	614-876-8305
OK	Tulsa, Data Mktg. Assocs.	918-494-2711
PA	Pittsburgh, Comtel Instrs. Co.	412-922-5720
TX	Austin, Data Mktg. Assocs.	512-443-7722
TX	Dallas, Data Mktg. Assocs.	214-661-0300
TX	Houston, Data Mktg. Assocs.	713-780-2511
TX	San Antonio, Data Mktg. Assocs.	512-342-3031
UT	Salt Lake City, Williams-Assocs.	801-532-7701
WI	Lake Mills, Saffro & Assocs.	414-648-2605
Can	Beaconsfield, Que., Mesurina Ltee/Ltd.	514-697-6581

ELECTRICAL STANDARDS DIV., E.S.R.S., Inc., 7337 Greenbush, N. Hollywood, CA 91605, Tel: 818-765-4224; Empl.: 6

ELECTRICAL SYSTEMS, Bristol Corporation, 555 North Michigan St., Lakeville, IN 46536, Tel: 219-784-3011, Telex: 233159; Empl.: 350; *Sls. Mgr.:* James Dayton

ELECTRICAL WINDINGS, INC., 2015 N. Kolmar Ave., Chicago, IL 60639, Tel: 312-235-3360; FSC No.: 72128; Empl.: 160; *Sls. Mgr.:* Virginia A. Dalke

ELECTRIC DEVICE, PO Box 337, Canfield, OH 44406, Tel: 216-533-1111

ELECTRIC INDICATOR COMPANY INC., 272 Main Ave., Norwalk, CT 06851, Tel: 203-847-5861; FSC No.: 73693; Empl.: 60

ELECTRIC MOTOR ENGINEERING, 6255 Sunset Blvd., Ste. 923, Los Angeles, CA 90028, Tel: 213-469-7393, Telex: 4973366, FAX: 213-469-2553; Empl.: 5; *Sls. Mgr.:* Jerry Kibler; *Dist. Mgr.:* Jerry Kibler

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ELECTRIC SWITCHES, INC., 2478 Fletcher Dr., Los Angeles, CA 90039, Tel: 213-660-1310, TWX: 910-321-2971; Empl.: 42; *Sls. Mgr.:* Louis Lim ..... **B•1592-1593** **607, 614, 616, 618, 633, 636, 637, 638, 650, 655, 685, 695, 702, 704, 709, 715, 720, 726, 733, 742, 760, 773, 776, 779**

ELECTRIC TACHOMETER, 68th & Upland Sts., Philadelphia, PA 19142, Tel: 215-SA6-7723, Telex: 83-1475; FSC No.: 20049; Empl.: 50; *Sls. Mgr.:* F. M. Porter

ELECTRIC TIME COMPANY, INC., P.O. Box 466, Medfield, MA 02052, Tel: 617-359-4396; FSC No.: 6645; Empl.: 10

ELECTRO ASSEMBLIES CORP., 425 Huehl Rd., Bldg. 17, Northbrook, IL 60062, Tel: 312-498-6520; FSC No.: 09250; Empl.: 60; *Sls. Mgr.:* Greg Andrews

ELECTROCHEM INDUSTRIES

ELECTROCHEM INDUSTRIES, Wilson Greatbatch Ltd., 10000 Wehrle, Clarence, NY 14031, Tel: 716-759-2828, Telex: 91-386; FSC No.: 6U589; Empl.: 300; *Dist. Mgr.:* R. Altieri

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CA	San Diego, Elsco Elctrns., Inc.	619-292-1771
CA	Santa Clara, Nova-Tronix, Inc.	408-727-9530
CO	Englewood, Omega Ltd.	303-762-1921
FL	Boca Raton, R. W. Mitscher Co.	305-368-3841
FL	Sanford, R. W. Mitscher Co.	305-322-7141
FL	Tarpon Springs, R. W. Mitscher Co.	813-934-9440
IL	Park Ridge, Metcom Assocs. Corp.	312-696-1490
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LA	Chalmette, Erickson Sls., Inc.	504-271-1976
MA	Waltham, Del Tech Sls.	617-894-4550
NJ	Berkeley Hgts., Cambridge Allen & Assocs.	201-464-0203
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NY	Clarence, R. W. Mitscher Co., Inc.	716-759-2350
NC	Pineville, JWL Assocs., Inc.	704-541-5750
OH	Beachwood, Electronic Salesmasters	216-831-9555
TX	Austin, Erickson Sls., Inc.	512-244-3068
TX	Dallas, Erickson Sls., Inc.	214-739-5833
TX	Houston, Erickson Sls., Inc.	713-266-1604
UT	Salt Lake City, Omega Ltd.	801-277-8061
WA	Bellevue, Nova-Tronix, Inc.	206-634-7355
Can	Downsview, Designtronics	416-747-1171
Can	Vancouver, Blakewood Elctrns.	604-261-8099

ELECTROCOM INDUSTRIES, 1105 N. Ironwood Dr., S. Bend, IN 46615, Tel: 219-232-2743; FSC No.: 27114; *Sls. Mgr.:* B. Jaffe

ELECTRO COMP., INC., 2415 Main St., Stratford, CT 06497, Tel: 203-375-5811

ELECTRO CORPORATION, 1845 57th Street, Sarasota, FL 33578, Tel: 813-355-8411, Telex: 52683; FSC No.: 81692; Empl.: 200; *Sls. Mgr.:* John MacKay; *Dist. Mgr.:* John MacKay

ELECTRO-CRAFT, 1600 2nd St. S., Hopkins, MN 55343, Tel: 612-931-2700

ELECTROCUBE, 1710 So. Del Mar Ave., San Gabriel, CA 91776, Tel: 818-573-3300, TWX: 910-589-1609; FSC No.: 14752; Empl.: 175; *Sls. Mgr.:* E. F. Bryant; *Dist. Mgr.:* E. F. Bryant

ELECTRODATA, INC., 23020 Miles Rd., Bedford Heights, OH 44128, Tel: 216-663-3333, TWX: 810-427-2280; FSC No.: 34-1173465; Empl.: 15; *Sls. Mgr.:* Philip Ardire; *Dist. Mgr.:* Philip Ardire

ELECTRODYNAMICS

ELECTRODYNAMICS, INC., A Talley Inds. Co., 1200 Hicks Rd., Rolling Meadows, IL 60008, Tel: 312-259-0740, Telex: 28-1070; FSC No.: 10236; Empl.: 250; *Sls. Mgr.:* Frank Rafferty ..... **D•1128**

Local Sales Offices & Reps

CA	Alhambra, M. W. Riedel & Co.	213-283-7694
CA	Hayward, Liaison, Inc.	415-783-1131
CO	Denver, West High-Tech, JV	303-477-8180
CT	Old Saybrook, FJS Assocs.	203-388-5374
IA	Cedar Rapids, J.R. Sales Engrg.	319-393-2232
MD	Severna Park, Delmarva Engrg. Assocs., Ltd.	301-647-8007
MA	Lexington, FJS Assocs.	617-861-1232
MN	Minneapolis, TWC Sls.	612-636-1770
MO	St. Louis, Midwest Meridian Corp.	314-878-4441
NJ	Clinton, Churchill Assocs.	201-204-0744
NY	Larchmont, Hingston Walsh Assocs., Inc.	914-834-5781
NY	Pittsford, Noeth Honsinger Assocs.	716-586-9002
OR	Tigard, ElTech, Inc.	503-684-3458
PA	Norristown, Rivco January Inc.	215-631-1414
TX	Ft. Worth, CMR	817-379-6540
UT	Salt Lake City, West High-Tech	801-466-5739
WA	Bellevue, ElTech, Inc.	206-643-4330

ELECTRO DYNAMICS, Sub. of SFE Technologies, 9075 Cody, Overland Park, KS 66214 Elec. Dyna., Tel: 913-888-1750, Telex: 42254

ELECTRO-DYNAMICS DEV. CO., 475 Mt. Hood Dr. S.W., Issaquah, WA 98027-4038, Tel: 206-392-2493; FSC No.: 9J838; *Sls. Mgr.:* W. A. Pommer

ELECTROFILM, 27727 Avenue Scott, Valencia, CA 91355, Tel: 805-257-2240, Telex: 65-1438; FSC No.: 85932; Empl.: 250; *Sls. Mgr.:* Richard W. Pearson

ELECTRO-FILMS

ELECTRO-FILMS, INC., 111 Gilbane St., Warwick Central Indl. Pk., Warwick, RI 02886, Tel: 401-738-9150, TWX: 710-382-0405, FAX: 401-738-4389; FSC No.: 57252; Empl.: 240; *Sls. Mgr.:* Frank Urrico, Dir., Engrg. & Mktg. ..... **A•1938-1939**

Local Sales Offices & Reps

CA	Santa Ana, Weatherman Assocs.	714-544-1304
CA	Sunnyvale, NES Assocs.	408-738-3259
GA	Chamblee, BCI, Inc.	404-455-0405
IL	Calument City, Context Sys.	312-655-4850
IN	Indianapolis, CC Electro Sls.	317-255-1508
MA	Bedford, Vector Assocs.	617-271-0000
MI	Livonia, Electro Sls. Assocs.	313-421-7500
MN	Eden Prairie, Comprehensive Tech. Sls.	612-941-7181
NY	Plainview, Robert Smith Assocs.	516-681-3155
NY	Syracuse, Labtronics	315-455-7314
NJ	Whippany, Robert Smith Assocs.	201-340-0204
NC	Charlotte, BCI, Inc.	704-545-7657
OH	Chesterland, Electro Sls. Assocs.	216-729-0190
OH	Dayton, Electro Sls. Assocs.	513-426-5551
PA	King of Prussia, Linear Sls.	215-783-5350
PA	Pittsburgh, Electro Sls. Assocs.	412-322-9000
TX	Austin, J. Clay Co.	512-346-7340
TX	Dallas, J. Clay Co.	214-458-8833
TX	Missouri City, M Rep	713-261-0798
WA	Seattle, MARS	206-747-3292
EXP	MA, Plainville, Teknis, Inc.	617-695-3591

ELECTROHOME LIMITED, Circuit Board Operations, 809 Wellington St. N., Kitchener, Ontario, Canada N2G 4J6, Tel: 519-744-7111, Telex: 069-55449, FAX: 519-749-3131; Empl.: 2000

ELECTRO IMPULSE, Box 870, Red Bank, NJ 07701-0870, Tel: 201-741-0404, TWX: 710-722-5717; FSC No.: 91161; Empl.: 105; *Sls. Mgr.:* Mark Rubin ..... **C•1628-1629; D•1234**

Local Sales Offices & Reps

CA	Los Angeles, RDH Assocs.	213-396-4100
MA	Reading, Geder Assocs.	617-944-3105

NY Plainview, B. D. Aaron & Co. 516-349-7399
TX Richardson, Spectra Sls. Corp. 214-234-3600
EXP NJ, Oradell, Sylvan Ginsbury Ltd. 201-261-3200

ELECTRO INDUSTRIES, Div. E.I. Elctrns., Inc., 1900 Shames Drive, Westbury, NY 11590, Tel: 516-334-0870, Telex: 4948652 ELECTRO; Empl.: 20; *Sls. Mgr.:* S. Kagan ..... **D•1351**

For further information call toll free: 800-645-6342

ELECTRO KINETICS CO., Sub. HTL Inds., Inc., 402 E. Gutierrez St., Santa Barbara, CA 93102, Tel: 805-963-2055, TWX: 910-334-1177; FSC No.: 02101; Empl.: 260; *Sls. Mgr.:* N.G. Otis

ELECTROL

ELEC-TROL, INC., 26477 N. Golden Valley Rd., Saugus, CA 91350, Tel: 805-252-8330, Telex: 310-3720 331, FAX: 805-251-7147; FSC No.: 15636; Empl.: 650; *Sls. Mgr.:* Mark Smith ..... **B•1352-1353**

Local Sales Offices & Reps

AL Huntsville, Beacon Elctrn. Assocs. 205-881-5031
AZ Tempe, Sys. Sls. of Arizona 602-829-9338
AR Little Rock, Beacon Elctrn. Assocs. 501-224-5449
CA Garden Grove, Elsco 714-891-4621
CA San Jose, Vernexx 408-972-9072
CO Denver, Elcom 303-337-2300
FL Boca Raton, Beacon Elctrn. Assocs. .. 305-392-3500
FL Clearwater, Beacon Elctrn. Assocs. ... 813-796-2378
FL Ft. Lauderdale, Beacon Elctrn. Assocs. 305-491-1054
FL Maitland, Beacon Elctrn. Assocs. 305-647-3498
FL Melbourne, Beacon Elctrn. Assocs. ... 305-724-8010
GA Atlanta, Beacon Elctrn. Assocs. 404-256-9640
IL Des Plaines, Lincoln, Hodges & Assocs. 312-297-3810
MA Framingham, Stone Comps. 617-875-3266
MI Ypsilanti, TechRep 616-642-6594
MN Minneapolis, R. K. Sls. Assocs. 612-571-1001
NY Clark Mills, KLM-Garner Co. 315-853-6126
NY North Syracuse, KLM-Garner Co. 315-458-6214
NY Pittsford, KLM-Garner Co. 716-381-8350
NY Yonkers, Sonkin Assocs. 914-968-8282
NC Greensboro, Beacon Elctrn. Assocs. .. 919-275-9997
NC Raleigh, Beacon Elctrn. Assocs. 919-787-0330
OH Columbus, Mulligan & Assoc. 614-457-2242
OR Portland, Earl & Brown Co. 503-245-2283
PA Birchrunville, Jadelectronics 215-296-3800
TX Houston, Aid Elctrns. 713-955-6204
TX Irving, Aid Elctrns. 214-790-4761
UT Salt Lake City, Elcom 801-485-7415
WA Seattle, Earl & Brown Co. 206-284-1121
WI Waukesha, Lincoln, Hodges & Assocs. 414-542-3087

Local Distributors

AL Huntsville, Component Distrs. 205-883-7501
AZ Tempe, Acacia Sls. 602-894-2874
CA Anaheim, Arrow Elctrns. 714-774-5290
CA Chatsworth, Arrow Elctrns. 213-701-7500
CA Irvine, Acacia Sls. 714-549-0954
CA Rancho Cordova, Acacia Sls. 916-638-1861
CA San Carlos, Control Design 415-592-4806
CA San Diego, Acacia Sls. 619-565-4365
CA San Diego, Arrow Elctrns. 619-565-4800
CA Santa Monica, Master Distrs. 213-452-1229
CA Sunnyvale, Acacia Sls. 408-745-7200
CA Sunnyvale, Arrow Elctrns. 408-745-6600
CA Sunnyvale, Sierra West 408-747-1188
CA Tustin, Arrow Elctrns. 714-838-5422
CO Denver, Arrow Elctrns. 303-758-2100
CO Englewood, Indl. Elctrns., Inc. 303-694-9444
CO Lakewood, Acacia Sls. 303-232-2882
CT Wallingford, Arrow Elctrns. 203-265-7741
FL Ft. Lauderdale, Arrow Elctrns. 305-776-7790
FL Ft. Lauderdale, Component Distrs. 305-971-4950
FL Palm Bay, Arrow Elctrns. 305-725-1480
GA Norcross, Arrow Elctrns. 404-449-8252
IL Itasca, Voyager Elctrns. 312-773-4900
IL Schaumburg, Arrow Elctrns. 312-397-3440
IN Indianapolis, Arrow Elctrns. 317-243-9353
MD Baltimore, Arrow Elctrns. 301-995-0003
MA Framingham, Jaks Elctrns. 617-875-3266
MA Woburn, Arrow Elctrns. 617-933-8130
MI Ann Arbor, Arrow Elctrns. 313-971-8220
MN Edina, Arrow Elctrns. 612-830-1800
MN Fridley, Voyager Elctrns. 612-571-7766
MO St. Louis, Arrow Elctrns. 314-567-6888
NH Manchester, Arrow Elctrns. 603-668-6968
NJ Fairlawn, Relay Specialties 201-797-3313
NJ Moorestown, Arrow Elctrns. 609-596-8000
NJ Saddle Brook, Arrow Elctrns. 201-797-5800
NM Albuquerque, Arrow Elctrns. 505-243-4566
NY Farmingdale, Arrow Elctrns. 516-694-6800
NY Farmingdale, Arrow Elctrns. 516-293-6363
NY Hauppauge, Arrow Elctrns. 516-231-1000
NY Liverpool, Arrow Elctrns. 315-652-1000
NY Rochester, Arrow Elctrns. 716-275-0300
NY Rochester, Simcona Elctrns. Corp. 716-328-3230
NY Yonkers, Kin-Tronics 914-968-7736
NC Raleigh, Arrow Elctrns. 919-876-3132
NC Raleigh, Comp. Distrs. 919-834-9465
NC Winston Salem, Arrow Elctrns. 919-725-8711
OH Centerville, Arrow Elctrns. 513-435-5563
OH Dayton, Bell Inds. 513-434-8231
OH Solon, Arrow Elctrns. 216-248-3990
OH Solon, Repco 216-248-8900
OR Beaverton, Acacia Sls. 503-646-3377
PA Monroeville, Arrow Elctrns. 412-856-7000
PA Philadelphia, Shap Elctrns. 215-969-3300
TX Austin, Arrow Elctrns. 512-835-4180
TX Dallas, Arrow Elctrns. 214-386-7500
TX Houston, Arrow Elctrns. 713-530-4700
TX Stafford, Arrow Elctrns. 713-491-4100
WA Bellevue, Arrow Elctrns. 206-643-4800
WI Oak Creek, Arrow Elctrns. 414-764-6600

ELECTROL CO., 321 Dewey St., P.O. Box 29, York, PA 17405, Tel: 717-848-1722; Empl.: 30; *Sls. Mgr.:* Debra Dudley; *Dist. Mgr.:* Debra Dudley

ELECTROLOGIC, INC., 1359 28th St., Signal Hill, CA 90806, Tel: 213-595-0551; FSC No.: 213-595-0554; Empl.: 10; *Sls. Mgr.:* Tony Hudson

ELECTRO-MAGENTIC PROCESSES, INC., Subsidiary of ISC Group, Inc., 9616 Owensmouth Ave., Chatsworth, CA 91311-4858, Tel: 818-882-6333, Telex: 499 2240 EMP UI; FSC No.: 51290; Empl.: 80; *Sls. Mgr.:* Kenneth A. Hacker

ELECTROMATIC CONTROLS CORP., 2495 Pembroke Road, Hoffman Estates, IL 60195-2010, Tel: 312-882-5757, TWX: 910-222-3452; FSC No.: 75203; Empl.: 400; *Sls. Mgr.:* Mike Meurer; *Dist. Mgr.:* Lawrence Tolvaysh

ELECTROMECH, INC., 528 Elm Street, Kearny, NJ 07032, Tel: 201-997-0950; Empl.: 40; *Sls. Mgr.:* Solomon Ezra ..... **A•2227**

ELECTRO MECHANICAL DESIGN SERVICES, INC., 16698 Oakmont Ave., Gaithersburg, MD 20877, Tel: 301-840-5710; *Sls. Mgr.:* Patrick E. Roney

ELECTRO MECHANICAL SYSTEMS, INC., 801 W. Bradley Ave., Champaign, IL 61820, Tel: 217-359-7125; Empl.: 20; *Sls. Mgr.:* Julie L. Redman

ELECTRO-MECHANICS CO., Box 1546, Austin, TX 78767, Tel: 512-835-4684, Telex: 767178

ELECTRO-MECHANISMS, INC., 2745 E. Huntington Dr., Duarte, CA 91010, Tel: 818-359-2535; FSC No.: 52592; Empl.: 27 ..... **B•1516-1517**

Local Sales Offices & Reps

CA Arcadia, Van Gott & Assoc. 818-445-9729
CA Redwood City, Hickey Indl. Sls. 415-368-3849
CA San Diego, Van Gott & Assocs. 619-451-0931
CO Lakewood, Cristee-Meade Co. 303-232-0287
FL Ft. Meyers, Rainbow Sls., Inc. 813-332-2210
FL Satellite Bch., Rainbow Sls. 305-777-3937
IL Addison, Engrd. Sls. Co. 312-832-8425
MN St. Paul, Vikeland Sls., Inc. 612-645-4647
NJ Piscataway, R. P. Luce 201-752-8750
NY Buffalo, Good Comps. 716-634-4400
NY New Hyde Park, R. P. Luce 516-437-4550
OH Dayton, Harvey Teplitz 513-898-5282
PA Philadelphia, R. P. Luce & Co. 215-233-0999
TX Dallas, Marcom 214-351-4532
TX Houston, Marcom 713-271-5635
WA Vancouver, Ray Over Sls. 206-695-6179

ELECTRO-MECH COMPONENTS, INC., 1826 N. Floradale Ave., South El Monte, CA 91733, Tel: 818-442-7180, Telex: 510-601-8764; FSC No.: 07150; Empl.: 75; *Sls. Mgr.:* T. Trumbull; *Dist. Mgr.:* Terry Trumbull ..... **B•1598-1599**

Local Sales Offices & Reps

CA Los Angeles, Universal Comps. Co. ... 213-641-4255
CA San Diego, Qualtronics 619-695-0118
CA Santa Clara, Engrg. Assocs. 408-988-5001
CO Englewood, Franklin Sls. 303-789-2526
CT Milford, Todino Engrg. 203-874-6643
FL Orlando, Publicover 305-898-9361
IL Chicago, IRI 312-967-8430
MD Gaithersburg, Eltron Sls. Ltd. 301-963-7082
MA Needham Hgts., Todino Engrg. 617-444-7925
MI Brighton, Michigan Mktg. & Sls. 313-229-6218
MN Minneapolis, D. A. Case Assocs. 612-869-3700
NJ Medford, Comp. Consits. 609-654-5300
NY Mamaroneck, Bassin Tech. 914-698-9332
NY Orchard Pk., SHR 716-662-0555
NC Raleigh, Eltron Sls. Ltd. 919-846-6215
OH Cincinnati, KCH Co. 513-931-1686
OR Forest Grove, Doran Sls. 503-357-3333
TX Leander, McCoy Assocs. 512-259-1109
TX Richardson, McCoy Assocs. 214-238-1017
VA Front Royal, Sls. Ltd. 703-635-7201
WA Redmond, Doran Sls. 206-885-1885
WI Milwaukee, IRI 414-259-0965

Local Distributors

AZ Phoenix, Parts Elctrn. 602-258-6476
CA Los Angeles, Elec. Switches 213-660-1310
CA Los Angeles, Master Distrs. 213-452-1229
CA Redwood City, SLD, Inc. 415-364-9881
NY Buffalo, Industrial Elctrns. 716-873-9661
NY Mamaroneck, Logicomp Elctrns. 800-431-2625

ELECTRO-METRICS, Penril Corp., 100 Church St., Amsterdam, NY 12010, Tel: 518-843-2600, TWX: 710-446-4798; FSC No.: 18581; Empl.: 105; *Sls. Mgr.:* James Havlicek

ELECTRO NATIONAL, Matthews Ave., Canton, MS 39046, Tel: 601-859-5511, TWX: 810-990-0938; FSC No.: M-54208; Empl.: 40

ELECTRONETICS, INC., Paine Field Bldg 335, Everett, WA 98204, Tel: 206-355-1855; Empl.: 10

ELECTRONIC COIL CORP., Farmington Industrial Park, Farmington, CT 06032, Tel: 203-677-6731; Empl.: 127; *Sls. Mgr.:* Raymond Gorski, Jr.

ELECTRONIC COMPONENT ASSEMBLY, INC., 7181-Construction Ct., San Diego, CA 92121, Tel: 619-549-0808; Empl.: 180; *Sls. Mgr.:* J. Winter

ELECTRONIC COMPONENTS GROUPE

ELECTRONIC COMPONENTS GROUPE, Stein Industries, Inc., 26 North 5th Street, Minneapolis, MN 55403, Tel: 612-375-9639, Telex: 62985650, TWX: 910-240-7878 (for Overseas), FAX: 612-375-1905; *Sls. Mgr.:* Ehrhard Goebel; *Dist. Mgr.:* Bill Belkin ..... **B•1600**

Local Sales Offices & Reps

AL Birmingham, Electro Sls., Inc. 205-681-4680
CA Cupertino, F & F Assocs. 408-446-2349
CA Marina Del Ray, Spec-Rep, Inc. 213-827-7767
CO Littleton, Electronic Comp. Sls. 303-797-0894/2772
CT Cheshire, A & M Elctrns., Inc. 203-271-3065
FL Altamonte Springs, APM Assocs. 305-869-6831
FL Ft. Lauderdale, APM Assocs. 305-565-0056
FL Tampa, APM Assocs. 813-886-2457
GA Atlanta, Cartwright & Bean, Inc.;GA Div. 404-239-0282
GA Atlanta, Electro Sls., Inc. 404-394-1122
IL Downers Grove, Richmar Elec. 312-968-0118
IN Indianapolis, Richmar Elctrns. 317-846-6383
LA Covington, Cartwright & Bean, Inc. 504-892-1780
MA Needham, A & M Elctrns., Inc. 617-444-8170
MI St. Joseph, OBE, Inc. 616-429-7788
MI W. Bloomfield, OBE, Inc. 313-332-4900
MN Minneapolis, Milt Westlund Assocs. 612-886-5002
MS Jackson, Cartwright & Bean, Inc. 601-981-1170
NJ Ho-Ho-Kus, D. J. Fisher Co., Inc. 201-652-0090
NM Albequerque, Syntech 505-266-7951
NC Charlotte, Cartwright & Bean, Inc. 704-536-0303
NC Raleigh, Cartwright & Bean, Inc. 919-876-4130
OH Cleveland, Components, Inc. 216-243-9200
OR Portland, A/D Elctrns. 503-641-6469
PA West Chester, TCA Assocs., Inc. 215-692-6853
TN Memphis, Cartwright & Bean, Inc. 901-276-4442
TX Dallas, Rem Air Comps. Corp. 214-234-1069
TX Houston, Dunkel Assocs. 713-729-1670
VA Forest, Beacon North, Inc. 804-239-8486

VA Sterling, Beacon North, Inc. 703-478-2480
WA Kirkland, A/D Elctrns. 206-821-3205
WI Butler, Richmar Elctrns. 414-781-1730

Local Distributors

AL Huntsville, C.D.I. 205-883-7501
AR Little Rock, C.D.I. 501-227-6278
CA Chatsworth, Poco Sls. 818-700-8727
CA Hollywood, Yale Radio 213-465-3186
CA Los Angeles, Elec. Switches Inc. 213-660-1310
CA Manhattan Beach, Prime Electro 213-379-3642
CA San Carlos, Logan Elec. 415-594-0700
CA Santa Ana, El-Com, Inc. 714-432-6630
CA Santa Monica, Master Distrs. 213-452-1229
CA Sunnyvale, Target Elctrns. 408-734-5611
CA Van Nuys, Pacific Switch Controls 213-873-4802
CO Englewood, Industrial Elctrns. 303-694-9444
CT Hartford, Atlantic Switch Control 203-527-7705
CT Waterbury, Century Elec. Supp. 203-755-0405
FL Ft. Lauderdale, C.D.I. (Acct. Only) 305-973-6650
FL Ft. Lauderdale, KSM Elctrns. 305-971-5900
FL Lakeland, Switch Controls 813-644-7564
FL Melbourne, C.D.I. 305-724-9910
GA Atlanta, KSM Elctrns. 404-458-2013
GA Norcross, C.D.I. 404-441-3320
KS Wichita, Radio Inc. 316-264-2798
MD Beltsville, PSI 301-937-4960
MD Columbia, D. K. Elctrns. 301-995-1950
MA Burlington, TLC 617-273-0140
MI St. Clair Shores, SPEMCO 313-771-2700
MN Eden Prairie, Glenmark, Inc. 612-941-4825
MO Florrissant, Delltron Co., Inc. 314-839-0033
NJ W. Berlin, G.C.I. 609-768-6767
NC Raleigh, C.D.I. 919-834-9465
OK Oklahoma City, Radio Inc. 405-789-0741
OK Tulsa, Radio Inc. 918-587-9123
OR Beaverton, Comp. Resources 503-641-8488
OR Portland, Radar Elec. 503-232-3404
TX Dallas, C.D.I. 214-644-0373
TX Dallas, Off-the-Shelf Comps. 214-247-0052
TX Richardson, Off-the-Shelf Comps. 214-238-0808
WA Redmond, Comp. Assocs. 206-454-8666
WA Richland, Radar Elec. Co., Inc.
WA Seattle, Radar Elec. Co., Inc. 206-282-2511
WA Seattle, Shelly (Zepher) Ragon 206-241-1980
WA Spokane, Radar Elec. 509-747-3053



ELECTRONIC CONCEPTS, INC., Box 627 E, Eatontown, NJ 07724, Tel: 201-542-7880, Telex: 7107226661; FSC No.: 50558; Empl.: 240; *Sls. Mgr.:* Philip N. Lepore ..... **A•1078-1083**

Local Sales Offices & Reps

AZ Tempe, Piper Sls. Co. 602-949-0048
CA Hemet, G & R Engrg. Co. 619-291-6094
CA La Mirada, Select Elctrns. 714-739-8891
CO Denver, Lindberg Co. 303-758-9033
CT Avon, Mass Tech. Sls. 203-673-5132
FL Ft. Lauderdale, Elctrn. Concepts, Inc. .. 305-563-3618
IL Wheaton, Elctrn. Concepts, Inc. 312-668-8747
MA Westwood, Mass Tech. Sls. 617-329-1947
MN Minneapolis, Components Grp. 612-374-1250
MO Grandview, Harris-Hanson Co. 816-763-6200
NJ Eatontown, Elctrn. Concepts, Inc. 201-542-7880
NM Albuquerque, Piper Sls. Co. 505-883-9090
NY New City, MacPherson Conner Assocs. 914-638-1775
OH Solon, Five Star Elctrns. 216-349-1611
MO St. Louis, Harris-Hanson Co. 314-432-3611
OR Tigard, Comps. West, Inc. 503-684-1671
TX Austin, Milred Assocs., Inc. 512-459-8602
TX Houston, Milred Assocs., Inc. 713-444-2557
TX Richardson, Milred Assocs., Inc. 214-644-6731
UT Salt Lake City, Lindberg Co. 801-277-2643
WA Redmond, Components West 206-885-5880
WA Spokane, Components West 509-922-2412

Local Distributors

NJ Clifton, Elcon Sls. 201-288-8170

ELECTRONIC CONNECTOR DIV., Midland-Ross Corp., One Alewife Pl., Cambridge, MA 02140, Tel: 617-491-5400, Telex: 6817363; *Sls. Mgr.:* Bill Hickey; *Dist. Mgr.:* Karen McMillan

ELECTRONIC CONTROLS, INC., 561 Tamarack Ave., Brea, CA 92621, Tel: 714-990-0850; Empl.: 9

ELECTRONIC CONTROLS DESIGN, 13626 S. Freeman Rd., Mulino, OR 97042, Tel: 503-829-9108, Telex: 703874 ECDINC UD; Empl.: 120; *Sls. Mgr.:* Steven Glass

ELECTRONIC DEVELOPMENT ASSOCIATES, INC., 1 Westcliff Drive, Dix Hills, New York 11746, Tel: 516-673-3881; FSC No.: 9V841

ELECTRONIC DEVELOPMENT CORP., EDC, 11 Hamlin St., Boston, MA 02127-4198, Tel: 617-268-9696, Telex: 951596; FSC No.: 12619; *Sls. Mgr.:* R. B. Ross ..... **D•1235**

Local Sales Offices & Reps

AL Huntsville, MOCO 205-881-5968
AK Anchorage, Topp Engrg. 907-243-4131
AZ Tempe, R. A. Mayes Co. 602-279-5243
CA Carlsbad, F.L.W. Inc. 619-434-5251
CA Carlsbad, FLW, Inc. 619-434-5251
CA Costa Mesa, FLW, Inc. 714-751-7512
CA Hayward, FLW, Inc. 415-786-9070
CA Van Nuys, FLW, Inc. 213-989-5237
CO Englewood, R. A. Mayes Co. 303-761-9447
FL Winter Haven, Lee Assocs. 813-294-5815
IL Hoffman Estates, Carvel Engrg. 312-885-8800
IN Carmel, Berndt Assocs. 317-844-0114
KS Lenexa, Ramsey Assts. 913-541-1007
MD Gaithersburg, Powell-Pendergraph 301-921-4200
MA Mansfield, Data Reps. 617-339-2396
MI Hazel Park, Tiby Co. 313-547-3550
MN Edina, Carvel Engrg. & Sls. 612-835-7929
MO St. Louis, Ramsey Assocs. 314-878-5042
NM Albuquerque, R. A. Mayes Co. 505-292-2330
NY E. Syracuse, Ossmann Instrs. 315-437-7052
NY Rochester, Ossmann Instrs. 716-442-4460
NY White Plains, Channel Grp. 914-694-9240
NC Raleigh, Lee Assocs. 919-848-8818
OH Cleveland, Tiby Co. 216-371-5335
OH Dayton, Tiby Co. 513-277-3822
OR Portland, Topp Engrg. Sls. 503-244-7265
PA Willow Grove, Powell-Pendergraph ... 215-657-0330
TX Dallas, Tech Rep Mktg. 214-241-2434
TX El Paso, R. A. Mayes Co. ..... Enterprise 750
TX Kemah, Hi Tech Sys. 713-783-3856
UT West Jordan, R. A. Mayes Co. 801-292-6781
VT Burlington, Data Reps. 802-864-0933
VA Richmond, Powell-Pendergraph 804-270-1400
WA Bellevue, Topp Engrg. Sls. 206-747-5400
WI Sheboygan, Carvel Engrg. 414-457-8800
PR Santurce, Sisco 809-726-7635

ELECTRONIC DEVELOPMENT LABS., See EDL Inc.

ELECTRONIC DEVICES, INC., 21 Gray Oaks Ave., Yonkers, NY 10710, Tel: 914-965-4400, Telex: 681-8047; Empl.: 200; *Sls. Mgr.:* Dennis Dean; *Dist. Mgr.:* Dennis Dean

WYLE LABORATORIES ELECTRONIC ENCLOSURES

ELECTRONIC ENCLOSURES, Div. Wyle Labs, 225 South Aviation Blvd., El Segundo, CA 90245, Tel: 213-643-8181, TWX: 910-348-6699; FSC No.: 09097; Empl.: 400; *Sls. Mgr.:* Hillard W. Sorey ..... **C•1045**

Local Sales Offices & Reps

AL Huntsville, Macro Mktg. Assocs. 205-883-9630
CA Campbell, Carlson & Assocs. 408-370-1284
CA El Segundo, Elctrn. Enclosures 213-643-8181
CA San Diego, De LaTorre & Assocs. 213-323-0922
FL Ovieda, Tech. Sls. & Applications 305-365-2233
GA Norcross, Macro Mktg. Assocs. 404-662-5580
IL Elmhurst, Scott Assocs. 312-279-5681
KS Olathe, C-Tron Inc. 913-829-0073
MD Upperco, Imigtron Sls. Co. 301-374-5600
MA Lexington, Zieco Inc. 617-861-8300
MI Jackson, Norwood Scroggs Co. 517-750-1170
MN St. Paul, Charles E. Bohlig & Assocs. 612-944-8404
NE C-Tron Inc. 314-928-8078
NJ Pennsauken, Elctrn. Encls. 609-665-6810
NY Syracuse, Canavan, Scanlon Assocs. 716-924-7450
OR Eugene, H. Hogstrom & Assocs. 503-689-1076
TX Houston, Zonk Engrg. Co. 713-895-9131
TX Richardson, Zonk Engrg. Co. 214-238-7651

ELECTRONIC ENGRG. CO. OF CAL., See EECO

ELECTRONIC ESSENTIALS, 60-20 34th Avenue, Woodside, NY 11377, Tel: 718-898-8300, Telex: 384-873, ESYLNK: 6275-6172, FAX: 718-899-7995; Empl.: 49

ELECTRONIC FILM CAPACITORS, INC., Reidville Industrial Pk, 41 Interstate Ln., Waterbury, CT 06705, Tel: 203-755-5629, FAX: 203-755-0659; Empl.: 65

ELECTRONIC HARDWARE, 320 Broad Hollow Rd., Farmingdale, NY 11735, Tel: 516-752-1950; Empl.: 100

ELECTRONIC INSTRUMENTS & SPECIALTY CORP., 42 Pleasant St., Stoneham, MA 02180, Tel: 617-438-5300, Telex: 948-025; FSC No.: 14908; Empl.: 100

ELCTRN. INSTR. & SPEC. CORP., MC DIV., See Millen Comps.

ELECTRONIC MEASUREMENTS, 405 Essex Rd., Neptune, NJ 07753, Tel: 201-922-9300, Telex: 132-424; Empl.: 250; *Sls. Mgr.:* Charles Lehmann ..... **D•1688-1691**

Local Sales Offices & Reps

AL Huntsville, Sci. Devices 205-536-1969
AZ Phoenix, Sci. Devices 602-957-0401
CA Huntington Beach, Sci. Devices 714-840-3501
CA San Diego, Sci. Devices 619-573-0157
CA San Jose, Sci. Devices 408-554-0455
CO Broomfield, Sci. Devices 303-469-5145
FL Orlando, Sci. Devices 305-841-8180
GA Marietta, Sci. Devices 404-427-8660
IL Chicago, Comtel 312-539-4838
IN Indianapolis, Comtel 317-253-1681
IA Cedar Rapids, Comtel 319-377-9434
MA Winchester, FJS Assoc. 617-729-3135
MI Southfield, Comtel 313-358-2510
MN Wayzata, Comtel 612-476-1551
NM Albuquerque, Sci. Devices 505-883-3668
NY East Syracuse, Ossmann Insts. 315-437-7052
NC Winston-Salem, Sci. Devices 919-765-5776
OH Dayton, WKM Assoc. 513-434-7500
PA Pittsburgh, WKM Assoc. 412-892-2953
PA Plymouth Meeting, Electronic Mktg. Assocs. 215-828-7400
TX Austin, Alphatech 512-458-9179
WA Redmond, Sci. Dvcs. 206-885-0004
WI New Berlin, Comtel 414-544-6042

ELECTRONIC MODULAR SYSTEMS, INC., Pasadena Technology Corp., 4546 Beltway Dr., Dallas, TX 75244, Tel: 214-392-3473, Telex: 791688; Empl.: 45; *Sls. Mgr.:* Jerry Slaughter



ELECTRONIC MOLDING CORP., 96 Mill St., Woonsocket, RI 02895, Tel: 401-769-3800, TWX: 710-387-1350; FSC No.: 17117; Empl.: 350 ..... **C•1222-1224, 1708, 1724-1727**

Local Sales Offices & Reps

AL Huntsville, Action Component Sls. 205-539-2074
AZ Tempe, B. F. Designs 602-345-7799
CA Mountain View, West Mark Assocs. ... 415-969-1700
CA Orange, Electronic Technlg. Assoc. ... 714-998-9241
CO Englewood, Megatronix 303-799-3700
FL Maitland, EIR, Inc. 305-660-9600
GA Roswell, Action Component Sls. 404-998-7227
ID Boise, Temco Northwest 208-343-4431
IL Schaumberg, Tech-Tron Sls. Inc. 312-843-7350
IN Indianapolis, Mohrfield Mktg., Inc. 317-546-6969
MD Glen Burnie, Macrotech Assocs. 301-766-1111
MA North Andover, J & K Enterprises 617-683-2002
MN Hopkins, The Kits Co. 612-933-1888
MO St. Charles, Hayes Elctrn. Sls. Co. 314-946-6677
NJ Englewood, Harold Gray Assocs. 201-894-0894
NY Binghamton, Empire Tech. Assocs. ... 607-772-0651
NC Raleigh, Tingen Tech. Sls., Inc. 919-878-4440
OH Centerville, Ditronix Corp. 513-885-7757
OR Hillsboro, Temco Northwest 503-649-8375
PA Spring House, P W C 215-643-2550
TX Houston, Component Technlg. 713-461-4197
TX Richardson, Component Technlg. 214-690-8537
WA Bothell, Temco Northwest 206-821-5434
WA Spokane, Temco Northwest 509-534-8635
Can Downsview, Ont., Har-Tech Elctrns., Inc. 416-665-7773
Can Nepean, Ont., Har-Tech Elctrns., Inc. .. 613-726-9410
Can Point Claire, Que., Har-Tech Elctrns., Inc. 514-694-6110

Local Distributors

AL Huntsville, Hammond Elctrns. 205-830-4764
AZ Phoenix, Heilind Elctrns. 602-437-1060
AZ Tempe, Betatron 602-252-2112
CA El Segundo, Force Elctrn. 714-522-1324
CA San Diego, Force Elctrns. 619-569-9661
CA San Jose, Capacitors Unlimited, Inc. .. 408-946-7676
CA San Jose, Force Elctrn. 408-943-1324

CT Bethel, Heilind Elctrns. 203-797-8600
CT Bridgeport, Millenium Elctrns. 203-372-2037
CT So. Windsor, Car-Lac Elctrns. 203-282-0631
FL Miami, Elctrn. Equip. Co. 305-871-3500
FL Ovideo, Aztech Elctrns. 305-365-2241
FL Tampa, Elctrn. Equip. Co. 813-988-0810
IL Palatine, Ohm Elctrns. 312-359-5500
MD Columbia, Aztech Elctrns. 301-995-6800
MA Boston, Vector Sls. 617-787-2790
MA Holliston, Add Elctrns. 617-429-7945
MA Milford, Car-Lac Elctrns. 617-478-7797
MA Wilmington, Heilind Elctrns. 617-657-4870
MN Minneapolis, Bergquist 612-835-2322
NJ Pennsauken, RESCO Elctrns. 609-662-4000
NJ Union, Meridian Supp. Co. 201-687-6221
NJ Whippany, American Distrs., Inc. (ADI) 201-428-0510
NM Albuquerque, Betatron 505-344-2381
NY Bohemia, L.I., Car-Lac Elctrns. 516-567-4200
NY East Syracuse, Add Elctrns. 315-437-0300
NY Millbrook, Villarreal Elctrns. 914-677-3447
NY Mt. Vernon, QAR Indl. Elctrn. Sls., Inc. 914-699-2224
NY Rochester, Masline Elctrns. 716-546-5373
NY Victor, Add Elctrns. 716-924-4760
NC Greensboro, Meridian Supply Co. 919-674-7042
OH Cincinnati, Schuster Elctrns. 513-489-1400
OH Twinsburg, Schuster Elctrns. 216-425-8134
OK Tulsa, Altair Co. 918-252-5781
OR Beaverton, Murphy Elctrns. 503-642-2001
TX Austin, Altair Co. 512-837-4970
TX Dallas, Elctrn. Parts Inventory Corp. (EPIC) 214-503-1414
TX Farmers Branch, Heilind Elctrns. 214-351-2050
TX Houston, Altair Co. 713-462-3029
TX Houston, Force Elctrns. 713-561-8644
TX Houston, Lenert Co. 713-225-1465
TX Richadson, Altair Co. 214-231-5166
WA Redmond, Murphy Elctrns. 206-881-1234

ELECTRONIC NAVIGATION INDUSTRIES, INC., 100 Highpower Road, Rochester, NY 14623, Tel: 716-427-8300, Telex: 671-1542 ENI UW; FSC No.: 10226; Empl.: 220 ..... **D•1010-1011**

Local Sales Offices & Reps

AL Huntsville, Teqspec 205-883-6699
AZ Tempe, Trembly Assocs. 602-967-2058
CA Los Altos, Jay Stone Assocs. 415-948-4563
CA Los Angeles, McDougall/McLaughlin Co. 213-477-8556
CA Santa Clara, ENI, Inc. 408-727-0993
CO Wheat Ridge, Trembly Assocs. 303-421-8900
FL Palm Harbor, Teqspec 813-785-2276
GA Norcross, Teqspec 404-980-9328
IL Elmhurst, Sector Engrg. 312-530-7850
IN Indianapolis, Sector Engrg. 317-842-1120
KS Lenexa, Ramsey Assocs. 913-541-1007
MD Silver Spring, Gawler Knoop Co. 301-589-4406
MA Westford, ICS Assocs. 617-692-3545
MI Madison Heights, WKM Assocs. 313-588-2300
MN Minneapolis, Sector Engrg. 612-593-1809
MO Maryland Hgts., Ramsey Assocs. 314-878-5042
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assocs. 505-266-8616
NY Great Neck, RTI, Inc. 516-829-3770
NC Winston Salem, Teqspec 919-723-8102
OH Dayton, WKM Assocs. 513-434-7500
OH Independence, WKM Assocs. 216-524-5930
PA Mechanicsville, John Bell Assocs. 215-794-7075
PA Pittsburgh, WKM Assocs. 412-892-2953
TX Houston, Lear Assocs. 713-488-7893
TX Richardson, Lear Assocs. 214-231-5388
UT Salt Lake City, Trembly Assocs. 801-486-5292
WA Bellevue, Sci. Dvcs. Northwest 206-747-5169
WI Milwaukee, Sector Engrg. 414-352-8280
Can Downsview, Rayonics Scientific 416-736-1600

ELECTRONIC PACKAGING TECHNOLOGY, INC., 132 Gloster Road, Lawrenceville, GA 30245, Tel: 404-925-8149; Empl.: 5; *Sls. Mgr.:* Al Lipphardt

ELECTRIC PRECISION COMPONENT CORP., 11 W. Sandford Blvd., Mt. Vernon, NY 10550, Tel: 914-664-2333; FSC No.: 75898; Empl.: 8; *Sls. Mgr.:* Don Edwards ..... **A•1659, 1940; D•1236-1238**

Local Sales Offices & Reps

CA Granada Hills, W. H. Inds., Inc. 213-363-3910
CO Denver, Midwest Meridian Corp. 303-341-7550
IL Elk Grove Village, Midwest Meridian Corp. 312-640-9540
IA Cedar Rapids, Midwest Meridian Corp. 319-365-6561
MA Andover, William Crawford Assocs. 617-470-2122
MN Prior Lake, Midwest Meridian Corp. 612-447-8222
MO Marylan Heights, Midwest Meridian Corp. 314-878-4441
OH Fairborn, Midwest Meridian Corp. 513-879-7100
TX Fort Worth, Midwest Meridian Corp. 817-654-2132
WA Kirkland, W.H. Industries 206-827-1024

ELECTRONIC PRODUCTS, INC., 67-9 North Branford Rd., Branford, CT 06405, Tel: 203-483-0689, Telex: 201126 ACTC, TWX: 510-955-4130; FSC No.: 226-1720; Empl.: 68; *Sls. Mgr.:* Joe DiBrigida

ELECTRONIC RESEARCH CO., 7618 Wedd St., Overland Park, KS 66204, Tel: 913-631-6700, TWX: 910-749-6477; FSC No.: 13571; Empl.: 60; *Sls. Mgr.:* Charles Ditzler ..... **A•1393**

Local Sales Offices & Reps

Frequency Product

NJ Riverdale, Comp-Tech Sls. 201-935-5454
NJ Union, Comp-Tech Sls. 201-687-2484
NY New Hyde Park, Comp-Tech Sls. 516-593-2628

ZERO Electronic Solutions
UNIT OF ZERO CORPORATION

ELECTRONIC SOLUTIONS, A Unit of Zero Corp., 6790 Flanders Dr., San Diego, CA 92121, Tel: 619-452-9333, Telex: 910-335-1169, FAX: 619-452-9464; Empl.: 100 ..... **C•1046-1047**

Local Sales Offices & Reps

AL Huntsville, Currie Peak & Frazier 205-536-1506
AZ Tempe, Trembly Assoc. 602-967-2058
CA Concord, Qualtech Assoc. North 415-680-1800
CA Orange, Qualtech South 714-639-9820
CA San Diego, Mesa Engrg. 619-278-8021
CA Sunnyvale, Qualtech North 408-732-4800
CA Thousand Oaks, Qualtech South 805-495-7100
CO Wheat Ridge, Trembly Assoc. 303-421-8900
CT Stamford, TA Squared 203-327-2934
FL Orlando, Currie Peak & Frazier 305-855-0843
FL Tampa, Currie Peak & Frazier 813-963-1076
FL West Melbourne, Currie Peak & Frazier 305-724-6795
GA Norcross, Currie Peak & Frazier 404-449-7662
IL Glendale Heights, Mar-Con Assoc. 312-653-3214
IL Skokie, Mar-Con Assocs. 312-675-6450
IA Des Moines, The Beams Co. 515-255-1148
KS Shawnee Mission, The Beams Co. 913-631-0300
MD Rockville, Spectro 301-294-9770
MA Framingham, TA Squared 617-875-3586
MI Livonia, Lowell Wendt 313-464-2722
MI Wyoming, Lowell-Wendt Mktg. 616-531-4499
MN Edina, Micro Res. 612-830-1454
MO St. Louis, The Beams Co. 314-434-8448
NM Albuquerque, S & S Technlgs. 505-255-5599
NY New York, Gebhardt Mktg. 201-376-4415
NJ Springfield, Gebhardt Mktg. 201-376-4415
NC Charlotte, Currie Peak & Frazier 704-846-1702
NC Greensboro, Currie Peak & Frazier 919-373-0380
NC Raleigh, Currie Peak & Frazier 919-787-0808
OH Richfield, Geotronix 216-659-6100
OH Trotwood, Geotronix 513-252-6700
OK Stillwater, Acudata, Inc. 405-743-1886
OR Beaverton, Thorson Co., N.W. 503-644-5900
PA Allison Park, Geotronix, Inc. 412-487-1770
PA Jenkintown, Monument Tech. Assocs. 215-884-3737
TX Austin, Acudata 512-478-1018
TX Houston, Acudata 713-580-2451
TX Plano, Acudata 214-424-3567
UT Salt Lake City, Trembly Assoc. 801-486-5292
WA Bellevue, Thorson Co. N.W. 206-455-9180
WI Waukesha, Computer & Sys. Sls. 414-544-1141

ELECTRONIC SPACE SYSTEMS CORP., Old Powder Mill Rd., Concord, MA 01742, Tel: 617-369-7200, Telex: 923480 ESSCO WCRD, FAX: 617-369-7641; FSC No.: 15175; Empl.: 100; *Sls. Mgr.:* Susan M. Cuevas

ELECTRONIC SPECIALISTS, 171 South Main St., Natick, MA 01760, Tel: 617-655-1532, 800-225-4876, Telex: 955-329 ATTN: ESP; Empl.: 42; *Sls. Mgr.:* Alice Brown

ELECTRONIC SPECIALTY CORP., P.O. Box 3501, Vancouver, WA 98668-3501, Tel: 206-574-5000, Telex: 360-453, TWX: 910-469-8782; FSC No.: 98927;Multiple; Empl.: 250; *Sls. Mgr.:* L. Fuller ..... **B•1354-1357, 1518-1519**

Local Sales Offices & Reps

CA Anaheim, Gabriel & Assocs. 714-666-0660
CA San Jose, Ruppert Sls. & Engrg. 408-998-8717
CT Bethel, Livera-Polk Assocs. 203-748-4639
FL Lighthouse Point, Jack Krutek & Assocs. 305-427-4202
IL Northbrook, Raines & Assocs., Inc. 312-498-0890
KS Wichita, BAKA Corp. 316-682-8411
MD Gaithersburg, Eastern Comp. 215-825-8610
MN Hopkins, The Kits Co. 612-933-1888
NJ Madison, Livera-Polk Assocs. 201-377-3239
NY Glen Head, Livera-Polk Assocs. 516-759-9300
NC Raleigh, Eastern Comp. 919-787-3416
OH Centerville, Ditronix 513-885-7757
PA West Conshohocken, Eastern Comp. 215-825-8610
TX Dallas, Barry Sls. 214-234-0255
TX Houston, Barry Sls. 713-784-5860
VA Annandale, Eastern Comp. 703-354-0723
Can Ottawa, Cantec Reps., Inc. 613-725-3704

ELECTRONICS RESEARCH CO., 2706 Colley Ave., Norfolk, VA. 23517, Tel: 804-627-1834; Empl.: 15

ELECTRONIC SYS. & PROGRAMMING, See Augat/ES)sP, Inc.

ELECTRONIC TESTING & CONSULTING, 812 Carver St., Mesquite, TX 75149, Tel: 214-288-0331; Empl.: 3

ELECTRONIC TRANSFORMER CORP., P.O. Box 188, Totowa, NJ 07511, Tel: 201-942-2222; FSC No.: 72149; Empl.: 130; *Sls. Mgr.:* Dan Rovine ..... **A•2228-2230**

ELECTRON-MACHINE CORP., Box M, Umatilla, FL 32784, Tel: 904-669-3101, Telex: 56-4300; Empl.: 55; *Sls. Mgr.:* S. K. Kemp V.P. Mktg

ELECTRON PRODUCTS, 2084 Central Ave., Duarte, CA 91010, Tel: 818-359-8281, Telex: 910-333-9810; FSC No.: 99515; Empl.: 65; *Sls. Mgr.:* John Williams; *Dist. Mgr.:* Ann Meunier

ENI

ELECTRO-NUMERICS, 1811 Reynolds, Irvine, CA 92714, Tel: 714-250-1501, Telex: 68-5612; FSC No.: 51666; Empl.: 24 ..... **D•1348-1350**

Local Sales Offices & Reps

AK Anchorage, Topp Engrg. Sls. Corp. 907-561-4585
CA San Jose, Gamma Saturn 408-248-4143
CA Santa Ana, Brooks-Moore & Assocs., Inc. 714-544-8900
CO Boulder, Herb Bass Assocs. 303-530-7509
FL Melbourne, VM-Squared Mktg. 305-984-1918
IL Chicago, PVA Corp. 312-655-3355
IN Ossian, Meas. Instrs. E., Inc. 219-622-7383
KS Topeka, R. E. Pedrotti Co. 913-677-3366
KY Louisville, Instr. & Tech. Sys., Inc. 502-244-1498
LA Lafayette, Kemp Engrg. Co., Inc. 318-269-9452
MA Boston, Di-Ana Sls. Co. 617-363-5420
MI Detroit, Satullo Assocs., Inc. 313-585-4811
MN Minneapolis, Kits Co. 612-933-1888
NH Berlin, Di-Ana Sls. Co. 603-466-3996
NY Brooklyn, Metropolitan Sls. Co. 718-336-7600
OH Cleveland, Meas. Instr. E., Inc. 216-257-4016
OK Tulsa, Golden Rule Sls. Co. 918-836-7556
OR Portland, Topp Engrg. Sls. Corp. 503-244-7265
PA Pittsburgh, Meas. Instr. E., Inc. 412-459-8090
TN Oak Ridge, Instr. & Tech. Sys. 615-483-5715
TX Houston, E. V. Smith Sls. Co. 713-649-5756
UT Bountiful, Herb Bass Assocs. 801-295-7100
VA Arlington, Beacon North, Inc. 703-478-2480
WA Seattle, Topp Engrg. Sls. Corp. 206-747-5400
WI Milwaukee, Stapleman Corp. 414-352-5777
Can Toronto, A. D. Smart, Ltd. 416-474-0550

ELECTRO-OPTICAL INDUSTRIES, Box 3770, Santa Barbara, CA 93130, Tel: 805-964-6701 (ext. 280), Telex: 65-8427 EOIND SNC, FAX: 805-967-8590; Empl.: 130

ELECTRO-PACIFIC, 5770 Thornwood Dr., Goleta, CA 93117, Tel: 805-964-0751; FSC No.: 29853; Empl.: 60; *Sls. Mgr.:* T. Calhoun

ELECTRO PHYSICS, 1910 West Birchwood Ave., Chicago, IL 60626, Tel: 312-274-9669; Empl.: 6; *Sls. Mgr.:* Abe Siegelman

ELECTROPHYSICS CORP., 48 Spruce St., Nutley, NJ 07110, Tel: 201-667-2262, Telex: 642277

ELECTROPREP, INC., Rt 28A, P.O. Box 437, Cataumet, MA 02534, Tel: 617-563-5559; *Sls. Mgr.:* R. M. Sullivan

ELECTRORACK PRODUCTS CO., 1443 S. Sunkist St., Anaheim, CA 92806, Tel: 714-776-5420; FSC No.: 26073; Empl.: 50; *Sls. Mgr.:* Mike Deming

ELECTRO RENT CORP., 4209 Van Owen Place, Burbank, CA 91505, Tel: 818-843-1221, Telex: 314225, TWX: 910-498-2238; Empl.: 350; *Sls. Mgr.:* R. Tarullo

ELECTRO SCIENTIFIC INDS., 13900 N.W. Science Pk. Dr., Portland, OR 97229, Tel: 503-641-4141, Telex: 474-2064; FSC No.: 11837; Empl.: 1100; *Sls. Mgr.:* Dick Donaca

ELECTRO SPACE FABRICATORS, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, Tel: 215-682-7181; Empl.: 205; *Sls. Mgr.:* T. Roth ..... **C•1041-1044**

Local Sales Offices & Reps

CA	Irvine, Vale Assocs.	714-551-4004, 4821
CA	San Jose, Silicon Valley Sls.	408-371-8814
CA	San Jose, Silicon Valley Sls.	408-286-7510
CT	Washington Depot, C & K Assocs.	203-868-0241
FL	Deerfield Beach, Jack Krutek & Assocs., Inc.	305-427-4202
FL	Melbourne, Winter Assocs.	305-254-6556
IL	Northbrook, Raines & Assocs.	312-498-0890
MD	Upperco, Imagitron Sls. Co.	800-638-3592
MA	Waltham, Betronic Assocs.	617-894-8400
NJ	Boonton, Winter Assocs.	201-334-3434
NY	Morrisville, Promark Elctrns., Inc.	315-662-3310
OH	Galion, James R. Bright	419-468-3787
OR	Beaverton, Electronics Northwest, Inc.	503-629-9241
PA	Huntingdon Valley, OMEGA Elctrn. Sls., Inc.	215-947-4135
PA	McKean, Ecco Electrns. Sls.	814-476-1376
TX	Dallas, M-Rep	214-349-5523
WA	Redmond, Electronics Northwest, Inc.	206-883-1959
WA	Spokane, Electronic Northwest, Inc.	509-924-0450

ELECTROSPACE SYSTEMS, INC., P. O. Box 831359, Richardson, TX 75083-1359, Tel: 214-470-2106/2107, TWX: 910-867-4768; FSC No.: 33875; Empl.: 1,642

Local Sales Offices & Reps

CA	Newbury Pk., Electrospace Sys., Inc.	805-498-9733
FL	Orlando, Electrospace Sys., Inc.	305-273-3310
MA	Acton, Electrospace Sys., Inc.	617-861-6009
NJ	Holmdel, Electrospace Sys., Inc.	201-264-5958
OH	Fairborn, Electrospace Sys., Inc.	513-426-3200
VA	Arlington, Electrospace Sys., Inc.	703-979-1220

ELECTRO STANDARDS LAB., INC., P.O. Box 9144, Providence, RI 02940, Tel: 401-943-1164, Telex: 697-2057 ESLAB; Empl.: 20; *Sls. Mgr.:* R. B. Sepe; *Dist. Mgr.:* R. B. Sepe

ELECTROSTATICS, 7718 Clairemont Mesa Blvd., San Diego, CA 92111, Tel: 619-279-1414; FSC No.: 34538; Empl.: 17

ELECTROSWITCH, A Unit of Electro Switch Corp., 180 King Ave., Weymouth, MA 02188, Tel: 617-335-5200, TWX: 710-388-0377; FSC No.: 82121; Empl.: 290; *Sls. Mgr.:* W. M. Mello ..... **B•1602-1603**

Local Sales Offices & Reps

AZ	Phoenix, Howe & Howe Sls.	602-264-7971
CA	Los Angeles, Wiley	213-666-1611
CA	Mtn. View, W. Nott & Co.	415-969-7411
CA	San Diego, Wiley Co.	619-453-9018
CO	Boulder, Comp. Prods. Sls.	303-530-2800
FL	Winter Park, Floritronics	305-886-4818
GA	Atlanta, Holman-Gillespie	404-992-8820
IL	Elk Grove Village, Electro Switch	312-593-2225
IA	Bettendorf, Weisler & Assocs.	319-344-0566
MD	Gathersburg, Naudain Assocs.-Southern	301-258-5040
MI	Royal Oak, Hilltronics	313-435-0920
MN	St. Paul, Kencotronics	612-645-7717
MO	Ellisville, Weisler & Assocs.	314-394-4543
MO	No. Kansas City, Weisler & Assocs.	816-421-1679
NJ	Fairfield, Electro Switch	201-227-6559
NJ	Marlton, Naudain Assocs.	609-983-5300
NY	Rochester, Sweetco Assocs.	716-225-2383
NY	Utica, Sweetco Assocs.	315-797-6721
NC	Winston-Salem, L.G. White Southern	919-725-3612
OH	Dayton, Rockford Controls	513-898-5452
OH	Euclid, Rockford Controls	216-731-5250
OH	Reynoldsburg, Rockford Controls	614-868-5577
PA	Pittsburgh, R. F. Clark	412-242-9500
SC	Greenville, L.G. White Southern	803-271-0630
TX	Dallas, Brice Co.	214-233-9808
TX	Stafford, Brice Co.	713-240-1788
VA	Ruther Glen, L.G. White Southern	804-448-4476
WA	Kent, C.B. Parsons & Co.	206-762-7373
WI	Wauwatosa, Larsen Assocs.	414-258-0529

Local Distributors

CA	Los Angeles, Electric Switches	213-660-1310
CA	San Jose, Pacific Elctrl. Supp.	408-942-1166
FL	Ft. Lauderdale, Peerless Radio Corp. of Fla.	305-973-4141
GA	Atlanta, Georgia Control Ctr.	404-876-8833
IL	Bridgeview, Midco Comp. Sls.	312-599-7777
MD	Kensington, Marine Air Supp.	301-949-9560
MN	St. Paul, K. D. I.	612-645-7717
NY	Hempstead, Electronic Equip. Co.	516-538-5510
NC	Winston-Salem, General Prods. Co.	919-725-3612
OH	Euclid, Rockford Controls Ohio	216-731-5250
TX	Stafford, Barclay Whls.	713-240-1788
WA	Seattle, C.B. Parsons Co.	206-762-7373

ELECTROSWITCH, SOUTHERN DIV., Electro Switch Corp., 2510 North Blvd., Raleigh, NC 27604, Tel: 919-833-0707, TWX: 910-240-4611, FAX: 919-833-8016; Empl.: 70; *Sls. Mgr.:* Doyle N. Evans; *Dist. Mgr.:* Lisa C. Tillis ..... **B•1528, 1601**

Local Sales Offices & Reps

AL	Huntsville, Elctrn. Sls., Inc.	205-533-1735
AL	Huntsville, R. W. Mitscher Co., Inc.	205-882-6050
AZ	Scottsdale, Luscombe Engrg. Co.	602-949-9333
CA	Campbell, Luscombe Engrg. Co.	408-370-2020
CA	Pasadena, Luscombe Engrg. Co.	213-684-2000
CA	San Diego, Luscombe Engrg. co.	619-549-9699
FL	Clearwater, Electrocraft, Inc.	813-578-2233
GA	Norcross, Elctrn. Sls., Inc.	404-448-6554
IL	Itasca, Janus, Inc.	312-250-9650
IN	Indianapolis, Electro Reps., Inc.	317-842-7202
KS	Overland Pk., Electri Rep., Inc.	913-649-2168
MD	Laurel, R. W. Mitscher Co., Inc.	301-498-6090
MI	Royal Oak, Hilltronics, Inc.	313-435-0920
MN	Minneapolis, HMR, Inc.	612-888-2122
MO	St. Louis, Electri Rep., Inc.	314-993-4421
NH	Salem, Sls. Engrg. Co.	603-893-5521
NJ	Englewood, Sprung/Nussbaum, Inc.	201-569-5666
NY	Clarence, R. W. Mitscher Co., Inc.	716-759-2350
NC	Raleigh, R. W. Mitscher Co., Inc.	919-848-0941
OR	Beaverton, Luscombe Engrg. Co.	503-636-6664
PA	Huntingdon Valley, R. W. Mitscher Co.	215-355-4452
PA	Pittsburgh, Cliff Price	412-831-1588
TN	Johnson City, R. W. Mitscher Co., Inc.	615-929-7258
TX	Austin, Allied Comps., Inc.	512-331-4494
TX	Dallas, Allied Comps., Inc.	214-238-0408
VA	Shipman, R. W. Mitscher Co., Inc.	804-263-5154
Can	Mississauga, Ont., Gidden-Morton Assocs., Inc.	416-671-8111

Local Distributors

IL	Lisle, Components, Inc.	312-852-7707
MA	Canton, Impact Sls.	617-821-1500
MA	Hingham, Sager Elctrns.	617-749-6700
NJ	Cranford, Garden State Inds.	201-272-6400
NY	Buffalo, Summit Distrs.	716-887-2800
NY	Mt. Vernon, QAR Indl. Elctrns.	914-699-2224
NY	Rome, Rome Elctrns.	315-337-5400
NY	Woodside, Switches Unltd.	718-478-5000
NC	Charlotte, Dixie Elctrns.	704-377-4348
OH	Solon, Repco Elctrns., Inc.	216-248-8900
OR	Portland, United Radio Supp.	503-233-5341
SC	Columbia, Dixie Elctrns.	803-779-5332
WI	Waukesha, Bell Inds.	414-547-8879

ELECTRO-TECH SYSTEMS, INC., 115 E. Glenside Ave., Glenside, PA 19038, Tel: 215-887-2196, Telex: 797137; Empl.: 13; *Sls. Mgr.:* Sharon Sandy; *Dist. Mgr.:* Stanley Weitz

ELECTRO VECTOR, INC., 6555 Covey Rd., Forestville, CA 95436, Tel: 707-887-2292, TWX: 510-746-6024; *Sls. Mgr.:* Wayne Brigden

ELECTRO WEAVE, 425 Shrewsbury St., Worcester, MA 01604, Tel: 617-752-8932, TWX: 710-340-0635; FSC No.: 54207; Empl.: 18; *Sls. Mgr.:* Peter Andrews

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ELFAB CORPORATION, Augat, Inc., 1097 Yates Street, Lewisville, TX 75067, Tel: 214-221-8776, TWX: 910-860-5460, FAX: 214-221-9667; Empl.: 250; *Dist. Mgr.:* Peter Kiddy ..... **C•1226-1227**

Local Sales Offices & Reps

AL	Huntsville, Rick Burns Assocs., Inc.	205-776-9481
AZ	Phoenix, Spectrum	602-890-9000
CA	Los Angeles, Wiley Co.	213-661-1611
CA	San Diego, Wiley Co.	619-571-2881
CA	San Jose, Augat Sys. Sls.	408-249-8801
CO	Denver, Spectrum	303-480-9991
FL	Casselberry, S.A. Inc.	305-695-6010
FL	Coral Springs, Augat Sls.	305-755-4364
FL	Tampa, SMI Assocs.	813-999-9999
FL	Winter Park, Elfab Corp.	305-678-7759
FL	Winter Pk., Elfab Corp.	305-678-7759
GA	Atlanta, Rick Burns Assocs., Inc.	404-951-1181
IL	Crystal Lake, Mid-American Reps., Inc.	815-455-5310
IL	Downers Grove, Rockford Controls	312-960-2046
IA	Marion, Ensco Rep, Inc.	319-377-8551
KS	Shawnee Mission, Microtronics	913-262-1444
KS	Wichita, Ensco Rep, Inc.	316-683-1070
MD	Baltimore, Micro Comp Inc.	301-644-5700
MA	Canton, Augat Sls.	617-762-3164
MA	Fayesville, Marathon Sls.	617-875-3566
MA	Faysville, Marathon Sls., Ltd.	617-875-3566
MA	Framingham, Elfab Corp.	617-626-2467
MI	Southfield, Rathburg Assocs., Inc.	313-559-9700
MN	Edina, Augat Sls.	612-925-0255
MN	Edina, Mel Foster Tech. Sls.	612-941-9790
MO	Maryland Hgts., Ensco-Rep, Inc.	314-423-3935
MO	St. Charles, Microtronics	314-946-8500
NY	N. Syracuse, Advanced Comps.	315-699-2671
NY	Yonkers, David Sonkin Assocs.	914-968-8282
NC	Raleigh, Rick Burns Assocs., Inc.	919-876-2224
OH	Cincinnati, Luebbe Sls.	513-891-5770
OH	Columbus, Luebbe Sls.	614-431-0474
OH	Richfield, Geotronix, Inc.	216-659-6100
OH	Trotwood, Geotronix, Inc.	513-252-6700
OK	Tulsa, Ammon & Rizos Co.	918-663-8788
OR	Portland, Augat Sls.	503-256-4596
OR	Portland, Elctrn. Mktg. Grp.	503-684-5935
PA	Allison Pk., Geotronix, Inc.	412-487-1770
PA	Pittsburgh, Luebbe Sls.	412-364-0490
PA	Prospect Pk., Elf Sls. Co.	215-534-3340
TX	Austin, Ammon & Rizos Co.	512-454-5131
TX	Dallas, Augat Sls.	214-788-4211
TX	Houston, Ammon & Rizos Co.	713-781-6240
TX	Richardson, Ammon & Rizos Co.	214-644-5591
UT	Murry, Butterworth Mktg.	801-268-2244
UT	Ogden, Spectrum	801-972-8552
VA	Huddleston, Micro-Comp Inc.	804-297-6295
WA	Bellevue, Augat Sls.	206-451-9777
WA	Redmond, Elctrn. Mktg. Grp., Inc.	206-882-0962
WI	West Bend, Rockford Controls	312-960-2046
PR	Rio Piedras, D.K. Mktg.	809-765-5380
Can	Mississauga, Ont., Augat Elctrns., Inc.	416-677-9141
Can	Nepean, Ont., Electro Source, Inc.	613-726-8834
Can	Rexdale, Ont., Electro Source, Inc.	416-675-6871
Can	Vancouver, Davetek Mktg.	604-430-3680

Local Distributors

AZ	Phoenix, Cetec Elctrns.	602-272-7951
AZ	Phoenix, Force Elctrns.	602-437-1060
CA	Chatsworth, Cetec Elctrns.	213-700-0914
CA	Irvine, Cetec Elctrns.	714-250-4141
CA	Los Angeles, Cetec Elctrns.	213-773-6521
CA	San Diego, Cetec Elctrns.	619-278-5020
CA	Santa Clara, Cetec Elctrns.	408-748-8550
CT	Bethel, Heilind Elctrns.	203-797-8600
MA	Peabody, Time	617-532-6200
MA	Wilmington, Heilind	617-657-4870
TX	Dallas, Force Elctrns.	214-351-2050

ELFORM, INC., P.O. Box 7362, Reno, NV 89510, Tel: 702-356-1734, TWX: 510-600-5662 ELFORM, FAX: 702-356-1742; *Sls. Mgr.:* Roger R. Reinke ..... **C•1225**

ELGAR

ELGAR CORP., 9250 Brown Deer Rd., San Diego, CA 92121, Tel: 619-450-0085, 800-854-2213, Telex: 211063 ELSD UR; FSC No.: 25965; Empl.: 275; *Dist. Mgr.:* Doug Caldwell ..... **D•2055-2059**

Local Sales Offices & Reps

AL	Huntsville, Pen-Tech Assocs.	205-881-9298
AZ	Tempe, Trembly Assoc.	602-967-2058
CA	Costa Mesa, Ward Davis Assocs.	714-556-0955
CA	Redondo Beach, Ward/Davis Assocs.	213-643-6977
CA	San Diego, Ward/Davis Assocs.	619-292-1000
CA	Santa Clara, Ward Davis Assocs.	408-245-3700
CO	Wheat Ridge, Trembly Assocs.	303-421-8900

CT Wallington, Pat Jenks Assocs., Inc. 203-265-9939
FL Boco Raton Beach, Pen-Tech Assocs. 305-394-7400
FL Casselberry, Pen-Tech Assocs. 305-678-6809
GA Marietta, Pen-Tech Assocs. 404-424-1931
IL Arlington Heights, Dytec/Central 312-394-3380
IL Hoffman Estates, Carvel Engrg. 312-885-8800
IN Indianapolis, Carter, McCormic & Peirce 317-244-1685
IN Indianapolis, Dytec/Central 317-297-5988
KS Lenexa, Dytec/South 913-888-0215
KS Wichita, Dytec/South, Inc. 316-945-7090
MD Rockville, Elctrn. Mktg. Assocs. 301-953-7800
MA Woburn, P. Jenks Assocs. 617-938-0488
MI Farmington Hills, Carter, McCormic & Peirce 313-477-7700
MI Madison Heights, WKM Assocs. 313-588-2300
MN Minneapolis, Berndt Assocs. 612-546-2021
MD Maryland Hgts., Dytec/South 314-739-0665
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assoc. 505-266-8616
NY Great Neck, RTI 516-829-3770
NY Liverpool, Northern Tech. Sls. 315-451-1091
NC Greenboro, Pen Tech Assocs. 919-852-6000
OH Dayton, WKM Assocs. 513-434-7500
OH Fairview Park, Carter, McCormic & Peirce 216-779-5100
OH Independence, WKM Assocs. 216-524-5930
GA Norcross, Carter, McCormic & Peirce 404-441-3451
TX Richardson, Testech, Inc. 214-644-5010
OR Tigard, Northwest Test & Meas. 503-246-0962
PA Pittsburg, Carter, McCormic & Peirce 412-733-7490
PA Pittsburgh, WKM Assocs. 412-892-2953
PA Plymouth Meeting, Elctrn. Mktg. Assocs. 215-828-7400
UT Salt Lake City, Trembly Assocs. 801-486-5292
WA Redmond, Northwest Test & Meas. 206-881-8857
WI Brookfield, Dytec Central Inc. 414-792-0320
WI Sheboygan, Carvel Engrg. 414-457-8800
EXP CA, San Diego, Elgar Intl. Corp. 619-450-0085

Local Distributors

CT North Haven, Power Sys Distrb 203-281-7270
FL Casselberry, Pen-Tech Assocs, Inc 305-678-6809
FL Ft. Lauderdale, A.J.L. Distrb 305-522-6954
HI Honolulu, Honolulu Elctrns 808-949-5564
ID Boise, Delta Services, Inc 208-375-6033
IL Bensenville, Micro, Inc 312-350-1300
IL Wheeling, Price Elctrns Corp 312-541-6400
IN Indianapolis, Star-Tronics Distb Co. 317-244-0355
MD Hunt Valley, Micro Wholesalers, Inc 301-666-5300
MA Wellesley, Power Sys Distrb 617-235-7884
MI Farmington Hills, Star-Tronic Distrb Co 313-477-7586
NH Londonderry, Power Sys Distrb 603-434-2841
NY Hauppauge, Manchester Equp. Co., I .. 516-434-8700
NC Charlotte, Mill-Power Tech 704-527-8632
OH Fairview Park, Star-Tron Distrb 216-779-9660
PA Pittsburg, Star-Tronics Distrb 412-733-7586
TX Houston, Q.C. Distrb, Inc 713-988-2290
Can Toronto, Ont., Bertex Distrb 416-926-9253
GA Norcross, Carter, McCormic & Peirce 404-441-3451

ELGENCO, INC., Box 460, Hurricane, UT 84737, Tel: 801-635-4954; FSC No.: 15455; *Sls. Mgr.:* Duane Beecher .... **D•1240-1245**

Local Sales Offices & Reps

CA Sherman Oaks, Windsor Dynamics 818-990-4173
CA Woodside, N-S Assocs. 415-851-2703
CT Marion, Polytek Assoc. 203-288-5246
MA Waban, Polytek Assoc. 617-881-4741
NJ Marmore, SWR Tech., Inc. 609-398-4340
NM Albuquerque, Technology Mktg. Assoc. 505-345-8921
PA Broomall, SWR Tech., Inc. 215-353-6639

ELGIN ELECTRONICS, Combustion Engineering, 5533 New Perry Hwy., Erie, PA 16509-3570, Tel: 814-864-4921, TWX: 510-699-6870; Empl.: 500; *Sls. Mgr.:* D. Selmon

Local Sales Offices & Reps

GA Alpharetta, Elgin Elctrns. 404-641-9611
IL Chicago, Elgin Elctrns. 312-726-7231
IN Redkey, Elgin Elctrns. 317-369-2012
NJ Clifton, Elgin Elctrns. 201-471-3326
PA Erie, Elgin Elctrns. 814-864-4921
TX Ft. Wayne, Elgin Elctrns. 817-429-7331

ELITE ELECTRONICS, INC., 1408 Summit - Suite #5, Plano, TX 75074, Tel: 214-881-0026; Empl.: 3

Local Sales Offices & Reps

AZ Glendale, Adtek, Inc. 602-931-9289
CO Englewood, Chinook Tech. Sls. 303-781-6050
FL Davie, Edwin Weisl 305-474-5601
MD Woodbine, DJC Elctrn. Sls. 301-795-7020
MN Edina, Engineering Prods. Assocs., Inc. 612-835-9022
NM Albuquerque, Adtek, Inc. 602-931-9289
NY Bayside, John J. Kavanagh 718-229-2731
RI Cumberland, Haddad Sls. 401-333-5098
EXP Plano, TX, Elite Elctrns. Inc. 214-881-0026

ELITE SOFTWARE DEVELOPMENT, INC., P.O. Drawer 1194, Bryan, TX 77806, Tel: 409-846-2340, Telex: 910-997-6760; Empl.: 9; *Sls. Mgr.:* Terri J. King

ELMA

ELMA ELECTRONIC INC., 41440 Christy Street, Fremont, CA 94538, Tel: 415-656-3400 .... **B•1604; C•1048-1049, 1573; D•1108**

Local Sales Offices & Reps

AL Huntsville, Elctrn. Sls. Inc. 205-533-1735
CA Anaheim, Impact Elctrns., Inc. 714-533-1351
CA Fremont, ELMA Elctrn. Inc. 415-656-3400
CA Santa Ana, Caltronics, Inc. 714-751-9162
GA Norcross, Elctrn. Sls. Inc. 404-448-6554
IL Elmhurst, F.F./Hill Gray Inc. 312-832-4101
IN Indianapolis, John Sukup, Inc. 317-253-5501
MD Lisbon, Samuel K. MacDonald Inc. 301-982-1088
MI Royal Oak, Hilltronics 313-435-0920
NH Nashua, Bell Controls Inc. 603-882-6984
NJ Englewood, Harold Gray Assocs. Inc. 201-894-0894
NY Rochester, Lamb Comps., Inc. 716-323-1250
NC Greensboro, Hile Assocs. Inc. 919-288-1500
MA Beachwood, Land Elctrn. Supp. Co. 216-831-9555
PA Philadelphia, Samuel K. MacDonald Inc. 215-545-1205

Local Distributors

CA Canoga Pk., Panel Parts Co. 818-884-8898
CO Lakewood, ACACIA Sls. Inc. 303-232-2882
CT Wallingford, Sager Elctrl. Supp. Co. 203-265-4600
IL Chicago, Federal Screw Prods. Inc. 800-225-5377
IL Villa Pk., Melvin Elctrns. 312-279-5010
MA Lynn, Land Elctrn. Cupp. Co. 617-592-2220
MA Waltham, Vantage Elctrns. Corp. 617-894-8690
NJ Cranford, Garden State Indl. Elect. 201-272-6400
NJ Cranford, Garden State Indl., Inc. 201-272-6400
NY Buffalo, Summit Distrs. Inc. 716-884-3450
NC Raleigh, Meter Metrics 804-275-1431
OK Tulsa, Radio, Inc. 918-587-9123
PA Philadelphia, PEI-Genesis 215-568-7400
VA Richmond, Meter Metrics 804-275-1431

ELMA ENGINEERING, 1066 E. Meadow Circle, Palo Alto, CA 94303, Tel: 415-494-7303, Telex: 345-560; FSC No.: 59810; Empl.: 38; *Sls. Mgr.:* T. A. Beno; *Dist. Mgr.:* T. A. Beno

ELMAG, 54 Clark St., Newark, NJ 07104, Tel: 201-481-1600; FSC No.: 23160; Empl.: 15

ELMEC
DELAY LINE

ELMEC TECHNOLOGY OF AMERICA, 1225 Ridgecrest St., Monterey Pk., CA 91754, Tel: 213-265-1861, FAX: 213-265-1908; *Sls. Mgr.:* Steve Sameshima .... **A•1552-1555**

ELM SYSTEMS, 1101 Brown St., Wauconda, IL 60084, Tel: 312-526-5003

ELMWOOD SENSORS, 500 Narragansett Park Drive, Pawtucket, RI 02861, Tel: 401-727-1300, Telex: 6814066 ELMWOOD; Empl.: 700; *Sls. Mgr.:* Mark Pollock .... **B•1735-1737**

Local Sales Offices & Reps

AL Decatur, Tenn. Tech. Sls. 205-350-0630
AZ Phoenix, O'Donnell SW 602-944-9542
AR Tulsa, Ion Assoc.-Arkla 918-644-0187
CA San Diego, O'Donnell Assocs. 619-578-1645
CA San Jose, O'Donnell Assocs. 408-263-6500
CA Torrance, O'Donnell Assocs. 213-539-9664
CO Boulder, Front Range Mktg. 303-443-4780
FL Coral Springs, CBC Electronics 305-755-1111
GA Marietta, Tenn. Tech. Sls. 404-428-9594
IL Arlington Heights, Thermek 312-577-6900
IN Fort Wayne, O. Bromberg 219-456-6010
KY Louisville, O. Bromberg 502-456-1498
MD Glen Burnie, Faber-Renoff, Inc. 301-768-4554
MA Danvers, C. H. Burnham Assoc. 617-774-0111
MI Brooklyn, Engineered Comps. 517-592-3236
MN Minneapolis, C. Listug Sls. 612-537-6740
MO St. Louis, Hill & Co. 314-432-1136
NH Durham, C. H. Burnham Assoc. 603-868-2282
NJ Pitman, Colrud Corp. 609-589-5866
NY Fairport, Bastian Sls. 716-223-0237
NY Larchmont, G. M. Moch Co. 914-834-3530
NY Syracuse, Canavan-Scanlon 315-437-1271
NC Raleigh, Tenn-Tech 919-266-3610
OH Cincinnati, O. H. Bromberg 513-771-9333
OH Cleveland, Allied Entprs. 216-779-0080
OK Tulsa, Ion Assoc. 918-644-0186
OR Hillsboro, Temco-Northwest 503-649-8375
PA Murrysville, Allied Entprs. 412-325-3200
NJ Pittman, Colrud Corp. 609-589-5866
RI Johnston, C. H. Burnham Assoc. 401-231-7475
TX Austin, Ion Assocs. 512-331-7251
TX Grand Prairie, Ion Assocs. 214-647-8225
TX Houston, Ion Assocs. 713-537-7717
UT Salt Lake City, Front Range Mktg. 801-364-6481
VA Midlothian, Daniel E. Boehling Assocs. 804-794-5879
WA Bellevue, Lehr Assocs. 206-453-9993
WA Bothell, Temco Northwest 206-821-5434
WI Milwaukee, R. Zingler 414-351-5005
Can Mississauga, Ont., Andy Baumen Assocs. 416-828-2600

ELNA AMERICA, INC., 153 E. Savarona Way, Carson, CA 90746, Tel: 213-327-6090, Telex: 68-6427, TWX: 910-346-6730; *Sls. Mgr.:* Don L. Bilsing; *Dist. Mgr.:* Isao Kikuchi

ELNETIC ELCTRNS., 1730 21st St., Santa Monica, CA 90404, Tel: 213-828-9541; FSC No.: 98460; Empl.: 25; *Sls. Mgr.:* Ernest H. Carlson, Jr.

ELNIK INSTRUMENTS, 3 Edison Place, Fairfield, NJ 07006, Tel: 201-882-8033, Telex: 13-0567; Empl.: 8; *Sls. Mgr.:* Claus J. Joens

ELOGRAPHICS, 105 Randolph Rd., Oak Ridge, TN 37830, Tel: 615-482-4100, Telex: 350348; *Sls. Mgr.:* R. Highfill

ELPAC COMPONENTS, Elpac Electronics, Inc., 3131 S. Standard Ave., Santa Ana, CA 92705, Tel: 714-979-4440, TWX: 910-595-1513, FAX: 714-241-7293; Empl.: 130; *Sls. Mgr.:* Wayne Melvin .... **A•1084-1085**

Local Sales Offices & Reps

AZ Phoenix, Eltron 602-266-2164
CA San Diego, Wes-K Assocs. 619-655-2040
CA Van Nuys, Wes-K Assocs. 213-989-3070
CO Wheat Ridge, Wescom Mktg. 303-422-8957
CT Milford, Todino Engr. Sls. 203-874-6643
FL Orlando, OEM Mktg. Corp. 305-299-1000
IL Highland Park, Bransky Sls. 312-433-2375
MD Monkton, Imagitron Sls. Co. 301-374-5600
MA Needham Heights, Todino Engr. Sls. .. 617-444-7925
MN Bloomington, Smiley-Scott Assocs. 612-888-5551
NJ Englewood, Harold Gray Assocs. 201-894-0894
NJ Marlton, Imagitron 609-983-0897
NC Greensboro, Imagitron Sls. Co. 919-292-5474
OH Dayton, J. C. Hofstetter Co. 513-296-1010
OH Medina, J. C. Hofstetter Co. 216-241-4880
OR Portland, Harry Levinson Co. 503-245-1902
PA Camp Hill, Imagitron Sls. Co. 717-763-9577
UT Salt Lake City, Wescom Mktg. 801-466-9594
WA Seattle, Harry Levinson Co. 206-382-1300
WI Cedarburg, Bransky Sls. 414-377-8507

Local Distributors

AZ Phoenix, T.T.I. 602-861-0222
CA Chatsworth, Mil-Comm 818-998-3111
CA Irvine, Kelex 714-863-1230
CA San Diego, T.T.I. 619-587-4888

CA	San Jose, T.T.I.	408-946-5577
CO	Westminster, T.T.I.	303-429-6806
CT	Stratford, T.T.I.	203-375-1400
FL	Orlando, T.T.I. Florida	305-859-1000
GA	Norcross, T.T.I.	404-662-0911
IL	Northbrook, Classic Components	312-272-9650
IL	Skokie, Kellner Elctrns.	312-677-1120
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
MA	Wilmington, Aved Elctrns.	617-657-9310
MA	Woburn, T.T.I, Inc. NE	617-938-8800
MN	Eden Prairie, T.T.I.	612-944-5080
MN	Minneapolis, Northern	612-944-1167
MO	Maryland Heights, Ensco Distribg., Inc.	314-423-3935
NJ	S. Hackensack, Waltech	201-641-7300
NY	Bohemia, T.T.I.	516-737-2000
NY	Mamaroneck, New Yorker Elec.	914-698-7600
NY	Elmsford, Ancar	914-592-7100
OH	Dayton, Electro Supp.	513-299-5020
OK	Tulsa, Altair Co.	918-252-5781
TX	Ft. Worth, T.T.I.	817-831-8300
TX	Houston, Altair Co.	713-462-3029
TX	Richardson, Altair	214-231-5166
WA	Seattle, Kam Elec.	206-382-1300
WI	Mequon, Taylor Elec. Dists.	800-558-8921
WI	Milwaukee, Progressive	414-321-4722
WI	New Berlin, Classic	414-786-5300
WI	Racine, Badger Elctrns.	414-637-1256, 414-933-6685

ELPAC POWER SYSTEMS, Elpac Electronics, Inc., 3131 S. Standard Ave., Santa Ana, CA 92705, Tel: 714-979-4440, TWX: 910-595-1513, FAX: 714-241-7293; Empl.: 270; *Sls. Mgr.:* H. Myers; *Dist. Mgr.:* H. Myers ..... **D•1692-1697**

Local Sales Offices & Reps

AL	Huntsville, K&E Assoc.	205-883-9720
AZ	Sun City, Hannah-Hill	602-933-4623
CA	North Ridge, XBX Sls., Inc.	818-368-3503
CA	Orange, XBX Sls., Inc.	714-998-8200
CA	San Diego, XBX Sls., Inc.	619-586-1577
CA	San Jose, Ruppert Sls. & Engrg.	408-998-8717
CO	Broomfiled, Hannah-Hill	303-460-0602
CT	Torrington, Northern Computer Sls.	203-482-3007
FL	Orlando, Gillum sls.	305-855-0039
GA	Doraville, K&E Assoc.	404-448-7025
ID	Idaho Falls, Hannah-Hill	208-529-0671
IL	Highland Park, Bransky Sls.	312-433-2375
MD	Monkton, Imagitron Sls.	301-374-5600
MA	Canton, Northern Computer Sls.	617-821-2180
MN	Minneapolis, R.K. Sls.	612-571-1001
NJ	Marlton, Imagitron Sls.	609-983-0897
NM	Albuquerque, Hannah-Hill	505-292-4098
NY	Fairport, Northern Computer Sls.	716-377-2650
NC	Greenboro, Imagitron Sls.	919-292-5474
OH	Dayton, J. F. Hofstetter	513-296-1010
OH	Medina, J. F. Hofstetter	216-241-4880
OR	Portland, Tasco	503-292-1910
PA	Hickory, S. C. Hofstetter	412-356-2305
TX	Houston, Zonk & Assocs.	713-895-9131
TX	Richardson, Zonk & Assocs.	214-238-7651
WA	Bellevue, Tasco	206-453-1414
WI	Cedarburg, Bransky Sls.	414-377-6837

Local Distributors

AL	Birmingham, ACK Radio Supp.	205-322-0588
AZ	Phoenix, Heilind Elec.	602-437-1060
AZ	Tempe, Marshall Inds.	602-968-6181
CA	El Monte, Marshall Inds.	213-442-7204
CO	Denver, Marshall Inds.	303-427-1818
CT	Bethel, Heilind Elec.	203-797-8600
CT	Wallingford, Marshall Inds.	203-265-3822
FL	Orlando, Marshall Inds.	305-841-1878
GA	Atlanta, ACK Radio Supp.	404-351-6340
GA	Norcross, Marshall Inds.	404-923-5750
IL	Chicago, Newark Elctrns.	312-638-5100
IL	Northbrook, Classic Comps.	312-272-9650
IL	Schaumburg, Marshall Inds.	312-490-0155
MD	Gaithersburg, Marshall Inds.	301-840-9450
MA	Burlington, Marshall Inds.	617-272-8200
MA	Burlington, QPL Elctrns.	617-229-2424
MI	Livonia, Marshall Inds.	313-525-5850
MN	Plymouth, Marshall Inds.	612-559-2211
NJ	Cranford, Garden State Indl.	201-272-6400
NJ	Fairfield, Marshall Inds.	201-882-0320
NJ	Mt. Laurel, Marshall Inds.	609-234-9100
NY	Hauppauge, Broadline Elctrns.	212-895-6232
NY	Hauppauge, Marshall Inds.	516-273-2424
NY	Johnson City, Marshall Inds.	607-798-1611
NY	Rochester, Marshall Inds.	716-235-7620
NC	Greensboro, Hammond	919-275-6391
OH	Dayton, Marshall Inds.	513-236-8088
PA	Philadelphia, Shap Elctrns.	215-969-3300
SC	Greenville, Hammond Elctrns.	803-233-4121
TN	Austin, Marshall Inds.	512-458-5654
TX	Dallas, Heilind Elec.	214-351-2050
TX	Dallas, Marshall Inds.	214-233-5200
TX	Houston, Marshall Inds.	713-789-6600
TX	Houston, Newark Elctrns.	713-782-4800
WA	Bellevue, Marshall Inds.	206-747-9100
WI	New Berlin, Classic Comps.	414-786-5300

ELPAZ INSTRUMENTS, INC., 160 N. Craig St., Pittsburgh, PA 15213, Tel: 412-687-8700, Telex: 382960; *Sls. Mgr.:* Stephen Phelps; *Dist. Mgr.:* Stephen Phelps

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ELPOWER CORPORATION, 2117 S. Anne St., Santa Ana, CA 92704, Tel: 714-540-6155, Telex: 678354 ELPOWER SNA; Empl.: 200; *Sls. Mgr.:* R. Calvert; *Dist. Mgr.:* Ronnie LeFevre ..... **D•1436-1438**

Local Sales Offices & Reps

AZ	Phoenix, More Sls., Inc.	602-265-9201
CA	Hayward, Pacific Mktg.	415-887-1620
CA	Laguna Hills, Spa Assocs.	714-547-5177
CA	San Diego, Miner Assocs.	619-566-9891
CO	Denver, Moss Mktg.	303-455-7205
CT	Milford, Todino Engrg. Sls. Co.	203-874-6643
GA	Norcross, Hollingsworth & Still	404-447-1700
IL	Chicago, G. Mcl. Cole Co.	312-692-6040
IN	Indianapolis, Elctrn. Mktg. Consits.	317-253-1668
KS	Overland Park, Thomas L. Dowell & Assocs.	913-648-7373
MA	Needham Heights, Todino Engrg.	617-444-7925
MI	Southfield, R. C. Nordstrom	313-559-7373
MN	Edina, Restronics	612-941-9135
MS	Jackson, S. L. Welch	601-932-5534
MO	St. Louis, Thomas L. Dowell & Assoc.	314-849-4234
NJ	Englewood Cliffs, Masin Esco	201-569-8868
NJ	Marlton, Twin Sls.	609-966-4070
NY	East Syracuse, Nycom, Inc.	315-437-8343
NY	Hauppauge, Masin Esco	516-273-3500
OH	Wadsworth, Merit Elctrns.	216-239-2186
TX	Garland, Nesbitt Co.	214-270-9867
VA	Herndon, Stinson Assocs.	703-620-0088
WA	Seattle, Northmar	206-524-5170

Local Distributors

AL	Huntsville, Forbes Distbg.	205-837-1579
AZ	Phoenix, Mountain West	602-263-8831
CA	Cerritos, El Com	714-432-6630
CA	Mountain View, Energy Sls.	415-969-0800
CO	Denver, Hensley Battery	303-455-3643
FL	Ft. Lauderdale, Southeastern Elctrns.	305-563-4131
GA	Atlanta, Comp. Distrs.	404-441-3320
GA	Atlanta, Wholesale Indl. Elctrn.	404-447-8431
HI	Honolulu, Precision Radio	808-537-5291
IL	Downers Grove, Telecommunication Dvcs.	312-971-3460
IL	Palatine, Ohm Elctrns.	312-359-5500
IN	Indianapolis, Graham Elctrns.	317-634-8202
LA	New Orleans, William B. Allen Supp. Co.	504-525-8222
MD	Savage, Pyttronic	301-792-0780
MN	Edina, Northern Inc.	612-944-1167
MO	Kansas City, Walter Radio	816-531-7015
NM	Albuquerque, Walker Elctrn.	505-247-2288
NY	Bohemia, National Security Products	516-563-1900
OH	Columbus, Mid-Ohio Battery	614-861-7200
OR	Portland, Radar Elec.	503-232-3404
PA	Montgomeryville, Pyttronic Inds.	215-643-2850
TN	Nashville, Randolph & Rice	615-225-5601
TX	Dallas, Wholesale Elctrn.	214-824-3001
UT	Salt Lake City, Standard Supp.	801-486-3371
VA	Richmond, AVEC Elctrns.	804-359-6071
WA	Seattle, Radar Elec.	206-282-2511

E-L PRODUCTS, Astronics Company, 77 Olean Rd., E. Aurora, NY 14052, Tel: 716-655-0800

EL-RAD MFG., 2800 W. Cullom Ave., Chicago, IL 60618, Tel: 312-478-7300, TWX: 910-221-0104; FSC No.: 11253; Empl.: 225; *Sls. Mgr.:* Marvin S. Christ

ELTEC INSTRUMENTS INC., P.O. Box 9610, Daytona Bch., FL 32020, Tel: 904-253-5328, TWX: 810-832-6294; Empl.: 120; *Sls. Mgr.:* Douglas S. Armstrong

ELTROL CORPORATION, 20942 Osborne Street, Bldg. I, Canoga Park, CA 91304, Tel: 818-709-0131; FSC No.: IER54; Empl.: 6; *Sls. Mgr.:* Terry E. Donovan ... **B•1174**

ELVO ELECTRONICS CORPORATION, 140 Kisco Avenue, Mt. Kisco, NY 10549, Tel: 914-241-1008, Telex: 229684, FAX: 914-241-7096; *Sls. Mgr.:* Thomas H. Stein

EMCA, Sub. Rohm and Haas Advanced Matls. Co., 605 Center Ave., Mamaroneck, NY 10543, Tel: 914-698-8434, TWX: 710-566-1128; Empl.: 70; *Sls. Mgr.:* Dennis Hanley

EMCO ELECTRONICS, 104 S. Central Ave., Valley Stream, NY 11580, Tel: 516-825-3330, Telex: 276590; Empl.: 9; *Sls. Mgr.:* K. Berkowitz; *Dist. Mgr.:* Jay Robinson

Local Sales Offices & Reps

AL	Birmingham, John F. Russell	205-822-2196
CA	Long Bch., Ross Sls. Co.	213-424-9818
FL	Venice, JGG Sls.	813-497-0177
HI	Honolulu, Lee Gaber	808-536-2457
KS	Leavenworth, K & M Sls.	913-727-1993
MD	Baltimore, David S. Linz	301-435-0012
MO	St. Charles, K & M Sls.	314-946-8871
NY	Whitestone, Jack Brown	718-767-1977
OH	Akron, Buckeye Mktg.	216-836-7875
OH	Jamestown, Buckeye Mktg.	513-675-2059
PA	Philadelphia, David S. Linz Co.	215-379-0734
SC	Greenville, Hal C. Norman	803-244-6254
TX	Garland, Nesbitt Co.	214-270-9867
EXP	Valley Stream, NY, Bysk Elctrns.	516-825-7302
Can	Ontario, H. W. Cowan Ltd.	416-773-4331

EMCO HIGH VOLTAGE CO., 11126 Ridge Road, Sutter Creek, CA 95685, Tel: 209-223-3626, Telex: 5101008006; Empl.: 38; *Sls. Mgr.:* Roxanne McCoy .... **D•1699-1701**

EMCON INC., Sub. of Kyocera Intl., 11620 Sorrento Valley Rd., San Diego, CA 92138, Tel: 619-459-4355, TWX: 910-322-1130; Empl.: 500; *Sls. Mgr.:* Bob Goodman; *Dist. Mgr.:* George Maines

EMCOR PRODUCTS, Crenlo, Inc., 1600 Fourth Ave. NW, Rochester, MN 55901, Tel: 507-289-3371, TWX: 910-565-2374; *Sls. Mgr.:* John Horton ..... **C•1050**

EMC TECHNOLOGY INC, 1971 Old Cuthbert Rd., Cherry Hill, NJ 08034, Tel: 609-429-7800, Telex: 710 896 0193; FSC No.: 24602; Empl.: 75; *Sls. Mgr.:* Peter Semitschew

EMERGENCY POWER ENGINEERING INC., 3580 Cadillac Ave., Costa Mesa, CA 92626, Tel: 714-557-1636, Telex: 183535; Empl.: 525; *Sls. Mgr.:* Warren Caves

EMERSON, INDL. CONTROLS DIV., 3300 Standard St., Santa Ana, CA 92702, Tel: 714-545-5581, Telex: 67-8460; Empl.: 800; *Sls. Mgr.:* W. Sgro

Please call factory for sales offices and nearest rep.

EMERSON & CUMING, W. R. Grace & Co., 59 Walpole St., Canton, MA 02021, Tel: 617-828-3300, TWX: 710-348-1324; Empl.: + 500

EMHART CANADA, LTD., See Mallory Components Div.

EMICO INC., Box 368, Dublin, PA 18917, Tel: 215-249-9330, TWX: 510-665-9583; FSC No.: 85925; Empl.: 100; *Sls. Mgr.:* R. Jones

EMI GENCOM INC., See THORN EMI Gencom Inc.

EMI TECHNOLOGY INC., See THORN EMI Technology Inc.

E/M LUBRICANTS, INC., Div. of Great Lakes Chemical Corp., Highway 52 NW, W. Lafayette, IN 47906, Tel: 317-463-2511, Telex: 27-9428; FSC No.: 11770

EMM SEMI, SUB OF EM & M, See GTE Microcircuits

Empro SHUNTS ®

EMPRO MANUFACTURING COMPANY, INC., P.O. Box 26060, Indianapolis, IN 46226, Tel: 317-823-4478; Empl.: 25 ..... **D•1246**

Local Sales Offices & Reps

CA	La Canada, Lew Brooks Co.	213-790-8358
CA	Santa Ana, Lew Brooks Co.	714-544-8900
GA	Atlanta, Brownell Electro Inc.	404-762-5181
IL	Chicago, Best Rep Co.	312-992-1055
MA	Burlington, E.I.L. Instr.-Mancib Div.	617-272-9450
NJ	Belleville, D. F. Tobias & Co.	201-751-8680
OH	Cleveland, Weschler Elec. Corp.	216-238-2550
PA	Philadelphia, Sunshine Sci. Instr. Inc.	215-673-5600
TX	Houston, Ev Smith Sls.	713-649-5756

Local Distributors

CA	Glendale, Western Elctrn. Supp.	213-849-3451
CA	S. Pasadena, Dae Instr. & Svc., Inc.	213-258-0578
LA	Harahan, Indl. Instrs. Works	504-733-8355
NJ	Belleville, Miscorp	201-751-1190
TX	Beaumont, Straughn Elctrns.	409-838-4563
TX	Houston, American Analog	713-524-0528
TX	Houston, Meters & Instrs.	713-644-1631
WI	Milwaukee, E-M Instrs.	414-272-7799

EMR DATA SYSTEMS, DIV. SANGAMO- WESTON, Box 3041, Sarasota, FL 33578, Tel: 813-371-0811, Telex: 052-890, TWX: 810-864-0406; Empl.: 1100; *Sls. Mgr.:* F. V. Hinkel

EMS, Div. of Sandberg Industries, 1851 Reynolds Ave., Irvine, CA 92714, Tel: 714-261-9473, Telex: 910 595 2767; Empl.: 125; *Sls. Mgr.:* Duane Halverson ..... **C•1729**

E M S DEVELOPMENT CORP., 100 Sea La., Farmingdale, NY 11735, Tel: 516-293-7900, TWX: 510-224-6480; FSC No.: 51435; Empl.: 125; *Sls. Mgr.:* Ed Simkovich

EMTRONIX CORPORATION, N114 W. 19225 Clinton Dr., Germantown, WI 53022, Tel: 414-255-2620, ESYLNK: 629-38203, FAX: 414-255-0653; Empl.: 53; *Sls. Mgr.:* Jerome H. Smith ..... **D•2113**

Local Sales Offices & Reps

CA	Saratoga, Edward King & Assocs.	408-867-2111
IL	Lombard, RMP McBride	312-932-9090
IN	Carmel, STB & Assocs.	317-844-9227
WI	Colgate, Rep I & Assocs., Inc.	414-628-4016

EMULATION TECHNOLOGY, INC., 422 Ives Terrace, Sunnyvale, CA 94087, Tel: 415-960-0652, Telex: 184817 ; Empl.: 6; *Sls. Mgr.:* Joseph J. Bagliere, Jr.

ENCLOSURE CORP., 2900 Wharton Rd., Bristol, PA 19007, Tel: 215-785-2900; FSC No.: 32360; Empl.: 120; *Sls. Mgr.:* Gene Goldner

ENCODER DIV., LITTON SYSTEMS, INC., See Litton Encoder Div.

ENCODER PRODUCTS, 1601B Dover Rd., Sandpoint, ID 83864, Tel: 208-263-8541, TWX: 510-776-1595; Empl.: 70; *Sls. Mgr.:* Vance Conner ..... **B•1787**

ENDEVCO, 30700 Rancho Viejo Rd., San Juan Capistrano, CA 92675, Tel: 714-493-8181, Telex: 68-5608, TWX: 910-596-1415; FSC No.: 95411; Empl.: 400; *Sls. Mgr.:* J. Burger

ENDICOTT COIL, 24 Charlotte St., Binghamton, NY 13905, Tel: 607-797-1263, Telex: 932411; Empl.: 110; *Sls. Mgr.:* Thomas E. Frank

ERC®

ENDICOTT RESEARCH GROUP, 2601 Wayne St., P.O. Box 269, Endicott, NY 13760, Tel: 607-754-9187, TWX: 510-252-0155; FSC No.: 63312; Empl.: 150 ..... **B•1073-1075; D•1702-1703**

Local Sales Offices & Reps

AZ	Phoenix, Finn-Pat Co., Inc.	602-954-0301
CA	Laguna Hills, Component Mktg. Assocs.	714-951-6046
CA	Lomita, Component Mktg. Assoc.	213-326-1460
CA	Saratoga, Testco	408-253-1900
CO	Littleton, TMC	303-773-0643
CT	Marion, Sands Co./Sir Assocs.	203-628-4363
FL	Pompano Beach, Cole-Tek Assocs.	305-781-8110
GA	Atlanta, Wallace Electronics	800-334-3518
IL	Elk Grove Village, Carlson Elctrn. Sls.	312-956-8240
IN	Indianapolis, J & W Sls.	317-842-3740
IA	Cedar Rapids, Carlson Elctrn. Sls.	319-377-6341
KS	Wichita, Palatine	316-262-1020
MA	Westford, SIR Assocs.	617-692-2500
MI	West Bloomfield, Granneman & Assocs.	317-849-2000
MN	Minneapolis, OEM Prods.	612-541-0236
MO	Hazelwood, Palatine	314-839-0800
NJ	Livingston, Eagle Sls. Co.	201-992-2030
NY	Jericho, Metro-Tech	516-935-3330
NY	Rochester, H. C. Johnson Agencies	716-586-0777
NC	Kernersville, Wallace Electronics	919-996-2742
OH	Worthington, Dynel Co.	614-436-9452
PA	Glenshaw, H. C. Johnson Agencies	412-487-1246
PA	King of Prussia, Freedman-Malta Assocs.	215-337-9211
TX	Austin, Component Technlg.	512-258-1744
TX	Houston, Component Technlg.	713-461-4197
TX	Richardson, Component Technlg.	214-690-8537
UT	Salt Lake City, TMC	303-773-0643
WA	Bellevue, Testco	206-454-7422
WI	Milwaukee, Carlson Elctrn. Sls.	414-476-2790
Can	Toronto, Norgay Entprs., Ltd.	416-239-3025

ENERCO, INC., 9615 W. Marginal Way S., Seattle, WA 98108, Tel: 206-762-1422; Empl.: 5; *Sls. Mgr.:* Lee Rabie

ENERGETEC SYSTEMS, INC., 130 E. St. Charles Rd., Carol Stream, IL 60188, Tel: 312-653-1920, Telex: 910-380-8574; Empl.: 40

ENERGY CONCEPTS INC., 5205D Avenida Encinas, Carlsbad, CA 92008, Tel: 619-438-2202, Telex: 01830, FAX: 619-438-0694; FSC No.: 01830; Empl.: 6; *Sls. Mgr.:* Tim O'Connell

Local Sales Offices & Reps

CA	Los Angeles, Wallace & Wallace	213-945-2908
CA	Mill Valley, Roy Colen Sls.	415-383-8700
CA	San Francisco, Roy Colen Sls.	415-383-8700
CA	Sante Fe Springs, Wallace & Wallace	213-945-2908
CO	Denver, Mountain Reps.	303-623-0972
GA	Atlanta, Harvey Minsk and Assoc.	404-934-3272
IL	Schaumburg, Energy Concepts Central	312-310-9292
LA	Kenner, The Associates	504-443-5072
MN	Minneapolis, dc Battery	612-721-8547
NJ	Montville, Energy Concepts E.	201-335-7373
OK	Oklahoma City, The Associates	405-751-5510
OR	Oregon City, Proctor Sls. & Mktg.	503-657-7583
TX	Dallas, The Assoc.	214-241-7190
TX	Houston, The Associates	713-466-8673
WA	Tacoma, Proctor Sls. & Mktg.	206-473-1265
Can	Mississauga, Ont., EC Battery Canada Corp.	416-624-6626

ENERGY ELECTRONIC SYSTEMS, INC, 9486 Deereco Rd., Timonium, MD 21093, Tel: 301-252-2240, 301-561-5430; Empl.: 35; *Sls. Mgr.:* Janet C. Wist

ENERGY ENGINEERING, Rt. 4, Box 330, Fayetteville, AR 72701, Tel: 501-521-4707; Empl.: 3; *Sls. Mgr.:* David F. Scott; *Dist. Mgr.:* David F. Scott

ENERGY, LTD., 4714 Upshur Street, Bladensburg, MD 20710, Tel: 301-699-1144, FAX: 301-699-8107; FSC No.: Easylink 62837736; Empl.: 6 ..... **D•2060**

Local Sales Offices & Reps

MD	Bladensburg, Energy, Ltd.	301-699-1144

Local Distributors

MD	Bladensburg, Energy, Ltd.	301-699-1144

ENERGY SYSTEMS, 37925-6th St. East, Ste.213, Palm Dale, CA 93550, Tel: 805-273-0547; Empl.: 25

ENGELHARD CORP., Menlo Pk., CN40, Edison, NJ 08818, Tel: 201-632-6000, 800-932-0444 (in NJ), Telex: 13-8552

ENGINEERED COMPONENTS CO., P. O. Box 8121, San Luis Obispo, CA 93403-8121, Tel: 805-544-3800; FSC No.: 32440; Empl.: 250

ENGINEERING DESIGN & SLS., Rt. 2, Box 305, Danville, VA 24540, Tel: 804-685-7073; Empl.: 50; *Sls. Mgr.:* Mark Gignac

ENGINE SYSTEMS DIVISION, Simmonds Precision, P.O. Box 310, Norwich, NY 13815, Tel: 607-335-5000, TWX: 510-261-7776; Empl.: 650; *Sls. Mgr.:* J. A. Bartlom/P. R. Materazzo

ENGLER INSTRUMENTS OPERATION, See Stemco Instruments, Colt Inds.

ENI, INC., See Electronic Navigation Inds., Inc.

ENTECH CORPORATION, 17A Herman Drive, Simsbury, CT 06070, Tel: 203-658-2740, 203-651-9557 ..... **B•1605**

ENTECH SYSTEMS, INC., 178 Herman Dr., Simsbury, CT 06070, Tel: 203-651-9557; *Sls. Mgr.:* A. D. Jorczak

ENTERPRISE SYS. CORP., P.O. Box 698, Dover, NH 03820, Tel: 603-742-7363; Empl.: 40; *Sls. Mgr.:* G. E. Perrine

Entran

ENTRAN DEVICES, 10 Washington Ave., Fairfield, NJ 07006, Tel: 201-227-1002, Telex: 130-361; *Sls. Mgr.:* John W. G. Budd ..... **B•1788-1789**

Local Sales Offices & Reps

AZ	Phoenix, J. Smith & Assocs.	602-267-0981
CA	Long Beach, Saber Entprs.	213-595-5646
CA	Pleasanton, Secco Assocs.	415-484-1030
CA	San Diego, Saber Entprs.	619-271-1523
CO	Colorado Springs, J. Smith & Assoc.	303-597-5343
CT	Hamden, Pond Tech. Sls.	203-281-0005
FL	Clearwater, Structural Engrg. & Test Svc.	813-442-7767
GA	Smyrna, Quantum Meas.	404-433-0093
IN	Plainfield, Stress Analysis Svcs.	317-839-8235
MI	Hartland, Stress Analysis Svcs.	313-632-6110
NJ	Budd Lake, Measurements, Inc.	201-770-1281
NM	Albuquerque, J. Smith & Assocs.	505-265-3406
NY	Clarence, Trott Electrns.	716-634-8500
NY	Pittsford, Trott Elctrns.	716-586-8251
NC	Chapel Hill, Quantum Meas.	919-933-7408
OH	Dayton, Stress Analysis Svcs.	513-422-7900
OH	Medina, Stress Analysis Svc.	216-725-7733
PA	Exton, Measurements, Inc.	215-524-0310
VA	Fredericksburg, Measurements, Inc.	703-373-5520
Can	Ontario, Intertechnology	416-445-5500

ENTRELEC, Cogenel, Inc., 2 Ram Ridge Rd., Spring Valley, NY 10977, Tel: 914-425-7460, FAX: 914 425 8108; Empl.: 50; *Sls. Mgr.:* F. D. Leynaert

ENVIRONMENTAL COMM., 3150 Pullman St., Costa Mesa, CA 92627, Tel: 714-557-7800, TWX: 910-595-1781; FSC No.: 16450; Empl.: 65; *Sls. Mgr.:* Robert Nicholson

ENVIRONMENTAL CONTAINER SYS., INC., See ECS Composites

EOTEC CORP., 420 Frontage Road, W. Haven, CT 06516, Tel: 203-934-7961, Telex: 358190; Empl.: 42; *Sls. Mgr.:* W. Nik Damuck

EOTEC CORPORATION, Fiber Optic Interconnect Group, 420 Frontage Road, West Haven, CT 06516, Tel: 203-934-7961, Telex: 358190; Empl.: 24; *Sls. Mgr.:* Lou Maiolo

EPAC:GARDNER METAL CO., 4820 S. Campbell Ave., Chicago, IL 60632, Tel: 312-847-0100, TWX: 910-221-2510

EPD ELECTRONICS INC.

EPD ELECTRONICS, INC., 16921 S. Western Ave., Ste. 110, Gardena, CA 90247, Tel: 213-323-7771, Telex: 691-738; Empl.: 6 ..... **C•1230; D•1064, 1704**

Local Sales Offices & Reps

IA	Burlington, JS Ridge Entprs., Inc.	319-754-8745
NJ	Bricktown, Bryan Elctrn. Sls. Co.	201-840-8487
OR	Portland, Dale G. Weber Co.	503-234-0686
TN	White House, Apple Sls. & Mktg.	615-672-4498

E.P.E. CORP., P.O. Box 5238, Manchester, NH 03108, Tel: 603-669-9181, Telex: 943536; Empl.: 65; *Sls. Mgr.:* James D. Bell; *Dist. Mgr.:* Thomas S. Bell

EPIC, INC., 150 Nassau St., New York, NY 10038, Tel: 212-349-2470, Telex: 12-6531; Empl.: 8; *Sls. Mgr.:* Peter Letica

EPOXYLITE CORP., 9400 Toledo Way, P.O. Box 19671, Irvine, CA 92713, Tel: 714-951-3231; Empl.: 60

EPOXY TECHNOLOGY, INC., 14 Fortune Dr., Billerica, MA 01821, Tel: 617-667-3805, 800-227-2201, Telex: 94-7140; FSC No.: 33246; Empl.: 18

EPSCO, 1020 W. Fullerton Ave., Ste. D, Addison, IL 60101, Tel: 312-543-0410; FSC No.: 53003; Empl.: 8

EPSCO MICROWAVE, 411 Providence Hwy., Westwood, MA 02090, Tel: 617-329-1500, TWX: 710-348-0484; FSC No.: 15894; Empl.: 240; *Sls. Mgr.:* John M. Shalhoub ..... **D•1012-1013, 1411**

Local Sales Offices & Reps

AZ	Tempe, Trembly Assocs., Inc.	602-967-2058
CA	Campbell, Graef Microwave Mktg.	408-866-0931
CA	Inglewood, L & M Engrg. South	213-674-6850
CO	Boulder, Herb Bass Assocs.	303-530-7509
IA	Cedar Rapids, Midwest Tech. Sls., Inc.	319-365-4011
KS	Lenexa, Midwest Tech. Sls., Inc.	913-888-5100
MD	Laurel, CSDS, Inc.	301-490-3800
MA	Chelmsford, Matrix Sls., Inc.	617-459-4000
MO	St. Charles, Midwest Tech. Sls., Inc.	314-441-1012
NM	Albuquerque, Trembly Assocs., Inc.	505-266-8616
NY	Huntington, CDB Entprs. Inc.	516-692-5200
NY	Syracuse, I. A. Holtze	315-479-6641
OH	Dayton, R. A. Ehlert Assocs., Inc.	513-253-9197
PA	Bensalem, HES Assocs.	215-245-5250
TX	Richardson, Lear Associates, Inc.	214-231-5388
UT	Bountiful, Herb Bass Assocs.	801-295-7100

EPSILON-LAMBDA ELCTRNS. CORP., 427 Stevens St., Geneva, IL 60134, Tel: 312-232-9611, TWX: 910-237-1684; Empl.: 23; *Sls. Mgr.:* W. Cavallo

EQUIPTO, 225 S. Highland Ave., Aurora, IL 60507, Tel: 312-859-1000, TWX: 910-232 0845; Empl.: 300; *Sls. Mgr.:* Ralph Zettinger

EQUIPTO ELECTRONICS CORP., 351 Woodlawn Ave., Aurora, IL 60506, Tel: 312-897-4691, FAX: 312-897-5314; FSC No.: 14002;Multiple; Empl.: 75; *Sls. Mgr.:* Kent Jarnig

ERA POLY-PLANAR DIV., See Poly-Planar, Inc.

ERA/TRANSPAC POWER SUPPLIES, West Hill Rd., P.O. Box 809, Winsted, CT 06098-0809, Tel: 203-379-2731, TWX: 710-449-6464, FAX: 203-379-8861; FSC No.: 96762; Empl.: 100; *Sls. Mgr.:* Alan Edelman .... **D•1705**

Local Sales Offices & Reps

AZ	Glendale, Adtex, Inc.	602-931-9289
AZ	Phoenix, Adtex, Inc	602-992-6248
CA	Inglewood, Basic Sys. Corp	213-673-4300
MA	Needham Heights, Addelko Corp.	617-444-4754
NJ	Glen.Rock, High Tech. Assocs	201-447-2680
NM	Albuquerque, Adtex, Inc.	505-296-2567
NY	East Islip, High Tech. Assocs.	516-277-1861
OK	Bixby, MGR Elctrns	918-369-5186
PA	Morristown, Denco Eltcrns Co.	215-630-8990
TX	Austin, MGR Elctrns.	512-250-0926
TX	Dallas, MGR Eltcrns.	214-238-5246
TX	Ft. Worth, MGR Elctrns	817-338-1493
TX	Houston, MGR Elctrns	713-759-0187
VA	Front Royal, Eltron Sls., Ltd.	703-635-7201

ERASER CO., Box 4961, Syracuse, NY 13221, Tel: 315-454-3237, Telex: 93-7442; Empl.: 45; *Sls. Mgr.:* Linda S. Cahill

ERBTEC ENGINEERING, INC., 2760 29th St., Boulder, CO 80301, Tel: 303-447-8750, Telex: 386292, ESYLNK: 62757032; Empl.: 18; *Sls. Mgr.:* Allen Kreibach ..... **D•1247**

Local Sales Offices & Reps

CA	Mtn. View, Thorson West	415-964-9300
CA	Riverside, Cal Tech Pro	714-682-8506
MD	Linthicum, KD Assocs.	301-859-5151
MA	Reading, Scheinfein Assocs.	617-944-2304
MN	Oakdale, Precision Movement	612-779-6120
MN	Shoreview, Precision Movement	612-483-0841
NJ	Ridgefield, Rical Assocs.	201-945-5250
NM	Albuquerque, Burt Dieruf Assocs.	505-299-0989
TX	Carrollton, Seaton Corp.	214-380-0414
WA	Woodinville, T.E.A.M.	206-485-1111

ERC, See Electronic Research Co.

ERCONA, 101 Main/Patchogue Rd., Port Jefferson Sta., NY 11776, Tel: 516-331-5500, Telex: 283965; Empl.: 10; *Sls. Mgr.:* P. M. Westphal; *Dist. Mgr.:* J. Barry

EREM CORP., 3740 Skypark Dr., Torrance, CA 90505, Tel: 213-772-0751; Empl.: 25; *Sls. Mgr.:* G. Johnson; *Dist. Mgr.:* C. Johnson

ERGOTRON, INC., 1621 E. 79th Street, Minneapolis, MN 55420, Tel: 612-854-9116, 800-328-9839, Telex: 4310015; Empl.: 16; *Sls. Mgr.:* Keith A. Jentoft

ERICSON MANUFACTURING CO., 4215 Hamann Pkwy., Willoughby, OH 44094, Tel: 216-951-8000, Telex: 98-5390; *Sls. Mgr.:* J. E. (Jay) Ericson, Jr.

ERIE TECHN. PRODS., See Murata Erie No. Amer., Inc.

ERNI COMPONENTS, 520 Southlake Blvd., Richmond, VA 23236, Tel: 804-794-6367, Telex: 559647; FSC No.: (804) 379-2109; Empl.: 700; *Sls. Mgr.:* James Garratt, VP. Sls.

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ESCAP PRODUCTS, 36 Central Ave., Hauppauge, NY 11788, Tel: 516-234-3900, Telex: 62830792, FAX: 516-234-3986; *Sls. Mgr.:* Dave Hall ..... **B•1175**

ESC ELECTRONICS CORPORATION

ESC ELECTRONICS CORP., 534 Bergen Blvd., Palisades Pk., NJ 07650, Tel: 201-947-0400, TWX: 710-991-9780, FAX: 201-947-0406; Empl.: 120 ..... **A•1556-1569, 1661, 2231**

Local Sales Offices & Reps

AL	Huntsville, Murcota Corp.	205-539-8476
AZ	Mesa, Sedco Sls.	602-835-6281
CA	Culver City, Westaironics	213-641-4122
CA	Santa Clara, Rodgers Assocs.	408-984-8110
CO	Denver, Donohue Sls. Co.	303-455-1719
CT	Bridgeport, Betronic Assocs.	203-374-6404
FL	Clearwater, Sigma Tech. Assocs.	813-791-0271
FL	Ft. Lauderdale, Sigma Tech. Assocs.	305-699-0729
IL	Elk Grove, Carlson Elctrn. Sls. Co.	312-956-8240
IN	Indianapolis, J & W Sls.	317-842-3740
IA	Cedar Rapids, Carlson Elctrn. Sls. Co.	319-377-6341
KS	Lenexa, Midwest Tech. Sls.	913-888-5100
KY	Louisville, J & W Sls.	502-897-0989
MA	Waltham, Betronic Assocs.	617-894-8400
MN	Minneapolis, R-J, Inc.	612-866-3661
MO	St. Charles, Midwest Tech. Sls.	314-441-1012
NJ	Fairfield, Intercomp Assocs.	201-227-8585
NC	Winston-Salem, Murcota Corp.	919-722-9445
OH	Cincinnati, Makin Assocs.	513-871-2424
OR	Beaverton, Ravencraft	503-646-9261
TX	Plano, Zeus Engrg.	214-423-2027
VA	Reston, Tytronics Tech. Sls.	703-471-0440
WI	Milwaukee, Carlson Elctrn. Sls. Co.	414-476-2790
EXP	NJ, Palisades Pk., ESC Elctrns. Corp.	201-947-0400
Can	Lachine, Que., Electrodesign, Ltd.	514-636-4838

ESE, 142 Sierra St., El Segundo, CA 90245, Tel: 213-322-2136; FSC No.: 58525; Empl.: 25; *Sls. Mgr.:* R. Mayers; *Dist. Mgr.:* R. Mayers

ESICO, INC., Box 247, Deep River, CT 06417, Tel: 203-526-5361; Empl.: 45; *Sls. Mgr.:* Robert W. Mead

E-SQUARED TECHNOLOGY CORP., 4475 Dupont Ct #9, Ventura, CA 93003, Tel: 805-644-9544, Telex: 887971 E Sq. Tech. UD; Empl.: 19; *Sls. Mgr.:* Larry D. Emery

ESSCO INDS., P.O. Box 515, Sierra Madre, CA 91024-0515, Tel: 818-355-8315; Empl.: 33

ESSEX GROUP, 9933 13th St., Ft. Wayne, IN. 46809, Tel: 219-478-1521; Empl.: 300-500; *Sls. Mgr.:* J. Scott

ESSEX GRP., Power Conductor Div., 2601 S. Adams, Marion, IN 46953, Tel: 317-664-6211, TWX: 317-667-6972; Empl.: 700; *Sls. Mgr.:* J. Burdick

ESTERLINE ANGUS INSTRUMENT CORP., Box 24000, Indianapolis, IN 46224, Tel: 317-244-7611, Telex: 027-419, ESYLNK: 317-247-4749; FSC No.: 72264; Empl.: 200+; *Sls. Mgr.:* Donald E. Allen, Pres. & Sls. Mgr.

ESTES ENGRG. CO., 930 Marine Dr., Port Angeles, WA 98362, Tel: 206-457-0904; FSC No.: 22590; Empl.: 28

E-SYSTEMS, Greenville Div., P.O. Box 1056, Greenville, TX 75401, Tel: 214-457-4694, Telex: 73-2392; *Sls. Mgr.:* C. L. Byrom

E-SYSTEMS, Melpar Div., 7700 Arlington Blvd., Falls Church, VA 22046

E-SYSTEMS, See Memcor-Truohm, Inc.

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E-T-A CIRCUIT BREAKERS, 7400 N. Croname Rd., Chicago, IL 60648, Tel: 312-647-8303, Telex: 253780, FAX: 312-647-7494; Empl.: 20; *Sls. Mgr.:* John J. Palsir ..... **B•1241-1243**

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CA	Los Angeles, Sierra-Pacific Eng.	714-731-3411
CA	San Francisco, Moulthrop Sls.	415-463-0450
CO	Denver, Candal, Inc.	303-233-0155
CT	East Haven, Eagle Assocs.	203-467-6542
FL	Orlando, EAB Inc.	305-898-7444
IN	Ft. Wayne, Needler Sls. Co.	219-447-2123
IN	Indianapolis, Needler Sls. Co.	317-255-8056
IA	Bettendorf, Weisler & Assocs.	319-344-0566
MA	Boston, Eagle Assocs.	617-444-3446
MI	Detroit, Hilltronics	313-398-5556
MN	Minneapolis, Chris & Assocs.	612-861-1634
MO	N. Kansas City, Weisler & Assocs.	816-421-1679
MO	St. Louis, Weisler & Assocs.	314-394-4543
NY	New York, Schmitt Indl. Mktg. Corp.	516-486-3510
NY	Rochester, Lamb Comps.	716-323-1250
NY	Syracuse, Lamb Comps.	315-455-6286
OH	Cincinnati, J. O. Olsen Co.	513-922-8885
OH	Cleveland, J. O. Olsen Co.	216-662-3454
OR	Portland, Doran Sls.	503-357-3333
PA	Philadelphia, Jacobsen Assocs.	215-674-2937
TN	Hendersonville, Stark & Assoc.	615-822-1667
TX	Austin, Delta Comps.	512-458-4288
TX	Dallas, Delta Comps.	214-287-6333
UT	Salt Lake City, Frank Merchant	801-277-3775
VA	Forest, Beacon North	804-239-8486
VA	Sterling, Beacon North	703-478-2480
WA	Seattle, Doran Sls. Assocs.	206-885-1885
WI	Milwaukee, Star Engineering	414-645-3680

ETA POWER, See JETA Power Systems

ETD TECHNOLOGY, INC., 605 West County Road E., Shoreview, MN 55126, Tel: 612-482-7760; Empl.: 35; *Sls. Mgr.:* John Parsons

ETI

ETI SYSTEMS, Polaris Indl. Entprs., 215 Via Del Norte, Oceanside, CA 92054, Tel: 619-757-7770, TWX: 910-322-1396, FAX: 619-757-2305; FSC No.: 952 762672; Empl.: 25; *Sls. Mgr.:* Bill Tice; *Dist. Mgr.:* Bill Tice ..... **A•2091-2095; B•1177**

Local Sales Offices & Reps

CA	San Jose, Nelson Elctrn. Sls., Inc.	408-293-2600
MN	Minneapolis, Holmgren Assocs.	612-786-7641
NY	Clifton Pk., Net Sls.	518-371-6864
NY	Fairport, Net Sls.	716-223-1030
NY	Oceanside, Bittan Assocs., Inc.	516-678-6222
OH	Centerville, Omega Sls., Inc.	513-434-5507
OH	Cleveland, Omega Sls., Inc.	216-381-1404
TX	Dallas, Gen. Power Equip.	214-350-5153
Can	Ont., Electrodesign, Ltd.	416-665-4405
Can	Ont., Electrodesign, Ltd.	613-727-5220
Can	Que., Electrodesign, Ltd.	514-636-4838

Local Distributors

AZ	Tempe, Anjon Enterprises	602-894-1332
CA	Anaheim, A To Z Elctrns.	714-632-1620
CA	Garden Grove, Allied Elctrns.	714-544-0731
CA	Hayward, Allied Elctrns.	415-487-5250
CA	Los Angeles, Allied Elctrns.	213-725-7111
CA	San Jose, Allied Elctrns.	408-727-1690
CO	Wheatridge, Allied Elctrns.	303-425-7144
CT	Hamden, Allied Elctrns.	203-248-8900
FL	Ft. Lauderdale, Allied Elctrns.	305-486-0500
GA	Atlanta, Allied Elctrns.	404-237-3366
IL	Elgin, Allied Elctrns.	312-697-8200
IL	Lisle, Components, Inc.	312-852-7707

MD Marlow Heights, Allied Elctrns. 301-423-0161
MA Holliston, Mac Bearing Co. 617-429-7945
MA Wilmington, Allied Elctrns. 617-942-0150
MA Woburn, Mac Bearing Co. 617-933-2110
NY E. Syracuse, Add Elctrns. 315-437-0300
NY Mineola, Allied Elctrns. 516-248-2360
NY Victor, Add Elctrns. 716-924-4760
NC Raleigh, Allied Elctrns. 919-467-0720
OH Cleveland, Specialized Comp. Sls. 216-464-0405
OK Oklahoma City, Trice Wholesales Elec. 405-524-4411
OK Tulsa, Allied Elctrns. 918-663-7630
PA Bala Cynwyd, Allied Elctrns. 215-667-6940
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Houston, Lenert Co. 713-225-1465
TX Humble, Allied Elctrns. 713-852-3730
WA Seattle, Allied Elctrns. 206-767-5772
WI Milwaukee, Allied Elctrns. 414-235-4233
WI Oshkosh, Electronic Inds. 414-235-4233

ETM ELECTROMATIC INC, 35451 Dumbarton Ct., Newark, CA 94560, Tel: 415-797-1100, FAX: 415-797-4358; Empl.: 85; *Sls. Mgr.:* Kenneth F. Lillis ..... **D•1248, 1709**

ETRI, INC., 608 Broome St., Monroe, NC 28110, Tel: 704-289-5423, TWX: 810-649-1352, FAX: 704-283-7170; FSC No.: FAX 704-283-7170; *Sls. Mgr.:* G. Wolf ..... **C•1630-1634**

Local Sales Offices & Reps

CA Los Gatos, Nor-West Elctrns. 408-395-1190
CA San Diego, Bestronics 619-693-1111
CA Westminster, West Elctrn. Sls. 714-898-0120
CO Boulder, Comp. Prods. Sls. 303-530-2800
IL Des Plaines, Lincoln, Hodges & Assocs. 312-297-3810
IA Cedar Rapids, PMR, Inc. 319-362-9177
KS Overland Park, PMR, Inc. 913-381-0004
MA Chelmsford, John E. Boeing Co., Inc. .. 617-256-5800
MN Minneapolis, Milt Westlund Assocs. 612-866-5002
MO St. Louis, PMR, Inc. 314-569-1220
NJ Cherry Hill, Trinkle Sls., Inc. 609-795-4200
NY Marcellus, Noeth-Honsinger 315-673-1052
NY Pittsford, Noeth-Honsinger 716-586-9002
OH Cincinnati, Makin & Assocs., Inc. 513-871-2424
OR Wilsonville, RTS, Inc. 503-638-5670
TX Austin, Nova Mktg. 512-343-2321
TX Dallas, Nova Mktg. 214-750-6082
TX Houston, Nova Mktg. 713-988-6082
WA Vashon, RTS, Inc. 206-285-1363
WI Janesville, Antek/Lincoln Hodges & Assocs. 608-754-4214
WI Waukesha, Lincoln, Hodges & Assocs. 414-542-3087
PR Santurce, John E. Boeing Co., Inc. 809-722-6942
Can Mississauga, Ont., R-Theta 416-890-0221

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AZ Tempe, Acacia Sls., Inc. 602-894-2874
AZ Tempe, Harper, S.I.D. 602-967-1464
CA Alhambra, Harper, S.I.D. 213-979-5090
CA Fountain Valley, Components Ctr. 714-979-0433
CA Irvine, Acacia Sls., Inc. 714-660-0834
CA San Diego, Acacia Sls., Inc. 619-565-4365
CA San Diego, Harper, S.I.D. 619-560-8545
CA San Jose, Dansco 408-292-9740
CA Sunnyvale, Acacia Sls., Inc. 408-745-7200
CA Sunnyvale, Harper, S.I.D. 408-747-0333
CO Lakewood, Acacia Sls., Inc. 303-232-2882
CT Milford, RC Comps. 203-874-0006
CT Orange, Milgray Elctrns. 203-795-0711
FL Altamonte Springs, Pioneer Elctrns. 305-834-9090
FL Deerfield Beach, Pioneer Elctrns. 305-428-8877
FL Winter Park, Milgray Elctrns. 305-647-5747
GA Atlanta, Milgray Elctrns. 404-393-9666
IL Bensenville, Milgray Elctrns. 312-350-0490
IL Bensenville, Voyager Elctrns. 312-860-1300
IL Palatine, OHM Elctrns. 312-359-5500
IN Indianapolis, Advent Elctrns. 317-872-4910
KS Overland Park, Milgray Elctrns. 913-236-8800
KS Wichita, L-Comp 316-265-5100
MD Columbia, Milgray Elctrns. 301-621-6169
MD Gaithersburgh, MS Elctrns. 301-921-0200
MA Burlington, Milgray Elctrns. 617-272-6800
MA Wilmington, R C Comps. Inc. 617-273-1860
MI Grand Rapids, Calder Elctrns. 616-698-7400
MN Minneapolis, Stark Elctrns. 612-332-1325
NH Hudson, C & H Elctrns. 603-882-1133
NJ Marlton, Milgray Elctrns. 609-983-5010
NY Bohemia, Key Comps. 516-567-7500
NY Buffalo, Summit Distrs. 716-884-3450
NY Farmingdale, Milgray Elctrns. 516-420-9800
NY Rochester, Milgray Elctrns. 716-235-0830
NY Rochester, Summit Elctrns. 716-334-8110
NC Charlotte, Electronic Mktg. Corp. 704-394-6195
OH Cleveland, Milgray Elctrns. 216-447-1520
OH Columbus, Electronic Mktg. Corp. 614-299-4161
OH Dayton, Electronic Mktg. Corp. 513-439-4711
OH Highland Heights, Electronic Mktg. Corp. 216-442-3441
OK Tulsa, Norvell Elctrns. 918-254-8606
OR Beaverton, Acacia Sls., Inc. 503-646-3377
PA Allentown, P.A. Peters 215-434-5237
PA Montgomeryville, Pyttronics Inds. 215-643-2850
TX Austin, Norvell Elctrns. 512-837-5555
TX Dallas, Milgray Elctrns. 214-248-1603
TX Dallas, Norvell Elctrns. 214-233-0020
TX Houston, Norvell Elctrns. 713-777-1666
TX Irving, Harper, S.I.D. 214-621-0500
TX Richardson, Components Ctr. 214-644-3444
TX Richardson, Harper, S.I.D. 214-235-3177
UT Salt Lake City, Bell Indus. 801-972-6969
VA Charlottesville, Virginia Elctrn. Comps. 804-296-4184
WI Milwaukee, Indl. Elctrns. 414-784-4420
Can Mississauga, Ont., R-Theta 416-890-0221
Can Vancouver B.C., Intek Elctrns. 604-324-6831

E-TRON CORPORATION, 30 Ethel Rd., Edison, NJ 08817, Tel: 201-287-9039; FSC No.: 06007; Empl.: 65; *Sls. Mgr.:* Ray Lanihan

E-TRONICS, 16774 Schoenborn, Sepulveda, CA 91343, Tel: 818-892-7279; Empl.: 28

EUBANKS ENGINEERING, 1307 So. Myrtle Ave., Monrovia, CA 91016, Tel: 818-357-7011, Telex: 675403; Empl.: 90; *Sls. Mgr.:* Martin Lambert

EVANS & SUTHERLAND COMPUTER CORP., P.O. Box 8700, 580 Arapeen Dr., Salt Lake City, UT 84108, Tel: 801-582-5847, Telex: 389492, TWX: 910-925-5818; Empl.: 850; *Sls. Mgr.:* David Luther

EVANS ELECTRONICS, Box 5055, Berkeley, CA 94705, Tel: 415-653-3083

EVAPORATED COATINGS, INC., P.O. Box 160-3, Huntingdon Valley, PA 19006, Tel: 215-947-1465; Empl.: 24; *Sls. Mgr.:* Stephen L. Schaffer

EVENTIDE, INC., One Alsan Way, Little Ferry, NJ 07643, Tel: 201-641-1200, 800-446-7878, TWX: 710-991-8715; Empl.: 48; *Sls. Mgr.:* Gil Griffith; *Dist. Mgr.:* Gil Griffith

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EVEREADY BATTERY CO. INC., Ralston Purina, Checkerboard Square, St. Louis, MO 63164, Tel: 314-982-2000 ..... **D•1440-1441**

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CA San Francisco 415-875-2800
CT Danbury, Military & Govt. App. Only ... 203-794-7547
GA Norcross 404-446-2400
IL Itasca 312-773-3444
NJ Saddle Brook 201-845-5400
OH Middleburg Hgts. 216-826-4444
TX Dallas 214-241-9100

EVEREST INTERSCIENCE, INC., P. O. Box 3640, Fullerton, CA 92634-3640, Tel: 714-992-4461, Telex: 295368 EVER UR, FAX: 714-556-8325; Empl.: 20; *Sls. Mgr.:* Steve A. Giffin

EVERETT/CHARLES CONTACT PRODUCTS, 700 E. Harrison Ave., Pomona, CA 91767, Tel: 714-625-5551, Telex: 67-55-78, TWX: 910-581-1210; Empl.: 75; *Sls. Mgr.:* Bud Fabian

EVERETT/CHARLES TEST EQUIPMENT, INC., 2887 N. Towne Ave., Pomona, CA 91767, Tel: 714-621-9511, TWX: 910-581-3838; Empl.: 200; *Sls. Mgr.:* Jim Malloy

EVERSHED & VIGNOLES, LTD., Meggitt Holdings P. L. C., Acton Lane, Chiswick, London, England W4 5HJ, Tel: 01-994-3670, Telex: 22583; Empl.: 300; *Sls. Mgr.:* J. Gilpin

EVI, INC., 8300 Guilford Rd., Ste. A, Columbia, MD 21046, Tel: 301-290-9550; Empl.: 10

EWALD INSTRUMENTS, Rte. 7R, Kent, CT 06757, Tel: 203-927-3278

EWC® INC.

EWC, INC., 725 Federal Ave., Kenilworth, NJ 07033, Tel: 201-245-3200, 800-526-4048, TWX: 710-996-5993; FSC No.: 15387;MIL-T-27D; Empl.: 230; *Sls. Mgr.:* C. G. Hiotis; *Dist. Mgr.:* C. G. Hiotis ..... **A•1252, 2232-2244**

Local Sales Offices & Reps

CA Canoga Park, Cummings & Assocs. ... 818-340-6035
CA Santa Clara, Cummings & Assocs. 408-247-8656
CO Denver, Cummings & Assocs., Mktg. Inc. 303-455-6860
CT Marion, Sands Co. 203-628-4363
FL Clearwater, Tech-Rep Assocs. 813-576-9900
IA Cedar Rapids, Pattison Sls. 319-395-9866
MD Hagerstown, Stinson Assocs. 301-790-1193
MA Westford, S.I.R. Assocs. 617-692-2500
MO St. Louis, Clyde Logsdon & Assocs. ... 314-849-5125
NJ E. Brunswick, Winch Assoc. 201-828-4615
NY Fairport, Net Sls. 716-223-1030
NY Plainview, Winch Assocs. 516-681-3163
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OH Medina, J. C. Hofstetter 216-241-4880
OR Portland, SPS Elctrns. 203-243-9343
PA Bensalem, Cimperman Assocs. 215-638-4850
PA Greensberg, Pro-Mark 412-832-3800
VA Cloverdale, Stinson Assocs. 703-992-5459
VA Reston, Stinson Assoc. 703-620-0088
WI Mequon, Tumy Assocs. 414-473-6997

Local Distributors

CA Mountain View, Abacus Elctrns. 415-961-1500
CA Woodland Hills, C & A Elctrns. 213-340-6036
FL West Palm Beach, Nurmi Elctrn. Supp. 305-686-8553
IL Arlington Heights, Reptron Elctrns. 312-593-7070
MD Baltimore, Whitney Dist. 301-944-8080
OR Portland, Dunn Elctrns. 503-285-0214
OR Portland, Radar Elec. 503-233-3691
PA McKean, Advocom Elctrns. 814-476-7774
WA Seattle, Radar Elec. 206-282-2511

E.W. COMPONENTS INC., 32961 Calle Perfecto, San Juan Capistrano, CA 92675, Tel: 714-493-9501, TWX: 910-336-1293; FSC No.: 33174; Empl.: 85; *Sls. Mgr.:* A. J. Pina

EXACT ELECTRONICS, Div. of Dynatech Nevada Inc., Box 1925, 2000 Arrowhead Dr., Carson City, NV 89701, Tel: 702-883-3400, 800-648-7952, Telex: 170054; FSC No.: 34511; Empl.: 60; *Sls. Mgr.:* Mike Brisbin

EXAR CORP., P. O. Box 3575, 750 Palomar Ave., Sunnyvale, CA 94088-3575, Tel: 408-732-7970, TWX: 910-339-9233; Empl.: 600; *Dist. Mgr.:* Tom Wargo ..... **A•1749**

Local Sales Offices & Reps

AL Huntsville, Rep. Inc. 205-881-9270
AZ Scottsdale, Summit Sls. 602-998-4850
CA Escondito, Eagle Tech Sls. 619-743-6550
CA Los Angeles, Landa/Minyard, Inc. 213-879-0770
CA San Jose, Tripar Assocs. 408-280-5744
CA Santa Ana, Landa/Minyard, Inc. 714-543-7805
CO Golden, Candal, Inc. 303-233-0155
CT Ridgefield, Phoenix Sls 203-438-9644
FL Altamonte Springs, Semtronic Assocs. 305-831-8233
GA Tucker, Rep Inc. 404-938-4358
IL Itasca, Janus, Inc. 312-250-9650
KS Shawnee Mission, Design Solutions, Inc. 913-677-4774
MD Baltimore, Comp. Sls. 301-484-3647
MA Carlisle, Mass Tech Sales 617-369-9335
MI Grand Rapids, R.P. Urban & Assocs. 616-245-0511/6
MN Minneapolis, Components Group 612-374-1250
MO St. Louis, Design Solutions, Inc. 314-961-7170
NJ Haddonfield, Sunday-O'Brien 609-429-4013
NY Buffalo, Quality Comps. 716-837-5430
NY Great Neck, Trionic Assocs. 516-466-2300
NY Manilus, Quality Comps. 315-682-8885
NC Raleigh, Zucker Assocs. 919-782-8433

OH Cincinnati, Applied Data Mgmt. 513-579-8108
OR Tigard, Comps. West 503-684-1671
TN Jefferson City, Rep Inc. 615-475-4105
TX Carrollton, Technical Mktg. 214-387-3601
TX Houston, Technical Mktg. 713-783-4497
TX Round Rock, Technical Mktg. 512-244-2291
UT Bountiful, Candal Assocs. 801-292-8991
WA Liberty Lake, Components West, Inc. .. 509-255-6224
WA Redmond, Comps. West 206-885-5880
WI Waukesha, Janus, Inc. 414-542-7575
Can Brampton, Ont., Clark-Hurman Assocs. 416-453-1118
Can Nepean, Ont., Clark-Hurman Assocs. 613-727-5626/7

Local Distributors

AL Huntsville, Resisticap 205-883-4270
CA Irvine, IEC/Jaco 714-660-1055
CA Irvine, Marshall Elctrns. 714-458-5309
CA Sunnyvale, Bell Indus. 408-734-8570
CA Tustin, A.V.E.D. 213-770-0871
CT East Haven, J.V. Elctrns. 203-469-2321
FL Clearwater, Future Elctns. 813-596-8295
GA Comming, Pan American 404-577-2144
IL Arlington Hgts., Reptron 312-593-7070
IN Indianapolis, Graham Elctrns. 317-634-8202
IA Cedar Rapids, Deeco 319-377-5795
MA Norwood, Gerber Elctrns. 617-329-2400
MI Grand Rapids, R.M. Elctrns. 616-531-9300
MN Minneapolis, Merit Elctrns. 612-546-5583
NJ Berlin, GCI 609-768-6767
NY Melville, Diplomat Elctrns. 516-454-6400
OH Columbus, Reptron Elctrns. 614-436-6675
OK Tulsa, Quality Comps. 918-664-8812
OR Beaverton, Western Microtechnology 503-641-9312
PA Philadelphia, Almo Elctrns. 215-698-4000
TX Dallas, Act/ Diplomat Elctrns. 214-980-1818
WA Seattle, Radar Elec. Co., Inc. 206-282-2511
WI Mequon, Taylor Elctrns. 414-241-4321
Can Pt. Claire, Que., Future Elctrns. 514-694-7710

EXATRON AUTOMATIC TEST EQUIP., 2842 Aiello Dr., San Jose, CA 95111, Tel: 408-629-7600, 800-EXA-TRON, Telex: 172-090, FAX: 408-629-2832; Empl.: 17; *Sls. Mgr.:* Kathryn Henderson

EXCEL SPECIALTY CORP., 6335 N. Broadway, Chicago, IL 60660, Tel: 312-262-4781; Empl.: 50

EXCEL TECHNOLOGY INTL. CORP., 4-5 Stryker La., Hillsborough Indl. Pk., Belle Mead, NJ 08502, Tel: 201-874-4747, TWX: 910-333-9588; *Sls. Mgr.:* Michi Chen ..... **B•1076-1077**

Local Sales Offices & Reps

CA Marina Del Ray, Electro-Optical Mktg. 213-822-0702
IL Westchester, W. G. Brouillette & Assocs., Inc. 312-345-6500
MO Independence, Engrg. Svcs. Co. 816-254-3600
MO St. Louis, Engrg. Svcs. Co. 314-997-1515
OR Portland, Frank Jackson, Assoc. 503-292-2638
TX Dallas, Southwest Elctrn. Inds. 214-690-9881

EXEL MICROELECTRONICS, INC., Sub. of Exar Corp., 2150 Commerce Dr., San Jose, CA 95131, Tel: 408-942-9500, Telex: 171339, TWX: 910-338-2116; Empl.: 180 ..... **A•1751**

EXIDE CORP., 101 Gibraltar Rd., Horsham, PA 19044, Tel: 215-674-9500, TWX: 215-725-7397; Empl.: 2200

EXIDE ELCTRNS., 3201 Spring Forest Rd., Raleigh, NC 27604, Tel: 919-872-3020, Telex: 289968; FSC No.: 31795; Empl.: 900; *Sls. Mgr.:* Phil Tompkins

EXPRESS TEST CORP., 1161 D San Antonio Rd., Mountain View, CA 94043, Tel: 415-968-8818, Telex: 4942091; *Sls. Mgr.:* Frank S. Gavin

EXTECH INSTRUMENTS CORP., 150 Bear Hill Rd., Waltham, MA 02154, Tel: 617-890-7440, Telex: 940913; *Sls. Mgr.:* Robert M. Shipione

EYRING RESEARCH INST., INC., 1455 W. 820 N., Provo, UT 84601, Tel: 801-375-2434, TWX: 882000; FSC No.: 801-374-8339; Empl.: 350

E-Z-HOOK, Div. Tektest Inc., Box 450 - 225 N. Second Ave., Arcadia, CA 91006, Tel: 818-446-6175, TWX: 910-582-1614; FSC No.: 08505; Empl.: 23; *Sls. Mgr.:* C. Haskin; *Dist. Mgr.:* P. Wood

Fabricast, Inc.

FABRICAST, 2517 Seaman Ave., P.O. Box 3176, S. El Monte, CA 91733, Tel: 818-443-3247; FSC No.: 13345; Empl.: 8 ..... **B•1178-1183**

FAB-TEK INC., 68 Morgan Ave., Danbury, CT 06810, Tel: 203-743-3312; Empl.: 5

FACET ENTERPRISES, INC., Elmira, NY 14903, Tel: 607-737-8011, Telex: 93-2490, TWX: 510-252-1594; Empl.: 400; *Sls. Mgr.:* Gene Ebbrecht

FACET ENTERPRISES, Fluid Technology Group, 2225 E. Randol Mill Rd., Ste. 223, Arlington, TX 76011, Tel: 816-649-5597

FACTRON/SCHLUMBERGER, 299 Old Niskayuna Rd., Latham, NY 12110, Tel: 518-783-3600, TWX: 710-444-4968; Empl.: 126; *Sls. Mgr.:* Marvin Cox

FAGOR ELECTRONIC COMPONENTS, INC., Fagor Electrotecnica S. Coop., 8411 Canoga Ave., Canoga Pk, CA 91304, Tel: 818-718-2500, TWX: 910-494-1948, FAX: 818-341-2860; Empl.: 18,000; *Sls. Mgr.:* Marvin R. Zidel, VP Mktg.; *Dist. Mgr.:* Marvin R. Zidel, VP Mktg. ..... **A•2149**

Local Sales Offices & Reps

AZ Phoenix, More Sls. Co. Inc. 602-265-9201
CA Chatsworth, EFI-Elctrn. for Ind. 818-700-2664
FL Umatilla, Jim Slade Assocs., Ltd. 904-669-4738
GA Marietta, DeWitt Austin Co., Inc. 404-926-4943
IL Highland Pk., Bransky Sls. Co. 312-433-2375
IA Des Moines, SPS Assocs. Ltd. 515-225-0607
KS Olathe, SPS Assocs. Ltd. 913-764-4460
MI Grand Rapids, DEM Elctrn. Sls. 616-361-5414
MI Warren, DEM Elctrn. Sls. 313-575-9444
MO Earth City, SPS Assocs. Ltd. 314-291-0520
NE Panama, SPS Assocs. Ltd. 402-788-2536
NC Charlotte, DeWitt Austin Co., Inc. 704-334-0174
PA Harrisburg, Beil & Whitaker, Inc. 717-564-6900
TX Irving, Kite Elctrn. Sls. co. 214-986-0321
VA Arlington, Howard Golenpaul & Assocs. 703-525-5898

FAIRCHILD CAMERA & INSTR. CORP., Digital Div., 333 Western Avenue, So. Portland, ME 04106, Tel: 207-775-8700, Telex: 710-221-1980; *Sls. Mgr.:* Dan Bongatti; *Dist. Mgr.:* Brigid O'Rourke

FAIRCHILD CAMERA & INSTR. CORP., Linear Div., 313 Fairchild Dr., Mountain View, CA 94139, Tel: 415-962-4011, Telex: MVLD

FAIRCHILD SEMICONDUCTOR CORPORATION, 10400 Ridgeview Court, Cupertino, CA 95014, Tel: 408-864-6026, TWX: 910-379-5091, FAX: 408-253-2228; Empl.: 16,000; *Sls. Mgr.:* Jim Bolton; *Dist. Mgr.:* Mike Furman

FAIRCHILD SEMICONDUCTOR, M&HSL, 1111 39th Ave. S.E., Puyallup, WA 98373, Tel: 206-841-6700, Telex: 206-841-6723; *Sls. Mgr.:* Jim Brye

FAIRCHILD WESTON, DATA RECORDERS, P.O. Box 3041, Sarasota, FL 33578, Tel: 813-371-0811, TWX: 494-7160; FSC No.: GS-00K-8301-S0078; Empl.: 750; *Sls. Mgr.:* Ron Johnson ..... **D•1249**

Local Sales Offices & Reps

AZ Chandler, Vic Myers Assoc. 602-241-9324
CA Camarillo, Fairchild Weston Sys. 805-987-1827
CA Laguna Hills, Elotek Sys. 714-830-4856
CA Pleasanton, Secco Assoc. 415-484-1030
CO Denver, Vic Myers 303-629-9676
CT Higganum, Intersell 203-528-5357
FL Van Winkle Sls. Co. 904-862-2700
FL Winter Park, Wade Hoggs, Inc. 305-647-2226
MD Lanham, Sel-Tronics 301-731-8080
MA Burlington, Intersell 617-273-3844
MI Madison Heights, WKM Assocs. 313-588-2300
NJ Cedar Grove, KLS Assocs. 201-785-4450
NM Albuquerque, Vic Myers Assocs. 505-884-6878
NY Rochester, Scientific Dvcs. 716-334-2445
OH Dayton, WKM Assocs. 513-434-7500
PA Devon, Fairchild Weston Sys. 215-687-3220
PA Pittsburgh, WKM Assoc. 412-892-2953
TX Plano, Accudata 214-424-3567
UT West Jordan, Vic Myers Assocs. 801-964-6901
WA Bellevue, D.P.M., Inc. 206-747-3309

FAIRCHILD WESTON SYSTEMS, INC., CCD Imaging Division, 810 W. Maude Ave., Sunnyvale, CA 94086, Tel: 408-720-7600, TWX: 910-373-2110, FAX: 408-720-8438; *Sls. Mgr.:* Jim Johnson; *Dist. Mgr.:* Patricia A. Lippe

FAIRCHILD - WESTON - TELEMETRY, P.O. Box 3041, Sarasota, FL 33578, Tel: 813-377-5566, Telex: 4947160; FSC No.: 06141; Empl.: 825; *Sls. Mgr.:* F. V. Bud Hinkel

FAIR-RITE PRODS., PO Box J, Wallkill, NY 12589, Tel: 914-895-2055, TWX: 510-249-4819; FSC No.: 34899; Empl.: 200 +; *Sls. Mgr.:* B. G. Tolen ..... **C•1745**

Local Sales Offices & Reps

AL Huntsville, Macro-Mktg. Assocs. 205-883-9630
CA Anaheim, Micrometals 714-630-7420
CA Sunnyvale, Schwerin & Merrill Assocs. 408-735-7900
CO Littleton, TMC 303-773-0643
CT W. Hartford, R. S. Pettigrew & Assocs. 203-236-5891
FL New Smyrna Beach, J. Wetzel 904-423-5707
IL Wheaton, Charles D. Atwater Assocs. 312-653-5701
IN Indianapolis, Frank J. Campisano Co. 317-253-7651
MI Southfield, J. L. Montgomery Assocs. 313-358-2616
MN Bloomington, Holmes & Ladky Assocs. of Minn. 612-884-2125
NY Hempstead, Kahgan Sls. 516-538-2300
OH Cincinnati, F. J. Campisano & Assocs. 513-574-7111
PA Easton, Kendon Co. 215-253-3100
TX Dallas, S.E.I., Inc. 214-690-9881
VA Front Royal, Eltron Sls., Ltd. 703-635-7201
VA Roanoke, A. B. Kreger & Co. 703-989-4738
WA Bellevue, Quest Mktg., Inc. 206-747-9424
WI Milwaukee, Frank W. Ladky Assocs. .. 414-351-2112

FANCORT INDUSTRIES, INC., 31 Fairfield Place, W. Caldwell, NJ 07006, Tel: 201-575-0610, Telex: 130540; Empl.: 16; *Sls. Mgr.:* Ron Corey; *Dist. Mgr.:* Ron Corey

FAN-S CORP., See Qualtek Electronics Corp.

FARADAY ELECTRONICS, 749 N. Mary Avenue, Sunnyvale, CA 94086, Tel: 408-749-1900, Telex: 706738, FAX: 408-738-1671; Empl.: 85; *Sls. Mgr.:* Nick Antonopoulos

FARIA, THOMAS G., CORP., P.O. Box 983, Uncasville, CT 06382-0983, Tel: 203-848-9271, Telex: 4970991 TGF CORP; FSC No.: 09527; Empl.: 250; *Sls. Mgr.:* A. Knupp

FARINON DIV., Harris Corp., 1691 Bayport, San Carlos, CA 94070, Tel: 415-594-3000, Telex: 34-8491; *Sls. Mgr.:* George Woodruff

FARRAND CONTROLS, Div. of Farrand Industries, Inc., 99 Wall St., Valhalla, NY 10595, Tel: 914-761-2600, Telex: 646-640, FAX: 914-761-0405; Empl.: 120; *Sls. Mgr.:* George A. Quinn; *Dist. Mgr.:* George A. Quinn

FASCO INDUSTRIES, INC., Div. of Hawker Siddeley Grp. Plc., 601 North Federal Highway, Boca Raton, FL 33432, Tel: 305-368-0600, Telex: 51-5612; *Sls. Mgr.:* O. J. Binnette; *Dist. Mgr.:* Paul R. Reid

FASTEX, 195 Algonquin Rd., Des Plaines, IL 60016, Tel: 312-299-2222, TWX: 910-233-2786; FSC No.: 02768; *Sls. Mgr.:* Andy Flis; *Dist. Mgr.:* Denis Singery

FAST FEEDBACK TECHNOLOGIES, 1505 Aviation Blvd., Redoudo Beach, CA 90278, Tel: 213-379-6100; Empl.: 4; *Sls. Mgr.:* M. Lacas

FCM PLASTICS, Plastics Technologies Inc., 2555 Oak Industrial Dr. NE, Grand Rapids, MI 49505, Tel: 616-451-4502, TWX: 810-273-6038; *Sls. Mgr.:* Patrick K. Parsons

FDK
Fuji Electrochemical Co.,Ltd.

FDK AMERICA, INC., Fuji Electromechanical Co., Ltd., 17326 Edwards Rd., Ste. A-130, Cerritos, CA 90701, Tel: 213-404-1770, Telex: 18-1998, FAX: 213-404-2850; *Sls. Mgr.:* Yasu Yasutani ..... **A•1317, 1571, 1662-1663, 1752-1753, 1784;**

D•1442-1443, 1710-1712

Local Sales Offices & Reps

NJ Englewood Cliffs, FDK America, Inc. .. 201-567-1900

F-DYNE ELCTRNS., 449 Howard Ave., Bridgeport, CT 06605, Tel: 203-367-6431, TWX: 710-453-0087; Empl.: 175; *Sls. Mgr.:* Robert Furst

FEEDBACK, 620 Springfield Ave., Berkeley Hghts., NJ 07922, Tel: 201-464-5181; Empl.: 28; *Sls. Mgr.:* N. V. Wright

FEMA ELCTRNS. CORP., 12-6 Edgeboro Rd., E. Brunswick, NJ 08816, Tel: 201-238-1223, Telex: 299425 FEMA UR, FAX: 201-238-7981; Empl.: 10 to 20; *Sls. Mgr.:* Bob Cheng

FEMCO, INC., P.O. Box 26710 Parkmoor Sta., San Jose, CA 95159, Tel: 408-946-1188, Telex: 17-1618, TWX: 910-338-2290

FEME ELECTRONICS, INC., 5 Longwood Dr., S. Huntington, NY 11746, Tel: 516-385-4151, TWX: 910-240-4181, ESYLNK: 62773739 ..... **B•1351, 1606-1607**

Local Sales Offices & Reps

CA Maywood, Mgt. Mktg. & Sls. 213-560-5584
CA Mtn. View, Francisco & Assocs. 415-982-1717
IL Pk. Ridge, Bob Burns & Assocs. 312-823-9360
PA Huntigndon Valley, Marder Elctrn. Sls. 215-947-5650
WI West Bend, Bob Burns & Assocs. 414-334-3250

Local Distributors

AL Huntsville, Powell Elctrns. 205-539-2731
CA Chatsworth, Mil-Comm Distrs. 818-998-3111
CA Costa Mesa, Powell Elctrns. 714-754-1717
CA San Jose, Powell Elctrns. 408-943-9020
CA Santa Ana, Norstan Elctrns. 213-924-7651
CT Wallingford, Sager Elec. Supp. 203-265-4600
FL Ft. Lauderdale, Powell Elctrns. 305-972-4300
IL Chicago, Classic Comps. 312-272-9650
MD Columbia, Powell Elctrns. 301-621-4070
MA Hingham, Sager Elec. Supp. 617-749-6700
MA Westborough, Powell Elctrns. 617-366-6100
MN Minneapolis, Classic Comps. 612-944-1167
NJ Englewood, Powell Elctrns. 201-894-0800
NJ Oakland, Relay Specialties 201-337-1000
NJ Parsippany, Fabe Electro Sls. 201-299-1123
NY Hauppague, Sager Elec. Supp. 516-348-1300
NY Mt. Vernon, QAR Indl. Elec. 914-699-2224
NC Cary, Powell Elctrns. 919-467-1212
PA Philadelphia, Powell Elctrns. 215-365-1900
TX Irving, Powell Elctrns. 214-258-6841
WI Milwaukee, Marsh Elctrns. 414-475-6000
WI New Berlin, Classic Comps. 414-786-5300
WI Oshkosh, Elctrn. Inds. 414-235-8930

FENWAL, INC., Kidde, Inc., 400 Main St., Ashland, MA 01721, Tel: 617-881-2000; Empl.: 1000; *Sls. Mgr.:* Frank R. Shea

Local Sales Offices & Reps

AL Birmingham, Regal Controls, Inc. 205-967-5770
AL Daphne, Regal Controls, Inc. 205-626-1929
AR N. Little Rock, Jordan/Marlar/Hale, Inc. 501-378-0421
CA Oakland, Bellilove Co. Engrs. 415-658-9011
CA Van Nuys, Pacific Thermal Sls. 213-873-6262
CO Englewood, E & M Sls. Inc. 303-761-6202
CT Middletown, Dittman & Greer 203-347-4655
FL Miami, Ludlum Assocs. 305-592-6523
FL Orlando, Ludlum Assocs. Co. 305-894-7761
GA Woodstock, Hile Controls of Georgia 404-928-6844
IL Itasca, Tourtelot Co. 312-250-9300
IN Indianapolis, TEMCO, Inc. 317-831-3007
IA Bettendorf, Volco Co. 319-326-5233
KS Overland Pk., Richard Greene Co. 913-492-6886
LA Baton Rouge, Flowmaster, Inc. 504-293-7315
MD Baltimore, Ives Equip. Corp. 301-597-9000
MA Ashland, Fenwal Inc., N.E.D.O. 617-881-4800
MI Grand Rapids, Smith Instr. Grand Rapids 616-245-1195
MI Midland, Smith Instr. & Equip. 517-496-9250
MI Warren, Smith Instr. & Equip. 313-755-3110
MN Minneapolis, Volco Co. 612-933-6631
MO St. Louis, Richard Greene Co. 314-994-0222
NE Omaha, Volco Co. 402-330-6700
NJ Clifton, Faber Associates 201-773-8900
NM Albuquerque, E & M Sls., Inc. 505-883-8955
NY Albany, The Robert F. Lamb Co. 518-869-3355
NY Buffalo, The Robert F. Lamb Co. 716-874-4900
NY Rochester, The Robert F. Lamb Co. 716-323-1250
NY Syracuse, The Robert F. Lamb Co. 315-455-2469
NC Matthews, W. K. Hile Co., Inc. 704-847-9125
OH Cincinnati, Anderson-Bolds, Inc. 513-528-5680
OH Cleveland, Anderson-Bolds, Inc. 216-229-4700
OH Toledo, Smith Instr. & Equip. 419-865-0388
OH Worthington, Anderson-Bolds, Inc. 614-885-3933
OK Tulsa, Driscoll Automatic Control 918-663-6625
OR Portland, Tek-Electric Control 503-246-5451
PA King of Prussia, Ives Equip. Corp. 215-337-4660
PA Pittsburgh, Gilson Engrg. Sls. 412-369-0100
PA York, Ives Equip. Corp. 717-846-8381
TN Knoxville, Hile Controls of TN 615-584-0208
TN Memphis, Jordan/Marlar/Hale, Inc. ... 901-452-7441
TN Nashville, Jordan/Marlar/Hale, Inc. ... 615-361-3006
TX Dallas, Don Shuhart Co., Inc. 214-349-6000
TX Houston, McClanahan-Pruett Inc. 713-460-9336
VA Chester, Hile Controls of VA 804-796-3001
WA Seattle, Tek-Elec. Control 206-243-6007
WV Charleston, Gilson Engrg. Sls. 304-342-0012
WI Milwaukee, Gordon Hatch Co. 414-671-6550
Can Pointe Claire, Que., Chromalox Canada 514-697-1131
Can Rexdale, Ont., Chromalox Canada 416-743-8000

Local Distributors

AL Birmingham, Indl. Elec. Supp. Co. 800-633-6042
AL Birmingham, M-G Elctrns. & Equip. 205-328-4525
AR Little Rock, Drives & Elec. 501-568-8800
CA Oakland, Bellilove Co. Engrs. 415-658-9011
CA Van Nuys, Pacific Thermal Sls. 213-873-6262
CO Englewood, E & M Sls., Inc. 303-761-6202
CT Hartford, L. E. Whelan Co. 203-246-5694
CT Middletown, Dittman & Greer, Inc. 203-347-4655
FL Miami, Ludlum Assocs. Co. 305-592-6523
FL Orlando, Brownell Electro, Inc. 305-843-6770
IL Arlington Hgts., Ogden Mfg. Co. 312-593-8050
IL Itasca, Tourtelot Co. 312-250-9300
IN Indianapolis, Loy Instrument Inc. 317-356-6318
LA Baton Rouge, Elctrl. Whlsrs. 504-291-6631
LA Harahan, M-G. Elctrns. & Equip. 504-733-0070
MD Mt. Airy, Thermal Dvcs. Div. 301-831-7550
MA Ashland, Fenwal Inc., N.E.D.O. 617-881-4800
MA Danvers, Hotwatt, Inc. 617-777-0070
MA Methuen, Merrimac Indl. Sls. 617-683-6006
MA Springfield, F. M. Keefe Co., Inc. 413-781-0530
MI Comstock Pk., Mor Elec. Heating 616-784-1121
MI Grand Rapids, Smith Instr. Grand Rapids 616-245-1195
MI Muskegon, Fitzpatrick Elec. Supp. 616-722-6621
MI Troy, Instr. Specialties Inc. 313-689-0176
MI Troy, Unistrut-Teal Service Co. 313-689-3000
MI Warren, Smith Instr. & Equip. 313-755-3110
MN Minneapolis, Elec. Scientific 612-933-6631
MO St. Louis, Richard Greene Co. 314-994-0222
NJ Clifton, Faber Assocs., Inc. 201-773-8900
NY Buffalo, KOM Lamb Co. 716-874-3530
NY Syracuse, KOM Lamb Co. 315-455-7436
NC Matthews, Hile Equip. Co. 704-847-9125
OH Cleveland, Anderson-Bolds, Inc. 216-229-4700
OH Columbus, McKeever Elec. Supp 614-221-3168
OH Toledo, F. N. Cuthbert, Inc. 419-385-0881
OK Tulsa, Paul King Co. 918-836-2501
OR Portland, Tek-Elec. Control 503-246-5451
PA King of Prussia, Ives Equip. Corp. 215-337-4660
PA Pittsburgh, Edwin L. Wiegand Co. 412-242-6400
PA Pittsburgh, Gilson Engrg. Sls. 412-369-0100
TN Knoxville, Phillips Indl. Controls 615-584-0208
TN Memphis, Brownell Electro, Inc. 901-795-8487
TN Memphis, Controls Panels Inc. 901-452-6396
TN Memphis, Thermal Equip. Sls. 901-452-4516
TN Nashville, Brownell Instrs. & Controls 615-889-8230
TX Dallas, Don Shuhart Co., Inc. 214-349-6000
TX Dallas, INOTEK Corp. 214-243-7000
TX Houston, Gaumer Co., Inc. 713-460-9336
TX Odessa, Marklyn Controls & Supp. Co. 915-337-6668
UT Salt Lake City, Stuart Elec. Supp. 801-466-8603
VA Chester, Virginia Control Equip. Co. .. 804-796-3001
WI Milwaukee, CD Controls Division 414-671-6550
Can Rexdale, Ont., Chromalox Canada 416-743-8000



FENWAL ELECTRONICS/APD, Kidde, Inc., 450 Fortune Blvd., Milford, MA 01757, Tel: 617-478-5255, Telex: 299550; Empl.: 500; *Sls. Mgr.:* W. M. Minnucci; *Dist. Mgr.:* Chester Tricca ..... **B•1738**

Local Sales Offices & Reps

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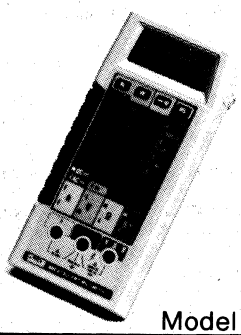
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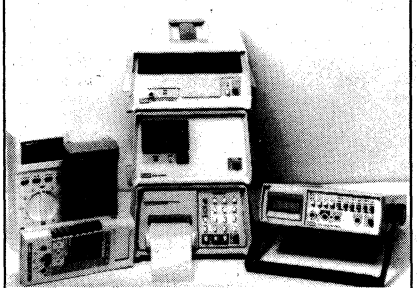
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WA Bellevue, Underwood & Hanify 206-643-1793

FRAZIER, 1930 Valley View La., Dallas, TX 75234, Tel: 214-241-3441; Empl.: 20; *Sls. Mgr.:* W. A. Wadkins

FREDERICK COMPONENTS INTL., 20806 Plummer St., Chatsworth, CA 91311, Tel: 818-882-0868, 800-354-0660, Telex: 691531 ..... **C•1635**

Local Sales Offices & Reps
AL Huntsville, Twentieth Century Mktg. ... 205-533-9281
CA Chatsworth, Frederick Comps. Int'l. ... 818-882-0868
CT Milford, Todino Engrg. Sls. Inc. 203-874-6643
IL Park Ridge, Bob Burns & Assocs. 312-823-9360
IA Cedar Rapids, Barnes Midwest Sls. ... 319-393-9790
KS Overland Park, Barnes Midwest Sls. .. 913-341-9317
KS Overland Pk., Barnes Midwest Sls. 913-469-9688
MA Needham Hgts., Todino Engrg. Sls. Inc. 617-444-7925
MN Chanhassen, Barnes Sls. Assocs. 612-934-2907
MN Maple Grove, EPI 612-425-6500
NJ Medford, Jack McCoy, Inc. 609-953-0770
NY Hilton, Charles Avery Assocs. 716-271-2132
NY Rye, Charles Avery Assocs. 914-967-7610
OH Dayton, Electro-Com 513-898-5140
PA McKean, Ecco Elctrn. Sls. 814-476-1376
PA Murrysville, Ecco Elctrn. Sls. 412-795-6934
Can Rexdale, Ont., Bestec Elctrns. 416-674-1330

Local Distributors
CA Sacramento, Sacramento Elctrns. 916-441-4821
CA Santa Ana, Advanced Computer 714-558-8813
GA Fayetteville, Frankland 404-461-4026
IL Niles, Joseph Elctrns. 312-297-4200
MA Needham, You Do It Elctrn. Ctr. 617-449-1005
NH Hampstead, Astrum Elctrns., Inc. 603-329-5656
NJ Medford, Jack McCoy, Inc. 609-953-0770
NY Rye, Electro/Mec 914-967-7610
WI Oshkosh, Elctrn. Inds. 414-235-8930

FREDERICK ELECTRONICS CORP., 7630 Hayward Rd., P.O. Box 502, Frederick, MD 21701-0502, Tel: 301-662-5901, Telex: 197639, 248862; FSC No.: 15230; Empl.: 350; *Sls. Mgr.:* John W. Seniff

FREED TRANSFORMER, 1718 Weirfield St., Ridgewood, NY 11385, Tel: 212-386-1300; FSC No.: 73386; Empl.: 200; *Sls. Mgr.:* M. Salzberg ..... **A•2249-2251; D•1252**

Local Sales Offices & Reps
CA San Gabriel, R. G. Moye Co. 213-283-1669
CO Denver, Nelson Co. 303-573-1516
CT Marlborough, Precision Sls. 203-295-0580
GA Smyrna, B-C. Elctrn. Sls. 404-436-5169
MD Baltimore, B. White & Co. 301-484-5400
NY Pittsford, Noeth-Honsinger Assoc. 716-586-9002
NY White Plains, QED Elctrns. 914-946-3424
OH Cleveland, Scott Elctrns. 216-473-5050
OH Trotwood, I. Atkind & Assoc. 513-837-4750
PA King of Prussia, Freedman-Malta Assoc. 215-337-9211
EXP NY, Plainview, Morhan Exp. 516-293-5582



FREQUENCY AND TIME SYSTEMS, INC., DATUM, INC., 34 Tozer Rd, Beverly, MA 01915, Tel: 617-927-8220, Telex: 94-0518 FTS BVLY; FSC No.: 56219; Empl.: 126; *Sls. Mgr.:* Martin W. Levine ..... **D•1253**

Local Sales Offices & Reps

AL	Huntsville, Lee Assocs.	205-533-5896
CA	Anaheim, Datum Timing	714-533-6333
CA	Santa Clara, Ward-Davis Assocs.	408-245-3700
FL	Largo, Electrocraft	813-530-4749
IL	Park Ridge, Electronic Instr. Assocs.	312-298-2290
IN	Indianapolis, Electronic Instr. Assocs.	317-257-7231
IA	Hiawatha, Gassner & Clark Co.	319-393-5763
MD	Rockville, Creative Mktg. Assocs., Ltd.	301-251-4100
MA	Lexington, Del-Con Sls.	617-862-1118
MN	Minneapolis, Electronic Instr. Assocs.	612-374-5628
NJ	Haddonfield, G. L. Williams Assocs.	609-428-6060
NM	Albuquerque, BFA Corp.	505-292-1212
NY	Bayside, Robert Diamond, Inc.	718-423-7330
NY	Liverpool, R & D Assocs.	315-457-0100
OH	Centerville, Micro Sls. Corp.	513-433-8171
TX	Houston, Lear Assocs., Inc.	713-488-7893
TX	Richardson, Lear Assocs., Inc.	214-231-5388
WA	Seattle, Comptronics	206-284-4842

FREQUENCY CONTROL PRODUCTS, INC., American Time Products Div., 61-20 Woodside Ave., Woodside, NY 11377, Tel: 718-458-5811, TWX: 710-581-0014; FSC No.: 59559;03040; Empl.: 150; *Sls. Mgr.:* A. Caggiano



FREQUENCY DEVICES, INC., 25 Locust St., Haverhill, MA 01830, Tel: 617-374-0761, TWX: 710-347-0314; Empl.: 40; *Sls. Mgr.:* Frank J. DeGiso ..... **A•1670-1671**

Local Sales Offices & Reps

AL	Huntsville, Lee Assocs. Mid-South, Inc.	205-533-5896
CA	Moreno Valley, Lundstrom Sls.	714-247-5310
CA	San Ramon, Tech. Consultants, Inc.	415-830-0829
FL	Orlando, Digital Analog Intl. Sls.	305-299-7754
IL	Chicago, Kingston Comps.	312-477-7800
MD	College Park, Ken Geary & Son, Inc.	301-935-5055
MA	Holbrook, McLellan Assocs.	617-767-4771
NJ	East Brunswick, Winch Sls. Assocs.	201-613-1515
NY	DeWitt, DB Environmental, Inc.	315-446-0220
NY	Roslyn Heights, Winch Sls. Assocs.	516-681-3163
TX	Houston, TCI Elctrns.	713-774-5019
Can	Don Mills, Ontario, R. D. Assocs.	416-444-0959



FREQUENCY ELCTRNS., 55 Charles Lindbergh Blvd., Mitchel Field, NY 11553, Tel: 516-794-4500, TWX: 510-223-0418; Empl.: 350; *Sls. Mgr.:* John Cuthbertson ..... **A•1394-1395**

Local Sales Offices & Reps

CA	Mountainview, Disman-Baker	415-969-3010
FL	Orlando, Truex Assoc.	305-859-2160
MD	Hunt Valley, Marktron	301-628-1111
MD	Rockville, Marktron	301-251-8990
MA	Cochituate, High-Tech Sls.	617-653-3838
NJ	East Windsor, Micro Lambda	609-443-3113
NJ	W. Orange, E-F Techn. Sls.	201-731-7203
NY	Huntington Sta., E-F Techn. Sls.	516-549-1818
OH	Cleveland, Tiby Co.	216-371-5335
TX	Houston, Spectra Sls. Corp.	713-783-8333
TX	Richardson, Spectra Sls. Corp.	214-234-3600
VA	Charlottesville, Marktron	804-973-5874
EXP	NY, New York, Henley Elctrns.	212-986-5544

FREQUENCY SELECTIVE NETWORKS, 69-20 Garfield Ave., Woodside, NY 11377, Tel: 718-424-7500; FSC No.: 56662; Empl.: 30; *Sls. Mgr.:* Michael L. Izzolo ..... **A•1396**

Local Sales Offices & Reps

FL	Ft. Lauderdale, Donato Assoc.	305-733-3450
MN	Bloomington, 2M Sls.	612-888-7414
NY	Huntington, Carnes Assocs.	516-694-1600
OH	Dayton, Aschbacher Assocs.	513-252-7785

FREQUENCY SOURCES, KSW Semiconductor Div., 16 Maple Rd., Chelmsford, MA 01824, Tel: 617-256-8101, TWX: 710-343-0404; FSC No.: 50101; Empl.: 80

FREQUENCY WEST, INC., Subsidiary of LORAL Corporation, 214 Devcon Dr., San Jose, CA 95112-4210, Tel: 408-436-4500, TWX: 910-338-0163; FSC No.: 8F150; Empl.: 130; *Sls. Mgr.:* John Tarvin

Local Sales Offices & Reps

AZ	Scottsdale, Thorson Desert States, Inc.	602-998-2444
CA	Mission Hills, Detomasi & Grupp, Inc.	818-365-8285
CA	San Diego, Detomasi & Grupp, Inc.	619-277-0178
CA	San Jose, MCH Assocs.	408-246-7330
CA	Torrance, Detomasi & Grupp Inc.	213-618-8898
CO	Aurora, Thorson Desert States, Inc.	303-671-7344
CT	Norwalk, Nemarco Assocs.	203-853-2618
FL	Clearwater, Southeastern Comp. Sls. Inc.	813-447-1911
FL	Indian Harbour Beach, Southeastern Comp. Sls. Inc.	305-773-3767
GA	Atlanta, Southeastern Comp. Sls. Inc.	404-451-9620
IL	Arlington Hgts., Dytec/Central, Inc.	312-394-3380
IN	Indianapolis, Dytec/Central, Inc.	317-297-5988
MD	Laurel, Electronic Mktg. Assocs.	301-792-9300
MO	Maryland Hgts., Dytec/South, Inc.	314-739-0665
NH	Merrimack, John Callahan & Assocs., Inc.	603-424-5700
NM	Albuquerque, Thorson Desert States, Inc.	505-293-8555
NY	Skaneateles, Robtron, Inc.	315-685-5731
PA	Plymouth Meeting, Elctrn. Mktg. Assocs.	215-828-7400
TX	Dallas, Dunbar Assocs., Inc.	214-239-7151
WA	Bellevue, Arva-Hudson	206-455-0773
WI	Brookfield, Dytec/Cen., Inc.	414-792-0320

FRESNEL OPTICS, Div. of Alliance Tool Corp., 1300 Mt. Read Blvd., Rochester, NY 14606, Tel: 716-647-1140, Telex: 97-8322; *Sls. Mgr.:* Helmut Walter

FRONT PANEL DEVICES, INC., 38-7 Raymor Ave., Ronkonkoma, NY 11779, Tel: 212-471-9800, Telex: 645-580; Empl.: 20; *Sls. Mgr.:* Maureen Quinn

FSI/FORK STANDARDS, INC., 666 Western Ave., Lombard, IL 60148, Tel: 312-231-3511, 312-932-9380; FSC No.: 14986; Empl.: 20; *Sls. Mgr.:* Alfredo J. Ramirez; *Dist. Mgr.:* A. E. Toht

FTS SYSTEMS, INC., Rte. 209, P.O. Box 158, Stone Ridge, NY 12484, Tel: 800-824-0400, TWX: 510-247-0547, FAX: 914-687-7481; Empl.: 100 +; *Sls. Mgr.:* Brian Adams

FUJI ELECTRIC CORP. OF AMERICA, 727 W. 7 St., Ste. 235, Los Angeles, CA 90017, Tel: 213-622-4490, Telex: 677318; FSC No.: 213-488-9382; Empl.: Yasuko Suzuki; *Sls. Mgr.:* Atsuo Noguchi; *Dist. Mgr.:* Masanas Deguchi

FUJITSU AMERICA, INC, Storage Products Div., 3055 Orchard Dr., San Jose 95134, Tel: 408-432-1300, TWX: 910-338-2193; *Sls. Mgr.:* Chuck Priddy; *Dist. Mgr.:* Buffy Fee ..... **D•1084-1089**

Local Sales Offices & Reps

CA	Irvine, Fujitsu America	714-553-1250
CA	Sherman Oaks, Fujitsu America	818-905-1985
GA	Atlanta, Fujitsu America	404-953-0130
IL	Schaumburg, Fujitsu America	312-310-4434
MA	Burlington, Fujitsu America	617-229-6310
MN	Bloomington, Fujitsu America	612-835-0573
OR	Portland, Fujitsu America	503-640-6665
PA	Malvern, Fujitsu America	215-648-3958
TX	Austin, Fujitsu America	512-335-8263
Can	Mississauga, Fujitsu Canada	416-673-8666

Local Distributors

AL	Huntsville, Gentry Assocs.	205-837-0692
AZ	Scottsdale, Frontier Sys.	602-998-4438
CA	Anaheim, Dex Corp.	714-758-0424
CA	Cupertino, Western Microtechnlg.	408-725-1660
CA	Santa Clara, Wyle Laboratories	408-727-2500
CA	Sunnyvale, Dex Corp.	408-985-8181
CO	Englewood, R2 Mktg.	303-799-9292
CT	Milford, S&S Elctrns.	203-878-6800
FL	Ft. Lauderdale, Gentry Assocs.	305-791-8405
GA	Atlanta, Gentry Assocs.	404-998-2828
IL	Elmhurst, Fast Access	312-530-2450
IA	Cedar Rapids, Data Link	314-395-0245
LA	Gretna, Gentry Assocs.	504-367-3975
MD	Gaithersburg, Mesa Technlg.	301-948-4350
MA	Lowell, S&S ELctrns	617-273-0115
MI	Detroit, Cranel, Inc.	313-855-0166
MN	Minneaplis, Datalink	612-944-3456
NE	New Port News, Mesa Technlg.	804-873-0955
NJ	Cedar Knowles, S&S Elctrns.	201-538-8004
NJ	Summit, Hopkins Assocs.	201-273-2770
NY	Rochester, Cameron Computers	716-427-8190
OH	Cleveland, Cranel, Inc.	216-589-4744
OH	Columbus, Cranel, Inc.	614-433-0045
OK	Tulsa, Dallas Digital	918-622-5708
OR	Beaverton, Western Microtechnlg.	503-640-6000
PA	W. Conshocken, Hopkins Assocs	215-828-7191
TX	Houston, Dallas Digtal	713-469-7151
TX	Plano, Dallas Digital	214-424-2800
UT	Salt lake, R2 Mktg.	801-595-0631
VT	S. Burlington, S&S Elctrns	802-863-3923
WA	Redmond, Western Microtech	206-453-8300

FUJITSU COMPONENTS OF AMERICA, 3320 Scott Blvd., Santa Clara, CA 95054, Tel: 408-727-1700, TWX: 910-338-0190; FSC No.: FAX 408-980-1042; Empl.: 40; *Sls. Mgr.:* Jack Foster (acting); *Dist. Mgr.:* Hal Mumma ..... **B•1363-1382; C•1236-1281**

Local Sales Offices & Reps

AK	Scottsdale, Thorn Luke Sls., Inc.	602-941-1901
CA	San Diego, Earle Assocs., Inc.	619-278-5441
CA	Santa Clara, Norcomp	408-727-7707
CA	Tustin, Hi-Tech Rep Co.(HTRC)	714-730-9561
CA	Westlake Village, Hi-Tech Rep Co.(HTRC)	818-706-2916
CO	Golden, Candal	303-233-0155
CT	Cheshire, Connecticut Applied Technlg.	203-272-6564
FL	Altamonte Springs, Semtronics Assocs.	305-831-8233
FL	Clearwater, Semtronics	813-461-4675
FL	Ft. Lauderdale, Semtronics	305-831-2484
GA	Lawrenceville, Tek-Rep Mktg. Inc.	404-963-1600
IL	Highland Park, Brensky Sls.	312-433-2375
IA	Cedar Rapids, R.W. Kunz	319-396-5386
KS	Prairie Village, R.W. Kunz and Assocs.	913-648-3535
MD	Baltimore, Comp. Sls. Inc.	301-484-3647
MA	Burlington, Mill-Bern Assocs., Inc.	617-273-1313
MI	Farmington Hills, W. R. Hummon Assocs.	313-474-0661
MN	Burnsville, Electromec Sls., Inc.	612-894-8200
MO	St. Louis, R.W. Kunz	314-966-4977
NJ	Cedar Knolls, Tech. Applications & Mktg.	201-285-9094
NJ	Marlton, BGR Assocs.	609-983-1020
NM	Albuqueque, F.P. Sls.	605-345-5553
NY	Rochester, H.C. Johnson Agy.	716-586-0777
NC	Charlotte, Robert W. Chapman Co.	704-525-2421
NC	Raleigh, Robert W. Chapman Co.	919-782-2624
OH	Columbus, McFadden Sls. Inc.	614-761-3177
OR	Beaverton, L-Squared Ltd.	503-644-8555
PA	Glenshaw, H.C. Johnson Agy.	412-487-1246
TX	Carrollton, Tech. Mktg. Inc. (TMI)	214-387-3601
TX	Houston, Tech. Mktg. Inc.	713-783-4497
TX	Round Rock, Tech. Mktg.	512-244-2291
UT	Bountiful, Anderson Assocs.	801-292-8991
WA	Seattle, L-Squared Ltd.	206-562-0641
WI	Cedarburg, Bransky Sls.	414-377-6837
Can	Vancouver, Davetek Mktg.	604-430-3680

Local Distributors
See Schweber &/or Marshall in your local city.

FUJITSU MICROELECTRONICS, INC., Sub. of Fujitsu Limited, 3320 Scott Boulevard, Santa Clara, CA 95054-3197, Tel: 408-562-1000, TWX: 910-338-0190; FSC No.: 408-980-1047; Empl.: 350; *Sls. Mgr.:* Rich Christopher; *Dist. Mgr.:* Dan Buist

FURANE PRODS. CO./ISOCHEM OPERS., A Sub. of Rohm & Haas, 99 Cook St., Lincoln, RI 02865, Tel: 401-723-2100, Telex: 845-247, TWX: 710-670-5335; Empl.: 26; *Sls. Mgr.:* W. Lott

FURMAN SOUND, INC., 30 Rich St., Greenbrae, CA 94904, Tel: 415-927-1225, Telex: 230199 SWIFTUR; Empl.: 22; *Sls. Mgr.:* Joe Desmond; *Dist. Mgr.:* Joe Desmond

FURNAS ELEC., 1197 McKee St., Batavia, IL 60510, Tel: 312-879-6000, Telex: 72-0458; Empl.: 1360; *Sls. Mgr.:* R. Doty; *Dist. Mgr.:* R. Lanser

FUSECOM, 14864 NE 95th St., Redmond, WA 98052, Tel: 206-881-2442; *Sls. Mgr.:* Bruce Barndt

Distributor

FUSES UNLIMITED, 9300 Mason Av., Chatsworth, CA 91311, Tel: 818-882-1515; Empl.: 35; *Sls. Mgr.:* Bruce Barndt; *Dist. Mgr.:* Pat White ..... **B•1244**

FUSION INC., 4658 E. 355th. St., Willoughby, OH 44094, Tel: 216-946-3300, Telex: 98-0445; Empl.: 85; *Sls. Mgr.:* Raymond C. Yuhasz

GABRIEL ELCTRNS., Box 70, Scarborough Indl. Pk, Scarborough, ME 04074, Tel: 207-883-5161, Telex: 95-0113; Empl.: 225; *Sls. Mgr.:* D. B. Crisman

GALILEO ELECTRO-OPTICS CORP., Galileo Pk., Sturbridge, MA 01518, Tel: 617-347-9191, TWX: 710-347-1190; FSC No.: 28719; Empl.: 350; *Sls. Mgr.:* Lawrence T. Guzowski

GALIL MOTION CONTROL, INC., 1054 Elwell Ct, Palo Alto, CA 94303, Tel: 415-964-6494, Telex: 171409; Empl.: 10; *Sls. Mgr.:* Lisa Wade

GALITE, 2 Tower Dr., Wallingford, CT 06492, Tel: 203-265-7126, TWX: 710-476-0764; FSC No.: 56447; *Sls. Mgr.:* James W. Campbell, Jr.

GAMBLE, CHARLES T., INDS., 605 Perkins La., Delanco, NJ 08075, Tel: 609-461-1900, FAX: 609 461-8216; Empl.: 150; *Sls. Mgr.:* Chuck Gamble

GAMMA HIGH VOLTAGE RESCH. INC., 30 N. MacQuesten Pkwy., Mt. Vernon, NY 10550, Tel: 914-667-5050, FAX: 914-667-5225 ..... **D•1714-1717**

Local Sales Offices & Reps

CA	Pasadena, A-F Sls. Engrg.	213-681-5631
CA	Santa Cruz, Le Rep	408-458-0667
CT	Madison, Omni Rep	203-421-4561
MA	Wakefield, Omni-Rep	617-245-4511
NJ	Nutley, Irwin Brill Sls.	201-667-0653
NM	Albuquerque, Cleveland Entprs.	505-265-7893

GAMMA SCIENTIFIC INC., 3777 Ruffin Rd., San Diego, CA 92123, Tel: 619-279-8034, Telex: 69-7938; Empl.: 65; *Sls. Mgr.:* G.C. Unangst

GANDALF DATA INC., Gandalf Technologies Inc., 1020 S. Noel Ave., Wheeling, IL 60090, Tel: 312-541-6060, TWX: 910-651-4951; Empl.: 350+; *Sls. Mgr.:* Michael Salustri

GANDALF TECHNOLOGIES, INC, See Gandalf Data, Inc.

GAP INSTR., 40 Oser Ave., Hauppauge, NY 11787, Tel: 516-273-0909, TWX: 510-227-6237; FSC No.: 00607; Empl.: 50

GARDINER SOLDER CO., Div. of Gardiner Metal Co., 4820 S. Campbell Ave., Chicago, IL 60632, Tel: 312-847-0100, TWX: 910-221-2510; Empl.: 100; *Sls. Mgr.:* John A. Seyda

GAR ENTERPRISES, 2029 N. Lincoln Ave., Pasadena, CA 91103, Tel: 818-798-0785; Empl.: 45

GARNER GLASS CO., 177 S. Indian Hill Blvd., Claremont, CA 91711, Tel: 714-624-5071; Empl.: 50; *Sls. Mgr.:* Joseph C. Hyatt

GARRY MFG. CO., DIV. OF BRAND-REX CO., 9 Queen Anne Ct., Laghorne, PA 19047, Tel: 215-949-2300; Empl.: 250; *Sls. Mgr.:* Tom Malek; *Dist. Mgr.:* Bob D'Autrachy

GASKET INTL. INC., 49 Ackerman St., Bloomfield, NJ 07003, Tel: 201-338-6814; Empl.: 5; *Sls. Mgr.:* Russell L. Steinman

GATES, GEO. W., & CO., INC., 1209 Hempstead Tpke., Franklin Sq., NY 11010, Tel: 516-352-2904; Empl.: 10; *Sls. Mgr.:* T. E. Schulz, Jr

GATES ENERGY PRODUCTS, P.O. Box 114, Gainesville, FL 32602, Tel: 904-462-3911, TWX: 810-836-8500; Empl.: 2700; *Sls. Mgr.:* C. W. Garstang; *Dist. Mgr.:* J. E. Ferrell ..... **D•1444-1451**

Local Sales Offices & Reps

CO	Denver	303-744-4806
CT	Meriden	203-238-6812
GA	Atlanta	404-458-8755
IL	Des Plaines	312-827-9130

Local Distributors

AL	Huntsville, REMCO	205-533-3763
AK	Anchorage, Revl Com. & Sys.	907-349-8790
AZ	Phoenix, Electro-Mktg. Div.	602-991-0110
CA	Los Angeles, Battery Specialties	213-437-1809
CA	Mountain View, Energy Sls.	415-969-0800
CA	San Diego, Tauber Elctrns.	619-274-7242
CA	San Francisco, Rose Elctrns.	415-348-0483
CA	San Jose, Powell Elctrns.	408-943-9020
CA	Van Nuys, NESCO	818-781-0505
CO	Denver, Shelley-Ragon Eletronics	303-744-3601
FL	Miami, Electronic Equipment	305-871-3500
GA	Atlanta, A. P. Sls.	404-263-0421
IL	Chicago, Joseph Elctrns.	312-297-4200
IL	Chicago, LCOMP, Inc.	312-628-1400
IL	Chicago, Power-Pak, Inc.	312-966-6000
MD	Baltimore, Harco	301-838-7990
MD	Beltsville, Mark Elctrns.	301-595-5040
MD	Rockville, Capitol Radio	301-881-2270
MA	Boston, Adcour	617-784-8123
MI	Detroit, A. P. Sls.	313-229-6550
MN	Minneapolis, Stark Elctrns.	612-332-1325
MO	Kansas City, LCOMP, Inc.	816-221-2400
MO	St. Louis, LCOMP, Inc.	314-291-6200
NJ	Clifton, Engineered Assemblies	201-340-0600
NY	Buffalo, Summit	714-884-3450
NY	Long Island, TNR Tech.	516-242-4800
NY	Maline, Aquas Elctrns.	716-546-5373
NC	Winston-Salem, Kirkman Elctrns.	919-722-9131
OH	Cincinnati, Heldden Sls.	513-793-7027
OH	Columbus, Promark	614-876-8885
OR	Portland, Micro Power Elctrns.	503-694-5353
PA	Philadelphia, Powell Elctrns.	215-365-1900
TX	Dallas, Norvell Elctrns.	214-233-0020
TX	Houston, Southwest Elctrns.	713-240-4000
UT	Salt Lake City, Standard Supp. Co.	801-486-3371
WA	Seattle, Energy Sls.	206-883-2343
WA	Seattle, Priebe Electronics	206-821-4695

GAVITT WIRE & CABLE, Brookfield, MA 01506, Tel: 617-867-6476; Empl.: 75

GAYNOR ELECTRIC CO., 135 South Main St, P.O. Box 316, Thomaston, CT 06787-0316, Tel: 203-283-4388; Empl.: 50; *Sls. Mgr.:* John Swanson; *Dist. Mgr.:* John Swanson

Local Sales Offices & Reps

AR	N. Little Rock, Indl. Heaters & Controls	501-771-1100
CA	Chatsworth, Porter Co.	818-700-0808
CA	Santa Cruz, Le Rep	408-458-0667
CT	Glastonbury, Barton Assocs.	203-633-9417
FL	Deerfield Bch., Newell-Hynes Assocs.	305-429-3207
GA	Atlanta, Electro Sls.	404-394-1122
IL	Elk Grove Village, Control Sls.	312-595-2110
KY	Edgewood (Ft. Mitchell), ELECCO	606-341-0330
MI	Brighton, A. P. Assocs.	313-229-6550
MN	St. Louis, Lestronix	612-926-8466
MO	Bridgeton, Dy-Tronix, Inc.	314-291-4777
NJ	Mountain Lakes, P. Tutschek Assocs.	201-335-2029
OH	Dayton, Thompson & Assocs.	513-435-7733
OH	Mentor, Appliance Elctrns.	216-257-6019
VA	Sterling, Beacon North	703-478-2480
WI	Thiensville, Control Sls.	414-242-4580

GC ELECTRONICS, Household International, 1801 Morgan St., P.O. Box 1209, Rockford, IL 61105-1209, Tel: 815-968-9661, Telex: 383956 GC Elect; Empl.: 360; *Sls. Mgr.:* Raymond D. Camacho; *Dist. Mgr.:* Vic Giovingo

GEBEX CORPORATION, 10500 Ridgeview Ct, Cupertino, CA 95014, Tel: 408-973-1137, FAX: 408-973-1436; Empl.: 35

GECO, 145 Penn St., Millheim, PA 16854, Tel: 814-349-5656; Empl.: 21

GEMINI, 103 Mensing Way, Cannon Falls, MN 55009, Tel: 507-263-3957; *Sls. Mgr.:* Gary Pearson ... **C•1052-1053**

Local Sales Offices & Reps

AR	North Little Rock, Leo Barker Co.	501-834-2537
CA	Orange, XBX Sls., Inc.	714-998-8200
CA	San Diego, Qualtronics	619-560-8955
CA	San Jose, Gemini, Inc.	408-280-7710
CO	Broomfield, Conners Co.	303-466-9628
FL	Oviedo, Tech. Sls. & Applications, Inc.	305-365-2233
GA	Lilburn, Tech. Sls. & Applications, Inc.	404-925-1276
IL	Palatine, JRS Assocs.	312-991-6626
IN	Noblesville, Century Elctrns.	317-849-2026
MD	Glen Burnie, Freedman-Malta Assocs.	301-837-3155
MA	Brookline, Harman Assocs.	617-232-6687
MI	Dearborn, Pitcher-Poulin, Inc.	315-582-5450
MN	Bloomington, Heil's Temi	612-854-2001
MO	St. Louis, Harris Hanson Co.	816-763-6200
NY	Buffalo, Leonard D. Allen, Inc.	716-542-2728
NY	New York, Packaging Tech. Resources	718-939-6080
NY	Rochester, Leonard D. Allen, Inc.	716-377-3530
NY	Syracuse, Leonard D. Allen, Inc.	315-437-8387
NC	Kernersville, Wallace ELctrns. Sls.	919-996-2742
OH	Cincinnati, Bob Gilbert & Assocs.	513-574-1932
OR	Forest Grove, Doran Sls., Inc.	503-357-3333
PA	King of Prussia, Freedman-Malta Assocs.	215-337-9211
TX	Dallas, J. Clay Co.	214-350-1281
TX	Taylor, Gemini, Inc.	512-352-5207
UT	Salt Lake City, Medax	801-266-4545
WA	Redmond, Doran Sls., Inc.	206-885-1885
WI	Wauwatosa, Larsen Assocs.	414-258-0529
Can	Markham, Ont., Avotronics, Ltd.	416-475-2024

GEN/COMP INC., 6 Algonquin Rd., Canton, MA 02021, Tel: 617-828-2008; *Sls. Mgr.:* G. Nutter

GENCO PRECISION CORP., 247 Skidmore Road, Deer Park, NY 11729, Tel: 516-242-3006

GENERAL AUTOMATIC CORP., See E-Tron Corp.

GENERAL BUSINESS TECH., 1891 McGaw Ave., Irvine, CA 92714, Tel: 714-261-1891, FAX: 714-261-8285; Empl.: 44; *Dist. Mgr.:* Barbara A. Foy

GENERAL CABLE CO., Fiber Optics Div., 160 Fieldcrest Ave., P.O. Box 7810, Edison, NJ 08818-7810, Tel: 201-225-4780, Telex: 642892; *Sls. Mgr.:* Pieter deBruijn

GENERAL COMPUTERS, 1624 Veteran Ave., Los Angeles, CA 90024; Empl.: 10

GENERAL CONTROL CO., 11 Cote Indl. Pk., Goffston, NH 03045, Tel: 603-669-2844; Empl.: 7

GENERAL DEFENSE CORPORATION, Tactical Systems Division, Box 500, Pinellas Pk., FL 34290-0500, Tel: 813-541-6681, TWX: 810-866-0433, FAX: 813-544-4944; FSC No.: 1M813; Empl.: 250; *Sls. Mgr.:* Sam Gray

GENERAL DEVICES, Box 39100, Indianapolis, IN 46239-9632, Tel: 317-897-7000, Telex: 27-2169; Empl.: 175; *Sls. Mgr.:* Jack Bradford; *Dist. Mgr.:* Dan McCauley ..... **C•1054-1057**

Local Sales Offices & Reps

AL	Huntsville, Hughes Assocs., Inc.	205-533-9108
AZ	Phoenix, Snyder Engrg.	602-279-2010
CA	Fullerton, Groh Assoc.	714-837-9871
CA	Mountain View, G. Woempner Co.	415-964-5454
CO	Boulder, R. F. Mayo Assoc.	303-499-2155
CT	North Haven, Coakley, Boyd & Abbett	203-481-2828
FL	Lighthouse Point, J. Krutek & Assoc.	305-427-4202

FL	Maitland, J. Krutek	305-628-4837
GA	Norcross, Hughes Assocs., Inc.	404-622-1587
IL	Glencoe, Howard Benjamin	312-272-2900
IN	Noblesville, Century Elctrns.	317-849-2026
KS	Shawnee Mission, Lowell & Kangas	913-631-3515
MA	Needham, Coakley, Boyd & Abbett	617-444-5470
MN	St. Paul, Northport Engrg.	612-457-8000
MS	Corinth, Hughes Assocs., Inc.	601-287-2915
MO	St. Louis, Lowell & Kangas	314-821-4050
NH	Plaistow, Coakley, Boyd & Abbett	617-444-5470
NJ	Mountainside, Henry G. Richter	201-233-4615
NY	Fayetteville, H.G. Richter	315-637-6713
NC	Raleigh, Hughes Assocs., Inc.	919-782-2065
OH	Cleveland, Electronic Comps., Inc.	216-331-5330
OH	Dayton, Electronic Comps., Inc.	513-866-3340
OK	Tulsa, Advance Tech. Sls.	918-664-0482
PA	Doylestown, Monteiro Assoc.	215-345-5855
TN	Morristown, Hughes Assocs., Inc.	615-587-2433
TX	Austin, Advance Tech. Sls.	512-440-7677
TX	Dallas, Advance Tech. Sls.	214-340-1300
TX	Houston, Advance Tech. Sls.	713-440-3888
WA	Olympia, Bergford & Assocs.	206-866-2001
	Local Distributors	
AZ	Tempe, Acacia/VWR Elctrns.	602-894-2874
CA	Irvine, Acacia/VWR Elctrns.	714-660-0834
CA	San Diego, Acacia/VWR Elctrns.	619-565-4365
MA	Newton, In-Stock Products Co.	617-964-6200
NJ	Atlantic Highlands, Freedom Elctrns., Inc.	201-872-2300

GENERAL DIGITAL CORP., 160 Chapel Rd., Box 1657, Manchester, CT 06040, Tel: 203-647-9700; Empl.: 50

GENERAL DIGITAL INDUSTRIES INC., 7702 Governors Dr. W., Huntsville, AL 35805, Tel: 205-837-8305; Empl.: 29; *Sls. Mgr.:* John Robinson

GENERAL ELECTRIC CO., Battery Business Dept., P.O. Box 992, Gainesville, FL 32602, Tel: 904-462-4480, TWX: 810-836-8500; *Sls. Mgr.:* K. Edwards

GE CUSTOM INTEGRATED CIRCUITS DEPT., 1 Micron Dr., Research Triangle Park, NC 27709, Tel: 919-549-3100; Empl.: 500; *Sls. Mgr.:* Steve Pletcher; *Dist. Mgr.:* Vincent Bonnana

GENERAL ELEC. CO., Electromaterials Dept., 1350 South Second Street, Coshocton, OH 43812, Tel: 614-622-5310, Telex: 810-255-2921; Empl.: 600; *Sls. Mgr.:* Dick Hurlbut

	Local Sales Offices & Reps	
AZ	Phoenix, General Elec. Co.	602-241-7232
CA	Orange, General Elec.	714-978-6655
CA	San Jose, General Elec. Co.	408-281-1201
FL	Tampa, General Elec. Co.	813-832-1208
GA	Atlanta, General Elec. Co.	404-393-4580
IL	Arlington Heights, General Elec. Co.	312-439-9080
MA	Norwood, General Elec. Co.	617-762-9610
MN	Minneapolis, General Elec.	612-542-0280
NY	Syracuse, General Elec.	315-456-6103
NC	Raleigh, General Elec. Co.	919-872-2451
OH	Coshocton, General Elec. Co.	614-622-5310
OR	Portland, General Elec. Co.	503-292-1703
PA	Berwyn, General Elec. Co.	215-962-3411
TX	Dallas, General Elec. Co.	214-661-5474
	Local Distributors	
AZ	Phoenix, The Advance Grp.	602-243-4326
CA	Anaheim, The Advance Grp.	714-870-0300
CA	Belmont, The Advance Grp.	415-592-4550
CO	Denver, The Advance Grp.	303-388-0923
WA	Seattle, The Advance Grp.	206-575-4323

GENERAL ELECTRIC CO., Instrument Prods. Section, See Yokogawa Corp. of America

POWER SUPPLY OPERATION, General Electric Co., 1701 College Street, Fort Wayne, IN 46801, Tel: 219-420-2000; *Sls. Mgr.:* Stan Williams or Chris Copestake

GENERAL ELECTRIC CO., Power Elctrns. Semiconductor Dept., Electronics Pk., Bldg. 7, Syracuse, NY 13221, Tel: 315-456-3606; Empl.: 4000; *Sls. Mgr.:* George H. Oliver; *Dist. Mgr.:* Richard Levitre

GENERAL ELECTRIC, RCA/Solid State Div., Route 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333; FSC No.: 19089; *Sls. Mgr.:* Ed Parker; *Dist. Mgr.:* Tom Pitera

GENERAL ELECTRIC CO., Specialty Mktg. Oper., Nela Park, Cleviand, OH 44112, Tel: 216-266-3494; *Sls. Mgr.:* W. D. Wells

GENERAL ELECTRIC CO., RELAY OPERATION, See Genicom Corp.

GENERAL ELECTRIC CO., Wire & Cable, 1285 Boston Ave., Bridgeport, CT 06602, Tel: 203-382-2000, Telex: 96-4209; Empl.: 700; *Sls. Mgr.:* R. A. Kulakowski

GENERAL FIBER OPTICS, INC., 98 Commerce Rd., Cedar Grove, NJ 07009, Tel: 201-239-3400, Telex: 132741; *Sls. Mgr.:* Herb Berkowitz

GENERAL HARDWARE MFG., 80 White St., New York, NY 10013, Tel: 212-431-6100, Telex: 126394 Aegis; *Sls. Mgr.:* Tom McGannon

GENERAL INDS., Taylor & Olive St., Elyria, OH 44035, Tel: 216-323-3136, TWX: 810-424-2109; Empl.: 1100

GENERAL INSTRUMENT, Govt. Systems, 600 W. John St., C. S. 710, Hicksville, NY 11802-0709, Tel: 516-933-3000, Telex: 311512, TWX: 510-221-1865; Empl.: 695

GENERAL INSTR., Lamp Div., 4433 N. Ravenswood Ave., Chicago, IL 60640, Tel: 312-784-1020, TWX: 910-221-5445; FSC No.: 71744; Empl.: 390; *Sls. Mgr.:* Jim Flanagan

GENERAL INSTRUMENT CORP., Microelectronics Div., 600 W. John St., Hicksville, NY 11802, Tel: 516-733-3107, TWX: 510-221-1866; *Sls. Mgr.:* A. Lindgren; *Dist. Mgr.:* J. Johnson

GENERAL INSTRUMENT NETWORK CABLE DIV., M/A Com, Inc., P. O. Box 1729, Hickory, NC 28603, Tel: 704-324-2200, 800-438-3331, Telex: 802-166; *Sls. Mgr.:* Nita Hunsucker

GENERAL INSTR., Optoelctrns. Div., 3400 Hillview Ave., Palo Alto, CA 94304, Tel: 415-493-0400, Telex: 348430, TWX: 910-373-1767; FSC No.: 58361; Empl.: 500; *Sls. Mgr.:* J. Beach; *Dist. Mgr.:* W. Clark

GENERAL LASER, INC., 7662 East Gray Rd., Scottsdale, AZ 85260, Tel: 602-991-0674

GENERAL MAGNETICS, 211 Grove St., Bloomfield, NJ 07003, Tel: 201-743-2700; FSC No.: 99165; Empl.: 20

GENERAL MANUFACTURING, 724 Ruberta Ave., Glendale, CA 91201, Tel: 818-243-2069; FSC No.: 10454

GENERAL MIRCOCIRCUITS, 780 Boston Rd., Billerica, MA 01821, Tel: 617-663-9101, FAX: 617-663-9132; Empl.: 40; *Sls. Mgr.:* Denise Laplante

GENERAL MICROWAVE CORPORATION, 5500 New Horizons Blvd., Amityville, NY 11701, Tel: 516-226-8900, Telex: 310-287-780; FSC No.: 11332; Empl.: 300; *Sls. Mgr.:* F. Perry **A•1785; D•1254**

	Local Sales Offices & Reps	
AL	Huntsville, Saber Assocs.	800-327-0853
AZ	Phoenix, Odyssey One	602-246-8846
CA	Los Angeles, RF Assocs.	213-478-1586
CA	Palo Alto, RF Assocs.	415-494-3331
CO	Englewood, Odyssey One	303-773-8176
FL	Apopka, Saber Assocs.	800-432-6288
FL	Bradenton, Saber Assocs.	800-432-6288
FL	Coral Springs, Saber Assocs.	800-432-6288
FL	Melbourne, Saber Assocs.	305-724-0920
FL	Palm Bch., Saber Assocs.	800-432-6288
GA	Atlanta, Saber Assocs.	800-327-0853
IL	Mt. Prospect, Cain Forlaw	312-253-3578
MA	Burlington, Microwave Mktg. Specialists	617-272-7530
NJ	West Orange, EF Tech. Sls.	201-731-7203
NM	Albuquerque, Odyssey One	505-265-6645
NY	Huntington Sta., EF Tech. Sls.	516-549-1818
NY	Rochester, TCS (Technical Comp. Sls.)	716-342-2406
NC	Clayton, Saber Assocs.	800-327-0853
OH	Lancaster, Cain Forlaw	614-654-4800
PA	Newtown, Hes Assocs.	215-860-9338
TX	Dallas, Cain & Co.	214-247-3901

GENERAL NUMERIC CORPORATION, 390 Kent Avenue, Elk Grove Village, IL 60007, Tel: 312-640-1595, Telex: 210036, FAX: 312-228-5490; Empl.: 125; *Sls. Mgr.:* James Scott

GENERAL OPTRONICS CORP., 2 Olsen Ave., Edison, NJ 08820, Tel: 201-549-9000, TWX: 710-997-9556; FSC No.: 7W944; Empl.: 175; *Sls. Mgr.:* H. R. Moeller

GENERAL POWER SYSTEMS

GENERAL POWER SYS., 1045 S. East St., P.O. Box 65008, Anaheim, CA 92805-8508, Tel: 714-956-9321, Telex: 678870; FSC No.: 04801; Empl.: 200; *Sls. Mgr.:* Ernest R. Murillo; *Dist. Mgr.:* Ernest R. Murillo ... **D•2061**

	Local Sales Offices & Reps	
AL	Huntsville, Synergetic Reps., Inc.	205-539-1691
AZ	Tempe, Barnhill Assocs., Inc.	602-820-8800
CA	Los Alamitas, Power Specialist	213-594-9418
CA	Sunnyvale, Pacific Power Controls	408-745-0944
CO	Englewood, Barnhill Assocs., Inc.	303-799-6999
FL	Hollywood, Synergetic Reps., Inc.	305-961-7007
FL	Largo, Synergetic Reps., Inc.	813-586-2871
FL	Melbourne, Synergetic Reps., Inc.	305-727-7851
GA	Atlanta, Synergetic Reps., Inc.	404-451-5641
IL	Libertyville, KGA Engrg. Co., Inc.	312-367-5700
IN	Indianapolis, Tech. Sls. & Mktg.	317-849-6612
KS	Lenexa, Engineered Equip.	913-492-9221
MA	Hopkinton, East. Sys. Technlg.	617-329-4068
MI	Pontiac, EQS Sys., Inc.	313-338-2280
NJ	Fairfield, SDM Reps.	201-882-5005
NM	Albuquerque, Barnhill Assocs., Inc.	505-299-7658
NY	Rochester, Tae Rep, Inc.	716-586-8710
NY	Schenectady, Tae Rep, Inc.	607-692-3705
NY	Whitney Point, Taerep, Inc.	607-692-3705
OH	Chesterland, E Q S Sys., Inc.	216-729-2222
OH	Dayton, E Q S Sys., Inc.	513-236-7676
OR	Lake Oswego, Drive Motor Control Sys.	503-636-7931
PA	Bethel Park, E Q S Sys., Inc.	412-261-2604
TX	Austin, Barnhill Assocs., Inc.	512-451-0217
TX	Houston, Barnhill Assocs., Inc.	713-872-4900
TX	Richardson, Barnhill Assocs.	214-231-2573
UT	Murray, Barnhill Assocs., Inc.	801-262-3000
WA	Seattle, Drive Motor Control Sys.	206-575-4172
WI	Milwaukee, KGA Engrg. Co., Inc.	414-357-7600

GENERAL RESISTANCE

GENERAL RESISTANCE, A Prime Technology Company, Twin Lakes Rd., P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937; FSC No.: 05591; Empl.: 60; *Sls. Mgr.:* J. L. Jamieson **A•1941; D•1255**

	Local Sales Offices & Reps	
	Instruments	
AL	Birmingham, SESCO	205-988-8304
AZ	Tempe, Qualtech, Inc.	602-967-4655
CA	Long Beach, Saber Entprs.	213-595-5646
CA	Mountain View, Gado Instr. Sls.	415-961-2222
CA	San Diego, Saber Entrps.	619-271-1523
CO	Littleton, Radco	303-794-4279
CT	Cheshire, MECO, Inc.	203-271-0026
FL	St. Petersburg, SESCO	813-576-6991
GA	Altanta, SESCO	404-458-6423
IL	Des Plaines, Marsland Assocs.	312-694-2262
IA	Cedar Rapids, Marsland Assocs.	319-365-1908
LA	Baton Rouge, SESCO	504-928-4951
MD	Joppa, Electra-Tech	301-877-0344
MA	Reading, MECO, Inc.	617-944-6660
MI	Mt. Clemens, O'Hara Assocs.	313-791-7140
MN	Minneapolis, Marsland Assocs.	612-545-4481
MO	St. Louis, Marsland Assocs.	314-991-1399
NJ	Hillsdale, CB Associates	201-664-6230
NM	Albuquerque, Qualtech	505-243-5605
NY	Rochester, TAE-REP	716-586-8710
NY	Schenectady, Tae-Rep, Inc.	607-692-3705
NY	Whitney Point, TAE-REP, Inc.	607-692-3705
NC	Cary, SESCO, INC.	919-467-7482
OH	Dayton, RIXAN Assocs.	513-278-4216
OH	Stow, Rixan Assocs.	216-686-2909
OK	Tulsa, SESCO	918-622-3868
SC	Greenville, SESCO, Inc.	803-297-8306
TN	Maryville, SESCO, Inc.	615-977-8239
TX	Austin, SESCO	512-892-2490
TX	Dallas, SESCO	214-231-9364
TX	Houston, SESCO	713-999-3510
TX	Plano, SESCO, Inc.	214-867-8880
VA	Dumfries, Electra-Tech	703-670-6962
VA	Waverly, Electra-Tech	804-834-2417
WA	Seattle, Datacom Assocs.	206-285-2525
WI	New Berlin, Marsland Assocs.	414-786-6611

Components

AZ	Tempe, Qualtech, Inc.	602-967-4655
CA	Saratoga, TESTCO	408-253-1900
CO	Golden, J. F. Hurlbut Co.	303-279-7796
MD	Gaithersburg, Beacon North, Inc.	301-869-3289
MD	Mt. Airy, Beacon North, Inc.	703-591-1300
MD	Randallstown, Beacon North, Inc.	703-591-1300
MI	Farmington, W. R. Hummon & Assoc.	313-474-0661
OH	Dayton, RIXAN Assocs.	513-278-4216
OH	Stow, Rixan Assocs.	216-686-2909
TX	Dallas, Blackburn Assocs.	214-750-8927
TX	Houston, Blackburn Assocs.	713-463-1354
UT	Salt Lake City, J. F. Hurlbut Co.	801-531-7472
VA	Forest, Beacon North Inc.	804-239-8486
VA	Sterling, Beacon North, Inc.	703-591-1300

Local Distributors

CA	Saratoga, TESTCO	408-253-1900
OH	Dayton, RIXAN Assocs.	513-278-4216

GENERAL ROBOTICS CORP., 23 S. Main Street, Hartford, WI 53027, Tel: 414-673-6800, Telex: 6713838; *Sls. Mgr.:* Bert Johnston; *Dist. Mgr.:* Barbara Pick

GENERAL SCANNING, 500 Arsenal St., Watertown, MA 02272, Tel: 617-924-1010, Telex: 443-0105; Empl.: 250

GENERAL SEMICONDUCTOR IND., INC., Square D Company, 2001 W. 10 Pl., Tempe, AZ 85281, Tel: 602-968-3101, Telex: 910-950-1942; FSC No.: 24444;19500; Empl.: 625; *Sls. Mgr.:* Jim Williams; *Dist. Mgr.:* Howard Israel

GENERAL TECHNOLOGY CORP., 6816 Washington Avenue, NE, Albuquerque, NM 87109, Tel: 505-345-5591; Empl.: 50; *Sls. Mgr.:* Ralph H. Anderson

GENERAL TRANSISTOR CORP., 216 W. Florence Av., Inglewood, CA 90301, Tel: 213-673-8422, Telex: 653474; FSC No.: 1P738; Empl.: 39; *Sls. Mgr.:* Al Barrios

GENERAL WIRE PRODUCTS, INC., 425 Shrewsbury Street, Worcester, MA 01604, Tel: 617-752-8260, Telex: 710-340-0635; FSC No.: 5F262; Empl.: 58; *Sls. Mgr.:* Thomas P. Andrews, Jr.

GENICOM

GENICOM CORP., 1 Genicom Dr., Waynesboro, VA 22980, Tel: 703-949-1471, TWX: 710-839-0407; FSC No.: 01526; Empl.: 2300; *Sls. Mgr.:* W. O. Bare **B•1383-1388**

Local Sales Offices & Reps

AZ	Tempe, Genicom Corp.	602-968-6999
CA	Bell Canyon, Genicom Corp.	818-884-1638
CA	Fountain Valley, Genicom Corp.	415-793-7356
CA	Fremont, Genicom Corp.	415-796-7600
CA	Westlake, Genicom Corp.	805-373-8509
CA	Westminster, Genicom Corp.	714-895-1779
CT	Meriden, Genicom Corp.	203-238-6876
GA	Norcross, Genicom Corp.	404-449-1021
IL	Rolling Meadows, Gencicom Corp.	312-577-1100
MD	Rockville, Genicom Corp.	301-770-4434
MA	Woburn, Genicom Corp.	201-737-9696
MN	Bloomington, Genicom Corp.	612-854-2909
NJ	Edison, Genicom Corp.	201-738-9696
NY	Hauppauge, Genicom Corp.	516-434-8228
TX	Dallas, Genicom Corp.	214-661-5132
Can	Nepean, Ont., Genicom Corp.	613-726-0215

Local Distributors

CA	Santa Ana, Norstan	800-854-8344
CA	Santa Ana, Norstan Elctrns.	714-540-4168
FL	Orlando, T & T Prods., Inc.	305-857-2282
FL	Orlando, T & T Products	305-857-2282
MD	Towson, Electronic Comp. Sls.	800-638-4221
NY	Farmingdale, Midway Indl. Elctrns.	516-293-6800
NY	Farmingdale, Midway Indl. Elctrns., Inc.	516-293-6800
NY	Rochester, Aquas Elctrns.	716-454-7800
NC	Charlotte, Electronics Mktg. Corp.	704-394-6195
OH	Cleveland, Electronics Mktg. Corp.	216-442-3441
OH	Columbus, Electronics Mktg. Corp.	614-299-4161
OH	Dayton, Elctrns Mktg. Corp.	513-278-5745
OH	Highland Heights, Electronics Mktg. Corp.	216-442-3441
TX	Dallas, Associated Aircraft Supp. Co.	214-331-4381
WA	Redmond, Pan Pacific Elctrns.	206-881-7252
WA	Redmond, Pan Pacific Elctrns., Inc.	206-881-7252

GENISCO MEMORY PRODS. CORP., 10874 Hope St., Cypress, CA 90630, Tel: 714-220-0720, TWX: 910-347-6773; FSC No.: 96682; Empl.: 248; *Sls. Mgr.:* John Krill

GENISCO TECHNOLOGY CORP., Eldema Div., 18435 Susana Rd., Rancho Dominguez, CA 90221, Tel: 213-537-4750, TWX: 910-346-6773; FSC No.: 03797; Empl.: 450; *Sls. Mgr.:* W. R. Esser

GENISCO TECHNLG. CORP., Filters Div., 18435 Susana Rd., Rancho Dominguez, CA 90221, Tel: 213-537-4750, TWX: 910-346-6773; FSC No.: 07294; Empl.: 450; *Sls. Mgr.:* T. Cantine

GENISCO TECHNOLOGY CORP., 18435 Susana Rd., Rancho Dominguez, CA 90221, Tel: 213-537-4750, TWX: 910-346-6773; FSC No.: 13946; Empl.: 450; *Sls. Mgr.:* F. Schodlbauer

GENISCO TECHNOLOGY CORP., Transducers Products Div., 650 Easy St., Simi Valley, CA 93065, Tel: 805-581-3985, TWX: 910-494-4782; FSC No.: 65998; Empl.: 450; *Sls. Mgr.:* John E. Smith

GENRAD, INC., 300 Baker Ave., Concord, MA 01742, Tel: 617-369-4400

GENSTAR RENTAL ELCTRNS., 6307 De Soto Ave., Suite J, Woodland Hills, CA 91367, Tel: 818-887-4000, Telex: 348368, FAX: 818-715-9249

GENTEX, Box 315, Carbondale, PA 18407, Tel: 603-434-0311, Telex: 831-883; FSC No.: 97427; *Sls. Mgr.:* Ture Heline

GENTRON CORP., 6667 N. Sidney Pl., Milwaukee, WI 53209, Tel: 414-351-1660, Telex: 26881, FAX: 414-351-4573; FSC No.: 270-7400; Empl.: 100; *Sls. Mgr.:* William Tennie; *Dist. Mgr.:* Randy Hintz/Al Hungsberg

GEOPHYSICAL SURVEY SYSTEMS, INC., 15 Flagstone Dr., Hudson, NH 03051, Tel: 603-889-4841, Telex: 953038; FSC No.: 02-0278634; Empl.: 35; *Sls. Mgr.:* J. V. Rosetta, Jr.



GEORATOR CORP., Box 70, Manassas, VA 22110, Tel: 703-368-2101, Telex: 892-431; Empl.: 49; *Sls. Mgr.:* Charles E. Trefzger **D•2062-2064**

GERMANIUM POWER DEVICES, Box 3065, Shawsheen Village Sta., Andover, MA 01810, Tel: 617-475-5982, Telex: 94-7150, FAX: 617-470-1512; Empl.: 100; *Sls. Mgr.:* R. W. Kassiotis

GETTYSBURG TRANSFORMER CORPORATION, 1380 Old Harrisburg Rd., P.O. Box 99, Gettysburg, PA 17325, Tel: 717-334-2191; Empl.: 55; *Sls. Mgr.:* Charles A. Ritter

GEYER SYSTEMS, See GSI Corp.

GFC/HAMMOND ELECTRONICS, INC., Hammond Manufacturing Co., 1690 Walden Ave., Buffalo, NY 14225, Tel: 716-894-5710, FAX: 716-894-1156; *Sls. Mgr.:* Dave Oliver

GGB INDUSTRIES, INC., Picoprobe Division, P.O. Box 125, Gillette, NJ 07933, Tel: 201-464-1749, Telex: 136692 GGB; *Sls. Mgr.:* Greg Boll

GHIELMETTI, INC., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028-8770, Tel: 213-463-5111, TWX: 910-321-2903; Empl.: 4; *Sls. Mgr.:* David Mendoza

GIANNINI PETRO MARINE, 9474 Chesapeake Dr., San Diego, CA 92123, Tel: 619-569-1668, Telex: 181754; FSC No.: 24727; Empl.: 10

GIBSON/EGAN, See Textool Test & Interconnect Prods. Dept., 3M, Electronic Prods. Div.

GIC THERMODYNAMICS, 2611 Parmenter, Royal Oak, MI 48073, Tel: 313-280-1648, Telex: 23-5714; Empl.: 20; *Sls. Mgr.:* Denny Desmond

GIDDINGS & LEWIS ELECTRONICS, A Unit of AMCA International, 666 S. Military Rd., P.O. Box 1658, Fond du Lac, WI 54935, Tel: 414-921-7100, Telex: 26-2722, TWX: 910-275-1100; Empl.: 200; *Sls. Mgr.:* Tom Bullock

GILTRONIX, 3780 Fabian Way, Palo Alto, CA 94303, Tel: 415-493-1300, Telex: 345542; *Sls. Mgr.:* Erv Stein

Gilway Technical Lamp

GILWAY TECHNICAL LAMP, 165 New Boston Street, Woburn, MA 01801, Tel: 617-935-4442, Telex: 287617 GWAY UR; FSC No.: 3T059; Empl.: 17; *Sls. Mgr.:* Clark Benjamin III; *Dist. Mgr.:* W. C. Fotino **B•1078-1081**

GIMIX, INC., 1337 W. 37th Place, Chicago, IL 60609, Tel: 312-927-5510, TWX: 910-221-4055; Empl.: 14; *Sls. Mgr.:* Richard Don

GLAR-BAN DIV. OF MARK IV INDS., INC., 199 Wales Ave., Tonawanda, NY 14150, Tel: 716-694-5076, Telex: 91578; Empl.: 85; *Sls. Mgr.:* Scott Simons

GLASGAL COMMUNICATIONS, INC., 151 Veterans Dr., Northvale, NJ 07647, Tel: 201-768-8082, TWX: 710-991-8585; Empl.: 100; *Sls. Mgr.:* Ingemar Sjunnemark; *Dist. Mgr.:* Al Merwede



GLASSMAN HIGH VOLTAGE INC., P.O. Box 551, Salem Indl. Pk., Whitehouse Sta., NJ 08889, Tel: 201-534-9007, TWX: 710-480-2839; Empl.: 60; *Sls. Mgr.:* John R. Belden **D•1719-1727**

Local Sales Offices & Reps

AZ	Scottsdale, Power Specialists	602-996-4100
CA	Los Alamitos, Power Specialists	213-594-9418
CA	San Diego, Power Specialists	619-586-1160

GLATZER INDUSTRIES CORP., 15 River St., New Rochelle, NY 10801, Tel: 914-576-2700; Empl.: 25; *Sls. Mgr.:* Patricia M. Wyllie

GLENAIR INC., 1211 Air Way, Glendale, CA 91201-2497, Tel: 818-247-6000, Telex: 67-3485, TWX: 910-497-2066; FSC No.: 06324; Empl.: 485; *Sls. Mgr.:* Ronald E. Platz

GLENMARC MANUFACTURING, 330 Melvin Dr., Northbrook, IL 60062, Tel: 312-272-9030, Telex: 754427 GLEN UD; Empl.: 13; *Sls. Mgr.:* David Greenwood

GLEN MILLS INC., 203 Brookdale St., Maywood, NJ 07607, Tel: 201-845-4665, Telex: 134 656; Empl.: 11; *Sls. Mgr.:* Stanley I. Goldberg; *Dist. Mgr.:* Rober F. Carlson

GLENRO, INC., 39 McBride Ave. Extension, Paterson, NJ 07501, Tel: 201-279-5900, 800-922-0106, Telex: 130127; Empl.: 50; *Sls. Mgr.:* Sterling Pitt

GLOBAL SPECIALTIES, Interplex Electronics, Inc., 70 Fulton Terrace, P.O. Box 1942, New Haven, CT 06509, Tel: 203-624-3103, TWX: 710-465-1227; Empl.: 125; *Sls. Mgr.:* Frank Gregorio

GLOBAL TECHNOLOGY INTERNATIONAL, INC., 917-134th Street S.W., Everett, WA 98204, Tel: 206-742-9111, ESYLNK: 759633, FAX: 206-743-7420; Empl.: 61; *Sls. Mgr.:* Ruskin A. Whaley, V.P. Sls. & Mktg.

GLOBE BATTERY DIV., See Johnson Controls, Globe Battery Div.

GLOBE PLASTICS, 1342 S. Signal Dr., Pomona, CA 91766, Tel: 714-623-2747; FSC No.: 21071; Empl.: 27; *Sls. Mgr.:* J. R. Humphreys

Local Distributors

CA	Fremont, Alatec Prods.	408-279-8895
CA	N. Hollywood, Alatec Prods.	818-764-5600
NJ	Pine Brook, Alatec Prods.	201-227-8140
TX	Arlington, APX Plastics	817-275-3883

GLOBE UNION, See Johnson Controls, Globe Battery Div.

GM NAMEPLATE, INC., 2040 15th Ave. West, Seattle, WA 98119, Tel: 206-284-2200; *Sls. Mgr.:* Ed Westfall

GMR CO., 8801 Sepulveda Blvd., Los Angeles, CA 90045, Tel: 213-216-9516, Telex: 499 2468; Empl.: 87; *Sls. Mgr.:* Harvey Mushman

GNB INCORPORATED, 2010 Cabot Blvd. W., Langhorne, PA 19047, Tel: 215-750-2600, Telex: 4761219 GNBLAHN

GPE

GOLDEN PACIFIC ELECTRONICS, INC, 560 S. Melrose St., Placentia, CA 92670, Tel: 714-993-6970, Telex: 3720016 GPE INTL PLA; Empl.: 12; *Sls. Mgr.:* Wilson Chiu ..... **D•1036, 1452, 1728**

Local Sales Offices & Reps

CA	Garden Grove, ELSCO Elctrns	714-891-4621
CA	Norwalk, Ed Rivers Assocs.	213-868-1471
CA	San Jose, Applied Eltcrns Mktg	408-971-9377
FL	Coral Springs, PSR Technig. Inc.	305-753-5732
IL	Arlington Heights, M.J. Peterson & Assocs.	312-577-8220
MA	Billerica, Bennetron	617-663-7017
NJ	Wayne, Breen Assocs	201-696-8683
NY	Roslyn Hgts., Breen & Assocs.	516-621-6378
NY	Syracuse, Northeastern Elctrns., Inc.	315-455-7561
NC	Raleigh, Micro Sls., Inc.	919-872-7922
OR	Portland, Core II Mktg	503-641-0877
TX	Dallas, Milco Mktg	214-783-2716
TX	Houston, Milco Mktg	713-723-5003
UT	Bountiful, Duven Assocs	801-295-0353
WA	Seattle, Core II Mktg.	206-467-0622
WA	Spokane, Core II Mktg.	509-922-2971

GOOD-ALL ELECTRIC, INC., 3725 Canal Drive, Fort Collins, CO 80524, Tel: 303-484-3080, 800-826-7891, TWX: 910-930-9015, FAX: 303-484-8649; FSC No.: 22096; Empl.: 100; *Sls. Mgr.:* Dennis M. Pearson

GOODNIGHT SYSTEMS, 18523 Collins, Ste. 4, Tarzana, CA 91356, Tel: 818-703-1524; *Sls. Mgr.:* Jim Goodnight

GORDON CO., 5710 Kenosha St., Richmond, IL 60071, Tel: 815-678-2211, Telex: 72-2427; Empl.: 260

GORDON, L., PACKAGING, 1050 S. Paca St., Baltimore, MD 21230, Tel: 301-539-6537; Empl.: 200

GORDON PRODUCTS, 67 Del Mar Dr., Brookfield, CT 06804, Tel: 203-775-4501; Empl.: 45; *Sls. Mgr.:* Leon Najman; *Dist. Mgr.:* Leon Najman

GORDOS CORPORATION

GORDOS CORPORATION, Reed Relay Division, 1903 Town West Drive, P.O. Box 824, Rogers, AR 72757, Tel: 501-636-2111, TWX: 910-720-7998, FAX: 501-636-2305; Empl.: 350; *Sls. Mgr.:* B. Garlock, Prod. Mgr. ..... **B•1390-1401, 1609**

Local Sales Offices & Reps

CA	Costa Mesa, Jim Pancake	714-751-6760
CA	Milpitas, Maxim Elctrn. Sls.	408-946-6001
CA	San Diego, West Elctrn. Sls. Co.	619-233-0236
CA	Westminster, West Elctrn. Sls. Co.	714-898-0120
CO	Arvada, Gemini Elctrns.	303-428-5600
CT	Woodbury, Anacon Sls. Assocs.	203-266-0707
FL	Miramar, J R Controls, Inc.	305-963-6142
FL	Tmapa, J R Controls, Inc.	813-961-9478
FL	Winter Springs, J R Controls, Inc.	813-961-9478
GA	Atlanta, DHR Mktg.	404-451-9848
IL	Schaumberg, Martan, Inc.	312-303-5660
IN	Indianapolis, Elctrn. Sls. & Engrg.	317-849-4260
MA	Wilmington, Anacon Sls. Assocs.	617-270-3712
MO	Maryland Heights, Ensco-Rep, Inc.	314-423-3935
NJ	Budd Lake, Guido Assocs.	201-347-4643
NM	Albuquerque, Syntech	505-266-7951
NY	E. Rochester, Noeth-Honsinger Assocs.	716-586-9002
NC	Peachland, D. P. McDonald	704-272-8474
NC	Raleigh, Crossroads Elctrn. Assocs.	919-859-1033
OH	Centerville (Dayton), Omega Sls., Inc.	513-434-5507
OH	University Hgts., Omega Sls., Inc.	216-381-1404
NJ	Lawrenceville, DVS Co.	609-896-1112
UT	Salt Lake City, Gemini Elctrns.	801-278-0201
WI	Milwaukee, Bill Swanson	414-543-2727
Can	Kanata, Ont., Birde Mktg., Inc.	613-592-5411
Can	Markham, Ont., Birde Mktg.	416-477-7722

GORDOS CORPORATION, Solid State Products Division, 1000 N. Second St., P.O. Box 824, Rogers, AR 72756, Tel: 501-636-5000, TWX: 910-720-7998, FAX: 501-636-2305; *Sls. Mgr.:* P. Bachman, Prod. Mgr.; *Dist. Mgr.:* B. Garlock, Prod. Mgr. ..... **A•1754; B•1390-1401**

Local Sales Offices & Reps

CA	Costa Mesa, Jim Pancake	714-751-6760
CA	Milpitas, Maxim Elctrn. Sls.	408-946-6001
CA	San Diego, West Elctrn. Sls. Co.	619-233-0236
CA	Westminster, West Elctrn. Sls. Co.	714-898-0120
CO	Arvada, Gemini Elctrns.	303-428-5600
CT	Woodbury, Anacon Sls. Assocs.	203-266-0707
FL	Miramar, J R Controls, Inc.	305-963-6142
FL	Tampa, J R Controls, Inc.	813-961-9478
FL	Winter Springs, J R Controls, Inc.	815-961-9478
GA	Atlanta, DHR Mktg.	404-451-9848
IL	Schaumberg, Martan, Inc.	312-303-5660
IN	Indianapolis, Elctrn. Sls. & Engrg.	317-849-4260
MA	Wilmington, Anacon Sls. Assocs.	617-270-3712
MO	Maryland Hgts., Ensco Rep, Inc.	314-423-3935
NJ	Budd Lake, Guido Assocs.	201-347-4643
NJ	Lawrenceville, DVS Co.	609-896-1112
NY	E. Rochester, Noeth-Honsinger	716-586-9002
NC	Peachland, D.P. McDonald	704-272-8474
NC	Raleigh, Crossroads Elctrn. Assocs.	919-859-1033
OH	Centerville (Dayton), Omega Sls., Inc.	513-434-5507
OH	University Hgts., Omega Sls., Inc.	216-381-1404
UT	Salt Lake City, Gemini Elctrns.	801-278-0201
WI	Milwaukee, Bill Swanson	414-543-2727
Can	Kanata, Ont., Birde Mktg., Inc.	613-592-5411
Can	Markham, Ont., Birde Mktg., Inc.	416-477-7722

Local Distributors

AL	Auburn, Interstate Elctrl. Supp.	205-821-3341
AL	Birmingham, SESCO Inc.	205-988-8304
AL	Montgomery, Control Comps.	205-264-3325
GA	Norcross, Time Elctrns.	404-448-4448
AL	Huntsville, Pioneer	205-837-9300
AZ	Phoenix, Control Design	602-829-7981
CA	Hayward, KEA Elctrns.	415-887-2900
CA	Irvine, IEC	714-837-9960
CA	San Jose, Future Elctrns.	408-435-9100
AZ	Tempe, Bell Inds.	602-966-7800
AZ	Tempe, Elctrn. Supp.	602-258-4769
AZ	Tempe, Time Elctrns.	602-967-2000
IL	Addison, L Comp	312-628-1400
CO	Denver, Bell Inds.	303-424-1985
AZ	Tucson, Elctrn. Supp.	602-790-1137
CO	Westminster, Future Elctrns.	303-650-0123
FL	Altamonte Springs, Control Design	305-788-3220
CA	Anaheim, Time Elctrns.	714-937-0911
IL	Chicago, Newark	312-784-5100
MO	Kansas City, L Comp	316-265-5100
MN	Minneapolis, Control Design	612-721-1628
FL	Miramar, JR Controls, Inc.	305-963-6142
GA	Norcross, Pioneer	404-448-1711
FL	Orlando, Future Elctrns.	305-767-8414
FL	Pompano Bch., Control Design	305-782-1388
FL	St. Petersburg, SESCO	813-576-6991
GA	Stone Mtn., J R Controls, Inc.	404-979-3502
FL	Winter Springs, JR Controls, Inc.	813-961-9478
CA	Anaheim, Control Design	213-821-1516
GA	Atlanta, SESCO	404-458-6423
GA	Columbus, Interstate Elctrl. Supp.	404-324-1000
IL	Genoa, Control Design	815-784-6519
MN	Minneapolis, Newark	612-331-6350
GA	Norcross, Future Elctrns.	404-441-7676
IL	Addison, L Comp	312-628-1400
IL	Algonquin, Marshall Wolf	312-658-8130
CA	Chatsworth, Time Elctrns.	818-998-7200
IL	Hoffman Estates, IEC	312-843-2040
IN	Indianapolis, Control Design	317-788-4559
CA	Los Angeles, Elec. Switches	213-660-1310
IL	Schaumberg, Future Elctrns.	312-882-1255
IL	Wood Dale, Time Elctrns.	312-350-0610
IA	Cedar Rapids, Control Design	319-373-2923
CA	Riverside, Elctrn. Supp.	714-683-7300
LA	Baton Rouge, SESCO	504-928-4951
LA	New Orleans, Currier & Roser	504-734-9201
GA	Norcross, A.A. Elec.	404-449-8670
CA	San Carlos, Control Design	415-592-4808
MO	Maryland Hgts., L Comp	314-291-6200
MO	St. Louis, Time Elctrns.	314-391-6444
NJ	E. Rutherford, A.A. Elec.	201-777-5477
NJ	Oakland, Relay Specialties	201-337-1000
NJ	Pennsauken, Resco	609-662-4000
NM	Albuquerque, Bell Inds.	505-292-2700
NM	Albuquerque, Elctrn. Dvcs.	505-884-2950
NY	Buffalo, Summit	716-887-2800
NY	Hauppauge, JACO	516-273-5500
NY	Hauppauge, Time Elctrns.	516-273-0100
NY	Rochester, Future Elctrns.	716-272-1120
NY	Rochester, Simcona Elctrns.	716-328-3230
NY	Rochester, Summit	716-334-8110
CA	San Diego, Elctrn. Supp.	619-585-1023
CA	San Diego, Time Elctrns.	619-586-1331
NY	Syracuse, Future Elctrns.	315-451-2371
NY	Syracuse, Time Elctrns.	315-432-0355
NC	Charlotte, Control Design	704-588-4410
NC	Charlotte, Time Elctrns.	704-522-7600
NC	Greensboro, Hammond Elctrns.	919-275-6391
NC	Raleigh, SESCO	919-467-7482
CA	San Jose, Integrated Elctrns.	408-263-1100
KS	Wichita, L Comp	316-265-8501
OH	Columbus, Elctrns. Mktg. Corp.	614-299-4161
OH	Dublin, Time Elctrns.	614-761-1100
OH	Highland Hgts., Elctrns. Mktg. Corp.	216-442-3441
OH	Kettering, Elctrns. Mktg. Corp.	513-439-4711
CA	Sunnyvale, Time Elctrns.	408-734-9888
CA	Torrance, Time Elctrns.	213-320-0880
OK	Tulsa, SESCO	918-622-3868
OR	Beaverton, Cascade Data Mktg.	503-641-9266
OR	Beaverton, Future Elctrns.	503-645-9454
OR	Beaverton, IEC	503-641-1690
MD	Columbia, Time Elctrns.	301-964-3090
CO	Denver, Integrated Elctrns.	303-292-6121
OR	Lake Oswgoo, Bell Inds.	503-241-4115
OR	Portland, Time Elctrns.	503-684-3780
CO	Englewood, Time Elctrns.	303-799-8851
PA	King of Prussia, Time Elctrns.	215-337-0900
PA	Malvern, Control Design	215-296-0150
PA	Newton Sq., QDI	215-359-1000
MA	Peabody, Time Elctrns.	617-532-6200
PA	Philadelphia, Future Elctrns.	609-778-7600
PA	Willow Grove, Resco Elctrns.	215-659-4575
SC	Greenville, Hammond	803-233-4121
SC	Greenville, SESCO	803-297-8306
CO	Wheatridge, Bell Inds.	303-424-1985
CT	Bethel, Future Elctrns.	203-743-9594
TN	Hixson, Techni-Tronics	615-842-0514
TN	Knoxville, SESCO	615-588-5455
TN	Nashville, A.A Elec.	614-832-6632
MA	Westboro, Future Elctrns.	617-366-2400
TX	Austin, SESCO	512-892-2490
MN	Bloomington, Time Elctrns.	612-944-9192
TX	Carrollton, Time Elctrns.	214-241-7441
CT	Cheshire, Time Elctrns.	203-271-3200
TX	Dallas, Control Design	214-358-1441
TX	Dallas, SESCO	214-231-9364
TX	Dallas Metro, Newark	214-340-3585
FL	Ft. Lauderdale, Hammond Elctrns.	305-973-7103
TX	Houston, Newark	713-782-4800
TX	Houston, SESCO	713-999-3510
TX	Houston, Time Elctrns.	713-530-0800
MI	Oak Pk., Newark	313-968-2950
TX	Richardson, Future Elctrns.	214-437-2437
TX	Richardson, JACO	214-235-9575
FL	Ft. Lauderdale, Time Elctrns.	305-974-4800
UT	Salt Lake City, Bell Inds.	801-972-6969
UT	Salt Lake City, Future Elctrns.	801-972-8489
UT	Salt Lake City, Time Elctrns.	801-973-8181
VA	Chester, Virginia Control Equip.	804-796-3001
FL	Lakeland, A.A. Elec.	813-665-6940
VA	Roanoke, Virginia Control Equip Comp.	703-342-6927
WA	Bellevue, Bell Inds.	206-747-1515
WA	Bellevue, Cascade Data Mktg.	206-747-6190
WA	Bellevue, Future Elctrns.	206-881-8199
WA	Bellevue, IEC	206-455-2727
WA	Bellevue, Time Elctrns.	206-641-3640
FL	Orlando, Hammond Elctrns.	305-849-6060
WA	Redmond, Time Elctrns.	206-882-1600
MO	St. Louis, Control Design	314-426-3150
WI	Milwaukee, Indl. Elctrns.	414-276-1212
WI	New Berlin, Control Design	414-784-1015
Can	Calgary, Saynor Varah	403-255-9550
Can	Calgary, Alberta, Future Elctrns.	403-235-5325
Can	Don Mills, Ont., Saynor Varah	416-445-0723
Can	Edmonton, Alberta, Future Elctrns.	403-438-2858
Can	Mississauga, Ont., Newark	416-629-2266
Can	Montreal, Future Elctrns.	514-694-7710
FL	Orlando, Time Elctrns.	305-841-6565
Can	Ottawa, Future Elctrns.	613-820-8313
Can	Toronto, Ont., Future Elctrns.	416-638-4771
Can	Vancouver, BC, Future Elctrns.	604-294-1166
Can	Vancouver, BC, Saynor Varah	604-873-3211
Can	Winnepeg, Saynor Varah	204-633-6190

GORE
Creative Technologies Worldwide

W. L. GORE & ASSOCS., INC., 1505 N. Fourth St., P.O. Box 1389, Flagstaff, AZ 86002, Tel: 602-526-1290, TWX: 910-972-0969; FSC No.: 60622; *Sls. Mgr.:* Burt Chase (Intl.) ..... **C•1860-1862**

Local Sales Offices & Reps

AZ	Flagstaff	602-526-1290
AZ	Phoenix	602-431-0077
CA	Chula Vista	619-422-1420
CA	Huntington Beach	714-895-6666
CA	Milpitas	408-433-0454
CO	Lakewood	303-989-7752
DE	Newark	302-738-4880
FL	Orlando	305-345-8131
FL	Orlando	305-725-4910
MA	Wakefield	617-246-1818
MN	Burnsville	612-435-6200
NY	Hyde Pk.	914-229-7165
NY	Port Jefferson	516-751-9703
NY	Rochester	716-223-3541
NC	Chapel Hill	919-967-0426
TX	Dallas	214-349-0853
TX	Manor	512-276-7600
WA	Redmond	206-881-3017

Local Distributors

CA	Los Angeles, Force Elctrns.	213-772-1324
CA	Orange County, Force Elctrns.	714-522-1324
CA	Sacramento, Force Elctrns.	916-443-1324•
CA	San Diego, Force Elctrns.	619-569-9661
CA	San Jose, Force Elctrns.	408-435-1324

W. L. GORE & ASSOCS., 555 Paper Mill Rd., Newark, DE 19714, Tel: 302-738-4880, TWX: 510-666-0825; Empl.: 2000; *Sls. Mgr.:* A. B. Chase

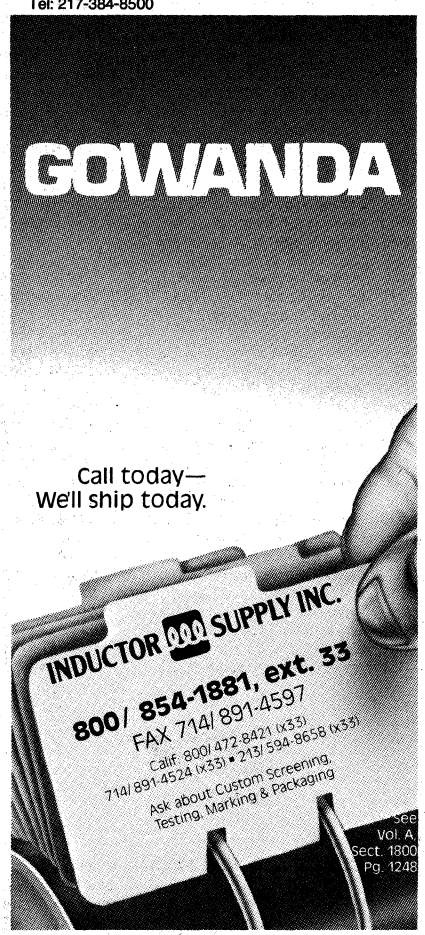
GORMAN MACHINE CORP., 7 Burke Dr., Brockton, MA 02401, Tel: 617-588-2900, TWX: 710-345-0679, FAX: 617-588-9560; Empl.: 25; *Sls. Mgr.:* Kenneth P. Gorman

GORMAN-REDLICH MFG. CO., 257 W. Union St., Athens, OH 45701, Tel: 614-593-3150; Empl.: 4; *Sls. Mgr.:* Jim Gorman

GOULD INC., Corporate Headquarters, 10 Gould Center, Rolling Meadows, IL 60008; Empl.: 20,650

GOULD INC., Circuit Protection Div., 374 Merrimac St., Newburyport, MA 01950, Tel: 617-462-6662/3131, Telex: 94-7427, TWX: 710-347-0264; *Sls. Mgr.:* Malcolm Allison

GOULD COMPION, 1101 E. University, Urbana, IL 61081, Tel: 217-384-8500



GOULD INC., Design & Test Sys. Div., 19050 Pruneridge Ave., Cupertino, CA 95014-0718, Tel: 408-988-6800, TWX: 910-338-0509; *Sls. Mgr.:* Dan Cockcroft

GOULD INC., Meas. Sys. Div., 2230 Statham Blvd., Oxnard, CA 93030, Tel: 805-487-8511, Telex: 65-9223; Empl.: 500

GOULD INC., Motion Control Div., 2701 N. Green Bay Rd., Racine, WI 53404, Tel: 414-637-6591, Telex: 201-309

GOULD INC., POWER CONVERSION DIV., See RTE Deltic Corporation 4c

GOULD INC., Programmable Control Div., Box 83, S.V.S., Andover, MA 01810, Tel: 617-475-4700, Telex: 947-402, TWX: 710-347-6610; *Sls. Mgr.:* George Dannecker; *Dist. Mgr.:* Richard Bell

GOULD INC., Recording Systems Div., 3631 Perkins Ave., Cleveland, OH 44114, Tel: 216-361-3315, Telex: 196113GLD RS UT; FSC No.: 96795; Empl.: 550; *Sls. Mgr.:* Gary Brown ..... **D•1407**

Local Sales Offices & Reps

AZ	Mesa, Gould Inc., Recording Sys. Div.	602-833-1602
CA	Cerritos, Gould Inc., Recording Sys. Div.	213-404-1919
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NM	Albuquerque, Gould Inc., Recording Sys. Div.	505-292-4063
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CA	San Diego, Earle & Assocs.	619-278-5441
CO	Westminster, Western Region Mktg.	303-430-8883
FL	Longwood, NSL Assocs.	305-629-5226
GA	Atlanta, L & D, Inc.	404-395-7079
IL	Niles, W. F. Hamilton Co.	312-965-8757
IA	Cedar Rapids, Snider Sls. Co.	319-362-4410
KS	Overland Park, Barnes MidWest Sls.	913-469-9688
MA	Reading, Lincoln Assocs.	617-944-9020
MI	Southfield, Fred H. Gehrke & Assocs.	313-559-5363
MN	Chanhassen, Barnes Sls. Assocs.	612-934-2907
NJ	Whippany, Robert Smith Assocs.	201-540-0204
NY	Morrisville, Naylor Electric	315-684-9620
NY	Plainview, Robert Smith Assocs.	516-681-3155
NC	Raleigh, L & D, Inc.	919-876-5301
OH	Cincinnati, Stegman Blaine Mktg.	513-729-1969
OH	Cleveland, Stegman Blaine Mktg.	216-572-0003
PA	King of Prussia, Linear Sls.	215-783-5350
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Can	St. Laurent, Componetics	514-334-1464

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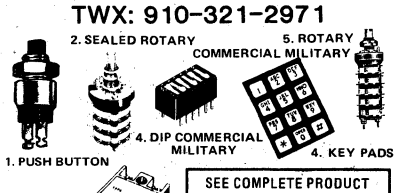

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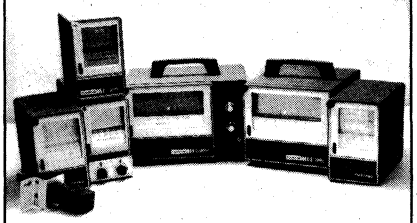

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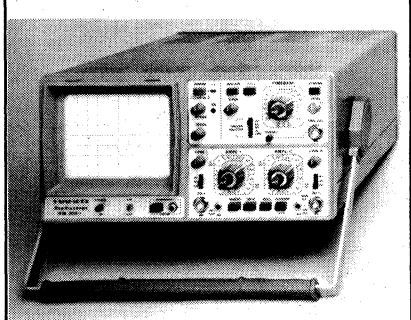

Model 203

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GUIDELINE INSTRUMENTS, 4403 Vineland Rd, Suite B-10, Orlando, FL 32811-7335, Tel: 305-423-8215, Telex: 856443; Empl.: 85; *Sls. Mgr.:* W. Dietz

GULTON ENGINEERED MAGNETICS, A Mark IV Company, 13041 Cerise Ave., Hawthorne, CA 90250, Tel: 213-679-0111, TWX: 910-325-6208; FSC No.: 06509; Empl.: 250

GULTON GRAPHIC INSTRUMENTS DIV., Gulton Ind'l. Pk., E. Greenwich, RI 02818, Tel: 401-884-6800, TWX: 710-387-1500; Empl.: 400

GULTON INDUSTRIES, INC., Servonic Div., 1644 Whittier Ave., Costa Mesa, CA 92627, Tel: 714-642-2400, 800-854-4066, Telex: 183-532, TWX: 910-596-1352; FSC No.: 99564; Empl.: 320; *Sls. Mgr.:* Tom Perrin, Jr.

GUNTHER, W., GMBH, Virnsberger Strasse 51, D 8500 Nurnberg 82, West Germany, Tel: (0)911/65521 or 65520, TWX: 622351 Wigu d; Empl.: 340; *Sls. Mgr.:* Peter Hammel

Refer to Gordos Corporation, Bloomfield, New Jersey for Representatives and Authorized Distributor information.

GW INSTRUMENTS, INC., P.O. Box 2145, Cambridge, MA 02141, Tel: 617-625-4096

G W THREE INCORPORATED, 7623 Fullerton Rd., 2nd Floor, Springfield, VA 22153, Tel: 703-451-2043

HACKER INSTRUMENTS, Box 657, Fairfield, NJ 07007, Tel: 201-226-8450, Telex: 642769; Empl.: 15

HADES MANUFACTURING CORP., 151-A Verdi St, Farmingdale, NY 11735, Tel: 516-249-4244; FSC No.: 51578; Empl.: 18; *Sls. Mgr.:* K. Norris

HADLEY, ROBERT M. CO., INC., 750 West 51st St, Los Angeles, CA 90037, Tel: 213-234-9091, FAX: 213-234-2779; Empl.: 135; *Sls. Mgr.:* Charles A. Hadley

HADRON, INC., 9990 Lee Hwy., Fairfax, VA 22030, Tel: 703-359-6250, Telex: 248454 TELCM UR; *Sls. Mgr.:* D. Laiti

HAFSTROM TECHNICAL PRODUCTS, INC., P.O. Box 9829, San Diego, CA 92109, Tel: 619-274-8822; Empl.: 10; *Sls. Mgr.:* J. R. Hafstrom

THE HALL COMPANY, 420 East Water St., Urbana, OH 43078, Tel: 513-652-1376; Empl.: 69 ..... **B•1714**

Local Sales Offices & Reps

AL	Huntsville, Elctrn. Mfgs. Agents.	205-830-4030
CA	Delmar, Chapman & Chapman	619-755-0412
CA	Orange, V.R. Elctrns.	714-633-6450
CA	Santa Clara, Context Engrg.	408-748-8676
CO	Westminster, D. Barth & Assocs.	303-427-8679
GA	Roswell, Elctrn. Mfgs. Agents	404-992-7240
IL	Des Plaines, Lincoln/Hodges & Assocs.	312-297-3810
IN	Indianapolis, Secor, Inc.	317-846-4132
MD	Glen Arm, J. B. Anderson & Assocs.	301-592-5188
MA	Scituate, Olsen Tech. Sls. Inc.	617-545-5101
MI	Dearborn, Pitcher Poulin, Inc.	313-582-5450
MO	St. Louis, Reps. of Elctrn. Prods.	314-868-9805
NJ	Morristown, Andrews & Andrews Inc.	516-692-8686
NY	Clark Mills, KLM Garner Inc.	315-853-6126
NY	Pittsford, KLM Garner Inc.	716-381-8350
OH	Dayton, Del Steffen & Assocs., Inc.	513-293-3145
OR	Bellevue, Olson/Ferree & Assocs.	206-883-1792
PA	Pittsburgh, Del Steffen & Assocs., Inc.	412-276-7366
TX	Richardson, Precision Technlg. Assocs.	214-234-8071
WI	Milwaukee, Taylor Mktg.	414-332-1211
Can	Pointe Claire, Que., A. R. Gray Assocs.	514-694-6378

HALLMARK METALS INC., 610 W. Foothill Blvd., Glendora, CA 91740, Tel: 213-335-1263; Empl.: 20; *Sls. Mgr.:* Robert Schoenick

HALLMARK NAMEPLATE, INC., 1855 New Highway, Farmingdale, NY 11735, Tel: 516-454-0700, Telex: 510-222-0884; *Sls. Mgr.:* Ron Broussard

HALMAR ELECTRONICS, INC., 900 N. Hague Ave., Columbus, OH 43204, Tel: 614-275-0530, TWX: 810-482-1654; Empl.: 110

HAMAMATSU PHOTONICS K.K., 325-6 Sunayama-Cho, Hamamatsu City, Shizuoka Pref, Japan, Tel: 0534-52-2141; FSC No.: 0534-56-7889; Empl.: 1060; *Sls. Mgr.:* H. Hiruma

HAMEG, INC., 88-90 Harbor Rd., Port Washington, NY 11050, Tel: 516-883-3837, TWX: 510-223-0889

HAMILTON METALCRAFT, 848 N. Fair Oaks Ave., Pasadena, CA 91103, Tel: 818-795-4811; *Sls. Mgr.:* Mel Stahler

HAMILTON STANDARD CONTROLS/STANCOR, See Stancor/Hamilton Standard Controls

HAMILTON STANDARD CONTROLS, 9100 Airport Dr., P.O. Box 11648, Fort Wayne, IN 46859, Tel: 219-747-6142, TWX: 810-295-0699; Empl.: 3,700; *Sls. Mgr.:* C. Michalski

HAMILTON STANDARD DIV., United Technologies Corp., Windsor Locks, CT 06096, Tel: 203-623-1621

HAMLIN

HAMLIN, Lake & Grove Sts., Lake Mills, WI 53551, Tel: 414-648-2361, TWX: 910-260-3740; Empl.: 1000; *Sls. Mgr.:* Ken Deans ..... **B•1082, 1431, 1620, 1790**

Local Sales Offices & Reps

AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	213-404-3881
CA	San Diego, Westrep	619-566-6580
CA	Santa Clara, Westrep	408-988-8833
CO	Boulder, R-G Entprs.	303-447-9211
CT	North Haven, Coakley, Boyd & Abbett, Inc.	800-225-8402
FL	Casselberry, Southern Elctrn. Mktg.	305-831-2822
GA	Jonesboro, Wallace Elctrn. Sls.	404-471-6297
IL	Skokie, Indl. Rep.	312-967-8430
IN	Carmel, TMC	317-844-8462
IN	Fort Wayne, TMC	219-432-5553
IA	Cedar Rapids, Palatine Sls.	319-365-8071
KY	Louisville, TMC	502-499-7808
MD	Churchville, Atlantic Technical Sls.	301-879-2236

MA Needham Heights, Coakley, Boyd & Abbett, Inc. 617-444-5470
MI Brighton, A.P. Assocs. 313-229-6550
MN Minneapolis, R-J, Inc. 612-866-3661
MO Blue Springs, Palatine Sls. 816-229-4007
MO Hazelwood, Palatine Sls. 314-839-0800
NH Plaistow, Coakley, Boyd & Abbett, Inc. 800-225-8402
NJ Marlton, Naudain Assoc. 609-983-5300
NJ West Caldwell, Grimm Siegel 201-575-9300
NY Great Neck, Tylinski Assocs. 516-466-9070
NY Ithaca, Bob Dean, Inc. 607-257-1111
NC Kernersville, Wallace Elctrn. Sls. 919-996-2742
OH Dayton, Bear Mktg. 513-299-5877
OH Richfield, Bear Mktg. 216-659-3131
TX Austin, Allied Comps. 512-331-4494
TX Dallas, Allied Comps. 214-238-0408
TX Hurst, Allied Comps. 817-589-0456
WA Bellevue, Testco, Inc. 206-454-7422
WI Milwaukee, Indl. Rep. 414-259-0965
Can Markham, Ont., Weber Div. of DGW Elctrns. 416-475-8500
Can Ottawa, Ont., Weber Div. of DGW Elctrns. 613-728-2746

Local Distributors

AZ Phoenix, Heilind Elctrns. 602-437-1060
AZ Tempe, Circuit Specialties 602-966-0764
CA Buena Park, Cypress/RPS Elctrns. 213-744-0255
CA Fullerton, Pyramid Elctrns. 714-773-0781
CA Hawthorne, Electrosonic Comps. 213-988-4455
CA San Jose, Cypress Elctrns. Inc. 408-945-8400
CA Santa Clara, Patane Avionics 408-496-6151
CA Santa Clara, Pyramid Elctrns. 408-727-9810
CO Englewood, Ind. Elctrns. 303-694-9444
CT Bethel, Heilind Elctrns. 203-797-8600
CT Hartford, Hatry Elctrns. 203-527-1881
CT New Haven, Hatry Elctrns. 203-787-5921
CT Stratford, Hatry Elctrns. 203-375-5866
CT Wallingford, Sager Elect. Supp. 203-265-4600
CT Waterbury, Hatry Elctrns. 203-755-1181
FL Lakeland, AA Elec. 813-665-6941
FL Longwood, Intertec Inc. 305-834-7777
FL Miami, Elctrn. Equip. Co. 305-871-3500
FL Orlando, Hammond Elctrn. 305-849-6060
FL Tampa, Leader Elctrns. 813-870-3315
GA Atlanta, Specialty Distrbg. Co. 404-873-2521
GA Norcross, AA Elec. 404-449-8670
IL Chicago, Newark Elctrns. 312-784-5100
IL Palatine, Ohm Elctrns. 312-359-5500
IN Carmel, Altex Elctrns. 317-848-1323
IN Ft. Wayne, Graham Elctrns. 219-424-3422
IN Indianapolis, Graham Elctrns. 317-634-8202
IA Cedar Rapids, Iowa Radio Supp. Co. 319-393-4510
MD Gaithersburg, Pioneer/Wash. 301-921-0660
MA Burlington, Heilind Elctrns. 617-272-5610
MA Hingham, Sager Elec. Supp. 617-749-6700
MI Grand Rapids, Calder Elctrns. 616-698-7400
MI Oak Park, Newark Elctrns. 313-967-0600
MN Fridley, Voyager Electronics 612-571-7766
MN Minneapolis, Newark Elctrns. 612-331-6350
MO St. Louis, Olive Indl. Elctrns. 314-426-4500
NH Hudson, Heilind Elctrns. 603-883-9536
NJ Berlin, General Comps., Inc. 609-768-6767
NJ Oakland, Relay Spec. 201-337-1000
NJ Pennsauken, Resco Elctrns. 609-662-4000
NM Albuquerque, Bell Inds. 505-292-2700
NY Buffalo, Summit Distr. 716-844-3540
NY Lynbrook, Peerless Radio Corp. 516-593-2121
NY Rochester, Masline Elctrns. 716-546-5373
NY Rome, Rome Elctrns. 315-337-5400
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
OH Cincinnati, Graham Elctrns. 513-772-1661
OH Solon, Repco 216-248-8900
OK Tulsa, Radio, Inc. 918-587-9123
OR Portland, Radar Elec. 503-233-3691
PA McKeesport, Barno Radio 412-751-5966
TX Dallas, Harrison Equip. Co. 214-239-2750
TX Farmers Branch, Heilind Elctrns. 214-351-2058
TX Fort Worth, Allied Elctrns. 214-265-9341
TX Houston, Harrison Equip. 713-879-2711
TX Houston, Heilind Elctrns. 713-988-2711
WA Kent, Interface Elctrns. 206-872-5800
WA Seattle, Radar Elec. Co. 206-282-2511
WA Spokane, Radar Elec. Co. 509-747-3053
WI Cedarburg, AA Elec. 414-377-7500
WI Mequon, Taylor Elec. 414-241-4321
Can Burnaby, B. C., Rae Indl. Elctrns. 604-291-8866
Can Burnaby, B. C., Semad Elctrns. 604-438-2515
Can Dorval, Que., Semad Elctrns. 514-636-4614
Can Downsview, Ont., Rae Indl. Elctrns. 416-736-1750
Can Markham, Ont., Semad Elctrns. 416-475-3922
Can Ottawa, Ont., Semad Elctrns. 613-729-6145
Can Surrey, B. C., Memco Elctrn. Mkts. 604-590-1553

HAMMOND MANUFACTURING CO., 1690 Walden Ave., Buffalo, NY 14225, Tel: 716-894-5710, FAX: 716-894-1156; Empl.: 1,450; *Sls. Mgr.:* Ray Shatzel ..... **C•1058**

Local Sales Offices & Reps

AZ Scottsdale, Mahaffey & Assocs. 602-991-9790
CA Laguna Hills, English/Damco Co. 714-837-3801
CA Redwood City, Hickey Indl. Sls. 415-368-3849
CO Northglenn, Challenge Sls. 303-450-2402
FL Coral Springs, HAI Elctrns. 305-752-7520
GA Atlanta, Millar Elctrns. 404-634-3350
IL Highland Park, Bransky Sls. 312-433-2375
IN Indianapolis, Wilson Tech. Sls. 317-872-2513
MA N. Scituate, W. A. Hendrickson Co. 617-545-0652
MI Southfield, Component Assocs. 313-557-3232
MN Golden Valley, Ambassador Inds. Mktg. 612-542-8437
MO St. Louis, Kathrinus, Kelly & Baumhauer 314-647-2400
NY Fairport, Net Sls. 716-223-1030
NY Islip, ABS Technlgs., Inc. 516-277-7101
NC Raleigh, Millar Elctrns. 919-828-8840
OH Medina, JC Hofstetter 216-241-4880
OR Portland, Dussault & Assocs., Inc. 503-641-8780
PA Springfield, George M. Conneen 215-544-5884
TX Dallas, J. Y. Schoonmaker Co., Inc. 214-349-1650
WA Seattle, Dussault & Assocs., Inc. 206-527-5454

Local Distributors

AL Birmingham, ACK, Inc. 205-322-0588
AZ Phoenix, Electronic Parts Co. 602-277-7281
AZ Tucson, Southwest Sls. 602-628-1613
AR Ft. Smith, Carlton Bates 501-646-8201
AR Little Rock, Carlton Bates 501-562-9100
AR Texarkana, Lavender Dist. Corp. 501-773-4631
CA Chatsworth, Poco Sls. 818-700-8727
CA Manhattan Beach, Prime Electro 213-379-3642
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Redwood City, H.D.B. 415-368-1388
CA San Diego, Western Radio Elec. 619-268-4400
CA San Jose, Con. Parts, Inc. 408-435-1200
CA San Jose, Quement Elctrns. 408-998-5900
CA San Rafael, Elctrns. Plus 415-457-0466
CA Santa Ana, ITT Multicomponents 714-835-9019
CA Santa Clara, Pyramid Elctrns. 408-727-9810
CO Denver, Fistell Elctrns. 303-629-1312
CO Denver, Integrated Elctrns. 303-292-6121
CT Bridge Port, Park Distrbg. 203-366-7200
CT Danbury, Pilgrim Elec. 203-792-7274
CT Hartford, Hatry Elec. 203-527-1881
CT Middletown, Midstate Elec. 203-632-1138
CT New London, Jan Elctrn. Supp. 203-442-4386
CT Norwalk, Cobra 203-847-6442
CT Stratford, Hatry Elec. 203-375-5866
DE Wilmington, Whlsl. Elctrns. 302-652-3222
FL Ft. Lauderdale, Hammond Elctrns. 305-973-7103
FL Orlando, Hammond Elctrns. 305-841-1010
GA Atlanta, Ack, Inc. 404-351-6340
GA Atlanta, Wholesale Dist. 404-447-8431
GA Norcross, Whitehead Elctrns. 404-923-6667
IL Chicago, Newark Elec. 312-784-5100
IL Joliet, Mainline Elec. 815-436-3900
IL Mt. Prospect, Magnuson Elctrns. 317-956-0700
IL Niles, Joseph Elec. 312-297-4200
IL Wheeling, Hawk Elec. 312-459-4030
IN Indianapolis, Advent Elec. 317-872-4910
IN Indianapolis, Mar Elec. 317-633-6699
IN Lafayette, C.W.Y. Elec. 317-448-1611
IA Cedar Rapids, Dee Elec. 319-365-7551
KY Louisville, Peerless Elctrns. 502-637-7677
LA New Orleans, W. B. Allen Supp. 504-525-8222
MD Beltsville, Mark Elctrns. 301-792-0072
MO Gaithersburg, M. S. Elec. 301-921-0200
MA Haverhill, Spartan Elctrns. 617-373-1200
MA Lynn, Land Elec. Supp. 617-592-2220
MA Needham, Y.D.I. 617-449-1005
MA Wellesley Hills, Target Elctrns. Supp. 617-235-2545
MA Woburn, Abbott Elec. 617-935-2040
MI Farmington Hills, Advent Elctrns. 313-477-1650
MI Farmington Hills, LSI Mktg. 313-474-4400
MI Grand Rapids, S. F. Electrns. 616-459-0216
MN Eden Prairie, Cassidy Elec. 612-944-0100
MN Minneapolis, Tortec Corp. 612-866-3662
MO Kansas City, Electronic Supp. 816-931-1321
MO St. Louis, Van Sickle Radio 314-621-5000
NV Las Vegas, Kiesub Corp. 702-733-0024
NH Dover, American Radio Corp. 603-335-3118
NJ Edison, Brownell Elctrns. 201-287-2037
NJ Oakland, Relay Specialties 201-337-1000
NJ Raritan, Masters Elctrn. Supp. 201-725-3533
NM Albuquerque, Beta Tron Elctrns. 505-344-2381
NY Buffalo, Genesee Ind. Elec. 716-873-9661
NY Buffalo, Summit Dist. 716-887-2800
NY Commack, Spartan Elctrns. 516-499-9500
NY Hempstead, Davis Elctrns. 516-483-9200
NY Poughkeepsie, Chief Elctrns. 914-471-1300
NY Rochester, Goldcrest Elec. 716-546-8464
NY Rochester, Masline Elec. 716-546-5373
NY Rome, Rome Elec. 315-337-5400
NY Syracuse, Salina Elec. 315-422-2336
NY Troy, Trojan Elec. 518-272-4481
NC Greensboro, Hammond Elec. 919-275-6391
NC Raleigh, Brownell Electro 919-876-6524
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
OH Cleveland, Roberts Elec. 216-238-1711
OH Cleveland, Selectronics 216-243-9700
OH Columbus, Thompson Elec. Supp. 614-228-6191
OH Dayton, Stotts Friedman 513-298-5555
OH Toledo, Warren Radio 419-248-3364
OK Oklahoma City, Radio, Inc. 405-528-2391
OK Tulsa, Radio, Inc. 918-587-9123
PA Drexel Hill, Kass Elec. 215-449-2300
PA Erie, Warren Radio 814-454-5285
PA McKean, Advacom 814-476-7774
PA Wayne, Peak Elec. 215-293-9000
PA York, Rosen Elctrns. 717-843-3875
RI Pawtucket, Major Elec. Supp. 401-725-7400
RI Providence, Hope Elctrns. 401-521-5600
SC Greenville, EMSCO 803-233-4121
TN Knoxville, Bondurant Bros. 615-573-9151
TX Austin, Galtronics 512-837-7470
TX Corpus Christi, Douglas Elec. 512-883-5103
TX Dallas, Off-the-Shelf Comps. 214-247-0052
TX Dallas, Wholesale Elec. 214-824-3001
TX Ft. Worth, Allied Elec. 817-336-5401
TX Houston, The Altair Co. 713-462-3029
TX Midland, ESI Supp. 915-694-9657
TX San Antonio, Sherman Elec. 512-224-1001
UT Salt Lake City, Standard Elec. Supp. 801-486-3371
WA Bellevue, Integrated Elec. 206-455-2727
WI Mequon, Taylor Elec. 414-241-4321
WI Oshkosh, Elctrn. Inds. 414-235-8930
WI Racine, Badger Elctrn. Supp. 414-637-1256

HANCOCK ELECTRONICS CORP., 135 King St., P.O. Box 557, Cohasset, MA 02025, Tel: 617-383-6610; FSC No.: 66851; Empl.: 8; *Sls. Mgr.:* Robert H. Sturdy

H & T COMPONENTS INC., Unitech Plc., 35 Carlough Road, Bohemia, NY 11716, Tel: 516-567-2282, Telex: 510-228-7886; *Sls. Mgr.:* Joe Vallerand; *Dist. Mgr.:* Mario Nardini

Local Sales Offices & Reps

AZ Phoenix, Adtek, Inc. 602-931-9289
CA Irvine, Vale Elctrns. 714-551-4004
CA Laguna Niguel, H & T Comps., Inc. 714-831-8705
CA Milpitas, Hickey & Roth 408-262-0926
CO Englewood, Romulus Elctrns. 303-770-4888
CT Prospect, Cycle Sls. 203-755-2888
IL St. Charles, XYZ Mktg. 312-584-3001
MA Harvard, Cycle Sls. 617-456-6868
MN Minneapolis, D. A. Case Assocs. 612-869-3700
NJ Medford, Champion Elctrns. 609-983-0932
NY Rahway, R. E. Breuer Co. 201-388-5045
OR Portland, Temco Northwest 503-649-8375
TX Dallas, Beacon Mfrs. 214-437-1505
UT Salt Lake City, Charles Fields & Assocs. 801-531-6177
WA Bothell, Temco Northwest 206-821-5434
WI Colgate, Rep L & Assocs. 414-628-4016

Local Distributors

AZ Tuscon, Southwest Sls. 602-628-1613
CA Corona, Konex Corp. 800-821-8021
CA Costa Mesa, Eric Elctrns. 714-751-1185
CA Cypress, On-Line Elctrns. 714-826-8200
CA El Segundo, Force Elctrns. 213-772-1324
CA Placentia, Telesis Elctrns. 714-579-7555
CA S. San Francisco, Peters deLaet 415-873-9595
CA San Diego, Southland Comps. 619-578-6634
CA San Francisco, Force Elctrns. 408-435-1324
CA San Jose, Eric Elctrns. 408-262-1111
CO Arvada, Denver Beta Wintronics 303-431-7161
CT Bridgeport, Millennium Elctrns. 203-372-2037
FL Ft. Lauderdale, Comp. Distrs. 305-971-4950
GA Norcross, Whitehead Elctrns. 404-923-6667
IL Lisle, Components, Inc. 312-852-7707
IA Marion, Barton Digital 319-476-2247
MD Baltimore, Pyttronic Inds. 301-792-0780
MA Andover, Aved Elctrns. 617-688-3800
MA Lowell, Anixter-Colonial 617-459-6400
MA Wilmington, Heilind Elctrns. 617-657-4870
MI Grand Rapids, Calder Elctrns. 616-698-7400
MN Shore View, Northern Automatic 612-481-0022
MO Valley Pk., Beckworth Computer 314-225-4846
NH Manchester, Components North 603-624-4661
NY Farmingdale, Pride Elctrns. 516-293-4020
NY Hauppauge, Broadline Elctrns. 516-231-4100
NC Raleigh, Comp. Distrs. 919-834-9465
OH Columbus, Whitehead Elctrns. 614-224-1186
OR Beaverton, Murphy Elctrns. 503-642-2001
PA Montgomeryville, Pyttronic Inds. 215-242-6700
TN Knoxville, Mac-1 Elctrns. 615-966-4143
TX Dallas, Computer Comps. 214-239-0271
TX Houston, Ralphs Indl. Elctrn. Supp. 713-748-4902
UT Salt Lake City, Wintronics 801-483-1882
WA Redmond, Murphy Elctrns. 206-881-1234

HANDY & HARMAN ELCTRN. MATLS. CORP., 72 Elm St, Box 1031, N. Attleboro, MA 02761-1031, Tel: 617-695-1401, Telex: 6711549; Empl.: 600

HANKSCRAFT MOTORS, Div. of Gerber Prods. Co., P.O. Box 120, Reedsburg, WI 53959, Tel: 608-524-4341; Empl.: 550

HANSCOM, H. F., CO., INC., 225 Chapman St, Providence, RI 02905, Tel: 401-941-1455, Telex: 952107; Empl.: 50; *Sls. Mgr.:* William E. Taplin

HARBISON INDUSTRIAL PRODUCTS, Sub. of Polymer Corp., 7205 Hibbs La., Levittown, PA 19057, Tel: 215-943-9000; Empl.: 40

HARDIGG INDS., INC., North Main St, South Deerfield, MA 01373, Tel: 413-665-2163, Telex: 955431; FSC No.: 11214; *Sls. Mgr.:* Norman F. Roberts

HARDMAN INC., 600 Cortlandt St, Belleville, NJ 07109, Tel: 201-751-3000, TWX: 710-995-4940; Empl.: 105; *Sls. Mgr.:* Carl T. Sanford

HAROWE SERVO CONTROLS, Bowmar Inst. Corp., Westtown Rd. at West Chester Pike, W. Chester, PA 19380, Tel: 215-692-2700, Telex: 685-1176; FSC No.: 06989; Empl.: 329; *Sls. Mgr.:* Dennis B. Daisy

HARREL, INC., 16 Fitch St, E. Norwalk, CT 06855, Tel: 203-866-2573; *Sls. Mgr.:* W. Becker ..... **D•1129**

Local Sales Offices & Reps

CA	Sherman Oaks, Windsor Dynamics ...	213-990-4173
CA	Walnut Creek, Viking Instr.	415-946-1226
NY	Cazenovia, P. M. Decew, Inc.	315-655-8602
NC	Pineville, Beck Sls.	704-542-9329
OH	Medina, Odessa Instr. Co.	216-725-0575
PA	Elkins Park, Edwin F. Gregg	215-635-0450
TN	Knoxville, Robert Olsen Co.	615-688-4038

HARRIS CORP., Computer Systems Div., 2101 W. Cypress Creek Rd., Ft. Lauderdale, FL 33309, Tel: 305-974-1700, TWX: 510-956-3096; FSC No.: 29436; Empl.: 1000; *Sls. Mgr.:* Robert F. Mitro

HARRIS CORP., Dracon Div., 809 Calle Plano, Camarillo, CA 93010, Tel: 805-987-9511, Telex: 182327; Empl.: 325; *Sls. Mgr.:* Tom Erdmann; *Dist. Mgr.:* Keith Boutillier

HARRIS CORPORATION/GSSD/PRD INSTRUMENTS, 1200 Prospect Avenue, Westbury, NY 11590, Tel: 516-364-0400, TWX: 510-222-4494; FSC No.: 77327; Empl.: 1,850; *Sls. Mgr.:* Jeff Price

HARRIS MICROWAVE SEMICONDUCTOR, 1530 McCarthy Blvd., Milpitas, CA 95035, Tel: 408-262-2222, TWX: 910-338-2247; *Sls. Mgr.:* Vic Kovacevic

HARRIS SEMICONDUCTOR, Box 883, Melbourne, FL 32901, Tel: 305-724-7400, TWX: 510-959-6259; FSC No.: 34371; Empl.: 2300; *Sls. Mgr.:* Dan McCranie; *Dist. Mgr.:* Charles H. Beaty

HARTLEY PRODUCTS, 1200 N. 23rd St, Ste. 105, Wilmington, NC 28405, Tel: 919-763-7422; *Sls. Mgr.:* R. Schmetterer

HARTMAN SYSTEMS, Figgie Intl., 360 Wolf Hill Rd., Huntington Sta., NY 11746, Tel: 516-427-7500, TWX: 510-226-6982; FSC No.: 92220; Empl.: 310; *Sls. Mgr.:* Robert Griffith

HARTWELL CORP., 900 S. Richfield Rd., Placentia, CA 92670, Tel: 714-993-4200, Telex: 683-485, TWX: 910-596-1294; FSC No.: 83014; Empl.: 425

HARWIL, 1548 17th St, Santa Monica, CA 90404, Tel: 213-829-2310; Empl.: 10

HASCO COMPONENTS, INC., 247-40 Jericho Tpke., Bellrose Village, NY 11001, Tel: 516-328-9292, TWX: 710-582-5750; Empl.: 30; *Sls. Mgr.:* Tab Hauser ..... **B•1404-1412, 1621-1622**

HATHAWAY INSTRUMENTS, Computer Motor Products Div., 10837 E. Marshall, Tulsa, OK 94116, Tel: 918-438-7800, FAX: 918-438-7626; Empl.: 80; *Sls. Mgr.:* Wanda McDonald ..... **B•1185**

HAVERLY SYSTEMS, INC., 78 Broadway, Box 919, Denville, NJ 07834, Tel: 201-627-1424, Telex: 710-987-8402; Empl.: 33; *Sls. Mgr.:* Wm. Parkins

HAYDON SWITCH & INSTRUMENT, 1500 Meriden Rd., P.O. Box 3329, Waterbury, CT 06705, Tel: 203-756-7441, Telex: 643852 - HSIINTLWBY; FSC No.: 02005; Empl.: 350

HAZELTINE CORP., Cuba Hill Rd., Greenlawn, NY 11740, Tel: 516-261-7000, Telex: 96-7800, TWX: 510-226-0239; Empl.: 2,300

Local Sales Offices & Reps

MA	Braintree, Hazeltine Corp.	617-848-3400
VA	Arlington, Hazeltine Corp.	703-892-1800

HBS EQUIPMENT CORPORATION, 3000 Supply Ave., Los Angeles, CA 90040, Tel: 213-726-3033, TWX: 910-580-3179; Empl.: 50; *Sls. Mgr.:* D. Daniel

Local Sales Offices & Reps

AZ	Phoenix, Hill & Co., Inc.	602-990-2925
CA	Morgan Hill, Carmel Chemicals	408-778-2878
FL	Orlando, Gra-Mar, Inc.	305-658-1971
MI	Ann Arbor, Bruce Johnson Co., Inc. ...	313-996-9544
PA	Yardley, Jarec Assocs.	215-493-0511

HC POWER INC., 1571 Parkway Loop, No. D, Tustin, CA 92680, Tel: 714-259-0788; *Sls. Mgr.:* Wallace Hersom ..... **D•1729**

Local Sales Offices & Reps

CA	Laguna Hills, Electro-Venture	714-581-9244
CA	San Jose, Electro-Venture	408-727-1553
TX	Dallas, Dyna Mark Sls.	214-437-3333

HDR POWER SYSTEMS, INC., 600 Oakland Park Ave., Columbus, OH 43214, Tel: 614-262-6832, Telex: 246524; Empl.: 90; *Sls. Mgr.:* Harlan W. Bates

HDS INC., 12310 Pinecrest Rd., Reston, VA 22091, Tel: 703-620-6200, Telex: 64585; Empl.: 110

HEADWAY RESEARCH, INC., 3713 Forest La., Garland, TX 75042, Tel: 214-272-5431, Telex: 73-0257; Empl.: 50

Local Sales Offices & Reps

CA	Anaheim, California Tech. Svcs.	714-632-1724
CA	Santa Clara, California Tech. Serv.	408-496-1156, 408-496-1157
PA	Haverford, Blason Ent., Inc.	609-767-6733

HEATH CO., Hilltop Road, St. Joseph, MI 49085, Tel: 616-982-3210, Telex: 72-9421

HEAT SYSTEMS-ULTRASONICS, INC., 1938 New Hwy., Farmingdale, NY 11735, Tel: 516-694-9555, Telex: 825-339; Empl.: 35; *Sls. Mgr.:* Irwin Leibson

HECON CORP., 31 Park Rd., Tinton Falls, NJ 07724, Tel: 201-542-9200, Telex: 13-2457; Empl.: 200; *Sls. Mgr.:* P. Shine; *Dist. Mgr.:* R. Drum

HEI CORPORATION, 350 E. Randy Road, Carol Stream, IL 60188, Tel: 312-665-5500; Empl.: 10

HEI, INC., 1495 Steiger Lake La., P.O. Box 5000, Victoria, MN 55386, Tel: 612-443-2500, TWX: 910-578-3961, ESYLNK: 62940281, FAX: 612-443-2668; Empl.: 200; *Sls. Mgr.:* Dale Norquist/Dick Clark ..... **B•1224**

Local Sales Offices & Reps

AL	Huntsville, REP, Inc.	205-881-9270
AZ	Phoneix, Toward Engrg.	602-955-3193
CA	Mountain View, Leddy Assocs.	415-969-6313
GA	Tucker, REP, Inc.	404-938-4358
IL	Hoffman Estates, Micro-Tex	312-382-3001
NJ	Pitman, Colrud Corp.	609-589-5866
NC	Raleigh, REP, Inc.	919-851-3007
TX	Austin, Lelco Preston	512-282-2046
TX	Dallas, Lelco Paulson	214-680-0411
VA	Reston, Colrud Corp. South	703-620-6612
WI	Waukesha, Micro-Tex	414-542-5352

HEINEMANN ELECTRIC CO., Brunswick Pike, Alt. Rte. # 1, P.O.Box 6800, Lawrenceville, NJ 08648-0800, Tel: 609-882-4800, Telex: 843431; FSC No.: 74193; Empl.: 480; *Sls. Mgr.:* N. J. Alzamora ..... **B•1246-1247**

Local Sales Offices & Reps

AL	Birmingham, Austin Brown Assocs. Inc.	205-822-6198
AL	Mobile, Austin Brown Assocs., Inc.	205-344-0728
AZ	Phoenix, O'Donnell Assocs. SW	602-944-9542
CA	San Diego, O'Donnell Assocs., Inc.	619-578-1645
CA	San Jose, O'Donnell Assocs. No.	408-263-6500
CA	Torrance, O'Donnell Assocs., Inc.	213-539-9664
CO	Englewood, CompuTech Mktg.	303-773-3981
FL	Oviedo, Conley & Assocs.	305-365-3283
GA	Atlanta, Austin Brown Assocs. Inc.	404-457-6381
ID	Boise, Temco Northwest	208-345-2051
IL	Northbrook, D. Dolin Sls.	312-498-6770
IN	Ft. Wayne, O.H. Bromberg & Assocs. ..	219-456-6010
IA	Hiawatha, Ard Sls. Co.	319-393-6392
KY	Louisville, O.H. Bromberg & Assocs. ..	502-456-1498
MA	Framingham, Sullivan Tech. Sls.	617-620-0195
MI	Southfield, L. H. Dickelman Co.	313-353-8210
MN	Minneapolis, Furber Sls. Co., Inc.	612-881-3620
MO	Creve Coeur, Hill & Co.	314-432-1136
MO	Kansas City, Hill & Co.	816-561-2593
NJ	Ridgewood, Ballou, Inc.	201-444-6990
NM	Albuquerque, O'Donnell Assocs. SW ..	505-298-8585
NY	Farmington, Canavan-Scanlon	716-924-7450
NY	Syracuse, Canavan-Scanlon	315-437-1271
NC	Charlotte, J. Rudisill Assocs.	704-377-6901
OH	Cincinnati, O.H. Bromberg & Assocs. ..	513-771-9333
OH	Cleveland, Brown Elect. Prod.	216-331-2072
OH	Dayton, KW Elctrn. Sls.	513-890-2150
OH	Dayton, O. H. Bromberg & Assocs.	513-434-8788
OR	Hillsboro, Temco Northwest	503-649-8375
PA	Allison Park, KW Electrn. Sls.	412-487-4300
NJ	Lawrenceville, DVS Co.	609-896-1112
TN	Brentwood, Austin Brown Assocs. Inc.	615-373-2068
TN	Maryville, Austin Brown Assocs., Inc. ..	615-977-6004
TX	Dallas, Glidden Electro Equip.	214-341-0610
TX	Houston, Glidden Electro Equip.	713-681-1415
VA	Reston, DVS – South	703-648-1548
WA	Kirkland, Temco Northwest	206-821-5434
WA	Spokane, Temco Northwest	509-534-8635
WI	Milwaukee, Key Entpr.	414-453-9462

Local Distributors

AL	Montgomery, Southern Controls	205-277-5030
CA	Buena Pk., Cypress Elctrns.	213-744-0355
CA	Chatsworth, POCO Sls.	818-700-8727
CA	Inglewood, Newark Elctrns.	213-671-7066
CA	Los Angeles, Master Distrs.	213-452-1229
CA	San Carlos, Campbell & George	415-594-1994
CA	San Jose, Cazco Sls.	408-263-6503
CO	Aurora, Jet Elctrns.	303-364-1000
CO	Denver, CSID Inc.	303-292-9594
CO	Denver, Newark Elctrns.	303-757-3351
CT	Hartford, L. E. Whelan Co.	203-728-5800
CT	New Haven, Green Shaw Co.	203-397-0710
FL	Oviedo, Dixie Sls.	305-365-5211
GA	Atlanta, Georgia Control Cen.	404-876-8833
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Morton Grove, Nedco Elctrns.	312-966-6000
IL	Northbrook, Classic Comps. Supp.	312-272-9650
IN	Indianapolis, Graham Elctrns.	317-634-8202
KS	Edwardville, C. Tennant & Sons	913-441-1801
MD	Columbia, Aztech Elctrns.	301-995-6800
MA	Newton, Green Shaw Co.	617-969-8900
MA	Woburn, Apparatus Svc.	617-933-5999
MI	Oak Pk., Newark Elctrns.	313-967-0600
MI	Southfield, Michigan Lectrols Corp. ...	313-353-1350
MI	Troy, I/O Corp. of Detroit	313-583-9066
MN	Minneapolis, Newark Elctrns.	612-331-6350
NH	Hudson, C & H Elctrns.	603-882-1133
NJ	Lawrenceville, Riverside Comps. Supp.	609-896-1611
NY	Johnson City, Help Elctrns., Inc.	607-729-3528
NY	Melville, Arrow Elctrns.	516-694-6800
NY	Whitestone, Power Electro Supp. Co.	212-767-1447
NY	Yonkers, I/O Corp. of NY	914-964-1940
NC	Charlotte, Joyce Sls. Co.	704-377-1555
OH	Dayton, Duellman Elec.	513-461-5010
OH	Dayton, Stotts Friedman Co.	513-298-5555
OH	Shandon, Cartessa Corp.	513-738-4477
OH	Solon, REH Electrns.	216-248-1636
OH	Valley View, Newark Elctrns.	216-447-8860
OR	Portland, Taylor Elec.	503-233-5321
PA	Conshohocken, I/O Corp. of America	215-825-4610
PA	Erie, REM Elctrns.	814-453-5626
PA	Washington Crossing, Riverside Comps.	215-493-5228
PA	West Chester, West Chester Elec. & Electrn.	215-696-7500
TN	Chattanooga, Techni-Tronics	615-875-5449
TN	Hixson, Techni-Tronics, Inc.	615-842-0514
TX	Dallas, Geeco Sls. Co.	214-341-2626
TX	Garland, Newark Elctrns.	214-494-5911
TX	Houston, Newark Elctrns.	713-782-4800
VA	Ashland, Hanover Controls & Supp. Corp.	804-798-2007
VA	Charlottesville, Va. Radio Supp. Co. Inc.	804-296-4184
VA	Richmond, General Elec. Supp.	804-358-4941
WA	Seattle, H. C. Campbell Co.	206-433-1900
WI	Milwaukee, Hunt Co.	414-383-1781

HEITZ, KARL, INC., P.O. Box 427, Woodside, NY 11377, Tel: 718-565-0004; Empl.: 15

HELICAL PRODS. CO., INC., Box 1069, Santa Maria, CA 93456-1069, Tel: 805-928-3851, TWX: 910-351-5856, FAX: 805/928-2369; FSC No.: 13201; Empl.: 55

HELIONETICS, INC., DECC Div., 17312 Eastman St, Irvine, CA 92714, Tel: 714-546-4731, 800-421-7915, TWX: 910-595-2829; *Sls. Mgr.:* R. S. Tullock

HELM INSTRUMENT CO., INC., 1387 Dussel Drive, Maumee, OH 43537, Tel: 419-893-4356, Telex: 28-6078, FAX: 419-893-1371; Empl.: 52

HENES PRODUCTS, 4225 E. Madison St., Phoenix, AZ 85034, Tel: 602-275-4126, Telex: 530101; Empl.: 25

HERAEUS CERMALLOY DIVISION, Heraeus, Inc., Union Hill Industrial Park, W. Conshohocken, PA 19428, Tel: 215-825-6050, Telex: 846-461; Empl.: 60; *Sls. Mgr.:* W. Wilson, Jr.

HERAEUS INC., Temp. Measurement Group, 222-34 96th Ave., Queens Village, NY 11429, Tel: 212-464-8400, Telex: 142338; Empl.: 250

HERBERT PRODS. INC., 180 Linden Ave., Westbury, NY 11590-0384, Tel: 516-334-6500, TWX: 510-222-5963; Empl.: 98; *Sls. Mgr.:* B. J. Simmons

HERMETIC SEAL CORP., 4232 Temple City Blvd., Rosemead, CA 91770, Tel: 213-283-0411; TWX: 910-587-3352; FSC No.: 04820; Empl.: 200

HERMETIC SWITCH, Box 1325, Hwy. 92, Chickasha, OK 73018, Tel: 405-224-4046, Telex: 796125 Hermetic CKSA; FSC No.: 65623; Empl.: 150; *Sls. Mgr.:* R. Helms/Darla Ballard ..... **B•1623**

Local Sales Offices & Reps

CA	Arcadia, V. Gott & Assocs.	818-445-9728
CA	San Diego, V. Gott & Assocs.	619-280-1041
GA	Atlanta, Electro Technlg. Prods.	404-262-1522
MD	Timonium, Heller Sls.	301-252-4780
MA	Canton, New England Elctrn. Sls.	617-828-4835
MN	Minneapolis, Peterson Sls. & Assocs.	612-944-0030
NY	Oceanside, Current Inds.	516-678-3895
NY	Rochester, Electronic Mktg. Assocs.	716-427-8115
OR	Beaverton, LD Elctrns.	503-684-8221
PA	Furlong, Avenir	215-348-8290
TX	Austin, R. F. Kimball Co.	800-442-4506
TX	Houston, R. F. Kimball Co.	713-890-8810
TX	Richardson, R. F. Kimball Co.	214-231-3447
WA	Snohomish, LD Elctrns.	206-568-0511
WA	Spokane, LD Elctrns.	509-922-4883

HERTNER DIV., 12690 Elmwood Ave., Cleveland, OH 44111, Tel: 216-252-4242, Telex: 98-5552; Empl.: 125; *Sls. Mgr.:* S. Steven

HERTZ FILTER, 3 Aerial Way, Syosset, NY 11791, Tel: 516-822-4770; Empl.: 22

HEWLETT-PACKARD CO., 1820 Embarcadero Rd., Palo Alto, CA 94303, Tel: Call Local Sls. Off.; Empl.: 68,000 ..... **D•1256-1257, 1730-1733**

Local Sales Offices & Reps

AL	Birmingham	205-988-0547
AL	Huntsville	205-830-2000
AK	Anchorage	907-563-8855
AZ	Phoenix	602-273-8000
AZ	Tucson	602-573-7400
CA	Brisbane	415-330-2500
CA	Fresno	209-252-9652
CA	Fullerton	714-999-6700
CA	Goleta	805-685-6100
CA	Long Beach	213-498-1111
CA	Palo Alto	415-857-8000
CA	Pleasanton	415-460-0282
CA	Sacramento	916-929-7222
CA	San Diego	619-279-3200
CA	Santa Clara	408-988-7000
CA	Thousand Oaks	805-373-7000
CO	Boulder	303-499-6655
CO	Englewood	303-649-5000
CT	Bridgeport	203-371-6454
CT	Wallingford	203-265-7801
FL	Ft. Lauderdale	305-973-2600
FL	Jacksonville	904-636-9955
FL	Melbourne	305-729-0704
FL	Orlando	305-859-2900
FL	Pensacola	904-476-8422
FL	Tampa	813-884-3282
GA	Atlanta	404-955-1500
GA	Norcross	404-448-1894
HI	Honolulu	808-526-1555
ID	Boise	208-323-2700
IL	Bloomington	309-662-9411
IL	Chicago	312-930-0010
IL	Naperville	312-357-8800
IL	Rolling Meadows	312-255-9800
IN	Carmel	317-844-4100
IN	Ft. Wayne	219-482-4283
IA	Cedar Rapids	319-390-4250
IA	West Des Moines	515-224-1435
KS	Wichita	316-684-8491
KY	Louisville	502-426-0100
LA	Kenner	504-467-4100
MD	Baltimore	301-644-5800
MD	Rockville	301-948-6370
MA	Andover	617-682-1500
MA	Lexington	617-861-8960
MI	Grand Rapids	616-957-1970
MI	Novi	313-349-9200
MI	Troy	313-643-6474
MN	St. Paul	612-644-1100
MO	Bridgeton	314-344-5100
MO	Kansas City	816-941-0411
NE	Omaha	402-493-0300
NJ	Paramus	201-265-5000
NJ	Piscataway	201-562-6100
NM	Albuquerque	505-823-6100
NM	Los Alamos	505-662-6700
NY	Albany	518-458-1550
NY	Clarence	716-759-8621
NY	Fairport	716-223-9950
NY	Liverpool	315-451-1820
NY	Manhattan	212-971-0800
NY	Purchase	914-935-6300
NY	Wappinger Falls	914-298-9125
NY	Woodbury	516-682-7800
NC	Cary	919-467-6600
NC	Charlotte	704-527-8780
NC	Greensboro	919-852-1800
OH	Akron	216-644-2270
OH	Beachwood	216-292-4677
OH	Cincinnati	513-891-9870
OH	Cleveland	216-243-7300
OH	Miamiburg	513-433-2223
OH	Toledo	419-242-2200
OH	Westerville	614-891-3344
OK	Oklahoma City	405-946-9499
OK	Tulsa	918-665-3300
OR	Wilsonville	503-682-8000
PA	Harrisburg	717-657-5900
PA	Pittsburgh	412-782-0400
PA	Valley Forge	215-666-9000
SC	Columbia	803-732-0400
SC	Greenville	803-232-8002
TN	Knoxville	615-966-4747
TN	Memphis	901-346-8370
TN	Nashville	615-255-1271
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TX	El Paso	915-833-4400
TX	Fort Worth	817-232-9500
TX	Houston	713-776-6400
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TX	Richardson	214-231-6101
TX	San Antonio	512-494-9336
UT	Salt Lake City	801-974-1700
VA	Chesapeake	804-424-7105
VA	Glen Allen	804-747-7750
VA	Roanoke	703-774-3444
WA	Bellevue	206-643-4000
WA	Spokane	509-922-7000
WV	Charleston	304-925-0492
WI	Brookfield	414-794-8800

HEWLETT-PACKARD, Santa Clara Div., 5301 Stevens Creek Blvd., Santa Clara, CA 95050-7299, Tel: 408-553-2545; Empl.: 1,500; *Sls. Mgr.:* Mark Allen ..... **D•1258-1259**

Refer to Hewlett-Packard Co., Palo Alto, CA, for sales office information.

HEXACON ELEC., 161 W. Clay Ave., Roselle Park, NJ 07204, Tel: 201-245-6200, Telex: 13-8812; Empl.: 150; *Sls. Mgr.:* Robert L. Miller ..... **C•1755**

Local Sales Offices & Reps

AL	Huntsville, BJR Mfrs. Reps.	205-881-3569
AZ	Tucson, Ross IV Assocs.	602-885-1046
CA	Newport Beach, Ross IV Assocs.	714-650-5542
CA	San Diego, Ross IV Assocs.	619-485-7341
CA	Simi Valley, Ross IV Assocs.	805-526-6261
CA	Sunnyvale, J. F. Pell Co.	408-730-5869
CO	Denver, Production Equip. Sls.	303-650-0344
CT	E. Woodstock, H & M Assocs.	203-928-2703
FL	Rockledge, J. A. Kennedy Co.	305-639-4810
IL	Schaumburg, Technimark Inc.	312-397-9494
KS	Kansas City, Louis E. Bruns	913-287-5242
MD	Phoenix, B&W Mktg.	301-592-8907
MN	Edina, Pec/Levi	612-944-8540
NH	So. Merrimack, H & M Assocs.	603-882-1620
NJ	Clifton, W. D. Blood & Co.	201-365-0210
NJ	Jersey City, Dunn & Bryan	201-963-4478
NY	Massapequa Park, Dunn & Bryan	516-541-0938
NY	New Hartford, V. Clair	315-735-8122
NY	Westbury, Dunn & Bryan	516-334-5640
NC	Pinehurst, Russell Bransford	919-295-2185
OH	Solon, KDF Co.	216-248-8010
OR	Gladstone, Northcoast Mfrs. Agy. II	503-657-9427
PA	West Chester, B&W Mktg.	215-692-7155
SC	Simpsonville, Russell C. Bransford III	803-963-1736
TX	El Paso, Ross IV Assocs.	915-594-7253
TX	Plano, D.G. Mktg. Co.	214-867-5395
WA	Bothell, Northcoast Mfrs. Agy.	206-486-1496

HEYCO MOLDED PRODUCTS, INC., Box 160, Kenilworth, NJ 07033, Tel: 201-245-0033, 800-526-4182, Telex: 844771; FSC No.: 28520; Empl.: 135 .... **C•1867**

Local Distributors

CA	Garden Grove, HW Eckhardt	800-221-8761
CA	Hayward, Arow Fasteners	415-487-2100
CA	Lakeside, Mouser Elctrns.	619-449-2229
CA	Los Angeles, Lighting Parts Inc.	213-233-8111
CA	Riverside, Elctrns. Supp.	714-787-9220
CA	San Jose, Pro Fasteners	408-943-9177
IL	Shaumberg, Engrd. Fasteners	312-980-4082
IN	Elkhart, La Vanture Prods. Co.	219-264-0658
MD	Baltimore, Jandorf Elec. & Mfg.	301-358-5550
MA	Newton, In-Stock Prods.	617-964-6200
MN	St. Paul, Arden Fasteners	612-483-6681
MO	St. Louis, Engrd. Fastener Co.	314-434-2888
NJ	Manasquan, Kulka-Smith Inc.	201-223-9400
NY	Amityville, Yorkville Inds. Inc.	516-225-2100
OK	Oklahoma City, Wesco	405-232-5521
TN	Nashville, Arden Fasteners	615-889-7043

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HH CONTROLS CO., INC., 16 Frost St., Arlington, MA 02174, Tel: 617-646-2626; Empl.: 13

HHK IND., Telan Int., Rte. 611, P. O. Box 690, Plumsteadville, PA 18949, Tel: 215-766-0990; *Sls. Mgr.:* Fred Yodis; *Dist. Mgr.:* Fred Yodis

HICKOK ELECTRIC INSTRUMENT, 10514 DuPont Ave., Cleveland, OH 44108, Tel: 216-541-8060; Empl.: 450; *Sls. Mgr.:* Norm Holliday; *Dist. Mgr.:* Jeff Snider

HICO HORIZONS INTL. CO., See Maxon Precision Motors

HI-G COMPANY, A Subsidiary of Nytronics Inc., 101 Locust St., Hartford, CT 06114, Tel: 203-522-8600, Telex: 643394, TWX: 710-425-1379; FSC No.: 02289; Empl.: 550; *Sls. Mgr.:* J. Parsons ..... **B•1414-1423**

Local Sales Offices & Reps

AL Huntsville, L & D Inc. 205-837-1469
AZ Phoenix, Westrep 602-997-8899
CA Anaheim, Westrep 213-404-3881
CA San Diego, Westrep 619-566-6580
CA Santa Clara, Westrep 408-988-8833
CO Englewood, Omega 303-762-1921
FL Maitland, Beacon 305-647-3498
IL Highland Park, Bransky Sls. 312-433-2375
IN Fort Wayne, TX Sls. 219-489-4447
KS Olathe, Advanced Tech. Sls. 913-782-8702
MD Monkton, Imagitron Sls. Co. 301-374-5600
MA Woburn, Astrorep New England 617-959-7399
MI Ann Arbor, Jordan-Elliott Inc. 313-662-4087
MN St. Paul, Repco 612-642-2828
MO St. Louis, Advanced Tech. Sls. 314-878-2921
NJ Perth Amboy, Astrorep 201-826-8050
NY Babylon, Astrorep 516-422-2500
NY E. Rochester, Tri-Tech Elctrns. 716-385-6500
NC Greensboro, L & D Inc. 919-292-3201
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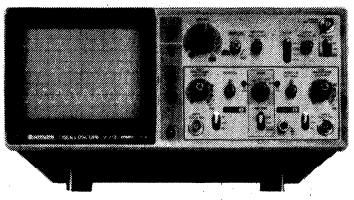

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HOPKINS ENGRG., 12900 Foothill Blvd., San Fernando, CA 91342, Tel: 818-361-8691, Telex: 910380-5379; FSC No.: 02777; Empl.: 100; *Sls. Mgr.:* Tom C. Hudson; *Dist. Mgr.:* Tom C. Hudson

HOPT, KARL, CO., 118 First Ave., Atlantic Highlands, NJ 07716, Tel: 201-291-0633, Telex: 132496; Empl.: 400; *Sls. Mgr.:* G.C. Ellis

HOTPACK CORP., Heinicke Instrs., 10940 Dutton Rd., Philadelphia, PA 19154, Tel: 215-824-1700, 800-523-3608, TWX: 710-670-1694; FSC No.: 66; Empl.: 100

Hotpack is a manufacturer and is sold direct. To contact the salesman in your area call 800-523-3608 or 215-824-1700.

HOTTINGER BALDWIN MEASUREMENTS, 139 Newbury St., Framingham, MA 01701, Tel: 617-875-8282, Telex: 94-8499; Empl.: 179; *Sls. Mgr.:* Robert Haggerson

HOUSE OF METAL ENCLOSURES, 500 W. 9th St., Box 225, Hermann, MO 65041, Tel: 314-486-3111; Empl.: 100; *Sls. Mgr.:* Richard L. Kastel

HOUSTON INSTRUMENT, AMETEK, Inc., 8500 Cameron Rd., Austin, TX 78753, Tel: 512-835-0900, TWX: 910-874-2022; Empl.: 450; *Dist. Mgr.:* Rod Schaffner

HOWARD INDUSTRIES, MSL Ind., Inc., Box 287, Milford, IL 60953, Tel: 815-889-4105, TWX: 910-642-2950; FSC No.: 815-889-4105; Empl.: 500; *Sls. Mgr.:* Alan Mancuso

HOWELL INSTRS., 3479 W. Vickery Blvd., Ft. Worth, TX 76107, Tel: 817-336-7411, Telex: 75-8233; FSC No.: 98869; Empl.: 180; *Sls. Mgr.:* Luke Hawkins

HTL ELECTRO KINETICS, 402 E. Gutierrez St., Santa Barbara, CA 93101, Tel: 805-963-2055, TWX: 910-334-1177; Empl.: 180; *Sls. Mgr.:* Robert E. Lynch

HUDSON TOOL & DIE CO., 18 Malvern St., Newark, NJ 07105, Tel: 201-589-1800, TWX: 710-995-4445; FSC No.: 02875; Empl.: 300

HUGHES AIRCRAFT CO., Connecting Devices Div., 17150 Von Karman Ave., Irvine, CA 92714, Tel: 714-660-5701, TWX: 910-595-2523; FSC No.: 53669; *Sls. Mgr.:* Bill Strobel

HUGHES AIRCRAFT CO., Electron Dynamics Div., 3100 W. Lomita Blvd., P.O. Box 2999, Torrance, CA 90509-2999, Tel: 213-517-6000, Telex: 67-7064, TWX: 910-347-7321; Empl.: 1895; *Sls. Mgr.:* Robert L. Woods

HUGHES AIRCRAFT CO., Industrial Products Division, 6155 El Camino Real, Carlsbad, CA 92009, Tel: 619-931-3000, TWX: 910-332-1393

HUGHES AIRCRAFT CO., Microelctrns. Sys. Div., 2601 Campus Dr., Irvine, CA 92715, Tel: 714-752-3800, TWX: 910-595-2435; *Sls. Mgr.:* J. L. Waters

HUGHES
HUGHES AIRCRAFT COMPANY

HUGHES MICROELECTRONICS CIRCUITS DIVISION, 500 Superior Ave., P.O. Box H, Newport Beach, CA 92658-8903, Tel: 714-759-2952, TWX: 910-596-1374 ..... **A•1399**

Local Sales Offices & Reps

AL	Huntsville, L & D Inc.	205-837-1469
AZ	Phoenix, Toward Engrg. Assocs.	602-955-3193
CA	Mountain View, Weseloh/Swanson	415-961-0565
CA	San Diego, Wes-K Assocs.	619-295-3501
CA	Van Nuys, Wes-K Assocs.	213-989-3070
CT	Ansonia, R. H. Sturdy Co.	203-734-2186
CT	Rocky Hill, R. H. Sturdy Co.	203-563-8455
FL	Clearwater, Delmac Sls.	813-447-5192
FL	Orlando, Delmac Sls.	305-898-4688
FL	Tamarac, Delmac Sls.	305-726-1330
GA	Atlanta, L & D Inc.	404-455-3483
IL	Elk Grove Village, Carlson Elctrn. Sls.	312-956-8240
IN	Indianapolis, J & W Sales	317-842-3740
IA	Cedar Rapids, Carlson Elctrn. Sls.	319-377-6341
KS	Shawnee Mission, Technical Sls. Assocs.	913-888-3330
MD	Glen Burnie, Faion Lott & Co.	301-744-4611
MA	Salisbury, R. H. Sturdy Co.	617-465-1505
MA	Wellesley Hills, R. H. Sturdy Co.	617-235-2330
MI	Livonia, Luebbe Sls.	313-477-3131
MN	Minneapolis, Deming (Bill) & Assocs.	612-888-5000
MO	Ferguson, Technical Sls. Assocs.	314-725-5361
NY	Endwell, Tri-Tech Elctrns.	607-754-1094
NY	Fairport, Tri-Tech Elctrns.	716-223-5720
NY	Fayetteville, Tri-Tech Elctrns.	315-446-2881
NY	Great Neck, Cooper-Simon & Co.	516-487-1142
NY	Poughkeepsie, Tri-Tech Elctrns.	914-473-3880
NC	Greensboro, L & D Inc.	919-292-3201
NC	Raleigh, L & D Inc.	919-876-5301
OH	Cincinnati, Luebbe Sls.	513-891-5770
OH	Cleveland, Luebbe Sls.	216-333-0425
OH	Columbus, Luebbe Sls.	614-431-0474
OH	Dayton, Luebbe Sls.	513-294-0426
PA	Bala Cynwyd, Electro-Comp Sls.	215-667-9360
PA	Pittsburgh, Luebbe Sls.	412-931-0414
TX	Dallas, Southern States Mktg.	214-248-8600
TX	Houston, Southern States Mktg.	713-988-0991
WI	Milwaukee, Carlson Elctrn. Sls.	414-476-2790

HUGHEY & PHILLIPS, INC., 8511 Lankershim Blvd., Sun Valley, CA 91352-3127, Tel: 818-768-4811, TWX: 910-498-2252; FSC No.: 94295; Empl.: 21; *Sls. Mgr.:* Peter H. Johnson; *Dist. Mgr.:* Peter H. Johnson

HUGIN INDUSTRIES INC., 745 Distel Dr., Los Altos, CA 94022, Tel: 415-961-2950, Telex: 278 559; Empl.: 5; *Sls. Mgr.:* Peter Hugin

Local Sales Offices & Reps

CA	Burbank, A.C. Stearns Co.	213-849-5776
IL	Chicago, Patton Sls.	312-325-2170
NJ	Tenafly, D&D Engrg.	201-568-5032
NY	Rochester, Irondequoit Inds.	716-544-6257
NC	Fayetteville, Zim-Tek	919-488-4101
OH	Dover, AJ Assocs.	216-343-2224

HULL CORP., Davisville Rd., Hatboro, PA 19040, Tel: 215-672-7800, Telex: 650-296-3800 MCI; Empl.: 200; *Sls. Mgr.:* C. T. Lind

HUMISEAL DIV., Columbia Chase Corp., 26-60 Bklyn.-Queens Expwy., Woodside, NY 11377, Tel: 718-932-0800, TWX: 710-582-2141; FSC No.: 99109;46058; Empl.: 150

HUMPHREY, INC., 9212 Balboa Ave., San Diego, CA 92123, Tel: 619-565-6631, TWX: 910-335-2001; Empl.: 220

HUNTER STANLEY ELEC., 1813 Church St., Nashville, TN 37203, Tel: 615-321-0500; FSC No.: 21675; Empl.: 10; *Sls. Mgr.:* W. D. Stanley

HUNTER TOOLS, Easco/K-D Tools, 3575 Hempland Rd., Lancaster, PA 17604, Tel: 717-285-4581, Telex: 848429; *Sls. Mgr.:* George Gard

HUNTINGTON ELECTRIC INC., P.O. Box 366, Dept. EEM 87, Huntington, IN 46750, Tel: 219-356-0778; *Sls. Mgr.:* Robert Smith ..... **A•1943**

Local Sales Offices & Reps

IL	Arlington Heights, Rozner Sls.	312-577-0067
IN	Huntington, HEI	219-356-0756
MA	Burlington, Tri-Com Assocs., Inc.	617-272-8163
MN	St. Louis Park, Parq Sls.	612-920-3643
MO	St. Louis, Rep-Tronics	314-576-9816
PA	Greensberg, Pro-Mark	412-832-3800

Local Distributors

CA	Fountain Valley, Comp. Center	714-979-0433
CA	Los Angeles, Cal State Elctrns.	213-933-8187
CA	Manhattan Bch., Prime Electro	213-379-3642
CA	Monrovia, Daring	818-357-0021
FL	Ft. Lauderdale, NRC Elctrns., Inc.	305-772-4500
MA	Billerica, Baldwin Comp. Center	617-667-6710
MO	St. Louis, Franklin Elctrns.	314-933-5333
NY	Ronkonkoma, Baldwin Comp. Center	516-588-5700

HURRICANE ELECTRONICS LAB, P.O. Box 1280, Hurricane, UT 84737, Tel: 801-635-2003; FSC No.: 64109; Empl.: 14; *Sls. Mgr.:* C. R. Reeve

HURST MANUFACTURING CORP., Emerson Elec. Co., Box 326, Princeton, IN 47670, Tel: 812-385-2564; Empl.: 200; *Sls. Mgr.:* Jac Diano

HUTSON INDUSTRIES, 1000 Hutson Cir., Frisco, TX 75034, Tel: 214-377-3557, TWX: 910-860-5051; *Sls. Mgr.:* Bill Giles

HYBRICON CORPORATION, 12 Willow Road, Ayer, MA 01432, Tel: 617-772-5422, TWX: 710-347-0654; Empl.: 74; *Sls. Mgr.:* Stanley A. Vesely

HYBRID ELECTRONICS, 142 Adams St., Newton, MA 02158, Tel: 617-527-2711; Empl.: 28; *Sls. Mgr.:* D. Kates

HYBRID SYSTEMS CORP., 22 Linnell Circle, Billerica, MA 01821, Tel: 617-667-8700, FAX: 617-667-8310

HY-CAL ENGINEERING, 9650 Telstar Ave., El Monte, CA 91731, Tel: 818-444-4000, Telex: 67-5548; FSC No.: 12199; Empl.: 125; *Sls. Mgr.:* D. Z. Chapman

HyComp, Inc.

HYCOMP, INC., 165 Cedar Hill St., Marlborough, MA 01752, Tel: 617-485-6300, TWX: 710-347-0385; FSC No.: 34707; Empl.: 65; *Sls. Mgr.:* Steve Rubin ..... **A•1756-1757, 1944-1946**

Local Sales Offices & Reps

AL	Huntsville, Magaro & Assocs.	205-882-0827
AZ	Mesa, SEDCO Sls.	602-835-6281
CA	Mountain View, Leddy Assocs.	415-969-6313
CA	Santa Ana, Calif. Elctrn. Mktg.	714-835-2702
CT	Collinsville, Dynamic Sls. of New Eng.	203-693-6567
FL	Clearwater, Cherith Sls.	813-797-3004
GA	Atlanta, Magaro & Assocs.	404-451-8862
IL	Palatine, T-Squared Assocs.	312-991-2144
IN	Ft. Wayne, Scott Elctrns.	219-484-7865
IN	Indianapolis, Scott Elctrns.	317-897-9976
KS	Kansas City, BC Elctrns.	913-342-1211
KS	Wichita, BC Elctrns.	316-942-9840
KY	Louisville, Scott Elctrns.	502-964-0640
MD	Owing Mills, Walker-Houck Assocs.	301-296-6021
MA	Burlington, Dynamic Sls. of New Eng.	617-272-5676
MA	Marlborough, HyComp, Inc.	617-485-6300
MN	Minnetonka, JP & Assocs.	612-935-0777
MO	Bridgeton, BC Elctrns.	314-291-1101
NY	New Rochelle, R.D.I.	914-632-2828
NY	Syracuse, Murcan Sls. Corp.	315-437-0734
NC	Greensboro, Magaro & Assocs.	919-294-4783
OH	Cincinnati, Scott Elctrns.	513-791-2513
OH	Cleveland, Scott Elctrns.	513-294-0539
OH	Cleveland, Scott Elctrns.	216-473-5050
OH	Reynoldsburg, Scott Elctrns.	614-863-1281
PA	Norristown, Rivco January	215-631-1414
PA	Pittsburgh, Scott Elctrns.	412-963-6116
TX	Austin, Dyna Mktg.	512-454-3114
TX	Houston, Dyna Mktg.	713-460-0314
TX	Irving, Dyna Mktg.	214-438-6528
VA	Moneta, Walker-Houck Assocs.	703-297-4496
WI	Racine, T-Squared Assocs.	414-241-9243
Can	Nepean, Ont., Intrade Canada, Inc.	613-727-1272

HYLETRONICS, Newtown Rd., Littleton, MA 01460, Tel: 617-486-8911, TWX: 710-347-0656; FSC No.: 22534; Empl.: 82; *Sls. Mgr.:* John W. Perkins

HYPERTRONICS CORP., 16 Brent Dr., Hudson, MA 01749, Tel: 617-568-0451, 800-225-9228, Telex: 95-1152; FSC No.: 50541; Empl.: 125; *Sls. Mgr.:* E. Dalrymple ..... **C•1292-1296**

Local Sales Offices & Reps

AL	Madison, Design Mktg. Inc.	205-772-8224
AZ	Scottsdale, TC Elctrns. Sls., Inc.	602-994-5153
CA	Mountain View, Leddy Assocs.	415-969-6313
CA	N. Hollywood, Jewett Co.	818-789-8103
CO	Commerce City, Williams Assocs.	303-289-5647
CT	Bethany, Reps. Corp.	203-393-0024
DC	Washington, Tyler Griffin Co.	EN1-4821
FL	Orlando, Design Mktg.	305-291-8208
IL	Downers Grove, Momak Sls.	312-936-6400
IN	Indianapolis, CC Elctrns.	317-255-1508
KS	Merriam, Midwest Tech. Sls.	913-236-8557
MD	Baltimore, Tyler Griffin Co.	EN9-4821
MA	Wellesley, Reps. Corp.	617-237-6476
MI	Pontiac, CC Elctrns.	313-338-7400
MN	Bloomington, Murnco, Inc.	612-854-4161
NJ	Wayne, G.T. Assocs.	201-694-6040
NM	Albuquerque, Williams Assocs.	505-255-0622
NY	E. Syracuse, R. D. Sherman	315-433-1165
PA	Greensburg, Pro-Mark	412-832-3800
TX	Freeport, Marathon Assoc.	409-233-7026
TX	Lewisville, Marathon Assoc.	214-436-8882
UT	Salt Lake City, Williams Assocs.	801-532-7701
WA	Bellevue, A.I.E. Inc.	206-455-4697

HY-TEC INDUSTRIES, Div. of Topo Industries, Inc., P.O. Box 91, Shoreham, NY 11786, Tel: 516-924-8686; *Sls. Mgr.:* Tom Poole

HYTEK MICROSYSTEMS, 980 University Ave., Los Gatos, CA 95030, Tel: 408-395-2300, TWX: 910-597-5393; FSC No.: 57474; Empl.: 340; *Sls. Mgr.:* John J. Gardella; *Dist. Mgr.:* Richard Fryhoff

ICI INC., 1901 Petra La., Placentia, CA 92670, Tel: 714-579-7575; Empl.: 10

ICON, 156 Sixth St., Cambridge, MA 02142, Tel: 617-868-5400, TWX: 710-321-1883; Empl.: 81; *Sls. Mgr.:* Irvin L. McKittrick

ICO-RALLY, 2575 E. Bayshore Rd., Palo Alto, CA 94303, Tel: 415-856-9900, Telex: 34-8335; FSC No.: 51705; Empl.: 45; *Dist. Mgr.:* Barbara Enad

ICS ELECTRONICS CORP., 2185 Old Oakland Rd., San Jose, CA 95131, Tel: 408-263-4844, TWX: 286895; Empl.: 28; *Sls. Mgr.:* Robert H. Prosin; *Dist. Mgr.:* Robert H. Prosin

IDEAL INDUSTRIES, 4450 Becker Pl., Sycamore, IL 60178, Tel: 815-895-5181, TWX: 910-639-0613; Empl.: 700; *Sls. Mgr.:* Glenn Hollister

IDEAL PRECISION METER, 214 Franklin St., Brooklyn, NY 11222, Tel: 212-383-6904, TWX: 710-584-2160; FSC No.: 11707;10304-41; Empl.: 150; *Sls. Mgr.:* T. Bell

IDE ASSOCIATES, INC., 35 Dunham Rd., Billerica, MA 01821, Tel: 617-663-6878; Empl.: 40; *Sls. Mgr.:* James Bender

idec

IDEC CORPORATION, 1213 Elko Drive, Sunnyvale, CA 94089-2211, Tel: 408-747-0550, Telex: 34-0601, TWX: 910-339-9383; Empl.: 60; *Sls. Mgr.:* D.J. Synnott; *Dist. Mgr.:* James Young ..... **B•1084-1085, 1424-1430; C•1297-1299**

Local Sales Offices & Reps

AL	Decatur, El Tech, Inc.	205-353-7899
AZ	Phoenix, Neal-Miller Sls.	602-274-0898
AR	Jonesboro, Electro-Tech, Inc.	501-932-0366
CA	Laguna Hills, Western Automation	714-859-6988
CO	Lakewood, T.M.M.I.	303-232-1516
FL	Oldmar, Boggs & Assocs.	813-855-1812
FL	Sarasota, Boggs & Assocs.	813-351-3338
GA	Grayson, Bryco	404-466-2997
IL	Hoffman Estates, Bu-Nell Engrg.	312-843-8600
IL	Schaumburg, Idec Corporation	312-882-7887
IN	Indianapolis, Gurney Indl. Sls.	317-293-2333
KS	Overland Park, TMW	913-383-1818
MA	Norwood, Hyland Assocs.	617-762-0345
MN	Minnetonka, S. J. Collins & Assocs.	612-933-7661
NM	Albuquerque, T.M.M.I.	505-298-6893
NY	Long Island, Optimum Sls.	516-589-4664
NY	Syracuse, Lachut Elctrl. Sls. Inc.	315-458-6480
NC	Kernersville, Heritage Sls. Assocs.	919-996-4374
OH	Cincinnati, James Murray & Assocs.	513-574-8500
OH	Cleveland, Matthew Haley Co.	216-892-1820
OH	Perrysburg, Matthew Haley Co.	419-874-0488
OK	Tulsa, Associated Sls. Agy.	918-838-8930
OR	Portland, SPS Elctrns.	503-297-6919
PA	Carnegie, Brown-Yates Elctrl. Equip.	412-221-4200
PA	Philadelphia, Fite-El Tech	215-233-2100
SC	Taylors, Heritage Sls. Assocs.	803-292-1723
TN	Knoxville, Tubbs Agy.	615-577-0689
TN	Memphis, Electro-tech	901-372-4550
TX	Dallas, SW Mktg. Assocs.	214-341-8631
UT	Salt Lake City, T.M.M.I.	801-487-7676
VA	Alexandria, T.D.I.	703-971-8982
VA	Richmond, Dunnington & Assocs.	804-282-8383
WA	Redmond, SPS Elctrns.	206-323-4140
WI	Appleton, Bu-Nell Engrg.	414-733-4242
WI	Waukesha, Bu-Nell Engrg.	414-784-0994

IDENTATRONICS, INC., 425 Lively Blvd., Elk Grove, IL 60007, Tel: 312-437-2654, 1-800-323-5403, Telex: 254708; *Sls. Mgr.:* Gregg Powell

IDENTICON DIV., Vertex Inds. Inc., 23 Carol St., P. O. Box 996, Clifton, NJ 07014, Tel: 201-472-2121, TWX: 710-989-7021 VER TOT CLIF; Empl.: 85; *Sls. Mgr.:* Ronald Byer

Local Sales Offices & Reps

AZ	Tempe, Burland Assocs.	602-894-5564
CA	Santa Ana, California Elec. Mktg.	714-835-2702
FL	Plantation, Electrographic Sys.	305-587-8259
IL	Elk Grove Village, Quad Data	312-228-1722
KS	Shawnee Mission, Panatek Tech. Sls.	913-362-3349
MA	Wayland, Daner Hayes, Inc.	617-655-0888
MI	Farmington Hills, Carter, McCormic & Pierce	313-477-7700
MO	Rockville, Spectro Assocs.	301-294-9770
TX	Dallas, IBL Engrg. & Sls.	214-363-2921

IEC ELECTRONICS, 105 Norton St., Newark, NY 14513, Tel: 315-331-7742, TWX: 910-240-8356, ESYLNK: 6290-2827, FAX: 315-331-3547; Empl.: 650; *Sls. Mgr.:* Frank Montabana; *Dist. Mgr.:* Steve Hotchkiss

IEE, See Industrial Elctrn. Engrs., Inc.

IEI-ISKARA ELECTRONICS INC., INC, See Iskara Electronics, Inc.

IERC HEAT SINKS

IERC, 135 W. Magnolia Blvd., Burbank, CA 91502, Tel: 213-849-2481, TWX: 910-498-2206, ESYLNK: 62951515, FAX: 818-848-8872; FSC No.: 98978; Empl.: 97; *Sls. Mgr.:* Jim Smith ..... **C•1637**

Local Sales Offices & Reps

AL	Huntsville, Murcota Corp.	205-539-8476
AZ	Phoenix, Howe & Howe Sls. Inc.	602-264-7971
CA	Santa Clara, Ross Mktg. Assocs.	408-988-8111
CO	Denver, Elcom, Inc.	303-337-2300
FL	Boca Raton, Sls. Specialties	305-395-5371
FL	Plant City, Sls. Specialists	813-754-1329
FL	Temple Terrace, Sls. Specialists	813-988-0561
IL	Mt. Prospect, Magnuson & Assocs.	312-956-0700
IN	Indianapolis, Magnuson & Assocs.	317-247-5108
KS	Leawood, Thunderbird Tech. Sls. & Svcs., Inc.	913-642-7220
KS	Wichita, Thunderbird Tech. Sls.	316-684-3941
MA	Lexington, Hathaway Elctrns., Inc.	617-861-7010
MN	Minneapolis, Magnuson Assocs.	612-521-1235
MO	Maryland Heights, Thunderbird Tech. Sls. & Svcs., Inc.	314-567-6488
NJ	Wayne, G. T. Assocs., Inc.	201-694-6040
NM	Albuquerque, Nelco Elctrns.	505-293-1399
NY	Rochester, Ossman Comp. Sls. Corp.	716-424-4460
NY	Syracuse, Ossman Comp. Sls. Corp.	315-437-7052
NC	Winston-Salem, Murcota Corp.	919-722-9445
OH	Cleveland, Norm Case & Assocs.	216-333-0400
OR	Portland, Frank Jackson & Assocs.	503-645-8511
PA	Philadelphia, Kenneth B. Erdman Co.	215-224-1833
TX	Houston, Barry Sls., Inc.	713-784-5860
TX	Richardson, Barry Sls., Inc.	214-234-0255
UT	Salt Lake City, Elcom, Inc.	801-485-7415
WA	Redmond, Frank Jackson Assocs.	206-881-7277
WI	Milwaukee, Magnuson Assocs.	414-933-8344
Can	Burlington, Ont., White Radio Ltd.	416-632-6894
Can	Montreal, Que., White Radio Ltd.	514-481-0158

Local Distributors

AZ	Phoenix, Arizona Comps. Co.	602-269-5655
AZ	Tempe, Betatron Elctrns.	602-252-2112
CA	Chatsworth, Mil-Comm Distrs.	213-998-3111
CA	San Diego, Deco Elctrns.	619-693-1595
CA	San Jose, Rose Elctrns.	408-263-9700
CO	Englewood, Industrial Elctrns., Inc.	303-694-9444
CT	Bridgeport, Park Distrs., Inc.	203-366-7200
FL	Clearwater, Lynch Gentry Assocs.	813-433-2697
IL	Mt.Prospect, Magnuson & Assocs.	312-956-0700
MD	Towson, Jones-Maryland Elctrns.	301-823-5721
MA	Billerica, A. W. Mayer Co., Inc.	617-229-2255
NH	Hudson, C & H Elctrns., Inc.	603-882-1133
NM	Albuquerque, Betatron Elctrns.	505-344-2381
NM	Albuquerque, Ram Elctrns.	505-262-0888
NY	Bohemia, Car-Lac Elctrn. Indl. Sls.	516-567-4200
NY	E. Syracuse, Modutex Corp.	315-437-7052
NY	West Hempstead, March Elctrns.	516-485-4700
OH	Englewood, Argent Inds., Inc.	513-836-8633
PA	McKeesport, Barno Radio	412-751-5966
RI	Providence, William Dandreta & Co.	401-861-2800
TX	Fort Worth, C & W Supp.	817-831-0395
TX	Houston, Lenert Co.	713-225-1465
WA	Redmond, Elwood Inds.	206-881-7277

IET

IET LABS, INC., 534 Main St., Westbury, NY 11590, Tel: 516-334-5959, FAX: 516-334-5988; FSC No.: 62015; *Sls. Mgr.:* Sam Sheena ..... **D•1264-1269**

DDC

ILC DATA DEVICE CORP., 105 Wilbur Pl., Bohemia, NY 11716, Tel: 516-567-5600, TWX: 510-228-7324; FSC No.: 19645; Empl.: 910; *Sls. Mgr.:* J. P. Sheahan; *Dist. Mgr.:* Marshall Lacoff ..... **D•1158-1159**

Local Sales Offices & Reps

AL	Huntsville, Montgomery Mktg.	205-830-0498
AZ	Scottsdale, Fred Board Assocs.	602-994-9388
AZ	Tuscon, Fred Board Assocs.	602-299-1508
CA	Huntington Bch., ILC Data Dvcs. Corp.	714-840-5723
CA	Santa Clara, ILC Data Dvcs. Corp.	408-244-0831
CA	Woodland Hills, ILC Data Dvcs. Corp.	818-992-1772
CO	Denver, Quorum 3 Sls. Grp.	303-696-8480
CT	Canton Center, Dynamic Sls. of New Eng.	203-693-6567
FL	Clearwater Beach, Perrott Assocs.	813-443-5214
FL	Orlando, Perrott Assocs.	305-298-7748
GA	Norcross, Montgomery Mktg., Inc.	404-447-6124
IL	Des Plaines, Elctrn. Mktg.	312-298-2330
IN	Carmel, Giesting & Assocs.	317-844-5222
IN	Fort Wayne, Giesting & Assocs.	219-486-1912
KS	Lenexa, Dytec/South	913-888-0215
MA	Burlington, Dynamic Sls. of New Eng.	802-863-6665
MI	Coloma, Giesting & Assocs.	616-468-4200
MI	Farmington Hills, Giesting & Assocs.	313-478-8106
MN	Minneapolis, Comprehensive Techn.	612-888-7011
MO	Maryland Hgts., Dytec/South	314-569-2990
NJ	Totowa, ILC Data Dvcs. Corp.	201-785-1734
NM	Albuquerque, Quatra Assocs.	505-821-1455
NY	E. Rochester, Tri Tech Elctrns.	716-385-6500
NY	Endwell, Tri Tech Elctrns.	607-754-1094
NY	Fayetteville, Tri Tech Elctrns.	315-446-2881
NY	Fishkill, Tri Tech Elctrns.	914-897-5611
NC	Cary, Montgomery Mktg., Inc.	919-467-6319
OH	Cincinnati, Giesting & Assocs.	513-385-1105
OH	Cleveland, Giesting & Assocs.	216-261-9705
OH	Dayton, Giesting & Assocs.	513-433-5832
OK	Tulsa, Bonser-Philhower Sls.	918-744-9964
OR	Forrest Grove, Venture Elctrns.	503-357-5112
PA	E. Lancaster, Electro Rep	717-299-5877
PA	Pittsburgh, Giesting & Assocs.	412-963-0727
TX	Austin, Bonser-Philhower Sls.	512-346-9186
TX	Houston, Bonser-Philhower Sls.	713-531-4144
TX	Richardson, Bonser-Philhower Sls.	214-234-8438
UT	Salt Lake City, Quroum 3 Sls. Grp.	801-943-9227
VT	Burlington, Dynamic Sls. of New Eng.	802-863-6665
VA	Vienna, ILC Data Dvcs. Corp.	703-893-7989
WA	Bellevue, Venture Elctrns.	206-454-4594

WI Waukesha, Electron Mktg. 414-547-1505
Can Montreal, Repco Engrg. 514-694-1877

ILC TECHNOLOGY, INC., 399 Java Dr., Sunnyvale, CA 94089, Tel: 408-745-7900, TWX: 910-339-9389; *Sls. Mgr.:* Robert Turner

ILLINOIS CAPACITOR, INC.

ILLINOIS CAPACITOR, INC., 3757 W. Touhy Ave., Lincolnwood, IL 60645, Tel: 312-675-1760, Telex: 72-4361; Empl.: 44; *Sls. Mgr.:* C. Kurland .... **A•1088-1089**

Local Sales Offices & Reps

AL Huntsville, JWL Assocs., Inc. 205-883-1712
CA Palo Alto, Mollard Mktg. 415-961-0456
CA Woodland Hills, Illinois Capacitor, Inc. 800-323-3652
CO Denver, Lindberg Co. 303-758-5863
CT Bristol, Technology Prods. Grp. 617-731-0858
GA Marietta, JWL Assocs., Inc. 404-429-8010
IL Lincolnwood, Illinois Capacitor, Inc. ... 312-675-1760
IN Indianapolis, J & W Sls. 317-842-3740
MA Brookline, Technology Prods. Grp. 617-731-0858
MI Farmington Hills, Tritech Sls. Inc. 313-553-7126
MN Golden Valley, Highland Elctrn. Sls. Co. 612-545-2123
MS Jackson, Doby Assocs. 601-981-1138
MO Hazelwood, Jim Moore & Assocs. 314-731-2240
MO Kansas City, Jim Moore & Assocs., Inc. 816-756-0262
NJ Springfield, F. F. Sylvester Assocs. 201-376-3324
NM Albuquerque, Lindberg Co. 505-881-1006
NY Clinton, Advanced Comps. Corp. 315-853-6438
NY Endicott, Advanced Comps. Corp. 607-785-3191
NY N. Syracuse, Advanced Comps. Corp. 315-699-2671
NY Rochester, Advanced Comps. 716-544-7017
NY Scottsville, Advanced Comps. Corp. ... 716-889-1429
NC Pineville, JWL Assocs., Inc. 704-541-5750
OH Dayton, Rockford Controls Ohio, Inc. .. 513-898-5452
OH Euclid, Rockford Controls Ohio, Inc. ... 216-731-5250

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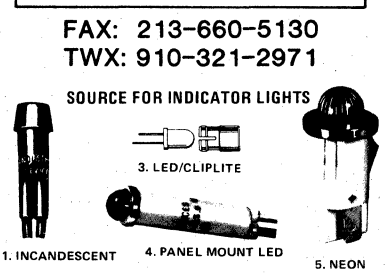

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TX El Paso, EPEC, Inc. 915-855-3900
TX Houston, Mil-Rep 713-444-2557
TX Richardson, Mil-Rep Assocs. 214-644-6731
UT Salt Lake City, Lindberg Co. 801-277-2643
WA Renton, Luscombe Engrg. Co. 206-223-1541
WI Milwaukee, Erdman Sls. Co. 414-281-1330
Can Downsview, Ont., Designtronics 416-747-1171

Local Distributors

AZ Phoenix, Arizona Comps. Co. 602-269-5655
CA Anaheim, A to Z Elctrns. 714-632-1620
CA Canoga Pk., Myco/Vickers Elctrn. Supp. 213-340-2025
CA Milpitas, California Capacitor 408-262-6000
CA San Diego, Neumann Elctrns. 619-695-3005
CA San Diego, Projections Unltd. 619-453-7900
CA Tustin, Projections Unltd. 714-544-2700
CO Englewood, Industrial Elctrns. 303-694-9444
CT Norwalk, Cobra Comps., Inc. 203-847-6442
IL Northbrook, Classic Comps. 312-272-9650
IN Carmel, Altex Elctrns. 317-848-1323
MD Beltsville, Resco/Washington 301-937-9100
MD Columbia, General Radio Supp. 301-995-6744
MA Holliston, ADD Elctrns. Corp. 617-429-7945
MA Woburn, Lorcor 617-935-5024
MI Detroit, Semiconductor Reliability Assocs. 313-965-8550
MI Grand Rapids, Calder Elctrns. 616-698-7400
MN Eitzen, Capacitor Assocs. 507-495-3130
MN Minneapolis, Bergquist Co. 612-835-2322
MN Minneapolis, Northern, Inc. 612-944-1167
MO Kansas City, Walters Indl. Supp. 816-531-7015
MO St. Charles, Finnigan Elctrns. 314-946-6201
NJ Camden, General Radio Supp. Co. 609-964-8560
NJ Roselle, Lectron Ind. 201-245-5859
NY Buffalo, Summit Distrbg. 716-887-2829
NY E. Syracuse, Add Elctrns. 315-437-1835
NY Johnson City, Help Elctrns. 607-729-3528
NY Victor, Add Elctrns. Corp. 716-924-4760
OH Akron, Akron Elctrn. Supp. Co. 216-762-8818
OH Cincinnati, United Radio, Inc. 513-761-4030
OK Tulsa, Altair Elctrns. 918-252-5781
TX Austin, Altair Elctrns. 512-837-4490
TX Houston, Altair Elctrns. 713-462-3029
TX Richardson, Altair Elctrns. 214-231-5166
WI Milwaukee, Badger Capacitor Sls. 414-281-1330
WI New Berlin, Classic Comps. Supp. Co. 414-786-5300
Can Concord, Ont., Target Elctrns. 416-669-9902

Illinois Lock Company

ILLINOIS LOCK CO., The Eastern Co., 301 W. Hintz Rd., Wheeling, IL 60090, Tel: 312-537-1800, TWX: 910-651-0221, FAX: 312-537-1881; Empl.: 120 ..... **B•1624-1625**

Local Sales Offices & Reps

CA Los Angeles, Spectrum Assocs. 213-641-4255
CA Palo Alto, Mollard Mktg. 415-961-0456
IN Carmel, TMC 317-844-8462
IN Fort Wayne, TMC 219-432-5553
KY Louisville, TMC 502-499-7808
MA Braintree, Nova Assocs. 617-848-9330
MN Minneapolis, Jos. Co/Melius 612-861-3343
NJ Newark, Northeast Lock 201-777-7500
NY New York, Cambridge Allen Assocs. .. 201-464-0203
TX Dallas, MGR Elctrns. 214-238-5246

Local Distributors

CA San Leandro, Electro-Components 415-352-5210
NJ Clifton, Northeast Lock 800-524-2575

IMAGE GRAPHICS, INC., 107 Ardmore Street, Fairfield, CT 06430, Tel: 203-259-1394; FSC No.: 5M867; Empl.: 52; *Sls. Mgr.:* Troy Pelfrey

IMAGE TECHNOLOGY METHODS CORP., 103 Moody St., Waltham, MA 02154, Tel: 617-894-1720; Empl.: 10

IMAGING TECHNOLOGY, INC., 600 W. Cummings Park, Woburn, MA 01801, Tel: 617-938-8444, Telex: 948263; Empl.: 95; *Sls. Mgr.:* John Morrissey

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AZ Tempe, Elctrn. Development & Sls., Inc. 602-438-1547
CA Los Altos, Recht Assocs. 415-964-6321
CO Englewood, Thorson Rocky Mtn. Inc. 303-779-0666
FL Coral Springs, HAI-Elctrns., Inc. 305-752-7520
IL Skokie, Indl. Reps., Inc. 312-967-8430
MA Waltham, Gerber Sls. Corp. 617-890-3334
MN Minneapolis, Holmgren Assocs. Inc. of Minneapolis 612-786-7641
NJ Haddonfield, Mesa Tech. Assocs. 609-429-9531
NY Great Neck, Trionic Assocs., Inc. 516-466-2300
NY Rochester, Electra Sls. Corp. 716-427-7860
NY Syracuse, Electra Sls. Corp. 315-463-1248
OH Dayton, Elctrl. Sys. Co. 614-761-2688
OH Worthington, Elctrl. Sys. Co. 614-761-2688
TX Dallas, Kruvand Assocs., Inc. 214-437-3355
TX Houston, Kruvand Assocs., Inc. 713-780-9710
VA Sterling, Beacon North, Inc. 703-478-2480

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IMC MAGNETICS CORP., Eastern Div., 570 Main St., Westbury, NY 11590, Tel: 516-334-7070, TWX: 510-222-4469; *Sls. Mgr.:* A. Chillemi

IMC MAGNETICS CORP., Florida Division, 14025 N.W. 60th Ave., Miami Lakes, FL 33014, Tel: 305-822-2558

IMC MAGNETICS CORP, Hansen Mfg. Co., Inc., Box 23, Princeton, IN 47670-0023, Tel: 812-385-3415, Telex: 27-8458 HANSON PRON; *Sls. Mgr.:* George A. Gilbert

IMC MAGNETICS CORP., Thermal Products Group., 100 Jericho Quad., Ste. 221, Jericho, NY 11753, Tel: 516-938-0800, TWX: 510-221-2126; *Sls. Mgr.:* R. Lavochkin

IMC MAGNETICS CORP., Universal Magnetics Corp., 12627 Hidden Creek Way, Cerritos, CA 90701, Tel: 213-926-0927, Telex: 750157, TWX: 910-583-1355; *Sls. Mgr.:* Chuck Carlson

IMC MAGNETICS CORP., Western Div., 12627 Hiddencreek Way, Cerritos, CA 90701, Tel: 213-926-0927, TWX: 910-583-1355; FSC No.: 99743; *Sls. Mgr.:* Joe Gute

IMEC CORP., 3065 Beyer Blvd., San Diego, CA 92154, Tel: 619-690-2622; Empl.: 1400; *Sls. Mgr.:* R. L. Hill

IMO DELEVAL INC., CEC Instruments Division, 325 Halstead St., Pasadena, CA 91109-7087, Tel: 818-351-4241, Telex: 200445 RCA, FAX: 818-351-0557; Empl.: 210

IMO DELEVAL INC., Gems Sensors Division, Cowles Rd, Plainville, CT 06062-9990, Tel: 203-677-1311, Telex: 99-306, FAX: 203-747-4244; Empl.: 203; *Sls. Mgr.:* M. W. Brown; *Dist. Mgr.:* M. W. Brown

I.M.S. EQUIPMENT, INC., See Worldnet Marketing, Inc.

IMTRONICS INDUSTRIES, 11930 31st Ct. N., St. Petersburg, FL 33715, Tel: 813-577-9010, Telex: 566027 IMTRON CWTR UD, FAX: 813-549-0012; Empl.: 10; *Sls. Mgr.:* Steven B. Cohen

INCONIX CORP, See Hancock Electronics Corp.

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AZ Phoenix, Shefler-Kahn Co., Inc. 602-257-9015
CA Santa Clara, Nova-Tronix, Inc. 408-727-9530
CA Simi Valley, Tri-Electro Sls. 805-527-3317
IN Granger, Gregory Sls. Co. 219-272-9626
CO Denver, Lindberg Co. 303-758-9033
MI Brighton, A.P. Assocs. 313-229-6550
MN Eden Prairie, Elctrn. Innovators Inc. ... 612-941-0830
MO Florissant, Deltron Co., Inc. 314-839-0033
NH Amherst, D. A. Crowley 603-673-7050
GA Norcross, Hollingsworth & Still 404-447-1700
NY Clarence Ctr., Nu-Tekneex Mktg., Inc. 716-741-9138
IL Chicago, Brock & Cushman 312-622-4110
TX Rowlett, Campion Sls. 214-475-8313
VA Front Royal, Eltron Sls. Inc. 703-635-7201

Local Distributors

CA S. San Francisco, Peters-de Laet 408-727-9440
CA San Jose, Daine Prods. 408-365-9100
CA Sebastopol, First Source 707-823-0220
IL N. Chicago, Ammco Tools Inc. 312-689-1111

INDEPENDENT CABLE, INC., 43 Broad St, Hudson, MA 01749, Tel: 617-562-9913; Empl.: 120; *Sls. Mgr.:* Gary W. Nace

INDUCTIVE PRODS., INC., 11733 Markon Dr., Garden Grove, CA 92641, Tel: 714-891-2572; Empl.: 10; *Sls. Mgr.:* Timothy J. Scanlon

Distributor

INDUCTOR SUPPLY, 15204 Transistor Lane, Huntington Beach, CA 92649, Tel: 714-891-4524, 800-854-1881, 800-472-8421, TWX: 497 9775; Empl.: 21; *Sls. Mgr.:* Carla Van DerMeulen ..... **A•1248** **684, 713, 765, 782**

INDUSTRIAL COMPUTER DESIGNS, INC., 31264 La Baya Drive, Westlake Village, CA 91362, Tel: 818-889-3179; Empl.: 33; *Sls. Mgr.:* Laurie Messick

INDUSTRIAL CONTROL CO., 3100 Pineda Ave., Rockledge, FL 32955, Tel: 305-259-7105; Empl.: 15; *Sls. Mgr.:* I. Nobilio

INDUSTRIAL DEVICES CORPORATION, 35 Pamaron Way, Novato, CA 94947, Tel: 415-883-3535, FAX: 415-883-2094; Empl.: 25

INDUSTRIAL DEVICES, INC., 260 Railroad Ave., Hackensack, NJ 07601, Tel: 201-489-8989, Telex: 12-7459, FAX: 201-489-4911; FSC No.: 91802; Empl.: 200; *Sls. Mgr.:* Michael Diceglie ..... **B•1086-1091**

Local Sales Offices & Reps

AL Huntsville, E.M.A., Inc. 205-837-7363
CA Los Angeles, Universal Comps. 213-641-4255
CA Mountain View, Westech Sls. 415-961-1422
CO Englewood, Harthun Assocs., Inc. 303-792-5000
FL Casselberry, Southern Elctrn. Mktg. ... 305-831-2822
GA Atlanta, E.M.A., Inc. 404-448-1215
IL Chicago, K. D. Engle 312-539-1820
IN Indianapolis, Elctrn. Mktg. Consits. 317-253-1668
MD Towson, Ernie Stefkovic Assocs. 301-321-6008
MA Newton Upper Falls, Anchor Engrg. ... 617-964-6205
MI Troy, W. Spenser 313-649-2222
MN Minneapolis, Elec. Comp. Sls. 612-933-2594
MO St. Louis, Lowell-Kangas Assocs. 314-821-4050
NJ Cherry Hill, Ernie Stefkovic Assocs. ... 609-667-4066
NJ Manville, Dyno Rep 201-685-0135
NY Rochester, Apex Assocs. 716-254-6050
NC Raleigh, E.M.A., Inc. 919-847-8800
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OH Medina, J. C. Hofstetter Co. 216-241-4880
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SC Greenville, E.M.A., Inc. 803-233-4637
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TX Houston, R. F. Kimball Co. 713-890-8810
TX Richardson, R. F. Kimball Co. 214-231-3447
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EXP NY, Jericho, E.T.I., Inc. 516-931-3434

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CA Los Angeles, Elec. Switches 213-664-1141
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Pasadena, Empire Elctrn. Distr. 213-681-2711
CA S. San Francisco, Steven Engrg. 415-588-9200
CA San Diego, Shanks & Wright 619-239-0176
CA San Diego, Sigma Elctrns. 714-565-2000
CA San Francisco, Zack Elctrns. 415-626-1444
CA San Jose, Quement Elctrns. 408-998-5900
CA San Jose, Rose Elctrn. Distrbg. Co. ... 408-263-9700
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CO Arvada, Denver Wintronics 303-431-7161
CT Stratford, Utronics, Inc. 203-378-4201
CT Wallingford, Sager Electrical Supp. 203-265-4600
FL Miami, Electro Standard Lab (ESL) 305-593-6060
FL Tampa, Specialty Distrbg. Co. 813-870-3315
FL W. Palm Beach, Nurmi Elctrn. 305-686-8553
GA Atlanta, Wholesale Indl. Elec. 800-282-1857
IL Villa Park, Melvin Elctrns. 312-279-5015
IL Wood Dale, Electro-Kinetics 312-595-6700
IN East Chicago, ACRO Elctrns. 312-375-1269
IN Evansville, Hutch & Son 812-425-7201
IN Fort Wayne, Graham Elctrs. 219-423-3422
IN Indianapolis, Graham Elctrns. 317-634-8202
IN South Bend, Genesis Elctrns. 219-287-2911
IA Cedar Rapids, Bergquist Co. 319-366-8733
IA Cedar Rapids, Iowa Radio Supp. 319-393-4510
KY Bowling Green, Crescent Elctrns. 502-842-2444
LA Lafayette, Ralph's 318-234-4507
LA New Orleans, Wm. B. Allen Supp. Co. 800-462-9520
MD Rockville, Capitol Radio Whlsrs. 301-881-2270
MA Hingham, Sager Elec. Supp. 617-749-6700
MA N. Wilbraham, Indl. Comps. 413-596-3854
MA Norwood, Gerber Elctrns. 617-329-2400
MA Worcester, RM Elctrns. 617-756-8311
MI Flint, Shand Elctrns. 313-743-8940
MN Minneapolis, Bergquist Co. 612-835-2322
MN Minneapolis, Elctrn. Center 612-371-5200
MN Minneapolis, Stark Elctrns. 612-332-1325
MO Kansas City, Olive Indl. Elect. 816-842-8556
MO St. Louis, Olive Indl. Elctrns. 314-426-4500
MO St. Louis, Van Sickle Radio-Elec. 314-621-5000
NE Lincoln, Scott Elctrn. Supp. 402-466-8221
NV Las Vegas, Kiesub Elctrns. 702-733-3888
NJ Hanover, State Elctrns. Parts 201-887-2550
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NJ Springfield, Route Elctrns. 201-379-7710
NY Albany, E. E. Taylor Co. 518-438-7811
NY Buffalo, Summit Distrs. 716-887-2800
NY Hauppauge, Broadline Elctrns. 516-231-4100
NY Hempstead, Elctrn. Equip. 800-645-1605
NY Mt. Vernon, Q.A.R. Indl. Elctrn. Sls. 914-699-2224
NY Rochester, Simcona Elctrns. 716-328-3230
NY Rochester, Summit Elctrns. 716-334-8110
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OH Toledo, Warren Radio 419-248-3364
OK Tulsa, Oil Capitol Elctrns. 918-622-8520
OR Eugene, United Radio Supp. 503-342-3381
OR Portland, United Radio Supp. 503-233-7151
PA Erie, Rem/Mace Elctrns. 814-453-5626
PA Harrisburg, Cumberland Elctrns. 717-233-5883
PA Philadelphia, Philadelphia Elctrns. 215-568-7400
TN Memphis, Bluff City Elctrns. 901-345-9500
TN Nashville, Randolph & Rice 615-255-5601
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Houston, Altair Co. 713-462-3029
TX Richardson, Altair Co. 214-231-5166
TX San Antonio, Sherman Elctrns. Supp. 512-224-1004
UT Salt Lake City, Standard Supp. 801-486-3371
VA Arlington, Arlington Elctrn. Whlsrs. 703-524-6256
VA Glenn Allen, Hermitage Distrs. 804-798-3830
WI Milwaukee, Marsh Elctrns. 414-475-6000

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Local Sales Offices & Reps

AL Huntsville, Techn. Mktg. Assoc. 205-883-7893
AZ Phoenix, Thor Engr. 602-437-1463
CA Alhambra, Thorson 818-281-2280
CA Goleta, Thorson 805-964-8751
CA Mountain View, Thorson 415-964-9300
CA Signal Hill, Thorson 213-595-0361
CT Meriden, Whitehead Assocs., Inc. 203-634-1280
FL Melbourne, Technlg. Mktg. Assocs. ... 305-676-3776
FL Orlando, Techn. Mktg. Assoc. 305-857-3760

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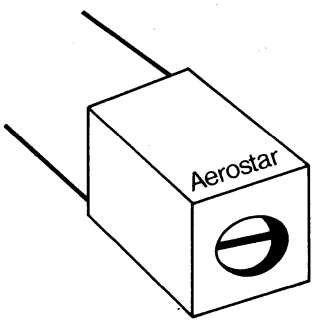

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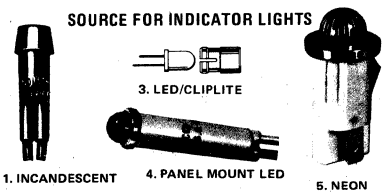


2. PANEL MOUNT

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IL Schaumburg, Industrial Drives 312-893-8886
MA Wakefield, Whitehead Assocs., Inc. 617-246-5155
MI Farmington Hills, Electro-Matics Prods., Inc. 313-478-1182
MN St. Paul, John J. Exon Co. 612-636-5533
MO Raytown, Cadon Techn. Sls. 816-356-7685
MO St. Louis, Cadon Techn. Sls. 314-645-8670
NJ Wayne, S. Howard Lagerveld & Assocs. 201-790-1714
NY Rochester, A & D Devices 716-385-2778
NY Sydney, A & D Dvcs. 607-563-8488
NC Matthews, Industrial Drives Div. 704-821-9875
OH Chagrin Falls, Jerry Kilroy Corp. 216-543-3370
OH Kettering, Kilroy Corp. 513-294-1235
OR Beaverton, Thorson NW 503-644-5900
PA Downingtown, Homersmith, Inc. 215-269-3637
PA Media, Homer Smith Engr. Prods. Rep. 215-543-2434
TX Austin, P.J. Scanlon Co. 512-331-7322
TX Dallas, P. J. Scanlon Co., Inc. 214-231-4661
VA Salem, Homersmith, Inc. 703-387-1600
WA Bellevue, Thorson 206-455-9180

IEE

INDUSTRIAL ELECTRONIC ENGINEERS, 7740 Lemona Ave., Van Nuys, CA 91405, Tel: 818-787-0311, TWX: 4720556/4720693/4720120; Empl.: 400; *Sls. Mgr.:* Darryl Bloom/J. Hart/I. Minarik; *Dist. Mgr.:* J. Hart ..... **B•1011, 1092-1093**

Local Sales Offices & Reps

AL Huntsville, DHR Mktg., Inc. 205-533-5165
AL Huntsville, TMA Technlg. Mktg. Assocs. 205-882-6162
AZ Phoenix, Howe & Howe Sls., Inc. 602-264-7971
CA Auburn, Class One Elctrns. 916-885-0416
CA Brea, Masco Elctrns., Inc. 714-529-0866
CA Campbell, LCO Tech. Sls. 408-378-9900

IEE
INDUSTRIAL ELECTRONIC ENGINEERS, INC.
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LOGICOMP
ELECTRONICS, INC.
1009 BOSTON POST ROAD
MAMARONECK, NEW YORK 10543
PHONE: (914) 698-9332
TOLL FREE
(Outside N.Y.)
800/431-2625

CA Los Angeles, Masco Elctrns., Inc. 714-529-0866
CA Vista, Masco Elctrns., Inc. 619-758-5562
CO Lakewood, Cristee-Meade Co. 303-232-0287
CA San Jose, Class One Elctrns. 408-297-8666
CT North Haven, Kitchen & Kutchin, Inc. .. 203-239-0212
FL Largo, TMA Technlg. Mktg. Assocs. ... 813-536-3796
FL Melbourne, TMA Tech. Mktg. Assocs. 305-676-3776
FL Orlando, TMA Tech. Mktg. Assocs. 305-857-3760
FL Pompano Beach, TMA Tech. Mktg. Assocs. 305-977-9006
GA Atlanta, DHR Mktg., Inc. 404-451-9848
GA Atlanta, TMA Tech. Mktg. Assocs. 404-257-0374
IL Arlington Hgts., Phoenix Elctrn. Sls. ... 312-394-4422
IL Highland Park, Bransky Sls. 312-433-2375
KS Lenexa, Midtec 913-541-0505
MD Hunt Valley, Marktron, Inc. 301-628-1111
MD Rockville, Marktron, Inc. 301-251-8990
MA Burlington, Kitchen & Kutchin, Inc. 617-229-2660
MI Southfield, L. H. Dickelman Co. 313-353-8210
MN Burnsville, 2M Sales, Inc. 612-890-7774
NY N. Syracuse, Advanced Comps. Corp., Inc. 315-699-2671
MO St. Louis, Midtec 314-275-8666
NC Raleigh, DHR Mktg, Inc. 919-781-1961
OH Richfield, Geotronix, Inc. 216-659-6100
OH Trotwood, Geotronix, Inc. 513-252-6700
PA Allison Pk., Geotronix, Inc. 412-487-1770
PA Norristown, RJI 215-631-1414
SC Greenville, DHR Mktg., Inc. 803-235-3594
TX Dallas, MGR Elctrns., Inc. 214-238-5246, 713-759-0187
WI Cedarburg, Bransky Sls. 414-377-6837

Local Distributors

AL Huntsville, C.D.I. 205-883-7501
AZ Phoenix, Tri-Tek, Inc. 602-371-0860
AZ Tempe, Circuit Specialist Co. 602-966-0764
AR Little Rock, C.D.I. 501-227-6278
CA Garden Grove, Richey/Western Elctrns. 714-895-0060
CA Gardena, California Switch & Signal Co. 213-538-9830
CA Industry, Ital Elctrn. Sls., Inc. 818-968-8515, 714-990-0922
CA Lakeside, Mouser Elctrn. Corp. 619-449-2229
CA San Diego, Richey/Western Elctrns. .. 619-271-4511
CA Santa Clara, Richey/Western Elctrns. 408-727-7411
CA Santa Clara, Waltronic Sls. 408-727-1200
CA Santa Monica, Master Distrs. 213-452-1229
CO Denver, Integrated Elctrns. 303-292-6121
CT East Haven, J. V. Elctrns. 203-469-2321
CT Wallingford, Cronin Elctrns. 203-265-3134
FL Alamonte Springs, Pioneer/Orlando ... 305-834-9090, 800-432-6094
FL Ft. Lauderdale, C.D.I. 305-971-4950
FL Miami, Elctrn. Equip. Co., Inc. 305-871-3500
GA Norcross, C.D.I. 404-441-3320
IL Bensenville, Voyager Elctrns. Corp. ... 312-860-1300
IL Chicago, Bell Inds. 312-640-1910
IL Chicago, Newark Elctrns. 312-784-5100
IL Elgin, Allied Elctrns. 312-697-8200
IL Elmhurst, Semiconductor Specialists, Inc. 312-279-1005
IL Northbrook, Classic Comps. 312-272-9650
IN Carmel, Altex Elctrns., Inc. 317-848-1323, 800-692-6039
KS Wichita, R.S.C. 316-267-5213
MD Beltsville, Treeko Sls. 301-937-8260
MD Gaithersburg, Pioneer/Washington ... 301-921-0660
MA Burlington, Excalibur Elctrns., Inc. 617-273-5858
MA Needham, Cronin Elctrns., Inc. 617-449-5000
MI Grand Rapids, S-F Elctrn. Supp. Inc. .. 616-459-0216
MI Southfield, Michigan Lectrols Corp. ... 313-353-1350
MN Minneapolis, Stark Elctrns. 612-332-1325
MO Kansas City, Semiconductor Specialists, Inc. 816-452-3900
MO St. Louis, Olive Indl. Elctrns. 314-426-4500
NM Albuquerque, Betatron Elctrns. 505-344-2381
NM Albuquerque, Intl. Elctrns. 505-345-8127
NY Farmingdale, Pride Elctrns. 516-293-4020
NY Farmingdale, S.A.I. 516-293-2710
NY Mamaroneck, Logicomp Elctrns. 914-698-9332
NY Rochester, Masline Elctrns. 716-546-5373
NC Greensboro, Hammond Elec. 919-275-6391
NC Raleigh, So. Eastern. Elctrns. 919-828-2311
NC Winston-Salem, Kirkman Elctrns. 919-722-9131
OH Cleveland, Alpha Distr. Corp. 216-659-7100
OH Dayton, The Stotts-Friedman Co. 513-298-5555
OK Oklahoma City, Electro Entrs., Inc. 405-427-6591
PA Philadelphia, Herbach & Rademan, Inc. 215-426-1700
PA Philadelphia, PEI/Genesis Elctrns. 215-568-7400
SC Greenville, EMSCO 803-233-4121
SC Taylors, Cantrell Whls. 803-268-1194
TN Knoxville, MAC-1 615-966-4143
TX Austin, Southwest Elctrns. 512-837-8971
TX Austin, The Altair Co. 512-837-4490
TX Farmers Branch, Force Elctrns. Inc. of Texas 214-247-9955
TX Fort Worth, Allied Elctrns. 817-336-5401
TX Houston, Force Elctrns. Inc. of Texas 713-561-8644
TX Houston, The Altair Co. 713-462-3029
TX Richardson, Southwest Elctrns. 214-234-3050
TX Richardson, The Altair Co. 214-231-5166
TX Stafford, Southwest Elctrns. 713-240-4000
WA Kent, Shannon Ltd. 206-763-0545
WI Mequon, Taylor Elec. Co. 414-241-4321
WI Milwaukee, Marsh Elctrns. 414-475-6000

INDUSTRIAL ELECTRONIC HARDWARE CORP., 109 Prince St., New York, NY 10012, Tel: 212-677-1881, TWX: 710-581-4338; FSC No.: 97913; Empl.: 250; *Sls. Mgr.:* Louis Roberts; *Dist. Mgr.:* Louis Roberts

INDUSTRIAL FABRICATING CO., 481 Shelton Ave., Hamden, CT 06517, Tel: 203-787-9111; Empl.: 30; *Sls. Mgr.:* Ray Peterson

INDUSTRIAL INDEXING SYSTEMS, INC., 626 Fishers Run, Victor, NY 14564, Tel: 716-924-9181; Empl.: 30; *Sls. Mgr.:* Raymond F. Coller

Local Sales Offices & Reps

IL Clearview, Microcon, Inc. 312-390-0290
NY East Rochester, A & D Dvcs. 716-385-2778
PA Media, Homersmith, Inc. 215-543-2434

Local Distributors

MI Grand Rapids, Ackerman Elec. 616-459-8327
MI Walled Lake, Static Controls 313-624-0600
OH Cincinnati, Tapco Prods., Inc. 513-683-4481
WI Oneida, MCL Inds., Inc. 414-434-1500

INDUSTRIAL MIDWEC CAPACITORS, 4902 Tollview Dr., Rolling Meadows, IL 60008, Tel: 312-577-0120, TWX: 910-687-3375; Empl.: 100; *Sls. Mgr.:* Dale Rasmussen

ITECO

INDUSTRIAL TEST EQUIP., 21 Yennicock Ave., Port Washington, NY 11050, Tel: 516-883-1700; FSC No.: 99074; *Sls. Mgr.:* Jay Monroe ..... **D•2070-2074**

INERTIAL MOTORS, 280 N. Broad St., Doylestown, PA 18901, Tel: 215-345-1010, Telex: 83-1633; Empl.: 17; *Sls. Mgr.:* T. D. Schmalbruch

INFICON LEYBOLD-HERAEUS, INC., 6500 Fly Rd, E. Syracuse, NY 13057, Tel: 315-437-0377, TWX: 710-541-0594; Empl.: 185; *Sls. Mgr.:* John G. Stratakos

INFINETICS INC., Friskem Div., 201 Vandever Ave., Wilmington, DE 19802, Tel: 302-658-2471, TWX: 510-666-2332; *Sls. Mgr.:* M. Schwartz

INFODEX, INC., 395 W. Main St., Waterbury, CT 06702, Tel: 203-757-9291, Telex: 178702 IFDX, FAX: 203-757-9291 (x230); FSC No.: 09087; Empl.: 65; *Sls. Mgr.:* E. H. Ulm

INFO-LITE CORP., See Dio-Rey and Crosspoint

INFORMATION CONTROL, Dept. EM7 9610 Bellanca Ave., Los Angeles, CA 90045, Tel: 213-641-8520, TWX: 910-328-7234; Empl.: 55; *Sls. Mgr.:* Carol J. Smith

INFORMATION CONTROL CORP., Abacus Div. Dept. EM7, 9610 Bellanca Ave., Los Angeles, CA 90045, Tel: 213-641-8520, TWX: 910-328-7234; Empl.: 50

INFORMATION CONTROL CORP., 9610 Bellanca Ave., Los Angeles, CA 90045, Tel: 213-641-8520, TWX: 910-328-7234; Empl.: 30; *Sls. Mgr.:* J. M. Boyle

INFORMATION TECHNOLGOY A.D.S.C., P.O. Box 470, College Park, MD 20740, Tel: 301-779-5110

itti THE SWITCHING COMPANY

INFORMATION TRANSFER INDL., Box 357, Holcomb, NY 14469, Tel: 716-657-7074; FSC No.: 55137; Empl.: 70; *Sls. Mgr.:* John Dillman ..... **D•1161-1163, 1270-1271**

Local Sales Offices & Reps

AZ	Scottsdale, Luscombe Engrg.	602-949-9333
CA	Pasadena, Luscombe Engrg.	213-684-2000
CA	San Diego, Luscombe Engrg.	619-295-4300
CO	Littleton, Pond Assocs., Inc.	303-798-2904
CT	Marion, Polytek Assocs.	203-621-4542
IL	Schaumburg, Kenneth W. Meyers Co.	312-882-4808
IN	Indianapolis, Kenneth W. Meyers Co.	317-783-1030
IA	Cedar Rapids, Kenneth W. Meyers Co.	319-363-8987
MA	Ashland, Polytek Assocs.	617-881-4741
MN	Minneapolis, Kenneth W. Meyers Co.	612-920-7080
NJ	Oxford, Malin Assocs.	201-689-7398
NY	Albany, R. F. Lamb Co.	518-869-3355
NY	Buffalo, R. F. Lamb Co.	716-874-4900
NY	Rochester, R. F. Lamb Co.	716-323-1250
NY	Syracuse, R. F. Lamb Co.	315-454-2469
OR	Portland, Tasco	503-245-8168
PA	Melrose Park, Robert Meyers Assocs.	215-224-1663
TX	Houston, Sci. Sls. Co.	713-460-9170
TX	Richardson, Sci. Sls. Co.	214-231-6541
WA	Bellevue, Tasco	206-453-1414
WI	Brookfield, Kenneth W. Meyers Co.	414-784-3790

INFRARED INDUSTRIES, INC., 12151 Research Parkway, Orlando, FL 32826, Tel: 305-282-7700, Telex: 568908; Empl.: 80; *Sls. Mgr.:* Thomas Chisholm

INJECTORALL ELECTRONICS (WOMAN OWNED), 110 Keyland Court, Bohemia, NY 11716, Tel: 516-563-3388 ..... **C•1105, 1111, 1740**

Local Sales Offices & Reps

AL	Birmingham, John F. Russell Co.	205-822-2196

Local Distributors

AL	Birmingham, ACK Radio Supp.	205-322-0588
AZ	Tucson, Electronic City	602-622-1173
CA	San Luis Obispo, Midstate Elctrns. Supp.	805-543-2770
CA	San Rafael, Elctrns. Plus	415-457-0466
CA	Sunnyvale, Halted Specialties	408-732-1573
FL	Jacksonville, Mitchell Elctrns.	904-356-8426
GA	Atlanta, Delta	404-458-4690
IL	Lombard, Tron Elctrns.	312-691-8900
IN	Evansville, Tri-State Supp. Co.	812-423-4257
IA	Cedar Rapids, Iowa Radio Supp. Co.	800-332-5296
KY	Louisville, P.I. Burkes	502-589-3960
MD	Rockville, Capitol Radio Whlsrs.	301-881-2270
MA	Needham, Y.D.I.	617-449-1005
MI	Canton, The Elctrn. Connection	313-595-6655
NY	Endicott, Rogan Elctrns.	607-754-3590
NY	Lindenhurst, RNJ Elctrns.	516-226-2700
NY	Long Island City, Typeco	718-706-6666
NY	Richmond Hill, Anchor	212-846-2420
NC	Charlotte, Slayton Elctrns.	704-375-6600
OK	Oklahoma City, Radio Supp., Inc.	405-332-6127
OR	Beaverton, Norvac	503-644-1025
PA	Philadelphia, H & R Elctrns.	215-426-1700
SC	Charleston, Wholesale Indl. Elctrns.	803-722-2634
TX	Fort Worth, Sweico	817-335-6521
VA	Roanoke, H. C. Baker	703-344-9209

INLAND MOTOR
KOLLMORGEN CORPORATION

INLAND MOTOR, 4020 E. Inland Rd., Sierra Vista, AZ 85635, Tel: 602-459-1150, Telex: 62858, TWX: 910-973-9869; *Sls. Mgr.:* David Richards ..... **B•1190-1193**

INLAND MOTOR, Kollmorgen Corp., 501 First St, Radford, VA 24141, Tel: 703-639-9045, TWX: 710-875-3740; FSC No.: 11384; Empl.: 450

INMARK CORP., 147 West Cedar St., Norwalk, CT 06854, Tel: 203-866-8474, Telex: 99-6419, FAX: 203-866-0918; *Sls. Mgr.:* Theo Notaras

INMOS CORP., P.O. Box 16000, Colorado Springs, CO 80935, Tel: 303-630-4000 Ext. 4454, TWX: 910-920-4904; Empl.: 300; *Sls. Mgr.:* Don Carrigan; *Dist. Mgr.:* Jackson Cole

INNOVATEK MICROSYSTEMS, INC., Smithfield Rd., R1 Box 104, Millerton, NY 12546-9720, Tel: 914-373-9003, Telex: Easylink 62264170; Empl.: 8; *Sls. Mgr.:* Paul F. Fitts

INNOVATIVE ELECTRONICS, INC., 4714 N.W. 165th St., Miami, FL 33014, Tel: 305-624-1644; Empl.: 28; *Sls. Mgr.:* Marshall Roper

INRECO, See Ransco Industries

INRESCO, INC., 654 Ocean Road, Pt. Pleasant, NJ 08742, Tel: 201-892-5881; Empl.: 16; *Sls. Mgr.:* G. L. Martin

INSTRON CORP., 100 Royall St., Canton, MA 02021, Tel: 617-828-2500, Telex: 924434; Empl.: 1000; *Sls. Mgr.:* Lawrence Frost; *Dist. Mgr.:* Patrick Heck

INSTRULAB, P.O. B. 98, Dayton, OH 45404, Tel: 513-223-2241; Empl.: 22; *Sls. Mgr.:* Philip C. Alderton

Local Sales Offices & Reps

AL	Huntsville, Scientific Dev. S.E.	205-536-1969
AZ	Scottsdale, Williams Assocs.	303-289-5647
CA	Laguna Hills, Elotek Sys.	714-830-4856
CA	Pleasanton, Microwave Meas.	415-846-0377
CO	Denver, Williams Assoc.	303-289-5647
FL	Orlando, Scientific Dev. S.E.	305-841-8180
IL	Chicago, Midwest Instrs.	312-571-7292
KS	Overland Park, Ramsey Assocs.	913-649-6996
MD	Baltimore, Eastern Instr.	301-384-8500
MD	Burtonsville, Eastern Instrmn.	301-384-8500
MA	Boston, Addelco Corp.	617-444-4754
MI	Detroit, E.Q.S. Sys.	313-961-3042
MN	Minneapolis, Loren Green Assoc.	612-571-6666
MO	St. Louis, Ramsey Assoc.	314-878-5042
NJ	Cresskill, Eastern Inst. of N Y	201-567-9505
NM	Albuquerque, Williams Assocs.	505-255-1638
NY	Syracuse, DB Assocs.	315-446-0220
OH	Chesterland, E. Q. S. Sys.	216-729-2222
OH	Dayton, E.Q.S. Systems	513-294-2476
PA	Philadelphia, Sci. Devices	215-825-9515
TX	Dallas, Milstek Inc.	214-231-8106
TX	Houston	713-376-8666
UT	Salt Lake City, Williams Assocs.	801-485-6511
WA	Bellevue, Scientific Dev. N.W.	206-747-5169

ICS inc.

INSTRUMENTATION & CONTROL SYS., 520 Interstate Rd, Addison, IL 60101, Tel: 312-543-6200, Telex: 271503 ICS UR, TWX: 910-991-5945; Empl.: 50; *Sls. Mgr.:* Ken Horning ..... **B•1432-1433; D•2075**

Local Sales Offices & Reps

Industrial Control Component Reps.

AL	Huntsville, Alpha Mktg.	205-533-0766
FL	Miami, Hummel Indl. Sls.	305-651-0196
IL	Elmhurst, Hill-Gray Assocs.	312-832-4101
MN	Minneapolis, R. W. Marshall Co.	612-929-0457
CO	Denver, West HiTech Inc.	303-477-8180
NJ	Whippany, Robert Smith Assocs.	201-540-0204
NY	Plainview, R. Smith Assocs.	516-681-3155
PA	Abington, Wynn Environmental Sls.	215-659-9667

Power Conditioning Reps.

AL	Birmingham, C. S. Phillips Co.	205-870-0640
CA	Downey, Randolph Inds., Inc.	213-803-1407
CT	Hartford, John Bouchard Assocs.	203-523-0044
IL	Arlington Hgts., Engrd. Indl. Prod. Inc.	312-398-1311
MD	Burtonsville, Bekr Inds. Inc.	301-384-3145
NV	Las Vegas, Randolph Inds.	702-361-6663
NJ	Spring Lake, CPN Assocs.	201-774-5224
NY	Brentwood, CPN Assocs.	516-273-8348
NY	Hyde Pk., CPN Assocs.	914-229-7395
NC	Charlotte, Fred Lekson Assocs.	704-536-1868
TX	Houston, Gettys-Eads-Adair	713-781-3005
VA	Mechanicsville, Bekr Inds. Inc.	804-746-3003

Local Distributors

AL	Birmingham, Systec Engrg. Inc.	205-967-8967
AL	Huntsville, Allied Elctrns.	800-433-5700
CA	Canoga Park, C & A Elctrns.	800-433-5700
CA	Hayward, Allied Elctrns.	415-487-5250
CA	San Jose, Allied Elctrns.	408-995-0470
CA	Tustin, Allied Elctrns.	213-860-0090
CO	Denver, Colorado Bus.	303-759-4589
MA	Wilmington, Allied Elctrns.	617-942-0150
FL	Clearwater, Industrial Control Drives	305-486-0500
FL	Miami, Hummel Indl. Sls.	305-651-0196
FL	Pompano Bch., Allied Elctrns.	305-486-0500
GA	Norcross, Allied Elctrns.	404-377-3555
GA	Norcross, Automatic Controls Co.	404-447-5644
IL	Berwyn, B-B & W, Inc.	312-749-1710
IL	Elgin, Allied Elctrns.	312-697-8200
IL	Rosemont, Advent Elctrns.	312-297-6200
IA	Cedar Rapids, Advent Elctrns.	319-363-0221
IA	Indianapolis, Advent Elctrns.	317-872-4910
MD	Marlow Hgts., Allied Elctrns.	301-423-0161
MI	Farmington Hills, Advent Elctrns.	313-447-1650
MN	St. Paul, Powermation	612-645-0781
NC	Raleigh, Allied Elctrns.	919-876-5845
NY	Hauppauge, N & L Instrs.	516-234-9797
NY	Mineola, Allied Elctrns.	516-248-2360
OH	Chagrin Falls, Neptune	216-247-7030
OH	Warren, REM Elctrn. Supp. Co., Inc.	216-373-1300
PA	Wayne, Peak Elctrns. Corp.	215-293-9000
TX	Brownsville, Garden Indl. Grp.	512-546-1612
TX	Ft. Worth, Allied Elctrns.	817-336-5401, 214-265-9341
TX	Ft. Worth, Allied Export Svcs.	817-336-5401
TX	Garland, Powertronics	214-272-4640
WA	Seattle, Allied Elctrns.	206-767-2827
WI	Fond du Lac, Fedco Elctrns.	414-922-6490
WI	Waukesha, Powermation	414-542-2868

INSTRUMENTATION MEAS. LAB., See Lockheed Electronics Co., Inc.

INSTRUMENTATION PRODS., 3M Co., 300 S. Lewis Rd., Camarillo, CA 93010, Tel: 805-482-1911, TWX: 910-336-1676; Empl.: 500

INSTRUMENTATION SERVICES, INC., 957 Winnetka Ave. N., Minneapolis, MN 55427, Tel: 612-544-8916, Telex: 29-0101; Empl.: 30; *Sls. Mgr.:* G. Ryan

INSTRUMENT ENCLOSURES, 9767 Glenoaks Blvd., Sun Valley, CA 91352, Tel: 818-768-4622, Telex: 70-5097; FSC No.: 62012; Empl.: 28; *Sls. Mgr.:* William B. Taylor

THE INSTRUMENT MART, 295 Community Dr., Great Neck, NY 11021, Tel: 516-487-7430

INSTRUMENT RESEARCH CO., Box 40207, Santa Barbara, CA 93103, Tel: 805-962-8336; Empl.: 6

INSTRUMENT RESISTOR CO., See INRESCO/Instr. Resistor

INSTRUMENTS, INC., 7263 Engineer Rd., Ste. G, San Diego, CA 92111, Tel: 619-571-1111, Telex: 910-350-7239 INST INC.; FSC No.: 34563; Empl.: 28; *Sls. Mgr.:* Ken Kalbfell

INSTRUMENTS & CONTROLS DIV., See Technology Systems Div., KRUG Intl.

ifi INSTRUMENTS FOR INDUSTRY, INC

INSTRUMENTS FOR INDUSTRY, INC., 151 Toledo St., Farmingdale, NY 11735, Tel: 516-694-1414, TWX: 510-222-0876, FAX: 516-694-1418; Empl.: 25; *Sls. Mgr.:* Ethel Smarz ..... **D•1014**

Local Sales Offices & Reps

AZ	Mesa, DJM Elctrns.	602-820-4030
CA	Mountain View, DJM Elctrns.	415-966-1680
CA	Newhall, DJM Elctrns.	805-254-2677
CA	Westlake Village, DJM Elctrns.	805-495-1006
CO	Englewood, R. A. Mayes Co.	303-761-9447
CA	San Diego, DJM Elctrns.	619-726-1266
IA	Cedar Rapids, EIR Co.	319-395-7500
MD	Laurel, CSDS, Inc.	301-490-3800
MN	Minneapolis, Deerland Distrs.	612-331-6433
MO	Kansas City, EIR Co.	816-452-7030
MO	Leasburg, EIR Co.	314-895-4100
NJ	N. Plainfield, Brady Co.	201-283-0400
NM	Albuquerque, R. A. Mayes Co. Southwest	505-292-2330
OH	Cincinnati, Bill Teplitz Assocs.	513-481-1648
OH	Cleveland, Bill Teplitz Assocs.	216-439-3265
PA	Sewickley, Bill Teplitz Assocs.	412-741-3628
TX	Austin, Scientific Dvcs.	512-388-3982
TX	Houston, Scientific Dvcs.	713-864-1711
TX	Richardson, Scientific Dvcs.	214-231-8016
WI	Milwaukee, Deerland Distrs.	414-784-1414

INSTRUMENT SPECIALTIES CO., P.O. Box A, Delaware Water Gap, PA 18327, Tel: 717-424-8510, TWX: 510-671-4526; Empl.: 300; *Sls. Mgr.:* Stephen Wasseluk ..... **C•1746-1747**

Local Sales Offices & Reps

AZ	Phoenix, O'Donnell Assocs.	602-944-9542
CA	San Jose, O'Donnell Assocs.	408-263-6500
CA	Torrance, O'Donnell Assocs.	213-539-9664
CO	Englewood, D. M. Harthun Assocs., Inc.	303-792-5050
MN	Eagan, Rel Comp	503-649-8375
OR	Hillsboro, Temco Northwest	503-648-8171

TX Dallas, J. M. Spell 214-620-0040
WA Kirkland, Temco Northwest 206-821-5434

INTECH, Instruments Div., 282 Brokaw Rd., Santa Clara, CA 95050, Tel: 408-727-0500, TWX: 910-338-0254; Empl.: 120; *Sls. Mgr.:* Howard Randall; *Dist. Mgr.:* Howard Randall

INTECH, Advanced Analog, 2270 Martin Ave., Santa Clara, CA 95050, Tel: 408-988-4930, TWX: 910-338-2213; FSC No.: 33967; Empl.: 150; *Sls. Mgr.:* David Timm

INTEGRA, INC., 2368 Walsh Ave., Santa Clara, CA 95051, Tel: 408-727-9601, TWX: 910-338-0585; FSC No.: 51162; Empl.: 14; *Sls. Mgr.:* Len Johnson

INTEGRATED CIRCUITS, INC., 10301 Willows Road, Redmond, WA 98052, Tel: 206-882-3100, TWX: 910-443-2302; FSC No.: 50821; Empl.: 290; *Sls. Mgr.:* D. T. Baughman ..... **A•1758; D•1741-1745**

Local Sales Offices & Reps

AL Huntsville, Novus Grp. 205-881-2207
AZ Tempe, Gassner & Clark 602-968-9037
CA El Toro, Martronix 714-858-0630
CA Mountain View, Weseloh-Swanson Assocs. 415-961-0565
CA San Diego, Martronix 619-728-0384
CO Parker, Tech. Mktg. Assocs. 303-841-3435
FL Deerfield Bch., Krutek & Assocs. 305-427-4202
GA Lilburn, Novus Grp. 404-381-1015
IL Schaumburg, Gassner & Clark Co. 312-882-8608
IA Des Moines, Beams Co. 515-255-1148
KS Shawnee Mission, Beams Co. 913-631-0300
MD Owings Mills, Neal Deoul Assocs. 301-363-4311
MA Wakefield, Howard C. Jappe Co. 617-245-9359
MN Minneapolis, Electromark 612-881-3306
MO St. Louis, Beams Co. 314-569-1060
NJ Flanders, K & R Engrg. Sls. 201-584-5235
NY N. Syracuse, Advanced Comps. Corp. 315-699-2671
NC Raleigh, Novus Grp. 919-872-3966
OH Cleveland, Arthur H. Baier Co. 216-461-6161
PA Newtown, Yax Assocs. 215-860-2540
TX Irving, Kite Elctrn. Sls. 214-438-9336
Can Scarborough, Ont., Bestec Elctrns., Ltd. 416-293-1391

INTEGRATED COMPUTER SYSTEMS, 5800 Hannum Ave., Culver City, CA 90230, Tel: 213-417-8888, Telex: 4995168 ICS LA; Empl.: 100; *Sls. Mgr.:* Marilyn Martin

INTEGRATED DEVICE TECHNOLOGY, INC., 3236 Scott Blvd., Santa Clara, CA 95054-3090, Tel: 408-727-6116, TWX: 910-338-2070; FSC No.: 61772; Empl.: 750; *Sls. Mgr.:* Joe Zabkar (VP); *Dist. Mgr.:* Rick Keeling

INTEGRATED DIGITAL PRODUCTS, 1470 N. Hundley St., Anaheim, CA 92806, Tel: 714-666-1133; Empl.: 12; *Sls. Mgr.:* Penny Karlberg

INTEGRATED MICROWAVE, 3422 Tripp Ct., San Diego, CA 92121, Tel: 619-259-2600, TWX: 910-335-2037; FSC No.: 60656; Empl.: 60; *Sls. Mgr.:* Art Brand

INTELCO, 8 Craig Road, Acton, MA 01720, Tel: 617-264-4485, Telex: 62923380; Empl.: 25; *Sls. Mgr.:* Jeffrey Flesner

Intelligence Power Technology

INTELLIGENCE POWER TECHNOLOGY, 2111 Howell Ave., Anaheim, CA 92806, Tel: 714-937-1301, Telex: 910-591-1893; Empl.: 35; *Sls. Mgr.:* Larry Steen ..... **D•1746**

Local Sales Offices & Reps

AZ Scottsdale, American Mktg. Inc. 602-948-2778
CA Los Angeles, Power Partners 213-215-0800
CA San Diego, Mesa Engrg. 619-278-8021
CA San Jose, Ruppert Sls. & Engrg. 408-998-8717
CT Torrington, Northern Computer Sls. ... 203-482-3007
KY Ft. Mitchell, G. W. Thelen 606-341-8181
MD Columbia, Robert Elctrn. Sls. 301-995-1900
MA Canton, Northern Computer Sls. 617-821-2180
MI Livonia, Lowell-Wendt 313-464-2722
MI Wyoming, Lowell-Wendt Mktg. 616-531-4499
MO St. Louis, Design Solutions 314-961-7170
NJ Berkeley Hgts., Cambridge, Allen & Assocs. 201-464-0203
NY Fairport, Northern Computer Sls. 716-377-2650
NC Charlotte, Robert Elctrn. Sls. 704-563-2475
NC Raleigh, Robert Elctrn. Sls. 919-878-4465
OH Medina, G. W. Thelen 216-723-1293
PA Hatboro, Jacobsen Assocs. 215-674-2937
PA Lebanon, Jacobsen Assocs. 717-273-9746
TX Austin, Space Elctrns. Corp. 512-346-2215
TX Houston, Space Elctrns. Corp. 713-266-9245
TX Irving, Space Elctrns. Corp. 214-251-3636
VA Richmond, Robert Elctrn. Sls. 804-745-5342
WA Bellevue, Underwood-Hanify 206-643-1793
WA Vancouver, Underwood-Hanify 206-695-2311
WI Greenfield, Olympic 414-281-9294

Local Distributors

CA Huntington Bch., Mil-Com 714-840-2424
CA Los Altos, Frauman 415-941-0660
CA San Diego, Mesa Engrg. 619-278-8021
CA Thousand Oaks, Mil-Com 805-647-8569
KY Ft. Mitchell, Thelen 606-341-8181
MD Columbia, Robert Elctrn. Sls. 301-995-1900
MA Chelmsford, EnCo Tronic 617-256-4207
MI Livonia, Lowell-Wendt 313-464-2722
MI Wyoming, Lowell-Wendt 616-531-4499
NJ Berkeley Hgts., Cambridge Allen 201-464-0203
NC Charlotte, Robert Elctrn. Sls. 704-563-2475
OH Medina, G. W. Thelen 216-723-1293
OR Vancouver, Underwood-Hanify 503-224-0583
PA Hatboro, Jacobsen 215-674-2937
TX Austin, Space Elctrns. 512-346-2215
TX Irving, Space Elctrns. 214-251-3636
VA Richmond, Robert Elctrn. Sls. 804-745-5343
WA Bellevue, Underwood-Hanify 206-643-1793
WI Greenfield, Olympic 414-281-9294

INTERACTION SYSTEMS INC., 130 Lincoln St, Brighton, MA 02135, Tel: 617-789-5900, TWX: 753582; *Sls. Mgr.:* Richard P. Stroum

INTERACTIVE COMPUTER PRODUCTS, INC., 23591 El Toro Rd., Ste. 180, El Toro, CA 92630, Tel: 714-770-5332; *Sls. Mgr.:* Jim Bearden

INTERCONICS, BMC Industries, 1100 American National Bank Building, St. Paul, MN 55101, Tel: 612-228-6556, Telex: 297022; *Sls. Mgr.:* Lee Jamison

INTERCONICS, BUSSING SYS. OPER., a unit of BMC Industries, Inc., 2525 E. Vista Industria, Compton, CA 90220, Tel: 213-639-2535, Telex: 316727; FSC No.: 55783; Empl.: 90

INTERCONNECT DEVICES, INC., 5101 Richland Ave., Kansas City, KS 66106, Tel: 913-342-5544, Telex: 286767 IDIKC UR, FAX: 913-342-7043; *Sls. Mgr.:* Cathy Snead/Donna McKinney

INTERCONNECT TECHNOLOGIES, INC., 194C Charlestown Road, Malvern, PA 19355, Tel: 215-647-9260; *Sls. Mgr.:* Steve Major; *Dist. Mgr.:* Steve Major

INTERDYNE CO., 157 Topaz St., Milpitas, CA 95035, Tel: 408-943-9133; FSC No.: 31598; Empl.: 30

INTERELECTRONICS CORP., Interelectronics Park, 550 U.S. Rte. 303, Congers, NY 10920, Tel: 914-EL8-8000; Empl.: 82; *Sls. Mgr.:* M. H. Pintell; *Dist. Mgr.:* G. Sherwood ..... **D•1747**

INTERFACE, INC., 7401 E. Butherus Dr., Scottsdale, AZ 85260, Tel: 602-948-5555, Telex: 825-882; FSC No.: 32311

INTERFACE ENGINEERING, 386 Lindelof Ave., Stoughton, MA 02072, Tel: 617-344-7383, Telex: 940-848; FSC No.: 14352; Empl.: 25; *Sls. Mgr.:* Thomas Scanlon ..... **D•1164-1165**

Local Sales Offices & Reps

NY Great Neck, Industron Assoc. 516-487-2620
VA Arlington, Gans & Pugh 703-527-3262

INTERFACE PRODUCTS, INC., 2185 S. Grand Ave., Santa Ana, CA 92705, Tel: 714-549-4977, TWX: 910-595-2569; FSC No.: 55300; Empl.: 60; *Sls. Mgr.:* Western Sls. Mgr./Larry Green

INTERFACE TECHNOLOGY, Dynatech Div., 2100 E. Alosta Ave., Glendora, CA 91740, Tel: 818-914-2741, Telex: 4945489

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INTERFAN, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-1203, TWX: 910-374-2353; Empl.: 12; *Sls. Mgr.:* F. L. Nelson ... **C•1644-1647**

Local Sales Offices & Reps

AZ Phoenix, Mercury Engrg. Sls., Inc. 602-265-0344
AR Mabelvale, Erickson Sls., Inc. 501-455-0618
CA Burlingame, William J. Purdy Co. 415-347-7701
CA Costa Mesa, Berman Gravley Co., Inc. 714-549-2122
CA Costa Mesa, Berman-Gravley Co., Inc. 714-549-2122
CO Denver, William J. Purdy Co. 303-753-6800
FL Clearwater, HHP Assocs., Inc. 813-797-4447
FL Maitland, HHP Assocs., Inc. 305-831-7404
FL Pompano Bch., HHP Assocs., Inc. 305-971-5750
GA Atlanta, Millar Elctrns., Inc. 404-634-3350
IL Elmhurst, F.F./Hill-Gray Assocs., Inc. .. 312-832-4101
IN Indianapolis, John Sukup, Inc. 317-253-5501
LA Chalmette, Erickson Sls., Inc. 504-271-1976
MD Lisbon, Samuel K. MacDonald, Inc. 301-442-1590
MI Royal Oak, Hilltronics Inc. 313-435-0920
MN Minneapolis, Boerger & Assocs. 612-560-3435
NH Nashua, Bell Controls, Inc. 603-882-6984
NJ Englewood, Sprung/Nussbaum, Inc. .. 201-569-5666
NM Albuquerque, William J. Purdy Co. 505-266-7959
NY Syracuse, Paston-Hunter Co., Inc. 315-437-2843
NC Raleigh, Millar Elctrns., Inc. 919-828-8840
OH Cleveland, KT/DEPCO 216-442-6200
OH Columbus, KT/DEPCO 614-447-0106
OR Beaverton, William J. Purdy Co. 503-641-9373
PA Philadelphia, Samuel K. MacDonald, Inc. 215-545-1205
PA Pittsburgh, KT/DEPCO 412-367-1011
TX Austin, Erickson Sls., Inc. 512-244-3068
TX Dallas, Erickson Sls., Inc. 214-739-5833
TX Houston, Erickson Sls., Inc. 713-266-1604
WA Redmond, William J. Purdy Co. 206-882-3144

INTERGALACTIC CORP., Box 7025, Salt Lake City, UT 84107, Tel: 801-262-0094, TWX: 910-530-0888; *Sls. Mgr.:* Shawn MacGregor

INTERLOK, Wm. J. Purdy Co., 770 Airport Blvd, Burlingame, CA 94010, Tel: 415-348-5625, Telex: 677-1439 (Purdy UW); FSC No.: 55951; Empl.: 30; *Sls. Mgr.:* Clarence Bruce

MLEC® INTER-MARKET INC.

INTER-MARKET, 1946 Lehigh Ave., Glenview, IL 60025, Tel: 312-729-5330, TWX: 910-651-1997; FSC No.: 34165; Empl.: 10; *Sls. Mgr.:* Phil Gardanier ..... **B•1094, 1628**

Local Sales Offices & Reps

MN St. Paul, Kenco Tronics 612-645-7717
PA Rydal, Espy Sls. 215-576-0780
WA Redmond, Elctrn. Mktg. 206-882-0962
Can Montreal, Que., Braydon Electro 514-332-5650

Local Distributors

CA Chatsworth, Mil-Comm Distr. 818-998-3111
ID Spirit Lake, A-1 Elctrns. 800-635-1545
IL Chicago, Newark Elctrns. 312-638-4411
MN St. Paul, K.D.I., Inc. 612-645-5090
NH Hudson, C & H Elctrns. 603-882-1133
NJ Oakland, Relay Specialties 201-337-1000
PA Willow Grove, Resco Elec. 215-659-4575
WI Oshkosh, Electronic Inds. 414-235-8930
Can Montreal, Que., Braydon Electro 514-332-5650

INTERMATIC, Intermatic Plaza, Spring Grove, IL 60081, Tel: 815-675-2321, Telex: 25-265; Empl.: 1000

INTER METRO INDUSTRIES CORP., North Washington St., Wilkes-Barre, PA 18705, Tel: 717-825-2741, Telex: 831-833; *Sls. Mgr.:* Brian Shedlock

INTERNATIONAL COMPONENTS CORP., 105 Maxess Rd., Melville, NY 11747, Tel: 516-293-1500, TWX: 510-224-6409; Empl.: 100; *Sls. Mgr.:* Al Macaluso; *Dist. Mgr.:* Al Macaluso ..... **D•1038**

Local Sales Offices & Reps

AR Little Rock, Erickson Sls. 501-455-0618
CA Anaheim, Impact Elctrns. 714-533-1351
CA Redwood City, Hickey Inds. 415-368-3849
CO Parker, Parker Webster 303-841-4888
FL Clearwater, Electrocraft 813-578-2233
FL Coral Springs, Electrocraft 305-753-8666
IL Arlington Heights, MJ Petersen & Assoc. 312-577-8200
IA Cedar Rapids, IOWA Tech. Sls. 319-393-8644
LA Chalmette, Erickson Sls. Inc. 501-271-1976
MD Baltimore, Espy Sls. Co. 301-444-6982
MN Minneapolis, PSI 612-944-8545

NJ Cedar Knolls, T.A.M. 201-575-4390
NY S. Hauppauge, T.A.M. 516-348-0800
NY Syracuse, Nycom 315-437-8343
OK Broken Arrow, Erickson Sls. Inc. 918-455-4276
PA Camp Hill, Espy Sls. Co. 717-763-9577
PA Rydal, Espy Sls. Co. 215-576-0780
TX Austin, Erickson Sls. Inc. 512-244-3068
TX Dallas, Erickson Sls. Inc. 214-739-5833
TX Houston, Erickson Sls. Inc. 713-266-1604
UT Murray, Parker Webster 801-266-9939
PR Hato Rey, Casanova Indl. Sls. Corp. ... 809-753-8674

Local Distributors

AZ Phoenix, ACC 602-269-5655
CA Canoga Park, Myco Vickers 213-340-2025
CA Redwood City, Hi-Cor 415-365-5087
CO Denver, Integrated Elctrns. 303-623-8713
CT East Haven, JV Elctrns. 203-469-2321
FL Ft. Lauderdale, National Resistor Co. 305-772-4500
MN Eden Prarie, Cassidy Elctrns. 612-944-0100
MN Minneapolis, Cassidy Elctrns. 612-835-7746
NJ Clifton, Vantage Comps. 201-667-1840
PA Philadelphia, Jan Indl. Elec. 215-WA 2-1321
PA Philadelphia, Mur'Tronics 215-632-4330
TX Ft. Worth, C & W Supp. Co. 817-831-0395

INTERNATIONAL COMPONENTS CORP., Worldwide Sales Headquarters, 770-101 Wooten Road, Colorado Springs, CO 80915, Tel: 303-570-6900, Telex: 452427; Empl.: 50 (U.S.), 1100 (Offshore)

INTERNATIONAL CONFIGURATIONS, INC., P. O. Box 3374, Enfield, CT 06082, Tel: 203-749-6380, Telex: 643 067; FSC No.: 62484; Empl.: 4; *Sls. Mgr.:* Mr. L. Baldwin

INTERNATIONAL CONTROLS & MEASUREMENTS CORP., P.O. Box 2819, Syracuse, NY 13220, Tel: 315-699-5266; FSC No.: 52516; Empl.: 50; *Sls. Mgr.:* Don Plath; *Dist. Mgr.:* Don Plath

INTERNATIONAL CRYSTAL MFG., 701 W. Sheridan, P.O. Box 26330, Oklahoma City, OK 73126, Tel: 405-236-3741, Telex: 747-147; Empl.: 224; *Sls. Mgr.:* Paul E. Denwalt

INTERNATIONAL DATA SCIENCES, 7 Wellington Rd., Lincoln, RI 02865, Tel: 401-333-6200, TWX: 710-384-1911; Empl.: 125

INTERNATIONAL DATA TECHNOLOGY, INC., 7440 N.W. 13th St., Ft. Lauderdale, FL 33313, Tel: 305-587-6823, TWX: 910-997-4751 (DIGITAL); Empl.: 15

INTERNATIONAL DIGITAL ELECTRONICS, 2045 S. Arlington Hgts. Rd., Ste. 119, Arlington Hgts., IL 60005, Tel: 312-439-8858/8861/8863, FAX: 312-439-8864; Empl.: 6; *Sls. Mgr.:* Masanori Kotani

INTERNATIONAL DIODE, 229 Cleveland Ave., Harrison, NJ 07029, Tel: 201-482-6518; Empl.: 9; *Sls. Mgr.:* Lee Toong

iem.®

INTERNATIONAL ELECTRO MAGNETICS, INC., 350 N. Eric Dr., Palatine, IL 60067, Tel: 312-358-4622; Empl.: 15; *Sls. Mgr.:* T. Pretto ..... **D•1037**

Local Sales Offices & Reps

NY New York, United Research Labs. 212-751-4660

Local Distributors

CA Hollywood, Scottsound 213-462-6981
CA Pleasant Hill, ALC 415-777-5525
NY Morris, Boynton Studio 607-263-5695
NY New York, United Research Labs. 212-751-4660

INTERNATIONAL HIGH VOLTAGE ELCTRNS., INC., Finance Drive, Danbury, CT 06810, Tel: 203-792-7820; *Sls. Mgr.:* A. Pellegrino ..... **D•1748-1749**

Local Sales Offices & Reps

CA Santa Ana, Power House, Inc. 714-549-9599
CT Waterbury, HLM Assocs. 203-753-9894
NJ Parsippany, HLM Assocs. 201-263-1535
NY Northport, HLM Assocs. 516-757-1606

INTERNATIONAL INSTRUMENTATION, INC., 2282 Townsgate Rd., Westlake Vlg., CA 91361, Tel: 805-495-7673, FAX: 805-379-0701; Empl.: 32; *Sls. Mgr.:* Ted Rush; *Dist. Mgr.:* Dan Kimberling

INTERNATIONAL INSTRUMENTS

INTERNATIONAL INSTRUMENTS, General Resistance, Inc., Twin Lakes Rd, P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-3450, TWX: 710-452-3092, FAX: 203-481-8937; Empl.: 150; *Dist. Mgr.:* Bruce Granoff ..... **D•1355**

Local Sales Offices & Reps

KS Shawnee Mission, Tech. Sls. Assoc. .. 913-888-3330
MD Perry Hall, Electra-Tech 301-256-2723
MO Ferguson, Tech. Sls. Assocs. 314-725-5361
NJ Berkley Heights, NBS Assocs. 201-464-8500
NY Rochester, H. C. Johnson Agys. 716-586-0777
OH Westlake, Advanced Tech. Assocs. ... 216-835-5050
PA Glenshaw, H. C. Johnson Agys. 412-487-1246
PA Malvern, Stitzer Assocs. 215-644-5500
VA Dumfries, Electra-Tech 703-670-6962

Local Distributors

AZ Phoenix, Metermaster 602-437-1425
CA Los Angeles, E.I.L. Instrs., Inc. 213-685-7020
CA Los Angeles, Metermaster 213-685-4340
CA Palo Alto, Metermaster 415-968-0313
CA San Diego, Metermaster 619-560-4841
CA Santa Clara, Dynametron 408-727-6531
CA Santa Clara, E.I.L. Instrs., Inc. 408-727-0396
CO Denver, E.I.L. Instrs., Inc. 303-534-4160
CO Denver, Metermaster Instr. Corp. 303-722-5766
CT Middletown, E.I.L. Instrs., Inc. 203-346-6646
FL Palm Bay, E.I.L. Instrs., Inc. 305-735-8300
GA Norcross, Metermaster 404-446-0166
IL Bridgeview, E.I.L. Instrs., Inc. 312-430-2292
IL Elk Grove Village, Metermaster 312-593-8650
IN Indianapolis, E.I.L. Instrs., Inc. 317-545-1373
KY Louisville, E.I.L. Instrs., Inc. 502-454-3420
LA New Orleans, Industrial Instr. Works .. 504-733-8355
MD Gaithersburg, Pioneer Instrs. Div. 301-921-0660
MA Burlington, E.I.L. Instrs. 617-272-9450
MI Ferndale, Ram Meter Inc. 313-398-6767
MN Minneapolis, Process Meas. Co. 612-544-4035
NJ Pensauken, E.I.L. Instrs., Inc. 609-488-0474
NY Clarence, Trott Elctrns., Inc. 716-634-8500
NY Hauppauge, E.I.L. Instrs., Inc. 516-231-6333
NY Rochester, E.I.L. Instrs., Inc. 716-427-8000
OH Cleveland, Metermaster 216-651-4100
OH Cleveland, Pioneer/Instrmn. Div. 216-587-3600
OH Dayton, E.I.L. Instrs., Inc. 513-435-2134
OR Beaverton, Eicher-Richards 503-641-3300
PA Philadelphia, Sunshine Scientific 215-673-5600
PA Pittsburgh, E.I.L. Instrs. 412-731-5230
TX Dallas, E.I.L. Instrs., Inc. 214-931-1236
TX Garland, Metermaster 214-271-5671
TX Houston, E.I.L. Instrs., Inc. 713-271-3100
TX Houston, Meters & Instr. Corp. 713-644-1631
VA Alexandria, E.I.L. Instrs., Inc. 703-354-4330
VA Virginia Beach, E.I.L. Instrs., Inc. 804-499-3746
WA Seattle, E.I.L. Instrs., Inc. 206-762-0800
WA Seattle, Eicher Richards 206-523-7888

INTERNATIONAL LASER SYS., 3404 N. Orange Blossom Trail, Orlando, FL 32804, Tel: 305-295-4010, TWX: 810-850-0195; Empl.: 408; *Sls. Mgr.:* W. C. Hudson

INTERNATIONAL MANUFACTURING SERVICES, 50 Schoolhouse La., Portsmouth, RI 02871, Tel: 401-683-9700, FAX: 401-683-5571; FSC No.: 45177; Empl.: 25; *Sls. Mgr.:* Jay Benson

INTERNATIONAL MICROELECTRONIC PRODS., 2830 North First Street, San Jose, CA 95134, Tel: 408-262-9100, Telex: 499-1041, TWX: 910-338-2274; Empl.: 380; *Sls. Mgr.:* Robert Kromer

INTERNATIONAL MICROSYSTEMS, 790 E. Arques Ave., Sunnyvale, CA 94086, Tel: 800-237-4734; Empl.: 10; *Sls. Mgr.:* Peter Schade

INTERNATIONAL MICROTRONICS CORP., 4016 E. Tennessee St., Tucson, AZ 85714, Tel: 602-748-7900, TWX: 910-952-1170, FAX: 602-790-2808; Empl.: 30; *Sls. Mgr.:* H. Statler

INTERNATIONAL POLARIZER, INC., 320 Elm Street, Marlborough, MA 01720, Tel: 617-481-7495, ESYLNK: 601 6454; Empl.: 5

INTERNATIONAL POWER DC POWER SUPPLIES

INTERNATIONAL POWER D.C., Power Supplies Inc., 355 N. Lantana, Ste. 710, Camarillo, CA 93010, Tel: 805-987-7900, TWX: 510-600-6944, ESYLNK: 62911592; Empl.: 25; *Sls. Mgr.:* Craig Johnson; *Dist. Mgr.:* Ron Ostlund ..... **D•1750-1753**

Local Sales Offices & Reps

AL Huntsville, Remco 205-533-3736
CA El Cajon, Atronics 619-444-1501
CA San Jose, Nelson Elctrn. Sls. 408-293-2600
CA Woodland Hills, Atronics 818-703-7212
CO Englewood, Frontier Reps. 303-799-6063
CT Bethel, Livera Polk Assocs. 203-748-4639
GA Atlanta, Remco 404-447-6937
IL Wheeling, Ed Joyner & Co. 312-520-1200
IN Indianapolis, JFCO, Inc. 317-576-9363
MA Franklin, OEM Mktg. & Sls. 617-528-4983
MI Detroit, JFCO, Inc. 313-693-2053
MI Grand Rapids, JFCO, Inc. 616-245-4621
MN Richfield, Clay Rep Co. 612-861-2191
NH Salem, OEM Mktg. & Sls. 603-893-0009
NJ Madison, Livera-Polk Assocs. 201-377-3220
NY Glenhead, Livera-Polk Assocs. 516-759-9300
NC Raleigh, Remco 919-847-5079
OH Cleveland, JFCO, Inc. 216-398-6300
OH Dayton, JFCO, Inc. 513-890-8322
PA Pittsburgh, JFCO, Inc. 412-823-5400
TX Irving, Kite Elctrns. 215-438-9336
UT Ogden, Frontier Reps. 801-546-4029
Can St. Laurent, Que., Componetics, Ltd. ... 514-334-1464

Local Distributors

CA San Jose, Cypress Elctrns. 408-945-8400
CA Torrance, Cypress Elctrns. 213-533-6005
CO Wheatridge, Cypress Elctrns. 303-431-2622
IL Champaign, Klaus Radio 217-356-1896
IL Villa Pk., Melvin Elctrns. 312-279-5015
IN Evansville, Evansville Supp. Co. 812-424-7541
MN Minneapolis, Glenmark Elctrns. 612-941-4825
NH Hudson, C & H Elctrns. 603-882-1133
NY Glenhead, Livera Polk Assocs. 516-759-9300
OK Oklahoma City, Radio Supp. Inc. 405-232-6127
TX Dallas, Cypress Elctrns. 214-869-1435
TX McKinney, Sunbelt Elctrns. 214-542-1435
WI Cedarburg, A-A Elec. 414-377-7500
Can St. Laurent, Que., Componetics, Ltd. ... 514-334-1464

IPD

INTERNATIONAL POWER DEVICES, 155 N. Beacon St., Brighton, MA 02135, Tel: 617-782-3331, ESYLNK: 989-752, FAX: 617-782-7416; *Sls. Mgr.:* Amanda Pratt ..... **D•1755-1763**

Local Sales Offices & Reps

AL Huntsville, Macro Mktg. 205-883-9630
AZ Tempe, Elec-Com Assocs. 602-967-8644
CA Los Angeles, Power Partners 213-215-0800
CA San Diego, Power Partners 619-560-0099
CA San Ramon, Tech. Consits. 415-830-0829
CO Parker, Parker-Webster 303-841-4888
FL Plantation, EMS, Inc. 305-587-7416
GA Norcross, Macro Mktg. 404-441-1081
MA Billerica, Bennetron 617-663-7017
MN Bloomington, Smiley/Scott Inc. 612-888-5551
NJ Englewood, Tecnimat 201-569-4200
NJ Haddonfield, Sunday O'Brien 609-429-4013
NY N. Syracuse, R. F. Roux 315-458-9169
NC Raleigh, Positive Comp. Sls. 919-772-8073
OR Portland, Power Sources, Unltd. 503-291-0820
TX Dallas, Seaton Corp. 214-380-0414
TX Houston, Seaton Corp. 713-731-2649
VA Richmond, Glasscock Assocs. 804-740-0063
WA Lynnwood, Power Sources, Unltd. 206-743-6641

INTERNATIONAL POWER MACHINES, 11534 Pagemill Rd., Dallas, TX 75243, Tel: 800-527-1208, Telex: 794078 IPM POWER, FAX: 214-341-9309; *Sls. Mgr.:* Arthur W. Willcox

INTERNATIONAL POWER SOURCES, INC., 10 Cochituate St., Natick, MA 01760, Tel: 617-651-1818, TWX: 510-100-3635, FAX: 617-655-7984

INTERNATIONAL RECTIFIER CORP., Semiconductor Div., 233 Kansas St., El Segundo, CA 90245, Tel: 213-772-2000, Telex: 472-0403, TWX: 910-348-6291, FAX: 213-772-9028; Empl.: 2200; *Sls. Mgr.:* Don Prescott; *Dist. Mgr.:* Shawn Fogarty

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INTERNATIONAL RESISTIVE COMPANY, P.O. Box 1860, Boone, NC 28607, Tel: 704-264-8861, Telex: 46-9902; Empl.: 1700; *Sls. Mgr.:* Pete Smith; *Dist. Mgr.:* Hugh Bolen ..... **A•1948-1953**

Local Sales Offices & Reps

AL	Huntsville, TRW/ECG	205-533-7600
AZ	Scottsdale, SW Sls. Inc.	602-391-3180
CA	Pasadena, Luscombe Engrg. Co.	213-684-2000
CA	Sacramento, ETS	916-962-3030
CA	San Jose, ETS	408-433-9366
CO	Westminster, Straube Assocs.	303-426-0890
CT	E. Norwalk, TRW/ECG	203-853-4466
FL	Ft. Lauderdale, TRW/ECG	305-772-3000
FL	Orlando, TRW/ECG	305-857-3650
GA	Norcross, TRW/ECG	404-447-6154
IL	Elk Grove Vl., TRW/ECG	312-981-6500
IN	Ft. Wayne, R. O. Whitesell & Assocs.	219-432-5591
IN	Indianapolis, R. O. Whitesell & Assocs.	317-359-9283
IA	Cedar Rapids, C. H. Horn & Assocs.	319-393-8703
KS	Lenexa, Midtec Assocs.	913-541-0505
KY	Pewee Valley, R. O. Whitesell & Assocs.	502-241-1441
MA	Westborough, TRW/ECG	617-870-0745
MI	Grand Blanc, R. O. Whitesell & Assocs.	313-695-0770
MI	Grand Rapids, R. O. Whitesell & Assocs.	616-942-5420
MI	Southfield, R. O. Whitesell & Assocs.	313-559-5454
MN	Minneapolis, TRW/ECG	612-854-6616
MO	St. Louis, Jack Macke Co.	314-432-2830
NY	Fairport, TRW/ECG	716-425-3775
NC	Greensboro, TRW/ECG	919-852-4676
OH	Cincinnati, R. O. Whitesell & Assocs.	513-521-2290
OH	Cleveland, R. O. Whitesell & Assocs.	216-447-9020
OH	Columbus, R. O. Whitesell & Assocs.	614-888-9396
OH	Dayton, R. O. Whitesell & Assocs.	513-298-9546
OR	Portland, RTS	503-632-3925
PA	Bala Cynwyd, TRW/ECG	215-667-3400
PA	Pittsburgh, R. O. Whitesell & Assocs.	412-963-6161
TX	Austin, TRW/ECG	512-335-0499
TX	Dallas, TRW/ECG	214-248-8000
TX	El Paso, S. W. Sales	915-594-8259
TX	Houston, TRW/ECG	713-772-5541
UT	Salt Lake City, Straube Assocs.	801-263-2640
WA	Bellevue, TRW/ECG	206-641-1996
WA	Vashon, RTS	503-632-3925
WI	Brookfield, TRW/ECG	414-784-7773
Can	Toronto, Renmark	416-494-5445

Local Distributors

AZ	Tempe, Hamilton/Avnet	602-231-5100
CA	Campton, Harper S.I.D.	213-979-5090
CA	Chatsworth, Hamilton Electro Sls.	818-700-6500
CA	Culver City, Hamilton Electro Sls.	213-558-2121
CA	Gardena, Bell Inds.	213-515-1800
CA	Sunnyvale, Bell Inds.	408-734-8570
CA	Sunnyvlae, Harper S.I.D.	408-988-6041
FL	Tampa, Impala Elctrns.	813-885-4747
IL	Schaumburg, Arrow Elctrns.	312-397-3440
IN	Indianapolis, Graham Elctrns.	317-634-8202
IA	Cedar Rapids, Deeco	319-365-7551
MD	Columbia, Hamilton/Avnet	301-995-3500
MA	Woburn, Jaco Elctrns.	617-933-7760
MN	Edina, Arrow Elctrns.	612-830-1800
NJ	Hanover, State Elctrns.	201-887-2550
NJ	Marlton, Arrow Elctrns.	609-596-8000
NY	Hauppauge, Hamilton/Avnet	516-231-9800
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NC	Raleigh, Arrow Elctrns.	919-876-3132
NC	Raleigh, Resco/Raleigh	919-781-5700
OH	Columbus, Electronic Mktg.	614-299-4161
OH	Dayton, Hamilton/Avnet	513-439-6700
PA	Philadelphia, Philadelphia Elctrns.	215-568-7400
TX	El Paso, Intl. Elctrns.	915-778-9761
TX	Irving, Hamilton/Avnet	214-659-4100
TX	Richardson, Jaco Elctrns.	214-235-9575
WA	Bellevue, Hamilton/Avnet	206-643-3950
WA	Bellevue, Priebe Elctrns.	206-821-4695

INTERNATIONAL RESOURCE SVCS., 7343 N.W. 79th Terr., Miami, FL 33166, Tel: 305-884-2924, Telex: 522261 MIA DEPT 343; Empl.: 5; *Sls. Mgr.:* Richard L. Winn

ISI

INTERNATIONAL SENSOR SYSTEMS, INC., Aurora Industrial Pk., Box 345, Aurora, NE 68818, Tel: 402-694-6111, ESYLNK: 62942952, FAX: 402-694-6180; Empl.: 45; *Sls. Mgr.:* Wayne Robiee ... **A•1759; D•1130**

Local Sales Offices & Reps

CA	Mission Viejo, EAB Assocs. Inc	818-339-4555
CA	Palo Alto, Tri-Rep	415-965-1822
CO	Ft. Collins, Rep Sls. Inc.	303-226-1504
CT	Roxbury, Kimble Assocs.	203-354-1954
IL	Northfield, H. Sam Tollaksen Co.	312-441-6644
IN	Indianapolis, STB Assocs., Inc.	317-844-9227
KS	Wichita, DLE Elctrns.	316-744-1229
MD	Lutherville, Quarterback Sls. Inc.	301-764-9400
MO	Jefferson City, Williams Assocs. Co.	314-893-2459
NE	Omaha, IONEB	402-895-4431
NY	Liverpool, Syronics, Inc.	315-451-0968
PA	Southampton, Campbell Assocs.	215-322-6630
TN	McMinnville, B & D Mktg.	615-473-7155
TX	El Paso, Nokomis of El Paso, Inc.	915-778-2801

INTERNATIONAL TRANSDUCER CORP., Channel Technologies, Inc., 869 Ward Dr., Santa Barbara, CA 93111, Tel: 805-683-2575, Telex: 658 495; FSC No.: ID 532; Empl.: 65; *Sls. Mgr.:* W. Bunker

INTERNATIONAL WIRE PRODUCTS CO., 500 W. Main St., Wyckoff, NJ 07481, Tel: 201-891-5800, Telex: 642580; Empl.: 700; *Sls. Mgr.:* C. D. Abbott

INTEROPTICS

INTEROPTICS, Purdy Group, 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-7727, Telex: 677-1439 (PURDY UW), FAX: 415-340-1670; Empl.: 35; *Sls. Mgr.:* Thomas B. Kinney ..... **B•1148-1149**

Local Sales Offices & Reps

AZ	Phoenix, Laser Tech. Intl.	602-978-5756
CA	Burlingame, William J. Purdy Co.	415-347-7701
CA	Santa Ana, Wayne Champa Assocs.	714-662-2228
CO	Denver, William J. Purdy Co.	303-753-6800
FL	Melbourne, Panterra Sls., Inc.	305-452-4454
GA	Decatur, Panterra Sls., Inc.	404-325-0165
IL	Des Plaines, Flaherty-Haines, Inc.	312-298-2710
MN	Bloomington, Heil's Termatech Elctrn. Mktg.	612-854-2001
MO	St. Louis, Midtec Assocs., Inc.	314-275-8666
NH	Nashua, Bell Controls, Inc.	603-882-6984
NJ	Passaic, Lightcomm Sls. Assocs.	201-778-6540
NM	Albuquerque, William J. Purdy Co.	505-266-7959
NY	New York, Lightcomm Sls. Assocs.	212-807-8924
NY	Utica, Fiber Instrs. Sls.	315-735-1691
NC	High Pt., EME, Inc.	919-869-3335
OK	Park Hill, Scientific Dvcs.	918-457-4888
OR	Beaverton, William J. Purdy Co.	503-641-9373
TN	Fayetteville, Panterra Sls., Inc.	615-759-4155
TX	Richardson, Scientific Dvcs.	214-231-8106
TX	Roundrock, Scientific Dvcs.	512-388-3982
TX	Spring, Scientific Dvcs.	713-376-8666
VA	Williamsburg, EME IV, Inc.	804-253-0171
WA	Redmond, William J. Purdy Co.	206-882-3144

Local Distributors

CA	Anaheim, Fibertron	714-634-3449
Can	Burnaby, BC, C.D. Nova, Ltd.	604-430-5612

INTERSIL, 10710 N. Tantau Ave., Cupertino, CA 95014, Tel: 408-996-5000, TWX: 910-338-0583; FSC No.: 32293; Empl.: 4102; *Dist. Mgr.:* Bruce Mattern

INTERSTATE ELECTRONICS CORP., Box 3117, 1001 E. Ball Rd., Anaheim, CA 92803, Tel: 714-635-7210, Telex: 655443, TWX: 910-591-1197; FSC No.: 6625, 5985; Empl.: 1500; *Sls. Mgr.:* Darryl Watanabe; *Dist. Mgr.:* R. Sorenson

INTERSTATE WIRE CO., INC., 10820 Sander Dr., Dallas, TX 75238, Tel: 214-553-1311

INTERSWITCH

INTERSWITCH, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-8217, Telex: 677-1439, FAX: 415-340-1670; FSC No.: (Purdy UW); Empl.: 30; *Sls. Mgr.:* Clarence Bruce ..... **B•1629**

Local Sales Offices & Reps

AZ	Tempe, Foley, Tallent & Lee	602-438-1564
CA	Burlingame, William J. Purdy Co.	415-347-7701
CA	Costa Mesa, Berman-Gravely Co.	714-549-1992
CO	Denver, William J. Purdy Co.	303-753-6800
IL	Elmhurst, F.F./Hill-Gray	312-832-4101
IN	Indianapolis, John Sukup Inc.	317-253-5501
KS	Shawnee Mission, M-S-B Assocs.	913-432-2131
MD	Lisbon, S. K. MacDonald	301-982-1088
MI	Royal Oak, Hilltronics, Inc.	313-435-0920
MO	St. Charles, M-S-B Assocs.	314-946-5577
NH	Nashua, Bell Controls, Inc.	603-802-6984
NJ	Englewood, Harold Gray Assocs.	201-894-0894
NM	Albuquerque, William J. Purdy Co.	505-266-7959
OR	Beaverton, William J. Purdy Co.	503-641-9373
PA	Philadelphia, S. K. MacDonald, Inc.	215-545-1205
UT	Salt Lake City, William J. Purdy Co.	801-486-8557
WA	Redmond, William J. Purdy Co.	206-882-3144

Local Distributors

AZ	Tempe, Anjon Entprs.	602-894-1332
AZ	Tempe, Waltronic Sls.	602-967-1020
CA	Burbank, Merit Comp. Supp.	818-842-8162
CA	Canoga Pk., Panel Parts Co.	818-884-8898
CA	Santa Clara, Waltronic Sls.	408-727-1200
CO	Denver, Ragon	303-744-3601
FL	Ft. Lauderdale, Peerless Radio Corp.	305-973-4141
MA	Lynn, Land Elctrn. Supp. Co.	617-592-2220
MN	Minneapolis, Bergquist	612-835-2322
NJ	Englewood, Powell Elctrns.	201-894-0800
NM	Albuquerque, Walker Elctrn. Supp.	505-883-2992
NY	Buffalo, Summit Distrs.	716-884-3450
NY	Rochester, Summit Elctrns.	716-334-8110
NC	Winston-Salem, Kirkman Elctrns.	919-722-9131
PA	Philadelphia, Resco Elctrns.	215-659-4575
WI	Mequon, Taylor Elec. Co.	414-241-4321

INTER-TECHNICAL GRP., One Bridge Street, Irvington, NY 10533, Tel: 914-591-8822, TWX: 710-564-0802; Empl.: 21; *Sls. Mgr.:* Gary M. Fey; *Dist. Mgr.:* Andrew E. Dvorscak ..... **A•1091**

Local Sales Offices & Reps

AL	Huntsville, J. R. Assocs.	205-830-2130
CA	Santa Clara, Engineering Assocs. Corp.	408-988-5001
CO	Lakewood, Palmer Assocs.	303-233-9423
CT	Colchester, Normell Assocs.	203-537-5555/3758
FL	Altamonte Springs, 'C' Assocs., Inc.	305-831-1717
GA	Conyers, J.R. Assocs.	404-922-1231
IL	Westchester, W. G. Brouillette & Assocs.	312-345-6500
IN	Noblesville, W. G. Brouillette & Assocs.	317-877-4508
MA	Newton, Normell Assocs.	617-969-5478
MN	Minneapolis, Intl. Sls. Co.	612-831-8423
NJ	Colonia, Heft & Ficarra Assocs.	201-381-5193
NY	Rochester, BKT Assocs., Inc.	716-586-5814
NY	Smithtown, T & K Sls.	516-724-3456
NC	Lewisville, J.R. Assocs.	919-945-9574
OH	Dayton, Markus Barnett Assocs., Inc.	513-293-6778
OH	Shaker Heights, Don Gype Co.	216-283-5380
OR	Portland, Harry Levinson Co.	503-245-1902
PA	King of Prussia, Eltron Comp. Sls.	215-783-5350
TN	Chattanooga, J. R. Assocs.	615-892-7630
TN	Chattanooga, J.R. Assocs.	615-892-7630
TX	Dallas, Lelko-Paulsen Sls.	214-680-9588
UT	Salt Lake City, Alpine Entprs.	801-278-5081
VA	Front Royal, Eltron Sls., Ltd.	703-635-7201
VA	Manassas, Eastern Comps. Sls.	800-223-3850
WA	Seattle, Harry Levinson Co.	206-382-1300
PR	Ponce, Burke Assocs., Inc.	809-840-2444
Can	Ontario, R-Theta, Inc.	416-890-0221

Local Distributors

CA	San Jose, Shelly-Ragon, Inc.	408-942-9111
CA	Santa Clara, ISC	408-496-0411
FL	Ft. Lauderdale, NRC Elctrns., Inc.	305-772-4500
FL	Melbourne, T.C. Pridmore Co.	305-727-2491
GA	Norcross, Spectrum Elctrns., Inc.	404-448-1516
IL	Rosemont, Advent Elctrns., Inc.	312-297-6200
IN	Indianapolis, Advent Elctrns., Inc.	317-872-4910
IA	Cedar Rapids, Advent Elctrns., Inc.	319-363-0221
MA	Ashland, March Elctrns.	617-881-6715
MI	Farmington, Advent Elctrns.	313-477-1650

MN New Brighton, Chris Elctrns. Distr. 612-631-2647
NJ East Brunswick, Brothers Elctrns., Inc. 201-238-2200
NY Port Chester, MKM Elctrn. Comps., Inc. 914-382-3940
NY West Hempstead, March Elctrns. 516-485-4700
PA Exton, VSH Elctrns. 215-363-2250
PA McKean, Advacom, Inc. 814-476-7774
TX Allen, Prime Distrbg. Co. 214-231-0170
WA Seattle, Kam Elctrns. Div. 206-382-1300

INTRA-COMPUTER, 101 W. 31st St., New York, NY 10001, Tel: 212-947-5533, Telex: 64-5067; Empl.: 9; *Sls. Mgr.:* Art Yaglian

INTRONICS, INC., 57 Chapel St., Newton, MA 02158, Tel: 617-964-4000, Telex: 200095, TWX: 710-335-6835; Empl.: 130; *Sls. Mgr.:* J. Conway .... **D•1765**

Local Sales Offices & Reps
AL Huntsville, Husghes Assocs. 205-533-9108
AZ Tempe, Trembly Assocs., Inc. 602-967-2058
CA Los Alamitos, Power Specialists 213-594-9418
CO Wheatridge, Trembly Assocs., Inc. 303-421-8900
FL Orlando, Hughes Assocs. 305-774-7117
GA Atlanta, Hughes Assocs. 404-662-1587
IL Arlington Hgts., Cooms Assocs. 312-439-9810
IA Cedar Rapids, Technical Elctrns. 319-366-5443
KS De Soto, Midtec Assocs. 913-441-6565
MA Walpole, JEF Comps. Inc. 617-668-6695
MS Corinth, Hughes Assocs. 601-287-2915
NV Las Vegas, Trembly Assocs., NC 702-739-9770
NJ Montgomeryville, Eastern Sci. Mktg. 215-368-4570
NM Albuquerque, Trembly Assocs., Inc. 505-266-8616
NY Canandaigua, Bensman/Upstate Assocs. 716-396-2498
NY Hicksville, J-Square Mktg. 516-935-3200
NC Cary, Hughes Assocs. 919-467-7029
OH Dayton, Del Steffen & Assocs. 513-293-3145
OH Lexington, Del Steffen & Assocs. 419-884-2313
PA Montgomeryville, Eastern Sci. Mktg. 215-368-4570
PA Pittsburgh, Del Steffen & Assocs. 412-276-7366
TN Morristown, Hughes Assocs. 615-587-2433
TX Houston, Scientific Sls. Co. 713-460-9170
TX Richardson, Scientific Sls. Co. 214-231-6541
UT Salt Lake City, Trembly Assocs., Inc. 801-486-5292
Can Lachine, Que., Electro Design 514-636-4838
Can Surry, BC, Enerlec Sls., Ltd. 604-888-1667

ION PHYSICS CO., 323 Andover St., Wilmington, MA 01887, Tel: 617-658-6030, TWX: 510-600-6134

IOTECH, INC., 23400 Aurora Road, Cleveland, OH 44146, Tel: 216-439-4091, Telex: WUI 6502820864

IPAC GRP., 3047 Indl. Blvd., Bethel Pk., PA 15102, Tel: 412-831-9200, TWX: 510-697-3935; Empl.: 50; *Sls. Mgr.:* D. T. Cusack

IRONICS INCORPORATED, 798 Cascadilla St., Ithaca, NY 14850, Tel: 607-277-4060, Telex: 705-742; *Sls. Mgr.:* Ed Schulman

IR SCIENTIFIC, Box 110, Carlisle, MA 01741, Tel: 617-667-7110; Empl.: 10; *Sls. Mgr.:* S. J. Sommer

ISC CARDION ELECTRONICS, INC., Long Island Expwy., Woodbury, NY 11797, Tel: 516-921-7300, Telex: 221683 CARD, TWX: 510-221-2179; FSC No.: 12909; Empl.: 450; *Sls. Mgr.:* J. J. Murphy

ISC DATACOM, 2225-I Martin Ave., Santa Clara, CA 95050, Tel: 408-748-7616, Telex: 330168, FAX: 408-748-9132; Empl.: 12; *Sls. Mgr.:* C. Frank

ISC MAGNETICS DIV., See Aeroflex Labs., Inc., Magnetic Prods. Div.

ISKRA ELECTRONICS, INC., 222 Sherwood Ave., Farmingdale, NY 11735, Tel: 516-753-0400, 800-862-2101, Telex: 221527, FAX: 516 753-0658; *Sls. Mgr.:* Debbie Gremito

Local Sales Offices & Reps
CA San Diego, C. K. Assocs. 619-279-0420
FL Largo, Burke Assocs. 813-584-5699
IL Elmhurst, Utronix Sls. 312-834-1100
IN Ft. Wayne, Naunas Sls. Co. 219-432-4792
MD Baltimore, Comp. Sls., Inc. 301-484-3647
MA Winchester, Mutronics 617-729-1866
MN Minneapolis, R.K. Sls. Assocs. Inc. 612-571-1001
NY New Hyde Pk., R. P. Luce & Co. 516-437-4550
OH Akron, Merit Elctrns. Inc. 216-239-2186
PA Harleysville, Thomas Jackson Assocs. 215-256-8877
SC Easley, R A Sls. 803-859-1859
TX Dallas, J. Clay Co. 214-458-8833
TX El Paso, EPEC Elctrns. Inc. 915-593-8481
UT South Jordan, MAC III 801-569-1095

Local Distributors
CA West Lake, JACO 805-495-9998
MA Woburn, JACO 617-933-7760
NJ Westwood, Seacor 201-666-5600
NY Hauppauge, JACO 516-273-5500
TX Richardson, JACO 214-235-9573

ISL PRODUCTS INT'L, LTD., 235 P Robbins Lane, Syosset, NY 11791-6093, Tel: 516-937-3475, Telex: 503242; Empl.: 25,000; *Sls. Mgr.:* Ken Kawaller .... **A•1092-1093, 2257; C•1301, 1868**

Local Sales Offices & Reps
IL Chicago, Trans World Prods. 312-486-5474
IN Noblesville, C.C. Elctrns. 317-255-2508
MD Pikesville, Muncy Sls. 301-484-6376
MA Topsfield, RFC Assocs. 617-887-8545
MN Edina, Components Rep. Grp. 612-944-1160
NC Chapel Hill, Muncy Sls. 919-942-1090

ISOLATION PRODUCTS, INC., 157 San Lazaro Ave., Sunnyvale, CA 94086, Tel: 408-730-4672; Empl.: 5

ISOREG CORP., 410 Great Rd., P.O. Box 486, Littleton, MA 01460, Tel: 617-486-9483, TWX: 710-347-6974 ISOREG LTTN; Empl.: 75; *Sls. Mgr.:* Paul Foss; *Dist. Mgr.:* Paul Foss

ISOTEMP RESEARCH, INC.

ISOTEMP RESEARCH, INC., 1750 Broadway St., P.O. Box 3389, Charlottesville, VA 22901, Tel: 804-295-3101; FSC No.: 031785; Empl.: 30 .... **A•1400-1401**

Local Sales Offices & Reps
AZ Scottsdale, Faser Technical Sls. 602-948-4404
CA Fremont, Wm. Parks & Assocs. 415-796-0875
CA Irvine, EBA Microwave 714-857-6079
CA San Diego, Qualtronics 619-695-0118
IL Woodridge, Trend-Tronics 312-985-0626
IN Fort Wayne, Given Corp. 219-432-5585
NC Raleigh, Godwin Assocs. 919-847-3006

ISOTRONICS, Augat, Industrial Park, New Bedford, MA 02745, Tel: 617-998-2000, TWX: 710-344-1961; *Sls. Mgr.:* Dennis T. Hanley

ITC SYSTEMS, INC., 813 Anapamu St. 2C, Santa Barbara, CA 93103, Tel: 805-965-8900, Telex: 295-298 INTERTEL SNC; *Sls. Mgr.:* W. Schulz

ITEK MEASUREMENT SYS., Div. Litton Inds., 27 Christina St., Newton, MA 02161, Tel: 617-969-7300, TWX: 710-335-6783; Empl.: 100 .... **B•1791-1793**

Local Sales Offices & Reps
CA Long Bch., Measurement Sys. Div. 213-598-8575
FL Orlando, K. S. Chaney 305-293-5656
IL Des Plaines, Marsland Assocs. 312-298-2620
IN Indianapolis, Marsland Assocs. 317-293-5437
IA Cedar Rapids, Marsland Assocs. 319-365-1908
MN Minneapolis, Marsland Assocs. 612-545-4481
NJ Metuchen, Measurement Sys. Div. 201-548-1500
NM Las Cruces, BFA Corp. 505-524-9693

Local Distributors
FL Orlando, Kenneth S. Chaney 305-293-5656
IL Des Plaines, Marsland Assocs. 312-298-2620
IN Indianapolis, Marsland Assocs. 317-293-5437
MN Minneapolis, Marsland Assocs. 612-545-4481
NM Las Cruces, BFA Corp. 505-524-9693

ITHACO, INC., Meas. & Control Instrs. Div., 735 W. Clinton St., P.O. Box 6437, Ithaca, NY 14851-6437, Tel: 607-272-7640, TWX: 510-255-9307; Empl.: 120; *Sls. Mgr.:* Russell Aikman

ITT CANNON, 666 E. Dyer Road, Santa Ana, CA 92705-5684, Tel: 714-557-4700, Telex: 75-3917, TWX: 910-997-0523; FSC No.: 71468;Multiple; Empl.: 2500; *Sls. Mgr.:* Richard Torson; *Dist. Mgr.:* Richard Torson

ITT Components
A unit of ITT Corporation

ITT COMPONENTS, ITT Corporation, 5 Genner St., Ste. 100, Irvine, CA 92715, Tel: 714-559-4700, Telex: 681-389, TWX: 910-595-1744; FSC No.: 61725; Empl.: 29; *Sls. Mgr.:* Nigel Stevens; *Dist. Mgr.:* K. Rider .... **A•1094-1096, 1402-1403; B•1434-1441; C•1302-1303**

Local Sales Offices & Reps
AZ Scottsdale, Bill Earl Assocs. Inc. 602-994-3813
CA Laguna Hills, English Damco 714-837-3801
CA Santa Clara, Westrep 408-988-8833
CO Englewood, Romulus Elctrns. 303-770-4888
CT Guilford, Data Mark, Inc. 203-453-0575
IL Rolling Meadows, Heartland Tech. Sls. 312-577-9222
IN Ft. Wayne, M/S Sls. 219-436-3023
KS Wichita, Thunderbird Tech. Sls. 316-684-3941
MD Millersville, Trimark 301-761-6000
MA Sudbury, KSA of New England 617-443-5881
MN Minnetonka, J.P. & Assocs. 612-935-7930
MO Maryland Hgts., Thunderbird Tech. Sls. 314-298-8940
NM Albuquerque, Syntech 505-266-7951
NY Manhasset, Win Cor Elctrns. 516-627-9474
NY Rochester, D. L. Eiss Assocs. 716-328-3000
OH Kettering, Bear Mktg. 513-299-5877
OH Richfield, Bear Mktg. 216-659-3131
PA Prospect Pk., Elf Sls. 215-534-3340
TX Richardson, Milco Mktg. 214-783-2716

Local Distributors
AZ Tempe, Richey Western Elctrns. 602-894-9251
CA Chatsworth, Shelley Ragon 818-998-3333
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CA Irvine, Integrated Elctrns. 714-837-9960
CA Sacramento, Integrated Elctrns. 916-424-5297
CA San Diego, Richey Western Elctrns. 619-271-4511
CA San Diego, Shelley Ragon 619-453-7133
CA San Jose, Integrated Elctrns. 408-263-1100
CA San Jose, ITT Multicomps. 408-279-0685
CA San Jose, Shelley Ragon 408-942-9111
CA Santa Ana, ITT Multi Comps. 714-835-9019
CA Santa Clara, Richey Western Elctrns. 408-727-7411
CA Santa Monica, Distr. Specialties 213-452-3445
CA Santa Monica, Master Distrs. 213-452-1229
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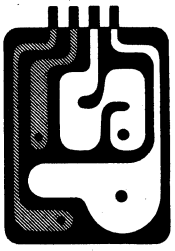

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MD	White Marsh, Resco	301-529-0500
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MN	Minneapolis, Industrial Comps.	612-831-2666
NV	Las Vegas, Kiesub Elctrns.	702-733-3888
NJ	Clifton, J-Mar Elctrns.	201-772-6400
NJ	Oakland, Relay Specialties	201-337-1000
NJ	Rockaway, Tonar Inds.	201-586-9000
NM	Albuquerque, Betatron Elctrns.	505-344-2381
NC	Raleigh, Prehler Elctrns.	919-876-9111
OH	Middleburg Hgts., Prehler Elctrns.	216-243-5510
OK	Tulsa, Altair Co.	918-252-5781
OR	Beaverton, Integrated Elctrns.	503-641-1690
OR	Wilsonville, Shelley Ragon	503-641-1691
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TX	El Paso, ERA Elctrns.	915-855-3600
TX	El Paso, International Elctrns.	915-598-3406
TX	Richardson, Captronics	214-234-1555
UT	North Salt Lake, Integrated Elctrns.	801-298-1869
WA	Bellevue, Integrated Elctrns.	206-455-2727
WA	Seattle, Richey Western Elctrns.	206-575-1910
WA	Seattle, Shelley Ragon	206-241-1980
WI	New Berlin, NEP Elctrns.	414-785-9100

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ITT ELECTRO-OPTICAL PRODS., ITT Corporation, 7635 Plantation Rd., Roanoke, VA 24019, Tel: 703-563-0371, Telex: 829458; Empl.: 1000; *Sls. Mgr.:* R. Bruce; *Dist. Mgr.:* P. Williams

ITT GENERAL CONTROLS DIV., Intl. Telephone & Telegraph Corp., 801 Allen Ave., Glendale, CA 91201, Tel: 213-842-6131, Telex: 673147, TWX: 910-498-2225; Empl.: 1545; *Sls. Mgr.:* Phillip Vaughn

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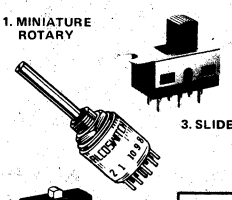

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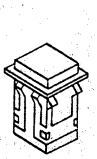

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AL	Huntsville, Brandel-Stephens	205-883-0445
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CA	Los Angeles, Landa & Assocs.	213-879-0770
CA	Santa Ana, Landa & Assocs.	714-543-7805
CA	Santa Clara, C-Com	408-727-2266
CO	Boulder, Component Prod. Sls.	303-530-2800
CT	Guilford, Richard Purinton Inc.	203-453-4505
FL	Deerfield Beach, Brandel-Stephens	305-427-8558
FL	Orlando, Brandel-Stephens	305-425-3202
GA	Atlanta, Brandel-Stephens	404-261-7579
IL	Chicago, IRI	312-647-7755
IN	Indianapolis, EMCI (Elec. Mktg. Consits., Inc.)	317-253-1668
MA	Andover, Richard Purinton, Inc.	617-475-7055
MI	Brighton, A.P. Assocs.	313-229-6550
MN	Edina, Hanna/Lind	612-925-5700
MO	St. Louis, W. Saunders Assocs., Inc.	314-576-4650
NJ	W. Caldwell, Grimm, Siegal Assocs.	201-575-9300
NY	Albany, Reagan-Compar, Inc.	518-489-4777
NC	Greensboro, Brandel-Stephens	919-274-6952
OH	Dayton, K. W. Elctrns.	513-890-2150
OH	Shaker Heights, K.W. Elctrns.	216-491-9177
OH	Worthington, K. W. Elctrns.	614-888-0483
OR	Portland, James J. Backer Co.	503-297-3777
PA	Allison Pk., K.W. Elctrn. Sls., Inc.	412-487-4300
PA	Trevose, P.S.A., Inc.	215-245-0513
TX	Austin, Fralia & Assocs.	512-835-7911
TX	Bedford, Fralia & Assocs.	817-267-3577
TX	Houston, Fralia & Assocs.	713-772-1572
WA	Seattle, Jas. J. Backer Co.	206-285-1300
WI	Milwaukee, Indl. Reps., Inc.	414-259-0965
Can	Whitby, Ont., ITT Cannon-Canada	416-668-8881

Local Distributors

AL	Huntsville, Hallmark	205-837-8700
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CA	Los Angeles, Richey Western	213-820-3777
CA	Riverside, Elctrns Supp	714-787-9220
CA	San Jose, Eric Elctrns	408-262-1111
CA	Sunnyvale, Time Elctrns. Nor/Cal	408-734-9888
CO	Denver, Integrated Elctrns.	303-292-6121
FL	Miami, Hallmark	305-971-9280
FL	Orlando, Hallmark	305-855-4020
IL	Bensenville, Hallmark	312-860-3800
IL	Crystal Lake, Sub-Sem	312-782-3954
IL	Wheeling, Hawk Elctrns.	312-459-4030
IA	Cedar Rapids, Bengquist	319-366-8733
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KS	Wichita, R.S.C. Elctrns.	316-267-5213
MD	Beltsville, Treeko Sls.	301-937-8260
MD	Columbia, Hallmark	301-988-9800
MA	Canton, Impact Sls. Co.	617-444-3971
MA	Hingham, Sager Elec.	617-749-6700
MI	Kentwood, R.M. Elctrns.	616-531-9300
MN	Bloomington, Hallmark	612-854-2223
MN	Minneapolis, Berquist Co.	612-835-2322
MO	Maryland Heights, Hallmark	314-291-5350
NJ	Oakland, Relay Specialties	201-337-1000
NY	Buffalo, Summit Distr.	716-884-3450
NY	Lynbrook, Peerless Radio	516-593-2121
NY	Rochester, Modutex, Inc.	716-647-9700
NC	Raleigh, Hallmark	919-872-0712
OH	Cincinnati, Schuster Elec.	313-489-1400
OH	Twinsburg, Schuster/Cleveland	216-425-8134
OH	Westerville, Hallmark	614-891-4555
OK	Tulsa, Hallmark	918-665-3200
PA	Philadelphia, Hallmark	215-355-7300
PA	Philadelphia, Phila. Elctrns.	215-568-7400
TX	Austin, Hallmark	512-258-8848
TX	Dallas, Hall-Mark	214-343-5000
TX	Houston, Hall-Mark	713-781-6100
TX	Stafford, SW Elctrns.	713-491-4900
WA	Bellevue, Almac Elctrns	206-643-9992
WI	Milwaukee, Hallmark	414-761-3000

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ITW CORTRON, Illinois Tool Works, 400 W. Grand Ave., Elmhurst, IL 60126, Tel: 312-279-9110, TWX: 910-254-0154, FAX: 312-279-9709; Empl.: 125; *Sls. Mgr.:* Ken Buheit

ITW PAKTRON, Div. of Illinois Tool Works, 1205 McConville Road, Lynchburg, VA 24502, Tel: 804-239-6941, Telex: 8711533; FSC No.: 19396; *Sls. Mgr.:* Tom Lee; *Dist. Mgr.:* Curt Miller

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AZ	Phoenix, Stearns & Assocs.	602-996-9077
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CA	San Pedro, Rolle & Assocs.	213-514-9299
CO	Colorado Springs, Colorado Tech. Svcs.	303-598-0916
IL	Chicago, Republic Pkg., Inc.	312-233-6530
IN	Indianapolis, Alexander Inds. Sls.	317-848-1849
NH	Milford, Robert H. Murphy, Inc.	603-673-5918
NJ	Piscataway, ITW Thielex	201-968-5300
NC	Charlotte, ITW Extruded Prods.	704-547-1186
OH	Chagrin Falls, Alexander Inds. Sls.	216-247-4133
OH	Dayton, Alexander Inds. Sls.	513-293-3651
TX	Arlington, ITW Meritex	817-640-5668

IVEK CORP., 43 School St., N. Springfield, VT 05150, Tel: 802-886-2238; Empl.: 6; *Sls. Mgr.:* Gene Williams

IVERON PACIFIC, 1150 Morena Boulevard, San Diego, CA 92110-3899, Tel: 619-275-1500; Empl.: 16; *Sls. Mgr.:* Lee Kerl

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Local Sales Offices & Reps

CA	Tustin, Sierra-Pacific Engrg.	714-731-3411

Local Distributors

CA	Agoura, Sibbald Instrs.	213-991-3864
CA	San Carlos, Logan Elctrns.	415-594-0700
CA	San Jose, Consolidated Parts	408-263-9521
CA	Santa Monica, Master Distr.	213-452-1229
FL	Lakeland, A A Electric	813-665-6941
GA	Norcross, A A Electric	404-449-8670
IL	Arlington Heights, Martec Assocs.	312-956-8090
MD	Towson, Kraft Indl.	301-828-5838
MI	Detroit, E & E Engrg.	313-371-2000
MN	St. Paul, Power/Mation Div.	612-645-0781
NJ	E. Rutherford, A A Electric	201-777-5477, 800-223-0119
NY	Clarence, Trott Elctrns.	716-634-8500
NC	Charlotte, Trott Elctrns.	704-376-2237
NC	Huntersville, Scott Equip.	704-875-1611
SC	Greenville, Automation Supp. Co.	800-845-5274
TX	Dallas, Dallas Meter Tek	214-349-6044
WI	Green Bay, Control Speciality	414-468-1967
WI	Waukesha, Power/Mation Div.	414-542-2868
WI	Wausau, Control Speciality	715-359-9122

THE IVYNET COMPANY, One Gale Rd., Brick, NJ 08723, Tel: 201-920-6807; *Sls. Mgr.:* Doug Slocum

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Local Sales Offices & Reps

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CA	Westlake Vl, Advanced Prods. Sls.	818-706-8351

FL	Palm Harbor, Periphix Teqspec	813-785-5374
IL	Rolling Meadows, Commodore 1	312-394-5441
KS	Lenexa, A-tech	913-268-9644
MD	Lanham, Sel-tronics, Inc.	301-731-8080
MI	Warren, Burcaw Co.	313-573-4605
MN	Minneapolis, Kodo Assocs.	612-881-1255
NH	Nashua, MJT Assocs.	603-889-5373
NY	Liverpool, Northern Tech. Sls.	315-451-1091
NY	Port Chester, Radiation Elctrns., Inc.	914-937-2300
OH	Strongesville, Dolfuss/Root Co.	216-238-0300
TX	Dallas, S.W. Mktg.	214-341-8631
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CA	Anaheim, R & D Elctrn. Supp.	714-773-0240
CA	Burbank, U.S. Instr. Rentals	213-849-5861
CA	Canoga Park, Rag Elctrns.	818-998-6500
CA	Dublin, Std. Meter Labs	415-828-4837
CA	El Monte, Marshall Inds.	818-459-5500
CA	Oceanside, Palomar Elctrn. Prods.	619-439-7541
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CA	San Mateo, U.S. Instr. Rentals	415-579-0911
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CA	Van Nuys, Testek Corp.	818-786-6890
CO	Boulder, Instr. Repair Labs	303-469-5375
CO	Denver, Meter Master Instrs.	303-722-5766
CO	Ft. Collins, Mtn. States Elctrns.	303-484-1044
CT	Newtown, Connecticut Calibration	203-270-1263
DE	Wilmington, Wholesale Elctrns. Inc.	302-656-9988
FL	Cocoa Bch., Space Probes	305-783-3444
FL	Sarasota, Ram-Z Assocs.	813-957-4900
FL	St. Petersburg, H. J. Knapp	813-392-0406
FL	Tampa, Leader Elctrn. Distr.	813-870-3315
FL	Tampa, Sunex Elctrn.	813-885-4074
FL	Tampa, Tampa Instrmn. Ctr.	813-623-3970
FL	W. Palm Beach, Nurmi Elctrn. Supp.	305-686-8553
IL	Downers Grove, Ames Supply Co.	800-942-1596
KS	Wichita, R.S.C. Elctrns.	316-267-5213
MD	Hunt Valley, Tessco	301-785-5300
MA	Billerica, Hayes Instr. Svc.	617-663-4800
MA	Danvers, Anasco	617-777-8885
MA	N. Andover, Contact East	617-682-2000
MA	N. Billerica, A.S.T./Servo Sys.	617-667-8541
MA	Waltham, Calibron Instrs.	617-894-6440
MI	Battle Creek, Great Lakes Elctrns.	616-731-4156
MI	Grand Rapids, S.F. Elctrns. Supp., Inc.	616-459-0216
MI	Lansing, Fulton Radio Supp. Co.	517-394-5020
MI	Oxford, Techno Inds. Ltd.	313-628-4090
MI	Troy, Programmed Learning Resources	313-585-4303
MN	Minneapolis, Edu-tech Inc.	612-533-0000
MN	Minneapolis, Instrmn. Svcs., Inc.	612-544-8916
MN	Minneapolis, Tonka Tech. Labs	612-593-1770
MO	St. Louis, Indl. Svc. Lab. Corp.	314-535-5760
NJ	Basking Ridge, Wintronics, Inc.	201-647-0144
NJ	Clarksburg, Accutest Inc.	201-259-0460
NJ	Newfoundland, Hosica	201-697-6111
NJ	S. Plainfield, Test Equip. Svcs.	201-561-1133
NM	Albuquerque, Electronic Parts Co.	505-293-6161
NY	Bohemia, Exphil Calibration	516-563-3520
NY	Frankfort, Kapital Instr. Sls.	315-894-4245
NY	Great Neck, Instrument Mart	516-487-7430
NY	Morrisville, D.F.I. Entprs.	315-684-9693
NY	Pleasantville, Elctrn. Tool Co.	914-769-8070
NY	Poughquag, Schmidt Elctrns.	914-724-3400
NY	Rochester, Caltronix, Inc.	716-359-3780
NC	Charlotte, Meas. Technlg. Inc.	704-552-5629
NC	Charlotte, United Elctrns. Supp. Co.	704-372-2650
OK	Oklahoma City, Houston De Pue Labs.	404-235-5469
OK	Oklahoma City, World Wide Elctrns.	405-525-9897
OK	Tulsa, Tri-State Instrs.	918-836-0286
OR	Portland, Westcon, Inc.	503-283-0132
PA	Drexel Hill, Kass Elctrns., Inc.	215-449-2300
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PA	Philadelphia, Jan Ind. Elctrns.	215-922-1321
PA	Philadelphia, Sunshine Instrs.	215-673-5600
PA	York, Y.I.S., Inc.	717-854-7804
RI	Providence, Hope Elctrns.	401-521-5600
SC	Spartanburg, Brian Lyttle, Inc.	803-583-8436
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TX	Dallas, Hutton Co.	214-484-0580
TX	Dallas, Wholesale Elctrn. Supp.	214-824-3001
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TX	Garland, Tucker Elctrns.	214-348-8800
TX	Houston, Houston Whls. Elctrns.	713-644-8320
TX	Houston, Meters & Instrs.	713-644-1631
TX	Richardson, Central Instr. Labs	214-234-3600
UT	Salt Lake City, Stan. Supp.	801-486-3371
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VA	Vienna, Electronic Equip. Bank	703-938-3350
WA	Redmond, Vanguard Elctrn. Tool	206-823-4111
WI	Madison, Schrenk Sls.	608-255-7400

IXYS CORP., 2355 Zanker Rd., San Jose, CA 95131-1109, Tel: 408-435-1900, Telex: 384928 SNJ SU; FSC No.: 408-435-1033; *Sls. Mgr.:* Dan Schwob

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	Local Sales Offices & Reps	
CA	Newport Beach, Camda, Inc.	714-642-7281
CA	Santa Clara, Pinnacle Sls.	408-249-7400
CO	Littleton, Con-Tek Mktg.	303-973-8490
CT	Prospect, Cycle Sls.	203-755-2888
FL	Boca Raton, Design Mktg.	305-392-0367
FL	Ft. Lauderdale, JAE Elctrns.	305-563-3484
FL	Maitland, Design Mktg.	305-660-0224
GA	Atlanta, Design Mktg.	404-985-0256
IN	Indianapolis/Ft. Wayne, Campisano Co.	317-253-7651
MA	Marboro, Cycle Sls.	
NJ	Mountainside, Henry R. Richter Co.	201-233-4615
NY	Fayetteville, Henry G. Richter Co.	315-637-6713
NC	Greensboro, Caravan Sls.	919-294-1500
OH	Cincinnati, Campisano Co.	513-574-1111
OH	Cleveland, Campisano Co.	216-749-5550
OH	Columbus, Campisano Co.	614-876-5405
OR	Hillsboro, Rhodes Sls. Corp.	503-640-6666
OR	Portland, Electronic Sources	503-684-0040
PA	Coraopolis, Campisano Co.	412-264-5151
PA	Paoli, Stitzer Assoc.	215-644-5500
PA	Phoenixville, Henry G. Richter Co.	215-495-6176
SC	Greenville, Ellenburg Sls.	803-233-9942
TX	Arlington, Ran Assocs.	817-451-1079
WA	Bellevue, Electronic Sources	206-451-3500
	Local Distributors	
CA	Santa Clara, Cypress Elctrns.	408-980-2500
NY	Deer Pk., Ramtronix Inc.	516-242-4700

JAICO PRODUCTS, Jaidinger Mfg. Co., Inc., 1921 W. Hubbard St., Chicago, IL 60622, Tel: 312-421-1090; Empl.: 35; *Sls. Mgr.:* John S. Jaidinger

JAMESBURY CORP., Div. of Combustion Engineering, Inc., 640 Lincoln St., Worcester, MA 01605, Tel: 617-852-0200, Telex: 92-0448, TWX: 710-240-1268; Empl.: 900; *Sls. Mgr.:* C. A. Richardson

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	Local Sales Offices & Reps	
AZ	Tempe, Piper Sls.	602-949-0048
AR	Dallas, Kruvand Assocs.	214-437-3355
CA	Cupertino, Codella	408-257-2561
CA	San Diego, Qualtronics	619-695-0118
CO	Longmont, Piper Sls.	303-651-2378
FL	Orlando, MacKay, Smith & Assocs.	305-423-4353
GA	Atlanta, MacKay, Smith & Assocs.	404-449-7444
IL	Addison, Engineered Sls.	312-832-8425
IN	Ft. Wayne, Aktron Corp.	219-747-3650
KS	Wichita, T-Bird Tech. Sls. & Svc.	316-684-3941
MD	Silver Spring, H.R. Sieber	301-589-9110
CT	W. Haven, TMP Assocs.	203-932-3115
MN	St. Paul, Cahill, Schmitz & Cahill	612-646-7217
MO	Maryland Heights, T-Bird Sls. & Svc.	314-567-6488
NJ	Cherry Hill, Quality Comps.	609-428-6266
NY	Fairport, TAC Sls. Inc.	301-681-3770
NC	Charlotte, MacKay, Smith & Assocs.	704-372-1188
OH	Columbus, Tom Mulligan Company	614-457-2242
TX	Dallas, Kruvand Assocs.	214-437-3355
WA	Seattle, Norwest	206-827-9562
	Local Distributors	
CA	Burbank, Merit Comp. Supp.	818-842-8162
CA	Westlake Village, Tech-Cable Prods.	818-991-4697

JAN HARDWARE MFG. CO., 47-27 36th St., Long Island City, NY 11101, Tel: 718-361-0800; FSC No.: 99813; Empl.: 60; *Sls. Mgr.:* Irwin E. Wasserman **C•1568, 1575-1595**

	Local Sales Offices & Reps	
CA	Menlo Park, Long Assocs.	415-342-6544
CA	San Diego, Robert Scott Co.	619-420-6446
CA	Santa Fe Springs, James E. Fitch & Assoc.	213-945-2624
IL	Woodale, Croydon Elec.	312-595-2300
MD	Gaithersburg, Naudain Assocs. South.	301-258-5040
MA	Brookline, Harman Assoc., Inc.	617-232-6687
MA	Lee, Harman Assoc., Inc.	413-243-1158
MN	Golden Valley, A.I.M.	612-542-8437
MO	Crestwood, Nevco, Inc.	314-343-7406
MO	No. Kansas City, Nevco, Inc.	816-421-1751
NJ	Englewood, Harold Gray Assoc.	201-894-0894
NJ	Marlton, Naudain Assoc.	609-983-5300
OH	Kettering, F. L. Ohmer & Assoc.	513-434-1454
TX	Richardson, AGM Sls. Co.	214-644-1475
Can	Scarborough, Ont., Banke Elctrns., Ltd.	416-292-5152

JAPANESE PRODUCTS CORP., 7 Westchester Plaza, Elmsford, NY 10523, Tel: 914-592-8880, Telex: 516929 ANS BACK ENFD, FAX: 914-592-7001; Empl.: 8; *Sls. Mgr.:* Don Cassalia

JARO COMPONENTS, INC., 5549 Powerline Rd., Ft. Lauderdale, FL 33309-2883, Tel: 305-771-7000, Telex: 159007, FAX: 305-772-8899; Empl.: 30; *Sls. Mgr.:* Floyd Burwell; *Dist. Mgr.:* Floyd Burwell

JAY CONTROL CO., 21 Sequin Dr., Glastonbury, CT 06033, Tel: 203-633-5294; Empl.: 40; *Sls. Mgr.:* Mike Colomonico

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JAYCO PLASTICS OF CALIFORNIA, INC., 507 W. Blueridge Ave., Orange, CA 92665, Tel: 714-974-1701, Telex: 67840; Empl.: 22; *Sls. Mgr.:* Hemant Mistry **B•1715-1717**

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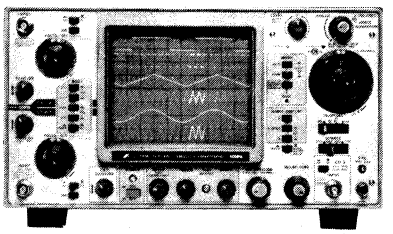

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Local Sales Offices & Reps

AZ	Tempe, Delta Elctrns.	602-224-1601
CA	San Diego, Coastal Elctrn. Sls.	619-459-4148
CO	Boulder, Stratford Grp.	303-530-3194
IL	Palatine, Somers-Reagan	312-991-1108
NY	New York, Breen Assocs.	201-696-8633
OH	West Carrollton, Scientific Sys.	513-253-3141

JAYCOR, P.O. Box 85154, San Diego, CA 92138, Tel: 619-453-6580, TWX: 910-322-1064; Empl.: 500; *Sls. Mgr.:* Steven Lutjens

JAY-EL PRODS., Sub. Ducommun Inc., 1859 W. 169th St, Gardena, CA 90247, Tel: 213-323-7130, TWX: 910-346-7633; FSC No.: 08719;Multiple; Empl.: 480

JB ELECTRONIC TRANSFORMERS, 2300 W. Armitage Ave., Chicago, IL 60647, Tel: 312-342-0080, TWX: 910-221-1283; FSC No.: 11700; Empl.: 150; *Sls. Mgr.:* John S. Ammouneh; *Dist. Mgr.:* John S. Ammouneh

jbm

JBM ELECTRONICS, INC., 531 Front St, Manchester, NH 03102, Tel: 603-623-0222, Telex: 953134, TWX: 710-220-8978, FAX: 603-623-0446; FSC No.: 62694; Empl.: Approx. 100 ..... **A•1572-1577**

Local Sales Offices & Reps

AL	Huntsville, ACM	205-881-5493
AZ	Scottsdale, Haas & Assoc., Inc.	602-994-3813
CA	San Jose, QCI Assocs.	408-432-1070
CT	N. Haven, Kitchen & Kutchin	203-234-9108
FL	Altamonte Springs, C Assocs., Inc.	305-831-1717
GA	Duluth, ACM	404-447-5499
IL	Highland Pk, Bransky Sls.	312-433-2375
MA	Burlington, Kitchen & Kutchin	617-229-2660
MN	Minneapolis, Boerger & Assoc.	612-560-3435
NY	Albany, Reagan Compar	518-489-7408
NC	Charlotte, Quantum Mktg.	704-523-8822
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J-B-T INSTRUMENTS

J-B-T INSTRUMENTS, Box 1818, New Haven, CT 06508, Tel: 203-776-1111; Empl.: 25; *Sls. Mgr.:* Lillian Sharron ..... **D•1356**

Local Sales Offices & Reps

MN	Minneapolis, Hei-Lite Sls.	612-861-6051
TX	Dallas, Elcom Mktg., Inc.	214-241-2166
Can	Thornhill, Ont., R. C. Kahnert Sls., Ltd.	416-221-7755
Can	Winnipeg, Vancouver, Smith-Paterson & Assocs.	604-681-0743

Local Distributors

AL	Montgomery, Southern Controls	205-277-5030
CA	Glendale, Western Elctrns.	213-246-4861
CA	Los Angeles, Metermaster	213-685-4340
CA	San Francisco, Pacific Elctrns.	415-543-3104
CA	Wilmington, Wilmington Instrs.	213-834-1133
CO	Denver, E.I.L. Instrs.	303-534-4160
CT	New Haven, Hatry Elctrns.	203-787-5921
FL	Miami, Florida Precision	305-324-1731
GA	Augusta, Speciality Distributing	404-873-2521
IL	Bridgeview, E.I.L. Instrs.	312-430-2292
IL	Elk Grove Village, Metermaster	312-593-8650
LA	Lafayette, Ralph's Elctrns.	318-234-4507
MD	Sparks, E.I.L. Instrs.	301-771-4800
MA	Hingham, Sager Elec.	617-749-6700
MN	Minneapolis, Instrument Controls	612-871-2514
MS	Jackson, Ellington Elctrn. Supp.	601-355-0561
NJ	Belleville, Miscorp	201-751-8680
NJ	North Caldwell, Hosica Labs	201-256-7724
NY	Long Island City, Metermod	718-726-4850
NY	Lynbrook, Peerless Radio	516-593-2121
NY	Maspeth, Harry Alter	718-366-0123
NC	Winston-Salem, Kirkman Elctrns.	919-722-9131
OH	Bluffton, Bluffton Prods.	419-358-7891
OH	Cleveland, Weschler Elec.	216-238-2550
OH	Dayton, Scott-Friedman	513-298-5555
OK	Oklahoma City, Trice Wholesale	405-524-4411
PA	Reading, Barbey Elctrns.	215-376-7451
RI	Providence, William Dandreta	401-861-2800
TN	Nashville, Electra Distributing	615-329-3971
TX	Ft. Worth, Swieco	817-335-6521
TX	Garland, Metermaster	214-271-5671
TX	Houston, Harrison Equip.	713-879-2600
TX	Houston, Quality Instrs.	713-524-0528
WA	Seattle, Eicher-Richards	206-523-7888
WV	St. Albans, Preiser Scientific	304-727-2902

J-B-T SWITCHES, CUTLER-HAMMER PRODS., EATON CORP., Box 1904, New Haven, CT 06509, Tel: 203-772-2220; FSC No.: 55459; Empl.: 160; *Sls. Mgr.:* C. A. Peffer

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JDK CONTROLS, INC., 2630 Lavery Ct, Suite F, Newbury Park, CA 91320-1593, Tel: 805-499-7779; *Sls. Mgr.:* Reece Kendall ..... **A•2096**

JEFFERS ELECTRONICS, Grand Plaza, 945 Grand Ave., Nogales, AZ 85621, Tel: 602-287-5851, Telex: 165036; FSC No.: 59474; Empl.: 400; *Sls. Mgr.:* Ken Shobert; *Dist. Mgr.:* Steve Morris

JEFFERSON ELEC., MagneTek, Inc., 1400 Center Circle Drive, Downers Grove, IL 60515-1021, Tel: 312-691-2400, Telex: 72-8408; Empl.: 1200; *Sls. Mgr.:* Tom Hull; *Dist. Mgr.:* Frank Michalik

JENSEN TOOLS, INC., Axia, Inc., 7815 S. 46th St, Phoenix, AZ 85044, Tel: 602-968-6241, TWX: 910-950-0115; Empl.: 200; *Sls. Mgr.:* Herb Oberman

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JEROME INDUSTRIES CORP., 730 E. Division St, Elizabeth, NJ 07201, Tel: 201-353-5700, Telex: 132001-JEROME, ELIZ; Empl.: 150; *Sls. Mgr.:* Anthony Di Girolamo ..... **A•2259; D•1766-1768**

JERSEY SPECIALTY CO., See JSC Wire & Cable

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JETA POWER SYSTEMS, 2675 Juniperro, Signal Hill, CA 90806, Tel: 213-427-0095, Telex: 510-101-1804; Empl.: 100; *Sls. Mgr.:* Derek Steele ..... **D•1706-1708**

Local Sales Offices & Reps

AL	Huntsville, R.O. Whitesell & Assocs.	205-883-5110
CA	Los Angeles, Alpha Electro Sls., Inc.	213-215-0249
CA	San Diego, Miner Assocs.	619-566-9891
CA	Santa Clara, Basic Sys. Corp.	408-727-1800
CT	Vernon, George Urban Assocs.	203-647-3991
FL	Altamonte Springs, Semtronic Assocs., Inc.	305-831-8233
FL	Clearwater, Semtronic Assocs.	813-461-4675
FL	Ft. Lauderdale, Semtronic Assocs.	305-731-2484
GA	Norcross, R.O. Whitesell & Assocs.	404-449-9190
IL	St. Charles, XYZ Mktg.	312-584-3001
IN	Indianapolis, R. O. Whitesell	317-359-9283
MD	Wheaton, Brimberg Sls. Inc.	301-946-2670
MA	Dover, George Urban Assocs.	617-329-4068
MI	Farmington Hills, Comstrand	612-788-9234
MN	Minneapolis, Comstrand Co.	612-788-9234
NY	Yonkers, Sonkin Assocs.	914-968-8282
NC	Raleigh, R.O. Whitesell & Assocs.	919-273-1945
OH	Cincinnati, R. O. Whitesell	513-521-2290
OH	Cleveland, R. O. Whitesell	216-447-9020
OH	Columbus, R. O. Whitesell	614-888-9396
OH	Dayton, R. O. Whitesell	513-298-9546
OR	Portland, Jas. J. Backer Co.	503-297-8744
OR	Salem, Jas. J. Backer Co.	503-362-0717
PA	Huntingdon Valley, Lynbar Grp., Inc.	215-947-3554
PA	Pittsburgh, R. O. Whitesell	412-963-6161
TN	Knoxville, R.O. Whitesell & Assocs.	615-694-9676
WA	Seattle, Jas J. Backer Co.	206-285-1300
WI	Milwaukee, XYZ Mktg.	312-584-3601
Can	Montreal, Empro Sls.	514-341-6420

JETTRON PRODUCTS, P.O. Box 337, E. Hanover, NJ 07936, Tel: 201-887-0571; FSC No.: 04435; Empl.: 30; *Sls. Mgr.:* J. M. Schill ..... **C•1308-1310**

Local Sales Offices & Reps

CA	El Cajon, A-Tronics	619-444-1501
CA	Woodland Hills, A-Tronics	818-703-7212
NY	New York, Eltron Export Co.	212-944-7635

JEWELL ELECTRICAL INSTRUMENTS, Grenier Field, Manchester, NH 03103, Tel: 603-669-6400, Telex: 943435 JEWELL MAN; Empl.: 250; *Sls. Mgr.:* George Molleur ..... **D•1357**

Local Sales Offices & Reps

AL	Huntsville, Currie, Peak & Frazier	205-536-1506
AZ	Phoenix, The Knight Co.	602-582-8506
AR	Little Rock, J. Y. Schoonmaker	501-375-2168
CA	Escondido, Knight Co.	619-693-1806
CA	Fremont, William Parks Assocs.	415-796-0875
CA	Los Angeles, Knight Co.	213-670-2833
CT	Middletown, Gerber Sls.	203-347-3000
GA	Norcross, Currie, Peak & Frazier, Inc.	404-449-7662
IL	Chicago, Berndt Assocs.	312-283-0713
IN	Carmel, Berndt Assocs.	317-844-0114
IA	Cedar Rapids, Gassner & Clark Co.	319-393-5763
MA	Monson, Gerber Sls.	413-267-5051
MA	Waltham, Gerber Sls.	617-890-3334
MI	Troy, C. B. Jensen	313-643-0506
MN	Edina, M. Foster Co.	612-941-9790
NJ	Cherry Hill, Trinkle Sls.	609-795-4200
NM	Albuquerque, C. T. Carlberg	505-888-3883
NY	Buffalo, Rudell-Merrifield Assocs.	716-634-4300
NY	Melville, Comtronics Assocs.	516-249-0505
NC	Greensboro, Currie, Peak & Frazier, Inc.	919-373-0380
NC	Raleigh, Currie, Peak & Frazier, Inc.	919-787-0808
OH	Cleveland, Marlow Assocs.	216-991-6500
OH	Dayton, Marlow Assocs., Inc.	513-274-9666
OK	Oklahoma City, J. Y. Schoonmaker	405-685-4477
OR	Portland, Frank Jackson	503-645-8511
TX	Austin, J. Y. Schoonmaker	512-480-9257
TX	Dallas, J. Y. Schoonmaker	214-349-1650
TX	Houston, J. Y. Schoonmaker	713-738-2427
WA	Redmond, F. Jackson	206-881-7277
WI	Milwaukee, Berndt Assocs.	414-545-8400

Local Distributors

AL	Birmingham, Brownell Electro, Inc.	205-322-3374
AL	Mobile, Brownell Electro, Inc.	205-479-5405
AZ	Phoenix, Metermaster, Inc.	602-437-1425
AR	Little Rock, Brownell Electro, Inc.	501-562-2061

CA Lamirada, Stevens Instr. Co. 714-994-5111
CA Los Angeles, E.I.L. Instrs., Inc. 213-685-7020
CA Los Angeles, Metermaster, Inc. 213-685-4340
CA Palo Alto, Metermaster, Inc. 415-960-8500
CA San Diego, Metermaster, Inc. 619-560-4844
CA Santa Clara, Dynametron, Inc. 408-727-6531
CA Santa Clara, E.I.L. Instrs., Inc. 408-727-0396
CO Denver, E.I.L. Instrs., Inc. 303-534-4160
CO Denver, Metermaster Instr., Inc. 303-722-5766
CT Middletown, E.I.L. Instrs., Inc. 203-346-6646
FL Miami, Brownell Electro, Inc. 305-884-3197
FL Orlando, Brownell Electro, Inc. 305-843-6770
FL Palm Bay, E.I.L. Instrs., Inc. 305-725-8300
GA Atlanta, Brownell Electro, Inc. 404-762-5181
IL Bridgeview, E.I.L. Instrs., Inc. 312-430-2292
IL Countryside, Pacific Indicator Co. 312-352-3500
IL Itasca, Metermaster, Inc. 312-250-0606
IN Evansville, Electro-Lab Svcs., Inc. 812-423-5211
IN Indianapolis, E.I.L. Instrs., Inc. 317-545-1373
KY Louisville, E.I.L. Instrs., Inc. 502-454-3420
LA Kenner, Breard-Gardner 504-466-3401
MD Sparks, E.I.L. Instrs., Inc. 301-771-4800
MA Burlington, E.I.L. Instrs., Inc. 617-272-9450
MA Waltham, Calibron Corp. 617-894-6440
MA Woburn, Brownell Electro, Inc. 617-935-7820
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NJ Edison, Brownell Electro, Inc. 201-287-2030
NJ Pennsauken, E.I.L. Instrs., Inc. 609-488-0474
NM Albuquerque, Walker Elctrn. Supp. Co. 505-883-2992
NY Clarence, Trott Elctrns., Inc. 716-634-8500
NY Farmingdale, Brownell Electro, Inc. 516-420-4142
NY Hauppauge, E.I.L. Instrs., Inc. 516-231-6333
NC Charlotte, Brownell Electro, Inc. 704-597-1270
NC Charlotte, Trott Electronics, Inc. 704-376-2237
NC Raleigh, Brownell Electro, Inc. 919-876-6524
OH Cleveland, Pioneer Instrmn. 216-587-3600
OH Cleveland, Weschler Elec. Co. 216-238-2550
OH Dayton, E.I.L. Instrs., Inc. 513-435-2134
OH Dayton, Pioneer Std. Elctrn. 513-236-9900
OK Tulsa, Genesis Elctrns. Corp. 918-254-6591
OK Tulsa, Process Meas. 918-584-1545
OR Portland, Branom Instr. Co. 503-283-2555
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TN Knoxville, Brownell Electro, Inc. 615-966-3441
TN Memphis, Brownell Electro, Inc. 901-795-8483
TN Nashville, Brownell Electro, Inc. 615-885-1302
TX Dallas, Dallas Meter-Tek Supp. 214-349-6044
TX Dallas, E.I.L. Instrs., Inc. 214-931-1236
TX Dallas, Ultra Instr. Lab, Inc. 214-357-0297
TX El Paso, McNicol Elctrns. 915-566-2936
TX Garland, Metermaster, Inc. 214-271-5671
TX Houston, American Analog Co. 713-941-7265
TX Houston, E.I.L. Instrs., Inc. 713-271-3100
VA Richmond, Meter Metrics 804-275-1431
WA Redmond, E.I.L. Instrs., Inc. 206-882-3222
WA Richland, Branom Instr. Co. 509-943-6664
WA Seattle, Branom Instr. Co. 206-762-6050
VA Springfield, E.I.L. Instrs., Inc. 703-569-2611
VA Virginia Beach, E.I.L. Instrs., Inc. 804-499-3746
WI Milwaukee, E-M Instrs., Inc. 414-272-7799

JFD ELCTRNS., See Murata Erie No. Amer., Inc.

JF MICROSYSTEMS, 3641 Frontier Road, Pasco, WA 99301, Tel: 509-297-4294, 800-JF-CARDS; Empl.: 2; *Sls. Mgr.:* Jim Follansbee

JFW INDS., INC., 5134 Commerce Sq. Dr., Indianapolis, IN 46237, Tel: 887-1340; Empl.: 50; *Sls. Mgr.:* Steve Manka; *Dist. Mgr.:* Steve Manka

JKL COMPONENTS CORPORATION, 13343 Paxton St., Pacoima, CA 91331, Tel: 818-896-0019, Telex: 910-496-1504; FSC No.: 55335; Empl.: 19; *Sls. Mgr.:* Bob Brandt

JMJ TECHNICAL PRODS., 50 Wheeler Point Rd., Newark, NJ 07105, Tel: 201-589-4257; Empl.: 8; *Sls. Mgr.:* Kevin Kolenut ..... **C•1596**

JMK, INC., 15 Caldwell Dr., Amherst, NH 03060, Tel: 603-886-4100, Telex: 955329; Empl.: 200; *Sls. Mgr.:* J. Kennedy ..... **A•1674-1676**

Local Sales Offices & Reps

AL Huntsville, Naylor Assocs. 404-299-9701
AZ Phoenix, S.W. Sls. 602-391-3180
CA Glendale, Orion Sls. 818-240-3151
CA San Diego, Cerco 619-450-1754
CA Santa Clara, Engrg. Assocs. 408-988-5001
CA Tustin, Orion Sls. 714-832-9687
CO Denver, Quorum 303-696-8480
FL Ft. Lauderdale, Naylor Assocs. 305-482-5649
IL Chicago, Electro-Tech 312-676-3151
MD Silver Springs, Mid-Atlantic Sls. Co. 301-593-7749
MA Framingham, Sullivan Tech. Sls. 617-620-0195
MN St. Paul, Arkco Sls. 612-777-7454
MO Clayton, Mertens Co. 314-993-6600
MO Kansas City, Mertens 913-432-9323
NV Reno, Dunning Assocs. 702-849-0722
NJ Princeton, Murtronics Assocs. 609-394-3737
NY Syracuse, Nycom Inc. 315-437-8343
NC Research Triangle, Naylor Assocs., Inc. 919-361-2630
OH Akron, Augnat Assocs. 216-273-1211
OH Dayton, Augnat Assocs. 513-298-1507
SC Greenville, Naylor Assocs. 704-892-1366
TX Dallas, Aid Elctrns. 214-790-4761
TX Houston, Aid Elctrns. 713-955-6204
UT Salt Lake City, Quorum 3 801-943-9227
WA Lynn Wood, Power Sources 206-743-6641
WI Brookfield, Electro-Tech Mktg. Assoc. 414-785-9554
Can Montreal, Que., A. R. Gray 514-694-6378

Local Distributors

AZ Phoenix, Tri-Tek, Inc. 602-371-0860
CA Burbank, Atwater Elctrns. 714-670-1426
CA Fullerton, Pyramid Elctrns. 714-773-0781
CA San Diego, Tauber Elctrns. Inc. 619-274-7242
CA San Jose, Compumech Elctrns. 408-436-0950
CA Santa Ana, Vision Elctrns. 714-261-6777
CA Santa Clara, Pyramid Elctrns. 408-727-9810
CA Sunnyvale, Sierra West Elctrns. 714-747-1188
CA Tustin, Added Value Elctrns. 714-259-8258
FL Davie, Arco Distrbn. 305-473-2550
FL Ft. Lauderdale, Brothers Elec. 305-561-6700
MD Aberdeen, Harco Elctrns. 301-838-7990
MD Baltimore, Baynesville Elctrns. 301-823-0082
MD Beltsville, Mark Elctrns. 301-595-5040
MD Beltsville, Treeko Sls, Inc. 301-470-3300
MD Columbia, Aztech Elctrns. 800-368-2025
MD Gaithersburg, Axis Elctrns. 301-840-9640
MA Boston, Vector Sls. 617-787-2790
MA Danvers, Criterion Elctrns. 617-777-4725
MA Newton, Green-Shaw Co. 617-969-8900
NJ Atlantic Highland, Freedom Elctrns. 201-872-2300
NJ E. Brunswick, Brothers Elec. 201-238-2200
NY Hendrietta, Cam RPC Elctrns. 716-865-2080
OH Cleveland, CAM RPC Elctrns. 216-461-4700
OH Dayton, Bell 513-434-8231
PA Pittsburgh, CAM RPC Elctrns. 412-782-3770
UT Salt Lake City, Wintronics 801-483-1882
VA Annandale, Arcade Elctrns. 703-256-4610
VA Arlington, Arlington Elctrns. 703-524-2412
VA Norfolk, Partronics 804-379-3333
VA Norfolk, Radio Parts 804-461-8095
VA Roanoke, Peoples Elctrns. 703-342-8933
WA Kent, Pyramid Elctrns. 206-872-5800

JMR ELECTRONICS, 1525 Blondell Ave., Bronx, NY 10461, Tel: 212-597-6050; Empl.: 50; *Sls. Mgr.:* Jack Gaon

JM TRANSFORMER CO., INC., 112 Florida St, Farmingdale, NY 11735, Tel: 516-293-0475; Empl.: 13; *Sls. Mgr.:* J. Millman ..... **A•2260-2265**

JOBMASTER CORP., 9008 Liberty Rd., Randallstown, MD 21133, Tel: 301-655-1400, 1-806-642-1400, (Can)-416-897-1380; Empl.: 16; *Sls. Mgr.:* Wendy Goldman ..... **A•1318**

JOHANSON DIELECTRICS, 2220 Screenland Dr., Burbank, CA 91505, Tel: 818-848-4465, TWX: 910-498-2735; Empl.: 154; *Sls. Mgr.:* Fred Luhrs ..... **A•1098**

Local Sales Offices & Reps

AZ Phoenix, Compass Mktg. & Sls. 602-996-0635
AZ Tucson, Compass Mktg. & Sls. 602-293-1220
CA Glendale, Mission Mktg. 818-247-9110
CA Mountain View, Straube Assocs. 415-969-6060
CO Westminster, Straube Assocs. 303-426-0890
FL Boca Raton, Lawrence Assocs 305-368-7373
FL Clearwater, Lawrence Assocs. 305-339-3855
IL Lisle, WG Controls 312-963-5954
IN Kokomo, Schillinger Assocs. 317-452-4057
KS Shawnee Mission, Florence & Meyer 913-722-5210
CT Wethersfield, Compac Sls. 203-563-4784
MI Troy, C. B. Jensen & Assocs. 313-643-0506
MN Minneapolis, Bill Deming & Assocs. 612-888-5000
NY Huntington, Compar New York Inc. 516-423-5660
NY Syracuse, Pitroncis 315-455-7346
NC Winston-Salem, Murcota 919-722-9445
OH Westlake, Baehr Greenleaf Assocs. 216-892-1770
PA Trevose, PSA Co. 215-245-0513
TX Dallas, C & J Assocs. 214-539-0140
WA Seattle, Northmar Inc. 206-524-5170
Can Hamilton, Ont., Cartwright/Southhall 416-528-0294

Local Distributors

CA Los Alamitos, SEMI DICE 213-594-4631
CA Santa Clara, SEMI DICE 408-980-9777
CA Sunnyvale, Bell Inds. 408-734-8570
FL Orlando, Chip Supp. 305-298-7100
IL Chicago, Newark 312-638-4411
MA Canton, Semi Dice 617-821-0070
NJ Fairfield, CHPS Inc. 201-882-0997

JOHANSON MANUFACTURING CORP., 400 Rockaway Valley Rd., Boonton, NJ 07005, Tel: 201-334-2676, TWX: 710-987-8367; FSC No.: 91293; Empl.: 200 ..... **A•1099**

Local Sales Offices & Reps

AL Huntsville, Murcota Corp. 205-539-8476
AZ Phoenix, Compass Mktg. & Sls. 602-996-0635
AZ Tucson, Compass Mktg. & Sls. 602-293-1220
CA Escondido, Knight Co. 619-743-5136
CA Los Angeles, Knight Co. 213-670-2833
CA Mountain View, Straube Assocs. 415-969-6060
CO Westminster, Straube Assoc., Mt. States 303-426-0890
FL Boca Raton, Perrott Assocs. 305-482-6909
FL Clear Water Bch., Perrott Assocs. 813-443-5214
FL Orlando, Perrott Assocs. 305-298-7748
IL Lisle, W.G. Controls 312-963-5954
IN Kokomo, Schillinger Assocs. 317-452-4057
IA Hiawatha, ARD Sales Co. 319-393-6392
MA Seekonk, J. Murphy Assocs. 617-761-7153
MN Bloomington, Bill Deming & Assoc. 612-888-5000
MO St. Louis, Midtec Assocs. 314-275-8666
NJ Boonton, Johanson Mfg. Corp. 201-334-2676
NY Mount Vernon, Friedman-Smith Elctrn. Sls. 914-664-4866
NY Pittsford, NHA, Inc. 716-586-9002
NC Winston-Salem, Murcota Corp. 919-722-9445
OH Columbus, Baehr, Greenleaf & Assocs. 614-486-4046
OH Dayton, Baehr, Greenleaf & Assocs. 513-439-0724
OH Westlake, Baehr, Greenleaf & Assoc. 216-842-1770
PA Evans City, Baehr, Greenleaf & Assocs. 412-776-2151
PA Trevose, P.S.A. 215-245-0513
TX Austin, W. Pat Fralia & Assocs. 512-835-7911
TX Bedford, W. Pat Fralia Co. 817-267-3577
TX Houston, W. Pat Fralia & Assocs. 713-772-1572
UT Salt Lake City, Straube Assocs., Mt. States 801-263-2640
VA Oakton, PSA South 703-281-1806
WA Seattle, Northmar 206-524-5170

Local Distributors

AZ Tempe, Bell Inds. 602-267-7774
CA Gardena, Bell Inds. 213-515-1800
CA San Jose, All American Semiconductor 408-287-0190
CA San Pedro, ASAP Elctrns./West 213-519-8377
CA Sunnyvale, Bell Inds. 408-734-8570
CA Van Nuys, CW Swift & Assocs. 818-989-1133
CA Westlake Vl., Distel, Inc. 805-495-9998
CO Wheatridge, Bell Inds. 303-424-1985
FL Orlando, Pelcor Co. 305-299-1541
IL Chicago, Bell Inds. 312-982-9210
IL Chicago, Newark Elctrns. 312-784-5100
MD Baltimore, Radio Elec. Svc. 301-823-0070
MD Beltsville, Radio Elec. Svc. 301-937-9100
MA Seekonk, M-Squared 617-761-5490
MA Wilmington, RC/Jaco Elctrns. 617-273-1860
NM Albuquerque, Bell Inds. 505-292-2700
NY Hauppauge, Jaco Elctrns. 516-273-5500
NY Mt. Vernon, ASAP Elctrns. 914-699-2727
NY Syracuse, Newark Elctrns. 315-437-6611
OR Lake Oswego, Bell Inds. 503-241-4115
PA Philadelphia, PEI-Genesis 215-568-7400
TX Ft. Worth, PATCO Supplies 817-429-8596
TX Irving, Newark Elctrns. 817-534-3696
UT Salt Lake City, Bell Inds. 801-972-6969
WA Bellevue, Bell Inds. 206-747-1515

JOHNSON, E. F., CO., 299 Johnson Ave., Waseca, MN 56093, Tel: 507-835-6222, Telex: 290470; Empl.: 1400; *Sls. Mgr.:* Charles Ard ..... **C•1312-1317**

Local Sales Offices & Reps

CA Granada Hills, C-N & Assocs. 818-895-2431
CA Santa Clara, Logan Sls. 408-496-0660
CO Denver, Elcom 303-337-2300
FL Pompano Bch., Hutto-Hawkins-Peregoy 305-971-5934
GA Atlanta, Millar Elctrns. 404-634-3350
IL Cary, Ellinger Sls. 312-639-1850

IN Willoughby, Nationwide Comps, Inc. .. 216-946-3226
KS Overland Park, PMR Corp. 913-381-0004
MA Needham Hgts., P. R. Sturgeon 617-444-6603
MN Minneapolis, S. Clothier 612-944-3456
NY Fairport, Net Sls. & Co. 716-223-1030
NY West Hempstead, Schmitt Ind. Mkg. Corp. 516-486-3510
NC Charlotte, M & M Sls. Inc. 704-529-0442
OH Dayton, Nationwide Comps. Inc. 513-298-7171
PA Narberth, Bresson Assocs. 215-664-6460
TN Memphis, Cartwright & Bean 901-362-8345
TX Dallas, Electra Reps., Inc. 214-248-3852
WA Seattle, J. J. Backer 206-285-1300
EXP New York, Robum Agencies 212-989-5939
Can Ontario, Lenbrook Elctrns. 416-477-7722

JOHNSON CONTROLS, Battery Div., 900 E. Keefe Ave., Milwaukee, WI 53212, Tel: 414-961-6500, Telex: 026-650; Empl.: 20,000; *Sls. Mgr.:* Robert J. Scrima

JOLO INDUSTRIES, 13921 Nautilus Dr., Garden Grove, CA 92643, Tel: 714-554-6840, TWX: 910-595-1138; FSC No.: 30035; Empl.: 20; *Sls. Mgr.:* J.S. Giampiccolo, Jr.

JONARD INDUSTRIES CORP., 134 Marbledale Rd., Tuckahoe, NY 10707, Tel: 914-793-0700, Telex: 996570, TWX: 710-562-0107; Empl.: 65; *Sls. Mgr.:* R. Fersen

JONATHAN MANUFACTURING CORP., 1101 So. Acacia Ave., Fullerton, CA 92631, Tel: 714-526-4651, TWX: 910-592-1241, FAX: 714-773-5582; Empl.: 375

JONES, HIRAM, ELCTRNS. INC., See Hiram Jones Elctrns. Inc.

JORI RESOURCES, 2128 Knoll Dr., Ventura, CA 93003, Tel: 805-642-2266; Empl.: 4

JOSLYN ELCTRN. SYS., P.O. Box 817, Goleta, CA 93116, Tel: 805-968-3551, TWX: 910-334-3464; FSC No.: 23663; Empl.: 210; *Sls. Mgr.:* A. deSouza

JRW INDUSTRIES, INC., 2312 N Second St., Harrisburg, PA 17110, Tel: 717-236-1418; Empl.: 4; *Sls. Mgr.:* Bryan J. Williams, Sls. Mgr.

JSC WIRE & CABLE

JSC WIRE & CABLE, Box 248, Burgess Pl., Wayne, NJ 07474, Tel: 201-694-6200; Empl.: 40; *Sls. Mgr.:* R. Dulude ..... **C•1869**

Local Sales Offices & Reps
CA W. Covina, Don Furth Assocs. 818-919-2322
CO Colorado Springs, Norris & Warren Assocs. 303-576-8697
CO Denver, Norris & Warren Assocs. 303-579-1676
DE Newark, Carmine Assocs. 302-731-0697
FL Crystal River, Foster Sls. 904-795-7831
IL Chicago, Ken Levy Assocs. 312-763-5000
IA Burlington, J. S. Ridge Entprs. 319-754-8745
KY Louisville, Mid Central Sls. Co. 502-239-5614
MA Lynn, Keene Sls. Co. 617-595-2300
MI Livonia, Harvey Sls. 313-591-1975
NJ Teaneck, Steve Fisher Sls. 201-837-1200
NY Rochester, Warren Kaufman 716-266-2728
NC Charlotte, D. Austin Co. 704-334-0174
OH Columbus, Benchmark 614-861-2070
OR Portland, R. M. Minthorne 503-246-4556
TX Dallas, J & J Sls. Co. 214-328-9239
MN Minneapolis, John E. M. Anderson 612-823-6459
EXP NY, New York, Robum Agencies 212-989-5939

JTM SYSTEMS & CONSULTING, INC., Terrace Hill, Ithaca, NY 14850, Tel: 607-272-0808; Empl.: 12

JUDCO MFG. INC., P.O. Box 487-E84, 24030 Frampton Ave., Harbor City, CA 90710, Tel: 213-534-0959

Judd Wire
DIVISION OF
HIGH VOLTAGE ENGINEERING

JUDD WIRE, High Voltage Engrg., 57 Turnpike Rd., Turners Falls, MA 01376, Tel: 413-863-4357, TWX: 510-290-2147; FSC No.: 3357; Empl.: 148; *Sls. Mgr.:* Steve Fritz ..... **B•1012-1013; C•1870-1871**

Local Sales Offices & Reps
AL Huntsville, R & G Assocs. 205-536-6300
AZ Phoenix, O'Donnell Assocs. 602-944-9542
CA Laguna Hills, English/Damco 714-837-3801
CA Los Altos, Ewing Foley 415-941-4525
CO Denver, Elcom 303-337-2300
FL Coral Springs, HAI Elctrns. 305-752-7520
GA Gainsville, R & G Assocs. 404-532-3850
IL Arlington Heights, Rozner Sls. Co. 312-577-0067
IA Cedar Rapids, PMR, Inc. 319-362-9177
KS Overland Pk., PMR, Inc. 913-749-6473
MD Baltimore, R. A. Wafer Assocs. 301-744-1133
MA Marlborough, O.K. Engrg. 617-481-6400
MN Brooklyn Center, Willman Assocs. 612-566-5010
NJ Haddonfield, Mesa Tech. Assocs. 609-429-9531
NM Albuquerque, O'Donnell Assocs. 505-883-1030
NY Attica, B. H. Tollefson Assocs. 716-591-1219
NY Auburn, B. H. Tollefson Assocs. 315-253-4109
NY Rochester, B. H. Tollefson Assocs. 716-271-4141
NC Research Triangle Park, Naylor Assocs. 919-544-6630
OH Worthington, Simcox Assocs. 614-885-8995
OR Portland, Jas. J. Backer Co. 503-297-8744
TX Denton, Stevens Sls. Co. 817-382-4735
UT Salt Lake City, Elcom 801-486-4233
WA Seattle, Jas. J. Backer Co. 206-285-1300

Local Distributors
AL Madison, Sea Wire & Cable 205-772-9616
CA Anaheim, Innovative Sys. 714-968-6383
CA Concord, Control Master 415-939-3600
CA Irvine, Republic Elctrns. 714-855-2222
CA San Leandro, Anixter 415-352-3100
CA Torrance, Blake Wire & Cable 213-533-8141
CA Valencia, Wirenetics Co. 805-257-2400
CO Colorado Springs, Colorado Mfg. Technlg. 303-598-6888
CT East Hartford, E. J. Stephens Co. 203-282-9400
CT Manchester, I.M.S. 203-649-4415
FL Altamonte Springs, Royce Elctrns. 305-869-4700
FL Ft. Lauderdale, Anixter 305-485-4455
FL Ft. Lauderdale, Pacer Elctrns. 305-462-0902
IL Brookfield, Conductors Unltd. 312-485-7855
MA Woburn, Pacer Elctrns. 617-935-8330
MN Bloomington, K. L. Tannehill 612-881-6700
NH Amherst, North Country Wire & Cable 603-889-0063
NJ Atlantic Highlands, Freedom Elctrns. .. 201-872-2300
NJ Dover, Electro Spec. 201-361-6300
NM Albuquerque, Southwest Wire 505-888-3400
NY Farmingdale, Weico Elctrns. 516-293-0050
NY Johnson City, HELP Elctrns. 607-729-3528
NY Rochester, Pacer Elctrns. 716-288-6750
NY Rochester, Simcona Elctrn. 716-328-3230
NY Ronkonkoma, Zenith Wire 516-585-1444
OH Dayton, Astro Inds. 513-429-5900
PA Montgomeryville, Pyttronic Ind. 215-242-6700
TX Dallas, Interstate Wire 214-553-1311
WA Woodinville, Storm Prods. 206-488-7400
WI New Berlin, Indl. Elec. Wire & Cable ... 414-782-2323

JUDD WIRE, High Voltage Engrg., 870 Los Vallecitos Blvd., San Marcos, CA 92069, Tel: 619-744-7720, TWX: 910-322-1149, FAX: 619-744-6089; FSC No.: 3357 ..... **C•1870-1871**

Refer to Judd Wire, Turners Falls, MA for sales office and distributor information.

JUDSON INFRARED INC., 21 Commerce Dr., Montgomeryville, PA 18936, Tel: 215-368-6900, Telex: 846120, ESYLNK: 62820476, FAX: 215-362-6107; Empl.: 65; *Sls. Mgr.:* Susan T. Wells

JRL JULIE RESEARCH

JULIE RESEARCH LABS., 211 West 61st St., New York, NY 10023, Tel: 212-245-2727, TWX: 710-581-5138; FSC No.: 07062; Empl.: 45; *Sls. Mgr.:* Pamela Spencer; *Dist. Mgr.:* Pamela Spencer ..... **A•1954; D•1272-1276**

Local Sales Offices & Reps

Resistors
CA Northridge, Craig Assocs. 213-993-4060

JUMO PROCESS CONTROL, INC., 410 Garibaldi Ave., Lodi, NJ 07644, Tel: 201-779-7744, Telex: 642-406; *Sls. Mgr.:* W. F. Feiler

JUPITER SYSTEMS, 1100 Marina Village Parkway, Alameda, CA 94501, Tel: 415-523-9000, Telex: 6713004; FSC No.: 63872

KAHGAN ELCTRNS. CORP., 605 Peninsula Blvd., Hempstead, NY 11550, Tel: 516-538-2300, Telex: 261097 KAHG UR; Empl.: 31; *Sls. Mgr.:* Fred Strauss; *Dist. Mgr.:* Bernard Stapler

KAHLE ENGINEERING, Div. Jouhle Machinery Group, 50 S. Center St., Orange, NJ 07050, Tel: 201-678-2020, Telex: 42-7757, TWX: 710-992-8835; Empl.: 50; *Sls. Mgr.:* Julie Clark

KAISER ELCTRNS., Kaiser Aerospace & Elctrns., 2701 Orchard Pkwy., San Jose, CA 95134, Tel: 408-432-3000, TWX: 910-338-0196, FAX: 408-433-0553; Empl.: 1300

KAISER ELECTROPRECISION, Kaiser Aerospace & Elctrns., 1700 S. Redhill Ave., Irvine, CA 92714, Tel: 714-250-1015, Telex: 678467; FSC No.: 86831; Empl.: 387; *Sls. Mgr.:* Gerald W. Allen

KSI

KAISER SYSTEMS, INC., 126 Sohier Road, Beverly, MA 01915, Tel: 617-922-9300, Telex: 887159; FSC No.: IFD78; Empl.: 100 ..... **D•1770-1773**

teclab®

KALAMAZOO TECHNICAL FURNITURE, P.O. Box 1165, Kalamazoo, MI 49005, Tel: 616-385-2255; Empl.: 42; *Sls. Mgr.:* B. Smith ..... **C•1059**

KALGLO ELCTRNS. CO., INC., 6584 Ruch Rd., E. Allen Twp., Bethlehem, PA 18017-9359, Tel: 215-837-0700, TWX: 510-651-2101; FSC No.: 64521

KALMUS & ASSOCS., INC., 2424 S. 25th Ave., Broadview, IL 60153, Tel: 312-343-7004, TWX: 910-226-0713; Empl.: 346

KAM COMPONENTS, INC., P. O. Box 192-EEM, Nesconset, NY 11767, Tel: 516-585-0666; Empl.: 29; *Sls. Mgr.:* Cheryl Day

K&L MICROWAVE, INC., 408 Coles Circle, Salisbury, MD 21801, Tel: 301-749-2424, TWX: 710-864-9683; FSC No.: 50140; Empl.: 425; *Sls. Mgr.:* Charles J. Schaub

K & L QUARTZTEK, K & L Microwave, 20 S. 48th Ave., Phoenix, AZ 85043, Tel: 602-272-7944, TWX: 910-951-1305; FSC No.: 59492; *Sls. Mgr.:* Mark H. Story

K & M ELECTRONICS, 123 Interstate Dr., W. Springfield, MA 01089, Tel: 413-781-1350, TWX: 710-350-6463; FSC No.: 66613; Empl.: 700; *Sls. Mgr.:* Ralph Warmack ..... **A•1955**

Local Sales Offices & Reps
CA Fremont, C/G Assocs., Inc. 415-790-1193
CA Tarzana, High Voltage Sls. 818-881-9194
CT Marlborough, Precision Sls., Inc. 203-295-0580
FL Melbourne, Reynolds & Assocs., Inc. .. 305-259-7000
IL Westchester, W. G. Brouillette & Assocs. 312-345-6500
WA Bellevue, Advanced Power Comps., Inc. 206-747-9127

KANTZ ELECTRONIC INDUSTRY, 1804 Wall Church Rd., Wall Township, NJ 07719, Tel: 201-974-0090; Empl.: 12; *Sls. Mgr.:* L. Herold

KAPPA NETWORKS, INC., 1443 Pinewood St., Rahway, NJ 07065, Tel: 201-396-9400, 1-800-223-0603, Telex: 130081 Kappa Rhwy, FAX: 201-388-4786; FSC No.: 20933; Empl.: 237; *Sls. Mgr.:* D. Pearl ..... **A•1579-1600, 2266-2268**

Local Sales Offices & Reps
AZ Scotsdale, M. W. Riedel & Co. 602-251-5902
CA Alhambra, M. W. Riedel & Co. 213-283-7694
CA Sherman Oaks, Kappa Networks 818-995-2401
CT Clinton, Selmark Assocs., Inc. 203-573-9088
FL Casselbury, Kappa Networks, Inc. 305-293-9370
FL Maitland, D. J. Ellis & Assocs., Inc. 305-645-1101

IA Cedar Rapids, Lorenz Sls. 319-377-4666
KS Overland Pk, Lorenz Sls., Inc. 913-649-5556
MD Middletown, S.T./Woolard Co., Inc. 301-371-4500
MA Millis, Selmark Assocs. 617-376-2914
MN Osseo, Gaffney Sls. Co. 612-425-5484
MO University City, Lorenz Sls., Inc. 314-997-4558
NE Lincoln, Lorenz Sls., Inc. 402-475-4660
NH Hopkinton, Selmark Assocs., Inc. 603-746-3299
NJ Madison, Livera-Polk Assocs., Inc. 201-377-3220
NY Cazenovia, S.T./Woolard Co., Inc. 315-655-8145
NY Glen Head, Livera-Polk Assocs. 516-759-9300
PA Erdenheim, Omni Sls., Inc. 215-233-4600
TX Austin, Mil-Rep Assocs., Inc. 512-346-6331
TX Houston, Mil-Rep Assocs., Inc. 713-444-2557
TX Richardson, Mil-Rep Assocs., Inc. 214-644-6731
VA Lynchburg, S.T./Woolard Co., Inc. 804-528-5421

Local Distributors

CA Sherman Oaks, Delay Line Distrs. Co. 800-624-2617

KAPPA SCIENTIFIC CORP., Box 30585, Santa Barbara, CA 93105, Tel: 805-687-9648; Empl.: 4

KARKAR ELECTRONICS, INC., A Unit of General Signal, 1950 Army Street, San Francisco, CA 94124-1132, Tel: 415-552-1247, TWX: 910-372-7754 or 650-157-2515 MCI; FSC No.: 017857; *Sls. Mgr.:* Andy Lovas

Local Sales Offices & Reps

CA Los Angeles, Karkar Elctrns., Inc. 818-573-1251
IL Chicago, Karkar Elctrns., Inc. 312-438-0410
NJ Lebanon, Karkar Elctrns., Inc. 201-236-2838
TX Richardson, Karkar Elctrns., Inc. 214-680-9854

KATES SCIENTIFIC INSTRUMENTS, 142 Adam St, Newton, MA 02158, Tel: 614-527-2711; Empl.: 28; *Sls. Mgr.:* D. Kates

KAUTT & BUX OF AMERICA, INC., 675 Toner Rd, P.O. Box 867, Mundelein, IL 60060, Tel: 312-949-8505; *Sls. Mgr.:* Heinz Kutschera ..... **B•1644; C•1318-1319**

Local Sales Offices & Reps

CA Palo Alto, Baribeault Assocs. 415-493-4441
CA San Diego, Frank Polese & Assocs. ... 619-271-1993
MA Assonet, Syscomp, Inc. 617-763-2490
TX Austin, Swearingen Sls. Inc. 512-339-8663
WA Seattle, Harry Levinson Co. 206-382-1300

KAVLICO CORP., 14501 Los Angeles Ave., Moorpark, CA 93021, Tel: 805-523-2000, Telex: 65-1481, FAX: 805-523-7125; Empl.: 400; *Dist. Mgr.:* Peter Swift

KAYE INSTRUMENTS, INC., 15 De Angelo Dr., Bedford, MA 01730, Tel: 617-275-0300, Telex: 6817183; Empl.: 170

Local Sales Offices & Reps

AL Birmingham, Regal Controls, Inc. 205-967-5770
AL Daphne, Regal Controls, Inc. 205-626-1929
AZ Scottsdale, Dave Menegay Assocs. ... 602-994-9519
CA Costa Mesa, FLW, Inc. 714-751-7512
CA Hayward, FLW, Inc. 415-487-2222
CA Rancho Cordova, Rohrer Instr. Sls. 916-635-2066
CA San Diego, FLW, Inc. 619-277-0993
CA Van Nuys, FLW, Inc. 213-989-5236
CO Denver, Hurley Indl. Controls 303-980-9300
FL Tampa, Lewis & Assocs. 813-988-2104
GA Marietta, Hile Controls of GA 404-424-8372
HI Kailua, CBC, Inc. 808-254-5878
IL Des Plaines, Antel Corp. 312-635-8209
IL Westmont, Antel Corp. 312-887-8910
IN Indianapolis, Temco 317-831-3007
KS Shawnee Mission, RDS Controls Co. 913-362-0265
LA Baton Rouge, Rise, Inc. 504-776-4645
MD Towson, FLW, Chesapeake 301-321-5797
MA Hopkinton, Eastern Sys. Technlg. 617-435-2151
MI Farmington Hills, Carter, McCormic & Peirce 313-477-7700
MN St. Louis Pk., The Mark Co. 612-933-3026
MO Chesterfield, Indl. Meas. Co. 314-532-6910
NJ Emerson, Instrumentation Prods. 201-265-6330
NJ Metuchen, FLW, Inc. 201-548-4343
NY Syracuse, Labtronics 315-455-7314
NC Matthews, W. K. Hile Co. 704-847-9125
OH Cincinnati, Temco 513-489-9444
OH Cleveland, Fox & Dole 216-476-2625
OK Tulsa, Kemp Engrg. Co. 918-663-4501
PA King of Prussia, FLW, Inc. 215-337-4343
PA Murrysville, Data Acquisition Sys. 412-327-8979
TN Knoxville, Hile Controls of TN 615-584-0208
TN Memphis, Hile Controls of TN 901-372-0451
TX Houston, Adaptive Controls, Inc. 713-995-9791
TX Lubbock, Summit Controls 806-792-2072
TX Plano, Summit Controls 214-867-6056
UT Salt Lake City, Process Engrd. Prods. 801-292-5020
VA Chester, Hile Controls of VA 804-796-3001
WA Issaquah, DCI/Alpha 206-392-7521
WA Vancouver, DCI/Alpha 206-693-7447
Can Toronto, R. H. Nichols Co. Ltd. 416-851-8871

KAY ELEMETRICS CORP., 12 Maple Ave., Pine Brook, NJ 07058-9798, Tel: 201-227-2000, TWX: 710-734-4347; FSC No.: 80138; Empl.: 70; *Sls. Mgr.:* Stephen P. Crump ..... **A•1786**

KAY-TOWNES, Div. of Alco Industries, Inc., P.O. Box 593, Rome, GA 30161, Tel: 404-291-9871, TWX: 810-764-4809; Empl.: 60; *Sls. Mgr.:* Charles S. Ford

KB ELECTRONICS, 73 Wortman Ave., Brooklyn, NY 11207, Tel: 718-257-3300, FAX: 710-257-4740; Empl.: 125; *Sls. Mgr.:* A Bueller

KBI, A Div. of Cabot Corp., PO Box 1462, Reading, PA 19603, Tel: 215-371-3600, Telex: 902251, TWX: 510-651-0106; Empl.: 600; *Sls. Mgr.:* Robert J. Longenecker

KD COMPONENTS, INC., 3016 S. Orange Ave., Santa Ana, CA 92707, Tel: 714-545-7108, TWX: 910-595-2678, FAX: 714-549-7966; FSC No.: 58421; Empl.: 32; *Sls. Mgr.:* Wayne Devine

Local Sales Offices & Reps

AZ Scottsdale, Memco Sls. 602-952-2254
CA Fremont, CG Assocs. 415-790-1193
CA Tarzana, Power Comp. Sls. 213-881-9111
CO Golden, J. F. Hurlert Co. 303-279-7796
FL Jupiter, Southern Elctrns. Sls. Corp. ... 305-744-0028
IL Palatine, Golbeck-Milota Assocs., Inc. 312-705-0602
IA Hiawatha, Ard Sls. 319-393-6392
KS Olathe, Rep-Tronics 314-576-9816
MD Glen Burnie, Tri-Mark 301-761-6000
MA Waltham, Datcom Inc. 617-891-4600
MI Brighton, Michigan Mktg. 312-229-6218
MN Brooklyn Cen., Lydon & Assocs. 612-535-6526
MO St. Louis, Rep-Tronics 314-576-9816
NY Bohemia, Optimum Sls. 516-589-4664
NY Mastic, Optimum Sls. Co. 516-589-4664
NY Rochester, Allen Lupton Assocs. 716-381-4800
OK Tulsa, Cunningham Comps. 918-665-3562
PA Newton, Yax Assocs. 215-860-2540
SC Greer, So. Elctrn. Sls. 803-297-8486
TX Dallas, Cunningham Comps. 214-669-9706
TX Houston, Cunningham Comps. 713-461-4197
WA Edmonds, Edco Sls. 206-776-8922
Can Islington, Ont., Pipe-Thompson, Ltd. ... 416-236-2355
Can Richmond, BC, Macom Agencies 604-271-2661

KDI ELECTRONICS, INC., Engelmann & Pyrofilm Divisions, 60 S. Jefferson Rd., Whippany, NJ 07981, Tel: 201-887-8100, TWX: 710-986-8220; FSC No.: 64537; Empl.: 300

KEARNEY/WABASH ELECTRICAL COMPONENTS, 1375 Swan Street, Huntington, IN 46750, Tel: 219-356-8300, TWX: 510-100-2867; Empl.: 1000; *Sls. Mgr.:* Stanley P. Bickhart

KEC ELECTRONICS, INC., 20817 Western Ave., Torrance, CA 90501, Tel: 213-320-3902, TWX: 910-349-6962, FAX: 213-618-1197; Empl.: 8; *Sls. Mgr.:* Y. Furuya ..... **D•1774**

Local Sales Offices & Reps

AZ Tempe, Quatra 602-894-2802
CA Cupertino, Costar 408-446-9339
CA Los Alamitos, Power Specialists 213-594-9418
CO Fort Collins, Vic Myers Assocs. 303-223-8907
FL Cocoa Beach, Teqspec 305-748-9292
FL Hobe Sound, Teqspec 305-746-4987
FL Palm Harbor, Teqspec 813-785-2276
GA Atlanta, Teqspec 404-455-7222
IL Elk Grove Village, Loren Green Assocs. 312-593-0282
IN Indianapolis, Loren Green Assocs. 317-293-9827
MA Danvers, C. H. Burnham Assocs. 617-774-0111
MI Jenison, R. C. Nordstrom & Co. 616-457-5762
MI Southfield, R. C. Nordstrom & Co. 313-559-7373
MN Minnetonka, Chris-Tek 612-934-1334
NH Durham, C. H. Burnham Assocs. 603-868-2282
NJ Springlake, Neville & Vespo 201-974-1520
NM Albuquerque, Quatra Assoc. Inc. 505-821-1355
NY Binghamton, TAE-Rep. 607-772-6952
NY Rochester, TAE-Rep. 716-586-8710
NY Thompson Ridge, Neville & Vespo 914-457-9209
NC Winston Salem, Teqspec 919-723-8102
OH Chesterland, KT/DEPCO 216-729-3588
PA Erdenheim, Omni Sls. 215-233-4600
PA Pittsburg, KT/Depco 412-487-8777
RI Johnston, C. H. Burnham Assocs. 401-231-7475
TN Morristown, Teqspec 615-587-0980
VA Fairfax, Nine Assocs. 703-273-1803
WA Bellevue, Elctrn. Mktg. Grp. 206-746-5915

KEDMAN CO., Box 25667, Salt Lake City, UT 84125, Tel: 801-973-9112, TWX: 910-925-4116; Empl.: 100

KEENE LAMINATES, Keene Corp., 199 Amaral St., E. Providence, RI 02914, Tel: 800-556-7683, Telex: 927524; Empl.: 50 ..... **C•1601**

For sales offices and reps. in the Northeastern region, call Dennis Smith- 401-434-2340 For sale offices and reps. in California, call Rick Kirchhoff- 714-540-2811 For sales offices and reps. in Michigan, Ohio, and Indiana, call STAFFCO- 216-331-5100

Local Sales Offices & Reps

IL Chicago, Ray Roth 312-941-1754

KEITHLEY INSTRS., 28775 Aurora Rd., Cleveland, OH 44139, Tel: 216-248-0400, Telex: 98-5469; Empl.: 461; *Sls. Mgr.:* Mike Sciulli

KEL AM, See Teltec, Inc.

KELMET, INC., 569 W. Covina Blvd., San Dimas, CA 91773, Tel: 714-599-0954, ESYLNK: 62771590; Empl.: 3; *Sls. Mgr.:* Cort W. Farmer

KELTEC FLORIDA, INC., MICROWAVE PRODUCTS, Amstar Electronics Group, P.O. Box 862, Shalimar, FL 32579, Tel: 904-651-9749, TWX: 510-730-7654; FSC No.: 09062; Empl.: 625; *Sls. Mgr.:* M. Yount/L. Newbold/D. King

KELTLON CORP., Viking Modules Div., 225 Crescent St., Waltham, MA 02154, Tel: 617-894-8700, Telex: 948197; Empl.: 75; *Sls. Mgr.:* T. Chadurjian

KELTRON CORP., 225 Crescent St., Waltham, MA 02154, Tel: 617-894-8700, Telex: 948197; Empl.: 270; *Sls. Mgr.:* Robert Dacey; *Dist. Mgr.:* Robert Dacey

KELTRON CORP., Walden Div., 225 Crescent St, Waltham, MA 02154, Tel: 617-894-8700, Telex: 948197; Empl.: 225; *Sls. Mgr.:* T. Chadurjian

KELVIN, 14724 Ventura Blvd., Ste. 1003, Sherman Oaks, CA 91403-3501, Tel: 818-990-1192, Telex: 65-1417; FSC No.: 19587; Empl.: 250; *Sls. Mgr.:* R. A. Featherston ..... **A•1956-1959**

Local Sales Offices & Reps

AZ Tempe, Sunwest Mktg. 602-838-7586
CA Mountain View, G. C. Woempner Co. .. 415-964-5454
CA San Diego, Wes-K Assoc. 619-695-2040
CA Sherman Oaks, Wes-K Assocs. 818-990-1302
CT Milford, Todino Engrg. Sls. 203-874-6643
FL Lighthouse Point, R. C. Simon & Co. .. 305-941-2757
IL Deerfield, Walt Krueger 312-945-3720
MA Needham Hgts., Todino Engrg. 617-444-7925
MI Birmingham, Forand Sls. 313-644-0087
MN Minneapolis, Furber Sls. 612-881-3620
MO St. Louis, Abrams & Assocs. 314-569-0447
NY Great Neck, Trionic 516-466-2300
NY Rochester, Foster & Wager 716-385-7744
NC Burlington, P. J. Nahser 919-226-8053
OH New Lebanon, J. N. Bailey & Assocs. 513-687-1325
OR Portland, Frank Jackson 503-645-8511
PA Southampton, Campbell Assocs. 215-322-6630
OH Front Royal, Wright Source 703-635-7201
WA Redmond, Frank Jackson 206-881-7277

Local Distributors

AZ Tempe, TTI, Inc. 602-966-1616
CA Chatsworth, PassiveComponents 818-341-1745

CA No. Hollywood, TTI, Inc. 818-709-1010
CA San Diego, TTI, Inc. 619-587-4888
CA San Fernando, Petell Elctrns. 818-365-9841
CA San Jose, TTI, Inc. 408-943-9155
CT Stratford, Electro Comp. 203-375-5811
FL Orlando, TTI, Inc. 305-859-1000
GA Norcross, TTI, Inc. 404-662-0911
ID Spirit Lake, A-I Elctrns 802-635-1545
MA Boston, TTI, Inc. 617-938-8800
NY Farmingdale, Command Elec. 516-293-1212
NY Ronkonkoma, TTI, Inc. 516-737-2000
OH Dayton, Wright Source 513-293-1341
TX Ft. Worth, TTI, Inc. 817-831-0441

KEMET®

KEMET, Box 5928, Greenville, SC 29606, Tel: 803-963-6348, Telex: 57-0496, TWX: 810-287-2536; FSC No.: 31433; *Sls. Mgr.:* Robert Taylor; *Dist. Mgr.:* Dan Manly ..... **A•1002, 1100-1110; B•1014**

Refer to Kemet, Union Carbide Corp., Elctrns. Div. for sales office information and for distributor listings.

Local Sales Offices & Reps

AL Huntsville 205-830-1090
AZ Tempe 602-831-2151
CA Culver City 213-568-8384
CA Newport Beach 714-640-9320
CA Santa Clara 408-986-0424
CO Englewood 303-790-0494
FL Ft. Lauderdale 305-731-2187
FL Orlando 305-855-8886
GA Norcross 404-441-7701
IL Schaumburg 312-843-1030
IN Carmel 317-844-7756
KS Shawnee Mission 913-362-8004
MD Columbia 301-992-5600
MA Stoneham 617-279-0400
MI Livonia 313-591-0555
MN Edina 612-929-4642
NY Elmsford 914-332-4390
NY Liverpool 315-451-0720
NC Raleigh 919-872-2877
OH Westerville 614-890-8688
OK Tulsa 918-664-8592
PA Exton 215-363-8310
SC Greenville 803-242-5789
TX Austin 512-458-3181
TX Irving 214-556-0009
WA Kirkland 206-828-4853

Local Distributors

CA Compton, Harper, S.I.D. Elctrns. 213-979-5090
CA Culver City, Hamilton/Avnet Elctrns. 213-558-2662
CA Los Angeles, Bell Inds. 213-826-6778
CA Sunnyvale, Time Elctrns. 408-747-4704
CA West Lake Vl., Distel, Inc. 805-495-9998
CO Denverale, Integrated Elctrns. 303-292-5537
MA Wilmington, J V Elctrns. 617-273-4300
MN Minneapolis, Merit 312-437-9680
NJ Perth Amboy, Arm Bar Inds. 201-442-0990
NM Albuquerque, Alliance Elctrns., Inc. 505-292-3360
NY Buffalo, Summit 716-884-3450
NY Cen. Islip, Semicap 516-582-4400
NY Hauppauge, JACO Elctrns., Inc. 516-273-5500
NY Westbury, Schweber 516-334-7474
NC Greensboro, Golden Elctrns. 919-294-4653
OH Cleveland, Pioneer Elctrns. 216-587-3600
TX Dallas, Hall-Mark Elctrns. Corp. 214-343-5001
TX Ft. Worth, TTI Elctrns. 817-831-0441

KEMLITE LABS., INC., 1819 W. Grand Ave., Chicago, IL 60622, Tel: 312-829-6050; Empl.: 65; *Sls. Mgr.:* J.V. Daniels

KEMTRON CIRCUITS & ELCTRNS. CORP., 48 Merrick Rd., Rockville Centre, NY 11570, Tel: 516-766-2772; Empl.: 7; *Sls. Mgr.:* Walter Carlock

M.S. KENNEDY CORP., Sub of Hybrilonics, Inc., 8170 Thompson Rd., Clay, NY 13041, Tel: 315-699-9201, TWX: 710-541-0465; FSC No.: 51651; Empl.: 41; *Sls. Mgr.:* Greg Overend

KEN-TRON MFG., INC., 1204 Industrial Dr., Owensboro, KY 42301, Tel: 502-684-0431, Telex: 20-4305; Empl.: 100; *Sls. Mgr.:* J. Douglas

KEPCO

KEPCO, INC., 131-38 Sanford Ave., Flushing, NY 11352, Tel: 718-461-7000, TWX: 710-582-2631; Empl.: 300; *Sls. Mgr.:* Paul Birman; *Dist. Mgr.:* Paul Birman ..... **D•1775-1804**

Local Sales Offices & Reps

AL Huntsville, Highsmith Co. 205-536-6666
AZ Phoenix, Hurlburt Co. 602-840-1085
CA Los Alamitos, Reed Elctrn. Mktg. 213-598-6676
CA San Francisco, N-S Westronics 415-960-1111
CO Denver, J. F. Hurlbut Co. 303-279-7796
CT Farmington, R. Perron Co. 203-673-4825
DC Washington, Eastern Instrmn. Corp. 301-384-8500
FL Miami Lakes, ATEK/Highsmith Co. 305-556-4800
FL Orlando, ATEK/Highsmith Co. 305-740-6835
IL Chicago, Century Elctrns. 312-777-9700
IN Noblesville, Century Elctrns. 317-849-2026
KS Shawnee, ATECH 913-268-9644
MD Burtonsville, Eastern Instrmn. 301-384-8500
MA Needham, R. Perron Co. 617-449-6162
MI Detroit, Carter McCormic & Peirce 313-477-7700
MO St. Louis, ATECH 314-576-2884
NJ Woodcliff Lake, Eastern Instrmn. 201-664-0907
NM Albuquerque, Techn. Mktg. Assoc. 505-345-8921
NY Liverpool, NTS Assocs., Inc. 315-451-1091
NY Syracuse, NACO Elctrns. Corp. 315-699-2651
NC Charlotte, ATEK/Highsmith Co. 704-527-2382
OH Cleveland, Carter McCormic & Peirce 216-779-5100
OH Dayton, Carter McCormic & Peirce 513-836-0951
OK Tulsa, Kepco Inc. 918-664-9222
OR Portland, H. Levinson 503-245-1902
PA Pittsburgh, Carter McCormic & Peirce 412-733-7490
PA Southampton, Eastern Instrmn. 215-355-3469
TX Austin, Airep Elctrns. 512-327-0778
TX Dallas, Airep Elctrns. 214-349-4360
TX Houston, Airep Elctrns. 713-644-8171
UT Salt Lake City, J. F. Hurlbut Co. 801-595-8818
VA Richmond, ATEK/Highsmith Co. 804-745-5555
WA Seattle, H. Levinson Co. 206-382-1300
WI Milwaukee, Century Elctrns. Sls. 414-645-3680
Can Montreal, DigiDyne Inc. 514-631-1891

KEPRO CIRCUIT SYSTEMS, 630 Axminister Dr., Fenton, MO 63026, Tel: 314-343-1630; Empl.: 17; *Sls. Mgr.:* Jeff R. Keil; *Dist. Mgr.:* Jeff R. Keil

KEP

KESSLER-ELLIS PRODS., 120 1st Ave., Atlantic Highlands, NJ 07716, Tel: 201-291-0500, 800-631-2165, Telex: 13-2496; FSC No.: 28222; Empl.: 85; *Sls. Mgr.:* Frank Vogt ..... **D•1132**

Local Sales Offices & Reps

CA Costa Mesa, FLW 714-751-7512
CA Hayward, FLW 415-786-9070
CA San Diego, FLW 619-277-0993
MD Mt. Airy, Strayton Assocs., Inc. 301-831-7007
MA Salem, CDM Assocs. 617-741-3166
MI Southfield, Bill Coombe Sls. Co. 313-355-1511
NJ Wanamassa, Nota-Tek, Inc. 201-347-1490
NC Kernersville, Heritage Elctrl. Sls. Assocs. 919-996-4374
OH Chagrin Falls, RPM Indl. Sls. 216-247-3295
TX Dallas, Devices, Inc. 214-991-1202

Local Distributors

CA Los Angeles, E.I.L. Instrs. 213-685-7020
CT Middletown, E.I.L. Instrs. 203-346-6646
FL Bartow, Chemco Elec. Supp. 813-533-3165
FL St. Petersburg, Chemco Elec. Supp. 813-577-7774
FL Tampa, Chemco Elec. Supp. 813-621-8611
GA Norcross, A A Elec. 404-449-8670
HI Honolulu, Process Valve & Control 808-834-7675
IL La Salle, Complete Indl. Entprs. 815-224-1485
IA Cedar Rapids, Hupp Elec. Motors 319-366-0761
IA Davenport, Hupp Elec. Motors 319-322-3168
LA W. Monroe, Weaks Supp. Co. 318-323-8831
ME Bangor, Holmes Distrs. 207-942-7357
ME Portland, Holmes Distrs. 207-774-5901
MD Sparks, E.I.L. Instrs. 301-771-4800
MA Burlington, E.I.L. Instrs. 617-272-9450
MA W. Springfield, Control Engrg. 413-781-1330
MA Wilmington, Stan. Elec. Supp. 617-658-5050
MI Ann Arbor, Madison Elec. 313-665-6131
MI Ann Arbor, McNaughton & McKay 313-995-9515
MI Jackson, Madsion Elec. 517-783-2735
MI Kalamazoo, Madison Elec. 616-342-1965
MI Madison Hgts., McNaughton & McKay 313-399-7500
MO Maryland Hgts., French Gerleman Elec. 314-569-3122
NH Manchester, Holmes Distrs. 603-669-5060
NJ Green Brook, Apparatus Elctrl. Supp. 201-752-8400
NY Clarence, Trott Elctrns. 716-634-8500
NY Elmira, Brady Supp. 607-733-6591
NY Pittsford, Trott Elctrns. 716-586-8251
NC Charlotte, Trott Elctrns. 704-376-2237
OH Cleveland, Pioneer Stan. 216-587-3600
OH Dayton, Pioneer Dayton 513-236-9900
OH Toledo, Girkins Elec. 419-478-5600
TN Nashville, A A Elec. 615-832-6632
WI Oconomowoc, Atlas Instrs. 414-367-8759

KESTER SOLDER

KESTER SOLDER DIV., Litton Sys., Inc., 515 E. Touhy Ave, Des Plaines, IL 60018, Tel: 312-297-1600, TWX: 910-221-2100, FAX: 312-390-9338; Empl.: 350; *Sls. Mgr.:* Mack J. Haraburd; *Dist. Mgr.:* Carl Voelkel ..... **C•1756**

Local Sales Offices & Reps

CA Anaheim 714-871-0280
NJ Newark 201-589-0246

KEVLIN MICROWAVE CORP., 26 Conn St, Woburn, MA 01801, Tel: 617-935-4800, TWX: 710-393-1239; FSC No.: 25634; Empl.: 120; *Sls. Mgr.:* James E. Riley

Keystone CARBON COMPANY

KEYSTONE CARBON, Thermistor Div., St. Marys, PA 15857, Tel: 814-781-1591, Telex: 91-4517; FSC No.: 75-263; Empl.: 1200; *Sls. Mgr.:* John A. Brock; *Dist. Mgr.:* John A. Brock ..... **B•1739-1741**

Local Sales Offices & Reps

CA Orange, El Dorado Sls. 714-538-7252
CA Redwood City, Hickey Inds. Sls. 415-368-3849
CA San Diego, El Dorado Sls. 619-565-9112
CT Wethersfield, L.J. Labant 203-529-0048
GA Marietta, J.J. Arnold 404-427-1062
IL West Dundee, W. S. Heffron 312-426-6472
IN Fort Wayne, R.O. Whitesell & Assocs. 219-432-5591
IN Indianapolis, R.O. Whitesell & Assocs. 317-359-9283
IN Kokomo, R.O. Whitesell & Assocs. 317-457-9127
KS Shawnee, Benson Engrg. 913-491-4446
MI Southfield, J.L. Montgomery Assocs. 313-358-2616
MN Minnetonka, Dave Marrone 612-934-9115
NY Rochester, Foster & Wager 716-385-7744
OH Cincinnati, R.O. Whitesell & Assocs. 513-521-2290
OH Cleveland, R.O. Whitesell & Assocs. 216-447-9020
OH Columbus, R.O. Whitesell & Assocs. 614-888-9396
OH Dayton, R.O. Whitesell & Assocs. 513-298-9546
NC Cary, J. E. Shea 919-481-2575
PA Pittsburgh, R.O. Whitesell & Assocs. 412-963-6161
TX Dallas, Benson Engrg. 214-352-7541
TX Houston, Benson Engrg. 713-672-2194
EXP NY, Inwood, Minthorne Int'l. 516-239-0767

Local Distributors

AZ Scottsdale, Allied Elctrns. 602-990-9549
CA Garden Grove, Allied Elctrns. 714-554-0731
CA Inglewood, Newark Elctrns. 213-671-7066
CA Santa Clara, Allied Elctrns. 408-727-1690
CO Wheatridge, Allied Elctrns. 303-425-7144
FL Ft. Lauderdale, Allied Elctrns. 305-486-0500
GA Atlanta, Allied Elctrns. 404-237-3366
IL Elgin, Allied Elctrns. 312-697-8200
MA Wilmington, Allied Elctrns. 617-942-0150
MI Westland, Allied Elctrns. 313-595-6565
MN Minneapolis, Allied Elctrns. 612-559-9545
MO Maryland Hgts., Newark Elctrns. 314-739-0133
MO St. Louis, Allied Elctrns. 314-878-1229
NJ Springfield, Newark Elctrns. 212-349-7087

NY Mineola, Allied Elctrns. 516-248-2360
NC Cary, Allied Elctrns. 919-467-0720
OH Willoughby, Allied Elctrns. 216-951-0908
OK Tulsa, Allied Elctrns. 918-663-7630
PA Bala Cynwyd, Allied Elctrns. 215-667-6940
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Houston, Allied Elctrns. 713-445-7123
VA Alexandria, Allied Elctrns. 703-836-5002
WA Seattle, Allied Elctrns. 206-767-5772
WI Brookfield, Newark Elctrns. 414-781-2450
WI Milwaukee, Allied Elctrns. 414-463-2662

KEYSTONE ELECTRONICS CORP., 49 Bleecker St., New York, NY 10012, Tel: 212-475-4600, Telex: 35-3700; FSC No.: 91833; Empl.: 80; *Sls. Mgr.:* Charles Gold; *Dist. Mgr.:* Len Lenzen ..... **C•1699**

KEYTEK DIV., 6424 Warren Dr., Norcross, GA 30093, Tel: 404-449-6040, Telex: 810-766-4529; Empl.: 50; *Sls. Mgr.:* Ron Inneckin

KEYTEK INSTRUMENT CORP., 260 Fordham Rd., Wilmington, MA 01887, Tel: 617-658-0880, Telex: 951389 KEYTEK BURL; *Sls. Mgr.:* Lee Walsh

KEYTEK KEYBOARDS CANADA INC., 16 Mary St., Units 3 & 4, Aurora, Ontario, Canada L4G 3W8, Tel: 416-727-9491; Empl.: 20

KEY TRONIC, P.O. Box 14687, Spokane, WA 99214, Tel: 509-928-8000, TWX: 510-773-1885; FSC No.: 52833; Empl.: 1350

K.G.S. electronics, inc.

KGS ELECTRONICS, INC., 2029 N. Lincoln Ave., Pasadena, CA 91103, Tel: 818-798-0786; Empl.: 50 ..... **D•2080-2081**

Local Sales Offices & Reps
TX Hurst, McGarrah & Assocs. 817-268-3557

WALTER KIDDE, Div. of Kidde, Inc., Fire Sys. Operations, P.O. Box 1147, Wake Forest, NC 27587, Tel: 919-556-6811, Telex: 802569 WALTKIDDE; Empl.: 250

KIK®

KIKUSUI INTERNATIONAL CORP., 19601 Mariner Ave., Torrance, CA 90503, Tel: 213-515-6432, 800-545-8784, Telex: 213-371-4662 (in CA & AK), TWX: 800-545-8784; *Sls. Mgr.:* Dean Dawson ..... **D•1399, 1805**

Local Sales Offices & Reps
AL Huntsville, Morard & Co.(MOCO) 205-881-5968
AZ Chandler, Vic Myers Assocs. 602-241-9324
CA Carson, Amasco South 213-516-8561
CA Sunnyvale, Amasco North 408-733-8690
CO Aurora, R & R Instrmn. 303-340-8728
CT Madison, Eastronix, Inc. 203-421-4514
FL Melbourne, EMS, Inc. 305-724-1027
FL Plantation, EMS, Inc. 305-587-7146
FL Sarasota, EMS, Inc. 813-923-2804
HI Honolulu, Honolulu Elctrns. 808-949-5564
IL Elmhurst, Sector Engrg. Sls. 312-530-7850
IN Indianapolis, Sector Engrg. Sls. 317-842-1120
KS DeSoto, Midtec Assocs. 913-441-6565
MD Wheaton, Brimberg Sls. (Power Supp.) 301-946-2670
MA Bedford, Eastronix 617-275-5775
MI Warren, Dietrich & Assocs. 313-751-4990
MN Minneapolis, Sector Engrg. Sls. 612-593-1809
MO St. Louis, Midtech Assocs. 314-275-8666
NJ Teaneck, Scientific Dvcs. East 201-837-1035
NM Albuquerque, Vic Myers Assocs., Inc. 505-884-6878
NY Rochester, EIC Elctrns. 716-544-4392
OH Cleveland, Dietrich & Assocs. 216-781-1855
OH Dayton, Dietrich & Assocs. 513-223-6042
OK Parkhill, Scientific Dvcs.-S.W. 918-457-4888
OR Portland, Syntek, Inc. 503-636-6793
PA Pittsburgh, Dietrich & Assocs. 412-892-2992
PA Springhouse, Scientific Dvcs. East 215-643-3335
TX Austin, Scientific Dvcs. SW 512-442-6215
TX Houston, Scientific Dvcs. SW 713-864-1711
TX Richardson, Scientific Dvcs. SW 214-231-8106
UT Salt Lake City, Intermountain Instrs. ... 801-487-3151
VT Shelburne, Eastronix 802-985-3743
WA Kirkland, Syntek, Inc. 206-488-0394
WI Milwaukee, Sector Engrg. Sls. 414-352-8280
PR San Juan, David S. Ternent 809-762-2688
Can Burnaby, BC, Interfax Sys., Inc. 604-430-1410
Can Mississauga, Ont., Interfax Sys., Inc. ... 416-671-3920
Can Nepean, Ont., Interfax Sys., Inc. 613-726-8888
Can St. Laurent, Que., Interfax Sys., Inc. 514-336-0392

KILO INTERNATIONAL

KILO INTERNATIONAL, 2118 D Street, La Verne, CA 91750, Tel: 714-593-4626; FSC No.: 05129; Empl.: 50; *Sls. Mgr.:* James T. Davis; *Dist. Mgr.:* James T. Davis ..... **A•2097**

Kilovac Corporation

KILOVAC CORP., Box 4422, Santa Barbara, CA 93140, Tel: 805-684-4560, TWX: 910-336-1141; FSC No.: 18741; Empl.: 85; *Sls. Mgr.:* Jerry L. Dysart ..... **B•1442-1447**

Local Sales Offices & Reps
CA Campbell, Kottmeier Assocs. 408-371-8700
CA Tarzana, High Voltage Sls. 818-881-9194
CT Brookfield, Kanan Assocs. 203-775-0494
FL St. Petersburg, K-Square 813-381-1893
GA Atlanta, Electro Tech 404-262-1522
IL Elgin, Gassner & Clark, Inc. 312-695-9540
IA Cedar Rapids, H. R. Brown Sls. Co. ... 319-366-0635
KS Olathe, M. E. Bettis Co. 913-764-0621
KS Wichita, M. E. Bettis Co. 316-265-8250
MD Columbia, Tyler Griffin Co. 301-995-1215
MA Needham Heights, Kanan Assocs. 617-449-7400
MN Osseo, Gaffney Sls. 612-425-5484
MO St. Louis, Abrams & Assocs. 314-569-0447
NM Albuquerque, Cleveland Entprs., Inc. .. 505-265-7893
NY Great Neck, Trionic Assocs. 516-466-2300
NY Rochester, Lamb Comp., Inc. 716-323-1250
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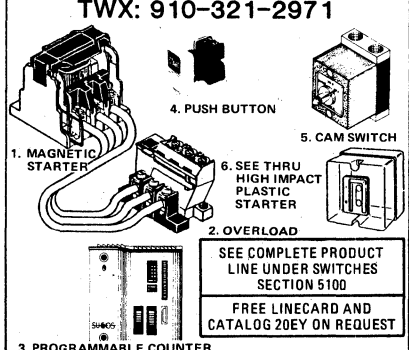

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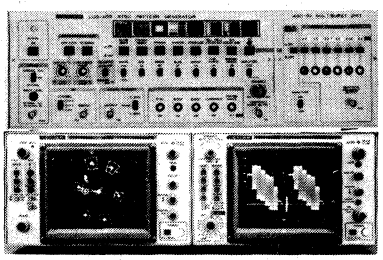

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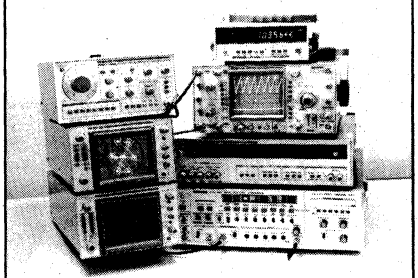

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OH Cincinnati, United Radio 513-761-4030
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OH Solon, Repco Elctrns. 216-248-8900
OH Warren, REM Elect. 216-373-1300
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PA Philadelphia, Herbach & Rademan 215-426-1700
PA Philadelphia, PEI/Genesis 215-568-7400
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TX McKinney, Prime Distributing 214-231-0170
TX Richardson, Fisher Brownell 214-235-3177
WA Seattle, Pacific Elctrns. 206-575-1050
WI Milwaukee, Indl. Elctrns. 414-276-1212

LEE DATA CORPORATION, 7075 Flying Cloud Drive, Minneapolis, MN 55344, Tel: 612-828-0300, TWX: 910-576-1690; Empl.: 1075; *Sls. Mgr.:* John F. Roy

LEEDS & NORTHRUP INSTRUMENTS, Sumneytown Pike, North Wales, PA 19454, Tel: 215-643-2000

LEEPOXY PLASTICS, 3324 Ferguson Rd., Ft. Wayne, IN 46809, Tel: 219-747-7411; Empl.: 15; *Sls. Mgr.:* Rick Stacy

LEIGH INSTRUMENTS LTD., Components Division, 141 Bond Ave., Don Mills, ON, Canada M3B 1M2, Tel: 416-447-8531, Telex: 06-966626, FAX: 416-447-8535; FSC No.: 02533; Empl.: 158; *Sls. Mgr.:* R. W. Parkins

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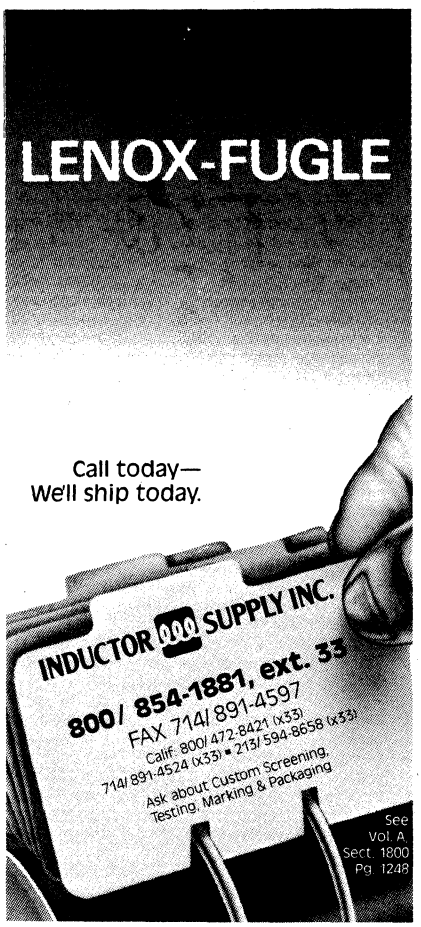
AZ Scottsdale, Heath Assocs. 602-945-9546
CA Santa Cruz, LeRep 408-458-0667
FL Pompano Beach, V. G. Sls. Co. 305-971-0900
IL Elmhurst, F.F./Hill Gray Inc. 312-832-4101
IN Fort Wayne, Frank Campisano Co. 219-747-2633
MA Woburn, Radian Assocs. 617-933-7386
NY Cazenovia, Naylor Elctrns. 315-655-8174
OH Cincinnati, Frank Campisano & Co. ... 513-574-7111
VA Vinton, A. B. Andrews & Co. 703-890-1128

LEKTRA SERVICE CORP., 129-07 18th Ave., P.O. Box 222, College Point, NY 11356, Tel: 718-939-7171; Empl.: 10; *Sls. Mgr.:* Ben Eisenberg



LENCO
ELECTRONICS, INC.

LENCO ELCTRNS., INC., 1330 Belden St., McHenry, IL 60050, Tel: 815-344-2900, FAX: 815-344-2730; Empl.: 155; *Sls. Mgr.:* Lenard J. Duncan ..... **A•2270-2271**

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CA Northridge, Myco Sls. 818-886-7101
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CO Aurora, Butler Tech. Sls. 303-343-3787
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KS Mission, McAllister Assocs. 913-262-5500
MA Framingham, Stone Comps. 617-875-3266
MI Farmington Hills, Stone Comps. Sls. .. 313-476-6090
NJ Oak Ridge, P.G. Assocs. 201-697-0128
NJ Pensauken, Vantage Sls. 609-663-6660
NC Fripp Island, NPM Assocs. 803-838-2691
OH Fairview Pk., Comp. Specialty 216-734-0655
SC Fripp Island, N.P.M. Assocs. 803-838-2691

LENCO ELECTRONICS, INC., 300 N. Maryland St., Jackson, MO 63755, Tel: 314-243-3147, TWX: 910-760-1382; Empl.: 70; *Sls. Mgr.:* Bob Bergfeld; *Dist. Mgr.:* Mark A. Hill, Intl. Sls. Mgr.

LENOX-FUGLE ELECTRONICS, 100 Sylvania Pl., S. Plainfield, NJ 07080, Tel: 201-756-1164; Empl.: 25; *Sls. Mgr.:* Henry J. Lenox

LENOX INSTRUMENT, 265 Andrews Rd., Trevose, PA 19047, Tel: 215-322-9990, TWX: 710-670-1440; FSC No.: 35733; Empl.: 30; *Sls. Mgr.:* William Lang

LENZ ELECTRIC MFG. CO., 1751 N. Western Ave., Chicago, IL 60647, Tel: 312-276-4454

LEL CO., 5 Burns Pl., Cresskill, NJ 07626, Tel: 201-569-8641; Empl.: 10

LEMO USA INC
ELECTRONIC CONNECTORS

LEMO U.S.A., INC., P.O. Box 11488, Santa Rosa, CA 95406, Tel: 707-578-8811, Telex: 340-933; FSC No.: 2P953; Empl.: 17; *Sls. Mgr.:* David A. Battaglia ..... **C•1325-1333**

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AL	Mobile, Hollingsworth & Still, Inc.	800-241-5712
AZ	Tempe, Trembly Assocs.	602-967-2058
CA	Irvine, Balzer-Wolf Assocs.	714-261-6877
CA	San Diego, Balzer-Wolf Assocs.	619-581-6060
CA	San Jose, Ruppert Sls. & Engrg.	408-998-8717
CO	Wheat Ridge, Trembly Assocs.	303-421-8900
FL	Tampa/Ft. Lauderdale, Hollingsworth & Still, Inc.	800-241-5712
GA	Norcross, Hollingsworth & Still, Inc.	404-447-1700
IL	Northbrook, Raines & Assocs.	312-498-0890
KS	Lenexa, Midtec Assocs.	913-541-0505
MD	Rockville, Mechtronics Sls., Inc.	301-340-2130
MA	Lexington, Zieco	617-861-8300
MI	Detroit, Jack M. Thorpe Co.	313-779-6363
MN	Edina, Hanna Lynd	612-925-5700
MO	St. Louis, Midtec Assocs.	314-275-8666
NV	Las Vegas, Trembly Assocs.	702-739-9770
NJ	Englewood, Sprung/Nussbaum, Inc.	201-569-5666
NM	Albuquerque, Trembly Assocs.	505-266-8616
NY	Syracuse, Canavan-Scanlon Assocs.	315-437-1271
NY	Victor, Canavan-Scanlon Assocs.	716-924-7450
NC	Charlotte/Kernersville, Hollingsworth & Still, Inc.	800-241-5712
OH	Cleveland, K/T Depco	216-442-6200
OH	Columbus, K/T Depco	614-262-9151
OR	Portland, Earl & Brown Co.	503-245-2283
PA	Hatboro, Jacobsen Assocs.	215-674-2937
PA	Lebanon, Jacobsen Assocs.	717-273-9746
PA	Pittsburgh, K/T Depco	412-367-1011
TX	Lewisville, Jim Hughes Co.	214-221-1536
UT	Salt Lake City, Trembly Assocs.	801-486-5292
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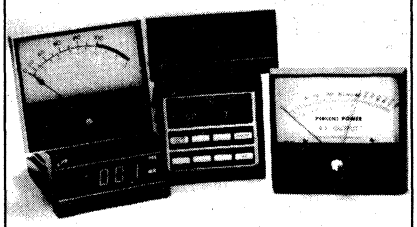

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1810 Grant Avenue/Philadelphia, PA 19115
(215) 673-5600

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(215) 776-7500 in Allentown, PA
(301) 444-5600 in Baltimore, MD
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(717) 397-2600 in Lancaster, PA
(215) 673-5600 in Philadelphia, PA & NJ
(301) 621-5077 in Washington, DC & VA
(717) 829-5600 in Wilkes-Barre, PA
(302) 652-8585 in Wilmington, DE

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CA	Redwood City, Ault Assocs.	415-367-1710
FL	Tampa, RFS Mktg.	813-962-0562
IL	Arlington Heights, The Russell Co.	312-394-5560
MN	N. Mankato, E. I. Sls.	507-345-5786
NC	Cary, RFS Mktg.	919-469-4150
OH	Cleveland, Engrd. Indl. Sls.	216-371-4350
OK	Tulsa, Advance Tech. Sls.	918-664-0482
PA	Newton, Indl. Sls. Assocs.	215-860-2076
TX	Dallas, Advance Tech. Sls.	214-340-1300

LEPEL, 50 Heartland Blvd., Edgewood, NY 11717, Tel: 516-586-3300, Telex: 12303, FAX: 516-586-3232; Empl.: 150; *Sls. Mgr.:* Richard Sutton

LESTRONICS, INC., 1840 Industrial Circle, Longmont, CO 80501, Tel: 303-651-2011; Empl.: 75; *Sls. Mgr.:* Linda Tholen

LEXICON CORP. OF MIAMI, See Electronic Products, Inc.

LEXIDATA, Division of Adage, Inc., One Fortune Dr., Billerica, MA 01821, Tel: 617-667-7070, Telex: 710-347-1594; Empl.: 425; *Sls. Mgr.:* B. Edward Fitzgibbons; *Dist. Mgr.:* N/A

LFE, Instruments Div., 55 Green St., Clinton, MA 01510, Tel: 617-835-1000, Telex: 20-0156, TWX: 710-347-1734; FSC No.: 20905; Empl.: 500; *Sls. Mgr.:* D. Snyder, D. Verville; *Dist. Mgr.:* B. Pugsley (East.)E. Stuart (West.)

LH RESEARCH, INC., 14402 Franklin Ave., Tustin, CA 92680, Tel: 714-730-0162, TWX: 910-595-2540; Empl.: 620; *Sls. Mgr.:* Dennis Pouliot

LIBBEY-OWENS-FORD CO., Liberty Mirror Products, 851 Third Ave., Brackenridge, PA 15014, Tel: 412-224-1800; Empl.: 150; *Sls. Mgr.:* Terry W. Garrett

LC

LIBERTY CONTROLS, 500 Brookforest Ave., Shorewood, IL 60435, Tel: 815-725-2241; Empl.: 60; *Sls. Mgr.:* Terry Matichak ..... **B•1524**

Local Sales Offices & Reps

CA	Arcadia, H.M.C. Inc.	818-447-0958
CA	Hayward, Featherstone Sls. Co.	415-785-1926
CO	Arvada, Gemini Elctrns.	303-428-5600
CT	Guilford, A & M Elctrns. Inc.	203-453-1612
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IL	Palatine, Goldbeck Milota Assocs. Inc.	312-705-0602
KS	Olathe, Advanced Tech. Sls.	913-782-8702
MI	Detroit, R. P. Urban & Assocs.	313-535-2355
MI	Grand Rapids, R. P. Urban & Assocs.	616-245-0511
MN	St. Paul, Countryman Assocs.	612-645-9151
MO	St. Louis, Advanced Tech. Sls.	314-878-2921
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NY	Hauppauge, Mason-Esco Inc.	516-273-3500
NY	Rochester, BRS Sls. Assocs.	716-586-1522
OH	Dayton, J. C. Hoffsteller Co.	513-296-1010
OH	Medina, J. C. Hoffsteller Co.	216-241-4880
OR	Portland, SPS Elctrns., Inc.	503-297-6919
TX	Dallas, Reese & Assocs.	214-351-0703
UT	Slat Lake City, Gemini Elctrns.	801-278-0201
WA	Redmond, SPS Elctrns., Inc.	206-323-4140

Distributor

LIBERTY ENGINEERING, 9300 Mason Avenue, Chatsworth, CA 91311 ..... **C•1702**

LIBERTY INTL. CORP., 2539 237th St, Suite F, Torrance, CA 90505, Tel: 213-539-6452; Empl.: 5; *Sls. Mgr.:* Gary Lee; *Dist. Mgr.:* Maria A. Lauro

LIBERTY MIRROR, See Libbey-Owens-Ford Co., Liberty Mirror Products

LICON DIV., Illinois Tool Works, 6615 W. Irving Park Rd., Chicago, IL 60634, Tel: 312-282-4040, Telex: 4330130, TWX: 910-221-0275; Empl.: 350; *Sls. Mgr.:* A. Steiner; *Dist. Mgr.:* A. Steiner

LIGHTNING PROTECTION CORP., Box 6086, Santa Barbara, CA 93160, Tel: 805-967-5089/4577; FSC No.: 56618; Empl.: 25; *Sls. Mgr.:* Chester J. Kawiecki

LIGHTWAVE COMMUNICATIONS, INC., 650 Danbury Rd., Ridgefield, CT 06877, Tel: 203-438-3591, TWX: 710-467-0699; *Sls. Mgr.:* Greg Pollack

LINCOLN INSTRUMENTS, 456 W. Montana St., Pasadena, CA 91103, Tel: 818-798-0733; Empl.: 11; *Sls. Mgr.:* Barbara J. Burchette

LINCOLN LASER CO., 234 East Mohave, Phoenix, AZ 85004, Tel: 602-257-0407, Telex: 165-718; FSC No.: 602-257-0728; Empl.: 120; *Sls. Mgr.:* Robert S. Nehrbas, Jr.

LINDGREN RF ENCLOSURES, INC., 1228 Capitol Drive, Addison, IL 60101, Tel: 312-628-9100, Telex: 254708 dfld; FSC No.: 18234; Empl.: 72

LINEAR INSTRS., 500 Edison Way, Reno, NV 89502, Tel: 702-786-3636, Telex: 170044; Empl.: 50

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LINEAR TECHNOLOGY CORP., 1630 McCarthy Blvd., Milpitas, CA 95035, Tel: 408-942-0810, Telex: 499-3977; FSC No.: 4W715; Empl.: 750; *Sls. Mgr.:* Bill Ehrsam; *Dist. Mgr.:* David Robbie

LINEAR TECHNOLOGY INC., P.O. Box 489, Sta. "A", Burlington, ON, Canada L7R 3Y3, Tel: 416-632-2996, Telex: 061-8525; Empl.: 180; *Sls. Mgr.:* C. Marshall/I. H. Scott

LINE ELECTRIC PRODUCTS, 122 Naubuc Ave., Glastonbury, CT 06033, Tel: 203-659-3573, 1-800-331-1137, Telex: 643-067; FSC No.: 07065; Empl.: 100; *Sls. Mgr.:* Teo Babun; *Dist. Mgr.:* Roland Dombroski ..... **B•1461**

Local Sales Offices & Reps

AL	Birmingham, Robertson Indl. Sls.	205-823-4187
CT	Hartford, Line Elec.	203-659-3573
GA	Marietta, Levine Lectronics & Lectric	404-956-8148
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MO	Kansas City, Fee Sls. Co.	816-356-0616
MO	St. Charles, Power Transmission Sys.	314-928-1750
NV	Reno, Alehoff & Assocs.	702-348-7461
NJ	Lawrenceville, Riverside Comps.	609-896-1112
WA	Lynnwood, Nichols Co.	206-742-8761

Local Distributors

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CA	San Francisco, Steven Engrg.	415-588-9200
CO	Denver, Mundix Control Co.	303-893-2390
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CT	Plainville, TDI Catalog Sls.	203-747-4788
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GA	Cunters, P & S Elctrn. Supp.	404-922-6101
GA	Rome, Battey Machine	404-291-4141
GA	Tucker, Control Instr. Device	404-491-3143
IL	Elk Grove Village, Elk Grove Elec.	312-956-6350
IN	Marion, Myers Radio Supp.	317-664-7394
IN	Wabash, Wabash Elec.	219-563-4146
KY	Corbin, Eubanks Elec.	606-528-2818
LA	Lafayette, Ralph's Radio Elec.	318-234-4507
MA	Lynn, Land Elctrns. Supp., Inc.	617-592-2220
MN	Minneapolis, Warmington, Woodcock & Williams	612-872-6655
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NJ	Lawrenceville, Riverside Comps.	609-896-1112
NJ	Linden, Turtle & Hughes	201-574-3600
NJ	Secaucus, Franklin & Smith	201-864-0555
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NY	Buffalo, Summit Distr.	716-887-2800
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OH Dayton, John A. Becker Co. 513-226-1341
PA Philadelphia, F & C Sls. Co. 215-228-5656
TN Chatanooga, Industrial Elctrns. 615-398-3413
TN Knoxville, Industrial Elctrns. 615-573-7135
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WI Cedaburg, AA Elec. 414-377-8000
WI Green Bay, Beemster Elec. Co. 414-437-3238

LINEMASTER SWITCH, Box 52, Woodstock, CT 06281, Tel: 203-974-1000, TWX: 710-434-7412; FSC No.: 979180; Empl.: 190

LINSEIS, INC., P.O. Box 666, Princeton Junction, NJ 08550, Tel: 609-799-6282 (in N.J.), Toll Free 1-800-RECORDER, Telex: 843-360; *Sls. Mgr.:* Andreas Sasinski ..... **D•1404, 1408**

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CA Los Angeles, LINSEIS CORP. WEST 213-337-9243,415-775-2333
CA Orange County, Elotek Sys. 714-830-4856
CA San Diego, Elotek Sys. 714-830-4856
CA Santa Clara, Johnson Assocs. 408-984-4626
CO Broomfield, Connors Co. 303-466-9628
MD Baltimore, Bio Chem Elctrns. Inc. 301-488-2729
MO Manchester, Vertec Assocs. 314-394-6242
MO Raytown, Vertec Assocs. 816-737-0377
NM Albuquerque, J. Smith & Assocs. Inc. 505-345-6501
NY Liverpool, Syronics Inc. 315-451-0968
NC Burlington, P. J. Nahser Co. 919-226-8053
OH Dayton, Hocker Assocs. 513-253-3642
TX Argyle, Milestek, Inc. 817-455-7444
UT Highland, Highland Tech. Mktg. 801-756-2634
Can Toronto, RCC Elctrns. 416-252-5094

LISK, G. W., CO., 2 South St, Clifton Springs, NY 14432, Tel: 315-462-2611, Telex: 685-4113; Empl.: 200; *Sls. Mgr.:* R. A. Nelson; *Dist. Mgr.:* R. A. Nelson

LITE-ON CORP., Sub. Taiwan Liton Elctrn. Co. Ltd., 4951 Airport Pkwy., Ste. 570, Dallas, TX 75248, Tel: 214-239-3565, TWX: 910-860-9316, FAX: 214-385-0145; Empl.: 1100; *Sls. Mgr.:* Michael Barnes; *Dist. Mgr.:* R. W. Morrison

LITTELFUSE, INC., Sub. of Tracor, Inc., 800 E. Northwest Hwy., Des Plaines, IL 60016, Tel: 312-824-1188, Telex: 910-233-4977; Empl.: 2500; *Sls. Mgr.:* Milan Bagel; *Dist. Mgr.:* Michael Budde

LITTON APPLIED TECHNOLOGY, 645 Almanor Ave., P.O. Box 3478, Sunnyvale, CA 94088-3478, Tel: 408-773-0777, TWX: 910-339-9271; Empl.: 1700; *Sls. Mgr.:* J. Timm

LITTON ENCODER DIV., 20745 Nordhoff St, Chatsworth, CA 91311, Tel: 818-341-6161, TWX: 910-494-1229; FSC No.: 17080; Empl.: 350 ..... **B•1795**

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MI Grand Rapids, Midwest Meridian Corp. 616-698-7391
MN Bloomington, PWC, Inc. 612-831-5999
MO St. Louis, Midwest Meridian Corp. 314-878-4441
NY Chappaqua, R. M. Glueck Assocs. 914-238-3233
OH Fairborn, Midwest Meridian Corp. 513-879-7100
PA Clifton Heights, Clifton Precision 215-622-1000
TX Garland, Carey, McMahill & Assocs.... 214-681-1414
TX Round Rock, Carey, McMahill & Assocs. 512-255-1663

LITTON POTENTIOMETER DIV., 750 So. Fulton Ave., Mt. Vernon, NY 10551, Tel: 914-664-7733, TWX: 710-562-0129; FSC No.: 04454;Multiple; Empl.: 300; *Sls. Mgr.:* E. R. Cubbin

LITTON SYSTEMS, INC., Electron Dvcs. Div., 960 Industrial Rd., San Carlos, CA 94070, Tel: 415-591-8411, Telex: 910-376-4900 ..... **A•1787; B•1015; D•1806**

Local Sales Offices & Reps
CA Westlake Village, Litton Electron Dvcs. Div. 818-889-4903
GA Warner Robins, Litton Electron Dvcs. Div. 912-923-3397
MA Westford, Litton Electron Dvcs. Div. ... 617-692-6220
NJ Springfield, Litton Electron Dvcs. Div. 201-379-3131
OH Dayton, Litton Electron Dvcs. Div. 513-258-1243
TX Plano, Litton Electron Dvcs. Div. 214-881-0822
VA Arlington, Litton Electron Dvcs. Div. ... 703-920-4100

LITTON SYS. INC., Winchester Elecs/Use Co, 13536 G Saticoy St., Van Nuys, CA 91409, Tel: 213-786-9381, Telex: 67-4088, TWX: 910-495-1700; FSC No.: 88245; Empl.: 250; *Sls. Mgr.:* E. Wallen

LIXI, INC., 1438 Brook Dr., Downers Grove, IL 60515, Tel: 312-620-4646, Telex: 6871077 DKROB; Empl.: 16; *Sls. Mgr.:* Susan Cochran

LMB HEEGER, INC., 2946 E. 11th St., Los Angeles, CA 90023, Tel: 213-261-0382; *Sls. Mgr.:* Robert Heeger

LMI CONNECTORS, INC., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028, Tel: 213-463-2295, TWX: 910-321-2903

LNP CORPORATION, Div. of ICI, 412 King Street, Malvern, PA 19355, Tel: 215-644-5200, Telex: 510-668-6728; *Sls. Mgr.:* Douglas Stagnaro

LNR COMMUNICATIONS, INC., 180 Marcus Blvd., Hauppauge, NY 11788, Tel: 516-273-7111, TWX: 510-227-9871; FSC No.: 51049; Empl.: 200; *Sls. Mgr.:* F. Kelly, Dir. Mktg.

LOCKHEED ELECTRONICS CO., INC., Lockheed Corporation, 1501 Rt. 22, Plainfield, NJ 07061, Tel: 201-757-1600, TWX: 710-997-9541; Empl.: 2,300; *Sls. Mgr.:* P. Murray Grinnell

LOCUS, Box 740, State College, PA 16804, Tel: 814-466-6275, FAX: 814-466-7351; Empl.: 420; *Sls. Mgr.:* Anthony J. Coray

LOGICAL DESIGN GROUP, INC., 541 Pylon Dr., Raleigh, NC 27606, Tel: 919-834-8827, Telex: 9102400475 - LDGVMEBUS USA, ESYLNK: 62947014; Empl.: 7; *Sls. Mgr.:* Terry F. Blakeslee; *Dist. Mgr.:* Terry F. Blakeslee

Distributor

LOGI COMP ELECTRONICS, INC., 895 Mamaroneck Ave., Mamaroneck, NY 10543, Tel: 914-698-9332, 800-431-2625 ..... **696, 726, 753, 778**

LOGICOMP ELCTRNS., INC., See Pres-Air-Trol Corp.

LOGIC TECHNOLOGY, INC., 2452 Charleston Rd., Mtn. View, CA 94043, Tel: 415-967-1007; FSC No.: 51019; *Sls. Mgr.:* Mel Morgan

LOGIMETRICS, 121-03 Dupont St., Plainview, NY 11803, Tel: 516-349-1700, TWX: 510-221-1833; FSC No.: 33013; Empl.: 91; *Sls. Mgr.:* Eugene Blum

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Local Sales Offices & Reps
AL Huntsville, Remco 205-533-3763
AZ Scottsdale, Faser Technical Sls. 602-948-4404
CA Woodlands Hills, Craig Assoc. 818-887-2444
CT Hartford, Dynamic Sls. of New England 203-693-6567
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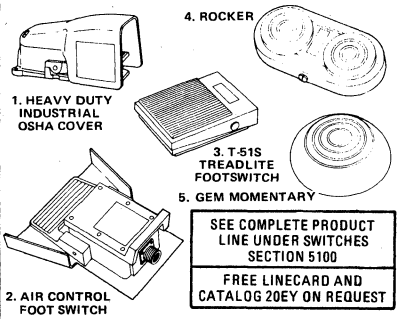

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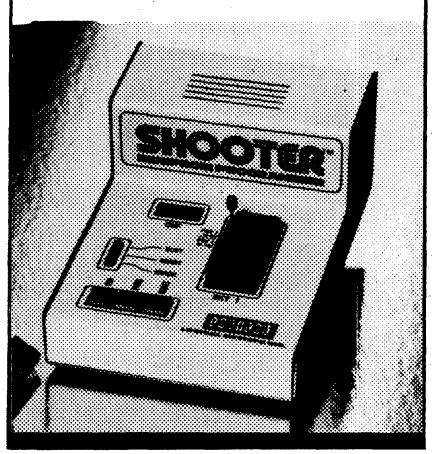

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CA Redwood City, Hickey Indl. Sls. 415-368-3849
CA Tarzana, High Voltage Sls. 818-881-9194
NH Milford, D. A. Crowley & Assocs. 603-673-7050
SC Mauldin, Carl Hart 803-288-2323
VA Danville, F.B.D. Sls. 804-791-1499
WA Seattle, ECCO Mktg. 206-364-0200
Can Ontario, D. J. Hyslop & Co. 416-648-0061

MALCO, DIV. OF MICRODOT, INC., See Microdot, Interconnect Sys. Div.

MALCO SYSTEMS, THORN EMI Malco, Inc., 74 Gwynns Mill Court, Owings Mills, MD 21117, Tel: 301-363-1600, Telex: TRT14005, ESYLNK: 62933125; *Sls. Mgr.:* Phil Carroll

MALLORY BATTERY, See Duracell Intl.

MALLORY CAPACITOR CO., Emhart Elctrl./Elctrn. Grp., 3029 E. Washington St., Indianapolis, IN 46201, Tel: 317-636-5353, Telex: 687-6027, TWX: 687-6015; FSC No.: 317-261-1581; Empl.: 1900; *Sls. Mgr.:* Bob Patrick, VP Mktg. & Sls.; *Dist. Mgr.:* Ray Donham, Dir. of Fld. Sls.

MALLORY COMPONENTS DIVISION, Emhart Elec./Elctrn. Grp., 222 Dixon Rd., Weston, Ont., Canada M9P 3S5, Tel: 416-244-4239, Telex: 064-74132; FSC No.: 37942;76055; *Sls. Mgr.:* Peter Balodis; *Dist. Mgr.:* Russ Jones

MALLORY TIMERS, Emhart Elec./Elctrn. Grp., 3029 E. Washington St, Indianapolis, IN 46201, Tel: 317-636-5353, TWX: 317-634-4214; Empl.: 2,000; *Sls. Mgr.:* Eric Eaton

MANAGE, INC., Fibre Optics Elctrns. Sys. Grp., P.O. Box 175, 40 Nichols Rd., Chicopee, MA 01014, Tel: 413-598-8204, 592-3834; Empl.: 30; *Sls. Mgr.:* David Menard

MANGER ELECTRIC COMPANY, INC., W. Henry St, Stamford, CT 06902, Tel: 203-348-7761, FAX: 203-324-5447; FSC No.: 20262; Empl.: 100; *Sls. Mgr.:* J. V. Judge

MANHATTAN ELECTRIC CABLE, 225 Passaic St, Passaic, NJ 07055, Tel: 201-779-8900, Telex: 137-387; Empl.: 125; *Sls. Mgr.:* Ed Harvey; *Dist. Mgr.:* Allan Marconi

MANHATTAN ELECTRIC CABLE CORPORATION, 1 Station Plaza, Rye, NY 10580, Tel: 914-967-8000, Telex: 137-387; Empl.: 125; *Sls. Mgr.:* Edward J. Harvey

Local Sales Offices & Reps

CA	Los Angeles, Manhattan Elec. Cable Corp.	800-423-4040
CA	San Francisco, Manhattan Elec. Cable Corp.	800-231-0152
GA	Atlanta, Gamble Sls.	404-696-7100
IL	Chicago, Bensdorf & Johnson	800-942-1147
MA	Boston, Manhattan Elec. Cable Corp.	800-255-1429
NJ	Bridgeton, Manhattan Elec. Cable Corp.	800-225-2293,800-257-7071
NJ	Harrison, Manhattan Elec. Cable Corp.	201-484-9111
OH	Cleveland, Dynamic Elec. Sls.	216-362-7900
TX	Houston, Manhattan Elec. Cable Corp.	800-231-3868,800-392-4948
TX	Irving, Huemmer-O.K. Inc.	800-442-7733

MANN, HENRY, INC., 3983 Mann Road, Huntingdon Valley, PA 19006, Tel: 215-355-7200, Telex: 6851160; FSC No.: 215-355-5134; Empl.: 105; *Sls. Mgr.:* Carol Mann; *Dist. Mgr.:* James P. Massi

MANTEX CORP., 1800 Metamora Rd., P.O. Box 15E, Oxford, MI 48051, Tel: 313-628-8200; Empl.: 100; *Sls. Mgr.:* John R. Santiago **B•1721**

MANUFACTURERS' COMPONENTS INC., 2260 W. 77 St, Hialeah, FL 33023, Tel: 305-556-4481, 800-367-0377, Telex: 514181, FAX: 305-556-5989; Empl.: 5; *Sls. Mgr.:* Jackie Barker **B•1649**

Local Sales Offices & Reps

AL	Adamsville, South Rep	205-674-3056
IL	Chicago, Kruse Corp.	312-745-9073
MA	Woburn, Del-Con Sls.	617-862-1115
MI	Southfield, Fred Gehrke	313-559-5363
MN	Minneapolis, R J Inc.	612-866-3662
MO	Macon, Klootwyck Agy.	816-385-2341
TX	Richardson, PSI	214-644-0483
WI	Montello, Kruse Corp.	414-297-2916

Local Distributors

MI	St. Clair Shores', SPEMCO	313-771-2700
TX	Dallas, Knight Sls.	214-341-8631

MARATHON BATTERY CO., P.O. Box 8233, Waco, TX 76714, Tel: 817-776-0650, TWX: 910-894-5203 MARATHON WAC

MARATHON FLITE-TRONICS COMPANY, A Marathon Power Technologies Co., 2525 N. Naomi St, Burbank, CA 91504, Tel: 818-841-3210, Telex: 69-1487; Empl.: 65

MARATHON SPECIAL PRODS., 13300 Van Camp Rd., Bowling Green, OH 43402, Tel: 419-352-8441, TWX: 810-499-2988; Empl.: 150; *Sls. Mgr.:* J. Campisi

MAR-CHAR CORPORATION, ATR Electronics, Inc., 167 East Fifth Street, Montello, WI 53949, Tel: 608-297-2106; Empl.: 10; *Sls. Mgr.:* Charles G. Nutter

MARCON AMERICA CORP., 310 Era Drive, Northbrook, IL 60062, Tel: 312-564-2820; FSC No.: 312 564-1150; Empl.: 11; *Sls. Mgr.:* Tony Olita; *Dist. Mgr.:* Helen A. Stubbs

MARCONI INSTRUMENTS, 3 Pearl Court, Allendale, NJ 07401, Tel: 201-934-9050, TWX: 710-991-9752; *Sls. Mgr.:* William E. Bean **D•1190, 1280-1284**

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns. Assocs.	205-881-5031
CA	Carson, Amasco-South	213-516-8561
CA	San Diego, Amasco-South	619-565-9676
CA	Sunnyvale, Amasco-North	408-773-8690
CA	Westminster, Marconi	714-895-7182
FL	Boca Raton, Beacon Electrns. Assocs.	305-392-3500
GA	Atlanta, Beacon Electrns. Assocs.	404-256-9640
IL	Chicago, K.W. Meyers	312-882-4808
IN	Indianapolis, K. Meyers	317-783-1030
MD	Cockeysville, Sci-Rep/Sci. Assocs.	301-321-1411
MA	Chelmsford, ICS Assocs.	617-256-3350
MN	Minneapolis, K.W. Meyers	612-920-7080
MO	Maryland Hgts., Comms. Equip. Specialties	314-291-7841
NJ	Elmwood Park, L & M Assocs.	201-797-0441
NM	Albuquerque, Scientific Dvcs.	505-883-3668
NY	New York City, L & M Assocs.	212-243-6155
NY	Whitney Point, Tae-Rep	607-692-3705
NC	Raleigh, Beacon Electrns. Assoc.	919-787-0330
OH	Chesterland, EQS Systems	216-729-2222
PA	Andalusia, L & M	215-245-6658
TX	Dallas, EES	214-644-8881
VA	Fairfax, Sci-Rep/Sci. Assocs.	703-385-0600
WA	Marysville, The Western Rep	206-653-6031

MAREL INSTR. CO., 907 South East 13th Pl, Cape Coral, FL 33904, Tel: 813-574-8788; Empl.: 14; *Sls. Mgr.:* T. Swift

MARINE ELECTRIC RPD, INC., See CML Macarr Div. Marine Electric RPD, Inc.

WILD OATS

MARKAT DIV., Wild Oats Corp., 206 Captains Dr., W. Babylon, NY 11702, Tel: 516-549-9272; Empl.: 228; *Sls. Mgr.:* K. L. Campbell; *Dist. Mgr.:* W. B. Heather

Local Sales Offices & Reps

AZ	Scottsdale, Southworth Sls.	602-945-3464
IN	Carmel, Hoosier Sls.	317-844-4535
NY	Plainview, Indl. Controls, Inc.	516-349-0231
OH	Centerville, Grimm & Co.	513-433-1717

MARKEL CORPORATION

MARKEL CORP., P.O. Box 752, Norristown, PA 19404, Tel: 215-272-8960, TWX: 510-660-0929; FSC No.: 03890; Empl.: 228; *Dist. Mgr.:* L. J. Clemente **C•1705**

Local Sales Offices & Reps

AL	Huntsville, Alpha Mktg.	205-533-0766
AZ	Phoenix, Shefler-Kahn	602-257-9015
AR	Hot Springs, MYA, Inc.	501-262-1365
CA	Anaheim, Indl. Dielectrics	714-776-7411
CA	L.A., Natl. Wire & Cable	213-225-5611
CA	Santa Clara, Penmark Sls.	408-980-1303
CO	Arvada, Arrowhead Sls.	303-423-5556
CT	Hamden, Datcom	203-288-7005
FL	Deerfield Bch., Jack Krutek & Assoc.	305-427-4202
IL	Schiller Pk., Wm. R. Bolles	312-678-7888
IN	Indianapolis, D. M. Assocs.	317-842-4424
KS	Overland Park, Mathews	913-642-9063
MD	Glen Burnie, F. Lott	301-744-4611
MA	Waltham, Datcom	617-891-4600
MI	Farmington, L. George & Assoc.	313-474-1505
MN	Edina, PWC	612-933-3393
MO	Florissant, O C B Sls.	314-837-3361
NJ	Colonia, Heft & Ficarra	201-381-5193
NM	Albuquerque, Shefler-Kahn	305-296-0749
NY	Lynbrook, Heft & Ficarra	516-599-3351
NY	Rochester, Apex	716-254-6050
OH	Chagrin Falls, Electrolock	216-543-5125
OR	Portland, James J. Backer	503-297-8744
PA	Flourtown, C. Newson	215-248-3377
SC	Greenville, Electrolock Inc.	803-297-9830
TN	Murfreesboro, Alpha Mktg.	615-896-6102
TX	Richardson, C.J. Garvey	214-234-3371
UT	Salt Lake City, Arrowhead Sls.	801-261-1661
WA	Seattle, James J. Backer	206-285-1300
WI	Mequon, Wm. R. Bolles	414-241-3320
EXP	Blue Bell, PA, Markel Corp., Exp. Dept.	215-825-5710
Can	Mississauga, Ont., Marflex-Barrett Ltd.	416-828-0220

Local Distributors

CA	Anaheim, Indl. Dielectrics West	714-776-5215
CA	Berkeley, Riggs/LaMoree	415-841-0601
CA	Los Angeles, Natl. Wire & Cable	213-225-5611
CA	Torrance, Insulation Supp.	213-320-9400
CO	Denver, Ward Elec. Supp.	303-333-3541
CT	Greenwich, R. H. Carlson	203-531-5500
CT	Hartford, Atlantic Switch	203-527-7705
FL	Davie, Arco Distrs.	305-473-2550
FL	Lakeland, Switch Controls	800-282-7619
GA	Atlanta, Accu-Tech Cable	404-455-6422
IL	Addison, J. J. Glenn	312-543-6100
IN	Indianapolis, Marian Rubber	317-638-6525
KS	Wichita, Midwest Aircraft Supp.	316-267-3318
LA	New Orleans, Long Elctrl. Supp.	504-524-8383
MD	Rockville, Read Plastics	301-881-7900
MI	St. Clair Shores, Spemco	313-771-2700
MO	St. Charles, Lectronix	314-946-6424
NJ	Mt. Laurel, Jersey Switch	609-778-8190
NY	Rochester, Simcona Elctrns.	716-328-3230
OH	Chagrin Falls, Electrolock	216-543-6626
SC	Greenville, Electrolock, Inc.	803-297-9830
TN	Chattanooga, Technitronics	615-875-5449
VA	Norfolk, Read Plastics	804-627-0111
VA	Roanoke, Key Resources	703-989-7925
Can	Mississauga, Ont., Marflex-Barrett Ltd.	416-828-0220

MARKEM CORP., 150 Congress St, Keene, NH 03431, Tel: 603-352-1130, TWX: 710-366-1800; FSC No.: 38360; Empl.: 1200; *Sls. Mgr.:* Carl Panza

MARKENRICH CORP., 14946-A Shoemaker Ave., Santa Fe Springs, CA 90670, Tel: 213-921-0250, Telex: 298727 MARK UR; Empl.: 8

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns.	205-881-5031
CA	North Hollywood, Crown Elctrns.	213-877-3550
FL	Sarasota, Camtech, Inc.	813-923-2804
GA	Atlanta, Beacon Elctrns.	404-256-9640
IL	Palatine, Somers-Reagan	312-991-1108
IA	Coralville, EPA, Inc.	319-354-5344
MA	Reading, Lincoln Tech. Sls.	617-944-9594
MN	Edina, EPA, Inc.	612-835-9022
NJ	Vincentown, Eastern Sci. Mktg.	609-268-0250
NY	Syracuse, I. A. Hotze Assocs.	315-479-6641
NC	Raleigh, Beacon Elctrns.	919-787-0330
OR	Beaverton, Core II Mktg.	503-649-0871
PA	Montgomeryville, Eastern Sci. Mktg.	215-368-4570
TX	Dallas, Beacon Elctrns.	214-437-1505
VA	Manassas, Eastern Sci. Mktg.	703-369-6124

MARK EYELET INC., AMP, Inc., 63 Wakelee Rd., Wolcott, CT 06716, Tel: 203-756-8847, Telex: 69-6191; Empl.: 60; *Sls. Mgr.:* Joe Patrick **C•1338**

marktech international, corp.

MARKTECH INTERNATIONAL CORP., 120 Broadway, Menands, NY 12204, Tel: 518-436-5865, Telex: 510-600-3322; Empl.: 14; *Sls. Mgr.:* John Duffie; *Dist. Mgr.:* Jayne Kendarian **B•1105**

Local Sales Offices & Reps

AL	Gurney, Rick Burns Assocs.	205-776-9481
AZ	Scottsdale, Harris & Croy	602-951-9121
CA	Maywood, Management Mktg. & Sls.	213-560-5584
CA	Mtn. View, Straube Assocs.	415-969-6060
CO	Englewood, Megatronix	303-799-3700
CT	Cheshire, Connecticut Applied Technlg.	203-272-6564
FL	Winter Springs, Sunland Assocs.	305-365-9533
GA	Marietta, Rick Burns Assocs.	404-951-1181
IL	Elk Grove Vl., John G. Twist	312-593-0200
KS	Olathe, Tech. Sls. Assocs.	913-829-2800
MA	Westboro, Bay Colony Reps., Inc.	617-870-1930
MI	Plymouth, Leading Edge Sls. Corp.	313-420-3344
MN	Golden Valley, Ambassador Indl. Mkg.	612-542-8437
MO	St. Louis, Tech. Sls. Assocs.	314-521-2044
NJ	Hewitt, CRG Grp., Inc.	201-728-3377
NJ	Pennsauken, Vantage Sls. Co.	609-663-6660
NY	Syracuse, Canavan-Scanlon	315-437-1271
NC	Raleigh, Rick Burns Assocs.	919-876-2224
OH	maple Hgts., Versatron	216-581-0090
OR	Portland, Comp. Technlg.	503-292-1578
TX	Richardson, Marketronics Inc.	214-644-1354
UT	Salt Lake City, Charles Fields & Assocs.	801-531-6177
WI	Brookfield, The John G. Twist Co.	414-782-2670
Can	Markham, Avotronics	416-475-2024

Local Distributors

AZ	Phoenix, Cetex/Future	602-272-7951
CA	Costa Mesa, J & J Elctrns.	714-751-7994
CA	San Diego, Cetex/Future	619-278-5020
CA	San Jose, All American Semiconductor	408-287-0190
CA	San Jose, Future Elctrns.	408-435-9100

CA Sunnyvale, Target Elctrns. 408-734-5611
CA Torrance, All American Semiconductor 213-320-0240
CO Westminster, Future Elctrns. 303-650-0123
CT Danbury, Pilgrim Elctrns. 203-792-7274
FL Clearwater, Future Elctrns. 813-578-2770
FL Miami, All American Semiconductor ... 305-621-8282
GA Norcross, Future Elctrns. 404-441-7676
IL Schaumberg, Future Elctrns. 312-882-1255
MD Columbia, Future Elctrns. 301-995-1222
MD Rockville, All American Semiconductor 301-251-1205
MA Westborough, Future Elctrns. 617-366-2400
MN Bloomington, All American Semiconductor 612-884-2220
NJ Moorestown, Marlac Elctrns. 609-234-4200
NY Ronkonkoma, All American Semiconductor 301-251-1205
NY Syracuse, Future Elctrns. 315-451-2371
OR Beaverton, Future Elctrns. 503-645-9454
PA Philadelphia, Future Elctrns. 609-778-7600
UT Salt Lake City, Future Elctrns. 801-972-8489
WA Bellevue, Future Elctrns. 206-881-8199
Can Pointe Claire, Future Elctrns. 514-694-7710

MARLEE SWITCH CO., 933-D N. Central Ave., Upland, CA 91786, Tel: 714-982-8988; *Sls. Mgr.:* LeRoy Tichy

MARLOW INDUSTRIES, 10451 Vista Park Rd., Dallas, TX 75238, Tel: 214-340-4900, TWX: 910-860-5161; FSC No.: 55686; Empl.: 110; *Sls. Mgr.:* Tom E. Quinn; *Dist. Mgr.:* David Marlow ..... **C•1670-1671**

MARQUARDT SWITCHES INC., Route 20 East, P.O. Box 465 EEM, Cazenovia, NY 13035, Tel: 315-655-8050, Telex: 703-287-40; FSC No.: 315-655-8042; *Sls. Mgr.:* J. J. Kennedy, VP Sls.; *Dist. Mgr.:* R. A. Philipchik, VP Mktg. ..... **B•1651**

Local Sales Offices & Reps

AL Huntsville, Electro Sls. Co. 205-830-2715
CA Los Angeles, Universal Components, Inc. 213-641-4255
CA Santa Clara, M-2 Marketing Group 408-986-0676
CO Lakewood, Cristee Meade Co. 303-232-0287
FL Orlando, Stettner Elctrns., Inc. 305-291-7756
GA Atlanta, Electro Sls. Co. 404-394-1122
IL Rosemont, Stettner Central, Inc. 312-671-4208
IN Fort Wayne, J & B Engrg. 219-483-2813
KS Shawnee Mission, M-S-B Assocs. 913-432-2131
MI Grand Blanc, Inter-Comm 313-695-0665
MN St. Paul, Arkco Sls Co. 612-777-7454
MO St. Louis, M-S-B Assocs. 314-946-5577
NH Nashua, Bell Controls, Inc. 603-882-6984
NJ Freehold, Ballou, Inc. 201-431-0514
NJ Ridgewood, Ballou, Inc. 201-444-6990
NY Cazenovia, S.T./Woolard Co. 315-655-8145
NY Syosset, Ballou, Inc. 516-681-3068
NY Whitestone, Ballou, Inc. 212-352-9233
OK Tulsa, Rem-Air Comps. Corp. 918-742-2559
PA Phoenixville, Gil-Tronics, Inc. 215-933-8525
SC Easley, R-A Sls. Co. 803-859-1859
TN Chattanooga, Electro Sls. 615-267-4260
TX Dallas, Rem-Air Comps. 214-234-1069
CO Lakewood, Cristee Meade Co. 303-232-0287
WA Kirkland, Manon Engrg. 206-827-7449
WI Elm Grove, Key Entpr., Inc. 414-784-3390

Local Distributors

CA Covina, Selecta Switch 213-967-4123
CA Gardena, California Switch & Signal .. 213-770-2330
CA Sunnyvale, Sierra West 408-747-1188
CA Van Nuys, Pacific Switch Controls, Inc. 213-873-4802
CO Denver, CSID 303-292-9564
CT Hartford, Atlantic Switch Controls, Inc. 203-527-7705
FL Lakewood, Switch Controls 813-644-7564
FL West Palm Beach, Nurmi Electrns. 305-686-8553
IL Itasca, Voyager Elctrns. 312-773-4900
IL Rosemont, Central Comps. 312-671-4208
KS Wichita, Radio, Inc 316-264-2798
MA Wilmington, J-V Elctrns. 617-273-4300
MI Grand Rapids, S.F. Elctrns. 616-459-0216
MI St.Claire Shores, Spemco 313-771-2700
MN Minneapolis, Control Design Supp. 612-721-1628
MO Maryland Heights, L-Comp 314-291-6200
NJ Garfield, B & R Electronics 201-470-0700
NJ Mt. Laurel, Jersey Switch 609-778-8190
NJ Warwick, Cal-Greg Comp. Inc. 401-738-6170
NC Gastonia, J.M.T. Electronics 704-867-4401
OH Columbus, Ohioswitch, Inc. 614-885-0319
OK Oklahoma City, Radio, Inc. 405-789-0741
OK Tulsa, Radio, Inc. 918-587-9123
OR Beaverton, Murphy Electrns,Inc. 503-642-2001
TX Austin, Southwest Electrns. 512-837-8971
TX Dallas, Texas Switch, Inc. 214-357-1768
TX Richardson, Southwest Electrns. 214-234-3050
TX Stafford, Southwest Electrns. 713-240-4000
WA Redmond, Murphy Electrns. 206-881-1234

MARSH PRODUCTS, INC., 336 McKee St., Batavia, IL 60510, Tel: 312-879-8008; *Sls. Mgr.:* Mel Ruskin

MARTEL ELECTRONICS, 373 Main St., Salem, NH 03079, Tel: 603-893-0886, 800-821-0023, Telex: 95-1232; *Sls. Mgr.:* David DeVries

MARTIN SOUND PRODS., 28 Alpha Park, Cleveland, OH 44143-2297, Tel: 216-442-2286; Empl.: 2; *Sls. Mgr.:* DeWayne (Bud) Martin; *Dist. Mgr.:* DeWayne (Bud) Martin

MARWAY PRODS. INC., 311 N. Clara St., Santa Ana, CA 92703, Tel: 714-973-1800; FSC No.: 60955; *Sls. Mgr.:* Wayne Whitney

MASTECH, INC., Lorlin Test Systems, Precision Rd., Danbury, CT 06810, Tel: 203-744-0096, Telex: 7104565030; Empl.: 48; *Sls. Mgr.:* Ruthe Ploskunyak

MASTER APPLIANCE CORP., 2420 18th St., Box 68, Racine, WI 53403, Tel: 414-633-7791, Telex: 269-505; FSC No.: 83284; Empl.: 50; *Sls. Mgr.:* G. E. Mertins; *Dist. Mgr.:* G. E. Mertins

MASTER BOND, 154 Hobart St., Hackensack, NJ 07601, Tel: 201-343-8983; FSC No.: 59504; Empl.: 16; *Sls. Mgr.:* James Brenner

MASTER ELECTRONIC CONTROLS, P.O. Box 25905, Los Angeles, CA 90025, Tel: 213-452-1336, Telex: 182041, FAX: 213-399-8600; Empl.: 69; *Sls. Mgr.:* I. Nizam; *Dist. Mgr.:* Jamil Nizam

MASTERITE CORPORATION, 2841 Lomita Blvd., Torrance, CA 90505, Tel: 213-775-3471, TWX: 910-347-6237; FSC No.: 05041; Empl.: 680; *Sls. Mgr.:* C.J. Huebert; *Dist. Mgr.:* G. Peterson

MATEC INSTRUMENTS, INC., 75 South St., Hopkinton, MA 01748, Tel: 617-435-9039, Telex: 948332, FAX: 617-435-5289; Empl.: 55; *Sls. Mgr.:* Jerry Zschau

MATERIALS RESEARCH CORPORATION, Route 303, Orangeburg, NY 10962, Tel: 914-359-4200, Telex: 221862 MRC UR; Empl.: 560; *Sls. Mgr.:* Mel Lipton

Local Sales Offices & Reps

AZ Scottsdale 602-949-8311
CA Santa Clara 408-748-0902
MO Bridgeton 314-739-3326
NY Orangeburg, Materials Research Corp. 914-359-6700
TX Dallas 214-235-9008

MATH ASSOCS., 2200 Shames Dr., Westbury, NY 11590, Tel: 516-334-6800, Telex: 238-667 RAPID UR; FSC No.: 60373; Empl.: 37; *Sls. Mgr.:* Robert DeLia

MATHEMATICAL SYSTEMS DESIGN, INC., 11835 W. Olympic Blvd., Suite 745, Los Angeles, CA 90064, Tel: 213-479-7180; *Sls. Mgr.:* Lorr Kramer

MATRA DESIGN SEMICONDUCTOR, 2840 San Tomas Expressway, Santa Clara, CA 95051, Tel: 408-986-9000, Telex: 299-656; *Sls. Mgr.:* David T. Fletcher

MATRIX CORP., 2260 Distributors Dr., Indianapolis, IN 46241, Tel: 317-248-2036; Empl.: 10 ..... **D•1167**

MATRIX CORP., 1203 New Hope Rd., Raleigh, NC 27610, Tel: 919-833-2000; Empl.: 45; *Sls. Mgr.:* Ray Alderman

MATRIX SYSTEMS CORP., 5177 N. Douglas Fir Rd., Calabasas, CA 91302, Tel: 818-992-6776, TWX: 910-494-4975, FAX: 818-992-8521; Empl.: 60; *Sls. Mgr.:* Randy Sue Rabideau ..... **A•1788**

Local Sales Offices & Reps

AL Huntsville, Reynolds Assoc., Inc. 305-259-7000
AZ Scottsdale, Faser Techn. Sls. 602-948-4404
CA Milpitas, IFM Inc. 408-945-5920
CA N. Hollywood, Crown Elctrns. 213-877-3550
CO Broomfield, Scientific Dvcs. 303-469-5145
CT Marion, Polytek Assocs. 203-621-4542
FL Melbourne, Reynolds Assoc., Inc. 305-259-7000
FL Orlando/Hollywood/Sarasota, Reynolds Assocs. 305-259-7000
GA Lilburn, Reynolds Assoc., Inc. 305-259-7000
IL Chicago, Comtel Midwest 312-539-4838
IN Indianapolis, Comtel Midwest 317-253-1681
IA Cedar Rapids, Comtel Midwest 319-377-9434
KS Shawnee Mission, Comtel Midwest ... 913-268-0762
MA Ashland, PolyTek Assocs. 617-881-4741
MA Falmouth Heights, RJC Assocs. 617-540-8832
MI Southfield, Comtel-Instr. 313-358-2505
MN Wayzata, Comtel Midwest 612-476-1551
MO St. Louis, Comtel Midwest 314-991-5363
NY Mamaroneck, Bassin Tech. Sls. Co. ... 914-698-9358
NC Raleigh, Reynolds Assoc. 305-259-7000
OH Cleveland, Comtel Instr. 216-442-8080
OH Dayton, Comtel Instr. 513-426-5310
OH Hillard, Comtel Instr. 614-876-8305
OR Portland, Topp Engrg. Sls. 503-244-7265
PA Pittsburgh, Comtel Instr. 412-922-5720
TX Carrollton, Seaton Corp. 214-380-0414
UT Sandy, Scientific Dvcs. 801-562-0410
VA Fairfax, Schibley Assocs. 703-591-3008
WA Bellevue, Topp Engrg. Sls. 206-747-5400
WI New Berlin, Comtel Midwest 414-544-6042

MATROX ELECTRONIC SYSTEMS, 1055 St. Regis Blvd., Dorval, QU, Canada H9P 2T4, Tel: 514-685-2630, Telex: 05-822798; Empl.: 350; *Sls. Mgr.:* Ed Dwyer

MATSUO ELECTRONICS, 2134 Main Street, Suite 200, Huntington Beach, CA 92648, Tel: 714-969-2491, TWX: 910-596-1828; FSC No.: (714) 960-6492; Empl.: 854; *Sls. Mgr.:* Emmalee Shaw ..... **A•1118-1123**

Local Sales Offices & Reps

AZ Phoenix, Elmark Elctrns. 602-269-6241
CA Los Angeles, Angle Assocs. 213-839-7490
CA Mission Viejo, Angle Assocs. 714-582-8858
CA Redwood City, James S. Heaton Co. .. 415-367-7158
FL Plantation, Gallagher 305-473-2101
ID Boise, N. R. Schultz 208-377-8686
IL Chicago, Berndt Assocs. 312-283-0713
IN Indianapolis, Needler 317-255-8056
MA Randolph, Hatch Assocs. 617-963-3306
MI Grand Rapids, DEM Elctrns. 616-361-5414
MI Warren, DEM Elctrn. Sls. 313-575-9444
MN St. Paul, Proud Inds. 612-646-9428
NJ Medford, Champion Elctrn. Sls. 609-983-0932
NM Albuquerque, FP Sls. 505-345-5553
NY Clifton Pk., Net Sls. 518-371-6864
NY Fairport, Net Sls. 716-223-1030
NY Seaford, Henry Abbott & Assocs. 516-781-5256
NY Webster, Net Sls. 716-467-4538
NC Raleigh, Beacon 919-787-0330
OK Tulsa, Beacon 918-252-5181
OR Beaverton, N. R. Schultz 503-643-1644
TX Dallas, Beacon 214-437-1505
WA Bellevue, N. R. Schultz 206-454-0300
WI Milwaukee, Berndt Assocs. 414-545-8400
Can London, Ont., Bach-Simpson 519-452-3200

Local Distributors

AZ Phoenix, Camco 602-269-6241
CA Garden Grove, National Chip 714-892-7749
CA San Diego, Projections 619-268-2929
CA San Jose, Projections 408-748-9280
CA Santa Maria, Garrett Instrs. 805-922-0594
CA Tustin, Projection Unltd. 714-544-2700
MD Gaithersburg, Axis Elctrns.

MA	Billerica, A. W. Mayer Co.	617-229-2255
MA	Billerica, Baldwin Comps.	617-667-6710
MA	Wilmington, Aved Elctrns.	617-657-6310
MI	Detroit, SRA	313-965-8550
NJ	Fairfield, C.H.P.S., Inc.	201-882-0997
NJ	Kenilworth, Ventronics	201-272-9262
NY	Ronkonkoma, Baldwin Comps.	516-588-5700
NY	Ronkonkoma, Prime Comps.	516-737-1730
OH	Cleveland, SRA	216-442-2000
OH	Dayton, SRA	513-228-5255
PA	Norristown, Century Elctrn. Comps.	215-631-5400
TX	Dallas, C & W	817-831-0395
TX	El Paso, ERA Elctrns.	915-855-3600
Can	N. London, CM Peterson	519-434-3204
Can	Willowdale, Ont., Electro Sonic	416-494-1666

MAUELL CORP., Cabin Hollow Rd., RD No. 1, P.O. Box 339, Dillsburg, PA 17019, Tel: 717-432-8686, Telex: 466003, FAX: 717-437-8688; Empl.: 25; *Sls. Mgr.:* Haubold Vom Berg; *Dist. Mgr.:* Haubold Vom Berg

MAUREY INSTRUMENT CORP.

MAUREY INSTRUMENT CORP., 4555 W. 60th St., Chicago, IL 60629, Tel: 312-581-4555; FSC No.: 03942; Empl.: 50; *Sls. Mgr.:* E. Maurey; *Dist. Mgr.:* Louis Derdzinski ..... **A•2098-2103**

Local Sales Offices & Reps

CT	Killingworth, Gallagher Assocs.	203-663-2338
FL	Largo, L-P Sls.	813-531-2664
FL	Orlando, ASI	305-851-7929
FL	Plantation, Innovative Mktg.	305-583-8895
MA	Framingham, Gallagher Assocs.	617-626-2346
MI	Grand Blanc, Inter-Comm	313-595-0665
WA	Vancouver, Sls. & Engrg. Assoc.	206-573-5161

Local Distributors

CA	Garden Grove, Allied Elctrns.	714-554-0731
CA	Santa Clara, Allied Elctrns.	408-727-1690
CO	Wheatridge, Allied Elctrns.	303-425-7144
CT	Ridgefield, PIC	203-451-1533
FL	Margate, Allied Elctrns.	305-973-3070

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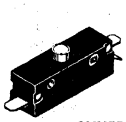
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MO	St. Louis, Allied Elctrns.	314-878-1229
NY	Mineola, Allied Elctrns.	516-248-2360
NC	Raleigh, Allied Elctrns.	919-821-0415
OH	Akron, Stotts-Friedman	216-253-7000
OH	Cincinnati, Stotts-Friedman	513-574-7701
OH	Dayton, Stotts-Friedman	513-298-5555
OH	Willoughby, Allied Elctrns.	216-951-0908
OK	Tulsa, Allied Elctrns.	918-663-7630
PA	Bala Cynwyd, Allied Elctrns.	215-267-6940
TN	Knoxville, Shields Elctrns.	615-588-2421
TX	Ft. Worth, Allied Elctrns.	817-336-5401
TX	Houston, Allied Elctrns.	713-932-7321
VA	Alexandria, Allied Elctrns.	703-836-5002
WA	Seattle, Allied Elctrns.	206-767-5772

MAURY MICROWAVE CORP., 8610 Helms Ave., Cucamonga, CA 91730, Tel: 714-987-4715, TWX: 910-581-3408; FSC No.: 13047; Empl.: 104; *Sls. Mgr.:* M. A. Maury, Jr.

MAXI-SWITCH CO., Sub. of EECO, 9697 East River Rd., Minneapolis, MN 55433, Tel: 612-755-7660, TWX: 910-576-2690; Empl.: 160; *Dist. Mgr.:* E. C. Helme, Jr.

MAXON PRECISION MOTORS, INC., 838 Mitten Rd., Burlingame, CA 94010, Tel: 415-697-9614; Empl.: 270; *Sls. Mgr.:* Edward Graham ..... **B•1195**

MAXTOR CORPORATION, 150 River Oaks Pkwy., San Jose, CA 95134, Tel: 408-942-1700, Telex: 171074, FAX: 408-433-0457; *Sls. Mgr.:* Jim Daly; *Dist. Mgr.:* Jerry Ellstrom

MAXWELL ELECTRONICS, P.O. Box 12033, Research Triangle Park, NC 27609, Tel: 919-846-1633; Empl.: 8; *Sls. Mgr.:* Joe Harrison

MAXWELL LABORATORIES, 8888 Balboa Avenue, San Diego, CA 92123-1506, Tel: 619-279-5100, TWX: 910-335-2063, FAX: 619-576-7534; Empl.: 600; *Sls. Mgr.:* William Fox (Prods.)

MCCOY ELECTRONICS CO., 100 Watts St., P.O. Box B, Mt. Holly Springs, PA 17065, Tel: 717-486-3411, TWX: 510-650-3548, FAX: 717-486-5920; Empl.: 450 ..... **A•1404-1415**

Local Sales Offices & Reps

AL	Huntsville, Elctrn. Sls., Inc.	205-533-1735
AZ	Tempe, Sunwest Mktg.	602-893-7677
CA	Mountain View, Thorson West	415-964-9300
CA	Sherman Oaks, Wes-K	818-990-1302
CO	Littleton, Advanced Tech Mktg.	303-798-4200
CT	Hartford, JMG, Inc.	203-278-9709
FL	Oviedo, Conley & Assocs.	305-365-3283
GA	Norcross, Elctrn. Sls., Inc.	404-448-6554
IL	Glendale Heights, Beta Technlg. Sls., Inc.	312-790-9886
IN	Kokomo, Schillinger Assoc., Inc.	317-452-4057
IA	Cedar Rapids, Lorenz Sls.	319-377-4666
MD	Baltimore, Burgin-Kreh Assocs.	301-265-8500
MA	Norwood, JMG, Inc.	617-762-5333
MI	Southfield, Fred H. Gehrke & Assoc.	313-559-5363
MN	Minneapolis, Dunlop Consits.	612-544-1070
KS	Merriam, Lorenz	913-384-6556
MO	University City, Lorenz Sls., Inc.	314-997-4558
NJ	Medford Lake, Gray Assocs.	609-953-9109
NM	Albuquerque, Sunwest Mktg.	505-898-6471
NY	Binghamton, Foster & Wager, Inc.	607-724-7093
NY	New Rochelle, Ascor Elctrns.	914-235-8838
NY	Rochester, Foster & Wager, Inc.	716-385-7744
NC	Cary, Elctrn. Sls., Inc.	919-467-8486
OH	Cincinnati, Stegman Blaine Mktg.	513-729-1969
OR	Beaverton, Evergreen Mktg. Grp.	503-643-8020
WA	Seattle, Evergreen Mktg. Grp.	206-633-3160
TX	Austin, R. F. Kimball Co.	512-443-5284
TX	Richardson, R. F. Kimball Co.	214-231-3447
VA	Lynchburg, Burgin-Kreh Assocs.	804-239-2626
WI	Milwaukee, Beta Technlg. Sls., Inc.	414-543-6609
EXP	NJ, Oradell, Sylvan Ginsbury Ltd.	201-261-3200

MCE SEMICONDUCTOR, INC., 1111 Fairfield Dr., West Palm Beach, FL 33407, Tel: 305-845-2837, Telex: 441405 (MCE VI), FAX: 305-863-8275; Empl.: 45; *Sls. Mgr.:* Richard H. McCargar

MCFADDEN SYSTEMS, INC., 11835 E. Smith Ave., Santa Fe Springs, CA 90670, Tel: 213-948-4414, Telex: 677161; FSC No.: 25750; Empl.: 49

MCG

MCG ELCTRNS., 12 Burt Dr., Deer Park, NY 11729, Tel: 516-586-5125, Telex: 645518; FSC No.: 29779; Empl.: 45; *Sls. Mgr.:* Carolyn Schultz ..... **B•1232, 1249-1272**

MCGILL MANUFACTURING CO., INC., 909 North Lafayette Street, Valparaiso, IN 46383, Tel: 219-465-2200, TWX: 910-690-4982; Empl.: 295; *Sls. Mgr.:* Dave Rickards/Tom Morris/Tom Frary ..... **B•1652-1654**

Local Sales Offices & Reps

AL	Decatur, Tenn Tech Sls.	205-350-0630
AR	Hot Springs, Automation Supp., Inc.	501-767-5444
CA	Arcadia, HMC Inc.	818-447-0958
CA	Orinda, Mark Barrett	415-930-3496
FL	Tampa, Monte Constantine	813-985-4376
GA	Marietta, Tenn Tech Sls.	404-428-9594
IN	Indianapolis, Michael Airey	317-253-8689
MD	Baltimore, R. A. Wafer Assocs.	301-744-1133
MN	Maple Grove, Mark Waggoner	612-924-3440
MO	Ellisville, Larco Sls.	314-394-7141
NH	Westmoreland, Howard Sls. Corp.	603-399-4345
NY	Great Neck, Tylinski Assocs.	516-466-9070
NY	Rochester, Michael Bowles	716-325-3485
NC	Raleigh, Tenn Tech Sls., Inc.	919-779-3309
OR	Portland, SPS Elctrns.	503-297-6919
PA	Levittown, Paul McCool	215-359-3708
TX	Dallas, Raley Sls. Co.	214-368-1683
UT	Salt Lake City, Sage Sls.	801-467-5451
WA	Redmond, SPS Elctrns.	206-323-4140
WI	Kenosha, Wally Coats	312-299-2354
Can	Mississauga, Ont., Marr Elec. Ltd.	416-277-9481

Local Distributors

CA	Fresno, Jack C. Arbuckle Co.	209-264-6554
CA	Gardena, Calif. Switch & Signal	213-538-9830
CA	Los Angeles, Electric Switches, Inc.	213-660-1310
CA	Palo Alto, Elctrl. Materials, Inc.	415-494-0400
CA	Sacramento, Sacramento Elctrns.	916-441-4821
CA	San Jose, Cypress Elctrns.	408-945-8400
CA	Tustin, Western Switches & Controls	714-259-8144
CO	Englewood, Indl. Elctrns.	303-694-9444
CT	Shelton, Century Elctrn. Supp.	203-736-2684
FL	Miami, Elctrn. Equip. Co.	305-871-3500
FL	Pompano Beach, Peerless Radio Supp.	305-973-4141
GA	Augusta, Ireland Elec. Supp.	404-798-0454
IL	Addison, Lcomp, Inc.	312-628-1400
IL	Chicago, NEP Elctrns.	312-625-8400
IL	Chicago, Otto Frankenbush Co.	312-647-0755
IL	Peoria, Klaus Radio, Inc.	309-691-4840
IL	Villa Park, Melvin Elctrns.	312-279-5015
IL	Wheeling, Hawk Elctrns.	312-459-4030
IN	Ft. Wayne, Graham Elctrns.	219-423-3422
IN	Indianapolis, Farrell-Argast Elec.	317-546-4041
IN	Indianapolis, Graham Elctrns.	317-634-8202
KS	Wichita, Lcomp, Inc.	316-265-5100
KY	Louisville, E & H Elec. Supp.	502-587-0991
LA	Shreveport, Indl. Elctrn. Supp.	318-222-9459
MD	Kensington, Marine Air Supp. Co.	301-949-9560
MA	Boston, George H. Wahn Co.	617-782-8500
MA	Lynn, Land Elctrns.	617-592-2220
MA	Needham, Cronin Elctrns.	617-449-5000
MI	Grand Rapids, T & W Elctrns.	616-241-3645
MI	St. Clair Shores, SPEMCO Switches	313-771-2700
MN	Minneapolis, Bergquist Co.	612-835-2322
MN	Minneapolis, Sterling Elec. Co.	612-332-4571
MN	St. Paul, Gopher Elctrns.	612-483-3322
MO	Kansas City, Lcomp, Inc.	816-221-2400
MO	Maryland Heights, Lcomp, Inc.	314-291-6200
MO	St. Louis, Olive Elctrns.	314-426-4500
NJ	Oakland, Relay Specialties, Inc.	201-337-1000
NJ	Prospect Park, Kappe Elctrl. Dist.	201-790-1999
NY	Hempstead, Elctrn. Equip. Co.	516-538-5510
NY	Rochester, Simcona Elctrns.	716-328-3230
NC	Charlotte, Southeastern Elctrns.	704-523-1122
NC	Raleigh, Southeastern Elctrns.	919-828-2311
OH	Cincinnati, Graham Elctrns.	513-772-1661
OH	Cincinnati, Graybar Elec. Co.	513-621-0600
OH	Lima, L R P Elctrns.	419-228-1220
OH	Middleburg Hgts., Selectronics Corp.	216-243-9700
OR	Portland, Dunn Elctrns.	503-285-0214
PA	Erie, Seaway Elctrns.	814-455-1304
PA	Norristown, Century Elctrns.	215-631-5400
PA	Philadelphia, Lindley Elec. Supp.	215-329-7005
SC	Charleston, Wholesale Ind. Elctrns.	803-722-2634
TN	Chattanooga, Techni-Tronics, Inc.	615-875-5449
TX	Dallas, Dallas Meter-Tek	214-349-6044
WA	Seattle, Dunn Elctrns.	206-382-0379
WA	Spokane, Dunn Elctrns.	509-624-7393
WI	Milwaukee, Marsh Elctrns.	414-475-6000

MCGUIRK ELECTRONICS CO. INC., 212 So. Main St, P. O. Box 853, Middleton, MA 01949, Tel: 617-933-3500; FSC No.: 55902; Empl.: 10; *Sls. Mgr.:* L. McCarthy

MCI TRANSFORMER CORPORATION, 411 Manhattan Ave., Babylon, NY 11704, Tel: 516-587-0510; Empl.: 50; *Sls. Mgr.:* Timothy J. Williams ..... **A•2276-2291**

MCL, INC., 501 S. Woodcreek Rd., Bolingbrook, IL 60439, Tel: 312-759-9500, Telex: 910-683-1899; FSC No.: 16469; Empl.: 110; *Sls. Mgr.:* Frank Morgan ..... **D•1412-1413**

Local Sales Offices & Reps

GA	Riverdale, MCL, Inc./Bob Lundy	404-996-6632
MA	Reading, Geder Assocs.	617-944-3105

MCLEAN ENGINEERING, Zero Corp., 70 Washington Rd., Princeton Junction, NJ 08550, Tel: 609-799-0100, TWX: 510-685-2543; FSC No.: 03522; Empl.: 118; *Sls. Mgr.:* George N. Vogel; *Dist. Mgr.:* Craig A. Reed ..... **C•1672-1673**

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns.	205-881-5031
AZ	Fountain Hills, Halbar Assocs.	602-837-2464
CA	Glendale, Halbar Assocs.	818-246-8263
CA	San Mateo, Halbar Assocs.	415-349-4700
CO	Englewood, Component Tech.	303-758-5750
CT	Canton, Motoreps, Inc.	800-243-1978
FL	Ft. Lauderdale, R.I. Smith Assocs.	305-772-5100
GA	Atlanta, Beacon Elctrns.	404-256-9640
IL	Elmhurst, Scott Assocs.	312-279-5681
LA	Gretna, M. F. Sls.	504-361-4343
MD	Hunt Valley, Marktron	301-628-1111
MD	Rockville, Marktron	301-251-8990
MA	Needham, Motoreps	617-449-3252
MI	Spring Lake, Jim Finnegan	616-846-4980
NY	Syracuse, Scott/Allan	315-475-2455
MN	Minneapolis, Scott Elctrn. Sls.	612-929-2985
MO	Grandview, Harris-Hanson	816-763-6200
MO	St. Louis, Harris-Hanson	314-432-3611
NJ	Springfield, Sylvester Assocs.	201-376-3324
NM	Albuquerque, Fry-Gates	505-262-1525
OH	Cleveland, Jim Finnegan	216-398-6300
OH	Dayton, Jim Finnegan	513-890-8322
OR	Beaverton, Halbar Assocs.	503-226-0451
PA	Huntingdon Valley, Inacker Sls.	215-947-5660
PA	Pittsburgh, Jim Finnegan	412-823-5400
TX	Dallas, Milco Mktg.	214-783-2716
TX	Houston, Milco Mktg.	713-946-2841
WA	Redmond, Halbar Assocs.	206-882-0990
Can	Guelph, Ont., Hammond Mfg. Co.	519-822-2960

Local Distributors

FL	Ft. Lauderdale, Component Distrs.	305-971-4950
GA	Norcross, Component Distrs.	404-441-3320
MI	Ann Arbor, Wedemeyer Elctrn. Supp. Co.	313-665-8611
NC	Raleigh, Component Distrs.	919-834-9465
TX	Dallas, Component Distrs.	214-644-0373
Can	Guelph, Ontario, Hammond Mfg. Co.	519-822-2960

McLEAN MIDWEST
SUBSIDIARY OF ZERO CORPORATION

MCLEAN MIDWEST, 4000 83rd Ave. N., Brooklyn Pk., MN 55443, Tel: 612-561-9400, Telex: 29-0883, TWX: 910-576-2951, FAX: 612-569-0533; *Sls. Mgr.:* J. Buyse ..... **C•1674-1675**

3M ASSOCIATED ELECTRONICS, 9450 Pineneedle Dr., P.O. Box 270, Mentor, OH 44060, Tel: 216-354-9239, TWX: 810-421-0017; FSC No.: 30146; *Sls. Mgr.:* Phillip F. Fram ..... **C•1183-1187, 1738**

Local Sales Offices & Reps

Chabin Transmission Line Applications;Board Mount Interconnect Comps.;Interconnect Assembly Sys.

CA	Foster City, 3M;San Francisco Branch	415-571-6700
CA	Los Angeles, 3M;Los Angeles Branch	213-726-6423
MA	Needham Hgts., 3M;Boston Branch	617-449-0300
MN	Eagan, 3M;Twin Cities Branch	612-736-9378
NJ	Pennsauken, 3M;Philadelphia Branch	609-662-7077
TX	Dallas, 3M;Dallas Branch	214-324-8100

Electronic Specialty Products

AZ	Mesa, Bidwell Sls. Co. of Arizona	602-265-2029
CA	Los Altos, Ewing-Foley, Inc.	415-941-4525
CA	Newhall, Lessing/Assocs.	805-254-0274
CO	Wheatridge, Cluff & Assocs.	303-425-6604
FL	Pompano Bch., Hutto Hawkins Assocs.	305-979-0330
GA	Norcross, Hollingsworth & Still Inc.	404-447-1700
IL	Lombard, RMP/McBride Corp.	312-932-9090
IN	Indianapolis, M & L Elctrn. Sls., Inc.	317-359-4742
MD	Lisbon, Samuel K. MacDonald Inc.	301-442-1590
MA	Norwood, The Macinnis Co.	617-762-8090
MI	Warren, Burcaw Co.	313-573-4605
MN	Edina, Restronics	612-941-9135
MO	St. Louis, Kathrinus Kelly Baumhauer	314-647-2400
NY	New Hyde Pk., Harris & Aldrich Sls., Inc.	516-488-2622
NY	Rochester, Lamb Comps.	716-323-1250
OH	Dayton, Shamrock Elctrn. Sls.	513-258-1227
PA	Philadelphia, Samuel K. MacDonald Inc.	215-545-1205
TX	Dallas, Elcom Mktg., Inc.	214-241-2166
WA	Seattle, Don Dussault & Assocs., Inc.	206-281-4025
WI	Colgate, Rep 1 & Assocs.	414-628-4016

3M

3M-ELECTRONIC PRODUCTS DIVISION, Bldg. 502, P.O. Box 2963, Austin, TX 78769-2963, Tel: 512-834-1800; *Sls. Mgr.:* Bernie Graham ..... **C•1339-1342**

Local Sales Offices & Reps

AK	Anchorage	907-561-1030
CA	Los Angeles	213-726-6423
CA	So. San Francisco	415-571-6700
GA	Atlanta	404-447-7000
HI	Honolulu	808-422-2721
IL	Chicago	312-496-6500
MA	Boston	617-449-0300
MI	Detroit	313-827-2450
MN	Eagan	612-736-9378
MO	St. Louis	314-997-8500
NJ	West Caldwell	201-575-2000
NC	High Point	919-889-7181
OH	Cincinnati	513-482-3100
OH	Cleveland	216-362-1700
NJ	Philadelphia	609-662-7077
TX	Dallas	214-324-8100
WA	Seattle	206-244-7200

Local Distributors

AL	Huntsville, Powell Elctrns.	205-539-2731
AZ	Phoenix, Arizona Comps. Co.	602-269-5655
AZ	Tempe, Acacia/VWK Elctrns.	602-885-9054
CA	Costa Mesa, Powell Elctrns.	714-754-1717
CA	Irvine, Acacia/VWR Elctrns.	714-660-0834, 213-971-2428
CA	La Crescenta, Mulvin & Co.	213-245-1081
CA	Los Angeles, Richey/Western Elctrns.	714-845-0060,800-227-0060
CA	San Diego, Acacia/VWR Elctrns.	619-565-4365
CA	San Diego, Richey/Western Elctrns., Inc.	619-271-4511
CA	San Jose, Powell Elctrns.	408-943-9020
CA	San Jose, Shelley/Ragon	408-942-9111
CA	Santa Clara, DC Elctrn. Supp.	408-980-1199
CA	Santa Clara, Richey/Western Elctrns., Inc.	408-727-7411
CA	Sun Valley, Richey/Western Elctrns., Inc.	818-768-3800,213-875-2862
CA	Sunnyvale, Acacia/VWR Elctrns.	408-745-7200
CO	Englewood, Shelley/Ragon	303-762-0670
CO	Lakewood, Acacia/VWR Elctrns.	303-232-2882
CT	East Haven, JV Elctrns.	203-469-2321
CT	New Canaan, Impact Sls. Co.	203-972-1458
CT	Yalesville, Schaal Assocs./Deanco	203-269-3779
FL	Clearwater, Tech. Sls.	813-539-7429
FL	Ft. Lauderdale, Powell Elctrns.	305-979-5000
FL	Winter Park, Deanco	305-671-5100
GA	Atlanta, Prehler Elctrns.	404-447-5540
GA	Marietta, Deanco	404-429-0126
IL	Chicago, Prehler Elctrns.	312-364-6070
IL	Lombard, Shelley/Ragon Elctrns.	312-629-8833
IL	Mt. Prospect, Magnuson Elctrns.	312-956-0700
IL	Skokie, EL/Mech.	312-967-8530
IN	Indianapolis, Graham Elctrns.	517-634-8202
MD	Columbia, Aztech Elctrns.	301-621-8890
MD	Columbia, Powell Elctrns.	301-995-0410, 301-621-4070 in
MD	Gaithersburg, Deanco	301-948-5444
MA	Allston, Vector Sls.	617-787-2790
MA	Burlington, Schaal Assocs./Deanco	617-272-1506
MA	Canton, Impact Sls.	617-821-1500
MA	Westboro, Powell Elctrns.	617-366-6100
MI	Grand Rapids, RM Michigan	616-531-9300
MI	Southfield, Michigan Lectrols	313-353-1350
MN	St. Paul, Shelley/Ragon Elctrns.	612-642-2828
MO	Independence, Shelley/Ragon Elctrns.	816-254-3410
MO	St. Charles, Lectronix	314-946-6424,800-325-3348
MO	St. Louis, El/Mech	314-527-4830
NJ	Clifton, J-Mar Elctrns.	201-772-6400
NJ	Englewood, Powell Elctrns.	201-894-0800
NJ	Fairfield, Deanco	201-575-7960
NJ	Union, Meridian Supp.	201-687-6220
NM	Albuquerque, Alliance Elctrns.	505-292-3360
NY	Farmingdale, Addem Distrs.	516-752-9303
NY	Hauppauge, Schaal Assocs./Deanco	516-434-7100
NY	Ithaca, Deanco	607-257-4444
NY	Ronkonkoma, Zenith Wire & Cable	516-585-1444
NC	Cary, Powell Elctrns.	919-467-1212
NC	Charlotte, Elctrns. Mktg. Corp.	704-394-6195, 800-432-0549
NC	Raleigh, Deanco, Inc.	919-851-2065
NC	Raleigh, Meridian Supp. Co.	919-872-1565
NC	Raleigh, Prehler Elctrns.	919-876-9111
OH	Columbus, Elctrns. Mktg. Corp.	614-299-4161
OH	Dayton, Elctrns. Mktg. Corp.	513-439-4711
OH	Highland Heights, Elctrns. Mktg. Corp.	216-442-3441,800-362-6117
OH	Middleburg Hgts., Prehler	216-243-5510, 800-321-0178
OK	Tulsa, Norvell Elctrns.	918-663-1247
OR	Beaverton, Acacia/VWR Elctrns.	503-646-3377
OR	Beaverton, Shelley/Ragon	503-641-1691
OR	Lake Oswego, Moore Elctrns., Inc.	503-684-3100
PA	Malvern, Transtek Inds.	215-296-4400
PA	Philadelphia, Powell Elctrns.	215-365-1900
TN	Nashville, Graham Elctrns.	615-242-2682
TX	Allen, Prime Distrbg.	214-231-0170
TX	Austin, Kent Elctrns.	512-834-1900
TX	Austin, Norvell Elctrns.	512-837-5555
TX	Dallas, Kent Elctrns.	214-669-2600
TX	Dallas, Norvell Elctrns.	214-233-0020
TX	El Paso, ERA Elctrns.	915-855-3600
TX	Houston, Kent Elctrns.	713-780-7770
TX	Houston, Norvell Elctrns.	713-777-1666
TX	Plano, Tactic Elctrns.	214-422-0777
WA	Lynwood, Blair Hirsh Co.	206-774-8151
WA	Renton, Carlyle Tech. Sls. Inc.	206-251-0700
WA	Seattle, Shelley/Ragon Elctrns.	206-241-1980
VA	Virginia Bch., Deanco, Inc.	804-499-3322
WI	Milwaukee, Elctrn. Expeditors, Inc.	414-228-8100
Can	London, Ont., 3M	519-451-2500

3M

3M CO., STATIC CONTROL SYS. DIV., P. O. Box 2963, Austin, TX 78769-2963, Tel: 800-328-1368; Empl.: 300; *Sls. Mgr.:* Mike Martin ..... **D•2114-2115**

Local Sales Offices & Reps

CA	Los Angeles	800-221-1045
CA	San Francisco	800-634-8909
CO	Denver	800-328-0201
DC	Washington	404-447-7170
GA	Atlanta	800-241-3670
IL	Chicago	800-942-3961
IN	Indianapolis	800-323-4087
MA	Boston	617-449-0300
MI	Detroit	800-323-4087
MN	St. Paul	800-392-0312
MO	St. Louis	314-997-8500
NJ	Newark	201-575-2155
NY	Syracuse	212-285-9600
NC	High Point	919-889-7181
OH	Cincinnati	800-523-4441
OH	Cleveland	800-523-4441
OH	Columbus	800-523-4441
PA	Philadelphia	800-524-0168
TN	Memphis	800-241-3669
TX	Dallas	800-442-8046
TX	Houston	800-442-8046
WA	Seattle	206-244-7200,206-241-2250
WI	Milwaukee	800-323-4087

3M CO., TECH CERAMIC RESOURCES, 3M Center 225-4W, St. Paul, MN. 55101, Tel: 617-736-0601, Telex: 29-7023, TWX: 910-563-3712; Empl.: 83000

MDF PRODUCTS INC., 7 Johnson Dr., Danbury, CT 06811, Tel: 203-743-3579, Telex: 499-8051; FSC No.: 60628 ..... **D•1285**

MEA DIV., See Mechanized Elctrn. Assembly Div., Universal Instrs. Corp.

MEASUREMENTS GROUP, INC., Box 27777, Raleigh, NC 27611, Tel: 919-365-3800, Telex: 62919594, FAX: 919-365-3945; *Sls. Mgr.:* R. N. Bennett

MS

MEASUREMENT SYSTEMS, INC., 121 Water St, Norwalk, CT 06854, Tel: 203-838-5561, Telex: 6813573, TWX: 710-468-2185; Empl.: 97; *Sls. Mgr.:* Tom Brass, Gen. Sls. Mgr. ..... **D•1133**

Local Sales Offices & Reps

IA	Cedar Rapids, S & O Sls.	319-393-1845
MD	Columbia, Robert Elctrn. Sls.	301-995-1900
MA	Hudson, Data Rep.	617-481-0333
TX	Richardson, OM Assocs., Inc.	214-690-6746
VA	Richmond, Robert Elctrn. Sls.	804-276-3979

MEC A/S, Industriparken 23, Ballerup, Denmark DK-2750, Tel: 011-452-973366, Telex: 9125649, TWX: Teletex 2381-125649, FAX: 02681514; Empl.: 40

Local Sales Offices & Reps

AZ	Phoenix, Shackelford Assocs., Inc.	602-893-8893
CA	Curpertino, F & F Assocs.	408-446-2349
CA	Marina del Ray, SPEC-REP, Inc.	213-827-7767
CO	Littleton, Electronic Comps. Sys.	303-797-0894
CT	Cheshire, A & M Elctrns. Inc.	203-271-3065
FL	Altamonte Springs, APM Assocs.	305-869-6831
FL	Ft. Lauderdale, APM Assocs.	305-565-0056
FL	Tampa, APM Assocs.	813-886-2457
GA	Atlanta, Electro Sls., Inc.	404-394-1122
IL	Downers Grove, Richmar Elctrns.	312-968-0118
IN	Indianapolis, Richmar Elctrns.	317-846-6383
IA	Cedar Rapids, Palatine Engrg. & Sls.	319-365-8071
LA	Covington, Cartwright & Bean Inc.	504-892-1780
MA	Needham, A & M Elctrns. Inc.	617-444-8170
MI	Bloomfield, Obe, Inc.	313-332-4900
MI	Grand Rapids, Obe, Inc.	616-458-8998
MI	St. Joseph, Obe, Inc.	616-429-7788
MN	Minneapolis, Milt Westlund Assocs.	612-886-5002
MS	Jackson, Cartwright & Bean Inc.	601-981-1170
MO	Blue Springs, Palatine Engrg. & Sls.	816-229-4007
MO	Hazelwood, Palatine Engrg. & Sls.	314-839-0800
NJ	Ho-Ho-Kus, D. J. Fisher Co., Inc.	201-652-0090
NM	Albuquerque, Syntech	505-266-7951
NC	Raleigh, Cartwright & Bean Inc.	919-876-4130
OH	Cleveland, Components, Inc.	216-243-9200
OR	Portland, A/D Elctrns.	503-641-6469
PA	Westchester, TCA Assocs., Inc.	215-692-6853
TN	Memphis, Cartwright & Bean Inc.	901-276-4442
TX	Dallas, Rem Air Components Corp.	214-234-1069
UT	Salt Lake City, Quality Comps. Sls.	801-268-8000
VA	Forest, Beacon North	804-239-8486
VA	Sterling, Beacon North	703-478-2480
WA	Kirkland, A/D Elctrns.	206-821-3205
WI	Butler, Richmar Elctrns.	414-781-1730

Local Distributors

CA	Hollywood, Yale Elec.	213-465-3186
CA	Manhattan Beach, Prime Electro	213-379-3642
CA	Mountain View, Target Elctrns.	415-962-8649
CA	Orange County, Pacific Switch Controls	714-953-1254
CA	San Carlos, Logan Elctrns.	415-594-0700
CA	San Diego, Pacific Switch Controls	619-264-6117
CA	Santa Monica, Master Distrs.	213-452-1229
CA	Van Nuys, Pacific Switch Controls	213-873-4802
CO	Englewood, Industrial Supp.	303-694-9444
CT	Hartford, Atlantic Switch Controls	203-527-7705
CT	Shelton, Century Elec.	203-736-208
FL	Lakeland, Switch Controls, Inc.	813-644-7564
IL	Carol Stream, Conectrix	312-653-1460
MD	Beltsville, P.S.I.	301-937-4960
MD	Columbia, D.K. Elctrns.	301-995-1950
MA	Needham, 'You Do It'	617-449-1005
MN	Minneapolis, Glen Mark	612-941-4825
NH	Nashua, Atlantic Switch	603-880-1971
NJ	Mt. Laurel, Jersey Switch	609-778-8190
OH	Columbus, Ohio Switch	613-885-0391
OR	Portland, Component Resources	503-641-8488
TX	Dallas, TexaSwitch	214-357-1768
WA	Seattle, Component Resources	206-454-8666
WA	Seattle, Radar Elctrns.	507-747-3053
Can	Toronto, Ont., Deskin Sls.	416-475-1412

MECHANICAL ENGRAVING, 4500 Bullard Ave, Bronx, NY 10470, Tel: 212-324-4455; FSC No.: 99040; Empl.: 35; *Sls. Mgr.:* Bernard W. Mandel

MECHANICAL ENTPRS., 461 Carlisle Dr., Herndon, VA 22070, Tel: 703-435-9496, TWX: 710-832-0942; Empl.: 25; *Sls. Mgr.:* R.H. Twyford ..... **B•1655, 1722-1723**

Local Sales Offices & Reps

CA	Irvine, Vale Electrn. Assocs.	714-551-4821, 619-693-0113
CT	Bristol, Technlg. Prod. Grp.	203-583-0703
IL	Arlington Heights, Coombs Assocs., Inc.	312-439-9810
MA	Brookline, Technlg. Prods.	617-731-0858
MI	Jackson, Norwood Scroggs Co.	517-750-1170
MS	Jackson, Doby Assocs.	601-981-1138
NY	Cooperstown, Fitzelle Assoc.	607-547-9333
NY	Rochester, Fitzelle Assocs.	716-244-0671
TN	Memphis, Doby Assocs.	901-763-5730
TX	Dallas, Stasco	214-239-4517
WI	Milwaukee, Coombs Assocs., Inc.	414-351-6123

Local Distributors

CA	Los Angeles, Electric Switches, Inc.	213-660-1310
CA	San Diego, Sigma Electrns.	619-565-2000
IL	Wheeling, Hawk Elctrns., Inc.	312-459-4030
NY	Yonkers, Kintronics, Inc.	914-968-7736, 800-431-1658
Can	Burnaby, B.C., Rae Ind. Electrns.,LTD	604-291-8866

MECHANICAL PRODUCTS, Amstar, 1824 River St. P. O. Box 729E, Jackson, MI 49204, Tel: 517-782-0391, TWX: 810-253-0827; *Sls. Mgr.:* Bob Vangermeersch ..... **B•1273**

Local Sales Offices & Reps

AL	Huntsville, Electro-Mech	205-533-2100
AZ	Tempe, Cantec Sls., Inc.	602-829-0191
CA	El Cajon, California Terminal	619-562-4840
CA	Los Angeles, Universal Components Co.	213-641-4255
CA	Sunnyvale, Pass Associates	408-735-9040
CO	Denver, West High-Tech,JV	303-477-8180
FL	Orlando, OEM Mktg.	305-299-1000
GA	Atlanta, Electro-Mech	404-447-6478
IL	Barrington, Perhats Assocs.	312-381-6360
MD	Pikesville, Muncy Sls.	301-484-6376
MN	St. Paul, John J. Exon Co., Inc.	612-636-5533
NH	Durham, C. H. Burnham Assocs.	603-868-2282
NJ	West Caldwell, Grimm, Siegel Assocs., Inc.	201-575-9300
NY	Pittsford, Noeth-Honsinger Assoc., Inc.	716-586-9002
NC	Raleigh, Electro-Mech	919-851-8165
OH	Dayton, Rockford Controls Ohio, Inc.	513-898-5452
OH	Euclid, Rockford Controls Ohio, Inc.	216-731-5250
OH	Reynoldsburg, Rockford Controls Ohio, Inc.	614-868-5577,614-868-5576
OK	Tulsa, John B. Guenther, Inc.	918-660-5126
RI	Johnston, C. H. Burnham Assocs.	401-231-7475
TN	Jonesboro, Electro-Mech	615-753-2964
TX	Austin, John B. Guenther, Inc.	512-472-3825
TX	Dallas, John B. Guenther, Inc.	214-691-8500
UT	Salt Lake City, West High-Tech, Ltd.	801-466-5739
Can	Bells Corners, Nepean, Ont., Har Tech	613-726-9410
Can	Downsview, Ont., Har Tech	416-665-7773
Can	Pointe Claire, Que., Har Tech	514-694-6110

Local Distributors

CA	Gardena, Cal Switch	213-770-2330/213-538-9830
CA	Hawthorne, Electro-Sonics	213-970-0997
CA	San Carlos, Campbell & George Co.	415-594-1994
CA	So. San Francisco, Nasam, Inc.	415-872-1155
FL	Ft. Lauderdale, Zelcon, Inc.	305-565-2555/6
IL	Crystal Lake, Sub-Sem, Inc.	815-459-4139
KS	Edwards, Tennant Elctrns.	913-441-1801
KS	Edwardsville, Tennant Elctrns.	913-441-1801
KS	Wichita, Airtechnics	316-267-2849
MI	Grand Rapids, S & F Elec. Supp. Co., Inc.	616-459-0216
MN	Minneapolis, Berquist	612-835-2322
NJ	Mount Laurel, Techtron Components Corp.	609-234-1940
NJ	Oakland, Relay Specialties	201-337-1000
NY	Hauppauge, Genelco	516-231-1144/800-645-9802
NY	Plainview, Linrose Elctrns.	516-293-2520
NY	Woodside, Switches Unlimited	800-221-0487
OH	Dayton, KM Co.	513-890-6734
OH	Euclid, Rockford Controls Ohio, Inc.	216-731-5250
RI	Warwick, Cal-Greg Components, Inc.	401-884-5100/1
TX	Arlington, Bell Components Sls., Inc.	817-461-5303
TX	Dallas, Associated Aircraft Supp., Inc.	214-331-4381
Can	Montreal, Que., Ferro Technique Ltd.	TLX 05-824863
Can	Scarborough, Ont., Carsten Elctrns. Ltd.	416-495-9999
Can	St. Laurent, Que., Tara Inds. Corp.	514-331-6550

MECHANIZED ELECTRONIC ASSEMBLY DIV., Universal Instrs. Corp., P.O. Box 825, Binghamton, NY 13902, Tel: 607-772-7502, 1-800-PWB-ASSY, TWX: 510-252-1990; Empl.: 300; *Sls. Mgr.:* Robert P. Egan ..... **D•2117**

Local Sales Offices & Reps

NH	Bedford, Universal Instrs. Corp.	603-625-9600
NY	Binghamton, Universal Instrs. Corp.	607-772-7563

MECHATRONICS

MECHATRONICS/SAB INC., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, Tel: 206-232-4800, 800-453-4569, TWX: 910-444-4126; Empl.: 40; *Sls. Mgr.:* David Ray ..... **B•1709; C•1605, 1676-1677, 1874-1875**

Local Sales Offices & Reps

CA	San Jose, SAB Mechatronics	408-370-7018
CA	Westlake Vl, SAB Mechatronics	805-373-0631
GA	Atlanta, SAB Mechatronics	404-928-7137
TX	Dallas, SAB Mechatronics	817-488-6634
NH	Exeter, SAB Mechatronics	603-772-4282

MEDA, INC., Macintyre Electronics Design Assocs., 11260 Roger Bacon Dr., Ste. 202, Reston, VA 22090, Tel: 703-471-1445, Telex: 910-350-0132; Empl.: 8

MEDIA RECOVERY INC., Box 1407, Graham, TX 76046, Tel: 800-527-9497, 214-630-9625 (Texas), Telex: 73-2561; Empl.: 130; *Sls. Mgr.:* J. Ricciardi

MEGATRAN ELECTRONIC POWER, Rising Sun Rd., Bordentown, NJ 08505, Tel: 609-298-7300, TWX: 510-685-3645; Empl.: 25; *Sls. Mgr.:* C. W. Harrison

MEISSNER INDUSTRIES, 551 Rte. 10, Dover, NJ 07801, Tel: 201-366-1700; Empl.: 10

MELCHER INC., 10 Cochituate St., Natick, MA 01760, Tel: 617-653-9979, TWX: 510-100-3630, FAX: 617-653-9974; *Sls. Mgr.:* Richard Sakakeeny

Local Sales Offices & Reps

CA	Laguna Hills, Electro Venture S.	714-581-9244
CA	Santa Clara, Sourcetronics	408-988-8801
FL	Casselberry, S.E.M.I.	305-831-2822
IL	La Grange Pk, Bierhaus Sls. Inc.	312-354-5100
MA	Lowell, Total Power	617-453-7272
NJ	Englewood, Technimat	201-569-4200
NJ	Ridgewood, Ballou Inc.	201-444-6990
NY	Mendon, Tech-Mark, Inc.	716-624-3840
NC	Matthews, R.G. Sls., Inc.	704-847-0049
PA	Horsham, TMI	215-441-4300
TX	Richardson, Jim D. Gray & Assocs., Inc.	214-699-9976
TX	Richmond, Jim D. Gray & Assocs., Inc.	713-342-1710
WI	Milwaukee, Bierhaus Sls. Inc.	414-963-0318

MELCOR/MATERIALS ELCTRN. PRODS., 994 Spruce St., Trenton, NJ 08648, Tel: 609-393-4178, Telex: 84-3314; FSC No.: 32333; Empl.: 100; *Sls. Mgr.:* M.A. Levine ..... **C•1678-1679**

Local Sales Offices & Reps

CO	Fort Collins, Rep Sls., Inc./Andy Cornedi	303-226-1504
NY	Rochester, R. G. Minges Agency	716-328-3410

MELLES GRIOT, Optics, 1770 Kettering St., Irvine, CA 92714, Tel: 714-261-5600, Telex: 678447; Empl.: 90; *Sls. Mgr.:* David W. Kuntz, Mktg. Mgr.

MEL-RAIN CONTROLS, 42974 M-43 Hwy., Paw Paw, MI 49079, Tel: 616-657-2527; FSC No.: 639; Empl.: 20; *Sls. Mgr.:* Howard F. Walter

MEL TEC, Div. Epsco, Inc., 411 Providence Hwy., Westwood, MA 02090, Tel: 617-329-1508, Telex: 95-1110, TWX: 710-348-0484; Empl.: 180

MEMBRONICS DIVISION, Chicago Decal Company, 3310 North Elston Avenue, Chicago, IL 60618, Tel: 312-463-4007; *Sls. Mgr.:* Robert Burns

MEMCOR-TRUOHM INC.

MEMCOR-TRUOHM, INC., 1320 Flaxmill Rd., Huntington, IN 46750, Tel: 219-356-4300, TWX: 810-333-1530, ESYLNK: 6298315; FSC No.: 24681; Empl.: 250; *Sls. Mgr.:* Ray Vanderspool ..... **A•1969, 2104**

Local Sales Offices & Reps

AL	Huntsville, Murcota	205-539-8476
CA	Huntington Bch., Mil-Com Sls.	714-840-2424
CA	Santa Clara, D.H. Ross	408-988-8111
FL	Indialantic, Raycom	305-727-8860
GA	Atlanta, Murcota	404-875-2525
IL	Chicago, D. Dolin Sls.	312-286-6200
IN	Ft. Wayne, Menze Sls.	219-747-5616
MI	St. Clair Shores, J.M. Thorpe	313-779-6363
MO	Blue Springs, Cairns Sls. Co.	816-229-1404
MO	St. Charles, Hayes Elec. Sls. Co.	314-946-6677
NH	Atkinson, Mark Rep Assoc.	603-382-9563
NJ	Englewood Cliffs, Masin Esco	201-569-8868
NY	Hauppauge, Masin Esco	516-273-3500
NY	Marcellus, Mullahy Sls. Inc.	315-685-6280
NC	Burlington, Murcota	919-585-1577
NC	Winston-Salem, Murcota	919-723-1001
OH	Cleveland, Glover Sls.	216-842-4520
PA	Newtown Square, G.M. Conneen	215-353-2241
TX	Dallas, SW Elctrn. Ind.	214-233-9816
TX	Houston, SW Elctrn. Ind.	713-729-1670
WA	Redmond, Barrett-Squibb	206-885-6991

COMPUTER PRODUCTS MEMODYNE CORP.

MEMODYNE, 200 Reservoir St., Needham Hgts., MA 02194, Tel: 617-444-7000, Telex: 92-2537, TWX: 510-600-8774, FAX: 617-449-7023; Empl.: 40; *Sls. Mgr.:* Normand H. Renaud ..... **D•1092-1094**

Local Sales Offices & Reps

AL	Huntsville, Magaro & Assocs.	205-882-0827
AZ	Scottsdale, Williams Assocs.	602-947-4297
CA	Carson, Amasco	213-516-8561
CO	Commerce City, Williams Assocs.	303-289-5647
CT	Hamden, Burton Forrester Associates	203-248-4380
GA	Atlanta, Magaro & Assoc.	404-451-8862
IL	Elmhurst, Scott Assocs.	312-279-5681
KS	DeSoto, Midtec Assocs.	913-441-6565
MA	Stoughton, Burton Forrester Assocs.	617-341-3121
MI	Detroit, EQS Sys.	313-961-3042
MI	Pontiac, EQS Sys., Inc.	313-338-2280
MO	Florissant, Midtec Assocs.	314-837-5200
NM	Albuquerque, Williams Assocs.	505-255-1638
NY	Elmont, Crane & Egert Corp.	516-872-0800
NC	Greensboro, Magaro & Assocs.	919-294-4783
OH	Chesterland, EQS Sys.	216-729-2222
OH	Columbus, EQS Sys.	614-228-3453
OH	Dayton, EQS Sys., Inc.	513-236-7676
OH	Huber Hgts., EQS Sys., Inc.	216-729-2222
OK	Tulsa, J. Wisdom & Assocs., Inc.	918-663-4814
OR	Lake Oswego, Syntek	503-636-6793
PA	Pittsburgh, EQS Sys.	412-261-2604
PA	Sellersville, Penn-Tech Sls.	215-257-2756
TX	Dickinson, J. Wisdom & Assocs., Inc.	713-337-6804
TX	Richardson, J. Wisdom & Assocs., Inc.	214-470-9093
UT	Salt Lake City, Williams Assocs.	801-485-6511
WA	Kirkland, Syntek	206-488-0394

MEMORY PROTECTION DEVICES, INC., See Bogen Communications, Inc.

MEMTRON

MEMTRON TECHNOLOGIES, INC., 1400 Weiss St., Frankenmuth, MI 48734, Tel: 517-652-2652, 800-245-7525, TWX: 910-380-9153, ESYLNK: 628-67308; FSC No.: 6 V 417; Empl.: 86; *Sls. Mgr.:* Daniel T. Ortner ..... **B•1657**

Local Sales Offices & Reps

AZ	Scottsdale, Semi-Systems Arizona, Inc.	602-991-1151
CA	Saratoga, Edward King & Assocs.	408-867-2111
CA	Woodland Hills, Cummings & Assocs.	818-340-6035
CO	Lakewood, Martec Assocs.	303-987-0922
FL	Maitland, EIR, Inc.	305-660-9600
GA	Lawrence, Tek-Rep Mktg., Inc.	404-963-1600
IL	Wheaton, Chadra-Schilke & Assocs., Inc.	312-653-8126
IN	Indianapolis, EMCI, Inc.	317-253-1668
MA	Framingham, Stone Comp. Sls. Corp.	617-875-3266
MI	Detroit, Memtron Technlgs., Inc.	313-545-8880
MI	Grand Rapids, Memtron Technlgs., Inc.	616-866-0103
MN	Minneapolis, Don Luger & Assocs.	612-553-1122
MO	Saint Charles, Buckman & Assocs.	314-946-6201
NY	Islip, ABS Technlgs., Inc.	516-277-7010
OH	Columbus, Tom Mulligan Co.	614-457-2242
PA	Southampton, Campbell Assocs.	215-322-6630
TX	Richardson, Zonk & Assocs.	214-238-7651
VA	Springfield, Tech-Reps. Inc.	703-370-2600
WA	Federal Way, K. R. Jensen Sls.	206-874-2772
Can	Rexdale, Ont., Bestec Elctrns., Ltd.	416-674-1330

MEPCO/CENTRALAB
A NORTH AMERICAN PHILIPS COMPANY

MEPCO/CENTRALAB, INC./CORPORATE HDQRTS., A North American Philips Co., 2001 W. Blue Heron Blvd., Riviera Beach, FL 33404, Tel: 305-881-3200, Telex: 136461, TWX: 810-848-0228 ..... **A•1124-1128, 1763, 1970-1973, 2105; B•1002, 1016-1017, 1659-1660**

Local Sales Offices & Reps

AL	Huntsville, Over & Over	205-837-7105
AZ	Tempe, Mepco/Centralab	602-968-9573
CA	Anaheim, Mepco/Centralab	714-441-0385
CA	Harbor City, Refrigeration Comp.	213-325-3420
CA	Milpitas, Mepco/Centralab	408-945-1020
CA	Mtn. View, Brooks Tech. Grp.	415-960-3880
CA	Sherman Oaks, Mepco/Centralab	818-986-4892
CO	Englewood, Mepco/Centralab	303-779-9696
FL	Altamonte Springs, Mepco/Centralab	305-339-5073
FL	Ft. Lauderdale, Mepco/Centralab	305-485-0115
GA	Norcross, Over & Over, Inc.	404-449-6205
IL	Des Plaines, Mepco/Centralab	312-827-4487
IN	Carmel, Corrao Marsh, Inc.	317-843-0739
IN	Ft. Wayne, Corrao Marsh, Inc.	219-482-2725
IN	Greenfield, Carrao Marsh, Inc.	317-462-4446
IN	Indianapolis, Leslie M. Devoe Co.	317-842-3245
IA	Cedar Rapids, Lorenz Sls.	319-377-4666
KS	Overland Pk., Lorenz Sls.	913-649-5556
MD	Columbia, Delta III Assocs.	301-730-4700
MA	Stoneham, Mepco/Centralab	617-438-6050
MI	Farmington Hills, Mepco/Centralab	313-553-9300
MN	Minneapolis, Electric Comps. Sls., Inc.	612-933-2594
MO	University City, Lorenz Sls.	314-997-4558
NE	Lincoln, Lorenz Sls.	402-475-4660
NJ	Englewood Cliffs, Ed Glass Assocs.	201-592-0200
NJ	Mendham, Mepco/Centralab	201-543-2556
NY	Binghamton, Empire Tech. Assocs.	607-772-0651
NY	Skaneateles, Empire Tech. Assocs., Inc.	315-685-5703
NC	Charlotte, Over & Over, Inc.	704-542-9111
NC	Raleigh, Over & Over	919-782-9111
OH	Dayton, Mepco/Centralab	513-278-5842
OH	Mentor, Mepco/Centralab	216-354-4350
OH	Worthington, Mepco/Centralab	614-888-2150
OR	Beaverton, Eclipse Mktg. Grp.	503-642-1661
PA	Narberth, Bresson Assocs.	215-664-6460
TX	Austin, Mepco/Centralab	512-331-8828
TX	Richardson, Mepco/Centralab	214-231-8274
WA	Redmond, Eclipse Mktg. Grp.	206-885-6991
WA	Spokane, Eclipse Mktg. Grp.	509-922-3972
WI	Milwaukee, Mepco/Centralab	414-228-4242
PR	Hato Rey, M. Anderson Co.	809-751-2026
Can	Calgary, Alberta, Philips Elctrns.	403-243-2710
Can	Montreal, PQ, Philips Elctrns.	514-342-9180
Can	N. Vancouver, BC, Arwin Tech. Sls.	604-980-4557
Can	Ottawa, Ont., Philips Elctrns.	613-237-3134
Can	Pickering, Ont., Alltemp Prod. Co.	416-831-3311
Can	Pickering, Ont., McHugh Elctrns.	416-831-4770
Can	Scarborough, Ont., Philips Elctrns.	416-292-5161
Can	Scarborough, Ont., Philips Elctrns.	416-292-8200

MEPCO/CENTRALAB, INC., A North American Philips Co., 4561 Colorado Blvd., Los Angeles, CA 90039, Tel: 818-240-4880, TWX: 910-947-2282; *Sls. Mgr.:* G. Ollen ..... **A•1127, 1970-1971; B•1016-1017**

MEPCO/CENTRALAB, INC., A North American Philips Co., 5900 Australian Avenue, W. Palm Bch., FL 33407, Tel: 305-863-2000, Telex: 820677, TWX: 510-952-7631, FAX: 305-863-1811 ..... **A•1124**

MEPCO/CENTRALAB, INC., A North American Philips Co., 2566 Northwestern Ave., West Lafayette, IN 47906, Tel: 317-463-2536, Telex: 810-342-1889 ..... **A•1972; B•1016-1017**

MEPCO/CENTRALAB, INC., A North American Philips Co., Hwy. 20 W., P.O. Box 858, Ft. Dodge, IA 50501, Tel: 515-573-1300, TWX: 910-520-2493; FSC No.: 71590; *Sls. Mgr.:* L. Fette ..... **A•2105; B•1658-1660**

MEPCO/CENTRALAB, INC., A North American Philips Co., 6071 St. Andrews Rd., Columbia, SC 29210, Tel: 803-772-2500, Telex: 820676, TWX: 810-666-2662 ..... **A•1124-1125**

DC Aluminum Electrolytic Capacitors (Computer Grade, Radial) Military, Industrial & Consumer AC Motor Starts, Film Capacitors (Film/Foil, Metallized) Tantalum Capacitors (Foil) Film Trimmer Capacitors

MEPCO/CENTRALAB, INC., A North American Philips Co., 7158 Merchant Ave., El Paso, TX, Tel: 915-779-3961, Telex: 910-964-1311; *Sls. Mgr.:* R. Michaels ..... **A•1128**

MEPCO/CENTRALAB, INC., A North American Philips Co., Airport Road, P.O. Box 760, Mineral Wells, TX 76067, Tel: 817-325-7871, Telex: G.P.R.-881857/S.P.R.-820545 ... **A•1970, 1973; B•1016-1017**

MEPCO/CENTRALAB, INC., A North American Philips Co., 2601 S. Moorland Rd., New Berlin, WI 53131, Tel: 414-785-6506, TWX: 910-262-3032 ..... **A•1763**

MEPCOPAL COMPANY, 11468 Sorrento Valley Rd., San Diego, CA 92121, Tel: 619-453-0332, Telex: 62547100, TWX: 910-337-1120, FAX: 619-481-1123; Empl.: 125

Potentiometers (Cermet, Carbon) Industrial & Military

MERCER ELECTRONICS, Simpson Electric Co., 859 Dundee Ave., Elgin, IL 60120, Tel: 312-697-2265, Telex: 72-2416, FAX: 312-697-2272; *Sls. Mgr.:* Mike Scala; *Dist. Mgr.:* George Oskandy ..... **D•1286-1287**

Local Sales Offices & Reps

AL	Huntsville, Cartwright & Bean, Inc. of GA	205-830-1540
AK	Anchorage, Harry J. Lang & Assoc.	907-279-5741
CA	Burlingame, William J. Purdy Co.	415-347-7701
CA	Downey, Simpson Elec. Co.	213-862-4259
CO	Denver, William J. Purdy Co.	303-753-6800
CT	Hartford, Sturgeon Co.	203-249-7800
FL	Lauderdale Lakes, Seacom Sls. Co.	305-486-0260
GA	Atlanta, Cartwright & Bean, Inc. of GA	404-233-2939
IN	Carmel, Technlg. Mktg. Corp.	317-844-8462
KY	Louisville, Technlg. Mktg. Corp.	502-499-7808
LA	Covington, Cartwright & Bean, Inc. of TN	504-892-1780
MD	Lisbon, Samuel K. Macdonald, Inc.	301-982-1088
MA	Needham, Sturgeon Co.	617-444-6603
MI	Farmington Hills, R. C. Merchant & Co., Inc.	313-476-4600
MI	St. Joseph, R. C. Merchant & Co., Inc.	616-983-7378
MN	Edina, Mel Foster Tech. Sls., Inc.	612-941-9790
MS	Jackson, Cartwright & Bean, Inc. of TN	601-981-1170
MO	St. Louis, Kathrinus-Kelly-Baumhauer & Co.	314-647-2400
NM	Albuquerque, C. T. Carlberg & Asoc., Inc.	505-888-3883
NY	Great Neck, L.I., Simpson Elec. Co.	516-482-3103
NY	Syracuse, Leonard D. Allen, Inc.	315-437-8387
IL	Elgin, Simpson Elec.	312-697-2260
OH	Columbus, Baehr-Greenleaf & Assoc., Inc.	614-486-4046
OH	Westlake, Baehr-Greenleaf & Assoc., Inc.	216-892-1770
OR	Portland, Earl & Brown Co., Inc.	503-245-2283
PA	Philadelphia, Samuel K. Macdonald, Inc.	215-545-1205
TN	Knoxville, Cartwright & Bean, Inc. of GA	615-693-7450
TX	Dallas, J. Y. Schoonmaker Co., Inc.	214-349-1650
WA	Redmond, Earl & Brown Co., Inc.	206-885-5064
WI	Milwaukee, D. Dolin Sls. Co.	414-482-1111
Can	London, Ont., Bach-Simpson, Ltd.	519-452-3200

MERCURY PLASTICS, A UNIT OF ZERO CORP., 672 Fuller Rd., Chicopee, MA 01020, Tel: 413-267-5561, TWX: 710-354-1450; Empl.: 100; *Sls. Mgr.:* Douglas W. Griffith

MERECO PRODUCTS DIV., Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893, Tel: 401-828-4550; Empl.: 100; *Sls. Mgr.:* John E. Powell, Jr.

MERET, INC., 1815 24th St., Santa Monica, CA 90404-4998, Tel: 213-828-7496, Telex: 65-246 8 SNM; Empl.: 45; *Sls. Mgr.:* Jonathan Medved ..... **B•1150**

Local Sales Offices & Reps

CA	West Covina, Eureka Tech. Sls., Inc. ..	213-331-8766
CO	Lakewood, Technical Mktg. Mfg. Inc. ..	303-232-1516
FL	Ft. Lauderdale, Fox-Rowden-McBrayer	305-971-1800
MA	Brookline, Boston Elctrn. Corp.	617-566-3821
MO	St. Louis, Engrg. Svcs. Co.	314-997-1515
MT	Bozeman, Christopher Sls. Assocs. ...	406-587-1040
NM	Albuquerque, Tech. Mktg. & Mfg.	505-298-6893
IL	Northrock, Emtech	312-564-2505
NY	Elmsford, Metro-Tek Assocs.	914-347-4112
VA	Fairfax, Schibley Assocs.,Inc.	703-591-3008

MERIX CHEM. CO., 2234 East 75th St., Chicago, IL 60649, Tel: 312-221-8242; Empl.: 15; *Sls. Mgr.:* E. O. Sonneman; *Dist. Mgr.:* E. O. Sonneman

MERRILL, POB 308, 1316 Sumneytown Pike, Gwynedd Valley, PA 19437, Tel: 215-643-2116; FSC No.: 58624; Empl.: 10; *Sls. Mgr.:* J. Fournier

MERRIMAC INDUSTRIES, 41 Fairfield Pl., West Caldwell, NJ 07006, Tel: 201-575-1300, Telex: 6853128, TWX: 710-734-4314; FSC No.: 12457; Empl.: 350

MERRIMACK MAGNETICS CORP., 121 Hale St., Lowell, MA 01851, Tel: 617-458-1487; Empl.: 450; *Sls. Mgr.:* Richard Boucher; *Dist. Mgr.:* Mellisa Lavers

J. R. MERRITT CONTROLS, INC., 8 Crimmins Rd., Darien, CT 06820, Tel: 203-656-0143, ESYLNK: 510-601-6932JRMC

MESUR-MATIC ELCTRNS., 50 Grove St., Salem, MA 01970-2294, Tel: 617-745-7000; Empl.: 29; *Sls. Mgr.:* Kosma L. Evangelidis

METATEK INC., 290 Coon Rapids Blvd. N. W., P.O. Box 33129, Minneapolis, MN 55433, Tel: 612-786-8253, Telex: 4994418 Metatek; Empl.: 6; *Sls. Mgr.:* Don Hallblade; *Dist. Mgr.:* Don Hallblade

METEREX CORP., 25 Industrial Park Rd., Hingham, MA 02043, Tel: 617-749-8100; Empl.: 4; *Sls. Mgr.:* K. Sharples

METERMASTER, 5646 Jullson St., Los Angeles, CA 90040, Tel: 213-685-4340

METHODE ELECTRONICS, INC., 7444 W. Wilson Ave., Chicago, IL 60656, Tel: 312-867-9600, TWX: 910-221-2468; Empl.: 1500; *Sls. Mgr.:* S. Landeene; *Dist. Mgr.:* K. Lindsey

METHODE ELECTRONICS, INC., Interconnect Prods Div, 1700 Hicks Rd, Rolling Meadows, IL 60008, Tel: 312-392-3500, TWX: 910-687-0760; FSC No.: 95354; Empl.: 250; *Sls. Mgr.:* Suzi Landeene; *Dist. Mgr.:* Kathy Lindsey

METIS, P.O. Box 1499, Bowie, MD 20716, Tel: 301-249-1702; Empl.: 2; *Sls. Mgr.:* Eric K. Pritchard

METRA BYTE CORP., 440 Myles Standish Blvd., Taunton, MA 02780, Tel: 617-880-3000, Telex: 503989; FSC No.: 1 FG 11; Empl.: 50; *Sls. Mgr.:* Bendrix Bailey; *Dist. Mgr.:* Bendrix Bailey ..... **D•1168-1169**

Local Sales Offices & Reps

AL	Huntsville, Magaro Assocs.	205-882-0827
AZ	Phoenix, Louis James & Assocs.	602-992-0872
CA	Orange, X. B. X. Sls.	714-998-8200
CA	Santa Clara, Nelson Elctrn.	408-980-1950
CO	Commerce City, Louis James & Assocs.	303-287-4657
GA	Atlanta, Magaro Assocs.	404-451-8862
IL	Chicago, Berndt Assocs.	312-283-0713
IN	Carmel, Berndt Assocs.	317-844-0114
MI	Livonia, Lowell-Wendt Mktg.	313-464-2722
MN	Minneapolis, Berndt Assocs.	612-546-2021
NJ	W. Caldwell, PCS	201-575-7464
NC	Greensboro, Magaro Assocs.	919-294-4783
PA	Jenkintown, Monument Tech. Assocs.	215-884-3737
UT	Salt Lake City, Louis James & Assocs.	801-487-3851
WA	Woodinville, Louis James & Assocs. ..	206-788-5228
WI	Milwaukee, Berndt Assocs.	414-545-8400
Can	St. Laurant, Quebec, Techmatron Inst., Inc.	514-689-5889

METRA INSTRUMENTS, 2056 Bering Dr., San Jose, CA 95131, Tel: 408-436-8530, Telex: 296698; Empl.: 30; *Sls. Mgr.:* John R. Hook

METRAPLEX CORP., 5305 Spectrum Dr., Frederick, MD 21701, Tel: 301-662-8000, Telex: 697-4248 MPX CORP

MATRIX SYSTEMS, 645 Anchors St., Ft. Walton Beach, FL 32548-9990, Tel: 904-244-9600, Telex: 70-2447; FSC No.: 12339; Empl.: 700

METRIX INSTRUMENT CO., 1711 Townhurst, Houston, TX 77043, Tel: 713-461-2131, Telex: 77-5486; Empl.: 50; *Sls. Mgr.:* W. B. Brown

METROLAB INSTRUMENTS SA, 6, Chemin du Clos, Geneva, Switzerland CH-1212 Grand-Lancy, Tel: (41-22) 941121, Telex: 422 008 mtl ch

METRON OPTICS INC., P.O. Box 690, Solana Beach, CA 92075-0690, Tel: 619-755-4477; Empl.: 22

METROPOLE PRODUCTS INC., P. O. Box 309, Stafford, VA 22554, Tel: 703-659-2132, 703-971-7082, Telex: 908059 WSH; FSC No.: 55908; *Sls. Mgr.:* John DePaola

METROSONICS, INC., Box 23075, Rochester, NY 14692-3075, Tel: 716-334-7300, Telex: 853348; FSC No.: 55381; Empl.: 80; *Sls. Mgr.:* B. Watkins; *Dist. Mgr.:* S. Macioulis



METUCHEN CAPACITORS, INC., 420 Park Ave., Perth Amboy, NJ 08861, Tel: 201-442-0500, TWX: 710-998-0892; FSC No.: 55969; Empl.: 25; *Sls. Mgr.:* George Wolter ..... **A•1130-1137, 1678-1679; C•1344-1347**

MEYER WIRE CO., INC., 1072 Sherman Avenue, Hamden, CT 06514, Tel: 203-281-0817, TWX: 910-240-0340, ESYLNK: 62938426, FAX: 203-281-9648; Empl.: 45; *Sls. Mgr.:* Brian Meyer

MFE INSTRUMENTS CORP., 19 Keewaydin Dr., Salem, NH 03079, Tel: 603-893-1921, ESYLNK: 953145; Empl.: 60; *Sls. Mgr.:* Dennis Doscher; *Dist. Mgr.:* Dennis Doscher

MF ELCTRNS. CORP., 10 Commerce Dr., New Rochelle, NY 10801, Tel: 914-576-6570, TWX: 710-563-0643; FSC No.: 08111; Empl.: 100; *Sls. Mgr.:* Bill Braverman; *Dist. Mgr.:* Bill Braverman ..... **A•1416**

Local Sales Offices & Reps

AZ	Scottsdale, Bill Earl Assocs.	602-944-3813
CA	Irvine, J. V. Earley & Assocs.	714-833-1806
CA	San Jose, C.M.S.I.	408-971-0224
CO	Denver, Matthews & Assocs.	303-450-6476
CT	Meriden, Orion Group	203-621-8371
FL	Tampa, SRT Mktg.	813-884-4805
GA	Norcross, Dixie Tech. Mktg.	404-447-6832
MA	Wakefield, The Orion Group	617-245-5220
MN	Edina, Peterson Sls. & Assoc.	612-944-0030
NC	Raleigh, Tingen Tech. Sls.	919-878-4440
OH	Dublin, AP Assocs.	614-766-1855
OH	Fairview Pk., AP Assocs.	216-734-2567
OR	Portland, Controltek Sls.	503-641-0877
PA	Prospect Park, ELF Sls.	215-534-3340
TX	Dallas, Matthews & Assocs.	214-248-7881
WA	Seattle, Core II Mktg.	206-467-0622

Local Distributors

AZ	Scottsdale, Prime Inds.	602-946-9977
CA	Anaheim, Pacesetter Elctrns.	714-779-5855
CA	Burbank, Atwater Elctrns.	714-670-1426
CA	Sunnyvale, Pacesetter	408-734-5470
NJ	Bellmawr, Mid Atlantic	609-931-5303
NY	Bohemia, RBD Elec.	516-589-7717
NY	Cen. Islip, Domino Comps.	609-931-5303
NY	Mt. Vernon, Janesway Elec.	914-699-6710

MFG-WEST, Parabam Div., 1130 Watsoncenter Rd., Carson, CA 90745, Tel: 213-549-5044; Empl.: 85



MG ELECTRONICS, 32 Ranick Rd., Hauppauge, NY 11788, Tel: 516-582-3400, Telex: 645113; Empl.: 14; *Sls. Mgr.:* John Kibbit; *Dist. Mgr.:* Stan Grey ..... **D•1045**

MHOTRONICS., INC., 444 Lake Cook Rd., Ste. 8, Deerfield, IL 60015, Tel: 312-948-5600, TWX: 910-686-0630, FAX: 312-948-5604; Empl.: 10; *Sls. Mgr.:* David McFadden ..... **C•1348-1352**

Local Sales Offices & Reps

AL	Huntsville, Cartwright & Bean	205-830-1540
CA	Burbank, Mod-Co.	818-848-2215
CA	Cupertino, Solarise Sls.	408-446-9343
FL	Deerfield Beach, Cartwright & Bean ...	305-429-3400
FL	Orlando, Cartwright & Bean	305-422-4531
GA	Atlanta, Cartwright & Bean	404-233-2939
IN	Madison, Rose Engrg. & Sls.	812-265-6767
LA	Covington, Cartwright & Bean	504-892-1780
MA	Framingham, Marathon Sls., Ltd.	617-875-3566
MN	Minneapolis, Comstrand	612-788-9234
NY	Hauppauge, Masin-Esco, Inc.	516-273-3500
NY	Syracuse, Northeastern Elctrns. Co., Inc.	315-455-7561
NC	Charlotte, Cartwright & Bean	704-377-5673
NC	Raleigh, Cartwright & Bean	919-876-4130
OH	Cleveland, KT/DEPCO	216-442-6200
OR	Beaverton, Micro Power Elctrns.	503-646-0994
PA	Pittsburgh, KT/DEPCO	412-367-1011
TN	Knoxville, Cartwright & Bean	615-693-7450
TN	Memphis, Cartwright & Bean	901-276-4442
TX	Austin, Kreller Sls.	512-335-0483
WA	Micro Power Elctrns.	206-852-9558
Can	Rio Piedras, Digit-Tech Sls.	809-793-0560

MICA CORPORATION, 8536 National Blvd., Culver City, CA 90232, Tel: 213-837-8100, Telex: ITT 4720769; FSC No.: 06216;Multiple; Empl.: 300

MICHIGAN MAGNETICS, 203 W. Third St., Vermontville, MI 49096, Tel: 517-726-0590; Empl.: 35; *Sls. Mgr.:* Tom Krul

MICOM SYSTEMS, INC., 4100 Los Angeles Ave, P.O. Box 8100, Simi Valley, CA 93062-8100, Tel: 805-583-8600, Telex: 687-497, TWX: 910-494-4910

MICRA CORP., 120 Ricefield Lane, Hauppauge, NY 11788, Tel: 516-231-8600, TWX: 882633 MICRA US; FSC No.: 63071; Empl.: 200; *Sls. Mgr.:* Ronald P. Colino

MICREL, INC., 1235 Midas Way, Sunnyvale, CA 94086, Tel: 408-245-2500, TWX: 910-379-0007; FSC No.: 60496; Empl.: 120; *Sls. Mgr.:* Stan Ericsson

MICROAVIONICS CORP., 3198-K Airport Loop Dr., Costa Mesa, CA 92626, Tel: 714-957-6904; Empl.: 15; *Sls. Mgr.:* B. H. Corzine

Local Sales Offices & Reps

CA	Los Angeles, Forbes Pacific, Inc.	714-722-6174
CA	San Diego, Martronix	619-728-7678

MICROBAR SYSTEMS, INC., 785 Lucerne Drive, Sunnyvale, CA 94086, Tel: 408-720-9300, TWX: 910-373-2047; *Sls. Mgr.:* W. Barrett Burton

MICROCAP, INC., 11120 Roselle St., San Diego, CA 92121, Tel: 619-452-9812, Telex: 3719347; Empl.: 23; *Sls. Mgr.:* Denise Kelly

MICRO-CIRCUIT ENGRG., See MCE Semiconductor

MICRO-CIRCUITS CO., INC., 10792 Maublin Rd., New Buffalo, MI 49117, Tel: 616-469-2727 ..... **C•1106**

Local Sales Offices & Reps

IL	Chicago, Electro-Mech Sls. Co.	212-777-0554

MICRO-COAX COMPONENTS, INC., a UTI Company, Box E, Collegeville, PA 19426, Tel: 215-489-3700, Telex: 84-6428, TWX: 510-660-6107; FSC No.: 215-489-1103; Empl.: 50; *Sls. Mgr.:* Lloyd Deery

MICROCOMPUTER POWER, 15875 Concord Circle, Morgan Hill, CA 95037, Tel: 408-779-5700, TWX: 910-338-7694; Empl.: 60; *Sls. Mgr.:* Ray Parker; *Dist. Mgr.:* Ray Parker

MICRO COMPUTER RENTALS, 742D Hampshire Rd., Westlake Village, CA 91361, Tel: 213-991-1704

MICROCOSM, INC., 15275 S.W. Koll Parkway, Beaverton, OR 97006, Tel: 503-626-6100, Telex: 759527 (Microcosm UD); Empl.: 30; *Sls. Mgr.:* M. L. Epperson



MICRO DEVICES PRODUCT GROUP, Therm-O-Disc, Inc., 1320 South Main Street, P.O. Box 3538, Mansfield, OH 44907, Tel: 419-756-5911, Telex: 987455; *Sls. Mgr.:* P. J. Banks ..... **B•1274-1275**

MICRODOT, INTERCONNECT SYSTEMS DIVISION, 12 Progress Dr., Montgomeryville, PA 18936, Tel: 215-699-5373, Telex: 510-661-8260, TWX: 910-588-3768; *Sls. Mgr.:* K. A. Neumuller; *Dist. Mgr.:* J. McLaughlin ..... **B•1020; C•1353**

Local Sales Offices & Reps

AZ	Mesa, Sedco Sls.	602-834-8124
CA	Fullerton, Libratronix	714-871-1513
CO	Longmont, Todd & Fry Assocs.	303-776-7331
CT	Simsbury, Pettigrew Co.	203-651-4321
FL	Tampa, Temco Sls.	813-855-7566
IL	Rolling Meadows, Heartland Tech. Mktg.	312-577-9222
IA	Cedar Rapids, S & O Sls.	319-393-1845
KS	Overland Park, AME Sls.	913-262-3971
MA	Needham, Component Tech.	617-449-8490
MI	Farmington Hills, Carter, McCormic & Pearce	313-477-7700
MN	Eden Prairie, The Twist Co.	612-941-2040
NM	Albuquerque, Reptronix	505-292-1718
NY	E. Syracuse, Ossman Components	315-437-7052
NY	Rochester, Ossman Comps.	716-424-4460
NY	Yonkers, Sonkin Assocs.	914-968-8282
OH	Berea, Carter, McCormic & Pearce	216-826-0400
OR	Beaverton, Blair Hirsh Co.	503-641-1875
PA	Horsham, Jacobsen Assocs.	215-674-2937
TX	Dallas, M Rep	214-349-5523
VA	Forest, Beacon North, Inc.	804-239-8486
VA	Sterling, Beacon North	703-478-2480
WA	Lynnwood, Blair Hirsh Co.	206-774-8151
WI	Milwaukee, Heartland Tech. Mktg.	414-931-0606
Can	Concord, Ont., Kaytronics Ltd.	416-669-2262
Can	Kanata, Ont., Kaytronics Ltd.	613-592-6606
Can	Montreal, Que., Kaytronics, Ltd.	514-367-0101
Can	Surrey, B. C., Kaytronics Ltd.	604-581-5005

Local Distributors

AZ	Tempe, Hamilton Avnet	602-231-5100
CA	Chatsworth, Hamilton Avnet	818-700-6500
CA	Culver City, Hamilton Avnet	213-558-2657
CA	Placentia, Telesis Elctrns.	714-579-7555
CA	San Diego, Hamilton Avnet	619-571-7510
CA	Santa Clara, Pyramid Elctrns.	408-727-9810
CA	Sunnyvale, Hamilton Avnet	408-743-3372
CT	Danbury, Hamilton Avnet	203-797-2800
FL	Ft. Lauderdale, Hamilton Avnet	305-971-2900
FL	Winter Park, Hamilton Avnet	305-628-3888
IL	Bensenville, Hamilton Avnet	312-860-7700
MD	Columbia, Hamilton Avnet	301-995-3500
MA	Peabody, Hamilton Avnet	617-531-7430
NH	Manchester, Yankee Elctrn. Supp.	603-625-9746
NJ	Cherry Hill, Hamilton Avnet	609-424-0100
NJ	Fairfield, Hamilton Avnet	201-575-3390
NJ	Old Bridge, BTC Elctrn. Comps.	201-536-8000
NY	Hauppauge, Hamilton Avnet	516-231-9800
NY	Rochester, Hamilton Avnet	716-475-9130
NY	Syracuse, Hamilton Avnet	315-437-2641
NY	Westbury, Hamilton Avnet	516-997-6868
PA	Pittsburgh, Hamilton Avnet	412-281-4150
PA	Wayne, Peak Elctrn. Corp.	215-293-9000
TX	Irving, Hamilton Avnet	214-659-4912
UT	Salt Lake City, Hamilton Avnet	801-972-2800

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MICRO ELECTRONIC SYSTEMS, INC., 3 Quarry Road, Brookfield, CT 06804, Tel: 203-775-1440, 800-243-7254, Telex: 969659

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MICRO INDUSTRIES, 691 Greenscrest Drive, Westerville, OH 43081, Tel: 614-895-0404, ESYLNK: 759200; *Dist. Mgr.:* Michael A. Curran

MICRO INSTRUMENT COMPANY, 2250 Micro Pl., Escondido, CA 92025, Tel: 619-746-2010, Telex: 882205 MICROINST ESCD; FSC No.: FSCM 24836; Empl.: 45; *Sls. Mgr.:* C. Marks (Eastern), C. Blakeslee (Western)

MICROLAB/FXR, 10 Microlab Rd., Livingston, NJ 07039, Tel: 201-992-7700, TWX: 710-994-4850; FSC No.: 00929; Empl.: 80

MICRO LAMPS INC., 1055 Paramount Pkwy., Batavia, IL 60510, Tel: 312-879-0900; *Sls. Mgr.:* Shirley A. Jaeger

MICROLOGIC, INC., 108 Water St., Watertown, MA 02172, Tel: 617-923-1700; *Sls. Mgr.:* Yogendra Jain

MICROMETALS, 1190 N. Hawk, Anaheim, CA 92807, Tel: 714-630-7420, TWX: 910-591-1690; FSC No.: 12856; Empl.: 70; *Sls. Mgr.:* K. Baker, Jr.

MICRO MODE PRODS., 1870 John Towers Ave., El Cajon, CA 92020, Tel: 619-449-3844, TWX: 910-331-1673; FSC No.: 15907; Empl.: 40; *Sls. Mgr.:* V. DeMarco; *Dist. Mgr.:* V. DeMarco

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MA	Lexington, Micronel U.S.-East	617-862-1202

MICRONETICS, 36 Oak St., Norwood, NJ 07648, Tel: 201-767-1320, TWX: 710-991-9603; FSC No.: 54487; Empl.: 26; *Sls. Mgr.:* Philip Basse ..... **D•1289**

MICRO NETWORKS, Unitrode Corporation, 324 Clark St., Worcester, MA 01606, Tel: 617-852-5400, Telex: 951808, TWX: 710-340-0067, FAX: 617-853-8296; Empl.: 318; *Sls. Mgr.:* Martha Cheesman

MICRON INDUSTRIES, 1830 N. 32nd Ave., Stone Park, IL 60165, Tel: 312-345-0788, Telex: 27-0248; FSC No.: 30882; Empl.: 115; *Sls. Mgr.:* Michael Kitun; *Dist. Mgr.:* Mike Kadrowicz

MICRO-NOW INSTR. CO., INC., 8260 N. Elmwood St., P. O. Box 1488, Skokie, IL 60077, Tel: 312-677-4700, Telex: RCA 297214-MICRO-UR; FSC No.: 33288; Empl.: 25; *Sls. Mgr.:* C. Arnow

Local Sales Offices & Reps

CA	Los Angeles, Mc Dougall/Mc Laughlin	213-477-8556
CA	Mountain View, Mark V Assoc.	415-964-6275
CO	Boulder, H. Bass Assocs.	303-499-7509
CT	Wallingford, Pat Jenks Assoc.	203-265-9939
MA	Woburn, Pat Jenks Assoc.	617-938-0488
NM	Albuquerque, IMEC	505-344-2212
NY	E. Syracuse, Ossman Instrs.	315-437-7052
NY	Kings Park, USTM Tech. Mktg.	516-724-4250
PA	Melrose Park, Robert Meyers Assoc.	215-224-1663
TX	Dallas, Texas Avionics	214-437-5677
WA	Seattle, Datacom	206-285-2525

MICRO-OHM CORP., 1088 Hamilton Rd., Duarte, CA 91010, Tel: 818-3575377, TWX: 910, ESYLNK: 587-3425; FSC No.: 20940; Empl.: 109; *Sls. Mgr.:* Chas. Schwab; *Dist. Mgr.:* Chas. Schwab ..... **A•1974-1979; B•1743**

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CA	Laguna Hills, Cravins Assoc.	714-240-7242
CA	San Diego, Cerco	619-450-1754
CA	Scotts Valley, Alpha Omega Grp.	408-438-5665
CO	Denver, William Purdy Co.	303-777-1411
IL	Lake Bluff, R & R Mktg. Assocs.	312-295-6600
MA	Canton, N E E S Co.	617-828-4835
NM	Albuquerque, Wm. J. Purdy Co.	505-266-7959
OH	Cleveland, Jim Finnigan & Co.	216-238-5905
OR	Beaverton, Wm. J. Purdy Co.	503-641-9373
TX	Austin, Sage Mktg.	512-335-0300

Local Distributors

CA	Anaheim, A to Z Elctrns.	714-634-3620
CA	Burbank, TAW Elctrns.	213-846-3911
CA	Burlingame, Rose Elctrns.	415-348-2740
CA	Canoga Park, Myco-Vickers	213-340-2025
CA	Costa Mesa, Orange County Comps.	714-979-3597
CA	San Diego, Shelley Elctrns.	619-453-7133
IL	Des Plaines, Circuit Svc.	312-296-4412
MN	Minneapolis, Electronic Ctr.	612-371-5200
NH	Hampstead, Astrum Elctrns.	603-329-5656
NY	New Rochelle, Derf Elctrns.	914-235-4600
NY	Oceanside, Tritech	516-678-6222
OH	Toledo, J R Inds.	419-865-1408
PA	McKean, Advacom	814-476-7774
TX	Ft. Worth, Industrial Elect.	817-731-7321
UT	Provo, Central Utah Elctrns. Supp.	801-373-7522
UT	Salt Lake City, Nytronics	800-242-7612

MICROPAC INDS., INC., General Sensors Div., 905 E. Walnut St., Garland, TX 75040, Tel: 214-272-3571, TWX: 910-860-5186; Empl.: 120; *Sls. Mgr.:* Richard Schlueter

MICROPHASE, 587 Connecticut Ave., Norwalk, CT 06856, Tel: 203-866-8000, TWX: 710-468-0003; Empl.: 230; *Sls. Mgr.:* F. S. Parin

MICRO PLASTICS INC., Hwy 178 North, Flippin, AR 72634, Tel: 501-453-2261, Telex: 783036; FSC No.: 13764; Empl.: 150; *Sls. Mgr.:* J. H. Beijen; *Dist. Mgr.:* N. Vandermast

MICROPLEX, INC., 1977 State College Blvd., Anaheim, CA 92806, Tel: 714-979-8833, 714-634-1535; Empl.: 30

MICRO POWER INTL., INC., 9420 Activity Rd., San Diego, CA 92126, Tel: 619-271-0831, 619-271-5942; Empl.: 39

MICRO POWER SYS. INC., 3100 Alfred St., Santa Clara, CA 95050, Tel: 408-727-5350, TWX: 910-338-0154; FSC No.: 54186; Empl.: 305; *Sls. Mgr.:* Don Cavallo; *Dist. Mgr.:* Reed Neddermeyer

MICRO-PRODUCTS ENGINEERING CO., 230 Ridgewood Ave., Newark, NJ 07108, Tel: 201-824-8467; Empl.: 100; *Sls. Mgr.:* Gerald Muller

MICROSCIENCE, INC., 182 Forbes Rd., Braintree, MA 02184, Tel: 617-849-1952, Telex: 750-480, FAX: 617-843-9812; Empl.: 17; *Sls. Mgr.:* William Hall

MICROSEMI CORP., 2830 S. Fairview St., Santa Ana, CA 92704, Tel: 714-979-8220, Telex: 4720306; FSC No.: 14552; Empl.: 1100; *Sls. Mgr.:* R. M. Shultz; *Dist. Mgr.:* G. Avila

MICROSIGNAL INC., P.O. Box 60312, Santa Barbara, CA 93160, Tel: 805-964-2227; Empl.: 6; *Sls. Mgr.:* Jim Norton

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Local Sales Offices & Reps

AZ	Scottsdale, Territorial Mktg.	602-994-8665
CA	Mission Hills, Detomasi & Grupp	818-365-8285
CA	San Diego, Detomasi & Grupp	619-277-0178
CA	Torrance, Detomasi & Grupp	213-618-8898
FL	Orlando, TMA	305-857-3760
IL	Mt. Prospect, Cain forlaw Co.	312-253-3578
MD	Ellicott City, V.P.I.	301-461-2525
MA	Hingham, O'Sullivan & Murphy	617-749-8680
MO	Kansas City, EIR	816-452-7030
MO	Leesburg, EIR	314-245-6860
NJ	Glen Gardner, F & M Tech. Sls.	201-832-7216
NY	Liverpool, R & D Assocs.	315-457-0100
NY	Melville, Metro Mics	516-271-6677
OH	Lancaster, Cain Forlaw Co.	614-654-4800
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MA	Newton	617-969-0265
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MN	Minneapolis	612-830-3516
MO	St. Louis	314-576-2518
NJ	Westfield	201-233-9200
NY	Rochester	716-424-2700
NC	Charlotte	704-364-4770
OH	Brooklyn Heights	216-459-6075
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TX	Dallas	214-701-2876
TX	Houston	713-780-6651
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WI	Brookfield	414-784-6260
Can	Edmonton	403-453-3581
Can	Ottawa	613-224-3822
Can	Vancouver	604-291-6631
Can	Ville St. Laurent	514-731-7681
Can	Willowdale	416-491-1300
Can	Winnepeg	204-632-0250

MICRO/SYS, 1011 Grand Central Ave., Glendale, CA 91201-3010, Tel: 818-244-4600, Telex: 170788

MICROSYSTEMS DEVELOPMENT CORP., INC., 1560 Teaneck Rd., Teaneck, NJ 07666, Tel: 201-837-0051, Telex: 13-6479 Att. 296; *Sls. Mgr.:* L. G. Mansoor

MICRO SYSTEMS ENGINEERING, INC., 6024 S.W. Jean Rd., Lake Oswego, OR 97035, Tel: 503-635-4016, Telex: 151-538; FSC No.: 75800; Empl.: 60

MICROTECH, 1420 Conchester Hwy., Boothwyn, PA 19061, Tel: 215-459-3566; Empl.: 22; *Sls. Mgr.:* H. Carter

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MICRO TECHNICAL INDUSTRIES, 23132 La Cadena Dr. Ste. E, Laguna Hills, CA 92653, Tel: 714-855-4326, Telex: 371-9688, FAX: 714-855-9545; Empl.: 20; *Sls. Mgr.:* Konomi Y. Martin ..... **D•1288**

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CA	San Juan Capistrano, Craven & Assocs.	714-240-7242
FL	Orlando, Southeastern Sci., Inc.	305-299-4188
MA	Cohasset, Resch. Ltd.	617-482-5959
OR	Portland, Core II Mktg., Inc.	503-641-0877
PA	Jenkintown, Arnold Assocs.	215-887-7870
TX	Dallas, Dean Assocs.	214-458-1321
WA	Seattle, Core II Mktg., Inc.	206-451-8163
WA	Spokane, Core II Mktg., Inc.	509-922-2971

MICROTOUCH SYSTEMS INC., Ten State Street, Woburn, MA 01801, Tel: 617-935-0080, Telex: 530264; FSC No.: 935-0133; Empl.: 60; *Sls. Mgr.:* William N. Keller

MICROTRAN CO. INC., 145 E. Mineola Ave., P. O. Box 236, Valley Stream, NY 11582, Tel: 516-561-6050, TWX: 510-225-8412; FSC No.: 00348; Empl.: 75; *Sls. Mgr.:* W. Benscher ..... **A•1254, 2160, 2292-2306**

Local Sales Offices & Reps

AL	Huntsville, Over & Over	205-837-7105
AZ	Scottsdale, F. Schoeffler	602-948-1004
CA	Campbell, Kottmeier Assocs.	408-371-8700
CA	El Monte, Cook Entprs.	213-686-2120
CO	Englewood, Omega, Ltd.	303-762-1921
FL	Brandon, Over & Over, Inc./Florida	813-689-9104
GA	Norcross, Over & Over	404-449-6205
IL	Wheaton, Chadra-Schilke Assoc.	312-653-8126
IN	Noblesville, R & D Elctrn. Sls.	317-849-2026
KS	Overland Park, PMR, Inc.	913-381-0004
MD	Baltimore, Burgin-Kreh Assocs.	301-265-8500
MA	Reading, Meco, Inc.	617-944-6660
MN	Minnneapolis, RK Sales	612-571-1001
MO	Hazelwood, Jim Moore & Assocs.	314-731-2240
NJ	Englewood Cliffs, E. Glass Assocs.	201-592-0200
NM	Albuquerque, C.T. Carlberg & Assocs.	505-888-3883
NY	Rochester, J.G. Welch Assocs.	716-244-1100
NC	Charlotte, Over & Over	704-542-9111
NC	Raleigh, Over & Over Inc.	919-782-9111
OH	Cincinnati, J.O. Olsen Co.	513-922-8885
OH	Garfield Heights, J.O. Olsen	216-662-3454
OR	Portland, SPS Elctrns.	503-297-6919
PA	Jenkintown, Arnold Assocs.	215-887-7870
PA	Pittsburgh, J.O. Olsen Co.	412-279-2550
TX	Dallas, Howell Sls.	214-353-2707
VA	Lynchburg, Burgin-Kreh Assocs.	804-239-2626
WA	Redmond, SPS Elctrns.	206-323-4140
Can	Montreal, Quebec, H. W. Brieger Sls., Inc.	514-486-5869

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AL	Birmingham, MG Elctrns. & Equip.	205-328-4525
CA	Fullerton, Pyramid/Fullerton	714-773-0781
CA	Santa Clara, Pyramid Elctrns.	408-727-9810
CA	Santa Monica, Master Distrs.	800-421-8153
CA	Sunnyvale, Sierra West Elctrns.	408-747-1188
CO	Englewood, Shelley/Ragon Inc.	303-762-0670
FL	Clearwater, Elctrn. Precepts of Florida	813-530-9781
FL	Ft. Lauderdale, Peerless Radio Corp.	800-327-4993
IL	Crystal Lake, Sub-Sem, Inc.	312-782-3954
IL	Northbrook, Classic Comp.	312-272-9650
IN	Indianapolis, Graham Elctrns.	317-634-3202
IA	Cedar Rapids, Deeco, Inc.	319-365-7551
MA	Hingham, Sager Elec. Supp.	617-749-6700
MN	Minneapolis, Bergquist	612-835-2322
NJ	Kenilworth, Federated Elctrns.	201-272-0505
NM	Albuquerque, Walker Elctrn. Supp.	505-883-2992
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NY	Johnson City, Help Elctrns.	607-729-3528
NY	Lynbrook, Peerless Radio	516-593-2121
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MICROWAVE SYSTEMS, 6505 Collamer Rd., E. Syracuse, NY 13057, Tel: 315-437-9951, TWX: 710-541-0408, FAX: 315-437-8095; FSC No.: 26058; Empl.: 35; *Sls. Mgr.:* Michael P. Busse

MICTRON INC., 6050 Porter Way, Sarasota, FL 33582, Tel: 813-371-6659; *Sls. Mgr.:* M. Weinstein

MIDCOM MAGNETICS, Midland-Ross Corp., 121 Airport Dr., Watertown, SD 57201, Tel: 605-886-4385, TWX: 295-017; Empl.: 200; *Sls. Mgr.:* Tom Schuman

MIDDLEBURG CORP., Middco Connectors, 95 Albany Turnpike, Canton, CT 06019, Tel: 203-693-8361, Telex: 643529; Empl.: 20; *Sls. Mgr.:* Judy Nelson

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CT	Kensington, MTI Middle Tech., Inc.	203-828-1148
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PA	Huntingdon Valley, R. W. Mitscher Co., Inc.	215-355-4452
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VA	Richmond, R. W. Mitscher Co., Inc.	804-264-6883
VA	Shipman, R. W. Mitscher Co., Inc.	804-263-5154
WA	Redmond, Interstate Elctrns.	206-885-5257

Local Distributors

CA	Irvine, Mann Southwest	714-380-4170
FL	Melbourne, Rome Elctrns.	305-242-8151
GA	Fayetteville, Frankland, Inc.	404-461-4026
MA	Canton, Impact Sls.	617-821-1500
OH	Wickliffe, Gateway Megatech	216-944-5801
Can	Ontario, Paltronics Ltd.	416-844-2233

MID-EASTERN INDUSTRIES, 100 Campus Dr., RD 1, Mt. Holly, NJ 08060, Tel: 609-267-3811; FSC No.: 06179; Empl.: 10; *Sls. Mgr.:* Daniel Ellenback .... **D•1812-1816**

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CA	Los Angeles, Dyna Sls.	213-268-1175
IL	Des Plains, Marsland Assocs., Inc.	312-298-2620
IN	Indianapolis, Marsland Assocs., Inc.	317-293-5437
IA	Cedar Rapids, Marsland Assocs., Inc.	319-396-8030
MI	Centerline, Dietrich & Assocs.	313-754-6450
MN	Minneapolis, Marsland Assocs., Inc.	612-545-4481
MO	St. Louis, Marsland Assocs., Inc.	314-991-1399
NM	Albuquerque, Westahl Assocs.	505-881-0995
NY	Huntington, C.R. Mayer Co.	516-WA1-7876
OH	Cleveland, Dietrich & Assocs.	216-781-1855
OH	Dayton, Dietrich & Assocs.	513-223-6042
PA	Pittsburgh, Dietrich & Assocs.	412-892-2992
WA	Seattle, Eicher-Richards Co.	206-LA3-7888
WI	New Berlin, Marsland	414-786-6611

MIDGET LOUVER, 800 Main Ave., Norwalk, CT 06852, Tel: 203-866-2342; Empl.: 10; *Sls. Mgr.:* Francis J. Miller; *Dist. Mgr.:* Holly Monroe

MIDLAND-ROSS CORP., NEL UNIT, See NEL Frequency Controls, Inc.

MIDLAND STANDARD, INC., 1355 Holmes Rd., Elgin, IL 60120, Tel: 312-741-6600; Empl.: 38; *Sls. Mgr.:* Bernie McGuinn

MIDWAY MFR. CO., 10750 W. Grand Ave., Franklin Park, IL 60131, Tel: 312-451-1360, Telex: 72-1596; Empl.: 2000; *Dist. Mgr.:* Allan Stearns

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MCI
MIDWEST COMPONENTS INC.

MIDWEST COMPS., 1981 Port City Blvd., Muskegon, MI 49443, Tel: 616-777-2602, TWX: 510-394-4130; FSC No.: 50157; Empl.: 125; *Sls. Mgr.:* J. E. Saling ..... **B•1728, 1744-1751**

Local Sales Offices & Reps

AL	Huntsville, Glen White Assoc.	205-883-7938
CA	San Diego, Hadden Assocs.	619-565-9444
CA	Saratoga, Testco	408-253-1900
CA	Westminster, West Elctrns.	714-898-0120
GA	Norcross, Glen White Assoc.	404-441-1447
IL	Chicago, D. Dolin Sls.	312-286-6200
IN	Ft. Wayne, TMC Corp.	219-432-5553
MD	Timonium, Glen White Assoc.	301-252-6360
MN	St. Paul, R. G. Ragon	612-488-0201
NJ	West Cauldwell, Grimm, Siegel Assoc.	201-575-9300
NC	Raleigh, Glen White Assoc.	919-787-7023
OH	Dayton, Jay Engrg.	513-253-2151
OH	N. Royalton, Jay Engrg.	216-237-4235
OK	Tulsa, Norcom	918-664-9526
TN	Gray, Glen White Assoc.	615-477-8850
TX	Dallas, Norcom	214-386-4888
TX	Houston, Norcom	713-988-0022
VA	Lynchburg, Glen White Assoc.	804-237-6291
WA	Seattle, Jas. J. Backer	206-285-1300
WI	Milwaukee, D. Dolin Sls.	414-482-1111

MIKRON INSTR., 445 W. Main St., Wyckoff, NJ 07481, Tel: 201-891-7330, Telex: 361870, FAX: 201-891-1205; Empl.: 60; *Sls. Mgr.:* K. Irani

MII CORP., P.O. Box 395, Birdsboro, PA 19508, Tel: 1-800-835-8766, 215-582-5361, Telex: 4930573; FSC No.: I6668; Empl.: 8

Distributor

MIL-COMM DISTRIBUTORS, INC., 9400 Lurline Ave. #C, Chatsworth, CA 91311, Tel: 818-998-3111 ..... **D•1468**

MIL ELECTRONICS, INC., 1 Mill st., Dracut, MA 01826, Tel: 617-453-8000; FSC No.: 07862; Empl.: 40; *Sls. Mgr.:* Mark Ryan

MILFORD RIVET & MACH., 857 Bridgeport Ave., Milford, CT 06460, Tel: 203-878-4631, Telex: 964363, TWX: 710-462-0538; Empl.: 400

MILLEN COMPONENTS, Electronic Instr. & Specialty Corp., 42 Pleasant St., Stoneham, MA 02180, Tel: 617-438-6951, Telex: 948-025; FSC No.: 57285; Empl.: 20; *Sls. Mgr.:* R. A. Boisseau

MILLER DIAL CORP., 4400 N. Temple City Blvd., El Monte, CA 91734, Tel: 818-444-4555, TWX: 910-587-3438; *Sls. Mgr.:* P. J. Wener, V.P. Membrane

MILLER, J.W., CO., See Bell Inds.

MILLER, L.C., CO., 717 Monterey Pass Rd., Monterey Pk., CA 91754, Tel: 213-268-3611; Empl.: 45

MILLER, SANFORD, CORP., See Sanford-Miller Corp.

MILLER, W. A., CO., Mingo Loop, P.O. Box 337, Oquossoc, ME 04964-0337, Tel: 207-864-3344, 800-227-1415; Empl.: 18; *Sls. Mgr.:* D. Hunger

MILLER-STEPHENSON CHEM. CO., INC., George Washington Hwy., Danbury, CT 06810-7378, Tel: 203-743-4447, Telex: 643-711

MILLIFLECT, 7752 Enterprise Dr., Newark, CA 94560, Tel: 415-791-5188, Telex: 466465, FAX: 415-791-5189; Empl.: 39; *Sls. Mgr.:* Don Koijane

MILLI-SWITCH CORP., Box 67, Gladwyne, PA 19035, Tel: 215-MI2-9222; Empl.: 15

MILLIVAC INSTRUMENTS, INC., Box 997, Curry Rd. Ext., Schenectady, NY 12301, Tel: 518-355-8300; FSC No.: 85711; Empl.: 30; *Sls. Mgr.:* (Mrs.) Pola Metzger ..... **D•1290**

Local Sales Offices & Reps

CA	San Diego, Jan B. Metzger	619-281-0628
MA	Needham, Addelco Corp.	617-444-4754
NY	Fayetteville, Martin P. Andrews	315-637-5291
PA	Media, S & S Div. of Klinetics	215-565-5388
TX	Houston, Scientific Sls.	713-460-9170
TX	Richardson, Scientific Sls.	214-231-6541
Can	Downsview, Ont., Tradeport Elctrns. Grp.	416-736-0866

MILL-MAX MANUFACTURING CORP., P.O. Box 300, Oyster Bay, NY 11771, Tel: 516-922-6000, TWX: 510-221-1820; Empl.: 160; *Sls. Mgr.:* Charles P. Stiso ... **C•1355**

Local Sales Offices & Reps

CA	Dana Point/W. Covina, Patrick M. Conahan Assocs.	714-493-9822
CA	San Jose, Patrick M. Conahan Assocs.	408-723-2200
CO	Boulder, R. G. Enterprises, Inc.	303-447-9211
FL	Seminole, Chaco Sls. of America, Inc.	813-397-4843
IL	Palatine, Houlihan Sls. Co.	312-705-0400
IA	Davenport, Electro-Tech Assocs.	319-386-1134
ME	Kittery, Olsen Tech. Sls.	207-439-6872
MA	Scituate, Olsen Tech. Sls.	617-545-5101
MN	Minneapolis, Electro-Tech. Assocs.	612-927-5878
NY	South Huntington, JSA Sls.	516-939-0844
NC	Matthews, Cardinal Sls. Co.	704-847-0248
OH	Columbus, KT/Depco	614-447-0106
OH	Highland Heights, KT/Depco	216-442-6200
PA	Doylestown, G. A. Recentio Assocs.	215-348-7577
WA	Bellevue, Comtec	206-453-1188
Can	Burlington, Ont., Dennis Young Mktg. & Assocs.	416-634-9540

Local Distributors

AZ	Tempe, Acacia Sls., Inc.	602-894-2874
AZ	Tempe, Electronic Hardware, Ltd.	602-967-1691
CA	Campbell, Gourmet Elctrns.	408-374-0552
CA	Chatsworth, West Valley Inds.	818-700-0700
CA	Fremont, Alatec Prods.	415-657-7701
CA	N. Hollywood, Alatec Prods.	818-764-5600
CA	N. Hollywood, Electronic Hardware, Ltd.	818-982-6100
CA	San Jose, Bisco Inds., Inc.	408-946-8980
CO	Denver, Hardware Specialty Co., Inc.	303-322-3700
CT	Bethel, Heilind Elctrns., Inc.	203-797-8600
FL	Lake Mary, Electronic Fasteners, Inc.	305-321-4000
GA	Norcross, Atlanta Hardware Specialty Co.	404-449-3000
IL	Franklin Park, Bisco Inds., Inc.	312-451-1230
MD	Gaithersburg, Capital Fasteners	301-948-9310
MA	Canton, EPC Elctrns., Inc.	617-821-2111
MA	Marlborough, Hardware Specialty Co., Inc.	617-481-8622
MA	Wilmington, Heilind Elctrns., Inc.	617-657-4870
MA	Winchester, Rush Inds., Inc.	617-729-5800
MI	Grand Rapids, S. F. Elctrn. Supply, Inc.	616-459-0216
MN	Minneapolis, Aero-Space Computer Supplies, Inc.	612-884-4725
NJ	Union, Meridian Mfg. & Supply Co., Inc.	201-687-6220
NJ	Vincentown, Meridian Mfg. & Supply Co., Inc.	609-654-5582
NY	Hauppauge, Kaytech Inds.	516-435-0560
NY	Long Island City, Hardware Specialty Co., Inc.	718-361-9393
NY	Mount Vernon, QAR Industrial Elctrn. Sls., Inc.	914-699-2224
NC	Greensboro, Meridian Mfg. & Supply Co., Inc.	919-674-7042
NC	Raleigh, Century Fasteners	919-787-1800
OR	Beaverton, Component Resources	503-641-8488
TX	Farmers Branch, Force Elctrns. of Texas	214-351-2050
Can	Mississauga, Ont., Rush Elctrns., Ltd.	416-677-7280

MILLS RESISTOR CO., 3840 Catalina St., Los Alamitos, CA 90720, Tel: 213-598-2454; FSC No.: 34238; Empl.: 50 ..... **A•1981**

Local Sales Offices & Reps

CA	Los Altos, Frauman Assocs.	415-941-0660
CA	Sacramento, Mills Resistor Co.	916-422-5461
CT	Rocky Hill, Jim McPhail	203-721-1802
KS	Leawood, James Dick Co.	913-649-0805
MA	Waltham, Dynasel Assocs.	617-890-6777
OR	Gaston, SPS Elctrns.	206-323-4140
TX	Houston, Ev Smith Co.	713-649-5756
WA	Seattle, SPS Elctrns.	206-323-4140

Local Distributors

FL	Ft. Lauderdale, Jaro Elctrns.	800-327-5551
PA	McKean, Advacom	814-476-7774

MILPOWER SOURCE, INC., 49 Range Rd., Windham, NH 03087, Tel: 603-893-2834; Empl.: 150

MILTON ROSS CO., 511 Second St. Pike, Southampton, PA 18966, Tel: 215-355-0200, TWX: 510-667-1702; Empl.: 165; *Sls. Mgr.:* M. I. Ross

MILTOPE BUSINESS PRODUCTS, Miltope Grp., 1770 Walt Whitman Rd., Melville, NY 11747, Tel: 516-420-0200; Empl.: 700

MILTOPE CORP., 1770 Walt Whitman Rd., Melville, NY 11747, Tel: 516-420-0200, TWX: 510-221-1803; Empl.: 500; *Sls. Mgr.:* R. Douglas Shute; *Dist. Mgr.:* William Jennings

MRC

MILWAUKEE RESISTOR CORP., 700 W. Virginia St., Milwaukee, WI 53204, Tel: 414-271-9900; FSC No.: 82807;15109; Empl.: 65; *Sls. Mgr.:* W. R. Pollock; *Dist. Mgr.:* W. R. Pollock ..... **A•1982-1986**

Local Sales Offices & Reps

CA	San Carlos, Electro Pacific	415-592-3114
IL	Burr Ridge, PVA Corp.	312-655-3355
NY	Rochester, Gislason Sls.	716-328-7400
OH	Westlake, Assocd. Elctrl. Comps.	216-835-9960

MILWAUKEE TRANSFORMER CO., MTE Corporation, 7901 W. Clinton Avenue, Milwaukee, WI 53223, Tel: 414-358-5300; *Sls. Mgr.:* Fred A. Lewis; *Dist. Mgr.:* Fred A. Lewis

MIMIC, INC., P. O. Box 705, Islington, MA 02090-0705, Tel: 617-329-9593; Empl.: 5; *Sls. Mgr.:* S. Thurston

MINCO PRODUCTS, 7300 Commerce La., Minneapolis, MN 55432, Tel: 612-571-3121, TWX: 910-576-2848; FSC No.: 09359; Empl.: 475; *Sls. Mgr.:* J. Anderson

MIN-E-CON, 1791 Reynolds, Irvine, CA 92714, Tel: 714-250-0474, TWX: 910-595-1144; *Sls. Mgr.:* Jeff Sander

MINELCO INC. - A TALLEY IND., 135 S. Main St., Thomaston, CT 06787-0459, Tel: 203-283-8261, TWX: 710-475-1091; FSC No.: 07479; Empl.: 70; *Sls. Mgr.:* James T. Rasmussen

MINIATURE METAL FORMING DIV., 4819 Emerald St., P.O. Box 2962, Torrance, CA 90509, Tel: 213-370-3679, Telex: 664726; Empl.: 35; *Sls. Mgr.:* William Kramer

Mini-Circuits

MINI-CIRCUITS LAB., 2625 E. 14th St., P.O. Box 350166, Brooklyn, NY 11235-0003, Tel: 718-934-4500, Telex: 125460, 620156 (Intl.), FAX: 718-332-4661; FSC No.: 15542 ..... **A•1789-1852; B•1768**

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns.	205-881-5031
AZ	Scottsdale, Thorson Desert States, Inc.	602-998-2444
CA	Los Altos, Cain-White & Co.	415-948-6533
CA	N. Hollywood, Crown Elctrns.	213-877-3550
CO	Englewood, Thorson Rocky Mtn., Inc.	303-779-0666
FL	Boca Raton, Beacon Elctrns.	305-997-5740
FL	Clearwater, Beacon Elctrns.	813-796-2378
FL	Longwood, Beacon Elctrns.	305-332-1940
GA	Atlanta, Beacon Elctrns.	404-256-9640
IL	Mount Prospect, Cain Forlaw Co.	312-253-3578
MD	Columbia, M. Lader & Co.	301-730-1550
MA	Waltham, Scientific Devices	617-890-2252
NM	Albuquerque, Thorson Desert States, Inc.	505-293-8555
NY	Hartsdale, Spectrum Sales	914-472-8600
NY	Skaneateles, Robtron	315-685-5731
NC	Raleigh, Beacon Elctrns.	919-787-0330
OH	Lancaster, Cain Forlaw Co.	614-654-4800
OK	Tulsa, Beacon Elctrns.	918-622-1494
PA	Lafayette Hill, M. Lader & Co.	215-825-3177
TX	Dallas, Beacon Elctrns.	214-437-1505
UT	Salt Lake City, Thorson Rocky Mtn., Inc.	801-973-7969
WA	Bellevue, Cain-White & Co.	206-462-2118
PR	Santurce, Beacon Elctrns.	809-728-5040

Local Distributors

AL	Huntsville, Comp. Distrs., Inc.	205-883-7501
AZ	Scottsdale, Spirit Elctrns.	602-998-1533
AR	Little Rock, Comp. Distrs., Inc.	501-227-6278
CA	Los Altos, Penstock/West	415-948-6552
CA	Los Altos, Penstock, Inc.	415-948-6552
CA	N. Hollywood, Crown Elctrns.	213-877-3550
CO	Aurora, Spirit Distrs.	303-671-7344
FL	Melbourne, Comp. Distrs., Inc.	305-724-9910
GA	Norcross, Comp. Distrs., Inc.	404-441-3320
IL	Mt. Prospect, CFC Distrs., Inc.	312-253-3578
MD	Columbia, MLC Distrs.	215-825-3177
NC	Raleigh, Comp. Distrs., Inc.	919-834-9465
NC	Raleigh, MLC Distrs.	919-848-3253
PA	Lafayette Hills, MLC Distrs.	215-825-3177
TX	Dallas, Comp. Distrs., Inc.	214-644-0373

MINI COMPUTER TECHNOLOGY, 696 E. Trimble Rd., San Jose, CA 95131, Tel: 408-435-1616, TWX: 910-338-2281, FAX: 408-435-2709; Empl.: 30; *Sls. Mgr.:* Doug Vincent; *Dist. Mgr.:* Doug Vincent

MINI-MAGNETICS CO., INC., 1100 Fulton Place, Fremont, CA 94539, Tel: 415-490-7500; Empl.: 45; *Sls. Mgr.:* William Fine

MSI

MINI-SYSTEMS, INC., 20 David Rd., North Attleboro, MA 02761, Tel: 617-695-0203, TWX: 710-348-0564; FSC No.: 50316; Empl.: 150 ..... **A•1987**

Local Sales Offices & Reps

TX	Lewisville, C & J Assocs.	214-539-0140

MINI-SYSTEMS, INC., Electronic Package Div., 168 E. Bacon St., P.O. Box 1597, Plainville, MA 02762, Tel: 617-695-2000, TWX: 510-600-4340, FAX: 617-695-8758; *Sls. Mgr.:* Heather Edwards ..... **A•1764**

MINNTRONICS CORPORATION, 2599 White Bear Ave., St. Paul, MN 55109, Tel: 612-770-5247

Local Distributors

MN	St. Paul, MCS Computer Prods., Inc.	612-770-5232

MINOR RUBBER CO., INC., Ackerman St., Bloomfield, NJ 07003, Tel: 201-338-6800, 800-631-8574, Telex: 138817; *Sls. Mgr.:* Stan Messing

MISCO/MINNEAPOLIS SPEAKER CO, 3806 Grand Avenue, Minneapolis, MN 55409, Tel: 612-825-1010; FSC No.: 14208; *Sls. Mgr.:* Don Ringham

MITEC ELECTRONICS, 104 Gun Avenue, Pointe Claire, Quebec, Canada H9R 3X3, Tel: 802-864-0064, TWX: 510-101-2790; FSC No.: FSCM 38494; Empl.: 100; *Sls. Mgr.:* Elayne Bernstein

MITEL SEMICONDUCTOR, Mitel Corp., P. O. Box 13320, Kanata, ON, Canada K2K 1X5, Tel: 613-592-5630, Telex: 053-3221, TWX: 610-562-8529; Empl.: 600; *Sls. Mgr.:* Howard Tweddle; *Dist. Mgr.:* Howard Tweddle

MITEQ INC., 125 Ricefield Lane, Hauppauge, NY 11788, Tel: 516-543-8873, TWX: 510-226-3781; Empl.: 195

MITRONICS, 2908 Oregon Court - Bldg. I-2, Torrance, CA 90503, Tel: 213-320-7011

MITSUBISHI ELECTRONICS, 991 Knox Street, Torrance, CA 90502, Tel: 213-515-3993, Telex: 06-4703-M USA LSA, TWX: 66-4787-MELA TRNC; Empl.: 423; *Sls. Mgr.:* Mike Foster

MITSUBISHI ELCTRNS. AMERICA, INC., Semiconductor Div., 1050 East Arques Ave., Sunnyvale, CA 94086, Tel: 408-730-5900, Telex: 172296, TWX: 910-339-9549; FSC No.: 408-749-0453; *Sls. Mgr.:* John Zucker; *Dist. Mgr.:* Bob Olszewski

MITSUMI ELEC. CO., LTD., 8-2, 8-Chome, Kokuryo, Chofu-City, Tokyo, Japan, Tel: 489-5333, Telex: J28846/J24935; Empl.: 1700; *Sls. Mgr.:* H. Sato; *Dist. Mgr.:* U. Nishimura

MIYAKAWA AMERICA CORP., 408 E. Devon Ave., Elk Grove Village, IL 60007, Tel: 312-640-0515, FAX: 312-640-0531 ..... **B•1107-1109**

MIZAR, INC., 20 Yorkton Court, St. Paul, MN 55117, Tel: 612-224-8941, Telex: 469542; Empl.: 35; *Sls. Mgr.:* William K. Simons

MKC ELECTRONICS CORP., 454 E. Donovan Rd., Kansas City, KS 66115, Tel: 913-371-1351; Empl.: 26

MKS INSTRUMENTS, INC., Six Shattuck, Andover, MA 01810, Tel: 617-975-2350, Telex: 94-9375, FAX: 617-975-0094; Empl.: 130

MOBILE-TRONICS CO., INC., Box 1022, Tustin, CA 92680, Tel: 714-546-0884; Empl.: 2

MODERN CONTROLS CORP., 2233 Indl. Blvd., Sarasota, FL 33580, Tel: 813-355-5183; FSC No.: 66258; Empl.: 9

MODICON PROGRAMMABLE CONTROL DIV., Gould Inc., P.O. Box 83 S.V.S., Andover, MA 01810, Tel: 617-475-4700, Telex: 94-7402, TWX: 710-347-6610; *Sls. Mgr.:* Steven Mader (PC's); *Dist. Mgr.:* George Dannecker (Micro 84)

MODULAR AUDIO PRODUCTS, Modular Devices, Inc., 50 Orville Dr., Bohemia, NY 11716, Tel: 516-567-9620; *Sls. Mgr.:* C. Liptman

MODULAR DEVICES, 50 Orville Dr., Bohemia, NY 11716, Tel: 516-567-9620, Telex: 4949781 MODULAR; FSC No.: 52202; Empl.: 65; *Sls. Mgr.:* C. Liptman ..... **A•1765; D•1818-1819, 2084**

Local Sales Offices & Reps

GA	Roswell, Electro Comp. Sls.	404-992-2344
MD	Linthicum, Advanced Technlg. Sls., Inc.	301-789-9360
NH	Manchester, Northeast Comps.	603-627-7242
NY	Wantagh, Tri-Tek Assocs.	516-221-7600

MODULAR POWER SYS. INC., 2201 Donley Drive, Austin, TX 78758, Tel: 512-834-9262, Telex: 752-890; FSC No.: 58480; Empl.: 60

MODULAR SYSTEMS, INC., 905 Albemarle St., Charlottesville, VA 22901, Tel: 804-295-7882; Empl.: 9; *Sls. Mgr.:* H. N. Patel

MODUTEC, 18 Marshall St., Norwalk, CT 06854, Tel: 203-853-3636, TWX: 710-468-2039, FAX: 203-853-2147; Empl.: 300 ..... **D•1359**

Local Sales Offices & Reps

AL	Huntsville, R. W. Mitscher Co., Inc.	205-882-6050
AZ	Scottsdale, Luscombe Engrg. Co.	602-949-9333
CA	Campbell, Luscombe Engrg. Co.	408-370-2020
CA	Pasadena, Luscombe Engrg. Co.	213-684-2000
CO	Arvada, Arrowhead Sls. Co.	303-423-5556
FL	Altamonte Springs, R. W. Mitscher Co., Inc.	305-778-6844
FL	Boco Roton, R. W. Mitscher Co., Inc.	305-368-3841
FL	Clearwater, R. W. Mitscher Co., Inc.	813-539-1072
GA	Lawrenceville, R. W. Mitscher Co., Inc.	404-923-3239
IL	Arlington Hgts., Brainard-Wilson Mktg.	312-437-2700
IN	Carmel, Brainard-Wilson Mktg.	317-844-2800
IN	Carmel, Carter, McCormic & Peirce	317-844-4175
IA	Marion, M-S-B Assocs.	319-377-6261
KS	Shawnee Mission, M-S-B Assocs.	913-432-2131
MD	Randallstown, Beacon Elec.	703-534-7200
MA	Canton, New England Elctrn. Sls. Corp.	617-828-4835
MI	Farmington, Carter, McCormic & Peirce	313-477-7700
MN	Minneapolis, R.J. Inc.	612-866-3661
MO	St. Charles, M-S-B Assocs.	314-946-5577
NJ	Englewood, Sprung/Nussbaum	201-569-5666
NJ	Marlton, BGR Assocs.	609-983-1020
NY	Bainbridge, R. W. Mitscher	607-697-7192
NY	Clarence, R. W. Mitscher	716-759-2350
NY	Pittsford, R. W. Mitscher	716-586-4012
NY	Red Hook, R. W. Mitscher	914-758-8375
NY	Rochester, R. W. Mitscher	716-227-0839
NY	Utica, R. W. Mitscher	315-738-0383
NC	Charlotte, R. W. Mitscher Co., Inc.	704-563-8884
NC	Raleigh, R. W. Mitscher Co., Inc.	919-848-0941
OH	Berea, Carter, McCormic & Peirce	216-826-0400
OH	Englewood, Carter, McCormic & Peirce	513-836-0951
OR	Beaverton, Eclipse Mktg. Grp.	503-642-1661
PA	Camp Hill, Process Engrg.	717-761-3275
PA	Pittsburgh, Process Engrg.	415-561-5050
TN	Johnson City, R. W. Mitscher Co., Inc.	615-929-7258
TX	Houston, Scientific Sls. Co.	713-460-9170
TX	Richardson, Scientific Sls. Co.	214-231-6541
VA	Forrest, Beacon North	804-239-8486
VA	Sterling, Beacon Elctrns.	703-478-2480
WA	Redmond, Eclipse Mktg. Grp.	206-885-6991
WI	Colgate, Rep-1 Assoc.	414-628-4016
EXP	Freeport, Minthorne	516-546-4700

Local Distributors

AL	Birmingham, Brownell Electro	205-322-3374
AL	Huntsville, Component Distrs.	205-883-7501
AL	Mobile, Brownell Electro	205-479-8581
AR	Little Rock, Component Distrs.	501-227-6278
CA	Inglewood, Force Elctrns.	213-776-1324
CA	Santa Clara, Fisher-Brownell	408-988-6041
FL	Ft. Lauderdale, Component Distrs.	305-971-4950
FL	Miami, Brownell Electro	305-591-3215
FL	Orlando, Brownell Electro	305-843-6770
GA	Hapeville, Brownell Electro	404-762-5181
IL	Chicago, Newark Elctrns.	312-638-4411
IL	Elk Grove Village, Meter Master	312-593-8650
IN	Ft. Wayne, Graham Elctrns.	219-423-3422
IN	Indianapolis, Graham Elctrns.	317-634-8202
MD	Gaithersburg, Pioneer Instrumentation	301-921-0660
MA	Woburn, Brownell Electro	617-935-7820
MI	Ferndale, RAM Meter	313-398-6767
MO	St. Louis, Olive Elctrns.	314-426-4500
NJ	Belleville, Miscorp	201-751-1190
NJ	Fairfield, Ampower Elctrn. Instr.	201-227-7720
NJ	S. Plainfield, Brownell Electro	201-753-4600
NY	Clarence, Trott Elctrns.	716-634-8500
NY	New York, Brownell Electro	212-691-1171
NY	Pittsford, Trott Elctrns.	716-586-8251
NC	Charlotte, Brownell Electro	704-597-1270
NC	Raleigh, Brownell Electro	919-876-6524
NC	Raleigh, Component Distrs.	919-781-0262
OH	Cleveland, Pioneer Instrumentation	216-587-3600
OH	Cleveland, Weschler Elec. Co.	216-238-2550
OH	Dayton, Pioneer Instrumentation	513-236-9900
PA	Norristown, Kimberly-James Co.	215-666-7286
SC	Columbia, Brownell Electro	803-772-6111
TN	Chattanooga, Techni-Tronics	615-875-5449
TN	Knoxville, Brownell Electro	615-966-3441
TN	Memphis, Brownell Electro	901-795-8483
TN	Nashville, Brownell Electro	615-889-8230
TX	Dallas, Inotek Corp.	214-243-7000
TX	Ft. Worth, Allied Elctrns.	817-336-5401
TX	Ft. Worth, Inotek Corp.	817-831-2126
TX	Houston, American Analog	713-941-7265
TX	Houston, Brownell Electro	713-699-1981
TX	Houston, Inotek Corp.	713-688-4494
WA	Seattle, Eicher-Richards Co.	206-523-7888
WI	Milwaukee, E-M Instrs.	414-272-7799
WI	Milwaukee, Marsh Elctrns.	414-475-6000

MOISTURE REGISTER PRODUCTS DIV., Aqua Measure Instrument Co., 2583 Pomona Blvd., Pomona, CA 91768-3267, Tel: 714-594-5545, Telex: 6503137369 MRP; Empl.: 25; *Sls. Mgr.:* G. Dean Curd

MOLDCON, Div. of K & M Electronics, 221 Interstate Dr., W. Springfield, MA 01089, Tel: 413-736-0371, TWX: 710-350-6463; Empl.: 200; *Sls. Mgr.:* Robert Krzynowek

MOLDTRONICS, INC., 703 Rogers St., Downers Grove, IL 60515, Tel: 312-968-7000, TWX: 910-695-3537; Empl.: 140; *Sls. Mgr.:* Jim Arnold

Local Sales Offices & Reps

CA	Topanga, S-J-N Sales	213-455-1813
FL	Winter Springs, Martinet Assocs.	305-699-0392
IL	Cary, Ecro Inc.	312-639-1162
IN	Anderson, H. D. Dotson Sls. Co.	317-642-2040
MN	Minneapolis, P.D.Q. Comps.	612-938-5850
PA	Lancaster, Thomas G. Armstrong Assoc.	717-397-2942
RI	Wickford, R. P. Morrison Co.	401-295-5692

Molecu Wire

MOLECU-WIRE, P.O. Box 495, Farmingdale, NJ 07727, Tel: 201-938-9473, TWX: 710-723-6943; Empl.: 175 **C•1877-1881**

Local Sales Offices & Reps

CA	Montrose, Roger D. Dahl	213-245-3817
CT	Orange, KLS Sls.	203-795-6210
MO	Independence, Hi Tech Cen.	816-796-6684
KY	Louisville, Waddle & Assocs.	502-897-6419
NC	Charlotte, QED	704-525-3053
PA	Ligonier, Patterson Elec.	412-238-6238
WA	Seattle, Comptronics	206-284-4842
WI	Mequon, Robco	414-241-3348

molex®

MOLEX, INC., 2222 Wellington Ct., Lisle, IL 60532, Tel: 312-969-4550, Telex: 25-4069, TWX: 910-695-3229; Empl.: 4,100; *Sls. Mgr.:* Gregg Johnson; *Dist. Mgr.:* Sally Webster **B•1665; C•1356-1359, 1883**

Local Sales Offices & Reps

CA	Irvine, Molex	714-586-0950
CA	Milpitas, Molex	408-945-9060
CO	Englewood, Molex	303-779-8321
GA	Atlanta, Molex	404-396-6121
IL	Lisle, Molex	312-969-4550
IN	Indianapolis, Molex	317-299-0099
MA	Woburn, Molex	617-935-8983
TX	Dallas, Molex	214-931-0999

Local Distributors

AL	Huntsville, Hamilton/Avnet	205-837-7210
AZ	Tempe, Hamilton/Avnet	602-231-5100
AZ	Tempe, Harper SID	602-967-1464
AZ	Tempe, Time Elctrns. Arizona	602-967-2000
AR	Little Rock, Carlton-Bates	501-666-0206
CA	Alhambra, Harper SID	213-289-0255
CA	Chatsworth, Diplomat	213-341-4411
CA	Costa Mesa, Avnet Elctrns.	714-754-6111
CA	Costa Mesa, Diplomat	714-549-8401
CA	Costa Mesa, Hamilton Electro Sls.	714-641-4100
CA	Culver City, Hamilton Electro Sls.	213-558-2121
CA	Inglewood, Force Elctrns.	213-776-1324
CA	Los Angeles, Richley/Western Elctrns.	213-820-3777
CA	S. San Francisco, Peters-delaet	415-873-9595
CA	San Diego, Diplomat	619-292-5693
CA	San Diego, Hamilton/Avnet	619-571-7510
CA	San Diego, Harper SID	619-560-8545
CA	San Diego, Richley/Western Elctrns.	619-271-4511
CA	Santa Clara, Force Elctrns.	408-739-1324
CA	Santa Clara, Harper SID	408-988-6041
CA	Santa Clara, Peters-de Laet	408-727-9440
CA	Sunnyvale, Diplomat	415-964-1700
CA	Sunnyvale, Hamilton/Avnet	408-743-3355
CA	Sunnyvale, Time Northern Calif.	408-734-9888
CA	Torrance, Time Elctrns. West	213-320-0880
CO	Denver, Integrated Elctrns.	303-534-6121
CO	Englewood, Hamilton/Avnet	303-740-1000
CO	Wheat Ridge, Bell Inds.	303-424-1985
CT	Bethel, Heilind Elctrns.	203-797-8600
CT	Danbury, Hamilton/Avnet	203-797-2800
FL	Ft. Lauderdale, Hamilton/Avnet	305-971-2900
FL	Ft. Lauderdale, Time Elctrns.	305-974-4800
FL	Pompano Beach, Comps. South	305-971-0350
GA	Atlanta, Electro-Air Corp.	404-351-3545
GA	Norcross, Hamilton/Avnet	404-447-7507
IL	Bensenville, Hamilton/Avnet	312-860-7700
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Chicago, Waldom Elctrns.	312-585-1212
IL	Crystal Lake, Sub-Sem Elctrns.	815-459-4139
IL	Mount Prospect, Magnuson Elctrns.	312-956-0700
IN	Carmel, Hamilton/Avnet	317-844-9333
KS	Overland Park, Hamilton/Avnet	913-888-8900
MD	Columbia, Hamilton/Avnet	301-995-3500
MD	Savage, Pyttronic Inds.	301-953-9650
MA	Burlington, Heilind Elctrns.	617-272-5610
MA	Canton, Impact Elctrns.	617-821-1500
MA	Wilmington, RC Comps.	617-273-1860
MA	Woburn, Hamilton/Avnet	617-273-7500
MA	Woburn, Time New England	617-935-8080
MI	Clawson, Empire Elctrns.	313-435-0460
MI	Grand Rapids, Hamilton/Avnet	616-243-8805
MI	Livonia, Hamilton/Avnet	313-522-4700
MI	Wyoming, R-M Elctrns. Co.	616-531-9300
MN	Minneapolis, Indl. Comps.	612-831-2666
MN	Minnetonka, Hamilton/Avnet	612-932-0600
MO	Earth City, Hamilton/Avnet	314-344-1200
MO	St. Charles, Lectronix	800-325-3348
MO	St. Louis, Time Elctrn./Midwest	314-391-6444
NE	Lincoln, Scott Elctrns.	402-466-8221
NH	Hudson, Heilind Elctrns.	603-883-9536
NJ	Camden, Genral Radio Supp. Co.	609-964-8560
NJ	Cherry Hill, Hamilton/Avnet	609-424-0100
NJ	Clifton, J-Mar Elctrns.	201-772-6400
NJ	Fairfield, Hamilton/Avnet	201-575-3390
NM	Albuquerque, Hamilton/Avnet	505-765-1500
NY	Buffalo, Summit Distrs.	716-884-3450
NY	E. Syracuse, Hamilton/Avnet	315-437-2641
NY	Farmingdale, SAI	516-293-2710
NY	Hauppauge, Time Elctrns. Sls.	516-273-0100
NY	Melville, Hamilton/Avnet	516-454-6060
NY	Rochester, Hamilton/Avnet	716-475-9130
NC	Raleigh, Hamilton/Avnet	919-829-8030
NC	Raleigh, Resco	919-781-5700
OH	Cleveland, Hamilton/Avnet	216-831-3500
OH	Columbus, Camelot/Ohio	614-252-0728
OH	Dayton, Hamilton/Avnet	513-433-0610
OH	Dayton, Stotts-Friedman	513-298-5555
OH	Wickliffe, Gateway Megatech	216-944-8565
OR	Lake Oswego, Hamilton/Avnet	503-635-8157
PA	Broomall, Time Mid-Atlantic	215-359-1200
PA	McKean, Advacom	814-476-7774
PA	Montgomeryville, Pyttronic Inds.	215-643-2850
TN	Chattanooga, Techni-Tronics	615-875-5449
TX	Austin, Hamilton/Avnet	512-837-8911
TX	Houston, Hamilton/Avnet	713-780-1771
TX	Irving, Hamilton/Avnet	214-659-4111
TX	Richardson, Harper SID	214-235-3177
UT	Salt Lake City, Bell Inds.	801-972-6969
UT	Salt Lake City, Hamilton/Avnet	801-972-2800
VA	Lynchburg, Comps., United.	804-237-6286
WA	Bellevue, Electro-Air NW	206-641-3640
WA	Bellevue, Hamilton/Avnet	206-643-3950
WA	Seattle, Radar Elec.	206-282-2511
WI	New Berlin, Hamilton/Avnet	414-784-4510

MOLI ENERGY LIMITED, 3958 Myrtle St., Bunaby, BC, Canada V5C 4G2, Tel: 604-437-6927, Telex: 04-356708, FAX: 604-437-5195; FSC No.: 6140; Empl.: 160; *Sls. Mgr.:* Newton Hockey; *Dist. Mgr.:* Noulan Bowker .... **D•1453**

MOLON MOTOR & COIL CORP., 3737 Industrial Ave., Rolling Meadows, IL 60008, Tel: 312-259-8700, TWX: 910-687-0428; Empl.: 350; *Sls. Mgr.:* J. Bailey

MONITOR LABORATORIES, INC., 10180 Scripps Ranch Blvd., San Diego, CA 92131, Tel: 619-578-5060, Telex: 182794; Empl.: 96; *Sls. Mgr.:* Paul Stenberg

MONITOR PC

MONITOR PRODUCTS CO., INC., 502 Via Del Monte, Oceanside, CA 92054, Tel: 619-433-4510, ESYLNK: 629 5085, FAX: 619-434-0255; FSC No.: 54331; Empl.: 65; *Sls. Mgr.:* Matthew J. Mulvihill; *Dist. Mgr.:* Matthew J. Mulvihill **A•1418-1419**

Local Sales Offices & Reps

AL	Huntsville, CSR Elctrns.	205-533-2444
AZ	Phoenix, Eltron	602-266-2164
CA	Los Angeles, Monitor Prods. Co.	619-433-4510
CA	Mountain View, Straube Assocs.	415-969-6060
CA	Orange County, Monitor Prods. Co.	618-433-4510
CO	Aurora, Electrodyne	303-695-8903
CT	Bloomfield, Zaslow Sls., Inc.	203-242-7781
FL	Apopka, Tech Rep Assocs.	813-576-9900
FL	Ft. Lauderdale, Tech Rep Assocs.	813-576-9900
FL	Lake Worth, Tech-Rep Assocs.	813-576-9900
FL	St. Petersburg, Tech-Rep Assocs.	813-576-9900
GA	Atlanta, CSR Elctrns.	404-396-3720
MA	Westboro, Zaslow Sls., Inc.	617-393-8150
MN	Eden Prairie, Elctrn. Innovators	612-941-0830
NY	Fayetteville, C. W. Floring & Assocs.	315-637-4552
NY	Poughkeepsie, C. W. Floring & Assocs.	914-471-2973
NY	Scottsville, C. W. Floring & Assocs.	716-889-4614
NC	Raleigh, CSR Elctrns.	919-878-9200
PA	Gladwyne, J. S. Worts Co.	215-649-6300
TN	Knoxville, CSR Elctrns.	615-673-0222
TX	Austin, Mil-Rep Assocs.	512-346-6331
TX	Houston, Mil-Rep Assocs.	713-444-2557
TX	Richardson, Mil-Rep Assocs.	214-644-6731

Local Distributors

AL	Huntsville, Component Distrs., Inc.	205-883-7501
AL	Huntsville, Resistacap, Inc.	205-883-4270
AZ	Tempe, Harper SID	602-967-1464
AR	Little Rock, Component Distrs., Inc.	501-227-6305
CA	Compton, Harper SID	213-979-5090
CA	San Diego, Harper SID	619-560-8545
CA	San Diego, Neumann Elctrns.	619-695-3005
CA	Sherman Oaks, Delay Line Distrs.	818-986-9455
CA	Sunnyvale, Harper SID	408-747-0333
CA	Tustin, Added Value Elctrns.	714-259-8258
CO	Wheatridge, Added Value Elctrn.	303-422-1701
FL	Ft. Lauderdale, Component Distrs., Inc.	305-723-8874
FL	Melbourne, Rome Elctrns.	305-242-8151
GA	Norcross, Component Distrs., Inc.	404-441-3320
IL	Bensenville, Voyager Elctrns.	312-773-4900
MA	Hudson, DSC, Inc.	617-562-6920
MN	Fridley, Voyager Elctrns.	612-571-7766
NY	Johnson City, Help Elctrns.	607-729-3528
NC	Greensboro, Golden Elctrns.	919-294-4653
TX	Dallas, Component Distrs., Inc.	214-644-0373
TX	Fort Worth, C & W Supply	817-831-0395
TX	Richardson, Harper SID	214-235-3177
VA	Falls Church, Component Distrs., Inc.	703-241-8227

MONOLITHIC SYS., 84 Inverness Circle E., Englewood, CO 80112, Tel: 303-790-7400, Telex: 45-4498; Empl.: 100; *Sls. Mgr.:* Mike Hart

MONSANTO CO., 800 N. Lindbergh Blvd., St. Louis, MO 63167, Tel: 314-694-1000, Telex: 44-7282; Empl.: 50,000

MONTEK MICROSYSTEMS, P.O. Box 1845, Huntsville, AL 35807, Tel: 205-723-2927; *Sls. Mgr.:* Paul Rainosek; *Dist. Mgr.:* Paul Rainosek

MOODY TOOLS, INC., 43 Crompton Ave., E. Greenwich, RI 02818, Tel: 401-885-0911; Empl.: 11; *Sls. Mgr.:* J. H. Moody; *Dist. Mgr.:* D .H. Moody

J. L. MOON & COMPANY, 11323 East 20 Street, Tulsa, OK 74128, Tel: 918-234-6330; Empl.: 5; *Sls. Mgr.:* Karen Moon; *Dist. Mgr.:* Karen Duggan

MORRIS, J. I., CO., 372 Elm St., Southbridge, MA 01550, Tel: 617-764-4394; Empl.: 30

MORRIS ENTERPRISES, 16799 Schoenborn St, Sepulveda, CA 91343, Tel: 818-894-9103, Telex: 6-74681, TWX: 910-496-1525; FSC No.: 54918; Empl.: 50; *Sls. Mgr.:* J. Dumpert

MOTION CONTROL DEVICES, INC., 80 Stedman St, Lowell, MA 01851, Tel: 617-454-3407, Telex: 955318-INTL-DIV-ATTEN-MCD-I; Empl.: 25; *Sls. Mgr.:* Joe Laliberte

MOTION CONTROL GROUP, American Precision Industries, 3229 Roymar Rd., Oceanside, CA 92054, Tel: 619-439-7500, Telex: 18-1196; FSC No.: 32423; Empl.: 100; *Sls. Mgr.:* Andrew Boyer

MOTION SENSORS, INC., 12 Park Street, Cranford, NJ 07701, Tel: 201-925-3553; Empl.: 6; *Sls. Mgr.:* Arthur Bergman

MOTOROLA CERAMIC PRODUCTS, Components Division, 4800 Alameda Blvd. N.E., Albuquerque, NM 87113, Tel: 505-822-8801, Telex: 4999100; Empl.: 250; *Sls. Mgr.:* Tom Gilder

MOTOROLA INC., Auto. & Indl. Elctrns. Grp., 1299 E. Algonquin Rd., Schaumburg, IL 60196, Tel: 312-576-4850, Telex: 4999036 MOT APD; *Sls. Mgr.:* Jay A. Bonk

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Local Sales Offices & Reps

AL	Huntsville, R. O. Whitesell	205-883-5110
AZ	Tempe, Cantec Sls., Inc.	602-829-0191
AR	Ft. Smith, Electra Reps.	501-452-4030
CA	Campbell, Kottmeier Assocs.	408-371-8700
CA	Los Angeles, Landa/Minyard	213-879-0770
CO	Englewood, Thorson Co.	303-779-0666
FL	Clearwater, Perrott Assocs.	813-443-5414
FL	Orlando, Perrott Assocs.	305-298-7748
FL	Sunrise, Perrott Assocs.	305-792-2211
GA	Duluth, Advanced Components Mktg.	404-447-5499
IN	Fort Wayne, R. O. Whitesell	219-432-5591
IN	Indianapolis, R. O. Whitesell	317-359-9283
IA	Cedar Rapids, R. F. Welert Co.	319-377-1575
MD	Glen Burnie, Third Wave Solutions	301-787-0220
MA	Natick, Wayland Engrg. Sls.	617-655-6080
MI	Southfield, R. O. Whitesell Assoc.	313-559-5454
MI	St. Joseph, R. O. Whitesell Assoc.	616-983-7337
MN	Minneapolis, Microelectronics Sls.	612-829-0948
MO	St. Louis, Abrams Assoc.	314-569-0447
NY	Great Neck, Trionic Assoc.	516-466-2300
NY	Rochester, Ossmann Comp. Sls.	716-442-4460
NY	Syracuse, Ossmann Comp. Sls.	315-437-7052
NC	Charlotte, Quantum Mktg.	704-365-4538
OH	Cincinnati, R. O. Whitesell	513-521-2290
OH	Cleveland, R.O. Whitesell & Assoc.	216-447-9020
OH	Columbus, R. O. Whitesell	614-888-9396
OH	Dayton, R. O. Whitesell	513-298-9546
OK	Tulsa, H. J. Daly Co.	918-494-7711
OR	Tigard, Elctrn. Sources	503-684-0040
PA	Glenside, Koebert Assoc.	215-887-2310
PA	Pittsburgh, R. O. Whitesell	412-963-6161
TX	Austin, Electra Reps.	512-339-1163
TX	Dallas, Electra Reps.	214-248-3852
UT	West Valley City, Thorson Co.	801-973-7969
WA	Bellevue, Electronic Sources	206-451-3500
WI	Milwaukee, KMA Sls. & Co.	414-259-1771
EXP	IL, Franklin Pk., Motorola	312-451-1000

Local Distributors

AL	Huntsville, Hallmark Elctrns.	205-837-8700
AL	Huntsville, Pioneer Elctrns.	205-837-9300
AZ	Phoenix, Hallmark Elctrns.	602-437-1200
AZ	Tempe, Bell Inds.	602-966-7800
AZ	Tempe, Western Microtechnlg.	602-948-4240
CA	Canoga Pk., Hallmark Elctrns.	818-716-7300
CA	Cupertino, Western Microtechnlg.	408-725-1660
CA	Garden Grove, Bell Inds.	714-220-0681
CA	Gardena, Bell Inds.	213-515-1800
CA	Reseda, Jan Dvcs.	818-708-1100
CA	Roseville, Bell Inds.	916-969-3100
CA	San Diego, Hallmark Elctrns.	619-268-1201
CA	San Jose, Hallmark Elctrns.	408-946-0900
CA	Sunnyvale, Bell Inds.	408-734-8570
CA	Thousand Oaks, Bell Inds.	805-499-6821
CA	Torrance, Hallmark Elctrns.	213-217-8410
CA	Tustin, Hallmark Elctrns.	714-669-0662
CO	Englewood, Hallmark Elctrns.	303-790-1662
CO	Wheatridge, Bell Inds.	303-424-1985
CT	Norwalk, Pioneer Elctrns.	203-853-1515
CT	Wallingford, Hallmark Elctrns.	203-269-0100
FL	Altamonte Springs, Pioneer Elctrns.	305-834-9090
FL	Clearwater, Hallmark Elctrns.	305-428-8877
FL	Ft. Lauderdale, Pioneer Elctrns.	305-771-9280
FL	Orlando, Hallmark Elctrns.	305-855-4020
FL	Pompano Bch., Hallmark Elctrns.	305-971-9280
GA	Norcross, Hallmark Elctrns.	404-447-8000
GA	Norcross, Pioneer Elctrns.	404-448-1711
IL	Elk Grove Vl., Bell Inds.	312-640-1910
IL	Elk Grove Vl., Pioneer Elctrns.	312-437-9680
IL	Wooddale, Hallmark Elctrns.	312-860-3800
IN	Indianapolis, Bell/Graham	317-634-8202
IN	Indianapolis, Pioneer Elctrns.	317-849-7300
KS	Lenexa, Hallmark Elctrns.	913-888-4747
MD	Columbia, Hallmark Elctrns.	301-988-9800
MD	Gaithersburg, Pioneer Elctrns.	301-921-0660
MA	Billerca, Hallmark Elctrns.	617-935-9777
MA	Lexington, Pioneer Elctrns.	617-861-9200
MI	Livonia, Pioneer Elctrns.	313-525-1800
MN	Bloomington, Hallmark Elctrns.	612-854-3223
MN	Minnetonka, Pioneer Elctrns.	612-935-5444
MO	Earth City, Hallmark Elctrns.	314-291-5350
NJ	Cherry Hill, Hallmark Elctrns.	609-424-7300
NJ	Fairfield, Hallmark Elctrns.	201-575-4415
NJ	Pinebrook, Pioneer Elctrns.	201-575-3510
NM	Albuquerque, Alliance Elctrns.	505-292-3360
NM	Albuquerque, Bell Inds.	505-292-2700
NY	Bayshore, Brookdale Elctrns.	516-242-8033
NY	Fairport, Pioneer Elctrns.	716-381-7070
NY	Ronkonkoma, Hallmark Elctrns.	516-737-0600
NY	Vestal, Pioneer Elctrns.	607-748-8211
NY	Woodbury, Pioneer Elctrns.	516-921-8700
NC	Charlotte, Pioneer Elctrns.	704-527-8188
NC	Raleigh, Hallmark Elctrns.	919-872-0712
OH	Cincinnati, Stotts-Friedman Co.	513-574-7701
OH	Cleveland, Pioneer Elctrns.	216-587-3600
OH	Dayton, Bell Inds.	513-434-8231
OH	Dayton, Pioneer Elctrns.	513-236-9900
OH	Dayton, Stotts-Friedman Co.	513-298-5555
OH	Solon, Hallmark Elctrns.	216-349-4632
OH	Westerville, Hallmark Elctrns.	614-891-4555
OK	Tulsa, Hallmark Elctrns.	918-665-3200
OR	Lake Oswego, Bell Inds.	503-241-4115
PA	Horsham, Pioneer Elctrns.	215-674-4000
PA	Pittsburgh, Pioneer Elctrns.	412-782-2300
TX	Austin, Hallmark Elctrns.	512-258-8848
TX	Austin, Pioneer Elctrns.	512-835-4000
TX	Dallas, Hallmark Elctrns.	214-343-5037
TX	Dallas, Pioneer Elctrns.	214-386-7300
TX	Houston, Hallmark Elctrns.	713-781-6100
TX	Houston, Pioneer Elctrns.	713-988-5555
UT	Salt Lake City, Bell Inds.	801-972-6969
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MOTOROLA MICROELECTRONICS DIV., 8000 W. Sunrise, Ft. Lauderdale, FL 33322

MOTOROLA SEMICONDUCTOR PRODS. SECTOR, 3102 North 56th Street, Phoenix, AZ 85018-6606, Tel: James A. Norling, GM, TWX: 910-951-1334; FSC No.: 04713; *Sls. Mgr.:* Brian Hilton; *Dist. Mgr.:* Bruce Brammer

MOTOR-TRONICS, INC., 2142 Industrial Ct., Bldg. 'F', Vista, CA 92083, Tel: 619-727-7430; *Sls. Mgr.:* Bill Linko

MOTRONICS CORP., 15 Industrial Park, Little Falls, NY 13365, Tel: 315-823-4050; Empl.: 90; *Sls. Mgr.:* Otto Demuth

MOUSER ELECTRONICS, 11433 Woodside Ave., Santee, CA 92071, Tel: 619-449-2222, TWX: 910-331-1175; Empl.: 200; *Sls. Mgr.:* J. L. Kahler

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MOUSER ELECTRONICS, 2401 Hwy. 287 North, Mansfield, TX 76063, Tel: 817-483-4422, TWX: 510-601-0375; Empl.: 200; *Sls. Mgr.:* D. L. Niedecken **730**

MOUSE SYS. CORP., 2600 San Tomas Expressway, Santa Clara, CA 95051, Tel: 408-988-0211, Telex: 467848; *Sls. Mgr.:* David Witkowski; *Dist. Mgr.:* Alan Pettit

MOXNESS PRODUCTS, INC., Versa Technologies, 1914 Indiana St., Racine, WI 53405, Tel: 414-554-5050, 800-558-5706; Empl.: 300; *Sls. Mgr.:* Thomas D. Hynes; *Dist. Mgr.:* Thomas D. Hynes

MPB CORP., Miniature Precision Bearings Div., Precision Park, Keene, NH 03431, Tel: 603-352-0310, TWX: 710-366-1801; Empl.: 1600; *Dist. Mgr.:* R. F. Chartier

MPB CORPORATION, Split Ballbearing Division, Highway 4, Lebanon, NH 03766

MPC SYSTEMS, Div. of Consulting Systems, RFD No. 1, Box 441, Fremont, NH 03044, Tel: 603-642-5913, FAX: 603-642-5913; *Sls. Mgr.:* W. Morse ..... **D•1820**

Local Sales Offices & Reps

NH	Nashua, RPM Unlimited	603-880-3637

Local Distributors

TN	Knoxville, Indl. Elctrns.	615-573-7135

MPI, 4426 S. Century Dr., Salt Lake City, UT 84107, Tel: 800-821-8848; *Sls. Mgr.:* Jamie Johnston

MSI DATA CORP., 340 Fischer Ave., Costa Mesa, CA 92626, Tel: 714-549-6000, TWX: 910-595-1719; Empl.: 700; *Sls. Mgr.:* Jack Bertch; *Dist. Mgr.:* Janis Agopran

MSI ELECTRONICS, INC., 34-32 57th St., Woodside, NY 11377, Tel: 718-672-6500, Telex: 426407; FSC No.: 18518; Empl.: 26; *Sls. Mgr.:* A. Lederman

MTE CORP., 7901 W. Clinton Ave., P.O. Box 23957, Milwaukee, WI 53223, Tel: 414-358-5300; *Sls. Mgr.:* R. T. Armantrout

M-TRON INDUSTRIES, P.O. Box 630, E. Hwy. 50, Yankton, SD 57078, Tel: 605-665-9321, TWX: 910-668-3603; FSC No.: 23875; Empl.: 110; *Sls. Mgr.:* S. D. Sinkler ..... **A•1422-1423**

Local Sales Offices & Reps

AL	Huntsville, 20th Century Mktg.	205-533-9281
AZ	Phoenix, Howe & Howe Sls., Inc.	602-264-7971
CA	San Diego, Bestronics	619-693-1111
CA	Santa Clara, SMI	408-986-1610
CA	Thousand Oaks, SC Cubed	805-496-7307
CA	Tustin, SC Cubed	714-731-9206
CO	Littleton, Simpson Assoc.	303-794-8381
CT	Ridgefield, Phoenix Sls.	203-438-9644
FL	Apopka, G.F. Bohman	305-886-1882
FL	Ft. Lauderdale, G. F. Bohman	305-979-0008
FL	St. Petersburg, G F Bohman	813-522-6120
GA	Norcross, 20th Century	404-446-1999
IL	Arlington Hgts., Micro Sls.	312-956-1000
IN	Ft. Wayne, Alpha Tech, Inc.	219-447-0040
IA	West Des Moines, SPS Assoc.	515-225-0607
KS	Olathe, SPS Assoc.	913-764-4460
MD	Poolesville, Westerly Assocs.	301-972-8176
MA	Tyngsboro, Comptech, Inc.	617-649-3030
MI	Detroit, Rathsburg Assoc.	313-559-9700
MN	Eden Prairie, Com-Tek Sls.	612-941-7181
MO	Earth City, SPS Assoc.	314-291-0520
NE	Panama, SPS Assoc.	913-764-4460
NJ	Englewood, Sprung/Nussbaum	201-569-5666
NJ	Marlton, Naudain Assoc., Inc.	609-983-5300
NM	Albuquerque, Rep New Tec	505-293-2582
NY	Pittsford, James E. Zimmerman Sls.	716-381-3136
NC	Matthews, ADI	704-847-4323
NC	Smithfield, ADI	919-934-8136
OH	Dayton, Lyons Corp.	513-278-0714
OH	Richfield, Lyons Corp.	216-659-9224
OH	Westerville, Lyons Corp.	614-895-1447
TX	Austin, Texoma Tech. Sls.	512-331-4694
TX	Freeport, Texoma Tech. Sls.	409-233-8192
TX	Houston, Texoma Tech. Sls.	713-462-1432
TX	Richardson, Texoma Tech. Sls.	214-437-4833
UT	Midvale, Simpson Assoc.	801-566-3691
WA	Redmond, Quadra Sls.	206-883-3550
WI	Menominee, Micro Sales Inc.	414-251-0151
Can	Mississaqua, Ontario, John Weiss Co.	416-673-0011
Can	Nepean, Ontario, John Weiss Co.	613-825-0545
Can	St. Laurent, Quebec, John Weiss Co.	154-337-5022
Can	Vancouver, B. C., John Weiss Co.	604-873-1112
Can	Winnipeg, Manitoba, John Weiss Co.	204-774-2119

Local Distributors

AL	Huntsville, Pioneer Elctrns.	205-837-9300
AZ	Phoenix, Sterling Elect.	602-268-2121
AZ	Phoenix, Wyle Distr. Grp.	602-866-2888
AZ	Tempe, Bell Inds.	602-966-7800
AR	Little Rock, Carlton-Bates	501-562-9100
CA	Agoura, Image Elctrns.	818-707-0911
CA	Calabasas, Wyle Labs.	818-880-9000
CA	El Segundo, Wyle Labs.	213-322-8100
CA	Fullerton, Pyramid Elctrns.	714-773-0781
CA	Irvine, Wyle	714-863-9953
CA	Orange, Ryno Elctrns.	714-637-0200
CA	Rancho Cordova, Wyle	916-638-5282
CA	San Diego, Ryno Elctrns.	619-453-8430
CA	San Diego, Wyle	619-565-9171
CA	San Jose, Capacitors Unltd.	408-946-7676
CA	Santa Clara, Pyramid	408-727-9810
CA	Santa Clara, Wyle Distr. Grp.	408-727-2500
CA	Tustin, Image Elctrns.	714-259-0900
CO	Englewood, Sterling Elctrns.	303-796-7338
CO	Thornton, Wyle Distr. Grp.	303-457-9953
CO	Wheatridge, Bell Inds.	303-424-1985
CT	E. Haven, J. V. Elctrns.	203-469-2321
CT	Norwalk, Pioneer Elctrns.	203-853-1515
CT	Wallingford, Mid-State Elect.	203-265-9900
FL	Altamonte Springs, Pioneer	305-834-9090
FL	Deerfield Beach, Pioneer Elctrns.	305-428-8877
FL	Ft. Lauderdale, Reptron Elctrns.	305-735-1112
FL	Tampa, Reptron Elctrns.	813-855-4656
GA	Norcross, Pioneer Elctrns.	404-448-1711
GA	Norcross, Reptron Elctrns.	404-446-1300
IL	Elk Grove, Pioneer Elctrns.	312-437-9680
IL	Schamberg, Reptron Elctrns.	312-882-1700
IN	Indianapolis, Advent	317-872-4910
IN	Indianapolis, Pioneer/IN	317-849-7300
IA	Cedar Rapids, Advent	319-363-0221
KS	Lenexa, Pioneer Elctrns.	913-492-0500
MD	Baltimore, Resco Washington	301-529-0500
MD	Beltsville, Resco/Wash.	301-937-9100
MD	Gaithersburg, Pioneer	301-921-0660
MA	Lexington, Pioneer Elctrns.	617-861-9200
MA	Wilmington, J.V. Elctrns.	617-657-6523
MI	Farmington Hills, Advent Elec.	313-477-1650
MI	Grand Rapids, Pioneer Elctrns.	616-698-1800
MI	Grand Rapids, RS Elctrns.	616-241-3483
MI	Kalamazoo, RS Elctrns.	616-381-5470
MI	Livonia, Pioneer Elctrns.	313-525-1800
MI	Livonia, RS Elctrns.	313-525-1155
MI	Roseville, RS Elctrns.	313-779-2450
MI	Wyandotte, RS Elctrns.	313-282-5880
MN	Hibbing, Minntech Elctrns.	218-262-5228
MN	Livonia, Reptron Elctrns.	313-525-2700
MN	Minneapolis, Stark Elec.	612-332-1325
MN	Minnetonka, Pioneer	612-935-5444
MN	Minnetonka, Reptron Elctrns.	612-938-0000
MO	Raytown, Olive Elctrns.	816-356-6916
MO	St Louis, Ric-tronics	314-576-9816
MO	St Louis, Olive Elctrns.	314-426-4500
NJ	Berlin, GCI	609-768-6767
NJ	Mt. Laurel, P.A.C. Elctrns.	609-234-1940
NJ	Pinebrook, Pioneer Elctrns.	201-575-3510
NM	Albuquerque, Betatron	505-344-2381
NM	Albuquerque, Sterling Elect.	505-884-1900
NY	Binghamton, Pioneer Elctrns.	607-748-8211
NY	Bohemia, Key Comps. Inc.	516-567-7500
NY	Fairport, Pioneer	716-381-7070
NY	Woodbury, Pioneer Elctrns.	516-921-8700
NC	Charlotte, Pioneer Elctrns.	704-527-8188
NC	Raleigh, Century Elctrns.	919-782-2116
NC	Raleigh, QC Southeast Inc.	919-876-7767
OH	Cleveland, Pioneer Elctrns.	216-587-3600
OH	Dayton, Pioneer Elctrns.	513-236-9900
OH	Maumee, RS Elec.	419-893-0721
OH	Worthington, Reptron	614-436-6675
OK	Oklahoma City, Radio Inc.	405-789-0741
OK	Tulsa, Altair	918-252-5781
OK	Tulsa, Radio Inc.	918-587-9123
OR	Hillsboro, Wyle Distr. Grp.	503-640-6000
PA	Horsham, Pioneer Elctrns.	215-674-4000
PA	Norristown, Century Elec.	215-631-5400
PA	Pittsburgh, Pioneer Elctrns.	412-782-2300
TX	Austin, Altair	512-837-4970
TX	Austin, Pioneer	512-835-4000
TX	Austin, Wyle Distr.	512-834-9957
TX	Dallas, Pioneer Elctrns.	214-386-7300
TX	Houston, Altair	713-462-3029
TX	Houston, Pioneer	713-988-5555
TX	Houston, Wyle Laboratories	713-879-9953
TX	Richardson, Altair	214-231-5166
TX	Richardson, Wyle Electric	214-235-9953
UT	Salt Lake City, Standard Supp.	801-486-3371
UT	Salt Lake City, Wyle Distr. Grp.	801-974-9953
VA	Richmond, Sterling Elctrns.	804-226-2190
VA	Sterling, Sterling Elctrns.	703-450-2373
WA	Bellevue, Wyle Distr. Grp.	206-453-8300
WA	Kent, Pyramid Elec.	206-872-5800
WA	Redmond, Priebe Elctrns.	206-881-2363
WI	Milwaukee, Marsh Elect.	414-475-6000
Can	Burnaby, BC, R A E Ltd.	604-291-8866
Can	Burnaby, BC, R-A-E Ltd / Camgaard	604-291-8866
Can	Calgary, AB, Cardinal Elec. Ltd.	306-934-3443
Can	Calgary, AB, Saynor Varah	403-255-9550
Can	Dartmough NS, R A E Ltd.	902-465-2350
Can	Dartmouth, N. S., Saynor Varah	902-465-2322
Can	Downsvie, Ont., R A E Ltd.	416-736-1750
Can	Edmonton, AB, R A E Ltd.	403-451-4001
Can	Edmonton, AB, Saynor Varah	403-461-2222
Can	Edmonton, ALB., Cardinal Elec.	403-483-6266
Can	Mississauga, Ont., Prelco Elec. Ltd.	416-678-0401
Can	Moncton, NB, R A E Ltd.	506-855-2200
Can	Montreal, PQ, Prelco Ltd.	514-389-8051
Can	Nepean, Ont., Prelco Elec. Ltd.	613-726-1800
Can	Nepean, Ont., Saynor Varah	613-726-8884
Can	Oakville, ONT., Saynor Varah	416-842-8484
Can	Saskatoon, SK, Cardinal Elec. Ltd.	306-934-3443
Can	Saskatoon, SK, R A E Ltd.	306-933-2888
Can	Vancouver, BC, Saynor Varah	884-873-3211
Can	Willowdale, Ontario, Electro Sonic	416-494-1666
Can	Winnipeg, MN, R A E Ltd.	204-786-8401
Can	Winnipeg, MN, Saynor Varah	204-633-6190

MTS SYSTEMS, Box 24012, Minneapolis, MN 55424, Tel: 612-937-4000, Telex: 29-0521; Empl.: 1200; *Sls. Mgr.:* Ted Beaudoin

MU-DEL ELECTRONICS, INC., 2426 Linden Lane, Silver Spring, MD 20910-1288, Tel: 301-587-6087, Telex: 292038; FSC No.: 31563; Empl.: 8; *Sls. Mgr.:* Heinz E. Blum

MUELLER ELEC. CO., 1583 E. 31st St, Cleveland, OH 44114, Tel: 216-771-5225; Empl.: 156; *Sls. Mgr.:* J. E. Wisneski

MUIRHEAD, 1101 Briston Rd., Mountainside, NJ 07092, Tel: 201-233-6010, Telex: 13-8275; FSC No.: 03980; Empl.: 60; *Sls. Mgr.:* Martin Wargon

MULTI-AMP CORP., TBG, 4271 Bronze Way, Dallas, TX 75237, Tel: 214-333-3201, TWX: 910-861-9052; Empl.: 50; *Sls. Mgr.:* Robert D. Libbey

MULTICORE SOLDERS, Cantiague Rock Rd., Westbury, NY 11590, Tel: 516-334-7997, TWX: 510-222-5185; Empl.: 1000

MULTI PRODUCTS INTERNATIONAL, 218 Little Falls Rd., P.O. Box 238, Cedar Grove, NJ 07009, Tel: 201-239-8183, Telex: 219289; Empl.: 25; *Sls. Mgr.:* LeRoy Gray ..... **A•1129, 2308-2309; D•1821-1823**

Local Sales Offices & Reps

AZ	Scottsdale, Semi Sys., Inc.	602-991-1151
CA	Arcadia, HMC, Inc.	818-447-0958
CA	Campbell, Kottmeier Assocs.	408-371-8700
CO	Englewood, FRontier Reps.	303-799-6063
FL	Coral Springs, PC Elctrn. Sls.	305-755-3980
GA	Lawrenceville, Tek Rep Mktg.	404-963-1600
IL	Des Plaines, Esco Assocs.	312-298-5310
IN	Frankfort, C-S Elctrns. Sls.	317-659-1874
KS	Overland Park, Electri-Rep	913-649-2168
MD	Ellicott City, Eastern Tech. Corp.	301-461-7720
MA	Norwood, Mac Innis Co.	617-762-8090
MI	Lathrup Vl., R. C. Nordstrom & Co.	313-559-7373
MN	St. Paul, Proud Inds.	612-646-9428
NJ	Cedar Grove, Legtonics Assocs.	201-239-4098
NY	Albany, Whitehead Assocs.	800-841-4103
OH	Columbus, McFadden Sls.	614-459-1280
TX	Dallas, MGR Elctrns.	214-238-5246
WA	Bellevue, Eltech	206-643-4330
Can	Lachine, Bytewide Mktg.	514-636-4121

MULTI-TECH SYSTEMS, INC., 82 Second Ave. S.E., New Brighton, MN 55112, Tel: 612-631-3550, 800-328-9717, TWX: 910-563-3610; Empl.: 99; *Sls. Mgr.:* Thomas Heimerman; *Dist. Mgr.:* Peter Hanlon

MULTIWIRE DIVISION, Kollmorgen Corp., 250 Miller Place, Hicksville, NY 11801, Tel: 516-933-8300, TWX: 510-223-0639; Empl.: 500; *Sls. Mgr.:* James Anderson

MULTIWIRE NE, Kollmorgen, 41 Simon St., Nashua, NH 03061, Tel: 603-889-0083; FSC No.: 60490; Empl.: 165; *Sls. Mgr.:* Paul Lavigne

MUPAC, 10 Mupac Dr., Brockton, MA 02401, Tel: 617-588-6110, TWX: 710-345-8458; Empl.: 130; *Sls. Mgr.:* James L. Gallagher ..... **C•1732-1733**

Local Sales Offices & Reps

AL	Huntsville, Macro Mktg. Assocs., Inc.	205-883-9630
AZ	Tempe, Piper Sls.	602-949-0048
AR	Richardson, Lear Assocs., Inc.	214-231-5388
CA	Burbank, Gemini Assocs.	818-846-2633
CA	Los Alamitas, Gemini Assocs.	213-594-9618
CA	San Diego, Hadden Assocs. Inc.	619-565-9444
CA	Santa Clara, Interconnect Sls. Grp.	408-980-1166
CA	Sepulveda, Gemini Assocs.	818-891-1000
CA	Sunnyvale, Computer Modules	408-737-7727
CA	Tustin, Gemini Assocs.	714-838-1675
CA	West Covina, Mupac - West Coast Off.	213-960-3042
CO	Longmont, Piper Sls. Co.	303-443-5337
FL	Jupiter, Southern Elctrns. Sls. Co.	305-744-0028
FL	Longwood, Daturonix	305-774-0014
GA	Norcross, Macro Mktg. Assocs.	404-662-5580
IL	Hoffman Estates, Micro-Tex, Inc.	312-382-3001
IN	Batesville, Applied Data Mgt.	317-257-8949
KS	Leawood, Panatek Tech. Sls. Assocs.	913-649-7999
MD	Baltimore, Rep-Tron	301-799-7490
MA	Wayland, Daner-Hayes, Inc.	617-655-0888
MI	Whitmore Lake, Applied Data Mgt.	313-965-5859
MN	Minneapolis, L. F. Green Assoc.	612-571-6666
NM	Albuquerque, Piper Sls. Co.	505-883-9090
NY	Great Neck, F & F Metro, Inc.	516-482-4080
NY	Syracuse, Labtronics	315-455-7314
OH	Cincinnati, Applied Data Mgt.	513-579-8108
PA	Norristown, RJI	215-631-1414
PA	Pittsburgh, Applied Data Mgt.	412-642-4202
TX	Houston, Lear Assoc.	713-488-7893
TX	Richardson, Lear Assocs.	214-231-5388
TX	Seagoville, Delta Comps.	214-287-6333
UT	Salt Lake City, Piper Sls.	801-466-9336
WA	Bellevue, Comtec	206-453-1188
WI	Waukesha, Micro-Tex, Inc.	414-542-5352

Local Distributors

CT	Wallingford, Sager Electrical Supp. Co.	203-265-4600
MA	Hingham, Sager Electrical Supp. Co.	617-749-6700
MA	Wilmington, Lionex Corp.	617-657-5170
PA	Horsham, Lionex Corp.	215-443-5150

MURATA ERIE NORTH AMERICA, INC.

MURATA ERIE NORTH AMERICA, INC., 2200 Lake Park Dr., Smyrna, GA 30080, Tel: 404-436-1300, Telex: 54-2329, TWX: 810-766-1531; Empl.: 1800; *Sls. Mgr.:* Jack Driscoll; *Dist. Mgr.:* Kenneth O'Connor ..... **A•1140-1143, 1424-1425, 1680-1681, 1853, 1988-1989, 2106-2108; D•1042-1044**

Local Sales Offices & Reps

AL	Huntsville, Jack W. Harvey & Assocs.	205-536-4414
AZ	Scottsdale, Murata Erie N. America	602-941-2667
CA	Los Altos, Recht Assocs.	415-964-6321
CA	San Diego, Murata Erie North America, Inc	619-259-1055
CA	Santa Ana, Murata Erie North America	714-835-4822
CO	Boulder, Front Range Mktg	303-443-4780
FL	Maitland, Murata Erie North America, Inc.	305-644-0954
GA	Smyrna, Murata Erie N. America	404-433-7874
IL	Park Ridge, Metcom Assocs	312-696-1490
IN	Ft. Wayne, Murata Erie North America	219-484-1528
IN	Indianapolis, Jack Harvey & Assocs.	317-872-1031
KS	Overland Park, Glen White Assocs	913-341-0969
KY	Prospect, Jack Harvey & Assocs.	502-228-4100
MD	Columbia, Murata Erie North America	301-992-6612
MA	North Adams, Jack Harvey & Assocs	413-664-9993
MA	Wakefield, Murata Erie North America	617-245-7880
MI	Livonia, Murata Erie North America	313-471-9004
MN	Plymouth, Murata Erie North America	612-553-1594
MO	StLouis, Glen White Assocs	314-644-5997
NJ	Springfield, Radix, Inc.	201-467-4970
NY	Syracuse, Rep. Tech, Inc.	315-437-2845
NC	Raleigh, Glen White Assocs	919-848-1931
OH	Worthington, Murata Erie North America, Inc	614-885-3988
OR	Beaverton, Caruso & Northcutt, Inc.	503-646-4973
TX	Austin, Murata Erie North America, Inc.	512-451-8488
TX	Dallas, Glen White Assocs	214-350-6826
TX	Richardson, Murata Erie North America	214-238-8211
UT	Salt Lake City, Front Range Mktg	801-364-6481
WA	Bellevue, Caruso & Northcutt, Inc.	206-454-9699
WI	West Allis, Metcom Assocs.	414-476-1300
Can	Mississuaga, Ont., Murata Erie North America, Inc.	416-677-9822

Local Distributors

AL	Huntsville, Time Elctrns.	205-721-1133
AZ	Phoenix, R. V. Weatherford	602-266-1114
AZ	Tempe, Shelley-Ragon	601-894-2058
AZ	Tempe, Time	602-967-2000
CA	Anaheim, Time Elctrns.	714-937-0911
CA	Chatsworth, Shelley Elctrns.	213-998-3333
CA	Chatsworth, Time Elctrns.	818-998-7200
CA	Fullerton, Pyramid	714-773-0781
CA	Garden Grove, Inductive Prods. Inc.	714-891-2572
CA	Garden Grove, Natl. Capacitor Corp.	714-892-7749
CA	Garden Grove, Natl. Chip, Inc.	714-898-7494
CA	Garden Grove, Natl. Resistor Corp.	714-898-5959
CA	Glendale, R. V. Weatherford	818-848-6420
CA	Inglewood, Newark Elctrns.	213-671-7377
CA	San Diego, Shelley Elctrns.	619-453-7133
CA	San Diego, Time Elctrns.	619-586-1331
CA	San Jose, Passive Technlg. Sls.	408-435-5566
CA	San Jose, Shelly Elctrns.	408-942-9111
CA	Santa Clara, Pyramid Elctrns. Supp.	408-727-9810
CA	Sunnyvale, Capsco	408-734-3020
CA	Sunnyvale, R. V. Weatherford	408-738-8694
CA	Sunnyvale, Time Elctrns.	408-734-9888
CA	Torrance, Time Elctrns.	213-320-0880
CO	Denver, Newark Elctrns.	303-423-7941
CO	Englewood, Shelley-Ragon	303-744-3601
CO	Englewood, Time Electrns.	303-799-8851
CO	Lakewood, Acacia Sls.	303-232-2882
CT	Cheshire, Time Elctrns.	203-271-3200
CT	Orange, Milgray Elctrns.	203-795-0711
CT	Wallingford, Cronin Elctrns.	203-265-3134
FL	Ft. Lauderdale, Time Elctrns.	305-974-4800
FL	Orlando, Time Elctrns.	305-841-6565
FL	Tampa, Shelley Ragan	813-623-6560
FL	Winter Park, Milgray Elctrns.	305-647-5747
GA	Atlanta, Milgray Elctrns.	404-393-9666
GA	Norcross, Spectrum Elctrns.	404-448-1516
GA	Norcross, Time Elctrns.	404-448-4448
IL	Bensonville, Milgray Elctrns.	312-350-0490
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Elk Grove Vl., GBL/Goold Elctrns. Corp.	312-593-3220
IL	Lombard, Shelley-Ragon, Inc.	312-629-8833
IL	Rosemont, Advent Elctrns.	312-297-6200
IL	Wooddale, Time	312-350-0610
IN	Indianapolis, Advent Elctrns.	317-872-4910
IA	Cedar Rapids, Advent Elctrns. Inc.	319-363-0221
IA	Cedar Rapids, Shelley-Ragon, Inc.	319-373-0525
KS	Overland Park, Milgray Elctrns.	913-236-8800
MD	Beltsville, Resco	301-937-9100
MD	Columbia, Milgray Elctrns.	301-621-6169
MD	Columbia, Time Elctrns.	301-964-3090
MD	White Marsh, Resco	301-529-0500
MA	Burlington, Milgray Elctrns.	617-272-6800
MA	Needham, Cronin Elctrns.	617-449-5000
MA	Peabody, Time	617-532-6200
MI	Farmington Hills, Advent Elctrns.	313-477-1650
MI	Oak Park, Newark	313-967-0600
MN	Bloomington, Time Elctrns.	612-944-9192
MN	Hopkins, The Joal Co.	612-935-6202
MN	Minneapolis, Newark Elctrns.	612-331-6350
MN	St. Paul, Shelly-Ragon	612-642-2828
MO	Independence, Shelley-Ragon, Inc.	816-254-3410
MO	St. Louis, Shelley-Ragon, Inc.	314-454-0480
MO	St. Louis, Time Elctrns.	314-391-6444
NH	Manchester, Cronin Elctrns.	603-624-0105
NJ	Camden, Gen. Radio Supp. Co.	609-964-8560
NJ	E. Brunswick, Varitech	201-390-4700
NJ	Marlton, Milgray	609-983-5010
NJ	Rockaway, Tonar Inds.	201-586-9000
NY	Bohemia, Shelley	516-567-7751
NY	E. Syracuse, Time	315-432-0355
NY	Farmingdale, Milgray Elctrns.	516-420-9800
NY	Hauppauge, Time Elctrns.	516-273-0100
NY	Pittsford, Milgray Elctrns.	711-385-9330
NC	Charlotte, Elctrn. Mktg. Corp.	704-394-6195
NC	Charlotte, Time	704-522-7600
OH	Cleveland, Milgray Elctrns.	216-447-1520
OH	Columbus, Elctrn. Mktg. Corp.	614-299-4161
OH	Dublin, Time	614-761-1100
OH	Highland Hts., Elctrn. Mktg. Corp.	216-442-3441
OH	Kettering, Electronic Mktg. Corp.	513-439-4711
OH	Valleyview, Newark	216-447-8860
OR	Beaverton, Shelley-Ragon, Inc.	503-682-2929
OR	Portland, Time Elctrns.	503-684-3780
OR	Tualatin, Moore Elctrns.	503-692-5333
PA	King of Prussia, Time Elctrns.	215-337-0900
TX	Austin, Time	512-339-3051
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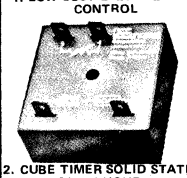
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NETCOM, 3002 Commercial Ave., Northbrook, IL 60062, Tel: 312-564-5100, TWX: 910-686-5478; FSC No.: 57193; Empl.: 85; *Sls. Mgr.:* Wayne Roeder

NEUTRIK PRODUCTS, See Kulka Smith

NEW ENGLAND INSTRUMENTS, Robertshaw Controls, 14 Kendal Lane, Natick, MA 01760, Tel: 617-875-9711, TWX: 710-346-0398, FAX: 617-872-8437; Empl.: 600

NEW ENGLAND SMELTING WORKS, INC., 502 Union St., W. Springfield, MA 01090, Tel: 413-734-6491; FSC No.: 3439; Empl.: 35; *Sls. Mgr.:* David R. Saffer

NEW HAMPSHIRE BALL BEARINGS, INC., Minebea Co., Ltd.-Tokyo, Japan, Rte. 202, Peterborough, NH 03458, Tel: 603-924-3311, TWX: 710-364-1805; Empl.: 1000

NEWMAN, M. M., CORP., Heli-Tube Div., P.O. Box 615, Marblehead, MA 01945, Tel: 617-631-7100; FSC No.: 09106; *Sls. Mgr.:* C. Loutrel; *Dist. Mgr.:* C. Loutrel **C•1907**

NEW MEDIA GRAPHICS CORP., 279 Cambridge St. #5, Burlington, MA 01803, Tel: 617-272-8501, FAX: 617-272-8302; Empl.: 44

NEWPORT

NEWPORT ELECTRONICS, 630 E. Young St., Santa Ana, CA 92705, Tel: 714-540-4914, TWX: 910-595-1787, FAX: 714-546-3022; Empl.: 150; *Sls. Mgr.:* Jim Way **D•1366-1367**

Local Sales Offices & Reps

AL	Birmingham, Jordan/Marlar/Hale	205-979-8324
AL	N. Little Rock, Jordan/Marlar/Hale	501-378-0421
AZ	Phoenix, CPS Assocs.	602-246-1097
CA	Milpitas, IFM, Inc.	408-945-5920
CA	Orange, Electramation	714-541-4434
CO	Denver, AKI Entprs.	303-388-4488
FL	Orlando, Datarep, Inc.	305-843-5224
IL	Arlington Hgts., Brainard-Wilson	312-437-2700
IN	Ft. Wayne, Walter M. Bierberich Inc.	219-432-2537
IA	Des Moines, H & H Vega Sls. Assocs.	515-280-8088
KS	Wichita, H & H Vega Sls.	316-722-7856
MD	Joppa, Electra-Tech	301-877-0344
MA	Bedford, Eastronix, Inc.	617-275-5775
MI	Farmington, Amtech Reps.	313-474-8300
MN	Eden Prairie, Rockmore Sls. Corp.	612-941-1390
MS	Jackson, Jordan/Marlar/Hale	601-354-1176
MO	St. Charles, Power Transmission Sys.	314-928-1750
NJ	Parlin, JMR Sls.	201-254-8484
NY	Skaneateles, NRM Mktg. Grp.	315-685-8991
NY	Stony Brook, JMR Sls., Inc.	516-689-8871
NC	Charlotte, SPK Instrmn.	704-535-2345
OH	Dayton, Dolfuss-Root & Co.	513-433-6776
OH	Strongsville, Dolfuss-Root & Co.	216-238-0300
PA	Bridgeville, Dolfuss-Root & Co.	412-221-4420
PA	Valley Forge, J. E. Cuesta & Co., Inc.	215-935-0400
TN	Memphis, Jordan/Marlar/Hale	901-452-7441
TX	Addison, Associated Dyn., Inc.	214-387-3800
VT	Shelburne, Eastronix	802-985-374
VA	Dumfries, Electra-Tech	703-670-6962
WA	Redmond, Sls. & Engrg. Assocs.	206-883-4999
WI	Waukesha, Brainard-Wilson	414-797-7940

Local Distributors

AL	Birmingham, Brownell Instrs.	205-332-3374
AZ	Phoenix, Metermaster	602-437-1425
AR	Little Rock, Brownell Instrs.	501-562-2061
CA	Costa Mesa, FLW, Inc	714-751-7512
CA	Foster City, Therm-X	415-571-1166
CA	Hayward, FLW, Inc.	415-786-9070
CA	Los Angeles, EIL Instrs., Inc.	213-685-7020
CA	Los Angeles, Metermaster	213-685-4340
CA	S. San Francisco, Steven Engrg.	415-588-9200
CA	San Leandro, Coast Instr.	415-483-3774
CO	Aurora, R & R Instrmn.	303-340-8728
CT	Middletown, EIL Instrs., Inc.	203-346-6646
FL	Orlando, FLW, Inc.	305-894-1100
GA	Atlanta (Hapeville), Brownell Electro	404-762-5181
GA	Marietta, FLW Southeast	404-424-1731
HI	Kailua, FLW, Inc.	808-945-1030
IL	Chicago, Data Elctrns. Co.	312-283-0300
IL	Countryside, Pacific Indicator	312-352-3500
IL	Itasca, Metermaster	312-250-0606
IN	Evansville, Electro-Lab Svcs.	812-423-5211
IA	Davenport, Universal Precision Instr.	319-326-5757
KS	Kansas City, Kornfeld Thorp	913-321-7070
KS	Silver Lake, Universal Precision	913-582-4050
KY	Louisville, P. I. Burkes Co.	502-589-3960
LA	Slidell, Process & Engrg. Prod.	504-641-0652
MD	Gaithersburg, Pioneer Instrs.	301-948-2242
MD	Sparks, EIL Instr.	301-771-4800
MA	Waltham, Calibron Instrs.	617-894-6440
MI	Royal Oak, George Instr.	313-280-1111
MN	Minneapolis, Instrmn. Svcs.	612-544-8916
MN	Minneapolis, Process Meas.	612-544-4035
MN	Plymouth, Data Elctrns.	612-559-1434
MO	Kansas City, ISL Corp.	816-587-5400
MO	St. Louis, C & S Instrs.	314-383-4445
MO	St. Louis, Universal Precision Inst.	314-394-4693
NE	Omaha, Interstate Indl.	402-331-3535
NJ	Newfoundland, Hosica Labs.	201-697-6111
NY	Buffalo, KOM	716-874-3530
NY	Clarence, Trott Elctrns.	716-634-8500
NY	Fairport, Pioneer Instr. Div.	716-381-7070
NY	Farmingdale, Brownell Electro	516-420-5990
NC	Charlotte, Trott Elctrns.	704-376-2237
OH	Cincinnati, Schlemmer	513-522-8340
OH	Cleveland, Pioneer Instr.	216-587-3600
OH	Cleveland, Weschler Elec.	216-238-2550
OH	Dayton, Pioneer Instr.	513-236-9900
OH	Toledo, Girkins Elec.	419-478-5600
OK	Tulsa, Inotek	918-627-1500
OR	Portland, Eicher-Richards	503-221-1123
OR	Portland, Westcon	503-283-0132
PA	Philadelphia, Sunshine Scientific	215-673-5600
PA	York, Trola Inds.	717-848-3700
SC	Columbia, Brownell Instrs.	803-772-6111
TN	Knoxville, Trott Elctrns.	615-525-9871
TX	Dallas, Dallas Meter Tek	214-349-6044
TX	Dallas, Inotek	214-243-7000
TX	Houston, American Analog	713-941-7265
UT	N. Salt Lake, Western Controls	801-292-5900
VA	Richmond, Metermetrics	804-275-1431
WA	Seattle, Branom Instrs.	206-762-6050
WA	Seattle, Eicher-Richards Co.	206-523-7888
WI	Milwaukee, E-M Instrs.	414-272-7799
WI	Waukesha, Machine Drive Sls.	414-549-9063

NEW WAVE INSTRUMENTS, 3760 Masters Court, San Jose, CA 95111, Tel: 408-629-3105, TWX: 510-601-2474, ESYLNK: 62925379; *Sls. Mgr.:* Larry Christensen

THE J. M. NEY COMPANY, Ney Industrial Park, Bloomfield, CT 06002, Tel: 203-242-2281, Telex: 9-9238; *Sls. Mgr.:* Ralph D. Turley **C•1361**

NGK BERYLCO, NGK Metals Corporation, P.O. Box 13367, Reading, PA 19612-3367, Tel: 215-921-5000, TWX: 510-651-0677; Empl.: 600; *Sls. Mgr.:* Robert E. Strock

NIC COMPONENTS CORP., 6000 New Horizons Blvd., N. Amityville, NY 11701, Tel: 516-226-7500, 800-645-9333, Telex: 221-228; Empl.: 50; *Sls. Mgr.:* Robert Schatz; *Dist. Mgr.:* Nancy Lamendola **A•1144-1145, 1990**

Local Sales Offices & Reps

AL	Huntsville, CSR Elctrns.	205-533-2444
AZ	Phoenix, Allegro Sls.	602-967-1337
CA	San Diego, Eagle Sls.	619-743-6550
CA	Santa Clara, Fahrner Miller	408-727-9800
CT	No. Haven, Kitchen & Kutchen	203-239-0212
GA	Atlanta, CSR Elctrns.	404-396-3720
IL	Lisle, W. G. Controls	312-963-5954
IN	Indianapolis, Elctrn. Rep. Inc.	317-894-1414
KS	Overland Park, Thomas L. Dowell & Assocs.	913-648-7373
LA	Hammond, Design Mktg.	504-294-3076
MI	Grand Rapids, Burcaw Co.	313-573-4605
MI	Warren, Burcaw Co.	313-573-4605
MN	Golden Valley, Ambassador Ind. Mktg.	612-542-8437
MO	St. Louis, Thomas L. Dowell & Assocs.	314-849-4234
NY	Hicksville, J-Square Mktg. Inc.	516-935-3200
NC	Raleigh, CSR Elctrns.	919-878-9200
OR	Portland, A.D. Elctrns.	503-641-6469
PA	Philadelphia, Delta Tech. Sls.	215-657-7250
TX	Irving, Design Mktg.	214-607-0611
TX	Round Rock, Design Mktg.	512-255-9896
WA	Kirkland, A.D. Elctrns.	206-821-3205

Local Distributors

AZ	Tempe, Acacia Sls.	602-894-2874
AR	Little Rock, Carlton-Bates	501-562-9100
CA	Los Angeles, Bell Inds.	213-515-1800
CA	San Diego, Ryno Elctrns.	619-453-8430
CA	Santa Ana, Projections Unlimited	714-261-2323
CA	Sunnyvale, Bell Inds.	408-734-8570
CO	Wheatridge, Bell Inds.	303-424-1985
CT	Danbury, Pilgrim Elctrns.	203-792-7274
FL	Largo, Bell inds.	813-541-4434
GA	Norcross, Bell Inds.	404-662-0923
IL	Addison, Belford Elctrns.	312-691-1100
IL	Elk Grove Vl, Bell Inds.	312-640-1910
IN	Ft. Wayne, Bell Inds./Graham Div.	219-423-3422
KY	Louisville, Peerless Elctrns.	502-637-7674
MD	Gaithersburg, Axis Elctrns.	301-840-9640
MA	Burlington, TLC Inc.	617-273-0140
MI	Ann Arbor, Bell Inds./Graham Div.	313-971-9093
MI	Grand Rapids, SF Elctrns.	616-459-0216
MN	New Brighton, Chris Elctrns.	612-631-2647
MO	St. Louis, Van Sickle Radio	314-621-5000
NH	Nashua, Brevan Elctrns.	603-889-7230
NJ	Mt. Laurel, Future Elctrns.	609-778-7600
NJ	Rockaway, Tonar Inds.	201-586-9000
NJ	Sayreville, M-Tronics	201-525-1305
NY	Farmingdale, Bell Inds.	516-752-9303
NY	Hauppauge, Belmont Elctrns.	516-273-1333

NY Liverpool, Future Elctrns. 315-451-2371
OH Dayton, Bell Inds./Graham Div. 513-435-8660
OK Oklahoma City, Carlton-Bates Co. 918-250-1620
OR Beaverton, Acacia Sls. 503-646-3377
TN Hixson, Techni-tronics 615-842-0514
TX Richardson, Bell Inds. 214-690-0466
TX Richardson, Future Elctrns. 214-437-2437
UT Salt Lake City, Bell Inds. 801-972-6969
WA Kirkland, Priebe Elctrns. 206-821-4695
Can Pointe Claire, Future Elctrns. 514-694-7710

NICHICON (AMERICA) CORP., 927 E. State Pkwy., Schaumburg, IL 60173, Tel: 312-843-7500, Telex: 20-6577; FSC No.: 312-843-2798; 312-843-7125; *Sls. Mgr.:* Russ Edwards; *Dist. Mgr.:* Buddy Black

NICHIFU AMERICA, INC., 1494 N. Charlotte St., Pottstown, PA 19464, Tel: 215-323-7120; *Sls. Mgr.:* Roy Allen

NICOLET INSTRUMENT CORP., Oscilloscope Div., 5225 Verona Rd., P.O. Box 4288, Madison, WI 53711, Tel: 608-271-3333, Telex: 608-273-5061, TWX: 910-286-2737; Empl.: 650; *Sls. Mgr.:* Mike Dambach

NICOLET PARATRONICS, 201 Fourier Ave., Fremont, CA 94539, Tel: 415-490-8300, TWX: 910-381-7030; FSC No.: 6625; Empl.: 95; *Sls. Mgr.:* Bob Francisco

NICOLET COMPUTER GRAPHICS DIV., See Bruning Computer Graphics

NIDEC-TORIN CORPORATION, 100 Franklin Drive, Torrington, CT 06790, Tel: 203-482-4422, Telex: 643963; Empl.: 250; *Sls. Mgr.:* Robert Murphy; *Dist. Mgr.:* Rich Brache ..... **C•1682-1685**

Local Sales Offices & Reps

AL Huntsville, Over & Over, Inc. 205-837-7105
AZ Scottsdale, Thom Lukes Sls., Inc. 602-941-1901
CA Los Altos, Ewing-Foley 415-941-4525
CA Los Angeles, Landa & Assocs., Inc. 213-879-0770
CA Roseville, Ewing-Foley 916-969-2672
CA San Diego, Mesa Engrg. & Sls. 619-278-8021
CA Santa Monica, Davidson Assocs., Inc. 213-829-1731
CO Englewood, Dynatech, Inc. 303-773-2830
CT Guilford, Richard Purinton, Inc. 203-453-4505
FL Coral Springs, Over & Over, Inc. 305-753-7050
FL Tampa, Over & Over, Inc. 813-626-9100
GA Norcross, Over & Over, Inc. 404-449-6205
IL Addison, Vikeland Sls., Inc. 312-832-8425
KS Olathe, C-Tron, Inc. 913-829-0073
MD Columbia, The Phoenix Grp. 301-740-4440
MA Andover, Richard Purinton, Inc. 617-475-7055
MI Novi, Action Comp. Sls. 313-349-3940
MN St. Paul, Vikeland Sls., Inc. 612-645-4647
MO St. Charles, C-Tron, Inc. 314-928-8078
NJ Florham Pk., Varrellman-Gorman Co., Inc. 201-822-9616
NJ Teaneck, Herbert Rude Assocs. 201-836-6778
NY Binghamton, Gen-Tech Elctrns. 607-648-8833
NY Liverpool, Gen-Tech Elctrns. 315-451-3480
NY Pleasant Valley, Gen-Tech Elctrns. 914-635-3233
NC Charlotte, Over & Over, Inc. 704-542-9111
NC Raleigh, Over & Over, Inc. 919-782-9111
OH Dayton, J. C. Hofstetter Co. 513-296-1010
OH Medina, J. C. Hofstetter Co. 216-241-4880/725-4477
OK Tulsa, Blair Engrg. 918-622-3100
OR Aloha, Micro Sls. 503-642-1818
PA Hickory, J. C. Hofstetter Co. 412-356-2305
PA Paoli, Tyler Griffin Co. 215-647-1550
TX Austin, Blair Engrg. 512-346-3032
TX Farmers Branch, Blair Engrg. 214-241-5655
TX Houston, Blair Engrg. 713-973-8800
UT Layton, Dynatech, Inc. 801-546-4837
WA Bellevue, Micro Sls. 206-451-0568
WA Seattle, Rep-West, Inc. 206-283-8351
PR Guaynabo, Isla Caribe Electro Sls. 809-720-4430
Can Mississauga, Ont., Tech-Trek, Ltd. 416-238-0366
Can Ville St. Laurent, Que., Tech-Trek, Ltd. 514-337-7540

Local Distributors

AL Huntsville, Arrow Elctrns., Inc. 205-837-6955
CA Sunnyvale, Acacia Sls., Inc. 408-745-7200
CO Thornton, Marshall 303-451-8383
FL Orlando, Marshall 305-841-1878
GA Norcross, Marshall 404-923-5750
IL Elk Grove Vl., Pioneer-Standard Elec. 312-437-9680
IN Indianapolis, Marshall 317-297-0483
KS Lenexa, Marshall 913-492-3121
MD Gaithersburg, Pioneer-Standard Elec. 301-921-0660
MA Wilmington, Marshall 617-658-0810
MI Livonia, Pioneer-Standard Elec. 313-525-1800
MN Minnetonka, Pioneer-Standard Elec. .. 612-935-5444
NJ Fairfield, Marshall 201-882-0320
NY Hauppauge, Jaco Elctrns. 516-273-5500
NY Rochester, Arrow Elctrns., Inc. 716-427-0300
NC Charlotte, Pioneer-Standard Elec. 704-527-8188
NC Winston Salem, Arrow Elctrns., Inc. 919-725-8711
OH Dayton, Pioneer-Standard Elec. 513-236-9900
OR Beaverton, Marshall 503-644-5050
TX Dallas, Cypress Elctrns., Inc. 214-869-1435
TX Houston, Marshall 713-895-9200
UT Salt Lake City, Arrow Elctrns., Inc. 801-972-0404
WI Brookfield, Marshall 414-797-8400
Can Nepean, Ont., ITT Multicomps. 613-226-7406
Can Richmond, BC, Zentronics 604-273-5575

NIDUS SYSTEMS, 4333 Orange St., No. 17, Riverside, CA 92501, Tel: 714-781-0531, TWX: 910-240-5178, ESYLNK: 6275-3594; Empl.: 3; *Sls. Mgr.:* Earl Chafin

NISSEI SANGYO AMERICA, LTD., 1701 Golf Rd., Ste. 401, Rolling Meadows, IL 60008, Tel: 312-981-8989, Telex: 28-0547, TWX: 910-233-5865; *Sls. Mgr.:* Y. Hamada

NITTANY PIEZO CERAMICS, See Piezo Kinetics, Inc.

NJE CORPORATION, 329 Culver Rd, P.O. Box 669, Dayton, NJ 08810-0669, Tel: 201-329-4611, TWX: 710-480-5674; FSC No.: 98380; Empl.: 85; *Sls. Mgr.:* John M. Slavik ..... **D•1824**

Local Sales Offices & Reps

CA Garden Grove, Elsco Elctrns., Inc. 714-891-4621
CA Palo Alto, Bytec Sls., Inc. 415-493-1053
CA San Diego, Elsco Elctrns., Inc. 619-292-1771
CA San Jose, Bytec Sls., Inc. 408-435-8004
CO Englewood, F. G. Mktg. 303-795-9176
CT Ansonia, R. H. Sturdy Co. 203-734-2186
FL Alamonte Springs, V.G. Sls. 305-831-8688
FL Largo, V.G. Sls. 813-584-2246
FL Pompano Beach, V.G. Sls. 305-971-0900
IL Elk Grove Vl., Loren Green Assocs. ... 312-593-0282
MD Randalstown, Beacon North 301-655-2265
MA Wellesley Hills, R. H. Sturdy Co. 617-235-2330
MN Edina, Grayden & Flemmer 612-941-1120
MO Independence, Engrg. Svcs. Co. 816-254-3600
MO St. Louis, Engrg. Svcs. Co. 314-977-1515
NV Reno, Bytec Sls., Inc. 702-852-4006
NJ Dayton, NJE Corp. 201-329-4611
NJ Englewood Cliffs, Masin-Esco, Inc. 201-569-8868
NJ Marlton, BEacon North 609-596-9456
NY Hauppauge, Masin-Esco, Inc. 516-273-3500
OH Beachwood, Elctrn. Salesmasters 216-831-9555
VA Forest, Beacon North 804-239-8486
VA Sterling, Beacon North 703-478-2480
WA Bellevue, Underwood-Hanify 206-643-1793
WA Vancouver, Underwood-Hanify 503-224-0583
Can Calgary, Alb., Deskin Sls. 403-466-2106
Can Edmonton, Alb., Deskin Sls. 403-466-2106
Can Markham, Ont., Deskin Sls. 416-475-1412
Can Montreal, Que., Deskin Sls. 514-331-2860
Can Ottawa, Ont., Deskin Sls. 613-729-1099
Can Richmond, B.C., Deskin Sls. 604-273-4963
Can Transcona, Man., Deskin Sls. 403-466-2106

NKK SWITCHES OF AMERICA, INC., 14415 N. Scottsdale Rd., Scottsdale, AZ 85260, Tel: 602-991-0942; FSC No.: 63426; Empl.: 50; *Sls. Mgr.:* Joseph Nessim; *Dist. Mgr.:* Joseph Nessim ..... **B•1666-1667**

Local Sales Offices & Reps

AL Huntsville, Over & Over 205-837-7105
AZ Scottsdale, NKK Switches 602-991-0942
AZ Tempe, Elec-Com Assocs. Inc. 602-967-8644
CA Anaheim, Spectrum Assocs. Inc. 714-630-6977
CA Mountain View, Caltron Components Corp. 415-964-3244
CT Sandy Hook, Schumacher & Yarrington, Inc. 203-426-3874
FL Coral Springs, Over & Over Inc. 305-753-7050
FL Tampa, Over & Over Inc. 813-626-9100
GA Norcross, Over & Over, Inc. 404-449-6205
IL Mt. Prospect, The Dombrow Co., Inc. .. 312-253-3326
IN Indianapolis, Frank E. Kahsar Sls. 317-888-8396
IA Cedar Rapids, Midwest Tech. Sls. 319-365-4011
KS Lenexa, Midwest Tech. Sls. 913-888-5100
KS Wichita, Midwest Tech. Sls. 316-262-7240
MA Winchester, Schumacher & Yarrington, Inc. 617-721-2515
MI Grand Haven, Frank E. Kahsar Sls. ... 616-846-7590
MN Minnetonka, J. P. & Assocs. 612-935-7930
MO St. Charles, Midwest Tech. Sls. 314-441-1012
NH Manchester, Schumacher & Yarrington, Inc. 603-668-4065
NY Clifton Pk., NET Sls. Co. 518-371-6864
NY Cortland, NET Sls. Co. 607-756-6592
NY De Ruyter, NET Sls. Co. 315-662-7996
NY Fairport, NET Sls. Co. 716-223-1030
NY Oceanside, Bittan Assocs. 516-678-6222
NY Webster, NET Sls. Co. 716-223-1030
NC Charlotte, Over & Over Inc. 704-542-9111
NC Raleigh, Over & Over Inc. 919-782-9111
OH Cincinnati, Frank E. Kahsar Sls. 513-922-3133
OH Hudson, Frank E. Kahsar Sls. 216-650-1089
OR Portland, James J. Backer, Inc. 503-297-8744
PA West Conshohocken, Eastern Comps. Sls. 215-825-8610
RI Warwick, Schumacher & Yarrington, Inc. 401-884-5671
TX Dallas, Rem Air Components Corp. ... 214-234-1069
TX Houston, Rem-Air Assocs. 713-729-7160
WA Seattle, James J. Backer Co. 206-285-1300

Local Distributors

AL Huntsville, Powell Elctrns. 205-539-2731
AZ Phoenix, Dalis Elctrn. Supp. 602-275-2885
AZ Tucson, Inland Elctrn. Supp. 602-889-5301
AR Ft. Smith, Radio, Inc. 501-646-5200
AR Little Rock, Bluff City Elctrns. 501-376-7044
CA Costa Mesa, Eric Elctrns. 714-751-1185
CA Costa Mesa, Powell Elctrns. 714-754-1717
CA Fountain Valley, Components Ctr. 714-979-0433
CA Garden Grove, Allied Elctrns. 714-554-0731
CA Hayward, Allied Elctrns. 415-487-5250
CA Los Angeles, Electric Switches, Inc. ... 213-660-1310
CA San Diego, Mock III Sls. Co., Inc. 619-560-0515
CA San Diego, Shanks & Wright 619-239-0176
CA San Diego, Southland Comps. 619-578-6634
CA San Jose, Allied Elctrns. 408-727-1690
CA San Jose, Eric Elctrns. 408-432-1111
CA San Jose, Powell Elctrns. 408-943-9020
CA San Jose, Rose Elctrn. Dist. Co. 408-263-9700
CA Santa Clara, Components Ctr. 408-988-3751
CA Tustin, Western Switches & Controls 714-259-8144
CO Arvada, Denver Beta 303-431-7161
CO Aurora, Jet Elctrns. Supp. Co. 303-364-1000
CO Colorado Springs, Kimball Elctrns. 303-528-7066
CO Englewood, NEP Elctrns. 303-799-9898
CT Danbury, Pilgrim Elctrns., Inc. 203-792-7274
CT Middletown, Midstate Elctrns. 203-632-1138
CT Wallingford, Midstate Elctrns. 203-265-9900
FL Altamonte Springs, Control Des. Supp., Inc. 305-788-3220
FL Ft. Lauderdale, Allied Elctrns. 305-486-0500
FL Ft. Lauderdale, Powell Elctrns. 305-979-5000
FL Miami, Electronic Equip. Co. 305-871-3500
FL Tampa, Elctrn. Equip. Co., Inc. 813-988-0810
FL West Palm Beach, Nurmi Elctrn. Supp., Inc. 305-686-8553
GA Atlanta, Trans-Southern Inds. 404-451-4425
GA Augusta, Dixie Elctrns., Inc. 404-772-2055
GA Decatur, Allied Elctrns. 404-377-3555
ID Boise, Kimball Elctrns., Inc. 208-342-3559
ID Pocatello, Kimball Elctrns., Inc. 208-232-2201
IL Addison, L Comp, Inc. 312-628-1400
IL Chicago, NEP Elctrns., Inc. 312-625-8400
IL Elgin, Allied Elctrns. 312-697-8200
IL Geneva, Melvin Elctrns., Inc. 312-232-8050
IL Villa Park, Melvin Elctrns., Inc. 312-279-5015
IL Wheeling, Hawk Elctrns., Inc. 312-459-4030
IN Indianapolis, MAR Elctrns. 317-633-6699
KS Great Bend, RSC Elctrns., Inc. 316-793-3507
KS Salina, RSC Elctrns., Inc. 913-823-6353
KS Wichita, Airtechnics, Inc. 316-267-2849
KS Wichita, Radio Inc. 316-264-2798
KS Wichita, RSC Elctrns., Inc. 316-267-5213
KY Florence, URI Elctrns., Inc. 606-371-4425
LA New Orleans, Southern Radio Supp. Co. 504-524-2343
MD Columbia, Powell Elctrns. 301-995-6410
MD Gaithersburg, Axis Elctrns., Inc. 301-840-9640
MD Kensington, Marine Air Supply Co. 301-949-9560
MD Marlow Hgts., Allied Elctrns. 301-423-0161
MA Boston, Controller Svc. & Sls. 617-269-1300
MA Westborough, Powell Elctrns. 617-366-6100
MA Wilmington, Allied Elctrns. 617-942-0150
MI Ann Arbor, Wedemeyer Elctrn. Supp. .. 313-665-8611
MI Detroit, Semiconductor Reliability 313-965-8550
MI Lansing, Wedemeyer Elctrn. Supp. 517-484-9009
MI St. Clair Shores, Spemco 313-771-2700
MN Eden Prairie, Cassidy Elctrns. 612-944-0100
MN Hopkins, The Joel Co. 612-935-6202
MN Minneapolis, Stark Elctrns. Supp., Inc. 612-332-1325
MS Columbus, Bluff City Elctrns. 601-328-6212
MS Tupelo, Bluff City Elctrns. 601-842-6832
MO Kansas City, L Comp., Inc. 816-221-2400
MO Maryland Hgts., L Comp., Inc. 314-291-6200
MO St. Louis, Franklin Elctrns. Co. 314-993-5333
NH Hudson, C & H Elctrns., Inc. 603-882-1133
NJ E. Brunswick, Brothers Elctrns. 201-238-2200
NJ Englewood, Powell Elctrns. 201-894-0800
NM Albuquerque, Dalis Elctrns., Inc. 505-888-4525
NY Bohemia, Key Components 516-567-7500
NY Hempstead, Electronic Equip. Co. 516-538-5510
NY Mineola, Allied Elctrns. 516-248-2360
NY Mt. Vernon, QAR Industrial Elctrn. Sls., Inc. 914-699-2224

NY Rochester, Masline Elctrns., Inc. 716-546-5373
NY Rome, Rome Elctrns. 315-337-5400
NY Troy, Trojan Elctrn. Supp. Co. 518-274-4481
NY Yonkers, Kin-Tronics Inc. 914-968-7736
NC Cary, Powell Elctrns. 919-467-1212
NC Charlotte, Dixie Elctrns., Inc. 704-377-5413
NC Winston-Salem, Dixie Elctrns., Inc. 919-724-5961
OH Cincinnati, Schuster Elctrns. 513-489-1400
OH Cincinnati, URI Elctrns. 513-761-4030
OH Columbus, Wedemeyer Elctrn. Supp. Co., Inc. 614-436-9600
OH Twinsburg, Schuster Elctrns. 216-425-8134
OK Norman, RSC Elctrns. 405-364-3276
OK Oklahoma City, Radio, Inc. 405-789-0741
OK Tulsa, Radio, Inc. 918-587-9123
OR Beaverton, Norvac Elctrns. 503-644-1025
OR Beaverton, Rose Elctrn. Distr. 503-629-9288
OR Eugene, Norvac Elctrns. 503-345-2905
OR Portland, URS Elctrns. 503-233-7151
OR Tigard, Priebe Elctrns. 206-881-2363
PA Philadelphia, H & R Elctrns. 215-426-1700
PA Philadelphia, Powell Elctrns. 215-365-1900
PA Wayne, Peak Elctrns. 215-293-9000
SC Columbia, Dixie Elctrns. 803-779-5332
SC Florence, Dixie Elctrns. 803-669-8201
SC Greenville, Dixie Elctrns. 803-297-1430
SC N. Charleston, Dixie Elctrns. 803-552-2671
SC Taylors, Cantrell Whlse. Prods. 803-268-1194
TN Gray, Dixie Elctrns. 615-477-3838
TN Jackson, Bluff City Elctrns. 901-424-0236
TN Knoxville, Dixie Elctrns. 615-938-4131
TN Memphis, Bluff City Elctrns. 901-345-9500
TN Nashville, Bluff City Elctrns. 615-242-8000
TX Austin, Southwest Elctrns. 512-837-8971
TX Austin, Wofford Elctrns. 512-339-1131
TX Brownsville, Carden Indl. Grp. 512-541-3660
TX Dallas, Allied Elctrns. 214-553-4370
TX Dallas, Off The Shelf Comps., Inc. 214-247-0052
TX Dallas, Southwest Elctrns. 214-234-3050
TX Dallas, Wallace Elctrns. 214-340-0400
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Ft. Worth, Swieco, Inc. 817-335-6521
TX Houston, Wofford Elctrns. 713-847-3583
TX Irving, Powell Elctrns. 214-550-0547
TX Richardson, Components Center, Inc. 214-644-3444
TX Richardson, Off the Shelf Comps., Inc. 214-238-0808
TX Stafford, Southwest Elctrns. 713-240-4000
UT Salt Lake City, Ballard Supp. Corp. 801-972-2430
UT Salt Lake City, Kimball Elctrns. 801-328-2075
UT Salt Lake City, Salt Lake Beta 801-483-1882
WA Bellevue, Powell Elctrns. 206-641-4446
WA Redmond, Priebe Elctrns. 206-881-2363
WA Seattle, Allied Elctrns. 206-547-2827
WI Mequon, Taylor Elec. Co. 414-241-4321
WI New Berlin, NEP Elctrns., Inc. 414-785-9100
WI Oconomowoc, GW Elctrns., Ltd 414-367-6003
Can Burnaby, BC, R-A-E Ind. Elctrns. Ltd. .. 604-291-8866
Can Calgary, Alberta, R-A-E Ind. Elctrns. Ltd. 403-251-5888
Can Concord, Ont, Trade Elctrns. 416-661-7111
Can Concord, Ont., ITT Multicomps. 416-736-1588
Can Dartmouth, NS, R-A-E Ind. Elctrns. Ltd. 902-465-2350
Can Edmonton, Alberta, R-A-E Ind. Elctrns. Ltd. 403-451-4001
Can Monkton, NB, R-A-E Ind. Elctrns. Ltd. .. 506-857-8011
Can Saskatoon, SK, R-A-E Ind. Elctrns. Ltd. 306-373-7139
Can St. Laurent, PQ, R-A-E Ind. Elctrns. Ltd. 514-335-7697
Can Winnipeg, Manitoba, R-A-E Elctrns. Ltd. 204-786-8401

NKR PRECISION MANUFACTURING, Rte. 17M, Box 333, Harriman, NY 10926, Tel: 914-782-8562; Empl.: 17

NMB CORP., MOTOR DIV., 9601 Mason Ave., Chatsworth, CA 91311, Tel: 213-709-1555

NOBEX DIV., Griffith Plastics Corp., 1027 California Dr., Box 4365, Burlingame, CA 94010, Tel: 415-342-8170; FSC No.: 32767; Empl.: 35

NOBLE U.S.A., INC., 5450 Meadowbrook Ct., Rolling Meadows, IL 60008, Tel: 312-364-6038, Telex: 206745, FAX: 1-312-364-6045; *Sls. Mgr.:* Robert K. Burdick; *Dist. Mgr.:* Vyto Omilijonas

NOLATRON, P.O. Box 4042, Harrisburg, PA 17111, Tel: 717-564-3398; Empl.: 10

NOLL, J. A. CO., P.O. Box 312, Monroeville, PA 15146, Tel: 412-733-1089; *Sls. Mgr.:* P. Carson; *Dist. Mgr.:* P. Carson

NON-LINEAR SYSTEMS/DIV. OF KAYPRO CORP., 533 Stevens Ave., Solana Bch., CA 92075, Tel: 619-481-3900, TWX: 910-322-1132; Empl.: 55; *Sls. Mgr.:* Ben W. Fisher; *Dist. Mgr.:* Jeanne Simmons

NORELCOM INDS., 63 Marine St., Farmingdale, NY 11735, Tel: 516-249-7245, FAX: 516-249-3745; Empl.: 30; *Dist. Mgr.:* Regina Vena

NOREN PRODUCTS INC., 1010 O'Brien Blvd., Menlo Pk., CA 94025, Tel: 415-322-9500, Telex: 17-1410 Noren MNPK

C. A. NORGREN CO., 5400 South Delaware, Littleton, CO 80120-1663, Tel: 303-794-2611, Telex: 45541; Empl.: 661; *Sls. Mgr.:* Patrick Maley

NORITAKE CO., INC., Noritake Co., Limited (Japan), 23820 Hawthorne Blvd., , Torrance, CA 90505, Tel: 213-373-6704, Telex: 67-4910; Empl.: 7; *Sls. Mgr.:* Y. Tatsuta

NORLAND CORPORATION, Norland Dr., Ft. Atkinson, WI 53538, Tel: 414-563-8456, Telex: 26-5448; Empl.: 270; *Sls. Mgr.:* Robert J. Millar

NORPLEX/OAK INC., Allied-Signal, Inc., 505 King St., P.O. Box 1448, La Crosse, WI 54602-1448, Tel: 608-784-6070, Telex: 59-2257; Empl.: 2,200; *Sls. Mgr.:* Dave Verbeten

NORSAL INDUSTRIES, 85 D Hoffman Lane So., P.O. Box 44, Central Islip, NY 11722, Tel: 516-234-1200, TWX: 510-234-1200, FAX: 516-234-1589; *Sls. Mgr.:* Marc Spector

NORTH AMERICAN PHILIPS CONTROLS CORP., See Airpax Corporation, Cheshire Div.

NORTH AMERICAN PHILIPS LIGHTING, Bank St., Hightstown, NJ 08520, Tel: 609-448-4000, TWX: 510-685-5651; Empl.: 600; *Sls. Mgr.:* C. J. Lehmann

NORTH AMERICAN PHILIPS/SMD TECHNLG., INC., 5855 N. Glen Park Rd., Milwaukee, WI 53209, Tel: 414-228-7380, TWX: 910-262-3083; *Sls. Mgr.:* F. Funk

NORTH AMERICAN PRINTED CIRCUIT DIV., Tyco Labs., Inc., Box 145, Stafford, CT 06075, Tel: 203-684-2703; Empl.: 230

NORTH AMERICAN SOAR CORP., 434 Windsor Pk. Dr., Dayton, OH 45459, Tel: 513-434-6952; Empl.: 7; *Sls. Mgr.:* Robert Liska ..... **D•1291-1295**

Local Sales Offices & Reps
AL Alabaster, Rohr Wanger Roberts, Inc. 205-879-7361
AZ Scotsdale, Bill Earl Assocs. 602-994-3813
CA Gardena, Bidwell Sls. 213-770-0300
CA S. San Francisco, Carelli EMA, Inc. 415-873-3365
CO Denver, Warren Assocs. 303-759-1676
FL Plantation, Unirep, Inc. 305-587-7481
GA Norcross, Rohr Wanger Roberts, Inc. 404-263-9349
IL Northbrook, Promar Entprs. 312-564-3510
IN Mulberry, Maish Sls. 317-296-2322
MD Silver Spring, Midlantic Sls. 301-593-7749
MA Braintree, Anderson Sls. 617-848-9194
MN Golden Valley, Ambassador Indl. Mrk. 612-542-8437
MO Liberty, Lectro Rep Inc. 816-781-2522
NJ Teaneck, Steve Fisher Assocs. 201-837-1200
NY Syracuse, Paston Hunter Assocs. 315-437-2992
OH Dayton, Shamrock Elctrn. Sls. 513-258-1227
OR Portland, Roger Minthorne Co. 503-246-4556
PA Pittsburgh, Shamrock Elctrn. Sls. 412-343-5877
SC Rock Hill, Rohr Wanger Roberts Inc. .. 803-324-5111
TX Plano, B & R Elctrn. Sls. 214-985-0028

NORTH ATLANTIC INDUSTRIES, 60 Plant Ave., Hauppauge, NY 11788, Tel: 516-582-6060, TWX: 510-227-9660; FSC No.: 07342; Empl.: 320; *Sls. Mgr.:* K. Salz ..... **D•1296, 1369**

Local Sales Offices & Reps
AL Huntsville, Periphes-Teqspec 205-883-6699
AZ Phoenix, Aztec Entprs. 602-944-9185
CA Cupertino, T. Louis Snitzer Co. 408-257-8333
CA Delmar, T. Louis Snitzer Co. 619-226-0305
CA Los Angeles, T. Louis Snitzer Co. 213-836-6170
CO Denver, Aztec Entprs. 303-779-5285
FL Cocoa Beach, TeqSpec 305-783-3444
FL Palm Harbor, Teqspec 813-785-2276
GA Norcross, Periphex-Teqspec 404-242-7215
IL Chicago, Pat Lind Elctrns. 312-726-3513
IN Indianapolis, Pat Lind Elctrns. 317-632-7444
KS Lenexa, Ramsey Assocs. 913-541-1007
MD Wheaton, Brimberg Sls. Co. 301-946-2670
MN Circle Pines, P. Lind 612-786-5770
MO St. Louis, Ramsey Assocs. 314-878-5042
NJ Teaneck, Sci. Dvcs.-East 201-837-1004
NM Albuquerque, Aztec Entprs. 505-262-1688
NY Whitney Pt., TAE-Rep., Inc. 607-692-3705
NC Winston-Salem, Teqspec III 919-723-8102
TX Houston, Scientific Sls. 713-460-9170
TX Richardson, Sci. Sls. 214-231-6541
UT Ogden, Aztec Entprs. 801-621-1655
WA Kirkland, Syntek 206-488-0394
WI Milwaukee, Pat Lind Elctrns. 414-224-0146
Can Scarborough, Ont., John DeGroot Assocs. 416-431-9331

NORTHEAST SCIENTIFIC CORP., 30 Wetherbee St., Acton, MA 01720, Tel: 617-263-2711; Empl.: 10; *Sls. Mgr.:* C. Moritz

NORTHERN PRECISION LABS., 11 Madison Rd., Fairfield, NJ 07006, Tel: 201-227-4800, TWX: 710-734-4301; Empl.: 95; *Sls. Mgr.:* M.P. Nigro

NORTHERN TECHNOLOGIES, 747 Main St., Ste. 207, Concord, MA 01742, Tel: 617-371-0915, Telex: 948337, FAX: 617-371-2580; Empl.: 400

North Hills Electronics, Inc.

NORTH HILLS ELECTRONICS, 1 Alexander Pl., Glen Cove, NY 11542, Tel: 516-671-5700, Telex: 46-6886; FSC No.: 98821; Empl.: 125; *Sls. Mgr.:* Herb Marx ..... **A•1255, 1776, 1854, 2310-2312; D•1297**

Local Sales Offices & Reps
CA Palo Alto, Microwave Mktg. 415-941-0247
CA Palo Alto, Tri Rep 415-965-1822
CA West Lake Vl., West Tech Microwave Inc. 818-991-9219
CT Wethersfield, Underwood Sls. Corp. ... 203-563-3046
MD Laurel, CSDS, Inc. 301-490-3800
MA Andover, Bee Assocs. 617-475-2124
MA Lowell, Underwood Sls. Corp. 617-256-8191
MI Madison Hgts., WKM Assocs., Inc. 313-588-2300
MN Minneapolis, Hei-Lite Sls. 612-861-6051
NJ Glen Gardner, F & M Tech. Sls. 201-832-7216
NJ Moorestown, Stern Assocs. 609-234-0661
NY New Rochelle, Robt. L. Diamond 914-632-2828
OH Dayton, WKM Assocs., Inc. 513-434-7500
OH Independence, WKM Assocs., Inc. 216-524-5930
OR Portland, Evergreen Mktg. Grp. 503-643-8020
PA Pittsburgh, WKM Assocs., Inc. 412-892-2953
TX Dallas, Milestek, Inc. 817-455-7444
TX Houston, Milestek, Inc. 713-376-6776
WA Seattle, Evergreen Mktg. Grp. 206-633-3160
Can Montreal, Componetics Ltd. 514-331-9930

NORTHLAKE ENGRG., 999 Anita Ave., Antioch, IL 60002, Tel: 312-395-5710; FSC No.: 50638; Empl.: 120; *Sls. Mgr.:* W. A. Hardt

NORTHWEST MICROCIRCUITS, INC., 5464SW Philomath Blvd., Corvallis, OR 97333, Tel: 503-753-8242; Empl.: 12; *Sls. Mgr.:* Wm. H. Ferwalt

NORTON ASSOCIATES, INC., 10 Di Tomas Ct., Copiague, NY 11726, Tel: 516-842-4666; FSC No.: 08739

NORTRAN, Power Elctrns. Corp., 96 Milton Rd., Rochester, NH 03867, Tel: 603-332-3334, TWX: 510-297-4462; *Sls. Mgr.:* Robert S. Karstedt

NOVA ELECTRIC INC., 263 Hillside Ave., Nutley, NJ 07110, Tel: 201-661-3434, Telex: 427386, FAX: 201-661-3926; FSC No.: 29019; Empl.: 50; *Sls. Mgr.:* Kenneth Niovitch ..... **D•2082-2083**

Local Sales Offices & Reps
AZ Glendale, Adtek 602-931-9289
AZ Phoenix, Adtek 602-931-9289
GA Atlanta, L. Grindinger Assoc. 404-381-1915
HI Honolulu, Victor Kim Assoc. 808-841-6266
MD Silver Springs, Seltronics, Inc. 301-731-8080
MO St. Louis, PEM Sls. 314-427-7200
NY E. Syracuse, J.M. Schaefer Assocs. ... 315-463-5223
TX Dallas, IDM Controls 214-438-5156
TX Houston, IDM Controls 713-686-4466
WA Bellevue, Topp Engrg. Sls. Corp. 206-747-5400
Can Lachine Quebec, Electro Design 513-636-4838

NOVATRONICS, Box 878, Pompano Beach, FL 33061, Tel: 305-942-5200, TWX: 510-956-9878; Empl.: 425; *Sls. Mgr.:* Paul R. Barlock

NOVATRONICS OF CANADA LTD., 677 Erie St, P.O. Box 610, Stratford, Ontario, Canada N5A 6V6, Tel: 519-271-3880, Telex: 06-955394, FAX: 519-271-9781; Empl.: 100; *Sls. Mgr.:* Laraine Murray ..... **B•1200**

Local Sales Offices & Reps

WA Seattle, Bill Knorr Sls. 206-643-4330

NRD INC., Mark IV Ind., Inc., 2937 Alt Blvd. N, Grand Island, NY 14072, Tel: 716-773-7634, Telex: 91578 NRD GRDI; Empl.: 100; *Sls. Mgr.:* James R. Curtis; *Dist. Mgr.:* Larry Keating ..... **D•2118**

Local Sales Offices & Reps

AZ Phoenix, Pam Hopkins Assoc. 602-253-7888
CA San Jose, Tech-Ser, Inc. 408-496-1004
CA Torrance, Tech-Ser, Inc. 213-370-7200
CO Broomfield, Connors Co. 303-466-9628
FL Tampa, SRT Mktg. 813-884-4805
GA Atlanta, Electro-Rep Assocs. 404-320-1134
IL Chicago, M. Gottlieb Assocs. 312-775-1151
IN Kokomo, M. Gottlieb Assocs., Inc. 317-455-0444
MD Laurel, CSDS 301-490-3800
MA Weston, Sullivan & Powers 617-899-3443
MI Grand Blanc, Inter-Comm 313-695-0666
MN Edina, Omni-Tec 612-881-4447
MO Liberty, Lectro-Reps 816-781-2522
NM Albuquerque, Purdy Co. 505-266-7959
NY Rochester, TCS 716-342-2406
NC Charlotte, Electro-Rep Assocs. 704-527-2530
OH Dunkirk, Inter-Comm of Ohio 419-759-2200
PA Longhorne, AMS Assocs. 215-364-1050
TX Dallas, P. J. Scanlon Co., Inc. 214-739-2888
Can Toronto, Ont., Sigma Mktg. 416-757-5757

Local Distributors

CT Wallingford, Astech, Inc. 203-265-4241
CT West Hartford, Signal Ind. Elec. 203-236-6005
IA Cedar Rapids, Storage Engrg. Co., Inc. 319-363-7775
KS Witchita, R.S.C. Elctrns. 316-267-5213
MD Gaithersburg, R. S. Willard Co., Inc. 703-948-7700
MD Laurel, RMA Co. 703-273-6660
MI Flint, Royalite 313-238-8641
MI Grand Rapids, S.F. Elctrns. 616-459-0216
MI Madison Heights, ABL Elctrns. 313-588-6663
MI Pontiac, Techno Inds., Inc. 313-628-4090
MO Kansas City, Elctrns. Supp. 816-931-0250
MO St. Louis, Van Sickle Elctrns. 314-621-5000
MO St. Louis, Van Sickle Radio Elctrns., Inc. 314-621-5000
NY Cortland, Monroe-Metz 1-800-424-2442
NY Rochester, Batty Hoyt 716-647-9400
TN Johnson City, Tri-Cities Indl. Supp. 615-929-8106
TN Johnson City, Tri-Citys Ind. Supp. Co. 615-929-8106
VA Arlington, Arlington Elctrns. Whlsrs. 703-524-6256
PR Rio Piedras, Rubber & Gasket Co. of P.R. 809-763-8787
Can Mississauga, Ont., Prelco Elctrns. 416-678-0401
Can Montreal, Que., Prelco Elctrns. 514-389-8051
Can Nepean, Prelco Elctrns. 613-726-1800

NTE ELECTRONICS, INC., 44 Farrand St, Bloomfield, NJ 07003, Tel: 201-748-5089, Telex: 333226; FSC No.: 7T184; Empl.: 50; *Sls. Mgr.:* Annette Fuchs; *Dist. Mgr.:* Mary Damiano

NTK TECHNICAL CERAMICS, NGK Spark Plugs (USA), Inc., 99 Morris Ave., Springfield, NJ 07081, Tel: 201-376-6070; FSC No.: 95-246-1286; *Sls. Mgr.:* Mark Ota; *Dist. Mgr.:* Earl Hanson ... **A•1432-1433; B•1797; D•1046-1047, 2119**

Local Sales Offices & Reps

AL Huntsville, L&D, Inc. 205-837-1469
CA Culver City, DeAngelo Rothman and Co. Inc. 213-827-2202
CT Brookfield, M & M Assocs. 203-775-6888
FL Maitland, D. J. Ellis & Assocs., Inc. 305-645-1101
FL Maitland, D.J. Ellis & Assocs. Inc. 305-645-1101
GA Atlanta, L&D Inc. 404-455-3483
IL Chicago, Greenslade Sls. 312-593-3450
IA Chanhassen, Barnes Sls. Assocs. 612-934-2907
MA Framingham, G/M Assocs., Inc. 617-380-0785
MI Ann Arbor, Elliott Sls. Co. 313-662-4087
MN Chanhassen, Barnes Sales Assocs. 612-934-2907
NC Raleigh, L&D Inc. 919-876-5301
PA Rydal, Espy Sls. Assocs. 215-576-0780
PA Rydal, ESPY Sls. 215-576-0780
TN Seymour, L & D, Inc. 315-573-6511
VA Richmond, L & D, Inc. 804-257-7717
WA Seattle, Northmar Inc. 206-524-5170

Local Distributors

IL Arlington Heights, Greenslade Sls. 312-593-3450

NUCLEAR RESCH. CORP., 125 Titus Ave., Warrington, PA 18976, Tel: 215-343-5900, Telex: 510-665-8525 NRC WNTN; FSC No.: 96696; Empl.: 85; *Sls. Mgr.:* James R. Lee

NUCLEONIC PRODS., See Thomson-CSF Comps. Corp., Passive Comps. Div.

NU-CONCEPT SYSTEMS, 2725 Advance La.,P. O. Box 587, Colmar, PA 18915, Tel: 215-822-8400, Telex: 5106614838; FSC No.: 58561; Empl.: 17; *Sls. Mgr.:* Thomas Dvorak

NU DATA, 32 Fairview Ave., Little Silver, NJ 07739, Tel: 201-842-5757, Telex: 271139, TWX: 710-722-5754; Empl.: 20; *Sls. Mgr.:* Richard A. Previte

NU-MEDIA, 1075 Featherstone, Pontiac, MI 48057, Tel: 313-373-1165; FSC No.: 2450; Empl.: 26; *Sls. Mgr.:* Brett W. Lincoln

NUMERIX CORP., 20 Ossipee Rd., Newton, MA 02164, Tel: 617-964-2500, Telex: 948032, FAX: 617-969-4380; *Sls. Mgr.:* Harold Messias

NU-METRICS, 947 Longdale Ave., Longwood, FL 32750, Tel: 305-331-7717, FAX: 305-331-7717; Empl.: 12; *Sls. Mgr.:* Bernie Ames

NWL CAPACITORS, NWL Transformers, 8050 Monetary Dr., Riviera Bch., FL 33404, Tel: 305-848-9009

NWL TRANSFORMERS

NWL TRANSFORMERS, Rising Sun Rd., P.O. Box 358, Bordentown, NJ 08505, Tel: 609-298-7300, TWX: 510-685-3645; Empl.: 225; *Sls. Mgr.:* C. W. Harrison ..... **A•2313; D•1825**

NYE, WILLIAM F. CO., Div. of New Bedford Thread Co., Inc., P.O. Box G-927, New Bedford, MA 02742-0927, Tel: 617-996-6721, Telex: 940807; Empl.: 15; *Sls. Mgr.:* Donald R. Fairbanks

NYLTITE, 3451 S. Clinton Ave., S. Plainfield, NJ 07080, Tel: 201-561-1300; *Sls. Mgr.:* Frances Gould

Nytronics Components Group, Inc.

NYTRONICS COMPONENTS GRP., INC., 700 Orange St., Darlington, SC 29532, Tel: 803-393-5421, TWX: 810-665-2182; FSC No.: 83125; Empl.: 502; *Sls. Mgr.:* Mack W. Windham .... **A•1146-1158, 1200, 1256-1275, 1602-1608, 1991; B•1019**

Local Sales Offices & Reps

AL Huntsville, B.C.I. 205-529-4411
AZ Tucson, Clemick & Assocs. 602-749-4003
CA Marina Del Rey, Spec Rep 213-827-7767
CA Sunnyvale, W.W. Posey 408-746-0771
CO Englewood, Component Sls. 303-779-8060
CT Bloomfield, Astrorep of New England 203-243-3122
FL Boca Raton, Lawrence Assocs. 305-368-7373
GA Chamblee, B.C.I. 404-455-0405
IL Rolling Meadows, Sumer Inc. 312-991-8500
IN Indianapolis, EMCI 317-253-1668
KS Lenexa, Mid-Tec Assoc. 913-541-0505
MA Lowell, Astrorep of New England 617-459-7399
MI Grand Haven, Kahsar Sls., Inc. 616-846-7590
MN Minneapolis, Dunlop Consits. 612-544-1070
MO Florissant, Mid-Tec Assoc. 314-275-8666
NJ West Orange, National Atlantic 201-731-0730
NY Pittsford, W.A. Franklin Sls. 716-248-8251
NY Valley Cottage, LRC Assocs. 914-268-4435
OH Cincinnati, Kahsar Sls., Inc. 513-922-3133
OH Columbus, Kahsar Sls., Inc. 614-252-4009
OR Tigard, Eltech, Inc. 503-684-3458
PA Narberth, Bresson Assocs. 215-664-6460
TX Austin, Design Mktg. 512-263-9151
TX Irving, Design Mktg. 214-929-0611
UT Salt Lake City, Component Sls. 801-268-8440
VA Lynchburg, Bresson Assocs. 703-237-1304
WA Bellevue, Eltec 206-643-4330
WI Brookfield, Sumer, Inc. 414-784-6641
Can Ottawa,Ont., Dynasty Elctrns. 613-738-1200

Local Distributors

CA Garden Grove, Inductive Prods. 714-891-2572
CA Gardena, Bell Inds. 213-515-1800
CA San Diego, Mock III 619-560-0515
CA San Diego, Neumann Elctrns. 619-695-3005
CA Santa Clara, Cypress 408-980-2500
CA Sunnyvale, Bell Inds. 408-734-8570
CA Thousand Oaks, Bell 805-499-6821
CA Walnut, A. C. I. 818-331-0735
CO Englewood, Industrial Elctrns. 303-694-9444
CO Wheatridge, Bell Inds. 303-424-1985
IL Chicago, Bell Inds. 312-982-9210
IL Chicago, Newark Elect. 312-638-4411
IN Indianapolis, Bell Inds. 317-634-8202
MD Beltsville, Newark Elec. 301-937-5085
MD White Marsh, RESCO/Baltimore 301-529-0500
MA Needham, Cronin Elctrns. 617-449-5000
MA Woburn, Sterling Elec. 617-938-6200
MN Minneapolis, Joel Co. 612-545-5669
NY Farmingdale, Pride Elctrns. 516-293-4020
NY Hauppauge, Fairmont Elctrns. 516-231-3313
NY Hauppauge, Jaco Elect. 516-273-5500
NY Plainview, ACI Elect. 516-293-6630
NY Rome, Rome Elect. 315-337-5400
NC Raleigh, Radio Elec. Svc. 919-781-5700
OH Centerville, C.V. Clark 513-435-3000
OR Lake Oswego, Bell Inds. 503-241-4115
PA Montgomeryville, Pyttronic Inds. 215-643-2850
PA Philadelphia, Herback Rademan 215-426-1700
PA Philadelphia, PEI 215-568-7400
PA York, E. C. I. 717-843-8971
TX Dallas, Wholesale Elect. 214-824-3001
WA Bellevue, Bell Inds. 206-747-1515

OAK MATERIALS GROUP INC., Laminates Div., 1 Mechanic Street, Hoosick Falls, NY 12090, Tel: 518-686-4379, Telex: 710-965-9721; FSC No.: 53240; *Sls. Mgr.:* Robert L. Fidrych; *Dist. Mgr.:* Richard Spiak

OAK Switch Systems Inc.

OAK SWITCH SYSTEMS, 100 S. Main St., Crystal Lake, IL 60014, Tel: 815-459-5000, TWX: 910-634-3353; FSC No.: 76854; Empl.: 500; *Dist. Mgr.:* Gary LeMaire ..... **B•1111, 1668-1669, 1724**

Local Sales Offices & Reps

AL Huntsville, Electramark, Inc. 205-883-9948
AZ Scottsdale, Harris & Croy 602-951-9121
AR Little Rock, Erickson Sls., Inc. 501-888-7684
CA Granada Hills, C & N & Assocs., Inc. .. 818-895-2431
CA San Mateo, Stewart/Fullerton & Assocs. 415-570-7666
FL Winter Springs, Oak Switch Sys., Inc. 305-699-4010
GA Norcross, Electramark, Inc. 404-446-7915
IL Crystal Lake, Oak Switch Sys. Inc. 815-459-5000
IL Palatine, Golbeck/Milota 312-705-0602
IA Cedar Rapids, Pattison Sls. 319-395-9866
KS Olathe, C-Tron, Inc. 913-829-0073
LA Chalmette, Erickson Sls., Inc. 504-271-1976
MA Acton, Boston Elctrns. Assocs. 617-264-4456
MN Maplewood, Ziegenbein Assoc., Inc. 612-772-1324
MO St. Charles, C-Tron 314-928-8078
NJ Mountainside, Henry G. Richter 201-233-4615
NY Fayetteville, Henry G. Richter 315-637-6713
NC Raleigh, Eastern Elctrns. 919-876-7591
OH Cincinnati, JMK Elctrns. 513-271-3860
OH Kettering, JMK Elctrns. 513-429-6910
OK Broken Arrow, Erickson Sls., Inc. 918-455-4276
OK Oklahoma City, Erickson Sls., Inc. 405-682-2947
OR Beaverton, Oak Switch Sys. 503-641-6192
PA Phoenixville, Henry G. Richter 215-495-6176
TX Dallas, Dal/Tex Rep., Inc. 214-991-7799
WI Brookfield, Ziegenbein Assocs., Inc. 414-785-1350
Can Toronto, Ont., R. D. Assocs. 416-444-0959

Local Distributors

AL Huntsville, Component Distr. 205-883-7501
AL Huntsville, Marshall Elctrns. 205-881-9235
AZ Tempe, Harper SID 602-967-1464
AZ Tempe, Marshall Elctrns. 602-968-6181
AR Little Rock, Component Distr. 501-277-6278
CA Chatsworth, Marshall Elctrns. 818-407-4100
CA Compton, Harper SID 213-979-5090
CA Inglewood, Newark Elctrns. 213-671-7066
CA Irvine, Marshall Elctrns. 714-859-5050
CA Milpitas, Marshall Elctrns. 408-943-4600
CA Mountain View, I/O Sls. Inc. 415-968-1080
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Rancho Cordova, Marshall Elctrns. 916-635-9700
CA San Diego, Harper SID 619-560-8545
CA San Diego, Marshall Elctrns. 619-578-9600
CA San Francisco, Zack Elctrns. 415-626-1444
CA Sunnyvale, Harper SID 408-747-0333

CO Denver, CSID 303-292-9594
CO Denver, Newark Elctrns. 303-757-3351
CO Thornton, Marshall Elctrns. 303-451-8383
CT Wallingford, Marshall Elctrns. 203-265-3822
FL Ft. Lauderdale, Marshall Elctrns. 305-928-0661
FL Melbourne, Component Distr. 305-724-9910
FL Orlando, Marshall Elctrns. 305-841-1878
GA Norcross, Component Distr. 404-441-3320
GA Norcross, Marshall Elctrns. 404-923-5750
IL Chicago, Newark Elctrns. 312-784-5100
IL Crystal Lake, Sub-Sem, Inc. 815-459-4139
IL Palatine, Ohm/Elctrns. 312-359-5500
IL Rosemont, Advent Elctrns. 312-297-6200
IL Schaumburg, Marshall Elctrns. 312-490-0155
IN Indianapolis, Advent Elctrns. 317-874-2190
IN Indianapolis, Graham Elctrns. 317-634-8202
IN Indianapolis, Marshall Elctrns. 317-297-0483
KS Edwardsville, C. Tennant Co. 913-441-1801
KS Lenexa, Marshall Elctrns. 913-492-3121
MD Beltsville, Newark Elctrns. 301-937-5900
MD Gaithersburg, Marshall Elctrns. 301-840-9450
MA Burlington, Marshall Elctrns. 617-272-8200
MA Canton, Impact Sls. 617-821-1500
MA Newton Upper Falls, In-Stock Prods. .. 617-964-6200
MI Farmington Hills, Advent Elctrns. 313-477-1650
MI Livonia, Marshall Elctrns. 313-525-5850
MI Oak Park, Newark Elctrns. 313-967-0600
MN Minneapolis, Newark Elctrns. 612-331-6350
MN Minneapolis, Northern Elec. Supp., Inc. 612-944-1167
MN Plymouth, Marshall Elctrns. 612-559-2211
MO St. Louis, Olive Elctrns. 314-426-4500
NJ Fairfield, Marshall Elctrns. 201-882-0320
NJ Mt. Laurel, Marshall Elctrns. 609-234-9100
NJ Springfield, Newark Elctrns. 201-376-9500
NJ Springfield, Route Elctrns. 201-379-7710
NM Albuquerque, Walker Radio 505-883-2992
NY East Syracuse, Modutex Corp. 315-437-7052
NY Hauppauge, Fairmont Elec. 516-231-3313
NY Hauppauge, Marshall Elctrns. 516-273-2424
NY Jamaica, Calson Co. 718-525-5900
NY Johnson City, Marshall Elctrns. 607-798-1611
NY Rochester, Marshall Elctrns. 716-235-7620
NC Raleigh, Component Distr. 919-787-7311
NC Raleigh, Marshall Elctrns. 919-878-9882
OH Centerville, IPD 513-435-2086
OH Dayton, Marshall Elctrns. 513-236-8088
OH Solon, Marshall Elctrns. 216-248-1788
OR Beaverton, Marshall Elctrns. 503-644-5050
OR Portland, Radar Elec. 503-232-3404
PA Pittsburgh, Marshall Elctrns. 412-963-0441
TX Austin, Marshall Elctrns. 512-837-1991
TX Dallas, Component Distr. 214-644-0373
TX El Paso, Ideal Indl. Elect. 915-779-6647
TX Garland, Newark Elctrns. 214-494-5911
TX Houston, Marshall Elctrns. 713-895-9200
TX Irving, Harper S. I. D. 214-621-0500
UT Salt Lake City, Marshall Elctrns. 801-485-1551
WA Bellevue, Marshall Elctrns. 206-747-9100
WA Seattle, Radar Elec. 206-282-2511
WA Spokane, Radar Elec. 509-747-3053
WI Brookfield, Marshall Elctrns. 414-797-8400

OAKTRON INDUSTRIES, INC., 704 30th St, Monroe, WI 53566, Tel: 608-328-5560, Telex: 260-266; FSC No.: 07109; Empl.: 250; *Sls. Mgr.:* J. F. Disch; *Dist. Mgr.:* Jim Hendrickson

OCEAN MARINE INSTRUMENT, P. O. Box 3963, Tustin, CA 92680, Tel: 714-548-9569 ..... **D•2085**

OHIO SEMITRONICS, INC., 1205 Chesapeake Ave., Columbus, OH 43212, Tel: 614-486-9561, TWX: 810-482-1630; FSC No.: 12066; Empl.: 36; *Sls. Mgr.:* G. Clagett ..... **B•1798-1811; D•1298-1303**

Local Sales Offices & Reps

CA Arcadia, Van Gott & Assocs. 818-445-9728
CA Hayward, FLW, Inc. 415-786-9070
CT Wallingford, Pat Jenks Assocs. 203-265-9939
FL Orlando, Datarep 305-843-5224
GA Marietta, FLW 404-424-1731
IL Columbia, R. L. Weisheimer & Assocs. 618-281-4148
IL Park Ridge, Elctrn. Instr. Assocs. 312-298-2290
MD Baltimore, Electra-Tech, Inc. 301-256-2723
MA Woburn, Pat Jenks Assocs. 617-938-0488
MN Minneapolis, The Mark Co. 612-933-3026
NJ Garwood, E. R. Mertz, Inc. 201-232-4643
NY Latham, L-Tron Corp. 518-785-5032
NC Charlotte, Zelco Assocs. 704-541-6122
OH Dayton, Mohawk Intronics 513-434-8873
OH No. Ridgeville, TMS, Inc. 216-327-3527
PA Carnegie, Flow Media 412-923-1619
PA King of Prussia, FLW, PA, Inc. 215-337-4343
TN Memphis, Jordan/Marlar/Hale, Inc. ... 901-452-7441
TX Houston, Scientific Sls. Co. 713-460-9170
TX Richardson, Scientific Sls. Co. 214-231-6541
UT Salt Lake City, MC Squared, Inc. 801-364-3174
WA Bellevue, Topp Engrg. Sls. Corp. 206-747-5400

OHMITE MANUFACTURING CO., A North American PHILIPS Co., 3601 W. Howard St., Skokie, IL 60076, Tel: 312-675-2600, Telex: 72-4433, TWX: 910-223-0805; FSC No.: 44655; *Sls. Mgr.:* Ed Rehe, E. Reg. Mgr. ..... **A•1992-2004, 2110-2111**

Local Sales Offices & Reps

AL Huntsville, Cartwright & Bean 205-830-1540
AK Anchorage, H. J. Lang Assoc. 907-279-5741
AZ Phoenix, Mercury Eng. Sls. 602-244-0123
CA Los Angeles, Wiley Co. 213-666-1611
CA San Diego, Wiley Co. 619-571-2881
CA Santa Clara, Ohmite Mfg. Co. 408-986-1458
CO Denver, Lindberg Co. 303-758-9033
CT North Haven, Coakley, Boyd & Abbett 203-239-6217
FL Deerfield Beach, Cartwright & Bean ... 305-429-3400
FL Orlando, Cartwright & Bean 305-422-4531
GA Atlanta, Cartwright & Bean 404-233-2939
IL Skokie (Chicago), Ohmite Mfg. Co. 312-675-2600
IN Indianapolis, Electronic Reps, Inc. 317-894-1414
IN Mishawaka, Elctrn. Reps., Inc. 219-259-9365
LA Covington, Cartwright & Bean 504-892-1780
MA Needham Hgts., Coakley, Boyd & Abbett 617-444-5470
MI Grosse Pointe Park, Greiner Assocs. .. 313-499-0188
MN St. Paul, Northport Engrg. 612-457-8000
MS Jackson, Cartwright & Bean 601-981-1170
MO Gladstone (Kansas City), Delltron Co. 816-436-6445
MO St. Louis, Delltron Co. 314-839-0033
NJ River Edge, Ohmite Mfg. Co. 201-488-3690
NM Albuquerque, Lindberg Co. 505-881-1006
NY Rochester, Electra Sls. 716-427-7860
NY Syracuse, Electra Sls. Corp. 315-463-1248
NC Charlotte, Polytech Svcs. 704-372-4161
OH Chardon, Ohmite Mfg. Co. 216-286-7454
OR Tigaird, Electronic Sls. 503-245-2342
PA Monroeville, Ohmite Mfg. Co. 412-373-2695
TN Knoxville, Cartwright & Bean 615-693-7450
TN Memphis, Cartwright & Bean 901-362-8345
TX Austin, Erickson Sls. 512-244-3068
TX Dallas, Erickson Sls. 214-739-5833
TX Houston, Erickson Sls. 713-226-1604
UT Salt Lake City, Lindberg Co. 801-277-2643
WA Mercer Island, Electronic Comp Sls. ... 206-232-9301
Can Pickering, Ont., A. C. Simmonds & Sons, Ltd. 416-839-8041

OHMTEK, INC., Sfernice, Inc., 2160 Liberty Dr., Niagara Falls, NY 14304, Tel: 716-283-4025; FSC No.: 57489; Empl.: 143; *Sls. Mgr.:* John Burger ..... **A•1862, 2006-2011; B•1024-1025**

Local Sales Offices & Reps

AZ Scottsdale, Semper Fi Sls., Inc. 602-991-4601
CA Chatsworth, Raltech 818-700-0933
CA Del Mar, Chapman & Chapman 619-755-0412
CA Glendale, Mission Mktg. Grp. 818-247-9110
CA Santa Clara, I Square, Inc. 408-988-3400
CO Denver, West, Inc. 303-477-8180
FL St. Petersburg, J.C.J. Assocs. 813-343-2679
IL Palatine, R-Tek, Inc. 312-991-4404
IN Ft. Wayne, Denton Mktg. 219-486-0665
IA Hiawatha, Ard Sls. 319-393-6392
MA Sterling, Compatible Comps., Inc. 617-422-7641
MI Jackson, T.P.S. & Assocs. 517-783-1722
MN Minneapolis, Dunlop Consits. 612-544-1070
NJ Piscataway, R. P. Luce & Co. 201-752-8750
NM Albuquerque, F P Sls. 505-345-5553
NY Chappaqua, Micrel, Inc. 914-238-4961
NY New Hyde Pk, R. P. Luce & Co. 516-437-4550
NY Rochester, Fritz Dasson 716-338-1699
OH Wooster, T.P.S. & Assocs. 216-264-0971
OR Beaverton, Eclipse Mktg. Grp. 503-642-1661
PA Wynnewood, Metz-Benham Assocs., Inc. 215-896-7300
TX Lewisville, Jim Hughes Co. 214-221-1536
UT Salt Lake City, West, Inc. 801-466-5739
WA Redmond, Eclipse Mktg. Grp. 206-885-6991
Can Rexdale, Ont., Source Elctrns. 416-675-6235

Local Distributors

AZ Phoenix, Zeus Comps. 602-263-6022
CA Anaheim, Zeus West 714-632-6880
CA Chatsworth, Petell Elctrns. 818-700-8838
CA San Diego, Neumann Elec. 619-695-3005
CA San Jose, Zeus Comps. 408-998-5121
CA Westlake Vl., Distel, Inc. 805-495-9998
FL Orlando, Aztech Elctrns. 305-291-1681
FL Oviedo, Zeus Comps. 305-365-3000
FL Tampa, Impala Elctrns. 813-885-4747
MD Columbia, Aztech Elctrns. 301-995-6800
MD Columbia, Zeus Comps. 301-997-1118
MA Burlington, TLC Elctrns. 617-273-0140
MA Lexington, Zeus Comps. 617-863-8800
NY Bohemia, Justin Elec. 516-589-4000
NY Hauppauge, Jaco, Inc. 516-273-5500
NY Hauppauge, Sherburn Elctrns. 516-231-4300
NY Melville, SAI, Inc. 516-293-2710
NY Port Chester, Zeus Comps. 914-937-7400
NY Valley Stream, L & S Elec. 516-561-2474
OH Cincinnati, Eclipse of Ohio 513-661-7733
OH Cincinnati, G & A Sls. 513-521-8800
OH Dayton, Televox, Inc. 513-454-1225
TX Dallas, EPIC 214-503-1414
TX Richardson, Jaco, Inc. 214-235-9575
TX Richardson, The Altair Co. 214-231-5166
TX Richardson, Zeus Comps. 214-783-7010

OK INDUSTRIES, INC., 4 Executive Plaza, Yonkers, NY 10701, Tel: 914-969-6800, Telex: 12-5091; Empl.: 200; *Sls. Mgr.:* David Leventhal

OKONITE CO., Box 340, Ramsey, NJ 07446, Tel: 201-825-0300, TWX: 710-988-1017; Empl.: 1700; *Sls. Mgr.:* F. R. Postma

OLEKTRON CORP., Signal Technology Corp., 61 Sutton Road, Webster, MA 01570, Tel: 617-943-7440, Telex: 710-347-1602, FAX: 617-949-1804; FSC No.: 32252 ..... **A•1855**

Local Sales Offices & Reps

CA Mission Hills, Detomassi & Grupp, Inc. 818-356-8285
CA San Diego, Detomassi & Grupp, Inc. .. 619-277-0178
CA San Jose, Allis Assocs. 408-252-2883
CA Torrance, Detomassi & Grupp, Inc. 213-618-8898
FL Clearwater, Brennan Assocs. 813-446-5006
IN Fort Wayne, TX Sls. 219-489-4447
MD Elicot City, VPE, Inc. 301-461-2525
MA Hingham, O'Sullivan & Murphy 617-749-8680
MO Maryland Heights, Ensco Rep. 314-423-3935
NY Commack, ERA, Inc. 516-543-0510
NY Utica, Sweetco Assocs. 315-797-6721
PA Huntington Valley, Rabal Assocs. 215-947-4825
WA Seattle, John Spaulding 206-282-9173

OLFLEX WIRE & CABLE, INC., 30 Plymouth Street, Fairfield, NJ 07006, Tel: 201-575-1101, Telex: 130-327, ESYLNK: 201-575-7178; *Sls. Mgr.:* Michael R. Picone

Local Sales Offices & Reps

AZ Glendale, Sun Mktg. Svc. 602-278-5917
CA Fremont, Olflex Wire & Cable 415-659-1222
CO Englewood, Hi-Tech Controls, Inc. 303-771-0444
MN Minnetonka, S. J. Collins & Assocs. ... 612-933-7661
UT Salt Lake City, Control Inds. 801-481-3288

OLIVER ADVANCED ENGINEERING, 320 W. Arden St., Glendale, CA 91203, Tel: 818-240-0080, Telex: 510 600-8099; Empl.: 28; *Sls. Mgr.:* Steve Welker

OLYMPIC WIRE & CABLE, 1 Madison Rd., Fairfield, NJ 07006, Tel: 201-227-7996, TWX: 7109910071; FSC No.: 63830; Empl.: 35; *Sls. Mgr.:* Robert T. Mello; *Dist. Mgr.:* Yvette Archer

OMEGA ENGINEERING, Box 4047, Stamford, CT 06907, Tel: 203-359-1660, Telex: 99-6404; Empl.: 500; *Sls. Mgr.:* George Vermilyea ..... **B•1670, 1752-1753, 1812-1813; C•1909; D•1015, 1095, 1135, 1171, 1304, 1370-1371, 1409**

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OAL ASSOCIATES, P.O. Box J, Escondido, CA 92025, Tel: 619-743-7143; Empl.: 10; *Sls. Mgr.:* Mark Lohkemper

OAS INC., See Optimum Applied Systems

OCTAGON SYSTEMS, 6510 W. 91st Ave., Westminster, CO 80030, Tel: 303-426-8540, Telex: 4931919

ODELL, M. P., CO., 1620 Chesapeake Dr., Hoffman Estates, IL 60195, Tel: 312-991-2828; *Sls. Mgr.:* Maria McClurkin

OECO CORP., 4607 S.E. International Way, Milwaukie, OR 97222, Tel: 503-659-7932, Telex: 36-0350; FSC No.: 95266; Empl.: 690; *Sls. Mgr.:* Dave Fuller

OGALLALA ELCTRNS., Div. Arnold Engrg. Co., Box 59, Ogallala, NE 69153, Tel: 308-284-4093; Empl.: 37; *Sls. Mgr.:* H. L. Harrington

OMEGA PRECISION CORP., 1384 Pompton Ave., Cedar Grove, NJ 07009, Tel: 201-256-3422; FSC No.: 9Y506; Empl.: 16; *Sls. Mgr.:* Leon Komsa

Local Sales Offices & Reps

CA	Mountain View, Lindsay Assocs.	415-965-3307
CO	Littleton, TMC	303-773-0643
MD	Baltimore, Bernard White & Co., Inc.	301-484-5400
OH	Hudson, J. A. Chluda & Assocs.	216-650-1638
PA	Westfield, Roberson Assocs.	201-256-3422

OMNIBYTE CORP., 245 W. Roosevelt Rd., Bldg. 1-5, W. Chicago, IL 60185, Tel: 312-231-6880, 1-800-638-5022, FAX: 1-312-231-7042; Empl.: 35; *Sls. Mgr.:* Mike Hansen

OMNIPrint

OMNIPRINT, INC., 1188 Elko Drive, Sunnyvale, CA 94089, Tel: 408-745-6400, Telex: 350165 OMNPRNT SUVL; Empl.: 12 ..... **D•1096**

Local Sales Offices & Reps

CA	Irvine, OBI Distrs.	714-250-9003
CA	Mountain View, I/O Sls. Inc.	415-968-1080
IL	Arlington Heights, Coombs Assoc., Inc.	312-439-9810
NJ	Fords, Marlin Data	201-738-7200
TX	Austin, The Thorson Co.	512-345-1985
TX	Dallas, The Thorson Co.	214-233-5744
TX	Houston, The Thorson Co.	713-771-3504
WI	Milwaukee, Coombs Assocs., Inc.	414-351-6123

OMNI SPECTRA, 21 Continental Blvd., Merrimack, NH 03054, Tel: 603-424-4111, Telex: 6817280; FSC No.: 16179; Empl.: 750; *Sls. Mgr.:* Ernest J. Devita; *Dist. Mgr.:* Terri Hastings

OMNI SPECTRA, INC., Microwave Subsystems Div., 2626 So. Hardy Dr., Tempe, AZ 85282, Tel: 602-966-1471, TWX: 910-950-1296; *Sls. Mgr.:* Carl Seburn; *Dist. Mgr.:* Carl Seburn

OMNI SWITCH USA, INC., 21630 N. 19th Ave., Ste. B-16, Phoenix, AZ 85027, Tel: 602-582-0629, FAX: 602-582-0665; Empl.: 100; *Sls. Mgr.:* Laurie Ball

OMNITEK, INC., P.O. Box 102, 820 Pennsylvania Blvd., Feasterville, PA 19047, Tel: 215-355-4443, TWX: 510-667-1730; FSC No.: 54316; *Sls. Mgr.:* Frank Shandelman

OMRON ELCTRNS., INC., Control Comps. Div., One E. Commerce Dr., Schaumburg, IL 60173, Tel: 312-843-7900, TWX: 910-291-2494; Empl.: 209; *Sls. Mgr.:* F. Newburn ..... **B•1469-1474, 1671-1673**

Local Sales Offices & Reps

CA	Cupertino	408-255-9231
IL	Schaumburg	312-843-7900
KS	Kansas City	913-262-0560
MA	Danvers	617-774-6501
MO	St. Louis	314-298-0093
PA	Wayne	215-964-9376

OMUTEC, Odetics, Inc., 1515 S. Manchester Ave., Anaheim, CA 92802, Tel: 714-758-0200, TWX: 910-594-1461; *Sls. Mgr.:* Stan Tomlinson

ONEAC CORPORATION, 27944 N. Bradley Rd., Libertyville, IL 60048, Tel: 312-680-5999, 800-243-4543; *Sls. Mgr.:* Frank Brletich

ONSET COMPUTER CORP., 199 Main St., PO Box 1030, N. Falmouth, MA 02556, Tel: 617-563-2267, Telex: 469915; Empl.: 8; *Sls. Mgr.:* Margaret Geist

OPAMP LABORATORIES, INC., 1033 N. Sycamore Ave., Los Angeles, CA 90038, Tel: 213-934-3566; FSC No.: 24699; Empl.: 18 ..... **D•1016**

OPTEK TECHNOLOGY, INC., 345 Industrial Blvd., McKinney, TX 75069, Tel: 214-542-9461, TWX: 910-860-5625, FAX: 214-542-1739; Empl.: 610; *Sls. Mgr.:* James Trautwein; *Dist. Mgr.:* Betty Renfro ..... **B•1225**

Local Sales Offices & Reps

AZ	Scottsdale, Earl & Haas Assoc.	602-994-3813
CA	Escondido, Uni Rep	714-746-5131
CA	Santa Clara, Criterion	408-988-6300
CA	Thousand Oaks, Sc Cubed	805-496-7307
CA	Tustin, Sc Cubed	714-731-9206
CO	Wheatridge, Waugaman Assocs.	303-423-1020
CT	Madison, Conti-Younger Assocs.	203-245-1136
FL	Coral Springs, H A I	305-752-7520
FL	Melborne, H A I	305-676-1639
FL	Tampa, HAI	813-963-0743
IL	Rolling Meadows, KMA Sales	312-398-5300
IN	Indianapolis, J & W Sales	317-842-3740
MA	Burlington, Conti-Younger Assocs.	617-273-1582
MI	Grosse Pointe Pk., Greiner Assocs.	313-499-0188
MN	Eden Praire, Elctrn. Innovators	612-941-0830
MO	St. Louis, Engineering Services	314-997-1515
NY	Clark Mills, KLM/Garner	315-853-6126
NY	Manhasset, Win-Cor Elec.	516-627-9474
NY	Pittsford, KLM/Garner	716-381-8350
NY	Syracuse, KLM/Garner	315-458-6214
OH	Rocky River, Norm Case Assocs.	216-333-0400
OR	Tigard, Vantage Corp.	206-455-3460
PA	Prospect Park, Elf Sls. Co.	215-534-3340
TX	Austin, ProSales	512-467-9947
TX	Dallas, Prosales	214-492-8870
TX	Houston, Prosales	713-495-8130
UT	Salt Lake City, Waugaman Assocs.	801-261-0802
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OH Dayton, RDP Corp. 513-253-6175
PA Huntington Valley, Rabal Assocs. 215-947-4825
PA Pittsburgh, Wainwright Tech. Sls., Inc. 412-487-5055
TX Arlington, John T. Houston Assocs., Inc. 817-265-2931
UT Salt Lake City, Vic Myers Assocs. 810-964-6901
VA Arlington, Gans & Pugh Assocs. 703-527-3262
WA Bellevue, Tasco, Inc. 206-453-1414
Can Rexdale, Ont., SRP Control Sys., Ltd. .. 416-746-0117

PACIFIC MAGNETICS CORP., 2602 Transportation Ave., Ste. F, National City, CA 92050, Tel: 619-474-8216; *Sls. Mgr.:* Mary Hill

PACIFIC MICROCURCUITS LTD., 240 H Street, Blaine, WA 98230, Tel: 604-536-1886; Empl.: 20; *Sls. Mgr.:* Philip D. Stern

PACIFIC MICROCOMPUTERS, Signal Technology, 6730 Mesa Ridge Rd., San Diego, CA 92121, Tel: 619-453-8649, Telex: 701-578; Empl.: 30; *Sls. Mgr.:* John Hamon

PACIFIC POWER SOURCE CORP.

PACIFIC POWER SOURCE CORP., 15122 Bolsa Chica St., Huntington Bch., CA 92649, Tel: 714-898-2691, 800-854-2433, FAX: 714-891-1928; FSC No.: 57148; Empl.: 80; *Sls. Mgr.:* Russ Engie ..... **D•2086-2091**

Local Sales Offices & Reps
CA Carson, Amasco Corp. 213-516-8561
CA Sunnyvale, Amasco Corp. 408-773-8690
FL Sarasota, Ram-Z Assocs. 813-957-4900
IN Indianapolis, Loren Green Assocs. of Indiana 317-923-9827
MA Burlington, Intersell, Inc. 617-273-3844
MN Minneapolis, Loren Green Assocs. 612-571-6666
NY DeWitt, D. B. Assocs. Inc. 315-446-0220
NY Wantagh, Bytec Reps. 516-781-7400
PA Mechanicsville, John Bell Assocs. 813-957-4900
VA Fairfax, L & F Mktg. 703-273-3705
WA Bellevue, Al Smith 206-746-6770

Local Distributors
EXP Los Angeles, CA, Trans World Trade 213-476-8406

PACIFIC RESISTOR CO., 18300 Oxnard St., Tarzana, CA 91356, Tel: 818-345-7811, Telex: 06416; FSC No.: 06416; *Sls. Mgr.:* Douglas Trewhitt ..... **A•2014-2015**

Local Sales Offices & Reps

CA San Jose, Comtech Mktg. 408-293-0894
IL St. Charles, XYZ Mktg. 312-584-3001

Local Distributors

CA San Jose, Comtech Mktg. 408-293-0894

PACIFIC SCIENTIFIC CO., 4301 Kishwaukee, Rockford, IL 61105, Tel: 815-226-3100, Telex: 386743; Empl.: 400

PACIFIC TRANSDUCER, 2301 Federal, Los Angeles, CA 90064, Tel: 213-478-1134; Empl.: 23

PACTEC®

PACTEC CORP., LaFrance Corp., Enterprise & Executive Avenues, Philadelphia, PA 19153, Tel: 215-365-8400, Telex: 506-082; Empl.: 401; *Sls. Mgr.:* Ken Hartman; *Dist. Mgr.:* Ken Hartman ..... **C•1002, 1068-1071**

Local Sales Offices & Reps

AL Huntsville, Scott Ray 205-883-2159
AZ Phoenix, Gramer & Co. 602-995-9455
CA Buena Pk., J. Winters 714-522-7373
CA Newark, R. Battaglia 415-795-8786
FL Key Largo, Jerrold Helbein & Assocs., Inc. 305-367-3025
IL Sleepy Hollow, Jim Shipp 312-428-6364
KS Lenexa, Spectrum Sls. 913-648-6811
NH Nashua, Karen Ralston 603-888-7720
NJ Pennsauken, Bill Boucot 609-488-9086
NC Thomasville, Keith Pierce 919-472-2030
OH Perrysburg, Bruce Brown 419-874-1110
PA Philadelphia, PacTec Corp. 215-365-8400
TX Grand Prairie, John E. Stocker 817-640-4038
WA Seattle, Mike Werttemberger 206-363-9899
WI Appleton, Ed Sabish 414-731-7212
Can Markham, Ont., Avotronics, LTD 416-475-2024
Can Ottawa, Ont., Avotronics, LTD 613-233-5527
Can Pointe Claire, Que., Avotronics, LTD .. 514-697-2135

Local Distributors

AL Birmingham, American Elctrns. Supp. 205-942-4656
AL Birmingham, Forbes Distrbg. 205-251-4105
AL Decatur, Forbes Distrs. 205-353-4762
AL Huntsville, Forbes Distrbg. 205-837-1579
AL Mobile, Forbes Elctrns. 205-479-4535
AZ Phoenix, Tri-Tek 602-371-0860
AZ Tempe, Circut Specialists, Inc. 602-966-0764
AZ Tucson, Anatech Corp. 602-881-2348
CA Anaheim, A-Z Elctrns. 714-634-3620
CA Anaheim, R&D Elctrns. 714-773-0240
CA Burbank, Electronic City 213-842-5275
CA Canoga Park, Sandy's Elctrns. Supp. .. 213-346-8353
CA Costa Mesa, Marvac 714-540-3280
CA Cucamonga, Abletronics 714-987-7606
CA El Segundo, Force Elctrns. 213-772-1324
CA El Toro, R-Vac 714-586-1210
CA Freemont, Terminal Sls. Corp. 415-656-7722
CA Gardena, California Switch & Signal .. 213-538-9830
CA Glendale, R. V. Weatherford 818-841-4573
CA Goleta, Bill's Stereo 805-967-8280
CA Monterey, Zackit (Monterey) 408-375-3144
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Redding, North Valley Elec. Distr. 916-222-1500
CA Sacramento, Zackit/Sacramento 916-446-3131
CA San Diego, Southland Comps. 619-578-6630
CA San Francisco, Zack Elctrns. 415-626-1444
CA San Jose, Force Elctrns. 408-435-1324
CA San Jose, Quement Elctrns. 408-998-5355
CA San Jose, Rose Elctrns. 408-263-9700
CA Sunnyvale, Weatherford, R.V. 408-738-8694
CA Thousand Oaks, Sandy's Elctrns. 818-889-1209
CA Vallejo, Zackit (Vallejo) 707-644-6676
CO Aurora, Jet Elctrn. Supp. 303-364-1000
CO Englewood, Indl. Elctrns., Inc. 303-694-9444
CT New London, Jan Elctrn. Supps. 203-442-4386
CT Stratford, Utronics 203-378-4201
CT Wallingford, Midstate Elctrns. 203-265-9900
DE Wilmington, Wholesale Elctrns. 302-656-9988
FL Clearwater, Electronic Precepts of FL 813-530-9781
FL Dania, Summit Distrs. 305-920-6253
FL Longwood, Intertec Comps. 305-834-7777
FL Miami, Electronic Equip. Co. 305-871-3500
FL St. Petersburg, Knapp of Florida 813-392-0406
FL Tampa, Sunex Elctrns. 813-885-4074
FL West Palm Beach, Nurmi Elctrns. 305-686-8553
GA Atlanta, Ack Radio 404-351-6340
GA Atlanta, Dapco Specialty 404-458-6341
GA Atlanta, Prehler Elctrns. 404-447-5540
GA Atlanta, Specialty Distr. Co. 404-873-2521
GA Norcross, EMSCO 404-925-8366
IL Berwyn, BB & W Inc. 312-242-1533
IL Champaign, Klaus Radio 217-356-1896
IL Elk Grove, Martec Assocs. 312-956-8090
IL Elk Grove Vl., Prehler Elctrns. 312-364-6070
IL Mt. Prospect, Tri State Elctrns. 312-255-0600
IL Niles, Joseph Elctrns. 312-297-4200
IL Peoria, Klaus Radio 309-691-4840
IL Rosemont, Advent Elctrns. 312-298-4210
IL Villa Pk., Melvin Elctrns. 312-279-5015
IN Bloomington, Stansifer Radio Co. 812-336-6339
IN Gary, Calumet Elctrns. 219-887-4961
IN Indianapolis, Advent Elctrns. 317-872-4910
IN Indianapolis, Electronic Service Parts 317-635-7822
IN Indianapolis, Prehler Elctrns. 317-841-0018
IN Jasper, Elex Mart 812-482-4101
IA Cedar Rapids, Iowa Radio Supply 319-393-4510
KS Overland Park, Burnstein & Assocs. ... 913-642-6444
KS Salina, Electronics, Inc. 913-827-7377
KY Bowling Green, Randolph, Hale & Meredith 502-781-1460
KY Louisville, Peerless Elctrns. 502-637-7674
MD Beltsville, Mark Elctrns. 301-595-5040
MD Beltsville, P.S.I. 301-937-4960
MD Gaithersburg, Almo Elctrns. 301-792-9197
MD Rockville, Capitol Radio 301-881-2270
MD Towson, Baynesville Elctrns. 301-823-0082
MA Hingham, Sager Elec. Supp. 617-749-6700
MA Newton Upper Falls, In Stock Products Co. 617-964-6200
MI Battle Creek, Great Lakes Elctrns. 616-731-4156
MI Farmington Hills, Prehler Elctrns. 313-473-7200
MI Grand Rapids, S. F. Elctrns. 616-459-0216
MI Lansing, Fulton Radio 517-394-5020
MI Livonia, RS Elctrns. 313-525-1155
MI Taylor, Tel Van Elctrn. Supp. 313-291-3515
MN Minneapolis, Acme 612-338-4754
MN Minneapolis, Northern Elctrns. 612-944-1167
MN St. Paul, Shelley-Ragon, Inc. 612-642-2828
MO Kansas city, Walters Indl. Elctrns. 816-531-7015
NE Lincoln, Scott Elctrns. 402-466-8221
NJ Frenchtown, Suntec Aries 201-996-4093
NJ Pine Brook, Parts Masters 201-227-7797
NM Albuquerque, Walker Elctrns. Supp. ... 505-883-2992
NY Buffalo, Summit Distr. 716-887-2800
NY Farmingdale, Midway Indl. Electro 516-293-6800
NY Freeport, KRP Elctrns. 516-623-3346
NY Mamoroneck, Logicomp Elctrns., Inc. .. 914-698-9332
NY Rochester, Masline Elctrns., Inc. 716-546-5373
NY Rochester, Summit Distr. 716-334-8110
NC Burlington, Womack Elctrns. 919-227-7486
NC Greensboro, Hammond Elctrns. 919-275-6391
NC Raleigh, Prehler Elctrns. 919-876-9111
NC Raleigh, Southeastern Elctrns. 919-828-2311
OH Cincinnati, Hughes-Peters 513-351-2000
OH Cincinnati, R. S. Elctrns. 513-793-2450
OH Cleveland, Roberts Elctrns. 216-238-1711
OH Columbus, Hughes-Peters 614-294-5351
OK Oklahoma City, She Elctrns. 405-843-5941
OK Tulsa, Radio Inc. 918-587-9123
OR Beaverton, Norvac Elctrns. 503-644-1025
OR Beaverton, Rose Elctrns 503-629-9288
OR Beaverton, Shelly-Ragon, Inc. 503-682-2929
OR Portland, Radar Elec. 503-232-3404
PA Allentown, P. A. Peters 215-434-5237
PA Coatesville, County Supply 215-384-4585
PA Exton, VSH Elctrns. 215-363-2250
PA Marcus Hook, Lindwood Wholesales, Inc. 215-485-0777
PA Philadelphia, Almo Grp. 215-698-4000
PA Philadelphia, Resco Elctrns. 215-659-4575
PA York, Rosen Elctrns. 717-843-7881
SC Columbia, Dixie Elec., Inc. 803-779-5332
TN Chattanooga, Curle Elctrns. Supp. 615-266-4729
TN Chattanooga, Techni-Tronics 615-842-0514
TN Columbia, Randolph & Williams, Inc. .. 615-388-7566
TN Memphis, Bluff City 901-345-9500
TN Nashville, Bluff City 615-242-8000
TN Nashville, Randolph & Rice 615-255-5602
TX Austin, Galtronics 512-837-7470
TX Austin, Wofford Elctrns. 512-339-1131
TX Dallas, Force Elctrns. 214-247-9955
TX Dallas, Wholesale Elctrns. Supp. 214-824-3001
TX Ft. Worth, Allied Elctrns. 817-336-5401
TX Houston, Ace Elctrns. 713-688-8114
TX Houston, Force Elctrns. 713-561-8644
TX Houston, Wofford Elctrns. 713-847-3583
TX San Antonio, Altex Elctrns. 512-828-0503
UT Salt Lake City, Standard Supp. 801-486-3371
VA Charlottesville, Virginia Elctrn. Comps. 804-296-4184
WA Bellevue, Almac Elctrns. DKM Co. 206-643-9992
WA Seattle, Radar Elec. 206-282-2511
WA Seattle, Shelly-Ragon 206-241-1980
WI Milwaukee, Industrial Elctrns., Inc. 414-276-1212
WI Milwaukee, Marsh Elctrns. 414-475-6000
WI Oshkosh, Electronic Inds., Inc. 414-235-8930
Can Burnaby, BC, Intek Elctrns. 604-324-6831
Can Markham, Ont., Avotronics, Ltd. 416-475-2024
Can Mississauga, Ont., Rush Elctrns. 416-677-7280
Can Nanaimo, BC, Queale Elctrns., Ltd. 604-758-8166
Can Ottawa, Ont., Avotronics, Ltd. 613-233-5527
Can Pointe Claire, Que., Avotronics, Ltd. ... 514-697-2135
Can Pointe Claire, Que., Future Elctrns. 514-694-7710
Can Victoria, BC, Queale Elctrns., Ltd. 604-388-6111

Paine®

PAINE CORPORATION, 2401 S. Bayview St., Seattle, WA 98144, Tel: 206-329-8600, 800-426-0366, TWX: 910-444-2164, ESYLNK: 6294-5057; FSC No.: 13624; Empl.: 83; *Sls. Mgr.:* R. E. Helmick ..... **B•1814**

Local Sales Offices & Reps

CA Huntington Beach, Melbourne Co. 714-840-9758
CA Milpitas, IFM, Inc. 408-945-5920
CA Mission Viejo, Par Mktg. 714-769-6021
CO Boulder, A. Bissell Co. Indl. Sls. 303-444-1173
CO Denver, Moss Mktg. 303-455-7205
CT Orange, Isdale Assocs. 203-389-8583
FL Orlando, Physimetrics, Inc. 305-894-8081
GA Atlanta, Physimetrics, Inc. 404-955-0155
IL Glendale Hts., Dudek Sls., Inc. 312-653-4945
IN Indianapolis, TMS, Inc. 317-845-9626
MD Rockville, Electronic Mktg. Assocs., Inc. 301-792-9300
MA Peabody, JSR Assocs. 617-532-0348
MI Farmington Hills, W. R. Hummon & Assocs., Inc. 313-474-0661
MN Minnetonka, J & P Assocs. 612-935-7930
NJ Allendale, Eastec Assocs. 201-934-7135
NJ Plainfield, Cosine, Inc. 201-654-3551
NY Clark Mills, KLM-Garner 315-853-6126
NY Pittsford, KLM-Garner 716-381-8350
NC Raleigh, Physimetrics, Inc. 919-787-9276
OR Portland, Jas. J. Backer Co. 503-297-8744
PA Plymouth Meeting, Elctrn. Mktg. Assocs., Inc. 215-828-7400
TN Knoxville, Physimetrics, Inc. 615-966-7553
TX Houston, Scientific Sls. Co. 713-460-9170
TX Richardson, Scientific Sls. Co. 214-231-6541
WA Seattle, Jas. J. Backer Co. 206-285-1300
WA Seattle, Paine 206-723-1705
WV Casper, A. Bissell Co. Indl. Sls. 307-577-1851
Can Richmond, B.C., Maxwell Morton Assocs., Ltd. 604-273-1337

PAKTRON, See ITW Paktron

PAK-TRONIC, See Tracor Paktronics

PALOMAR ENGINEERS, Box 455, Escondido, CA 92025, Tel: 619-747-3343; Empl.: 9

PAMRAN INC., 1900 Williams St., Young Ind. Pk., Racine, WI 53404, Tel: 414-637-7999; Empl.: 28; *Sls. Mgr.:* R. C. Pfeil

PANAMETRICS, 221 Cresent St., Waltham, MA 02254, Tel: 617-899-2740, Telex: 6817337, TWX: 951006, FAX: 617-899-1552; Empl.: 200; *Sls. Mgr.:* Bob Mel

Panasonic

PANASONIC IND'L. ELCTRN. COMPS., Box 1511, Secaucus, NJ 07094, Tel: 201-348-5266, Telex: 701 992-8920; Empl.: 25 ..... **D•1454-1461**

Local Sales Offices & Reps

AL Huntsville, Rep Inc. 205-881-9270
AZ Scottsdale, Dar-C 602-948-2240
CA Glendale, Halbar Assocs. Inc. 818-246-8263
CA Pleasanton, Moulthrop Sls. Inc. 415-463-0450
CA San Diego, Tauber & Assocs. 619-274-7242
CO Englewood, Comp. Sls. 303-779-8060
FL Deerfield Bch., S.E.C. 305-426-4601
IN Indianapolis, Marketing Engs. Inc. 317-872-5665
KS Overland Pk., Spectrum Sls. 913-648-6811
MA Burlington, Conti-Younger Assocs. Inc. 617-273-1582
MN Eden Prairie, Electro Mark Inc. 612-944-5850
NY Franklin Sq., Cooper-Simon & Co. Inc. 516-489-0404

OH Beachwood, Elctrn. Salesmasters Inc. 216-831-9555
OR Beaverton, Advanced Power Prods. ... 503-646-0994
TX Dallas, Dunbar Assocs. 214-239-7151

Local Distributors

AL Huntsville, Resistacap Inc. 205-883-4270
AZ Scottsdale, Electro Mktg. 602-991-0110
CA Chatsworth, Mil-Comm 818-998-3111
CA San Diego, Tauber Elctrns. Inc. 619-274-7242
CA San Jose, Rose Elec. Distrbg. Co. 408-263-2934
CA Santa Clara, Cypress Elctrns. Inc. 408-980-2500
CA Van Nuys, NESCO 818-781-0505
CO Arvada, Denver/Wintronics 303-934-2406
CO Englewood, Colorado Indl. Elec. Ind. .. 303-694-9444
FL St. Petersburg, Micro Power Prods. ... 813-821-5504
GA Norcross, Applied Power, Inc. 404-263-0421
IL Elk Grove, Prehler Elctrns. Inc. 312-364-6070, 800-621-4177
IL Morton Grove, Power Pak Inc. 312-966-6000
IL Palatine, Ohm Elctrns. 312-359-5500
IN Indianapolis, Graham Elctrns. 317-634-8202
MD Aberdeen, Harco Elctrns. 301-575-6885
MD Beltsville, Mark Elctrns. 301-792-0072
MA Canton, Impact Sls. Co. Inc. 617-821-1500
MA Danvers, Generation Elctrns. Inc. 617-777-4866
MA Sharon, Adcour 617-784-8123
MI Brighton, Applied Power Inc. 313-229-6550
MN Minneapolis, Stark Elctrns. Inc. 612-332-1325
MN Thief River Falls, Digi-Key 800-346-5144
MO St. Louis, Indl. Battery Prod. Inc. 314-423-7005
NJ Camden, Gen. Radio 609-964-8560
NJ Clifton, Engineered Assem. 201-340-0600
NY Commack, Brentronics Inc. 516-499-5155
NY Farmingdale, Pride Elctrns. 516-293-4020
NC Raleigh, Engrd. Assemblies Inc. 919-790-9700
OH Columbus, Hughes-Peters 614-294-5351
OR Beaverton, Micro Power 503-626-7086
PA Bensalem, Avex Elctrns. Corp. 800-345-1295
PA Drexel Hill, Kass Elctrns. Distrs. Inc. ... 215-449-2300
TX Dallas, Computer Comps. Corp. 214-239-0271
TX Dallas, Norvell Elctrns. Inc. 214-233-0020
TX Fort Worth, Allied Elctrns. 817-336-5401
WA Bellevue, Almac Elctrns. 206-643-9992
WI Mequon, Taylor Elec. Co. 414-241-4321

PANATECH SEMICONDUCTOR, 3375 Scott Blvd., Suite 314, Santa Clara, CA 95054, Tel: 408-727-7700, ESYLNK: 910-380-3973; FSC No.: FAX # 408-727-8144; Empl.: 12; *Sls. Mgr.:* Rebecca Gutierrez; *Dist. Mgr.:* Rebecca Gutierrez

Local Sales Offices & Reps

AL Huntsville, JR Assocs. 205-830-2130
AZ Scottsdale, Mactronix Assocs. 602-998-1848
CA Cupertino, Costar Inc. 408-446-9339
CA Escondido, Cirolia Elctrn. Sls. 619-743-3015
FL Coral Springs, JR Assocs. 305-755-4266
FL Miami, JR Assocs. 305-593-0621
GA Conyers, JR Assocs. 404-922-1231
IL Schaumburg, Sieger Assocs. 312-310-8844
IN Fort Wayne, M/S Sls. 219-436-3023
IN Indianapolis, M/S Sls. & Assocs. 317-257-8915
MA Waltham, Dynasel Assocs. 617-890-6777
MI Lake Orion, JFCO, Inc. 616-846-4980
MN Minneapolis, Robert W. Marshall Co. Inc. 612-929-0457
NM Alburquerque, Waide Assocs. 505-294-7600
NC Lewisville, JR Assocs. 919-945-9574
OH Cleveland, JFCO, Inc. 216-398-6300
OH Dayton, JFCO, Inc. 513-890-8322
OR Beaverton, Olson Ferree & Assocs. ... 503-643-9488
PA Pittsburgh, JFCO, Inc. 412-823-5400
TN Chattanooga, JR Assocs. 615-892-7630
TN Greenville, JR Assocs. 615-639-9572
TX Dallas, MRep 214-349-5523
TX Grapevine, MRep 817-488-6583
TX Missouri City, EMA/MREP 713-261-0798
WA Bellevue, Olson, Ferree & Assocs. 206-883-7792
WA Seattle, Olson Ferree & Assocs. 206-883-7792

Local Distributors

CA Irvine, IEC 714-837-9960
CA Sacramento, IEC 916-424-5297
CA San Jose, IEC 408-435-1000
CA San Jose, Merit Elctrns. 408-434-0800
CO Denver, IEC 303-292-5537
IL Hoffman Estates, IEC 312-843-2040
IL Northbrook, Classic Comps. 312-272-9650
MA Waltham, Eastern Micro Dvcs. 617-890-6777
OR Beaverton, IEC 503-639-9661
UT Salt Lake City, IEC 801-298-1869
WA Bellevue, IEC 206-455-2727
Can Ontario, Carsten Elctrns. 613-726-0250

PANAVISE PRODS., 2850 E. 29th St., Long Beach, CA 90806, Tel: 213-595-7621, Telex: 18-2135; Empl.: 29; *Sls. Mgr.:* Michael Steffen; *Dist. Mgr.:* Michael Steffen

PANDUIT CORP., 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, Tel: 312-532-1800, Telex: 25-4560; FSC No.: ;06383; Empl.: 1200 ..... **C•1362-1364, 1910-1911**

Local Sales Offices & Reps

AL Birmingham, Frank Parker & Assocs. 205-655-4801
AL Mobile, Frank Parker & Assocs. 205-653-7617
AK Anchorage, Bar Elec. Agt. 907-345-7281
AR Little Rock, Byron Carson Co. 501-568-6798
CA Anaheim, Panduit Corp. 714-978-2299
CA Los Altos, Ewing-Foley 415-941-4525
CA Sacramento, Ewing-Foley, Inc. 916-786-0796
CA San Diego, Tak Sls. Co. 619-287-6141
CO Denver, Panduit Corp. 300-985-1900
FL Ft. Lauderdale, Panduit Corp. 800-282-9209
FL Lakeland, Panduit Corp. 800-282-9209
FL Orlando, Panduit Corp. 800-282-9209
GA Atlanta, Panduit Corp. 404-256-5940
IN Indianapolis, Panduit Corp. 317-251-8332
KS Kansas City, Panduit Corp. 800-323-4439
KY Louisville, A. L. Pickens Co. 502-491-4215
LA Baton Rouge, Wells-Keown & Assocs. 504-292-6553
LA New Orleans, Wells-Keown & Assocs. 504-244-0330
MD Baltimore, Agency Group, Inc. 301-793-0023
MI Fraser, Panduit Corp. 313-791-1700
MI Grand Rapids, Panduit Corp. 800-323-4439
MN Minneapolis, Electric Comp. Sls. 612-933-2594
MO St. Louis, Panduit Corp. 314-894-7800
NE Omaha, Panduit Corp. 402-391-0452
NV Las Vegas, G & F Sls. Co. 702-367-0885
NH Salem, Sales Eng. Co. 603-893-5521
NJ Leonia, Panduit Corp. 201-461-7790
NM Albuquerque, F P Sls. 505-345-5553
NY Buffalo, Panduit Corp. 800-323-4439
NY Rochester, Panduit Corp. 800-323-4439
NY Schenectady, Panduit Corp. 800-323-4439
NY Syracuse, Panduit Corp. 800-323-4439
NC Raleigh, L. G. White Southern 919-872-6049
NC Winston-Salem, L. G. White Southern 919-725-3612
OH Cincinnati, Panduit Corp. 800-323-4439
OH Cleveland, Panduit Corp. 800-323-4439
OH Columbus
OH Worthington, Panduit Corp. 614-888-6224
OR Portland, Panduit Corp. 503-654-9455
PA Erie, Myles F. Smith & Assocs. 814-459-7464
PA Philadelphia, Kunz, Powell & Assoc. .. 215-296-9490
PA Pittsburgh, Myles F. Smith & Assoc. ... 412-276-5363
SC Greenville, L. G. White Southern 803-271-0630
TN Knoxville, Panduit Corp. 800-323-4439
TN Memphis, Byron Carson Co. 901-276-0614
TN Nashville, Panduit Corp. 800-323-4439
TX Dallas, Panduit Corp. 214-620-7713
TX Houston, Panduit Corp. 713-686-5600
UT Salt Lake City, Bruce-Emmett Co. 801-973-7454
VA Richmond, L. G. White Southern 804-448-4476
WA Seattle, Panduit Corp. 800-323-4439
WV Charleston, Myles F. Smith & Assoc. .. 304-768-9910
WI Appleton, H. Mercer Co. 414-739-6223
WI Milwaukee, Panduit Corp. 800-323-4439
PR Santurce, L. Gandia & Assocs. 809-725-3473
Can Markham, Ont., Panduit Canada Ltd. .. 416-475-6922

PANEL COMPONENTS CORPORATION

PANEL COMPONENTS CORP., P.O. Box 6626M, Santa Rosa, CA 95406, Tel: 707-523-0600, Telex: 176-747; Empl.: 18 ..... **B•1276-1277; C•1366-1372, 1914-1916; D•2098**

Local Sales Offices & Reps

AL Huntsville, DHR Mktg. Inc. 205-533-5165
CA Santa Clara, Ross Mktg. Assoc. 408-988-8111
CA Tustin, Schoenbachler-Dobson Co. ... 714-544-1888
CO Englewood, Omega Ltd. 303-762-1921
FL Deerfield Beach, Newell-Hynes Assoc., Inc. 305-429-3207
GA Atlanta, DHR Mktg., Inc. 404-451-9848
IL Northbrook, Raines & Assocs. 312-498-0890
IA Marion, M-S-B Assocs., Inc. 319-377-6261
KS Shawnee Mission, M-S-B Assocs., Inc. 913-432-2131
MA Lexington, Zieco 617-861-8300
MN St. Paul, Arkco Sls. 612-777-7454
MO St. Charles, M-S-B Assocs., Inc. 314-946-5577
NY Great Neck, Tylinski Assocs. 516-466-9070
NC Raleigh, DHR Mktg., Inc. 919-781-1961
OH Cleveland, K-T Depco 216-442-6200
OR Portland, Earl & Brown Co. 503-245-2283
PA Philadelphia, Eastern Sci. Mktg. 215-368-4570
PA Pittsburgh, K-T Depco 412-367-1011
SC Greenville, DHR Mktg. Inc. 803-235-3594
TX Lewisville, Jim Hughes Co. 214-221-1536
TX Stafford, Jim Hughes Co. 713-343-0673
WA Redmond, Earl & Brown Co. 206-885-5064
EXP Burnaby, B. C., Darmac Agencies, Ltd. 604-438-3523
Can Ottawa, Ont., Lloyd Ellam Assocs. 613-727-3892

PAN-MAGNETICS, See Tamura Corp. of America

PAPST MECHATRONIC CORP., Aquidneck Indl. Pk., Newport, RI 02840, Tel: 401-849-5930, Telex: 952092; *Sls. Mgr.:* Emanuel V. Lauria ..... **C•1686-1688**

PARAGON ELECT., 606 Parkway Blvd., Two Rivers, WI 54241, Tel: 414-793-1161, Telex: 26-3450; Empl.: 500; *Sls. Mgr.:* Don Karman

PARALINE

PARALINE TRANSFORMER CORP., 511 South Palm Ave., Alhambra, CA 91803, Tel: 818-281-0222; FSC No.: 59465; Empl.: 52 ..... **A•2315**

PARK ELECTRONICS

PARK ELECTRONICS, 16 Xenia Court, Mine Hill, NJ 07801, Tel: 201-328-9299; Empl.: 60; *Sls. Mgr.:* Kelley Faulkenham ..... **D•1834**

Local Sales Offices & Reps

NJ Mine Hill, Park Elctrns. 201-328-9299

PARKER HANNIFIN CORP., 17325 Euclid Ave., Cleveland, OH Eleanor Parrish, Acct. Coord. Dir., Tel: 216-531-3000, Telex: 980636

PARKER HANNIFIN CORPORATION, Compumotor Division, 1179 N. McDowell Blvd., Petaluma, CA 94952, Tel: 707-778-1244, 800-358-9068, TWX: 510-744-2155

PARKER MCCRORY MFG. CO., 2000 Forest Ave., Kansas City, MO 64108, Tel: 816-221-2000; *Sls. Mgr.:* Ken Turner; *Dist. Mgr.:* Ken Turner

PARKER SEAL GRP., P.O. Box 11751, Lexington, KY 40512, Tel: 606-269-2351, Telex: 218-442; Empl.: 2,200; *Sls. Mgr.:* Frank Chesnik; *Dist. Mgr.:* John Dutton

PARLEX CORP., 145 Milk St., Methuen, MA 01844, Tel: 617-685-4341, Ext. 265, TWX: 710-342-1528; Empl.: 650; *Sls. Mgr.:* Gary Marraccini

PAR PRODUCTS, 1260 Atlantic Ave., Brooklyn, NY 11216, Tel: 212-774-5900, Telex: 688870 ATTN: PAR-HF; *Sls. Mgr.:* J. Troiano ..... **C•1073-1075**

PARSONS MANUFACTURING, 1055 O'Brien Dr., Menlo Park, CA 94025-1476, Tel: 415-324-4726, TWX: 910-373-2106; Empl.: 85; *Sls. Mgr.:* C. E. Plummer

Local Sales Offices & Reps

CA El Monte, Parsons Mfg. 818-443-3277
FL Clearwater, Brennan Assocs. 813-446-5006
GA Doraville, South Pak, Inc. 404-452-0773
IL Chicago, Cougar Package Designers 312-833-0346
OH Cleveland, Bill Teplitz Assocs. 216-439-3265
PA Philadelphia, Thermo-Pak Co. 215-742-0447
TX Dallas, Bemel Ind. 214-942-8419

PASO SOUND PRODUCTS, 14 First St, Pelham, NY 10803, Tel: 914-738-4800, Telex: 646783 Paso Pelm, FAX: 914-738-3954; Empl.: 50; *Sls. Mgr.:* David Moore

PASS & SEYMOUR, INC., P.O. Box 4822, Syracuse, NY 13221, Tel: 315-468-6211, Telex: 93-7232; *Sls. Mgr.:* Kenneth Hooper

PASTERNACK ENTERPRISES, P.O. Box 16759, Irvine, CA 92713, Tel: 714-261-1920; FSC No.: 53919; Empl.: 13

PATTON-MACGUYER INC., 17 Virginia Ave., Providence, RI 02905, Tel: 401-941-6000; FSC No.: 77147; Empl.: 55; *Sls. Mgr.:* J. Allen

PAYNE ENGINEERING, Box 70, Scott Depot, WV 25560, Tel: 304-757-7353, Telex: 88-5452; Empl.: 40; *Sls. Mgr.:* Matthew J. Gilberto

PCA ELECTRONICS INC

PCA ELECTRONICS, 16799 Schoenborn St., Sepulveda, CA 91343, Tel: 818-892-0761, Telex: RCA GLOBAL 282 892, FAX: 818-894-5791; FSC No.: 97722; Empl.: 45; *Sls. Mgr.:* Ben Weinberg ..... **A•1610-1620**

Local Sales Offices & Reps

AZ	Phoenix, Toward Engrg. Assocs.	602-955-3193
CA	Folsom, Fahrner-Miller Assocs., Inc.	916-985-6382
CA	San Diego, Ramsey & Assocs.	619-546-9277
CA	Santa Clara, Fahrner-Miller Assocs.	408-727-9800
FL	Boca Raton, Sunland Assoc.	305-365-1533
FL	Goldenrod, Sunland Assocs.	305-365-9533
IL	Westchester, W. G. Brouillette & Assocs.	312-345-6500
IN	Carmel, W. G. Brouillette & Assocs., Inc.	317-848-2016
MA	Sudbury, KSA of New England	617-443-5881
MN	Minneapolis, Bill Deming and Assocs.	612-888-5000
NJ	Springfield, F. F. Sylvester	201-376-3324
NJ	Wayne, Howard Kagan Assocs.	201-694-1115
OH	Dayton, Electro-Com	513-898-5140
OR	Portland, Elctrn. Comp. Sls.	503-245-2342
PA	King of Prussia, Eltron Comp. Sls.	215-783-5350
TX	Richardson, Blackburn Assocs.	214-783-2200
UT	Salt Lake City, Sage Sls.	801-467-2401
WA	Mercer Island, Elctrn. Comp. Sls.	206-232-9301
WA	Seattle, Elctrn. Comp. Sls.	206-232-9301

Local Distributors

CA	San Jose, Cypress Elctrns.	408-980-2500

PCB PIEZOTRONICS, 3425 Walden Ave., Depew, NY 14043-2495, Tel: 716-684-0001, TWX: 710-263-1371; Empl.: 150; *Sls. Mgr.:* Roy Maines

Local Sales Offices & Reps

CA	Alhambra, Dale-Dahl Assocs.	213-682-3417
FL	Orlando, Microspec, Inc.	305-299-6508
IL	Woodstock, ITI Sys.	815-455-1411

PCD, 5 Lowell Avenue, Winchester, MA 01890, Tel: 617-721-1280, Telex: 294071; FSC No.: 58982; *Sls. Mgr.:* W. Brennan

PCKELASTOMERICS, INC.

PCK ELASTOMERICS, INC., Kollmorgen Corp., 2940 Turnpike Dr., Hatboro, PA 19040, Tel: 215-672-0787, 215-672-4741, TWX: 510-387-236, FAX: 215-672-4633; FSC No.: 64914; *Sls. Mgr.:* John H. Seibert ..... **C•1373-1375**

Local Sales Offices & Reps

AL	Huntsville, Technlg. Mktg. Assocs.	205-883-7893
AZ	Scottsdale, TC Elctrn. Sls., Inc.	602-994-5153
CA	Fullerton, Libratronix	714-871-1513
CA	San Jose, Western Indl. Network	408-559-8118
FL	Largo, Technlg. Mktg. Assocs.	813-536-3796
FL	Melbourne, Technlg. Mktg. Assocs.	305-676-3776
FL	Orlando, Technlg. Mktg. Assocs.	305-857-3760
FL	Pompano Bch., Technlg. Mktg. Assocs.	305-977-9006
GA	Atlanta, Technlg. Mktg. Assocs.	404-257-0374
IL	Barrington, Fisk Mktg.	219-478-1057
IN	Ft. Wayne, R. L. Bontempo & Assocs.	219-478-1057
MD	Gaithersburg, Carwithen Assocs.	301-921-9545
MI	Troy, C. B. Jensen & Assocs.	313-643-0506
MN	Brooklyn Center, Willman Assocs.	612-566-5010
NJ	Madison, Livera-Polk Assocs., Inc.	201-377-3220
NY	Glen Head, Livera-Polk Assocs., Inc.	516-759-9300
OH	Cincinnati, G & H Sls.	513-272-0580
OH	Grove City, G & H Sls.	614-878-1128
OH	Richmond Hgts., G & H Sls.	216-248-8490
OR	Beaverton, L. D. Elctrns.	503-684-8221
TX	Dallas, Marcom	214-351-4532
TX	Houston, Marcom	713-271-5635
WA	Snohomish, L. D. Elctrns.	206-568-0511
WA	Spokane, LD Elctrns.	509-922-4883

PCK TECHNOLOGY DIV., Kollmorgen Corp., 322 South Service Rd., Melville, NY 11747, Tel: 516-454-4400, Telex: 6852163, FAX: 516-454-0317; Empl.: 180; *Sls. Mgr.:* J. F. Dennis-Browne

PC TRANSFORMER CORP., 64 D Nancy St., West Babylon, NY 11704, Tel: 516-491-3300; FSC No.: 62281; Empl.: 11; *Sls. Mgr.:* Stanley L. Goldstein ..... **A•2316-2321**

PEARSON ELECTRONICS, INC., 1860 Embarcadero Rd., Palo Alto, CA 94303, Tel: 415-494-6444, Telex: 171-412; FSC No.: 05280; Empl.: 23; *Sls. Mgr.:* Patricia L. Pearson ..... **A•2322**

PECA, INC., 592 Winks Lane, Bensalem, PA 19020, Tel: 215-245-1550; Empl.: 30; *Sls. Mgr.:* Jean Douglass

PENFIELD, INC., 8 West St., Plantsville, CT 06479, Tel: 203-621-9141, TWX: 5101003285, ESYLNK: 6287757, FAX: 203-621-2380; Empl.: 77

PENN AIRBORNE PRODS., Industrial Hwy., Southampton, PA 18966, Tel: 215-355-3400, Telex: 834759; FSC No.: 25805; Empl.: 25; *Sls. Mgr.:* W. Williams

PENN ENGINEERING & MANUFACTURING CORP., P.O. Box 1000, Danboro, PA 18916, Tel: 215-766-8853, FAX: 215-766-0143; FSC No.: 46384; Empl.: 480; *Sls. Mgr.:* John E. O'Brien

PENN KEYSTONE CORP., Div. of C & K Components, Ives Road, Wallingford, CT 06492, Tel: 96-3485, 710-476-1397, , 203-265-5398, Telex: 96-3485, TWX: 710-476-1397; FSC No.: 03034; *Sls. Mgr.:* Martin Wakefield

PENN-TRAN

PENN-TRAN CORP., Box 1321, Rte. 144N, Wingate, PA 16880, Tel: 814-355-1521, Telex: 706473; FSC No.: 50783; Empl.: 87; *Sls. Mgr.:* William Holt ..... **A•1277; D•1835**

Local Sales Offices & Reps

AZ	Tempe, Systems Sls. of Arizona	602-829-9338
CA	Los Altos, Cain-White & Co.	415-948-6533
CA	Pasadena, A-F Sls. Engrg., Inc.	213-681-5631
CA	San Diego, AF Sls. Engrg. Inc.	619-581-1206
CO	Englewood, Dynatech, Inc.	303-773-2830
CT	Madison, United Comp.	203-245-4810
FL	Jupiter, Southern Elctrns.	305-744-0028
IL	Lake Bluff, R & R Mktg. Assoc.	312-295-6000
IN	Ft. Wayne, Aktron	219-747-3650
MA	Bourne, United Comps.	617-759-3556
MN	Minneapolis, International Sls. Co.	612-831-8423
NY	Johnson City, Teckmark, Inc.	607-729-6340
NY	Mendon, Tech-Mark, Inc.	716-624-3840
OH	Sharon Center, Merit Elctrns., Inc.	216-239-2186
OR	Portland, Intertech Sls.	503-775-7885
PA	Glenside, Koebert Assocs., Inc.	215-887-2310
PA	Pittsburgh, Merit Elctrns., Inc.	412-279-8727
TX	Dallas, Seaton Corp.	214-380-0414
UT	Layton, Dynatech, Inc.	801-546-4837
WV	Inwood, Koebert Assoc.	304-229-8401

PENN VIDEO INC., 929 Sweitzer Ave., Akron, OH 44311, Tel: 216-762-4840, Telex: 98-6327 PVI-AKR; Empl.: 51; *Sls. Mgr.:* Sandra Donaldson; *Dist. Mgr.:* Gary Wagner

PENNWALT CORP., Three Pkwy., Philadelphia, PA 19102, Tel: 215-587-7520, TWX: 215-569-9748

PENNY & GILES, 1640 Fifth Street, Suite 224, Santa Monica, CA 90401, Tel: 213-393-1497, Telex: 65-2337

PENRIL DATACOMM, Penril Corp., 207 Perry Parkway, Gaithersburg, MD 20877, Tel: 301-921-8600, TWX: 710-828-0522; Empl.: 250; *Sls. Mgr.:* Mr. John Rouse

Local Sales Offices & Reps

CA	Irvine, Penril DataComm	714-833-1550
MD	Gaithersburg, Penril DataComm	301-921-8600
NJ	Ft. Lee, Penril DataComm	201-585-9677
NC	Research Triangle Park	919-361-4667
TX	Mesquite, Penril DataComm	214-613-3283

PENSTOCK ENGINEERING LABS., Penstock, Inc., 105 Fremont Ave., Los Altos, CA 94022, Tel: 415-948-6552, TWX: 910-370-7450, FAX: 415-948-6552; Empl.: 23; *Sls. Mgr.:* V. Ginny Downing ; *Dist. Mgr.:* Lynne McCallum

Local Sales Offices & Reps

CA	Los Altos, Cain-White & Co.	408-948-6533

Local Distributors

CA	Los Altos, Penstock RF/Microwave	415-948-6552
IL	Palatine, Penstock RF/Microwave	312-934-3700
OR	Portland, Penstock RF/Microwave	503-224-3091
WA	Seattle, Penstock RF/Microwave	206-467-7022

PERCON, 2190 W. 11th, Eugene, OR 97402, Tel: 503-344-1189; Empl.: 9; *Sls. Mgr.:* Ralph McDonald

PERFECT GEAR & INSTRUMENT, Designatronics, Inc., 2101 Jericho Tpk., New Hyde Park, NY 11040, Tel: 516-328-3300, TWX: 510-223-0642; Empl.: 210; *Sls. Mgr.:* Murray Ores

PERFECTION MICA CO., See Magnetic Shield Corp.

PERFORMANCE CONTROLS, INC., 433 Caredean Drive, Horsham, PA 19044, Tel: 215-675-6500, Telex: 88-1478; FSC No.: 61773; Empl.: 35; *Sls. Mgr.:* Jerry J. Donahue ..... **B•1201; D•1836, 2125**

Local Sales Offices & Reps

CA	Thousand Oaks, Kannard Co.	805-495-5678
MD	Baltimore, Stemler Assocs.	301-944-8262
NY	Melville, Carnes Assocs.	516-694-1600

PERIPHERALS, 1363 Logan Ave., Costa Mesa, CA 92626, Tel: 714-540-4925, 800-468-6888, Telex: 4996258 Berlan; Empl.: 20; *Sls. Mgr.:* Elizabeth O'Rouke

PERKIN-ELMER CORP., Elctrn. Prods. Dept., 761 Main Ave., Norwalk, CT 06859-0132, Tel: 203-762-4786, TWX: 710-468-3213; Empl.: 70; *Sls. Mgr.:* D. P. Duggan ..... **A•2323**

Local Sales Offices & Reps

CA	Agoura Hills, C.D.H. Assocs.	818-707-1970

PERMAG, 400 Karin La., Hicksville, NY 11801, Tel: 516-822-3311, TWX: 710-581-5264; Empl.: 50

PERMAGILE INDUSTRIES, INC., 101 Commercial St., Plainview, NY 11803, Tel: 516-349-1100, Telex: 221720 PERM UR; *Sls. Mgr.:* William P. Flaim, East. Tech. Sls. Mgr.; *Dist. Mgr.:* A. (Zack) Zarcadoolas

PERMALUSTER, INC., 1844 N. Keystone St., Burbank, CA 91504, Tel: 213-849-4543, 213-849-6454; Empl.: 6; *Sls. Mgr.:* J. Ross

PERMANENT MAGNET, 4437 Bragdon St., P. O. Box 26226, Indianapolis, IN 46226, Tel: 317-547-1336; Empl.: 78; *Sls. Mgr.:* Jack Amigh

PERMA POWER ELCTRNS., 5601 W. Howard Ave., Chicago, IL 60648, Tel: 312-647-9414; Empl.: 52; *Sls. Mgr.:* Michael Shatz; *Dist. Mgr.:* Michael Shatz ..... **B•1278; C•1700-1701**

Local Sales Offices & Reps

AL	Birmingham, Adams & Assocs.	205-781-6467
CA	San Francisco, Techn. Sls.	415-467-1434
CA	Sun Valley, Teqni-Rep.	818-768-4223
CO	Broomfield, Stan Sliz & Assoc.	303-466-1608
CT	Hartford, The Smith Co.	203-523-0512
MA	Woburn, W & D Mktg.	617-935-5610
FL	Altamonte Springs, Adams & Assocs.	305-260-8286
GA	Atlanta, Adams & Assocs.	404-973-0853
IL	Chicago, GB Mktg. Inc.	312-774-4500
IN	Indianapolis, Green-Wissler	317-872-9981
LA	Slidell, Dick Bellew Sls.	504-646-1217
MI	Plymouth, J. Malcolm Flora	313-453-4296
MN	St. Paul, R. W. Sls.	612-646-2710
MO	Jefferson City, C. A. Vignola	314-636-3121
NH	Manchester, W&D Mktg.	603-622-5097
NJ	Medford, Fahy Mktg.	609-654-1022
NY	Phelps, L. S. M. Assocs.	315-548-4891
NY	Plainview, Landau & Mack	516-293-3310
NC	Greensboro, Adams & Assocs.	919-272-6838
OH	Stow, J. Lehner Co.	216-686-1985
TX	Dallas, Berthold Sls.	214-328-0067
WA	Seattle, Northmar, Inc.	206-524-5170
WI	Milwaukee, Voss-Dent & Assocs.	414-781-0555
EXP	N.Y., Plainview, Morhan Export	516-293-5582

Local Distributors

AL Birmingham, Forbes Distrbg. 205-251-4104
CA Los Angeles, ITC Corp. 213-388-0621
CO Denver, Fistells Elctrn. Supp. 303-623-7864
FL Orlando, Hammond Elctrns. 305-849-6060
GA Atlanta, Specialty Distrbg. 404-458-6341
IL Niles, Joseph's Elctrns. 312-297-4200
IL Palatine, OHM Elctrns. 312-359-5500
IN Lafayette, CWY Elctrns. 317-448-1611
IA Des Moines, Mid-State Distrbg. 515-244-7231
KY Louisville, Peerless Elctrns. 502-637-7674
LA New Orleans, Wm. B. Allen 800-535-9593
MA N. Wilbraham, Indl. Comps. 413-596-3854
MN Minneapolis, Acme Elctrns. 612-338-4754
MO Kansas City, Elctrns. Supp. Co., Inc. ... 816-931-0250
NY Hauppauge, Broadline Elctrns. 516-231-4100
NC Raleigh, Southeastern Elctrns. 919-828-2311
OH Columbus, Whitehead Elctrns. 614-224-1186
TN Nashville, Electra 615-256-0800
TX Dallas, Wallace Elctrns. 214-340-0400
TX Ft. Worth, Allied Elctrns. 800-433-5700
UT Ogden, Carter Supp. Co. 801-393-8603
WA Tumwater, JW Elctrns. 206-943-1071
EXP Plainview, NY, Morhan Exporting 516-293-5582

PERRY AMPLIFIER, 138 Fuller St., Brookline, MA 02146, Tel: 617-734-0844; Empl.: 18; *Sls. Mgr.:* N. Geskos

PERSONAL TOUCH CORPORATION, 4320-290 Stevens Creek Blvd., San Jose, CA 95129, Tel: 408-246-8822, Telex: 499-4986ABC UI, FAX: 408-246-8822

PERTEC PERIPHERALS CORP., Digital Development Corp., P.O. Box 2198, Chatsworth, CA 91311, Tel: 818-882-0300, 800-821-4126, 800-443-9577 (outside CA), TWX: 910-494-2093; Empl.: 300; *Sls. Mgr.:* Wm. Greenfield

PERX, 1730 S. Amphlett Blvd., Ste. 222, San Mateo, CA 94402, Tel: 415-573-0801; Empl.: 4; *Sls. Mgr.:* Bob Croshaw

PFC, See Southern Elctrns. Co. Inc.

PHALO CORP., Transitron Corp., 900 Holt Ave., Manchester, NH 03103, Tel: 603-669-4347, Telex: 710-220-9878; Empl.: 150

PHELPS DODGE MAGNET WIRE, P.O. Box 600, Ft. Wayne, IN 46801, Tel: 219-456-4444, 800-255-2542, TWX: 810-332-1501; *Sls. Mgr.:* G. H. Guyer; *Dist. Mgr.:* W. H. Deininger

PHILADELPHIA INSULATED WIRE CO. INC., 333 New Albany Rd., Moorestown, NJ 08057, Tel: 609-235-6700, FAX: 609-235-5480; Empl.: 150; *Sls. Mgr.:* Fred Newman

PHILAMON, INC., 33 Dubon Ct., Farmingdale, NY 11735, Tel: 516-249-2700, TWX: 510-224-6512; FSC No.: 95267; Empl.: 27; *Sls. Mgr.:* B.F. Grib

PHILIPS AUDIO VIDEO SYS. CORP., See AKG Acoustics

PhilipsECG

PHILIPS ECG, Amperex Electronics Corp., A North American Philips Co., 100 First Ave., Waltham, MA 02254, Tel: 617-890-6107, FAX: 617-890-7096; Empl.: 4213; *Sls. Mgr.:* D. R. Kronenwetter; *Dist. Mgr.:* E. H. Frost ..... **A•2150-2151**

Local Sales Offices & Reps

CA Costa Mesa, Philips ECG, Inc. 714-557-3100
CA Pleasanton, Philips ECG, Inc. 415-846-2427
FL Clearwater, Philips ECG, Inc. 813-446-8602
GA Atlanta, Philips ECG, Inc. 404-491-6003
IL Buffalo Grove, Philips ECG, Inc. 312-459-1180
MA Norwood, Philips ECG, Inc. 617-762-8090
MO Kansas City, Philips ECG, Inc. 816-741-4019
NY Seneca Falls, Philips ECG, Inc. 315-568-5432
OH Dayton, Philips ECG, Inc. 513-890-4421
OH Rocky River, Philips ECG, Inc. 216-331-1088
TX Dallas, Philips ECG, Inc. 214-239-9370

Local Distributors

AL Albertville, Electronic Part & Supp. Co. 205-878-3041
AL Andalusia, Wholesale Elctr. Supps. Co. 205-222-5100
AL Anniston, Radio Dist. & Sup. Co. 205-236-8654
AL Birmingham, Forbes Distributing Co. .. 205-251-4104
AL Birmingham, JLS Indl. Elctrns., Inc. 205-322-2486
AL Cambridge, Kaufman 617-491-5500
AL Decatur, Forbes Distributing Co. 205-353-4762
AL Dothan, Carmichael Elctrns. Inc. 205-793-7066
AL East Gadsden, Radio Dist. & Supp. Co. 205-547-1636
AL Huntsville, Forbes Distrbg. Co. 205-533-4150
AL Mobile, Electronic Supp. Co. 205-478-0455
AL Mobile, Forbes Elctrn. Distrs. Inc. 205-479-4535
AL Mobile, Specialty Distributing Co. 205-344-0450
AL Montgomery, Forbes-Godfrey TV Elctrns. Inc. 205-263-0283
AL Muscle Shoals, Jones Elctrns. 205-383-1241
AL Opelika, Southern Elctrns. Corp. 205-745-5298
AL Sheffield, Fuller Dist. Co. 205-383-2843
AL Tuscaloosa, Elect. Wholesale 205-349-5529
AK Anchorage, Alaska Elctrn. Supp. 907-563-3774
AK Juneau, Juneau Elctrns. 907-586-2260
AZ Phoenix, Dalis Elctrn. Supp. 602-275-2885
AZ Phoenix, Elctrn. Parts Co. Inc. 602-277-7281
AZ Phoenix, Electronic Distrs. 602-955-8303
AZ Phoenix, Parts Elctrn. of AZ 602-258-6476
AZ Tucson, Inland Elctrn. Supp. 602-889-5301
AR El Dorado, Electra Inc. 501-862-4901
AR Ft. Smith, Carlton Bates Co. 501-646-8201
AR Ft. Smith, Wise Wholesale Elctrns. 501-783-8925
AR Hot Springs, Prince Elctrns. Co. 501-624-2825
AR Little Rock, Bluff City Elctrns. 501-376-7044
AR Little Rock, Carlton Bates Co. 501-562-9100
AR Little Rock, David White Elctrns. 501-375-8887
AR Little Rock, Lavender Elctrn. Supp. Inc. 501-372-0248
AR Little Rock, Southern Elctrn. Co. 501-372-4196
AR Mt. Home, Show-Me Elctrns., Inc. 501-425-8979
AR Paragould, Martin Wholesale Radio Supp. 501-236-6049
AR Pine Bluff, Carlton Bates Co. 501-535-1354
AR Pine Bluff, David White Elctrns. 501-534-0612
AR Springdale, Carlton Bates Co. 501-756-5012
AR Springdale, Wise Wholesale Elctrns. .. 501-751-4814
AR Texarkana, Lavender Elctrns. Inc. 501-773-4631
CA Anaheim, Ball Elctrns. 714-828-1310
CA Berkeley, Al Lasher Elctrns. 415-843-5915
CA Calexico, Hurley Elctrns., Inc. 714-357-3148
CA Canoga Park, Sandy's Elctrns. 818-346-8353
CA Concord, Pacific Radio Supp. Inc. 415-682-4700
CA Dublin, Pacific Radio Supp. Inc. 415-829-5960
CA Eureka, Redwood Elctrn. Supp. 707-443-3107
CA Fresno, B. J. De Jarnatt Wholesale Co., Inc. 209-268-8544
CA Fullerton, Orvac Elctrns. 714-871-1020
CA Garden Grove, Sav-On 714-530-0555
CA Huntington Park, Martin Distributing Co. 213-582-7111
CA Inglewood, Hurley Elctrns., Inc. 213-678-7644
CA Long Beach, Hurley Elctrns., Inc. 213-537-5375
CA Los Angeles, Radio Equip. Distrs. 213-668-1100
CA Modesto, Inland Elctrns. 209-524-7945
CA Mtn. View, Associated Radio 415-968-1689
CA No. Hollywood, Sandy's Elctrns. 818-765-8585
CA Oakland, Cass Elctrns. 415-834-4225
CA Oakland, PV Elctrns 415-834-9185
CA Oceanside, Hurley Elctrns., Inc. 619-722-7694
CA Ontario, Hurley Elctrns., Inc. 714-986-6638
CA Oxnard, Dow Radio, Inc. 805-486-6353
CA Oxnard, Hurley Elctrns., Inc. 805-483-0133
CA Pasadena, Dow Radio, Inc. 213-681-3416
CA Redding, North Valley Elctrns. 916-222-1500
CA Sacramento, Cal Centron 916-456-0233
CA Sacramento, Chuck Hurley Elctrns. Inc. 916-927-5891
CA Sacramento, Dunlap Elctrns. Inc. 916-442-5801
CA Sacramento, Popkey Distributing 916-448-8848
CA Salinas, Ardco Elctrns. Supp. 408-422-5318
CA San Bernadino, Hurley Elctrns., Inc. ... 714-885-0721
CA San Diego, Hurley Elctrns. 619-235-6245
CA San Diego, Steren Elctrns. Intl. 619-274-4120
CA San Francisco, Associated Radio 415-431-0212
CA San Jose, John E. Schad Inc. 408-275-6484
CA San Luis Obispo, Midstate Wholesale Elctrns. 805-543-2770
CA San Rafael, Beaver Elctrns. 415-453-1130
CA Santa Ana, Hurley Elctrns., Inc. 714-971-2203
CA Santa Maria, Electronics Parts Supermart 805-925-8604
CA Santa Rosa, Associated Radio Distrs. 707-527-6000
CA Santa Rosa, Chuck Hurley Elctrns. Inc. 707-542-5423
CA Stockton, Cal-Centron 209-942-2094
CA Thousand Oaks, Sandy's Elctrns. 805-497-7515
CA Torrance, Cash Elctrns. 213-373-6333
CA Van Nuys, Hurley Elctrns., Inc. 818-781-8410
CO Colorado Springs, Walker Colorado Springs Elect. 303-636-1661
CO Denver, Elliott Elctrn. Supp. Inc. 303-778-0333
CO Denver, Walker Denver Elctrns. 303-935-2401
CO Englewood, Roth Distrbg. Co. 303-761-6531
CO Grand Junction, Walker Grand Junction Elctrns. 303-242-4435
CO Greeley, Walker Greeley Elctrns. Co. .. 303-353-3241
CO Pueblo, Walker Pueblo Elctrns. 303-542-1924
CT Greenwich, Wise Comps., Inc. 203-531-4880
CT Hartford, Signal Center, Inc. 203-233-8551
CT New London, Jan Elctrn. Supps., Inc. .. 203-442-4386
CT South Windsor, Sceli Elctrns. 203-289-6853
CT Stratford, Ultronics Elctrns. 203-378-4201
CT West Haven, Amerling Co. 203-934-7901
DE Wilmington, Wholesale Elctrns. 302-656-9988
FL Bradenton, Leader Elctrns. 813-756-9571
FL Cocoa, Cape Elctrns. 305-636-6331
FL Daytona Beach, C & S Elctrn. Supp. Co. 904-253-8131
FL Ft. Lauderdale, Leader Dixie Elctrns., Inc. 305-561-2544
FL Ft. Lauderdale, Southeastern Elctrns. 305-563-4131
FL Ft. Lauderdale, Vance Baldwin Inc. 305-523-3461
FL Ft. Myers, Dow Elctrns. 813-334-6577
FL Ft. Walton Beach, Key Elctrn. Supp. ... 904-863-2191
FL Gainesville, Dow Elctrns. Inc. 904-376-3231
FL Homestead, United Elctrn. Supp. Inc. .. 305-245-0955
FL Jacksonville, Mitchell Elctrns. 904-356-8427
FL Jacksonville, The Bay Co. 904-255-2614
FL Lakeland, Leader Elctrns. 813-686-8193
FL Largo, Chester Elctrn. Supp. Co. 813-585-4736
FL Melbourne, Leader Elctrn. Distributing Inc. 305-254-5274
FL Miama, Gulf Elctrn. Supp., Inc. 305-592-6583
FL Miami, Central Elctrns. Distrs., Inc. 305-635-1080
FL Miami, Elctrn. Equip. Co., Inc. 305-871-3500
FL Miami, Southeastern Wholesalers Inc. 305-634-6591
FL Miami, Vance Baldwin Inc. 305-769-0225
FL Miami, Walder Elctrn. Distr. Co. 305-379-9393
FL Naples, Joe Coomes Distr. Inc. 813-775-4442
FL Orlando, C & S Elctrn., Supp. Co., Inc. 305-299-4300
FL Orlando, Dow Elctrns. Inc. 305-299-2771
FL Panama City, Central Elctrn. Supp. Co. 904-785-0237
FL Pensacola, Elctrn. Supp. Co. 904-432-6916
FL Pensacola, Forbes Elctrn. Distributing Inc. 904-944-5551
FL Pensacola, Pensacola Elctrns. 904-478-3771
FL Sarasota, Dow Elctrns. 813-365-3393
FL St. Petersburg, Dow Elctrns. 813-525-1131
FL Tallahassee, Dell Elctrns. Inc. 904-224-5145
FL Tallahassee, Fouraker Elctrns. Inc. 904-224-5101
FL Tampa, Dow Elctrns., Inc. 813-626-5191
FL Tampa, Leader Elctrns. Distrs. 813-870-3315
FL Tampa, Sunex Elctrns. Supp., Inc. 813-885-4074
FL Tampa, Vance Baldwin, Inc. 813-870-2606
FL Venice, Ferguson Elctrns. Co. 813-493-0000
FL W. Palm Beach, Dolphin Elctrn. Supp. Inc. 305-659-7166
FL W. Palm Beach, Vance Baldwin Inc. 305-832-5671
GA Albany, Specialty Distributing Co. 912-435-1711
GA Athens, Specialty Distributing Co. 404-458-1334
GA Atlanta, Specialty Distributing Co. 404-458-6341
GA Atlanta, Specialty Distributing Co. 404-873-2521
GA Atlanta, Wholesale Indl. Elctrns. 404-447-8431
GA Augusta, Specialty Distributing Co. 404-722-1526
GA Brunswick, Specialty Distributing Co. .. 912-265-1927
GA College Park, Specialty Distributing Co. 404-763-3828
GA Columbus, Specialty Distributing Co. .. 404-327-7414
GA Macon, Specialty Distributing Co. 912-743-5421
GA Marietta, Specialty Distributing Co. 404-422-4333
GA Savannah, Specialty Distributing Co. .. 912-234-1684
GA Valdosta, Specialty Distributing Co. ... 912-242-4910
HI Honolulu, Admor Distr. Corp. 808-537-4501
HI Honolulu, Electrical Equip. Co., Ltd. ... 808-533-3884
HI Honolulu, Industrial Elctrns. 808-533-6095
HI Honolulu, Precision Radio Ltd. 808-537-5291
ID Boise, Kimball Elctrns. 208-342-3559
ID Pocatello, Kimball Elctrns. 208-232-2201
IL Alton, Ebinger Radio Co. 618-462-9783
IL Belleville, Deltronics Distrbg. Co. 618-398-2183
IL Benton, Lampley Radio Co. 618-435-8194
IL Berwyn, B-B & W Inc. 312-749-1710
IL Chicago, Alpha Elctrns. 312-561-0300
IL Chicago, Howard Elctrn. Sls. 312-254-1777
IL Chicago, Newark Elctrns. Corp. 312-638-4411
IL Chicago, U. S. Electronics 312-925-4111
IL Elgin, Mainline Supp. Co., Inc. 312-697-6746
IL Evergreen, Beaty Elctrns. Inc. 312-423-5500
IL Franklin Park, Richardson Elctrns. 312-456-0600
IL Geneva, Melvin Elctrns., Inc. 312-232-8050
IL Harrisburg, Standard Distrs. 618-252-1478
IL Jacksonville, Baptist Elctrn. Supp. Co., Inc. 217-243-6464
IL Joliet, Mainline Supp. Co., Inc. 815-436-3900
IL Kankakee, S & S Elctrn. Supp. Co. 815-933-5595

IL Mattoon, Mattoon Radio & TV Supp. Co. 217-235-5457
IL Moline, Lofgren Distributing Co. 309-764-7436
IL Niles, Joseph Elctrns. Inc. 312-297-4200
IL Peoria, Warren Radio Co. 309-674-5998
IL Quincy, Show Me Elctrns. 217-223-9880
IL Rockford, Jay-tronics 815-965-8786
IL Rockford, Midwest Associated 815-962-8036
IL Salem, Laco Elctrns. Inc. 618-548-3150
IL Springfield, Baptist Elctrn. Supp. Co., Inc. 217-753-0111
IL Sterling, Warren Radio Co. 815-625-6253
IL Waukegon, Chester Elctrn. Supp. 312-623-5000
IN Angola, Lakeland Elctrn. Supp. 219-665-6311
IN Bloomington, Stansifer Radio Co. 812-336-6339
IN Chesterton, Chesterton Elctrn. Supp. 219-926-2109
IN Elkhart, Warren Radio Co. 219-295-4205
IN Evansville, Hutch & Son, Inc. 812-425-7201
IN Evansville, Ohio Valley Sound 812-425-6173
IN Ft. Wayne, Pembleton Elctrns. 219-426-1812
IN Ft. Wayne, Warren Radio Co. 219-426-5344
IN Gary, B & B Elctrn. Supp. 219-980-8200
IN Gary, Calumet Elctrn. Supp. Inc. 219-887-4961
IN Indianapolis, Graham Elctrns. Supp. Inc. 317-634-8202
IN Indianapolis, ROBCO Distrs., Inc. 317-788-0857
IN Indianapolis, Warren Radio Co. 317-634-5566
IN Indianopolis, Elctrn. Svc. Parts 317-632-8586
IN Jasper, Elex Mart 812-482-3535
IN Kokomoa, Television Radio Distr. 317-457-5942
IN Logansport, Television Radio Distr., Inc. 219-753-2879
IN Marion, J & W Elctrns. Inc. 317-662-1114
IN Mishawaka, Television Supp., Inc. 219-255-4720
IN Peru, Television Radio Distr., Inc. 317-472-2005
IN Terre Haute, Mid West Supp. 812-232-0187
IN Vincennes, Ohio Valley Sound, Inc. 812-882-3615
IA Ames, Electronic Supp. Inc. 515-232-7020
IA Ames, Mid-State Distrbg. Co. 515-232-2104
IA Burlington, Union Supp. Co. 319-754-5745
IA Burlington, Warren Radio Co. 319-752-1842
IA Carroll, Mid-State Distrbg. Co. 712-792-2177
IA Cedar Rapids, Deeco, Inc. 319-365-7551
IA Cedar Rapids, Iowa Radio Supp. Co. 319-364-6154
IA Cedar Rapids, Mid-State Distrbg. Co. 319-365-9411
IA Clinton, Union Supp. Co., Inc. 319-242-4572
IA Davenport, Union Supp. Co. 319-322-3531
IA Davenport, Warren Radio Co. 319-322-5301
IA Des Moines, Gifford-Brown of Des Moines 515-243-1257
IA Des Moines, Mid State Distributing Co. 515-244-7231
IA Dubuque, Warren Radio Co. 319-582-4300
IA Iowa City, Union Supp. Co. 319-338-6165
IA Mason City, Mid State Distributing Co. 515-423-8012
IA Ottumwa, Mid-State Distrbg. Co. 515-682-5407
IA Sioux City, Molstad Dist. 712-255-8023
KS Great Bend, RSC Elctrns., Inc. 316-793-3507
KS Salina, RSC Electronics 913-823-6353
KS Wichita, RSC Electronics 316-267-5213
KY Ashland, Electronic Supp. Inc. 606-325-1511
KY Bowling Green, Randolph, Hale & Meredith 602-781-1460
KY Hopkinsville, Randolph & Hale 502-885-5357
KY Lexington, Service Elctrn. Supp. 606-254-5786
KY Louisville, P. I. Burks & Co. 502-589-3960
KY Newport, Holub Dist. Co. 606-431-4211
KY Paducah, Warren Radio Co. 502-442-4367
LA Alexandria, Elctrn. Svc. Supp. 318-443-8483
LA Alexandria, Ralph's Indl. Elctrns. 318-443-8483
LA Baton Rouge, Industrial Elec. Supp., Inc. 504-357-4249
LA Baton Rouge, Menard Elctrns. 504-355-0232
LA Baton Rouge, Ralph's of Baton Rouge 504-344-3761
LA Baton Rouge, Southern Radio Supp. Co., Inc. 514-355-0396
LA Broussard, Menard Elctrns., Inc. 318-837-9204
LA Gretna, Pelican Elctrn. Supp. Inc. 504-361-4187
LA Harahan, United Distrs., Inc. 504-733-7920
LA Harvey, AFG Elctrn. Supp., Inc. 504-368-9696
LA Houma, Pelican Elctrn. Supp. Inc. 504-868-1285
LA Lafayette, Lafayette Radio Equip. 318-234-2364
LA Lafayette, Ralph's of Lafayette 318-234-4507
LA Lake Charles, Ralph's of Lake Charles 318-439-2493
LA Lake Charles, Sparton Elctrns. Supp., Inc. 318-491-9223
LA Lake Charles, Wholesale Radio Equip. 318-439-2431
LA Metairie, Pelican Elctrn. Supp. 504-888-4720
LA Monroe, Martin Elctrns. Inc. 318-388-4224
LA Monroe, Tri-State Elctrns. 218-387-9711
LA Morgan City, Ralph's of Morgan City 504-384-9831
LA New Iberia, Ralph's of New Iberia 318-369-9861
LA New Orleans, Radio Parts 504-581-5959
LA New Orleans, Southern Radio Supp. Co. 504-524-2343
LA New Orleans, Wm. B. Allen, Inc. 504-525-8222
LA Opelousas, Opelousas Radio Equip. 318-942-5702
LA Shreveport, Elctrn. Supp. of Shreveport 318-227-9080
LA Shreveport, Indl. Elctrn. Supp. Inc. 318-222-9459
LA Shreveport, Wholesale Elec. Supp., Inc. 318-422-2063
LA West Monroe, Brooks Supp. of La 318-323-0344
ME Lewiston, Stark Wholesale Elctrns. 207-784-6979
ME Portland, LAD Elctrns. Distrs. 207-772-2174
MD Baltimore, Fairway Elctrns. of MD Inc. 301-247-8383
MD Baltimore, Modern Elctrns. 301-282-5300
MD Baltimore, Tritronics 301-256-4400
MD Beltsville, Radio Elec. Svc. Co. 301-937-5890
MD Bethesda, Empire Elec. Supp. 301-656-3300
MD Frederic, Hankey's Radio Inc. 301-662-1381
MD Hagerstown, Fairway Elctrns. Inc. 301-791-0200
MD Kensington, Fairway Elctrns. Inc. 301-564-1440
MD Towson, Baynesville Elctrns. 301-823-0082
MD White Marsh, Radio Elec. Svc. Co. 301-529-0500
MA Billerica, A. W. Mayer Co. 617-667-6900
MA Boston, Tee Vee Supp. Co. 617-522-9330
MA Brockton, Ware Radio Supp. Corp. 617-583-0810
MA Fall River, E. A. Ross Co. 617-673-0921
MA Lawrence, Lawrence Elctrn. Distrs. 617-683-0257
MA Lowell, Frank P. McCartin Co. 617-454-9101
MA New Bedford, Burns Elctrn. Supp. Co. 617-998-3344
MA New Bedford, C. E. Beckman Co. 617-994-9674
MA New Bedford, E. A. Ross Co. 617-673-0921
MA Norwood, Morrison Elctrn. Supp. 617-769-7260
MA Peabody, Tee Vee Supp. Co. 617-531-5777
MA Quincy, Electronic Dists. Corp. 617-328-7800
MA Springfield, Signal Elctrn. Ctr. of Springfield 413-739-3893
MA Waltham, MIL Elctrns. Inc. 617-891-6730
MA Woburn, Abbott Elctrns., Inc. 617-935-2040
MA Woburn, Semtex 617-935-2150
MA Worcester, Stark Wholesale Elctrns. Inc. 617-756-7136
MI Adrian, Wedemeyer Elctrn. Supp. Co. 313-263-2925
MI Battle Creek, Warren Radio Co. 616-965-3338
MI Bay City, Kinde Distributing 517-892-1594
MI Dearborn, West Side Radio 313-933-6972
MI Detroit, Elctrn. Parts Co. 313-891-7400
MI Detroit, S & S Elctrns. 313-521-3610
MI Detroit, Top Radio Supp. Corp. 313-366-9088
MI Flint, Electronic Parts Specialists 313-238-7311
MI Flint, Shand Elctrns. 313-743-8940
MI Grand Rapids, T & W Elctrns. 616-241-3645
MI Grand Rapids, Warren Radio Co. 616-456-5385
MI Kalamazoo, Warren Radio Co. 616-381-4203
MI Lansing, Wedemeyer Elctrns. 517-489-9047
MI Livonia, Norwest Elctrns. 313-261-4551
MI Livonia, RS Electronics 313-525-1155
MI Madison Hgts., Warren Radio Co. 313-588-3327
MI Niles, Niles Radio Supp. Co. 616-684-0550
MI Oak Park, Remcor Elctrns., Inc. 313-541-5666
MI Owasso, Warren Radio Co. 517-723-5239
MI Pontiac, Joe Coomes 313-334-1526
MI Saginaw, Ryder Distributing 517-799-2411
MI Traverse City, Traverse City Elctrns. 616-946-5153
MN Minneapolis, Electronic Center 612-371-5200
MN Minneapolis, Ness Elctrns. Inc. 612-824-2646
MN Minneapolis, Stark Elctrn. Supp. Co. 612-332-1325
MN Rochester, Pace Elctrns. Inc. 507-288-1853
MN St. Cloud, Team Elctrns. #4 612-251-1335
MN St. Paul, Electronics Ctr., Inc. 612-371-5260
MN St. Paul, Ness Elctrns. 612-224-5411
MS Biloxi, Electronic Parts Co. 601-435-3221
MS Columbus, Bluff City Elctrns. 601-328-6212
MS Greenville, Tri-State Elctrns. Co. 601-335-3594
MS Hattiesburg, N & H Elctrn. Distr. Co. 601-582-5571
MS Jackson, Tri-State Elctrns. Co. 601-355-3431
MS McComb, Risher Radio Supp. Co. 601-684-3731
MS Meridian, Hooper Elctrn. Supp. Co., Inc. 601-693-2668
MS Pascagoula, Hooper Elctrn. Supp. Co. 601-762-9383
MS Philadelphia, Risher Whls. Co. 601-656-8802
MS Tupelo, Bluff City Elctrns. 601-842-6832
MO Columbia, Show-Me Elctrns. 314-449-2944
MO Flat River, Show-Me Elctrns. 317-431-4816
MO Jefferson City, Central Missouri Distributing Co. 314-636-3149
MO Jefferson City, Show-Me Elctrns. 314-636-2191
MO Kansas City, Elctrn. Supp. Co. 816-931-0250
MO Kirkville, Mid State Distrbg. Co. 816-665-5625
MO Rolla, Show-Me Elctrns. 314-364-1515
MO Sedelia, Show-Me Elctrns., Inc. 816-826-3044
MO Sikeston, Baileys Elect. Supp. 314-471-6142
MO Springfield, Mason Elect. Supp. 417-865-5542
MO Springfield, Show-Me Elctrns. 417-869-0752
MO St. Charles, Deltronics Distrbg. Co. 314-723-0210
MO St. John, Ralph Toler Radio Co. 314-426-3260
MO St. Joseph, Show-Me Elctrns., Inc. 816-233-3118
MO St. Louis, City Refrigeration Co., Inc. 314-427-3420
MO St. Louis, Deltronics Distributing Co. 314-725-6060
MO St. Louis, Ebinger Elctrns. 314-353-8818
MO St. Louis, M C Distrs., Inc. 314-231-6350
MO St. Louis, Olive Elctrns. Inc. 314-426-4500
MO St. Louis, Show-Me Elctrns., Inc. 314-781-7643
MT Billings, Television & Elec. Supp. Co. 406-252-7193
MT Great Falls, The Source Inc. 406-761-2420
MT Havre, Northern Elctrns. 406-265-5568
MT Kalispell, Professional Elctrns. Ctr. 406-257-4545
NE Hastings, Meyerson Distrbg. Co. 402-463-3145
NE Lincoln, Leuck Radi Co. 402-476-2797
NE Norfolk, Radio Equip. Co. 402-371-2728
NE Omaha, Meyerson Distrbg. Co. 402-342-3088
NE Omaha, Omaha Elctrns. Co. 402-341-3440
NE Omaha, Radio Equip. Co. 402-341-7700
NE Scottsbluff, D & H Elctrns. Supp. Inc. 308-632-2181
NV Las Vegas, Hurley Elctrns. 702-384-5666
NV Reno, Bennett Elctrn. Supp. Co. 702-322-2127
NV Reno, Nevada Elctrns. 702-329-1308
NH Dover, American Radio Corp. 603-742-6800
NH Manchester, Stark Wholesale Elect. of N. H. Inc. 603-688-7611
NH Nashua, Tee Vee Supp. Co. 603-889-4171
NJ Eatontown, Atkinson & Smith Co. 201-542-2447
NJ Edison, William Elctrn. Supp. Inc. 201-985-3700
NJ Hillside, Leader Elctrn. Supp. Corp. 201-354-4200
NJ Pleasantville, Kearns Elctrn. Prods. Co. 609-646-7010
NJ Raritan, Masters Elctrn. Supp. 201-725-3583
NJ Trenton, Service Parts & Supp. Co. 609-393-7135
NJ Union City, NIDISCO, Inc. 201-863-2111
NM Albuquerque, Elctrn. Parts Co. 505-293-6161
NM Albuquerque, Southwest Elctrns. 505-881-2756
NM Albuquerque, US Module 505-345-7968
NM Farmington, Walker Farmington Elctrns. Inc. 505-327-9138
NM Hobbs, Trice Wholesale Elctrns. 505-393-5107
NM Las Cruces, Electronic Parts, Inc. 505-523-4578
NM Roswell, R & R Elctrn. Supp. Co. 505-622-0670
NM Sante Fe, Sepco Inc. 505-982-1621
NY Amherst, Standard Elctrns. Inc. 716-691-3061
NY Binghamton, Help Elctrns. 607-729-3528
NY Bronx, CAM Elcrns. Distr. Co., Inc. 212-893-8300
NY Brooklyn, Alpha Elctrns., Inc. 212-633-2800
NY Brooklyn, Mill Elctrns. Supp. Co. 212-336-4575
NY Brooklyn, Saco Elctrns. 212-783-7288
NY Buffalo, Genesee Radio Parts Co. 716-873-9661
NY Buffalo, Goldcrest Elctrn. Supp. 716-885-5878
NY Buffalo, Summit Distrbg. Co., Inc. 716-884-3450
NY Centereach, GTE Elctrn. Supp. 516-585-8111
NY Commack, Spartan Elctrns. Inc. 516-499-9500
NY Corning, Corning Elctrns., Inc. 607-962-0555
NY Cortland, Cortland Elctrn. Supp. 607-756-2523
NY East Rockaway, Temtron Elctrns. 516-599-6400
NY Elmira, Brady Supp.Corp. 607-733-6591
NY Freeport, Hygrade Elctrns., Inc. 516-379-8900
NY Hempstead, Davis Elctrns. Corp. 516-483-9200
NY Herkimer, Herkimer Elctrns., Inc. 315-866-1680
NY Hicksville, Elctrn. City 516-938-8330
NY Hornell, Hornell Elcrns., Inc. 607-324-2451
NY Horseheads, Southern Tier Elctrns. Inc. 607-734-4138
NY Jamaica, All Parts Elctrns. Whlers., Inc. 212-291-3388
NY Jamestown, Warren Radio Co. 716-484-1141
NY Johnson City, Goldcrest Elctrns. Supp. 607-797-2389
NY Johnson City, Help Elctrns. 607-729-3528
NY Kingston, Greylock Elctrn. Distrs. 914-338-5300
NY Lackawanna, Metromill Distrs. Inc. 716-826-2600
NY Long Island City, Avtech Elctrns. 212-937-9200
NY Massapequa, A & P Elctrns. Corp. 516-541-4200
NY Middletown, Greylock Elctrns. 914-343-7900
NY New Hyde Park, Electronic City 516-352-7145
NY New York, Consolidated Radio Sls. 212-865-4900
NY New York, Dale Elctrns. Corp. 212-255-3660
NY New York, State Labs, Inc. 212-807-9400
NY New York, United Teletronic Parts Corp. 212-569-2330
NY Olean, Standard Elctrns. Inc. 716-372-1800
NY Plainview, ACI Elctrns. Corp. 516-293-6630
NY Plattsburgh, Champlain Elctrns. 518-563-2323
NY Port Chester, Wise Comps. 914-939-3940
NY Poughkeepsie, Greylock Elctrns. 914-452-0550
NY Richmond Hill, Anchor Elctrns. Distr. Co. 212-846-2421
NY Rochester, Goldcrest Elctrns. Supp. 716-546-8464
NY Rochester, Masline Elctrns. Inc. 716-546-5373
NY Rochester, Standard Elctrns. Inc. 716-254-7590
NY Rochester, Summit Distrs. of Rochester 716-334-8110
NY Rome, Rome Security Dvcs., Inc. 315-336-0148
NY Schenectady, Goldcrest Elctrns. Supp. 518-377-6424
NY Syracuse, Goldcrest Elctrns. Supp. 315-471-7115
NY Syracuse, Standard Elctrns. Inc. 315-422-0421

NY Syracuse, Stewart W. Smith, inc. 315-422-0323
NY Troy, Troy Television 518-235-1521
NY Utica, Grapac Elctrns. Co. 315-732-4674
NY Watertown, Gateway Elctrns. 315-788-7251
NC Burlington, Womack Elc. Supp. 919-227-7486
NC Charlotte, United Elctrns. Supp. 704-372-2650
NC Concord, Mac Victor Elctrns. 704-786-4175
NC Durham, Knight Elctrns. 919-682-9371
NC Fayetteville, Brantley Elctrns. 919-868-8038
NC Fayetteville, Eastern Radio Supp. 919-485-2161
NC Gastonia, JMT Elctrns. 704-867-4401
NC Goldsboro, Womack Elctrns. 919-734-3221
NC Greensboro, Guilford Elctrns. 919-275-1385
NC Greenville, Pair Elctrns. 919-756-2291
NC Lumberton, Knight Elctrns. 919-739-2870
NC Raleigh, Knight Elctrns. 919-833-6417
NC Sanford, Knight Elctrns. 919-776-4249
NC Statesville, Mills Elctrns. Inc. 704-872-8949
NC Wilmington, Buck's Elctrns. 919-392-4262
NC Winston Salem, Electronic Distributing Inc. 919-723-1097
NC Winston Salem, Kirkman Elctrns. 919-722-9131
ND Fargo, RSC Elctrns. 701-232-8993
ND Fargo, S/S Elctrns., Inc. 701-237-5003
OH Akron, Akron Elctrn. Supp., Inc. 216-762-8818
OH Akron, Sun Radio 216-434-2171
OH Akron, Warren Radio Co. 216-434-6668
OH Ashtabula, Sesco/Sims Elect. 216-997-8391
OH Cambridge, J. Michael Elect. 614-432-2364
OH Canton, Canton Elctrn. Supp. 216-454-7048
OH Canton, Electronic Ctr. Inc. 216-456-7133
OH Canton, Srepco Elctrn. Div. 216-445-0271
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CA	Santa Monica, Pioneer Magnetics, Inc.	213-829-6751
CO	Commerce City, Williams Assocs.	303-289-5647
FL	Boca Raton, Pen-Tech Assocs.	305-394-7400
GA	Marietta, Pen-Tech Assocs.	404-424-1931
MD	Columbia, Stein Instrmn.	301-596-3748
MA	Wayland, Daner-Hayes	617-655-0808
MI	Ann Arbor, KRW Sls., Inc.	313-769-0056
MN	Eagan, Pioneer Magnetics	612-452-7747
MO	Kansas City, Zinsmaster & Assocs.	816-333-6233
NH	Wilton, Daner-Hayes Inc.	603-654-6543
NJ	Glen Gardner, Daner-Hayes Inc.	201-537-4534
NM	Albuquerque, Williams Assocs.	505-255-1368
NY	Brewster, Daner-Hayes Inc.	914-279-2168
NY	E. Norwich, Daner-Hayes Inc.	516-922-0080
NY	Rochester, Daner-Hayes Inc.	716-288-0921
NC	Greensboro, Pen-Tech Assocs.	919-852-6000
OH	Columbus, KRW Sls. Inc.	614-885-2598
OH	Westlake, KRW Sales	216-871-7521
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PA	Cheltenham, Stein Instrm.	215-379-1990
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UT	Salt Lake City, Williams Assocs.	801-485-6511
WA	Vashon, RTS, Inc.	206-285-1363
Can	Lachine, Electrodesign Ltd.	514-636-4838

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PITTMAN, Penn Engrg. & Mfg. Corp., 343 Godshall Dr., Harleysville, PA 19438, Tel: 215-256-6601, Telex: 283668, TWX: 510-661-8696, ESYLNK: 62894738, FAX: 215-256-1338; FSC No.: 98938; Empl.: 135 .... **B•1203**

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CO	Commerce City, Williams-Assocs.	303-289-5647

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GA Lilburn, Motion Technlg., Inc. 404-921-3585
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IN Fort Wayne, Aktron 219-747-3650
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NM Albuquerque, Williams-Assocs. 505-255-1638
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NY Rochester, Application Spec. 716-586-6226
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OH Cleveland, Servo-Mark 216-871-2353
OK Tulsa, Blair Engrg. 918-622-3100
PA Exton, Kiley Elect. Co., Inc. 215-363-8550
SC Greenville, Motion Technlg., Inc. 803-297-7903
TX Austin, Blair Engrg. 512-346-3032
TX Dallas, Blair Engrg. 214-241-5655
TX Houston, Blair Engrg. 713-973-8800
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WA Redmond, Halbar Assocs. 206-882-0990
WA Vancouver, Halbar Assocs. 206-696-0170
Can Montreal, Brian Engrg. Ltd. 514-738-5757

PKS - DIGIPLAN LTD., 1859 Charter Lane, Lancaster, PA 17601, Tel: 717-299-2706, Telex: 887352; Empl.: 100; *Sls. Mgr.:* David P. Overy

PLAINVIEW ELECTRONICS, 1121 Holland Dr., Ste. 7, Boca Raton, FL 33431, Tel: 305-997-7705; *Sls. Mgr.:* B. Erde ..... **D•1462-1463**

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PLASMARC TECHNOLOGIES, INC., 180 Passaic Avenue, Fairfield, NJ 07006, Tel: 201-575-0870, Telex: 833245; FSC No.: 6Y983; Empl.: 21; *Sls. Mgr.:* Gregory A. Galaida

PLASMA RESEARCH CORP., 2900 Main St., Alameda, CA 94501, Tel: 415-521-5532; FSC No.: 8Y067; Empl.: 7

PLASTIC CAPACITORS, INC., 2623 N. Pulaski Rd., Chicago, IL 60639, Tel: 312-489-2229, TWX: 910-221-1354; FSC No.: 99120; Empl.: 90; *Sls. Mgr.:* Thomas J. Brown; *Dist. Mgr.:* Thomas J. Brown

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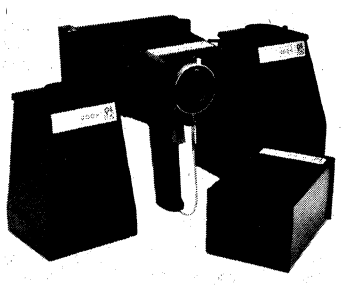

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CA Los Angeles, The Knight Co. 213-670-2833
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PLASTOID CORPORATION, 45 Gingerbread Castle Rd., Hamburg, NJ 07419, Tel: 201-827-7141; Empl.: 200

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CA San Jose, Cypress Elctrns. 408-945-8400
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FL Orlando, Hammond Elctrns., Inc. 305-849-6060
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MI Roseville, Madison Elctrns. 313-778-7640
MN Fridley, Voyager II 612-571-7766
NJ Bellmawr, Mid-Atlantic Elec. Corp. 609-931-5303
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NY Ronkonkoma, Conco 516-467-8200
NC Greensboro, Hammond Elctrns., Inc. .. 919-275-6391
OH Wickliffe, Gateway Megatech 216-944-5801
PA Philadelphia, Shap Elctrns. 215-969-3300
TX Dallas, Computer Comps. 214-239-0271
TX Dallas, Cypress Elctrns., inc. 214-869-1435

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POTTER & BRUMFIELD, A Siemens Co., 200 S. Richland Creek Dr., Princeton, IN 47671-0001, Tel: 812-386-1000, Telex: 27-8451, TWX: 810-350-2343; Empl.: 3000; *Dist. Mgr.:* Gordon Collins .. **B•1280, 1475-1488**

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CA Woodland Hills, Bestronics 818-704-5616
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MS Jackson, Cartwright & Bean 601-981-1170
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MO Raytown, Dy-Tronix, Inc. 816-356-6340
NJ Medford, Jack McCoy, Inc. 609-953-0770
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OH Cincinnati, R. O. Whitesell & Assocs. .. 513-521-2290
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OH Dayton, R. O. Whitesell & Assocs. 513-298-9546
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PR San Juan, Electronic Tech. Sls. 809-790-1300
Can Burlington, Ont., White Radio Ltd. 416-632-6894

POTTER CO., See Pulse Engineering

POTTER INSTRUMENT, (PSI-Peripheral Support), 122 Penn St., P. O. Box 892, El Segundo, CA 90245, Tel: 213-322-9370, Telex: 317928; FSC No.: 95-2800481; Empl.: 20; *Sls. Mgr.:* T. O. McMahon

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NY New York, Powerbox Inc. 212-944-6988

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CA Palo Alto, O'Halloran Assocs. 415-969-1600
CA Santa Clara, EIL Instrs. 408-727-0396
CO Denver, EIL Instrs. 303-534-4160
CT Middletown, EIL Instrs. 203-346-6646
FL Palm Bay, EIL Instrs. 305-725-8300
GA Atlanta, U.S. Instr. Rentals 404-955-4473
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MA Burlington, EIL Instrs. 617-272-9450
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MN Minneapolis, U.S. Instr. Rentals 612-881-3743
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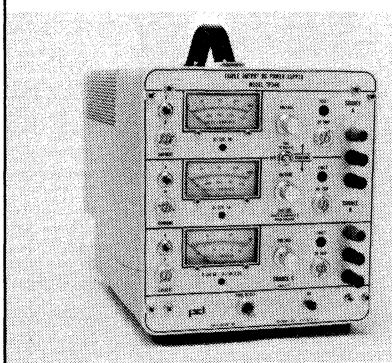
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UT Salt Lake City, Telcom Mktg. Ltd. 801-571-5605
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TX Houston, Force Elctrns. 713-561-8644
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TX Richardson, Off The Shelf Comps. 214-238-0808
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MA Waltham, Datcom, Inc. 617-891-4600
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OH Dayton, Bell Inds. 513-434-8231,513-435-8660
OH Dayton, Bell Inds. 513-434-8231
OH Dayton, Pioneer Elctrns. 216-587-3600
OH Solon, Arrow Elctrns. 216-248-3990
OH Solon, Pioneer Elctrns. 513-236-9900
OK Tulsa, Arrow Elctrns. 918-665-7700
OK Tulsa, Sterling Elctrns. 918-663-2410
OR Portland, Bell Inds. 503-241-4115
OR Portland, Radar Elec. 503-232-3404
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OR Tigard, Arrow Elctrns. 503-684-1690
PA Horsham, Pioneer Elctrns. 215-674-4000
PA Monroeville, Arrow Elctrns. 412-856-7000
PA Pittsburgh, CAM/RPC Elctrns. 412-782-3770
PA Pittsburgh, Pioneer Elctrns. 412-782-2300
PA Zelionople, Argent Electra 412-776-4330
RI Warwick, Major Edwards Elctrns. 401-725-7400
TN Nashville, Bell Inds. 615-242-2682
TX Austin, Arrow Elctrns. 512-835-4180
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TX Austin, Sterling 512-836-1341
TX Austin, Wyle Labs. 512-834-9957
TX Dallas, Force Elctrnd. 214-247-9955
TX Dallas, Pioneer/Dallas 214-386-7300
TX Dallas, Sterling Elctrns. 214-243-1600
TX Dallas, Wyle Labs. 214-235-9953
TX Houston, Arrow Elctrns. 713-530-4700
TX Houston, Force Elctrns. 713-561-8644
TX Houston, Pioneer Elctrns. 713-988-5555
TX Houston, Sterling Elctrns. 713-627-9800
TX Houston, Wyle Labs. 713-879-9953
TX Richardson, Arrow Elctrns. 214-380-6464
UT Salt Lake City, Arrow Elctrns. 801-972-0404
UT Salt Lake City, Bell Inds. 801-972-6969
UT Salt Lake City, Wyle Labs. 801-974-9953
VA Richmond, Sterling Elctrns. 804-226-2190
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Local Sales Offices & Reps
AL Huntsville, BC Elctrns. Sls. 205-837-6657
AZ Tempe, Delta Elctrns. 602-252-4222
CA Irvine, QPI 714-552-2849
CA Long Beach, QPI 213-596-1233
CA Simi Valley, QPI 805-522-3060
CT Southington, ORION-DSA 203-621-8371
DC Seabrook, W. A. Brown Equip. Co. 301-577-6105
GA Smyrna, BC Elctrn. Sls. 404-436-5169
IL Hillside, CADRE 312-449-3900
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MI Farmington Hills, Carter McCormic & Pierce 313-477-7700
MN Minneapolis, R.J. Inc. 612-866-3661
NJ E. Hanover, Emtec 201-428-0600
NY East Hanover, EMTEC 516-752-1630
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OH Berea, Carter McCormic & Pierce 216-826-0400
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PA King of Prussia, KSI 215-783-6400
PA Pittsburgh, Carter McCormic & Pierce 412-733-7490
TX Plano, G.W. Prods. 214-422-1746

POWER-PAK, INC., 6216 Oakton St., Morton Grove, IL 60053, Tel: 312-966-6000; Empl.: 16; *Sls. Mgr.:* Robert Villari

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Refer to Computer Prods., Inc., Pompano Beach, FL, for sales offices & representatives & distributors.

POWER-SCIENCE, 7667 Vickers St., San Diego, CA 92111, Tel: 619-292-4322; Empl.: 6; *Sls. Mgr.:* E. Cooper

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POWER-SONIC, Box 5242, 3106 Spring St., Redwood City, CA 94063, Tel: 415-364-5001, Telex: 348400; Empl.: 30; *Sls. Mgr.:* B. A. Ender; *Dist. Mgr.:* B. A. Ender ..... **D•1469**

Local Sales Offices & Reps
CA Irvine, English/Damco 714-837-3801
FL Tampa, SRT Mktg. 813-884-4805
ID Sun Valley, Rick Flickinger 208-726-3332
IL River Forest, Pete Collins 312-366-7076
MD Woodbine, DJC Elctrns. 301-795-7020
MA Natick, Steve Dworkin 617-879-5632
MS Jackson, Doby Assocs. 601-981-1138
MO St. Louis, Lowell Kangas 314-821-4050
NY Wantagh, Dony Tech. Sls. 516-816-5550
PA Newtown Sq., William Reeves Assocs. 215-566-6709
TX Dallas, Power Connection 214-357-8207

Local Distributors
CA Long Beach, Battery Specialties 213-437-1809
CA San Francisco, Zack Elctrns. 415-626-1444
CO Denver, Hensley Battery 303-455-3643
CT Waterbury, Lighting Svcs., Inc. 203-756-8148
FL Altamonte Springs, TNR Tech. 800-722-7267
FL Tampa, Leader Elctrns. 813-870-3315
GA Atlanta, Arrowhead 404-955-1006
IL Elgin, Allied Elctrns. 312-697-8200
LA New Orleans, Wm. B. Allen Supp. Co. 800-462-9528
MA Sharon, Adcour 617-784-3996
MA Wellesley Hills, Target Elctrns. 617-235-2545
MO Kansas City, Elctrn. Supp. 816-931-3383
NM Albuquerque, Betatron, Inc. 505-344-2381
NY Brewster, WHI Battery 914-278-6151
NY Ridgewood, J.A. McDermott Corp. 212-456-3606
OH Cleveland, Security Prods. Co. 216-451-1400
TX Ft. Worth, Allied Elctrns. 817-265-9341
TX Texas city, Elctrn. Supp. 409-945-4401
VA Arlington, Arlington Elctrns. 703-524-2412
WA Redmond, Energy Sls. 206-883-2343

POWER SOURCES INTERNATIONAL INC., Sources Electronics, 15014 Malachite Ct., Reno, NV 89506, Tel: 702-972-1224, TWX: 510-600-5831, FAX: 702-329-1360

POWER SYSTEMS, INC., 45 Griffin Rd., South, Bloomfield, CT 06002, Tel: 203-726-1300, TWX: 710-425-8778; FSC No.: 50463; Empl.: 275; *Sls. Mgr.:* Richard Milne ..... **D•1885**

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CA Santa Ana, Powerhouse 714-549-9599
CO Parker, A5 Co. 303-841-3651
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GA Duluth, R. K. Welter & Assocs., Inc. 404-476-9455
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UT Salt Lake City, A5 Co. 801-483-1034
WA Kirkland, Northwest Comps. Sls. 206-828-4838

POWER SYSTEMS & CONTROLS, INC., 3206 Lanvale Ave., Richmond, VA 23230, Tel: 804-355-2803, ESYLNK: 62776247; Empl.: 45

POWER SYS. GRP., Rantec Div., Emerson Elec., 9401 Oso Ave., Chatsworth, CA 91311, Tel: 818-885-8223, TWX: 910-493-1247; FSC No.: 04971; Empl.: 265; *Sls. Mgr.:* Daniel L. Esau

POWERTEC, INC.

POWERTEC, INC., 20550 Nordhoff St., Chatsworth, CA 91311, Tel: 818-882-0004, Telex: 277483, TWX: 910-494-2092; Empl.: 349; *Sls. Mgr.:* Royston A. Allman ..... **D•1890-1911**

POWERTECH, INC., 0-02 Fairlawn Ave., Fairlawn, NJ 07410, Tel: 201-791-5050, Telex: 353970; FSC No.: 32953; Empl.: 49; *Sls. Mgr.:* Alan J. Melnyk

Power Technology Inc.

POWER TECHNOLOGY, INC., P.O. Box 9769, Little Rock, AR 72219, Tel: 501-568-1995, TWX: 910-722-7313; Empl.: 75; *Sls. Mgr.:* John Webb ..... **D•1887**

POWER TEN, INC., 486 Mercury Dr., Sunnyvale, CA 94086, Tel: 408-738-5959, Telex: 287560 MLBX VR; FSC No.: 61987; *Sls. Mgr.:* Vince Mutascio ..... **D•1889**

Local Sales Offices & Reps
AZ Mesa, Insight 602-820-4955
AZ Phoenix, Jayson Co., Inc. 602-867-1964
CA San Diego, Power Assocs. 619-275-0641
MA Acton, Framar 617-263-2285
PA Glenside, Koebert 215-887-2310
TX Austin, Eberts Elctrns. Sls. 512-258-1067
TX Latexo, Eberts Elctrns. Sls. 409-687-4342
WA Bellevue, A. J. Smith Co. 206-746-6770

POWERTREND, INC., 3139-G Los Feliz Dr., Thousand Oaks, CA 91362, Tel: 805-496-2945; *Sls. Mgr.:* R. Jones

POWERTRON, See Industrial Test Equipment Co., Inc.

POWERTRON, Contraves Goerz Corp., 3821 Barranger Dr., Charlotte, NC 28210, Tel: 704-525-8962, Telex: 572-444; *Sls. Mgr.:* Sam LoBue

POWERTRON CORPORATION, Rte. 15, Box 932, Sparta, NJ 07871, Tel: 201-579-5599, Telex: 136198; *Sls. Mgr.:* William E. Cannon; *Dist. Mgr.:* William E. Cannon ..... **D•1913**

POWR-UPS CORP., 50 Orville Drive, Bohemia, NY 11716, Tel: 516-589-3602; Empl.: 50; *Sls. Mgr.:* Alon Kopstein ..... **B•1204-1205**

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CT Ridgefield, E. S. Williams 203-438-7474
IL Oak Brook, A.G. Erickson 312-323-1367
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OH Dover, AJ Assocs. 216-343-2224
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Local Distributors
NY Long Island City, B & B Motor & Control Corp. 800-638-7808

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PPD, INC., Rte. 8, P.O. Box 116, Raleigh, NC 27612, Tel: 919-781-3955, FAX: 919-781-4780 ..... **A•1159-1171**

Local Sales Offices & Reps
NC Raleigh, Godwin Assocs. 919-878-8000

PPM, INC., 5385 Harper Rd., Cleveland, OH 44139, Tel: 216-349-2300; Empl.: 20; *Sls. Mgr.:* A. L. Bletcher ..... **D•1305**

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AZ Phoenix, J. Smith & Assocs. 602-267-0981
CO Denver, J. Smith & Assocs. 303-597-5343
MI Ferndale, Tiby Co. 313-547-3550
NM Albuquerque, J. Smith & Assocs. 505-345-6501
OH Cleveland, Tiby Co. 216-371-5335
OH Dayton, Tiby Co. 513-277-3822

PRACTICAL AUTOMATION, INC., 2 Research Dr., Shelton, CT 06484, Tel: 203-929-5381, Telex: 6813310; Empl.: 150; *Sls. Mgr.:* R. M. Banzaca

PRD ELCTRNS., DIV. OF HARRIS CORP., see Harris Corp., PRD Electronics Div.

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PRECICONTACT, INC., 835 Wheeler Way, Langhorne, PA 19047, Tel: 215-757-1202, Telex: 83-4253; FSC No.: 60197; *Sls. Mgr.:* Joseph Carroll; *Dist. Mgr.:* Steve Lawler ..... **C•1500-1507**

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AL Birmingham, Electro Sls. Inc./K & L ... 205-681-4680
AZ Phoenix, G.B. Elctrns. Inc. 602-935-3984
CA San Jose, Applied Elctrn. Mktg. 408-971-9377
CA Woodland Hills, First Rep 818-992-5442
CO Denver, White Sls. Co. 303-694-9555
FL Orlando, C Assocs. 30 5-831-1717
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IL Chicago, Joel Wasserman Assocs. 312-256-3566
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MN Minneapolis, Midcon Corp. 612-944-8030
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MO St. Louis, KKB & Co. 314-647-2400
NY Rochester, Tech-Mark, Inc. 716-624-3840
NY Uniondale, Technlg. Sls., Inc. 516-227-2333
OH Cincinnati, Makin & Assocs. 513-871-2424
OH Cleveland, Makin & Assocs. 216-248-7370
PA Horsham, Jacobsen Assocs. 215-674-2937
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TX Houston, J. Y. Schoonmaker Co. 713-738-2427
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WA Redmond, Electronic Mktg. Grp. 206-882-0962
Can Vancouver, B.C., Davetek Mktg. 604-430-3680

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CA San Diego, Cypress/RPS Elctrns. 619-292-5611
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CA San Jose, Cypress Elctrns. 408-945-8400
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FL Clearwater, Electronic Precepts of FL 813-530-9781
FL Clearwater, Future Elctrns. 813-441-4771
FL Orlando, Reptron Elctrns. 305-735-1112
FL Tampa, Reptron Elctrns. 813-855-4656
GA Altanta, Reptron Elctrns. 404-446-1300
GA Atlanta, Future Elctrns. 404-441-7676
IL Crystal Lake, Subsem 815-459-4139
IL Lisle, Components, Inc. 312-852-7707
IL Palatine, OHM Elctrns., Inc. 312-359-5500
IL Schaumburg, Future Elctrns. 312-882-1255
IL Schaumburg, Reptron Elctrns. 312-882-1700
IN Indianapolis, Mar Elctrns. 317-875-4510
MD Columbia, Future Elctrns. 301-995-1222
MD Rockville, Wire Tech., Inc. 301-340-1445
MA Andover, Aved Elctrns. 617-688-3800
MA Hingham, Sager 617-749-6700
MA Needham, Cronin Elctrns. 617-449-5000
MA Norwood, Emtel Elctrns. 617-769-9500
MA Westborough, Future Elctrns. 617-366-2400
MA Wilmington, J.V. Elctrns. 617-273-4300
MI Detroit, Reptron Elctrns. 313-525-2700
MN Minnetonka, Reptron Elctrns. 612-938-0000
MO Kansas City, Walters Elctrns. 816-531-7015
MO St. Charles, Finnegan Elctrns. 314-946-6201
NH Salem, Sager 603-898-1348
NJ Bellmawr, Mid-Atlantic Elctrns. 609-931-5303
NJ Berlin, GCI Corp. 609-768-6767
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NJ Parsippany, Fabe Electro Sls., Inc. 201-299-1123
NM Albuquerque, Connecting Comps. Div. 505-345-8921
NY Brooklyn, Connector Resources 718-383-2208
NY Hauppauge, Jaco Elctrns. 516-273-5500
NY Hauppauge, Sager 516-348-1300
NY Liverpool, Future Elctrns. 315-451-2371
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OH Mansfield, Rush Elctrns. Distrs., Inc. 419-756-2322
OH Worthington, Reptron Elctrns., Inc. 614-436-6675
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TX Stafford, Southwest Elctrns. 713-491-4900
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Can Vancouver, B.C., Future Elctrns. 604-438-5545
Can Winnipeg, Manitoba, Future Elctrns. 204-339-0554

PRECISION COMPONENTS, INC., 1110 W. National Ave., Addison, IL 60101, Tel: 312-543-6400, Telex: 910-221-0158 ..... **A•2366**

Local Sales Offices & Reps

IL Addison, Precision Comp. 312-543-6400

PRECISION CONTROL MANUFACTURING, INC., 1509 B Queen Anne Ave. N., Seattle, WA 98109, Tel: 206-281-9380; FSC No.: 64782 ..... **A•2112**

Local Sales Offices & Reps

WA Seattle, Precision Control Mfg., Inc. 206-281-9380

PRECISION DIGITAL CORP., 80 Coolidge Hill Rd., Watertown, MA 02172, Tel: 617-924-2256

PRECISION ELECTRONICS, 9101 King Ave., Franklin Park, IL 60131, Tel: 312-678-5350; Empl.: 25; *Sls. Mgr.:* William Stow

PRECISION EXTRUSIONS, INC., Box 120, Bensenville, IL 60106, Tel: 312-766-0340; *Sls. Mgr.:* Richard Ziehm

PRECISION FILTERS, INC.

PRECISION FILTERS, 240 Cherry St., Ithaca, NY 14850, Tel: 607-277-3550, Telex: 646846; FSC No.: 66-II-F & 66-II-I; Empl.: 60; *Sls. Mgr.:* D. F. Chandler ..... **A•1686-1692; D•1018-1019**

Local Sales Offices & Reps

AZ Tempe, Cleveland Entprs. 602-820-1127
CA Laguna Hills, Elotek Sys., Inc. 714-830-4856
CA San Jose, Synergistic Sls. 408-292-6573
AZ Phoenix, Western Region Sls. Off. 602-953-0345
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FL Osprey, Dick Ridgewell Co. 813-484-2020
MD W. Friendship, Gans & Pugh Assocs. 301-442-2189
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MI Livonia, ElectroSales Assocs. 313-421-7500
MI Portage, ElectroSales Assocs. 616-323-2416
MN Chanhassen, Electronic Instr. Consltg. 612-445-7056
NJ Midland Park, Langstrom Instrs. 201-891-2829
NY Saugerties, Beckrep, Inc. 914-246-3031
OH Chesterland, ElectroSales Assocs. 216-729-0190
OH Dayton, ElectroSales Assocs. 513-426-5551
PA Pittsburgh, ElectroSales Assocs. 412-322-9000
TX Houston, Chauvin Engrg. Co. 713-795-5466
VA Arlington, Gans & Pugh Assocs. 703-527-3262
WA Bellevue, Topp Engrg. Sls. 206-747-5400
EXP Can./Ottawa, Ont., Rayonics Sci. 613-521-8251
Can Downsview, Ont., Rayonics Scientific 416-736-1600
Can St. Laurent, Que., Rayonics Sci. 514-335-0105

PRECISION LAMP, INC., 480 Aaron Dr., Cotati, CA 94928, Tel: 707-792-0333, Telex: 348498; FSC No.: FSCM 58451; Empl.: 25; *Sls. Mgr.:* Kathleen Guinn

PRECISION LEVEL VIAL CO., P.O. Box 320, 760 Edison-Furlong Rd., Furlong, PA 18925, Tel: 215-794-0800, 800-345-7517; Empl.: 12; *Sls. Mgr.:* Susan Mazzanti

PRECISION MECHANISMS, 44 Brooklyn Ave., Westbury, NY 11590, Tel: 516-ED3-5955; FSC No.: 08127; Empl.: 26; *Sls. Mgr.:* Leon N. Canick

PRECISION METAL PRODUCTS CO., Centennial Indl. Pk., Peabody, MA 01961-6026, Tel: 617-532-5500, TWX: 710-347-0123; FSC No.: 86577; Empl.: 54; *Sls. Mgr.:* Robert H. Degnan

PRECISION MONOLITHICS, INC., 1500 Space Park Dr., Santa Clara, CA 95054-3499, Tel: 408-727-9222, TWX: 910-338-0218; FSC No.: 06665; Empl.: 900; *Sls. Mgr.:* Jo Nall; *Dist. Mgr.:* Mike Dennison

Precision Resistive Products, Inc.

PRECISION RESISTIVE PRODUCTS, INC., P.O. Box 189, Highway 61 South, Mediapolis, IA 52637, Tel: 319-394-9131; Empl.: 40; *Sls. Mgr.:* Oscar Cline; *Dist. Mgr.:* Oscar Cline ..... **A•2016-2017**

Local Sales Offices & Reps

AL Huntsville, Hughes & Assocs. 205-533-9108
CA Anaheim, Impact Electrns. Inc. 714-533-1351
CA Los Altos, Frauman Assoc. 415-941-0660
CA San Diego, KCE 619-278-7640
CO Denver, Williams Assocs. 303-373-4730
IL Chicago, Ellinger Sls. 312-763-1570
IN Greenwood, Valentine Assocs. 317-888-2200
MA Waltham, Jesco, Inc. 617-893-0094
MI Warren, DEM Elctrns. Sls. 313-575-9444
MN Minneapolis, Intl. Sls. 617-831-8423
NJ Mountainside, Kevtron Elctrns. 201-654-7600
OH Cincinnati, G & H Sls. Co. 513-272-0580
TX Richardson, Campion Sls. Co. 214-238-8145
WA Seattle, W3 Assocs., Inc. 206-285-2667

PRC

PRECISION RESISTOR CO., INC., 10601 75 St. N., Largo, FL 33543, Tel: 813-541-5771, Telex: 821788; FSC No.: 48615; Empl.: 45; *Sls. Mgr.:* R. L. Wright ..... **A•2018-2025**

PRECISION SPECIALTIES, INC., 19414 Londelius St., Northridge, CA 91324, Tel: 818-349-9774; FSC No.: 66785; Empl.: 10

PRECISION STANDARD TIME, INC., 2585 Scott Blvd., Santa Clara, CA 95050, Tel: 408-980-8001; *Sls. Mgr.:* Rex Brown

PRECISION TECH. SEWING, 921 E. Charleston Rd., Palo Alto, CA 94303, Tel: 415-856-2128

PRECISION TUBE, Church Rd. & Wissahickon, N. Wales, PA 19454, Tel: 215-699-5801, Telex: 84-6439; FSC No.: 82413; Empl.: 240; *Sls. Mgr.:* William J. McNeil

PREFERRED ELCTRNS., INC., Main Line Dr, P.O. Box 954, Westfield, MA 01086, Tel: 413-568-2301, Telex: 955-339; Empl.: 250; *Sls. Mgr.:* Merton I. Rosenberg

PREH ELECTRONIC INDUSTRIES, INC., 5665 Howard Street, Niles, IL 60648, Tel: 312-647-8338, Telex: 297-112 PEI UR, TWX: FAX: 312-647-8157; FSC No.: 36-3193682; Empl.: 7; *Sls. Mgr.:* Ken Wood .... **A•2113; B•1680, 1726; C•1509**

Local Sales Offices & Reps

CA Anaheim, Spectrum Assocs., Inc. 714-630-6977
CA Nevada City, G. R. McKnight Co., Inc. 916-477-8096
CA San Jose, G. A. McKnight Inc. 408-942-0880
FL Miami, Indl. Comps. 305-591-0616
IN Bloomington, Gilbert & Assocs. 812-339-2463
MA Hopedale, H.E.S. Comps. Inc. 617-473-4324
MI Troy, C. B. Jensen & Assocs. 313-643-0506
NJ Woodbridge, John Chirico Assocs. 201-855-9600
OH Cincinnati, Bob Gilbert & Assocs. 513-574-1932
OK Tulsa, M-Rep Comps. 918-665-3562
PA Telford, Dalbrook 215-723-3300
TX Dallas, M-Rep Comps. 214-669-9706
TX Houston, M-Rep Comps. 713-461-4197
VA Midlothian, Frazer Sls. & Assocs. 804-744-4101
WA Seattle, Northmar Inc. 206-524-5170
Can Markham, Ont., Avotronics Ltd. 416-475-2024

Local Distributors

CA Belmont, LoDan Elctrns. Inc. 415-592-4600
CA El Segundo, Professional Audio Labs. 213-327-8430
CT Norwalk, Cobra Comps. 203-847-6442
FL Largo, LoDan Elctrns., Inc. 813-586-2851
IL Arlington Hgts., LoDan Elctrns. 312-398-5311
IL Wheeling, Hawk Elctrns. 312-459-4030
MA Newton Upper Falls, In Stock Prods. Co. 617-964-6200
NY Bohemia, Key Comps. 516-567-7500

NY Hauppauge, Broadline Elctrns. 516-231-4100
NY Rochester, Whirlwind Music Distrs. ... 716-663-8820
Can Calgary, Alberta, Cardinal Inds. Ltd. ... 403-259-6817
Can Edmunton, Alberta, Cardinal Inds. Ltd. 403-483-6266
Can Hamilton, Ont., C. M. Peterson Co. Ltd. 416-528-0151
Can Kitchener, Ont., C. M. Peterson Co. Ltd. 519-745-6961
Can London, Ont., C. M. Peterson Co. Ltd. 519-434-3204
Can Nepean, Ont., Carsten Elctrns. Ltd. 613-726-9250
Can Oshawa, Ont., C. M. Peterson Co. Ltd. 416-576-1700
Can Rexdale, Ont., C. M. Peterson Co. Ltd. 416-247-6667
Can Sarnia, Ont., C. M. Peterson Co. Ltd. ... 416-344-3382
Can Scarborough, Ont., Carsten Elctrns. Ltd. 416-495-9999
Can St. Catherines, C. M. Peterson Co. Ltd. 416-685-7377
Can St. Laurent, Que., Carsten Elctrns. Ltd. 514-334-8321
Can Toronto, Ont., Atlas Elctrns. Ltd. 416-789-7761
Can Willowdale, Ont., Electrosonic Inc. 416-494-1666
Can Windsor, Ont., C. M. Peterson Co. Ltd. 416-253-1161

PREMA PRECISION ELECTRONICS, INC., 6290 Sunset Blvd., Suite 1126, Los Angeles, CA 90028-8770, Tel: 213-463-2294, TWX: 910-321-2903, FAX: 213-463-4319

PREMIER METAL PRODS. CO., 381 Canal Pl., Bronx, NY 10451, Tel: 212-993-9200; Empl.: 75; *Sls. Mgr.:* Anthony E. Bozza ..... **C•1078-1079**

Local Sales Offices & Reps
AZ Phoenix, CPS Associates 602-246-1097
CA Fontana, Premier Metal 714-829-3089
CA Marina Del Rey, Spec. Rep. 213-827-7767
CA San Jose, Silicon Valley Sls., Inc. 408-286-7510
CO Denver, AKI Enterprises 303-338-4488
CT East Haven, Eagle Assocs. 203-467-6542
FL Altamonte Springs, Adams & Assocs. 305-260-8286
GA Marietta, Adams & Assocs. 404-973-0853
IL Elmhurst, Utronix Sls. 312-834-1100
KS Overland Park, Delltron Co. 913-649-2078
MD Burtonsville, Eastern Instrmn. 301-384-8500
MA Needham, Eagle Assocs. 617-444-3446
MI Brighton, Electronic Sources 313-227-3598
MN Minneapolis, J.E.M. Anderson Co. 612-823-6459
MO Florissant, Delltron Co. 314-839-0033
NM Rio Rancho, RML Associates 303-757-6654
NY New Hyde Park, Harris & Aldrich Sls. 516-488-2622
NY Syracuse, Lewis-Dunnigan Co. 315-446-5522
NY Yonkers, Sonkin Assocs. 914-968-8282
NC Greenboro, Adams & Assocs. 919-272-6838
OH Sharon Center, Merit Elctrns. 216-239-2186
PA Penndel, Merit Elctrns. 216-239-2186
TX Bedford, W. Pat Fralia Co. Inc. 817-267-3577
TX Houston, W. Pat Fralia Co. Inc. 713-772-1572
WA Redmond, Elctrn. Northwest, Inc. 206-883-1959
EXP FL, Ft. Lauderdale, GM Intl. 305-434-6617

Local Distributors
AL Huntsville, Mock Elctrns. 205-539-2401
AL Opelika, Southern Elctrns. 205-745-5298
AZ Phoenix, Dalis Elctrns. 602-275-2885
CA Burlingame, Rose Elctrns. 415-348-2740
CA San Jose, Quement Elctrns. 408-998-5900
CT Danbury, Pilgrim Elctrns. 203-792-7274
FL Dania, Summit Elctrns. 305-920-6253
FL Miami, Electronic Equip. Co. 305-871-3500
IL Elk Grove Village, GBL/Gould Elctrns. 312-593-3220
IN Fort Wayne, Graham Elctrns. 219-423-3422
LA Baton Rouge, Menard Elctrns. 504-355-0323
MD Baltimore, ASI Elctrns. 301-265-5100
MD Baltimore, Resco 301-823-0070
MD Bethesda, Empire Elctrns. 301-656-3300
MA Hingham, Sager Electrical Supp. 617-749-6700
MA Newton, Greene-Shaw Co. 617-969-8900
MI Ann Arbor, Purchase Radio Supp. 313-668-8696
MO St. Louis, Gateway Elctrn. Supp. 314-427-6116
NJ Cranford, Garden State Indl. Elec. 201-272-6400
NJ Hanover, State Elctrns. PTS 201-887-2550
NJ Kenilworth, Federated Purchaser 201-272-0505
NY Buffalo, Summit Distrs. 716-884-3450
NY E. Farmingdale, Tele Wire Supp. 516-293-7788
NY Hauppauge, Broadline Elec. Dist. 516-231-4100
NY Hempstead, Davis Elctrn. Corp. 516-483-9200
NY Lynbrook, Peerless Radio Dist. Corp. 212-523-3456
NY LIC, H. L. Dalis Inc. 212-361-1100
NY New York, Martin Audio/Video Corp. 212-541-5900
NY Portchester, Wise Comps. 914-939-8600
NY Rochester, Simcona Elctrn. Corp. 716-328-3230
NY Rochester, Summit Elctrns. 716-334-8110
NC Raleigh, Southeastern Radio 919-828-2311
OH Dayton, Carver Supp., Inc. 216-666-1185
PA Allentown, Federated Elctrns. 215-437-4481
PA Horsham, Toner Cable Equip. 215-675-2053
PA Pittsburgh, South Hills Elctrns. 412-921-9000
PA Reading, Barbey Elctrns. 215-376-6116
PA West Chester, West Chester Elec. Supp. 215-696-7500
SC Charleston, Wholesale Indl. Elec. 803-722-2634
TN Clarksville, Randolph Hale & Matthews 615-647-2325
TN Cookeville, Randolph & Parks 615-526-6184
TN Nashville, Randolph & Rice 615-255-5601
TN Tullahoma, Randolph Rice & Williams 615-455-4531
TX Ft. Worth, Swieco Inc. 817-335-6521
TX Houston, Lenert Co. 713-225-1465
VA Arlington, Arlington Elctrns. 703-524-2412
WA Seattle, Radar Elec. Co. 206-282-2511

PREMIER MICROWAVE, 35 New Broad St., Port Chester, NY 10573, Tel: 914-939-8900, TWX: 710-569-1609; FSC No.: 15870; Empl.: 90; *Sls. Mgr.:* Mel Radner

Local Sales Offices & Reps
CA Los Angeles, McDougla/McLaughlin Inc. 213-477-8556
CA San Jose, The Mktg. Co. 408-926-0372
FL Clearwater, Brennan Assocs. 813-446-5006
GA Smyrna, BC Elctrn. Sls. 404-436-5169
GA Warner Robins, Comp. Mktg. Concepts 912-922-4545
IL Chicago, L.G.S. Elctrns. Sls. 312-456-9616
KS Wichita, Boweng Tech. Rep. 316-683-7760
MD Catonsville, Callas Elctrns. Dist. 301-744-7711
MA Natick, Gerald Rosen 617-481-9277
NY E. Syracuse, R. D. Sherman, Inc. 315-433-1165
NY Huntington, C.D.B. Entprs. 516-692-5200
OH Dayton, KW Elctrn. Sls. 513-890-2150
TX Dallas, Stevens Sls. Co. 817-382-4735
EXP CA, N. Hollywood, Air Frame Mfg. & Supp. 213-875-2094
EXP Shantinagar, India, Kashinath & Co. ... 346-353-6942
Can Lachine, Que., Electrodesign Ltd. 514-636-4838

PREM MAGNETICS, INC., 3521 N. Chapel Hill Rd., McHenry, IL 60050, Tel: 815-385-2700, TWX: 910-642-3763; FSC No.: 20462; Empl.: 300; *Sls. Mgr.:* D. Hertel ..... **A•2367-2375**

PRES:AIR:TROL &

PRES-AIR-TROL CORP., 1009 Boston Post Rd., Mamaroneck, NY 10543, Tel: 914-698-2026, 800-431-2625 (outside NY) ..... **B•1681**

PRESIDIO COMPONENTS, INC., 7185 Construction Ct., San Diego, CA 92121, Tel: 619-578-9390, TWX: 310-371-6407; FSC No.: 60212

Local Sales Offices & Reps
AZ Phoenix, Eltron 602-266-2164
CA La Mirada, Select Elctrns. 714-739-8891
CA San Diego, C Tronics 619-291-5700
CA Santa Clara, Meade Advantage 408-741-5300
CO Ft. Collins, Rep Sls. Inc. 303-226-1504
FL Orlando, Micro Mktg. 305-788-0886
IN Indianapolis, Hi-Tek Sls. 317-887-2564
MA Sterling, Compatible Comps. 617-422-7641
MN Minneapolis, Peterson Sls. & Assocs. 612-944-0030
NY Chappaqua, Micrel 914-238-4961
NY Lewiston, Watmet, Inc. 716-285-3595
PA Colmar, E & L Assocs. 215-822-2510
TX Dallas, Merino Sls. 214-233-6002
WA Bellevue, MARS 206-747-3292

Local Distributors
NJ Fairfield, C.H.P.S., Inc. 201-882-0997

PRESS-ON PRODUCTS, 21 Factory Rd., Addison, IL 60101, Tel: 312-628-2255; Empl.: 20; *Sls. Mgr.:* T. Cummins

PRESSURE CONTROLS, INC., 406 Cortlandt St., Belleville, NJ 07109, Tel: 201-751-5003; Empl.: 15; *Sls. Mgr.:* P. Emmarco

PRESSURE SYSTEMS, INC., 34 Research Dr., Hampton, VA 23666, Tel: 804-865-1243, Telex: 901406; Empl.: 72; *Sls. Mgr.:* J. S. Yakshe

PRESTON

PRESTON SCIENTIFIC, 805 E. Cerritos Ave., Anaheim, CA 92805, Tel: 714-776-6400, Telex: 5101004596 ESL UD; Empl.: 67; *Sls. Mgr.:* Charles J. McGuire ..... **D•1021, 1172-1173**

Local Sales Offices & Reps
AL Huntsville, Mo-Co 205-881-5968
AZ Scottsdale, Williams Assocs. 602-947-4297
CA Santa Clara, PBC Assocs. 408-727-7244
CO Denver, Williams Assocs. 303-289-5647
CT Avon, Power Mark 203-678-0123
FL Orlando, Truex Assocs. 305-859-2160
IL Arlington Heights, Coombs Assocs. ... 312-439-9810
IN Ft. wayne, Coombs Assocs., Inc. 219-729-2628
KS Olathe, Techn. Sls. Assocs. 913-829-2800
MD Lanham, Astro-Tronics 301-577-8431
MN St. Paul, Vikeland Sls. 612-645-4647
MO Ferguson, Techn. Sls. Assocs. 314-521-2044
NJ Franklin Lake, Hansen/Hughes 201-848-8900
NM Albuquerque, Williams Assocs. 505-255-1638
NY Greenlawn, Hansen/Hughes 516-754-3068
NC Winston-Salem, Radco 919-722-9671
OH Dayton, Hocker Assocs. 513-253-3642
OR Portland, Sci Dvcs. N.W. 503-222-4754
PA Cheltenham, Stein Instrmn. 215-379-1990
TX Houston, Lear Assocs. 713-488-7893
TX Richardson, Lear Assocs. 214-231-5388
UT Salt Lake City, Williams Assocs. 801-485-6511
WA Bellevue, Sci. Dvcs. N.W. 206-747-5169
WI Milwaukee, Coombs Assocs. 414-351-6123

PRIMELINE, P. O. Box 670, San Fernando, CA 91341-0670, Tel: 818-365-0101, Telex: 494-3094 SOLTEC UI; *Sls. Mgr.:* Byron McIntire; *Dist. Mgr.:* Byron G. McIntire

PRIME POWER, A Prime Technology Co., Twin Lakes Rd., P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937; *Sls. Mgr.:* J. L. Jamieson

PRIME TECHNOLOGY

PRIME TECHNOLOGY, INC., See General Resistance, A Prime Technology Co.

PRIMO, 25-1, 6-Chome, Mure, Mitakashi, Tokyo, Japan 181, Tel: 0422-43-3121, Telex: 2822-326; FSC No.: 0422 49 8865; Empl.: 391; *Sls. Mgr.:* K. Shinai

PRINCETON CASE CO., INC., 667 Lehigh Ave., Union, NJ 07083, Tel: 201-687-1750; Empl.: 60; *Sls. Mgr.:* S. E. Parker

PRINCETON ELECTRONIC PRODUCTS, Box 101, North Brunswick, NJ 08902, Tel: 201-297-4448, TWX: 710-380-3832; Empl.: 29; *Sls. Mgr.:* H. Center; *Dist. Mgr.:* H. Center

PRINCO INSTRUMENTS, INC., 1020 Industrial Hwy., Southampton, PA 18966; FSC No.: 48620; Empl.: 70; *Sls. Mgr.:* G. G. Pfaff

PRINTER PRODUCTS, Capitol Circuits Corporation, 25 Denby Road, Boston, MA 02134, Tel: 617-254-1200; Empl.: 200; *Sls. Mgr.:* Blaine Wotring ..... **D•1097**

Local Sales Offices & Reps
AZ Scottsdale, Digital Bus. Sys. 602-991-9831
CA Mountainview, IFM Inc. 415-961-2828
IL Chicago, Data Elctrns. 312-283-0300

IN Indianapolis, John Sukup, Inc. 317-253-5501
PA Ambler, Denco Data Equip. Corp. 215-542-9876
TX Richardson, Scientific Sls. Co. 214-231-6541
VA Alexandria, Scott Data Corp. 703-765-7901
Can Scarborough, Ontario, Technical Logistics Support 416-298-9486

PROBE MASTER, INC., 4898 Ronson Ct, San Diego, CA 92111, Tel: 619-560-9676, 800-854-1519, 800-772-1519; *Sls. Mgr.:* Dick Press

PROBE-RITE, INC., 1010 Timothy Dr., San Jose, CA 95133, Tel: 408-727-0100, TWX: 910-338-0260; *Sls. Mgr.:* Frank J. Ardezzone

PRODUCTS FOR RESEARCH, 88 Holten St., Danvers, MA 01923, Tel: 617-774-3250, Telex: 940-287; Empl.: 24; *Sls. Mgr.:* Harry Martin

PTI PRODUCT TECHNOLOGY INC.

PRODUCT TECHNOLOGY, INC., 2201-E S. Standard Avenue, Santa Ana, CA 92707, Tel: 714-549-8998, FAX: 714-549-2238; FSC No.: 1Z295; Empl.: 20; *Sls. Mgr.:* Gerald F. Hammel ..... **C•1735**

Local Sales Offices & Reps
AZ Redlands, Lugen Inds. 714-371-5259
CA Fremont, Sidann Sls. 415-659-1394
CA Santa Ana, Sidann Sls. 714-850-0280
CO Broomfield, Ramark Sls. 303-469-1758
WI Milwaukee, Lugen Inds. 414-671-1047

PTS

PROGRAMMED TEST SOURCES, Beaver Brook Rd., P.O. Box 617, Littleton, MA 01460, Tel: 617-486-3008; FSC No.: 66381; Empl.: 20 ..... **D•1306**

PROJECTS UNLIMITED, 3680 Wyse Rd., Dayton, OH 45414, Tel: 513-890-1918, TWX: 810-450-2523; Empl.: 75; *Sls. Mgr.:* Greg Kimpton

PRO-LOG, 2411 Garden Rd., Monterey, CA 93940, Tel: 408-372-4593, TWX: 910-360-7082; Empl.: 200

PROTEON, INC., Two Technology Dr., Westborough, MA 01581-5008, Tel: 617-898-2800, Telex: 928124; Empl.: 150; *Sls. Mgr.:* Patrick F. Lally

PROTO PC INC., 2424 Territorial Rd., St. Paul, MN 55114, Tel: 612-644-4660, TWX: 910-380-7623; *Sls. Mgr.:* Danie Watson

PROTO STAMPING CORP., 850 Charter St., Redwood City, CA 94063, Tel: 415-365-0498, Telex: 709241; Empl.: 35; *Sls. Mgr.:* David Duncan

PROTO SYSTEMS OF ATLANTA, 625 Sims Industrial Blvd., Alpharetta, GA 30201, Tel: 404-475-1330, Telex: 469432; *Sls. Mgr.:* John Gregory

PROTOTEK, INC., 25 Standen Dr., Hamilton, OH 45015, Tel: 513-874-5094, FAX: 513-874-2252; FSC No.: 60813; Empl.: 45; *Sls. Mgr.:* Larry Frank; *Dist. Mgr.:* Earl Rohe

PSG INDS., 1225 Tunnel Road, Perkasie, PA 18944, Tel: 215-257-3621, Telex: 827361; FSC No.: 18509; Empl.: 150; *Sls. Mgr.:* John Feldermann, Jr.

PTC TRANSFORMERS, P.O. Box 397, Rising Sun Road, Bordentown, NJ 08505, Tel: 609-298-8200, Telex: 510-685-3645; Empl.: 25; *Sls. Mgr.:* C. W. Harrison

PTK/RANTEC DIVISION, 1173 Los Olivos Ave., Los Osos, CA Francesca Wilmot, Sls. Engr., Tel: 805-528-5858, Telex: 88-8863, TWX: 910-351-5802; FSC No.: 60132; Empl.: 145; *Sls. Mgr.:* Francesca Wilmot

PTS CORPORATION, Box 272, Bloomington, IN 47401, Tel: 812-824-9331; Empl.: 350; *Sls. Mgr.:* Jeff Hamilton; *Dist. Mgr.:* David Melwid

PTX-PENTRONIX INC., 1737 Cicotte, Lincoln Park, MI 48146, Tel: 313-388-3100, Telex: 23-0398; Empl.: 21; *Sls. Mgr.:* J. Schultz

Z-LINE

PULIZZI ENGINEERING, INC., 3260 S. Susan St., Santa Ana, CA 92704-6865, Tel: 714-540-4229, FAX: 714-641-9062; FSC No.: 70513; Empl.: 28; *Sls. Mgr.:* Michael B. Pulizzi; *Dist. Mgr.:* Michael B. Pulizzi ..... **D•2094-2097**

Local Sales Offices & Reps
CA Los Angeles, Power Partners 213-215-0800, 714-261-9200
CA Los Gatos, Norwest Elctrns. 408-395-1190
IA Des Moines, Beams 500 to 528 515-255-1148
MA Woburn, Alpha Omega Sls. Corp. 617-933-0237
TX Dallas, T.S.S 214-458-0644

Local Distributors
CA San Jose, Dansco Comp. Sls., Inc. 408-292-9740

PULNIX AMERICA, INC., 770-A Lucerne Drive, Sunnyvale, CA 94086, Tel: 408-733-1560, Telex: 172541 PULNIX AMERICA; *Sls. Mgr.:* Richard Hofmeister

PULSAR PRODUCTS DIV., Physics International, 2700 Merced St., San Leandro, CA 94577, Tel: 415-577-7236, TWX: 910-366-7033; Empl.: 360

PULSE ENGINEERING, INC., 7250 Convoy Ct., P.O. Box 12235, San Diego, CA 92112, Tel: 619-268-2400, FAX: 619-268-2515; Empl.: 150; *Sls. Mgr.:* Leonard M. Luner ..... **A•1693**

Local Sales Offices & Reps
CA San Diego 619-268-2400
CA San Jose 408-244-0951
MA Tyngsboro 617-649-7384
MN Minnetonka 612-933-7712
MS Wesson, Potter Mississippi Operation 601-643-2216
NC Raleigh 919-878-8018
TX Richardson 214-644-0575

PULSE INSTRUMENTS CO., 1234 Francisco, Torrance, CA 90502, Tel: 213-515-5330; Empl.: 20; *Sls. Mgr.:* Ron Perry

PURE DATA LTD., 860 Denison St., Markham, Ont., Canada L3R 4H1, Tel: 416-494-9563, 416-475-3370, Telex: 06-966707; Empl.: 42; *Sls. Mgr.:* Jane Cudmore; *Dist. Mgr.:* Carl Ruzycki

PYLE INDUSTRIES, INC., 501 Center St., P.O. Box 620, Huntington, IN 46750, Tel: 219-356-1200, FAX: 219-356-9133; Empl.: 250; *Sls. Mgr.:* Frank Pyle, Jr.; *Dist. Mgr.:* Mark Pyle

PYLE-NATIONAL DIVISION, BRIntec Corp., 1334 N. Kostner Ave., Chicago, IL 60651, Tel: 312-342-6300, Telex: 25251, TWX: 910-221-0335; FSC No.: 49367; Empl.: 800; *Sls. Mgr.:* Mike Carroccia/Dave Kostka; *Dist. Mgr.:* Neil Buchler(Eastern)/R. Williams(Western)

PYLON CO., See Augat/Pylon Corp., Inc.

PYLON ELEX DEVELOPMENT CO. LTD., 2300 Victoria, Lachine, PQ, Canada H8S 1Z3, Tel: 514-637-1186, Telex: 05-821680; *Sls. Mgr.:* Jacques Guay

PYROCOM CO., 924 N. 143rd St., Seattle, WA 98133, Tel: 206-365-3535; *Sls. Mgr.:* Bill Kurtz

PYROFERRIC INTERNATIONAL, INC., 200 Madison St., Toledo, IL 62468, Tel: 217-849-3300, TWX: 910-663-0616; Empl.: 50; *Sls. Mgr.:* S. John Horner

PYROFILM RESISTOR CO., See KDI Electronics

QPL MAGNETICS, INC., P.O.BOX C, Lake Grove, NY 11755, Tel: 516-589-3331; *Sls. Mgr.:* Joseph Surrusco ..... **A•2376**

Q-Tech Corporation

Q-TECH CORP., 2201 Carmelina Ave., Los Angeles, CA 90064-1093, Tel: 213-820-4921, Telex: 69-6140; FSC No.: 51774; Empl.: 100; *Sls. Mgr.:* H. Phillips ... **A•1440-1442**

Local Sales Offices & Reps
AZ Scottsdale, Western High Tech Mktg. 602-949-0873
CA Cupertino, Dura Elctrn. Sls. 408-255-2084
CA Northridge, Tauber-Dreyer 818-993-0048
FL Melbourne, Reynolds & Assocs. 305-259-7000
IL Northbrook, Allied Comp. Reps., Inc. .. 312-498-6658
MA Malden, J-K Assocs. 617-321-2922
NJ Glen Gardner, F & M Tech. Sls. 201-832-7216
NJ Paramus, Eltech Sls. 201-967-1309
NM Albuquerque, Western High Tech Mktg. 505-262-2461
NY Kings Park, Eltech Sls. 201-967-1309
TX Houston, TCI Elctrns. 713-774-5019

Local Distributors
AZ Scottsdale, Western High Tech 602-860-2702
CA Anaheim, Jim Rue (Tauber-Dryer) 714-542-6093
CA Cupertino, F & F Assocs. 408-446-2349
CA Northridge, Tauber-Dryer 818-993-0048
CO Denver, W. H. Howard Assocs. 303-426-3499
FL Coral Springs, MTS Assocs. 305-753-3830
IL Northbrook, Allied Comps. Reps., Inc. 312-498-6658
MD Perry Hall, Eltron Sls. 301-583-6080
MA Malden, J.K. Assocs. 617-321-2922
NJ Glen Gardner, F-M Tech. 201-832-7216
TX Austin, Mech-Tron Mktg., Inc. 512-459-0802
VA Front Royal, Eltron Sls. 703-635-7201

Qualidyne

QUALIDYNE SYS., Unitech Ltd., 3055 Del Sol Blvd., San Diego, CA 92154, Tel: 619-575-4000, 800-445-0425, Telex: 709029+, FAX: 619-429-1011; Empl.: 300; *Sls. Mgr.:* James J. Louden ..... **D•1914-1920**

Local Sales Offices & Reps
AL Huntsville, Beacon Elctrns. 205-881-5031
AZ Phoenix, Thor Engrg. 602-437-1463
CA Chatsworth, Raltech, Inc. 818-700-0933
CA San Diego, Qualidyne 619-575-4400
CA Santa Clara, Gagner-Toomey Assocs. 408-244-2200
CO Westminster, Gemini 303-428-5600
CT Brookfield, O.E.M. Mktg. & Sls. 203-243-8936
FL Boca Raton, Beacon Elctrns. 305-392-3500
GA Atlanta, Beacon Elctrns. 404-256-9640
ID Boise, N. R. Schultz Co. 208-377-8687
IL Northbrook, Howard Benjamin & Assocs. 312-272-9200
MA Franklin, OEM Mktg. & Sls. 617-528-4983
NH Salem, O.E.M. Mktg. & Sls. 603-893-0009
NJ Madison, Livera-Polk 201-377-3220
NY Glen Head, Livera-Polk 516-759-9300
NY Rochester, Elcom Sls., Inc. 716-385-1400
NY Syracuse, Elcom Sls., Inc. 315-685-8245
NC Raleigh, Beacon Elctrns. 919-787-0330
OR Beaverton, N. R. Schultz Co. 503-643-1645
PA Chestnut Hill, Deltatronics, Inc. 215-248-0294
TX Richardson, Jim D. Gray & Assocs., Inc. 214-699-9976
TX Richmond, Jim Gray 713-342-1710
UT Murray, Butterworth 801-268-2244
WA Bellevue, N. R. Schultz Co. 206-454-1585
Can Markham, Ont., Qualisys. 416-479-9229

QUALITEC TECHNOLOGIES, INC., 108 Gilbert Avenue, Menlo Park, CA 94025, Tel: 415-493-1188; Empl.: 30; *Sls. Mgr.:* Brian Vargo

QUALITY POWER SYSTEMS, INC., 2400 S. Texas Ave., Pearland, TX 77581, Tel: 713-997-1700, 800-992-1701, FAX: 713-997-1907; Empl.: 20; *Sls. Mgr.:* Alan Oliver; *Dist. Mgr.:* Alan Oliver ..... **D•1922-1927**

Local Sales Offices & Reps
AL Huntsville, Effective Mktg. Force 205-233-2947
CA El Toro, West Elctrn. Sls. Co. 714-898-0120
CA Encinitas, West Elctrns. Sls. Co. 619-944-7447
CA Santa Clara, BSN, Inc. 408-727-1800
CA Westminster, West Elctrn. Sls. Co. 213-498-5569
CO Aurora, New Ideas Mktg. 303-695-0120
CT Tariffville, EMSECO 203-651-8922

FL	Melbourne, VM2	305-676-3105
GA	Atlanta, Effective Mktg. Force	404-948-6023
IA	Des Moines, The Beams Co.	515-255-1148
NC	Raleigh, Effective Mktg. Force	919-979-8699
OK	Tulsa, Norcom	918-832-7747
TX	Austin, Norcom	512-451-2757
TX	Dallas, Norcom	214-386-4888
TX	Houston, Norcom	713-778-0392

Local Distributors

GA	Fayetteville, Frankland, Inc.	404-461-4026
NC	Charlotte, Dixie Elctrns.	919-724-5961
NC	Charlotte, United Elctrns.	704-372-2650
NC	Raleigh, Southeastern Elctrns.	919-828-2311
OR	Portland, Instrumentors Supp.	503-297-1749
SC	Columbia, Dixie Elctrns.	803-779-5332
SC	Florence, Dixie Elctrns.	803-669-8201
TN	Chattanooga, Horizon Elctrns.	615-266-4728
TX	Austin, Southwest Elctrns., Inc.	512-837-8971
TX	Dallas, Southwest Elctrns.	214-234-3050
TX	Houston, American Analog	713-524-0528
TX	Houston, Southwest Elctrns., Inc.	713-240-4000
WA	Bellevue, Instrumentors Supp.	206-455-9964

QUALITY THERMISTOR, 2147 Centurion Pl., Boise, ID 83705, Tel: 208-377-3373; FSC No.: 56866; Empl.: 30; *Sls. Mgr.:* John Mahoney **B•1755**

QUALTEK ELECTRONICS CORP., 7158 Industrial Pk. Blvd., Mentor, OH 44060, Tel: 216-951-3300, Telex: 985319; Empl.: 75; *Dist. Mgr.:* James Bof

QUAM-NICHOLS CO., 234 E. Marquette Rd., Chicago, IL 60637, Tel: 312-488-5800, Telex: 701676; Empl.: 200; *Sls. Mgr.:* William G. Little; *Dist. Mgr.:* Greg Johns **D•1048-1049**

QUANTRONIX, 49 Wireless Blvd., Smithtown, NY 11788, Tel: 516-273-6900, Telex: 967-782; Empl.: 225; *Sls. Mgr.:* R. J. Bruno; *Dist. Mgr.:* R. J. Bruno

QUANTUM DATA™

QUANTUM DATA, INC., 2111 Big Timber Road, Elgin, IL 60123, Tel: 312-888-0450, Telex: 206725, FAX: 312-888-2802; Empl.: 30 **D•1307**

QUANTUM ELECTRONICS, INC., R.D. 4, Box 6AAA, Lewistown, PA 17044, Tel: 717-242-2541, Telex: 842540; Empl.: 70; *Sls. Mgr.:* Kit C. Kennedy

QUARTIC SYSTEMS, INC., 3575 South West Temple #7, Salt Lake City, UT 84115, Tel: 801-268-9264, Telex: 887430; Empl.: 5; *Sls. Mgr.:* Stephen R. Thuis

Local Sales Offices & Reps

CA	Fremont, QVS Controls	415-651-1230
CT	Orange, Isdale Assocs.	203-387-2704
IL	Burr Ridge, PVA Corp.	312-655-3355

QUARTZITE PROCESSING, INC., 6 Holyoke St., Malden, MA 02148, Tel: 617-322-1380; Empl.: 11; *Sls. Mgr.:* P. S. Yanofsky

Q.V.S., INC., 20 North 15th St., East Orange, NJ 07017, Tel: 201-673-3996; FSC No.: 89820; Empl.: 45

QWINT DATA, INC., 3455 Commercial Ave., Northbrook, IL 60062, Tel: 312-564-0910, Telex: 27-0498; Empl.: 105; *Sls. Mgr.:* K. S. Berland

RACAL-DANA INSTRS. INC., 4 Goodyear St., Irvine, CA 92718, Tel: 714-859-8999; FSC No.: 21793; Empl.: 230

RACAL-MILGO, 1601 N. Harrison Parkway, Sunrise, FL 33323-2899, Tel: 305-475-1601, TWX: 510-955-4145; Empl.: 3,000; *Sls. Mgr.:* H. Cheli

RACET COMPUTES, LTD., 1855 W Katella Ste. 255, Orange, CA 92667, Tel: 714-997-4950, Telex: 701160, TWX: RACET UD; Empl.: 13; *Sls. Mgr.:* Ron Paul

RADIAL CONTROLS, 2555 E. 55th Place, Indianapolis, IN 46220, Tel: 317-255-2796; Empl.: 25; *Sls. Mgr.:* R. L. Newsom

RADIO MATERIALS CORP., P. O. Box 339, Attica, IN 47918, Tel: 317-762-2491, 1-800-356-9956, FAX: 317-762-6814; Empl.: 140; *Sls. Mgr.:* James Vogt; *Dist. Mgr.:* James Vogt

RADIOMETRICS, INC., 12021 South Memorial Pkwy., Huntsville, AL 35803, Tel: 205-881-1272; FSC No.: 62951; *Sls. Mgr.:* W. Shelton Ray

RADIO RESEARCH INSTRUMENT CO., INC., Two Lake Ave. Extension, Danbury, CT 06811-5295, Tel: 203-792-6666, Telex: 962444 RADAR DURY; FSC No.: 57174; *Sls. Mgr.:* E. B. Doyle

RADIO SWITCH CORP., 64 S. Main St., P.O. Box A, Marlboro, NJ 07746, Tel: 201-462-6100; FSC No.: 74217; Empl.: 40; *Sls. Mgr.:* J. L. Bernard

RAF ELECTRONIC HARDWARE, 95 Silvermine Rd., Seymour, CT 06483, Tel: 203-888-2133, TWX: 710-472-6216; FSC No.: 55566; Empl.: 120; *Sls. Mgr.:* William R. Bailey, Jr.; *Dist. Mgr.:* Dave Granger/John Capece

Distributor

RAG ELECTRONICS, INC., 21418 Parthenia St., Canoga Park, CA 91304, Tel: 818-998-6500, 800-732-3457 **614, 619, 624, 625, 678, 686, 689, 691, 703, 712, 715, 739, 750, 752, 771, 783, 801**

RAGEN CORP., Systems Div., 9 Porete Ave., N. Arlington, NJ 07032, Tel: 201-997-1000, TWX: 710-995-4752; Empl.: 400; *Sls. Mgr.:* Robert Hurley

RAGEN DATA SYSTEMS, INC., 3 Oval Dr., Central Islip, NY 11722, Tel: 516-234-3800, Telex: 685-2305, TWX: 510-227-4901; FSC No.: 13068; Empl.: 150; *Sls. Mgr.:* Kevin Douglas

RALTRON ELECTRONICS, 2315 N.W. 107th Ave.-A25, Miami, FL 33172, Tel: 305-593-6033, Telex: 441588 SENSSO, FAX: 305-591-3857; Empl.: 10; *Sls. Mgr.:* Alexander Wolloch; *Dist. Mgr.:* Ramon Quinones **A•1444-1445, 2027**

Local Sales Offices & Reps

AL	Huntsville, J.R. Assocs.	205-850-2130
CA	Cummings & Assocs. North	408-247-8656
CA	Los Angeles, Cummings & Assocs.	818-340-6035
CO	Denver, R. F. Mayo & Assocs.	303-442-2155
CT	Guilford, Data Mark	203-453-0575
GA	Atlanta, J.R. Assocs.	404-922-1231
IL	Chicago, Gaertner & Assocs.	312-593-2332
IN	Ft. Wayne, MS Sls.	219-436-3023
MA	Boston, Dynasel Co.	617-890-6777
MI	Detroit, Elcon Michigan Sls.	313-855-3240
MN	Minneapolis, Hanna-Lind	612-925-5700
NC	Winston Salem, J.R. Assocs.	919-919-9574
OK	Tulsa, Advanced Tech. Sls.	918-664-0482
OR	Quest Mktg.	503-641-7377
TN	Chattanooga, J.R. Assocs.	615-892-7630
TX	Austin, Advanced Tech. Sls.	512-331-9979
TX	Dallas, Advanced Tech. Sls.	214-340-1300
VA	Richmond, Glasscock Assocs.	804-740-0063
WA	Seattle, Quest Mktg.	206-747-9424

Local Distributors

CA	Canoga Pk., C & A Corp.	818-340-6035
CA	Hayward, KEA Elctrns.	415-887-2900
CO	Denver, Indl. Elctrns.	303-694-9444
CT	Stratford, Utronics	203-378-4201
FL	Ft. Lauderdale, N.R.C.	305-949-2400
IL	Northbrook, Classic Comps.	312-272-9650
IA	Cedar Rapids, Bergquist Co.	319-366-8733
MD	Gaithersburg, Axis Elctrns.	301-840-9640
MA	Needham, Cronin Elctrns.	617-449-5000
MN	Minneapolis, Bergquist Co.	612-835-2322
NY	Hauppauge, Circuit Sls.	516-348-7670
NY	Plainview, A.C.I. Elctrns.	516-293-6630
NY	Ronkonkoma, Baldwin Comps.	800-645-5608
PA	Exton, V.S.H. Corp.	215-363-2250
WI	Mequon, Taylor Elec.	414-241-4321

RAM CHEMICALS, DIV. WHITTAKER CORP., 210 E. Alondra Blvd., Gardena, CA 90248, Tel: 213-321-0710; Empl.: 65; *Sls. Mgr.:* G. M. Steinman

RAMCOM SYSTEMS, 4141-C Glencoe Ave., Marina Del Rey, CA 90292, Tel: 213-827-4432; *Sls. Mgr.:* Ralph Tisdale

RAMKO RESCH., INC., 11355A Folsom Blvd., Rancho Cordova, CA 95670, Tel: 800-821-2545, Telex: 176493; *Sls. Mgr.:* Jim Lucy; *Dist. Mgr.:* Jim Lucy

RAM TECHNOLOGIES, Div. of WISCO Intl., 690 W. 28th St., Hialeah, FL 33010, Tel: 305-888-1676/1677/1682, Telex: 5101007723

RANK ELECTRONICS TUBES, INC., Div. of The Rank Organization, 4658 Scotts Valley Drive, Scotts Valley, CA 95066, Tel: 408-438-6440, Telex: 172855; FSC No.: 60750; *Sls. Mgr.:* David Hurst

RANSCO INDUSTRIES, INC., Sub. Despatch Ind., Inc., 1400 E. Statham Pkwy., Oxnard, CA 93033, Tel: 805-487-7777, Telex: 6-59235; Empl.: 280; *Sls. Mgr.:* L. W. Benjamin

Local Sales Offices & Reps

CA	Santa Clara, Ransco Inds.	408-496-0266
FL	Apopka, Ransco Inds.	305-889-8263
IL	Wheeling, Ransco Inds.	312-459-7400
MA	Medway, Ransco Inds.	617-533-4915
TX	Plano, Ransco Inds.	214-881-9093

RANTEC, Emerson Electric, 9401 Oso Ave., Chatsworth, CA 91311, Tel: 818-885-8223, Telex: 910-493-1247; FSC No.: 818-993-7780; Empl.: 200 +; *Sls. Mgr.:* Fred R. Silver

RAPID POWER TECHNOLOGIES, Graysbridge Rd., P.O.BOX 291, Brookfield, CT 06804, Tel: 203-775-0411, 800-332-1111, Telex: 643:012, FAX: 203-775-0666; *Sls. Mgr.:* Robert Tedeschi

RAPIDSUN, See Motion Control Grp., American Precision Inds.

RAPID SYSTEMS INC., 433 N. 34th St., Seattle, WA 98103, Tel: 206-547-8311, Telex: 265017 UR; FSC No.: 91-1197314; Empl.: 30; *Sls. Mgr.:* Bo Ray

RASTER GRAPHICS, INC., P. O. Box 5157, Bend, OR 97701, Tel: 503-388-2584

RATELCO, Power Systems Div., 1260 Mercer, Dept. EEM, Seattle, WA 98109, Tel: 206-624-7770, Telex: 888729, FAX: 206-382-5447; FSC No.: 14259; Empl.: 120; *Sls. Mgr.:* D. Terpstra

RATH MICROTECH CORP., Rath Affiliated Cos., 2505 Foster Ave., Janesville, WI 53545, Tel: 608-754-2222, 800-356-9464, Telex: 26-5409; *Sls. Mgr.:* Jim Coenen

RAULAND-ZENITH ELECTRONICS CORP., 2407 W. North Ave., Melrose Pk., IL 60160, Tel: 312-345-4700, Telex: 72-1488; Empl.: 2300

RAYCHEM CORP., Elctrns. Grp., 300 Constitution Dr., Menlo Park, CA 94025, Tel: 415-361-3860, Telex: 34-8316, TWX: 910-373-1728; *Sls. Mgr.:* Robert Simpson; *Dist. Mgr.:* Joseph Rodgers

RAYMOND ENGRG. INC., Raycorder Prods. Div., 217 Smith St., Middletown, CT 06457, Tel: 203-632-1000, TWX: 710-428-7944; FSC No.: 92059; Empl.: 550; *Sls. Mgr.:* Bruce Greenfield

RAYOVAC CORPORATION, 601 Rayovac Drive, Madison, WI 53711-0960, Tel: 608-275-4692, Telex: 190428, FAX: 608-275-4577; FSC No.: 6135; Empl.: 2000; *Sls. Mgr.:* Jeff Haberlein

RAY PROOF, Shielding Systems Corp., 50 Keeler Ave., P.O. Box 5060, Norwalk, CT 06856-5060, Tel: 800-243-5704, Telex: 96-5812; *Sls. Mgr.:* James A. Graham

RAYTEK, INC., 1201 Shaffer Rd., Santa Cruz, CA 95060, Tel: 408-458-1110, Telex: 171890; *Sls. Mgr.:* R. Stillman/P. Jensen/S. Brager; *Dist. Mgr.:* Stuart Brager

RAYTHEON CO., 465 Centre St., Quincy, MA 02169, Tel: 617-479-5300, TWX: 710-337-1020; *Sls. Mgr.:* R. Whitt

RAYTHEON CO., Laser Products, Fourth Ave., Burlington, MA 01803, Tel: 617-272-6402, Telex: 92-3455, TWX: 710-324-6568; Empl.: 75; *Sls. Mgr.:* D. J. Hoffman

RAYTHEON CO., Microwave & Power Tube Div., 190 Willow St., Waltham, MA 02154, Tel: 617-899-8400, TWX: 710-324-6568; *Sls. Mgr.:* J. Hieber; *Dist. Mgr.:* L. Mercurio

Local Sales Offices & Reps

CA	Gardena	213-516-8911
CA	Santa Clara	408-496-6069
FL	Boca Raton	305-368-1134
GA	Warner Robins	912-922-8430
IL	Palatine	312-991-8155
MA	Waltham	617-642-3499
NY	Great Neck	516-482-8480
OH	Dayton	513-254-3571
TX	Dallas	214-233-2939
VA	Arlington	703-486-5400

RAYTHEON SEMICONDUCTOR, 350 Ellis St., Mountain View, CA 94043, Tel: 415-968-9211, TWX: 910-379-6481; FSC No.: 07933; Empl.: 1200; *Sls. Mgr.:* R. Goedjen; *Dist. Mgr.:* R. Johnson

RAYTHEON/TAG SEMICONDUCTORS LTD., 43 Third Ave., Burlington, MA. 01803, Tel: 617-272-3704 (3705), Telex: 92-3455, TWX: 710-324-6568; Empl.: 7; *Sls. Mgr.:* B. Cavender; *Dist. Mgr.:* Pat Mobilia

RCA DISTRIBUTOR & SPECIAL PRODUCTS DIV., RCA Corp., 2000 Clements Bridge Rd., Deptford, NJ 08096, Tel: 609-541-3636; *Sls. Mgr.:* H. L. Craton

RCA SOLID STATE DIV., See GE/RCA Solid State Div.

RCA SOLID STATE DIV., CMOS IC Mktg., Rte. 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333

See RCA Solid State Div. for Sls. Reps.

RCA SOLID STATE DIV., Linear Integrated Circuits, Rte. 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333

See RCA Solid State Div. for Sls. Reps.

RCA SOLID STATE DIV., Micro Processors/Memories/Peripherals, Route 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333

See RCA Solid State Div. for Sls. Reps.

RCA SOLID STATE DIV., Thyristors & Rectifiers, Rte. 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333

See RCA Solid State Div. for Sls. Reps.

RCA SOLID STATE DIV., Transistors, Rte. 202, Somerville, NJ 08876, Tel: 201-685-6000, TWX: 710-480-9333

See RCA Solid State Div. for Sls. Reps.

RCD COMPONENTS, INC., 520 E. Industrial Pk. Dr., Manchester, NH 03103, Tel: 603-669-0054, Telex: 943-512 RCD COMP MAN, FAX: 603-669-5455; Empl.: 450 ..... **A•2028-2029**

Local Distributors

CA	Anaheim, A to Z Inds.	714-634-3620
CA	City of Industry, Ital Elctrns.	213-968-8515
CA	San Diego, Neumann Elctrns.	619-695-3005
CA	San Jose, Capacitors Unlimited	408-946-7676
CA	San Jose, Passive Technlg. Sls.	408-435-5566
CO	Englewood, Indl. Elctrns.	303-694-9444
FL	Orlando, Stetco	305-298-0321
IL	Lisle, Components, Inc.	312-852-7707
IN	Wakavusa, Earlynn	219-862-2425
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
MA	Newton, Greeneshaw	617-969-8900
MA	Springfield, C & D Elctrns.	413-781-1776
MA	Worchester, Coghlin	800-922-8565
MI	Livonia, Reptron	313-525-2700
MN	New Brighton, Parts One	612-633-8079
NJ	E. Brunswick, Brothers	201-238-2200
NY	Hauppauge, Broadline	800-645-5444
OH	Warren, REM Elctrn. Supp.	216-373-1300
PA	McKean, Advacom	814-476-7774
PA	York, Elctrn. Comps. Ind.	717-846-5334
TN	Memphis, Bluff City Elctrns.	901-345-9500
TX	Ft. Worth, Allied Elctrns.	817-336-5401
TX	Richardson, Kent Elctrns.	214-669-2600
WI	Oshkosh, Elctrn. Inds.	414-235-8930

R. C. ELECTRONICS INC., 5386 Hollister Ave., Santa Barbara, CA 93111, Tel: 805-964-6708, Telex: 295281; Empl.: 10; *Sls. Mgr.:* Chao-Sun Pang; *Dist. Mgr.:* Chao-Sun Pang

RCI/DATA, 1992 Lakewood Rd., Toms River, NJ 08753, Tel: 201-341-8361; Empl.: 15; *Sls. Mgr.:* Robert Fierro

RCL•Shallcross

RCL-SHALLCROSS, 195 McGregor St., Manchester, NH 03102, Tel: 603-627-3831, TWX: 710-220-1876; FSC No.: 01686; Empl.: 400 ..... **A•2030-2035**

Local Sales Offices & Reps

AL	Huntsville, CSR Elctrns.	205-533-2444
AZ	Phoenix, ISDS Elctrns.	602-971-6250
CA	Anaheim, Westrep, Inc.	714-527-2822
CA	Palo Alto, Mollard Mktg.	415-961-0456
CA	San Diego, Westrep, Inc.	619-566-6580
CT	North Haven, Kitchen & Kutchen	203-239-0212
FL	Alamonte Sprs., APM Assocs.	305-869-6831
FL	Ft. Lauderdale, APM Assocs.	305-565-0056
FL	Tampa, APM Assocs.	813-886-2457
GA	Atlanta, CSR Elctrns.	404-396-3720
IL	Elgin, Gassner & Clark	312-695-9540
IN	Indianapolis, Luebbe Sls. Co.	317-845-7389
IA	Cedar Rapids, Lorenz Sls.	319-377-4666
KS	Overland Park, Lorenz Sls.	913-649-5556
MD	Columbia, Delta III Assocs.	301-730-4700
MA	Burlington, Kitchen & Kutchen	617-229-2660
MI	Livonia, Luebbe Sls.	313-477-3131
MN	Minneapolis, Electric Comp. Sls.	612-933-2594
MO	University City, Lorenz Sls.	314-377-4666
NE	Lincoln, Lorenz Sls.	402-475-4660
NM	Albuquerque, Nelco Elctrns.	505-293-1399
NY	Buffalo, Quality Comps.	716-837-5430
NY	Manlius, Quality Comps.	315-682-8885
NY	Melville, Comtronic Assoc.	516-249-0505
NC	Matthews, CSR Elctrns.	704-847-5806
NC	Raleigh, CSR Elctrns.	919-878-9200
OH	Cincinnati, Luebbe Sls. Co.	513-891-5770
OH	Cleveland, Luebbe Sls. Co.	216-333-0425
OH	Columbus, Luebbe Sls. Co.	614-431-0474
OH	Dayton, Luebbe Sls. Co.	513-294-0426
OR	Portland, James J. Backer Co.	503-297-8744
PA	Huntingdon Valley, Inacker Sls., Inc.	215-947-5660
PA	Pittsburgh, Luebbe Sls. Co.	412-364-0490
TN	Knoxville, CSR Elctrns.	615-673-0222
TX	Austin, Allied Comps.	512-331-4494
TX	Dallas, Allied Comps.	214-238-0408
TX	Hurst, Allied Comps.	817-589-0456
WA	Seattle, James J. Backer Co.	206-285-1300
Can	Mississauga, Ont., Gidden-Morton Assocs.	416-671-8111
Can	Nepean, Ont., Gidden-Morton Assocs.	613-726-0844
Can	St. Laurent, Que., Gidden-Morton Assocs.	514-335-9572

Local Distributors

AZ	Tempe, Harper/SID	602-967-1464
AZ	Tempe, Shelley-Ragon	602-894-2058
CA	Chatsworth, Shelley-Ragon	818-998-3333
CA	Chatsworth, TTI	818-709-1010
CA	Compton, Harper/SID	213-979-5090
CA	Milipitas, TTI	408-943-9155
CA	San Diego, Harper/SID	619-560-8545
CA	San Diego, Shelley-Ragon	619-453-7133
CA	San Diego, TTI	619-587-4888
CA	San Jose, Shelley-Ragon	408-942-9111
CA	Sunnyvale, Harper/SID	408-747-0333
CO	Englewood, Shelley-Ragon	303-762-0670
CO	Westminster, TTI	303-429-6806
CT	East Haven, J. V. Elctrns.	203-469-2321
FL	Orlando, TTI	305-859-1000
FL	Tampa, Impala Elctrns.	813-885-4747
FL	Tampa, Shelley-Ragon	813-884-0946
IL	Addison, Belford Elctrns.	312-865-2400
IL	Elk Grove Village, Shelley-Ragon	212-595-6633
IL	Northbrook, Classic Comps	312-272-9650
IA	Cedar Rapids, Shelley-Ragon	319-373-0525
MD	Columbia, Aztech Elctrns.	301-995-1760
MD	Columbia, TTI	301-995-1331
MA	Billerica, A. W. Mayer	617-229-2255
MA	Burlington, TLC	617-273-0140
MA	Woburn, TTI	617-938-8800
MI	Grand Rapids, S-F Elctrns. Supp.	616-459-0216
MN	El Prairie, TTI	612-944-5080
MN	Minneapolis, Aerospace Comptr. Supp.	612-884-4725
MN	St. Paul, Shelley-Ragon	612-642-2828
MO	Independence, Shelley-Ragon	816-254-3410
MO	St. Louis, Shelley-Ragon	314-454-0480
NH	Hudson, TNT Elctrns.	603-880-8300
NY	Bohemia, Shelley-Ragon	516-567-7751
NY	Buffalo, Summit Elctrns.	716-887-2862
NY	Farmingdale, Command Elctrns.	516-293-1212
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NY	Rochester, Simmcona Elctrns.	716-328-3230
NY	Rome, Rome Elctrns.	315-337-4500
NY	Ronkonkoma, TTI	516-737-2000
NC	Raleigh, Resco-Raleigh	919-781-5700
OH	Dayton, Stotts, Friedman	513-298-5555
OH	Englewood, Argent Electra	513-836-8633
OH	Solon, REH-Electra	216-248-1636
OK	Tulsa, Altair	918-252-5781
OR	Beaverton, Shelley-Ragon	503-682-2929
PA	McKean, Advacom	814-476-7774
PA	McKeesport, Barno Radio	412-751-5966
PA	Norristown, Century Elctrn. Comps.	215-631-5400
PA	Zelienople, Argent Electra	412-776-4330
TX	Austin, Altair	512-837-4970
TX	Fort Worth, TTI	817-429-0441
TX	Houston, Altair	713-462-3029
TX	Richardson, Altair	214-231-5166
WA	Seattle, Shelley-Ragon	206-241-1980
WI	New Berlin, Classic Comps.	414-786-5300
Can	Scarborough, Ont., Carsten Elctrns.	416-495-9999

RCL-SHALLCROSS, INC., U.S. Hwy. 70 East, Smithfield, NC 27577, Tel: 919-934-5181, TWX: 510-939-1463; FSC No.: 54294; Empl.: 150

See RCL-Shallcross for Local Sales Reps. and Distributors

R-COLUMBIA PRODS. CO., INC., 2008 St. Johns Ave., Highland Park, IL 60035, Tel: 312-432-7915, Telex: 910-692-2160; Empl.: 20

RDF CORPORATION, 23 Elm Ave., Hudson, NH 03051, Tel: 603-882-5195, TWX: 710-228-1882; Empl.: 120; *Sls. Mgr.:* Arthur Di Venuti

RDI/REED DEVICES, INC., Augat, 525 Randy Rd., Carol Stream, IL 60188, Tel: 312-682-4100, TWX: 910-252-2118, FAX: 312-682-4562; FSC No.: 53337; Empl.: 65; *Sls. Mgr.:* John Deichl; *Dist. Mgr.:* John Deichl ..... **C•1510-1511**

Local Sales Offices & Reps

AL	Huntsville, Alpha	205-533-0766
AZ	Phoenix, Augat Sls.	602-224-6104
CA	Los Angeles, Wiley Co.	213-666-1611
CA	San Diego, Wiley Co.	619-571-2881
CA	San Jose, Augat Sls.	408-249-8801
CO	Denver, Augat Sls.	303-757-2100
FL	Orlando, Augat Sls.	305-352-2020
GA	Tucker, Alpha	404-491-9430
IL	Downers Grove, Rockford Controls	312-960-2046
IA	Marion, Ensco-Rep., Inc.	319-386-6600
KS	Wichita, Ensco-Rep., Inc.	316-683-1070
MA	Canton, Augat Sls.	617-821-2372
MN	Edina, Augat Sls.	612-925-0255
MO	Maryland Hts., Ensco-Rep., Inc.	314-423-3935
NC	Kernersville, Wallace Elctrn.	919-996-2742
OH	Cincinnati, Luebbe Sls.	513-891-5770
OR	Beaverton, Augat Sls.	503-591-7508
TN	Murfreesboro, Alpha Mktg.	615-896-6102
TN	Oak Ridge, Alpha Mktg.	615-482-4681
TX	Dallas, Augat Sls.	214-788-4211
TX	Houston, Augat Sls.	713-781-9343
WA	Bellevue, Augat Sls.	206-451-9777
WI	Westbend, Rockford Controls	800-323-1042

Local Distributors

CA	Buena Park, Control Des.	714-521-5040
CA	Gardena, Calif. Switch & Signal	213-538-9830
CA	Santa Monica, Master Distr.	213-452-1229
CO	Englewood, Indl. Elctrns.	303-694-9444
FL	Altamonte Springs, Control Design	305-788-3220
IL	Arlington Heights, Lo Dan Elctrns.	312-398-5311
IL	Carol Stream, Lectro Comps.	312-690-0520
IL	Chicago, Newark Elctrns.	312-784-5100
IN	Ft. Wayne, Graham Elec.	219-423-3422
MA	Middleboro, Glynn Elec.	617-947-4262
MA	Peabody, Time Elec.	617-532-6200
MI	Farmington Hills, Advent Elctrns.	313-477-1650
MN	Minneapolis, Control Des.	612-721-1628
MO	St. Louis, Time Elctrns.	314-391-6444
NJ	Oakton, Relay Specialties	201-337-1000
NY	Buffalo, Summit	716-884-3450
NY	Lynbrook, Peerless Radio	516-593-2121
NY	Rochester, R. Baker Elctrns.	716-586-9164
OH	Akron, Akron Elctrn.	216-762-8818
OH	Columbus, E/M Equip. Co.	614-236-0888
OH	Columbus, Elctrns. Mktg. Co.	614-299-4161
PA	Malvern, Control Des.	215-296-0150
TX	Dallas, Control Des.	214-358-1441
WI	Green Bay, A-A Elec.	414-499-0258
WI	West Allis, Marsh Elctrns.	414-475-6000

REACTEL, INC., 687-D Lofstrand La., Rockville, MD 20850, Tel: 301-279-5535; FSC No.: 60458; Empl.: 20; *Sls. Mgr.:* D. E. Claycomb

Local Sales Offices & Reps

CA	North Hollywood, Crown Elctrns.	213-877-3550
CA	Sunnyvale, ESCO Assocs.	408-745-1410
FL	Clearwater, Brennan Assocs.	813-446-5006
NJ	Keansburg, Reps Five	201-495-2315
VA	Fairfax, Beacon North	703-591-1300

REAL TIME DEVICES, INC., 1930 Park Forest Avenue, State College, PA 16803, Tel: 814-234-8087, Telex: Telex 4948141 SEDACOG; Empl.: 15

REAL TIME SYSTEMS, 152 S. MacQuesten Pkwy., Mt. Vernon, NY 10550, Tel: 914-667-0425; *Sls. Mgr.:* A. Citrin

RECOGNITION TECHNOLOGY, INC., 335 Fiske St., Holliston, MA 01746, Tel: 617-429-7804; Empl.: 12; *Sls. Mgr.:* Avi Zimmerman

RECORDER SYS. DIV., See Gulton Instruments Div.

RECOTON CORP., 46-23 Crane St., Long Island City, NY 11101, Tel: 718-392-6442, Telex: 236047 RCTN; Empl.: 150; *Sls. Mgr.:* George Calvi

REDINGTON COUNTERS, 130 Addison Rd., Windsor, CT 06095, Tel: 203-688-6205, FAX: 203-688-1591; *Sls. Mgr.:* Dennis O'Shea; *Dist. Mgr.:* George Angelovich

REEVE ELECTRONICS, Mellish E. Murray, 1720 W. Fulton St., Chicago, IL 60612, Tel: 312-670-0150; Empl.: 25; *Sls. Mgr.:* George Elliott

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REEVES-HOFFMAN DIV., 400 W. North St., Carlisle, PA 17013, Tel: 717-243-5929, Telex: 265873 RHDV, FAX: 717-243-0079; Empl.: 310; *Sls. Mgr.:* Larry Barbary ..... **A•1446-1454; C•1602-1604**

Local Sales Offices & Reps

AZ	Phoenix, Chaparral Elctrns.	602-252-0897
CA	Culver City, Westaironics	213-641-4123
CA	Mountain View, Peninsula Tech. Sls.	415-965-3636
CO	Boulder, R.G. Entprs.	303-447-9211
FL	Tampa, APM Assocs.	813-886-2457
ID	Boise, N. R. Schultz	208-377-8686
IL	Des Plaines, ESCO Assocs.	312-298-5310
MD	Baltimore, R. A. Wafer Assocs.	301-744-1133
MA	Wakefield, H. Jappe Co.	617-245-9359
MN	Minneapolis, Intl. Elctrns.	612-571-0000
NY	Huntington, Compar N.Y.	516-423-5660
NC	Charlotte, JWL Assocs.	704-541-5750
OH	Cincinnati, Tri-State Mktg.	513-761-7993
OR	Beaverton, N. R. Schultz	503-643-1644
PA	Hatboro, Electro Rep Engrg.	215-674-4421
TX	Irving, Kite Elctrns. Sls.	214-438-9336
WA	Bellevue, N. R. Schultz	206-454-0300
Intl	FR, Paris, Tekelec Airtronic	(1) 534-75-35
Intl	GR, Munchen, Tekelec Airtronic	(089) 594621
Intl	IT, Milano, Tekelec Airtronic	(02) 73-80-641
Intl	NL, Zoetermeer, Tekelec Airtronic	(079) 31-01-00
Can	Rexdale, Ont., Myelco, Inc.	416-674-1636

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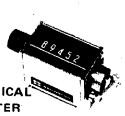

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CA	Los Altos, J. W. Wilhoit	415-961-3660
CA	Valencia, DJM Elctrns.	818-362-4309
CT	Woodbury, Mark-Rep Assocs.	203-263-3047
FL	Maitland, EIR, Inc.	305-660-9600
GA	Atlanta, Tenn Tech	404-622-5784
IL	Downers Grove, Richmar Elect. Corp.	312-968-0118
IN	Indianapolis, Richmar Elctrns.	317-846-6383
MN	Edina, T.H. Hanson & Co.	612-893-9960
NH	Plaistow, Mark-Rep Assocs.	603-382-9563
NJ	Florham Park, Varrelman-Gorman Co.	201-992-2505
NY	Binghamton, NHA	607-754-3214
NY	Pittsford, NHA	716-586-9002
NC	Raleigh, Tenn Tech	919-266-3610
OH	Cleveland, J. N. Bailey	216-892-1510
OH	New Lebanon, J. N. Bailey	513-687-1325
PA	Huntingdon Valley, Edwin Leiby & Assocs.	215-659-8938
TN	Chattanooga, Tenn Tech.	615-894-3012
TX	Austin, K & H Sales	512-258-8841
TX	Plano, K & H Sales	214-423-6520
WI	Butler, Richmar Elctrns.	414-781-1730

Local Distributors

CA	San Carlos, Logan Elctrn. Supp.	415-594-0700
MA	Lynn, Land Elctrns.	617-592-2220
NJ	Fairlawn, Relay Specialties	201-797-3313

REGENCY LAND MOBILE, INC., 1227 S. Patrick Dr., Satellite Bch., FL 32937, Tel: 305-777-1414, Telex: 989-086; Empl.: 540

REGENT CONTROLS, INC., 39 Fanny St., P.O. Box 767, Shelton, CT 06484-0767, Tel: 203-736-2924; *Sls. Mgr.:* Lora C. Minor

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REICH ASSOCIATES, Rt. 4, Box 4620, Lakehills, TX 78063, Tel: 512-751-3220, Telex: 358048; FSC No.: 55916; Empl.: 10; *Sls. Mgr.:* W. Reich

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REKCO, INC., P. O. Box 162, New Berlin, WI 53151, Tel: 414-784-3430, TWX: 9102623005; *Sls. Mgr.:* Dick Koerber ..... **D•1137**

RELAY SERVICE CO., 1300 N. Pulaski Rd., Chicago, IL 60651, Tel: 312-252-2700; Empl.: 30; *Sls. Mgr.:* Chas. H. Badger

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CA	Vista, Sado Sls.	619-941-2654
CO	Broomfield, Sunbird Inds., Inc.	303-460-9199
CT	Bethany, Reps. Corp.	203-393-0024
IL	Woodridge, Trend-Tronics	312-985-0626
IN	Ft. Wayne, Naunas Sls.	219-432-4792
MA	Wellesley, Reps. Corp.	617-237-6476
NY	New Rochelle, Repco Assocs.	914-235-6405
OH	Cincinnati, John O. Olsen	513-922-2589
OH	Warfield Hgts., John O. Olsen	216-662-3454
OR	Beaverton, Le Rep	503-626-7978
PA	Glenside, Shelmar Elctrns. Corp.	215-885-0800
PA	Pittsburgh, John O. Olsen	412-279-2550
TX	Dallas, Elctrn. Prod. Reps.	817-467-0377
UT	Salt Lake City, Energy Mgt. Agy.	801-466-9211

RELAY SPECIALTIES, 17 Raritan Rd., Oakland, NJ 07436, Tel: 201-337-1000, Telex: 642751; Empl.: 48; *Sls. Mgr.:* S. R. Gershberg

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CA	Los Alamitos, The Rep House	213-598-3379
CT	Manchester, Vin-Tech, Inc.	203-646-3007
FL	New Port Richey, Spinney Assocs.	813-848-8578
MD	Baltimore, Com Tech Assocs.	301-679-8935
MI	Dearborn, Pitcher Poulin Inc.	313-582-5450
MN	Minneapolis, Engrg. Prods. Assocs.	612-835-9022
NY	Rochester, Clark & Assocs.	716-436-1320
OH	Cincinnati, Annett Indl. Sls. Inc.	513-271-0030
PA	Pittsburgh, Anestis Assocs.	412-761-0581
TX	Dallas, Art Brawner & Assocs.	214-824-4013

RELCO PRODUCTS, 5594 E. Jefferson Ave., Denver, CO 80237, Tel: 303-756-1143; FSC No.: 14454; Empl.: 7

RELIABILITY, INC., P. O. Box 218370, Houston, TX 77218, Tel: 713-492-0550, TWX: 910-881-1739; FSC No.: 54098; Empl.: 575; *Sls. Mgr.:* J. Marcussen

RELIANCE COMM/TEC, Reliance Electric, P. O. Box 99502, Cleveland, OH 44199, Tel: 800-245-4501

RELIANCE ELECTRIC CO., Marketing Info Center, P.O. Box 99502, Cleveland, OH 44199, Tel: 800-245-4501

RELIANCE FUSE, 2070 Maple St., Des Plaines, IL 60016, Tel: 312-299-2211, Telex: 726-453; FSC No.: 72076;F15160E; Empl.: 200

For nearest sales office, phone 1-800-245-4501 (in Ohio, 1-800-245-4497)

RELIANCE PLASTICS & PACKAGING, 225 Belleville Ave., Bloomfield, NJ 07003, Tel: 201-748-2222; Empl.: 60; *Sls. Mgr.:* Hale Smith

REMEE PRODUCTS CORP., 41 Bridge St., Florida, NY 10921, Tel: 914-651-4431, Telex: 64-6715, FAX: 914-651-4160; FSC No.: 4R362; Empl.: 135; *Sls. Mgr.:* Ken Pimental; *Dist. Mgr.:* Ken Pimental

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RENCO, 26 Coromar Dr., Goleta, CA 93117-3094, Tel: 805-968-1525, TWX: 910-334-1180; FSC No.: 34479; Empl.: 170; *Sls. Mgr.:* Sid Russell

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Toll-Free Engineering Hot Line 800-645-5828, in NY State 516-586-5566

Local Sales Offices & Reps

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AR	Ft. Smith, Electra Reps	501-452-7822
CA	San Diego, Coastal Sls.	619-459-4148
CO	Englewood, Thorson Rocky Mtn.	303-779-0666
CT	Norwalk, Northeast Reps.	203-886-6030
FL	Casselberry, S.A. Assocs.	305-695-6010
GA	Tucker, Stephen & Assocs.	404-493-4666
IL	Addison, Baldwin Sls. Assocs.	312-279-0352
IA	Davenport, Rush & West Assocs.	319-388-9494
KS	Olathe, Rush & West Assocs.	913-764-2700
MD	Gaithersburg, Eltron Sls.	301-963-7082
MA	Hingham, Northeast Reps.	617-749-8700
MI	Dearborn, Pitcher-Poulin Co.	313-582-5480
MN	Minneapolis, All Phase	612-835-4940
MO	St. Louis, Rush & West Assocs.	314-965-3322
NH	Nashua, Northeast Reps.	603-880-8199
NJ	Marlton, BGR Assocs.	609-983-1020
NY	Great Neck, Pacent Engrg.	516-482-4678
NC	Raleigh, Eltron Sls.	919-846-6215
OH	Columbus, Baehr Greenleaf & Assocs.	614-486-4046
OH	Westlake, Baehr Greenleaf & Assocs.	216-892-1770
PA	Evans City, Baehr Greenleaf & Assocs.	412-776-2151
TX	Austin, Electra Reps	512-339-1163
TX	Dallas, Electra Reps	214-248-3852
UT	Salt Lake City, Thorson Rocky Mtn.	801-973-7969
VA	Front Royal, Eltron Sls.	703-635-1933
WA	Vancouver, Ray Over Sls.	206-695-6179
WI	Milwaukee, Bert Wartchow Assocs.	414-964-0942
Can	Montreal, Eli Manis, Inc.	514-861-5571

REPCO, 2421 N. Orange Blossom Trail, Box 7065, Orlando, FL 32854, Tel: 305-843-8484, Telex: 56-6536

REPRODUCTION TECHNOLOGIES INC., Dept. EM, P.O. Box 790, Bristol, IN 46507-0518, Tel: 219-848-5233, Telex: 510 600 2378 R T I; Empl.: 15 ..... **D•1050-1051**

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GA	Doraville, Secom Sys.	404-455-0672
IL	Arlington Hgts., VLR Comms.	312-520-5208

IN Indianapolis, David Warholak & Assocs. 317-635-4411
MA Falmouth Heights, R J C Assocs. 617-540-8832
MI Ferndale, Shalco 313-547-4771
MN Minneapolis, KODO Assocs. 612-881-1255
MO Kansas City, Forristal-Young Sls. 816-358-6771
NJ Parlin, JMR Sls. Co. 201-254-8484
NC Raleigh, Secom Sys. 919-846-6013
OH Reynoldsburg, RDL Computers 614-755-2125
TX Dallas, Dobbs Stanford Inc. 214-358-0800

REPUBLIC ELCTRNS. CORP., 176 E. 7th St, Paterson, NJ 07524, Tel: 201-279-0300, TWX: 710-988-5908, FAX: 201-345-1937; FSC No.: 93958; Empl.: 125; *Sls. Mgr.:* W. Eisenberger ..... **A•1172**

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CA Sunnyvale, Esco Assocs., Inc. 408-745-1420
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FL Maitland, Beacon 305-647-3498
IL Chicago, Ropek, Cahill & Vogt 312-631-0070
IN Ft. Wayne, T X Sls. 219-489-4447
IA Cedar Rapids, Ard Sales Co. 319-393-6392
MD Ellicott City, Nelson Elctrns. 301-747-7887
MA Malden, JK Assocs. 617-321-2922
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NY Pittsford, Gen-Tech Elctrns 716-381-2820
NY Pleasant Valley, Gen-Tech Elctrns 914-635-3233
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OH Columbus, Tom Mulligan & Assocs. .. 614-457-2242
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PA Langhorne, Spiral Sls Assocs 215-968-9250
TX Lewisville, Marathon Assocs. 214-436-8882
WA Seattle, Evergreen Mktg. Grp. 206-777-6656

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NY Hauppauge, Semi Cap Elctrns. 516-582-4400

REPUBLIC ELECTRONICS CO., 200 Wireless Blvd., Hauppauge, NY 11788, Tel: 516-273-9800, Telex: 96-1460; FSC No.: 95750; Empl.: 145; *Sls. Mgr.:* William Shaver

RESDEL ENGRG. CORP, Resdel Inds., 300 E. Live Oak Ave., Arcadia, CA 91006, Tel: 213-684-2600, TWX: 910-582-3219; FSC No.: 10412; Empl.: 225; *Dist. Mgr.:* W. Schwartz

RESISTANCE TECHNOLOGY INC., 1260 Red Fox Rd., St. Paul, MN 55112, Tel: 612-636-9770, FAX: 910-563-3601; *Sls. Mgr.:* Michael Geraci; *Dist. Mgr.:* Michael Geraci

RESISTORS, INC., 5226 W. 26th St, Chicago, IL 60650, Tel: 312-652-7555; Empl.: 35; *Sls. Mgr.:* Marlene Pingel

REVERE CORPORATION OF AMERICA, 845 N. Colony Rd., Wallingford, CT 06492, Tel: 203-269-7701, Telex: 96-3482, TWX: 710-476-3197; Empl.: 389; *Sls. Mgr.:* R. Paukstys

REXNORD CHEMICAL PRODUCTS INC., 6120 E. 58th Ave., Commerce City, CO 80022, Tel: 303-289-5651, Telex: 45-0331, FAX: 303-289-5283; *Sls. Mgr.:* Michael P. Manegold

RFD, INC., 5024 Nassau St, Tampa, FL 33607, Tel: 813-872-1502, TWX: 810-876-9146; *Sls. Mgr.:* Thomas W. Facer

RFI CORPORATION, 100 E. Pine Aire Dr., Bay Shore, NY 11706, Tel: 516-231-6400, TWX: 510-227-6233; FSC No.: 13619;15733; Empl.: 350; *Sls. Mgr.:* Robert Fitzpatrick ..... **A•1694**

Local Sales Offices & Reps
AL Huntsville, Murcota Corp. 205-539-8476
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CA Alhambra, M.W. Riedel Co. 213-283-7694
CA Mountain View, Peninsula Tech. Sls. .. 415-965-3636
CO Commerce City, Williams Assocs. 303-289-5647
FL Clearwater, Tech-Rep Assocs. 813-576-9900
IL Palatine, Technlg. Sls., Inc. 312-991-6600
IN Fort Wayne, Denton Mktg., Inc. 219-486-0665
IA Marion, Ensco-Rep 319-381-1466
KS Wichita, Ensco-Rep 316-683-1070
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MO Maryland Heights, Ensco-Rep 314-423-3935
NH Hudson, EMC Sls., Inc. 603-889-5751
NJ Cherry Hill, H.J. White Co. 609-428-4544
NM Albuquerque, Williams-Assocs. 505-255-1638
NY Binghamton, Empire Tech. Assocs. ... 607-772-0651
NY Great Neck, Trionic Assocs. 516-466-2300
NY Skaneateles, Empire Tech. Assocs. ... 315-685-5703
NC Winston-Salem, Murcota Corp. 919-722-9445
TX Garland, McBride Sci. Sls. 214-494-5000
UT Salt Lake City, Williams Assocs. 801-485-6511
WA Seattle, Granville Gillette Assocs. 206-284-3344
WI Waukesha, Technlg. Sls., Inc. 414-786-5015

RF MONOLITHICS, INC., 4441 Sigma Rd., Dallas, TX 75244, Tel: 214-233-2903, TWX: 910-860-5474; Empl.: 90; *Sls. Mgr.:* William Spurgeon

RF POWER LABORATORIES, INC., 22125 17th Ave. S.E., , Bothell, WA 98021, Tel: 206-481-8833, Telex: 32-1042, FAX: 206-486-1002; FSC No.: 057143; Empl.: 17; *Sls. Mgr.:* Kris Parmar ..... **D•1022-1024**

Local Sales Offices & Reps
CA San Jose, Synergystics Sls. 408-292-6573
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MA Burlington, Tritek, Inc. 617-272-4550
MI Union Lake, SKM Ashby 313-363-1100
NY Saugerties, Beck Rep, Inc. 805-261-3333
OH Dayton, SKM Ashby 513-461-2668
OH Lyndhurst, SKM Ashby 216-461-0826
TX Richardson, Spectra Sls. 214-234-3600

RHG ELECTRONICS LABORATORIES, INC., 161 E. Industry Ct., Deer Park, NY 11729, Tel: 516-242-1100, TWX: 510-227-6083; Empl.: 285; *Sls. Mgr.:* Martin D. Markson

RHOMBUS INDUSTRIES, 15801 Chemical Ln., Huntington Bch., CA 92649-1595, Tel: 714-898-0960, TWX: 910-596-1826; Empl.: 60; *Sls. Mgr.:* L. G. Luthy; *Dist. Mgr.:* L. G. Luthy ..... **A•1621-1625**

Local Sales Offices & Reps
AL Huntsville, Cross Assocs., Inc. 205-534-4477
AZ Tempe, A-5 Company 602-968-4923
CA Escondido, Eagle Tech. Sls. 619-743-6550
CA Irvine, J. V. Earley & Assocs. 714-833-1806
CA Santa Clara, Westrep 408-988-8833
CO Parker, A-5 Co. 303-841-3651
IL Skokie, Rendell Sls. Co. 312-967-1513
MA Malden, J. K. Assocs. 617-321-2922
MI Warren, D.E.M. Elctrn. Sls. 313-595-9444
NJ Mountainside, Henry G. Richter, Inc. .. 201-233-4615
NC Raleigh, Eltron Sls., Ltd. 703-635-1933
OH Cleveland, JMK Elctrns. 216-886-7100
TX Austin, Space Elctrns. 512-346-2215
TX Houston, Space Elctrns. 713-266-9245

Local Distributors
CA Agoura, Image Elctrns. 818-707-0911
CA Manhatten Bch., Prime Electro Prods. 213-379-3642
CA San Jose, Eric Elctrns. 408-432-1111
CA Tustin, Image Elctrns. 714-259-0900

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RICHARD-LEE CO., Box 724, New Providence, NJ 07974, Tel: 201-276-0710; Empl.: 8

RICHARDS, ARKLAY S., CO., INC., 72 Winchester St, Newton Highlands, MA 02161-1793, Tel: 617-527-4385; *Sls. Mgr.:* L. K. Richards ..... **B•1756-1757; C•1919**

RICHCO PLASTIC CO., P.O. Box 804238, Chicago, IL 60680, Tel: 312-539-4060, TWX: 910-221-1938; FSC No.: 06915; Empl.: 250; *Sls. Mgr.:* Ted E. Pavoris; *Dist. Mgr.:* Ted Pavoris

RIFA, INC., Greenwich Off. Pk. 3, P.O. Box 3110, Greenwich, CT 06836-3110, Tel: 203-625-7300, Telex: 221976 ERIANUR ..... **D•1929**

Local Sales Offices & Reps
AL Huntsville, Remco 205-533-3763
CA Garden Grove, Elsco Elctrns. 714-891-4621
CA Los Altos, PEI 415-968-1803
CA San Diego, Elsco Elctrns. 619-292-1771
CO Denver, Elcom, Inc. 303-337-2300
CT Ansonia, Sturdy Corp. 203-734-2186
FL Largo, Burke Assocs. Inc. 813-584-5699
FL Miami, Burke Assocs. Inc. 305-681-4957
FL Orlando, Burke Assocs. Inc. 904-787-5138
FL Tampa, Burke Assocs. Inc. 813-786-8105
IL Elk Grove Village, Carlson Elctrns. Sls. 312-956-8240
IA Rapid City, Carlson Elec. Sls. Assocs. 319-377-6341
MD Eagle Sls. 301-666-3930
MA Wellesley Hills, Sturdy Corp. 617-235-2330
MN Minneapolis, Holmgren Assocs. 612-786-7641
NV Reno, Unitronics 702-825-1978
NJ Marlton, Naudain Assocs., Inc. 609-983-5300
NJ Parlin, JMR Sls., Inc. 201-254-8484
NY Latham, H. C. Johnson 518-383-2239
NY Rochester, H. C. Johnson 716-586-5116
NY Stony Brook, JMR Sls., Inc. 516-689-8871
NC Raleigh, Remco 919-787-2112
PA Glensham, H. C. Johnson 412-961-0414
TX Austin, Tesco, Inc. 512-834-8374
TX Garland, Tesco, Inc. 214-681-1376
WA Redmond, EMG-Elec. Mktg. Grp. 206-882-0962
WI Milwaukee, Carlson Elctrns., Sls. 414-476-2790

RIL ELCTRNS., INC., 125 Titus Ave., P.O. Box H, Warrington, PA 18976, Tel: 215-EL5-1361; Empl.: 25

RISK, GEORGE, INDS., 802 S. Elm St, Kimball, NE 69145, Tel: 308-235-4645, TWX: 910-620-9040; FSC No.: 24229; Empl.: 100; *Sls. Mgr.:* J. Fisher; *Dist. Mgr.:* J. Fisher ..... **B•1727**

Local Sales Offices & Reps
CA Escondido, Cirolia Elctrn. Sls. 619-743-3015
CA Santa Clara, Context Engrg. Co. 408-748-8676
FL Casselberry, T Squared Mktg. 305-628-8911
IL Wheaton, Chadra-Schilke & Assoc. ... 312-653-8126
MA Lexington, Jodan Tech. 617-863-8898
MN Hopkins, S. J. Collins & Assocs. 612-933-7661
MO St. Louis, R.E.P.S. 314-298-8262
NY Huntington Sta., Morgan Elctrn. Sls. ... 516-549-5180
OH Painesville, JAC Mktg. 216-357-9858
TX Austin, Precision Technlg. Assocs. 512-250-0201
TX Richardson, Precision Technlg. Assocs. 214-234-8071
Can Toronto, Ont., Tienkay, Inc. 416-736-1221

Local Distributors
CA Los Angeles, Electric Switches 213-660-1310
CA Santa Ana, Advanced Computer Prods. 714-558-8813
MA Cambridge, Hi Tek Elctrns., Inc. 617-491-0442

RITTAL CORP., 1900 E. Leffel Lane, Springfield, OH 45505, Tel: 800-637-4425, Telex: 241 354, FAX: 513-325-0399; Empl.: 35 ..... **C•1800**

Local Sales Offices & Reps
CA Anaheim, Rittal Corp./Joe Bizzarro ... 714-493-6066
CA Concord, Q-Con 415-682-2020
CT Bristol, Rittal Corp./Mike Seib 203-589-1134
GA Lawrenceville, Lakewood Inds. 404-995-8842
IL Downers Grove, Rockford Controls Co. 312-960-2447
IN Fort Wayne, Rockford Controls Co. ... 312-960-2113
MD Towson, Affiliated Technlg. 301-583-8822
MI Brighton, Rittal Corp./Chuck Marino .. 313-229-7072
MN Shoreview, Ten-Tech 612-481-0274
MS Jackson, Doby Assoc. 601-981-1138
OH Cleveland, Rittal Corp.-Dwight Patterson 216-251-4676
OH Columbus, Rittal Corp.-Scott Puderbaugh 614-764-1108
OH Springfield, Rittal Corp.-Hdqrs. 513-325-1141
OR Portland, J. A. Tudor & Assoc. 503-288-5154
PA Exton (Phil.), Rittal Corp.-Todd Davis 215-524-7388
PA Pittsburgh, Robert Colley & Assocs. ... 412-331-3121
RI Cranston, Rittal Corp.-Greg Demirjian 401-942-3344
TX Dallas, The Power Connection 214-357-8207
Can Toronto, Werner Pischel-PTS Engrg. .. 416-842-8680



RITZ ELECTRONICS/RELCO, 196 Queen St. N., New Dundee, Ont., Canada NOB 2EO, Tel: 519-696-2616; Empl.: 30; *Sls. Mgr.:* Leonard Snow; *Dist. Mgr.:* Leonard Snow ..... **C•1081; D•1930-1931**

Local Sales Offices & Reps
CA Torrance, U.S. Power Converting Co. 213-316-9984
KS Wichita, Leonard Snow & Assocs./U.S. Power 316-682-5768
Can New Dundee, Ont., Ritz Elctrns. 519-696-2616

Local Distributors
CA Torrance, Leonard Snow & Assocs./U.S. Power 213-316-9984
KS Wichita, Leonard Snow & Assocs./U.S. Power 316-682-5768
Can New Dundee, Ont., Ritz Elctrns. 519-696-2616

RLC ELECTRONICS, INC., 83 Radio Cir., Mt. Kisco, NY 10549, Tel: 914-241-1334, TWX: 710-571-2103; FSC No.: 12598; *Sls. Mgr.:* Philip H. Wright

RMC POWER SEMICONDUCTOR, BBC, 2150 W. 6th Ave., Broomfield, CO 80020, Tel: 303-469-1883, 1-800-992-0312, Telex: 299745, FAX: 303-469-8394; Empl.: 16; *Sls. Mgr.:* Dave Whitcomb; *Dist. Mgr.:* Dave Whitcomb

RMF PRODUCTS, INC., 1275 Paramount Pkwy., P.O. Box 520, Batavia, IL 60510, Tel: 312-879-0020; Empl.: 11; *Sls. Mgr.:* R. Frieders ..... **C•1598**

RMS ELECTRONICS INC., 50 Antin Pl., Bronx, NY 10462, Tel: 212-892-6700, Telex: 224652 RMSEL; Empl.: 50; *Dist. Mgr.:* Lee R. Heller

RMS TECHN., 11833 Bunker Blvd., Ste. 100, Newport News, VA 23601, Tel: 804-873-0100; FSC No.: 59606; Empl.: 42

ROANWELL, 180 Varick St., New York, NY 10014, Tel: 212-989-1090, TWX: 710-581-6555; FSC No.: 82872; Empl.: 150; *Sls. Mgr.:* C. Carl Hilsdorf; *Dist. Mgr.:* C. Carl Hilsdorf

RO ASSOCIATES

RO ASSOCIATES, INC., 246 Caspian Dr., Box 61419, Sunnyvale, CA 94088, Tel: 408-744-1450, TWX: 910-339-9304; FSC No.: 24230; Empl.: 90; *Sls. Mgr.:* R. D. Okada ..... **D•1932-1933**

Local Sales Offices & Reps

AL	Huntsville, Lee Assocs.	205-533-5896
AZ	Phoenix, Tech. Sls. Inc.	602-246-1614
CA	Los Angeles, West Coast Reps.	714-558-6100
CA	San Francisco, Richards Assocs.	408-297-3010
CO	Denver, F.G. Mktg.	303-795-9176
DC	Washington, Gans & Pugh	703-527-3262
FL	Orlando, OEM Mktg.	305-299-1000
IL	Chicago, Mar-con Assocs. Inc.	312-675-6450
KS	Shawnee Mission, Midtec	913-441-6565
MD	Baltimore, Gans & Pugh	703-527-3262
MA	Boston, Intersell	617-273-3844
MN	Minneapolis, R J Inc.	612-866-3661
MO	St. Louis, Midtec	314-837-5200
NM	Albuquerque, Fry-Gates, Inc.	505-262-1525
NY	Mt Vernon, Sonkin Assocs.	914-968-8282
NY	Utica, B. D. Hummel Co.	315-736-7821
OH	Centerville, Omega Sls., Inc.	513-434-5507
OK	Tulsa, Cunningham Comps.	918-665-3562
PA	Philadelphia, Gans & Pugh	703-527-3262
TX	Dallas, Cunningham Comps.	214-669-9706
TX	Houston, Cunningham Comps.	713-461-4197
WA	Seattle, Huntley Assocs.	206-353-1833
Can	Missisauga, Ont., T. W. Wilson Sls.	416-677-8200
Can	Vancouver, BC, Tracan Elctrn. Western Ltd.	604-984-4141

ROBBINS & MEYERS, Motor & Control Systems Div., 1600 Second St. South, Hopkins, MN 55343, Tel: 612-931-2700, Telex: 4310124; *Sls. Mgr.:* Brad Nelson; *Dist. Mgr.:* Marshall French

Local Sales Offices & Reps

CO	Wheatridge, Robbins & Myers MCSD	303-420-3320
GA	Marietta, Robbins & Myers MCSD	404-971-2669
IL	S. Barrington, Robbins & Myers MCSD	312-551-3700
TX	Arlington, Robbins & Myers MCSD	817-460-7683
Can	London, Ont, Robbins & Myers MCSD	519-679-4752

ROBINSON-HALPERN, Teleflex, Inc., One Apollo Rd., P.O. Box 248, Plymouth Meeting, PA 19462-0248, Tel: 215-825-9200, TWX: 510-660-8637; FSC No.: 12400; Empl.: 80; *Sls. Mgr.:* Robert C. Rehborn, Prod. Mgr. ..... **B•1815-1817**

Local Sales Offices & Reps

AL	Huntsville, FLW Southeast	205-536-6207
CA	Bakersfield, FLW, Inc.	805-398-0720
CA	Carlsbad, FLW, Inc.	619-434-5251
CA	Costa Mesa, FLW, Inc.	714-751-7512
CA	Palo Alto, A. Barauck Co.	415-327-7711
CA	Van Nuys, FLW, Inc.	818-989-5238
FL	Lakeland, AMJ Equip.	813-646-1487
GA	Marietta, F.I.W. S.E.	404-424-1731
IL	S. Holland, Raeco, Inc.	312-331-6001
IN	Indianapolis, RDP Corp.	317-243-8788
IA	Davenport, Raeco, Inc.	319-324-9021
MA	Harvard, Douglas Lee Assocs., Inc.	617-456-8726
MI	Farmington Hills, RDP Corp.	313-471-0685
MN	Eden Prairie, Synergic Engrg. Corp.	612-941-8906
NJ	Passaic, J & B Assocs.	201-778-3939
NC	Charlotte, SPK Instr.	704-535-2345
OH	Cleveland, RDP Corp.	216-659-3138
OH	Dayton, RDP Corp.	513-253-6175
OR	Portland, McLaren	503-297-2248
PA	Pittsburgh, RDP Corp.	412-487-2217
PA	Radnor, Roberts Engrg. Sls.	215-688-6526
RI	Old Saybrook, Douglas Lee Assocs., Inc.	203-388-0370
TN	Memphis, FLW Southeast	901-345-3563
TX	Houston, Scientific Sls. Co.	713-460-9170
TX	Richardson, Scientific Sls. Co.	214-231-6541
VA	Richmond, Advance Control Equip. Co.	804-264-7100
WA	Bellevue, McLaren	206-454-3400
WI	Shorewood, Raeco, Inc.	414-342-5775

ROBINSON NUGENT, INC., 800 East 8th St., New Albany, IN 47150, Tel: 812-945-0211, TWX: 810-540-4082; Empl.: 567; *Sls. Mgr.:* Carl Pearcy

ROBISON ELECTRONICS, P.O. Box 8121, San Luis Obispo, CA 93403-8121, Tel: 805-544-8000; FSC No.: 19080; Empl.: 45

ROCHESTER INSTRUMENT SYSTEMS, 255 N. Union St., Rochester, NY 14605, Tel: 716-263-7700, Telex: 978457, TWX: 82971, FAX: 716-262-4777; Empl.: 330

ROCKLAND INSULATED WIRE & CABLE, 87 Broadway, Haverstraw, NY 10927, Tel: 914-429-3103; FSC No.: 12111

ROCKLAND SCIENTIFIC CORPORATION, 10 Volvo Dr., Rockland Indl. Pk., Rockleigh, NJ 07647, Tel: 201-767-7900, TWX: 710-991-9852; Empl.: 60; *Sls. Mgr.:* M. Schiavone

ROCKWELL FILTER PRODUCTS, 2990 Airway Ave., Costa Mesa, CA 92626, Tel: 714-641-5311, Telex: 685532; Empl.: 90; *Sls. Mgr.:* Bob Johnson ..... **A•1695**

ROCKWELL INT'L., 4311 Jamboree Rd., Newport Beach, CA 92660, Tel: 800-854-8099, TWX: 910-591-1654; FSC No.: 34576; Empl.: 1995; *Sls. Mgr.:* K. MacDonald; *Dist. Mgr.:* K. Foster

ROCKWELL INTERNATIONAL TELECOMMUNICATIONS, 1200 N. Alma Rd., Richardson, TX 75081, Tel: 214-996-5000, Telex: 73-307, 73-2490, TWX: 910-867-4709; Empl.: 7,000; *Sls. Mgr.:* Phil Ritzmann

RODALE ELCTRNS. CORP., 603 Chestnut St., Garden City, NY 11530, Tel: 516-222-0050, TWX: 510-222-0274; *Sls. Mgr.:* John B. Clement

RODELCO ELCTRNS. CORP., 111 Haynes Ct., Ronkonkoma, NY 11779, Tel: 516-981-0900; Empl.: 44

ROD-L ELECTRONICS, INC.

ROD-L ELECTRONICS, INC., 1098 Hamilton Ct., Menlo Park, CA 94025, Tel: 415-322-0711, TWX: 296210; Empl.: 20; *Sls. Mgr.:* Diane Shaw ..... **D•1308-1309**

Local Sales Offices & Reps

CA	Menlo Park, ROD-L (factory)	415-322-0711
CO	Conifer, Energy Equip. Sls.	303-674-8111
IL	Elk Grove, Loren Green Assocs.	312-593-0282
IN	Indianapolis, Loren Green Assocs.	317-293-9827
KS	Lenexa, Midtec Assocs.	913-541-0505
MD	Cockeysville, Sci. Reps.	301-321-1411
MA	Reading, Scheinfein Assocs.	617-944-2304
MI	Detroit, Micro Sls	313-464-4520
MN	Minneapolis, Hei-Lite Sls	612-861-6051
MO	St. Louis, Midtec Assocs.	314-275-8666
NJ	Fairfield, Addem Sls.	201-882-0993
NJ	Pennsauken, Sci. Reps.	609-662-5222
NY	De Witt, DB Assocs.	315-446-0220
OH	Centerville, Micro Sls.	513-433-8171
OH	N. Olmsted, Micro Sls	216-734-3080
OK	Tulsa, Spectra Sls	918-663-7188
OR	Beaverton, Core II Mktg	503-641-0877
TX	El Paso, Venturesearch	915-594-4094
TX	Houston, Spectra Sls.	713-270-8212
TX	Richardson, Spectra Sls.	214-234-3600
VA	Fairfax, Sci. Reps.	703-385-0600
WA	Redmond, Core II Mktg	206-885-4344
WA	Spokane, Core II Mktg	509-922-2971
WV	Pittsburg, Micro Sls	412-471-0105
Can	Ontario, Webster Instrs. Ltd.	416-625-0600

Local Distributors

CA	Menlo Park, Rod-L (Factory)	415-322-0711
Can	Ontario, Webster Instrs. Ltd.	416-625-0600

ROEAN INDUSTRIES, INC., 12970 Branford, Ste. C, Pacoima, CA 91331, Tel: 818-767-7047, Telex: 758630; Empl.: 8

ROEDERSTEIN ELCTRNS., INC., P.O. Box 5588, Statesville, NC 28677, Tel: 704-872-8101, Telex: 240802, TWX: 301-240802, FAX: 704-872-8023; *Sls. Mgr.:* Rick Price; *Dist. Mgr.:* Fred Fernandez

ROGAN, 3455 Woodhead Dr., Northbrook, IL 60062, Tel: 800-423-1543; Empl.: 100; *Sls. Mgr.:* D. Pelletier; *Dist. Mgr.:* D. Pelletier

ROGERS CORP., Bus Products Division, 5750 East McKellips Rd., Mesa, AZ 85205, Tel: 602-830-3370

ROGERS CORP., Box 700, Chandler, AZ 85244, Tel: 602-963-4584, Telex: 140-223, TWX: 910-950-1961; Empl.: 2500; *Sls. Mgr.:* Paul Anderson

ROGERS CORP., One Technology Dr., Rogers, CT 06263, Tel: 203-774-9605, TWX: 710-448-0047; Empl.: 2500; *Sls. Mgr.:* Paul L. Anderson

ROHDE & SCHWARZ-POLARAD, INC., 5 Delaware Dr., Lake Success, NY 11042, Tel: 516-328-1100, TWX: 510-223-0414; FSC No.: 82199; Empl.: 101; *Sls. Mgr.:* Ron Ramirez

ROHM CORP., 8 Whatney, Irvine, CA 92718, Tel: 714-855-2131, TWX: 910-595-1721; Empl.: 125; *Sls. Mgr.:* Al Kirwan; *Dist. Mgr.:* Al Kirwan

ROHM CORPORATION, 8 Whatney, Irvine, CA 92718, Tel: 714-855-2131, TWX: 910-595-1721, FAX: 714-855-1669; Empl.: 125

ROLM CORPORATION, Subsidiary of IBM Corp., 4900 Old Ironsides Dr., M/S 605, Santa Clara, CA 95054, Tel: 408-986-1000; Empl.: 10,000; *Sls. Mgr.:* Jack Blumenstein; *Dist. Mgr.:* Doug Goodall

ROLYN OPTICS CO., 706 Arrowland Cir., Covina, CA 91722, Tel: 818-915-5707/5717, Telex: 67-0380

ROSE ELECTRONIC, INC., Energy Products Group, 2461 Autumn Vale Dr., San Jose, CA 95131, Tel: 408-263-2934, FAX: 408-263-4263; Empl.: 13; *Sls. Mgr.:* Ted Williams; *Dist. Mgr.:* Ted Williams

ROSE ENCLOSURES SYS., INC., 12140 Parklawn Dr., Rockville, MD 20852, Tel: 301-984-1783, Telex: 908-107 Resi Rove; FSC No.: 4Y520/C0242; *Sls. Mgr.:* Paul Bruhn ..... **C•1082-1083**

ROSEMOUNT CORP., Sensall/National Sonics, 250 Marcus Blvd., Hauppauge, NY 11788, Tel: 516-273-6600, Telex: 14-4545; Empl.: 140; *Sls. Mgr.:* V. McCormack

ROSEMONT-NASHVILLE, INC., See Chromalox Instrs. & Controls

ROSS ENGINEERING CORP., 540 Westchester Dr., Campbell, CA 95008, Tel: 408-377-4621, Telex: 858840, TWX: 910-590-8033; FSC No.: 23598; Empl.: 45; *Sls. Mgr.:* Hugh C. Ross ..... **B•1489**

ROTEK INSTRUMENT CORP., 390 Main St., Waltham, MA 02254, Tel: 617-899-4611; *Sls. Mgr.:* Eliot Warner

ROTORQUE TECHNOLOGY CORP., 47915 Westinghouse Drive, Fremont, CA 94539, Tel: 415-659-1552, FAX: 415-659-1601; Empl.: 20; *Sls. Mgr.:* Beth Doolin

ROWE INDUSTRIES, INC., 6225 Benore Rd., P.O. Box 6877, Toledo, OH 43612, Tel: 419-729-9761, TWX: 810-442-1734; FSC No.: 82878; Empl.: 89; *Sls. Mgr.:* D. L. Mang; *Dist. Mgr.:* D. L. Mang ..... **C•1512-1514, 1920**

RTE AEROVOX INC., 740 Belleville Ave., New Bedford, MA 02745, Tel: 617-994-9661, TWX: 710-344-6985; FSC No.: 4K459; Empl.: 900; *Sls. Mgr.:* Jack Chmura; *Dist. Mgr.:* Matthew Simon ..... **A•1696-1698**

Local Sales Offices & Reps

AL Huntsville, 20th Century Mktg. 205-533-9281
AZ Scottsdale, Interstate Mktg. 602-244-9050
CA Campbell, Luscombe Engrg. Co. 408-370-2020
CA San Diego, Bestronics, Inc. 714-452-5500
CA Woodland Hills, Interstate Mktg. 818-883-7606
CO Westminster, Delta Sls. Assocs. 303-429-0222
CT North Haven, J.E. Boeing Co. 203-239-5369
DE Greenville, H. Anderson 302-655-2917
FL Orlando, E.P.M. Corp. 305-425-6149
GA Norcross, 20th Century Mktg. 404-446-1999
IL Elk Grove Village, Carlson Elctrn. Sls. 312-956-8240
IL Wauconda, Miller Sls. 312-526-9200
IN Ft. Wayne, F. J. Campisano Co. 219-747-2633
IN Indianapolis, F. J. Campisano Co. 317-253-7651
IA Cedar Rapids, Carlson Elctrn. Sls. 319-377-6341
MD Monkton, Imagitron Sls. Co. 301-374-5600
MA Chelmsford, J. E. Boeing Co. 617-256-5800
MI Farmington Hills, Carrier & Gable 313-477-8700
MN Minneapolis, Comstrand 612-788-9234
MO Grandview, Beneke & McCaul 816-765-2998
NM Albuquerque, Hewitt & Assocs. 505-299-7746
NY Ithaca, B. Dean 607-257-1111
NY Melville, Comtronic Assocs. 516-249-0505
NY Wappingers Falls, Bob Dean 914-297-6406
NC Matthews, R. G. Sls. 704-847-0049
OH Cincinnati, F. J. Campisano Co. 513-574-7111
OH Cleveland, F.J. Campisano Co. 216-749-5550
OH Dayton, Schmidt & Assocs. 513-293-6652
OK Tulsa, Ammon & Rizos Co. 918-663-8788
PA Coraopolis, F.J. Campisano Co. 412-264-5151
TX Austin, Ammon & Rizos 512-454-5131
TX Houston, Ammon & Rizos Co. 713-781-6240
TX Richardson, Ammon & Rizos 214-644-5591
UT Salt Lake City, Aspen Sls. Inc. 801-467-2401
WI Milwaukee, Carlson Elctrn. Sls. 414-476-2790
EXP Santurce, PR, J. E. Boeing Co. 809-722-6942

Local Distributors

AL Huntsville, Marshall Elctrns. 205-881-9235
CA Chatsworth, Diplomat Elctrns. 818-700-8700
CA Costa Mesa, Diplomat Elctrns. 714-549-8401
CA El Monte, Marshall Elctrns. 818-459-5590
CA Hayward, Kea Elctrns. 415-887-2900
CA San Jose, Dansco Comp. Sls. 408-292-9740
CA San Jose, Future Elctrns. 408-435-9100
CA Sunnyvale, Diplomat Elctrns. 408-737-0204
CO Arvada, Denver Beta Wintronics 303-431-7161
CO Westminster, Future Elctrns. 303-650-0123
CO Wheat ridge, Diplomat Elctrns. 303-422-9229
CT Bethel, Future Elctrns. 203-743-9594
CT Danbury, Diplomat Elctrns. 203-797-9674
CT Wallingford, Marshall Elctrns. 203-265-3822
FL Altamonte Springs, Future Elctrns. 305-834-9318
FL Clearwater, Diplomat Elctrns. 813-443-4514
FL Clearwater, Future Elctrns. 813-578-2770
FL Ft. Lauderdale, Diplomat Elctrns. 405-974-8700
FL Ft. Lauderdale, Marshall Elctrns. 305-928-0661
FL Melbourne, Rome Elctrns. 305-242-8151
FL Orlando, Marshall Elctrns. 305-841-1878
GA Norcross, Future Elctrns. 404-441-7676
IL Mt. Prospect, Magnuson Elctrns. 312-956-0700
IL Schaumberg, Future Elctrns. 312-882-1255
IL Schaumberg, Marshall Elctrns. 312-490-0155
IN Indianapolis, Marshall Elctrns. 317-297-0483
KS Lenexa, Marshall Elctrns. 913-492-3121
MD Columbia, Diplomat Elctrns. 301-995-1226
MD Columbia, Future Elctrns. 301-995-1222
MD Gaithersburg, Marshall Elctrns. 301-840-9450
MA Billerica, Diplomat Elctrns. 617-667-4670
MA Burlington, TLC Comps. Corp. 617-373-0140
MA Westborough, Future Elctrns. 617-366-2400
MA Wilmington, Marshall Elctrns. 617-658-0810
MI Livonia, Marshall Elctrns. 313-525-5850
MN Plymouth, Diplomat Elctrns. 612–59-2500
MN Plymouth, Marshall Elctrns. 612-559-2211
MO St. Louis, Franklin Elctrns. 314-993-5333
NH Hudson, C & H Elctrns. 603-882-1133
NJ Fairfield, Marshall Elctrns. 201-882-0320
NJ Mt. Laurel, Future Elctrns. 609-778-7600
NJ Mt. Laurel, Marshall Elctrns. 609-234-9100
NJ Totowa, Diplomat Elctrns. 201-785-1830
NY Hauppauge, LI., Marshall Elctrns. 516-273-2053
NY Johnson City, Marshall Elctrns. 607-798-1611
NY Liverpool, Future Elctrns. 315-451-2371
NY Melville, Diplomat Elctrns. 516-454-6334
NY Rochester, Diplomat Elctrns. 716-359-4400
NY Rochester, Future Elctrns. 716-272-1120
NY Rochester, Marshall Elctrns. 716-235-7620
NY Rome, Rome Elctrns. 315-337-5400
NC Raleigh, Marshall Elctrns. 919-878-9882
OH Akron, Akron Elctrns. Inc. 216-762-8818
OH Dayton, Marshall Elctrns. 513-236-8088
OH Solon, Marshall Elctrns. 216-248-1788
OR Beaverton, Future Elctrns. 503-645-9454
OR Beaverton, Marshall Elctrns. 503-644-5050
PA Pittsburgh, Marshall Elctrns. 412-963-0441
TX Austin, Diplomat Elctrns. 512-452-5254
TX Carrollton, Diplomat Elctrns. 214-980-1888
TX Houston, Marshall Elctrns. 713-895-9200
UT Salt Lake City, Diplomat Elctrns. 801-486-4134
UT Salt Lake City, Future Elctrns. 801-972-8489
UT Salt Lake City, Salt Lake Beta Wintronics 801-483-1882
WA Bellevue, Future Elctrns. 206-881-8199
WA Bellevue, Marshall Elctrns. 206-747-9100
WA Seattle, Diplomat Elctrns. 206-575-1633
Can Pointe Claire, Que., Future Elctrns. 514-694-7710
Can Scarborough, Ont., Carsten Elctrns. 416-495-7705

RTE DELTEC CORP., 2727 Kurtz St., San Diego, CA 92110, Tel: 619-291-4211, 800-854-2658, Telex: 910-335-1241; FSC No.: 52297; Empl.: 200

RTE POWER/MATE

RTE POWER/MATE, 2727 Kurtz St., San Diego, CA 92110, Tel: 800-843-8544, 619-299-3800, TWX: 910-335-1241, FAX: 619-299-6124; Empl.: 175 .... **D•1934-1935**

RTRON CORP., 7324 Lawndale, Skokie, IL 60076, Tel: 312-679-7180, TWX: 910-223-0810; FSC No.: 19130; *Sls. Mgr.:* R. McLean

RTS SYSTEMS

RTS SYSTEMS, INC., 1100 W. Chestnut St., Burbank, CA 91506, Tel: 818-840-7119, Telex: 194855, TWX: 910-498-4987; Empl.: 75; *Sls. Mgr.:* Shelly Brown Harrison; *Dist. Mgr.:* Shelly Brown Harrison ..... **D•1071**

Local Sales Offices & Reps

AL Birmingham, Gray Comms. Conslt. 205-942-2824
AL Birmingham, Sonics Assocs. 205-942-9631
AL Cropwell, Broadcast Sys. 205-525-5467
AL Mobile, Gray Comms. Conslt. 205-343-0662
AK Anchorage, N V S Sys. 907-349-3523
AZ Cottonwood, R I A Corp. 602-634-8065
CA Encino, Everything Audio 213-995-4175
CA Inglewood, Audio Visual Hdqtrs. Corp. 213-419-4040
CA Lawndale, Omega Video 213-679-9021
CA Long Beach, K T Elctrns. 213-424-0979
CA Los Angeles, Acromedia Corp. 213-410-4141
CA Los Angeles, Hollywood Sound Sys. .. 213-466-2416
CA Los Angeles, Shoreline Ltd. 213-851-1236
CA N. Hollywood, Audio Svcs. Corp. 213-980-9891
CA N. Hollywood, Best Audio 213-763-2378
CA N. Hollywood, Doc Siegel Audio 213-877-2300
CA N. Hollywood, Theatre Vision 213-769-0928
CA Newbury Park, Westlake Audio 213-655-0303
CA Pasadena, Audio Engrg. Assocs. 213-798-9127
CA San Diego, Centro Corp. 619-560-1578
CA Santa Clara, Video Comms. Corp. 408-988-2968
CA Sun Valley, Burns Audio 213-768-1701
CA Sunnyvale, Video Media 408-733-6500
CA Walnut, Video Comms. Corp. 714-594-2442
CO Denver, Film/Video Equip. Svc. 303-778-8616
CO Englewood, Burst Comms. 303-773-9499
CO Englewood, RIA 303-789-3611
FL Gainesville, Gray Comms. Conslt. 904-376-2435
FL Miami, Gray Comms. Conslt. 305-591-3637
FL Miami, Midwest Corp. 305-592-5355
FL Orlando, Gray Comms. Conslt. 305-896-7414
FL Tampa, Gray Comms. Conslt. 813-885-1411
FL Tampa, Midwest Corp. 813-885-9308
FL Winter Park, Barron Assocs. 305-339-2202
GA Albany, Gray Comms. Conslt. 912-883-2121
GA Atlanta, Midwest Corp. 404-875-3753
GA Doraville/Atlanta, Gray Comms. Conslt. 404-455-3121
GA Norcross/Atlanta, Tech. Video Sys. ... 404-447-6621
GA Union City/Atlanta, Allied Broadcast Equip. 404-964-1464
IL Chicago, Allied Broadcast Equip. 312-794-0224
IL Elk Grove Vlg., Swiderski Elctrns. 312-364-1900
IL Morton Grove, Roscor Corp. 312-539-7700
IL Palatine, RAM Bdcst. Hdqtrs. 312-358-3300
IL Skokie, Media Specialties 312-967-8900
IN Evansville, Camera Mart 812-476-6327
IN Indianapolis, Midwest Corp. 317-251-5750
IN Richmond, Allied Broadcast Equip. 317-962-8596
IA Davenport, Video Midwest 319-322-1525
KY Edgewood, Midwest Corp. 800-543-1584
KY Lexington, Midwest Corp. 606-277-4994
KY Louisville, Midwest Corp. 502-491-2888
LA Harahan/New Orleans, Gray Comms. Conslt. 504-733-7265
MD Bethesda, Professional Prods. 301-657-2141
MD Lanham, Midwest Corp. 301-577-4903
MD Rockville, Peirce Phelps Inc. 301-984-7979
MA Boston, La Salle Music 617-924-7767
MA Framingham, Landy Assocs. 617-877-9570
MA Middleboro, DLE, Inc. 617-947-6801
MA Needham Hgts., Capron Lighting & Sound Co. 617-444-8850
MA Newton, Lake Sys. Corp. 617-244-6881
MA Watertown, Talamas Co. 617-923-0166
MI Detroit, Hy James Audio Professionals 313-994-0934
MI Oak Park, Midwest Corp. 313-399-6361
MI Troy/Detroit, Midwest Corp. 313-689-9730
MN Burnsville, Emmons Assocs. 612-890-8920
MN Minneapolis, AVC Sys., Inc. 612-729-8305
MN Minneapolis, Todd Comms. 612-941-0556
MN Minneapolis, Video Midwest 612-831-2248
MO Chesterfield, Television Engrg. Corp. .. 314-532-4700
MO El Dorado Springs, Broadcast Sys. 417-876-6254
MO Springfield, Lines Video 417-862-5533
NE Omaha, Todd Comms. 402-341-7600
NV Las Vegas, Acromedia Corp. Las Vegas 702-362-7552
NV Las Vegas, Western Media Entprs. 702-873-2014
NJ Cherry Hill, Landy Assocs. 609-424-4660
NJ Clifton, Telemeasurements 201-473-8822
NJ Mountain Lakes, Turner Engrg. 201-263-0023
NJ Northvale, A F Assocs. 201-767-1000
NM Los Lunas, Dyma Engrg. 505-865-6700
NY New York, All Mobile Video 212-757-8919
NY New York, Camera Mart 212-757-6977
NY New York, M P C S Video Inds. 212-586-3690
NY New York, Martin Audio/Video Corp. 212-541-5900
NY New York, Tech. Video Sys. 212-580-3104
NY Yonkers, CP Comms. 914-767-4254
NC Charlotte, Midwest Corp. 704-399-6336
NC Charlotte, Reliable Music 704-375-8662
NC Winston-Salem, Tech. Video Sys. 919-748-0916
OH Centerville, Midwest Corp. 513-435-3246
OH Cleveland, Midwest Corp. 216-447-9745
OH Columbus, AVSTAR 614-486-0247
OH Columbus, Broadcast Video 614-445-8000
OH Columbus, Midwest Corp. 614-476-2800
OK Claremore, Ford Audio & Acoustics ... 405-946-9966
OK Tulsa, Doug Brown Entertainment 918-946-9966
OK Tulsa, Fairview/AFX 918-664-8020
OR Portland, Baldwin Mktg. Co. 503-234-1359
OR Portland, Cable Elctrns. 503-255-8945
PA Carnegie, Alpha Video & Elctrns. 412-923-2070
PA Philadelphia, Lerro Elctrl. Corp. 215-223-8200
PA Philadelphia, Peirce Phelps Inc. 215-879-7205
PA Pittsburgh, Midwest Corp. 412-364-6780
PA Pittsburgh, Tri-State Video 412-898-1630
TN Nashville, Gray Comms. Conslt. 615-883-9175
TN Nashville, Midwest Corp. 615-331-5791
TX Amarillo, Magnetic Media Corp. 806-358-2468
TX Arlington, Midcom 817-640-4573
TX Austin, Broadcast Sys. 512-836-6014
TX Austin, M Z B & Assocs. 512-837-7240
TX Austin, Magnetic Media Corp. 512-451-0138
TX Dallas, M Z B & Assocs. 214-233-5535
TX Dallas, Magnetic Media Corp. 214-931-0404
TX Houston, Electrotex 713-526-3456
TX Houston, M Z B & Assocs. 713-448-0881
TX Houston, Magnetic Media Corp. 713-771-9125
TX Plano, Allied Broadcast Equip. 214-423-8667
TX Plano, Broadcast Sys. 214-867-8775
TX San Antonio, Media Specialties 512-496-9581
TX San Antonio, MZB & Assoc. 512-525-1628
UT Salt Lake City, R I A Corp. 801-486-8822
UT Salt Lake City, Visual Technlg. 801-466-7481
VA Richmond, Midwest Corp. 804-262-5788
VA Richmond, Professional Prods. 804-794-2585
VA Virginia Beach, Midwest Corp. 804-464-6256
VA Woodbridge, Broadcast Sys. 703-494-4998
WA Federal Way, Allied Broadcast Equip. 206-927-4337
WA Seattle, Bennett Engrg. 206-232-3550
WA Tacoma, Ted Brown Music 206-272-3211
WV Dunbar, Midwest Corp. Corporate H/Q 304-768-1252

RUSH ENTERPRISES INC., 20 Hampshire Drive, Hudson, NH 03051, Tel: 603-886-9460; Empl.: 10; *Sls. Mgr.:* Richard Mulcahy

RUSH/HOUSTON, INC., 600 Kealrick, Ste C-40, Houston, TX 77060, Tel: 713-682-5151; *Sls. Mgr.:* Fred Murphy

RUSSTECH ENGINEERING COMPANY, INC., 23322 (D) Madero Road, Mission Viejo, CA 92691, Tel: 714-472-0880

RUSTRAK INSTRUMENTS, Mark IV Company, Rte. 2 & Middle Rd., E. Greenwich, RI 02818, Tel: 401-884-6800, 800-332-3202, TWX: 710-387-1500; Empl.: 250; *Sls. Mgr.:* John Olobri; *Dist. Mgr.:* John Olobri

RUTHERFORD RESEARCH, Box 249, Rutherford, NJ 07070, Tel: 201-933-2091; Empl.: 4; *Sls. Mgr.:* Dr. A. Blanck; *Dist. Mgr.:* Dr. A. Blanck

RVS ELECTRONICS, INC., 40 North St., Middletown, NY 10940, Tel: 914-342-3199, Telex: 820778; Empl.: 15

Local Sales Offices & Reps

CA	Manhatten Bch., Ray Garneau Co.	213-376-5712
NY	Middletown, RVS Elctrns., Inc.	914-342-3199

Local Distributors

AZ	Phoenix, Jensen Tools	602-968-6241
MA	Bedford, Continental Resources	617-275-0850
NJ	Northvale, Glasgal Comms.	201-768-8082
NY	Pleasantville, Electronic Tool	914-769-8070
PA	Blue Bell, W.J. Wisely Assocs.	215-275-0658

DYTRONICS

RYAN INTERNATIONAL CORP., 4800 Evanswood Dr., Columbus, OH 43229, Tel: 614-885-3303; Empl.: 30 **D•1310**

RYE INDUSTRIES, INC., 125 Spencer Pl, P.O. Box M, Mamaroneck, NY 10543, Tel: 914-698-0080; Empl.: 50

S A B NIFE, INC., Div. of Sonesson, P. O. Box 100, George Washington Hwy., Lincoln, RI 02865, Tel: 401-333-1170, 800-556-6764, Telex: 92-9407; Empl.: 150; *Sls. Mgr.:* Alan Feo; *Dist. Mgr.:* Alan Feo

SABRE COMMUNICATIONS CORP., 3400 Hwy 75 N., P.O. Box 536, Sioux City, IA 51102, Tel: 712-258-6690; FSC No.: 60348; *Sls. Mgr.:* Jerry W. Audus; *Dist. Mgr.:* Richard Krone

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SAFE POWER SYSTEMS, 528 W. 21st St., Tempe, AZ 85282, Tel: 602-894-6864, FAX: 602-921-0470

SAFT AMERICA INC., Box 1886, Valdosta, GA 31601, Tel: 912-247-2331, Telex: 547620, TWX: 810-786-5866 **D•1416**

SAFT AMERICA INC., Advanced Battery Sys. Div., 107 Beaver Ct., Cockeysville, MD 21030, Tel: 301-666-3200 **D•1470**

SAFT AMERICA, INC., Portable Battery Division, 711 Industrial Blvd., Valdosta, GA 31601, Tel: 912-247-2331, Telex: 547-620; Empl.: 1300; *Sls. Mgr.:* R. Bartmes **D•1471-1477**

Local Sales Offices & Reps

CA	Chatsworth, SAFT America, Inc.	818-998-0626
CA	Granada Hills, SAFT America, Inc.	818-360-1853
CA	Redwood City, SAFT America Inc.	415-365-4530
FL	Boca Raton, SAFT America, Inc.	305-338-7730
GA	Marietta, SAFT America, Inc.	404-992-6950
IL	Oak Forest, SAFT America, Inc.	312-687-6690
MA	Hanover, SAFT America, Inc.	617-871-0204
MN	Minneapolis	612-770-0082
OH	Columbus	216-861-1877
PA	Philadelphia	215-831-9520
TX	Dallas	214-436-0757

Local Distributors

AZ	Tempe, Anjon Entprs.	602-894-1332
CA	Chatsworth, Mill Comm. Distrs., Inc.	818-998-3111
CA	Mountain View, Energy Sls.	415-969-0800
CO	Englewood, Industrial Elctrns.	303-694-9444
FL	Altamonte Springs, TNR Tech.	305-722-7267
FL	Hialeah, Pro Battery	305-944-8800
GA	Decatur, Emergency Lighting Svcs. Co.	404-987-9676
IL	Downers Grove, Jabro Batteries	312-964-9358
IL	Downers Grove, Telecomms. Dvcs., Inc.	800-323-7307
MA	Billerica, A. W. Mayer Co., Inc.	800-225-6600
MA	Middleboro, Glynn Elctrns.	617-947-4262
MI	Livonia, R. S. Elctrns.	313-525-1155
MN	Minneapolis, D. C. Battery Prods. Inc,	612-721-8547
NJ	Clifton, Engineered Assemblies, Inc.	201-340-0600
NM	Albuquerque, Alliance Elctrns., Inc.	505-292-3360
NY	Deer Park, TNR Tech., Inc.	516-242-4800
NC	Winston-Salem, Kirkman Elctrns.	919-722-9131
PA	Bensalem, Avex Elctrns. Corp.	800-345-1295
TN	Mt. Juliet, Batteries Unlimited	617-754-8179
TX	Houston, Kent Elctrns.	713-780-7770
TX	Richardson, Kent Elctrns.	214-669-2600
UT	Salt Lake City, Standard Supp. Co.	800-453-7036
VA	Falls Church, Perrott Engrg. Labs, Inc.	703-532-0700
VA	Springfield, Redex Corp.	703-642-5670
WA	Redmond, Energy Sls.	206-883-2343
WA	Seattle, Priebe Elctrns.	206-682-8242

SAGE LABORATORIES, INC., 11 Huron Dr., Natick, MA 01760, Tel: 617-653-0844, TWX: 710-346-0390; FSC No.: 07180; *Sls. Mgr.:* Tony Cieri

SAINT SWITCH, INC., 103 N. 11th Ave.,Box 604, St. Charles, IL 60174, Tel: 312-377-3779; FSC No.: 60198; Empl.: 30

SAMARIUS, INC., 300 Seymour Ave., P.O. Box 377, Derby, CT 06418, Tel: 203-735-7405, TWX: 710-451-2495; FSC No.: 18065; Empl.: 90 **A•2114**

SAMTEC, 810 Progress Blvd., P.O. Box 1147, New Albany, IN 47150, Tel: 812-944-6733, TWX: 810-540-4095; FSC No.: 55322; Empl.: 150; *Sls. Mgr.:* Carol Roll; *Dist. Mgr.:* C. Roll **C•1515**

Local Sales Offices & Reps

AZ	Scottsdale, American Mktg., Inc.	602-948-2778
CA	Anaheim, Westrep	213-404-3881
CA	Campbell, Kottmeier	408-371-8700
CA	Fallbrook, Martronix	619-728-7678
CO	Boulder, Front Range Mktg.	303-443-4780
FL	Coral Springs, Hal Elec.	305-752-7520
IL	Lisle, W.G. Controls	312-963-5954
IN	Indianapolis, Needler Sls.	317-255-8056
KS	Parker, S. W. Wollard	913-898-6552
MD	Gaithersburg, Naudain Assocs.	301-258-5040
MN	Minnetonka, Frank Anthony Mktg.	612-934-0773
MO	Lee's Summit, S. W. Wollard/Miller	816-578-4221
MO	St. Louis, S. W. Wollard/Saunders	314-576-4650
NM	Albuquerque, C. T. Carlberg & Assocs.	505-888-3883
NY	Great Neck, Tylinski Assocs.	516-466-9070
NY	Rochester, J. G. Welch	716-244-1100
NC	Raleigh, B. T. Funderburk	919-782-3493
OH	Medina, J. C. Hofstetter	216-241-4880
PA	Huntington Valley, Inacker Sls.	215-947-5660
RI	Warwick, Schumacher & Yarrington	401-884-5671
TX	Plano, High Tech Sls.	214-612-0216
UT	Salt Lake City, Front Range Mktg.	801-485-4673
WA	Redmond, Quadra Sls.	206-883-3550
WI	Mequon, Badgerep	414-241-9200
PR	Caguas, K. D. Tronics	809-746-0275

Local Distributors

AL	Birmingham, Forbes	205-251-4104
AL	Huntsville, Forbes	205-837-1579
AZ	Phoenix, Force Elec.	602-437-1060
CA	Buena Pk., Cypress	714-521-5230
CA	Chatsworth, Milcomm	818-998-3111
CA	San Diego, Cypress	619-292-5613
CA	San Diego, Southland	619-578-6634
CA	Santa Clara, Cypress	408-980-2500
CA	Sunnyvale, Abacus	408-732-2000
CO	Englewood, Indl. Elec., Inc.	303-694-9444
CO	Wheat Ridge, Cypress	303-431-2622
CT	East Haven, J.V. Elec.	203-469-2321
CT	Yatesville, Schaal, Inc.	203-269-3779
FL	Winter Pk., Deanco	305-671-5100
GA	Marietta, Deanco	404-429-0126
IL	Addison, Belford Elec.	312-691-1100
IN	Carmel, Altex	317-848-1323
MD	Gaithersburg, Deanco	301-948-5444
MD	Middletown, Current Comps.	301-473-5333
MA	Burlington, Schaal, Inc.	617-272-1506
MA	Canton, Impact Sls.	617-821-1500
MN	Hibbing, Minn Tech	218-262-5228
MN	New Brighton, Parts 1	612-633-8079
MO	Kansas City, Elec. Supp.	816-931-0250
MO	St. Louis, Franklin Elec.	314-993-5333
NJ	Fairfield, Deanco	201-575-7960
NM	Albuquerque, Walker Elec.	505-883-2992
NY	Hauppauge, Broadline Elec.	516-231-4100
NY	Ithaca, Deanco	607-257-4444
NC	Raleigh, Century Elec.	919-782-2116
NC	Raleigh, Deanco	919-851-2065
NC	Winston-Salem, Kirkman Elec.	919-722-9131
OH	Cincinnati, Schuster	513-489-1400
OH	Twinsburg, Schuster Elec.	216-425-8134
OR	Tigard, Moore	503-684-3100
PA	McKean, Advacom	814-476-7774
PA	Norristown, Century	215-631-5400
PA	Norristown, Century Elec.	215-631-5400
TX	Dallas, Cypress	214-869-1435
TX	Stafford, Southwest	713-240-4000
VA	Virginia Bch., Deanco	804-499-3322
WA	Redmond, Priebe Elec.	206-881-2363
WI	Milwaukee, Marsh	414-475-6000
Can	Surrey, BC, Memco	604-590-1553

S & EI MANUFACTURING, Box 832, Northridge, CA 91324, Tel: 818-349-4111, TWX: 910-493-1252; FSC No.: 24152; Empl.: 65

SANDERS ASSOCS., INC., DEFENSE, 95 Canal St., Nashua, NH 03061, Tel: 603-885-3833

SANDERS ASSOCIATES, INC., EMC Dept., 95 Canal St., Nashua, NH 03061-2004, Tel: 603-885-3602, TWX: 710-228-1894; FSC No.: 94117; *Sls. Mgr.:* (EMC) R. Bossart

SANDERS ASSOCIATES, INC., MICROWAVE, 955 Perimeter Rd., Manchester, NH 03108, Tel: 603-645-6000 Ext. 4299, Telex: 710-220-1845; Empl.: 760; *Sls. Mgr.:* James C. Korcuba

S & H INDUSTRIES, INC.

S & H INDS., 2257 North Penn Rd., Hatfield, PA 19440, Tel: 215-822-7211; Empl.: 50; *Sls. Mgr.:* J. Perry **D•1936, 2099**

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SANFORD-MILLER CORP., 8 John St., Lynbrook, NY 11563, Tel: 516-593-2025, 800-645-5900; Empl.: 10

SAN FRANCISCO CUSTOM LABEL, 999 Blandford Blvd., Redwood City, CA 94062, Tel: 415-573-6365; Empl.: 27; *Sls. Mgr.:* D. R. Zamzow

SANKEN ELECTRIC CO., LTD., 1-22-8 Nishi-Ikebukuro, Toshima-ku, Tokyo, Japan, Tel: 03-986-6164, Telex: 272-2323 SANKEN J; FSC No.: 03-986-8637; Empl.: 4,830; *Sls. Mgr.:* K. Imaizumi; *Dist. Mgr.:* Ted Hara

SAN-O INDUSTRIAL CORP., 85 Orville Dr., Bohemia, NY 11716, Tel: 516-567-5556, TWX: 510-228-7701; Empl.: 50; *Sls. Mgr.:* M. Castellano

SANTA BARBARA RESCH. CTR., 75 Coromar Dr., Goleta, CA 93117, Tel: 805-968-3511, Telex: 910-334-1885, TWX: Hacsbar; Empl.: 2025; *Sls. Mgr.:* D.K. Smith

SANTA FE TEXTILES, Barcel Wire & Cable, 3151 W. Adams St., Santa Ana, CA 92704-5863, Tel: 714-751-7733, Telex: 910-595-1959; FSC No.: 31415; Empl.: 20; *Sls. Mgr.:* Mike Ross

SANYO ELECTRIC INC., 200 Riser Rd., Little Ferry, NJ 07643, Tel: 201-641-2333, Telex: 134-394; Empl.: 500; *Sls. Mgr.:* Joseph A. Carcone ..... **D•1478**

Local Sales Offices & Reps

CA	Compton, Sanyo Elec. Inc.	213-537-5830
FL	Gainesville, Sanyo Elec., Inc.	904-373-3737
IL	Bensonville, Sanyo Elec., Inc.	312-595-5600

SANYO SEMICONDUCTOR CORP., 7 Pearl Ct., Allendale, NJ 07401, Tel: 201-825-8080, Telex: 135138 SANYOSEMI ALNJ; Empl.: 22; *Sls. Mgr.:* Koichi Takahashi; *Dist. Mgr.:* Aki Goto

SAPHIKON, INC., 51 Powers St., Milford, NH 03055, Tel: 603-673-5831, Telex: 95-3067; Empl.: 32

SARONIX, 4010 Transport at San Antonio, Palo Alto, CA 94303, Tel: 415-856-6900, Telex: 348465; FSC No.: 61441; Empl.: 32; *Sls. Mgr.:* Dean Ransom; *Dist. Mgr.:* Dean Ransom ..... **A•1328, 1456-1460**

Local Sales Offices & Reps

AL	Huntsville, Electramark, Inc.	205-883-9948
AZ	Phoenix, JR Engrg. Sls., Inc.	602-956-4670
CA	Culver City, Bestronics	213-338-1212
CA	Fallbrook, Martronix	619-728-7678
CA	Irvine, Bestronics, Inc.	714-261-7233
CA	Woodland Hills, Bestronics, Inc.	213-704-5616
CO	Denver, Lindberg Co.	303-758-9033
FL	Altamonte Springs, Sls. Engrg. Concepts	305-682-4800
FL	Deerfield Beach, Sls. Engrg. Concepts	305-426-4601
FL	Tampa, Sls. Engrg. Concepts	305-331-3446
GA	Norcross, Electramark, Inc.	404-446-7915
IL	Palatine, Technlg. Sls., Inc.	312-991-6600
IN	Kokomo, Schillinger Assocs., Inc.	317-452-4057
KS	Kansas City, BC Elctrn. Sls., Inc.	913-342-1211
KS	Wichita, BC Elctrn. Sls., Inc.	316-722-0104
MA	Westwood, Apex Assocs.	617-326-5042
MI	Jenisen, R. C. Nordstrom & Co.	616-457-5762
MI	Southfield, R. C. Nordstrom & Co.	313-559-7373
MN	Eden Prarie, The Twist Co.	612-941-2040
MO	St. Louis, BC Elctrn. Sls.	314-521-6683
NV	Reno, Galena Technlg. Grp.	702-786-5030
NJ	Cherry Hill, Trinkle Sls.	609-795-4200
NJ	Englewood, Harold Gray Assocs.	201-894-0894
NM	Albuquerque, Lindberg Co.	505-881-1006
NY	Fayetteville, Henry C. Richter	315-637-6713
NC	Raleigh, J & B Sls.	919-783-9440
OH	Dayton, J. C. Hofstetter	513-296-1010
OH	Medina, J. C. Hofstetter	216-241-4880
OK	Tulsa, Logic 1	918-494-0765
OR	Beaverton, William J. Purdy Co.	503-641-9373
TX	Austin, Logic 1 Sls.	512-459-1297
TX	Richardson, Logic 1 Sls.	214-234-0765
UT	Salt Lake City, Lindberg Co.	801-277-2643
WA	Redmond, William J. Purdy Co.	206-882-3144
WI	Waukesha, Technlg. Sls., Inc.	414-786-5015
EXP	CA, Palo Alto, SaRonix	415-856-6900
Can	Rexdale, Ont., Bestec Elctrns.	416-674-1330

Local Distributors

CA	Anaheim, Deco Elctrns.	714-630-8252
CA	Manhattan Beach, Prime Electro Prods.	213-379-3642
CA	San Diego, Deco Elctrns.	619-693-1595
CA	San Diego, Southland Comps.	619-578-6630
FL	Oviedo, Aztech Elctrns.	305-365-2241
IN	Indianapolis, MAR Elctrns., Inc.	317-633-6699
MD	Columbia, General Radio Supp. Co.	301-995-6744
MA	Andover, R2 Elctrns.	617-470-3777
MI	Livonia, RS Elctrns.	313-525-1155
MO	St. Louis, Olive Elctrns.	314-426-4500
NJ	Camden, General Radio Supp. Co.	609-964-8383
NJ	Whippany, ADI	201-428-0510
NY	Hauppauge, Fairmount Elctrn. Sls.	516-231-3313
NY	Mt. Vernon, QAR	914-699-2224
NY	Stonybrook, Dove Elctrn. Comps.	516-689-7733
OR	Portland, Radar Elec. Co.	503-232-3404
WA	Seattle, Radar Elec. Co.	206-282-2511

SAVOY ELECTRONICS, P.O. Box 5727, Ft. Lauderdale, FL 33310, Tel: 305-563-1333, 800-327-1282, TWX: 510-955-9766; FSC No.: 59-1672492; Empl.: 60; *Sls. Mgr.:* J. Marlow

SAWTEK INC., P.O. Box 18000, Orlando, FL 32860, Tel: 305-886-8860, Telex: 514083, TWX: 810-862-0835; FSC No.: 58068; Empl.: 150 ..... **A•1461**

Local Sales Offices & Reps

AL	Huntsville, L & D, Inc.	205-837-1469
AZ	Scottsdale, Faser Tech. Sls.	602-948-4404
CA	Los Altos, Cain-White & Co.	415-948-6533
CA	Van Nuys, R-L Assocs.	818-782-7826
FL	Maitland, D. J. Ellis & Assocs.	305-645-1101
GA	Atlanta, L & D	404-395-7079
IL	Elk Grove Vl., Oasis Sls. Corp.	312-640-1850
IN	Ft. Wayne, J & B Engrg. Sls. Co.	219-483-2813
KS	Overland Park, Barnes-Midwest Sls.	913-469-9688
MD	Burtonsville, Eastern Instr. Corp.	301-384-8500
NH	Merrimack, John Callahan Assoc., Inc.	603-424-5700
NJ	Clarksburg, Micro-Lambda	609-259-0400
NY	Buffalo, Quality Comps.	716-837-5430
NY	Great Neck, Phase 4 Technical Rep., Inc.	516-482-1790
NY	Manlius, Quality Comps.	315-682-8885
NC	Greensboro, L & D Inc.	919-292-3201
NC	Raleigh, L & D Inc.	919-876-5301
TX	Richardson, Vector Sls.	214-234-4291
WA	Bellevue, Cain-White & Co.	206-462-2118
WI	Brookfield, Oasis Sls. Corp.	414-782-6660
Can	Montreal, Que., Soquelec Ltd.	514-482-6427

SAXTON WIRE AND CABLE, 215 N. Rte. 303, Congers, NY 10920, Tel: 914-268-6848, 800-431-2774, Telex: 13-1538; FSC No.: 16164; Empl.: 130; *Sls. Mgr.:* Bill Cullen; *Dist. Mgr.:* Steve Shelley

SAYLOR ELECTRONICS INT'L, INC., 1824 Calash Dr., Carson City, NV 89701, Tel: 702-883-4184; Empl.: 4



SCANBE UNIT, 3445 Fletcher Ave., El Monte, CA 91731, Tel: 818-579-2300, TWX: 910-587-3437, FAX: 818-444-3953; Empl.: 125; *Sls. Mgr.:* Frank Cooper/Gary Smith; *Dist. Mgr.:* Annamrie Trunco ..... **C•1084-1085**

Local Sales Offices & Reps

AZ	Scottsdale, EDP & Assoc.	602-991-6119
CA	Garden Grove, ELSCO Elctrns.	714-891-4621
CA	Santa Clara, Ross Mktg. Assocs.	408-988-8111
CO	Denver, Component Sls.	303-779-8060
FL	Casselberry, SEMI	305-831-2822
FL	Melbourne, Saber Assocs., Inc.	305-724-0920
GA	Norcross, Mtn. Electro Prods., Inc.	404-448-5594
IL	Elk Grove Village, Control Sls.	312-595-2110
IN	Indianapolis, Frank J. Campisano Co.	317-253-7651
MD	Laurel, Elec. Mktg. Assocs.	301-953-7800
MA	Needham, Com-Sale, Inc.	617-444-8071
MI	Grosse Pt. Pk., Greiner Assocs.	313-499-0188
MN	Bloomington, Elec. Sls. Agy.	612-884-8291
NM	Albuquerque, Nelco Electronix	505-293-1399
NY	Great Neck, MOS Assocs.	516-487-3966
NY	Mendon, Tech-Mark Inc.	716-624-3840
OH	Cincinnati, Frank J. Campisano Co.	513-574-7111
OH	Cleveland, Frank J. Campisano Co.	216-749-5550
OR	Beaverton, Blair Hirsh Co., Inc.	503-641-1875
PA	King of Prussia, KSI	215-783-6400
TX	Dallas, Milco Mktg. Inc.	214-783-2716
TX	Houston, Milco Mktg. Inc.	713-723-5003
WA	Lynnwood, Blair Hirsh Co., Inc.	206-774-8151

Local Distributors

AZ	Phoenix, Cetec	602-272-7951
CA	Fountain Valley, Comps. Ctr.	714-979-0433
CA	San Jose, Rose Elctrns.	408-263-9700
CA	South Gate, Cetec	213-773-6521
CO	Englewood, Hall-Mark	303-790-1662
CT	Bethel, Heilind Elctrns.	203-797-8600
CT	East Haven, J.V. Elctrns.	203-469-2321
FL	Orlando, Hall-Mark Elctrns.	305-855-4020
FL	Pompano Bch., Hall-Mark Elctrns.	305-971-9280
IL	Wooddland, Hall-Mark Elctrns.	312-860-3800
IN	Indianapolis, Advent Elctrns.	317-872-4910
KS	Lenexa, Hall-Mark Elctrns.	913-888-4747
MD	Columbia, Hall-Mark Elctrns.	301-988-9800
MD	Jessup, Treeko Sls.	301-470-3300
MA	Newton, Greene-Shaw	617-969-8900
MA	Wilmington, Heilind Elctrns.	617-657-4870
MI	Livonia, R.S. Elctrns.	313-525-1155
MN	Eden Prairie, Hall-Mark Elctrns.	612-941-2600
MN	Minneapolis, Indl. Comps.	612-831-2666
MO	Earth City, Hall-Mark Elctrns.	314-291-5350
MO	St. Louis, Olive Elctrns.	314-426-4500
NJ	Cranford, Garden State Elctrns.	201-272-6400
NM	Albuquerque, International Elctrns.	505-345-8127
NY	Bohemia, Car-Lac Elctrns.	516-567-4200
NY	Buffalo, Summit Elctrns.	716-887-2800
NY	Lynbrook, Peerless Radio	516-593-2121
NY	Rochester, Summit Elctrns.	716-334-8110
NC	Raleigh, Hall-Mark Elctrns.	919-872-0712
OH	Solon, Hall-Mark Elctrns.	216-349-4632
OR	Beaverton, Rose Elec. Distr. Co.	503-629-9288
PA	Essington, Tri-Com	215-521-3080
TX	Austin, Hall-Mark Elctrns.	512-258-8848
TX	Dallas, Hall-Mark Elctrns.	214-553-4300
TX	Dallas, International Elctrns.	214-233-9323
TX	Houston, Hall-Mark Elctrns.	713-781-6100
WA	Seattle, R.V. Weatherford	206-575-1340
WI	Milwaukee, Marsh Elctrns.	414-475-6000

SCANNING DEVICES, INC., 108 Elm St., Waltham, MA 02154, Tel: 617-891-8991; Empl.: 25; *Sls. Mgr.:* David Chanoux

SCHAEVITZ ENGRG., U.S. 130, Union Ave., Pennsauken, NJ 08110, Tel: 609-662-8000, TWX: 710-892-0714; FSC No.: 93190; Empl.: 325; *Sls. Mgr.:* F. R. Pisaro



SCHAFFNER EMC, INC., Instr. Div., 825 Lehigh Avenue, Union, NJ 07083, Tel: 201-851-0644, 800-367-5566, Telex: 685-3444, FAX: 201-467-1330; *Sls. Mgr.:* Albert A. Chiaravallo ..... **A•1699; D•1311**

Local Sales Offices & Reps

AL	Sci. Dvcs., S.E.	205-536-1969
AZ	Odyssey I	602-246-8846



AR Jim Wisdom & Assocs. 214-470-9093
CA (North), Microwave Meas. 415-846-0377
CA (South), Advanced Prods. Sls. 818-706-8351
CO Odyssey I 303-773-8176
CT Intersell 617-273-3844
DE Robert Meyers Assocs. 215-224-1663
DC Electra Tech 703-670-6962
FL Sci. Dvcs., S.E. 305-841-8180
GA Sci. Dvcs., S.E. 404-979-7971
ID Syntek 206-488-0394
IL Loren F. Green/Cen. 312-593-0282
IN Carter, McCormick & Peirce 317-244-1685
IA Palatine Engrg. & Sls. 319-365-8071
KS Palatine Engrg. & Sls. 816-229-4007
KY Carter, McCormick & Peirce 513-836-0951
LA Jim Wisdom & Assocs. 214-470-9093
ME Intersell 617-273-3844
MD Electra-Tech 301-877-0344
MA Intersell 617-273-3844
MI Carter, McCormick & Peirce 313-477-7700
MN Loren F. Green/Minn. 612-571-6666
MS Sci. Dvcs., S.E. 904-651-4407
MO Palatine Engrg. & Sls. 314-839-0800
MT Syntek 206-488-0394
NE Palatine Engrg. & Sls. 314-839-0800
NV Microwave Meas. 415-846-0377
NH Intersell 617-273-3844
NJ (North), Bytec 516-781-7400
NJ (South), Robert Meyers Assocs. 215-224-1663
NM Odyssey I 505-265-6645
NY (Metro), Bytec 516-781-7400
NY (State), Labtronics 315-455-7314
NC Sci. Dvcs., S.E. 919-765-5776
ND Loren F. Green/Minn. 612-571-6666
OH Carter, McCormick & Peirce 216-779-5100
OK Jim Wisdom & Assocs. 918-665-8899
OR Syntek 503-636-6793
PA Roebert Meyers Assocs. 215-224-1663
RI Intersell 617-273-3844
SC Sci. Dvcs., S.E. 919-765-5776
SD Loren F. Green/Minn. 612-571-6666
TN Sci. Dvcs., S.E. 919-765-5776
TX Jim Wisdom & Assocs. 214-470-9093
UT Odyssey I 801-531-1216
VT Intersell 617-273-3844
VA (North), Electra-Tech 703-670-6962
VA (South), Electra-Tech 804-834-2417
WA Syntek 206-488-0394
WV Carter, McCormick & Peirce 412-733-7490
WI Loren F. Green/Cen. 312-593-0282
WY Odyssey I 303-773-8176
Can (East), Amos, Mitchell & Assocs. 416-584-2238
Can (West), Jerome & Francis Co. 604-986-1286

SCHAUER MANUFACTURING, 4500 Alpine Ave., Cincinnati, OH 45242, Tel: 513-791-3030, Telex: 21-4576; Empl.: 195; *Sls. Mgr.:* A. A. Groenewold; *Dist. Mgr.:* Dan Shaw

SCHLAGE ELECTRONICS, 5452 Betsy Ross Drive, Santa Clara, CA 95054-1102, Tel: 408-727-5170, Telex: 171122; Empl.: 200

SCHONSTEDT INSTRUMENT CO., 1775 Wiehle Ave., Reston, VA 22090, Tel: 703-471-1050, TWX: 710-833-9880; Empl.: 45

SCHOTT CORP., 1000 Parkers Lk. Rd., Wayzata, MN 55391, Tel: 612-475-1173, TWX: 910-576-2964; FSC No.: 80023; Empl.: 325; *Sls. Mgr.:* A. Schmitt

Local Sales Offices & Reps
IL Des Plaines, Electro-Comp. Sls. 312-234-0336
MA Needham, Hatch Assocs. 617-963-3306

SCHOTT ELECTRONICS, 42 Silvermine Road, Seymour, CT 06483, Tel: 203-881-0102, TWX: 710-451-8911, FAX: 203-881-0098; Empl.: 240; *Sls. Mgr.:* Ross Wieringa

SCHOTT GLASS TECHNOLOGIES, INC., 400 York Ave., Duryea, PA 18642, Tel: 717-457-7485, TWX: 510-671-4535; FSC No.: 23-169-1403; Empl.: 600; *Sls. Mgr.:* D. Dougherty

SCHRACK NORTH AMERICA CORP., 3 Westchester Plaza, Elmsford, NY 10533, Tel: 914-592-1305, Telex: 646149, FAX: 914-592-1728; Empl.: 10; *Sls. Mgr.:* John Walsh; *Dist. Mgr.:* James Amor ..... **B•1490-1496**

Local Sales Offices & Reps
AL Huntsville, DHR Mktg. 205-533-5165
AZ Glendale, Adtek 602-931-9289
CA Arcadia, Van Gott & Assocs. 818-445-9728
CA Santa Rosa, Kency & Assocs. 707-579-5025
CO Boulder, Stratford Grp. 303-530-3194
FL Tampa, J-R Controls, Inc. 813-282-7946
GA Atlanta, DHR Mktg. 404-451-9848
IL Wheaton, Chadra-Schilke & Assocs. .. 312-653-8126
IN Indianapolis, C.C. Elctrns. 317-255-1508
KS Shawnee Mission, Microtronics (K&M) 913-262-1444
MA Waltham, Gerber Sls. 617-890-3334
MN Roseville, TLC 612-483-2226
MO St. Charles, Microtronics 314-946-8500
NJ Lawrenceville, DVS Co. 609-896-1112
NJ Westwood, Jarms 201-666-9390
NY Syracuse, PI Tronics 315-455-7346
NC Raleigh, DHR 919-781-1961
SC Greenville, DHR Mktg. 803-235-3594
TX Irving, Kite Elctrns. 214-986-0321
VA Richmond, DHR Mktg. 804-359-8803
WA Seattle, Krebs & Assocs. 206-285-8015
Can St. Laurent, Electromatic Comps. Ltd. 514-337-1104

Local Distributors
CA Buena Park, Ford Elctrns. 714-521-8080
CA Santa Monica, Distributor Specialist ... 213-393-9666
CT Hartford, Wes-Garde/Switch Controls 203-527-7705
CT New Haven, Hatry Elctrns. 203-755-1181
FL Lakeland, West-Garde/Swich Controls 813-644-7564
GA Norcross, Wholesale Ind. Elec., Inc. ... 404-447-8431
IL Carol Stream, Lectro Comps. 312-690-0520
IL Crystal Lake, Sub Sem, Inc. 815-459-4139
IA Boise, Bolen's Control House 208-375-3070
MD Gaithersburg, Axis Elctrns. 301-840-9640
MA Andover, Aved Elctrns. 617-657-8310
MA Wilmington, Standard Elctrns. 617-658-5050
MI Troy, Empire Elctrns. 313-585-8130
MN New Brighton, Chris Elctrns. 612-631-2647
NJ Oakland, Relay Specialties 201-337-1000
NY Buffalo, Summit Elctrns. 716-334-8110
NY New Rochelle, Derf Elctrns. 914-235-4600
OH Cincinnati, Schuster Distrs. 216-425-8134
OR Portland, O-Four Controls 503-231-8058
PA Redding, R.A.M. Motor Control 215-376-7102
SC Spartanburg, Harley's Elctrns. 803-582-7961
TX Dallas, Off The Shelf Comps. 214-247-0052
TX Garland, Industrial Equip. 214-271-5494
UT Salt Lake City, Ballard Supp. 801-972-2430
WA Seattle, Radar Elec. Co., Inc. 206-282-2511
WI Cedarburg, Lake-View Elctrns. Corp. .. 414-377-8250

Schroff®
19" Systems for Electronics Packaging

SCHROFF INCORPORATED, Schroff GMBH, 170 Commerce Dr., Warwick, RI 02886, Tel: 401-732-3770, Telex: 952175, FAX: 401-738-7988; Empl.: 65; *Sls. Mgr.:* Thomas Kennedy ..... **C•1086**

Local Sales Offices & Reps
AL Huntsville, CSR Elctrns. 205-533-2444
AZ Scottsdale, Luscombe Engr. 602-949-9333
CA Campbell, Luscombe Engr. 408-370-2020
CA Pasadena, Luscombe Engr. 213-684-2000
CA San Diego, Luscombe Engr. 619-549-9699
CO Boulder, Luscombe Engrg. 303-772-3342
FL Altamont Springs, Carter Assocs. 305-671-6800
GA Atlanta, CSR Elctrns. 404-396-3720
IL Hillside, Cadre Tech. Rep. 312-449-3900
IA Marion, MSB Assocs. 319-377-6261
KS Roeland Park, MSB Assocs. 913-432-2131
MD Columbia, Delta III Assocs. 301-730-0790
MI Troy, C. B. Jensen 313-643-0506
MN Minneapolis, D. A. Case Assoc. 612-869-3700
MO St. Charles, MSB Assocs. 314-946-5577
NH Salem, Sales Engr. 603-893-5521
NJ Englewood, Sprung-Nussbaum 201-569-5666
NY Clifton Park, Bastian Sls. 518-452-2026
NY E. Syracuse, Bastian Sls. 315-437-1482
NY Fairport, Bastian Sls. 716-223-0237
NC Matthews, CSR Elctrns. 704-847-1927
OH Aurora, EMA 216-562-6104
OH Centerville, EMA 513-433-2800
OR Tigard, Elctrn. Comps. Sls. 503-245-2342
PA Huntington Valley, Omega Elctrn. Sls. 215-947-4135
TN Knoxville, CSR Elctrns. 615-673-0222
TX Austin, CMZ 512-255-1663
TX Garland, CMZ 214-681-1414
WA Mercer Island, Elctrn. Comp. Sls. 206-232-9301

SCHROFF UK LTD., Maylands Ave., Hemel Hempstead, Herts, England HP2 4SG, Tel: 0442-40471/6, Telex: 825658; *Sls. Mgr.:* Mr. B-U Kaupisch

SCHURTER, INC., 1016 Clegg Ct., Petaluma, CA 94952, Tel: 707-778-6311, Telex: 176-084; FSC No.: 61935; *Sls. Mgr.:* Bruno H. Schurter ..... **C•1516-1518**

Local Sales Offices & Reps
AL Athens, Effective Mktg. Force 205-233-2947
AZ Scottsdale, Elctrns. Tech. Sls. Assocs., Inc. 602-941-9137
CA Fullerton, Gru Assocs. 714-738-0903
CA Moraga, Ruppert Sls. & Engrg. 415-376-8040
CA San Jose, Ruppert Sls. & Engrg. 408-998-8717
CO Lakewood, Cristee-Meade Co. 303-232-0287
FL Pompano, IMR, Inc. 305-942-2449
GA Lawrenceville, Effective Mktg. Force .. 404-925-2060
GA Lithia Springs, Effective Mktg. Force .. 404-948-4209
IL Arlington Hgts., MJ Petersen & Assoc., Ltd. 312-577-8200
IN Carmel, Newton & Assocs. 317-848-2016
IN Indianapolis, CC Elctrn. Sls. 317-255-1508
KS Lenexa, Midtec Assocs., Inc. 913-541-0505
MN Minnetonka, Frank Anthony Mktg. 612-934-0773
MS Jackson, Doby Assocs. 601-981-1138
MO St. Louis, Midtec Assocs., Inc. 314-275-8666
NH Nashua, Bell Controls 603-882-6984
NJ Ho-Ho-Kus, D. J. Fisher Co. 201-652-0090
NJ Medford, Champion Elctrn. Sls. Co. 609-983-0932
NY Fairport, TAC Sls, Inc. 716-425-1070
NC Lillington, Effective Mktg. Force 919-893-9650
OH Beachwood, Electronic Salesmasters 216-831-9555
OR Portland, Dussault & Associates Inc. .. 503-641-8780
TN Memphis, Doby Assocs. 901-763-5730
TX Dallas, Reese & Assocs. 214-351-0703
WA Seattle, Dussault & Associates Inc. ... 206-281-4025

Local Distributors
CA Chatsworth, Fuses Unltd. 818-882-1515, 800-255-1919
CA Livermore, Fusecom, Inc. 415-449-1313
CA San Jose, Quail Elctrns. 408-995-0812
CA Sunnyvale, Target Elctrns., Inc. 408-734-5611
IL Elk Grove Village, Nu-Way Elctrn. Distrbs. Inc. 312-437-7120
MD Rockville, FIC Corp. 800-638-6594
MA Wilmington, JV ELctrns. 617-273-4300
OH Strongsville, Fuse World 216-238-1330
OR Tualatin, Moore Elctrns., Inc. 503-692-5333
TX Dallas, Fuses, Inc. 214-341-6407
WA Redmond, Fusecom, Inc. 206-881-2442
Can Markham, Ont., Lenbrook Elctrns. 416-777-7722

SCIENCE ACCESSORIES CORP., 970 Kings Hwy. W., Southport, CT 06490, Tel: 203-255-1526, Telex: 964300 SAC SPRT; *Sls. Mgr.:* H. A. Cleveland

SCIENCE/ELCTRNS., P. O. Box 986, Dayton, OH 45401-0986, Tel: 513-228-6011, FAX: 513-228-3353; Empl.: 25; *Sls. Mgr.:* E. E. Pohl; *Dist. Mgr.:* J. Tanksley

SCIENTECH, INC., 5649 Arapahoe Ave., Boulder, CO 80303, Tel: 303-444-1361, 800-525-0522, TWX: 910-940-0994; Empl.: 57

SCIENTIFIC-ATLANTA, INC., See Optima Enclosures

SCIENTIFIC COLUMBUS, INC., Esterline Corporation, 1900 Arlingate Lane, Columbus, OH 43223, Tel: 614-274-0400, Telex: 245-426, FAX: 614-272-2288; *Sls. Mgr.:* Donald M. Yore

SCIENTIFIC COMMUNICATIONS, INC., 3425 Kingsley Rd., Garland, TX 75041, Tel: 214-271-3685, TWX: 910-860-5172; *Sls. Mgr.:* Donald G. Luiken

SCIENTIFIC RESEARCH CORP., See TRAK Microwave Corp.

SCIENTIFIC SYSTEMS, INC., One Alewife Pl., 35 Cambridge Pk., Cambridge, MA 02140, Tel: 617-661-6364, Telex: 928201, FAX: 617-661-6253; FSC No.: 2N787; Empl.: 63; *Sls. Mgr.:* Ralph Hawes, VP Sls. & Mktg.

SCIENTIFIC TECHNOLOGY, Optical Sensor Division, 1201 San Antonio Rd., Mountain View, CA 94043, Tel: CA 415-965-0910, 800-221-7060, Telex: 34-5506; Empl.: 100

SCITEQ ELECTRONICS, INC., 8401 Aero Dr., San Diego, CA 92123, Tel: 619-292-0500, Telex: 882008, FAX: 619-292-9120; FSC No.: 70561; Empl.: 35; *Sls. Mgr.:* Phil Feinberg

SCOPE INCORPORATED, 1860 Michael Faraday Dr., Reston, VA 22090, Tel: 703-471-5600, TWX: 710-883-1178; Empl.: 260; *Sls. Mgr.:* Richard Gizzie

SCREEN DATA CORP., 80 S. Jefferson Rd., Whippany, NJ 07981, Tel: 201-887-7713, 800-248-1212, Telex: 710-387-209; *Sls. Mgr.:* Michael A. Kling

SC TECHNOLOGY, INC., 2450 Armstrong St., Livermore, CA 94550, Tel: 415-373-9230; *Sls. Mgr.:* Susan L. Karl

SCREENPRINT DOW, See Dow Switch, Div. of Screenprint Dow

SEABOARD ELCTRNS., 70 Church St, New Rochelle, NY 10805, Tel: 914-235-8073, Telex: 646289; Empl.: 40; *Sls. Mgr.:* Dr. Richard Ader; *Dist. Mgr.:* Dr. Richard Ader

SEACOR, INC., 123 Woodland Ave, Westwood, NJ 07675, Tel: 201-666-5600, FAX: 201-664-8544; Empl.: 45

SEA DATA CORP., One Bridge St, Newton, MA 02158, Tel: 617-244-3203, Telex: 951107; Empl.: 30; *Sls. Mgr.:* P. Slechta/G. Bowers

SEALECTRO-BICC ELECTRONICS, 40 Lindeman Dr., Trumbull, CT 06611, Tel: 203-372-4118, Telex: 71-425-501, FAX: 203-372-6224; FSC No.: 98291; Empl.: 1600; *Sls. Mgr.:* D. Peoples, VP Sls. & Mktg.; *Dist. Mgr.:* P. Tynan, Dist. Sls. Mgr.

SEALTRON, INC., 9705 Reading Road, Cincinnati, OH 45215, Tel: 513-733-8400, Telex: 62872030; Empl.: 120; *Sls. Mgr.:* James Dawson

SEASTROM MANUFACTURING CO., INC., 701 Sonora Ave., Glendale, CA 91201, Tel: 213-245-9121, TWX: 910-497-2271; FSC No.: 86928; Empl.: 75; *Sls. Mgr.:* Bob Seastrom

SECTOR MICROWAVE IND. INC., 999 Grand Blvd., Deer Park, NY 11729, Tel: 516-242-2300, TWX: 510-227-6075; Empl.: 40; *Sls. Mgr.:* Victor Nelson

SECOINSA/DIGI POWER, 686 E. Gish Rd., San Jose, CA 95112, Tel: 408-288-5600, Telex: 910-338-0579; Empl.: 90; *Sls. Mgr.:* Ron Murphy; *Dist. Mgr.:* Ron Murphy

SECURITY PLASTICS, INC., 14427 N.W. 60th Ave., Miami Lakes, FL 33014, Tel: 305-823-5440, FAX: 305-557-1431; Empl.: 400; *Sls. Mgr.:* Nelson Rodriguez

SEEQ TECHNOLOGY, 1849 Fortune Dr., San Jose, CA 95131, Tel: 408-432-9550, Telex: 296609, TWX: 9103382313, FAX: 408-432-9549; Empl.: 400; *Sls. Mgr.:* Phil Ortiz, V.P. Sls.; *Dist. Mgr.:* Carolyn Troland

SEIKO INSTRUMENTS

SEIKO INSTRUMENTS U.S.A., INC., 2990 W. Lomita Blvd., Torrance, CA 90505, Tel: 213-530-8777, TWX: 910-347-7307, FAX: 213-539-8621; *Sls. Mgr.:* John Hawkins, Lee Guio; *Dist. Mgr.:* Lee Guio, John Hawkins ..... **A•1462-1463, 1771; B•1113; D•1099**

Local Sales Offices & Reps

AL	Huntsville, Electro-Mech	205-533-2100
AZ	Scottsdale, Fred Board Assocs.	602-994-9388
AZ	Tucson, Fred Board Assocs.	602-299-1508
CA	Irvine, Groh Assoc.	714-837-9871, 619-696-0054
CA	San Jose, Exis, Inc.	408-287-6680
CO	Golden, Candal, Inc.	303-233-0155
FL	Plantation, Gallagher & Assocs.	305-473-2101
GA	Norcross, Electro-Mech	404-447-6478
IL	Elk Grove Village, The John G. Twist Co., Inc.	312-593-0200
IN	Greenwood, Valentine & Assocs.	317-888-2260
IN	South Bend, Valentine & Assocs.	219-288-7070
KS	Overland Park, Kebco	913-541-8431
KS	Wichita, Kebco	316-733-1301
MD	Linthicum, Advanced Technlg. Sls.	301-789-9360
MA	Taunton, Focus Elctrns.	617-824-3840
MI	Grosse Pointe Pk., Greiner Assoc.	313-499-0188
MN	Eden Prairie, High Tech	612-944-7274
MO	Maryland Hgts., Kebco	314-576-4111
NJ	Manville, DynoRep, Inc.	201-685-0135
NM	Albuquerque, Fred Board Assocs.	505-888-1121
NC	Raleigh, Electo-Mech	919-851-8165
OH	Wadsworth, Merit Elctrns.	216-239-2186
TX	Austin, TL Mktg.	512-453-4586
TX	Dallas, TL Mktg.	214-357-1752
UT	Salt Lake City, Aspen Sage	801-467-2401
WA	Mercer Island, Elctrn. Comps. Sls.	206-232-9301
WI	Brookfield, John G. Twist Co., Inc.	414-782-2670
Can	Mississauga, Ont., Tech-Trek, Ltd.	416-238-0366
Can	Richmond, B.C., Tech-Trek, Ltd.	604-271-2764
Can	Ville St. Laurent, Tech-Trek, Ltd.	514-337-7540

Local Distributors

AZ	Phoenix, Sterling Elctrns.	602-268-2121
CA	Anaheim, Pacesetter Elctrns. USA	714-779-5855
CA	Costa Mesa, Eric Elctrns.	714-751-1185
CA	Reseda, Jan Dvcs.	818-708-1100
CA	San Diego, Added Value Elctrns.	619-278-1990
CA	San Diego, Neumann Elctrns.	619-695-3005
CA	San Jose, Eric Elctrns.	408-262-1111
CA	San Jose, Merit Elctrns.	408-434-0800
CA	Sunnyvale, Pacesetter Elctrns. USA	408-734-5470
CA	Tustin, Added Value Elctrns.	714-259-8258
CO	Englewood, Sterling Elctrns.	303-796-7338
CT	Wallingford, Sterling Elctrns.	203-265-9535
FL	Tampa, Lectro Distrs.	813-960-1631
IL	Chicago, Micro Elctrns.	312-539-2994
IL	Elmhurst, Semi-Conductor Specialists	312-279-1000
IL	Northbrook, Classic Comps.	312-272-9650
IA	Cedar Rapids, Dee Elctrns., Inc.	319-365-7551
KS	Overland Park, Sterling Elctrns.	913-236-5589
MD	Middletown, Current Comps.	301-473-5333
MA	Norwood, Emtel	617-769-9500
MA	Woburn, Sterling Elctrns.	617-938-6200
MN	Bloomington, Semi Conductor Specialists	612-854-8841
MO	St. Louis, Ric-Tronics	314-576-9816
NJ	S. Plainfield, Sterling Elctrns.	201-769-7000
NM	Albuquerque, Sterling Elctrns.	505-884-1905
NY	Mt. Vernon, QAR	914-699-2224
NY	Victor, ADD Elctrns.	716-924-4760
OH	Cincinnati, Schuster	513-489-1400
OH	Twinsburg, Schuster	216-425-8134
OK	Tulsa, Sterling Elctrns.	918-663-2410
OR	Tualatin, Moore Elctrns.	503-692-5333
PA	Exton, VSH Elctrns.	215-363-2250
TX	Austin, Sterling Elctrns.	512-836-1341
TX	Dallas, Sterling Elctrns.	214-243-1600
TX	Houston, Sterling Elctrns.	713-627-9800
VA	Richmond, Sterling Elctrns.	804-226-2190
VA	Sterling, Sterling Elctrns.	703-450-2373
WI	New Berlin, Classic Comps.	414-786-5300
CO	Wheatridge, Added Value Elctrns.	303-422-1701
Can	Concord, Ont., ITT Multicomps.	416-736-1144
Can	Downsview, Westburne Indl. Entprs.	416-635-2980
Can	Markman, Semad Div. DEW Elctrns.	416-475-8500

SEIKO INSTRUMENTS U.S.A., INC., Robotics/Automation Div., 2990 W. Lomita Blvd., Torrance, CA 90505, Tel: 213-530-8777; *Sls. Mgr.:* John Dudley

SEKAI ELECTRONICS OF AMERICA, INC., 14700 E. Firestone Blvd., Suite 122, La Mirada, CA 90638, Tel: 714-670-1854, Telex: 882756; FSC No.: 8V398; Empl.: 6; *Sls. Mgr.:* Larry Klementowski

selco

SELCO PRODUCTS CO., SEL Sales, Inc., 7580 Stage Rd., Buena Park, CA 90621, Tel: 714-521-8673, Telex: 65-5457; Empl.: 18; *Sls. Mgr.:* Bill Wilkinson; *Dist. Mgr.:* Bill Keneipp ..... **B•1758; C•1599; D•1372**

Local Sales Offices & Reps

CA	Arcadia, HMC, Inc.	818-447-0958
CA	La Mesa, Summit Sls.	619-697-0646
CA	Sunnyvale, Pass Assocs.	408-735-9040
IL	Elk Grove Vl., Parcom Inc.	312-228-6360
MA	Andover, Crawford Assocs.	617-470-2122
MN	Hopkins, S. J. Collins Co.	612-933-7661
NJ	Watchung, Dolan Assocs.	201-753-2671
NY	Marcellus, Mullahy Sls. Inc.	315-673-4898
OK	Tulsa, Swearingen Sls.	918-299-3206
OR	Beaverton, Luscombe Engrg.	503-636-6664
PA	Hatboro, J. S. Wurts Co.	215-674-3562
TX	Austin, Swearingen Sls.	512-339-8663
TX	Dallas, Swearingen Sls.	214-241-8767
UT	Salt Lake city, Sage Assocs.	801-467-5451

Local Distributors

CA	Arcadia, Parco	818-447-0958
MA	Andover, Crawford Assocs.	617-470-2122

SEL-REX DIV., OMI Intl. Corp., 75 River Rd., Nutley, NJ 07110, Tel: 201-667-5200, Telex: 133-320, TWX: 710-989-1423; Empl.: 250; *Sls. Mgr.:* Larry Price

SEMICOA, 333 McCormick Ave., Costa Mesa, CA 92626, Tel: 714-979-1900, Telex: 678-315, TWX: 910-595-1961, FAX: 714-557-4541; FSC No.: 34156; Empl.: 85; *Sls. Mgr.:* M. Gregson

SEMICON COMPONENTS, INC., Div. of Semicon, Inc., 10 North Ave., Burlington, MA 01803, Tel: 617-272-9015, TWX: 710-332-1919; Empl.: 300; *Sls. Mgr.:* Jack Lawrence

SEMICONDUCTOR CIRCUITS, 49 Range Rd., Windham, NH 03087, Tel: 603-893-2330, TWX: 710-366-0505; Empl.: 300; *Sls. Mgr.:* R. Gunther

SPM

SEMICONDUCTOR PACKAGING MATERIALS CO., 431 Fayette Ave., Mamaroneck, NY 10543, Tel: 914-698-5353, FAX: 914-698-5386 ..... **C•1107**

Local Sales Offices & Reps

AZ	Tempe, Spectrum Assoc., S.W.	602-966-1788
CA	Anaheim, California Tech Svcs.	714-630-8470
CA	Santa Clara, California Tech. Svcs.	408-496-1155
CT	Southington, Libby Assocs.	203-747-5601
FL	Pompano Beach, J. P. Elctrn. Sls.	305-782-6830
IL	Downers Grove, Physics Equip.	312-960-4054
PA	Franconia, Scharas Assocs.	215-582-0450
TX	Dallas, Dallas Indl. Sls.	214-669-2608
WA	Bellevue, Mars	206-747-3292

SEMICONDUCTOR TECHNOLOGY, INC., 3131 S.E. Jay St., Stuart, FL 33497, Tel: 305-283-4500, TWX: 510-953-7511, FAX: 305-286-8914; FSC No.: 50891; Empl.: 45

SEMIKRON, INC., 11E Executive Dr., P.O. Box 66, Hudson, NH 03051-0066, Tel: 603-883-8102, 1-800-258-1308, Telex: 6711011; FSC No.: 58687; Empl.: 60; *Sls. Mgr.:* Frank Haase; *Dist. Mgr.:* Bruce Sessler

SEMTECH, 652 Mitchell Rd., Newbury Park, CA 91320, Tel: 213-628-5392, TWX: 910-336-1264; FSC No.: 14099;Multiple; Empl.: 200; *Sls. Mgr.:* John Pennant-Jones; *Dist. Mgr.:* John Pennant-Jones

SEMTRONICS CORP., 310 Hwy 7 74 S, P.O. Box 2248, Peachtree City, GA 30269, Tel: 404-487-6681, Telex: 8107662244; Empl.: 30; *Sls. Mgr.:* Gregory Galaida

SENCORE, 3200 Sencore Dr., Sioux Falls, SD 57107, Tel: 605-339-0100, 800-843-3338, TWX: 910-660-0300; Empl.: 250

SENSITEK CORPORATION, See Biddle Instruments

Sensitive Research

SENSITIVE RESEARCH INSTRUMENTS, 25 Dock St., Mt. Vernon, NY 10550, Tel: 914-699-9717; FSC No.: 32590;16034A; Empl.: 35 ..... **D•1312-1314**

Local Sales Offices & Reps

AZ	Scottsdale, Williams Assocs.	602-947-4297
CO	Commerce City, Williams Assocs.	303-289-5647
DC	Washington, Whitcomb Assocs.	202-737-0763
IL	Lincolnwood, Saffro & Assocs.	312-677-9720
KS	Shawnee Mission, Comtel - Midwest	913-722-1030
MD	Baltimore, Whitcomb Assocs.	301-889-1245
MA	Lexington, Zieco	617-861-8300
MI	Southfield, Comtel Instrs. Co.	313-358-2505
MN	Minneapolis, Hei-Lite Sls.	612-861-6051
MO	St. Louis, Comtel - Midwest	314-991-5363
NM	Albuquerque, Williams Assocs.	505-255-1638
NY	Mount Vernon, Elctrl. Instr. Svc.	914-699-9717
OH	Cleveland, Comtel Instrs. Co.	216-442-8080
OH	Dayton, Comtel Instrs. Co.	513-426-5310
OH	Hilliard, Comtel Instrs. Co.	614-876-8305
OK	Tulsa, Data Mktg. Assocs.	918-494-2711
PA	Pittsburgh, Comtel Instrs. Co.	412-922-5720
TX	Austin, Data Mktg. Assocs.	512-443-7722
TX	Dallas, Data Mktg. Assocs.	214-661-0300
TX	Houston, Data Mktg. Assocs.	713-780-2511
TX	San Antonio, Data Mktg. Assocs.	512-342-3031
UT	Salt Lake City, Williams Assocs.	801-532-7701
WI	Lake Mills, Saffro & Assocs.	414-648-2605

SENSORAY, 44106 Old Warm Springs Blvd., Fremont, CA 94538, Tel: 415-657-7290; Empl.: 5; *Sls. Mgr.:* Karen Reeves ..... **D•1175**

Local Sales Offices & Reps

AL	Huntsville, FM Assocs.	205-882-0689
AZ	Tempe, Trembly Assocs.	602-967-2058
CA	LaJolla, Access Technlgs.	619-454-6274
CA	Placentia, Access Technlgs.	714-996-3917
CA	Sepulveda, Access Technlgs.	818-894-0981
CO	Wheatridge, Trembly Assocs.	303-421-8900
CT	Orange, Isdale Assocs.	203-387-2704
FL	Orlando, FM Assocs.	305-851-5710

GA Atlanta, FM Assocs. 404-446-0038
IL Arlington Hgts., Coombs Assocs. 312-439-9810
MN Minneapolis, CMT Corp. 612-566-6930
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assocs. 505-266-8616
NY Syracuse, T-Squared Elctrns. 315-463-8592
NC Ramseur, FM Assocs. 919-824-8461
OH Chesterland, EQS Sys. 216-729-2222
OR Beaverton, Cascade Data Mktg. 503-641-9266
UT Salt Lake City, Trembly Assocs. 801-486-5292
WA Kirkland, Cascade Data Mktg. 206-747-6190

SENSOR CORP., Box 140, Scottdale, PA 15683, Tel: 412-887-4080; Empl.: 6

Sensor Scientific, inc.

SENSOR SCIENTIFIC, INC., 1275 Bloomfield Ave., Fairfield, NJ 07006, Tel: 201-227-7790, 800-524-1610, TWX: 910-240-3313; *Sls. Mgr.:* Bob Brinley ..... **B•1759-1761**

Local Sales Offices & Reps

CA Irvine, Vale Elctrn. Assoc. 714-551-4004
CA San Diego, Vale Elctrns. 619-693-0113
CA Van Nuys, Vale Elctrns. 818-705-0283
CO Ft. Collins, Rep. Sls. 303-226-1504
CT Hartford, Sturgeon Co. 203-249-7800
FL Hollywood, Ashland Elctrn. Corp. 305-987-1074
IL Des Plaines, ESCO Assocs. 312-298-5310
MA Needham, Sturgeon Co. 617-444-6603
TX Dallas, Allied Comps. Inc. 214-238-0408
TX Houston, Allied Comps. Inc. 713-988-1600

SENSOR SYSTEMS, INC., 8929 Fullbright Ave., Chatsworth, CA 91311, Tel: 818-341-5366, Telex: 69-1583; *Sls. Mgr.:* E. Schneider

SENSOR TECHN., 21012 Lassen St., Chatsworth, CA 91311, Tel: 213-882-4100, TWX: 910-494-4776; Empl.: 350; *Sls. Mgr.:* Robert Bryden

SENSORTEK, INC., 154 Em Huron Ave., Clifton, NJ 07013, Tel: 201-779-5577, Telex: 238790; Empl.: 26

SENSOTEC, INC., 1200 Chesapeake Ave., Columbus, OH 43212, Tel: 614-486-7723, TWX: 810-482-1188; FSC No.: 29927; *Sls. Mgr.:* Jack Feil ..... **B•1818-1820**

Local Sales Offices & Reps

AL Birmingham, Sesco, Inc. 205-988-8304
AZ Sun City, Hannah-Hill, Inc. 602-933-4623
CA Carlsbad, FLW, Inc. 619-434-5251
CA Costa Mesa, FLW, Inc. 714-751-7512
CA Hayward, FLW, Inc. 415-786-9070
CA Van Nuys, FLW, Inc. 818-989-5236
CO Broomfield, Hannah-Hill, Inc. 303-460-0602
CT Wallingford, Pat Jenks Assocs. 203-265-9939
FL St. Petersburg, Sesco, Inc. 813-576-6991
GA Atlanta, Sesco, Inc. 404-458-6423
IL Chicago, Comtel Midwest Corp. 312-539-4838
IN Indianapolis, Comtel Midwest Corp. 317-253-1681
IA Cedar Rapids, Comtel Midwest Corp. 319-377-9434
KS Overland Pk., Advanced Indl. Sys. 913-432-8065
LA Baton Rouge, Sesco, Inc. 504-928-4951
MD Rockville, Farrell Assocs. 301-424-9460
MA Woburn, Pat Jenks Assocs. 617-938-0488
MI Southfield, Comtel Instrs. 313-358-2505
MN Wayzata, Comtel Midwest Corp. 612-476-1551
MO Ellisville, Advanced Indl. Sys. 314-391-0366
NJ Elizabeth, Instrmn. Prods. Inc. 201-351-1155
NY Williamsville, Maxwell Bennett Assocs. 716-634-2107
NC Cary, Sesco, Inc. 919-467-7482
OH Cleveland, Comtel Instrs. 216-442-8080
OH Columbus, Comtel Instrs. 614-876-8305
OH Dayton, Comtel Instrs. 513-426-5310
OK Tulsa, Sesco, Inc. 918-622-3868
PA Frazer, FLW, Inc. 215-251-9700
PA Pittsburgh, Comtel Instrs. 412-922-5720
SC Greenville, Sesco, Inc. 803-297-8306
TN Knoxville, Sesco, Inc. 615-588-5455
TX Austin, Sesco, Inc. 512-892-2490
TX Dallas, Sesco, Inc. 214-231-9364
TX Houston, Sesco, Inc. 713-999-3510
TX Plano, Sesco, Inc. 214-867-8880
WA Bellevue, Showalter Instrs. 206-746-7970
WA Richland, Showalter Instrs. 509-943-5288
WI New Berlin, Comtel Midwest Corp. 414-544-6042

SENSYM, INC., 1255 Reamwood Ave., Sunnyvale, CA 94089, Tel: 408-744-1500, Telex: 176376, TWX: 910-339-9625; FSC No.: 67234; *Sls. Mgr.:* Tom Johnson; *Dist. Mgr.:* Tom Johnson

SENTRY MANUFACTURING, Crystal Park, Chickasha, OK 73018, Tel: 405-224-6780; Empl.: 30; *Sls. Mgr.:* Barbara Maberry

SEQUENTIAL INFORMATION SYSTEMS INC., 249 N. Saw Mill River Rd., Elmsford, NY 10523, Tel: 914-592-5930, TWX: 710-567-1212, FAX: 914-592-6014; Empl.: 85; *Sls. Mgr.:* Murray E. Vinarub

SERCO PRODUCTS DIVISION, Serco Mold, 612 Commercial Ave., Covina, CA 91723, Tel: 818-331-0517, 800-843-8172(Calif.); Empl.: 45; *Sls. Mgr.:* Neil Reckon ..... **C•1098**

Local Sales Offices & Reps

CA Corta Madera, Paul O'Neal & Assocs. 415-924-1691
CA Covina, Serco Prods. 818-331-0517
CA Newhall, Lessing & Assocs. 805-254-0274
IL Northbrook, Promar 312-564-3510
MI Farmington Hills, A. B. Friedman Sls. Co. 313-851-0659

Local Distributors

AZ Phoenix, Capital Elctrns. 602-252-5897
AZ Tuscon, Electronic City 602-622-1173
CA Canoga Park, Sandy's Elctrns. 818-346-0510
CA Costa Mesa, Marvac 714-540-3280
CA Los Angeles, Pacific Radio 213-462-1392
CA San Jose, Quement Elctrns. 408-998-5900
CA Sunnyvale, Fry's Elctrns. 408-733-1770

SERIAL LAB PRODS., INC., 162 Cook Lane, P.O. Box 766, Marlboro, MA 01752, Tel: 617-481-1684, Telex: 955318 Attn: SERIAL LAB; Empl.: 12; *Sls. Mgr.:* R. L. Wiedeman; *Dist. Mgr.:* D. Kreck

SERMETEL, 155 Limerick Rd., Limerick, PA 19468, Tel: 215-948-5100, Telex: 84-6335, TWX: 710-637-1263; Empl.: 177; *Sls. Mgr.:* Luke McLaughlin

SERVO-TEK PRODUCTS CO., 1086 Goffle Rd., Hawthorne, NJ 07506, Tel: 201-427-3100, Telex: 130273; Empl.: 60; *Sls. Mgr.:* T. J. Daly ..... **B•1206**

SETRA SYSTEMS, INC., 45 Nagog Park, Acton, MA 01720, Tel: 617-263-1400, 1-800-25-SETRA, Telex: 948440; FSC No.: 53367; Empl.: 85; *Sls. Mgr.:* Ed Cope ..... **B•1821**

Local Sales Offices & Reps

AL Huntsville, Burnette Techno Metrics .. 205-830-2832
AK Anchorage, Unit Process 907-561-5600
CA Concord, QCon, Inc. 415-682-2020
CA Los Angeles, Dynasales Co. 213-268-1175
CO Westminster, RMS Sls. 303-429-1111
FL Orlando, Datarep 305-843-5224
GA Atlanta, Craft Assocs. 404-256-0420
HI Honolulu, Unit Process 808-488-7625
IL Chicago, Data Elctrns. 312-283-0300
IN Ft. Wayne, Domino, Inc. 219-456-5512
LA Metairie, Slaton & Assocs., Inc. 504-455-3855
MD Columbia, Stein Instrs. 301-596-3748
MA Framingham, J. M. Lancaster Co. 617-875-8893
MI Hazel Park, Tiby Co. 313-547-3550
MN Plymouth, Data Elctrns. 612-559-1434
MO St. Louis, Adelphi, Inc. 314-821-1232
MT Billings, Unit Process 406-252-0455
NJ Cedar Grove, KLS Assocs. 201-785-4450
NM Albuquerque, TMA, Inc. 505-345-8921
NY E. Rochester, A & D Dvcs. 716-385-2778
NY Sydney, A&D Dvcs. 607-563-8488
OH Cleveland, Tiby Co. 216-371-5335
OH Dayton, Tiby Co. 513-277-3822
OK Tulsa, Inotek Corp. 918-627-1500
OR Portland, Unit Process 503-227-5264
PA Cheltenham, Stein Instrm. 215-379-1990
TX Dallas, Inotek Corp. 214-243-7000
TX Houston, Inotek Corp. 713-688-7000
WA Kirkland, Unit Process 206-827-0433
Can Ont., B. H. McGregor 416-677-1431

SEVEN MOUNTAINS SCI. INC., P.O. Box 650, Boalsburg, PA 16827, Tel: 814-466-6559; Empl.: 4; *Sls. Mgr.:* Josephine Chesworth

SFE TECHNOLOGIES, 1501 1st St., San Fernando, CA 91340, Tel: 818-365-9411, TWX: 910-496-1535, FAX: 818-365-5117; FSC No.: 96733; Empl.: 2000; *Sls. Mgr.:* Joe Lucia ..... **A•1173**

Local Sales Offices & Reps

AL Huntsville, Electronic Sls., Inc. 205-533-1735
AZ Tucson, West-Cap Arizona 602-294-2646
CA Milpitas, SFE Technlgs. 415-825-5133
CA Poway, SFE Technlgs. 619-747-2789
CA San Fernando, San Fernando Elec. Div. 818-365-9411
CA Santa Clara, SMI Rep. Grp. 408-986-1610
CO Parker, Parker Webster 303-841-4888
FL Orlando, Perrott Assocs. 305-298-7748
GA Norcross, Electronic Sls., Inc. 404-448-6554
IL Schaumburg, Phase II Mktg. 312-303-5092
IN Carmel, Tech. Mktg. Corp. 317-844-8462
KS Overland Pk., Electro Dynamics 913-888-1750
KY Louisville, Technlg. Mktg. Corp. 502-499-7808
MD Baltimore, Micro-Comp 301-644-5700
MA Framingham, Gerald Rosen Co. 617-879-3385
MI Jackson, T.P.S. & Assocs. 517-784-3462
MN Eden Prairie, High Technlg. Sls. 612-944-7274
NY Bethpage, SFE Technlgs. 212-245-7292
NY Chester, Kraengel & Assocs. 914-469-9620
NC Cary, Elctrn. Sls. 919-467-8486
OH Dayton, Santech Sls. 513-434-8212
OK Tulsa, Bonser Philhower 918-744-9964
OR Portland, General Elctrns. 503-297-8500
PA King of Prussia, Emerald Elctrns. 215-265-1628
TX Richardson, Bonser Philhower 214-234-8438
UT Murray, Parker Webster 801-266-9939
WA Renton, General Elctrns. 206-228-9505
Can Willowdale, Ont., Boco North Elctrns. 416-491-0993

Local Distributors

AL Huntsville, Pioneer Technlgs. 205-837-9300
AZ Phoenix, TTI Inc. 602-966-1616
CA Chatsworth, Shelley-Ragon 818-998-3333
CA Compton, Harper S.I.D. 213-979-5090
CA Garden Grove, National Capacitor 213-598-9611
CO Englewood, Shelley-Ragon 303-762-0670
CT New Haven, Greene-Shaw, Inc. 203-397-0710
FL Altamonte Springs, Pioneer Technlgs. 305-834-9090
GA Norcross, TTI 404-662-0911
IL Elk Grove, RS Elctrns. 312-364-4733
IN Indianapolis, Pioneer Standard 317-849-7300
IA Cedar Rapids, Shelley-Ragon 319-373-0525
MD Baltimore, RESCO 301-529-0500
MA Needham, Cronin Elctrns. 617-449-5000
MO St. Louis, Time Elctrns. 314-454-0480
NJ Rockaway, Tonar Inds. 201-586-9000
NY Chester, Zeus Comps. 914-937-7400
NY Hauppauge, Fairmont 516-231-3313
NY Hauppauge, Jaco Elctrns. 516-273-5500
OH Dayton, Aschbacher & Assocs. 513-252-7785
PA Philadelphia, Shap Elctrns. 215-969-3300
TX Ft. Worth, TTI, Inc. 817-831-8300
UT Salt Lake City, Time Elctrns. 801-973-8181
WA Redman, Time Elctrns. 206-882-1600
WI Racine, Badger Elctrn. Parts 414-637-1256

S. F. PRODUCTS CORPORATION, P. O. Box 369, Southport, CT 06490, Tel: 203-929-6180, Telex: 220883 TAUR; Empl.: 8; *Sls. Mgr.:* Norman W. Johanson; *Dist. Mgr.:* R. S. Johanson

SGS-ATES SEMICONDUCTOR CORP., 240 Bear Hill Rd, Waltham, MA 02154, Tel: 617-890-6688, Telex: 923495; Empl.: 9000

SGS SEMICONDUCTOR CORPORATION, 1000 E. Bell Road, Phoenix, AZ 85022, Tel: 602-867-6100, Telex: 249976,667479(Western Union), TWX: 910-950-4654; FSC No.: 7X328; Empl.: 200; *Sls. Mgr.:* Tony Santoni; *Dist. Mgr.:* Jim Nord

SHALLCO, INC., Box 1089, Smithfield, NC 27577, Tel: 919-934-3135, FAX: 919-934-3298; Empl.: 40; *Sls. Mgr.:* M. D. Sutton ..... **B•1682-1687**

Local Sales Offices & Reps

AZ Tempe, Trembly Assocs. 602-967-2058
CA Irvine, Groh Assocs. 714-837-9871
CA Santa Clara, Fischer Assocs. 408-733-7350
CO Wheatridge, Trembly Assocs. 303-421-8900
FL Melbourne, Reynolds & Assocs., Inc. .. 305-259-7000
IN Fort Wayne, J & B Engrg. Sls. Co. 219-483-2813
IA Cedar Rapids, S & O Sls. 310-393-1845
MD Towson, Holden Engrg. Sls. 301-823-3763
MA Norwood, MPS Elctrn. 617-769-8700
MN Minneapolis, R-J Inc. 612-866-3661
NV Las Vegas, Trembly Assocs. 702-739-9770
NM Albuquerque, Trembly Assocs. 505-266-8616
NY Lynbrook, HLJ 516-599-2999
NY Manhattan, Lothar Sanford Corp. 212-757-3881
NY Pittsfield, D. Hurley Sls. 716-586-6159
NC Raleigh, B. T. Funderburk, Inc. 919-782-3493
OH Englewood, Allen Nace Co. 513-836-0931
OR Portland, Comp. Technlg., Inc. 503-292-1518
PA King of Prussia, Freedman-Malta Assocs. 215-337-9211
TX Dallas, Oeler & Menelaides, Inc. 214-361-8876
UT Salt Lake City, Trembly Assocs. 801-486-5292

Local Distributors

FL	Jacksonville, Southeast Elctrns.	904-356-3007
OH	Cincinnati, United Radio	513-761-4030
PA	Philadelphia, Philadelphia Elctrns.	215-568-7400
TN	Bristol, Broadcast Equip. & Supp.	615-878-2531
TX	Dallas, Wholesale Elctrns.	214-824-3001
Can	Montreal, Que., Braydon Electro	514-332-5650

SHALLTRONIX CORP., Preston St, P.O. Box 235, Selma, NC 27576, Tel: 919-965-6346; FSC No.: 58258; *Sls. Mgr.:* Joe Deans ..... **D•1315**

Local Sales Offices & Reps

TX	Arlington, Electronic Prod. Reps.	817-467-0377

SHAPE MAGNETRONICS, INC., 901 DuPage Ave., Lombard, IL 60148, Tel: 312-620-8394, TWX: 910-991-2352; *Sls. Mgr.:* J. Hilgenberg

SHAPIRO SCIENTIFIC INST., 3500 E. Coast Hwy., Corona del Mar, CA 92625, Tel: 714-675-1024; Empl.: 7

SHELDAHL, INC., P.O. Box 170, Hwy 3 North, Northfield, MN 55057, Tel: 507-663-8000, TWX: 910-565-2180, FAX: 507-663-8365

SHELLY associates

SHELLY ASSOCIATES, INC., 14281 Chambers Road, Tustin, CA 92680, Tel: 714-669-9850, Telex: 85-2263; FSC No.: 00303; Empl.: 30; *Sls. Mgr.:* Chuck Feeney; *Dist. Mgr.:* Chuck Feeney ..... **B•1115**

Local Sales Offices & Reps

CA	Anaheim, Spectrum Assocs., Inc.	714-630-6977
CA	Mountain View, Leddy Assocs.	415-969-6313
FL	Ft. Lauderdale, Hollingsworth & Still, Inc.	800-241-5712
FL	Tampa, Hollingsworth & Still, Inc.	800-241-5712
GA	Norcross, Hollingsworth & Still, Inc.	800-241-5712
IL	Chicago, Electro-Tech Mktg. Assocs.	312-676-3151
IN	Ft. Wayne, Scott Elctrns.	219-484-7865
IN	Indianapolis, Scott Elctrns. Inc.	317-897-9976
MD	Ellicott City, Tech. Sls., Inc.	301-461-2400
MA	Norwood, The MacInnis Co.	617-762-8090
MO	Florissant, R. R. Burton & Assocs.	314-831-4069
MO	Grandview, R. R. Burton & Assocs.	816-763-5385
NJ	Boonton, TMA	201-263-2946
NY	Port Washington, TMA	516-883-2432
NC	Charlotte, Hollingsworth & Still, Inc.	800-241-5712
NC	Kernersville, Hollingsworth & Still, Inc.	800-241-5712
OH	Cincinnati, Scott Elctrns.	513-791-2513
OH	Cleveland, Scott Elctrns. Inc.	216-473-5050
OH	Dayton, Scott Elctrns. Inc.	513-294-0539
OH	Reynoldsburg, Scott Elctrns.	614-863-1281
PA	Boyertown, Tech. Sls., Inc.	800-225-4335
PA	Pittsburgh, Scott Elctrns.	412-963-6116
TX	Austin, Milco Mktg., Inc.	713-783-2716
TX	Dallas, Milco Mktg., Inc.	214-783-2716
TX	Houston, Milco Mktg., Inc.	713-783-2716
WI	Brookfield, Electro-Tech Mktg. Assocs.	414-785-9554

Local Distributors

CA	Anaheim, Bisco Inds. Inc.	714-635-0380
CA	San Jose, Bisco Inds. Inc.	408-946-8980
CT	Norwalk, Park Distrs. Inc.	203-853-2010
CT	Wallingford, Midstate Elctrns. Co.	203-265-9900
FL	Clearwater, Jenkins Supp. Co., Inc.	813-584-5282
IL	Franklin Park, Bisco Inds. Inc.	312-451-1230
IN	Indianapolis, Mar Elctrns., Inc.	317-875-4510
IA	Cedar Rapids, Iowa Radio Supp. Co.	319-393-4510
MO	Kansas City, Elctrns. Supp. Co., Inc.	816-931-0250
NJ	Cranford, Garden State Indl. Elctrns.	201-272-6400
NJ	East Brunswick, Brothers Elctrns.	201-238-2200
NJ	Fair Lawn, Relay Specialties	201-797-3313
NY	Elmsford, White Plains Elctrl. Supp. Co.	914-592-9555
OH	Dayton, Televox, Inc.	513-294-4499
OH	Strongsville, Roberts Elctrns. Co., Inc.	216-238-1711
OK	Tulsa, Radio, Inc.	918-587-9123
TX	Dallas, Wilkinson Brothers Co.	214-941-9963
WI	Mequon, Lakeview Elctrns.	414-377-8250

SHEPHERD SCIENTIFIC, INC., 7918 Convoy Court, San Diego, CA 92111, Tel: 619-268-9696; FSC No.: 3825; Empl.: 10; *Sls. Mgr.:* John J. Kope

SKC
SHINANO KENSHI CORP.

SHINANO KENSHI CORP. (SKC), 7525 Ethel Ave., Ste. 1, N. Hollywood, CA 91605, Tel: 818-764-4266; Empl.: 5; *Sls. Mgr.:* Ken Shimizu ..... **B•1207**

Local Sales Offices & Reps

AL	Huntsville, MacKay Smith & Assocs.	205-539-8000
CA	North Hollywood, Shinano Kenshi Corp.	818-764-4266
CA	Santa Clara, Norcomp, Inc.	408-727-7707
CO	Denver, Tech Rep Sls. Co.	303-758-7031
CT	Bloomfield, SIR Assocs.	203-243-9343
FL	Melbourne, Phoenix Comps.	305-723-4414
GA	Norcross, MacKay Smith & Assocs.	404-449-7444
ID	Meridian, Intermountain Tech. Mktg.	208-888-6071
IL	Barrington, Richard Fisk Mktg.	312-381-0653
MA	Westford, SIR Assocs.	617-692-2500
MI	Southfield, Fred Gehrke & Assoc.	313-559-5363
MN	Eagan, REL Comp.	612-452-9541
NH	Bedford, Automation Equip. Co.	603-472-8870
NJ	Oxford, Malin Assocs.	201-689-7398
NC	Cary, Mackay Smith & Assocs.	919-481-3800
OK	Edmond, Precision Technlg. Asoscs.	405-341-5168
OR	Portland, Intertech Sls.	503-775-7885
TX	Austin, Precision Technlg. Assocs.	512-250-0201
TX	Richardson, Precision Technlg. Assoc.	214-234-8071
UT	Sandy, Intermountain Technlg.	801-566-5000

Local Distributors

CA	N. Hollywood, Digilog Dvcs., Inc.	818-764-9777

Shindengen America, Inc.

SHINDENGEN AMERICA INC., 2649 Townsgate Road, Ste. 200, Westlake Vl, CA 91361, Tel: 805-373-1130, FAX: 805-373-3710; Empl.: 6; *Sls. Mgr.:* Peter Gajewski; *Dist. Mgr.:* Peter Gajewski ..... **D•1937-1939**

Local Sales Offices & Reps

AZ	Phoenix, Southwest Tech. Sls.	602-893-1209
CA	Calabasas, Quadrep Cen.	818-887-3711
CA	Irvine, Quadrep S.	714-261-8141
CA	San Diego, Power Assocs.	619-275-0641
CA	San Jose, Quad Rep	408-946-4000
OR	Portland, Crown Elctrns.	503-620-8320
WA	Bellevue, Crown Elctrns.	206-643-8100

SHOGYO

SHOGYO INTERNATIONAL CORP., 287 Northern Blvd., Great Neck, NY 11021, Tel: 516-466-0911, Telex: 4758024, TWX: 12218 ... **A•2380-2381; B•1116-1118, 1688-1689; C•1519-1521, 1921; D•1052-1053, 1373**

SHOKAI FAR EAST, LTD., 280 North Central Ave., Hartsdale, NY 10530, Tel: 914-681-0700, Telex: 22-4219; Empl.: 362; *Sls. Mgr.:* Shirlee Serber ..... **D•1055**

SHURE BROS., 222 Hartrey Ave., Evanston, IL 60202-3696, Tel: 312-866-2200, Telex: 72-4381, TWX: 910-231-0048; *Sls. Mgr.:* R. T. Murphy, VP & Gen Mgr., Hi-Fi & Mic. Div.

SHURITE METERS, INC., 577 Grand Ave., P.O. Box 1848, New Haven, CT 06508, Tel: 203-624-1188, TWX: 710 474 0047; Empl.: 15; *Sls. Mgr.:* Joseph V. LeBlanc; *Dist. Mgr.:* Joseph V. LeBlanc

SIDAC ENCLOSURES, Div. of Triac Electronic Systems, Inc., 87-27 Myrtle Ave., Glendale, NY 11385, Tel: 718-441-4728; Empl.: 14; *Sls. Mgr.:* Victor Botnick

SIDEREAL CORP., 9600 S.W. Barnes Rd., Portland, OR 97225, Tel: 503-297-5531, Telex: 36-0640, TWX: 910-464-6139; Empl.: 250; *Sls. Mgr.:* Jim Miller; *Dist. Mgr.:* Chris Gantz

SIECOR CORP., Box 489, Hickory, NC 28603, Tel: 704-328-2171, Telex: 800-510, TWX: 510-934-1204; Empl.: 600; *Sls. Mgr.:* J. English

SIEMENS

SIEMENS COMPONENTS, INC., Semiconductor Grp., 19000 Homestead Rd., Cupertino, CA 95014, Tel: 408-257-7910, Telex: 352084, TWX: 910-338-0022; FSC No.: 50579; Empl.: 1100; *Sls. Mgr.:* Daniel Rendino; *Dist. Mgr.:* Regina Walls ..... **B•1119, 1228-1229**

Local Sales Offices & Reps

AL	Huntsville, EMA	205-830-4030
AZ	Phoenix, Westrep	602-997-8899
CA	Cupertino, Siemens Comps.	408-725-3814
CA	Irvine, Mission Ridge Mktg.	714-253-4626
CA	San Diego, Varigon Assocs.	619-576-0100
CA	Woodland Hills, Centaur Corp.	818-704-1655
CO	Littleton, Lange Sls.	303-795-3600
FL	Apopka, Bohman Assocs.	305-886-1882
FL	Ft. Lauderdale, Bohman Assocs.	305-979-0008
FL	St. Petersburg, Bohman Assoc.	813-522-6120
GA	Roswell, EMA	404-992-7240
IL	Rolling Meadows, KMA Sls. Co.	312-398-5300
IN	Indianapolis, Electro Reps.	317-842-7202
IA	Cedar Rapids, Advanced Tech. Sls.	319-365-3150
KS	Olathe, Advanced Tech. Sls.	913-782-8702
KS	Wichita, Advanced Tech. Sls.	316-682-2769
MD	Lutherville, D G Reps.	301-583-1360
MA	Newton Upper Falls, Anchor Engrg. Corp.	617-964-6205
MI	Bloomfield Hills, Enco Mktg.	313-642-0203
MN	St. Paul, Cahill, Schmitz & Cahill	612-646-7217
MO	St. Louis, Advanced Tech. Sls.	314-878-2921
NJ	E. Hanover, Emtec Sls., Inc.	201-428-0600
NM	Albuquerque, F P Sls.	505-345-5553
NY	E. Syracuse, Ossmann Assocs.	315-437-7052
NY	Melville, Emtec Sls.	516-752-1630
NY	Rochester, Ossmann Assocs.	716-424-4460
NC	Smithfield, ADI, Inc.	919-934-8136
OH	Beachwood, Elctrn. Salesmaster	216-831-9555
OK	Tulsa, CompTech Sls.	918-622-7744
OR	Aloha, Micro Sls.	503-642-1818
PA	Willow Grove, Delta Tech. Sls.	215-657-7250
TX	Arlington, CompTech Sls.	817-265-6007
TX	Austin, CompTech Sls.	512-331-8922
TX	Houston, CompTech Sls.	713-776-8330
UT	Salt Lake City, Lange Sls.	801-487-0843
WA	Bellevue, Micro Sls.	206-451-0568
WI	Milwaukee, KMA Sls.	414-259-1771

SIEMENS

SIEMENS COMPONENTS, INC., Special Products Div., 186 Wood Ave., South, Iselin, NJ 08830, Tel: 201-321-3400, TWX: 710-998-0588/0529; Empl.: 800; *Sls. Mgr.:* Curt Hozian; *Dist. Mgr.:* Merv Stamberger ..... **A•1175, 1319; B•1282-1283**

Local Sales Offices & Reps

AL	Huntsville, EMA, Inc.	205-830-4030
AL	Huntsville, Interep Assocs.	205-533-1730
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	714-527-2822
CA	Cupertino, Siemens Comps., Inc.	408-725-3586
CA	Cupertino, SC Sls. West	408-725-3531
CA	Irvine, Mission Ridge Mktg.	714-253-4626
CA	Orange, Siemens Comps., Inc.	714-385-1274
CA	San Diego, Varigon-San Diego, Inc.	619-576-0100
CA	Woodland Hills, Centaur Corp.	818-704-1655
CO	Littleton, Lange Sls.	303-795-3600
FL	Apopka, G.F. Bohman Assocs.	305-886-1882
FL	Ft. Lauderdale, QXI	305-978-0120
FL	St. Petersburg, QXI	813-894-4556
GA	Norcross, INTEREP	404-449-8680
GA	Norcross, Siemens Comps., Inc.	404-449-3981
GA	Roswell, EMA, Inc.	404-992-7240
IL	Park Ridge, Metcom Assocs.	312-696-1490
IL	Rolling Meadows, KMA Sls. Co.	312-398-5300
IL	Rosemont, Siemens Comps., Inc.	312-629-6000
IN	Indainapolis, Elctro Reps., Inc.	317-842-7202
IA	Cedar Rapids, Advanced Tech. Sls.	319-365-3150
IA	Cedar Rapids, Cahill-Schmitz-Cahill	319-377-8219
KS	Olathe, Advanced Tech. Sls.	913-782-8702
KS	Wichita, Advanced Tech. Sls.	316-682-2769

KS Wichita, BC Elec. 316-722-0104
MD Lutherville, D.G. Reps. 301-583-1360
MA Littleton, Siemens Comps., Inc. 617-486-0331
MA Newton Upper Falls, Anchor Engrg. Crop. 617-964-6205
MI Bloomfield Hills, Enco Mktg. 313-642-0203
MI Troy, C. B. Jensen & Assocs. 313-643-0506
MN St. Paul, Cahill-Schmitz-Cahill 612-646-7217
MO St. Louis, Advanced Tech. Sls. 314-878-2921
MO St. Louis, BC Elctrns. 314-521-6683
NJ Special Prods. Div. 800-222-2203
NJ Bellmawr, TAI Corp. 609-933-2600
NJ E. Hanover, Emtes Sls. 201-428-0600
NJ Ft. Lee, Necco 201-461-2789
NJ Princeton, Siemens Comps., Inc. 609-987-0083
NM Albuquerque, F-P Sls. 505-345-5553
NY Liverpool, Gen-Tech 315-451-3480
NY Melville, Emtec Sls. 516-752-1630
NY Rochester, Ossman Assocs. 716-424-4460
NY Syracuse, Ossman Assocs. 315-437-7052
NC Smithfield, ADI, Inc. 919-934-8136
OH Beachwood, Elctrn. Slsmasters 216-831-9555
OH Columbus, Siemens Comps., Inc. 614-433-7500
OH Dayton, Dolfuss-Root & Co., Inc. 513-433-6776
OH Strongsville, Dolfuss-Root & Co., Inc. 216-238-0300
OK Tulsa, Genzel Sls. & Assocs. 918-622-7744
OR Aloha, Micro Sls., Inc. 503-642-1818
PA Bridgeville, Dolfuss Root & Co. 412-221-4420
PA Willow Grove, Delta Tech. Sls. 215-657-7250
TN Greenville, Interep 615-639-3491
TX Arlington, CompTech Sls., Inc. 817-265-6007
TX Austin, CompTech Sls., Inc. 512-331-8922
TX Austin, Coulomb 512-258-3002
TX Bellaire, Coulomb Elec. 713-666-2204
TX Dallas, SC Sls. Tx. 214-620-2294
TX Houston, CompTech Sls., Inc. 713-776-8330
UT Salt Lake City, Lange Sls. 801-487-0843
UT Salt Lake City, Lange Sls., Inc. 801-487-0843
WA Bellevue, Micro Sls. 206-451-0568
WI Milwaukee, KMA Sls. Co. 414-259-1771
WI W. Allis, Melcom Assocs. 414-476-1300
PR Rio Piedras, Klamco Elec. 809-752-6169

Local Distributors

AL Huntsville, Hall-Mark 205-837-8700
AZ Phoenix, Hall-Mark 602-437-1200
CA Canoga Park, Hall-Mark 818-716-7300
CA Irvine, Marshall 714-458-5394
CA Milpitas, Marshall Elec. 408-942-4700
CA San Jose, Hall-Mark 408-946-0900
CA Sunnyvale, Permag-Sierra Div. 408-738-1080
CO Thornton, Marshall Elec. 303-451-8444
FL Orlando, Hall-Mark 305-855-4020
GA Norcross, Marshall 404-923-5750
IL Elk Grove, Permag-Central Div. 312-956-1140
IL Rosemont, Advent 312-298-4210
IL Wooddale, Hall-Mark 312-860-3800
IN Indianapolis, Marshall 317-297-0483
MD Columbia, Hall-Mark 301-988-9800
MI Farmington Hills, Advent 313-477-1650
MN Plymouth, Marshall 612-559-2211
NJ Fairfield, Hall-Mark 201-575-4415
NY Rochester, Marshall 716-235-7620
NC Raleigh, Hall-Mark 919-872-0712
OH Dayton, Marshall 513-236-8088
PA McKean, Advacom 814-476-7774
TX Dallas, Hall-Mark 214-553-4300
WA Bellevue, Marshall 206-747-9100

Sierracin/Magnedyne

SIERRACIN/MAGNEDYNE, 2258 Rutherford Rd., P.O. Box 458, Carlsbad, CA 92008, Tel: 619-438-3321, Telex: 910 322-1391; Empl.: 150 ..... **B•1208-1209**

Local Sales Offices & Reps

AZ Mesa, Terry Thatford 602-835-1932
CA Campbell, Luscombe Engrg. Co. 408-370-2020
CA Pomona, Chuck Schultz 714-629-2809
CT Tolland, Don Fontaine 203-875-0720
FL Deerfield Beach, Electrocomp Assocs. 305-429-0802
FL Orlando, Electrocomp Assoc. 305-774-3134
FL St. Petersburg, Electro Comp. Assocs. 813-327-9677
IL Rolling Meadows, KMA Sls. Co. 312-398-5300
MI Troy, Xanthus, Inc. 313-528-2000
MN St. Paul, ARKCO 612-777-7454
NY Melville, Carnes Assocs. 516-694-1600
OH Cleveland, Servo-Mark 216-871-2353
OR Beaverton, Luscombe, Northwest 503-636-6664
PA Morristown, Rivco January 215-631-1414
TX Roanoke, CMR 817-379-6540
WI Milwaukee, KMA Sls. Co. 414-259-1771

SIERRACIN POWER SYSTEMS, See Sierra Power Systems

SIERRA ELEC., See Pass & Seymour, Inc.

SIERRA MONITOR CORP., 1991 Tarob Ct., Milpitas, CA 95035, Tel: 408-262-6611, Telex: 17-1618; FSC No.: MSGSNDR; Empl.: 23; *Sls. Mgr.:* Robert Dunkle; *Dist. Mgr.:* Gordon Arnold

Sierra Power Systems

Division of Valor Electronics, Inc.

SIERRA POWER SYSTEMS, 20500 Plummer St., Chatsworth, CA 91311, Tel: 818-998-9873, TWX: 910-494-4830; FSC No.: 58999; Empl.: 300; *Sls. Mgr.:* Nick Freyling ..... **D•1941-1943**

Local Sales Offices & Reps

AZ Scottsdale, Fred Board Assocs. 602-994-9388
AZ Tucson, Fred Board Assocs. 602-299-1508
CA Huntington Beach, Riley Assocs. 714-841-1411
CA Santa Clara, Fahrner-Miller Assocs. 408-727-9800
CT Meriden, Whitehead Assocs. 203-634-1280
FL Altamonte Springs, Semtronic 305-831-8233
FL Clearwater, Semtronic 813-461-4675
FL Ft. Lauderdale, Semtronic Assocs. 305-731-2484
IL Rolling Meadows, Heartland Tech. Mktg. 312-577-9222
IA Cedar Rapids, Lorenz Sls. 319-377-4666
IA Cedar Rapids, R. Welch Co. 319-377-1575
KS Overland Pk, Lorenz Sls. 913-649-5556
MD Columbia, Delta III Assocs., Inc. 301-730-4700
MA Wakefield, Whitehead Assocs. 617-246-5070
MI Ypsilanti, Techrep Inc. 313-572-1950
MN Minneapolis, Comstrand 612-788-9234
MO University City, Lorenz Sls. 314-997-4558
NE Lincoln, Lorenz Sls. 402-475-4660
NJ Marlton, BGR Assocs. 609-983-1020
NM Albuquerque, Fred Board Assocs. 505-888-1121
NY Binghamton, Techmark, Inc. 607-729-6340
NY Manhasset, Win-Cor Elctrns. 516-627-9474
NY Mendon, Tech-Mark, Inc. 716-624-3840
NY Utica, Tech-Mark, Inc. 315-733-0575
OH Dayton, K. W. Elctrn. Sls. 513-890-2150
OH Shaker Heights, K. W. Elctrn. Sls. 216-491-9177
OH Worthington, K. W. Elctrn. Sls. 614-888-0483
PA Allison Park, K. W. Elctrn. Sls. 412-487-4300
TX Austin, Kruvand Assocs. 512-441-6777
TX Dallas, Kruvand Assocs. 214-437-3355
TX Houston, Kruvand Assocs. 713-780-9710
VA Alexandria, Delta III Assocs., Inc. 703-845-8790
VA Midlothian, Delta III Assocs., Inc. 804-379-1816
WI Milwaukee, Heartland Tech. Mktg. 414-931-0606
PR Hato Rey, Semtronic Assocs. 809-766-0700

Local Distributors

AL Huntsville, Hall-Mark Elctrns. Corp. 205-837-8700
AZ Phoenix, Hallmark Elctrns. Corp. 602-437-1200
CA Canoga Park, Hallmark Elctrns. Corp. 818-716-7300
CA Citrus Heights, Hall-Mark Elctrns. Corp. 916-722-8600
CA Costa Mesa, FLW 714-751-7512
CA Hayward, FLW, Inc. 415-786-9070
CA San Diego, Hall-Mark Elctrns. Corp. 619-268-1201
CA San Jose, Hallmark Elctrns. Corp. 408-946-0900
CA Torrance, Hall-Mark Elctrns. Corp. 213-217-8400
CA Tustin, Hall-Mark Elctrns. Corp. 714-359-0330
CA Tustin, Image Elctrns. Intl., Inc. 714-259-0900
CA Van Nuys, FLW, Inc. 818-989-5448
CO Englewood, Hall-Mark Elctrns. Corp. 303-790-1662
CT Wallingford, Hallmark Elctrns. Corp. 203-269-0100
FL Clearwater, Hall-Mark Elctrns. Corp. 813-530-4543
FL Orlando, Hall-Mark Elctrns. Corp. 305-855-4020
FL Pompano Beach, Hall-Mark Elctrns. Corp. 305-971-9280
FL Tampa, Reptron 813-855-4656
GA Norcross, Hall-Mark Elctrns. Corp. 404-447-8000
GA Norcross, Reptron Elctrns. 404-446-1300
IL Schaumburg, Reptron Elctrns. 312-882-1700
IL Woodale, Hall-Mark Elctrns. Corp. 312-860-3800
IN Indianapolis, Hallmark Elctrns. Corp. 317-872-8875
KS Lenexa, Hall-Mark Elctrns. Corp. 913-888-4747
MD Columbia, Hall-Mark Elctrns. Corp. 301-988-9800
MA Billerica, Hallmark Elctrns. Corp. 617-935-9777
MI Livonia, Reptron Elctrns. 313-525-2700
MN Eden Prairie, Hall-Mark Elctrns. Corp. 612-941-2600
MN Minnetonka, Reptron Elctrns. Corp. 612-938-0000
MO Earth City, Hall-Mark Elctrns. Corp. 314-291-5350
NJ Fairfield, Hall-Mark Elctrns. Corp. 201-575-4415
NJ Mt. Laurel, Hall-Mark Elctrns. Corp. 609-235-1900
NY Ronkonkoma, Hall-Mark Elctrns. Corp. 516-737-0600
NC Raleigh, Hall-Mark Elctrns. Corp. 919-872-0712
OH Solon, Hall-Mark Elctrns. Corp. 216-349-4632
OH Worthington, Hall-Mark Elctrns. Corp. 614-888-3313
OH Worthington, Reptron Elctrns. 614-436-6675
OR Beaverton, Shelley-Ragon 503-641-1691
TX Austin, Hall-Mark Elctrns. Corp. 512-258-8848
TX Dallas, Hall-Mark Elctrn. Corp. 214-553-4300
TX Dallas, Hall-Mark Elctrns. Corp. 214-343-5000
TX Houston, Hall-Mark Elctrns. Corp. 713-781-6100
UT Salt Lake City, Standard Supp. Co. 810-486-3371
UT W. Valley City, Hallmark Elctrns. Corp. 801-972-1008
WA Seattle, Shelley-Ragon 206-241-1980
WI New Berlin, Hall-Mark Elctrns. Corp. 414-797-7844

SIGMA ELECTRONICS INC., 10830 Kinghurst Dr., Houston, TX 77099, Tel: 713-933-4700, Telex: 71-378-7848, TWX: 310-378-7848; FSC No.: 60767; Empl.: 35; *Sls. Mgr.:* K. Johnson

SIGMA INSTRS., 170 Pearl St., Braintree, MA 02184, Tel: 617-843-5000, Telex: 94-0645, TWX: 710-348-1161; Empl.: 1,500

SIGMA-NETICS, INC., One Washington Ave., Fairfield, NJ 07006, Tel: 201-227-6372; FSC No.: 24038; Empl.: 30; *Sls. Mgr.:* Ronald J. Treiber

SIGMA PLASTRONICS, INC., P.O. Box 649, Whitmore Lake, MI 48189, Tel: 313-231-2871; Empl.: 3

SIGMAPOWER, INC., 20790 Leapwood Ave., Carson, CA 90746, Tel: 213-32-Sigma; FSC No.: 55196; Empl.: 61; *Sls. Mgr.:* Bill Adams

SIGMA SYSTEMS CORP., 3163 Adams Ave., San Diego, CA 92116, Tel: 619-283-3193; Empl.: 21; *Sls. Mgr.:* T. Stewart ..... **D•1187**

Local Sales Offices & Reps

CA San Carlos, Electronic Engrg. Assocs. 415-593-2189
CT Fairfield, Wexler-Court Sls. Co. 203-334-1122
IL Elgin, R.K. Elctrns., Inc. 312-695-8552

Honeywell

SIGNAL PROCESSING TECHNOLOGIES, Business Unit of Honeywell, Inc., 1150 E. Cheyenne Mtn. Blvd., Colorado Springs, CO 80906, Tel: 303-577-3734, Telex: 452533, TWX: 62926148; *Sls. Mgr.:* Joe Boufaissal

Local Sales Offices & Reps

AL Huntsville, Rep, Inc. 800-633-2050
CA Orangevale, Emerging Technlgy. Sls. 916-961-8941
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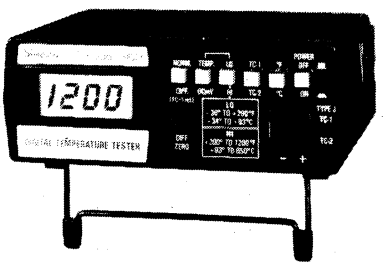

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SOLITRON/MICROWAVE, Box 278, Port Salerno, FL 33492, Tel: 305-287-5000, TWX: 510-953-7500; FSC No.: 95077; Empl.: 300; *Sls. Mgr.:* Ray Sulzer; *Dist. Mgr.:* Deloris Martinez

SOLTEC CORP., Sol Vista Pk., San Fernando, CA 91340-1597, Tel: 818-365-0800, 800-423-2344, Telex: 365-7089; Empl.: 80; *Sls. Mgr.:* Gary A. Purser

SONICOR INSTRUMENT CORP., 1365 Marconi Blvd., Copiague, NY 11726, Tel: 516-842-3344, Telex: 649494; FSC No.: 31605; *Sls. Mgr.:* Arthur Liers; *Dist. Mgr.:* Arthur Liers

SONNENSCHEIN BATTERIES INC., 300 E. Johnson Ave., P.O. Box 339, Cheshire, CT 06410, Tel: 203-271-0091, 800-4-DRYFIT, FAX: 203-271-2179; *Sls. Mgr.:* C. T. Wright, Natl. Sls. Mgr.

SONOBOND ULTRASONICS INC., 200 E. Rosedale Ave., West Chester, PA 19380, Tel: 215-696-4710, Telex: 902497; FSC No.: 15882; Empl.: 50; *Sls. Mgr.:* P. C. Krause

SORENSEN CO., 676 E. Island Pond Rd., Manchester, NH 03103, Tel: 603-668-4500, Telex: 94-3459, TWX: 710-220-1339; Empl.: 850; *Sls. Mgr.:* Roy Allman

SoLiCo

SORENSON LIGHTED CONTROLS, 75 Locust St., Hartford, CT 06114, Tel: 203-527-3092, 1-800-331-1184, TWX: 710-425-4093, FAX: 203-527-6047; Empl.: 100; *Sls. Mgr.:* Ted Ogorzalek ..... **B•1126**

Local Sales Offices & Reps

AL	Huntsville, K & E Assoc.	205-883-9720
CA	Mt. View, Del Bucchia & Assoc.	415-965-8045
CA	San Dimas, JPE Assoc.	714-541-2629
CO	Boulder, The Stratford Grp.	303-530-3194
FL	Tampa, J-R Controls	813-961-9478
FL	Winter Springs, J-R Controls	305-327-2464
GA	Doraville, K&F Assocs.	404-448-2464
IL	Wheaton, Chadra-Schilke	312-653-8126
IN	Fort Wayne, Menze Sls.	219-747-5616
KS	Mission, The Mertens Co.	913-432-9323
MD	Glen Burnie, Macrotech Assocs.	301-766-1111
MA	Canton, Comtek Assoc.	617-828-2948
MI	Dearborn, Pitcher-Poulin, Inc.	313-582-5450
MN	Minneapolis, Tech. Comps.	612-566-0684
MO	Clayton, Mertens Co.	314-993-6600
NJ	Marlton, Naudain Assocs.	609-983-5300
NJ	Union, Pacent Engrg.	201-687-7197
NJ	Wayne, November Elctrn. Sls.	201-696-8683
NY	Great Neck, Pacent Eng. Co.	516-482-4678
NY	Kingston, R. P. Kennedy Co., Inc.	914-876-2700
NY	Rochester, R. P. Kennedy Co., Inc.	716-271-6322
NC	Raleigh, Crossroads Elctrns.	919-742-2372
OK	Tulsa, Component Technlg.	918-665-3562
OR	Beaverton, Evergreen Mktg. Grp.	503-643-8020
TX	Houston, Component Technlg.	713-461-4197
TX	Richardson, Component Technlg.	214-690-8537
WA	Seattle, Evergreen Mktg. Grp.	206-633-3160

Local Distributors

AZ	Phoenix, Minarik Elec. Co.	602-233-3000
CA	Costa Mesa, J & J Elctrns.	714-751-7994
CA	Covina, Selecta Switch	818-967-4123
CA	Gardena, California Switch & Signal	212-538-9830
CA	Hayward, KEA Elctrns.	415-887-2900
CA	Los Angeles, Electric Switches	213-660-1310
CA	Los Angeles, Minarik Elec. Co.	213-624-3161
CA	San Diego, Minarik Elec. Co.	619-560-6632
CA	Santa Clara, Minarik Elec. Co.	408-727-0575
CA	Tustin, Western Switches	714-259-8144
CA	Van Nuys, Pacific Switch Controls	213-873-4802
CO	Denver, Minarik Elec. Co.	303-329-3525
CT	Hartford, Wes-Garde Comp. Grp.	203-527-7705
FL	Lakeland, Wes-Garde Comp. Grp.	813-644-7564
GA	Tucker, CID, Inc.	404-491-3143
IL	Carol Spring, Wes-Garde Comp. Grp.	312-653-1460
IL	Crystal Lake, Sub-Sem	815-459-4139
IA	Cedar Rapids, The Carl Bergquist Co.	319-366-8733
MA	Canton, Comtek Assocs.	617-828-2948
MI	Michigan, Specialties Mfg.	313-771-2700
MN	Minneapolis, Carl Bergquist	612-835-2322
MO	St. Louis, Wes-Garde Comp. Grp.	314-567-7776
NH	Nashua, Wes-Garde Comp. Grp.	603-880-1971
NJ	Mt. Laurel, Wes-Garde Comp. Grp.	609-778-8190
NY	Woodside, Switches Unltd.	212-478-5000
OH	Westerville, Ohio Switch	614-885-0319
OR	Portland, Minarik Elec.	503-253-3402
SC	Columbia, Dixie Elctrns.	803-779-5332
TX	Dallas, Wes-Garde Comp. Grp.	214-357-1768
TX	San Antonio, Minarik Elec.	512-822-7097
WI	Mequon, Lake-View Elctrns.	414-377-8250
Can	Edmonton, Deskin Sls.	403-466-2106
Can	Montreal, Deskin Sls.	514-331-2860
Can	Ottawa, Deskin Sls.	613-729-1099
Can	Richmond, Vancouver, Deskin Sls.	604-273-4963
Can	Toronto, Deskin Sls.	416-475-1412
Can	Winnipeg, Deskin Sls.	403-466-2106

SOSHIN ELECTRIC CO., LTD., No. 18-18, L-Chome Nakamagome, Ota-Ku, Tokyo, Japan, Tel: (03) 775-2111, Telex: 246-6377, FAX: (03)775-2071; Empl.: 1,000; *Sls. Mgr.:* N. Hiraide, Foreign Trade Dept.

SOUNDCOAT CO., INC., 1 Burt Dr., Deer Park, NY 11729, Tel: 516-242-2200, Telex: 12-5514; Empl.: 100; *Sls. Mgr.:* Mr. Carl Wolaver

SOURIAU, INC., 25158 Avenue Stanford, Valencia, CA 91355, Tel: 805-257-4830, Telex: 4720328, TWX: 910-336-1553, FAX: 805-257-2383; Empl.: 79; *Sls. Mgr.:* Keith L. Olsen; *Dist. Mgr.:* Sheridan Loungway

SOUTH AMERICAN DEVELOPMENT CORP., Rte. 9G, R.D. 413, Hyde Park, NY 12538, Tel: 914-229-8866, Telex: 4990035; Empl.: 80; *Sls. Mgr.:* L. Faber

SOUTHCO, INC., 210 N. Brinton Lake Rd., Concordville, PA 19331, Tel: 215-459-4000, Telex: 83-1485, TWX: 710-760-1715; *Sls. Mgr.:* R. W. Dougherty

SOUTHERN COMPUTER CORP., 141 W. Wicuca Rd, Ste. 300-B, Atlanta, GA 30342, Tel: 404-252-3340; *Sls. Mgr.:* Ray Manley

SOUTHERN ELECTRONICS, F-Dyne, 726 So. Flower St., Burbank, CA 91502, Tel: 818-845-2458, TWX: 910-498-5707; Empl.: 100; *Sls. Mgr.:* Ron Head

SOUTHWEST TECH PRODS CORP., 219 W. Rhapsody, San Antonio, TX 78216, Tel: 512-344-0242; Empl.: 34

SPACE ELECTRONICS, INC., Box 2166, Meriden, CT 06450, Tel: 203-235-7755; Empl.: 26; *Sls. Mgr.:* Richard Boynton

SP AMERICA INC., Shin-Etsu Polymer, 1181 N. 4th St., San Jose, CA 95112, Tel: 408-947-0311, TWX: 910-338-2229, FAX: 408-947-1332; *Sls. Mgr.:* Doug Hall

SPANTA, INC., 795 Franklin Ave., P.O. Box 193, Franklin Lakes, NJ 07417, Tel: 201-848-0033, Telex: 136011; Empl.: 10; *Sls. Mgr.:* W. Phifer; *Dist. Mgr.:* W. Phifer

SPARKOMATIC, Rte. 6 & 209, Milford, PA 18337, Tel: 717-296-6444, TWX: 510-260-2682; Empl.: 400; *Sls. Mgr.:* Gary Pomes

SPATIAL DATA SYSTEMS, A DBA Systems Co., 1135 W. Nasa Blvd., Melbourne, FL 32901, Tel: 305-727-0660, Telex: 56-4383; Empl.: 30

SPECIALTY CABLE CORPORATION, P.O. Box 50, Wallingford, CT 06492, Tel: 203-265-7126, 800-243-3959, TWX: 510-100-4275; Empl.: 50

SPECIALTY CONNECTOR CO., 2100 Earlywood Dr., Franklin, IN 46131, Tel: 317-738-2800, Telex: 217084

SPECIALITY ELECTRONICS, INC., 208 E. Rutherford St., Landrum, SC 29356, Tel: 803-457-3824; Empl.: 10; *Sls. Mgr.:* John Galli

SPECO DIV., Components Specialties, Inc., P.O. Box 624, 1172 Rte. 109, Lindenhurst, NY 11757, Tel: 516-957-8700, 800-645-5516, Telex: 96-7754; FSC No.: 516-957-9142; Empl.: 29; *Sls. Mgr.:* Eric Forman; *Dist. Mgr.:* Bruce Kurtz

SPECTRACOM, 101 Despatch Drive, East Rochester, NY 14445, Tel: 716-381-4827, Telex: 9103509587

SPECTRAGRAPHICS CORP., 9125 Rehco Rd., San Diego, CA 92121, Tel: 619-450-0611, Telex: 295439; Empl.: 170; *Sls. Mgr.:* Ray Barger, VP Sls.; *Dist. Mgr.:* Elliot Shev

SPECTRAL DYNAMICS, Scientific-Atlanta, Inc., 4255 Ruffin Rd., San Diego, CA 92123-0575, Tel: 619-268-7100, TWX: 910-335-2022; Empl.: 280; *Sls. Mgr.:* Joseph Sigismenti

SPECTRA LUX CORP., 12840 N.E. 21 St. Pl., Bellevue, WA 98005, Tel: 206-747-0560; FSC No.: 51896; *Sls. Mgr.:* Ron Bustad

SPECTRAN CORP., 50 Hall Road, Sturbridge, MA 01566, Tel: 617-765-0851, Telex: 709816, FAX: 347-2747; FSC No.: 6V569; Empl.: 175

SPECTRASCAN, INC., 1110A Elkton Drive, Colorado Springs, CO 80907, Tel: 303-599-9254, TWX: 312194 SPECTRASCAN UD; Empl.: 15; *Sls. Mgr.:* Bob Akers

SPECTRA SONICS, 3750 Airport Rd., Ogden, UT 84405, Tel: 801-392-7531; Empl.: 35

SPECTRA-STRIP, See Amphenol Products

SPECTRO EQUIPMENT, INC., 13821 Progress Pkwy., N. Royalton, OH 44133, Tel: 216-237-8910; Empl.: 25

SPECTROL ELECTRONICS, 17070 East Gale Ave., City of Industry, CA 91745, Tel: 818-964-6565, TWX: 910-584-1314; Empl.: 600; *Sls. Mgr.:* S. Deiling .... **A•2116-2119**

Local Sales Offices & Reps

AL	Huntsville, Beacon Sls.	205-881-5031
AZ	Scottsdale, ETS	602-941-9137
CA	San Diego, Hadden Assocs.	619-565-9444
CA	San Jose, Silicon Valley	408-286-7510
CO	Denver, West Hi-Tech	303-477-8180
CT	North Haven, Kitchen & Kutchin	203-239-0212
FL	Clearwater, Beacon Sls.	813-796-2378
IL	Cary, Ecro	312-639-1162
IA	Cedar Rapids, Gassner & Clark	319-393-5763
KS	Shawnee Mission, Lowell-Kangas	913-631-3515
MD	Baltimore, Component Sls.	301-484-3647
MA	Burlington, Kitchen & Kutchin	617-229-2660
MI	Livonia, Luebbe Sls.	313-477-3131
MN	Bloomington, Mumco	612-854-4161
MO	St. Louis, Lowell-Kangas	314-821-4050
NJ	Haddonfield, Sunday-O'Brien	609-429-4013
NM	Albuquerque, Nelco	505-293-1399
NY	Commack, E.R.A.	516-543-0510
NY	Liverpool, Gen Tech	315-451-3480
NC	Raleigh, Beacon Sls.	919-787-0330
OH	Cincinnati, Luebbe Sls.	513-891-5770
OH	Cleveland, Luebbe Sls.	216-333-0425
OH	Columbus, Luebbe Sls.	614-431-0474
OH	Dayton, Luebbe Sls.	513-294-0426
OR	Portland, Dussault & Assocs.	503-641-6234
PA	Pittsburgh, R. F. Clark	412-242-9500
WA	Seattle, Dussault & Assocs.	206-281-4025

SPECTRON GLASS & ELECTRONICS, INC., 595 Old Willets Path, P.O. Box 13368, Hauppauge, NY 11788, Tel: 516-582-5600, Telex: 968296; FSC No.: 57349; *Sls. Mgr.:* Lonnie Bott

SPECTRONICS CORP., 956 Brush Hollow Rd., Westbury, NY 11590, Tel: 516-333-4840, TWX: 510-222-5877; Empl.: 125; *Sls. Mgr.:* James J. Weglarz

SPECTRUM CONTROL, INC.

SPECTRUM CONTROL, INC., 2185 W. 8th St., Erie, PA 16505, Tel: 814-455-0966, TWX: 510-699-6871; FSC No.: 33095;5733; Empl.: 450; *Sls. Mgr.:* Herb Bostrom; *Dist. Mgr.:* C. Pirro ..... **A•1700-1705; C•1524-1529**

SoLiCo
SORENSON LIGHTED CONTROLS.

FULL LINE AUTHORIZED DISTRIBUTOR

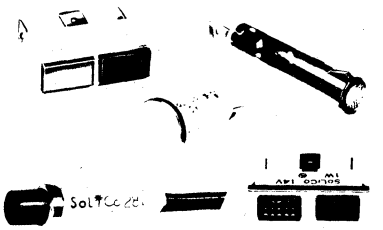
E S I

ELECTRIC SWITCHES
INCORPORATED
2478 Fletcher Dr. Los Angeles, California 90039

213-660-1310

CALL TOLL FREE
NATIONAL: 800-421-8855
CALIFORNIA: 800-252-4640

FAX: 213-660-5130
TWX: 910-321-2971



SEE COMPLETE PRODUCT LINE UNDER SWITCHES SECTION 5100
FREE LINECARD AND CATALOG ON REQUEST

Local Sales Offices & Reps

CA	Costa Mesa, Spectrum Control	714-432-8404
CA	Sunnyvale, Spectrum Control	408-735-9015
FL	Melbourne, Spectrum Control	305-724-4900
IL	Elgin, Spectrum Control	312-888-8011
MA	Chelmsford, Spectrum Control	617-458-9079
NJ	Clifton, Spectrum Control	201-779-7666
TX	Irving, Spectrum Control	214-929-0909
EXP	PA, Erie, Spectrum Control	814-455-0966

Local Distributors

CA	Buena Pk., Cypress Elctrns.	213-744-0355
CA	San Diego, Cypress Elctrns., Inc.	619-292-5611
CA	Santa Clara, Cypress Elctrns.	800-538-5112
CO	Wheatridge, Cypress Elctrns.	303-431-2622
FL	Melbourne, Aschbacher Elctrns.	305-729-0628
IL	Chicago, Newark Elctrns.	312-784-5100
MO	St. Charles, Finnigan Elctrns., Inc.	314-946-6201
NJ	Perth Amboy, Metuchen Capacitors	201-442-0500
NY	Buffalo, Summit Distrs.	716-887-2800
NY	Rochester, Summit Distrs.	716-334-8110
OH	Dayton, Aschbacher	513-252-7785
TX	Dallas, Cypress Elctrns.	214-869-1435
WA	Bothell, Cypress Elctrns. Inc.	206-483-1144

Spectrum Technology Inc
a DATUM company

SPECTRUM TECHNOLOGY, INC., DATUM, Incorporated, 300 Lopez Rd., Goleta, CA 93116, Tel: 805-964-7791, TWX: 910-334-1163, FAX: 805-683-3481; FSC No.: 32464; Empl.: 100; *Sls. Mgr.:* Don W. Cope ..... **A•1465-1468**

Local Sales Offices & Reps

AZ	Mesa, Sedco Sls.	602-834-8124
CA	San Jose, Frequency Control Assocs.	408-446-0200
CT	Milford, Todino Engrg. Sls.	203-874-6643
FL	Orlando, S.E.S.	305-282-3454
FL	Seminole, S.E.S.	813-391-1920
IL	Elgin, R.K. Elctrns.	312-695-8552
MA	Needham, Todino Engrg. Sls.	617-444-7925
NM	Albuquerque, I.M.E.C.	505-883-9010
NY	Huntington, Compar N.Y.	516-423-5660
OK	Tulsa, Ion Assocs.	918-664-0186
TX	Austin, Ion Assocs.	512-331-7251
TX	Grand Prairie, Ion Assocs.	214-647-8225
TX	Houston, Ion Assocs.	713-977-4354

Spellman
High Voltage Electronics Corporation

SPELLMAN HIGH VOLTAGE ELCTRNS. CORP., 7 Fairchild Ave., Plainview, NY 11803, Tel: 516-349-8686, TWX: 510-221-2155, FAX: 516-349-8699; Empl.: 120; *Sls. Mgr.:* Tom Stutzbach; *Dist. Mgr.:* Eric Marko ..... **D•1949-1953**

Local Sales Offices & Reps

CA	Costa Mesa, FLW-Southern	714-751-7512
CA	Hayward, FLW-Northern	415-786-9070
FL	Orlando, Gra-Mar, Inc.	305-658-1971
WA	Kirkland, Syntek	206-488-0394
Can	British Columbia, Broman Engrg.	604-254-6311

SPEMCO SWITCHES, 23425 Harper, Box 386, St. Clair Shores, MI 48080, Tel: 800-482-2828; Empl.: 10

SPERRY, A. W. INSTRUMENTS, P.O. Box 9300, Smithtown, NY 11787, Tel: 516-231-7050, 800-645-5398, Telex: 645104; Empl.: 50; *Sls. Mgr.:* Dennis W. Carroll

SPIRA MANUFACTURING CORP., 12721 Saticoy Street South, North Hollywood, CA 91605, Tel: 818-764-8222, FAX: 818-764-9880; FSC No.: 60050; Empl.: 18; *Sls. Mgr.:* Lisa A Panzich

SPIRICON, INC., 2600 North Main, Logan, UT 84321, Tel: 801-753-3729, Telex: 296 465 SPIR UR; Empl.: 10; *Sls. Mgr.:* John Gibbs

② SPRAGUE
THE MARK OF RELIABILITY

SPRAGUE ELECTRIC CO., a Unit of the Penn Central Corp. World HQ, 92 Hayden Ave., Lexington, MA 02173, Tel: 617-862-5500, Telex: 928071, TWX: 7103210021; FSC No.: 56289; Empl.: 10,500; *Sls. Mgr.:* Theodore W. Fischer, VP Sls.; *Dist. Mgr.:* James O'Sullivan, Sls. Mgr. ..... **A•1706, 1772, 2037; D•1138**

Local Sales Offices & Reps

AL	Huntsville, Electramark Inc.	205-539-7040
AL	Madison, EPI Inc.	205-461-7000,205-883-0520
AZ	Mesa, Sprague Electric Company	602-244-0154, 602-831-6762
AZ	Tucson, Sprague Electric Company	602-746-0955
CA	Burlingame, William J. Purdy Co.	415-347-7701
CA	San Diego, Miner Assocs., Inc.	619-566-9891
CA	Santa Ana, Sprague Electric Company	714-549-9913
CA	Van Nuys, Sprague Electric Company	818-994-6500
CO	Denver, William J. Purdy Co.	303-753-6800
CO	Longmont, Todd & Fry Assocs.	303-776-7331
CT	Guilford, Data Mark Inc.	203-453-0575
CT	Southbury, Sprague Electric Company	203-264-9595
CT	Wallingford, Sprague Electric Company	203-284-8300
FL	Altamonte Springs, Sprague Electric Company	305-831-3636
FL	Ft. Lauderdale, Sprague Electric Company	305-491-7411
FL	Tampa, Sprague Electric Company	813-962-1882
GA	Atlanta, Elctrn. Mktg. Assocs.	404-448-1215
GA	Norcross, Electramark Inc.	404-446-7915
IL	Northbrook, D. Dolin Sls.	312-498-6770
IN	Indianapolis, Sprague Electric Company	317-253-4247
IA	Cedar Rapids, J.R. Sls.	319-393-2232
KS	Overland Pk., EPI, Inc.	913-642-9118
KY	Lexington, Sprague Elec. Co.	606-224-4230
MD	Laurel, Sprague Elec. Co.	301-792-4890
MA	burlington, New England Tech. Sls.	617-272-0434
MA	Framingham, Sprague Electric Company	617-875-3200
MI	Ann Arbor, Sprague Electric Company	313-761-2014
MN	Minneapolis, HMR, Inc.	612-888-2122
MO	St. Louis, EPI, Inc.	314-962-1411
NJ	Cherry Hill, Trinkle Sls., Inc.	609-795-4200
NJ	Wayne, Sprague Electric Company	201-696-8200
NY	Central Islip, Sprague Electric Company	516-234-8700
NY	Larchmont, Sprague Electric Company	914-834-4439
NY	Syracuse, Paston-Hunter Co., Inc.	315-437-2843
NY	Syracuse, Sprague Electric Company	315-437-7311
NC	Charlotte, Sprague Electric Company	704-527-1306
NC	Raleigh, Elctrn. Mktg. Assocs.	919-847-8800
OH	Dublin, Sprague Electric Company	614-761-1881
OR	Beaverton, William J. Purdy Co.	503-641-9373
SC	Greenville, Elctrn. Mktg. Assocs.	803-233-4637
TX	Austin, Sprague Electric Company	512-458-2514
TX	Dallas, Sprague Electric Company	214-235-1256
WA	Redmond, William J. Purdy Co.	206-882-3144
WA	Vancouver, Sprague Electric Company	206-892-0361
WI	Milwaukee, D. Dolin Sls.	414-482-1111
Can	Downsview, Ont., Sprague Electric of Canada, Ltd.	416-665-6066
Can	Markham, Ont., Birde Mktg., inc.	416-477-7722
Can	Nepean, Ont., Sprague Elec. of Canada, Ltd.	613-726-0696
Can	Ottawa, Ont., Sprague Electric of Canada, Ltd.	613-238-2542

SPRAGUE ELECTRIC COMPANY, Advanced Ceramics Group, 267 Lowell Road, Hudson, NH 03051, Tel: 603-881-7200, FAX: 603-881-3168 ..... **A•1706**

See Sprague Electric World Headquarters listing for list of sales offices and reps.

SPRAGUE ELECTRIC COMPANY, The Capacitor Group, 92 Hayden Avenue, Lexington, MA 02173, Tel: 617-862-5500 ..... **D•1138**

See Sprague Electric World Headquarters listing for list of sales offices and reps.

SPRAGUE ELECTRIC COMPANY, FIL-MAG Business Unit, 3010 Del Sol Blvd., San Diego, CA 92154, Tel: 619-575-9353, TWX: 619-575-9425, FAX: 619-575-4081 ..... **A•2037**

See Sprague Electric World Headquarters listing for list of sales offices and reps.

SPRAGUE ELECTRIC COMPANY, The Semiconductor Group, 115 Northeast Cutoff, Worcester, MA 01606, Tel: 617-853-5000, TWX: 710-340-6304, FAX: 617-853-5049 ..... **A•1772**

See Sprague Electric World Headquarters listing for list of sales offices and reps.

SPRAGUE GOODMAN

SPRAGUE-GOODMAN ELCTRNS., INC., 134 Fulton Ave., Garden City Pk., NY 11040, Tel: 516-746-1385, Telex: 14-4533; FSC No.: 52769; Empl.: 80; *Sls. Mgr.:* Michael Trurowitsch ..... **A•1176-1177**

Local Sales Offices & Reps

AZ	Phoenix, Sanford Sls. Assocs.	602-957-3570
CA	Cupertino, Dura Elctrn. Sls.	408-255-2084
CA	Fountian Valley, SMC	714-962-2023
CO	Denver, West High-Tech	303-477-8180
FL	Pompano Beach, Cole-Tek	305-781-8110
GA	Norcross, Spartech	404-446-7300
IL	Chicago, B.N.I. Elctrns.	312-775-1717
IN	Ft. Wayne, Denton Mktg., Inc.	219-486-0665
IA	Marion, M.S.B. Assocs.	319-377-6261
KS	Shawnee Mission, M.S.B. Assocs.	913-432-2131
MD	Monkton, Imagitron Sls.	301-374-5600
MA	Sudbury, KSA of New England	617-443-5881
MI	Southfield, Fred H. Gehrke & Assocs.	313-559-5363
IA	Marion, M.S.B. Assocs., Inc.	319-377-6261
MO	St. Charles, M.S.B. Assocs.	314-946-5577
NJ	Wayne, Richman Salesco - Kagan	201-694-1115
NY	Commack, Richman Salesco	516-543-5532
NY	Utica, Sweetco Assocs.	315-797-6721
OH	Cincinnati, Stegman Blaine Mktg.	513-729-1969
TX	Seagoville, Delta Comps.	214-287-6333
WA	Seattle, Harry Levinson Co.	206-382-1300
Can	Toronto, Ont., Norgay Entprs.	416-259-9663

Local Distributors

CA	Garden Grove, National Capacitor	800-854-2451
CA	Santa Ana, Projections Unlimited	714-261-2323
MA	Needham, Cronin Elctrns.	800-225-4501
NJ	E. Brunswick, Varitech Elctrns.	201-390-4700
PA	State College, ALVO Elctrns.	814-238-0505
TX	Addison, Captronics	214-340-3592
TX	Garland, J & S Elctrns.	214-487-8808
WA	Seattle, KAM Elctrns.	206-382-1300

SPRAGUE SOLID STATE, 3900 Welsh Rd., Willow Grove, PA 19090, Tel: 215-657-8400, Telex: 476-1101, TWX: 510-661-7267; Empl.: 525

SPRUCE PINE MICA CO., Mtn. Laurel Dr., Spruce Pine, NC 28777, Tel: 704-765-4241; Empl.: 45; *Sls. Mgr.:* Bill Pittman

Local Sales Offices & Reps

CA	Mountain View, Straube Assocs.	415-969-6060
NC	Smithfield, Agents & Distrs.	919-934-7592
SC	Florence, Federated Svcs.	806-346-3959
SC	Mauldin, Carl Hart Assocs.	803-288-2323

SPS SOFTWARE PRODUCTS & SERVICES, INC., 14 E. 38th Street, 14th Fl., New York, NY 10016, Tel: 212-686-3790, Telex: 852616; *Sls. Mgr.:* Peter Voletsky

SPUR PRODUCTS CORP., 13649 Beach Ave., Marina Del Rey, CA 90292, Tel: 213-822-7100; Empl.: 12; *Sls. Mgr.:* Ray Lorenz

SQUARE D CO., Executive Plaza, Palatine, IL 60067, Tel: 312-397-2600, Telex: 255274; Empl.: 22600; *Sls. Mgr.:* R. M. O'Neal, VP; *Dist. Mgr.:* T. W. Wilbor, VP

SR ENGINEERING, Borg-Warner Industrial Products, Inc., 13961 Nautilus Dr., Dept. E, Garden Grove, CA 92643, Tel: 714-554-4200, Telex: 364412INTR-871, FAX: 714-554-1069; FSC No.: 21441; *Sls. Mgr.:* Coleman W. Conrad

Local Sales Offices & Reps

AL	Huntsville, Hughes Assocs., Inc.	205-533-9108
AZ	Phoenix, The Knight Co.	602-994-1311
AR	Swearingen Sls. Inc.	918-299-3206
CA	Hayward, Liaison, Inc.	415-783-1131

CA Los Angeles, The Knight Co. 714-833-8250
CT Shain Assocs., Inc. 203-651-8420
FL Orlando, Hughes Assocs., Inc. 305-774-7117
IL La Grange Pk., Bierhaus Sls. Inc. 312-354-5100
IA Cedar Rapids, Howard R. Brown Sls. Co. 319-366-6635
MA Hingham, Shain Assocs., Inc. 614-740-2334
MI E. Detroit, Jack M. Thorpe Co. 313-779-6363
NY Roslyn Hgts., Travco Assocs. 516-621-3223
TX Austin, Swearingen Sls. Inc. 512-339-8663
WA Seattle, Liaison, Inc. 206-767-3870

SSAC inc

SSAC INCORPORATED, P.O. Box 1000, Baldwinsville, NY 13027, Tel: 315-638-1300, Telex: 64-6221, TWX: FAX: 315-638-0333; FSC No.: 16-0985719; Empl.: 250; *Sls. Mgr.:* G. Weeks ..... **B•1501**

Local Sales Offices & Reps

AL Decatur, Tenn Tech, Inc. 205-350-0630
AZ Scottsdale, Vikeland Sls. Inc. 602-948-7921
AR Ft. Smith, Electro-Related Prods. 501-452-4030
CA LaHabra, Nolan Corp. 213-694-2145
CA Pleasanton, Sierra Sls. 415-463-2250
CO Englewood, Computech Mktg. 303-773-3981
FL Tampa, J-R Controls 813-961-9478
GA Marietta, Tenn Tech, Inc. 404-428-9594
IL Addison, Vikeland Sls. Inc. 312-832-8425
IN Beeach Grove, Control Sls. Inc. 317-786-2272
KS Prairie Vl., George Pearson Co. 913-362-4442
MD Glen Burnie, Faber-Renoff 301-261-2276
MA Cambridge, RJC Assocs. 617-492-5858
MN St. Paul, Vikeland Sls. Inc. 612-645-4647
NJ Paramus, Prime Indl. Comps. 201-262-9090
NY Buffalo, Niagra Elec. Sls. Co. 716-825-3100
NY E. Syracuse, Niagra Elec. Sls. Co. 315-437-1656
NY Rochester, Niagra Elec. Sls. Co. 716-271-1223
NC Charlotte, Purser, London & Edwards, Inc. 704-366-9222
OH Cleveland, Jim Finnegan & Co., Inc. ... 216-398-6300
PA Maple Glen, Certified Elctrl. Sls. 215-646-8996
PA Pittsburgh, Jim Finnegan & Co. 412-823-5400
TX Lewisville, Elec. Control Assocs. 214-221-3143
VA Midlothian, Daniel E. Boehling & Assocs. 804-794-5879
WA Mukilteo, Krippner & Assocs. 206-743-3579
WI Thiensville, TFL Assocs. 414-242-6800
Can Brampton, Ont., CPM Inds. 416-457-2450

Local Distributors

AZ Tempe, Control Design Supp. 602-829-7981
CA Anaheim, Control Design Supp. 714-821-1516
CA S. San Francisco, Steven Engrg. 415-588-9200
FL Lakeland, A. A. Elec. 813-665-6941
GA Atlanta, Georgia Control Cen. 404-876-8833
GA Norcross, A. A. Elec. 404-449-8670
IL Carol Stream, Lectro Comps. 312-690-0520
IL Mt. Prospect, Automation Equip. Co. .. 312-398-7550
IN Indianapolis, Control Design 317-788-4559
KS Wichita, Delta Elec. Supp. 316-262-1304
MA Hingham, Sager Elctrl. Supp. 617-749-6700
MA W. Springfield, Tectrol Assocs. 413-733-3695
MN Minneapolis, Control Design 612-721-1628
MN Minneapolis, United Elec. Co. 612-338-1915
MO Kansas City, Barr-Thorp Elec. Co. 816-531-8840
MO Maryland Heights, French Gerleman .. 314-569-3122
MO Springfield, SMC Elec. 417-865-2822
NJ E. Rutherford, A. A. Elec. Co. 201-777-5477
NJ Edison, Brownell Instrs. & Controls 201-287-2030
NJ Oakland, Relay Specialties 201-337-1000
NY Baldwinsville, Scibetta Dist. 315-622-3993
NY Hauppauge, Sager Elctrns. 516-348-1300
NY Penfield, Carlen Distrs. 716-381-9050
NY Rochester, Masline Elctrns. 716-546-5373
NY Rome, Rome Elctrns. 315-337-5400
NC Charlotte, Brownell Electro Inc. 704-597-1270
NC Shelby, Dixie Ind. Supp. 704-482-5641
OH Toledo, Fee & McCarthy, Inc. 419-535-3163
OR Clackamas, Amfac Elec. 503-657-3020
PA Harrisburg, Cumberland Elctrns. 717-232-9715
PA Malvern, Control Design Supp. 215-296-0150
TX Dallas, Watson Elec. 214-742-8441
VA Glen Allen, Hermitage Distrs. 804-798-3830
WI New Berlin, Control Design Supp. 414-784-1015
EXP New York, Sillcox Inter. 212-986-2220
Can Concord, Ont., Trade Elec. Supp. 416-661-7111
Can Scarborough, Ont., Banke Elctrns. 416-292-5152
Can Woodbridge, Ont., Sonepar 416-747-7800

STACKBIN CORP., Albion Road, Lincoln, RI 02865, Tel: 401-333-1600; Empl.: 75; *Sls. Mgr.:* Valerie Baxter

STACKPOLE, CARBON DIV., 201 Stackpole St., St. Marys, PA 15857, Tel: 814-781-1234, Telex: 914-514, TWX: 510-693-4511; *Sls. Mgr.:* B. E. Speedy

STACKPOLE COMPONENTS CO., See Ark-les Special Products Grp., Div. of Stackpole Switches

STACKPOLE, ELECTRONIC COMPONENTS DIV., 201 Stackpole St., St. Marys, PA 15857, Tel: 814-781-1234, Telex: 914-514, TWX: 510-693-4511; *Sls. Mgr.:* Ronald E. Braund

STACKPOLE, MAGNET DIV., 201 Stackpole St., St. Marys, PA 15857, Tel: 814-781-1234, TWX: 510-693-4511; *Sls. Mgr.:* V. D. Benigni

STACO, INC., See Staco Transpower

STACO ENERGY PRODUCTS CO., 301 Gaddis Blvd., Dayton, OH 45403, Tel: 513-253-1191, Telex: 288-032, TWX: 810-459-1798; FSC No.: 83008; Empl.: 146; *Sls. Mgr.:* Robert Simpson

STACOSWITCH, 1139 Baker St., Costa Mesa, CA 92626, Tel: 714-549-3041, TWX: 910-595-1507; FSC No.: 12522;Multiple; Empl.: 100; *Sls. Mgr.:* D. Sugg

STACO TRANSPOWER, 610 W. 6th St., Mt. Carmel, IL 62863, Tel: 618-262-5555, Telex: 510-525-2254; FSC No.: 83008; Empl.: 100; *Sls. Mgr.:* K. R. Harris ..... **A•2397**

Local Sales Offices & Reps

AL Huntsville, Remco 205-533-3763
AZ Scottsdale, Power Specialists 602-996-4100
CA Buena Park, Chuck Cooper Co. 714-739-8526
CA Los Altos, Frauman Assoc. 415-941-0660
CO Englewood, Computech Mktg. 303-773-3481
FL Rockledge, EDSI 305-631-8630
GA Atlanta, Remco 404-447-6937
IA Cedar Rapids, Di-tronix, Inc. 319-377-8275
KY Cinci, Tri-State Mktg. 513-761-7993
MI Southfield, Fred Gehrke & Assocs. 313-559-5363
MN Minneapolis, Furber Sls. 612-881-3620
MO Kansas City, Di-tronix, Inc. 816-356-6340
MO St. Louis, Di-tronix, Inc. 314-291-4777
NY E. Northport, Levison Sls. Co. Inc. 516-266-5020
NJ King of Prussia, Freeman-Malta Assoc. 215-337-9211
NC Raleigh, Remco 919-787-2112
OH Cleveland, Marlow Assocs. 216-991-6500
OH Columbus, Marlow Assocs. 614-885-7643
PA Pittsburgh, Marlow Assocs. 412-367-8886
TX Richardson, Jim D. Gray & Assocs. ... 214-699-9976
WA Mercer Island, Andersen Assocs. 206-232-0484
WI Milwaukee, Walter M. Braun & Assocs. 414-355-9515

STAFFALL INC., 7 Woodland St., Providence, RI 02908, Tel: 401-351-8282, TWX: 710-381-6964; Empl.: 25

STAINLESS, INC., 3rd St., N. Wales, PA 19454, Tel: 215-699-4871, TWX: 510-661-8097; Empl.: 80; *Sls. Mgr.:* Jess C. Rodriguez

STANCOR PRODUCTS, Hamilton Standard Controls, 131 Godfrey St., Logansport, IN 46947, Tel: 219-722-2244, TWX: 810-295-0699; FSC No.: 80089; *Sls. Mgr.:* Hubert Daubs ..... **A•2398; B•1502**

STANDARD CONDENSER CORP., 1065 W. Addison St., Chicago, IL 60613, Tel: 312-327-5440; FSC No.: 97419; *Sls. Mgr.:* B. P. McLean

STANDARD CRYSTAL CORPORATION, 9940 E. Baldwin Pl., El Monte, CA 91734, Tel: 818-443-2121, Telex: 4998755, FAX: 818-443-9049; FSC No.: 30149; *Sls. Mgr.:* Don Groh; *Dist. Mgr.:* Betty Longwell

STANDARD ENERGY, Div. WBH Scientific, Inc., Rte. 32, Greenville, NY 12083, Tel: 518-966-4197, Telex: 754180; *Sls. Mgr.:* Gary Hanington

STANDARD ENVIRONMENTAL SYSTEMS, INC., 383 Minnisink Rd., Totowa, NJ 07512, Tel: 201-256-2200, TWX: 710-988-5722; Empl.: 50

STANDARD GRIGSBY, INC., Gordos International Corp., 920 Rathbone Ave., Aurora, IL 60507, Tel: 312-844-4300, TWX: 910-232-3138; Empl.: 350; *Sls. Mgr.:* Lou Falco; *Dist. Mgr.:* Ed Barry ..... **B•1690-1693**

STANDARD GRIGSBY INC., W. Gunther GMBH, Virnsberger Strasse 51, D 8500 Nurnberg 51, West Germany, Tel: 0911-65521, Telex: 622351

STANDARD MICROSYSTEMS, 35 Marcus Blvd., Hauppauge, NY 11788, Tel: 516-273-3100, TWX: 510-227-8898; FSC No.: 53848; Empl.: 700; *Sls. Mgr.:* J. P. Chalmin; *Dist. Mgr.:* Steve Brander

STANDARD OIL ENGINEERED MATERIALS CO., Carborundum, P. O. Box 156, Niagara Falls, NY 14302, Tel: 716-278-2000; Empl.: 2000 ..... **A•2038-2039**

STANDARD POWER, INC., 1400 S. Village Way, Santa Ana, CA 92705, Tel: 714-558-8512, TWX: 910-595-1760; *Sls. Mgr.:* Sydele M. Petch; *Dist. Mgr.:* Sydele M. Petch

STANDARD REFERENCE LABS, INC., See Koep Precision Standards, Inc.

STANDARD WIRE & CABLE CO., 2345 Alaska Ave., El Segundo, CA 90245, Tel: 213-536-0006, 800-447-0006, Outside CA 800-821-5276, Telex: 65-3423; Empl.: 110; *Dist. Mgr.:* Jerry Gaither

STANDEX ELCTRNS., 4538 Camberwell Rd., Cincinnati, OH 45209, Tel: 513-871-3777, Telex: 212066, FAX: 513-871-3777; Empl.: 450; *Sls. Mgr.:* Charles C. Johnson, VP Sls. ..... **A•1708-1709; B•1503**

STANFORD APPLIED ENGRG. INC., 3520 De La Cruz Blvd., Santa Clara, CA 95050, Tel: 400-988-0700, Telex: 4990877; Empl.: 500; *Sls. Mgr.:* Dick Hudspeth/Dick Foley/Iver Sonderby; *Dist. Mgr.:* Dick Hudspeth

STANFORD TELECOMMUNICATIONS, INC., 2421 Mission College Blvd., Santa Clara, CA 95054, Tel: 408-748-1010, TWX: 910-339-9531; FSC No.: 61362; Empl.: 550; *Sls. Mgr.:* James A. Kirby

STANGENES INDUSTRIES, INC., 1052 East Meadow Circle, Palo Alto, CA 94303, Tel: 415-493-0814; Empl.: 56; *Sls. Mgr.:* Magne Stangenes

STANLEY/AC INTERFACE, 17911 Sampson Lane, Costa Mesa, CA 92647, Tel: 714-841-6090, Telex: 655328; Empl.: 24; *Sls. Mgr.:* Bill Roth; *Dist. Mgr.:* Ray Ponkey

STANLEY ELECTRONICS, INC., 10 Ocean Ave., Copiague, NY 11726, Tel: 516-842-8866; FSC No.: 61544; Empl.: 6; *Sls. Mgr.:* Isabel Goldberg

Local Sales Offices & Reps

CA San Jose, P & M Elctrns., Inc. 408-578-4878
CA Tarzana, High Voltage Sls. 213-881-9194
MA Chelmsford, Encotronics, Inc. 617-256-4207
OH Dayton, L. D. Bruno Co. 513-434-1847

STANLEY-VIDMAR, Stanley Works, 11 Grammes Rd., Allentown, PA 18103, Tel: 215-797-6600, Telex: 847-345; Empl.: 500 +; *Sls. Mgr.:* Ernie Gitlin, Vic Joliat; *Dist. Mgr.:* Frank Casey

STANPAT PRODS., 366 Main St., Port Washington, NY 11050, Tel: 516-883-8400; Empl.: 25

STANTON MAGNETICS, INC., Terminal Dr., Plainview, NY 11803, Tel: 718-445-0063, 516-349-0235, TWX: 510-221-1845; Empl.: 300; *Sls. Mgr.:* Joseph S. Woodstock, VP Mktg.; *Dist. Mgr.:* Jack O'Donnell, Natl. Sls. Mgr.

STANTRON DIV., 6900-6918 Beck Ave., P. O. Box 9156, N. Hollywood, CA 91605, Tel: 213-875-0990, TWX: 910-499-2177; FSC No.: 06514; Empl.: 125; *Sls. Mgr.:* G. A. Tessier ..... **C•1090-1091**

Local Sales Offices & Reps

AZ Phoenix, Shefler/Kahn 602-257-9015
CA Los Angeles, Landa & Assocs. 213-879-0770
CA Pleasanton, Moulthrop Sls. 415-463-0450
CA San Diego, Qualtronics 619-695-0118
CA Santa Ana, Landa & Assocs. 714-543-7805
CO Golden, J. F. Hurlbut Co. 303-279-7796
CT Farmington, Ray Perron & Co. 203-673-4825
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CT New Milford, Ray Perron Co. 203-354-2569
FL Bradenton, T G & Assocs. 813-753-4158
FL Long Wood, Southern Mktg. Assocs. .. 305-682-7317
HI Honolulu, JC Elctrns. 808-943-8614
IL Elmhurst, FF/Hill-Gray 312-832-4101
KS Overland Park, Stone & Assocs. 913-661-0808
MA Needham, Ray Perron Co. 617-449-6162
MO Hazelwood, Stone & Assocs. 314-895-4565
NH Dover, Ray Perron Co. 603-742-2321
NM Albuquerque, Shefler/Kahn 505-345-3591
NY Smithtown, T & K Sls. 516-724-3456
NY Whitney Point, Tae-Rep ... 607-692-3705/772-6952
OH Cincinnati, Ken Hoffman Co. 513-931-1686
OH Kettering, Ken Hoffman Co. 513-299-8448
OR Beaverton, Evergreen Mktg. Grp. 503-643-8020
PA West Conshocken, Eastern Component Sls. Corp. 215-825-8610

TX Austin, Barry Sls. 512-837-3616
TX Houston, Barry Sls. 713-784-5860
TX Richardson, Barry Sls. 214-234-0255
WA Seattle, Evergreen Mktg. Grp. 206-633-3160
WI Madison, FF/Hill-Gray 608-246-8155

STAR MICRONICS, INC., Components Div., 70-D Ethel Rd. W., Piscataway, NJ 08854, Tel: 201-572-9512, Telex: 299-766; Empl.: 120; *Sls. Mgr.:* R. Messer; *Dist. Mgr.:* Chris Duffy ..... **D•1056-1061, 1100-1101**

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AL Huntsville, REMCO 205-533-3763
CA Irvine, Groh Assocs. 714-837-9871
CA San Diego, Groh Assocs. 619-696-0054
CA San Jose, G. R. McKnight Co. 408-435-0880
CO Littleton, Martec Assocs. 303-972-3908
FL Orlando, Magaro & Assocs. 305-859-6546
GA Atlanta, REMCO 404-447-6937
IL Elk Grove Village, Parcom, Inc. 312-228-6360
IN Indianapolis, Midstates Mktg. 317-639-9999
IA Cedar Rapids, The Rozek Co. 319-362-2171
MD Baltimore, Adcour 301-889-1211
MA Sharon, Adcour 617-784-8123
MN Eden Prairie, Elctrn. Innovators 612-941-0830
NY Brooklyn, Metropolitan Sls. 718-336-7600
NC Greensboro, Magaro & Assocs. 919-294-4783
TX Garland, McCoy Assocs. 214-864-1838
TX Houston, Repmaster-Houston 713-680-0215
EXP Markham, Birde Mktg. 416-477-7722

Local Distributors
AZ Tempe, Waltronics Sls. 602-967-1020
CA Gardena, Cal Switch 213-770-2330
CA Hayward, Kea Elec., Inc. 415-887-2900
CA Los Angeles, Elec. Switches, Inc. 213-660-1310
CA San Diego, Tauber Elctrns. 619-274-7242
CA Santa Clara, Waltronics Sls. 408-727-1200
CO Englewood, NEP Elctrns. 303-799-9898
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TX Dallas, Wholesale Elec. Supp. 214-824-3001
WA Bellevue, U.R.S. Elctrns., Inc. 206-451-9393
WI New Berlin, NEP Elctrns. 414-785-9100
EXP Markham, Ont., Birde Mktg. 416-477-7722

STAR PORCELAIN, 71 Muirhead Ave., Trenton, NJ 08638, Tel: 609-392-3154; Empl.: 100; *Sls. Mgr.:* Art Weigold

STAR-TRON CORP., 58 Curtis St., Providence, RI 02909, Tel: 401-274-5090, Telex: 929490; FSC No.: 32494; Empl.: 50; *Sls. Mgr.:* Anna Coski

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STATEK CORP., 512 N. Main St., Orange, CA 92668, Tel: 714-639-7810, Telex: 67-8394, TWX: 910-593-1355; FSC No.: 51791; Empl.: 100; *Sls. Mgr.:* J. Gibson ..... **A•1469-1474**

Local Sales Offices & Reps
AL Huntsville, MacKay Smith & Assocs. .. 205-539-8000
AZ Phoenix, Eltron 602-266-2164
CA El Toro, Martronix 714-858-0632
CA Fallbrook, Martronix 619-728-7678
CA Mountain View, Weseloh/Swanson & Assocs. 415-961-0565
CA Newbury Pk., Martronix 805-499-6385
CO Denver, Elcom 303-337-2300
FL Ft. Lauderdale, Mackay Smith & Assocs. 305-467-3888
FL Madeira Beach, MacKay, Smith & Assocs. 813-530-1873
FL Orlando, MacKay, Smith & Assocs. ... 305-423-4353
GA Norcross, MacKay, Smith & Assocs. .. 404-449-7444
IL Northbrook, Raines & Assocs. 312-498-0890
IN Fort Wayne, M/S Sls. & Assocs. 219-436-3023
IN Indianapolis, M/S Sls. & Assocs. 317-257-8916
KS Overland Park, Thomas L. Dowell & Assocs. 913-648-7373
MD Columbia, Professional Reps. 301-992-7460
MA Woburn, Radian Assocs. 617-933-7386
MI Southfield, Gehrke & Assocs. 313-559-5363
MN Bloomington, Murnco Inc. 612-854-4161
MO St. Louis, Thomas L. Dowell & Assocs. 913-648-7373
NJ Bellmawr, TAI Corp. 609-933-2600
NJ Manhasset, Win-Cor Elec. Sls. Corp. .. 516-627-9474
NY Syracuse, PI' Tronics 315-455-7346
NC Cary, MacKay, Smith & Assocs. 919-481-3800
NC Charlotte, MacKay, Smith & Assocs. .. 704-372-1188
OH Centerville, Omega Sls. Inc. 513-434-5507
OH University Hgts., Omega Sls. Inc. 216-381-1404
OK Tulsa, Norcom Inc. 918-832-7747
TX Austin, Norcom 512-451-2757
TX Dallas, Norcom 214-386-4888
TX Houston, Norcom 713-778-0392
UT Salt Lake City, Elcom 801-485-7415
WA Redmond, Halbar Assocs. 206-882-0990
WA Vancouver, Halbar Assocs. 206-696-0170

Local Distributors
CA Orange, Ryno Elctrns. 714-637-0200
CA San Diego, Ryno Elctrns. 619-453-8430
CA Sunnyvale, Target Elctrns. 408-734-5611
CO Englewood, Indl. Elctrns. 303-694-9444
FL Ft. Lauderdale, Reptron Elctrns. 305-735-1112
FL Tampa, Reptron Elctrns. 813-855-4656
GA Norcross, Reptron Elctrns. 404-446-1300
IL Palatine, OHM Elctrns. 312-359-5500
IL Schaumberg, Reptron Elctrns. 312-882-1700
IN Indianapolis, Mar Elctrns., Inc. 317-633-6699
MD Columbia, Aztech Elctrns. 301-995-6800
MA Woburn, First Frequency 617-935-3885
MI Livonia, Reptron Elctrns. 313-525-2700
MN Minnetonka, Reptron Elctrns. 612-938-0000
MO St. Louis, Olive Elctrns. 314-426-4500
NY Buffalo, Summit Distrs. 716-884-3450
NY Mt. Vernon, QAR Indl. Elctrn. Sls. 914-699-2224
OH Worthington, Reptron Elctrns. 614-436-6675
TX Richardson, Ewing Elctrns., Inc. 214-231-6725
WA Kent, Pyramid Elctrns. 206-872-5800

STATE OF THE ART, INC., 2470 Fox Hill Rd., State College, PA 16803-1797, Tel: 814-355-8004, Telex: 866633; Empl.: 80; *Sls. Mgr.:* Barbara E. Ray ..... **A•2040-2042**

Local Sales Offices & Reps
AZ Phoenix, Eltron, Inc. 602-266-2164
CA La Miranda, Select Elctrns. 714-739-8891
CA Santa Clara, Meade Assocs. 408-748-1991
CT New Haven, Masten-Wright, Inc. 203-288-1638
FL Altamonte Springs, Micro Mktg., Inc. ... 305-788-0886
FL Seminole, Micro Mktg. Inc. 813-391-4336
IL Glenview, Crimson Engrg. Sls., Inc. 312-470-0024
MA S. Easton, Semi Dice East 617-238-8344
MN Edina, Peterson Sls. & Assocs. 612-944-0030
NY Huntington, Compar NY, Inc. 516-423-5660
NY Lewistown, Watmet, Inc. 716-285-3595
PA Colmar, E.L. Assocs. 215-822-2510
TX Dallas, Merino Sls. Co. 214-233-6002
WA Bellevue, Mars 206-747-3292
Can Niagara Falls, Waters Metal Prods., Ltd. 416-356-4925

Local Distributors
CA Los Alamitos, Semi Dice, Inc. 213-594-4631
NJ Fairfield, CHPS, Inc. 201-882-0997
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SUSSEX SEMICONDUCTOR, INC., Rte. 206, Branchville, NJ 07826, Tel: 201-948-3633, Telex: 226000 ETLXUR; Empl.: 12; *Sls. Mgr.:* Mark Iwanski

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SWITCHCRAFT, INC., 5555 N. Elston, Chicago, IL 60630, Tel: 312-792-2700, TWX: 910-221-5199; FSC No.: 82389;multiple; Empl.: 1100; *Sls. Mgr.:* Keith Bandolik; *Dist. Mgr.:* Dennis Warszona ..... **B•1694-1695; C•1536-1539**

Local Sales Offices & Reps
AL Huntsville, DHR Mktg. 205-533-5165
AZ Phoenix, Moss Mktg. 602-975-2065
CA Los Angeles, Wiley Co. 213-666-1611
CA San Diego, Wiley Co. 619-453-9018
CA Santa Clara, Ross Mktg. Assoc. 408-988-8111
CO Denver, Moss Mktg. 303-455-7205
CT Stamford, Unesco/Genex 203-322-9308
FL Coral Springs, HAI Elctrns. 305-752-7520
FL Melbourne, HAI Elctrns. 305-676-1639
FL Tampa, HAI Elctrns. 305-726-1330,813-963-0743
GA Atlanta, DHR Mktg. Inc. 404-451-9848
IL Chicago, Switchcraft Inc. 312-792-2700

IN Indianapolis, Marketing Engrs. 317-872-5665
KS Overland Park, Thomas L. Dowell & Assoc. 913-648-7373
LA Madisonville, S. L. Welch & Assocs. ... 504-524-8724
MA Waltham, Unesco/Genex 617-890-1535
MI Farmington Hills, R. C. Merchant & Co. 313-476-4600
MI St. Joseph, R. C. Merchant & Co. 616-983-7378
MN Edina, Mel Foster Tech. Sls. 612-941-9790
MS Jackson, S. L. Welch 601-932-5534
MO St. Louis, Thomas L. Dowell & Assoc. 314-849-4234
NJ Cherry Hill, Trinkle Sls. 609-795-4200
NJ Englewood Cliffs, Masin-Esco 201-569-8868
NM Albuquerque, Moss Mktg. 505-292-7505
NY E. Syracuse, Ossmann Comp. Sls. 315-437-7052
NY Hauppauge, Masin-Esco 516-273-3500
NY Rochester, Ossmann Comp. Sls. 716-424-4460
NC Raleigh, DHR Mktg., Inc. 919-781-1961
OH Dayton, J. C. Hofstetter Co. 513-296-1010
OH Medina, J. C. Hofstetter Co. 216-241-4880
OR Milwaukee, Comtec 503-227-2111
SC Greenville, DHR Mktg. Inc. 803-235-3594
TN Memphis, S. L. Welch & Assocs. 901-676-8476
TX Austin, J. Y. Schoonmaker Co. 512-327-5274
TX Dallas, J. Y. Schoonmaker Co. 214-349-1650
TX Houston, J. Y. Schoonmaker Co. 713-738-2427
UT Salt Lake City, Moss Mktg. 801-363-5875
WA Bellevue, Comtec 206-453-1188
Can Toronto, Atlas 416-789-7761

SWITCHES UNLIMITED, INC., 34-11 56th St., Woodside, NY 11377, Tel: 718-478-5000; Empl.: 15; *Sls. Mgr.:* Douglas King

SWITCHING POWER INC.

SWITCHING POWER INC., 3601 Veterans Hwy, Ronkonkoma, NY 11779, Tel: 516-981-7231, TWX: 510-220-1528; Empl.: 200 ..... **D•1955-1960**

Local Sales Offices & Reps
CA Sunnyvale, Switching Power Inc. 408-732-1230
FL W. Palm Bch., Graham Assocs. 305-622-4049
MA Tewksbury, United Sls. 617-658-4281
MN Minneapolis, Dan'l Engrg. 612-854-7550
NY Ronkonkoma, Switching Power Inc. ... 516-981-7231
OH Columbus, Seltech Mktg. 614-451-3865
TX Dallas, Matthews & Assocs. 214-248-7881

SWITCHING SYSTEMS INTL., 500 Porter Way, Placentia, CA 92670, Tel: 714-996-0909, FAX: 714-996-2753; Empl.: 57; *Sls. Mgr.:* Chris Edman

SYCON ELECTRONICS, 959 Cheney Ave., Marion, OH 43302, Tel: 614-382-5771, Telex: 3775688; Empl.: 50; *Sls. Mgr.:* James Call

SYLVANIA GTE CONTROL DEVICES, Rte. 35, Standish, ME 04084, Tel: 207-642-4535, TWX: 710-365-0145; Empl.: Over 1,000; *Sls. Mgr.:* M. L. Lyons; *Dist. Mgr.:* M. L. Lyons

SYLVANIA ELECTRONIC COMPONENTS, See Philips ECG, Amperex Electronics Corp., A North American Philips Co.

SYLVANIA MINIATURE LIGHTING, GTE Corporation, W. Main St., Hillsboro, NH 03244, Tel: 603-464-5533, TWX: 710-366-0387, FAX: 603-464-0259; FSC No.: 88204; Empl.: 1000; *Sls. Mgr.:* Tom Izbicki; *Dist. Mgr.:* Tom Izbicki ..... **B•1133-1135**

Local Sales Offices & Reps
AL Huntsville, R. O. Whitesell 205-883-5110
AZ Scottsdale, Bill Earl & Assocs. 602-994-3813
AR Little Rock, Erickson Sls. 501-225-7379
CA Laguna Hills, English/Damco 714-837-3801
CA Sunnyvale, W.W. Posey Co. 408-746-0771
CO Arvada, Cluff & Assocs. 303-425-6604
CT No. Haven, Coakley, Boyd & Abbett ... 800-225-8402
FL Brandon, Hutto, Hawkins, Peregoy 305-831-2474
FL Clearwater, Hutto, Hawkins, Peregoy .. 813-797-4447
FL Maitland, Hutto, Hawkins, Peregoy 305-831-2474
FL Pompano Beach, Hutto, Hawkins, Peregoy 305-971-5750
GA Atlanta, Millar Elctrns. 404-261-6160
IL Chicago, I.R.I. 312-647-7755
IN Ft. Wayne, R.O. Whitesell & Assocs. .. 219-432-5591
IN Indianapolis, R.O. Whitesell & Assocs. 317-359-9283
IN Kokomo, R. O. Whitesell 317-457-9127
IA Cedar Rapids, R. W. Kunz 319-396-5386
KS Prairie Village, R.W. Kunz 913-648-3535
KY Louisville, R.O. Whitesell & Assocs. ... 502-426-7696
LA Chalmette, Erickson Sls. 504-271-1976
LA Covington, Cartwright & Bean 504-892-1780
MA Needham, Coakley, Boyd & Abbett 617-444-5470
MI Grand Rapids, R.O. Whitesell & Assocs. 616-942-5420
MI Southfield, R. O. Whitesell 313-559-5454
MI St. Joseph, R.O. Whitesell & Assocs. .. 616-983-7337
MN Minneapolis, Stoss & Assocs. 612-925-2757
MS Jackson, Cartwright & Bean 601-981-1170
MO St. Louis, R.W. Kunz 314-966-4977
NJ Long Valley, Paul A. Sweeney 201-852-1434
NY Rochester, Electra Sls. 716-461-5252
NY Syracuse, Electra Sls. 315-463-1248
NC Raleigh, Millar Elctrns. 919-787-9585
OH Cincinnati, R.O. Whitesell & Assocs. ... 513-521-2290
OH Cleveland, R.O. Whitesell & Assocs. .. 216-447-9020
OH Columbus, R.O. Whitesell & Assocs. .. 614-888-9396
OH Dayton, R.O. Whitesell & Assocs. 513-298-9546
OR Tigard, Electronic Sources Inc. 503-684-0040
PA Pittsburgh, R.O. Whitesell & Assocs. .. 412-963-6161
PA Trevose, P.S.A. Inc. 215-245-0513
TN Knoxville, R. O. Whitesell 615-694-9476
TN Memphis, Cartwright & Bean 901-276-4442
TX Austin, Erickson Sls. 512-244-3068
TX Dallas, Erickson Sales 214-739-5833
TX Houston, Erickson Sales 713-266-1604
UT Salt Lake City, Cluff & Assocs. 801-486-7297
WA Bellevue, Electronic Sources Inc. 206-451-3500
WI Milwaukee, F.C. DuBois & Assocs. 414-774-3100

SYMBEX CORP., 3M Co., 72 Corwin Dr., Box 938, Painesville, OH 44077, Tel: 216-354-0925, TWX: 810-425-2256; Empl.: 130

SYMBICON, 89 Route 101A, Amherst, NH 03031, Tel: 603-673-8898, Telex: 272934 SYMB UR; *Sls. Mgr.:* S. Harrington; *Dist. Mgr.:* S. Buzzell

SYM-TEK SYS., INC., 3912 Calle Fortunada, San Diego, CA 92123, Tel: 619-569-6800, Telex: 249036; Empl.: 250; *Sls. Mgr.:* John Robinson

Local Sales Offices & Reps
AZ Phoenix, Scientific Dvs. 602-957-0401
CA Huntington Beach, Scientific Dvcs. 714-840-3501
CA San Diego, Scientific Dvcs. 619-268-9635
CA San Jose, Scientific Dvs. 408-554-0455
CO Broomfield, Scientific Dvcs. 303-469-5145
FL Longwood, Richard Schoonover, Inc. 305-788-3344
GA Marietta, MoRe 404-992-5172
IL Elmhurst, Sector Engrg. Sls. 312-530-7850
MA Waltham, Sym-Tek Sys., Inc. 619-899-7170
NM Albuquerque, Scientific Dvcs. 505-883-3668
NY Valley Stream, Levison Sls. 516-266-5020
OH Brecksville, WRR Assocs. 216-526-2023
TX Austin, Sym-Tek Sys., Inc. 512-837-9311
UT Sandy, Scientific Dvcs. 801-562-0410
WA Redmond, Scientific Dvcs. 206-885-0004
Can Montreal, Interfax Sys., Inc. 514-336-0392

SYMTRON CORP., 2415 E. Charleston Rd., Mountain View, CA 94043, Tel: 415-965-4500, TWX: 910-379-5002; Empl.: 350; *Sls. Mgr.:* Don Atkins

SYNEKTRON
THE MOTION CONTROL COMPANY

SYNEKTRON CORPORATION, 12000 S. W. Garden Place, Portland, OR 97223, Tel: 503-684-3090, Telex: 517441; Empl.: 80 ..... **B•1214-1215; D•2126**

SYNTEL DIV., Tegam, Inc., 7230 North Ridge Rd., Madison, OH 44057, Tel: 216-428-7505; Empl.: 15

SYNTEST CORP., 40 Locke Dr., Marlboro, MA 01752-9973, Tel: 617-481-7827, TWX: 710-390-7659; Empl.: 20; *Sls. Mgr.:* Curtis P. Hoffman ..... **D•1102**

Local Sales Offices & Reps
CA Laguna Hills, Elotek Sys., Inc. 714-830-0860
FL Altamonte Springs, EMA Inc. 305-671-6800
IL Arlington Heights, Coombs Assocs. ... 312-439-9810
MA N. Plymouth, D.C. Assocs. 617-585-5085
MI Rockford, Hal C. Heym Assocs. 616-874-7443
NY Canandaigua, Mamula Sls. 716-394-5560
NY White Plains, Channel Corp. 914-694-9234
OH Centerville, EMA Inc. 513-433-2800
PA Montgomeryville, Eastern Sci. Mktg. ... 215-368-4570
TX Waller, Vital Process Sys. 409-372-2927

Local Distributors
WA Bellevue, Showalter Instrs. 207-746-7970
WV Ravenswood, Valtronics, Inc. 304-273-5356

SYNTRONIC INSTRUMENTS, INC., 100 Industrial Rd., Addison, IL 60101, Tel: 312-543-6444, TWX: 910-651-2191; FSC No.: 99409; Empl.: 125; *Sls. Mgr.:* Paul Evans

SYRACUSE ELCTRNS., P.O. Box 4770, Syracuse, NY 13221, Tel: 315-488-4911, Telex: 937-232; Empl.: 150

SYSCON INTL., INC., 1108 So. High St., So. Bend, IN 46618-1096, Tel: 219-232-3900, TWX: 810-299-2523; Empl.: 60; *Sls. Mgr.:* Les Barney

SYSTEK, 1027 N. Kellogg St., Kennewick, WA 99336, Tel: 509-735-1200; Empl.: 7

SYSTEMS DATA, INC., 2830 Copley Road, P.O. Box 4297, Akron, OH 44321, Tel: 216-666-0085; Empl.: 12; *Sls. Mgr.:* John C. Hall

SYSTEMS PLUS, 500 Clyde Ave., Mtn. View, CA 94043, Tel: 415-969-7047, TWX: 910-373-2096; Empl.: 20

SYSTEMS RESEARCH LABORATORIES, INC., 2800 Indian Ripple Rd., Dayton, OH 45440, Tel: 513-426-6000, TWX: 810-450-2621; FSC No.: 14590; Empl.: 1000

SYSTONICS, INC., Box 121, Winchester, MA 01890, Tel: 617-729-4439, Telex: 951131 HQBSN; Empl.: 11

SYSTRON-DONNER INERTIAL DIV., 2700 Systron Dr., Concord, CA 94518, Tel: 415-671-6400, TWX: 910-481-9478; Empl.: 416

SYSTRON-DONNER INSTRUMENT DIV., 2727 Systron Dr., Concord, CA 94518, Tel: 415-676-5000, Telex: 171996, TWX: 910-481-9472; FSC No.: 52542; Empl.: 100; *Sls. Mgr.:* N. J. Susner, Gen. Mgr.

SYSTRON-DONNER MICROWAVE DIV., 14844 Oxnard St., Van Nuys, CA 91409, Tel: 818-786-1760, TWX: 910-495-1786; Empl.: 160; *Sls. Mgr.:* Ashvin K. Sheth

TAB BOOKS, Monterey & Pinola Aves., Blue Ridge Summit, PA 17214, Tel: 717-794-2191, Telex: 820562; Empl.: 175; *Sls. Mgr.:* Dan Hill

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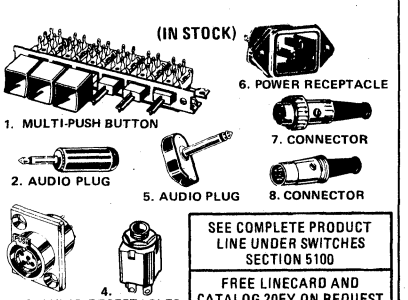
TWX: 910-321-2971



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TA INSTRUMENT CO., 4625 Alger St., Los Angeles, CA 90039, Tel: 818-242-8855, TWX: 910-497-4780; Empl.: 60

TAIYO YUDEN (USA) INC., 714 W. Algonquin Rd., Arlington Heights, IL 60005, Tel: 312-364-6104, FAX: 910-687-0378; Empl.: 35; *Sls. Mgr.:* Brian R. Hess

TALEMA ELECTRONIC, INC., 301 N. Highway 63, Rolla, MO 65401, Tel: 314-364-0882, Telex: 442353; Empl.: 23; *Sls. Mgr.:* Fred Tetley

tamura

TAMURA CORPORATION OF AMERICA, 1150 Dominguez St., Carson, CA 90746-3518, Tel: 213-638-1790, Telex: 664-759; *Sls. Mgr.:* Doug Henderson ..... **A•1291-1293, 1711-1713, 2314, 2407-2414; D•1961-1967**

Local Sales Offices & Reps

AZ	Scottsdale, E.D.P. & Assocs.	602-991-6119
CA	Irvine, Groh Assocs.	714-837-9871
CA	Mtn. View, Thorson West	415-964-9300
CT	Hamden, Datcom Inc.	203-288-7005
IL	Mt. Prospect, Interep Inc.	312-577-8899
IN	Kokomo, Schillinger Assocs., Inc.	317-452-4057
MA	Waltham, Datcom Inc.	617-891-4600
MN	Minneapolis, DeBeck-Hays Assocs.	612-835-3610
NJ	Lodi, TRC Elec. Inc.	201-779-8282
OR	Beaverton, Advanced Power Prods.	503-646-0994
PA	Box Spring House, QED Elec. Inc.	215-643-9200
WI	Milwaukee, Interep Inc.	414-774-1100

Local Distributors

NJ	Lodi, TRC Elec. Inc.	201-779-8282

T&B/ANSLEY CORP., Sub. Thomas & Betts, 920 Route 202, Raritan, NJ 08869, Tel: 201-685-1600; Empl.: 250; *Dist. Mgr.:* Roland Kolu

T&W SYSTEMS, INC., See Versacad Corp.

TANE ALARM PRODUCTS, 247-40 Jericho Tpke., Floral Park, NY 11001, Tel: 516-328-3351; Empl.: 5; *Dist. Mgr.:* Sam Lurie

TANSITOR ELECTRONICS, West Rd., P.O. Box 230, Bennington, VT 05201, Tel: 802-442-5473, TWX: 710-360-1782; FSC No.: 030266626; Empl.: 308; *Sls. Mgr.:* Dan Perreault; *Dist. Mgr.:* Dave Latchum

TAPE CONCEPTS, INC., P.O. Box 790, 110 E. Vistula St., Bristol, IN 46507, Tel: 219-848-5234, Telex: 510 600 2378 R T I; Empl.: 3; *Dist. Mgr.:* M. Stoll

TAPECON, INC., 10 Latta Rd., Rochester, NY 14612, Tel: 716-621-8400; Empl.: 80

TAPESWITCH CORP. OF AMERICA, 100 Schmitt Blvd., Farmingdale, NY 11735, Tel: 516-694-6312, Telex: 14-4611; Empl.: 100; *Sls. Mgr.:* Thomas Polistina

TAPPAN WIRE & CABLE, 256 Oak Tree Rd., Tappan, NY 10983, Tel: 914-359-9300; FSC No.: 2G330; Empl.: 20; *Sls. Mgr.:* Mike Ressa

TAUBER ELCTRNS. INC., 4901 Morena Blvd., Bldg. 314, San Diego, CA 92117, Tel: 619-274-7242, FAX: 619-274-2220; Empl.: 22; *Sls. Mgr.:* Bob Tauber; *Dist. Mgr.:* Pat Hoscoe ..... **D•1479**

Local Sales Offices & Reps

AL	Huntsville, Macro-Marketing	205-883-9630
AZ	Phoenix, MacDonald & Assocs.	602-998-1848
CA	Fullerton, AB Sls.	714-667-0177
CA	Northridge, Tauber & Assocs.	213-416-9000
CA	San Jose, Tauber & Assocs.	408-737-9408
IL	Wheeling, Ed Joyner & Co.	312-520-1200
NV	Reno, Connie Dunning	702-849-0722
OR	Portland, Frank Jackson Assocs.	503-292-2638
WA	Redmond, Frank Jackson Assocs.	206-881-7277

TAURUS COMPUTER PRODUCTS, INC., 1755 Woodward Dr., Ottawa, ON, Canada K2C0P9, Tel: 613-226-5361, Telex: 053-3577; Empl.: 20; *Sls. Mgr.:* J. Roger Davies; *Dist. Mgr.:* J. Roger Davies

TAURUS CORP., Academy Hill, P.O. Box 278, Lambertville, NJ 08530, Tel: 609-397-2390 ..... **D•1103**

Local Sales Offices & Reps

CA	Pasadena, Sci. Sls.	213-793-1244
FL	Clearwater, Brennan Assocs.	813-446-5006

TAU-TRON, INC., A Unit of General Signal, 10 Lyberty Way, Westford, MA 01886, Tel: 617-692-5100, Telex: 750245; Empl.: 300; *Sls. Mgr.:* Tom Lillard, Gen Sls. Mgr.

TAYLOR ELECTRONICS, INC., 401 West Orion, Tempe, AZ 85283, Tel: 602-838-4523; Empl.: 25; *Sls. Mgr.:* Sharon F. Hansen

T-bar INCORPORATED

T-BAR INCORPORATED, Data Switch Corporation, 141 Danbury Rd, P. O. Box T, Wilton, CT 06897-0730, Tel: 203-834-8227, Telex: 681-9129, TWX: 710-479-3216; Empl.: 540; *Sls. Mgr.:* Gerard F. Ryan; *Dist. Mgr.:* Bill Kruppenbacher ..... **B•1696**

Local Sales Offices & Reps

CA	Arcadia, Van Gott & Assocs.	818-445-9728
CA	Palo Alto, Horne Electro Sls.	415-494-6777
FL	Clearwater, Tech-Rep Assocs.	813-577-9370
GA	Atlanta, CSR Elctrns.	404-396-3720
MD	Gaithersburg, Carwithen Assocs.	301-921-9545
MA	Westwood, Apex Assocs.	617-326-5042
NY	Rochester, Elctrn. Mktg. Assocs.	716-427-8115
NY	Yonkers, Sonkin Assocs.	914-968-8282
OH	Cleveland, Carter, McCormic & Peirce	216-826-0400
TX	Richardson, McCoy Assocs. Co.	214-864-1838
Can	Quebec, J. G. Weiss Co. Ltd.	514-337-5022

Local Distributors

IL	Chicago, Newark Elctrns.	312-784-5100
CT	Wallingford, Sager Elctrl. Supp. Co.	203-265-4600

TDJ CO., INC., 1154 Morena Blvd., San Diego, CA 92110, Tel: 619-276-5920; FSC No.: 60382; Empl.: 9; *Sls. Mgr.:* R. Scherr ..... **C•1094-1095**

TDK CORPORATION, Electronic Components & Material, 13-1, Nihonbashi, 1-Chome, Chuo-ku,, Tokyo, Japan 103, Tel: (03) 278-5111, Telex: J24270, TWX: J26937, FAX: (03) 278-5330; Empl.: 7,800; *Sls. Mgr.:* Motoyuki Kurihara; *Dist. Mgr.:* Tadashi Enami (TDK Corporation of America) .... **A•1180-1183, 1294, 1321-1325, 1627, 1714-1715; D•1062, 1969**

Local Sales Offices & Reps

AL	Huntsville	205-539-4551
CA	San Jose	408-435-8565
CA	Torrance	213-539-6631
IL	Skokie, TDK Corp. of America (Corp. Off.)	312-679-8200
IN	Indianapolis	317-872-0370
MI	Southfield	313-353-9393
NJ	New Jersey, M & H Intl. Corp.	201-891-8800
NJ	W. Orange	201-736-0023
NY	Pt. Washington	516-625-0100
NC	Greensboro	919-292-0012
TX	Irving	214-506-9800
Can	Ontario, M & H Intl. Corp.	416-676-9401

TEAL ELECTRONICS CORPORATION, 7020 Carroll Rd., San Diego, CA 92121, Tel: 619-458-9522, 800-621-0852 (ext. 590); Empl.: 50; *Sls. Mgr.:* Bill Carpenter, VP Mktg.

TEC, 2727 N. Fairview, Box 5646, Tuscon, AZ 85703, Tel: 602-792-2230, TWX: 910-952-1377, FAX: 602-882-7472; Empl.: 275; *Sls. Mgr.:* Barry Hamilton; *Dist. Mgr.:* Barry Hamilton

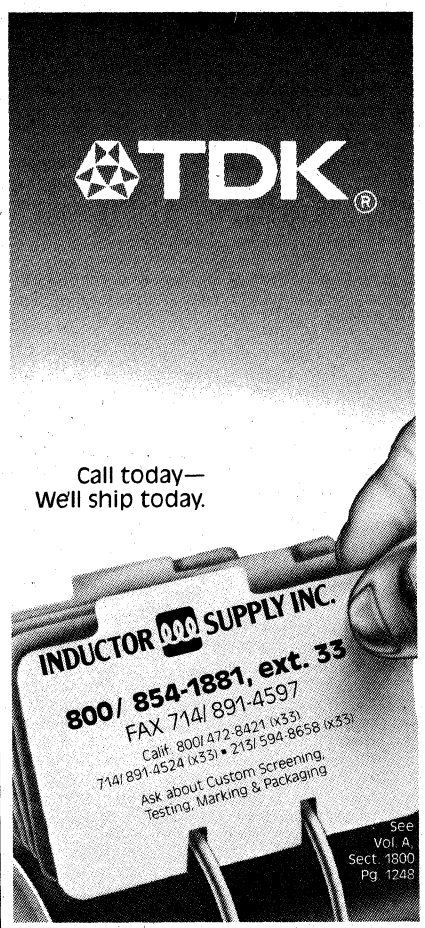
TECA, THERMOELECTRIC COOLING AMERICA CORP., 448 N. Halsted St., Chicago, IL 60622, Tel: 312-666-1600; Empl.: 50 ..... **C•1690-1691**

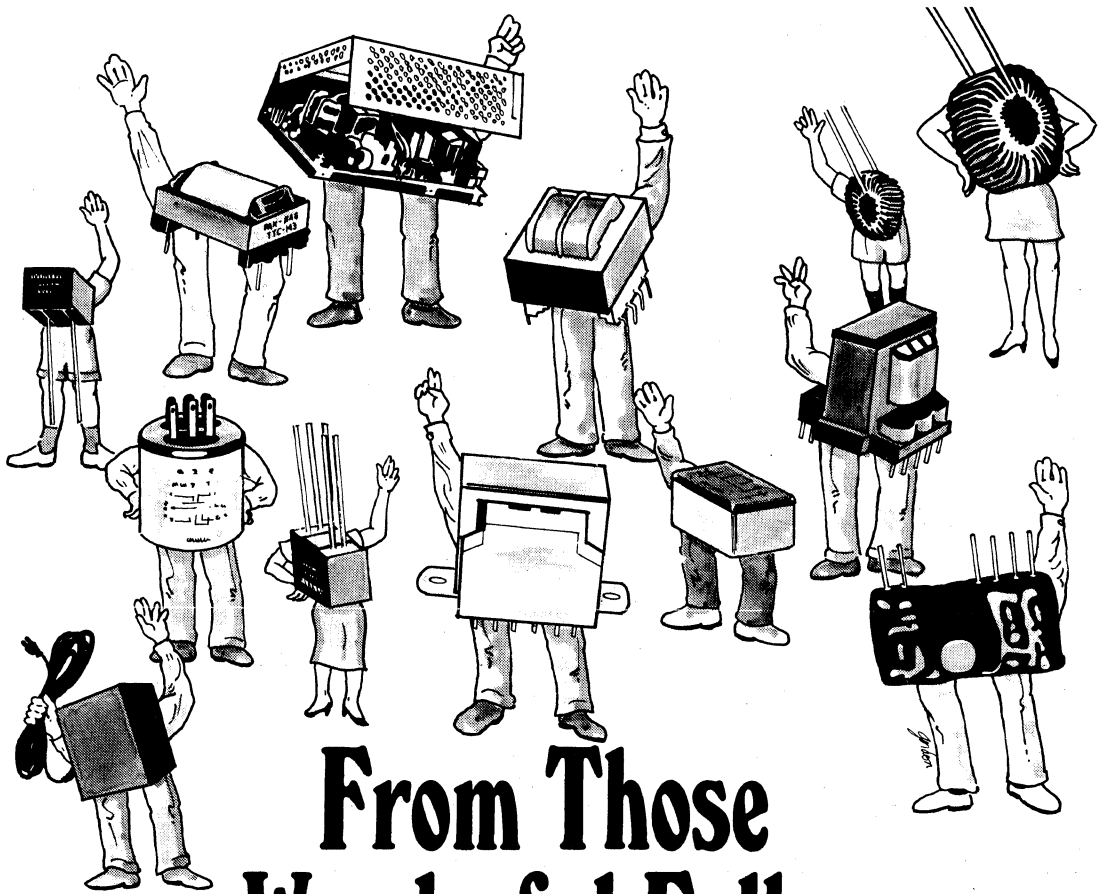
TECCOR ELECTRONICS, INC.

TECCOR ELECTRONICS, INC., 1801 Hurd Dr., Irving, TX 75038, Tel: 214-580-1515, Telex: 79-1600, TWX: 910-860-5068, FAX: 214-550-1309; Empl.: 700; *Sls. Mgr.:* Gerry Wiley ..... **A•2154-2157**

Local Sales Offices & Reps

AL	Huntsville, Interep Assocs.	205-533-1730
AL	Mobile, Interep Assocs. Inc.	205-478-1036
AZ	Tempe, System Sls. of Ariz.	602-829-9338
CA	San Diego, O'Donnell Assocs.	619-578-1645
CA	San Jose, O'Donnell Assocs.	408-263-6500
CA	Torrance, O'Donnell Assocs.	213-539-9664
CO	Englewood, Romulus Elctrns. Ltd.	303-770-4888
CT	Meriden, Advanced Comp. Sls. (ACS)	203-238-6888
FL	Boca Raton, Perrott Assocs. Inc.	305-483-2358
FL	Clearwater Beach, Perrott Assocs.	813-443-5214
FL	Orlando, Perrott Assocs.	305-298-7748
GA	Norcross, Interep Assocs.	404-449-8680
IL	Arlington Heights, MSI	312-956-1000
IN	Indianapolis, Elctrn. Rep, Inc.	317-894-1414
IN	Mishawaka, Elctrn. Rep, Inc.	219-259-9365
IA	Des Plains, SPS Assocs. Ltd.	515-225-0607
KS	Olathe, SPS Assocs.	913-764-4460
MA	Walpole, JEF Components	617-668-6695
MI	Southfield, Rathsburg Assocs.	313-559-9700
MN	Minneapolis, Electric Comp. Sls.	612-933-2594
MO	Earth City, SPS Assocs. Ltd.	314-291-0520
NJ	Mt. Laurel, S-J Assocs. South	609-866-1234
NM	Albuquerque, Sys. Sls. of Arizona Inc.	505-881-8877
NY	Canandaigua, Bensman/Upstate Assocs.	716-396-2498
NY	Jamaica, S-J Assocs. Inc.	718-291-3232
NC	Raleigh, Godwin Assocs.	919-878-8000
OH	Cleveland, Del Steffen & Assocs.	216-461-8333
OH	Dayton, Del Steffen & Assocs.	513-293-3145
OH	Lexington, Del Steffen & Assocs.	419-884-2313
PA	Carnegie, Del Steffen & Assocs.	412-276-7366
TN	Greeneville, Interep Assocs. Inc.	615-639-3491
TX	Irving, Davis, Don	214-580-1515
UT	Salt Lake City, Electrodyne	801-486-3801
VA	Lynchburg, Burgin-Kren Assocs.	804-239-2626
WA	Redmond, Quadra Sls.	206-883-3550
WI	Wauwatosa, Larsen Assocs.	414-258-0529
Can	Concord, Ont., Astec Comps.	416-669-4022
Can	St. Laurent, Que., Astec Comps.	514-744-5465





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Tech-Etch

TECH-ETCH, INC., 45 Aldrin Rd., Plymouth, MA 02360, Tel: 617-747-0300, Telex: 989997; Empl.: 280; *Sls. Mgr.:* P. A. Thomas ..... **C•1753**

TECH LABS., INC., Bergen & Edsall Blvds., Palisades Pk., NJ 07650, Tel: 201-944-2221, Telex: 322 532; FSC No.: 83332; Empl.: 31; *Sls. Mgr.:* George Morrow ... **B•1697**

Local Sales Offices & Reps

CA	Granada Hills, C & W Comps. Sls.	818-368-4032
CA	Santa Clara, Mollard Mktg.	408-866-5950
GA	Atlanta, Grady Duckett Sls.	404-451-3529
IL	Glenview, Crimson Engrg. Co.	312-470-0024
KS	Lenexa, Midtec Assocs.	913-541-0505
MA	Norwood, Comps. Mktg. Svc.	617-762-4339
MI	Jackson, N. Scroggs Co.	517-750-1170
MO	St. Louis, Midtec Assocs.	314-275-8666
NJ	Haddonfield, Gray Assocs.	609-953-9109
NJ	Whippany, Ken L. Love Assocs.	201-540-0204
NY	Fairport, Net Sls.	716-223-1030
NY	Hempstead, Ken L. Love Assocs.	516-681-3155
OH	Cincinnati, Patco	513-931-3311
PA	Pittsburgh, VerHill Assocs.	412-241-5202
TX	Dallas, Southwest Elctrns.	214-690-9881
TX	Houston, Southwest Elctrns.	713-729-1670
WA	Seattle, SPS Elctrns.	206-323-4140
Can	Montreal, Solid State Elctrns.	514-481-3313

TECHLAND SYSTEMS, INC., 25 Waterside Plaza, New York, NY 10010, Tel: 212-684-7788, Telex: 961-134; *Sls. Mgr.:* Tom Nickerson

TECHMAR

TECHMAR CORP., 2232 S. Cotner Ave., Los Angeles, CA 90064, Tel: 213-478-0046, 800-TECHMAR, 800-CHASSIS (CA); FSC No.: 32597; Empl.: 12; *Sls. Mgr.:* Grant Reisfelt ..... **C•1096-1097**

Local Distributors

AZ	Tempe, Bell Inds.	602-966-7800
AZ	Tempe, Insight Elctrns.	602-829-1800
CA	Agoura, Insight Elctrns. Inc.	818-707-2100
CA	Costa Mesa, Insight Elctrns. Inc.	714-556-6890
CA	Hayward, Electro Comp. Distrs.	415-783-5800
CA	San Diego, Insight Elctrns.	619-587-0471
CA	San Jose, Rose Elctrns. Dist.	408-263-9700
CA	Santee, Mouser Elctrns.	714-449-2220
CA	Tustin, Added Value Elec. Dist. Inc.	714-259-8258
CO	Wheatridge, Bell Inds.	303-424-1985
CT	East Haven, JV Elctrns.	203-469-2321
CT	Wallingford, Sager	203-265-4600
FL	Ft. Lauderdale, Hammond Elctrns.	305-973-7103
GA	Norcross, Hammond Elctrns.	404-449-1996
IL	Rosemont, Advent Elctrns.	312-298-4210
IN	Ft. Wayne, Graham Elctrns.	219-423-3422
IN	Indianapolis, Advent Elctrns.	317-872-4910
IN	Indianapolis, Graham Elctrns.	317-634-8202
IA	Cedar Rapids, Advent Elctrns.	319-363-0221
LA	Baton Rouge, Indl. Elctrns. Supp.	504-357-4249
LA	Shreveport, Indl. Elctrns. Supp.	318-222-9459
MD	Savage, Pyttronic Inds.	301-953-9650
MA	Woburn, ACI Elctrns.	617-935-7230
MI	Farmington Hills, Advent Elctrns.	313-477-1650
MN	Minneapolis, Stark Elctrns.	612-332-1325
NE	Lincoln, Scott Elctrns.	402-466-8221
NJ	Bloomfield, Solid State Inc.	201-429-8700
NJ	Camden, Gen. Radio Supp.	609-964-8560
NM	Albuquerque, Bell Inds.	505-292-2700
NY	Buffalo, Summit Distrs.	716-884-3450
NY	Jamaica, Archer Indl. Distr.	212-291-3232
NY	Plainview, ACI Elctrns.	516-293-6630
NY	Rochester, Simcona Elctrns.	716-328-3230
NC	Greensboro, Hammond Elctrns.	919-275-6391
OH	Centerville, Graham/Bell Ind. Ohio	513-435-8660
OH	Twinsburg, Advacom Inc.	216-425-8477
OR	Portland, Radar Elc. Co.	503-232-3404
PA	Mc Kean, Advacom	814-476-7774
PA	Montgomeryville, Pyttronic Inds.	215-643-2850
SC	Greenville, Hammond Elctrns.	803-233-4121
TN	Nashville, Graham/Bell Elctrns. Ind.	615-242-2682
TX	Corpus Christi, Douglas Elctrns.	512-883-5103
TX	Dallas, Omni Pro Intl. Inc.	214-233-9368
TX	Mansfield, Mouser Elctrns.	817-483-4422
UT	Salt Lake City, Bell Inds.	801-972-6969
WA	Seattle, Radar Elec. Co.	206-282-2511
WI	Milwaukee, Marsh Elctrns.	414-475-6000
EXP	Pennsylvania, Advacom Inc.	412-733-5400
Can	Burnaby, BC, RAE Indl. Elctrns. Ltd.	604-291-8866
Can	Edmonton, Alberta, Cardinal IND Elctrns.	403-483-6266
Can	Montreal, Que., Prelco Elec. Ltd.	514-389-8051
Can	Willowdale, Ont., Electro Sonic Inc.	416-494-1666

TECHNAR, INC., See TRW Technar, Inc.

TECHNIC, INC., Box 965, Providence, RI 02901, Tel: 401-781-6100, Telex: 927514; Empl.: 125; *Sls. Mgr.:* Andrew T. Ferris

TECHNICAL DEVICES, 560 Alaska Ave., Torrance, CA 90503, Tel: 213-618-8437; FSC No.: 04772; Empl.: 21; *Sls. Mgr.:* D. Murrin; *Dist. Mgr.:* D. Murrin

TECHNICAL MARKING SYS., See Autoroll Machine Corp.

TECHNICAL MATERIALS, INC., Sub. of Brush Wellman, Inc., 5 Wellington Rd., Lincoln, RI 02865, Tel: 401-333-1700, TWX: 710-384-0600, FAX: 401-333-2848; Empl.: 200; *Sls. Mgr.:* Kenneth Bennett

TECHNICAL PANELS, INC., 9162 La Rosa Dr., Temple City, CA 91780, Tel: 818-285-3105; Empl.: 11; *Sls. Mgr.:* Norman J. Towne

TECHNICAL RESEARCH & MFG., INC., See TRM, Inc.

TECHNIPOWER, A PENRIL CO., P.O. Box 222, Commerce Pk., Danbury, CT 06813, Tel: 203-748-7001, TWX: 710-456-9280; FSC No.: 13850; Empl.: 135; *Sls. Mgr.:* Ivan Bourgoin (Variac); *Dist. Mgr.:* James McCarty ..... **A•2415; D•1970**

Local Sales Offices & Reps

CA	Thousand Oaks, Technipower	805-493-2244
FL	Maitland, EIR, Inc.	305-660-9600
MA	Sudbury, Technipower	617-443-7347
MN	Burnsville, Electromec Sls., Inc.	612-894-8200
MO	St. Louis, Rothkopf & Assocs.	314-961-4485
NY	Pennsauken, Ar-Jay Tech.	609-663-4260
TX	Richardson, Scientific Sls. Co.	214-231-6541
Can	Guelph, Ont., Victrix, Ltd.	518-836-1480

Local Distributors

CA	Hollywood, Yale Radio Elctrn.	213-465-3186, 800-421-4144
CA	Los Angeles, Cal-State Elctrns.	213-933-8187
CA	Oakland, N. A. D'Arcy	415-638-7773
CA	Santa Ana, Action Elctrns.	714-547-5169
IL	Chicago, Delta Tech. Prods. Co.	312-478-1134
MA	Woburn, Abbott Elctrns. Co.	617-935-2040
MI	Dearborn, Indl. Temperature & Control	313-278-2210
MN	St. Paul, Gopher Elctrns. Co.	612-483-3322
MO	St. Louis, Olive Elctrns., Inc.	314-426-4500
NY	Albany, Adirondack Elctrns., Inc.	518-456-0203
NY	Farmingdale, Midway Indl. Elctrns.	516-293-6800
NC	Charlotte, Jenkins Elec. Co.	704-392-7371
OH	Dayton, Esco Inc.	513-226-1133
OK	Tulsa, Inotek	918-627-1500
PA	Philadelphia, PEI/Genesis	215-568-7400
TX	Dallas, Inotek	214-243-7000
TX	Houston, Inotek	713-688-4494
Can	Guelph, Ont., Victrix, Ltd.	519-836-1480

TECHNIQUES, INC., 235 Jackson St., Englewood, NJ 07631, Tel: 201-569-5900; Empl.: 60

TECHNI-TOOL, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462, Tel: 215-825-4990, Telex: 834-763; Empl.: 80; *Sls. Mgr.:* W. Bezar

Technitrol, Inc.

TECHNITROL, 1956 E. Allegheny Ave., Philadelphia, PA 19134, Tel: 215-426-9105, Telex: 834245; FSC No.: 90095; Empl.: 350; *Sls. Mgr.:* G. Shilling ..... **A•1488, 1628-1637, 2416; B•1021-1023**

Local Sales Offices & Reps

AZ	Phoenix, Integrated Sys. & Dev. Sls.	602-971-6250
CA	Sunnyvale, Electec Sls., Inc.	408-747-1722
CA	Torrance, Detomasi & Grupp, Inc.	213-327-1775
GA	Norcross, Dixie Tech. Mktg.	404-447-6832
IL	Wauconda, Cudahy Sls.	312-526-2484
IA	Des Moines, The Beams Co.	515-255-1148
MD	Baltimore, Callas Elctrns.	301-744-7711
MA	Newton, Normell Assoc.	617-969-5478
NM	Albuquerque, Syntech	505-266-7951
NY	Fairport, TAC Assoc.	716-425-1070
NY	Jericho, J. Square Mktg.	516-935-3200
OH	Akron, Augnat Assocs.	216-273-1211
FL	Seminole, Q-Rep	813-393-2375
PA	Easton, The Kendon Co.	215-253-3100
TX	Austin, M-Rep	512-837-0893
TX	Grapevine, M-Rep	817-481-7502
TX	Houston, M-Rep	713-261-0798
WA	Redmond, General Technlg., Inc.	206-881-6456
Can	Mississauga, Ont., Elcom GBM, Inc.	416-821-4870

TECHNO
SFERNICE, INC.

TECHNO COMPONENTS CORPORATION, Sfernice, Inc., 7803 Lemona Ave., Van Nuys, CA 91405, Tel: 818-781-1642, TWX: 910-929-6965; FSC No.: 05347; Empl.: 260; *Sls. Mgr.:* John Hardesty; *Dist. Mgr.:* Danny Jagirdar ..... **A•1862, 2050-2051, 2122; B•1024-1025, 1762-1765**

Local Sales Offices & Reps

CA	Chatsworth, Raltech	818-700-0933
CA	Del Mar, Chapman & Chapman	619-755-0412
AZ	Scottsdale, Semper Fi Sls., Inc.	602-991-4601
CA	Glendale, Mission Mktg. Grp.	818-247-9110
IA	Hiawatha, Ard Sls.	319-393-6392
CA	Santa Clara, I Square, Inc.	408-988-3400
CO	Denver, West, Inc.	303-477-8180
KS	Parker, S. W. Wollard Co.	913-898-6552
CT	Bloomfield, Astrorep of New England	203-243-3122
MA	Lowell, Astrorep of New England	617-459-7399
MI	Jackson, T.P.S. & Assocs.	517-783-1722
MN	Minneapolis, Dunlop Consits.	612-544-1070
MO	St. Louis, S. W. Wollard Co.	314-576-1130
FL	St. Petersburg, J.C.J. Assocs.	813-343-2679
NJ	Piscataway, R. P. Luce & Co.	201-752-8750
NM	Albuquerque, F P Sls.	505-345-5553
NY	Chappaqua, Micrel, Inc.	914-238-4961
IN	Ft. Wayne, Denton Mktg.	219-486-0665
NY	New Hyde Pk., R. P. Luce & Co.	516-437-4550
NY	Rochester, Fritz Dasson	716-338-1699
OH	Wooster, T.P.S. & Assocs.	216-264-0971
PA	Wynnewood, Metz-Benham Assocs., Inc.	215-896-7300
TX	Hurst, Pro Comp Sls. Co.	817-589-0336
UT	Salt Lake City, West, Inc.	801-466-5739
Can	Rexdale, Ont., Source Elctrns.	416-675-6235

Local Distributors

CA	Anaheim, Zeus West	714-632-6880
CA	Chatsworth, Petell Elctrns.	818-700-8838
CA	San Diego, Neumann Elec.	619-695-3005
FL	Orlando, Aztech Elctrns.	305-291-1681
FL	Tampa, Impala Elctrns.	813-885-4747
ID	Spirit Lake, A-1 Elctrns.	208-623-3111
MD	Columbia, Azteck Elctrns.	301-995-6800
MA	Burlington, TLC Elctrns.	617-273-0140
NJ	clifton, J-Mar Electro	201-772-6400
NY	Bohemia, Justin Elec.	516-589-4000
NY	Hauppauge, Jaco, Inc.	516-273-5500
NY	Melville, SAI, Inc.	516-293-2710
NY	Valley Stream, L & S Elec.	516-561-2474
OH	Cincinnati, Eclipse of Ohio	513-661-7733
PA	Philadelphia, Herbach & Rademan	215-426-1700
TX	Richardson, Jaco, Inc.	214-235-9575
TX	Richardson, The Altair Co.	214-231-5166
WA	Bellevue, Hamilton Avnet	206-453-5861

TECHNOLOGY DYNAMICS inc.

TECHNOLOGY DYNAMICS INC., 100 School St., Bergenfield, NJ 07621, Tel: 201-385-0500 ..... **D•1971**

Local Sales Offices & Reps

CA	Lennox, Dae Joon Elctrns.	213-674-0219
CA	Sunnyvale, Sourcetronics, Inc.	408-988-8801
MD	Hagerston, Stinson Assocs., Inc.	301-790-1193
UT	Salt Lake City, Sunbird Inds.	801-272-1303
VA	Reston, Stinson Assocs., Inc.	703-620-0088

TECHNOLOGY PRODUCTS, INC., 8900 Eton Ave., Canoga Park, CA 91304, Tel: 213-998-8555; FSC No.: 8K984; *Sls. Mgr.:* N. Lerman

TECHNOLOGY SYSTEMS DIVISION, Krug International, P.O. Box 3036, Overlook Branch, Dayton, OH 45431-0036, Tel: 513-426-2405, TWX: 810-450-2620; FSC No.: 23978; Empl.: 150; *Sls. Mgr.:* William O. Murphy, Reg. Sls. Mgr.

TECHNO VATION, INC., 14 Crandall Ave., Pompton Lakes, NJ 07442, Tel: 201-839-0740; Empl.: 10; *Sls. Mgr.:* Fredric S. Miller

TECRON

TECHRON DIV., Crown Intl., Inc., 1718 W. Mishawaka Rd., Elkhart, IN 46517, Tel: 219-294-8300, Telex: 810-294-2160; FSC No.: 06306; Empl.: 400; *Sls. Mgr.:* Howard King ..... **D•1025-1029**

Local Sales Offices & Reps

CA	Manhattan Bch., Basic Trade, Inc.	714-634-2629
CA	Milpitas, IFM Inc.	408-945-5920
CO	Commerce City, Williams Assocs.	303-289-5647
CT	Woodbridge, Electronic Marketing Assoc.	203-397-1461
FL	Melbourne, Reynolds & Assocs., Inc.	305-259-7000
IL	Chicago, Berndt Assocs.	312-283-0713
IA	Cedar Rapids, MAI Assocs.	319-396-8030
MI	Livonia, Lowell-Wendt Mktg. Co.	313-464-2722
MN	St. Paul, Timewave Technlgy., Inc.	612-451-7575
NJ	Wayne, Ramapo, Inc.	201-839-6767
NY	Syracuse, Labtronics Inc.	315-455-7314
OH	Brecksville, Audio Mktg. Assoc.	216-526-2426
PA	Montogomeryville, Eastern Sci. Mktg.	215-368-4570

TECH SPRAY, INC., Box 949, Amarillo, TX 79105, Tel: 806-372-8523, Telex: 738450; Empl.: 40; *Sls. Mgr.:* 738450; *Dist. Mgr.:* Jack Swanson

TECHTROL CYCLONETICS, INC., 815 Market St., New Cumberland, PA 17070, Tel: 717-774-2746, TWX: 510-650-7003; FSC No.: 58792; Empl.: 25; *Sls. Mgr.:* James M. Griffith ..... **A•1476-1477**

Local Sales Offices & Reps

AL	Huntsville, Gentry Assocs., Inc.	205-837-0692
CA	Palo Alto, Radar Sys.	415-322-7448
CA	San Jose, MC Microwave, Inc.	408-446-4100
FL	Tampa, Gentry Assocs., Inc.	813-886-0720
GA	Atlanta, Gentry Assocs., Inc.	404-998-2828
MD	Laurel, CSDS, Inc.	301-490-3800
NJ	Teaneck, Sci. Dvcs. East	201-837-1004
PA	Spring House, Penn. Sci. Dvcs.	215-643-3335
TX	Austin, Airep Elctrns.	512-327-0778
TX	Dallas, Airep Elctrns.	214-349-4360
EXP	Palo Alto, CA, Radar Sys., Inc.	415-424-0661

TECKNIT® a TWP company
EMI SHIELDING PRODUCTS

TECKNIT (EASTERN FACILITY), 129 Dermody St., Cranford, NJ 07016, Tel: 201-272-5500, Telex: 6853079 TCKNT, TWX: 710-996-5961; FSC No.: 07700; Empl.: 300; *Sls. Mgr.:* Thomas McCreery ..... **C•1754**

Local Sales Offices & Reps

AL	Huntsville, Dixie Tech. Mktg.	205-830-0808
AZ	Tempe, Elctrn. Dev. & Sls.	602-438-1547
CA	Granada Hills, C & W Comp. Sls.	818-368-4032
CA	Santa Barbara, Tecknit (Western Facility)	809-963-5811
CA	Santa Clara, Nova-Tronix	408-727-9530
FL	Altamonte Springs, Lawrence Assocs.	305-339-3855
FL	Clearwater, Lawrence Assocs.	813-584-8110
GA	Norcross, Dixie Tech. Mktg. Inc.	404-447-6832
IL	Palatine, Technlg. Sls., Inc.	312-991-6600
MI	W. Bloomfield, OBE, Inc.	313-332-4900
MN	St. Paul, Repco	612-642-2865
MO	Maryland Heights, Ensco-Rep, Inc.	314-423-3935
NH	Hudson, EMC Sales	603-889-5751
NJ	Floram Pk., Transocean Commerce	201-377-5032
NY	Buffalo, R. W. Mitscher Co., Inc.	716-759-2350
NY	Great Neck, Trionics Assocs.	516-466-2300
OH	Dayton, Jay Engrg.	513-253-2151
OR	Beaverton, Quest Mktg.	503-641-7377
TX	Austin, Kryvand Assocs.	412-441-6777
TX	Dallas, Kryvand Assocs.	214-437-3355
WA	Bellevue, Quest Mktg.	206-747-9424
Can	Montreal, Que., Norgay Entprs., Ltd.	514-932-3233
Can	Ottawa, Ont., Norgay Entprs., Ltd.	613-723-1858
Can	Toronto, Norgay Entprs. Ltd.	416-259-9663

TECKNIT® a TWP company

TECKNIT INTERCONNECTION PRODUCTS, 135 Bryant Ave., Cranford, NJ 07016, Tel: 201-272-3850; Empl.: 32 ..... **C•1541**

Local Sales Offices & Reps

AZ	Tempe, E.D.S.	602-438-1547
CA	Grenada Hills, C & W Comp. Sls.	818-368-4032
CA	San Diego, Mesa Engrg.	619-278-8021
CA	Santa Clara, Nova-Tronix	408-727-9530
CO	Aurora, Butler Tech. Sls.	303-343-3787
FL	Maitland, E.I.R., Inc.	305-660-9600
IL	Skokie, I.R.L. Indl. Reps.	312-967-8430
MA	Needham, Com-Sale	617-444-8071
MI	Livonia, Luebbe Sls. Co.	313-477-3131
MN	Eden Prairie, E.I.I. Elctrn. Innovators	612-941-0830
MO	St. Louis, PMR. Inc.	314-569-1220
NJ	Union, Meridian Entprs.	201-687-6220
NY	Clarence, R. W. Mitscher Co., Inc.	716-759-2350
OH	Columbus, McFadden Sls., Inc.	619-761-3177
TX	Richardson, Blackburn Assocs., Inc.	214-783-2200
WA	Bellevue, Quest Mktg.	206-747-9424
Can	Toronto, Norgay Entprs.	416-239-3025

TECMAR, INC., 6225 Cochran Rd., Solon, OH 44139, Tel: 216-349-0600; Empl.: 600; *Sls. Mgr.:* Tim Mahoney

COMPUTER PRODUCTS™
TECNETICS INCORPORATED

TECNETICS, See Computer Products, Inc.

TECO CORP., Bay Rd., P. O. Box A, Winnisquam, NH 03289, Tel: 603-524-1998; Empl.: 40-50; *Sls. Mgr.:* Sandra Murphy

TECOM INDS., 9324 Topanga Canyon Blvd., Chatsworth, CA 91311, Tel: 818-341-4010, Telex: 69 8476; FSC No.: 59850001; Empl.: 128

Local Sales Offices & Reps

CA	Mountain View, Disman - Bakner	415-969-3010
FL	Maitland, Beacon Elctrns.	305-647-3498
FL	Melbourne, Barkman Assocs.	305-254-1863
GA	Atlanta, Beacon Elctrns.	404-256-9640
IA	Cedar Rapids, Feller Assocs.	319-364-0566
MD	Severna Pk., Delmarva Engrg.	301-647-8007
MA	Topsfield, R. F. Assocs.	617-887-9762
MO	Leasburg, EIR Co.	314-895-4100
NY	Hartsdale, Spectrum Sls.	914-472-8600
NY	Skaneateles, Robtron, Inc.	315-685-5731
PA	Lafayette Hill, M. Lader Co.	215-825-3177
TX	Arlington, John Houston Assocs.	817-265-2931
TX	Helostis, John Casey	512-695-9869
Can	Ottawa, Ont., Gigatron Assocs.	613-225-4090

TECTROL, INC., 39 Kodiak Cres., Downsview, Ontario, Canada M3J 3E5, Tel: 416-630-8108, FAX: 416-638-0553; Empl.: 320; *Sls. Mgr.:* Len Klebanoff

TED CORP., 11415 Johnson Dr., Shawnee Mission, KS 66203, Tel: 913-631-6211; FSC No.: 05209; Empl.: 48

TEDEA INC.

TEDEA INC., 8606 Wilbur Ave., Northridge, CA 91324, Tel: 818-349-6116, Telex: 499-8137, TWX: 910-240-0598; Empl.: 16; *Sls. Mgr.:* Tony Smalarz ..... **B•1824**

Local Sales Offices & Reps

AZ	Tempe, Trembly Assocs.	505-266-8616
CA	Palo Alto, Gado Instr. Sls.	415-961-2222
GA	Atlanta, Physimetrics	404-955-0155
MI	Trenton, I & C Sls.	313-671-1320
MN	Minneapolis, CMI	612-566-6930
NV	Las Vegas, Trembly Assocs.	702-739-6816
NJ	Hillsdale, C B Assocs.	201-664-6230
NJ	Marlton, Analectro, Inc.	609-424-2883
NM	Albuquerque, Trembly Assocs.	505-266-8616
OH	Cincinnati, I & C Sls.	513-772-3101
Can	Rexdale, ON, SRP Control Sys. Ltd.	416-746-0117

TEGAL SCIENTIFIC, INC., Box 5905, Concord, CA 94524, Tel: 415-827-1054, Telex: 380053, FAX: 415-827-1189; *Sls. Mgr.:* L. Rigali

TEGAM, 7230 N. Ridge Rd., Madison, OH 44057, Tel: 216-428-7505, Telex: 205188; Empl.: 25

TEKA PRODS., 45 Salem, Providence, RI 02907, Tel: 401-785-4110, TWX: 710-582-4946; Empl.: 89; *Sls. Mgr.:* John Robertson; *Dist. Mgr.:* John Robertson

TEK-COM CORPORATION, 120 Charcot Ave., San Jose, CA 95131, Tel: 408-435-9515, Telex: 277216; FSC No.: 72242; Empl.: 23; *Sls. Mgr.:* Joseph Gaynor; *Dist. Mgr.:* Leonard Bertolami

TEKNATIONAL INDS., INC., 430 S. Clinton Ave., Rochester, NY 14620, Tel: 716-232-1291, FAX: 716-232-1295; FSC No.: 24227; Empl.: 15; *Sls. Mgr.:* J. D. Hochheimer

TEKTITE CORP., 4657 Platt Rd., Ann Arbor, MI 48108, Tel: 313-971-9379; Empl.: 12; *Sls. Mgr.:* Bob Sinelli

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TEKTRONIX, CAE Systems Divison, 5302 Betsy Ross Drive, Santa Clara, CA 95052, Tel: 408-727-1234, Telex: 821378, FAX: 408-980-4622; Empl.: 300; *Sls. Mgr.:* John Henrotin

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TEXAS INSTRS., Data Sys. Group, P. O. Box 809063, Dallas, TX 75380-9063, Tel: 1-800-527-3500, Telex: 73324 TEXINS DAL, TWX: 910-867-4702; Empl.: 80,696

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Can	Toronto, R. H. Nichols Co. Ltd.	416-851-8871

TEXSCAN INSTRUMENTS, 3169 N. Shadeland, Indianapolis, IN 46226, Tel: 317-545-4196, Telex: 810-341-3184, TWX: 27-2110; FSC No.: 23042; Empl.: 160; *Sls. Mgr.:* Ron Adamson; *Dist. Mgr.:* Ron Adamson

TEX-TECHS CONNECTORS, Norwesco, 2633 Plastics Dr., Gastonia, NC 28053, Tel: 704-866-9161, Telex: 80-2117; FSC No.: 80-2117; Empl.: 150; *Sls. Mgr.:* R. Prindle; *Dist. Mgr.:* R. Prindle

TEXTOOL TEST & INTERCONNECT PRODS. DEPT., 3M Electronic Products Division, 1001 Fountain Parkway, Grand Prairie, TX 75050, Tel: 214-647-0392; Empl.: 40

TEXTRO, P.O. Box 381, Greer, SC 29652-0381, Tel: 803-879-0752; Empl.: 15; *Sls. Mgr.:* Frank Pellatt ... **C•1923**

Local Sales Offices & Reps

CA	Santa Ana, Wayne Champa Assocs.	714-662-2228
CO	Longmont, Todd & Fry	303-776-7331
FL	Sarasota, R. F. Carlson	813-921-2992
IL	E. Hazelcrest, Shoven Assocs.	312-798-8300
MD	Churchville, Atlantic Tech. Sls.	301-879-2236
MA	Tewksbury, Sequel Assocs., Inc.	617-851-4010
MN	Minneapolis, RIX	612-927-9836
MO	St. Charles, Buckman Assocs.	314-947-4727
NJ	Woodbridge, John Chirico Assocs.	201-855-9600
NC	New Hill, Tom Santel	919-362-4091
OR	Tigard, Matrix Sls.	503-641-6192
PA	Mechanicsburg, Comps. Elctrns.	717-766-8823
SC	Mauldin, Carl Hart	803-288-2323
TX	Irving, AID Elctrns. Inc.	214-790-4761

T-F ELCTRNS., 4903 Commercial Park Dr., Austin, TX 78724-2638, Tel: 512-928-8926, Telex: 988 306, FAX: 512-928-8210; FSC No.: 50307; Empl.: 6

THALER CORP., 10940 N. Stallard Pl., Tucson, AZ 85704, Tel: 602-742-5572; Empl.: 5

THERMACORE INC., 780 Eden Road, Lancaster, PA 17601, Tel: 717-569-6551; Empl.: 44; *Sls. Mgr.:* Don Ernst ..... **C•1692**

Local Sales Offices & Reps

CA	San Franciso, Shaw-Tech	415-961-4775
MA	Lexington, Zieco Inc.	617-861-8300

THERMAL AMER. FUSED QUARTZ, Route 202, Montville, NJ 07045, Tel: 201-334-7770, FAX: 201-334-4523; Empl.: 65; *Sls. Mgr.:* G.A. Miller

Thermalloy Inc.

The Innovator in semiconductor accessories.

THERMALLOY, INC., 2021 W. Valley View, P. O. Box 810839, Dallas, TX 75381-0839, Tel: 214-243-4321, Telex: 203965; Empl.: 248; *Sls. Mgr.:* Larry Marshall; *Dist. Mgr.:* Lisa Wilson ..... **C•1693**

Local Sales Offices & Reps

AL	Huntsville, Montgomery Mktg., Inc.	205-830-0498
AZ	Phoenix, Integrated Sys. & Dvc. Sls.	602-971-6251
CA	Mountain View, Straube Assocs.	415-969-6060
CA	San Diego, Interstate Mktg. Assocs.	619-693-3220
CA	Woodland Hills, Interstate Mktg. Assocs.	818-883-7606
CO	Denver, Lindberg Co.	303-758-9033
FL	Maitland, EIR, Inc.	305-660-9600
GA	Norcross, Montgomery Mktg., Inc.	404-447-6124
ID	Boise, N. R. Schultz Co.	208-377-8686
IL	Elk Grove Village, The John G. Twist Co.	312-593-0200
IN	Ft. Wayne, R.O. Whitesell & Assocs.	219-432-5591
IN	Indianapolis, R.O. Whitesell & Assocs.	317-359-9283
IN	Kokomo, R.O. Whitesell & Assocs.	317-457-9127
IA	Cedar Rapids, PMR Corp.	319-362-9177
KS	Overland Park, PMR Corp.	913-381-0004
KY	Peewee Valley, R.O. Whitesell & Assocs.	502-241-1441
MI	Grand Blanc, R. O. Whitesell & Assocs.	313-695-0770

MI Grand Rapids, R.O. Whitesell & Assocs. 616-942-5420
MI Southfield, R.O. Whitesell & Assocs. .. 313-559-5454
MI St. Joseph, R.O. Whitesell & Assocs. .. 616-983-7337
MN Bloomington, The John G. Twist Co. .. 612-941-2040
MO St. Louis, PMR Corp. 314-569-1220
NH Salem, Sales Engrg. Co., Inc. 603-893-5521
NJ Cherry Hill, Trinkle Sls., Inc. 609-795-4200
NM Albuquerque, Lindberg Co. 505-881-1006
NY Ithaca, Bob Dean, Inc. 607-257-1111
NY Melville, Comtronic Assocs. 516-249-0505
NY Wappinger Falls, Bob Dean, Inc. 914-297-6406
NC Cary, Montgomery Mktg., Inc. 919-467-6319
OH Cincinnati, R.O. Whitesell & Assocs. ... 513-521-2290
OH Cleveland, R.O. Whitesell & Assocs. .. 216-447-9020
OH Columbus, R.O. Whitesell & Assocs. .. 614-888-9396
OH Dayton, R.O. Whitesell & Assocs. 513-298-9546
OK Tulsa, Ion Assocs. 918-664-0186
OR Beaverton, N. R. Schultz Co. 503-643-1644
PA Pittsburgh, R.O. Whitesell & Assocs. .. 412-963-6161
TX Austin, Ion Assocs. 512-331-7251
TX Grand Prairie, Ion Assocs. 214-647-8225
TX Houston, Ion Assocs. 713-537-7717
UT Salt Lake City, Lindberg Co. 801-277-2643
WA Bellevue, N. R. Schultz Co. 206-454-0300
WI Brookfield, The John G. Twist Co. 414-782-2670
PR San Juan, Electronic Tech. Sls., Inc. ... 809-720-3661
Can Edmonton/Transconia/Calgary, Deskin Sls. 403-466-2106
Can Markham, Ont., Deskin Sls. 416-475-1412
Can Montreal, Que., Deskin Sls. 514-331-2860
Can Ottawa, Ont., Deskin Sls. 613-729-1099
Can Richmond, B.C., Deskin Sls. 604-273-4963

THERMAX WIRE CORP., 32-02 Linden Pl., Flushing, NY 11354-2897, Tel: 718-939-8300, Telex: 645587, TWX: 710-582-2551; FSC No.: 12814; Empl.: 220; *Sls. Mgr.:* R. Prusak

Therm-O-Disc®

THERM-O-DISC, INC., Sub. Emerson Elec. Co., 1320 South Main St., P. O. Box 3538, Mansfield, OH 44907, Tel: 419-756-5911, Telex: 987455; *Sls. Mgr.:* P. J. Banks ..... **B•1767**

THERMODYNE INTERNATIONAL LTD., 20850 S. Alameda, Long Beach, CA 90810, Tel: 213-603-1976; FSC No.: 29724; Empl.: 100-120; *Sls. Mgr.:* Walter Wolf

THERMO ELECTRIC, 109 Fifth St., Saddle Brook, NJ 07662, Tel: 201-843-5800, TWX: 710-990-5108; Empl.: 375

THERMOELECTRICS, See TECA

THERMOLAB, 14713 Keswick St., N. Hollywood, CA 91605, Tel: 818-787-4084; FSC No.: 09152

THERMOMETRICS, INC., 808 U.S. Hwy. #1, Edison, NJ 08817-4695, Tel: 201-287-2870, Telex: 844-387; FSC No.: FSCM 58090; Empl.: 150; *Sls. Mgr.:* Harold Broitman

THERMONICS, INC., 3350 Scott Blvd., Bldg. 32, Santa Clara, CA 95054, Tel: 408-496-6838, Telex: 172-353; *Sls. Mgr.:* Curt Blackmon; *Dist. Mgr.:* Curt Blackmon

THERMOSEN, P.O. Box 1254, Stamford, CT 06904, Tel: 203-324-6125, Telex: 965846; FSC No.: 00428; Empl.: 33

Local Sales Offices & Reps

CA San Carlos, Elctrn. Engrg. Assoc. 415-593-2189
CA Santa Monica, REP Assoc. 213-452-3445
CO Denver, Lindberg Co. 303-758-9033
FL Plantation, Electro Mechanical Standards 305-587-7146
MA Newton, Normell Assocs. 617-969-5478
MN Minneapolis, Intl. Sls. Co. 612-831-8423
NM Albuquerque, Lindberg Co. 505-881-1006
OH Cincinnati, John O. Olsen Co. 513-922-8885
OH Garfield Hgts., John O. Olsen Co. 216-663-8180
OR Beaverton, Advanced Power Prods. 503-646-0994
PA Glenside, Elcom, Inc. 215-885-1715
PA Pittsburgh, John O. Olsen Co. 412-279-2550
TX Austin, John B. Guenther, Inc. 512-472-3825
TX Dallas, John B. Guenther, Inc. 214-691-8500
UT Salt Lake City, Lindberg Co. 801-477-2643
VT Bennington, Magyar Assocs. 802-442-5858

THERMOTECH, Div. of FL Industries, Inc., 1203 S. 5th St., Hopkins, MN 55343, Tel: 612-933-9400, Telex: 29-0414; Empl.: 605; *Sls. Mgr.:* Gene Christiansen

THERMOTRON INDUSTRIES, 291 Kollen Park Dr., Holland, MI 49423, Tel: 616-392-1491, FAX: 616-392-5643; *Sls. Mgr.:* John Condon/Don Linderman

THETA-J CORPORATION, 8 Corporate Pl, 107 Audobon Rd., Wakefield, MA 01880, Tel: 617-246-4000, Telex: 681-7300, FAX: 617-246-1356; Empl.: 75; *Sls. Mgr.:* William Riedel

THICKFILM INTERNATIONAL, Rt. 1-Box 85-0, Indian Head, MD 20640, Tel: 301-375-7400; Empl.: 21; *Sls. Mgr.:* P. Gundotra

THIELEX PLASTIC CORP., See ITW Thielex

THINCO DIV., HULL CORP., Davisville Rd., Hatboro, PA 19040, Tel: 215-672-7800, Telex: 650-296-3800; Empl.: 8; *Sls. Mgr.:* John L. Hull

THIRD DOMAIN, P.O. Box 35400, Tucson, AZ 85740-5400, Tel: 602-792-3204, Telex: 275008; Empl.: 13; *Sls. Mgr.:* Kelli Gallentine

THIRD WAVE INSTRUMENTS, 268 B Cambridge St., Burlington, MA 01803, Tel: 617-273-0779, Telex: MCI 6503065552; Empl.: 12; *Sls. Mgr.:* Daniel C. Wiswell

THOMAS & BETTS CORPORATION, 920 Route 202, Raritan, NJ 08869, Tel: 201-685-1600, Telex: 833190; FSC No.: 59730; Empl.: 2000 ..... **C•1542-1544**

Local Sales Offices & Reps

CA Irvine, T & B Elctrns. Grp. 714-476-0430
CA San Jose, T & B Elctrns. Grp. 408-248-9111
IL Naperville, T & B Elctrns. Grp. 312-357-0404
MA Norwell, T & B Elctrns. Grp. 617-871-6204
NJ Flemington, T & B Elctrns. Grp. 201-788-5900
Can Toronto, T & B Elctrns. Grp. 416-661-2761

Local Distributors

AL Huntsville, Hall-Mark 205-837-8700
AL Huntsville, Marshall Inds. 205-881-9235
AZ Phoenix, Elctrn. Supp. 602-258-4769
AZ Phoenix, Hall-Mark 602-437-1200
AZ Tempe, Time Elctrns. 602-967-2000
CA Anaheim, Time Elctrns. 714-937-0911
CA Chatsworth, Time Elctrns. 818-998-7200
CA Conoga Pk., Marshall Inds. 818-999-5001
CA Irvine, Marshall Inds. 714-660-0951
CA Orange County, Hall-Mark 714-669-4700
CA Riverside, Elctrn. Supp. 714-683-7300
CA Sacramento, Hall-Mark 916-722-8600
CA Sacramento, Marshall Inds. 916-635-9700
CA San Diego, Hall-Mark 619-268-1201
CA San Diego, Marshall Inds. 619-578-9600
CA San Diego, Time Elctrns. 619-586-1331
CA San Fernando, Hall-Mark 818-716-7300
CA San Jose, Hall-Mark 408-946-0900
CA Sunnyvale, Marshall Inds. 408-943-4600
CA Sunnyvale, Time Elctrns. 408-734-9888
CA Torrance, Hall-Mark 213-217-8400
CA Torrance, Time Elctrns. 213-320-0880
CO Denver, Hall-Mark 303-790-1662
CO Denver, Marshall Inds. 303-427-1818
CO Denver, Time Elctrns. 303-799-8851
CT Cheshire, Time Elctrns. 203-271-3200
CT Wallingford, Marshall Inds. 203-265-3822
FL Ft. Lauderdale, Hall-Mark 305-971-9280
FL Ft. Lauderdale, Pioneer 305-428-8877
FL Ft. Lauderdale, Time Elctrns. 305-974-4800
FL Orlando, Hall-Mark 305-855-4020
FL Orlando, Pioneer 305-834-9090
FL Orlando, Time Elctrns. 305-841-6565
FL Tampa Bay, Hall-Mark 813-530-4543
GA Atlanta, Hall-Mark 404-447-8000
GA Atlanta, Marshall Inds. 404-923-5750
GA Atlanta, Time Elctrns. 404-448-4448
IL Chicago, Hall-Mark 312-860-3800
IL Chicago, Marshall Inds. 312-490-0155
IL Chicago, Pioneer 312-437-9680
IL Chicago, Time Elctrns. 312-350-0610
IN Indianapolis, Pioneer 317-849-7300
KS Kansas City, Hall-Mark 913-888-4747
MD Baltimore, Hall-Mark 301-988-9800
MD Baltimore, Marshall Inds. 301-840-9450
MD Columbia, Time Elctrns. 301-964-3090
MD Washington, Pioneer 301-921-0660
MA Boston, Hall-Mark 617-667-0902
MA Boston, Marshall Inds. 617-272-8200
MA Peabody, Time Elctrns. 617-532-6200
MI Livonia, Marshall Inds. 313-525-5850
MI Livonia, Pioneer 313-525-1800
MI Twin Cities, Pioneer 612-935-5444
MN Minneapolis, Hall-Mark 612-854-3223
MO St. Louis, Hall-Mark 314-291-5350
MO St. Louis, Time Elctrns. 314-391-6444
NJ Fairfield, Hall-Mark 201-575-4415
NJ Mt. Laurel, Hall-Mark 609-235-1900
NY Binghamton, Marshall Inds. 607-798-1611
NY Farmingdale, Iris Elctrns. 516-420-8400
NY Hauppauge, Time Elctrns. 516-273-0100
NY Mt. Vernon, QAR Indl. Elctrns. 914-699-2224
NY Rochester, Marshall Inds. 716-235-7620
NY Rochester, Simcona Elctrns. 716-328-3230
NY Syracuse, Time Elctrns. 315-432-0355
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NC Raleigh, Hall-Mark 919-872-0712
OH Cleveland, Hall-Mark 216-349-4632
OH Cleveland, Marshall Inds. 216-248-1788
OH Cleveland, Pioneer 216-587-3600
OH Columbus, Hall-Mark 614-888-3313
OH Dayton, Marshall Inds. 513-236-8088
OH Dayton, Pioneer 513-236-9900
OK Tulsa, Hall-Mark 918-665-3200
OR Beaverton, Almac Elctrns. 503-629-8090
OR Portland, Time Elctrns. 503-684-3780
PA Delaware Valley, Pioneer 215-674-4000
PA King of Prussia, Time Elctrns. 215-337-0900
PA Pittsburgh, Pioneer 412-782-2300
TX Austin, Hall-Mark 512-258-8848
TX Austin, Pioneer 512-835-4000
TX Dallas, Hall-Mark 214-341-1147
TX Dallas, Marshall Inds. 214-233-5200
TX Dallas, Pioneer 214-386-7300
TX Houston, Hall-Mark 713-781-6100
TX Houston, Pioneer 713-988-5555
TX Houston, Southwest Elctrns. 713-240-4000
UT Salt Lake City, Hall-Mark 801-268-3779
UT Salt Lake City, Marshall Inds. 801-261-0901
WA Bellevue, Almac Elctrns. 206-643-9992
WA Bellevue, Marshall Inds. 206-747-9100
WA Spokane, Almac Elctrns. 509-924-9500
WI Milwaukee, Hall-Mark 414-797-7844

THOMAS ELECTRONICS, INC., 100 Riverview Dr., Wayne, NJ 07470, Tel: 201-696-5200, TWX: 310-685-3326; FSC No.: ;01852; Empl.: 380; *Sls. Mgr.:* Bruce Piaget, VP Sls.

THOMSON-CSF COMPS. CORP., Electron Tube Div., 301 Route 17 N., Rutherford, NJ 07070, Tel: 201-438-2300, TWX: 710-989-7286; *Sls. Mgr.:* Stephen Barthelmes

THOMSON COMPONENTS-MOSTEK CORP., Passive Comp. Div., 6203 Variel Ave., Ste. A, Woodland Hills, CA 91367, Tel: 818-887-1010, Telex: 3719759, TWX: 310-371-9759; Empl.: 150; *Sls. Mgr.:* Michael St. Amant

THOMSON-CSF COMPS. CORP., Special Prods. Div., 301 Rte. 17 North, Rutherford, NJ 07070, Tel: 201-438-2300, TWX: 510-601-3756, ESYLNK: 62928668; *Sls. Mgr.:* Hans H. Sandager

THORDARSON MEISSNER, Components Corp. of Amer., Electronic Center, Mt. Carmel, IL 62863, Tel: 618-262-5121, TWX: 510-525-2254; FSC No.: 96256; Empl.: 600; *Sls. Mgr.:* Ken Harris ..... **A•2417**

Local Sales Offices & Reps

CA Burlingame, Polack & Bensigner, Inc. 415-697-2525
CA Gardena, Bidwell Sls. Assoc. 213-770-0300
CO Colorado Springs, Norris & Co. 303-576-8697
FL Miami, Electronica Intl. 305-635-8675
FL Tampa, SRT Mktg. 813-884-4805
IL Bannockburn, GMR Sls. 312-295-8440
IN Indianapolis, EMCI 317-253-1668
MA Malden, JK Assocs. 617-321-2922
MN St. Paul, Johnson Co. 612-641-1878
MO St. Louis, Kathrinus, Kelly, Braumhauer Co. 314-647-2400
NJ Medford, Champion Elctrn. Sls. 609-983-0932
NY Great Neck, Tylinski Assocs., Inc. 516-466-9070
NY Mendon, Tech-Mark, Inc. 716-624-3840
NY New York, Roburn Agencies 212-989-5939
OH Beachwood, ESI 216-831-9555
OH Dayton, KW Elctrns. Sls., Inc. 513-890-2150
OR Portland, Jos. V. Belusko Co. 503-222-4279
TX Dallas, SW Mktg. Assoc. 214-341-8631
Can Montreal, Que., ECG, Canada 514-342-6200

Local Distributors

AZ Phoenix, Tri-Tek 602-995-9352
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CA Palo Alto, Zack 415-326-5432
CA Santa Ana, Norstan 213-924-7651
CA Santa Clara, Patave 408-496-6151
CO Englewood, Indl. Elctrns. 303-694-9444
CT Hartford, Atlantic Switch Controls 203-527-7705
FL Tampa, Sunex Elctrns. 813-885-4074
ID Spirit Lake, A-I Elctrns. 208-623-3111
IL Peoria, Klaus Radio 309-691-4840
IN Indianapolis, Graham Elctrns. 317-634-8202
KY Louisville, P. I. Burks Co., Inc. 502-589-3960
MA Hingham, Sager Elctrns. 617-749-6700
MS Kansas City, Walters Radio Supp. 816-531-7051

NH Nashua, Atlantic Switch Controls 603-880-1971
NM Albuquerque, Intl. Elctrns. 505-345-8127
OH Dayton, Stotts Friedman 513-298-5555
OH Solon, Radio & Elec. Parts Corp. 216-248-8900
OK Tulsa, Radio Inc. 918-587-9123
OR Portland, Radar Elec. 503-232-3404
PA Essington, Tri Com, Inc. 215-521-3080
TN Knoxville, Specialty 615-588-2421
UT Salt Lake City, Ra-El-Co 801-487-7749
WA Seattle, Radar 206-282-2511
WI Milwaukee, Marsh Elctrns. 414-475-6000

THOR ELECTRONICS, 321 Pennsylvania Ave., Linden, NJ 07036, Tel: 201-486-3300, Telex: 138 968; Empl.: 50; *Sls. Mgr.:* Jack Rose

THORN EMI GENCOM INC., 23 Madison Rd., Fairfield, NJ 07006, Tel: 201-575-5586, Telex: RCA 221236 TEGI; Empl.: 35; *Sls. Mgr.:* Michael R. Avery

THORN EMI TECHNLG. INC., 8601 Dunwoody Pl, Atlanta, GA 30338, Tel: 404-587-0017, 800-243-2572, TWX: 810-766-2267 ..... **D•1320**

Local Sales Offices & Reps
CA Irvine 714-261-0141
CA Sunnyvale 408-732-9027
MA Framingham 617-875-5858
NM Albuquerque 505-884-0541
VA Manassas 703-631-1766

3M CO., see listing under letter "M"

THUNDER SCIENTIFIC CORP., 623 Wyoming S.E., Albuquerque, NM 87123, Tel: 505-265-8701; Empl.: 26; *Sls. Mgr.:* J. L. Bennewitz

TIDEWATER TECHNOLOGICAL, INC., 611 Industrial Pk. Dr., Newport News, VA 23602, Tel: 804-874-2800; Empl.: 30

TIF INSTRUMENTS, INC., 9101 N.W. 7th Ave., Miami, FL 33150, Tel: 305-757-8811; Empl.: 500; *Sls. Mgr.:* Tom Wolff

TII INDUSTRIES INC., 1375 Akron Street, Copiague, NY 11726, Tel: 516-789-5000, Telex: 144631; *Sls. Mgr.:* Jim Roach

TIL-TEK LIMITED, 500 Van Buren St., P.O. Box 550, Kemptville, Ontario, Canada K0G 1J0, Tel: 613-258-5928, Telex: 0534370 OTT; *Sls. Mgr.:* Steve Tilston

TIMBER-TOP, Hopkins Rd., Box 517E, Watertown, CT 06795, Tel: 203-274-6706; FSC No.: 06773; Empl.: 5; *Sls. Mgr.:* W. E. Fischer

TIMECO, INC., 1035 - 26th St., P.O. Box 8036, Huntington, WV 25705, Tel: 304-523-5149; Empl.: 7; *Sls. Mgr.:* James E. Myers

TIME LOCK, INC., 87 Water Mill Lane, Great Neck, NY 11021, Tel: 516-487-0690, TWX: 510-223-0886; Empl.: 6; *Sls. Mgr.:* Ernie Odierna

TIMEPLEX, INC., 400 Chestnut Ridge Rd., Woodcliff Lake, NJ 07675, Tel: 201-930-4600, Telex: 178200, TWX: 710-990-7270; FSC No.: 7035-0001; Empl.: 1500 + ; *Sls. Mgr.:* Rick MacPherson

TITAN AC POWER SYSTEMS, See Compact Power Co.

TITAN TECHNOLOGIES, INC., 310 W. Ann, Ann Arbor, MI 48104, Tel: 313-662-7777, Telex: 757689; *Sls. Mgr.:* Rob Risser

TITCHENER, E. H., & CO., 1 Titchener Pl, Binghamton, NY 13902, Tel: 607-772-1161, TWX: 510-252-1985; Empl.: 235

TIW SYSTEMS, INC., 1284 Geneva Drive, Sunnyvale, CA 94089, Tel: 408-734-3900, Telex: 346352, FAX: 408-734-9012; Empl.: 100

TMC SYSTEMS (ARIZ.) INC., See Dale Electronics, Inc.

TNR TECHNICAL, INC., 45 Jefryn Blvd. West, Deer Park, NY 11735, Tel: 516-242-4800; Empl.: 35; *Sls. Mgr.:* Wayne Thaw

TNR TECHNICAL, INC., 402-S. N. Lake Blvd., Altamonte Springs, FL 32701, Tel: 305-767-2411; Empl.: 6; *Sls. Mgr.:* Wayne Thaw

TOBE DEUTSCHMANN LABS., INC., 550 Turnpike St, Canton, MA 02021, Tel: 617-828-3366, Telex: 92-4427; FSC No.: 21966; Empl.: 40; *Sls. Mgr.:* T. Deutschmann, Jr.

TOCOS AMERICA

TOCOS AMERICA, INC., Tokyo Cosmos Electric Co., Ltd., 565 West Golf Road, Arlington Heights, IL 60005, Tel: 312-364-7277, Telex: 62932147, FAX: 312-364-7317; Empl.: 2,000; *Sls. Mgr.:* Joseph D. Tanney ..... **A•2120-2121; B•1698, 1825**

Local Sales Offices & Reps
CA Laguna Hills, English/Damco Sls. Co. Inc. 714-837-3801
CA Santa Rosa, Kency & Assocs. 707-579-5025
CT Washington, Tri-Com Assocs. 203-868-7027
FL Altamonte Springs, Semtronic Assocs., Inc. 305-831-8233
FL Clearwater, Semtronic Assocs. Inc. 813-461-4675
FL Ft. Lauderdale, Semtronic Assocs. Inc. 305-731-2484
IL Downers Grove, Momak Sls. 312-963-6400
IA Cedar Rapids, Cahill, Schmitz & Howe, Inc. 319-377-8219
MA Burlington, Tri-Com Assocs. 617-272-8163
MI Grand Rapids, Miltimore Sls., Inc. 616-942-9721
MI Novi, Miltimore Sls., Inc. 313-349-0260
MN Minneapolis, Northstar Comps., Inc. ... 612-553-1888
NJ Medford, Delaware Valley Elctrns. 609-654-6028
NY Great Neck, F & F Metro, Inc. 516-482-4080
OR Portland, Harry Levinson Co. 503-245-1902
WA Seattle, Harry Levinson Co. 206-382-1300

Local Distributors
FL Ft. Lauderdale, Reptron Elctrns., Inc. .. 305-735-1112
FL Tampa, Reptron Elctrns., Inc. 813-855-4656
GA Norcross, Reptron Elctrns., Inc. 404-446-1300
IL Schaumburg, Reptron Elctrns., Inc. 312-882-1700
MI Livonia, Reptron Elctrns., Inc. 313-525-2700
MN Minneapolis, K & H Elctrns. Distr. Co. 612-553-1312
MN Minnetonka, Reptron Elctrns. 612-938-0000
NJ Kenilworth, Ventronics, Inc. 201-272-9262
OH Worthington, Reptron Elctrns., Inc. 614-436-6675

TODD PRODUCTS CORP.

TODD PRODUCTS CORP., 50 Emjay Blvd., Brentwood, NY 11717, Tel: 516-231-3366, TWX: 510-227-4905; Empl.: 250 ..... **D•1972-1975**

Local Sales Offices & Reps
AL Huntsville, R. W. Mitscher Co. 205-882-6050
AZ Scottsdale, Thorson Desert States 602-998-2444
CA Calabasas, QuadRep Central 818-887-3711
CA Irvine, QuadRep South 714-261-8141
CA San Diego, SR Elctrns. 619-560-8330
CA San Jose, Quantum Coefficient Sys. .. 408-942-1070
FL Boca Raton, R.W. Mitscher Co. 305-368-3841
FL Sanford, R.W. Mitscher Co. 305-322-7141
FL Tarpon Springs, R. W. Mitscher Co. ... 813-934-9440
GA Lawrenceville, R. W. Mitscher Co. 404-923-3239
IL Arlington Heights, Coombs Assocs. ... 312-439-9810
MA Hingham, Northeast Reps. 617-749-8700
MN Minneapolis, R. K. Sales Assocs. 612-571-1001
MO St. Louis, AME Sls. 314-567-3757
NH Nashua, Northeast Reps. 603-880-8199
NJ Pennsauken, Scientific Reps. 609-662-5222
NM Albuquerque, Thorsen Desert States, Inc. 505-293-8555
NC Charlotte, R. W. Mitscher Co. 704-563-8884
NY Melville, Comtronic Assocs. 516-249-0505
NY Syracuse, T-Squared Elctrns. Co. 315-463-8592
NY Victor, T-Squared Elctrns. Co. 716-924-9101
NC Raleigh, R. W. Mitscher Co. 919-848-0941
OH Beachwood, Thompson & Assocs. 216-831-6277
OH Dayton, Thompson & Assocs., Inc. 513-435-7733
OH Orient, Thompson & Assocs. 614-272-2086
OK Tulsa, Cunningham Comps. Corp. 918-665-3562
OR Beaverton, E/S Chase Co. 503-641-4111
TN Johnson City, R. W. Mitscher Co. 615-929-7258
TX Austin, Cunningham Comps. Corp. 512-258-1744
TX Dallas, Cunningham Comps. Corp. 214-669-9706
TX Houston, Cunningham Comps. Corp. 713-461-4197
VA Fairfax, Scientific Assocs., Inc. 703-385-0600
WA Kirkland, E/S Chase Co. 206-823-9535
WI Milwaukee, Coombs Assocs. 414-351-6123
Can Surrey, BC, Enerlec Sls. Ltd. 604-888-1667

TODD SYSTEMS, INC., 50 Ash St., Yonkers, NY 10701, Tel: 914-963-3400; Empl.: 45; *Sls. Mgr.:* S. Edwards ..... **A•2418-2421**

Local Distributors
AL Mobile, Kretzer's Inc. 205-438-5611
CA San Francisco, Aris Corp. 415-550-8605
CA San Francisco, Delray Distr. 415-777-4405
CT Norwalk, Park Distr. 203-853-2010
FL Miami, Gay Mar, Inc. 305-371-0765
FL Miami Bch., B. Frank Inc. 305-861-8227
GA Macon, Giga Corp. 912-745-2897
IL Skokie, Sargent Welch Inc. 312-677-0600
LA New Orleans, Bailey Distr. 504-943-2461
MD Bethesda, Albee Sls. 301-897-8088
MA Revere, Sozio's 617-547-6900
NJ Newark, Cotrapex, Inc. 201-589-1416
NJ Newark, Pinto Trading 201-344-7748
NY Long Island City, H. L. Dalis, Inc. 212-361-1100
NY New York, Gelb Sls. 212-475-7940
NY New York, Rosetta Elec. 212-233-9088
OH Dayton, K. Elctrns. 513-426-1877
PA Philadelphia, H & Z Sls. 215-912-2500
TX Houston, Cross & Co. 713-673-3100
TX Houston, Western Sls. 713-869-6671
VA Bailey's Crossroads, Arya Corp. 703-845-0800
WA Seattle, ForeigN Elctrns. 206-682-2761
WA Seattle, Pearl Elctrns. 206-622-6200
EXP NY, New York, Able Intl., Ltd. 212-696-5300

TOKIN AMERICA, INC., 2261 Fortune Drive, San Jose, CA 95131, Tel: 408-432-8020, Telex: 171952 TOKIN A, FAX: 408-434-0375; Empl.: 2170; *Sls. Mgr.:* Anthony R. Costarella; *Dist. Mgr.:* S. Numata ..... **A•1295, 1327, 1716; B•1827; D•1105**

Local Sales Offices & Reps
AZ Scottsdale, Mactronix 602-998-1848
CA Mission Viejo, Angel Assocs. 714-582-8858
CA Mountain View, Griffith, Nuniey & Hobbs, Inc. 415-961-6740
CA San Diego, Angel Assocs. 619-581-2211
CA San Jose, Tokin America, Inc. 408-946-4887
CA Spring Valley, Griffith, Nuniey & Hobbs, Inc. 209-772-2696
CO Broomfield, Mactronix 303-469-4350
IN Indianapolis, Jack Harvey & Assocs., Inc. 317-872-1031
MN Minnetonka, JPM & Assoc. 612-593-5460
NJ Monmouth Junction, S.E.A. Co. 201-329-3636
TX Austin, Coulomb Elec. 512-258-3002
TX Dallas, Coulomb Elec. 214-406-1117
TX El Paso, El Paso Elctrns. 910-855-3900
TX Houston, Coulomb Elctrns. 713-820-3210
VA Royal Front, Eltron Sls., Ltd. 703-635-7201
WA Seattle, ECCO Mktg. 206-364-0200
Can Ontario, Har-Tech Elec. 416-665-7773

TOKO AMERICA, INC.

TOKO AMERICA, INC., 1250 Feehanville Dr., Mt. Prospect, IL 60056, Tel: 312-297-0070, Telex: 230-724372; Empl.: 60; *Dist. Mgr.:* Mark Sullivan ..... **A•1296-1297, 1639, 1717; D•1976**

Local Sales Offices & Reps
AL Huntsville, Toko America, Inc. 205-830-0952
CA Cupertino, Toko America, Inc. 408-996-7575
CA San Diego, Varigon San Diego Inc. 619-576-0100
IL Mt. Prospect, Toko America, Inc. 312-297-0070
NY White Plains, Toko America, Inc. 914-694-5618

Local Distributors
MA Plainfield, J & W Elctrns. 1-800-227-8529
MN Thief River Falls, Digi-Key Corp. 1-800-344-4539

TOKYO ELEC. CO., LTD., 1-1 Nishiki-Cho, Kanda, Chiyoda-Ku, Tokyo, 101, Japan, Tel: (03) 292-1011, Telex: 0222-3575, TWX: S

TOPAZ, INC., 9192 Topaz Way, San Diego, CA 92123, Tel: 619-279-0111, TWX: 910-335-1526; FSC No.: 06049; Empl.: 450; *Sls. Mgr.:* Ruxton Tucker, Dir. of Sls.; *Dist. Mgr.:* Dan Mathews, Field Svc. Mgr.

TOPFLIGHT, 160 East 9th Ave., York, PA 17404, Tel: 717-843-9901, 800-233-9386, TWX: 510-657-4849; Empl.: 250; *Sls. Mgr.:* Bill Ciabattoni

TOPWARD INSTRUMENTS, Div. of Hauman, Inc., 2031 Ringwood Avenue, San Jose, CA 95131, Tel: 408-434-0888, Telex: 510-101-2820; FSC No.: 408-434-9832; Empl.: 100+; *Dist. Mgr.:* Thomas C. Trieu

Local Sales Offices & Reps

CA	Canoga Park, RAG Elctrns., Inc.	818-998-6500
CA	San Diego, Instrumerit Engrs.	619-268-8344
IN	Indianapolis, LGA of Indiana	317-293-9827
KS	Lenexa, Atech	913-268-9644
NJ	Belmar, Accutest Instrs.	201-681-6560
TX	Dallas, Knight Sls. Co.	214-341-8631

TORAD COIL CO., INC., 283 Linden Rd., Wayne, NJ 07470, Tel: 201-835-6195; *Sls. Mgr.:* Dan Gupta

TORELCO, INC., 14 Paine Ave., P. O. Box 560, Irvington, NJ 07111, Tel: 201-374-8641; Empl.: 20; *Sls. Mgr.:* Stewart H. Cook

TOROID CORP. OF MARYLAND, 6000 Laurel-Bowie Rd., Bowie, MD 20715-4037, Tel: 301-464-2100, TWX: 710-826-0414, FAX: 301-464-4657; *Sls. Mgr.:* Lennart Elmlund **A•1299, 2422-2424**

Local Sales Offices & Reps

CA	San Jose, Texel North	408-272-6836
CA	Seal Beach, Texel	213-596-9411
IL	Wheeling, Ed Joyner & Co.	312-520-1200
NJ	Ridgewood, Ballou, Inc.	201-444-6990
PA	Hatboro, Electro Rep Engrg.	215-674-4421
TX	Dallas, Jim Gray & Assocs.	214-699-9976
TX	Houston, Jim Gray & Assocs.	713-342-1710
VT	Ludlow, Ballou Inc.	802-228-5240

TOROTEL PRODS. INC., 13402 S. 71 Hwy., Grandview, MO 64030-3199, Tel: 816-761-6314, TWX: 910-777-7037; Empl.: 250; *Sls. Mgr.:* H. Foland **A•1300-1315, 2426-2431**

Local Sales Offices & Reps

AZ	Tempe, Gassner & Clark Co.	602-968-9037
CA	Redwood City, Hickey Ind. Sls.	415-368-3849
CA	Santa Ana, California Elctrn. Mktg.	714-835-2702
FL	Orlando, Perrott Assocs.	305-298-7748
IA	Hiawatha, Gassner & Clark Co.	319-393-5763
MD	Towson, Dickison Sls. Co.	301-823-0923
MA	Weston, John Goode Assocs.	617-235-3900
MO	St. Louis, Abrams & Assocs.	314-569-0447
NY	New Hyde Park, R. P. Luce & Co., Inc.	516-437-4550
NY	Syracuse, Rep, Tech, Inc.	315-437-2845
NC	Raleigh, L & D, Inc.	919-876-5301
OH	New Lebanon, J. N. Bailey & Assocs.	513-687-1325
CO	Boulder, Stratford Grp.	303-530-3194
TX	Dallas, Oeler & Menelaides	214-361-8876

TOROTRON CORP., 519 South Fifth Ave., Mt. Vernon, NY 10550, Tel: 914-664-2050; Empl.: 14; *Sls. Mgr.:* Miriam Zanger **D•1321**

TORQ CORP., 32 W. Monroe St., Bedford, OH 44146, Tel: 216-232-4100; Empl.: 135

TORWICO ELCTRNS. INC., 410 Oberlin Ave. South, Lakewood, NJ 08701, Tel: 201-364-1800, TWX: 710-723-8343, FAX: 201-363-6234; Empl.: 240 **A•2432-2433**

Local Sales Offices & Reps

CA	Burlingame, Long and Assocs.	415-344-1727
CA	El Cajon, KCE Corp.	619-588-1198
FL	Orlando, Gra-Mar	305-658-1971
IN	Noblesville, Patco & Assocs.	317-877-5986
IA	Blue Grass, Ensco Rep	319-381-1466
KS	Wichita, Ensco Rep	316-683-1070
MD	Riderwood, W. S. Warrington & Assoc.	301-823-8759
MA	Hingham, N.E. Reps.	617-749-8700
MO	Maryland Heights, Ensco Rep	314-423-3935
NJ	Marlton, BGR Assocs.	609-983-1020
NY	Albany, Lynn Assocs.	518-459-1239
NY	Buffalo, Lynn Assocs.	716-631-0054
NY	Great Neck, Trionic	516-466-2300
OH	Akron, Eljay Assoc.	216-666-3774
OR	Portland, Abacus Sls.	503-777-8111
PA	Pittsburgh, Lynn Assocs.	412-935-1466
TX	Irving, Kite Elctrns. Sls. Co.	214-986-0321

TOTAL POWER INTERNATIONAL, INC., 418 Bridge St., Lowell, MA 01850, Tel: 617-453-7272, ESYLNK: 948617, FAX: 617-453-7395; Empl.: 15 ... **D•1977-1979**

Local Sales Offices & Reps

AZ	Tempe, Piper Sls.	602-949-0048
CA	San Diego, Agave	619-488-1920
CA	San Jose, Bytec Sls., Inc.	408-435-8004
CO	Longmont, Piper Sls.	303-433-5337
CT	Avon, Power Mark, Inc.	203-678-9123
FL	Orlando, Gra-Mar	305-658-1971
IL	Palatine, T-Squared	312-991-2144
MD	Columbia, Techlg. Sls. Assocs.	301-498-1130
MA	Framingham, JDS Reps.	617-872-5876
NJ	Pine Hill, Delta Mktg., Inc.	609-784-7718
NJ	Wyckoff, Northeast Comps.	201-848-1100
NM	Albuquerque, Piper Sls.	505-883-9090
NY	Albany, Lynn Assocs., Inc.	518-459-1239
NY	Buffalo, Lynn Assocs., Inc.	716-631-0054
NY	Plainview, All Metro Co.	516-681-3163
OH	Columbus, Scientific Sys.	614-861-0129
OR	Beaverton, Blair Hirsh Co., Inc.	503-641-1875
PA	Hatboro, Delta Mktg., Inc.	215-675-0343
PA	Langhorne, Delta Mktg., Inc.	215-750-1140
PA	Penndel, Delta Mktg., Inc.	215-750-1440
PA	Wexford, Lynn Assocs.	412-935-1466
TX	Dallas, Rem-Air Corp.	214-234-1069
UT	Salt Lake City, Piper Sls.	801-466-9336
WA	Lynnwood, Blair Hirsh Co., Inc.	206-774-8151
WI	Mequon, Delta Tech. Sls.	414-241-9243

TOUCH TECHNOLOGY, INC., 107 Gibraltar St, Annapolis, MD 21401, Tel: 301-269-6181; Empl.: 19

TOYO COMM. EQUIP. CO., LTD., 20-4, Nishi-Shimbashi, 3-Chome Minato-Ku, Tokyo, Japan 105, Tel: 03-459-7320/03-459-7310, Telex: 02423115 Toyocoj.; FSC No.: 03-436-1434; Empl.: 1800; *Sls. Mgr.:* T. Nagai/S. Nakagome

TRACEWELL ENCLOSURES, 7032 Worthington Galena Rd., Columbus, OH 43085, Tel: 614-846-6175, 800-848-4525; Empl.: 30 **C•1099-1101**

TRACK EQUIPMENT, Div. of Enteç Corp., 32 Daniel Webster Hwy., Merrimack, NH 03054, Tel: 603-882-7743; Empl.: 12; *Sls. Mgr.:* Barry D. Moskowitz

TRA-CON, INC., 55 North St., Medford, MA 02155, Tel: 617-391-5550; Empl.: 55; *Sls. Mgr.:* Dan Romanow

TRACOR INSTRUMENTS, 6500 Tracor La., Bldg. 27, Austin, TX 78725, Tel: 512-929-2051, TWX: 910-874-1366; Empl.: 9100; *Sls. Mgr.:* William R. Murphy; *Dist. Mgr.:* Will Hoover

TRACOR PAKTRONICS, Westronics, Inc., 2441 Northeast Pkwy., Ft. Worth, TX 76106, Tel: 817-625-2311, 800-433-2880, Telex: 629 00631, FAX: 817-625-1068; Empl.: 30; *Sls. Mgr.:* W. C. Preston

TRAK MICROWAVE CORP., 4726 Eisenhower Blvd., Dept. E-7, Tampa, FL 33634, Tel: 813-884-1411, Telex: 52-827, TWX: 810-876-9140; FSC No.: 12855; *Sls. Mgr.:* Toby Gant **A•1856-1859**

Local Sales Offices & Reps

AL	Huntsville, Beacon Assocs.	205-881-5031
AZ	Glendale, Fetty/Schoenduve	602-241-9009
CA	Mountain View, Disman Bakner	415-969-3010
CO	Parker, Howard Assocs.	303-841-5755
FL	Boca Raton, Beacon Assocs.	305-392-3500
FL	Clearwater, Beacon Assocs.	813-796-2378
FL	Maitland, Beacon Assocs.	305-647-3498
GA	Atlanta, Beacon Assocs.	404-256-9640
IL	Franklin Park, Dekotech	312-455-5100
IN	Ft. Wayne, TX Sls. Indiana	219-489-4447
IA	Cedar Rapids, J.R. Sls. Engrg.	319-393-2232
MD	Columbia, M. Lader Co.	301-381-1550
MD	Conowingo, M. Lader Co.	301-378-3449
MA	Andover, Bee Assoc.	617-475-2124
NY	Liverpool, R&D Assocs.	315-457-0100
NY	New Rochelle, Ascor Elctrns.	914-235-8838
NC	Raleigh, Beacon Assocs.	919-787-0330
NC	Raleigh, M. Lader Co.	919-848-3253
OK	Tulsa, Beacon Assocs.	918-622-1494
PA	Lafayette Hill, M. Lader Co.	215-825-3177
TN	Johnson City, Beacon Assocs.	615-282-9639
TX	Austin, Beacon Assocs.	512-345-3543
TX	Dallas, Beacon Assocs.	214-437-1505
UT	Salt Lake City, Effective Sls.	801-266-9617
WA	Seattle, Datacom Assocs.	206-285-2525
Can	Nepean, Ont., Norgay Entprs.	613-723-1858
Can	Toronto, Ont., Norgay Entprs.	416-259-9663
Can	Westmont, Que., Norgay Entprs.	514-932-3233

Local Distributors

CA	Mtn. View, Comstock Distrs., Inc.	415-969-3711
IL	Des Plaines, Compucon Distr., Inc.	312-827-9444
MA	Reading, Compucon Distr., Inc.	617-944-6875
NY	Commack, Compucon Distr., Inc.	516-499-1211
PA	Lafayette Hill, MLC Distrs., Ltd.	215-825-3177

TRAK MICROWAVE, Western Division, 735 Palomar Ave., Dept. E-7, Sunnyvale, CA 94086, Tel: 408-735-9660, TWX: 910-339-9309; FSC No.: 29111; *Sls. Mgr.:* Sam Covelli

TRAK SYSTEMS, Div. TRAK Microwave Corp., 4722 Eisenhower Blvd., Dept. E-7, Tampa, FL 33634, Tel: 813-884-1411, Telex: 52-827, TWX: 810-876-9140; FSC No.: 11165; *Sls. Mgr.:* Thomas L. Roberts **D•1176-1179**

Local Sales Offices & Reps

AL	Huntsville, Magaro & Assocs.	205-882-0827
AZ	Phoenix, J. Smith Assocs.	602-267-0981
CA	Mtn. View, Tech Mktg. Assocs. Inc.	415-968-0102
CA	San Diego, L. L. Stoakes, Inc.	619-452-1600
CO	Parker, Howard Assocs.	303-841-5755
FL	Sarasota, Bass Assocs.	813-922-9538
GA	Atlanta, Magaro & Assocs.	404-451-8862
IN	Ft. Wayne, TX Sls. Indiana	219-489-4447
MD	Annapolis, Blackwood Assocs.	301-268-3669
MA	Cochituate, High-Tech Sls., Inc.	617-653-3838
NM	Albuquerque, J. Smith Assocs.	505-345-6501
NC	Raleigh, M. Lader Co.	919-848-3253
PA	Huntingdon Valley, Rabal Assocs.	215-947-4825
TX	Arlington, J. T. Houston Assocs.	817-265-2931
WA	Bellevue, Tasco, Inc.	206-453-1414
Can	Nepean, Ont., Norgay Entprs.	613-723-1858
Can	Toronto, Ont., Norgay Entprs.	416-259-9663
Can	Westmount, Que., Norgay Entrps.	514-932-3233

TRANCOR, 108 N. High St., P.O. Box 907, San Saba, TX 76877, Tel: 915-372-6127; Empl.: 6; *Sls. Mgr.:* William F. Mayfield

TRANSAMERICA DELAVAL, INC., See IMO Delaval, Inc., CEC Instruments Div.

TRANSAMERICA DELAVAL, See IMO Delaval, Inc., Gems Sensors Div.

TRANS AMERICAN TRANSFORMER, 142 Peconic Ave., Medford, NY 11763, Tel: 516-654-1880; FSC No.: 61619; Empl.: 30 **A•2434**

TRANSCO PRODUCTS, INC., 1001 Flynn Rd., Camarillo, CA 93011-6003, Tel: 805-987-8007, Telex: 857579, FAX: 805-484-0830; FSC No.: 82152; Empl.: 400; *Sls. Mgr.:* J. Underhill

TRANSDUCERS AND SYSTEMS, A Prime Technology Company, Twin Lakes Rd., P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937; Empl.: 60; *Sls. Mgr.:* J. L. Jamieson

TRANSDUCER SYSTEMS, INC., 1510 Delp Dr., Kulpsville, PA 19443, Tel: 215-256-4611, Telex: 846078; Empl.: 310

TRANSDUKTOR, INC., See Ulveco, Inc.

TRANSENE, Rte. 1, Rowley, MA 01969, Tel: 617-948-2501; Empl.: 21; *Sls. Mgr.:* H. Fernino

TRANSFORMATION ELECTRONICS GROUP, P.O. Box 2314, Flagler Bch., FL 32036, Tel: 904-439-5888; Empl.: 30; *Sls. Mgr.:* Revella Friedman ..... **D•1980**

TRANSFORMER DESIGN, INC., 7901 W. Clinton, Milwaukee, WI 53223, Tel: 414-358-5300; *Sls. Mgr.:* Fred A. Lewis

TRANSICOIL, INC., Trooper Rd., P.O. Box 99, Worcester, PA 19490-9990, Tel: 215-277-1300, TWX: 510-660-0132; FSC No.: 82686; Empl.: 220; *Sls. Mgr.:* P. Schoenacker

TRANSISTOR DEVICES, INC., 274 S. Salem St., Randolph, NJ 07869, Tel: 201-361-6622; Empl.: 410; *Sls. Mgr.:* J. A. Gilson ..... **D•1322-1323**

Local Sales Offices & Reps

AL	Huntsville, Spada & Assocs.	205-539-3414
AZ	Tucson, W J M Sls.	602-888-4847
CA	Campbell, SMA	408-370-6900
CA	Costa Mesa, FLW Inc.	714-751-7512
CO	Niwot, D/Z Assocs.	303-443-4388
CT	Bethel, Livera-Polk Assocs., Inc.	203-748-4639
GA	Norcross, Spada & Assocs.	404-448-4028
IL	Elmhurst, Scott Assocs.	312-279-5681
IA	Des Moines, The Beams Co.	515-255-1148
KS	Shawnee Mission, The Beams Co.	913-631-0200
MD	Ellicott City, Dyna-Rep Co.	301-992-4350
MA	Lexington, E. F. Delfino, Inc.	617-862-1118
MI	Union Lake, SKM Ashby Assocs., Inc.	313-363-1100
MN	Minneapolis, Integrated Peripherals Sys., Inc.	612-831-0349
MO	St. Louis, The Beams Co.	314-434-8448
NJ	Franklin Lakes, Hansen & Hughes Assocs.	201-848-8900
NM	Albuquerque, WJM Sls.	505-268-9499
NY	Clinton, Advanced Comps. Corp.	315-853-6438
NY	Greenlawn, Hanson & Hughes Assocs.	516-754-3608
NY	North Syracuse, Advance Components	315-699-2671
NY	Rochester, Advanced Comps. Corp.	716-544-7017
NY	Scottsdale, Advanced Comps. Corp.	716-889-1429
OH	Cleveland, SKM Ashby Assocs., Inc.	216-461-0826
OR	Hillsboro, Controlek Sls.	503-640-8444
PA	Evdenheim, Omni Sls.	215-233-4600
TX	Lewisville, J. Hughes Co.	817-430-1683
TX	Stafford, Jim Hughes Co.	713-343-0673
UT	Salt Lake City, D/Z Assocs., Inc.	801-486-4233
VA	Alexandria, Dyna-Rep Co.	703-354-1222
WA	Seattle, SJI Corp.	206-763-8981
EXP	NY, New York, Singer Prods.	212-432-1400

TRANSKINETIC SYS., 110 Shawmut Rd., Canton, MA 02021, Tel: 617-828-3000; Empl.: 7

TRANSMAGNETICS, 210 Adams Blvd., Farmingdale, NY 11735, Tel: 516-293-3100, TWX: 510-224-6420; FSC No.: 17755; Empl.: 40; *Sls. Mgr.:* Fred Haber ... **D•1180-1181**

Local Sales Offices & Reps

MI	Livonia, Lowell Wendt Mktg.	313-464-2722
MI	Wyoming, Lowell Wendt Mktg.	616-531-4499
PA	Doylestown, T I S (Tech. Instr. Sls.)	215-345-4110
TX	Carrollton, Seaton Corp.	214-380-0414
WA	Bellevue, Scientific Dvcs. NW	206-747-5169

TRANSMET CORP., 4290 Perimeter Dr., Columbus, OH 43228, Tel: 614-276-5522, 800-245-5253, TWX: 810-482-1016, FAX: 614-276-FAXX; *Sls. Mgr.:* Ronald A. Crossman; *Dist. Mgr.:* Amy L. Holbrook

TRANS METRICS, INC., P. O. Box 178, Chagrin Falls, OH 44022, Tel: 216-248-2229, Telex: 810-427-2059; FSC No.: 34-1169466; Empl.: 20

TRAN-SPECTRA, INC., Rte. 1-Box 27A, Greenfield, TN 38230, Tel: 901-235-2218; Empl.: 20; *Sls. Mgr.:* D. Cole

TRANS-TECH, Alpha Industries, 5520 Adamstown Rd., Adamstown, MD 21710, Tel: 301-695-9400, Telex: 89-3456, TWX: 710-854-8418; FSC No.: 14591; Empl.: 120; *Sls. Mgr.:* Blair W. Stiles; *Dist. Mgr.:* Blair W. Stiles

TRANS-TEK, P.O. Box 338, Rte. 83, Ellington, CT 06029, Tel: 203-872-8351, Telex: 99207; FSC No.: 27109; Empl.: 40; *Sls. Mgr.:* William R. Padin

TRAN-TEC, Box 1044, Columbus, NE 68601, Tel: 402-564-2748; Empl.: 46; *Sls. Mgr.:* Cliff Schroeder

Local Sales Offices & Reps

CA	Redwood City, Woodworth Co.	415-365-0252
CA	Tustin, Sierra-Pacific Engrg. Co.	714-731-3411
CO	Golden, Pierce-Robbins Assocs.	303-399-6618
FL	Winter Park, Russell Assocs.	813-526-1134
GA	Atlanta, Russell Assocs.	404-225-8422
IN	Indianapolis, Scott Elctrns, Inc.	317-897-9976
IA	Hiawatha, Ard Sls. Co.	319-393-6392
MD	Bel Air, Russell Assocs.	301-879-9180
MA	Wakefield, H.C. Jappe Co.	617-245-9359
PA	Westchester, Russell Assocs.	215-696-0700
NY	Bay Shore, Russell Assocs.	516-666-6500
NY	Morrisville, Naylor Elec. Co.	315-684-9620
OH	Cleveland, D. Steffen & Assocs.	216-461-8333
TX	Dallas, Russell Assocs.	214-699-0383
WA	Bellevue, Russell Assocs.	206-455-3694

TREND CIRCUITS, 44358 Old Warm Springs Blvd., Fremont, CA 94536, Tel: 415-651-1150; Empl.: 35; *Sls. Mgr.:* Mike Gunion

TRENT, INC., 201 Leverington Ave., Philadelphia, PA 19127, Tel: 215-482-5000; Empl.: 55

TRIAC ELECTRONIC SYSTEMS, INC., 87-27 Myrtle Ave., Glendale, NY 11385, Tel: 718-441-4759, TWX: 221500 ASAS ATT TRIAC; Empl.: 35; *Sls. Mgr.:* Victor Botnick

TRIAD POWER SYSTEMS, 10362 Miller Road, Dallas, TX 75238, Tel: 214-341-8700; FSC No.: 214-341-1804; *Sls. Mgr.:* Jack Conn

TRIAD-UTRAD
A Division of MagneTek, Inc.

TRIAD-UTRAD, Div. of Magnetek, Inc., 305 N. Briant, Huntington, IN 46750, Tel: 219-356-6500, TWX: 810-333-1532; Empl.: 750; *Dist. Mgr.:* Dave Miller ..... **A•2437-2446**

Local Sales Offices & Reps

AK	Anchorage, H.J. Lang & Assocs.	907-279-5741
AZ	Scottsdale, Bill Earl Assocs.	602-994-3813
CA	Chino, Tracy Elec. Sls.	714-591-4736
CA	Los Altos, Recht Assocs.	415-964-6321
CO	Denver, Lindberg Co.	303-758-9033
FL	Maitland, Hutto-Hawkins Assocs.	305-831-2474
GA	Atlanta, Effective Mktg. Force	404-948-6023
HI	Honolulu, Hawaii Elctrn. Svc.	808-845-8207
IL	Wilmette, J. Wasserman Assocs.	312-256-3566
KS	Overland Park, Electri-Rep	913-649-2168
LA	Little Rock, J. Y. Schoonmaker	501-375-2168
MA	Westboro, Bay Colony	617-870-1930
MI	Southfield, Rathsburg Assocs., Inc.	313-559-9700
MN	Minneapolis, Elec. Comp. Sls.	612-933-2594
MO	St. Louis, Thomas Dowell Assocs.	314-849-4234
PA	Narberth, Bresson Assocs.	215-664-6460
NY	Rochester, Apex Assocs.	716-254-6050
NY	West Hempstead, Schmitt Indl. Mktg.	516-486-3510
OH	Cincinnati, F.E. Kahsar Sls.	513-922-3133
TX	Dallas, J. Y. Schoonmaker Co.	214-349-1650
WA	Seattle, J. J. Backer Co.	206-285-1300
Can	Inwood, N.Y., Minthorne Int'l.	516-239-0767

Local Distributors

AL	Birmingham, Forbes Distrbg.	205-251-4104
AZ	Phoenix, Dalis Elctrn. Supp.	602-275-2885
AR	Little Rock, Carlton Bates Co.	501-562-9100
CA	Palo Alto, Zack Elctrns.	415-326-5432
CA	Riverside, Electronic Supp.	714-683-7300
CA	Sunnyvale, Abacus Elctrns.	408-732-2000
CO	Denver, Newark Elctrns.	303-757-3351
FL	Ft. Lauderdale, Peerless Radio Corp. of Fla.	305-973-4141
GA	Atlanta, Ack Radio Supp.	404-351-6340
IL	Chicago, Bell Inds.	312-982-9210
IL	Chicago, Newark Elctrns.	312-638-4411
IN	Indianapolis, Graham Elctrns.	317-634-8202
IA	Cedar Rapids, Deeco, Inc.	319-365-7551
KY	Louisville, P. I. Burks Co.	502-589-3960
LA	New Orleans, William B. Allen Co.	504-525-8222
MD	Rockville, Capitol Radio Whls.	301-881-2270
MA	Hingham, Sager Elec.	617-749-6700
MA	Needham, Cronin Elctrns.	617-449-5000
MI	Grand Rapids, S-F Elctrns.	616-459-0216
MI	Livonia, R. S. Elctrns.	313-525-1155
MN	St. Paul, Gopher Elctrns.	612-483-4450
MO	St. Louis, Olive Indl. Elctrn.	314-426-4500
NE	Lincoln, Scott Elctrn. Supp. Corp.	402-466-8221
NH	Hudson, C & H Elctrns.	603-882-1133
NJ	Camden, General Radio Supp.	215-922-7037
NJ	Oakland, Relay Specialties	201-337-1000
NM	Albuquerque, Electronic Parts Co.	505-293-6161
NY	Hauppauge, Broadline Elctrn. Distr.	516-231-4100
NY	Rochester, Simcona	716-328-3230
NY	Rockville Centre, Midway Indl. Elctrns.	516-764-2400
NY	Rome, Rome Elctrns.	315-337-5400
NC	Greensboro, Hammond Elctrns.	919-275-6391
OH	Cleveland, Pioneer Std. Elctrns.	216-587-3600
OH	Dayton, Pioneer/Dayton	513-236-9900
OK	Tulsa, Combined Tech.	918-582-8242
OR	Portland, United Radio Supp.	503-233-5346
PA	Philadelphia, Almo Elctrns.	215-698-4000
SC	Greenville, Hammond Elctrns.	803-233-4121
TN	Memphis, Bluff City Elctrns.	901-345-9500
TX	Dallas, Sterling Elctrns.	214-243-1600
TX	Houston, Altair Co.	713-462-3029
UT	Salt Lake City, Standard Supply	801-486-3371
WA	Seattle, Almac	206-643-9992
WI	New Berlin, RM/Wisconsin	414-784-4420

TRICON INDUSTRIES, INC., Brazing Alloys & Chemical Products Div., 5000 Chase St., Downers Grove, IL 60515-4012, Tel: 312-963-0220, Telex: 27-0064, FAX: 312-963-0269; Empl.: 25; *Sls. Mgr.:* Norm Hansen

TRICON INDUSTRIES, INC., Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076, Tel: 312-964-2330, Telex: 27-0064; FSC No.: 312-964-5179; Empl.: 200; *Sls. Mgr.:* Robert Stevens

TRIDAK, 1120 Federal Rd., Brookfield, CT 06804, Tel: 203-775-1287, TWX: 710-456-1372; Empl.: 20; *Sls. Mgr.:* F. C. Herot

TRI-DATA CORP., 505 E Middlefield Rd., Mountain View, CA 94043-4082, Tel: 415-969-3700, Telex: 172282, FAX: 415-967-6555; Empl.: 90

TRIDYNE PROCESS SYSTEMS, DBI Industries, 80 Allen Rd., So. Burlington, VT 05401, Tel: 802-863-6873; Empl.: 35; *Sls. Mgr.:* Jean Garin

TRILOBYTE COMPUTER CORPORATION, 801 W. Grand Ave., Oakland, CA 94607, Tel: 415-839-1100, TWX: 910-350-0171; Empl.: 15

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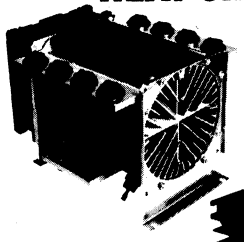

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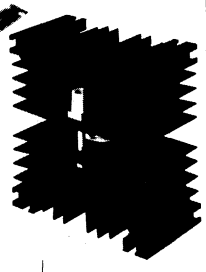

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TRI-MAG, INC., 8210 West Doe Ave., Visalia, CA 93291, Tel: 209-651-2222, Telex: (ITT) 4994462, FAX: 209-651-0188; FSC No.: 64771; Empl.: 80 ..... **A•1718-1719; D•1981**

Local Sales Offices & Reps

AZ	Scottsdale, T.C. Elctrns. Sls.	602-994-5153
CA	Laguna Hills, Electro-Venture	714-581-9244
CA	Santa Clara, C. B. King & Assocs.	408-988-7551
CO	Englewood, Frontier Reps.	303-799-6064
FL	Plantation, EMS, Inc.	305-587-7146
IL	Arlington Hgts., Coombs Assocs., Inc.	312-439-9810
MN	Mendota Hgts., Gll Sls., Inc.	612-454-3086
NH	Nashua, Bell Controls	603-882-6984
NY	Penfield, Upstate Comp. Sls.	716-381-6070
OK	Tulsa, Cunningham Comps.	918-665-3562
OR	Portland, Power Source Unltd.	503-292-0820
TX	Dallas, Cunningham Comps.	612-454-3086
TX	Houston, Cunningham Comps.	713-461-4197
UT	Hooper, Frontier Reps.	301-546-4029
WA	Lynwood, Power Source Unltd.	206-743-6641
WI	Milwaukee, Coombs Assocs., Inc.	414-351-6123

TRIMM, INC., Div. of Newton Instr. Co., 400 W. Lake St., Box 489, Libertyville, IL 60048, Tel: 312-362-3700, Telex: 728452; Empl.: 70; *Sls. Mgr.:* Nancy Calkins

TRIM-TRONICS, INC., 67 Albany St., Cazenovia, NY 13035, Tel: 315-655-9528, FAX: 315-655-2149; Empl.: 20; *Sls. Mgr.:* James E. Dowd

TRINETICS INC., 55807 Currant Rd., Mishawaka, IN 46545-4899, Tel: 219-259-8535; Empl.: 100; *Sls. Mgr.:* P. L. Kamerer

TRIO LABORATORIES, INC., 80 Dupont St., Plainview, NY 11803, Tel: 516-349-0400, TWX: 510-221-1861; FSC No.: 00638; Empl.: 60; *Sls. Mgr.:* John Crawford

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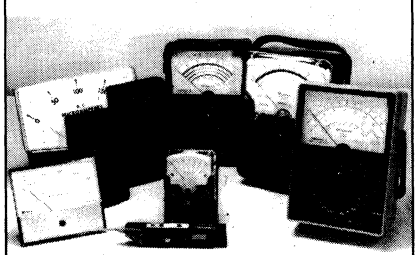

Offices

1810 Grant Avenue/Philadelphia, PA 19115
(215) 673-5600

Local Direct Dial Phones

(215) 776-7500 in Allentown, PA
(301) 444-5600 in Baltimore, MD
(717) 236-5900 in Harrisburg, PA
(717) 397-2600 in Lancaster, PA
(215) 673-5600 in Philadelphia, PA & NJ
(301) 621-5077 in Washington, DC & VA
(717) 829-5600 in Wilkes-Barre, PA
(302) 652-8585 in Wilmington, DE

TRIO-TECH INTERNATIONAL, 355 Parkside Dr., San Fernando, CA 91340, Tel: 818-365-9200, Telex: 194811 (TTI INTL SFDO); Empl.: 266; *Sls. Mgr.:* Ron Nelson

TRIPLE I, See PHI Technologies, Inc.

TRIPLETT CORPORATION
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TRIPLETT CORP.-A PENRIL CO., One Triplett Dr., Bluffton, OH 45817-9987, Tel: 419-358-5015, TWX: 810-490-2400; *Sls. Mgr.:* Kenneth Dahlstrom ..... **D•1324-1325, 1380-1383**

Local Sales Offices & Reps

AZ	Phoenix, Shefler-Kahn	602-257-9015
CA	Burlingame, Polach & Bensinger	415-697-2525
CA	Costa Mesa, Berman-Gravley, Inc.	714-549-2122
FL	Deerfield Beach, Jack Krutek & Assocs.	305-427-4202
FL	Maitland, Jack Krutek & Assocs.	305-628-4837
GA	Atlanta, Millar Elctrns.	404-261-6160
IL	Berkeley, G. Petitt Co.	312-449-8000
IN	Ft. Wayne, W. Bieberich	219-432-2537
IN	New Albany, W. Bieberich	812-945-3187
KS	Olathe, SPS Assocs., Ltd.	913-764-4460
MI	Grosse Point Woods, A & D Elctrn. Sls.	313-884-1956
NJ	Englewood Cliffs, Masin Esco	201-569-8868
NY	Hauppauge, Masin Esco	516-273-3500
NY	Mendon, Marchese Marsey Barden	716-582-2240
NC	Raleigh, Millar Elctrns.	919-828-8840
OH	Centerville, Dolfuss-Root	513-433-6776
OH	Strongsville, Dolfuss-Root	216-238-0300
OR	Portland, Elctrn. Sources, Inc.	503-684-0040
PA	Bridgeville, Dolfuss-Root	412-221-4420
RI	Lincoln, Adams-McGregor	401-726-1300
RI	West Warwick, Adams McGregor, Inc.	401-821-1320
TX	Dallas, Elcom Mktg. Inc.	214-241-2166
WA	Bellevue, Elctrn. Sources, Inc.	206-451-3500

Local Distributors

AL	Birmingham, Brownell-Electro	205-323-4761
AL	Mobile, Brownell-Electro	205-479-8581
AZ	Phoenix, Metermaster Div.	602-437-1425
CA	Glendale, Western Elctrn. Supp.	213-245-1226
CA	Irvine, Meter Craft/Larson	714-261-7135
CA	Los Angeles, Metermaster Div.	213-685-4340
CA	Palo Alto, Metermaster	415-960-8500
CA	San Diego, Metermaster Div.	619-560-4841
CA	Santa Clara, Dynametron	408-727-6531
CO	Denver, Meter-master	303-722-5766
FL	Hialeah, Kimball Elctrn. Lab.	305-822-5792
FL	Miami, Brownell-Electro	305-884-3072
FL	Orlando, Brownell-Electro	305-843-6770
GA	Atlanta, Brownell-Electro	404-762-5181
GA	Atlanta, Process Meas. Control	404-696-7481
IL	Countryside, Pacific Indicator	312-352-3500
IL	Elk Grove Village, Meter-Makers	312-439-5050
IN	Evansville, Electro-Lab Svcs.	812-423-5211
IN	Indianapolis, E.I.L. Instrs.	317-545-1373
KS	Overland Park, Brooks Elec.	913-648-3131
LA	New Orleans, Indl. Instr. Works	504-733-8355
MD	Gaithersburg, Pioneer/Inst.	301-948-2242
MD	Savage, Pyttronic	301-792-0780
MA	Waltham, Calibron	617-894-6440
MI	Ferndale, Ram Meter	313-398-6767
MN	Minneapolis, Instr. Control	612-871-2514
MO	St. Louis, ISL Corp.	314-535-5760
NJ	Belleville, Marshall Inst.	201-751-1190
NJ	New Foundland, Hosica Labs	201-697-6111
NY	Clarence, Trott Elctrns.	716-634-8500
NY	L.I.C., Metermod Instr.	718-726-4850
NC	Charlotte, Brownell-Electro	704-597-1270
NC	Raleigh, Brownell-Electro, Inc.	919-876-6524
NC	Raleigh, Meter-Meterics, Div. of I.T.R.	919-872-5456
NC	Raleigh, Speed Instr. Div. Owen-Barbot	919-876-4919
OH	Cleveland, Pioneer/Instrmn.	216-587-3600
OH	Cleveland, Weschler Elec.	216-238-2550
OH	Dayton, Pioneer/Dayton	513-236-9900
OK	Tulsa, Tri-State Instr.	918-836-0286
PA	Philadelphia, Sunshine Sci.	215-673-5600
PA	Pittsburgh, CAM/RPC	412-963-1885
TN	Knoxville, Brownell-Electro	615-966-3441
TN	Memphis, Brownell-Electro	901-795-8487
TN	Memphis, Instrument Repair Svc.	901-278-0762
TN	Nashville, Brownell-Electro	615-889-8230
TX	Beaumont, Straughn Elec.	409-838-4563
TX	Dallas, Ultra Instr.	214-357-0297
TX	Garland, Metermaster	214-271-5671
TX	Houston, Meters & Instrs.	713-644-1631
TX	Houston, Quality Instr.	713-524-0528
TX	Odessa, Whitlock Instr.	915-337-3412
VA	Richmond, Meter Metrics (I.T.R.)	804-275-1431
WA	Seattle, Eicher-Richards	206-523-7888
WI	Milwaukee, E-M Instrs.	414-272-7799

TRIPP-LITE, 500 No. Orleans, Chicago, IL 60610, Tel: 312-329-1777; Empl.: 80; *Sls. Mgr.:* Priscilla Galgan; *Dist. Mgr.:* Priscilla Galgan

TRITON MFG. CO., P. O. Box 239, Rowayton, CT 06853, Tel: 203-838-4666, Telex: 955439; FSC No.: 54195; *Sls. Mgr.:* Jack Spangler

TRI-TRONICS CO. INC., 6902 Cypress Park Drive, Tampa, FL 33622, Tel: 813-886-4000, 800-237-0946; Empl.: 27; *Sls. Mgr.:* Robert A. Warner

TRM, INC., 401 Kelley Ave., Grenier Field, Manchester, NH 03103, Tel: 603-627-6000, TWX: 710-220-6765; Empl.: 40; *Sls. Mgr.:* A. Butts

TROMPETER ELECTRONICS, INC., 31186 La Baya Dr., P.O. Box 5069, Westlake Village, CA 91359-5069, Tel: 818-707-2020, TWX: 910-494-1210; FSC No.: 14949; Empl.: 180; *Sls. Mgr.:* Paul Cox; *Dist. Mgr.:* Hap Gladish

Local Sales Offices & Reps

AL	Huntsville, Currie, Peak and Frazier	205-536-1506
AZ	Phoenix, Aztec Entprs.	602-944-9185
CA	Los Angeles, Knight Co.	213-670-2833
CA	San Diego, Knight Co.	619-571-7903
CA	Santa Clara, ISG	408-980-1166
CO	Denver, Aztec Entprs.	303-779-5285
CT	Wethersfield, Underwood Sls.	203-563-3046
FL	Melbourne, Currie, Peak & Frazier	305-724-6795
FL	Orlando, Currie, Peak & Frazier	305-855-0843
FL	Tampa, Currie,Peak, & Frazier	813-963-1076
GA	Norcross, Currie, Peak & Frazier	404-449-7662
IL	Chicago, Berndt Assocs.	312-283-0713
IN	Carmel, Berndt Assocs.	312-844-0114
KS	Wichita, Baka	316-682-4811
MD	Lanham, Sel-Tronics	301-731-8080
MA	Lowell, Underwood Sls.	617-256-8191
MN	Edina, Engineering Prods. Assoc.	612-835-9022
MO	Crev Coeour, Baka	314-878-4242
NJ	Elmwood Park, L & M Assoc. Eng. Rep.	201-797-0441
NM	Albuquerque, Aztec Entprs.	505-262-1688
NY	New York, L & M Assocs. Eng. Rep.	212-243-6155
NY	Rochester, T A E Reps.	716-586-8710
NY	Whitney Point, T.A.E. Reps.	607-692-3705
NC	Greensboro, Currie, Peak & Frazier	919-373-0380
NC	Mathews, Currie, Peak & Frazier	704-846-1702
OH	Richfield, Geotronix	216-659-6100
OH	Trotwood, Geotronix	513-252-6700
OR	Beaverton, Evergreen Mktg. Co.	503-643-8020
PA	Allison Park, Geotronix	412-487-1770
PA	Andalusia, L & M Assocs.	215-245-6658
TN	Smyrna, Currie, Peak & Frazier	615-459-0743
TX	Argyle, Milestek	817-455-7444
TX	Spring, Milestek	713-376-6776
UT	Ogden, Aztec Entprs.	801-621-1655
WA	Seattle, Evergreen Mktg.	206-633-3160
WI	Milwaukee, Berndt Assocs.	414-545-8400
Can	Markham, Ont., Components, Ltd.	416-479-7200
Can	St. Laurent, Que., Componetics, Ltd.	514-331-1498

TRONTECH, INC., 63 Shark River Rd., Neptune, NJ 07753, Tel: 201-922-8585, Telex: 132445, FAX: 201-922-3903; Empl.: 40 ..... **D•1030**

Local Sales Offices & Reps

AZ	Tempe, BF Designs Entprs.	602-345-7799
CA	San Jose, MC Microwave, Inc.	408-446-4107
CA	Torrance, Dyna Sls.	213-541-1543
FL	Clearwater, Brennan Assocs., Inc.	303-446-5006
GA	Atlanta, BWS Microwave Mktg.	404-446-6576
MD	Laurel, Electronic Mktg. Assoc., Inc.	301-881-5300
MA	Burlington, Tritek, Inc.	617-272-4550
NM	Albuquerque, IMEC	505-883-9010
NY	Melville, Metro Mics	516-271-6677
OH	Dayton, Frederic L. Ohmer & Assocs.	513-434-1454
TX	Garland, McBride Sci. Sls.	214-494-5000
Can	St.Laurent, Que., RF Microwave Ltd.	514-335-2335

TRUE DATA, 17092 Pullman St. #B, Irvine, CA 92714, Tel: 714-261-9281, TWX: 910-595-1917; Empl.: 60; *Sls. Mgr.:* Jack Gaushell, VP Sls.

TRW CAPACITOR DIV., 301 West "O" St., Ogallala, NE 69153, Tel: 308-284-3611, Telex: 484 533; *Sls. Mgr.:* Dennis Lienemann

TRW CONNECTOR DIV., TRW Electronic Components Grp., 1501 Morse Ave., Elk Grove Village, IL 60007, Tel: 312-981-6000, TWX: 910-222-1796; *Sls. Mgr.:* B. Walthall; *Dist. Mgr.:* Jim Hartranft Jr.

TRW CYLINDRICAL CONNECTOR DIV., TRW Electronic Components Grp., 8821 Science Center Dr., Minneapolis, MN 55428, Tel: 612-537-1010, TWX: 910-576-2748; *Sls. Mgr.:* Bill Warner

TRW, Dynalco Controls Div., 5200 NW 37th, P.O. Box 8187, Ft. Lauderdale, FL 33310, Tel: 305-739-4300, Telex: 514833; Empl.: 125; *Sls. Mgr.:* Kurlin Wilson; *Dist. Mgr.:* Joe Stephens

TRW ELECTRONIC COMPONENTS GRP., 2525 E. El Segundo Blvd., El Segundo, CA 90245, Tel: 213-536-0600

TRW FIBER OPTIC PRODS., CONNECTOR DIV., TRW Elctrn. Comps. Grp., 401 N. Broad St., Philadelphia, PA 19108, Tel: 215-922-8900, TWX: 710-670-2286; *Sls. Mgr.:* Harry Saleker

TRW LSI PRODUCTS, PO Box 2472, La Jolla, CA 92038, Tel: 619-457-1000, Telex: 697957, TWX: 910-335-1571; Empl.: 350; *Sls. Mgr.:* Doug Turnage, (Acting) Natl. Sls. Mgr.; *Dist. Mgr.:* Ron Courtois

Local Sales Offices & Reps

CA	El Segundo, TRW/ECG Sls. Off.	213-535-6175
CA	Sunnyvale, TRW/ECG Sls. Off.	408-720-8727
MA	Westboro, TRW/ECG Sls. Off.	617-870-0745
TX	Dallas, TRW/ECG Sls. Off.	214-248-8000

Local Distributors

CA	Culver City, Hamilton Avnet	203-558-2000
NY	Melville, Arrow Elctrns.	516-694-6800
TX	Dallas, Hall-Mark	214-343-5000

TRW MICROWAVE, Div. of TRW, Inc., 825 Stewart Dr., Sunnyvale, CA 94086, Tel: 408-732-0880, TWX: 910-339-9207; FSC No.: 21847; Empl.: 550; *Sls. Mgr.:* R. J. Roy

TRW MOTOR DIV., 2275 Stanley Ave., Dayton, OH 45404, Tel: 513-228-3171, Telex: 288-224, TWX: 810-459-1642; Empl.: 580; *Sls. Mgr.:* Bill Pelfrey; *Dist. Mgr.:* Tom Coyle ..... **B•1216**

Local Sales Offices & Reps

AL	Huntsville, TRW/ECG	205-533-7600
AZ	Scottsdale, TRW/ECG	602-994-0441
CA	El Segundo, TRW/ECG	213-535-6175
CA	San Diego, TRW/ECG	619-279-3990
CA	Sunnyvale, TRW/ECG	408-720-8727
CO	Westminster, Straube Assocs.	303-426-0890
CT	Rowayton, TRW	203-853-4466
FL	Ft. Lauderdale, TRW/ECG	305-772-3000
FL	Orlando, TRW/ECG	305-857-3650
GA	Norcross, TRW/ECG	404-447-6154
IL	Chicago, TRW/ECG	312-981-6500
IN	Ft. Wayne, R. O. Whitesell & Assocs.	219-432-5591
IN	Indianapolis, R. O. Whitesell & Assocs.	317-359-9283
IN	Kokomo, R. O. Whitesell & Assocs.	317-457-9127
IA	Cedar Rapids, C. H. Horn & Assocs.	319-393-8703
KS	De Soto, Midtec Assocs.	913-541-0505
KY	Louisville, R. O. Whitesell & Assocs.	502-426-7696
MD	Baltimore, TRW/ECG	301 964-9110
MA	Westborough, TRW/ECG	617-870-0745
MI	Grand Rapids, R. O. Whitesell & Assocs.	616-942-5420
MI	Southfield, R. O. Whitesell & Assocs.	313-559-5454
MI	St. Joseph, R. O. Whitesell & Assocs.	616-983-7337
MN	Minneapolis, TRW/ECG	612-854-6616
MO	St. Louis, John G. Macke Co.	314-432-2830
NY	Fairport, TRW/ECG	716-425-3775
NC	Greensboro, TRW/ECG	919-852-4676
OH	Cincinnati, R.O. Whitesell	513-521-2290
OH	Cleveland, R.O. Whitesell	216-447-9020
OH	Columbus, R.O. Whitesell	614-888-9396
OH	Dayton, R.O. Whitesell	513-298-9546
PA	Bala Cynwyd, TRW/ECG	215-667-3400
PA	Pittsburgh, R. O. Whitesell & Assocs.	412-963-6161
TN	Greeneville, R. O. Whitesell & Assocs.	615-639-6154
TX	Austin, TRW/ECG	512-339-7787
TX	Dallas, TRW/ECG	214-248-8000
TX	El Paso, TRW/ECG	915-594-8259
TX	Houston, TRW/ECG	713-772-5541
UT	Salt Lake City, Straube Assocs.	801-263-2640
WI	Brookfield, TRW/ECG	414-784-7773
Can	Toronto, Ont., Renmark Elctrns. Ltd.	416-494-5445

Local Distributors

AL	Huntsville, Hallmark Elctrns.	205-837-8700
AL	Huntsville, Hamilton/Avnet Elctrns.	205-837-7210
AZ	Phoenix, Hallmark Elctrns.	602-437-1200
AZ	Tempe, Fisher Brownell	602-967-1464
AZ	Tempe, Hamilton/Avnet Elctrns.	602-231-5100
CA	Alhambra, Fisher Brownell	213-289-0255
CA	Chatsworth, Avnet Elctrns.	213-700-2600
CA	Costa Mesa, Avnet Elctrns.	714-754-6111
CA	Culver City, Hamilton/Avnet Elctrns.	213-558-2252
CA	Sacramento, Hamilton/Avnet Elctrns.	916-925-2216
CA	San Diego, Fisher Brownell	619-560-8545
CA	San Diego, Hallmark Elctrns.	619-268-1201
CA	San Diego, Hamilton/Avnet Elctrns.	619-571-7510
CA	San Jose, Hallmark Elctrns.	408-946-2575
CA	Santa Clara, Fisher Brownell	408-988-6041
CA	Sunnyvale, Hallmark Elctrns.	408-946-0900
CA	Sunnyvale, Hamilton/Avnet Elctrns.	408-743-3355
CO	Englewood, Hallmark Elctrns.	303-790-1662
CO	Englewood, Hamilton/Avnet Elctrns.	303-740-1000
CT	Danbury, Hamilton/Avnet Elctrns.	203-797-2800
FL	Ft. Lauderdale, Hamilton/Avnet Elctrns.	305-971-2900
FL	Orlando, Hallmark Elctrns.	305-855-4020
FL	St. Petersburg, Hamilton/Avnet Elctrns.	813-576-3930
FL	Winter Park, Hamilton/Avnet Elctrns.	305-628-3888
GA	Norcross, Hallmark Elctrns.	404-447-8000
GA	Norcross, Hamilton/Avnet Elctrns.	404-447-7507
IL	Bensenville, Hamilton/Avnet Elctrns.	312-860-7700
IL	Elk Grove Village, Pioneer/Chicago	312-437-9680
IN	Carmel, Hamilton/Avnet Elctrns.	317-844-9333
IN	Indianapolis, Pioneer/Indiana	317-849-7300
KS	Lenexa, Hallmark Elctrns.	913-888-4747
KS	Overland Park, Hamilton/Avnet Elctrns.	913-888-8900
MD	Columbia, Hallmark Elctrns.	301 988-9800
MD	Columbia, Hamilton/Avnet Elctrns.	301-995-3500
MA	Billerica, Hallmark Elctrns.	617-667-0902
MA	Peabody, Hamilton Avnet	617-531-7430
MA	Woburn, Jaco	617-933-7760
MI	Grand Rapids, Hamilton/Avnet Elctrns.	616-243-8805
MI	Livonia, Hamilton/Avnet Elctrns.	313-522-4700
MI	Livonia, Pioneer/Michigan	313-525-1800
MN	Eden Prairie, Hallmark Elctrns.	612-941-2600
MN	Minnetonka, Hamilton/Avnet Elctrns.	612-932-0600
MN	Minnetonka, Pioneer/Twin Cities	612-935-5444
MO	Earth City, Hamilton Avnet	314-344-1200
MO	Maryland Heights, Hallmark Elctrns.	314-291-5350
MO	Overland Park, Hamilton/Avnet Elctrns.	913-888-8900
NJ	Cherry Hill, Hamilton/Avnet Elctrns.	609-424-0100
NJ	Fairfield, Hamilton Avnet	201-575-3390
NJ	Fairfield, Hamilton/Avnet Elctrns.	201-575-3390
NJ	Mt. Laurel, Hallmark Elctrns.	201-235-1900
NJ	Pinebrook, Hallmark Elctrns.	201-882-9773
NM	Albuquerque, Hamilton/Avnet Elctrns.	505-765-1500
NY	Hauppauge, Hamilton/Avnet Elctrns.	516-434-7421
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NY	Rochester, Hamilton/Avnet Elctrns.	716-475-9130
NY	Ronkonkoma, Hallmark Elctrns.	516-737-0600
NY	Syracuse, Hamilton Avnet	315-437-2641
NC	Raleigh, Hallmark Elctrns.	919-872-0712
NC	Raleigh, Hamilton/Avnet Elctrns.	919-878-0810
OH	Cleveland, Hamilton/Avnet Elctrns.	216-831-3500
OH	Cleveland, Pioneer/Cleveland	216-587-3600
OH	Dayton, Hamilton/Avnet Elctrns.	513-433-6700
OH	Dayton, Pioneer/Dayton	513-236-9900
OH	Solon, Hallmark Elctrns.	216-349-4632
OH	Worthington, Hallmark Elctrns.	614-888-3313
OR	Lake Oswego, Hamilton/Avnet Elctrns.	503-635-8157
PA	Pittsburgh, Pioneer/Pittsburgh	412-782-2300
TX	Austin, Hallmark Elctrns.	512-258-8848
TX	Dallas, Hall-Mark Elctrns.	214-343-5000
TX	Houston, Hallmark Elctrns.	713-781-6100
TX	Irving, Hamilton/Avnet Elctrns.	214-659-4912
TX	Richardson, Fisher Brownell	214-235-3177
TX	Stafford, Hamilton Avnet	713-240-7733
UT	Salt Lake City, Hamilton/Avnet Elctrns.	801-972-2800
WA	Bellevue, Hamilton/Avnet Elctrns.	206-643-3950
WI	New Berlin, Hamilton Avnet	414-784-4510
WI	New Berlin, Hamilton/Avnet Elctrns.	414-797-7844
Can	Mississauga, Ont., Hamilton Avnet	416-677-7432

TRW OPTOELECTRONICS DIV., 1215 W. Crosby Rd., Carrollton, TX 75006, Tel: 214-323-2200, Telex: 6716032; Empl.: 1800; *Sls. Mgr.:* Bob Taber; *Dist. Mgr.:* Robert Linker

TRW RESISTIVE PRODUCTS DIV., See International Resistive Co.

TRW, RF Devices Div., 14520 Aviation Blvd., Lawndale, CA 90260, Tel: 213-536-0888, TWX: 910-325-6206; Empl.: 1000; *Dist. Mgr.:* G. Vegvari

TRW TECHNAR, INC., TRW, Inc., 5462 Irwindale Ave., Irwindale, CA 91706, Tel: 818-334-0250; Empl.: 175; *Sls. Mgr.:* George R. Downs

TS PRODUCTS, INC., 12455 Branford St., Bldg. 22, Arleta, CA 91331, Tel: 818-896-6676; Empl.: 12; *Sls. Mgr.:* Ron Zettelmier; *Dist. Mgr.:* Ron Zettelmier ..... **D•2127**

Local Sales Offices & Reps

CA	Los Angeles, TS Products, Inc.	818-896-6676
CA	Montebello, TUCUL Engrg.	213-728-7397
CA	San Marino, Motion Control, Inc.	818-796-0189

TTE, INC., 2233 S. Barry Ave., Los Angeles, CA 90049, Tel: 213-478-8224, Telex: 3725291; FSC No.: 07766; *Sls. Mgr.:* S. J. Sodaro ..... **A•1642, 1720-1723, 2435**

TTS-TELECOM TERMINAL SYSTEMS, 621 Hindry Ave, Inglewood, CA 90301, Tel: 213-641-8111, Telex: 182405, TWX: 3715831; Empl.: 18; *Sls. Mgr.:* L. Winters

TUCKER ELECTRONICS, Box 461966, Garland, TX 75046, Tel: 214-348-8800, 800-527-4642, Telex: 79-1726, TWX: 62812862; Empl.: 43; *Sls. Mgr.:* Don Stabeno

TUNGSTONE BATTERIES, INC., 18 Billings St., Sharon, MA 02067, Tel: 617-784-2000, Telex: 951908; Empl.: 8; *Sls. Mgr.:* John McCusker

TUSONIX, INC., 7741 N. Business Park Drive, P. O. Box 37144, Tucson, AZ 85740-7144, Tel: 602-744-0400, Telex: 102-299640, TWX: 310-299640; FSC No.: 59660; Empl.: 800; *Sls. Mgr.:* Robert H. Jones; *Dist. Mgr.:* John H. Ohlrich ..... **A•1184-1189, 1724-1727**

Local Sales Offices & Reps

AZ	Tucson, Tusonix, Inc.	602-744-0400
CA	Santa Ana, Tusonix, Inc.	714-953-9945
MD	Pasadena, Tusonix, Inc.	301-360-0100
NY	Webster, Tusonix, Inc.	716-671-4073
NC	Greensboro, Tusonix, Inc.	919-292-4286
OR	Portland, Tusonix, Inc.	503-297-1555

Local Distributors

AZ	Phoenix, TTI	602-861-0222
CA	Chatsworth, TTI	818-709-1010
CA	San Diego, TTI	619-587-4888
CA	San Jose, TTI	408-943-9155
CO	Westminster, TTI	303-429-6806
CT	Stratford, TTI	203-375-1400
FL	Orlando, TTI	305-859-1000
GA	Norcross, TTI	404-662-0911
IL	Chicago, Newark Elctrns.	312-638-4411
MD	Beltsville, Resco	301-937-9100
MD	Columbia, TTI	301-995-1331
MD	White Marsh, Resco	301-529-0500
MA	Woburn, TTI	617-938-8800
MN	Eden Prairie, TTI	612-944-5080
NY	Hauppauge, Fairmont Elctrn. Sls.	516-231-3313
NY	Ronkonkoma, TTI	516-737-2000
NC	Raleigh, Resco	919-781-5700
TX	Fort Worth, TTI	817-831-0441

TUSTIN ELECTRONICS CO., 1580 N. Kellogg Drive, Anaheim, CA 92807, Tel: 714-777-5800; FSC No.: 7025-0010; *Sls. Mgr.:* Saul Tunkelrott

TWP, INC., 2133 4th St., Berkeley, CA 94710, Tel: 415-548-4434, Telex: 171-267, FAX: 415-548-3073; Empl.: 10; *Sls. Mgr.:* G. Reed

TYCO INSTR. DIV., See Data Instrs.

TYCOR ELECTRONIC PRODUCTS LTD., 6107-6 Street S.E., Calgary, Alberta, Canada T2H 1L9, Tel: 403-259-3200, Telex: 03 825842, ESYLNK: 1-800-661-8263, FAX: 403-253-0663; *Sls. Mgr.:* Scott Lee ..... **A•1728**

TYTON CORP., Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223, Tel: 414-355-1130, TWX: 910-262-3094; *Sls. Mgr.:* Terry Morgan

UCCEL CORPORATION, P. O. Box 660054, Dallas, TX 75266, Tel: 214-353-7100, TWX: 910-861-4990; Empl.: 1350

UCE, INC., 24 Fitch St, Norwalk, CT 06855, Tel: 203-838-7509; Empl.: 20; *Sls. Mgr.:* D. Schmidt

UID SWITCHES INC., Sub. of ITW, 6615 W. Irving Park Rd., Chicago, IL 60634, Tel: 312-282-4040, Telex: 4330130, TWX: 910-221-0275; Empl.: 250; *Sls. Mgr.:* A. Steiner; *Dist. Mgr.:* A. Steiner

ULTRONIX SFERNICE, INC.

ULTRONIX, INC., Sfernice, Inc., P.O. Box 1090, Grand Junction, CO 81502, Tel: 303-242-0810, TWX: 910-929-6965; FSC No.: 05347; Empl.: 260; *Sls. Mgr.:* John Hardesty; *Dist. Mgr.:* Danny Jagirdar ..... **A•1774-1775, 1862, 2046-2055; B•1024-1025, 1762-1765**

Local Sales Offices & Reps

AZ	Scottsdale, Semper Fi Sls., Inc.	602-991-4601
CA	Chatsworth, Raltech	818-700-0933
CA	Del Mar, Chapman & Chapman	619-755-0412
CA	Glendale, Mission Mktg. Grp.	818-247-9110
CA	Santa Clara, I Squared Inc.	408-988-3400
CO	Denver, West Inc.	303-477-8180
FL	St. Petersburg, J.C.J. Assocs.	813-343-2679
IN	Ft. Wayne, Denton Mktg.	219-486-0665
IA	Hiawatha, Ard Sls.	319-393-6392
KS	Parker, S. W. Wollard Co.	913-898-6552
MA	Newton Upper Falls, Anchor Engrg.	617-964-6205
MI	Jackson, T.P.S. & Assocs.	517-783-1722
MN	Minneapolis, Dunlap Consits.	612-544-1070
MO	St. Louis, S. W. Wollard Co.	314-576-1130
NJ	Piscataway, R. P. Luce & Co.	201-752-8750
NM	Albuquerque, F P Sls.	505-345-5553
NY	Chappaqua, Micrel, Inc.	914-238-4961
NY	New Hyde Pk., R. P. Luce & Co.	516-437-4550
NY	Rochester, Fritz Dasson	716-338-1699
OH	Wooster, T.P.S. & Assocs.	216-264-0971
PA	Wynnewood, Metz-Benham Assocs., Inc.	215-896-7300
TX	Hurst, Pro Comp Sls. Co.	817-589-0336
UT	Salt Lake City, West, Inc.	801-466-5739
Can	Rexdale, Ont., Source Elctrns.	416-675-6235

Local Distributors

AZ	Phoenix, Zeus Comps.	602-263-6022
CA	Anaheim, Zeus West	714-632-6880
CA	Chatsworth, Petell Electronics	818-700-8838
CA	San Diego, Neumann Elec.	619-695-3005
CA	San Jose, Zeus Comps.	408-998-5121
CA	Westlake Vl., Distel, Inc.	805-495-9998
FL	Orlando, Aztech Elctrn.	305-291-1681
FL	Oviedo, Zeus Comp.	305-365-3000
FL	Tampa, Impala Elctrns.	813-885-4747
MD	Columbia, Aztech Elctrns.	301-995-6800
MD	Columbia, Zeus Comps.	301-997-1118
MA	Burlington, TLC Elctrns.	617-273-0140
MA	Lexington, Zeus Comps.	617-863-8800
NY	Bohemia, Justin Elec.	516-589-4000
NY	Hauppauge, Jaco, Inc.	516-273-5500
NY	Hauppauge, Sherburn Elctrns.	516-231-4300
NY	Melville, SAI, Inc.	516-293-2710
NY	Port Chester, Zeus Comps.	914-937-7400
NY	Valley Stream, L & S Elec.	516-561-2474
OH	Cincinnati, Eclipse of Ohio	513-661-7733
OH	Cincinnati, G & A Sls.	513-521-8800
OH	Dayton, Televox, Inc.	513-454-1225
TX	Dallas, EPIC	214-503-1414
TX	Richardson, Jaco, Inc.	214-235-9575
TX	Richardson, The Altair Co.	214-231-5166
TX	Richardson, Zeus Comps.	214-783-7010

ULVAC NORTH AMERICA, P.O. Box 799, 105 York Street, Kennebunk, ME 04043, Tel: 207-985-2973, Telex: 46-9045; Empl.: 50; *Sls. Mgr.:* Susan Zilaro; *Dist. Mgr.:* Harold Baum

ULVECO, INC., 323 Vintage Park Drive, Foster City, CA 94404, Tel: 415-574-1100, TWX: 856446 ULVECO; *Sls. Mgr.:* Michael Szulborski ..... **A•2451-2453**

Local Sales Offices & Reps

CA	Foster City, Ulveco, Inc.	415-574-1100
CO	Denver, Megatronix	303-799-3700
MD	Lutherville, DGR	301-583-1360
MA	Norwood, TMA	617-551-0500
PA	King of Prussia, Linear Sls.	215-783-5350
UT	Salt Lake City, Chuck Fields Assocs.	801-531-6177
Can	Toronto, Stetron Intl.	416-475-6202

USD

UNDERWRITERS SAFETY DEVICE, Amphenol Products, 7300 W. Wilson Ave., Chicago, IL 60656, Tel: 312-867-4600, Telex: 910-221-3474, FAX: 312-867-2211; Empl.: 200; *Sls. Mgr.:* R. Kary; *Dist. Mgr.:* John Thielen ..... **C•1546-1549**

Local Sales Offices & Reps

AL	Decatur, El Tech, Inc.	205-353-7899
AZ	Phoenix, O'Donnell Assocs. SW	602-944-9542
AR	Hot Springs, MYA, Inc.	501-262-1365
CA	Torrance, O'Donnell Assocs., Inc.	213-539-9664
CO	Englewood, Harthun Assocs., Inc.	303-792-5050
FL	Stuart, Cahill Assocs., Inc.	305-288-3113
IL	Schaumburg, Tech Tron Sls., Inc.	312-843-7530
IN	Carmel, Fred A. Dorsey & Assocs., Inc.	317-844-4842
IA	Cedar Rapids, R. F. Welch Co., Inc.	319-377-1575
KS	Wichita, Thunderbird Tech. Sls., Inc.	316-684-3941
MA	Chelmsford, Marty Flynn Assocs.	617-649-3088
MI	Oak Park, A. Blumenberg Assocs., Inc.	313-968-3230
MN	St. Paul, Arkco Sls., Inc.	612-777-7454
NE	Lincoln, MYA-Midwest, Inc.	402-475-5298
NJ	Florham Park, Varrelman-Gorman Co.	201-822-9616
NY	Rochester, BKT Assocs., Inc.	716-586-5814
NC	Winston-Salem, L. G. White Southern, Inc.	919-725-3612
OH	Rocky River, Hiltebrant Indl. Sls.	216-333-5600
PA	Edgemont, White/Whiddett Co.	215-353-6343
TX	Lewisville, Texoma Tech. Sls., Inc.	214-434-2770
VA	Blacksburg, Candor Co.	703-953-2197
WA	Bothell, Temco Northwest	206-821-5434
WI	Franklin, WD Engrg. Sls., Ltd.	414-529-3772
Can	Mississauga, Ont., Andy Baumen Assocs., Ltd.	416-828-2600

Local Distributors

AZ	Tempe, Control Design	602-829-7981
CA	Anaheim, Control Design	714-821-1516
CA	Hayward, Electro Comps.	415-783-5800
CA	San Carlos, Control Design	415-592-4806
CA	South San Francisco, Steven Engrg.	415-588-9200
FL	Ft. Lauderdale, Bel Thermal Units, Inc.	305-566-0043
GA	Norcross, A-A Electric	404-449-8670
IL	Genoa, Control Design Supp.	815-784-6515
IL	Wheeling, Connector Concepts	312-541-4020
IN	Indianapolis, Control Design	317-788-4559
IA	Marion, Control Design	319-373-2923
MA	Boston, Controller Svc. & Sls.	617-269-1300
MN	Minneapolis, Control Design	612-721-1628
MO	St. Louis, Control Design	314-426-3150
NH	Manchester, Controller Svc.	603-623-7255
NY	Rochester, R. Baker Elctrns.	716-586-9164
NC	Charlotte, I/O Electric Supp. Corp.	919-884-4474
OH	Cincinnati, Richards Elec. Supp.	513-242-8800
OH	Wickliffe, Gateway Megatech	216-944-7039
OK	Tulsa, Altair	918-252-5781
OR	Portland, Tek Elec. Control, Inc.	503-246-5451
PA	Philadelphia, Royal Elec. Supp.	215-221-1200
RI	Providence, Controller Svc. & Sls.	401-781-7100
TN	Nashville, Steinhouse Supp. Co.	615-254-1613
TX	Austin, Altair	512-837-4970
TX	Dallas, Control Design	214-358-1441
WA	Redmond, Fuses Unltd.	206-881-2442
WI	Brookfield, I/O Electric Supp.	414-786-8487
Can	Toronto, Ont., GLE, Inc.	416-252-5301

UNGAR, Div. Eldon Inds., Inc., 100 W. Manville St., Compton, CA 90224-6005, Tel: 213-774-5950, Telex: 4720750 Eldon; FSC No.: 78976; Empl.: 140; *Sls. Mgr.:* Richard Shivers

UNHOLTZ-DICKIE CORP., 6 Brookside Dr., Wallingford, CT 06492, Tel: 203-265-3929, Telex: 643802; Empl.: 49

UNIBOX, Div. of Amerex, P.O. Box 2815, Riverside, CA 92516, Tel: 714-686-1400; *Sls. Mgr.:* Roger Orton

UNICO, 3725 Nicholson Rd., Franksville, WI 53126-0505, Tel: 414-886-5678, TWX: 910-271-2385, FAX: 414-886-8396; Empl.: 250; *Sls. Mgr.:* Joseph Glover

UNICORP, 291 Cleveland St., Orange, NJ 07050, Tel: 201-674-1700; FSC No.: 04729; Empl.: 82; *Sls. Mgr.:* B. Levine ..... **C•1703**

Local Sales Offices & Reps

OH	Cleveland, C. A. Robinson Co., Inc.	216-473-6044
OH	Dayton, C. A. Robinson Co., Inc.	513-278-7969

UNILATOR TECHNICAL CERAMICS INC., 6290 Sunset Blvd., Ste. 1126, Los Angeles, CA 90028-8770, Tel: 213-463-5618, TWX: 910 321-2903; *Sls. Mgr.:* Norman R. Sutherland

UNIMAX SWITCH CORP., See C & K/Unimax, Inc.

UNIMEASURE, INC., 7055 N.W. Grandview Dr., Corvallis, OR 97330, Tel: 503-757-3158

UNION CARBIDE CORPORATION, Industrial Chemicals Div., Crystal Products Dept., 9320 Chesapeake Dr., Ste. 104, San Diego, CA 92123, Tel: 619-279-4500, Telex: 695-465; Empl.: 125; *Sls. Mgr.:* J. J. Beeman

UNIQUE OPTICAL CO., Diversified Optical Corp., P.O. Box 585, Farmingdale, NY 11735, Tel: 516-420-0288, TWX: 510-224-6598; Empl.: 28; *Sls. Mgr.:* James A. Greene

UNIT DESIGN, 1140 E. Valencia Dr., Fullerton, CA 92631, Tel: 714-526-0800; Empl.: 6

UNITED CHEMI-CON

UNITED CHEMI-CON INC., 9801 W. Higgins Rd., Rosemont, IL 60018, Tel: 312-696-2000, Telex: 28-3557, TWX: 910-253-2964; Empl.: 50; *Sls. Mgr.:* T. Matsubara; *Dist. Mgr.:* Peter Ishu ..... **A•1190-1191**

Local Sales Offices & Reps

NJ	Bellmawr, TAI Corp.	609-933-2600
AL	Huntsville, R. D. Whitesell	205-883-5110
CA	Mountain View, Straube Assocs.	415-969-6060
CA	Santa Ana, Jones & McGeoy Sls.	714-547-6466
CO	Westminster, Straube Assocs. Mountain States, Inc.	303-426-0890
FL	Altamonte Springs, Semtronic Assocs., Inc.	305-831-8233
FL	Clearwater, Semtronic Assocs., Inc.	813-461-4675
FL	Ft. Lauderdale, Semtronic Assocs., Inc.	305-731-2484
GA	Norcross, Twentieth Century	404-446-1999
IL	Chicago, M. Gottlieb Assocs.	312-775-1151
IL	Elk Grove Village, John G. Twist Co.	312-593-0200
IN	Fort Wayne, R. O. Whitesell	219-432-5591
IN	Indianapolis, M. Gottlieb Assocs.	314-846-5788
IN	Indianapolis, R. O. Whitesell	317-359-9283
IN	Kokomo, M. Gottlieb Assocs.	317-455-0444
IN	Kokomo, R. O. Whitesell	317-457-9127
KS	Shawnee Mission, Lowell Kangas & Assocs., Inc.	913-631-3515
KY	Peewee Valley, R. O. Whitesell	502-241-1441
MD	Columbia, Pro-Rep, Inc.	301-653-3600
MA	Chelmsford, John E. Boeing Co., Inc.	617-256-5800
MI	Grand Rapids, R. O. Whitesell	616-942-5420
MI	Southfield, M. Gottlieb Assocs.	313-569-5501
MI	Southfield, R. O. Whitesell	313-559-5454
MI	St. Joseph, R. O. Whitesell	616-983-7337
MN	Eden Prairie, Twist Co.	612-941-2040
NY	Jamaica, S-J Assocs., Inc.	212-291-3232
NY	New York, Caravan Sls., Corp.	212-734-5800
NY	Pittsford, Franklin Sls. Corp.	716-248-8251
NC	Greensboro, Caravan Sls.	919-294-1500
NC	Raleigh, Tingen Tech Sls., Inc.	919-878-4440
OH	Cincinnati, R. O. Whitesell	513-521-2290
OH	Cleveland, R. O. Whitesell	216-447-9020
OH	Columbus, R. O. Whitesell	614-888-9396
OH	Dayton, R. O. Whitesell	513-298-9546
OK	Tulsa, Ammon & Rizos	918-663-8788
OR	Portland, Earl & Brown	503-245-2283
PA	Pittsburgh, R. O. Whitesell	412-963-6161
TN	Knoxville, M. Gottlieb Assocs.	615-966-1314
TN	Knoxville, R. O. Whitesell	615-694-9476
TX	Austin, Ammon & Rizos	512-454-5131
TX	Richardson, Ammon & Rizos	214-644-5591
UT	Salt Lake City, Straube Assocs. Mountain States, Inc.	801-263-2640
WA	Redmond, Earl & Brown	206-885-5064
WI	Brookfield, Twist Co.	414-782-2670
Can	Toronto, Renmark Elctrns.	416-494-5445

Local Distributors

AZ	Tempe, Bell Inds.	602-966-7800
AZ	Tempe, Elctrn. Supp.	602-258-4769
AZ	Tempe, Time Elctrns.	602-967-2000
CA	Agoura Hills, Time Elctrns.	818-707-2890
CA	Anaheim, Time Elctrns.	714-937-0911
CA	Chatsworth, Passive Comps.	818-341-1745
CA	Chatsworth, Time Elctrns.	818-998-7200
CA	Riverside, Elctrn. Supp.	714-787-9220
CA	San Diego, Elctrn. Supp.	619-693-8222
CA	San Diego, Time Elctrns.	619-586-1331
CA	San Jose, Capacitors Unltd.	408-946-7676
CA	San Jose, Passive Technlg. Sls.	408-435-5566
CA	Sunnyvale, S.A.I.	408-720-0760
CA	Sunnyvale, Time Elctrns.	408-734-9888
CA	Torrance, Time Elctrns.	213-320-0880
CA	Tustin, Projections Unltd.	714-544-2700
CO	Englewood, Nep Elctrns.	303-799-9898
CO	Englewood, Time Elctrns.	303-799-8851
CO	Wheatridge, Bell Inds.	303-424-1985
CT	Cheshire, Time Elctrns.	203-271-3200
FL	Altamonte SPrings, S.A.I.	305-831-6201
FL	Ft. Lauderdale, Hammond Elctrns.	305-973-7103
FL	Ft. Lauderdale, Reptron Elctrns.	305-735-1112
FL	Ft. Lauderdale, Time Elctrns.	305-974-4800
FL	Orlando, Hammond Elctrns.	305-849-6060
FL	Orlando, Time Elctrns.	305-841-6565
FL	Tampa, Reptron Elctrns.	813-855-4656
GA	Atlanta, Time Elctrns.	404-984-0126
GA	Norcross, Hammond Elctrns.	404-449-1996
GA	Norcross, Reptron Elctrns.	404-446-1300
GA	Norcross, Time Elctrns.	404-448-4448
IL	Chicago, Nep Elctrns.	312-625-8400
IL	Elk Grove Vl., RM Elctrns.	312-869-2080
IL	Northbrook, Classic Comps.	312-272-9650
IL	Schaumburg, Reptron Elctrns.	312-882-1700
IL	Wood Dale, Time Elctrns.	312-350-0610
IN	Indianapolis, RM Elctrns.	317-291-7110
MD	Columbia, Time Elctrns.	301-964-3090
MA	Burlington, TLC Elctrns.	617-273-0140
MA	Hopkinton, Interface Elctrns.	617-435-6858
MA	Peabody, Time Elctrns.	617-532-6200
MA	Wilmington, J.V. Elctrns.	617-273-4300
MA	Woburn, S.A.I.	617-938-5460
MI	Grand Rapids, RM Elctrns.	616-531-9300
MI	Livonia, Reptron Elctrns.	313-525-2700
MN	Bloomington, Time Elctrns.	612-944-9192
MN	Hopkins, Joel Co,	612-935-6202
MN	Minnetonka, Reptron Elctrns.	612-938-0000
MO	St. Louis, Time Elctrns.	314-391-6444
NJ	Clifton, J-Mar Elctrns.	201-772-6400
NM	Albuquerque, Bell Inds.	505-292-2700
NY	E. Syracuse, Time Elctrns.	315-432-0355
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NY	Hauppauge, Time Elctrns.	516-273-0100
NY	Melville, S.A.I.	516-293-2710
NY	Rochester, Masline Elctrns.	716-546-5373
NY	Ronkonkoma, Prime Comps.	516-737-1730
NC	Charlotte, Time Elctrns.	704-522-7600
NC	Greensboro, Hammond Elctrns.	919-275-6391
NC	Raleigh, Service Plus	919-850-9550
OH	Dublin, Time Elctrns.	614-761-1100
OH	Worthington, Reptron	614-436-6675
OR	Lake Oswego, Bell Inds.	503-241-4115
OR	Portland, Time Elctrns.	503-684-3780
PA	Exton, VSH	215-363-2250
PA	King of Prussia, Time Elctrns.	215-337-0900
PA	York, E.C.I.	717-846-5334
SC	Greensville, Hammond Elctrns.	803-233-4121
TX	Austin, Kent Elctrns.	512-834-1900
TX	Carrollton, Time Elctrns.	214-241-7441
TX	Dallas, RM Elctrns.	214-869-2080
TX	Houston, Kent Elctrns.	713-780-7770
TX	Houston, Time Elctrns.	713-530-0800
TX	Richardson, Jaco Elctrns.	214-235-9575
TX	Richardson, Kent Elctrns.	214-669-2600
UT	Salt Lake City, Standard Supp. Co.	801-486-3371
UT	W. Valley, Time Elctrns.	801-973-8181
VT	Rutland, S.A.I.	802-775-7126
WA	Bellevue, Bell Inds.	206-747-1515
WA	Redmond, Time Elctrns.	206-882-1600
WI	New Berlin, Classic Comps.	414-786-5300
WI	New Berlin, Nep Elctrns.	414-785-9100

UNITED DETECTOR TECHNOLOGY, 12525 Chadron Ave., Hawthorne, CA 90250, Tel: 213-978-0516, Telex: 18-2458; FSC No.: 50486; Empl.: 150; *Sls. Mgr.:* Alfred Seck

UNITED ELECTRIC CONTROLS, 85 School St., Watertown, MA 02172, Tel: 617-WA6-1000, Telex: 92 2445, FAX: 617-926-2568; Empl.: 420; *Sls. Mgr.:* Dave Williams; *Dist. Mgr.:* Dave Williams

UNITED FOAM PLASTICS, 172 E. Main St., Georgetown, MA 01833, Tel: 617-352-2200, TWX: 710-347-0315; FSC No.: 55900; Empl.: 163; *Sls. Mgr.:* Richard L. Corrigan

UNITED SOLDER WRAP INC., 2608 Electronic La., Ste 509, Dallas, TX 75220, Tel: 214-350-4978, 800-527-5144; Empl.: 80

UNITED STATES CRYSTAL CORP., 3605 McCart St., Fort Worth, TX 76110, Tel: 817-921-3014, TWX: 910-893-4084; FSC No.: 52847; Empl.: 75; *Sls. Mgr.:* Jan Henderson

UNITED STATES SOFTWARE CORP., 14215 N.W. Science Pk. Dr., Portland, OR 97229, Tel: 503-641-8446, TWX: 4993875 U S SOFTWARE; *Sls. Mgr.:* Donald L. Dunstan

UNITED SUPERTEK, INC., 118 Charcot Ave., San Jose, CA 95131-1101, Tel: 408-922-0730, FAX: 408-922-0534; Empl.: 40; *Sls. Mgr.:* Ms. Jo-Ann Ricci

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UNITED TRANSFORMER CORPORATION, Sub. of OPT Industries, 150 Varick St., New York, NY 10013, Tel: 212-255-3500, TWX: 710-581-2722; Empl.: 200; *Sls. Mgr.:* A. Profeta ..... **A•2448-2449**

Local Sales Offices & Reps

AL	Huntsville, Elctrn. Mktg.	205-536-3044
AZ	Phoenix, Westrep	602-997-8899
CA	Anaheim, Westrep	714-527-2822
CA	San Diego, Westrep	619-566-6580
CA	Santa Clara, Westrep	408-988-8833
CO	Westminster, Straube Assocs.	303-426-0890
FL	Orlando, OPT	305-658-6020
GA	Atlanta, Elctrn. Mktg.	404-448-1215
ID	Boise, N. R. Schultz	208-377-8686
KS	Lenexa, Midtec Assocs.	913-541-0505
MD	Columbia, L. D. Lowery	301-964-9110
MD	Columbia, L. D. Lowery	301-381-0225
MN	Eden Prarie, The Twist Co.	612-941-2040
NM	Albuquerque, S.W. Sls.	505-883-1388
NY	E. Rochester, Lupton Assocs.	716-381-4800
NY	Melville, Comtronic Assocs.	516-249-0505
NC	Raleigh, Elctrn. Mktg.	919-847-8800
OR	Beaverton, N. R. Schultz	503-643-1644
PA	Broomall, L. D. Lowery	215-356-5300
SC	Greenville, Elctrn. Mktg.	803-233-4637
TX	El Paso, S.W. Sls.	915-594-8259
WA	Bellevue, N. R. Schultz	206-494-0300
WA	Bellevue, N. R. Schultz Co.	206-454-0300
Can	Toronto, Ont., Renmark Assocs.	416-494-5445

Local Distributors

AL	Huntsville, Arrow Elctrns.	205-837-6955
AL	Huntsville, Hall-Mark Elctrns.	205-837-8700
AZ	Phoenix, Hall-Mark Elctrns.	602-437-1200
AZ	Tempe, Arrow	602-968-4800
CA	Canoga Pk., Hall-Mark Elctrns.	818-716-3300
CA	Garden Grove, Bell Inds.	714-220-0681
CA	Gardena, Bell Inds.	213-515-1800
CA	Los Angeles, Arrow Elctrns.	818-701-7500
CA	Sacramento, Hall-Mark Elctrns.	916-722-8600
CA	San Diego, Arrow	619-565-4800
CA	San Diego, Hall-Mark	619-268-1201
CA	San Francisco, Arrow Elctrns.	408-745-6600
CA	San Jose, Hall-Mark	408-432-0900
CA	Sunnyvale, Bell Inds.	408-734-8570
CA	Thousand Oaks, Bell Inds.	818-340-1940
CA	Torrance, Hall-Mark Elctrns.	213-217-8400
CA	Tustin, Arrow Elctrns.	714-838-5422
CA	Tustin, Hall-Mark Elctrns.	714-669-4100
CO	Denver, Arrow Elctrns.	303-696-1111
CO	Denver, Hall-Mark Elctrns.	303-790-1662
CT	Wallingford, Arrow	203-265-7741
CT	Wallirigford, Hall-Mark Elctrns.	203-269-0100
FL	Ft. Lauderdale, Arrow Elctrns.	305-429-8200
FL	Ft. Lauderdale, Hall-Mark Elctrns.	305-971-9280
FL	Melbourne, Arrow Elctrns.	305-725-1480
FL	Orlando, Hall-Mark Elctrns.	305-855-4020
FL	Tampa, Hall-Mark Elctrns.	813-530-4543
GA	Atlanta, Arrow Elctrns.	404-449-8252
GA	Atlanta, Hall-Mark Elctrns.	404-447-8000
HI	Honolulu, Honolulu Elctrns.	809-949-5564
IL	Chicago, Arrow	312-397-3440
IL	Chicago, Hall-Mark Elctrns.	312-860-3800
IN	Indianapolis, Arrow	317-243-9353
IN	Indianapolis, Hall-Mark Elctrns.	317-872-8875
IA	Cedar Rapids, Arrow Elctrns.	319-395-7230
KS	Kansas City, Arrow Elctrns.	913-541-9542
KS	Kansas City, Hall-Mark Elctrns.	913-888-4747
MD	Baltimore, Arrow Elctrns.	301-995-0003
MD	Baltimore, Hall-Mark	301-988-9800
MD	Gaithersburg, Pioneer/Tech Group	301-921-0660
MA	Boston, Arrow Elctrns.	617-933-8130
MA	Boston, Hall-Mark	617-935-9777
MI	Detroit, Arrow Elctrns.	313-971-8220
MI	Grand Rapids, Arrow Elctrns.	616-243-0912
MN	Minneapolis, Arrow Elctrns.	612-830-1800
MN	Minneapolis, Hall-Mark Elctrns.	612-941-2600
MO	St. Louis, Arrow Elctrns.	314-567-6888
MO	St. Louis, Hall-Mark Elctrns.	314-291-5350
NH	Manchester, Arrow Elctrns.	603-668-6968
NJ	Fairfield, Arrow	201-575-5300
NJ	Fairfield, Hall-Mark	201-575-4415
NJ	Marlton, Arrow Elctrns.	609-596-8000
NM	Albuquerque, Arrow Elctrns.	505-243-4566
NY	Hauppauge, Arrow Elctrns.	516-231-1000
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NY	Lynbrook, Peerless Radio	516-593-2121
NY	Rochester, Arrow Elctrns.	716-427-0300
NY	Ronkonkoma, Hall-Mark Elctrns.	516-737-0600
NC	Raleigh, Arrow	919-876-3132
NC	Raleigh, Hall-Mark	919-872-0712
NC	Winston-Salem, Arrow Elctrns.	919-725-8711
OH	Cleveland, Arrow Elctrns.	216-248-3990
OH	Cleveland, Hall-Mark Elctrns.	216-349-4632
OH	Columbus, Arrow Elctrns.	614-885-8362
OH	Columbus, Hall-Mark Elctrns.	614-888-3313
OH	Dayton, Arrow	513-435-5563
OH	Dayton, Pioneer	513-236-9900
OH	Westerville, Hall-Mark	614-891-4555
OK	Tulsa, Arrow Elctrns.	918-665-7700
OK	Tulsa, Hall-Mark Elctrns.	800-231-0253
OR	Portland, Arrow	503-684-1690
PA	Philadelphia, Almo Elctrns.	215-698-4000
PA	Philadelphia, Arrow Elctrns.	215-928-1800
PA	Philadelphia, Hall-Mark Elctrns.	215-355-7300
PA	Pittsburgh, Arrow Elctrns.	412-856-7000
TX	Austin, Arrow	512-835-4180
TX	Austin, Hall-Mark	512-258-8848
TX	Dallas, Arrow Elctrns.	214-380-6464
TX	Dallas, Hall-Mark	214-553-4300
TX	Houston, Arrow Elctrns.	713-530-4700
TX	Houston, Hall-Mark Elctrns.	713-781-6100
UT	Salt Lake City, Arrow Elctrns.	801-972-0404
UT	Salt Lake City, Hall-Mark Elctrns.	801-972-1008
WA	Seattle, Arrow	206-643-4800
WI	Milwaukee, Arrow Elctrns.	414-792-0150
WI	Milwaukee, Hall-Mark Elctrns.	414-797-7844
WI	Milwaukee, Marsh Elctrns.	414-475-6000
PR	Hato Rey, Arrow Elctrns.	809-764-4384
Can	Montreal, Que., Arrow Elctrns.	514-735-5511
Can	Ottawa, Ont., Arrow Elctrns.	613-226-6903
Can	Quebec City, Que., Arrow Elctrns.	418-687-4231
Can	Toronto, Ont., Arrow Elctrns.	416-661-0220

UNITED WIRE & CABLE CORP., 425 Shrewsbury St., Worcester, MA 01604, Tel: 617-757-3872, TWX: 710-340-0635; FSC No.: 51348; Empl.: 10; *Sls. Mgr.:* T. P. Andrews

UNIT INDUSTRIES, 1140 E. Valencia Dr., Fullerton, CA 92631, Tel: 714-871-4161; Empl.: 40; *Sls. Mgr.:* R. Lisman

UNITRACK DIV., Calabro Inds., Inc., Goshen Corp. Pk., P.O. Box 1927, 1372 Enterprise Dr., West Chester, PA 19380, Tel: 215-692-0800, TWX: 510-663-0000

UNITRODE CORP., 5 Forbes Rd., Lexington, MA 02173, Tel: 617-861-6540, Telex: 95-1064, TWX: 710-326-6509; Empl.: 2,000; *Sls. Mgr.:* Leslie Wallace; *Dist. Mgr.:* John Flannery

UNITRODE CORP., Capacitor Div., 11494 Sorrento Valley Road, San Diego, CA 92121, Tel: 619-453-8020

Unitron

UNITRON INC., 10925 Miller Rd., Dept. EE, Dallas, TX 75238, Tel: 214-340-8600, Telex: 882511; FSC No.: 6130; Empl.: 69; *Sls. Mgr.:* R. L. Beutel ..... **D•2104-2106**

Local Sales Offices & Reps

CA	Manhattan Bch., Unitron (Jim Houghten)	213-379-7901
CA	Sunland, Unitron (Jim Crevier)	818-352-7348
RI	Portsmouth, Unitron(Chuck DiTucci)	401-846-1397

UNITRONIX CORP., 50 County Line Rd., Somerville, NJ 08876, Tel: 201-231-9400, Telex: 833184; Empl.: 35; *Sls. Mgr.:* Frank Zimmer; *Dist. Mgr.:* Joseph Murawski

UNIVERSAL AD-YU/D-F CORP., 2517 E. Norwich St., Milwaukee, WI 53207, Tel: 414-482-4100; FSC No.: 90101; Empl.: 10

UNIVERSAL DATA SYSTEMS, INC., Motorola Information Systems Group, 5000 Bradford Dr., Huntsville, AL 35805-1953, Tel: 205-721-8000, Telex: 752602 UDS HTV; Empl.: 800; *Sls. Mgr.:* Ray Kelly; *Dist. Mgr.:* Ron Martin

UNIVERSAL INSTRS. CORP., MECHANIZED ELCTRN. ASSEMBLY (MEA) DIV., See Mechanized Elctrn. Assembly Div., Universa

UNIVERSAL VOLTRONICS, 27 Radio Circle Dr., Mt. Kisco, NY 10549, Tel: 914-241-1300, TWX: 710-571-2142; Empl.: 135; *Sls. Mgr.:* Bill Herndon ..... **D•1983**

Local Sales Offices & Reps

CA	Santa Clara, Sourcetronics	408-998-8801
MA	Whitinsville, Power Factor & Assocs.	617-234-6415
MN	Minneapolis, R.J. Sls.	612-866-3661
PA	Audubon, Holmes Assocs.	215-666-0636
VA	Fairfax, Schibley Assocs.	703-591-3008

UPSystems INC.

UPSYSTEMS, INC., 7801 E. Compton Blvd., Paramount, CA 90723, Tel: 213-634-0621, TWX: 910-346-7814; FSC No.: 3698; *Sls. Mgr.:* Dick Williams ..... **D•2107**

URBAN ELCTRNS., P. O. Box 456, Dover, MA 02030, Tel: 617-329-4068, TWX: 710-325-1579; Empl.: 50; *Sls. Mgr.:* G. Urban

U S CAPACITOR CORP., See U S Microtek Components

U.S. COMPONENTS, INC., Unitech PLC., 35 Carlough Rd., Bohemia, NY 11716, Tel: 516-589-8080, TWX: 510-228-7886; *Sls. Mgr.:* J. Prideaux; *Dist. Mgr.:* J. Prideaux

US DIGITAL

U. S. DIGITAL CORP., 12371 Kensington Rd., Los Alamitos, CA 90720, Tel: 213-594-0094 ..... **B•1828**

Local Sales Offices & Reps

KS		316-264-6910

Local Distributors

NY	Clarks Mills, KLM Garner	315-853-6126

USECO DIV., Litton Inds, 13536 Saticoy St, Van Nuys, CA 91409, Tel: 818-786-9388, TWX: 910-495-1700; Empl.: 100

U.S. INSTR. RENTALS, 2988 Campus Dr., San Mateo, CA 94403, Tel: 800-824-2873, Telex: 349301 USIR SMT; Empl.: 500

U. S. LASER CORP., 825 Windham Court North, Wyckoff, NJ 07481, Tel: 201-848-9200; Empl.: 25; *Sls. Mgr.:* John Tobin

U S MICROTEK COMPONENTS CORP., Sub. of Unitrode Corp., 11144 Penrose St., Sun Valley, CA 91352, Tel: 818-767-6770, TWX: 910-498-4998; FSC No.: 59942; Empl.: 210; *Sls. Mgr.:* Donald F. Hosmer ..... **A•1192**

Local Sales Offices & Reps

AZ	Tempe, Gassner & Clark Co.	602-968-9037
CA	Cupertino, F & F Assocs.	408-446-2349
CA	Granada Hills, Clemick-Neenan & Assocs.	818-895-2431
CA	San Diego, Clemick-Neenan & Assocs.	619-268-8540
CO	Aurora, Key Specialties	303-690-6106
FL	Margate, EPM Corp.	305-977-0331
FL	Orlando, EPM Corp.	305-425-6149
IL	Elgin, Gassner & Clark	312-695-9540
IA	Marion, MSB Assocs., Inc.	319-377-6261
KS	Shawnee Mission, MSB Assocs., Inc.	913-532-2131
MD	Ellicott City, Thiem Assocs.	301-465-4776
MA	Randolph, Hatch Assocs.	617-963-3306
MO	St. Charles, MSB Assocs., Inc.	314-946-5577
NY	Albany, Reagan/Compar	518-489-7408
NY	Commack, Kaelber & Mack	516-499-2924
OH	Cleveland, Baehr, Greenleaf & Assocs.	216-221-9030
OH	Columbus, Baehr, Greenleaf & Assocs.	614-486-4046
OH	Dayton, Baehr, Greenleaf & Assocs.	513-439-0724
PA	Broomall, Sapinosa Assocs.	215-353-7267
TX	Austin, OM Assocs., Inc.	512-452-1838
TX	Houston, OM Sales Co., Inc.	713-789-4426
TX	Richardson, OM Assocs., Inc.	214-690-6746
WA	Redmond, Gentech	206-881-6456
Can	Oakville, Ont., Haltronics	416-844-2121

U.S. POWER CONVERTING COMPANY, Relco, 21517 Ocean, Torrance, CA 9053, Tel: 213-316-9984; Empl.: 30; *Sls. Mgr.:* Leonard Snow; *Dist. Mgr.:* Leonard Snow ..... **C•1081; D•1930-1931**

Local Sales Offices & Reps

CA	Torrance, U.S. Power Converting Co.	213-316-9984
KS	Wichita, U.S. Power Converting Co.	316-264-6910
Can	New Dundee, Ont., Ritz Elctrns.	519-696-2616

Local Distributors

CA	Torrance, U.S. Power Converting Co.	213-316-9984
KS	Wichita, U.S. Power Converting Co.	316-682-5768
Can	New Dundee, Ont., Ritz Elctrns.	519-696-2616

U.S. TERMINALS, 7502 Camargo Rd., Cincinnati, OH 45243, Tel: 513-561-8145, TWX: 810-461-2290; FSC No.: 12615; *Sls. Mgr.:* G.L. Stepp

U.S. TOYO FAN CORP., 4915 Walnut Grove Ave., San Gabriel, CA 91776, Tel: 818-287-5297, TWX: 910-589-1540; Empl.: 20; *Sls. Mgr.:* Bruce Rockwell; *Dist. Mgr.:* Bruce Rockwell ..... **C•1694-1695**

Local Sales Offices & Reps

AL	Huntsville, Par Mktg.	205-859-5702
AZ	Tempe, Delta Elctrn. Sls.	602-252-4222
CA	Oceanside, Noo Rep Tech Sls.	619-941-0558
CA	San Gabriel, U.S. Toyo Fan Corp.	818-287-5297
CA	Santa Clara, U.S. Toyo Fan Corp.	408-984-2618
CO	Lakewood, Christee-Meade	803-232-0287
FL	Goldenrod, Sunland Assocs.	305-365-9533
GA	Alpharetta, Par Mktg.	404-442-8858
IL	Elk Grove, Martec Assocs.	312-956-8090
KS	Lenexa, Midtec Assocs.	913-541-0505
MA	Needham, Component Technlg.	617-449-8490
MI	Farmington Hills, W. R. Hummon	313-474-0661
MN	Osseo, Gaffney Sls. Co.	612-425-5484
MO	St. Louis, Midtec Assocs.	314-275-8666
NJ	Madison, Livera-Polk Assocs.	201-377-3220
NY	Cooperstown, Fitzelle Assocs.	607-547-9333
NY	Glen Head, Livera-Polk Assocs.	516-759-9300
OH	Richfield, Geotronix	216-659-6100
OH	Trotwood, Geotronix	513-252-6700
OR	Beaverton, B & P Sls.	503-641-3486
PA	Telford, Dalbrook Corp.	215-723-3300
TX	Houston, Zonk & Assocs.	713-895-9131
TX	Richardson, Zonk Assocs.	214-238-7651
WA	Bellevue, B & P Sls.	206-454-6571
PR	Santruce, SISCO	809-726-3137
Can	Islington, Ont., Pipe-Thompson Ltd.	416-236-2355

Local Distributors

AZ	Phoenix, Aero-Space Southwest	602-269-5655
CA	Anaheim, Pacesetter Elctrns.	714-777-4711
CA	Buena Park, Cypress Elctrns.	714-521-5230
CA	Fremont, Terminal Sls. Corp.	415-656-7722
CA	Santa Clara, Cypress Elctrns.	408-980-2500
CA	Tustin, Added Value Elctrns. Distr.	714-259-8258
CO	Arvada, Denver Beta Wintronics	303-431-7161
FL	Largo, Lo-Dan Elctrns.	813-586-2851
FL	Longwood, Intertec Comps.	305-834-7777
IL	Elk Grove, Martec Assocs.	312-956-8090
MD	Beltsville, Petricko Sls.	301-937-4960
MA	Haverhill, Cord Elctrns.	617-374-0100
MI	Farmington Hills, Versatron	313-474-0667
NV	Las Vegas, Kiesub Corp.	702-733-3888
NJ	Sicklerville, Index	609-629-3158
NM	Albuquerque, Betatron	505-344-2381
NY	Elmsford, Multimeterics	914-347-3666
NY	Endwell, Pryme-Line Distr.	607-748-5200
OH	Richfield, Alpha Distr. Corp.	216-659-7100
OR	Beaverton, Hansen Elctrns.	503-642-4455
PA	Harrisburg, Cumberland Elctrns.	717-233-5883
TX	Dallas, Cypress Elctrns.	214-869-1435
TX	El Paso, Era Elctrns.	915-592-4126
TX	Richardson, Zec Sls.	214-669-0895
WA	Kent, Shannon, Ltd.	206-763-0545

UTE MICROWAVE, 3500 Sunset Ave., Asbury Park, NJ 07712, Tel: 201-922-1009, Telex: 13-2461; FSC No.: 23261; Empl.: 35

Local Sales Offices & Reps

CA	Goleta, Thorson Co.	805-964-8751
FL	Melbourne, VM2 Mktg.	305-676-3105
GA	Atlanta, BWS Microwave Mktg.	404-446-6576
MA	Wakefield, Nerem	617-245-4426
NJ	Matawan, Reps Five	201-495-2315
NY	Commack, Richman Sls.	516-543-5532
OH	Dayton, Fred Ohmer Assocs.	513-434-1454
TX	Dallas, Airep Elctrns.	214-349-4360
VA	Annandale, Q.T. Elctrn.	703-941-4242
EXP	FL, Boca Raton, Microwave Intl. Corp.	305-391-7475

UTICA TOOL CO., INC., Cameron Rd., P.O. Box 1807, Orangeburg, SC 29115, Tel: 803-534-7010, Telex: 57-3498

UTI INSTRUMENTS CO., 497 S. Hillview Dr., Milpitas, CA 95035, Tel: 408-945-1955, TWX: 910-339-9546; Empl.: 80; *Sls. Mgr.:* George Bunyard

Local Sales Offices & Reps

AZ	Scottsdale, Allen Assocs., Inc.	602-994-1305
AZ	Tempe, Metroline Western	602-829-0376
CA	Brea, Metroline Western	714-996-7290
CA	Campell, US Inc.	408-371-6900
CA	Santa Clara, Comtronics, Inc.	408-773-9800
CO	Boulder, Palmborg Assoc.	303-442-4838
CO	Colorado Springs, C.E.C., Inc.	303-597-8872
GA	Atlanta, Sealey Indl. Resch. & Inst.	404-491-3777
IL	Des Plaines, Byron Ellis Assoc.	312-298-7626
MN	Minneapolis, Byron Ellis Assocs.	612-835-6153
NJ	Morganville, Cook & Weil	201-536-3964
OH	Berea, Byron Ellis	216-826-0559
PA	Harveys Lake, Matrix Scientific Sys.	717-639-2330
TX	Richardson, Yarbrough	214-690-0800
UT	Salt Lake City, C.E.C., Inc.	801-355-8424
Can	Ottawa, Gigatron	613-225-4090

UVP, INC., 5100 Walnut Grove Ave., P.O. Box 1501, San Gabriel, CA 91778, Tel: 818-285-3123, Telex: 371 6381; Empl.: 100; *Sls. Mgr.:* Bill Antwiler

VACO PRODUCTS DIV., Klein Tools, Inc., 7200 McCormick Blvd., Chicago, IL 60645, Tel: 312-564-3300, Telex: 72-4431; Empl.: 250; *Sls. Mgr.:* Fred Grede

VACTRONIC LAB. EQUIP., 65 Brightside Ave., E. Northport, NY 11731, Tel: 516-261-2660; Empl.: 30

VALHALLA SCIENTIFIC

VALHALLA SCIENTIFIC, 9955 Mesa Rim Rd., San Diego, CA 92121, Tel: 619-457-5576, Telex: 181750 VALHALLA SDG; Empl.: 75; *Sls. Mgr.:* Bill Reed ..... **D•1327**

Local Sales Offices & Reps

AL	Huntsville, Currie, Peak & Frazier	205-536-1506
CA	San Jose, Scientific Dvcs.	408-554-0455
CA	Torrance, Cutlass Elctrns.	213-324-7360
FL	Orlando, Currie, Peak & Frazier	305-855-0843
IL	Arlington Hgts., Dytec/Central	312-394-3380
MD	Lanham, Sel-Tronics	301-731-8080
MA	Needham, Addelco	617-444-4754
NY	Syracuse, Labtronics	315-455-7314
NC	Raleigh, Currie, Peak & Frazier	919-787-0808
TX	Richardson, Barnhill Assocs.	214-231-2573

Validyne ENGINEERING CORPORATION

VALIDYNE ENGINEERING CORPORATION, 8626 Wilbur Ave., Northridge, CA 91324, Tel: 818-886-2057, Telex: 65-1303; Empl.: 200 ..... **B•1829; D•1184-1185**

Local Sales Offices & Reps

AL	Huntsville, Physimetrics, Inc.	205-881-8483
AZ	Scottsdale, T C Elctrn. Sls.	602-994-5153
CA	Laguna Hills, Elotek Sys., Ltd.	714-830-4856

CA Pleasanton, SECCO Assocs. 415-484-1030
CO Denver, Winn-Marion, Inc. 303-778-6767
FL Seminole, J & J Instrmn. 813-397-8068
GA Atlanta, Physimetrics 404-955-0155
IL Westchester, Murphy & Dickey Inc. ... 312-344-5660
IN Indianapolis, Temco Inc. 317-331-3007
MI Highland Pk, Marsh Co. 313-869-9200
MN St. Louis Pk, Mark Co. 612-933-3026
MO St. Louis, Cadon Tech. Sls. 314-645-8670
NM Albuquerque, RLS Instrs. 505-293-7931
NY Buffalo, Angus Instrs., Inc. 716-634-0640
NY Rochester, Angus Instrs., Inc. 716-461-2260
NY Schenectady, Angus Instrs., Inc. 518-346-0057
NC Matthews, Zelco Assocs. 704-541-6122
OH Lakewood, Franklyn W. Kirk Co. 216-226-1970
OK Tulsa, Control Sys. Consits., Inc. 918-622-8867
OR Portland, Core II Mktg. 503-641-0877
PA Pittsburgh, Staples Assocs. 412-881-5990
PA Warminster, Advanced Controls Engrg. Corp. 215-674-4777
TN Knoxville, Physimetrics 615-966-7553
TX Austin, Acudata, Inc. 512-478-1018
TX Houston, Acudata, Inc. 713-580-2451
TX Plano, Acudata, Inc. 214-424-3567
UT Salt Lake City, Winn-Marion, Inc. 801-355-6151
WA Redmond, Core II Mktg. 206-885-4344
WA Spokane, Core II Mktg. 509-922-2971
WI Glendale, Stapleman Corp. 414-352-5777
Can Edmonton, Alberta, Dycor Indl. Resch., Ltd. 403-486-0091
Can Oakville, Ont., Cancoppas Ltd. 416-845-4841

VALLEY ELECTROMAGNETICS CORP., P.O. Box 557, Crystal Lake, IL 60014, Tel: 815-459-3080, Telex: 72-2417

VALLEY ELECTROMAGNETICS, P.O. Box 131, Spring Valley, IL 61362, Tel: 815-664-2348; Empl.: 90; *Sls. Mgr.:* A. Petak

VALMARK INDUSTRIES INC., 1376 Borregas Ave., Sunnyvale, CA 94089, Tel: 408-734-4253, FAX: 408-734-0136; Empl.: 60; *Sls. Mgr.:* Roger Coil

VALOR Electronics

VALOR ELECTRONICS, 6275 Nancy Ridge Dr., San Diego, CA 92121, Tel: 619-458-1471, Telex: 653406 VALORSD; FSC No.: 15003; Empl.: 600; *Sls. Mgr.:* Brad Rogers ..... **A•1640-1641; D•1984-1985**

Local Sales Offices & Reps

AL Huntsville, MacKay, Smith & Assocs, Inc 205-539-8000
AZ Scottsdale, American Mktg., Inc. 602-948-2778
CA Irvine, Groh Assocs. 714-837-9871
CA Santa Clara, Gagner-Toomey & Assocs. 408-244-2200
CO Aurora, Electrodyne, Inc 303-695-8903
FL Orlando, MacKay, Smith & aAssocs ... 305-423-4353
GA Atlanta, MacKay, Smith & Assocs, Inc 404-449-7444
IN Ft. Wayne, TX Sls 219-489-4447
MN Minnetonka, JPM/Salespro 612-593-5460
NC Raleigh, MacKay, Smith & Assocs 919-851-5000
TX Austin, Matthews & Assocs 512-346-2969
TX Dallas, Matthews & Assocs. 214-248-7884
UT Salt Lake City, Electrodyne, Inc 801-486-3801

VALPEY-FISHER, 75 South St, Hopkinton, MA 01748, Tel: 617-435-6831, Telex: 94-8332; FSC No.: 5955; Empl.: 120; *Sls. Mgr.:* Donald Elliott

VAMISTOR CORP., 115 Industrial Pk., Sevierville, TN 37862, Tel: 615-453-0001, Telex: 810-570-4931; FSC No.: 56856; Empl.: 49; *Sls. Mgr.:* John Boatman; *Dist. Mgr.:* L. Shular ..... **A•2057**

Local Sales Offices & Reps

NJ Moorestown, Vamistor Corp. 609-234-9185

Local Distributors

CA San Fernando, Petell Elctrns., Inc. 818-365-9841
MD Timonium, Zebra Elctrns., Inc. 301-252-6576
MA Needham, Cronin Elctrns., Inc. 617-449-5000
NY Bohemia, Justin Elctrns. 516-589-4000
NY Hauppauge, Fairmont Elctrns. 516-231-3313
NY Hauppauge, Jaco Elctrns. 800-645-5112
NY Valley Stream, L & S Elctrns., Inc. 516-561-2474

VANGUARD ELCTRNS. CO., 1480 W. 178th St, Gardena, CA 90248, Tel: 213-323-4100, TWX: 910-346-7067; FSC No.: 03550; Empl.: 250; *Sls. Mgr.:* T. A. Crawford; *Dist. Mgr.:* T. A. Crawford

VANGUARD RELAY CORP., 333 Strawberry Field Rd, Warwick, RI 02886, Tel: 401-732-0700; *Sls. Mgr.:* Fred Pestana

VANN INSTRUMENTS, 1046 Vassar N.E., Albuquerque, NM 87106, Tel: 505-265-2498; *Sls. Mgr.:* Michael E. Vann

VARIAN ASSOCS., Indl. Equip. Grp., 611 Hansen Way, Palo Alto, CA 94303, Tel: 415-493-4000, TWX: 910-373-1731; Empl.: 1500

VARIAN ASSOCS., Instr. Grp., 220 Humboldt Ct, Sunnyvale, CA 94089, Tel: 408-734-5370, TWX: 910-339-9331

VARIAN ASSOCIATES, Electron Device Group, 611 Hansen Way, Palo Alto, CA 94303, Tel: 415-493-4000, Telex: 910-373-1731; Empl.: 11,000; *Sls. Mgr.:* J. Driscoll

VARIAN CANADA, INC., Microwave Div., 45 River Drive, Georgetown, ON, Canada L7G2J4, Tel: 416-877-0161, Telex: 069-7502, TWX: 610-492-2641; FSC No.: 02845; Empl.: 350; *Sls. Mgr.:* George C. Plhak

VARITRONIX, See VL Electronics

VARO, INC., Electron Devices Div., 2203 W. Walnut St, Garland, TX 75046, Tel: 214-487-4126, TWX: 910-860-5093; FSC No.: 27777;Multiple; Empl.: 350; *Sls. Mgr.:* Lon Hodge

VARO QUALITY SEMICONDUCTOR, 1000 N. Shiloh Rd., Garland, TX 75040, Tel: 214-487-4300, Telex: 6829276, FAX: 214-487-0406; Empl.: 550; *Sls. Mgr.:* Charlie Merz; *Dist. Mgr.:* Mike Hawkins ..... **A•2158**

Local Sales Offices & Reps

AL Huntsville, Rep, Inc. 205-881-9270
AZ Scottsdale, SMS & Assocs. 602-998-0831
CA Los Angeles, Corcoran Assocs. 213-823-4589
CA Sunnyvale, W. W. Posey Co. 408-746-0771
CO Parker, Technology Mktg. Assocs. 303-841-3435
FL Orlando, OEM Mktg. Corp. 305-299-1000
GA Tucker, Rep, Inc. 404-938-4358
IL Northbrook, D. Dolin Sales Co. 312-498-6770
IN Frankfort, C-S Electronic Sls. 317-659-1874
IA Cedar Rapids, Ard Sls. 319-393-6392
KS Overland Park, Electri-Rep 913-649-2168
MD Lutherville, DG Representatives 301-583-1360
MA Burlington, Bob Dean, Inc. 617-229-6800
MI Farmington, Amtech Reps. 313-474-8300
MN Minneapolis, Electric Comp. Sls. 612-933-2594
MO St. Louis, Electri-Rep 314-878-8209
NY Franklin Square, Cooper-Simon & Co. 516-489-0404
NY Ithaca, Bob Dean, Inc. 607-257-1111
NY Wappingers Falls, Bob Dean, Inc. 914-297-6406
NC Charlotte, Rep, Inc. 704-563-5554
NC Raleigh, Rep, Inc. 919-851-3007
OH Dayton, J. C. Hofstetter Co. 513-296-1010
OH Medina, J. C. Hofstetter Co. 216-241-4880
OK Tulsa, Ammon & Rizos Co. 918-663-8788
PA Feasterville, Knowles Assocs. 215-322-7100
PA Hickory, J. C. Hofstetter Co. 412-356-2305
TN Jefferson City, Rep, Inc. 615-475-4105
TX Austin, Ammon & Rizos Co. 512-454-5131
TX Dallas, Ammon & Rizos Co. 214-644-5591
TX Houston, Ammon & Rizos Co. 713-781-6240
UT Salt Lake City, Technology Mktg. Assocs. 801-483-1009
WI Milwaukee, D. Dolin Sales Co. 414-482-1111
Can Toronto, Ont., Cantronics, Ltd. 416-297-8668

Local Distributors

AL Huntsville, Resistacap 205-883-4270
AZ Tempe, Anthem Elctrns. 602-966-6600
AZ Tempe, Bell Inds. 602-966-7800
CA Chatsworth, Anthem Elctrns. 818-700-1000
CA Garden Grove, Allied Elec. 714-554-0731
CA Garden Grove, Bell Inds. 714-220-0681
CA Gardena, Bell Inds. 213-515-1800
CA Hayward, Allied Elctrns. 415-487-5250
CA Irvine, Anthem Elctrns. 714-768-4444
CA Roseville, Bell Inds. 916-969-3100
CA San Diego, Anthem Elctrns. 619-453-9005
CA San Diego, Bell Inds. 619-268-1277
CA San Jose, Anthem Elctrns. 408-295-4200
CA Sunnyvale, Bell Inds. 408-734-8570
CA Thousand Oaks, Bell Inds. 805-499-6821
CO Denver, Integrated 303-292-6121
CO Wheat Ridge, Bell Inds. 303-424-1985
CT Cheshire, Time Elctrns. 203-271-3200
CT Orange, Milgray Elctrns. 203-795-0711
FL Ft. Lauderdale, Allied Elec. 305-406-0500
FL Ft. Lauderdale, Hammond Elctrns. 305-973-7103
FL Orlando, Hammond Elctrns. 305-849-6060
FL Winterpark, Milgray Elctrns. 305-647-5747
GA Atlanta, Milgray Elctrns. 404-393-9666
IL Bensonville, Milgray Elctrns. 312-350-0490
IL Champaign, Klaus Radio 217-356-1896
IL Chicago, Bell Inds. 312-982-9210
IL Elgin, Allied Elctrns. 312-697-8200
IL Elk Grove Village, Pioneer Std. 312-437-9680
IL LaSalle, Klaus Radio 815-223-7400
IL Palatine, OHM Elctrns. 312-359-5500
IL Peoria, Klaus Radio 309-691-4840
IL Quincy, Klaus Radio 217-223-7560
IN Fort Wayne, Graham Elctrns. 219-423-3422
IN Indianapolis, Graham Elctrns. 317-634-8202
IN Indianapolis, Pioneer 317-849-7300
IA Cedar Rapids, Deeco 319-365-7551
IA Eldridge, Klaus Radio 319-285-8484
KS Overland Park, Milgray Elctrns. 913-236-8800
MD Columbia, Milgray Elctrns. 301-621-6169
MD Marlow Hgts., Allied Elec. 301-423-0161
MA Burlington, Milgray Elctrns. 617-272-6800
MA Peabody, Time Elctrns. 617-532-6200
MA Wilmington, Allied Elec. 617-942-0150
MI Livonia, Pioneer 313-525-1800
MN Minnetonka, Pioneer Std. 612-935-5444
MO St. Louis, Time Elctrns. 314-391-6444
NJ Marlton, Milgray Elctrns. 609-983-5010
NM Albuquerque, Bell Inds. 505-292-2700
NY Buffalo, Summit Distrs. 716-887-2800
NY Farmingdale, Milgray Elctrns. 516-391-3000
NY Pittsford, Milgray Elctrns. 716-385-9330
NY Rochester, Summit Distrs. 716-334-8110
NY Syracuse, Time Elctrns. 315-432-0355
NC Greensboro, Hammond Elctrns. 919-275-6391
OH Cleveland, Milgray Elctrns. 216-447-1520
OH Cleveland, Pioneer Std. 216-587-3600
OH Dayton, Pioneer Std. 513-236-9900
OH Dayton, Stotts Friedman 513-298-5555
OK Tulsa, Altair 918-252-5781
OR Lake Oswego, Bell Inds. 503-241-4115
PA King of Prussia, Time Elec. 215-337-0900
PA Pittsburgh, Pioneer Std. 412-782-2300
SC Greenville, Hammond Elctrns. 803-233-4121
TN Memphis, Bluff City Elctrns. 901-345-9500
TX Austin, Altair Elec. 512-837-4490
TX Austin, Pioneer Elec. 512-835-4000
TX Dallas, Allied Elec. 214-553-4370
TX Dallas, Milgray Elec. 214-248-1603
TX Dallas, Pioneer Std. 214-386-7300
TX Fort Worth, Allied Elctrns. 817-336-5401
TX Houston, Altair Co. 713-462-3029
TX Houston, Pioneer Elec. 713-998-5555
TX Richardson, Altair Co. 214-231-5166
TX San Antonio, Sherman Elctrns. 512-224-1004
UT Salt Lake City, Bell Inds. 801-972-6969
UT Salt Lake City, Standard Supp. 801-486-3371
WA Bellevue, Bell Inds. 206-747-1515
WA Redmond, Anthem Elec. 206-881-0850
WA Seattle, Allied Elctrns. 206-547-2827
WI Milwaukee, Marsh Elctrns. 414-475-6000
WI Waukesha, Bell Inds. 414-547-8879

VARTA BATTERIES, INC., 300 Executive Blvd, Elmsford, NY 10523, Tel: 914-592-2500, Telex: 996-548; *Sls. Mgr.:* Paul Silliman ..... **D•1480**

Local Sales Offices & Reps

AL Athens, EMF 205-233-2947
CA Norwalk, Ed Rivers Assocs. 213-868-1471
CO Denver, Moss Mktg. 303-455-7205
CT Cheshire, Sci. Comps. 203-272-2963
FL Maitland, EIR, Inc. 305-660-9600
KS Shawnee Mission, Microtronics 913-262-1444
MO St. Charles, Livera-Polk 314-946-8500
NJ Madison, Livera-Polk 201-377-3239
NM Albuquerque, Moss Mktg. 505-292-7505
NY Glen Head, Livera-Polk 516-759-9300
NC Lillington, EMF 919-893-3650
OH Cleveland, Del Steffen & Assocs. 216-461-8333
OH Dayton, Del Steffen & Assocs. 513-293-3145
OH Lexington, Del Steffen & Assocs. 419-884-2313
PA Carnegie, Del Steffen & Assocs. 412-276-7366
PA West Chester, TCA Assocs. 215-353-2022
UT Bountiful, Moss Mktg. 801-292-8660
Can Downsview, Ont., BD&D Power 416-663-9711
Can Mississauga, Ont., Nica Power Battery Corp. 416-828-7100

Local Distributors

CA San Francisco, Varta Batteries 415-954-8516
CA Van Nuys, Nesco, Inc. 818-781-0505
GA Lithia Springs, EMF 404-948-6023

IL Mt. Prospect, Johnson Assocs. 312-398-5159
IL Schaumburg, Varta Batteries 312-310-4437

VECTOR
ELECTRONIC COMPANY

VECTOR ELECTRONIC CO., INC., 12460 Gladstone Ave., Box 4336, Sylmar, CA 91342, Tel: 818-365-9661, Telex: 269303; FSC No.: 82893; Empl.: 120; *Sls. Mgr.:* David L. Peltz; *Dist. Mgr.:* Floyd L. Hill ..... **C•1102, 1108, 1113, 1736-1737; D•1111**

For Vector Elctrns.' sales offices and reps. in all other states- 800-423-5659.

Local Sales Offices & Reps

AZ Scottsdale, B.S.E. Co. 602-483-0373
CA Los Angeles, Advanced Digital Grp. ... 213-598-9645
CA San Jose, H-Technical Sls. 408-279-2443
CT Torrington, Northern Computer Sls. ... 203-482-3007
IN Ft. Wayne, Scott Elctrn. Supp. 219-489-5690
IN Greenwood, Scott Elctrn. Supp. 317-882-7388
MD Technlg. Sls. Assocs. 301-498-1130
MA Northern Computer Sls. 617-821-2180
NY Fairport, Northern Computer Sls. 716-377-2650
NY Hauppauge, Calvo Assocs. 516-724-2561
NY Monsey, Calvo Assocs. 914-577-5020
OH Cincinnati, Scott Elctrn. Supp. 513-791-2513
OH Cleveland, Scott Elctrn. Supp. 216-473-5050
OH Columbus, Scott Elctrn. Supp. 614-863-1281
OH Dayton, Scott Elctrn. Supp. 513-294-0539
PA Delta Tech. Sls. 215-657-7250
TX Vielock Assocs. 214-881-1940
CA Advanced Digital Grp. 714-897-0319

Local Distributors

AL Huntsville, Mock Elctrns. 205-539-2401
AL Huntsville, Powell Elctrns. 205-539-2731
AZ Phoenix, Dalis Elctrns. 602-275-2626
AZ Phoenix, Tri-Tek Inc. 602-371-0860
AZ Tempe, Elctrn. Supp. 602-790-1137
AZ Tucson, Inland Elctrns. 602-294-2628
AR Little Rock, Carlton Bates 501-562-9100
CA Buena Park, Cypress Elctrns. 714-521-5230
CA Canoga Pk., Sandy's Elec. Supp. 818-346-8353
CA Chatsworth, Priority I Elctrns. 818-709-5111
CA Gardena, Cal Switch 213-770-2330
CA Hayward, Allied Elctrns. 415-487-5250
CA Inglewood, Newark Elctrns. Co. 213-671-7066
CA Irvine, Priority 1 Elctrns. 714-660-1411
CA Oakland, Brill Elctrns. 415-834-5888
CA Palo Alto, Zack Elctrns. 415-326-5432
CA Pasadena, Empire Elctrns. Distr. 213-681-2711
CA Riverside, Elctrn. Supp. 714-787-9220
CA Sacramento, Zackit Elctrns. 916-446-3131
CA San Diego, Cypress Elctrns. 619-292-5611
CA San Diego, Elctrn. Supp. 619-693-8222
CA San Diego, Shanks & Wright 619-239-0176
CA San Francisco, Zack Elctrns. 415-626-1444
CA San Jose, Powell Elctrns. 408-943-9020
CA San Jose, Quement Elctrns. 408-998-5900
CA Santa Clara, Cypress Elctrns., Inc. 408-980-2500
CA Sunnyvale, Abacus Elctrns. Co. 408-732-2000
CO Colorado Springs, Colorado Springs Walker Elctrns. 303-636-1661
CO Denver, Newark-Denver Elctrn. Supp. 303-757-3351
CO Englewood, Shelly/Ragon 303-762-0670
CT Hamden, Allied Elctrns. 203-248-8900
CT Wallingford, Sager Elec. 203-265-4600
FL Ft. Lauderdale, Powell-Florida Elctrns. 305-972-4300
FL Miami, Elctrn. Equip. 305-871-3500
GA Atlanta, Jack Spears Elctrns. 404-237-4531
HI Honolulu, Elctrl. Equip. Ltd. 808-533-3884
IL Chicago, Newark Elctrns. Corp. 312-784-5100
IL Elgin, Allied Elctrn. Corp. 312-697-8200
IL Elk Grove Vl, GBL Goold Elctrns. 312-593-3220
IL Palatine, Ohm/Elctrns. 312-359-5500
IL Peoria, Klaus Radio 309-691-4840
IN Ft. Wayne, Graham Elctrns. 219-423-3422
IN Indianapolis, Graham Elctrn. Supp. 317-634-8202
KY Louisville, Peerless Elctrn. Equip. 502-637-7674
MD Baltimore, A S I Elctrns. 301-265-5100
MD Rockville, Capitol Radio Whlsrs. 301-881-2270
MA Hingham, Sager Elec. Supp. 617-749-6700
MA Lexington, Pioneer 617-861-9200
MA Lynn, Land Elctrn. Supp. 617-592-2220
MA Needham, Cronin Elctrns. 617-449-5000
MA Norwood, Gerber Elctrns. 617-769-6000
MI Ann Arbor, Wedemeyer Elctrn. Supp. .. 313-665-8611
MI Livonia, Olive/RS Elctrns. 313-525-1155
MI Oak Park, Newark Elctrns. 313-967-0600
MN Minneapolis, Newark Elctrns. 612-331-6350
MN St. Paul, Gopher Elctrns. Co. 612-483-3322
MO Kansas City, Elctrn. Supp. 816-931-1321
MO Kansas City, Walters Radio 816-531-7015
MO St. Louis, Olive/RS Elctrns. 314-426-4500
NE Lincoln, Scott Elctrn. Supp. Corp. 402-466-8221
NJ Camden, General Radio Supp. 609-964-8560
NJ E. Hanover, State Elctrn. Parts Corp. .. 201-887-2550
NJ Kenilworth, Federated Purchaser 201-272-0505
NJ Pine Brook, Pioneer 201-575-3510
NM Albuquerque, Elctrn. Parts Co. 505-293-6161
NY Binghamton, Pioneer 607-748-8211
NY Buffalo, Summit Distrs. 716-884-3450
NY Hauppauge, Broadline Elctrn. Dist. 516-231-4100
NY Hempstead, Davis Elctrns. 516-483-9200
NY Lynbrook, Peerless Radio Dist. 516-593-2121
NY Rochester, Simcona Elctrns. 716-328-3230
NY Woodbury, Pioneer-Harvey 516-921-8700
NC Raleigh, Southeastern Elctrns. 919-828-2311
OH Akron, Akron Elctrns. Supp. 216-762-8818
OH Cleveland, Pioneer/Cleveland 216-587-3600
OH Dayton, Pioneer/Dayton 513-236-9900
OH Dayton, Stotts Friedman Co. 513-298-5555
OR Beaverton, Almac Elctrns. 503-629-8090
OR Beaverton, Norvac Elctrns. 503-644-1025
OR Portland, Radar Elec. 503-232-3404
PA Drexel Hill, Kass Elctrn. Distr. 215-449-2300
PA McKean, Advacom, Inc. 814-476-7774
PA Philadelphia, Powell Elctrns. 215-365-1900
PA Willow Grove, RESCO Elctrns. 215-659-4575
SC Columbia, Dixie Elctrns. 803-779-5332
TN Memphis, Bluff City Distrb. Co. 901-345-9500
TX Austin, Wholesale Elctrns. 512-478-4568
TX Dallas, Harrison Equip. 214-239-2750
TX Dallas, Off the Shelf Comps. 214-247-0052
TX Dallas, Whls. Elctrn. Supp. 214-824-3001
TX El Paso, Ideal Indl. Elctrns. 915-779-6647
TX Fort Worth, Allied Elctrns. 817-336-5401
TX Fort Worth, Whls. Elctrn. Supp. 817-336-0461
TX Garland, Newark-Dallas Elctrns. Corp. 214-494-5911
TX Houston, Newark Elctrns. 713-782-4800
TX Irving, Powell Elctrns. 214-550-0547
TX Richardson, Off the Shelf Comps. 214-238-0808
TX Stafford, Harrison Equip. Co. 713-879-2600
WA Bellevue, Almac Elctrns. 206-643-9992
WA Seattle, Radar Electric Co. 206-282-2511
WA Spokane, Almac Elctrns. 509-924-9500
WA Spokane, Radar Elctrns. 509-747-3053
WI Milwaukee, Indl. Elctrns. 414-276-1212
WI Milwaukee, Marsh Elctrns. 414-475-6000
Can Burnaby, BC, R-A-E Indl. Elctrns. 604-291-8866
Can Calgary, Cardinal Indl. Elctrns. 403-259-6817
Can Edmonton, Cardinal Indl. Elctrns. 403-483-6266
Can Pointe Claire, Que., Future Elctrns. 514-694-7710
Can Victoria, BC, Pacific Coast Elctrns. Ltd. 604-385-5111
Can Willowdale, Ont., Elctro Sonic Ltd. 416-494-1666

VECTRONICS MICROWAVE CORP., 113 Lincoln Blvd., Middlesex, NJ 08846, Tel: 201-356-2377, Telex: 833560; FSC No.: 32846; Empl.: 51; *Sls. Mgr.:* John G. Vogler

VECTRON LABORATORIES, INC., 166 Glover Ave., Norwalk, CT 06850, Tel: 203-853-4433, TWX: 710-468-3796; FSC No.: 27802; Empl.: 325; *Sls. Mgr.:* Larry Jawitz ..... **A•1478-1483**

Local Sales Offices & Reps

AL Huntsville, Saber Assocs. 800-327-0853
AZ Glendale, Fetty/Schoenduve 602-241-9009
CA El Segundo, Fetty/Schoenduve 213-322-4991
CA Mountain View, Fetty/Schoenduve ... 415-962-8330
CA San Diego, Fetty/Schoenduve 619-292-5136
CO Parker, Techn. Mktg. Assocs. 303-841-3435
CT Cheshire, Meco 800-225-3409
FL Melbourne, Saber Assocs. 800-432-6288
GA Norcross, Saber Assocs. 800-327-0853
IL Bannockburn, Heth, Inc. 312-295-8440
IN Greenwood, Valentine & Assocs. 317-888-2260
IN South Bend, Valentine & Assocs. 219-288-7070
IA Anamosa, WG Controls 319-462-3456
KS Olathe, C-Tron, Inc. 913-829-0073
MA Reading, Meco 617-944-6660
MI Detroit, R. P. Urban Assocs. 313-535-2355
MI Grand Rapids, R. P. Urban Assocs. ... 616-245-0511
MN Burnsville, Allied Comp. Reps. 612-435-7876
MO St. Charles, C-Tron 314-928-8078
NJ Woodcliff Lake, J. Freid & Assocs. ... 201-391-6792
NM Albuquerque, J. Smith & Assocs. 505-265-3406
NY Great Neck, F & F Metro 516-482-4080
NY Syracuse, T—Squared Elctrns. 315-463-8592
NC Clayton, Saber Assocs. 800-327-0853
OH Englewood, A. Nace Co. 513-836-0931
OH Richfield, A. Nace Co. 216-659-7178
PA Newtown Sq., SWR Tech., Inc. 215-353-6639
TX Dallas, Texas Avionics 214-437-5677
UT Salt Lake City, Techn. Mktg. Assocs. .. 801-483-1009
VA Springfield, Tech-Reps 703-569-6868
WA Seattle, Datacom 206-285-2525
Can Montreal, Ont., Soquelec, Ltd. 514-482-6427
Can Nepean, Que., Soquelec, Ltd. 613-226-1696

VEECO INSTRUMENTS, INC., 830 Evelyn Ave., Sunnyvale, CA 94086, Tel: 408-733-3700, TWX: 910-339-9263; Empl.: 95; *Sls. Mgr.:* Fred Vanderlinde

VEECO INSTRUMENTS INC., Terminal Dr., Plainview, NY 11803, Tel: 516-349-8300; *Sls. Mgr.:* Gary Wilkins

VEEDER-ROOT, 70 Sargeant St., Hartford, CT 06102, Tel: 203-527-7201, Telex: 9-9219; Empl.: 1200; *Sls. Mgr.:* J. R. Garrison; *Dist. Mgr.:* Alan Schoenhut

VEETRONIX

VEETRONIX, INC., Sub. Reach Electronics, Box 480, Lexington, NE 68850, Tel: 308-324-4600; Empl.: 25; *Sls. Mgr.:* Robert M. Wallace ..... **B•1699-1701**

Local Sales Offices & Reps

CA San Jose, Ruby Sls. 408-224-0881

VEGA PRECISION LABS., 800 Follin La., Vienna, VA 22180, Tel: 703-938-6300, Telex: 89-2521; FSC No.: 23115; Empl.: 350; *Sls. Mgr.:* Joe E. Bennett

VELMEX, INC., P. O. Box 38, East Bloomfield, NY 14443, Tel: 716-657-6151; Empl.: 30; *Sls. Mgr.:* R. Yurick

VELONEX, 560 Robert Ave., Santa Clara, CA 95050, Tel: 408-727-7370, Telex: 756562 VELONEX SNTAUD; Empl.: 40; *Sls. Mgr.:* Customer Service .. **D•1328-1329, 1385**

Local Sales Offices & Reps

AZ Phoenix, Scientific Dvcs. 602-957-0401
CA Huntington Bch., Scientific Dvcs. 714-840-3501
CA San Diego, Scientific Dvcs. 619-268-4635
CA San Jose, Scientific Dvcs. 408-554-0455
CO Broomfield, Scientific Dvcs. 303-469-5145
CT Manchester, Addelco Corp. 203-647-7136
DC Washington, Elctrn. Mktg. 301-881-5300
FL Melbourne, Saber 800-432-6288
GA Lawrenceville, Saber 800-327-0853
HI Honolulu, Scientific Dvcs. 714-840-3501
IL Schaumburg, K. W. Meyers Co. 312-882-4808
IN Indianapolis, K. W. Meyers Co. 317-783-1030
IA Cedar Rapids, K. W. Meyers Co. 319-363-8987
MD Rockville, Elctrn. Mktg. 301-792-9300
MA Needham, Addelco Corp. 617-444-4754
NJ Boonton, Paf Assocs. 201-335-0680
NM Albuquerque, Scientific Dvcs. 505-293-3494
NY Smithtown, Paf Assocs. 516-360-0940
OH Medina, McShane, Inc. 216-725-4568
PA Plymouth Meeting, Elctrn. Mktg. 215-248-5050, 215-828-7400
TX Dallas, Tech Rep Mktg. 214-241-2434
TX Kemah, Hi-Tech Sys. 713-783-3856
UT W. Valley City, Scientific Dvcs. 801-966-0105, 801-973-9411
WA Redmond, Scientific Dvcs. 206-885-0004
WI Brookfield, K. W. Meyers Co. 414-784-3790
Can Downview, Ont., Electrodesign Ltd. 416-665-4405
Can Lachine, Que., Electrodesign Ltd. 514-636-4838
Can Nepean, Ont., Electrodesign Ltd. 613-727-5220
Can Vancouver, BC, Interworld Elec. 604-984-4171
Can Winnipeg, Manitoba, Electrodesign Ltd. 204-338-5050

VEMALINE PRODS. DIV., 333 Strawberry Field Rd., P.O. Box 6979, Warwick, RI 02887, Tel: 401-739-7600; FSC No.: 08730; Empl.: 27; *Sls. Mgr.:* Paul Vamvaketis; *Dist. Mgr.:* Paul Vamvaketis

Local Sales Offices & Reps

AZ Tempe, Foley, Tallent & Lee, Inc. 602-438-1564
CA San Gabriel, Van Gott & Assocs. 213-285-2148
CA Sunnyvale, Ruby Sls. 408-739-5333
CO Arvada, Delconec 303-422-7023
FL Orlando, O.E.M. Mktg. 305-299-1000
GA Atlanta, Millar Elctrns. 404-634-3350
IL Glenview, Key Entprs. 312-397-6390
MA Needham Hgts., Newscott Co., Inc. 617-444-1923
MI Wyoming, Howard Assocs. 616-532-2161
MN Brainerd, Mitchel Johnson 218-829-8180
MO St. Louis, Delltron 314-869-4779
NY Guilderland, NU-Tekneex 518-355-1829
NY Huntington, Andrews & Andrews 516-692-8686
NC Raleigh, Millar Elctrns. 919-828-8840
OH Cincinnati, Loesch Assocs. 606-331-4332
OH Cleveland, Loesch Assocs. 216-241-4581

PA Huntingdon Valley, Edwin Leiby Assocs. 215-659-8938
TX Dallas, Blackburn & Assocs. 214-750-8484
WA Seattle, F. W. Aurich & Co. 206-284-5561

VENABLE INDUSTRIES, INC., 3555 Lomita Blvd., Torrance, CA 90505, Tel: 213-539-2522, Telex: 752421; Empl.: 20; *Sls. Mgr.:* Shelly Scott

VENT RAK, See General Devices

VENUS SCIENTIFIC, INC.

VENUS SCIENTIFIC, INC., 399 Smith St., Farmingdale, NY 11735, Tel: 516-293-4100, TWX: 510-224-6492; Empl.: 450; *Sls. Mgr.:* Mike Maletta ..... **D•1987-1989**

Local Sales Offices & Reps
AZ Scottsdale, Venus Scientific Inc. 602-991-9684
MA Norwood, MPS Electronics Inc. 617-769-8700

VERMONT AUTOMATION CO., INC., 18 Morse Dr., Essex Junction, VT 05452, Tel: 802-879-7571; Empl.: 7; *Sls. Mgr.:* J. Littlefield

VERMONT PRECISION RESISTOR, Codeco Corp. of Vermont, Box 1170, Stowe, VT 05672, Tel: 802-253-8567; Empl.: 8

VERMONT RESCH. CORP., Precision Pk., N. Springfield, VT 05150, Tel: 802-886-2256, TWX: 710-363-6533; Empl.: 100; *Sls. Mgr.:* Richard Simmons

VERNITECH, 300 Marcus Blvd., Deer Pk., NY 11729, Tel: 516-586-5100, TWX: 510-227-6079; FSC No.: 30223; Empl.: 300 ..... **A•2123; B•1026, 1217, 1830**

Local Sales Offices & Reps
AZ Fountain Hills, Halbar Assocs. 602-837-2464
CA Glendale, Halbar Assocs. 213-246-8263
CA San Mateo, Halbar Assocs. 415-349-4700
CO Parker, Techn. Mktg. Assocs. 303-841-3435
CT Cheshire, Selmark Assocs. 203-272-8764
FL Orlando, E.P.M. Corp. 305-425-6149
IL Glencoe, Howard Benjamin Assocs. .. 312-835-0150
IA Cedar Rapids, Dytronix 319-377-8275
MD Baltimore, R.P. Luce & Co. 301-752-8200
MA Millis, Selmark Assocs. 617-376-2914
MN St. Paul, Vikeland Sls. 612-645-4747
MO Bridgeton, Dytronix 314-731-5799
MO Independence, Dytronix 816-373-6600
NH Concord, Selmark Assocs. 603-623-5774
NM Albuquerque, Technology Mktg. 505-265-5661
NY Melville, Comtronic Engrg. Sls. 516-249-0505
NY Pittsford, Net Sls. Co. 716-467-4538
OH Dayton, George Lessis 513-294-1551
OH Dayton, J. C. Hofstetter Co. 513-296-1010
OH Dayton, Rixan Assocs. 513-278-4216
OH Medina, J. C. Hofstetter Co. 216-241-4880
PA Philadelphia, R.P. Luce & Co. 215-884-8365
PA Pittsburgh, Dietrich & Assocs. 412-892-2992
TX Bellaire, Seaton Corp. 713-731-2649
TX Dallas, Seaton Corp. 214-380-0414
UT Sandy, TMA, Inc. 801-254-6410
VA Powhatan, R.P. Luce & Co. 804-598-4804
WA Mukilteo, Krippner & Assocs. 206-743-3579

VERNITRON CONTROLS, Vernitron Corp., 1601 Precision Park La., San Diego, CA 92073, Tel: 619-428-5581, TWX: 910-322-1862, FAX: 619-428-5090; FSC No.: 10112; Empl.: 200; *Sls. Mgr.:* R. Campbell ..... **B•1218-1220**

Local Sales Offices & Reps
AZ Glendale, Joe Adams & Assoc. 602-242-9688
CA Glendale, Halbar Assocs. 818-246-8263
CA Santa Clara, Comtronics 408-773-9800
CT North Haven, Kitchen & Kutchin 203-239-0212
FL Madeira Beach, Mackay, Smith & Assocs., Inc. 813-393-7144
FL Orlando, Mackay Smith & Assocs. 305-423-4353
IL Northbrook, Howard Benjamin Assocs. 312-272-2900
MA Burlington, Kitchen & Kutchin 617-229-2660
NJ Cherry Hill, Lanson Assocs. 609-424-4670
NY Jericho, Metro Tech. Sls. 516-935-3330
NY Syracuse, T-Squared Elctrns., Inc. 315-463-8592
NY Victor, T-Squared Elctrns., Inc. 716-924-9101
OH Dayton, Rixan Assocs. 513-222-0011
OK Tulsa, Norcom, Inc. 918-832-7747
TX Austin, Norcom, Inc. 512-451-2757
TX Dallas, Norcom, Inc. 214-386-4888
TX Houston, Norcom, Inc. 713-778-0392
TX San Antonio, Norcom, Inc. 512-680-4513
VA Fredericksburg, Vernitron 703-752-4499

VERNITRON ELEC. COMPS., See Beau Prods. Div.

VERNITRON PIEZOELECTRIC DIV., 232 Forbes Rd., Bedford, OH 44146-5478, Tel: 216-232-8600, TWX: 810-427-2274, FAX: 216-232-8731; Empl.: 100; *Sls. Mgr.:* James Honvath ..... **A•1485**

Local Sales Offices & Reps
FL Orlando, B & M Sls. 305-855-2455
IL Des Plaines, ESCO Assoc. 312-298-5310

VERSACARD CORPORATION, 7372 Prince Dr., Huntington Beach, CA 92647, Tel: 714-847-9960, TWX: 510-101-1759 TWINC UD; Empl.: 65; *Sls. Mgr.:* Robert Murphy; *Dist. Mgr.:* Barbara Preissel

VERSALOGIC, 3888 Stewart Rd., Eugene, OR 97402, Tel: 503-485-8575

VERTEX COMPUTER CABLE & PRODUCTS, 61 Executive Blvd., Farmingdale, NY 11735, Tel: 516-293-1610, Telex: 14-3155, TWX: VERTEX FDLE; FSC No.: 6T500; Empl.: 250; *Sls. Mgr.:* M. Scanzano; *Dist. Mgr.:* Penny Shaw

VERTEX INDUSTRIES, INC., P. O. Box 996, 23 Carol St., Clifton, NJ 07014, Tel: 201-472-1331, TWX: 710-989-7021; Empl.: 85; *Sls. Mgr.:* Ron Byer

Local Sales Offices & Reps
CA Santa Ana, California Elctrn. Mktg. 714-835-2702
FL Plantation, Electrographic Sys. 305-587-8259
IL Elk GRove Village, Quad Data, Inc. ... 312-228-1722
KS Shawnee Mission, Panatek 913-649-7999
MI Farmington Hills, Carter, McCormic & Pierce 313-477-7700
NJ Haddonfield, G.L. Williams Assocs. 609-428-6060
MA Wayland, Daner Hayes, Inc. 617-655-0888, 1-800-225-8760
TX Dallas, IBL Engrg. & Sls. 214-363-2921
Can Lachine, Quebec, Electrodesign Ltd. .. 514-636-4838

VERTOX CO., 9252 Garden Grove Blvd. # 22, Garden Grove, CA 92644, Tel: 714-530-4541, Telex: 678401 TAB IRIN; FSC No.: 53688; Empl.: 12; *Sls. Mgr.:* Steve Hacker; *Dist. Mgr.:* Steve Hacker

VESTA TECHNOLOGY, INC., 7100 W. 44th Ave. Ste. 101, Wheat Ridge, CO 80033, Tel: 303-422-8088; Empl.: 10

VIABLE SYSTEMS INC., Box 116, Sherborn, MA 01770, Tel: 617-653-7665, Telex: 922 495 VIABLEUS, FAX: 617-653-7665; Empl.: 30

VIA WEST INC., 534 N. Stone Ave., Tucson, AZ 85705, Tel: 602-623-5716, Telex: 333089 VIA WEST UD; Empl.: 25; *Sls. Mgr.:* David C. Troupe

VIBRAC, 1 Columbia Dr., Amherst, NH 03031, Tel: 603-882-6777, Telex: 312698 VIBRAC; Empl.: 50; *Sls. Mgr.:* R. Searle

VIBRA-METRICS, 1014 Sherman Ave., Hamden, CT 06514, Tel: 203-288-6158, 1-800-352-2001, TWX: 710-465-0169, FAX: 203-288-4937; Empl.: 25; *Sls. Mgr.:* Tom Golden ..... **B•1831**

Local Sales Offices & Reps
CA Long Beach, Saber Enterprises 213-595-5646
CA Mountain View, Saber Enterprises 415-968-0427
CA San Diego, Saber Enterprises 619-271-1523
CT North Haven, International Sls. 203-288-1638
IL Chicago, Comtel-Midwest 312-539-4838
IN Indianapolis, Comtel -Midwest 317-253-1681
IA Cedar Rapids, Comtel -Midwest 319-377-9434
KS Shawnee Mission, Comtel -Midwest .. 913-268-0762
MI Southfield, Comtel Instrs. 313-358-2505
MN Wayzata, Comtel -Midwest 612-476-1551
MO St. Louis, Comtel -Midwest 314-991-5363
NJ Martinsville, Blejwas Assocs. 201-221-1440
NY Baldwinsville, Oshex Assocs., Inc. 315-635-6027
NC Raleigh, Lee-Carolinas 919-848-8818
OH Cleveland, Comtel Instrs. 216-442-8080
OH Dayton, Comtel Instrs. 513-426-5310
OH Hilliard, Comtel Instrs. 614-876-8305
PA Philadelphia, MetraSystems 215-247-7347
PA Pittsburgh, Comtel Instrs. 412-922-5720
TX Argyle, MilesTek 817-455-7444
TX Houston, Techsas, Inc. 713-589-2323
UT West American Fork, Highland Tech. Mktg. 801-756-3744
WI New Berlin, Comtel -Midwest 414-544-6042
EXP New Haven, CT, Masten Wright 203-288-1638
Can Ile Perrot, Que., Dalimar 514-453-0033
Can N. Vancouver, B.C., Interworld Elctrns. 604-984-4171

VIBRATION INSTRUMENTS CO., 1614 Orangethorpe Way, Anaheim, CA 92801, Tel: 714-879-6085, Telex: 692433; FSC No.: 32102; Empl.: 35; *Sls. Mgr.:* Fritz Egger

VIBRO-METER CORP., 1 Progress Rd., Billerica, MA 01822-5058, Tel: 617-663-7322, Telex: 948145, TWX: 710-320-1872; FSC No.: 617-667-1944; Empl.: 50; *Sls. Mgr.:* John Snow

VICKERS INSTRUMENTS, INC., Vickers America (Holdings), Inc., 800 W. Cummings Pk., Ste. 1900, Woburn, MA 01801, Tel: 617-932-3800, Telex: 949913; Empl.: 20; *Sls. Mgr.:* Phill Truckle

VICLAN, 7373A Engineers Rd., San Diego, CA 92138, Tel: 619-292-1411, TWX: 910-335-1264; FSC No.: 51959; Empl.: 250; *Sls. Mgr.:* Bob Goodman

VICOM SYSTEMS, INC., 2520 Junction Avenue, San Jose, CA 95134, Tel: 408-946-5660, Telex: 171-603; Empl.: 85; *Sls. Mgr.:* N. Carlson

VICON INDUSTRIES, INC., 525 Broad Hollow Rd., Melville, NY 11747, Tel: 516-293-2200, Telex: 144581; Empl.: 500

VICTOREEN

VICTOREEN, INC., A Sheller-Globe Corp. Subsidiary, 10101 Woodland Ave., Cleveland, OH 44104, Tel: 216-795-8200, TWX: 810-421-8287, FAX: 216-795-1309 ..... **A•2058-2061**

Local Sales Offices & Reps
AZ Tempe, Ele-Comm Assocs. 602-967-8644
CA Napa, Victoreen, Inc. 707-252-0720
FL Pompano Bch., HHP Assocs. 813-797-4447
GA Norcross, Electra-Mark 404-446-7915
MA Newton, Victoreen, Inc. 617-964-2226
OH Cleveland, Victoreen, Inc. 216-381-2029
WA Edmond, EDCO Sls. 206-776-8922

VICTOR ELEC. WIRE & CABLE, 618 Main St., W. Warwick, RI 02893, Tel: 401-821-1700, SALES 401-821-7800, Telex: 952122, TWX: 710-382-1534; Empl.: 900; *Sls. Mgr.:* E. M. Colasanto

VICTOR WIRE & CABLE CORP., 3601 Holdrege Ave., Los Angeles, CA 90016, Tel: 213-870-9933; Empl.: 30

VICTORY ENGINEERING CORP., Victory Rd., Springfield, NJ 07081, Tel: 201-379-5900, TWX: 710-983-4430; Empl.: 150; *Sls. Mgr.:* J. Bacek

VIDAIRE ELECTRONICS MFG. CORP., P. O. Box 788, Freeport, NY 11520, Tel: 516-623-6696; Empl.: 20

VIDCO, 8029 S.W. Cirrus Dr., Beaverton, OR 97005, Tel: 503-641-1804; Empl.: 10; *Sls. Mgr.:* Bradley Cohen

VIDEO AUTOMATION SYSTEMS, Upper Shad Rd., Pound Ridge, NY 10576, Tel: 914-764-4613; Empl.: 5

VIDEO LOGIC CORP., 1294 Lawrence Station Rd., Sunnyvale, CA 94086, Tel: 408-745-0933, Telex: 35-7400

VIDEO MONITORS, INC., 3833 N. White Ave., Eau Claire, WI 54703, Tel: 715-834-7785, Telex: 510-100-1880; Empl.: 140; *Sls. Mgr.:* L. Stewart

VIKING CASES, 10480 Oak St. N.E., St. Petersburg, FL 33702, Tel: 813-577-1216; *Sls. Mgr.:* Jeff Shacter

VIKING CONNECTORS CO., 21001 Nordhoff St., P.O. Box 2379, Chatsworth, CA 91311, Tel: 818-341-4330, TWX: 910-494-2094; FSC No.: 05574; Empl.: 500; *Sls. Mgr.:* Bob Ploudre

VIKING ELECTRONICS, Industrial St., Hudson, WI 54016, Tel: 715-386-8861; Empl.: 24; *Sls. Mgr.:* Roy Crist

VIKING INDUSTRIAL PRODUCTS, 729 Farm Rd., Marlboro, MA 01752, Tel: 617-481-4600; Empl.: 20; *Sls. Mgr.:* Aubrey Elms

VIRGINIA PANEL, 1400 New Hope Rd., Waynesboro, VA 22980, Tel: 703-949-8376, TWX: 710-839-0406; Empl.: 225; *Sls. Mgr.:* Jeff Stowers



VIRGINIA PLASTICS CO., P.O. Box 4577, Roanoke, VA 24015-0577, Tel: 703-985-3811, TWX: 710-870-0440, FAX: 703-985-3848; FSC No.: 59608; Empl.: 120; *Sls. Mgr.:* Stephen Bogese II; *Dist. Mgr.:* John H. Hartley ..... **C•1550-1553, 1924-1925**

Local Sales Offices & Reps

CA	Granada Hills, C&W Comps.	818-368-4032
CA	Santa Cruz, Penmark Sls. Co.	408-980-1303
CO	Parker, Lindberg Co.	303-758-9033
CT	Middletown, Gerber Sls.	203-346-3000
FL	Pompano Beach, Joe Kerns	305-785-6362
GA	Peachtree City, G.M. Assocs.	404-487-9409
IL	Wheaton, Chadra-Schilke	312-653-8126
MD	Gaithersburg, Carwithen Assocs.	301-921-9545
MA	Waltham, Gerber Sls.	617-890-3334
MI	Livonia, Engrg. & Mktg. Svcs. Co.	313-522-9465
MN	Minneapolis, Northstar Comps.	612-553-1888
NJ	Haworth, Kay Sls.	609-655-3778
NY	Buffalo, NRM Mktg.	716-634-4300
OK	Bixby, MGR Elctrns.	918-369-5186
PA	Southampton, Campbell Assocs.	215-322-6630
TX	Dallas, MGR Elctrns., Inc.	214-238-5246
Can	Toronto, Tiemkay, Inc.	416-736-1221

Local Distributors

MN	Minneapolis, K & H Elctrn. Distrbg.	800-328-8515
NH	Manchester, Yankee Elctrn. Supp. Co.	800-221-1738

VIRTIS CO., Rte. 208, Gardiner, NY 12525, Tel: 914-255-5000, Telex: 926474; Empl.: 92; *Sls. Mgr.:* J. D. Schmidt

VISHAY-MANN SYSTEM, See Vishay Resistive Systems Group

VISHAY

VISHAY RESISTIVE SYSTEMS GROUP, 63 Lincoln Hwy., Malvern, PA 19355, Tel: 215-644-1300, TWX: 510-668-8944; Empl.: 500; *Dist. Mgr.:* Iris Demeritt ..... **A•2063-2074, 2124-2127**

Local Sales Offices & Reps

AL	Huntsville, JWL Assocs.	205-883-1712
AZ	Phoenix, Howe & Howe	602-264-7971
CA	Los Alamitos, Reed Elctrns.	213-598-6676
CA	Redwood City, James S. Heaton Co.	415-367-9000
CA	San Diego, Vishay Res. Sys. Grp.	619-690-2401
CO	Englewood, Comps. Sls. Inc.	303-779-8060
CT	Wallingford, Comp Rep Assocs.	203-269-1145
FL	Altamonte Springs, Semtronic Assocs.	305-831-8233
FL	Clearwater, Semtronic Assocs.	813-461-4675
FL	Ft. Lauderdale, Semtronic Assocs.	305-731-2484
GA	Atlanta, JWL Assocs.	404-429-8010
ID	Boise, N. R. Schultz Co.	208-377-8686
IL	Rolling Meadows, Eagle Tech. Sls.	312-991-0700
IN	Carmel, Shamrock Elctrn. Sls.	317-848-5265
KS	Olathe, Technical Sls. Assocs.	913-829-2800
MD	Lutherville, J. A. Dougherty Sls. Co.	301-321-7890
MA	Westwood, Comp Rep Assocs.	617-329-3454
MI	Bloomfield Hills, Enco Mktg.	313-642-0203
MN	St. Paul, MFI, Inc.	612-854-9446
MO	Ferguson, Technical Sls. Assocs.	314-725-5361
NJ	Bellmawr, TAI Corp.	609-933-2600
NJ	Flanders, K & R Engrg. Sls. Co.	201-584-5235
NM	Albuquerque, Compass Mktg. & Sls.	505-888-0800
NY	E. Syracuse, L-Mar Assocs.	315-437-7779
NY	Rochester, L-Mar Assocs.	716-381-9100
NC	Charlotte, JWL Assocs.	704-541-5750
NC	Raleigh, JWL Assocs.	919-787-4826
OH	Aurora, EMA, Inc.	216-562-6104
OH	Centerville, EMA, Inc.	513-433-2800
OR	Beaverton, N. R. Schultz Co.	503-643-1644
PA	Malvern, Vishay Resistive Sys. Grp.	215-644-1300
TX	Houston, Vishay Resistive Sys. Grp.	713-550-0568
UT	Salt Lake City, Harris/CSI	801-268-8440
WA	Bellevue, N. R. Schultz Co.	206-454-0300
EXP	Mayaguez, Comp Rep Assocs.	809-832-9529

Local Distributors

AZ	Phoenix, TTI, Inc.	602-861-0222,602-966-1616
AZ	Phoenix, TTI, Inc.	602-966-1616
AZ	Tempe, Shelley-Ragon, Inc.	602-894-2058
CA	Chatsworth, Petel Elctrns., Inc.	818-700-8838
CA	Chatsworth, Petell Elctrns., Inc.	818-341-1745, 805-583-3210
CA	Chatsworth, Shelley-Ragon, Inc.	818-998-3333
CA	Chatsworth, TTI, Inc.	818-709-1010
CA	Milipitas, TTI, Inc.	408-943-9155
CA	San Diego, Shelley-Ragon, Inc.	619-453-7133
CA	San Diego, TTI, Inc.	619-587-4888
CA	San Jose, Shelley-Ragon, Inc.	408-942-9111
CO	Englewood, Shelley-Ragon, Inc.	303-762-0670
CO	Westminster, TTI, Inc.	303-429-6806
CT	Stratford, TTI, Inc.	203-375-1400
FL	Tampa, Impala Elctrns., Inc.	813-885-4747, 800-237-7777
FL	Tampa, Shelley-Ragon, Inc.	813-623-6560
GA	Norcross, TTI, Inc.	404-662-0911
ID	Spirit Lake, A-I Elctrns.	208-623-3111
IL	Lombard, Shelley-Ragon, Inc.	312-629-8833
IL	Palatine, Ohm Elctrns.	312-359-5500
IA	Cedar Rapids, Shelley-Ragon, Inc.	319-373-0525
MD	Baltimore, RESCO/Baltimore	301-529-0500, 800-638-1242
MD	Beltsville, RESCO/Washington	301-937-9100
MA	Woburn, TTI, Inc.	617-938-8800
MN	St. Paul, Shelley-Ragon, Inc.	612-642-2823
MO	Independence, Shelley-Ragon, Inc.	816-254-3410
NJ	Flanders, VKR Svcs., Inc.	201-584-5235, 800-631-9362
NY	Bohemia, Shelley-Ragon, Inc.	516-567-7751
NY	Farmingdale, Command Elctrns. Corp.	516-293-1212
NY	Hauppauge, Mast Distrs., Inc.	516-273-4422
NY	Ronkonkoma, TTI, Inc.	516-737-2000
NY	Valley Stream, L & S Elctrns.	516-561-2474
OH	Cleveland, Specialized Comps. Sls.	216-464-0405
OH	Dayton, Micro Mil Div.	513-434-8231
PA	Malvern, Vishay Resistive Sys. Grp.	215-644-1300
TX	Fort Worth, TTI, Inc.	817-831-0441
TX	Houston, Texas Comp. Corp.	713-468-3882
WA	Redmond, Priebe Elctrns.	206-881-2363
WA	Seattle, Shelley-Ragon	206-241-1980
Can	Que., Kaytronics, Inc.	514-367-0101

VISIONARY ELECTRONICS, 141 Parker Avenue, San Francisco, CA 94118, Tel: 415-751-8811

VISION ENGINEERING, INC., 570 Danbury Rd., New Milford, CT 06776, Tel: 203-355-3776, Telex: 643769; Empl.: 15; *Sls. Mgr.:* S. Phillips

VISIONICS CORPORATION, 343 Gibraltar Dr., Sunnyvale, CA 94089, Tel: 408-745-1551, Telex: 346352, FAX: 408-734-9012; *Sls. Mgr.:* Debbie O'Connell ..... **D•1114**

VISTAR CORP., 13740 McCormick Dr., Tampa, FL 33625, Tel: 813-855-6611, Telex: 522434; Empl.: 22; *Sls. Mgr.:* Ron Rooks; *Dist. Mgr.:* Bill Greelish

VISUAL COMMUNICATIONS CO., INC., 7920 Arjons Dr., Ste. G, San Diego, CA 92126, Tel: 619-549-6900; Empl.: 9; *Sls. Mgr.:* J. Savage ..... **B•1137-1139**

Local Sales Offices & Reps

AL	Huntsville, Remco	205-553-3763
AZ	Phoenix, Bob Anderson Co.	602-266-2070
CA	Mountain View, Westech Sls.	415-961-1422
CA	San Diego, Harvey King, Inc.	619-587-9300
CA	Torrance, Assoc Reps.	213-328-6708
FL	Boca Raton, Beacon Elctrns.	305-392-3500
GA	Atlanta, Remco	404-447-6937
IL	Elmhurst, Utronix Sls.	312-834-1100
MA	Sharon, Adcour	617-784-8123
MI	Brighton, Michigan Mktg. & Sls.	313-229-6218
MN	Eden Prairie, Bohlig & Assocs.	612-944-8404
NJ	Whippany, Robert Smith Assocs.	201-540-0204
NY	Plainview, Robert Smith Assocs.	516-681-3155
NC	Raleigh, Remco	919-787-2112
OH	Worthington, Dynel Co.	614-436-9452
OK	Tulsa, J. B. Guenther	918-660-5126
OR	Portland, Electronic Mktg. Grp.	503-684-5935
PA	Penndel, Rayco Sls.	215-757-1899
TX	Austin, J. B. Guenther	512-472-3825
TX	Dallas, J. B. Guenther	214-691-8500
TX	Houston, J. B. Guenther	713-974-0383
VA	Forest, Beacon North	804-239-8486
VA	Sterling, Beacon No.	703-591-1300
WA	Redmond, Elctrn. Mktg. Grp.	206-882-0962
EXP	CT, Litchfield, Intrade	203-567-5901

Local Distributors

AL	Huntsville, Component Distr.	205-883-7501
AZ	Tempe, Anjon Entprs.	602-894-1332
AR	Little Rock, Component Distr.	501-227-6278
CA	Costa Mesa, Orange County Comps.	714-979-3597
CA	Los Angeles, Electric Switch	213-660-1310
CA	Santa Clara, Cypress Elctrns.	408-980-2500
CA	Torrance, WBC Electro Supp.	213-328-6871
CO	Englewood, Industrial Elctrns. Inc.	303-694-9444
FL	Boca Raton, Plainview	305-997-7705
FL	Ft. Lauderdale, Component Distr.	305-971-4950
GA	Norcross, Component Distrs.	404-441-3320
MA	Lynn, Land Elctrn. Supp.	617-592-2220
MI	Grand Rapids, S. F. Elctrns. Supp.	616-459-0216
MN	New Brighton, Chris Elctrn. Distr.	612-631-2647
NJ	Bellmawr, Midatlantic Elctrns.	609-931-5303
NY	Elmsford, Ancar Elctrn. Supp.	914-592-7100
NC	Raleigh, Component Distr.	919-834-9465
OH	Aurora, IPD	216-562-8113
OH	Centerville, IPD	513-435-2086
TX	Farmers Bch., Force Elctrns.	214-247-9955
TX	Houston, Force Elctrns.	713-772-8483
VA	Falls Church, Component Distr.	703-241-8227
WA	Redmond, Paccom	206-883-9200
WA	Redmond, Priebe Elctrns.	206-881-2363
EXP	CT, Litchfield, Intrade	203-567-5901
Can	Ottawa, Ont., E. G. Lomas Ltd.	613-725-2177

VISUAL INFORMATION INSTITUTE, Box 33, Xenia, OH 45385-0033, Tel: 513-376-4361, Telex: 501031 VIS INFO INST; FSC No.: 27432; Empl.: 45

Local Sales Offices & Reps

CA	Los Angeles, Perspective Meas.	714-592-3851
CA	San Diego, Perspective Meas.	619-259-8000
CA	San Jose, Fox Marketing	408-984-2221
CO	Bailey, Scientific Sys.	303-838-4615

VITRAMON N.A., P. O. Box 544, Bridgeport, CT 06601, Tel: 203-268-6261, TWX: 710-450-3640; Empl.: 606; *Sls. Mgr.:* Paul Davis; *Dist. Mgr.:* S. Judt

VIZ METEOROLOGICAL INSTRUMENTS, 335 E. Price St., Philadelphia, PA 19144-5782, Tel: 215-844-2626, TWX: 710-670-2626; FSC No.: 41226; Empl.: 450; *Sls. Mgr.:* V. Scott Zelov; *Dist. Mgr.:* V. Scott Zelov

VIZ TEST EQUIPMENT, Kappa Networks Inc., 175 Commerce Drive, Ft. Washington, PA 19034, Tel: 215-643-6950, 1-800-523-3696, FAX: 215-643-5237; Empl.: 10; *Sls. Mgr.:* F. H. Tribolet; *Dist. Mgr.:* F. H. Tribolet ..... **D•1330-1333, 1991-1993, 2108-2109**

Local Sales Offices & Reps

AR	Little Rock, Leo Barker Co.	501-834-2537
CA	Laguna Hills, English/Damco Sls. Assocs.	714-837-3801
CA	San Francisco, Tech. Sls. Assocs.	415-467-1434
CO	Denver, Mountain Reps.	303-623-0972
FL	Ft. Lauderdale, UniRep, Inc.	305-587-7481
GA	Roswell, Henry W. Phillips Co., Inc.	404-992-3070
IL	Park Ridge, Bob Burns & Assocs., Inc.	312-775-1233
IN	Bloomington, Reptronics	812-334-0383
MD	Woodbine, DJC Elctrn. Sls.	301-795-7020
MA	Milford, Jonel Sls. Assocs.	617-478-4650
MI	Royal Oak, Hilltronics, Inc.	313-435-0920
MN	White Bear Lake, Yore Co.	612-770-9760
MO	Raytown, Marty Tarkski Sls. Co.	816-358-1442
NJ	W. Orange, Applied Process Instrs., Inc.	201-325-2511
NY	Grand Island, L. J. McTaggart Assocs.	716-773-9222
OR	Portland, Joseph V. Belusko Co.	503-222-4279
PA	Philadelphia, Instrmn. Specialties	215-742-0898
TX	Dallas, Crockett Sls. Co.	214-350-3377
Can	Ontario, H. W. Cowan Canada Ltd.	416-773-4331

Local Distributors

AL	Birmingham, Forbes Distrs.	205-251-4104
CA	Canoga Pk., Rag Elctrns., Inc.	818-998-6500
CA	El Monte, Marshall Claude Michael	818-442-7204
CA	Los Angeles, Metermaster, Inc.	213-685-4340
FL	Orlando, Emsco/Hammond	305-849-6060
IL	Chicago, Newark Elctrns.	312-784-5100
IL	Niles, Joseph Elctrns.	312-297-4200
IN	Indianapolis, Meunier Elctrn. Supp.	317-635-3511
MA	Needham, You-Do-It Elctrns.	617-449-1005
MI	Livonia, RS Elctrns.	313-525-1155
MN	St. Louis Pk., Edtronics Co.	612-938-7541
MO	St. Louis, Van Sickle Inc.	314-621-5000
NJ	Clarksburg, Accutest	609-259-0460
NY	Farmingdale, Kelvin Elctrns.	516-249-4646
NY	Lindenhurst, RNJ Elctrns. Inc.	516-226-2700
NY	New York, Omnitron Elctrns.	212-865-4900
NY	Rochester, Transcat	716-458-4801
NC	Raleigh, Southeastern Elctrns.	919-828-2311
OH	Centerville, MCM Elctrns.	513-434-0031
OH	Cleveland, Brodhead-Garrett	216-341-0248
PA	Philadelphia, Sunshine Sci.	215-673-5600
TX	Ft. Worth, Allied Elctrns.	817-336-5401
VA	Richmond, Avec Elctrns.	804-359-6071
WI	Milwaukee, E-M Instrs.	414-272-7799

VL ELECTRONICS, INC, 3171 Los Feliz Blvd. Suite 303, Los Angeles, CA 90039, Tel: 213-661-8883, Telex: 62597050; FSC No.: 95-3896380; Empl.: 6; *Sls. Mgr.:* Christopher Sieh; *Dist. Mgr.:* Christopher Sieh ... **B•1140**

Local Sales Offices & Reps

AZ	Phoenix, Mercury Engrg. Sls., Inc.	602-244-0123
CA	Costa Mesa, KT Elctrns.	714-432-8465
CA	San Diego, Uni-Rep	619-746-5131
CT	Guilford, Bay Colony	203-453-5424
FL	Winter Haven, Foxx & Assocs	813-294-7127
IN	Indianapolis, S.T.B. & Assocs	317-344-9227
KS	Olathe, Crimson Tech. Elctrns.	913-764-1079
MA	Westboro, Bay Colony Reps	617-870-1930
NY	E. Syracuse, Nycom Inc.	315-437-8343
OH	Dayton, J. C. Hofstetter Co.	513-296-1010
OH	Medina, Hoftstetter	216-241-4880
OR	Portland, A/D	503-641-6469
PA	Huntingdon Valley, Intec Assocs. Inc.	215-677-7790
WA	Kirkland, A/D Elctrns.	206-821-3205
WI	Colgate, Rep One	414-628-4016
Can	Montreal, Dosh-Dart Import Ltd.	514-636-1913

Local Distributors

CA	Los Angeles, VL Elctrns Inc.	213-661-8883

VLSI TECHNOLOGY, INC., 1109 McKay Dr., San Jose, CA 95131, Tel: 408-434-3000, Telex: 278807; Empl.: 1,000; *Sls. Mgr.:* William Capparelli; *Dist. Mgr.:* Frank Reynolds

VME MICROSYSTEMS INTL CORP., 12021-N South Memorial Pkwy., Huntsville, AL 35803, Tel: 205-880-0444, Telex: 593128; *Sls. Mgr.:* Carl J. Leary

VOICE IDENTIFICATION, Box 714, Somerville, NJ 08876, Tel: 201-526-3408; Empl.: 7

VOLTAGE MULTIPLIERS, INC., 8711 W. Roosevelt Ave., Visalia, CA 93291, Tel: 209-651-1402, Telex: 530484; FSC No.: 60211; Empl.: 85; *Sls. Mgr.:* Karen Spano ... **A•2159**

VOLTAMPERE CORP., 146 Horton Ave., Lynbrook, NY 11563, Tel: 516-887-9443; FSC No.: 64196; Empl.: 30; *Sls. Mgr.:* Robert Pampin ... **D•1994**

VOLTARC TUBES, 176 Linwood Ave., Fairfield, CT 06430, Tel: 203-255-2633, Telex: 96-4337, FAX: 203-259-1194; Empl.: 180; *Sls. Mgr.:* Albert H. Katz

VOLTEX, 3460 Great Neck Rd., Amityville, NY 11701, Tel: 516-842-2772; Empl.: 55; *Sls. Mgr.:* S. Vogel ... **D•1995-1997**

Local Sales Offices & Reps

CA	Santa Clara, R-C Elctrns.	408-988-0701
CT	Washington, Tri-Com Assocs.	203-868-7027
MD	Burtonsville, Bekr Inds., Inc.	301-421-1200
MA	Burlington, Tri-Com Assocs.	617-272-8163

VOLTRONICS CORPORATION, West St., P.O. Box 476, E. Hanover, NJ 07936, Tel: 201-887-1517, TWX: 710-986-8253; FSC No.: 18736;Multiple; Empl.: 70; *Sls. Mgr.:* Richard J. Newman ... **A•1193**

Local Sales Offices & Reps

AL	Huntsville, Beacon Elctrns.	205-881-5031
AZ	Glendale, Fetty/Schoenduve, Inc.	602-241-9009
AR	Little Rock, Beacon Elctrns.	501-224-5449
CA	Clovis, Fetty/Schoenduve, Inc.	209-291-4484
CA	El Segundo, Fetty/Schoenduve, Inc.	213-322-4991
CA	Mtn. View, Fetty/Schoenduve, Inc.	415-962-8330
CA	San Diego, Fetty/Schoenduve, Inc.	619-292-5136
CO	Boulder, Herb Bass Assocs.	303-530-7509
FL	Boca Raton, Beacon Elctrns.	305-392-3500
GA	Atlanta, Beacon Elctrns.	404-256-9640
IL	Chicago, Technical Sls., Inc.	312-237-7210
KS	Parker, S. W. Wollard Co.	913-898-6552
MD	Highland, Beacon North Inc.	703-591-1300
MA	Malden, J. K. Assocs.	617-321-2922
MN	St. Paul, Countryman Assocs.	612-645-9151
MO	Lee's Summit, S. W. Wollard	816-578-4221
NJ	Freehold, RF Elctrn. Sls. Grp.	201-431-3374
NY	Melville, RF Elctrn. Sls. Grp.	516-420-8890
NC	Raleigh, Beacon Elctrns.	919-787-0330
OH	West Chester, J & B Sls.	513-874-0236
PA	Lancaster, Electro-Rep	717-299-5877
TX	Dallas, Talo Prods., Inc.	214-644-6010
UT	Bountiful, Herb Bass Assocs.	801-292-8991
VA	Sterling, Beacon North Inc.	703-478-2480
Can	Quebec, Vitel Elctrns.	514-331-7393

VOTAN, 4487 Technology Dr., Fremont, CA 94538, Tel: 415-490-7600; Empl.: 60; *Sls. Mgr.:* Robert Russo; *Dist. Mgr.:* Ron Williams

VOYAGER TECHNOLOGIES, INC., 2250 Cabot Blvd. W. Bldg. 40M, Langhorne, PA 19047, Tel: 215-750-0270; Empl.: 15; *Sls. Mgr.:* Roger J. Peirce

VRN INTERNATIONAL

VRN INTERNATIONAL, Div. Vernitron, 2801 72nd St. N., Box 44000, St. Petersburg, FL 33743, Tel: 813-347-2181, Telex: 6815306, TWX: 310-681-5306; FSC No.: 84048; Empl.: 400; *Sls. Mgr.:* R. Fielder; *Dist. Mgr.:* R. Fielder ... **A•1861, 2128-2129; B•1027; D•1072**

Local Sales Offices & Reps

AZ	Tempe, System Sls. of Az.	602-829-9338
CA	Alhambra, MW Riedel & Co.	213-283-7694
CA	Campbell, Kottmeier Assocs.	408-371-8700
CA	San Diego, M.W. Riedel & Co.	619-272-2359
CO	Englewood, Omega, Ltd.	303-762-1921
CT	Stratford, Gerald Rosen Co.	203-375-5456
FL	Boca Raton, Lawrence Assocs.	305-368-7373
FL	Clearwater, Lawrence Assocs.	813-584-8110
IL	Downers Grove, Circuit Sls.	312-833-2242
IN	Fort Wayne, Ro Whitesell & Assocs.	219-432-5591
IN	Indianpolis, Ro Whitesell & Assocs.	317-359-9283
IN	Kokomo, Ro Whitesell & Assocs.	317-457-9127
KS	Merriam, MTS	913-236-8557
KY	Louisville, Ro Whitesell & Assocs.	502-426-7696
MA	Framingham, Gerald Rosen Co.	617-879-5505
MI	Grand Rapids, Ro Whitesell & Assocs.	616-942-5420
MI	Southfield, Ro Whitesell & Assocs.	313-559-5454
MI	St. Joseph, Ro Whitesell & Assocs.	616-983-7337
MN	Minneapolis, PSI	612-944-8545
NM	Albuquerque, Sys. Sls. of Alb.	505-881-8877
NY	Great Neck, Mos Assocs.	516-487-3966
NY	Syracuse, Pi'tronics	315-435-7346
OH	Cincinnati, Ro Whitesell & Assocs.	513-521-2290
OH	Cleveland, Ro Whitesell & Assocs.	216-447-9020
OH	Columbus, Ro Whitesell & Assocs.	614-888-9396
OH	Dayton, Ro Whitesell & Assocs.	513-298-9546
OK	Broken Arrow, Genzel Sls.	918-258-8656
PA	Broomall, LD Lowery	215-528-5170
PA	Hummelstown, LD Lowery	717-533-7095
PA	Pittsburg, Ro Whitesell & Assocs.	412-963-6161
TX	Arlington, Comptech	817-265-6007
UT	Salt Lake City, Omega, Ltd.	801-277-8061
VA	Charlottesville, LD Lowery	804-973-6672
Can	Rexdale, Ont., Source Elec., Ltd.	613-592-5392

Local Distributors

AR	Little Rock, Carlton-Bates	501-562-9100
CA	Chatsworth, TTI	818-709-1010
CA	San Diego, Shelley-Ragon	619-453-7133
CA	San Fernando, Petell Elec.	213-365-9841
CA	San Jose, Future	408-945-9100
CA	San Jose, Shelley-Ragon	408-942-9111
CA	Thousand Oaks, Bell Inds.	818-340-1940
CO	Denver, Denver-Wintronics	303-431-7161
CO	Lakewood, Acacia	303-232-2882
CT	Bethel, Future	203-847-6442
CT	Norwalk, Cobra Comps.	203-847-6442
CT	Wallingford, Sager Elctrl. Supp.	203-265-4600
FL	Clearwater, Future	813-441-4771
FL	Ft. Lauderdale, Dielco	305-973-8700
FL	Ft. Lauderdale, NRC Elctrns.	305-772-4500
FL	Orlando, TTI Inc.	305-849-1000
FL	Tampa, Impala Elctrns.	813-885-4747
GA	Norcross, TTI	404-662-0911
IL	Chicago, Prehler	312-384-6070
IL	Lisle, Components Inc.	312-852-7707
IN	Indianapolis, Prehler	317-841-0018
IA	Cedar Rapids, Dee Elctrns.	319-365-7551
MA	Woburn, TTI Inc.	617-938-8800
MD	Columbia, TTI	301-995-1331
MD	Rockville, M S Elctrns.	301-340-6400
MA	Framingham, NOW	617-872-5876
MA	Hingham, Sager Elctrl. Supp.	617-749-6700
MA	Westboro, Future	617-366-2400
MI	Farmington Hills, Advent Elctrns.	313-477-1650
MN	Eden Prarie, TTI	612-944-5080
MN	Minneapolis, Aero-Space	612-884-4725
MO	St. Louis, Olive	314-426-4500
NJ	Berlin, GCI	609-768-6767
NJ	East Hanover, State Elctrns.	201-887-2550
NJ	Mt. Laurel, Future	609-778-7600
NJ	New Brunswick, Brothers Elctrns.	201-238-2200
NJ	Whippany, Tonar Ind.	201-884-1400
NM	Albuquerque, Sterling	505-884-1900
NY	Bohemia, TTI Inc	516-567-1500
NY	Buffalo, Summit	716-887-2800
NY	E. Syracuse, Add Elctrns. Corp.	315-437-0300
NY	Farmingdale, Command Elctrns. Corp.	516-293-1212
NY	Farmingdale, Pride Elctrns.	516-293-4020
NY	Hauppauge, Fairmont Elec. Sls.	516-231-3313
NY	Hauppauge, Jaco Elctrns.	516-273-5500
NY	Huntington Station, Sherburn Elctrns.	516-231-4300
NY	Liverpool, Future	315-451-2371
NY	Valley Stream, L & S Elctrns.	516-561-2474
NC	Charlotte, Elctrns. Mktg.	704-394-6195
NC	Raleigh, Southeastern	919-828-2311
OH	Columbus, Elctrns. Mktg.	614-299-4161
OH	Dayton, Bell Micro-Mil	513-434-8231
OK	Tulsa, Radio	918-587-9123
PA	Braddock, Leff	412-351-5000
PA	Montgomeryville, Pyttronic	215-643-2850
PA	Philadelphia, PEI Genesis	215-568-7400
TX	Ft. Worth, TTI Inc.	817-831-0441
TX	Houston, Sterling	713-627-9800
TX	Richardson, Altair	214-231-5166
UT	Salt Lake City, Bell	801-972-6969
UT	Salt Lake City, Future	801-972-8489
VA	Charlottesville, Virginia Radio	804-296-4184
WA	Bellevue, Future	206-881-8199
WA	Redmond, Priebe Elec. Inc.	206-881-2363
WI	Milwaukee, Marsh Elctrns.	414-475-6000

VTM MICROWAVES, INC., 4975 W. 80 Ave., Westminster, CO 80030, Tel: 303-426-6866; FSC No.: 52474; Empl.: 15

V-TRON ELECTRONICS CORP., 10 Venus Way, P.O. Box 3297, S. Attleboro, MA 02703, Tel: 617-761-9100; Empl.: 250; *Sls. Mgr.:* Richard E. French

Local Sales Offices & Reps

CT	Wallingford, Com-Sale	203-269-7964
MA	Waltham, Com-Sale	617-890-0011
NH	Manchester, Com-Sale	603-668-1440
NJ	Haworth, Kay Sls. Assocs.	201-384-3261
TX	Fort Worth, Diversified Comps.	817-249-5818
VA	Portsmouth, FDB Sls. Corp.	804-484-3162

VU-DATA, 9180 Brown Deer Rd., San Diego, CA 92121, Tel: 619-452-7670, TWX: 910-335-1586; FSC No.: 34160; Empl.: 15

WABASH ELECTRICAL COMPONENT GRP., See Kearney/Wabash Electrical Components

Kearney wabash

WABASH RELAY & ELECTRONICS, Kearney-National Company, First & Webster Streets, Wabash, IN 46992, Tel: 219-563-2191, TWX: 810-290-2722; Empl.: 250 ... **B•1506-1507**

Local Sales Offices & Reps

AL	Huntsville, Hughes Assocs., Inc.	205-533-9108
AZ	Fountain Hills, Halbar Assocs., INc.	602-837-2464
CA	Glendale, Halbar	818-246-8263
CA	San Mateo, Halbar	415-349-4700
CO	Denver, Elcom, Inc.	303-337-2300

FL Tampa, APM Assocs. 813-886-2457
GA Norcross, Hughes Assocs., Inc. 404-662-1587
IL Arlington Hgts., M. J. Petersen Assocs. 312-577-8200
IN Fort Wayne, M/S Sls. 219-436-3023
KS Lenexa, Midtec Assocs. 913-541-0505
MD Glen Burnie, Macrotech Assocs., Ltd. 301-766-1111
MA Andover, Crawford Assocs. 617-470-2122
MN Edina, PWC, Inc. 612-831-5999
MS Corinth, Hughes Assocs., Inc. 601-287-2915
MO St. Louis, Midtec Assocs. 314-275-8666
NJ Watchung, Dolan Assocs. 201-753-2671
NC Raleigh, Tingen Tech. Sls. 919-878-4440
OH Dayton, KW Elctrn. Sls. 513-890-2150
OH Shaker Heights, KW Elctrn. Sls. 216-491-9177
PA Allison Park, KW Elctrn. Sls., Inc. 412-487-4300
TN Nashville, Hughes Assocs., Inc. 615-871-0908
TX Denton, Stevens Sls. Co. 817-382-4735
WA Redmond, Halbar Assocs., Inc. 206-882-0990

Local Distributors

CA Fullerton, Pyramid Elctrn. Supp. 714-773-0781
CA Santa Clara, Pyramid Elctrn. Supp. 408-727-9810
CT Wallingford, Cronin Elctrns., Inc. 203-265-3134
IL Elk Grove Village, Nu-Way Elctrn. Distrs. 312-437-7120
MA Needham, Cronin Elctrns., Inc. 617-449-5000
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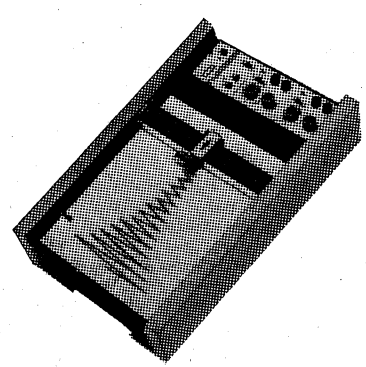

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FL	Hollywood, Askland Elctrn. Comps.	305-987-1074
IL	Arlington Hgts., Dinneen & Assocs.	312-870-0970
MA	Billerica, Bennetron	617-663-7017
MI	Grand Rapids, DEM Elctrn. Sls.	616-361-5414
MI	Warren, DEM Elctrn. Sls.	313-575-9444
NM	Albuquerque, Waide Assocs.	505-294-7600
NY	Hicksville, L Tronix	516-935-0220
NC	Matthews, R G Sls. Co.	704-847-0049
OH	Cincinnati, JMK Elctrns.	513-271-3860
OH	Cleveland, JMK Elctrns.	216-886-7100
TX	Austin, Swearingen Sls., Inc.	512-339-8663
TX	Dallas, Swearingen Sls. Inc.	214-241-8767
Can	Thornhill, Ont., R.F.Q. Ltd.	416-881-1976

Local Distributors

CA	Garden Grove, Inductive Prods.	714-891-2572
CA	Huntington Bch., Inductor Supp. Co.	800-854-1881
NJ	E. Brunswick, Brothers Elctrns., Inc.	201-238-2200
NY	Bohemia, L.I., Key Comps.	516-567-7500

WILCO WIRE & CABLE CO., INC., 1921 Las Plumas Ave., San Jose, CA 95133, Tel: 408-926-8880; Empl.: 52; *Sls. Mgr.:* Joe Shepherd; *Dist. Mgr.:* Ken Schmidt

WILCOXON RESEARCH, 2096 Gaither Rd., Rockville, MD 20850, Tel: 301-330-8811, Telex: 898-342; Empl.: 40; *Sls. Mgr.:* Fred Wilcoxen

WILKINSON, P.O. Box 4558, Westlake Village, CA 91359, Tel: 818-889-0050, 800-822-4653, Telex: 698213; Empl.: 34; *Sls. Mgr.:* R. Cook; *Dist. Mgr.:* R. Cook

WILMANCO, 19529 Business Center Drive, Northridge, CA 91324, Tel: 818-993-1662/1663, TWX: 9103807912 WILMANCOUWAV; FSC No.: 1Y521; Empl.: 12; *Sls. Mgr.:* Christian Noiroux

WILMAR ELECTRONICS, INC., 2430 Amsler St., Torrance, CA 90505, Tel: 213-326-6668, Telex: 182417; FSC No.: 25248; Empl.: 25; *Sls. Mgr.:* Zev Heifetz

WILMORE ELECTRONICS CO., Box 1329, Hillsborough, NC 27278, Tel: 919-732-9351, Telex: 292617; Empl.: 48; *Sls. Mgr.:* J. L. Harris ..... **D•2004-2008, 2110-2111**

WILSON, H. F., ENGINEERING CO., 475 Taft Ave., Glen Ellyn, IL 60137, Tel: 312-469-8473, Telex: 72-1438; Empl.: 21; *Sls. Mgr.:* H. Wilson; *Dist. Mgr.:* William Henry

WILSON, H. M., CO., 11501 Chimney Rock Rd., Houston, TX 77035, Tel: 713-729-1183; Empl.: 3; *Sls. Mgr.:* H. M. Wilson

WILSON ELECTRONICS, See Regency Land Mobile, Inc.

WILTRON, 490 Jarvis Dr., Morgan Hill, CA 95037-2809, Tel: 408-778-2000, Telex: 285227 WILTRON MH, FAX: 408-778-0239; FSC No.: 20944; Empl.: 550; *Sls. Mgr.:* W. Baxter

WINSYSTEMS, INC., P.O. Box 121361, Arlington, TX 76012, Tel: 817-274-7553, FAX: 817-548-1358; FSC No.: 67098

WINTEK CORP., 1801 South St., Lafayette, IN 47904-2993, Tel: 317-742-8428, 800-742-6809, Telex: 70-9079; Empl.: 16 ..... **D•1112-1113**

WIREBENDERS, INC., 2440 W. Mission Ln., Ste. 9, Phoenix, AZ 85021, Tel: 602-861-1856, 870-9242, Telex: 165-025; FSC No.: 5950;FSCS/CAGE 1DA26; Empl.: 18; *Sls. Mgr.:* Leo Middleton

THE WIREMOLD COMPANY, 60 Woodlawn Street, W. Hartford, CT 06110, Tel: 203-233-6251, TWX: 710-425-6281; Empl.: 900; *Sls. Mgr.:* F. D. Casteel

WON TRONICS, Apollo Magnetics Corp., 2720 W. Beverly Blvd., Los Angeles, CA 90057, Tel: 213-381-2500, TWX: 910-321-4348; *Sls. Mgr.:* Michael Ronzon

WORKMAN ELCTRN. PRODS., Box 3828, Sarasota, FL 33578, Tel: 813-371-4242, TWX: 810-864-0401; Empl.: 150; *Sls. Mgr.:* Frank Pounds

WORLDNET MARKETING INC., 3187 F Airway Ave., Costa Mesa, CA 92626, Tel: 714-545-7118, Telex: 3781824; Empl.: 7; *Sls. Mgr.:* Frank Buday; *Dist. Mgr.:* Frank Buday

'WORLD' TEST SYSTEMS, INC., P. O. Drawer 1428, Waynesboro, VA 22980, Tel: 703-949-6753; *Sls. Mgr.:* Buford H. Baber

WOVEN ELECTRONICS, Woven Electronics Corporation, Old Stage Road, Simpsonville, SC 29682, Tel: 803-963-5131, TWX: 810-963-5131, FAX: 803-963-1761; Empl.: 400; *Sls. Mgr.:* Peggy Burnett ..... **C•1927**

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CA	Diamond Bar, Solomon Tech. Sls	714-595-8212
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IL	St. Charles, A. T. Sinker Co.	312-377-6169
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MN	Bloomington, PWC Inc.	612-831-5999
NH	Merrimack, A. T. Sinker Co.	603-424-8061
NJ	Clinton, A.T. Sinker Co.	201-730-8975
SC	Greenville, Ellenburg Tech. Sls.	803-233-9942

WYLE LABS, See Electronic Enclosures

XCP, INC., 8 W. Main St., Dryden, NY 13053, Tel: 607-844-9143; *Sls. Mgr.:* Diane Rademacher

XEBEX DATA SYSTEMS, 6610 Buckley Dr., Cambria, CA 93428, Tel: 805-927-5008; Empl.: 4; *Sls. Mgr.:* W. E. Walker

XEDAR CORP., 2500 Central Ave., Boulder, CO 80301, Tel: 303-443-6441, Telex: 910-940-2512; *Sls. Mgr.:* Carol Lathrop

XENON CORP., 20 Commerce Way, Woburn, MA 01801, Tel: 617-938-3594, Telex: 928204; Empl.: 45; *Sls. Mgr.:* Louis R. Panico

Xentek

XENTEK, INC., 760 Shadow Ridge Dr., Vista, CA 92083, Tel: 619-727-0940, TWX: 910-322-1155; FSC No.: 52360; Empl.: 300 ..... **D•2010-2013**

XERCON, INC., P.O. Box 554, Portland, OR 97207, Tel: 503-292-8682; Empl.: 6; *Sls. Mgr.:* G. Osgood

XEROX CORPORATION, 800 Long Ridge Rd., P.O. Box 1600, Stamford, CT 06904, Tel: 203-968-3000; Empl.: 100,367

XERTEX CORP., See Rosemont Corp., Sensall National Sonics

XICO

XICO, INC., 9737 Eton Ave., Chatsworth, CA 91311, Tel: 818-709-4403, Telex: 709577 Easy Link 62253150; Empl.: 21; *Sls. Mgr.:* Ralph Reccia ..... **D•1106**

XICOR, INC., 851 Buckeye Court, Milpitas, CA 95035, Tel: 408-432-8888, Telex: TWX 910-379-0033; FSC No.: 60395; Empl.: 421; *Sls. Mgr.:* Bruce Mattern; *Dist. Mgr.:* Bruce Mattern

XKD CORPORATION, 101 Cooper Court, Los Gatos, CA 95030, Tel: 408-395-3700, Telex: 171946

XSIS ELECTRONICS, INC., 12620 W. 63rd St., Shawnee, KS 66216, Tel: 913-631-0448, Telex: 437227; FSC No.: 57051; *Sls. Mgr.:* Jerry Dehnert ..... **A•1486-1487**

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AL	Huntsville, Murcota Corp.	205-539-8476
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CA	Mtn. View, Loeswick's	415-967-5880
CT	Stamford, Ashworth Assocs.	203-968-0656
IL	Schaumberg, Sieger Assocs.	312-310-8844
KY	Ft. Mitchell, G. W. Thelen Co.	606-341-8181
MD	Ellicott City, VPI, Inc.	301-461-2525
MA	Shrewsbury, Ashworth Assocs.	617-845-9688
MN	Eden Prairie, Aldridge Assocs., Inc.	612-944-8433
NJ	Fairfield, Addem Sls.	201-882-0993
NY	E. Syracuse, R. D. Sherman	315-433-1165
TX	Houston, Repmaster	713-692-8204
TX	Sherman, Repmaster	214-247-6236
EXP	NY, Great Neck, Ad Auriema	516-487-0700

X-TRON ELECTRONICS, INC., 1869 National Avenue, Hayward, CA 94545, Tel: 415-783-2145; FSC No.: 54166; Empl.: 12; *Sls. Mgr.:* Jackie Medina; *Dist. Mgr.:* Jackie Medina

XYCOM, 750 N. Maple Rd., Saline, MI 48176, Tel: 313-429-4971, TWX: 810-223-8153; Empl.: 225; *Sls. Mgr.:* Dan Lewis; *Dist. Mgr.:* Bill Nemeth

XYLOG CORP., 83 Hobart St., Hackensack, NJ 07601, Tel: 201-489-4040; Empl.: 30; *Sls. Mgr.:* Milton Frank ..... **D•2014-2015**

Local Sales Offices & Reps

NJ	Hillsdale, Rosano Assocs.	201-664-5716

YAMAICHI ELECTRONICS, 2471 E. Bayshore Rd. #530, Palo Alto, CA 94303, Tel: 415-493-3756, TWX: 910-373-2060, ESYLNK:; *Sls. Mgr.:* Kathy Fioretti

YARDNEY BATTERY DIV., Yardney Corp., 82 Mechanic St., Pawcatuck, CT 02891, Tel: 203-599-1100, Telex: 6813114, TWX: 710-470-0260; FSC No.: 87362; Empl.: 300; *Sls. Mgr.:* Rene DuBois

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AZ	Tempe, Elec-Com Assocs.	602-967-8644
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CA	Santa Clara, San Jose	408-293-2600
GA	Atlanta, Craft Assocs.	404-256-0420
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IN	Indianapolis, RDP Corp.	317-243-8788
KS	Overland Park, Advanced Indl. Sys.	913-432-8065
MA	Norwell, Bordewieck Engrg.	617-659-4915
MI	Grand Rapids, Smith Instr. Equip.	616-245-1195
MI	Midland, Smith Instr. Equip.	517-496-2950
MI	Warren, Smith Instr. Equip.	313-755-3110
MN	Minneapolis, Trask Engrg.	612-537-2434
MO	Ellisville, Advanced Indl. Sys.	314-391-0366
NJ	Scotch Plains, RJM Sls.	201-322-7880
NY	Syracuse, Labtronics	315-455-7314
OH	Cleveland, RDP Assocs.	216-659-3138

OH Dayton, RDP Assocs. 513-253-6175
PA Pittsburgh, RDP Assocs. 412-487-5055
TX Pasadena, Tech-Quip, Inc. 713-473-2891
TX Plano, Acudata, Inc. 214-424-3567
VA Richmond, Advance Control Equip. ... 804-264-7100
WA Bellevue, Topp Engrg. Sls. 206-747-5400

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IL Chicago, Newark Elctrnsà 312-784-5100
MA Norwell, Bmrdwieck Eng. Sls. 617-659-5915
MN Minneapolis, Trask Engrg. 612-537-2434
NJ Scotch Plains, RJM Sls. 201-322-7880
NY Buffalo, Terryberry Sls. 716-632-7404
OH Dayton, RDP Corp. 513-253-6175
TX Argyle, Milestek Inc. 817-455-7444
WA Bellevue, Topp Engrg. Sls. 206-747-5400

YEW CORP., See Yokogawa Corp. of America

YOKOGAWA CORP. OF AMERICA, 200 West Park Drive, Peachtree City, GA 30269, Tel: 404-487-1471, TWX: 714-567-1256; Empl.: 70; *Sls. Mgr.:* Walt Steward

YORK METAL PRODUCTS, INC., 34-20 12th St., Long Island City, NY 11367, Tel: 718-932-3660; Empl.: 45; *Sls. Mgr.:* Harold Miller

YORK TECHNOLOGY, INC., Research Park, 139 Wall Street, Princeton, NJ 08540, Tel: 609-924-7676, Telex: 3762780

YUASA BATTERY (AMERICA), INC., 9728 Alburtis Ave., Santa Fe Springs, CA 90670, Tel: 213-949-4266, Telex: 696272; Empl.: 5,000; *Sls. Mgr.:* Les Biggins ..... **D•1481**

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CA Huntington Bch., West Elctrn Sls. 213-493-5569
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CO Englewood, Frontier Reps. 303-799-6063
CT Horth Haven, Kitchen & Kutchin 203-239-0212
FL Tampa, Over and Over 813-626-9100
GA Atlanta, Over and Over 404-449-6205
IL Cary, Ellinger Sls. 312-639-1850
IA Cedar Rapids, R.W. Kunz & Assocs. .. 319-396-5386
KS Prairie Vlg., R.W. Kunz & Assocs. 913-648-3535
MA Burlington, Kitchen & Kutchin 617-229-2660
MI Southfield, Component Assocs. 313-557-3232
MN Minneapolis, Johnson Co. 612-941-8526
MO St. Louis, R.W. Kunz & Assocs. 314-966-4977
NJ Berkeley Hgts., Cambridge Allen & Assocs. 201-464-0203
NJ Carlstadt, Yuasa Battery (Amer.) E. Reg. Off. 201-896-8800
NY Rochester, Ossman Comps. Sls. 716-424-4460
NY Syracuse, Ossman Comps. Sls. 315-455-6611
NY Vestal, Ossman Comps. Sls. 607-754-3264
NC Charlotte, Over and Over 704-542-9111
OH Columbus, McFadden Sls. 614-459-1280
OK Tulsa, Barry Sls. 918-749-7775
OR Portland, Earl & Brown 503-245-2283
TX Houston, Barry Sls. 713-784-5860
TX Richardson, Barry Sls. 214-234-0255
WA Lynwood, Earl & Brown 206-885-5064
Can Pointe-Claire, Que., Tech Trek, Ltd. ... 514-697-3385
Can Rexdale, Ont., Tech Trek, Ltd. 416-674-1717

Local Distributors

AL Huntsville, Newark Elctrns. 205-837-9011
AL Janeau, Janeau Elctrl. Equip. 907-586-2260
AZ Glendale, Lynntronics 602-931-5981
CA Buena Pk., Cypress Elctrns. 714-521-5230
CA Costa Mesa, House of Batteries 714-642-8222
CA San Diego, Tauber Elctrns. 619-274-7242
CA Santa Clara, Cypress Elctrns. 408-980-2500
CO Wheatridge, Cypress Elctrns. 303-431-2622
FL Miami, Elctrn. Equip. 305-871-3500
GA Norcross, Applied Power 404-263-0421
HI Honolulu, Elctrl. Equip. 808-533-3881
IL Addison, L Comp 312-628-1400
IL Downers Grove, Jarbo Battery 312-964-9358
IN Indianapolis, Newark Elctrns. 317-872-7070
KS Wichita, L Comp 316-265-5100
MD Beltsville, Mark Elctrns. 301-595-5040
MA Middleboro, Glynn Elctrns. 617-947-4262
MI Brighton, Applied Power 313-229-6550
MI Grand Rapids, Newark Elctrns. 616-214-6681
MN Minneapolis, Bergquist Co. 612-835-2322
MS Jackson, Newark Elctrns. 314-291-6200
MO Kansas City, L Comp 816-221-2400
NH Salem, Cronin Elctrns. 603-898-4440
NJ Clifton, Engrd. Assemblies 201-340-0600
NJ Edison, Newark Elctrns. 201-572-2103
NY Farmingdale, Battery Expeditors 516-752-0111
NY FLushing, W & W Assocs. 718-961-2103
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NY Rochester, Newark Elctrns. 716-473-6600
NC Raleigh, Engrd. Assemblies 919-790-9700
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WI Milwaukee, Newark Elctrns. 414-463-1100
Can Brampton, Ont., Zentronics 416-451-8445

ZAMBRE CO., INC., 2134 Old Middlefield Way, Mountain View, CA 94043, Tel: 415-968-9176

ZEBRA TECHNOLOGIES CORPORATION, 3455 Commercial Ave., Northbrook, IL 60062, Tel: 312-564-1800, Telex: 206230; Empl.: 110; *Sls. Mgr.:* Charles Waller

ZEHNTEL, INC., 2625 Shadelands Dr., Walnut Creek, CA 94598, Tel: 415-932-6900, Telex: 371-6185, TWX: 910-385-6300; Empl.: 750; *Sls. Mgr.:* Dick Noren; *Dist. Mgr.:* Jim Mohr

CARL ZEISS, INC., One Zeiss Drive, Thornwood, NY 10594, Tel: 914-747-1800, Telex: RCA 221834, TWX: WV64-6928

ZENDEX CORP., 6700 Sierra La., Dublin, CA 94568, Tel: 415-828-3000, TWX: 910-389-4009, FAX: 415-828-1574; Empl.: 42; *Sls. Mgr.:* Carl Dossenbach

ZENITH CRT & COMPONENTS OPERATIONS, 1000 Milwaukee Ave., Glenview, IL 60025, Tel: 312-391-7733; *Sls. Mgr.:* Norm Berkowitz

ZENITH COMPONENTS GROUP, Zenith Electronics Corp., 1000 Milwaukee Ave., Glenview, IL 60025, Tel: 312-391-7733, Telex: 254396; *Sls. Mgr.:* George Zimmerer

ZERO CORP., 444 S. Flower St., Ste. 2100, Los Angeles, CA 90071, Tel: 213-629-7080, FAX: 213-629-2366; Empl.: 1400; *Sls. Mgr.:* Doug Griffith ..... **C•1104**

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CA Burbank, Zero-West Div. 818-846-4191
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CA San Diego, San Diego Sls. Off. 619-271-7221
CO Boulder, Component Prod. Sls. Co. Inc. 303-530-2800
FL Clearwater, Zero-East Div. 813-531-8991
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IA Cedar Rapids, Carlson Elctrn. Sls. 319-377-6341
MS Jackson, S. L. Welch 601-932-5534
MD Baltimore, Marktron 301-628-1111
MA Monson, Zero-East Div. 413-267-5561
MI Grosse Pointe Park, Greiner Assoc. Inc. 313-499-0188
MN Bloomington, Elctrn. Sls. Agcy. 612-884-8291
MO St. Louis, Cadon Techn. Sls. 314-645-8670
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NY East Syracuse, Fountain Young & Co. 315-437-7733
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ZERO CORP., Zero East Div., 288 Main St., Monson, MA 01057, Tel: 413-267-5561, TWX: 710-354-1450; *Sls. Mgr.:* Roger St. Martin ..... **C•1104**

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AL Huntsville, BJR Mfg. Reps. 205-881-3569
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CA Burbank, Zero West Div. 213-846-4191
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CO Boulder, Comp. Prod. Sls. 303-530-2800
CT Monson, Zero-East Div. 413-267-5561
IL Elk Grove Vl., Carlson Elctrn. Sls. 312-956-8240
IN Indianapolis, Leslie M. Devoe Co. 317-842-3245
IA Cedar Rapids, Carlson Elctrn. Sls. 319-377-6341
MD Rockville, Marktron, Inc. 301-251-8990
MA Monson, Zero-East Div. 413-267-5561
MI Grosse Pointe Pk., Greiner Assocs., Inc. 313-499-0188
MN Bloomington, Elctrn. Sls. Agcy. 612-884-8291
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MO St. Louis, Cadon Tech. Sls. Co. 314-645-8670
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NY Commack, MTR, Inc. 516-462-9580
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UT Salt Lake City, Effective Sls. 801-266-9617
VA Charlottesville, Marktron, Inc. 301-251-8990
WA Vashon, RTS 206-285-1363
WI Milwaukee, Carlson Elctrn. Sls. 414-476-2790
Can Islington, Ont., Pipe-Thompson Ltd. ... 416-236-2355

ZETA LABS., Sub. of Whittaker Corp., 3265 Scott Blvd., Santa Clara, CA 95054, Tel: 408-727-6001, TWX: 910-338-7336; FSC No.: 31260; Empl.: 280; *Sls. Mgr.:* C. W. Frank

ZEUS INDL. PRODS. INC., P.O. Box 298, Raritan, NJ 08869, Tel: 201-526-0800, 800-526-3842, TWX: 710-480-9346; FSC No.: 32039; Empl.: 150; *Sls. Mgr.:* Jeffrey J. Tourville; *Dist. Mgr.:* Michael C. Tourville ..... **C•1707**

ZEVATECH, INC., 1580 Old Oakland Rd., Suite C-108, San Jose, CA 95131, Tel: 408-289-1001; Empl.: 70; *Sls. Mgr.:* Bob Black; *Dist. Mgr.:* Bob Black

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IL Palatine, Claeson Assocs. 312-359-7230

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ZIRMEX, See Degussa Electronics, Hybrid Div.

ZI-TECH INSTRUMENT CORP., P.O. Box 391567, Mountain View, CA 94039, Tel: 415-966-8484, Telex: 334-447, FAX: 415-966-8201; Empl.: 15; *Sls. Mgr.:* J. Ziman

ZITEL CORPORATION, 630 Alder Dr., Milpitas, CA 95035, Tel: 408-946-9600, Telex: 171607, TWX: 910-338-0567

Z-LINE POWER CONTROLLERS, See Pulizzi Engineering, Inc.

ZYLAB CORP., 233 E. Erie, Chicago, IL 60611, Tel: 312-642-2201, TWX: 383422 ZYLAB CGO; Empl.: 8; *Sls. Mgr.:* Tom Priestley

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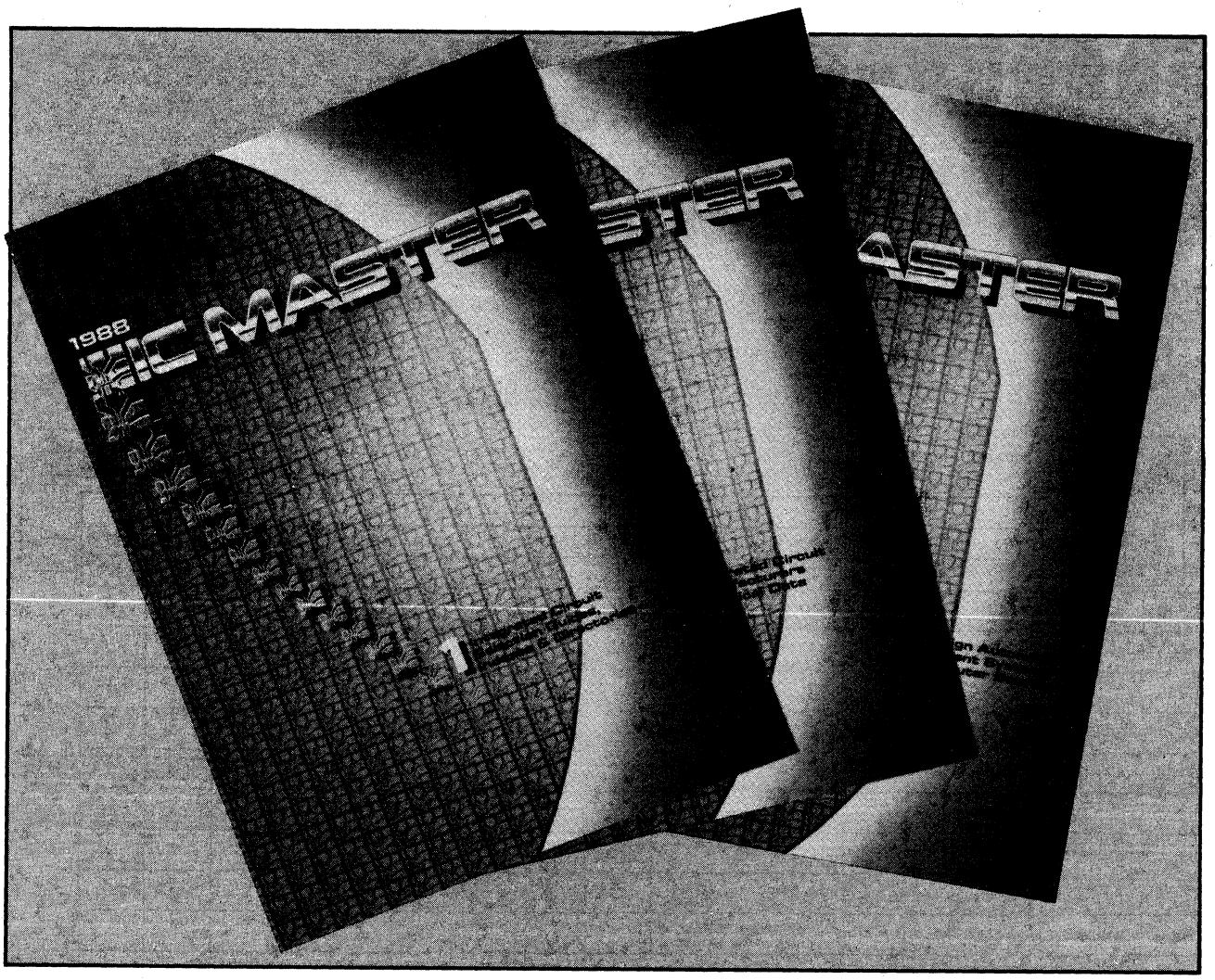

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Do you work with ICs? Do you have trouble finding the IC you need? Are you sick and tired of sifting through dozens of manufacturers' data books? Do you have trouble comparing one set of specs to another? Are you sick and tired of wasting time?

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MINIGLOSSARY
BASIC ASCII CODE

Bit positions 4, 3, 2, 1	Second Hexadecimal Digit	First Hexadecimal Digit: Bit Positions 6, 5 = 00				01				10				11			
		Bit Positions 8, 7 = 00				01				10				11			
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	0					@	P			`	P
0001	1	SOH	DC1			!	1					A	Q			a	q
0010	2	STX	DC2			"	2					B	R			b	r
0011	3	ETX	DC3			#	3					C	S			c	s
0100	4	EOT	DC4			$	4					D	T			d	t
0101	5	ENQ	NAK			%	5					E	U			e	u
0110	6	ACK	SYN			&	6					F	V			f	v
0111	7	BEL	ETB			'	7					G	W			g	w
1000	8	BS	CAN			(	8					H	X			h	x
1001	9	HT	EM			)	9					I	Y			i	y
1010	A	LF	SUB			*	:					J	Z			j	z
1011	B	VT	ESC			+	;					K	[			k	{
1100	C	FF	FS			,	<					L	\			l	¦
1101	D	CR	GS			-	=					M	]			m	}
1110	E	SO	RS			.	>					N	^			n	~
1111	F	SI	US			/	?					O	_			o	DEL

Control Character Representations

NUL	Null
SOH	Start of Heading (CC)
STX	Start of Text (CC)
ETX	End of Text (CC)
EOT	End of Transmission (CC)
ENQ	Enquiry (CC)
ACK	Acknowledge (CC)
BEL	Bell
BS	Backspace (FE)
HT	Horizontal Tabulation (FE)
LF	Line Feed (FE)
VT	Vertical Tabulation (FE)
FF	Form Feed (FE)
CR	Carriage Return (FE)
SO	Shift Out
SI	Shift In
DLE	Data Link Escape (CC)
DC1	Device Control 1
DC2	Device Control 2
DC3	Device Control 3
DC4	Device Control 4
NAK	Negative Acknowledge (CC)
SYN	Synchronous Idle (CC)
ETB	End of Transmission Block (CC)
CAN	Cancel
EM	End of Medium
SUB	Substitute
ESC	Escape
FS	File Separator (IS)
GS	Group Separator (IS)
RS	Record Separator (IS)
US	Unit Separator (IS)
DEL	Delete

(CC) Communication Control
(FE) Format Effector
(IS) Information Separator

Special Graphic Characters

SP	Space
!	Exclamation Point
¦	Logical OR
"	Quotation Marks
#	Number Sign
$	Dollar Sign
%	Percent
&	Ampersand
'	Apostrophe
(	Opening Parenthesis
)	Closing Parenthesis
*	Asterisk
+	Plus
,	Comma
-	Hyphen (Minus)
.	Period (Decimal Point)
/	Slant
:	Colon
;	Semicolon
<	Less Than
=	Equals
>	Greater Than
?	Question Mark
@	Commercial At
[	Opening Bracket
\	Reverse Slant
]	Closing Bracket
^	Circumflex
¬	Logical NOT
_	Underline
`	Grave Accent
{	Opening Brace
¦	Vertical Line (This graphic is stylized to distinguish it from Logical OR)
}	Closing Brace
~	Tilde

MINIGLOSSARY
BASIC
EBCDIC CODE

Bit Positions 4, 5, 6, 7	Second Hexadecimal Digit	Digit Punches	00				01				10				11				
			00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bit Positions 0, 1
			00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bit Positions 2, 3
			0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	First Hexadecimal Digit
			12				12	12		12	12	12		12	12				Zone Punches
				11				11	11	11		11	11	11		11			
					0		0		0	0	0		0	0			0		
			9	9	9	9	9	9	9	9									Digit Punches
			①	②	③	④	⑤	⑥	⑦	⑧					⑨	⑩	⑪	⑫	
0000	0	8-1	NUL	DLE	DS		SP	&	-									0	8-1
0001	1	1	SOH	DC1	SOS				⑬		a	j			A	J	⑭	1	1
0010	2	2	STX	DC2	FS	SYN					b	k	s		B	K	S	2	2
0011	3	3	ETX	TM							c	l	t		C	L	T	3	3
0100	4	4	PF	RES	BYP	PN					d	m	u		D	M	U	4	4
0101	5	5	HT	NL	LF	RS					e	n	v		E	N	V	5	5
0110	6	6	LC	BS	ETB	UC					f	o	w		F	O	W	6	6
0111	7	7	DEL	IL	ESC	EOT					g	p	x		G	P	X	7	7
1000	8	8		CAN							h	q	y		H	Q	Y	8	8
1001	9	8-1		EM							;	r	z	`	I	R	Z	9	9
1010	A	8-2	SMM	CC	SM		¢	!	⑮	:									8-2
1011	B	8-3	VT	CU1	CU2	CU3	.	$	,	#									8-3
1100	C	8-4	FF	IFS		DC4	<	*	%	@									8-4
1101	D	8-5	CR	IGS	ENQ	NAK	(	)	_	'									8-5
1110	E	8-6	SO	IRS	ACK		+	;	>	=									8-6
1111	F	8-7	SI	IUS	BEL	SUB	I	¬	?	"									8-7
			12				12				12	12		12	12	12		12	Zone Punches
				11				11				11	11	11		11	11	11	
					0				0		0		0	0	0		0	0	
			9	9	9	9									9	9	9	9	

Card Hole Patterns

①	12-0-9-8-1	⑤	No-Punches	⑨	12-0	⑬	0-1
②	12-11-9-8-1	⑥	12	⑩	11-0	⑭	11-0-9-1
③	11-0-9-8-1	⑦	11	⑪	0-8-2	⑮	12-11
④	12-11-0-9-8-1	⑧	12-11-0	⑫	0		

Control Character Representations

ACK	Acknowledge
BEL	Bell
BS	Backspace
BYP	Bypass
CAN	Cancel
CC	Cursar Control
CR	Carriage Return
CU1	Customer Use 1
CU2	Customer Use 2
CU3	Customer Use 3
DC1	Device Control 1
DC2	Device Control 2
DC4	Device Control 4
DEL	Delete
DLE	Data Link Escape
DS	Digit Select
EM	End of Medium
ENQ	Enquiry
EOT	End of Transmission
ESC	Escape
ETB	End of Transmission Block
ETX	End of Text
FF	Form Feed
FS	Field Separator
HT	Horizontal Tab
IFS	Interchange File Separator
IGS	Interchange Group Separator
IL	Idle
IRS	Interchange Record Separator
IUS	Interchange Unit Separator
LC	Lower Case
LF	Line Feed
NAK	Negative Acknowledge
NL	New Line
NUL	Null
PF	Punch Off
PN	Punch On
RES	Restore
RS	Reader Stop
SI	Shift In
SM	Set Mode
SMM	Start of Manual Message
SO	Shift Out
SOH	Start of Heading
SOS	Start of Significance
SP	Space
STX	Start of Text
SUB	Substitute
SYN	Synchronous Idle
TM	Tape Mark
UC	Upper Case
VT	Vertical Tab

Special Graphic Characters

¢	Cent Sign
.	Period, Decimal Point
<	Less-than Sign
(	Left Parenthesis
+	Plus Sign
!	Logical OR
&	Ampersand
!	Exclamation Point
$	Dollar Sign
*	Asterisk
)	Right Parenthesis
;	Semicolon
¬	Logical NOT
-	Minus Sign, Hyphen
/	Slash
,	Comma
%	Percent
_	Underscore
>	Greater-than Sign
?	Question Mark
:	Colon
#	Number Sign
@	At Sign
'	Prime, Apostrophe
=	Equal Sign
"	Quotation Mark

eem SI UNITS

RELATIVE QUANTITY SYMBOLS

$\neq$	not equal to
$\approx$	approximately equal to
$\propto$	proportional to
$<$	smaller than
$\leq$	smaller than or equal to
«	much smaller than
$>$	larger than
$\geq$	larger than or equal to
»	much larger than
$\equiv$	identical to or equivalent
$\uparrow$	increases
$\downarrow$	decreases

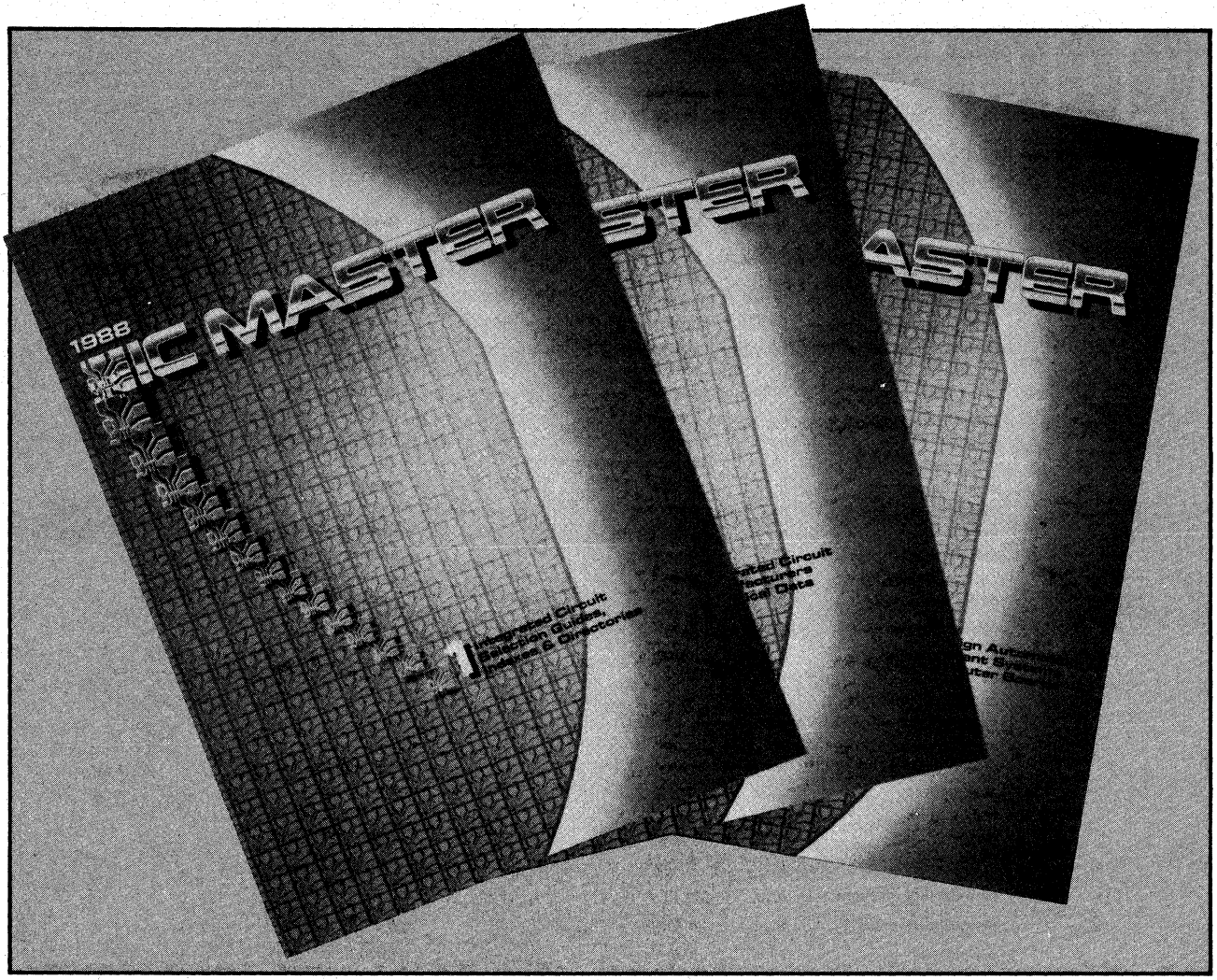
PREFIXES FOR SI UNITS

Multiple	Prefix	Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p

Quantity	Symbol	SI Unit	Symbol	Derivation
acceleration	a	m s^{-2}	—	velocity/time
acceleration due to gravity	g	m s^{-2}	—	velocity/time
amount of substance	n	mole	mol	mole fraction (n) used
amplification factor	μ	*a ratio*	—	—
angle	$\theta_1, \varphi_1, \alpha_1$	—	—	—
angle of incidence	i	degree or radian	°	—
angle of refraction	r	degree or radian	°	—
angle, Bragg	θ	number	—	—
angle, critical	c	degree or radian	°	—
anode slope resistance	R_A	ohm	Ω	$\Delta V_a / \Delta I_a$
area	A	metres squared	m^2	$l \times b$
atomic number	Z	a number	—	number of protons
Avogadro constant	L, N_A	number	—	—
breadth	b	metre	m	fundamental unit
capacitance	C	farad	F	charge/p.d.
charge, electric	Q	coulomb	C	current × time
charge on electron	e	coulomb	C	$1{\cdot}6 \times 10^{-19}$ C
conductance	G	ohm^{-1}	Ω^{-1}	reciprocal of resistance
current, electric	I	ampere	A	fundamental unit
decay constant	λ	*a ratio*	—	—
density	ρ	kg m^{-3}	—	m/V
distance along path	s	metre	m	fundamental unit
efficiency	η	*a ratio*	—	work output/work input
electrochemical equiv.	z	g C^{-1}	—	mass/charge
electromotive force	E	volt	V	energy/charge
electron	e	—	—	—
energy	E	joule	J	N m
energy, kinetic	E_k	joule	J	N m. $E_k = 1/2mv^2$
energy, potential	E_p	joule	J	N m. $E_p = mgh$
Faraday constant	F	coulomb mol^{-1}	C mol^{-1}	96,500 C mol^{-1}
field strength, electric	E	V m^{-1}	—	potential gradient: p.d./dist.
field-strength magnetic	H	ampere-turns	—	current × no. of turns
flux, magnetic	Φ	weber	Wb	e.m.f/rate of change of flux
flux density	B	tesla	T	flux/area
focal length	f	metre	m	—
force	F	newton	N	kg m s^{-2}
free energy	ΔG	joule	J	—
frequency	f	hertz	Hz	oscillations/time
gas constant	r	joule	J	energy
half-life,radioactivity	$t_{1/2}$	second	s	fundamental unit
heat capacity	C	J K^{-1}	—	quantity of heat/temp. rise
heat of reaction	ΔH	joule	J	heat energy
heat capacity, specific	c	J K^{-1} kg^{-1}	—	heat capacity/mass
heat, quantity of	q	joule	J	energy

eem SI UNITS

Quantity	Symbol	SI Unit	Symbol	Derivation
height	h	metre	m	fundamental unit
image distance	υ	metre	m	fundamental unit
inductance, mutual	M	henry	H	induced e.m.f./rate of change of current
inductance, self	L	henry	H	—
intensity of radiation	I	*a number*	—	—
latent heat	L	joule	J	quantity of heat
latent heat, specific	l	J kg^{-1}	—	quantity of heat
latent heat, molar	L_m	joule mol^{-1}	J	quantity of heat
length	l	metre	m	fundamental unit
magnetizing force	H	ampere-turns	—	—
magnetic moment	m	Wb m	—	torque in unit magnetic field
magnification, linear	m	*a ratio*	—	—
mass	m	kilogramme	kg	fundamental unit
mass number	A	*a number*	—	number of neutrons + protons
molar volume	V_m	(dm^3)	—	volume of 1 mole
molar solution	M	*a ratio*	—	moles/dm^3
moment of force	—	N m	—	force × perp. distance
neutron number	N	*a number*	—	number of neutrons
number	n	—	—	—
number of molecules	N	—	—	—
number turns on coil	n	*a number*	—	—
number order spectrum	p	*a number*	—	—
object distance	u	metre	m	fundamental unit
peak current	I_o	ampere	A	see current
peak e.m.f.	E_o	volt	V	see e.m.f.
period	T	second	s	fundamental unit
permeability	μ	H m^{-1}	—	henry/metre
permeability, vacuum	μ_o	H m^{-1}	—	—
permeability, relative	μ_r	*a ratio*	—	$\mu = \frac{\mu}{\mu_o}$
permittivity	ε	F m^{-1}	—	farad/metre
permittivity, vacuum	ε_o	F m^{-1}	—	farad/metre
permittivity, relative	ε_r	*a ratio*	—	$\varepsilon_r = \frac{\varepsilon}{\varepsilon_o}$
potential, electric	V	volt	V	energy/charge
potential difference	V	volt	V	energy/charge
power	P	watt	W	J s^{-1}
pressure	p	pascal	Pa	N m^{-2}: force/area
radius	r	metre	m	fundamental unit
reactance	X	ohm	Ω	E_o/I_o
refractive index	n	*a ratio*	—	—
resistance	R	ohm	Ω	p.d./current
resistivity, electrical	ρ	ohm-metre	—	resistance × length
relative density	d	*a ratio*	—	ρ_{sub}/ρ_{water}
r.m.s. current	$I_{r.m.s}$	ampere	A	see current
r.m.s. voltage	$V_{r.m.s}$	volt	V	see e.m.f.
slit separation	s	metre	m	fundamental unit
tension	T	newton	N	see force
temperature, Celsius	θ	degree C	°C	from kelvin
temp. interval	θ	degree	° or K	—
temp. absolute	T	kelvin	K	fundamental unit
thickness	d	metre	m	fundamental unit
time	t	second	s	fundamental unit
torque	T	Nm	—	see moment
turns ratio	T	*a ratio*	—	n_{sec}/n_{prim}
(unit of electricity)	—	kW h	—	kilowatt × hour
velocity	u,υ	ms^{-1}	—	distance/time
velocity, angular	ω	$second^{-1}$	s^{-1}	angle/time
velocity, e.m.waves	c	m s^{-1}	—	—
velocity of sound	υ	m s^{-1}	—	—
volume	V	metre cubed	m^3	l × b × h
wavelength	λ	metre	m	fundamental unit
work	w	joule	J	force x distance (Nm)
weight	W	newton	N	kg m s^{-2} or mg



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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3)
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

CHARACTERISTICS OF BATTERIES AND FUEL CELLS

System	Anode	Cathode	Theoretical battery		Practical battery		
			Voltage, V	Capacity, Ah/kg	Typical voltage, V	Capacity[a]	
						Wh/kg	Wh/dm³
Primary:							
Leclanche	Zn	MnO_2	1.6	230	1.2	65	175
Magnesium	Mg	MnO_2	2.0	270	1.5	100	195
Organic cathode	Mg	*m*-DNB	1.8	1,400	1.15	130	180
Alkaline MnO_2	Zn	MnO_2	1.5	230	1.15	65	200
Mercury	Zn	HgO	1.34	185	1.2	80	370
Mercad	Cd	HgO	0.9	165	0.85	45	175
Silver oxide	Zn	AgO	1.85	285	1.5	130	310
Zinc-air	Zn	Air (O_2)	1.6	815	1.1	200	190
Li-organic electrolyte	Li	[b]	2.1-5.4	130-660	1.8-3.2	250	400
Secondary:							
Lead-acid	Pb	PbO_2	2.1	55	2.0	37	70
Edison	Fe	Ni oxides	1.5	195	1.2	29	65
Nickel-cadmium	Cd	Ni oxides	1.35	165	1.2	33	60
Silver-zinc	Zn	AgO	1.85	285	1.5	100	170
Silver-cadmium	Cd	AgO	1.4	230	1.05	55	120
Zinc-nickel oxide	Zn	Ni oxides	1.75	185	1.6	55	110
Zinc-air[c]	Zn	Air (O_2)	1.6	815	1.1	150	155
Cadmium-air[c]	Cd	Air (O_2)	1.2	475	0.8	90	90
Zinc-O_2	Zn	O_2	1.6	610	1.1	130	120
H_2-O_2	H_2	O_2	1.23	3,000	0.8	45	65
Reserve:							
Cuprous chloride	Mg	CuCl	1.5	240	1.4	45	65[d]
Silver-chloride	Mg	AgCl	1.6	170	1.5	60	95[d]
Zinc-silver oxide	Zn	AgO	1.85	285	1.5	30	75[e]
Thermal	Ca	[b]	2.8	240	2.6	10	20[f]
Ammonia-activated	Mg	*m*-DNB	2.2	1,400	1.7	22	60[g]
High-temperature	NA	S	2.1	685	1.8	200	[h]
	Li	S	2.2	1,150	1.8	200	[i]
Solid electrolyte	Ag	Polyiodide	0.66	. . .	0.6	180	75[j]
Fuel cell:							
Hydrogen[c]	H_2	Air	1.23	26,000	0.7		[k]
Hydrazine[c]	N_2H_4	Air	1.5	2,100	0.7	800[b]	[l]
Methanol[c]	CH_2OH	Air	1.3	1,400	0.9	175[b]	185[m]

a Delivered capacity when discharged at normal temperatures (20°C) at normal discharge rates.
b Based on fuel consumption only.
c Weight of air not considered in computation of watt hours.
d Water-activated
e Automatically activated; high rate discharge; 2- to 10-min rate.
f Fused salt; heat-activated; high rate discharge; 2- to 10-min rate.
g Four-minute discharge rate.
h β-alumina electrolyte, 300°C operation.
i Fused salt; 350°C operation.
j Solid $RbAg_4I_5$ electrolyte.
k Several different cathode materials used.
l Fuel consumption is based on source of H_2.
m Based on methanol battery-fuel supply in situ.

eem MINIGLOSSARY POWER SUPPLIES

Ambient reference: Refers to the temperature of the still air surrounding the power supply

Case reference: One of the specs that make up the nominal rating. The temperature of the case with the temperature of the surrounding still air at a stated temperature (usually 25°C).

Crowbar circuit: Protects the load. A protective circuit that applies a short circuit across the output immediately upon overload. (See overvoltage).

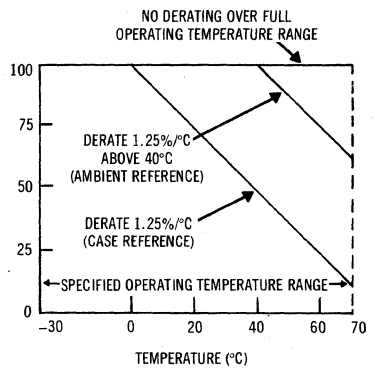


Fig. 1. Power output derating can be referred to ambient or case.

Derating: The degree output is reduced as temperature increases. Usually referenced to ambient case temperature and shown on a graph.

Efficiency: Ratio of the output power to the required input power. Usually expressed as a percentage given nominal environmental temperature.

EMI/RFI: Interference electronic circuitry caused by energy from electromechanical or radio frequency power supplies.

Foldback: Built-in protective circuits that automatically reduce the output voltage and/or current to very low levels in the event of an overload.

Holdover (Holdup): The interval that rated output will continue after input ceases. Usually milliseconds.

Input reflected current: The peak-to-peak alternating current generated by switching transients in DC/DC converters. Should not exceed 1%.

Inrush current limiting: Built-in circuits that monitor high currents through the rectifiers to the capacitors at turn ON. Circuit is usually inhibited as capacitors attain full charge.

Nominal rating: The spec value of the supply at stated conditions of input, output, and temperature.

Overshoot: A transient voltage change occurring during turn ON or OFF or during an abrupt load change.

Overvoltage (Overload) protection: Built-in circuits that protect the load or the supply by shutting it down or providing foldback.

Recovery: The time interval between the termination of an overload and restoration to normal operations.

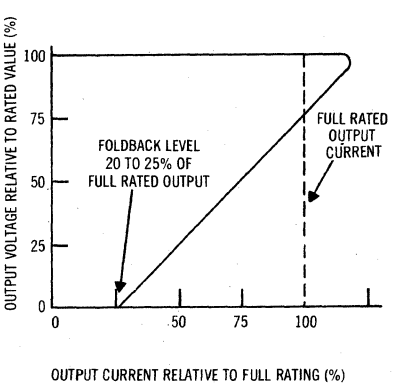


Fig. 2. Current foldback limiting self-resets with removal of fault.

Response: The time interval between a stated step change in input voltage or load current and return of output to normal operating conditions.

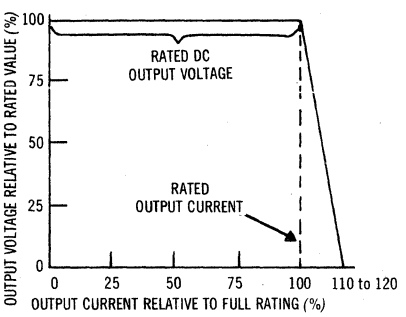


Fig. 3. Current limiting restrictions output current to a valve somewhat greater than full rated output; it resets when fault is removed.

Sensing: Regulation techniques that monitor output voltage and/or current. *Local sensing* refers to the output terminals. *Remote sensing* allows a feedback from the load circuit to the power supply.

Soft start: Allows the supply to start from zero current and/or voltage over a stated period of time during start up to prevent voltage overshoots and current imbalances.

Switchers: Power supplies using switching techniques to achieve high efficiency regulation. These techniques can have attendant EMI/RFI problems.

Tracking: The maintaining of fixed ratios between multiple outlets despite variations in line, load or temperature. Particularly important in supplies with symetrical (+)(−) outputs.

Transient protection: Circuitry designed to protect the supply from high amplitude line transients. Generally expressed in terms of peak voltage and maximum transient time duration.

NOMOGRAPH VOLTAGE DROP

NOMOGRAPH OF VOLTAGE DROP ACROSS LOAD SUPPLY LEADS
(as a function of wire size and load current)

THIS NOMOGRAPH CAN BE USED TO FIND:

Maximum current carrying capacity recommended for any standard wire size.*

1) With a straight edge, connect from the wire size on Scale 2 to the point "A" on Scale 3.
2) Read I_{max} on Scale 1.

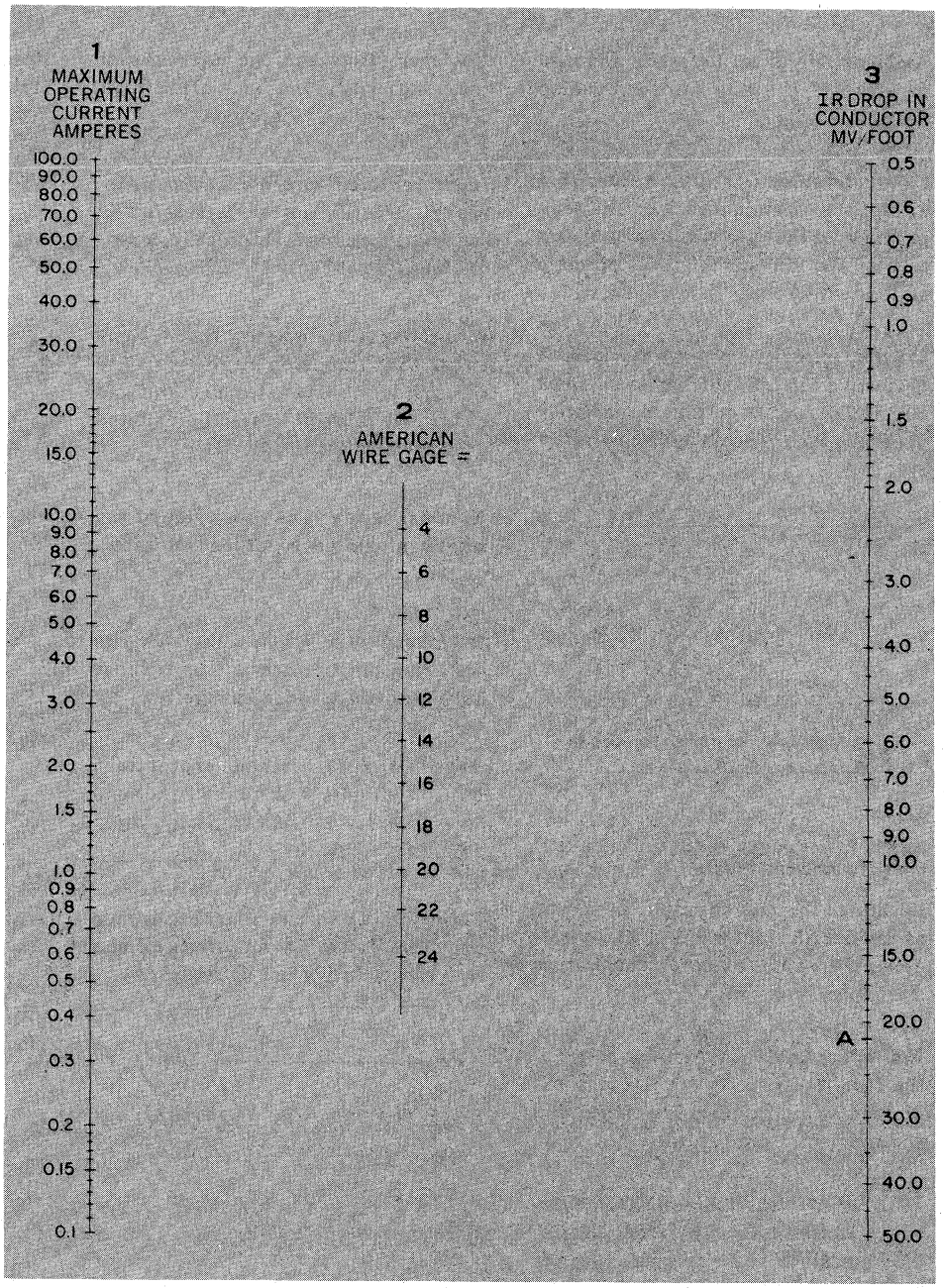
Voltage drop in millivolts per foot for known wire size and operating current.

1) With a straight edge, connect the known current on Scale 1 and the wire size on Scale 2.
2) Read voltage drop on Scale 3.

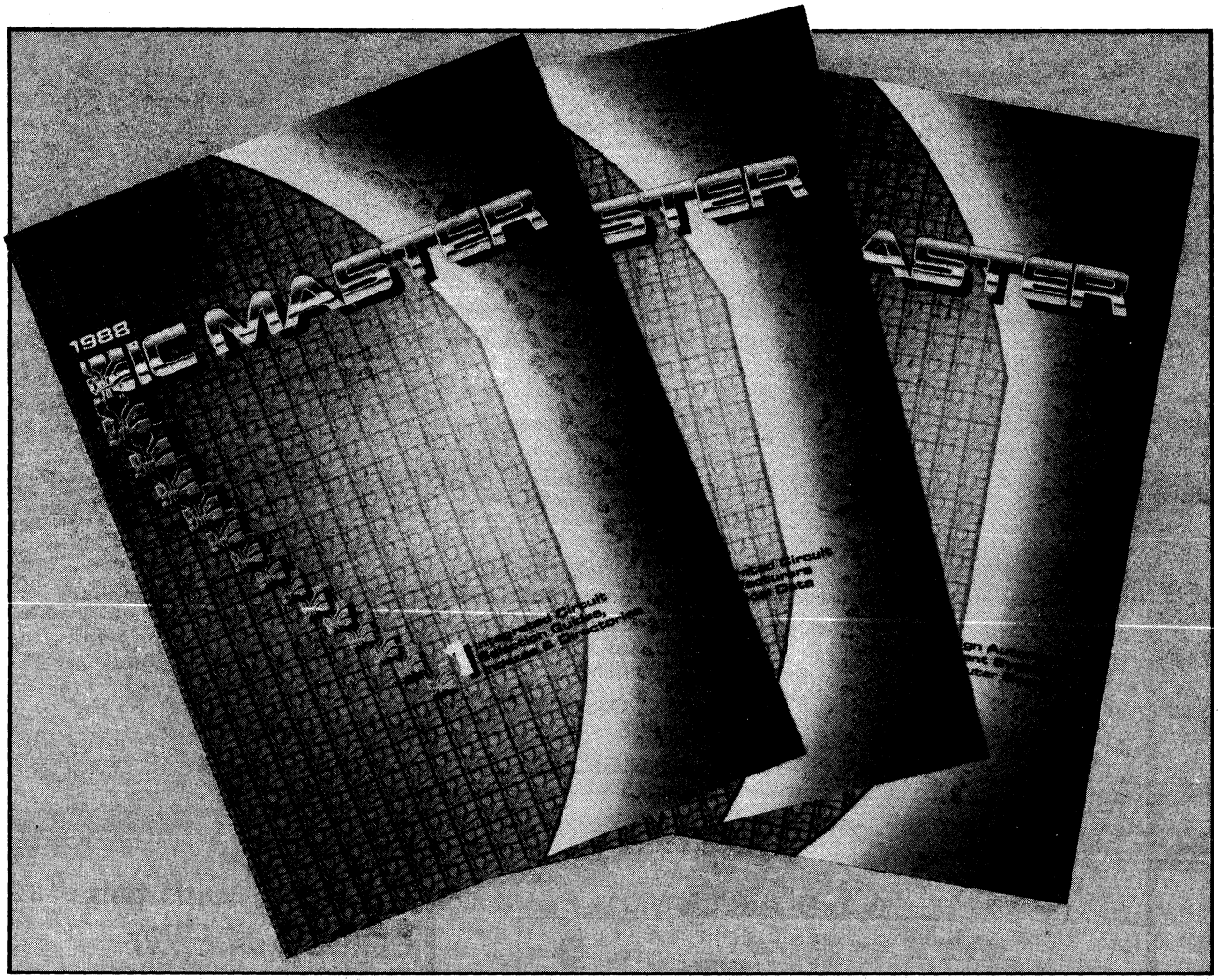
Wire size required for known operating current and known maximum tolerable voltage drop across supply leads.

1) Determine maximum tolerable drop in millivolts **per foot** of lead (sum of positive and negative leads).
2) Connect the value on Scale 3 (as determined in step 1) to the known current on Scale 1.
3) Read wire size on Scale 2.

* *Based on an arbitrary minimum 500 circular mils per ampere. High-temperature class insulation will safely allow higher currents.*



NOTE: A voltage stabilized Power Supply controls the voltage across its output terminals. Hence, the wire conductors used to connect the load must be considered as part of the load. At high load currents, the voltage drop across the supply leads may appreciably degrade stablization at the load. Kepco models equipped with the *remote error sensing* feature can automatically compensate for voltage drops of up to 500 mV across each load supply lead.



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Having trouble finding a particular integrated circuit? If so, you need the IC Master. The IC Master lists all commercially available integrated circuits by function and device number. If it's out there, it's listed in the Master.

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The all-new 1988 IC Master makes finding the IC you need easier than ever. All of the IC selection guides are located in Volume One. Manufacturers' data sheets are now in Volume Two. Volume Three covers ASICs, Design Automation, Microprocessor Development Systems and Microcomputer Boards.

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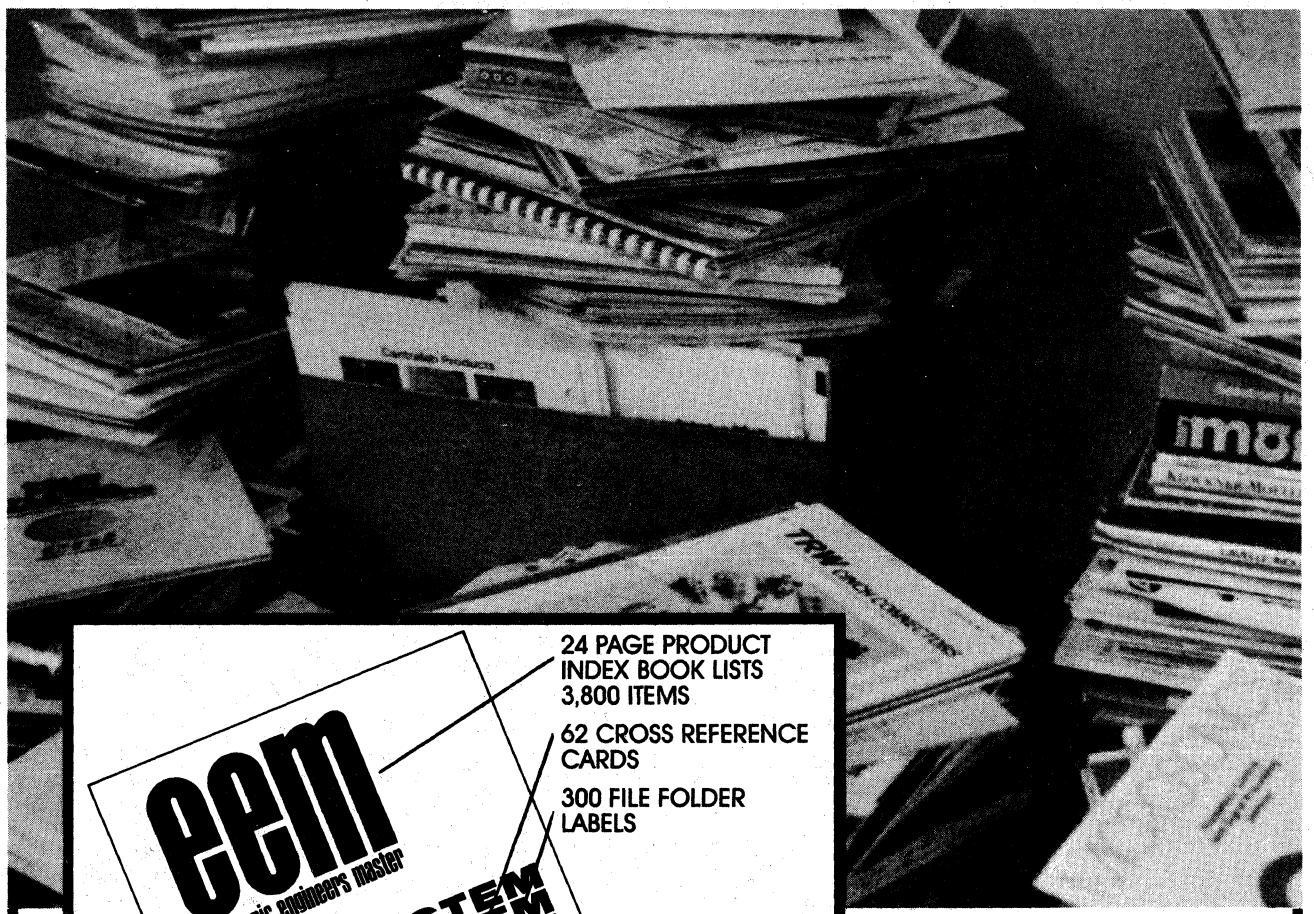

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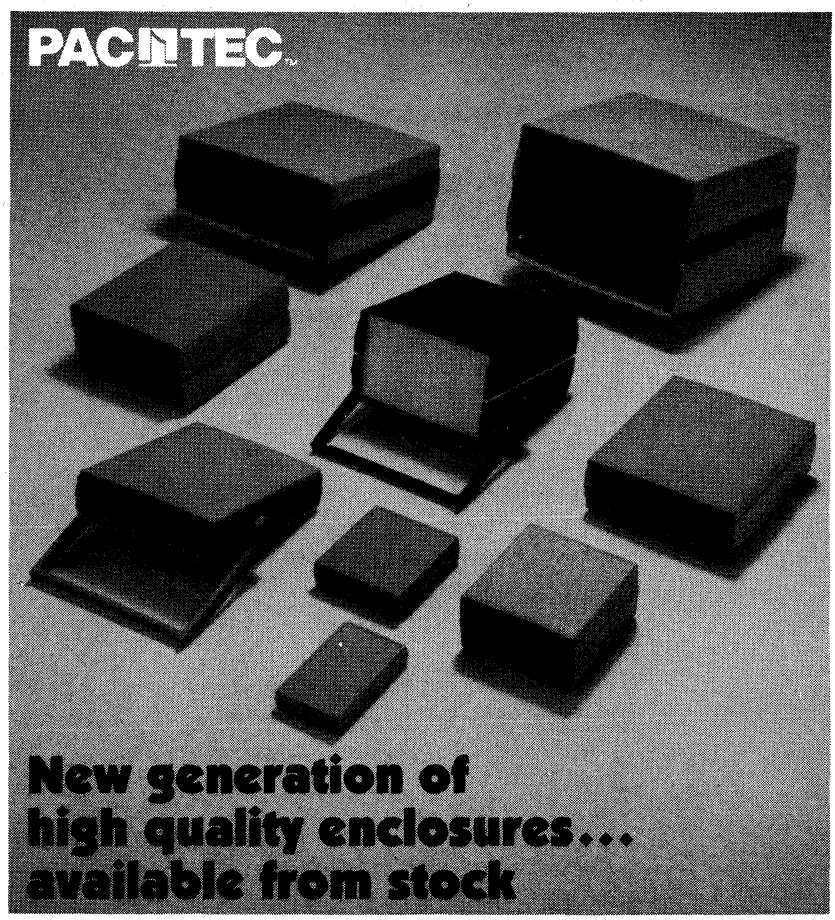
MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766



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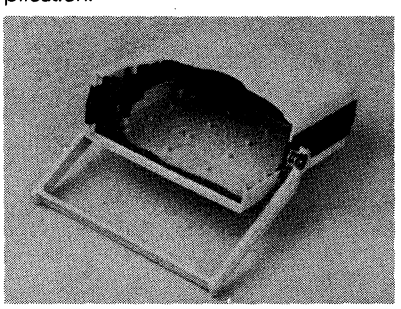
- **Attractive appearance**
- **Durable construction**
- **Over 50 models • Low cost**
- **Inexpensive front panels**
- **Standard features and options**
- **Prototyping kits**
- **Off-the-shelf availability**

Now you can package your product in an attractive, custom enclosure built from standard, stocked parts and accessories. PacTec enclosures are constructed of durable, impact-resistant ABS material, ensuring long life and attractive appearance.

PacTec enclosures are easy to use, easy to set-up, easy to assemble

The unique system of mounting bosses, rails, and card guides makes PacTec enclosures very versatile. You select the size enclosure you need, and choose the hardware and options to customize your enclosure. You can even order a prototyping kit that contains everything necessary to build an enclosure for your application.



Standard features and options include:

(not all available in every case size)

Choice of standard colors (black, tan, PC bone, grey); optional special colors and combinations; custom trim; special finish; handle; tilt stand; mounting rails; card guides; mounting bracket; shoulder strap; strap handle, wrist strap; belt clip; extended rear panels; sloped top or bottom covers; EMI/RFI shielding; UL listed materials; cord wrap; custom front panels and vinyl carrying cases.

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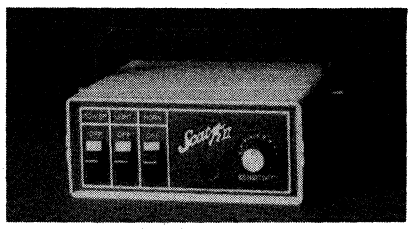
Create an attractive, custom appearance with a three-dimensional front panel which can incorporate raised copy and production advantages such as posts, clips, slots, etc.



Wide range of standard features and low-cost options

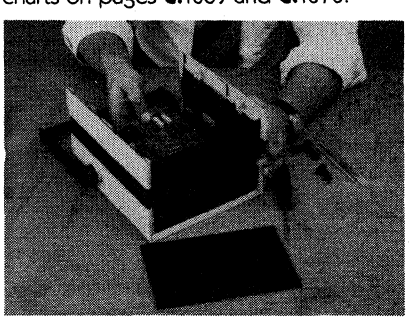
You can customize your enclosure with unlimited variations.



Prototyping kits available

You can build an attractive enclosure for your prototype model—and at the same time design your production unit.

See how easy-to-use the PacTec system is—order an inexpensive kit from the charts on pages **C.**1069 and **C.**1070.



See pages **C.**1068 thru **C.**1071

CABINETS

Manufacturer	EEM Starting Page No.	Consoles		Cabinets						Turrets		Racks		Special		Characteristics		
		Desk-top	Free standing	Sys-tems	Bench	Desk top	In-stru-ment	Rack	Port	Bench	Desk top	Equip-ment	Kits	Equip-ment Stnds	Desks, Work stations	Composition	19 in. Stan-dard	Shielded
Accuride†	C•1061			¤			¤	¤					¤		¤	Metal		
AMCO Engineering*	C•1010		¤				¤	¤					¤	¤	¤	Aluminum Frame, Vinyl	¤	¤
Ango Electronics	C•1015					¤		¤							¤	Aluminum and/or Steel	¤	
Atlas/Soundolier†	C•1016		¤	¤	¤		¤	¤		¤		¤	¤		¤	Steel	¤	
Bopla Enclosures	C•1019	¤	¤	¤		¤	¤	¤	¤									
Buckeye	C•1020					¤												
Cabtron*†	C•1021	¤	¤	¤	¤	¤	¤	¤		¤	¤	¤	¤	¤		Vinyl Finish, Steel Frame	¤	
Compac*†	C•1028							¤					¤			Metal	¤	
CTS Metal Products†	C•1033	¤	¤	¤		¤	¤	¤				¤	¤			CRS, Aluminum, Wood		
EG&G Birtcher†	C•1038												¤	¤		Metal		
Electronic Enclosures*†	C•1045		¤	¤	¤	¤	¤	¤	¤	¤	¤	¤		¤	¤	Metal		¤
Electro-Space†	C•1041		¤				¤	¤					¤			Metal	¤	¤
Elma Electronics	C•1048	¤		¤		¤	¤	¤						¤		Aluminum, Vinyl Coated	¤	
Emcor†	C•1050		¤	¤	¤		¤	¤				¤			¤			¤
Environmental Container*†	C•1051									¤						Thermo-plastics	¤	¤
General Devices	C•1054			¤			¤	¤								Steel		¤
Hammond	C•1058	¤	¤	¤	¤		¤	¤					¤			Plastic, Metal	¤	¤
Kalamazoo Technical	C•1059			¤										¤	¤	Steel		
Lansing	C•1060						¤											
Optima	C•1061	¤	¤	¤	¤	¤	¤	¤		¤			¤		¤	Metal, Acrylic, Latex Finish	¤	¤
Pactec*	C•1068		¤	¤	¤	¤	¤	¤	¤			¤	¤					¤
Par-Metal Products	C•1073	¤	¤	¤	¤	¤	¤	¤		¤	¤	¤			¤	CRS, Aluminum	¤	
Power Box	C•1077						¤											
Premier Metal	C•1078		¤	¤	¤		¤	¤		¤	¤		¤	¤	¤	Welded Units	¤	
Rittal Corp.	C•1080					¤	¤	¤					¤	¤		Aluminum ABS Plastic	¤	¤
Ritz	C•1081				¤	¤	¤	¤					¤		¤	Steel, Aluminum	¤	¤
Rose Enclosures*†	C•1103	¤	¤		¤		¤	¤		¤						Aluminum, Polyester, ABS Polycarbonate, Fiberglass		
Scanbe	C•1084			¤														
Schroff	C•1085	¤	¤	¤	¤	¤	¤	¤					¤				¤	
Stantron	C•1090	¤	¤	¤	¤	¤	¤						¤		¤	Steel	¤	
TDJ Co.*	C•1094						¤						¤	¤		Aluminum	¤	
Techmar	C•1096	¤											¤	¤		Aluminum	¤	
Tracewell	C•1099		¤	¤		¤	¤										¤	
Vector	C•1102												¤	¤		Aluminum	¤	
Watco	C•1103		¤		¤		¤									Aluminum	¤	
Zero	C•1104	¤	¤	¤	¤	¤	¤	¤		¤	¤	¤	¤	¤		Aluminum, Plastic	¤	¤

CASES

Manufacturer	Starting EEM Page No.	Type									Characteristics		
		Bench-top	Dis-play	Desk top	Key-board	Kits	Instru-ment	Port-able	Tran-sit	Equip-ment, Gen'l	Composition	19 in. Stand-ard	Shielded
Accuride	C•1006						¤	¤		¤	Metal		
Amerex †	C•1014			¤				¤		¤	Aluminum, ABS Plastic		
Buckeye	C•1020	¤		¤							Metal	¤	
Compac †	C•1028						¤			¤	Metal	¤	¤
Elma	C•1048	¤		¤	¤		¤	¤		¤	Aluminum, Vinyl Coated	¤	
Gemini †	C•1052						¤	¤	¤	¤	ABS, Aluminum & Foam	¤	¤
Environmental Container *†	C•1051							¤	¤		Thermoplastic	¤	¤
Hammond	C•1058			¤			¤	¤	¤	¤	Plastic, ABS & Diecast	¤	¤
Lansing †	C•1060						¤				Aluminum & Sheet Metal	¤	
Optima	C•1061	¤		¤			¤	¤			Molded Foam	¤	¤
Pac Tec	C•1068	¤	¤	¤	¤	¤	¤	¤		¤	ABS Metal	¤	¤
Power Box	C•1077	¤		¤			¤						
Rittal	C•1080			¤		¤	¤				Aluminium, ABS Plastic	¤	¤
Ritz	C•1081	¤		¤			¤			¤	Steel, Aluminum		
Rose Enclosures	C•1082	¤		¤			¤	¤	¤	¤	Aluminum, Polyester, Polycarbonate, ABS	¤	¤
Schroff	C•1086	¤	¤				¤					¤	
Skydyne *†	C•1087						¤	¤	¤		Fiberglass & Foam, Econoglass, ABS Aluminum	¤	
TDJ Co.*	C•1094					¤	¤				Aluminum	¤	
Techmar	C•1096	¤				¤				¤	Aluminum		
Tracewell	C•1099		¤	¤	¤		¤	¤		¤	Aluminum	¤	
Vector	C•1102			¤			¤	¤			Aluminum		
Watco	C•1103	¤					¤				Aluminum	¤	
Zero *	C•1104	¤	¤	¤	¤			¤	¤	¤	Steel, Aluminum	¤	

*Mil. Spec.

PCB MOUNTING

Manufacturer	Starting EEM Page No.	Card Cages/ Frames	Card Files	Card Guides	Vertical Card Guides	Retainers	Inserters/ Extractors
Atlee	C•1017			¤			
Bivar	C•1018	¤		¤	¤	¤	
Buckeye	C•1020	¤		¤		¤	
Calmark	C•1027	¤	¤	¤	¤	¤	¤
EG&G Birtcher	C•1038	¤		¤		¤	¤
Electro-Space	C•1041	¤		¤		¤	¤
Electronic Enclosures	C•1045	¤					
Electronic Solutions	C•1046	¤			¤		
Elma	C•1048	¤	¤				
Optima	C-1061	¤	¤				
Premier Metal	C•1078	¤			¤	¤	
Rose	C•1082		¤				
Scanbe	C•1084	¤	¤				¤
Techmar	C•1096	¤		¤		¤	
Tracewell	C•1099	¤	¤				
Vector	C•1102	¤		¤			

CHASSIS/TRACKS

Manufacturer	Starting EEM Page No.	Chassis	Tracks/ Slides
Ango	C•1015	¤	
Buckeye	C•1020	¤	
Cabtron	C•1021	¤	¤
EG&G Birtcher	C•1038	¤	
General Devices	C•1054	¤	¤
Optima	C•1061	¤	
Par Products	C•1074		¤
Ritz	C•1081	¤	
Scanbe	C•1084	¤	
Strongbox	C•1092	¤	¤
Techmar	C•1096	¤	¤
Zero	C•1104		¤

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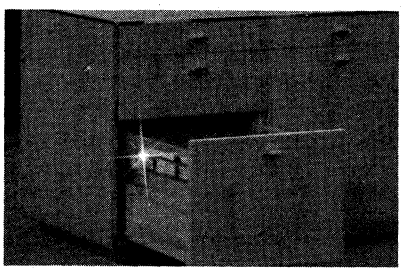
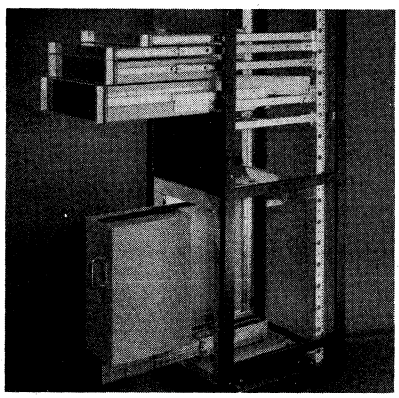
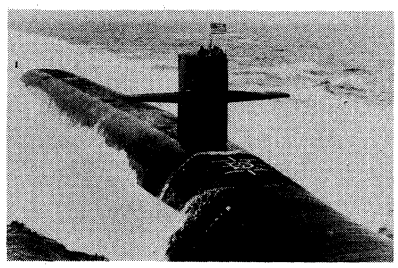
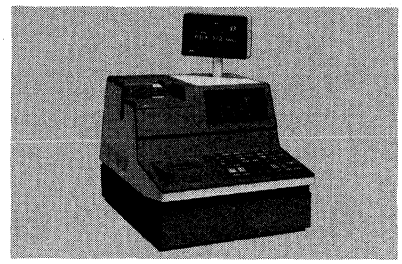








To The Design Engineer:

The Accuride slide models listed here are specifically engineered for EIA and/or RETMA mounting. Many other standard and custom Accuride models are available for electronic and commercial packaging applications.

Accuride has become the world standard for precise linear motion—in products ranging from disc drives to photocopier optics, from cash register drawers to medical equipment.

Today, almost every slide manufacturer offers an Accuride "look-alike," with roll-formed channels that resemble the Accuride members. But the extraordinary combination of smoothness and silence of the die-formed Accuride movement has never been duplicated.

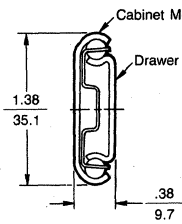
Accuride slide ball bearings are positioned in special "bridged" retainers so they cannot migrate or creep. Side play is virtually eliminated and bearings and raceways are perfectly matched metallurgically. Thus, you can count on Accuride slides for reliable support, quality and extraordinarily smooth movement—time and time again.

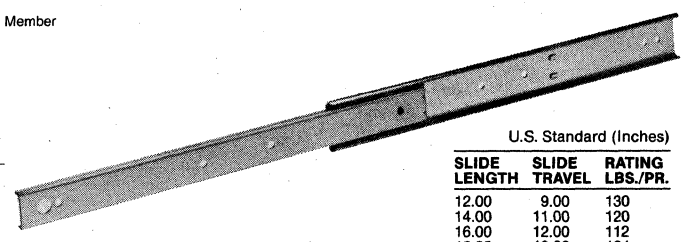
The Accuride textbook "Designing with Slides" and the Accuride "Manual of Specifications" are major tools for packaging engineers and are available to you upon request.

MODEL
201

Economical two-member medium-duty slide with 3/4 extension, positive stop.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.





U.S. Standard (Inches)

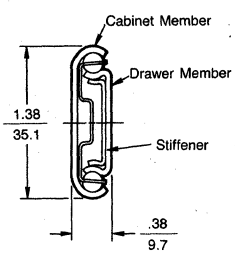
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	9.00	130
14.00	11.00	120
16.00	12.00	112
18.00	13.00	104
20.00	15.00	97
22.00	16.00	92
24.00	17.00	87
26.00	19.00	83
28.00	20.00	80

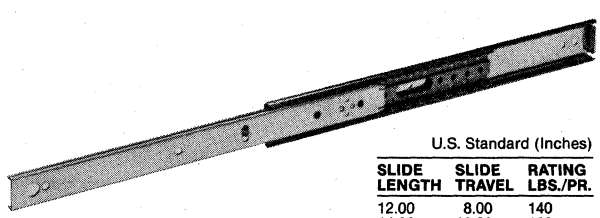
Stock available in even lengths, 12-26 inches.

MODEL
204LR

Standard-duty two-member slide with 3/4 extension. Front lock-out and disconnect facilitate easy chassis maintenance.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Positive lock-out and front disconnect.





- ☐ Tapered lead-in at rear of drawer member provides guide for easy, fast reinsertion of chassis.
- ☐ Drawer member reinforced for increased strength.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.

U.S. Standard (Inches)

SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	8.00	140
14.00	10.00	130
16.00	12.00	120
18.00	13.00	110
20.00	15.00	92
22.00	16.00	85
24.00	17.00	78
26.00	19.00	70
28.00	20.00	60

Stock available in even lengths, 14-26 inches.

Models, specifications and availability subject to change without notice. The tabulation above indicates standard dimensions. Contact Accuride for special requirements.

Optional features, mounting bracket information, material and specifications follow slide models.

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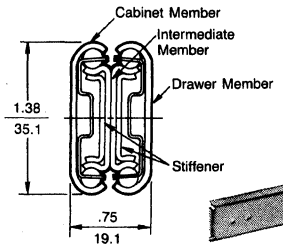
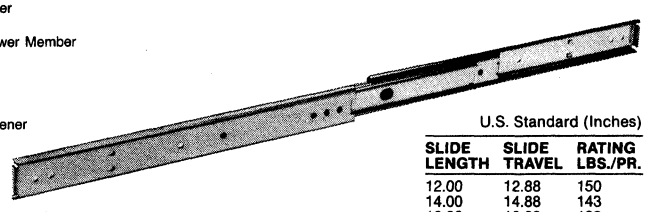
MODEL
301

Heavy-duty three-member full extension slide with positive stop. Design provides extraordinarily smooth, easy movement.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Reinforced for increased strength.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.





U.S. Standard (Inches)

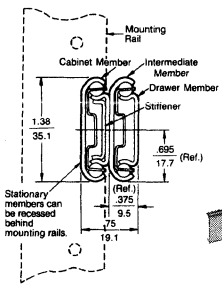
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	12.88	150
14.00	14.88	143
16.00	16.88	138
18.00	18.88	134
20.00	20.88	131
22.00	22.88	128
24.00	24.88	125
26.00	26.88	123
28.00	28.88	120

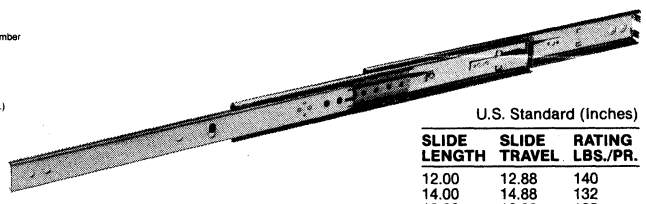
Stock available in even lengths, 14-26 inches.

MODEL
305LR

Unique full extension slide with lock-out and disconnect; requires only 3/8" space on each side of chassis.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Positive lock-out and front disconnect.
- ☐ Tapered lead-in at rear of drawer member provides guide for easy, fast reinsertion of chassis.





- ☐ Reinforced for increased strength.
- ☐ Recessed mounting.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.

U.S. Standard (Inches)

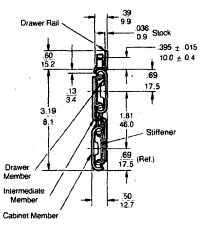
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	12.88	140
14.00	14.88	132
16.00	16.88	125
18.00	18.88	116
20.00	20.88	107
22.00	22.88	100
24.00	24.88	93
26.00	26.88	86
28.00	28.88	80

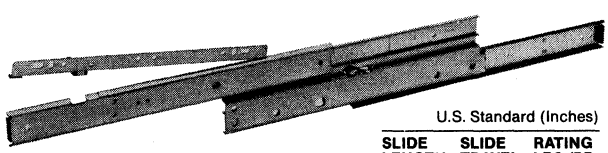
Stock available in even lengths, 14-26 inches.

MODEL
447

Special tolerance-absorption feature in addition to a lift-off disconnect, positive stop, lock-out at full extension and load-carrying capability of up to 150 pounds make this slide incredibly versatile.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."





- ☐ Reinforced for enhanced strength.
- ☐ Operates in side space variances up to ±.030 inch, eliminating the need for slide readjustment when interchanging chassis.
- ☐ Positive stop and lock-out.
- ☐ Quick drawer rail lift-off disconnect.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.

U.S. Standard (Inches)

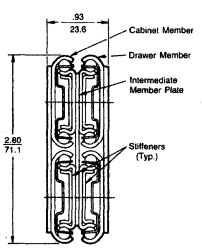
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	13.00	150
14.00	15.00	152
16.00	17.00	154
18.00	19.00	150
20.00	21.00	142
22.00	23.00	137
24.00	25.00	130
26.00	27.00	122
28.00	29.00	117

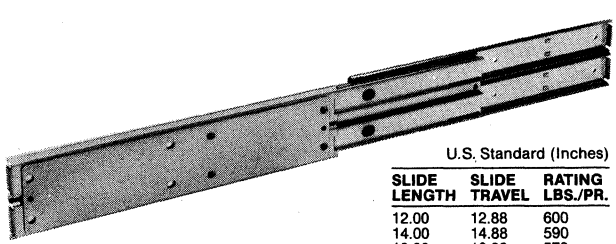
Stock available in even lengths, 14-28 inches.

MODEL
501

Extra-heavy-duty full extension slide supports tremendous loads and provides reliable support and smooth movement.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Reinforced for increased strength.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.





U.S. Standard (Inches)

SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	12.88	600
14.00	14.88	590
16.00	16.88	570
18.00	18.88	550
20.00	20.88	530
22.00	22.88	505
24.00	24.88	475
26.00	26.88	440
28.00	28.88	400

Stock available in even lengths, 14-28 inches.

Models, specifications and availability subject to change without notice. The tabulation above indicates standard dimensions. Contact Accuride for special requirements.

Optional features, mounting bracket information, material and specifications follow slide models.

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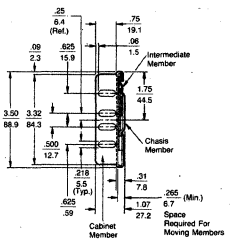
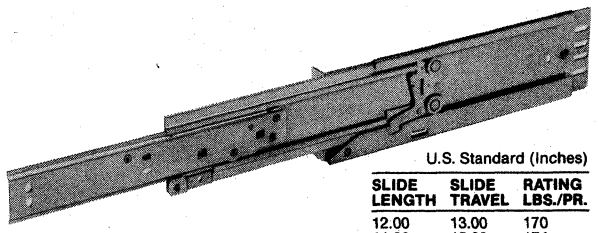
MODEL
772

Ultra-thin heavy-duty roller bearing slide, needs only .31" side space, only .27" for moving members. Locks out and disconnects.

- ☐ Positive lock-out and front disconnect.
- ☐ Front mounting bracket integral with slide.
- ☐ Cabinet member safety stop.
- ☐ Uses No. 10 pan-head screws.
- ☐ Slim profile with no protrusions.





☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.

U.S. Standard (Inches)

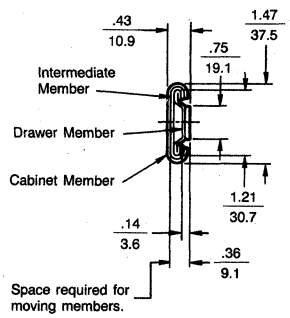
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	13.00	170
14.00	15.00	174
16.00	17.00	178
18.00	19.00	180
20.00	21.00	178
22.00	23.00	175
24.00	25.00	170
26.00	27.00	161
28.00	29.00	150

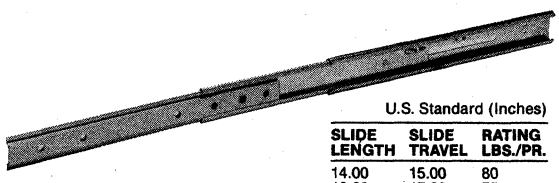
Stock available in even lengths, 14-28 inches.

MODEL
830

Low-cost solid-bearing slide provides alternative for full extension requirements. Requires only .43" side space. Lock-out and front disconnects.

- ☐ Positive lock-out and front disconnect.
- ☐ Low profile configuration with optional bracket positioning.
- ☐ Can be installed with centerlines either in-line with or between standard rack rail mounting holes.





☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.

U.S. Standard (Inches)

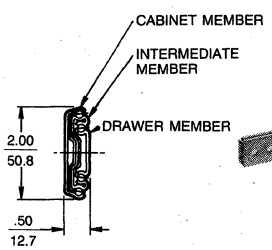
SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
14.00	15.00	80
16.00	17.00	75
18.00	19.00	70
20.00	21.00	65
22.00	23.00	60
24.00	25.00	55
26.00	27.00	50
28.00	29.00	45

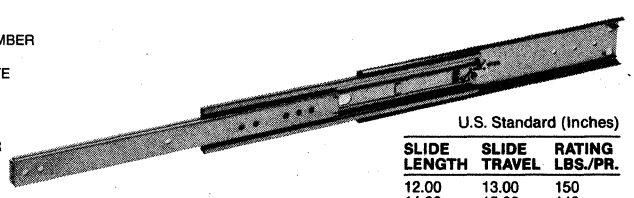
Stock available in even lengths, 14-28 inches.

MODEL
3307

Compact ball-bearing slide features lock-out and front disconnect.

- ☐ Full ball-bearing movement for silence, strength and long life.
- ☐ Self-cleaning bridged ball retainer for smooth operation without ball "creep."
- ☐ Positive lock-out and front disconnect.
- ☐ Tapered lead-in at rear of drawer member provides guide for easy, fast reinsertion of chassis.
- ☐ Dimensioned for typical EIA/RETMA chassis-cabinet combinations.





U.S. Standard (Inches)

SLIDE LENGTH	SLIDE TRAVEL	RATING LBS./PR.
12.00	13.00	150
14.00	15.00	148
16.00	17.00	147
18.00	19.00	146
20.00	21.00	145
22.00	23.00	140
24.00	25.00	135
26.00	27.00	127
28.00	29.00	120

Stock available in even lengths, 14-28 inches.

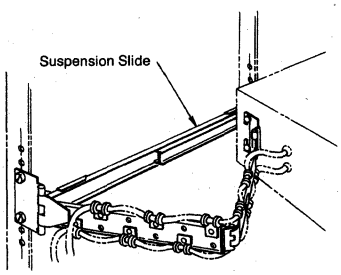
Cable Carriers

Accuride offers a full line of cable carriers designed for both round and ribbon cable management. The wide support arm and tie slot construction of the CC11 allow for single or multi-layer cabling. Numerous clamp attachment points on the CC9 keep cabling taut to prevent sag and consequential cable damage. Both the CC11 and CC9 may be used as either a left or right hand assembly and may be installed separately or as an integral part of Accuride chassis suspension slides. An Application Engineering Group is available for consultation and specialized design.

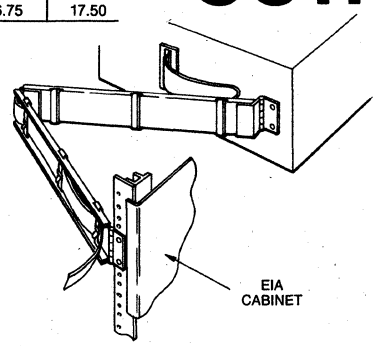
MODEL
CC9

MODEL NO.	CC9-1 Inches	CC9-2* Inches	CC11* Inches
Extension	23	29	30
Closed Length	14.28	16.75	17.50

*Stock available.



MODEL
CC11



Models, specifications and availability subject to change without notice. The tabulation above indicates standard dimensions. Contact Accuride for special requirements.

Optional features, mounting bracket information, material and specifications follow slide models.

Mounting Brackets

SLIDE MODEL	BRACKETS		OPTIONAL EXTRA LONG REAR BRACKETS	MOUNTING KITS
	FRONT	REAR		
201, 204LR, 301, 307LR	4000-0180	4000-0180	4000-0179	4180-0100
305LR	4000-0176	4000-0176	4000-0175	4180-0100
447	LEFT 4000-0130-CL RIGHT 4000-0131-CR	LEFT 4000-0131-CR RIGHT 4000-0130-CL	—	4180-0100
501	4000-0141	4000-0142	—	4180-0101
772	INTEGRAL WITH SLIDE	4000-0145	—	4180-0102
830	4000-0162(1)	4000-0163(2)	4000-0134(3)	(1)4180-0103 (2)4180-0104 (3)4180-0107
3307	4000-0250	4000-0250	4000-0251	4180-0100

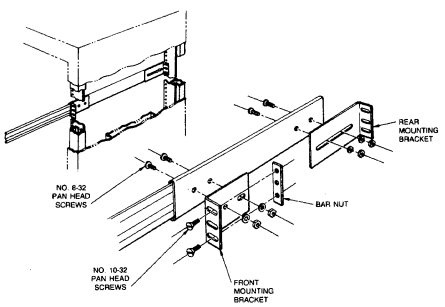
Mounting brackets and kits are not furnished with the slide and must be ordered separately.

Special Options

- ☐ Accuride acetal polymer balls for use where lubricants are prohibited or where ultra-smooth, quiet slide movement is desired.
- ☐ Locks available to lock slide open, closed and at ½-travel locations, separately or in any combination.
- ☐ Hold-in and/or hold-out detents.
- ☐ Silenced stops to assure quiet opening and/or closing.
- ☐ Shock blocks to eliminate amplification of shock and vibration to the chassis.
- ☐ Front and rear travel (two way).
- ☐ Special hole pattern.
- ☐ Bar nuts.
- ☐ Special features, e.g., lanced-out tabs, bayonets, angle brackets, threaded holes, tilt mechanisms, etc.

Contact Accuride for special requirements.

Mounting Bracket Instructions



The mounting brackets listed above are designed specifically for Accuride slides. Slides properly installed with correct mounting brackets will provide lasting maintenance-free service.

Illustrated to the left is the correct orientation of the mounting screws for attaching mounting brackets to Accuride slides. To ensure proper operation of the slide, make certain that all bracket mounting screw heads are inserted so that the screw heads are inside the slides. The front bracket should first be positioned, then securely fastened in place. The rear bracket screws should be left sufficiently loose to allow adjustment while fitting to the vertical mounting rails.

During installation in the enclosure, matching the alignment of the left hand and right hand slides is accomplished by installing one slide, than aligning it to the vertical mounting rails and securing the mounting screws. Then install the remaining slide, leaving the mounting screws sufficiently loose to permit horizontal adjustment. Moving the chassis in and out a few times prior to tightening the loose mounting screws will ensure proper alignment of the slides to each other and to the cabinet. Any sign of binding indicates lateral stresses or misalignment.

Ordering Information

ORDER PROCEDURE

Specify plating, slide model and length, brackets, mounting kits, bar nuts

Example C 3307 - 16

Commercial, Electro-zinc plating, Clear chromate coating — C

Slide model — 3307

Slide Length — 16

Order four (4) each brackets per slide pair:
Example: Two #4000-0250-CE (short) brackets for front mount
Two #4000-0251-CE (long) brackets for rear mount

Order four (4) each mounting kits (bracket-to-slide):
Example: Four #4180-0100-XE

Material and Finish Specifications

Stocked slides, brackets and bar nuts are only available in a commercial "C" finish. Other finishes available on order.

Commercial/Industrial Slides: Use "C" Prefix in Part Numbers

ITEM	MATERIAL	FINISH
Slide Members	Cold rolled steel	Electro-Zinc Plate per ASTM Spec. B633 SC1, Type III: Yellow ("CY" Prefix), Black ("CB" Prefix), Olive ("CO" Prefix)
Ball Retainers	Cold rolled steel	Zinc (Pre-plated)
Ball Bearings	Steel	Carburized
Packaging: Corrugated quality containers		Lubricants: Ball-bearing slides: Hi-Lo temperature grease Solid bearing slides: Molybdenum disulfide base dry film

NOTE: For stainless steel ("SS") and other materials and finishes consult with Accuride Applications Engineering.

Models, specifications and availability subject to change without notice. The tabulation above indicates standard dimensions. Contact Accuride for special requirements.

Accuride®

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Solve most any configuration problem with Amco's unlimited design and arrangement possibilities. Two attractive styling systems to choose from —high-tech simplicity of the Traditional style, or advanced state-of-the-art esthetics of Interface 33.

Select desk top cabinets, consoles, computer desks and accessories. Then specify single-unit, multi-bay configurations. Simplified one-number console ordering system makes design, selection and ordering easy and error-free. ***CATALOG 500-A. Newly Revised.***

Now includes color selection and 10-day shipping program.

Now you can select from 10 of our most popular color finishes for both Traditional and Interface 33 vertical consoles — at no extra cost. All custom-colored cabinets are shipped within 10 work days of approved credit or C.O.D.

• STRENGTH • DESIGN VERSATILITY

ALUMINUM
Heavy-duty structural systems, simplified design and assembly.

Minimize design time of even the most difficult structures and specialized enclosures. Bolted aluminum structural systems are stronger than most welded structures. High-strength 6061-T6 alloy extruded aluminum tubing is pre-cut to any length from 6 inches to 20 feet. Corner castings (356-T6) furnished with assembly locking clips. Take advantage of Amco's years of specialized design expertise.

CATALOG 203

• EXPERIENCE • RELIABILITY

EMI
Military and Commercial EMI cabinets.

Tested and certified attenuation values ensure high performance in electronics applications and environments. Enclosures are designed and built to comply with ***MIL 285, Tempest specifications and FCC.*** *Free initial consultation.*

Military EMI CATALOG 204
Commercial EMI CATALOG 650-A

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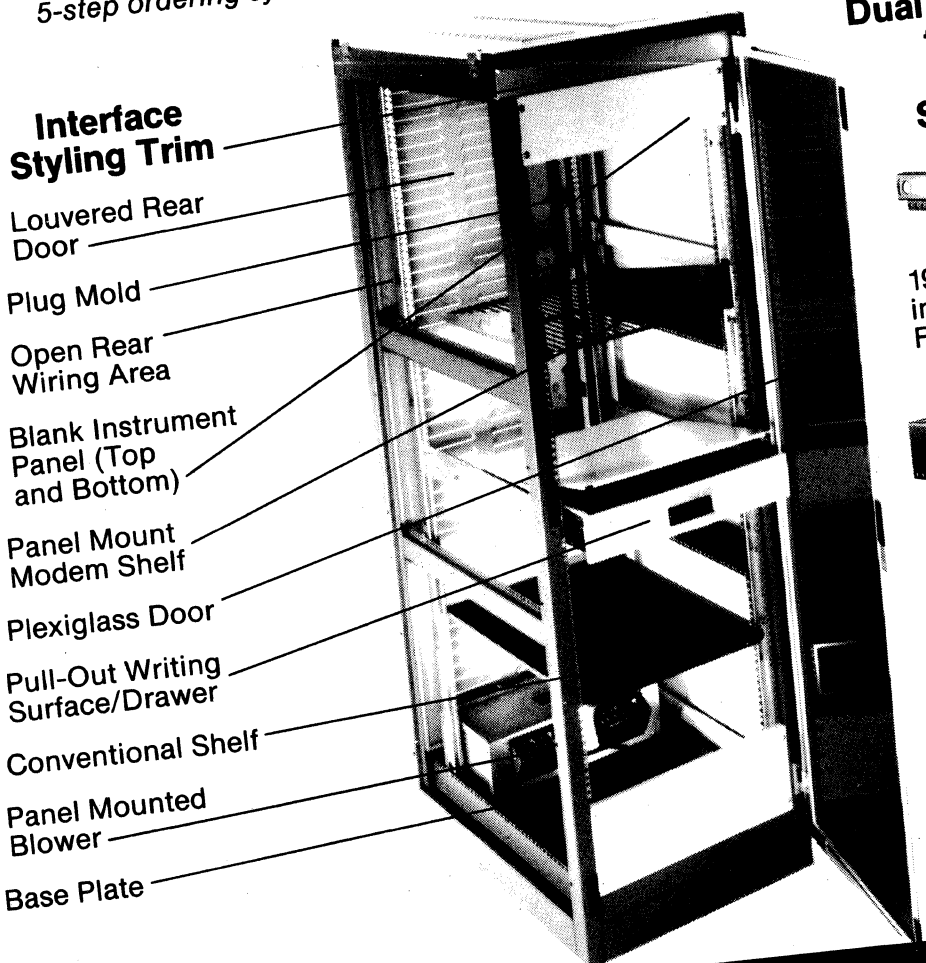

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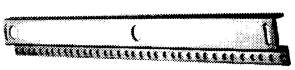

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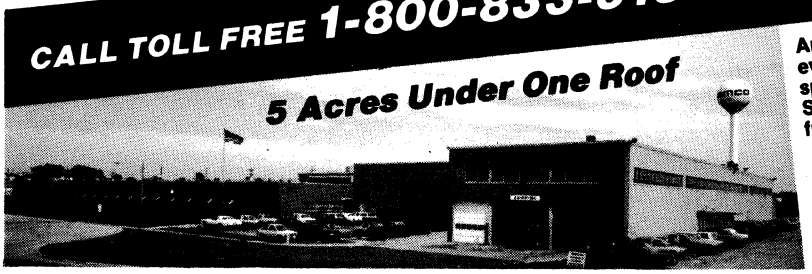

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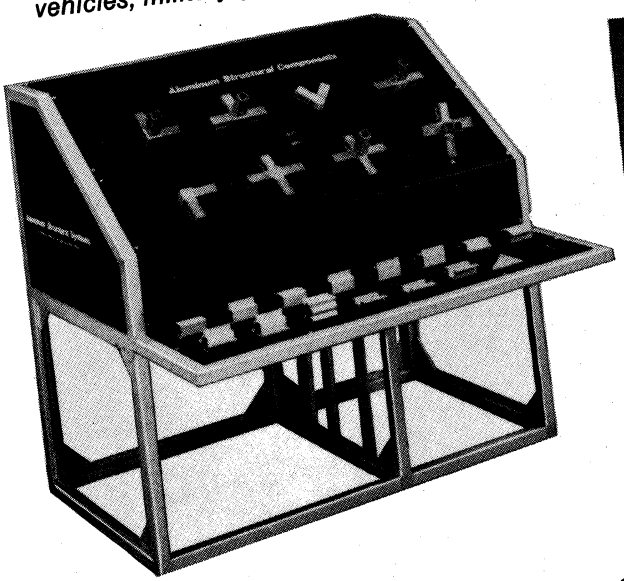

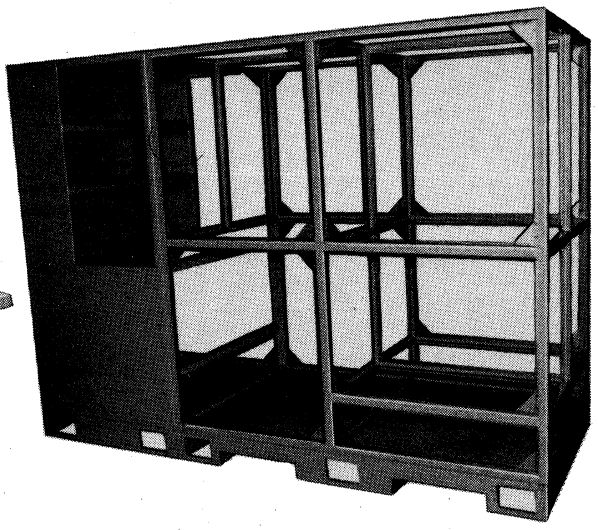

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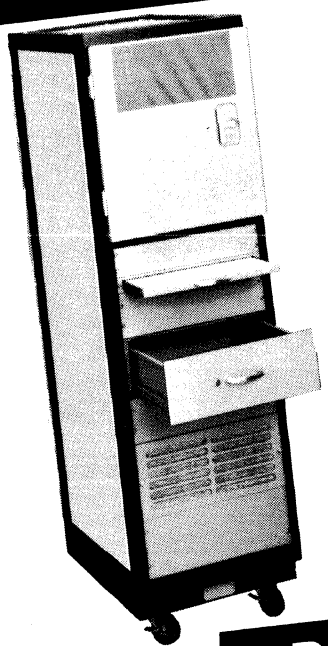

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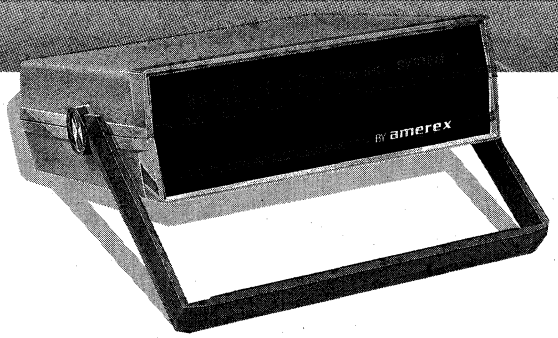
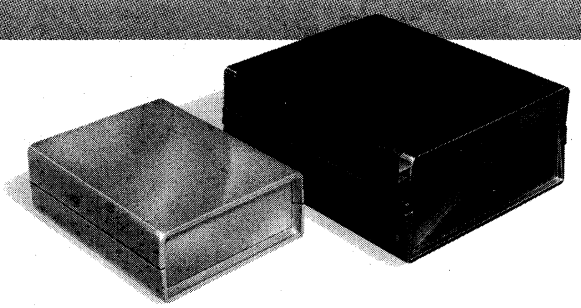
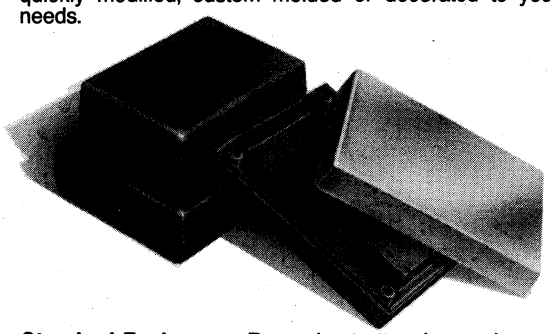


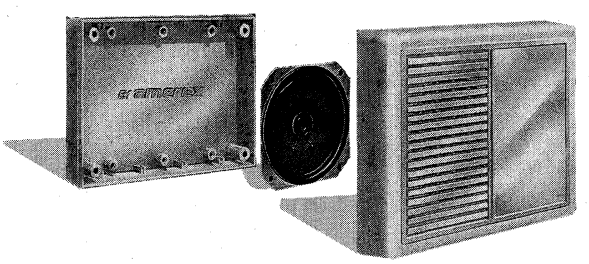
Desk Top Enclosures - An 8.8 x 8.3 inch enclosure is available in several standard colors, and features an adjustable tiltstand/carrying handle for convenience. Face panels are stocked in aluminum or plastic and can be quickly modified, custom molded or decorated to your needs.



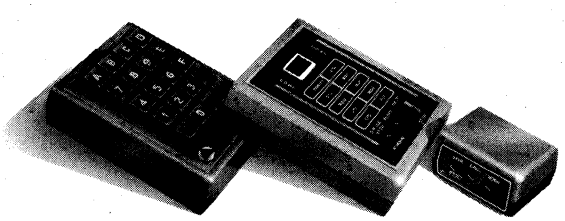
Panel Enclosures - Available in a variety of sizes and colors, featuring removable front and rear panels, these enclosures offer greater product design flexibility for many applications. Aluminum or plastic front and rear panels can be specially modified to your requirements.



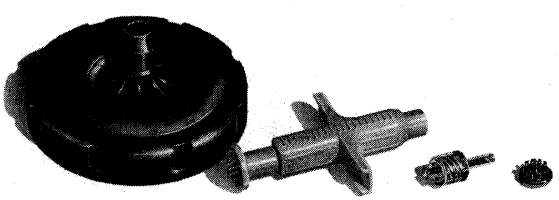
Standard Enclosure - Rugged yet attractive enclosures are molded from high impact ABS plastic in a variety of colors, and feature designer styling with an attractive grain finish. This modular system is supported with a variety of standard accessories including windows, panels, circuit boards and shielding products.



Specialty Enclosures - Popular Standard Enclosure sizes are also available with specialty options. Battery Compartment Enclosures feature a unique design to accept a 9 volt battery, and stylish Speaker Grill Enclosures are stocked with or without a standard 2½ inch speaker.



Custom Modifications - All Standard Enclosures, Specialty Enclosures, and Face Panels can be quickly and easily modified to transform standard parts into your custom product. Molded modifications, machined openings, screen printing, hot stamping, special materials or colors, and labels or overlays provide total versatility to the Unibox System.



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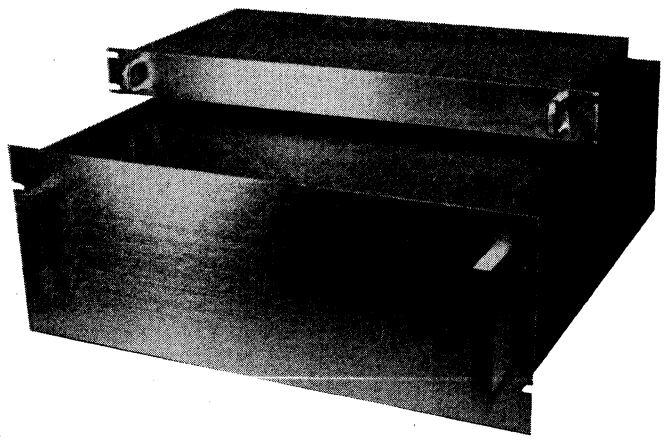
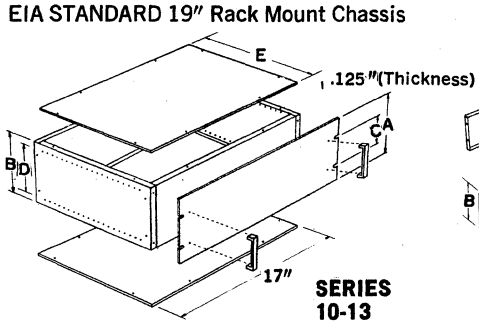
Series 22, 23 and 24 are extra heavy gauged all aluminum with 0.08" thick side panels. It provides light weight and strong construction. For series 22 and 23, all surfaces are anodized, and series 24 are painted in Beige.

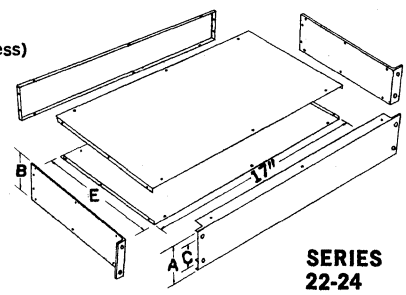
Desk-Top series 54 is same color and construction as series 24. Except there is no mounting ear, and the front panel is clear anodized.



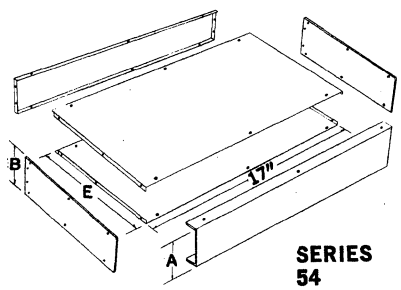
EIA STANDARD 19" Rack Mount Chassis



SERIES 10-13



SERIES 22-24



SERIES 54

Description	Rack Unit	Dimension (Inch) A	B	C	D	E	Side Panel Thickness (inch)	Black Stock No.	Black Price	Metallic Stock No.	Metallic Price	Ship-Weight (lb)
Steel—Side, Top, and Bottom Panels Aluminum—Back and Front Panels	1	1.75	1.50	1.25	0.50	8.00	.04	10-19082	38.50	11-19082	37.00	5
	2	3.50	3.13	3.00	2.00	8.00	.04	10-19083	44.30	11-19083	43.75	7
	2	3.50	3.13	3.00	2.00	14.00	.04	10-19143	49.50	11-19143	48.80	8
	3	5.25	4.93	2.25	3.75	8.00	.04	10-19085	50.00	11-19085	49.50	8
	4	5.25	4.93	2.25	3.75	14.00	.04	10-19145	55.80	11-19145	55.20	9
	4	7.00	6.75	4.00	5.50	8.00	.04	10-19087	54.00	11-19087	53.25	9
		7.00	6.75	4.00	5.50	20.00	.04	10-19207	66.50	11-19207	66.10	13
All Aluminum Anodized All Surface	1	1.75	1.60	1.25	.50	11.50	.05	12-19122	59.50	13-19122	58.10	4
	2	3.50	3.30	3.00	2.25	11.50	.05	12-19123	65.80	13-19123	64.20	5
	3	5.25	5.07	2.25	4.00	11.50	.05	12-19125	72.50	13-19125	71.00	6
	4	7.00	6.85	4.00	5.75	11.50	.05	12-19127	79.20	13-19127	77.90	7
Heavy Gauged All Aluminum	5	8.75	8.50	5.75	5.50	11.50	.06	12-19129	86.50	13-19129	84.10	10
	6	10.50	10.25	7.50	7.25	11.50	.06	12-19120	91.50	13-19120	89.90	12
Extra Strong All Aluminum Color B/M	1	1.72	1.62	1.25	—	10.00	.08	22-19102	53.40	23-19102	52.75	4
	2	3.47	3.37	3.00	—	10.00	.08	22-19103	59.20	23-19103	58.60	5
	3	5.22	5.12	2.25	—	10.00	.08	22-19105	64.50	23-19105	63.80	6
Extra Strong All Aluminum Color Beige	1	1.72	1.62	1.25	—	10.00	.08	24-19102	51.90	54-17102	49.40	4
	2	3.47	3.37	3.00	—	10.00	.08	24-19103	57.75	54-17103	55.20	5
	3	5.22	5.12	2.25	—	10.00	.08	22-19105	64.60	54-17105	60.50	6

Other accessories included: Support Rail and Second Front Panels for stronger construction and mounting of various components. Aluminum Blank Panels with excellent Anodized Finish are also available in black or metallic.

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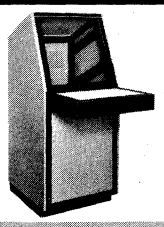
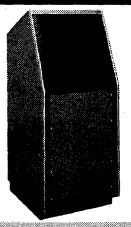
Select Series heavy duty modular enclosures include 19", 24", and 30" wide vertical cabinets, 19" slope front consoles, turrets and wedge sections. These attractive enclosures are welded 16 ga. CRS and conform to EIA standards. Furnished with basic frame, gussetted base, removable top panel and rear door with lock and louvers, horizontal trim, 11 ga. CRS mounting rails and choice of finish. Options include insert panel, vertical trim, side panels, front doors and UL listed versions.

Standard Series 19" racks and equipment cabinets are available in various width, height and depth configurations with welded, knocked down and UL Listed models to meet most specification requirements. Unless otherwise listed, 16 ga. CRS units include adjustable 11 ga. CRS mounting rails on EIA spacing, louvered side panels, wiring access, necessary hardware and choice of 17 standard colors.

Complete selection of convenience and electronic accessories are available for both series as well as custom manufacturing to meet individual needs.



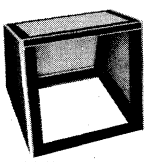
***1044/*1044LS** Select Series consoles include listed features plus bottom front panel and writing surface (1044LS is without writing surface). Units are 23⅜" W x 54⅛" H x 25½" D with 19⅜" (top) and 24⅝" (bottom) vertical panel space.



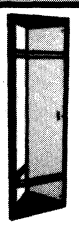
***1047** Select Series console includes listed features plus bottom front panel. Unit is 23⅜" W x 54⅛" H x 25½" D with 19⅜" (top) and 28⅛" (bottom) vertical panel space.



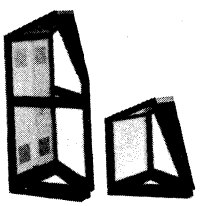
***2000, 2400 and 3000** Select Series cabinets are 23⅜" W, 28⅜" W and 34⅜" W respectively and include listed features. All models are 25½" D (30" depths available) with 5 sizes from 36⅞" - 77⅛" vertical panel space.



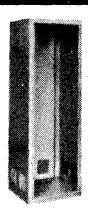
***700** Select Series desk turrets include frame, base, horizontal trim and removable top and back panels. 700-14 is 23⅜" W x 17⅝" H x 18" D with 14⅛" vertical panel space. 700-19 is 23⅜" W x 22½" H x 20" D with 19⅜" vertical panel space.



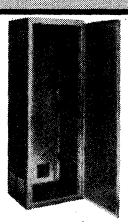
2000-45 Select Series floor wedge joins the 2000, 2400 and 3000 Series cabinets. 45° unit includes frame, removable top panel and rear door with lock.



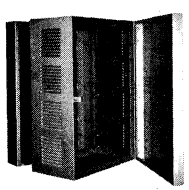
***1044-45** Select Series 45° wedge joins all consoles. Furnished with frame, base, removable top panel and louvered rear door with lock. ***700-45** Series are 45° wedge units which join 700 Series desk turrets. Units includes frame, removable top and back panels.



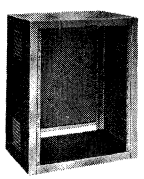
100/*WA100 Standard Series cabinets with fixed mounting rails are 22⅜" W x 18½" D with 5 vertical panel sizes from 36⅞" to 77⅛". 100 Series is knocked down. WA100 Series is welded.



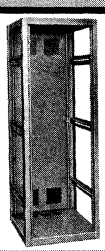
200/*WA200 Standard Series cabinets with adjustable mounting rails and locking front door are 22⅜" W x 18½" D with 5 vertical panel sizes from 36⅞" to 77⅛". 200 series is knocked down. WA200 series is welded. 200LD and WA200LD series are without front door.



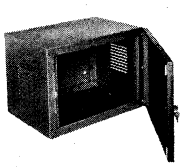
300/320 Standard Series welded sectional wall cabinets with locking front door are 17½" and 21½" deep respectively with 6 vertical panel sizes from 17½" to 61¼". Available without front door, order 300LD or 320LD.



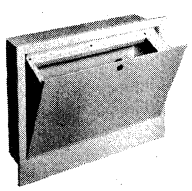
400 Standard Series cabinets are welded desk-top assemblies with solid rear door. Units are 22¼" W x 15⅜" D with 4 vertical panel sizes from 12⅜" to 31⅝".



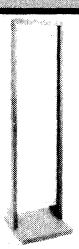
***500/*502** Standard Series multiracks are 18" and 25½" deep respectively. Models include open side frame, wiring access and louvered rear door with lock. Both sereis are 22⅜" wide with 61⅜", 70⅛" or 77⅛" vertical panel space.



***600-12** Standard Wall Mount cabinet is a welded, surface mounting assembly with full back and keyhole slots. Unit is 22⅜" W x 15¼" H x 15⅜" D with 12⅜" vertical panel space.



AWR Series amplifier wall cabinets include 14 ga. CRS frame with flush, tilt out locking door and attached 16 ga. CRS backbox. Recessed models have 3½" panel space. Surface models have 3½" and 5¼" panel space.



800 Standard Series open relay racks include frame, base and 11 ga. CRS mounting rails. 5 vertical panel sizes available from 36⅞" to 77⅛". Racks are shipped knocked down with mounting hardware.

*Denotes UL Listed Version Available

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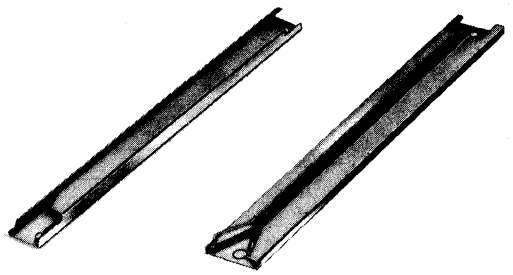
ATLEE CARD GUIDES

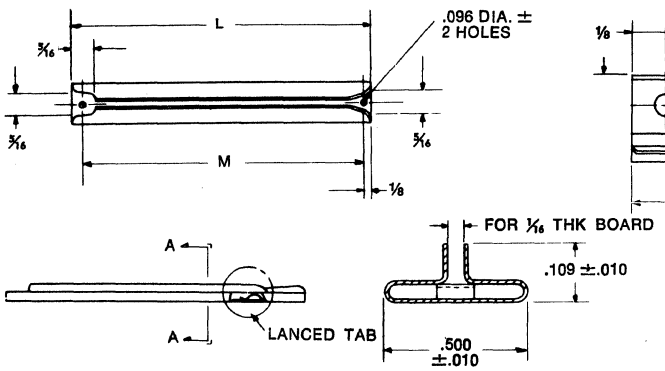


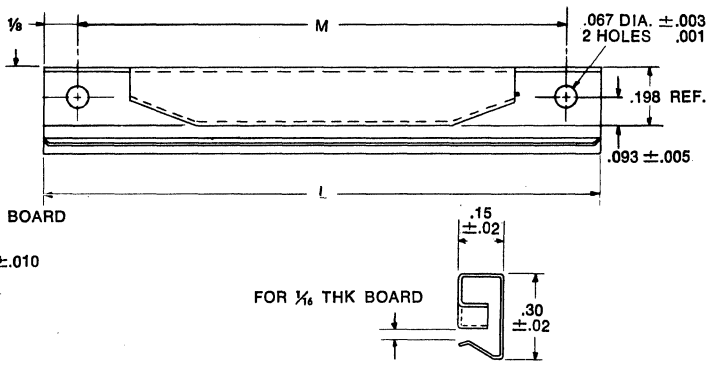
FEATURES

- High retention of printed circuit board under severe shock and vibration.
- Easily installed by welding or riveting.
- Quick and simple board insertion and withdrawal.
- Rigidly mounted printed-circuit board in racks and other types of assemblies.

MATERIAL: *beryllium copper, .010 thick, alloy 25, per QQ-C-533a, condition ¼ hard.

PLATING: .0003 thick cadmium per QQ-P-416a, type II, class 2.





*** 11903-300**

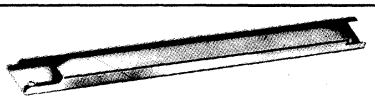
	L ±.02	M ±.005		L ±.02	M ±.005
2	2½	2.250	7	5	4.750
3	3	2.750	8	5½	5.250
4	3½	3.250	9	6	5.750
5	4	3.750	10	6½	6.250
6	4½	4.250	11	7	6.750

* Standard in beryllium copper and stainless steel.

*** 11909-300**

	L ±.02	M ±.005		L ±.02	M ±.005
1	2	1.750	6	4½	4.250
2	2½	2.250	7	5	4.750
3	3	2.750	8	5½	5.250
4	3½	3.250	9	6	5.750
5	4	3.750			

* Standard in beryllium copper and stainless steel.



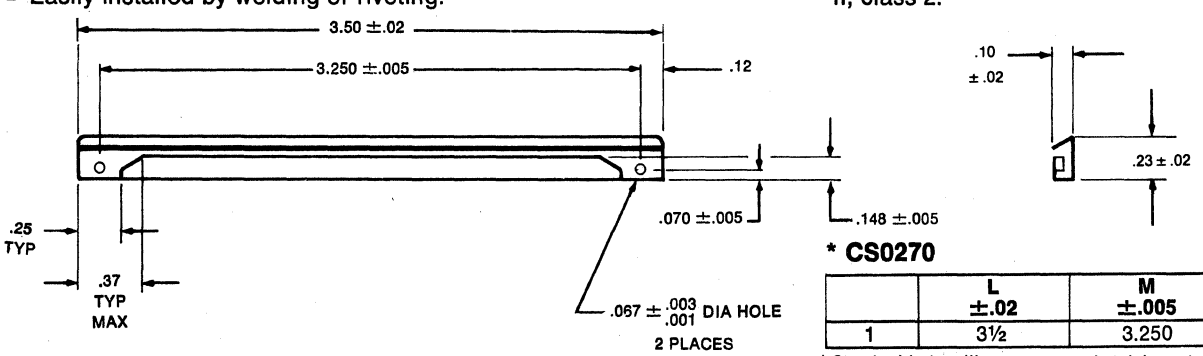
- Quick and simple board insertion and withdrawal.
- Rigidly mounted printed circuit board in racks and other types of assembiles.

FEATURES

- High retention of printed circuit board under severe shock and vibration.
- Easily installed by welding or riveting.

MATERIAL: *beryllium copper, .005 thick, alloy 25, per QQ-C-533a, condition ¼ hard.

PLATING: .0003 thick cadmium per QQ-P-416a, type II, class 2.



*** CS0270**

	L ±.02	M ±.005
1	3½	3.250

* Standard in beryllium copper and stainless steel.

- Card guides available for 1/32 and 3/32 thick printed circuit boards.
- Flared card guides also available.
- Refer to Atlee Cross Reference for additional card guides we manufacture.
- Card guides designed and manufactured to your specifications.

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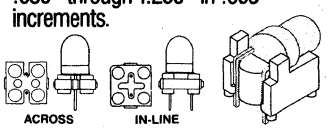
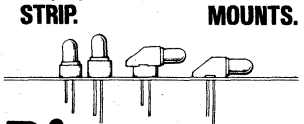
- ☐ T-1¾ L.E.D. Mounts
- ☐ L.E.D. Strip Mounts
- ☐ T-1 L.E.D. Mounts

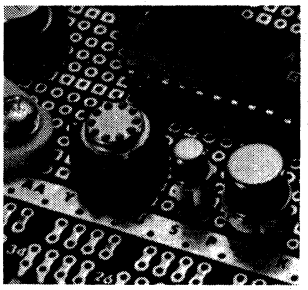
984 standards in heights from .030" through 1.250" in .005" increments.



12 (T-1¾) and 15 (T-1) STATION STRIP.

T-1 RIGHT ANGLE MOUNTS.





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TO-18 mounts/spreaders
TO-5 mounts
Integrated circuit-
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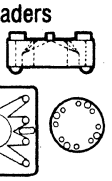
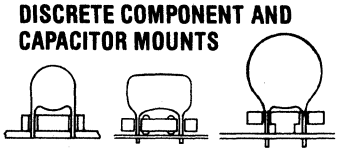
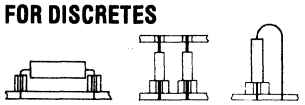
Spreaders
Converters



DISCRETE COMPONENT AND CAPACITOR MOUNTS

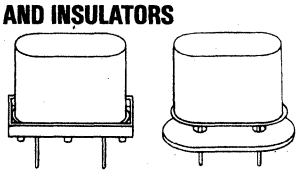


UNIVERSAL SPACERS FOR DISCRETES



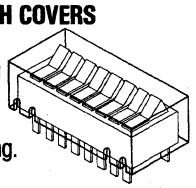
Dual in-line mounts
TO-5/TO-18 covers and shields

CRYSTAL MOUNTS AND INSULATORS



DIP SWITCH COVERS

Snap on to protect from accidental changes in programming.



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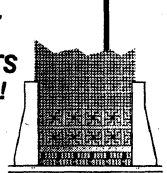

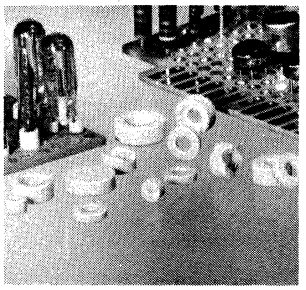

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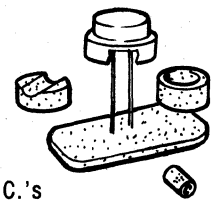
Over 400 standard sizes . . .



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Dual in-line components
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CARD EJECTORS
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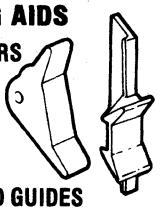
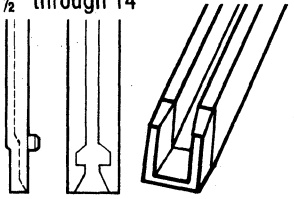


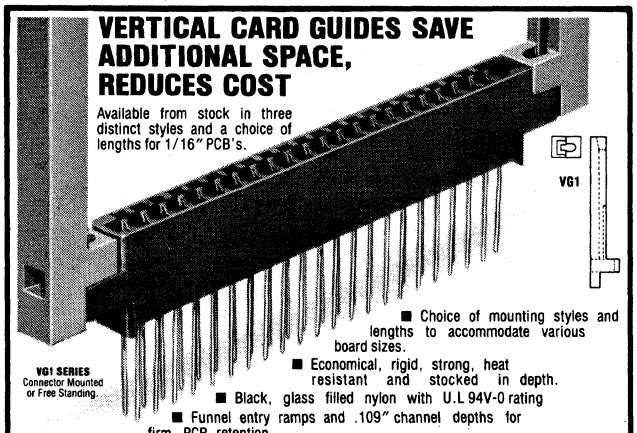
SNAP-IN CARD GUIDES
52 standard sizes; lengths from 2½" through 14"



DEEP CHANNEL CARD GUIDES

VERTICAL CARD GUIDES SAVE ADDITIONAL SPACE, REDUCES COST

Available from stock in three distinct styles and a choice of lengths for 1/16" PCB's.



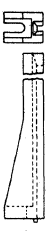
VG1 SERIES
Connector Mounted or Free Standing.

- Choice of mounting styles and lengths to accommodate various board sizes.
- Economical, rigid, strong, heat resistant and stocked in depth.
- Black, glass filled nylon with U.L 94V-0 rating
- Funnel entry ramps and .109" channel depths for firm PCB retention

VG2 SERIES

Available from stock in 7 lengths, the VG2 series is designed to be used in pairs and is easily mounted with standard #6 fasteners.

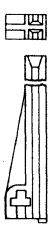
- Rigidly reinforced and heat resistant.
- Easily installed with standard #6 fasteners. Built-in anti-rotation device.
- Funnel entry ramps with .109" channel depths.
- 7 standard lengths stocked in depth.

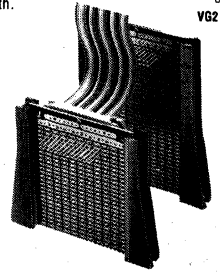


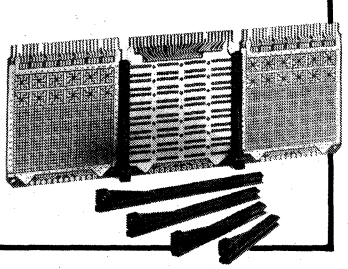
VG3 SERIES

These double sided guides are available from stock, may be used in pairs or in tandem for maximum economy and are easily mounted with standard #6 fasteners..

- Can be used in tandem for maximum density and economy.
- Easily installed with standard #6 fasteners. Built-in anti-rotation device.
- Funnel entry ramps with .109" channel depths.
- 7 standard lengths stocked in depth.







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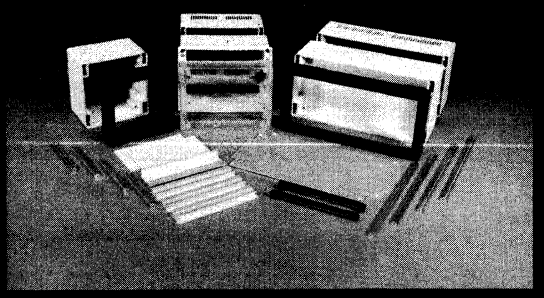
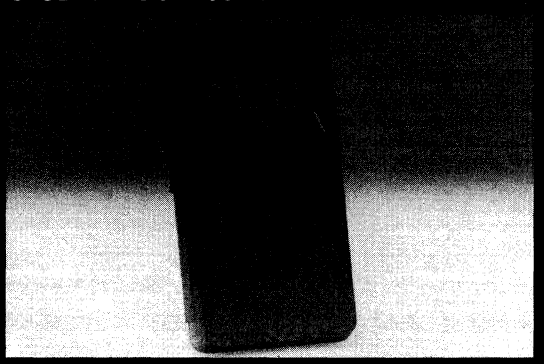


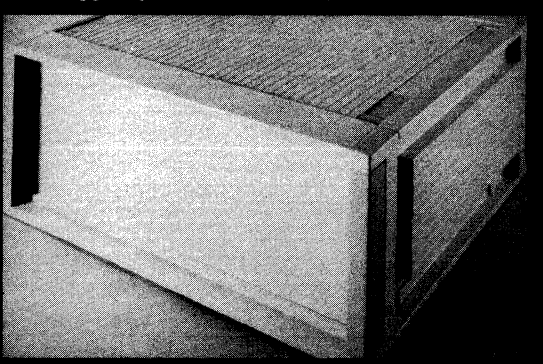
MODULAR "DESIGN YOUR OWN" ENCLOSURE SYSTEMS



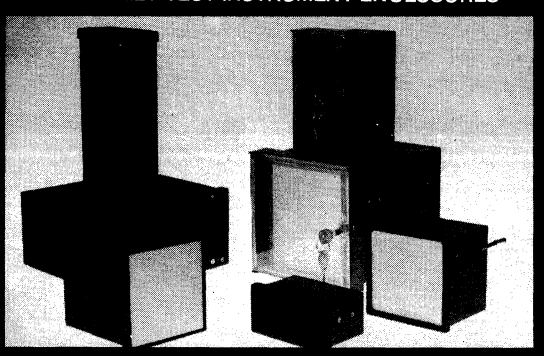
COMPUTER RELATED HOUSINGS



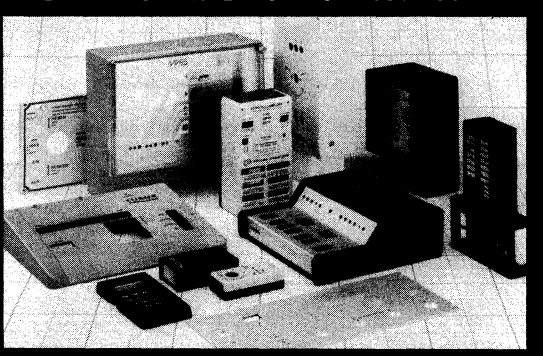
HAND HELD TEST INSTRUMENT ENCLOSURES



LIGHTWEIGHT 19" BENCH-TOP HOUSINGS



DIN PANEL MOUNTED HOUSINGS



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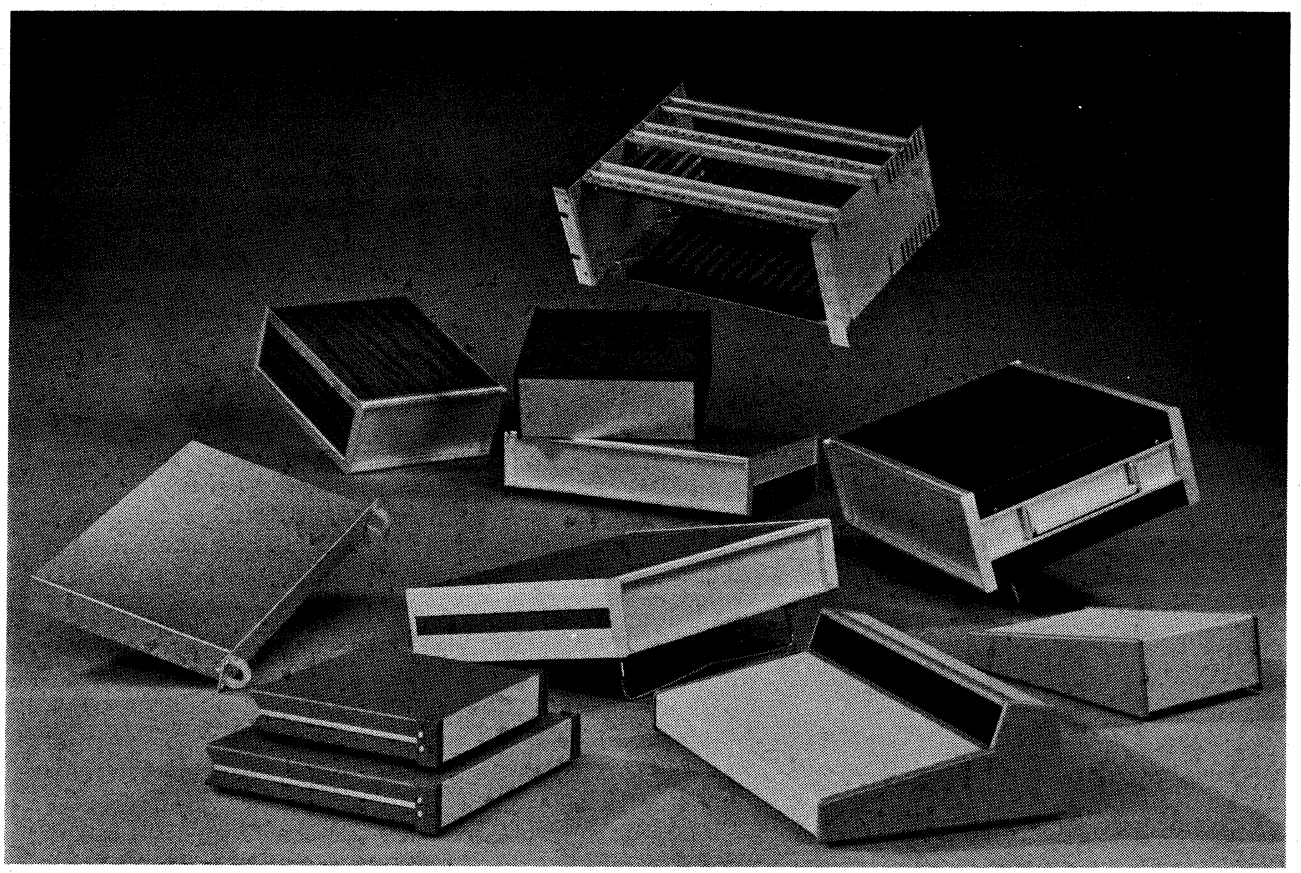

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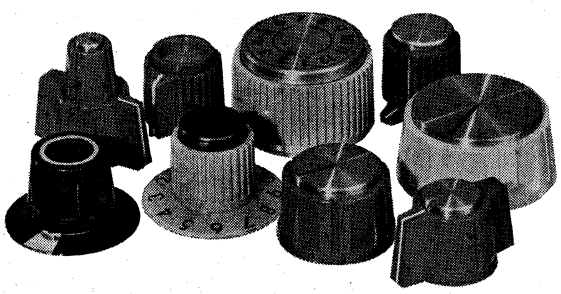

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MODULAR CARD **Guides**



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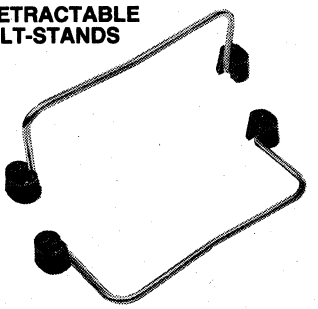

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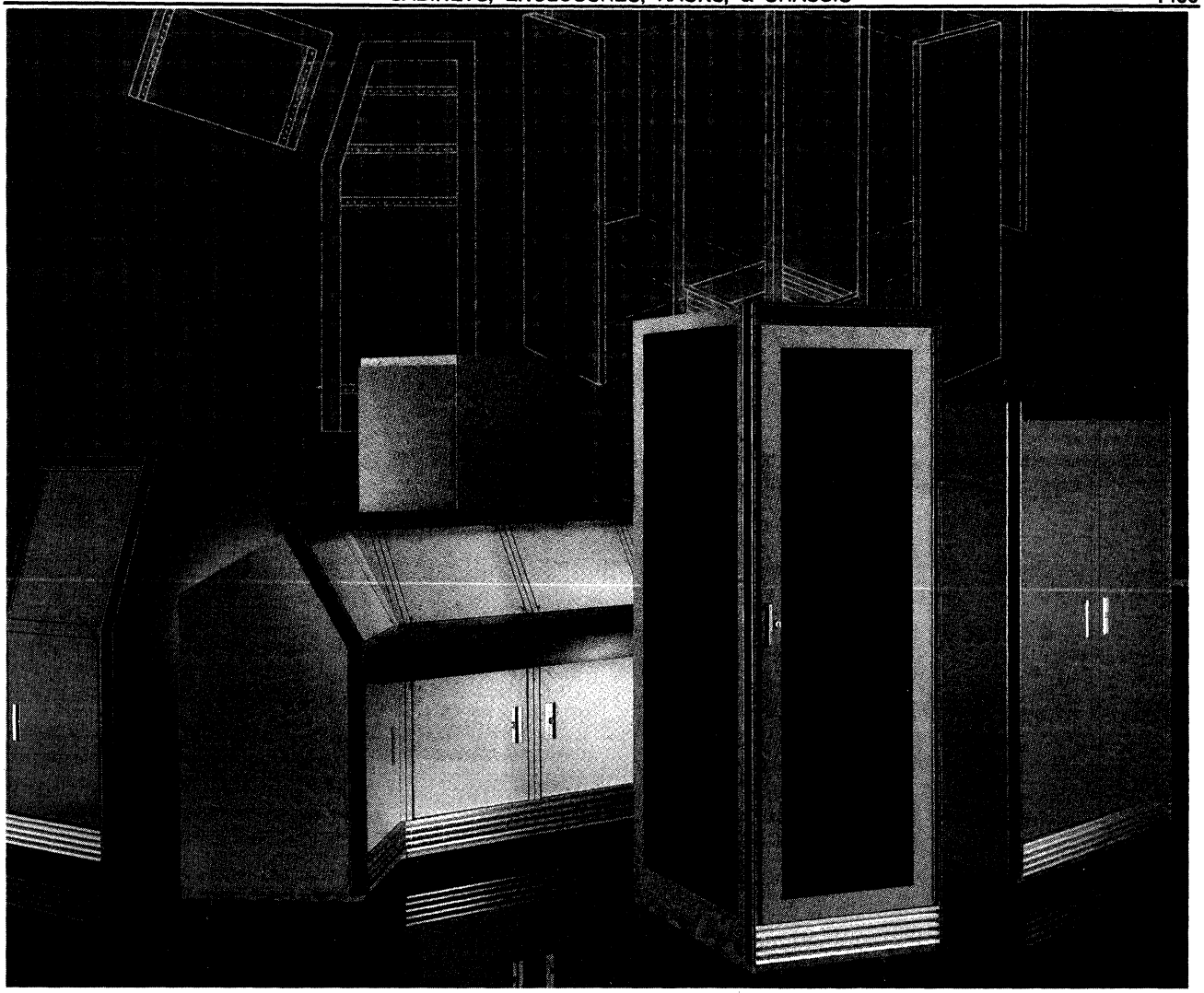

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Cabtron has the enclosures to make *your* designs work.

Cabtron's electronic enclosures are designed for maximum efficiency—whether used for automatic test equipment, communications, military, security, video, medical, industrial, or other applications. Our large selection of standard sizes, coupled with distinctive styling and a fully integrated, modular parts system, offer you the ultimate design flexibility required in today's market.

Cabtron also offers one of the largest selections of accessories in the industry, while attractive trim packages help you finish your enclosures in style. In addition, our skilled technicians will match any color, punch any size hole, or assemble any cabinet configuration to meet your specifications.

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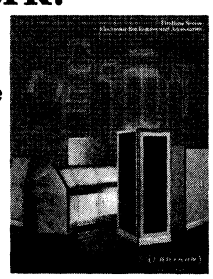

1-312-498-6090

Standard Features

- 12, 14, or 16 gauge steel frame.
- 11 gauge corner gussets for added strength on vertical rack and console models.
- Horizontal cowlings, vertical frame channel, horizontal top channel, and bottom caster plates all seam welded together for extra strength and rigidity.
- 11 gauge mounting angles have tapped holes on EIA patterns.
- Removable bottom panel for computer floor access.
- Front and rear grills with cleanable air filters engineered to accept exclusive Cabtron blower system.
- Frame provided with knock-outs for easy mounting of casters.
- Casters purchased at time of order installed at no additional charge.
- Free hardware kit includes four 10-32 panel screws for every 8¾" of front panel space and joining hardware for multi-bay configurations.
- Choose from 10 standard textured finishes. Combinations of standard colors available at no additional cost.

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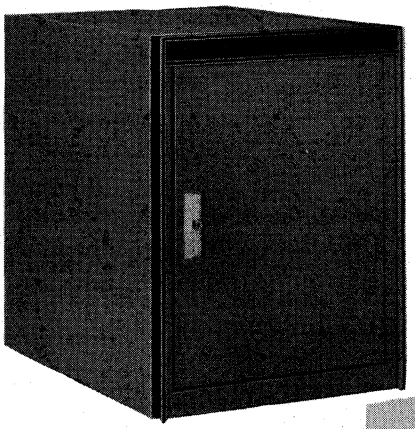
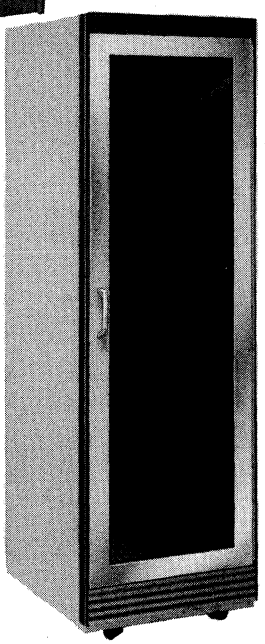
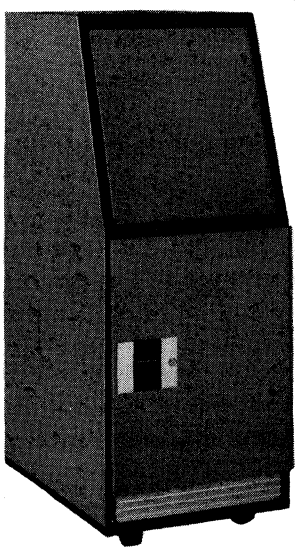
Durable

Quality enclosures in 5 DAYS.







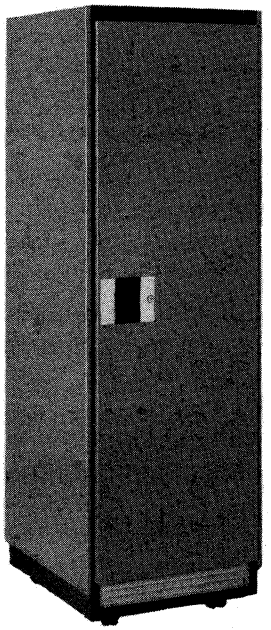
When you need it good, and you need it **now**, turn to Cabtron. We can produce and ship a large variety of standard sizes and configurations in just **five days** helping you keep important schedules.

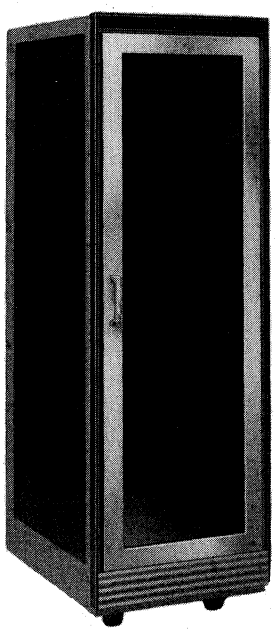
Cabtron can also help you replace or upgrade old enclosures with minimum downtime. And all enclosures in the five day program give you the quality features and durability you expect from Cabtron.

If you need it yesterday, and want it to last past tomorrow, be sure you call Cabtron today.

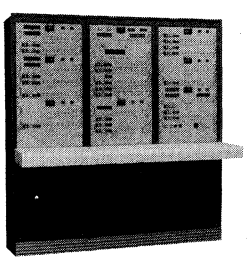
Firstline Series Vertical Rack Cabinets

• Three Panel Widths • Four Cabinet Depths • Nine Cabinet Heights





Cabtron's Firstline Series vertical racks combine a long list of performance and durability features with a styling package that complements the visual appeal of your single and multi-bay designs — all at an affordable price.



TYPICAL MULTI-BAY APPLICATION

For example, a 14 gauge steel frame is reinforced by eight corner gussets of 11 gauge steel to stand up to the toughest work environment. Critical components are seam welded for added strength and rigidity. Adjustable 11 gauge front and rear mounting angles provide distortion-free mounting for the heaviest loads. And, our exclusive filtered air base system helps protect valuable electronic equipment from heat overloads and dust contamination.

Choose from our model "C" (with trim) for computer style look, or our model "S" (square corners without trim) for industrial-type applications.

Also available in **Heavy Duty** version, featuring 12 gauge steel frame with three panel widths, three cabinet heights, two cabinet depths.

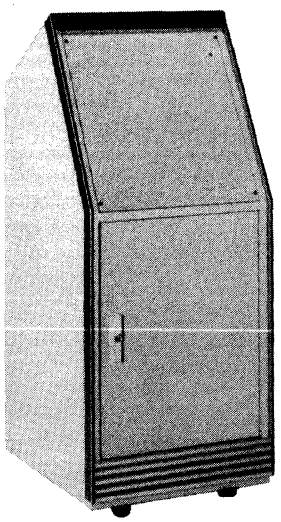
CABTRON

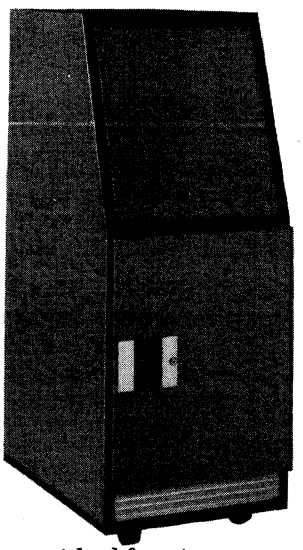
CABTRON SYSTEMS, INC., 200 Anets Drive, Northbrook, IL 60062

Versatile

Firstline Series 30° Vertical Slope Front and New 19° Vertical Slope Front "Flat-Top" Consoles

• Three Panel Widths • Four Frame Openings • Three Slope Openings

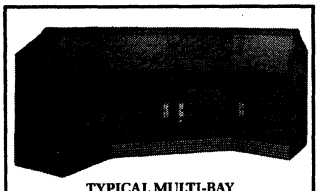




Firstline slope front consoles are ideal for virtually any control room environment. A wide range of features and optional accessories allow these cabinets to be used for monitors, control panels, and electronic equipment anywhere a sloped angle is desired.

Modular design enables Firstline consoles to be used individually, in groups, or intermixed with other Cabtron enclosures.

Joining hardware is provided for easy assembly of multi-bay configurations.



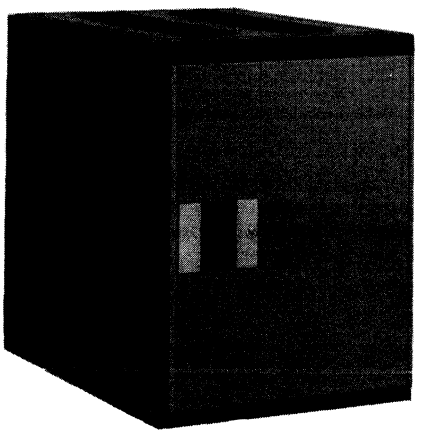
TYPICAL MULTI-BAY CONFIGURATION

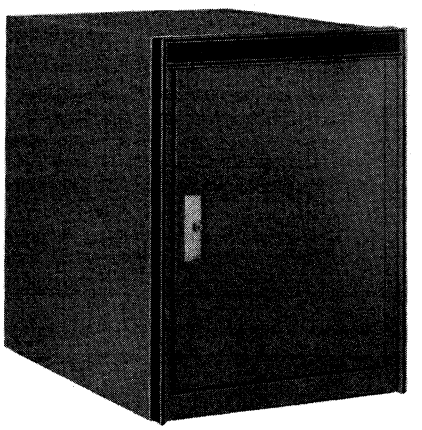
For standard applications, use our 30° console. Or, for applications requiring maximum depth with a sloped front, specify our new 19° flat-top model.

Choose between our model "C" (with trim) for computer-style look, or our model "S" (square corners without trim) for industrial-style applications.

Firstline Series Bench Cabinets

• Three Panel Widths • Five Frame Depths • Six Panel Heights





The ideal enclosures for use as bench top instrument cabinets or desk height equipment racks. Firstline bench cabinets combine sturdy construction with intelligent, productivity-oriented engineering and stylish good looks.

Rugged 14 gauge steel frame construction and seam welding of critical components allow Firstline bench cabinets to be matched to our other cabinet lines—or to stand alone wherever they're needed. Attractive styling makes them as at home in a high tech area as they are in an industrial environment. And, joining hardware is included to simplify multi-bay installations.

Choose between our model "C" (with trim) for computer-style look, or our model "S" (square corners without trim) for industrial-type applications.

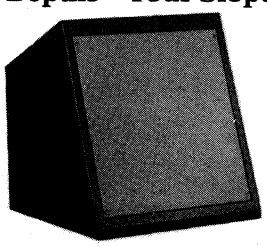
CABTRON

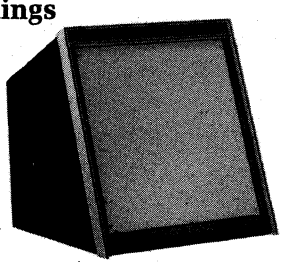
CABTRON SYSTEMS, INC., 200 Anets Drive, Northbrook, IL 60062

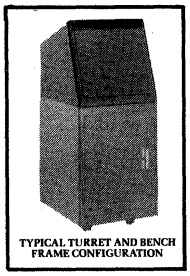
Attractive

Firstline Series 19° Turret Cabinets

• Three Panel Widths • Four Frame Depths • Four Slope Openings







TYPICAL TURRET AND BENCH FRAME CONFIGURATION

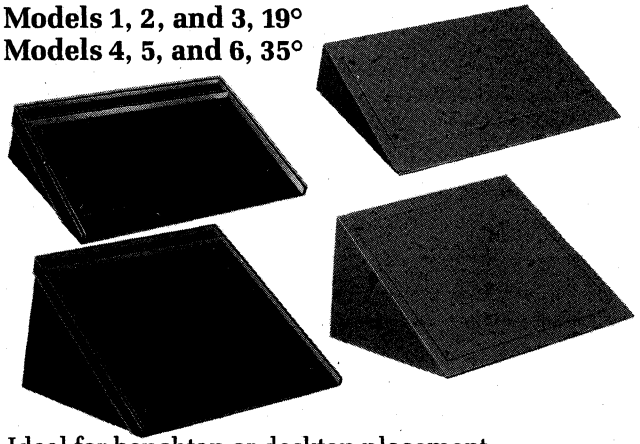
The perfect complement to Firstline bench cabinets, these turret cabinets are also ideal for desktop use. They provide the ideal slope viewing angle in sizes to match the particular application.

The 16 gauge steel frame can stand up to the toughest duty, allowing even heavy monitors or equipment to be conveniently mounted. Solid sides provide an attractive appearance in areas open to the general public, and multi-bay capability allows space to be used most efficiently.

Choose between our model "C" (with trim) for computer-style look, or our model "S" (square corners without trim) for industrial- type applications.

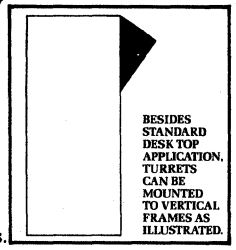
Firstline Series Desk Turrets

Models 1, 2, and 3, 19°
Models 4, 5, and 6, 35°



Ideal for benchtop or desktop placement, Firstline desk turrets provide maximum utility in minimal space. They can be easily attached to table tops as well, and can even be mounted to Firstline vertical rack cabinets for overhead monitor viewing.

Choose between our model "C" (with trim) for computer-style look, or our model "S" (square corners without trim) for industrial-type applications.



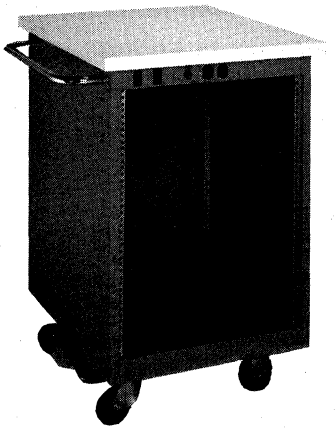
BESIDES STANDARD DESK TOP APPLICATION, TURRETS CAN BE MOUNTED TO VERTICAL FRAMES AS ILLUSTRATED.

Model MTC Mobile Test Cart

• Portable Work Station • Test Station • Equipment Transport



Test equipment not included.



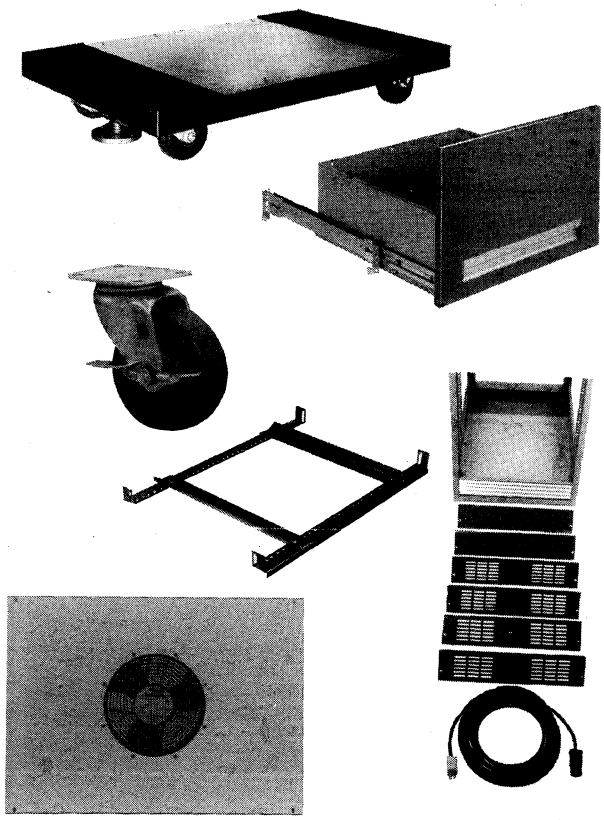
Cabtron's Mobile Test Cart transports integrated instrumentation and organizes your test or data acquisition equipment. Constructed of prime 14 gauge steel, this rugged single or dual bay cart features two grounded duplex outlets controlled by a master switch and pilot light, and one twist-lock receptacle on the outside of the frame.

The entire circuit is protected by a 15 amp fuse. Mounting angles with EIA spacing, removable 20 foot, 14 gauge/3 wire power cord, two swivel and two rigid casters, and foot lock provided. Available in any one or combination of 10 standard textured finishes.

CABTRON **CABTRON SYSTEMS, INC.**, 200 Anets Drive, Northbrook, IL 60062

Intelligent

Accessories

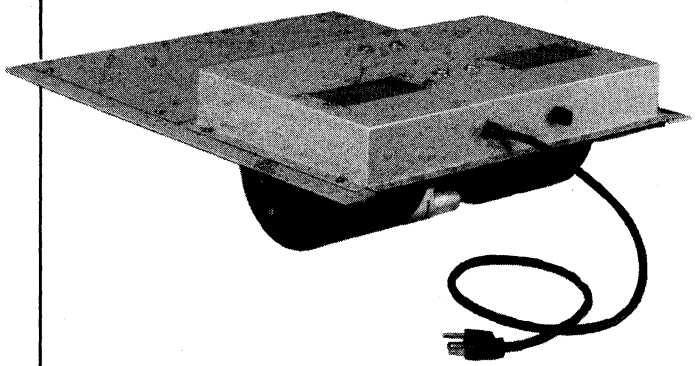


Cabtron offers a complete line of accessories to complement any of our standard lines of electronic enclosures. In addition, our engineers are available to assist you in creating custom applications or options... economically and efficiently.

Select the accessories you're interested in from the list below. Then call or write for more information.

- Blowers, base mounted
- Air duct assemblies
- Fan, 400 CFM top panel mounted
- Doors
  - Flush and surface, plain and louvered
  - DSA surface, plain and louvered
  - DSAW plexiglass window
- Enclosure panels
  - Plain and louvered, formed
  - Perforated, formed
  - Flat aluminum
  - Laminated plastic
- Panel spacers
- Casters
- Caster dollies, cabinet
- Caster plates, bench frame
- Bases
  - Toe base
  - Anti-tip base
  - Anti-tip legs
- Chassis brackets
  - Regular
  - Adjustable
- Shelves
  - Cabinet equipment
  - Perforated
  - Sliding
- Drawers
  - Writing top
  - Equipment
- Pull-out writing tops
- Mounting angles, cabinet panel
- Grills, base mounted
- Receptacle strips
- Grounding strips
- Extension, desk tops
  - "WTA" plastic with radius front
  - Plastic desk top
  - "WTC" plastic one piece console for 30° and 45° assemblies
- Chassis slides
- Cable carrier
- Cable runway
- Hardware, replacement and miscellaneous
- Hardware, mounting

Exclusive Base Mounted Blowers



Exclusive base mounted blowers are made to fit within the base of any filtered base Cabtron frame. Available in four air deliveries, 150 CFM, 300 CFM, 500 CFM, and 800 CFM.

Cabtron blower units have dual outlets providing filtered air into the cabinet. For directing filtered air to specific parts of the cabinet we recommend using out "AD" air ducts.

All Cabtron blowers operate on 115 volts AC, 50-60 Hertz and are fused per industry standards. A 30" cord and plug is provided for easy attachment to our receptacle strips. All parts are finished in Cabtron light gray finish.

CABTRON **CABTRON SYSTEMS, INC.**, 200 Anets Drive, Northbrook, IL 60062

COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

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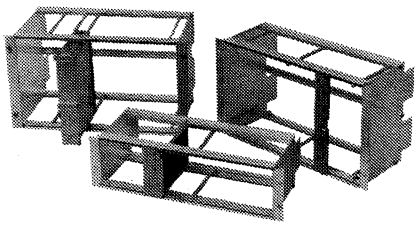
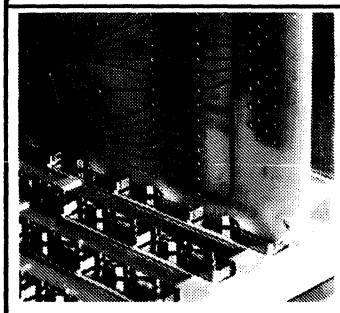
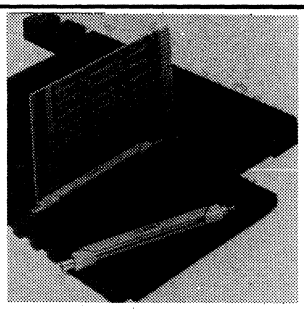


EUROCARD PACKAGING HARDWARE

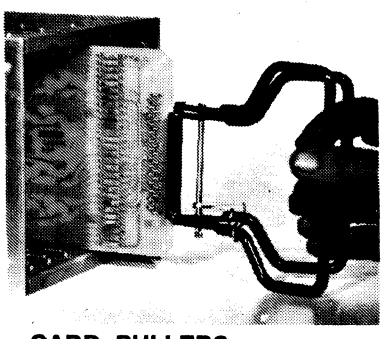
In accordance with VME 41494 & IEC 297 Stds.
VMEbus & MULTIBUS II compatible.

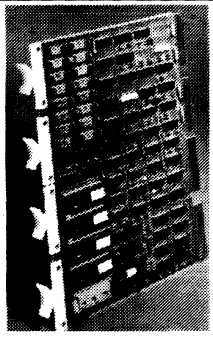




CARD RETAINERS CARD-LOKS

Excellent thermal and electrical conductivity, plus protection against shock and vibration.



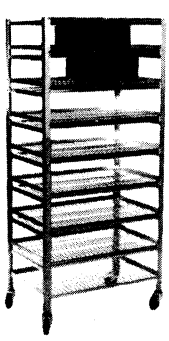


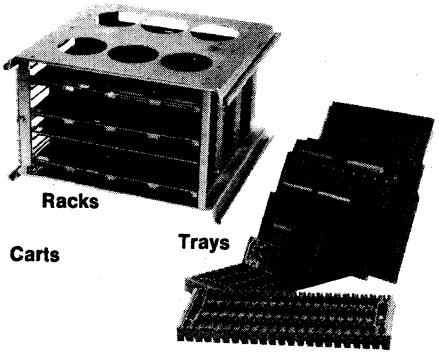
CARD PULLERS

For easy PC card extraction.

PCB HANDLING PRODUCTS

Trays, Racks and Carts for safe and efficient handling, transport, and storage of PC boards during all stages of production. Available with static resistant or conductive material.

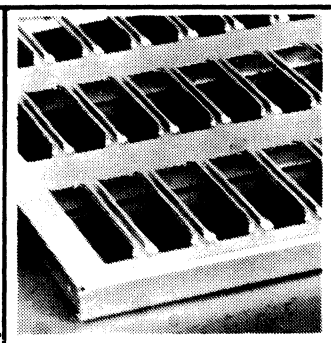


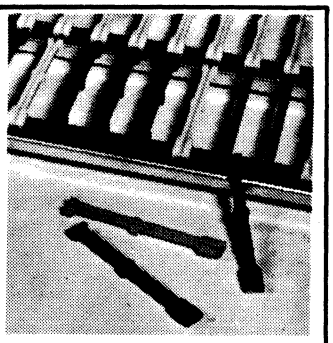


Racks

Carts

Trays





CARD GUIDES

Metal louver and nylon snap-in.



CARD INSERTERS & EXTRACTORS

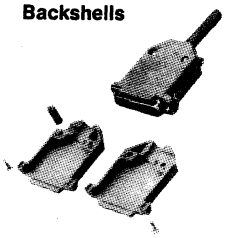
For easy insertion and extraction of cards.

- Available in colors for coding • Generous area for hot stamp marking.
- U.L. Approved • Available with pre-started assembly pins.

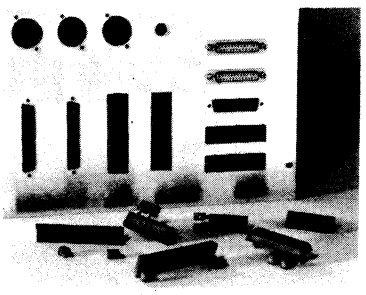
CONNECTOR ACCESSORIES

For "D"-subminiature rectangular connectors.

Backshells



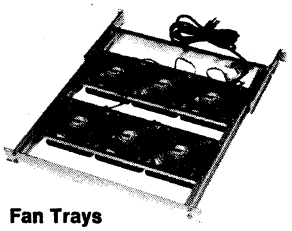
Available with EMI/RFI shielding.



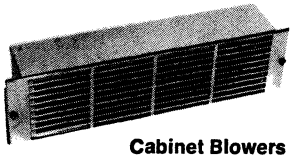
Cutout Covers

ELECTRONIC COOLING PRODUCTS

Fan Tray Assemblies offer standard mounting with multiple and adjustable fan locations. Cabinet Blowers for cooling of electronic rack equipment. For Special Applications Calmark will design an airmover to meet specific requirements.



Fan Trays



Cabinet Blowers

CALMARK® CORPORATION

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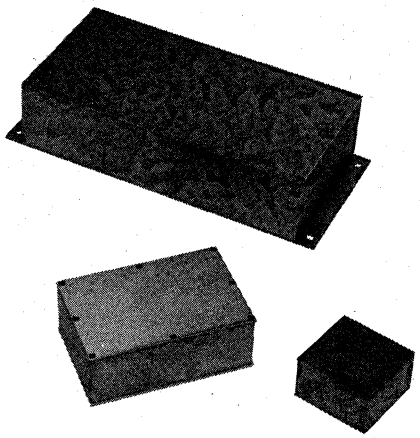
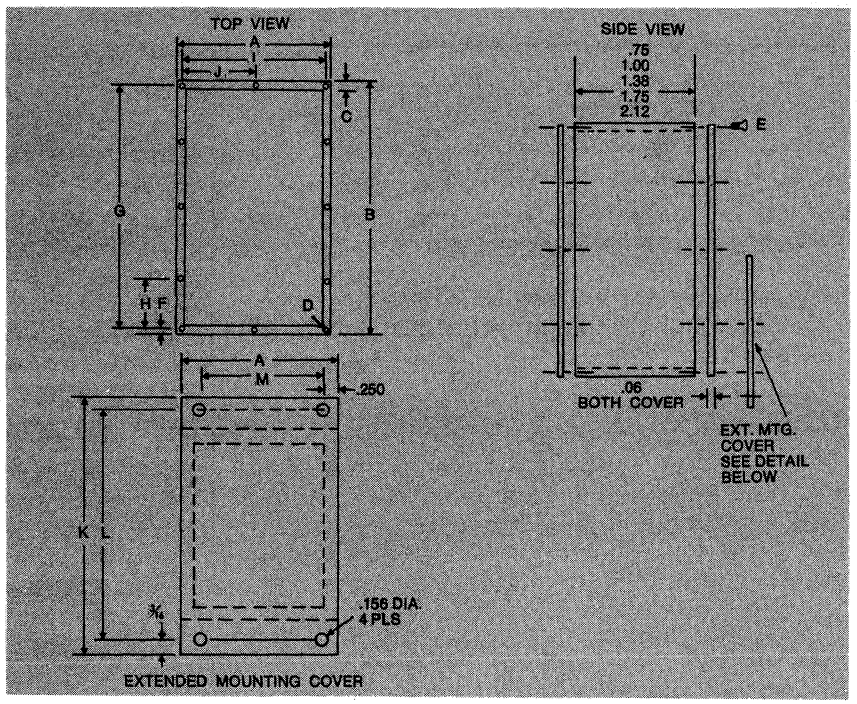
COMPAC™

RFT SERIES





- ☐ Compac's RFT Series Enclosures have shielding capabilities to 60 dB at 3 GHz
- ☐ Independent access from either side
- ☐ Greater Interior Acreage Construction Specs: Case — AL 6063T3 Covers — AL 5052-H32 finish chemical film per MIL C 5541 Class 1 A Conformance to MIL 45208A

HOW TO ORDER:

R-51110 — 138 — 0 (N)

CASE PART NO.

CASE HEIGHT
075 - 0.75
100 - 1.00
138 - 1.38
175 - 1.75
212 - 2.12

COVER TYPE
0 - Standard flush
1 - Extended

ADD FOR NICKEL PLATE

	A	B	C	D*	E	F	G	H	I	J	K	L	M
R51080	1.00	1.00	.125	4	0-80	.070	.860	—	.860	—	1.75	1.375	.50
R51090	1.25	1.25	.125	4	0-80	.070	1.110	—	1.110	—	2.00	1.625	.75
R51095	1.25	2.50	.125	6	0-80	.070	2.360	1.180	1.110	—	3.25	2.875	.75
R51100	1.50	1.50	.125	6	0-80	.070	1.360	.680	1.360	—	2.25	1.875	1.00
R51110	1.50	2.00	.125	6	0-80	.070	1.860	.930	1.360	—	2.75	2.375	1.00
R51120	1.50	2.50	.125	6	0-80	.070	2.360	1.180	1.360	—	3.25	2.875	1.00
R51125	1.50	3.25	.125	6	0-80	.070	3.110	1.555	1.360	—	4.00	3.625	1.00
R51130	1.50	6.00	.125	10	0-80	.070	5.860	1.465	1.360	—	6.75	6.375	1.00
R51140	1.75	1.75	.125	6	0-80	.070	1.610	.805	1.610	—	2.50	2.125	1.25
R51150	1.75	3.00	.125	6	0-80	.070	2.860	1.430	1.610	—	3.75	3.375	1.25
R51160	2.00	2.00	.125	8	0-80	.070	1.860	.930	1.860	.930	2.75	2.375	1.50
R51170	2.00	3.00	.125	8	0-80	.070	2.860	1.430	1.860	.930	3.75	3.375	1.50
R51180	2.00	4.00	.125	10	0-80	.070	3.860	1.286	1.860	.930	4.75	4.375	1.50
R51190	2.00	5.00	.125	12	0-80	.070	4.860	1.215	1.860	.930	5.75	5.375	1.50
R51200	2.00	6.00	.125	12	0-80	.070	5.860	1.465	1.860	.930	6.75	6.375	1.50
R51205	2.50	2.50	.125	8	0-80	.070	2.360	1.180	2.360	1.180	3.25	2.875	2.00
R51210	3.00	3.00	.125	8	0-80	.070	2.860	1.430	2.860	1.430	3.75	3.375	2.50
R54030	3.00	4.00	.125	10	0-80	.070	3.860	1.287	2.860	1.430	4.750	4.375	2.50
R51235	4.00	4.00	.125	12	0-80	.070	3.860	1.287	3.860	1.287	4.750	4.375	3.50
R51220	3.00	5.00	.125	12	0-80	.070	4.860	1.215	2.860	1.430	5.75	5.375	2.50
R51225	3.00	5.00	.188	12	2-56	.094	4.812	1.203	2.812	1.406	5.75	5.375	2.50
R51230	3.00	6.00	.188	12	2-56	.094	5.812	1.453	2.812	1.406	6.75	6.375	2.50
R51250	5.00	6.00	.188	14	2-56	.094	5.812	1.453	4.812	1.604	6.75	6.375	4.50
R58010	8.00	10.00	.187	16	2-56	.094	9.812	1.962	7.812	2.604	10.750	10.375	7.500

* D = Number of cover screws

Specifications subject to change without notice

CUSTOM
FROM COMPAC'S RFT SERIES

Compac will modify our RFT Series Enclosures to meet your needs.

- Drilling
- Tapping
- Milling
- "D" Punching
- Cut Outs for Subminiature Connections
- Silk Screening, Painting

Work is done from your prints or to your specifications.

For your convenience Compac has included on page 5 a request for quote with a rendering of a Compac Case to depict your modifications.

R51110 — 138 — 0 — (N)/MOD/XXX

CASE PART NO.

CASE HEIGHT
075 - 0.75
100 - 1.00
138 - 1.38
175 - 1.75
212 - 2.12

COVER TYPE
0 - Standard flush
1 - Extended

ADD FOR NICKEL PLATE

YOUR PRINT #

TO ORDER

Select a case size from the RFT series, send a drawing and include: overall height, feedthru location, type (plain Teflon or filter) connector location etc. Our expertise in shielded cases can give you a truly CUSTOM design, limited only by your requirements.

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HOLBROOK, NEW YORK 11741
TELEPHONE (516) 585-3400
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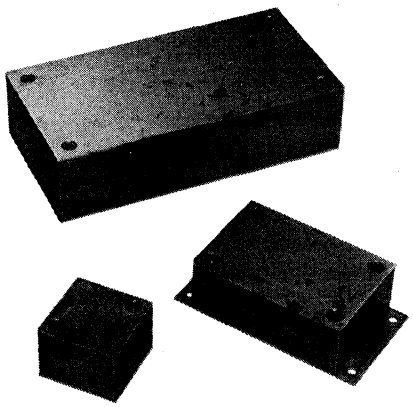
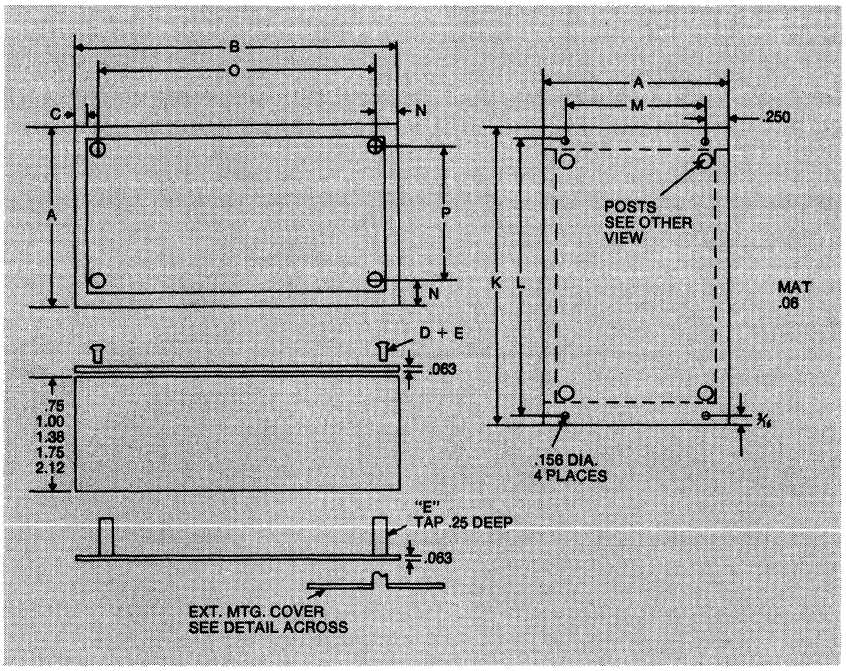
COMPAC™

BLANK SERIES





- ☐ Compac Blank Series Enclosures provide up to 100 dB shielding effectiveness at 100 MHz
- ☐ Easy access and assembly
- ☐ Off-the-shelf availability

CONSTRUCTION SPECS
Frames: 6063-T5QQA200 Extruded Aluminum
Covers: 5052-H32-Aluminum
Standard Finishes
Irridite Chemifilm per MIL C 5541 CL 1 A Conformance to MIL Spec 45208A

HOW TO ORDER:

51110 — 138 — 0 — (N)

- 51110 — CASE PART NO.
- 138 — CASE HEIGHT
  - 075 - 0.75
  - 100 - 1.00
  - 138 - 1.38
  - 175 - 1.75
  - 212 - 2.12
- 0 — COVER TYPE
  - 0 - Standard flush
  - 1 - Extended
- (N) — ADD FOR NICKEL PLATE

	A	B	C	D	E	K	L	M	N	O	P
51080	1.00	1.00	.125	2	4-40	1.75	1.375	.50	.250	.50	.50
51090	1.25	1.25	.125	2	4-40	2.00	1.625	.75	.250	.75	.75
51095	1.25	2.50	.125	4	4-40	3.25	2.875	.75	.250	2.00	.75
51100	1.50	1.50	.125	2	4-40	2.25	1.875	1.00	.250	1.00	1.00
51110	1.50	2.00	.125	4	4-40	2.75	2.375	1.00	.250	1.50	1.00
51120	1.50	2.50	.125	4	6-32	3.25	2.875	1.00	.250	2.00	1.00
51125	1.50	3.25	.125	4	6-32	4.00	3.625	1.00	.250	2.75	1.00
51130	1.50	6.00	.125	4	6-32	6.75	6.375	1.00	.250	5.50	1.00
51140	1.75	1.75	.125	4	6-32	2.50	2.125	1.25	.250	1.25	1.25
51150	1.75	3.00	.125	4	6-32	3.75	3.375	1.25	.250	2.50	1.25
51160	2.00	2.00	.125	4	6-32	2.75	2.375	1.50	.250	1.50	1.50
51170	2.00	3.00	.125	4	6-32	3.75	3.375	1.50	.250	2.50	1.50
51180	2.00	4.00	.125	4	6-32	4.75	4.375	1.50	.250	3.50	1.50
51190	2.00	5.00	.125	4	6-32	5.75	5.375	1.50	.250	4.50	1.50
51200	2.00	6.00	.125	4	6-32	6.75	6.375	1.50	.250	5.50	1.50
51205	2.50	2.50	.125	4	6-32	3.25	2.875	2.00	.250	2.00	2.00
51210	3.00	3.00	.125	4	6-32	3.75	3.375	2.50	.250	2.50	2.50
54030	3.00	4.00	.125	4	6-32	4.750	4.375	2.500	.250	3.50	2.50
51235	4.00	4.00	.125	4	6-32	4.750	4.375	3.500	.250	3.50	3.50
51220	3.00	5.00	.125	4	6-32	5.75	5.375	2.50	.250	4.50	2.50
51225	3.00	5.00	.188	4	6-32	5.75	5.375	2.50	.310	4.38	2.38
51230	3.00	6.00	.188	4	6-32	6.75	6.375	2.50	.310	5.38	2.38
51250	5.00	6.00	.188	4	6-32	6.75	6.375	4.50	.310	5.38	4.38
58010	8.00	10.00	.187	4	6.32	10.75	10.375	7.500	.310	9.330	7.380

Specifications subject to change without notice

CUSTOM FROM COMPAC'S BLANK SERIES

Compac will modify our Blank Series to meet your needs and specifications.

- Drilling
- Tapping
- Milling
- Punching
- Traps for Subminiature Connections
- Silk Screening/Painting

Work is done from your print to your specifications.

For your convenience Compac has included on page 5 a request for quote with a rendering of a Compac Case to depict your modifications.

51110 — 138 — 0 (N)/MOD/XXX

- 51110 — CASE PART NO.
- 138 — CASE HEIGHT
  - 075 - 0.75
  - 100 - 1.00
  - 138 - 1.38
  - 175 - 1.75
  - 212 - 2.12
- 0 — COVER TYPE
  - 0 - Standard flush
  - 1 - Extended
- (N) — ADD FOR NICKEL PLATE
- XXX — YOUR PRINT #

TO ORDER

Select a case size from the BLANK Series, send a drawing and include: overall height, feedthru location, type (plain Teflon or filter) connector location; etc. Our expertise in shielded cases can give you a truly CUSTOM design, limited only by your requirements.

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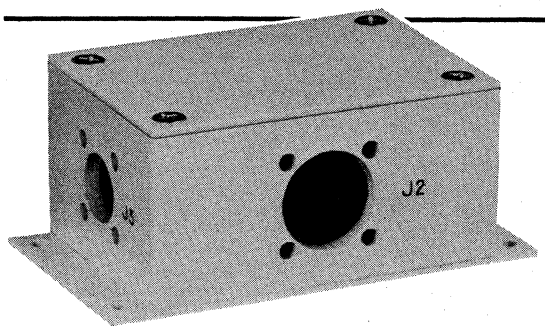
HOLBROOK, NEW YORK 11741
TELEPHONE (516) 585-3400
TWX 510-227-1064

COMPAC™

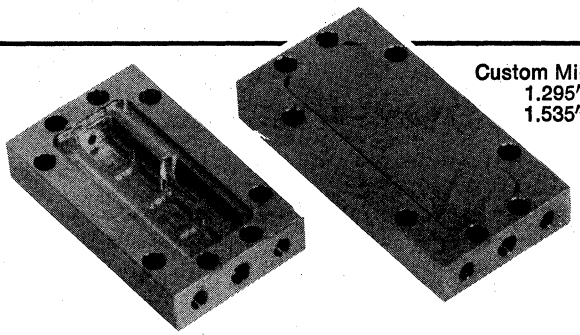
CUSTOM SERIES

Compac's unique product line can easily be tailored to meet your many custom specifications. But if our RFT or Blank Series do not fit your basic requirements, Compac can build a totally custom enclosure quickly and inexpensively. Compac's versatility converts your design into a finished product ready for assembly and installation. All you have to do is supply circuitry!

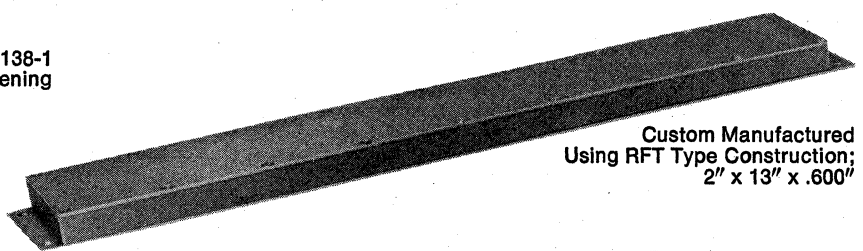
— Print or Detailed Drawings Required —



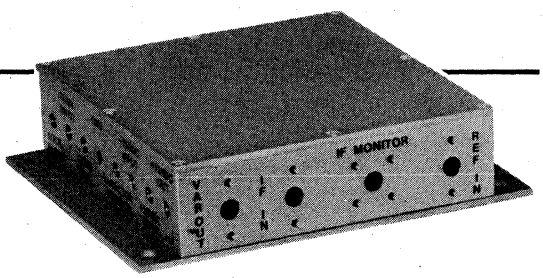
Manufactured from 51170-138-1
with Custom Drilling, Painting, and Silk Screening



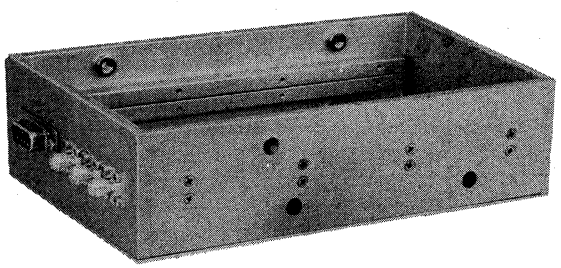
Custom Milled Enclosures,
1.295″ x .765″ x .225″
1.535″ x .765″ x .225″



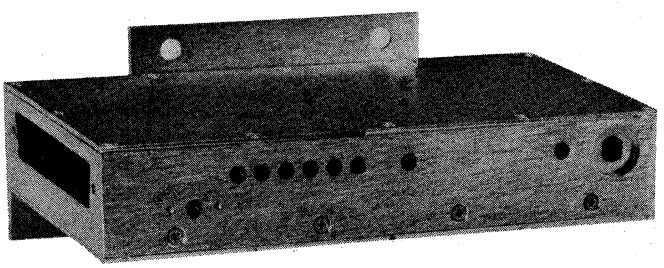
Custom Manufactured
Using RFT Type Construction;
2″ x 13″ x .600″



Manufactured from R51210-075-1 with
Custom Drilling, Tapping, and
Silk Screening



Custom Manufactured
Using RFT Type Construction, 4.00″ x 7.00″ x 2.00″
Showing Mounting Bars, Custom Drilling for
Hardware and Connectors



Manufactured from R51230-100-0(N)
Showing Custom Mounting Plate
Drilling, Milling and "D" Punching

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Not Limited To
Examples Shown; COMPAC
Can Build To Your Specifications

COMPAC™

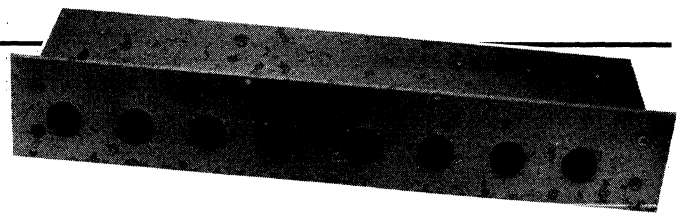
CUSTOM SERIES

SERVICES

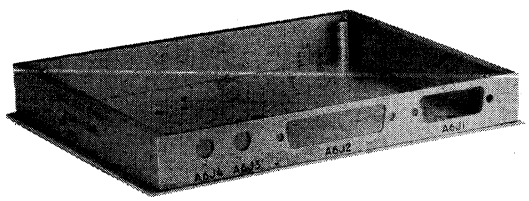
Milling — Enclosures, Channel, Grooves, as Required
Holes — Drilled or Punched
Material Thickness — To Your Specifications
Silk Screening or Painting
Construction Methods — Extrusion, Die Cast, Brazed, or Milled
Covers — To Your Specifications

ADVANTAGES OF A CUSTOM ENCLOSURE

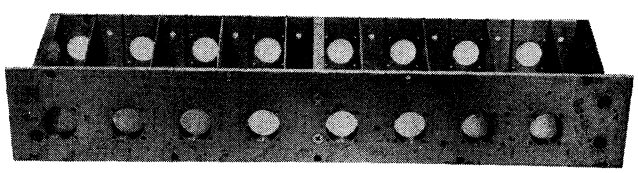
— Low Cost
— To your Exacting Specifications
— Short Lead Times
— Prototype to Production Quantity
— Finished Product Ready for Assembly
— With or Without Connectors & Filters



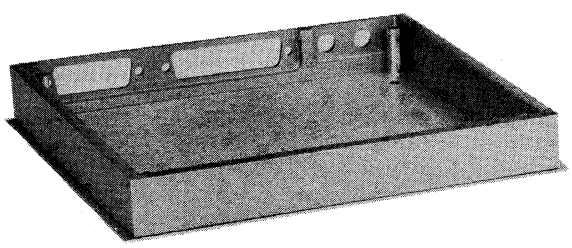
Custom Manufactured to Customer Spec's 19.00″ x 4.00″ x 6.00″



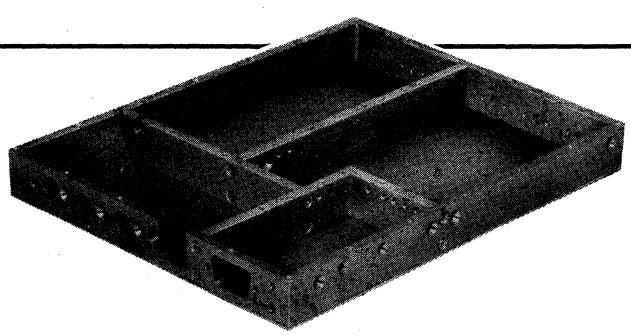
Custom Manufactured Blank Series Construction, 5.00″ x 6.00″ x .75″ Flat and Parallel to .001″ with Custom Milling, Drilling, "D" Punching and Silk Screening



View of above Enclosure Showing Interior and Partitions



View of Above Enclosure Showing Interior Milling



Custom Manufactured using RFT Construction 6.00″ x 8.00,″ x .75″, Show Custom Drilling, Milling, Counter Sinking, and Custom Partitions

Quantities from 1 pc thru production

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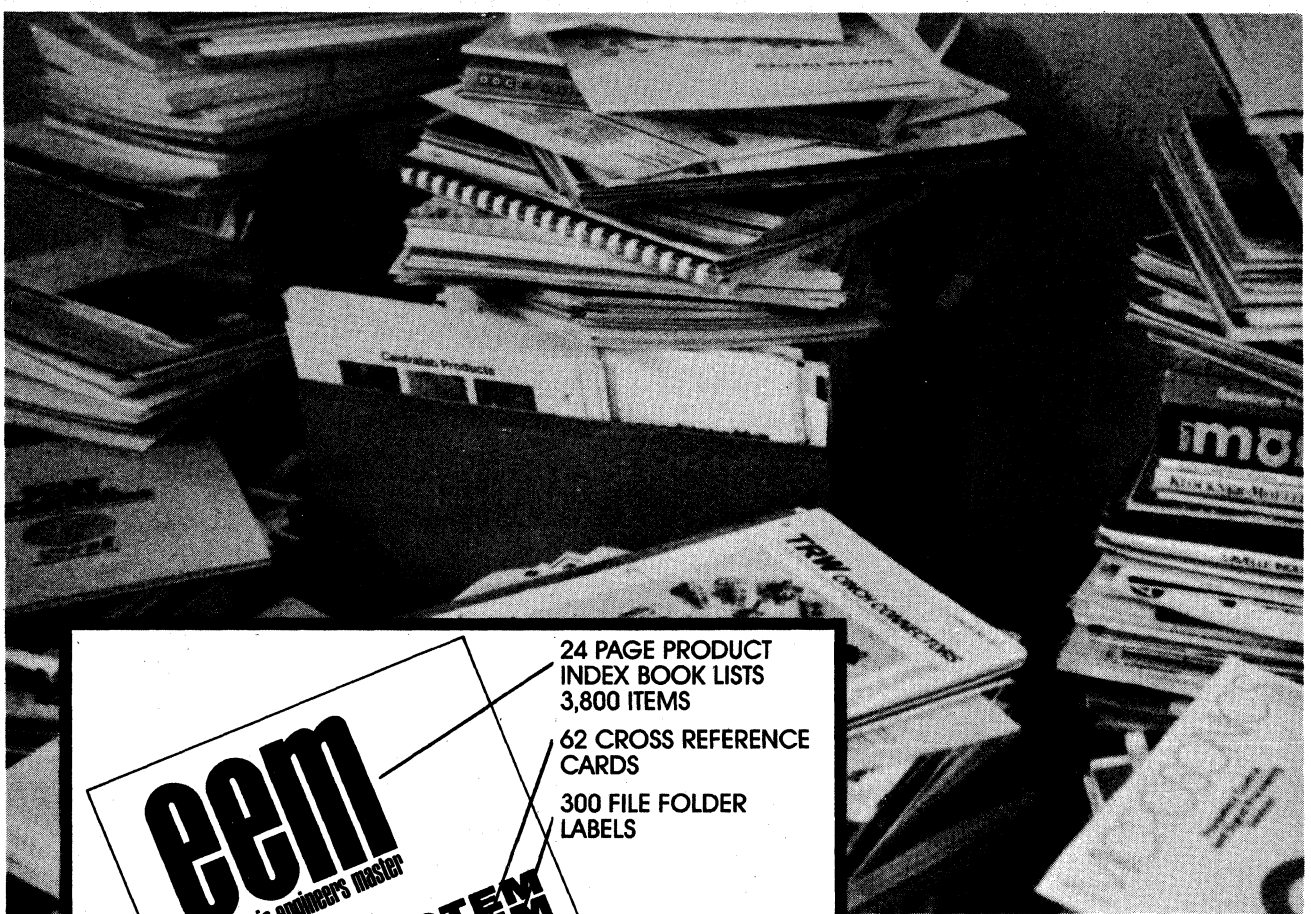
HOLBROOK, NEW YORK 11741
TELEPHONE (516) 585-3400
TWX 510-227-1064



24 PAGE PRODUCT INDEX BOOK LISTS 3,800 ITEMS

62 CROSS REFERENCE CARDS

300 FILE FOLDER LABELS

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Are your catalog files organized? Can you find any given catalog in a matter of seconds? If your answer is "Yes," you probably already have the EEM File System. But, if you said "No," you really ought to look into this simple system. It will save hours of time and tons of aggravation.

The EEM File System was invented over twenty-five years ago to help people who specify, buy, or work with electronic products and equipment. It is upgraded on a constant basis to reflect the current state of the art. It's easy to use and easy to customize to your particular needs.

You say you want to file catalogs by type of product? That's easy to do with The System. But, what are you going to do when there are multiple products in one catalog? Take Mallory for example. There are all kinds of products in the Mallory Short Form Catalog. With the EEM File System all you do is file the catalog under "M" for Mallory and refer to it on all of the cross reference cards that apply.

There are thousands of EEM File Systems in everyday use in engineering and procurement offices all over the world. Shouldn't you be using this proven system?

The EEM File System is shipped in one neat package. The package contains everything you need to set up your very own filing system. Best of all, it's easy to get and very affordable. Send a check or money order for $25.00 and EEM will pay the postage and sales tax. If you must use a purchase order, please add $5.00 for postage and handling. An invoice will accompany your System.

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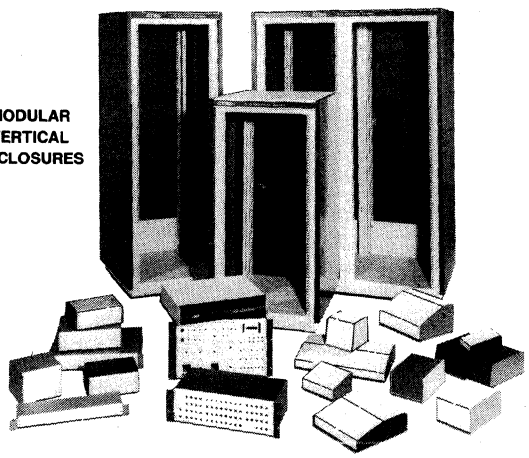
645 stewart ave., garden city, ny 11530

CTS METAL ENCLOSURES



CTS ENCLOSURES

A complete and compatible family of value engineered cabinets and vertical rack enclosures which meet the highest standards of quality, versatility, and ease of use at a surprisingly modest price.

All three lines: MOD-U-BOX, MOD-U-LINE, and MODULAR VERTICAL ENCLOSURES are specifically designed to complement each other and other standard electronics industry products.

Material: All CTS enclosures are manufactured from heavy gauge aluminum or cold rolled steel.

Finish: Beautiful oven-baked smooth and textured paints available in a selection of colors.

Design: Ease of assembly and replaceability of all parts are built-in features.

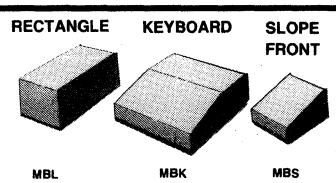
Price: Value engineering means top performance for bottom dollar.

CALL: TOLL FREE (800) 558-7297

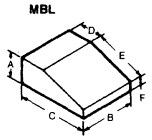
MOD-U-BOX

The MOD-U-BOX series presents a wide choice of small electronic cabinets. Distinctively styled, MOD-U-BOX offers rugged high quality construction at an exceptionally low price.

SIDE SHAPE	CTS NUMBER	OUTSIDE DIMENSIONS, INCHES HEIGHT A	WIDTH B	DEPTH C	TOP D	SLOPE E	FRONT F	NET PRICE
	MBL 4-6-10	3 13/16	5 13/16	9 13/16	NA	NA	NA	$19.40
	MBS 3-4-6	2 3/4	4 1/4	6 13/16	NA	6 3/8	1 1/4	13.40
	MBS 3-7-6	3 1/8	6 3/4	5 3/8	NA	5 9/16	1 5/8	14.90
	MBS 4-10-10	3 1/2	10	10	8	3 3/16	1 1/16	28.30
	MBS 4-12-11	3 13/16	11 13/16	10 13/16	9 3/4	3 15/16	NA	29.80
	MBS 5-6-6	4 13/16	5 13/16	5 13/16	4 1/2	4 15/16	NA	16.40
	MBK 2-5-5	1 13/16	4 13/16	4 15/16	2 1/8	2 15/16	1 1/16	13.40
	MBK 2-7-6	2 5/16	6 1/2	5 13/16	2 15/16	3 1/4	3/8	14.00
	MBK 3-10-11	2 13/16	9 13/16	10 13/16	5	5 15/16	1 1/2	28.30
	MBK 3-13-11	2 13/16	12 13/16	10 13/16	5	5 15/16	1 1/2	29.80
	MBK 3-17-11	2 13/16	16 13/16	10 13/16	5	5 15/16	1 1/2	37.30
	MBK 3-20-11	2 13/16	19 13/16	10 13/16	5	5 15/16	1 1/2	40.30
	MBK 5-10-10	4 13/16	9 13/16	9 13/16	1 15/16	8 7/16	1 3/4	29.80
	MBK 6-12-10	5 3/4	11 13/16	9 15/16	3	7 1/2	2 13/16	34.30



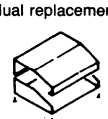
14 SIZES AVAILABLE



MOD-U-BOX FEATURES

Construction: Made from aluminum for lightweight strength and ease of handling. Wrap around base is .090" aluminum; sloped or flat front insert is .062" aluminum.

Ease of Assembly: Simple two piece design assembles or disassembles in minutes with just four screws. Allows easy access to your enclosed components. Individual replacement parts also may be ordered.



Colors & Finish: Cabinets are finished with oven-baked, EPA-approved paint. Wrap-around base has a textured finish while front insert is smooth. Standard colors are:

Wrap-Around Base	Front Insert
*Blue	*Off-White
Dark Grey	Light Grey
Black	Black
Tan	Tan

***Note:** **BLUE** and **OFF-WHITE** cabinets in stock for immediate delivery. Call for current availability of other standard color combinations.

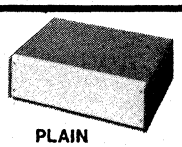
Modifications: CTS will make in-plant modifications to your specifications. Turn three pages to **STANDARD ENCLOSURE MODIFICATIONS** heading for a list of available modifications. Popular modifications include: silkscreening, venting, cut-outs, etc. Steel cabinets are also available through a special order.

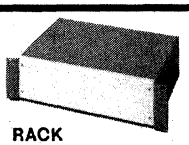
To Order Mod-U-Box: Select appropriate CTS model number and specify color combination by adding color suffix, the base color first followed by the insert color. For example, an **MBS-3-4-6** with a **BLACK** wrap-around base and an **OFF-WHITE** insert is ordered as follows: **"MBS 3-4-6 BLACK/OFF-WHITE".**

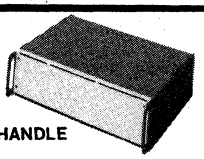
CTS METAL ENCLOSURES

MOD~U~LINE

Mod-U-Line is a line of quality small cabinets, available in standard off-the-shelf sizes. "Value Engineered" to provide the optimum in versatility, strength, and economy.


PLAIN


RACK


HANDLE

MOD-U-LINE FEATURES:

Construction: Made from aluminum for lightweight strength and ease of handling. Side panels (except for wooden) are .090" aluminum. All other components are .062" aluminum. Side panels and chassis plates are ordered separately.

Ease of Assembly: Mod-U-Line cabinets are designed to assemble in minutes. The top cover is easily removed for complete and immediate access to the inside.

Replacement Parts: All components of Mod-U-Line may be replaced in seconds with stock panels. This feature reduces damage or redesign costs by eliminating the need to repaint or replace the entire unit.

Colors & Finish: Cabinets are finished with oven-baked, EPA-approved paint. All exterior parts have a textured finish, except the front panel, which has a smooth finish. Standard colors are:

Top, Bottom & Rear Panels	Front Panel	Side Panels (except wooden)
*Blue	*Off-White	*Blue
Dark Grey	Light Grey	Dark Grey
Black	Black	Black
Tan	Tan	Tan

***Note:** **BLUE** and **OFF-WHITE** components in stock for immediate delivery. Call for current availability of other standard color combinations. Chassis plate and interior side braces are gold alodined.

Modifications: CTS will make in-plant modifications to your specifications. Turn two pages to **STANDARD ENCLOSURE MODIFICATIONS** heading for a list of available modifications. Popular modifications include: silk screening, venting, cut-out, etc. Steel cabinets are also available through a special order. Vented top and bottom panels are also available.

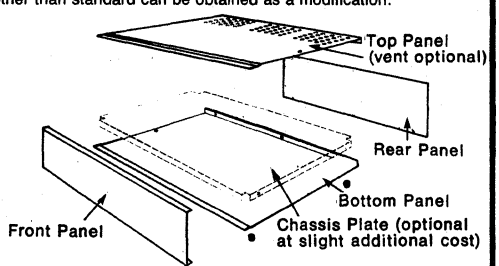
Order Mod-U-Line: A complete cabinet is ordered in three segments. 1) **Mod-U-Line Cabinet Less Sides (MCLS)** includes: front, back, top and bottom panels plus interior side braces. 2) Side Panels are ordered by style. **Side Panel Plain (SPP)** **Side Panel Rack (SPR)**, **Side Panel Handle (SPH)**; by size and color. Side panels are symmetrical - there are no righthand or lefthand panels. 3) Optional **Chassis Plate (CP)** is ordered individually according to table below. For example, a 3 5/16" x 16 5/8" x 11 7/8" cabinet with a **BLUE** exterior and **OFF-WHITE** front panel which has **BLUE RACK** side panels and a **16 5/8" x 11 7/8"** chassis plate is ordered as: **MCLS 3-17-12 BLUE/OFF - WHITE**, plus **SPR 3-12 BLUE, CP 17-12.**

STANDARD VENTED TOP AND BOTTOM PANELS ORDERING INSTRUCTION

A 1" wide ventilation strip comprised of 1/8" holes on 1/4" centers may be ordered on either top **(VT)**or bottom **(VB)** panels or on both **(VTB)**, if desired. Example: An **MCLS 3-17-12-VTB TAN/WHITE** would be vented on both top and bottom panels.

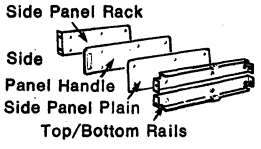
EXTRA COST PER PANEL $3.00

Venting other than standard can be obtained as a modification.



CTS NUMBER	INSIDE HEIGHT	DIMS., WIDTH	INCHES DEPTH	RECOMMENDED CHAS'S PLTE	PRICE
1 INCH HEIGHT					
MCLS 1-9-7	1 1/16	8 5/8	6 7/8	CP 9-7	$29.80
MCLS 1-17-7	1 1/16	16 5/8★	6 7/8	CP 17-7	34.30
MCLS 1-17-9	1 1/16	16 5/8★	8 7/8	CP 17-9	35.80
2 INCH HEIGHT					
MCLS 2-8-9	2 1/16	8 1/16	8 7/8	CP 8-9	29.80
MCLS 2-17-9	2 1/16	16 5/8★	8 7/8	CP 17-9	41.80
MCLS 2-17-12	2 1/16	16 5/8★	11 7/8	CP 17-12	49.20
3 INCH HEIGHT					
MCLS 3-7-7	3 5/16	6 5/8	6 7/8	CP 7-7	31.30
MCLS 3-9-7	3 5/16	8 5/8	6 7/8	CP 9-7	29.80
MCLS 3-9-9	3 5/16	8 5/8	8 7/8	CP 9-9	31.30
MCLS 3-12-7	3 5/16	11 5/8	6 7/8	CP 12-7	32.80
MCLS 3-12-9	3 5/16	11 5/8	8 7/8	CP 12-9	38.80
MCLS 3-12-12	3 5/16	11 5/8	11 7/8	CP 12-12	46.30
MCLS 3-17-7	3 5/16	16 5/8★	6 7/8	CP 17-7	32.80
MCLS 3-17-9	3 5/16	16 5/8★	8 7/8	CP 17-9	40.30
MCLS 3-17-12	3 5/16	16 5/8★	11 7/8	CP 17-12	46.30
MCLS 3-17-14	3 5/16	16 5/8★	13 7/8	CP 17-14	52.30
5 INCH HEIGHT					
MCLS 5-7-7	5 1/16	6 5/8	6 7/8	CP 7-7	30.60
MCLS 5-9-7	5 1/16	8 5/8	6 7/8	CP 9-7	31.40
MCLS 5-9-9	5 1/16	8 5/8	8 7/8	CP 9-9	32.80
MCLS 5-9-12	5 1/16	8 5/8	11 7/8	CP 9-12	35.80
MCLS 5-12-7	5 1/16	11 5/8	6 7/8	CP 12-7	34.30
MCLS 5-12-9	5 1/16	11 5/8	8 7/8	CP 12-9	35.80
MCLS 5-12-12	5 1/16	11 5/8	11 7/8	CP 12-12	38.80
MCLS 5-17-7	5 1/16	16 5/8★	6 7/8	CP 17-7	38.80
MCLS 5-17-9	5 1/16	16 5/8★	8 7/8	CP 17-9	43.30
MCLS 5-17-12	5 1/16	16 5/8★	11 7/8	CP 17-12	50.70
MCLS 5-17-14	5 1/16	16 5/8★	13 7/8	CP 17-14	52.20
7 INCH HEIGHT					
MCLS 7-9-12	6 13/16	8 5/8	11 7/8	CP 9-12	41.80
MCLS 7-12-9	6 13/16	11 5/8	8 7/8	CP 12-9	43.30
MCLS 7-12-12	6 13/16	11 5/8	11 7/8	CP 12-12	49.30
MCLS 7-17-9	6 13/16	16 5/8★	8 7/8	CP 17-9	49.30
MCLS 7-17-12	6 13/16	16 5/8★	11 7/8	CP 17-12	56.70
MCLS 7-17-14	6 13/16	16 5/8★	13 7/8	CP 17-14	59.70
8 INCH HEIGHT					
MCLS 8-17-12	8 5/16	16 5/8★	11 7/8	CP 17-12	65.70
MCLS 8-17-14	8 5/16	16 5/8★	13 7/8	CP 17-14	71.70
10 INCH HEIGHT					
MCLS 10-17-14	10 5/16	16 5/8★	13 7/8	CP 17-14	76.10

★ **NOTE: This size MOD-U-LINE with rack side panels is a perfect fit for CTS's 19" wide Modular Vertical Enclosures. See next page. Modular Vertical Enclosures.**



MOD-U-LINE SIDE PANELS

PLAIN SIDES SIZE INCHES H x D	CTS NUMBER	NET PAIR	RACK SIDES SIZE INCHES H x D	CTS NUMBER	NET PAIR	HANDLE SIDES SIZE INCHES H x D	CTS NUMBER	NET PAIR
1 x 7	SPP1-7	$ 8.10	1 x 7	SPR1-7	$ 8.50	—	—	—
1 x 9	SPP1-9	8.20	1 x 9	SPR1-9	8.60	—	—	—
2 x 9	SPP2-9	9.50	2 x 9	SPR2-9	10.10	—	—	—
2 x 12	SPP2-12	12.70	2 x 12	SPR2-12	12.80	—	—	—
3 x 7	SPP3-7	9.40	3 x 7	SPR3-7	9.70	3 x 7	SPH3-7	$10.10
3 x 9	SPP3-9	10.40	3 x 9	SPR3-9	11.30	3 x 9	SPH3-9	12.00
3 x 12	SPP3-12	14.90	3 x 12	SPR3-12	15.20	3 x 12	SPH3-12	15.70
3 x 14	SPP3-14	15.70	3 x 14	SPR3-14	16.10	3 x 14	SPH3-14	16.40
5 x 7	SPP5-7	11.60	5 x 7	SPR5-7	12.10	5 x 7	SPH5-7	12.70
5 x 9	SPP5-9	13.40	5 x 9	SPR5-9	14.60	5 x 9	SPH5-9	14.90
5 x 12	SPP5-12	18.90	5 x 12	SPR5-12	19.40	5 x 12	SPH5-12	20.10
5 x 14	SPP5-14	20.00	5 x 14	SPR5-14	21.30	5 x 14	SPH5-14	20.90
7 x 9	SPP7-9	17.00	7 x 9	SPR7-9	17.10	7 x 9	SPH7-9	19.40
7 x 12	SPP7-12	23.00	7 x 12	SPR7-12	23.60	7 x 12	SPH7-12	24.80
7 x 14	SPP7-14	25.00	7 x 14	SPR7-14	30.30	7 x 14	SPH7-14	26.40
8 x 12	SPP8-12	26.00	8 x 12	SPR8-12	28.00	8 x 12	SPH8-12	29.90
8 x 14	SPP8-14	31.30	8 x 14	SPR8-14	32.00	8 x 14	SPH8-14	34.30
10 x 14	SPP10-14	37.30	10 x 14	SPR10-14	38.00	10 x 14	SPH10 - 14	40.30

MOD-U-LINE CHASSIS PLATE

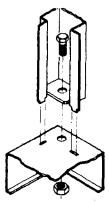
CTS NUMBER	WIDTH INCHES	DEPTH INCHES	NET EACH	CTS NUMBER	WIDTH INCHES	DEPTH INCHES	NET EACH	CTS NUMBER	WIDTH INCHES	DEPTH INCHES	NET EACH
CP-77	6 5/8	6 7/8	$ 8.60	CP-127	11 5/8	6 7/8	$11.50	CP-177	16 5/8	6 7/8	$13.00
CP-89	8 3/16	8 7/8	8.60	CP-129	11 5/8	8 7/8	13.60	CP-179	16 5/8	8 7/8	15.00
CP-97	8 5/8	6 7/8	10.00	CP-1212	11 5/8	11 7/8	17.00	CP-1712	16 5/8	11 7/8	17.30
CP-99	8 5/8	8 7/8	10.50					CP-1714	16 5/8	13 7/8	19.00
CP-912	8 5/8	11 7/8	13.60								

CTS METAL ENCLOSURES

MODULAR VERTICAL ENCLOSURES

CTS SPECIAL FEATURES

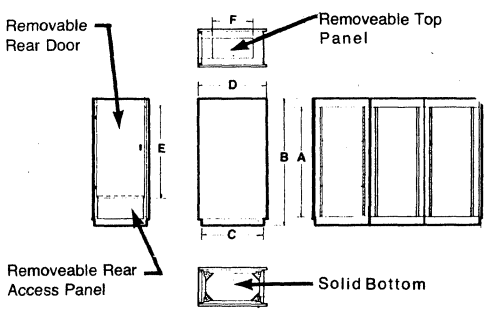
- **Unique Corner Post Design** CTS combines two unique design features to provide strength and rigidity previously associated only with more expensive welded units. Interlocking tab and slot construction in the corner joints eliminates torsional movement of the corner posts. Secondly, a heavy gage mounting plate is welded, slightly recessed, into the top and bottom of each corner post. Thus, when the corner bolt is tightened, the cabinet base (or top) flexes slightly, ensuring that the joint is always preloaded in tension, providing additional rigidity.



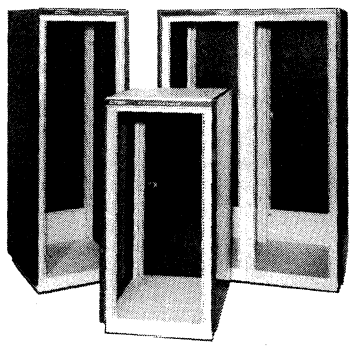
- **Knock Down Units Reduce Shipping Costs.** CTS Modular Enclosures save up to 66% in shipping costs -savings which are passed on to you.

- **CTS Modular Construction Reduces Parts Replacement Costs.** Never replace an entire enclosure again. All CTS cabinet parts, including frame components, are removable, interchangable, and replaceable.

- **Full Line of Accessories.** A full line of accessories to add versatility and to enhance the performance of your vertical enclosures is available. The line includes: plexiglass doors, casters, blower unit, louvers, door locks, drawers and more. Turn to the next page under the **VERTICAL ENCLOSURE ACCESSORIES** heading for a complete list. Note: 17" wide MOD-U-LINE with rack side panels fits 19" vertical enclosures.



Modular Vertical Enclosures are "tough as welded" with the cost savings and versatility of knockdown enclosures.



VERTICAL ENCLOSURE FEATURES

Construction: Heavy duty steel construction ensures durability. Corner Posts - 13 gage C.R.S. Top and bottom assemblies -14 gage C.R.S. All other components - 18 gage C.R.S. All metal forming, welding, and painting is done in CTS manufacturing facilities.

Ease of Assembly: CTS self-registration design enables quick and routine assembly. One person can assemble these vertical enclosures in minutes. Unique tab and slot engineering ensures all parts accurately self-align.

Colors and Finish: Enclosures are finished with oven-baked, EPA - approved paint. Rear door and side panels have a textured Royal Blue finish. All other components are textured in Ash White. This color combination harmonizes with standard electronics industry products. Other colors are available as modifications.

Multi-Bay Add-Ons: Modular enclosures are designed to bolt together easily and securely to form multi-bay configurations in any quantity. A variety of special multi-bay accessories is available. Turn next page under **VERTICAL ENCLOSURE ACCESSORIES** for a complete list.

Modifications: CTS will make in-plant modifications to your specifications. See next page under the **STANDARD ENCLOSURE MODIFICATIONS** heading for a list of available modifications.

To Order: Select the desired CTS model number from the table, for example: **MVE 19-61-25.** For multi-bay configurations add the appropriate suffix, ie. for **DOUBLE BAY** order: **MVE 19-61-25-2.**

CTS Modular Vertical Enclosure

CTS NUMBER	HEIGHT INSIDE A	HEIGHT OUTSIDE B	DEPTH INSIDE C	DEPTH OUTSIDE D	REAR DOOR E	TOP PANEL F	PRICE
MVE-19-42-25	42.125	48.125	25.25	27.25	34.88	20.95	$ 520.00
MVE-19-42-30	42.125	48.125	31.25	33.25	34.88	26.95	550.00
MVE-19-61-25	61.375	67.375	25.25	27.25	54.13	20.95	580.00
MVE-19-61-30	61.375	67.375	31.25	33.25	54.13	26.95	640.00
MVE-19-70-25	70.125	76.125	25.25	27.25	62.88	20.95	620.00
MVE-19-70-30	70.125	76.125	31.25	33.25	62.88	26.95	670.00
MVE-19-61-25-2	61.375	67.375	25.25	27.25	54.13	20.95	1020.00
MVE-19-61-30-2	61.375	67.375	31.25	33.25	54.13	26.95	1104.00
MVE-19-70-25-2	70.125	76.125	25.25	27.25	62.88	20.95	1073.00
MVE-19-70-30-2	70.125	76.125	31.25	33.25	62.88	26.95	1147.00
MVE-19-61-25-3	61.375	67.375	25.25	27.25	54.13	20.95	1460.00
MVE-19-61-30-3	61.375	67.375	31.25	33.25	54.13	26.95	1568.00
MVE-19-70-25-3	70.125	76.125	25.25	27.25	62.88	20.95	1526.00
MVE-19-70-30-3	70.125	76.125	31.25	33.25	62.88	26.95	1624.00

EXAMPLE: Single Bay = MVE-19-61-25; Double Bay = MVE-19-61-25-2

YOUR MVE ORDER INCLUDES:

- Four corner posts *per bay*
- One top assembly *per bay*
- One top access panel *per bay*
- One closed bottom assembly *per bay*
- One rear door *per bay*
- One rear access panel *per bay*
- Two removable side panels
- Mounting hardware

Note: CTS MVEs may be ordered without all these standard accessories. Call for prices.

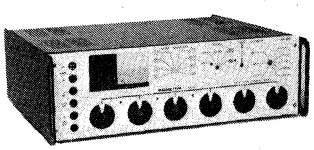
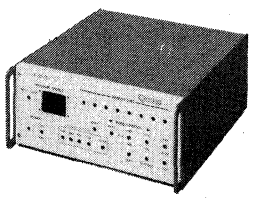
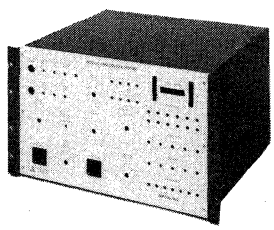
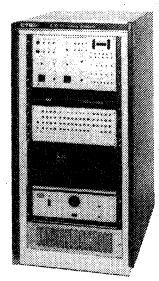
CTS METAL ENCLOSURES

STANDARD ENCLOSURE MODIFICATIONS

CTS can save you valuable time and money by modifying its entire line of standard enclosures [MOD-U-BOX, MOD-U-LINE, or MODULAR VERTICAL] to your specifications. In its manufacturing facilities, CTS can perform a wide variety of modifications for you under one roof, at competitive prices. Call for more information.

Modifications now available include:

- Custom Colors
- Smooth or Textured Paints
- Multicolor Silkscreening
- Cut-Outs
- Knockouts
- Punched Holes
- Louvers
- Vent Slots
- Double "D"
- Standoffs
- Pem Nuts
- Studs

VERTICAL ENCLOSURE ACCESSORIES

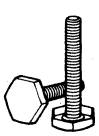
CTS offers a full line of accessories to enhance the performanace and versatility of your vertical enclosures. Call for prices.

BASE ACCESSORIES

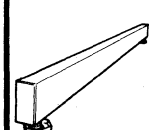


Casters
3 ½" diameter swivel casters plus assembly handware. These hard rubber casters are rated for 200 pounds each. 4 per set.
MVE 1010 **$34.50/set**

Leg Levelers
3" independently adjustable leg levelers for stabilizing units placed on uneven floor surfaces. 4 per set.
MVE 1015 **$7.50/set**



Anti-tilt Legs
Anti-tilt legs are available in CTS Royal Blue. Legs are tubular constructed with protective plastic caps and easily attach to the base of the cabinet. Assembly hardware included.
37" **MVE 1020** **$52.00/pair**
43" **MVE 1021** **$63.00/pair**



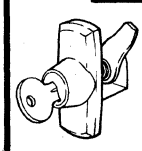
CTS ENCLOSURES:

Design, Variety, Quality, Durability, Modification, Replacements, Compatability

CTS MEANS RELIABILITY

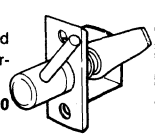
(800) 558-7297

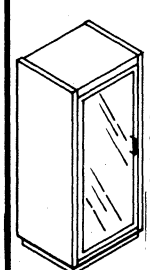
DOOR ACCESSORIES



Lock Assembly
Adjustable grip latch with key lock capabilities to limit access to the interior of your enclosure.
MVE 1030 **$15.00**

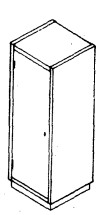
T-Door Handle
CTS offers zinc plated, knurled head/T-bar handles for all Vertical Cabinet models.
MVE 1035 **$7.50**





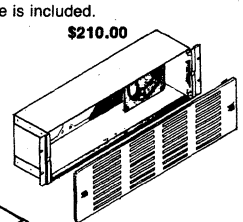
Plexiglass Door:
Smoked grey plexiglass door has a satin anodized aluminum extruded frame. Magnetic closure strip and handle allow easy access and secure closure.
42" **MVE 1092** **$185.00**
61" **MVE 1090** **$194.00**
70" **MVE 1091** **$216.00**

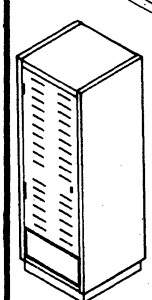
Steel Front Door:
18 gage C.R.S. door is finished in oven-baked, textured Royal Blue. Lock and handle ensure secure access. All mounting hardware is included.
42" **MVE 1185** **$119.00**
61" **MVE 1175** **$134.00**
70" **MVE 1180** **$150.00**



VENTILATION ACCESSORIES

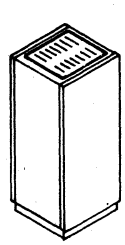
Blower Unit:
Three 15 W, 109 CFM fans housed in a zinc-plated rack mount enclosure. Washable air filter is protected by a bright nickel plated grille. All mounting hardware is included.
MVE 1115 **$210.00**





Louvered Rear Door:
18 gage C.R.S. door is finished with oven-baked textured Royal Blue. Two columns of louvers allow fresh air flow.
42" **MVE 1131** **$ 87.00**
61" **MVE 1125** **$100.00**
70" **MVE 1130** **$112.00**

Louvered Top Panel:
18 gage C.R.S. panel is finished in oven-baked textured Ash White paint. Top panel is formed to lie flush and mounts with four screws, which are included.
25" deep
MVE 1140 **$34.00**
30" deep
MVE 1145 **$37.00**



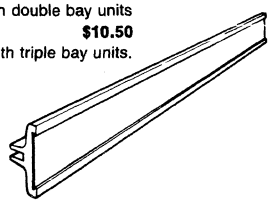
CTS METAL ENCLOSURES

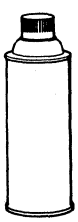
VERTICAL ENCLOSURE ACCESSORIES CONT'D

COSMETIC FINISHES

Identification Strip
The CTS Identification Strip is manufactured with a finish to match your CTS Vertical Enclosure. This strip fits neatly into the aluminum trim which is a standard part of all CTS Vertical Cabinets. This item is also available with your logo or corporate name for a slightly additional charge.

MVE 1001 **$4.50**
use with single bay units
MVE 1002 **$7.50**
use with double bay units
MVE 1003 **$10.50**
use with triple bay units.

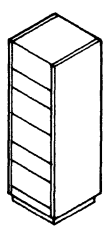




Touch Up Paint
Touch up paint is available to provide a compatible finish. Paint comes in 12 oz., air dry cans.

MVE 1040 **$13.40**
Royal Blue
MVE 1041 **$13.40**
Ash White

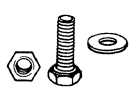
Filler Panels:
18 gage C.R.S. filler panels are formed to mount flush with the corner posts. Finished in oven-baked, textured Ash White paint. Available in three heights to fit 19" wide MVES.



3" **MVE 1101** **$14.50**
5" **MVE 1105** **$16.00**
7" **MVE 1110** **$18.00**

MULTI-BAY ACCESSORIES

Joining Kit
Complete hardware is available for joining units to form multi-bay capacities. Kit contains hex head bolts, nuts, flat and lock washers to complete assembly.



MVE 1045 **$4.50**



60" Power Strip:
Contains 6 single, 125V, grounded outlet receptacles on 9" centers. UL listed and rated for 15 amps. A 6' cord with ground is attached. All mounting hardware is included.

MVE 1135 **$97.00**

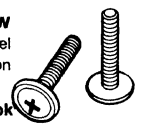
MOUNTING HARDWARE



5/8" Cup Head Screw
10/32 Phillips washer head panel mounting screw with nylon washer. 20 per pack.

MVE 1049 **$3.00/pk**

1 1/8" Cup Head Screw
10/32 Phillips washer head panel mounting screw with nylon washer. 20 per pack.



MVE 1046 **$3.00/pk**



Clip Nut
10/32 Plated "U" type clip nut to be used with panel mounting screws. 20 per pack.

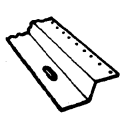
MVE 1047 **$4.50/pk**

Cage Nut
10/32 Plated "U" type clip nut to be used with panel mounting screws. 20 per pack.



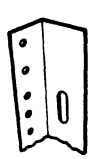
MVE 1048 **$12.00/pk**

Multi-Formed Vertical Mounting Rail Kit
Each kit contains two 16 ga. steel zinc plate, gold irridite rails. These can be used when necessary to install equipment horizontally into cabinet. Each rail is drilled and tapped with 10/32 holes using the standard EIA pattern. All necessary installation hardware is included.



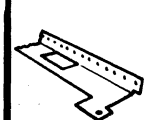
42" **MVE 1082** **$40.00 pr.**
61" **MVE 1080** **$44.00 pr.**
70" **MVE 1081** **$49.00 pr.**

90 Degree Vertical Mounting Rail Kit
Packed two per kit with all necessary installation hardware. Kit contains two 16 ga. steel rails. Rails attach to horizontal mounting kit inside of cabinet and are used to recess equipment inside of cabinet. Each rail is drilled and tapped with 10/32 holes using the standard EIA pattern.



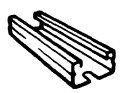
42" **MVE 1077** **$35.00 pr.**
61" **MVE 1075** **$37.00 pr.**
70" **MVE 1076** **$40.00 pr.**

Vertical Corner Mounting Rail Kit
Vertical corner mounting rails are packed two per kit and include all necessary installation hardware.
Rails attach directly behind corner post and provide a continuous height of 10/32 tapped holes utilizing the standard EIA pattern.



42" **MVE 1062** **$35.00**
61" **MVE 1060** **$38.00**
70" **MVE 1061** **$41.00**

MOUNTING HARDWARE

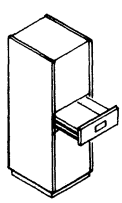


Horizontal Mounting Rail Kit
Each kit contains two 16 ga. steel rails with a zinc plate, gold irridite finish. Rails attach to CTS 90 degree vertical mounting rails and CTS multi-formed vertical mounting rails. All hardware is included.

25" **MVE 1070** **$23.00**
30" **MVE 1071** **$25.00**

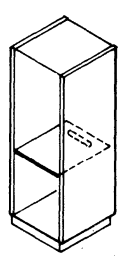
DRAWERS AND SHELVING

Drawer Assembly:
18 gage C.R.S. drawers are rated for a 200 lbs. load. Drawers mount on 14 gage zinc-plated C.R.S. brackets with ball bearing slides. Front panel is oven-baked textured Ash White, all other surfaces are smooth Ash White. Stainless steel pull is flush mounted in front panel. Drawer measures H x W x D = 6" x 16 1/8" x 16"
Note: All mounting hardware is included.
Front panel of drawer is available in two height sizes.



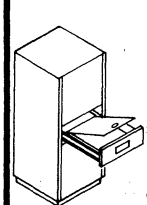
7" panel
MVE 1155 **$150.00**
10 1/2" panel
MVE 1160 **$155.00**

Equipment Shelf:
16 gage C.R.S. equipment shelf is rated for a 200 lbs. load. A slot for cables has been cut out in the back of the shelf. The shelf is finished in oven-baked smooth Ash White paint. All mounting hardware is included. Two shelf depths are available.



25" deep
MVE 1165 **$32.00**
30" deep
MVE 1170 **$42.00**

Drawer Assembly w/Writing Shelf:
This drawer assembly with a 3 1/2" high front panel, has the same construction and finish as the drawer described above. In addition, an 18 gage C.R.S. writing shelf has been attached to the back of the drawer. The shelf may be raised on its hinges to allow access to the drawer. The writing shelf is finished in smooth Ash White paint. All mounting hardware is included. The drawer dimensions, H x W x D, are: 2 11/16" x 16 1/8" x 16"



MVE 1150 **$150.00**

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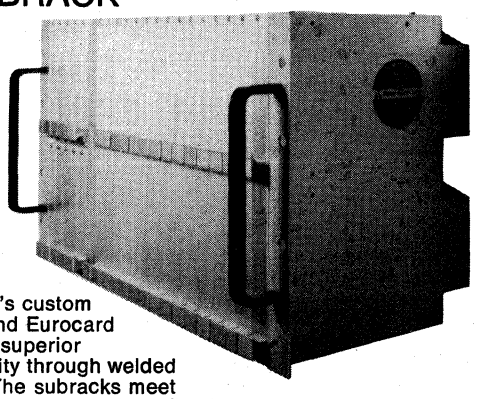
TELEPHONE: (818) 442-2572
TLX: 247345 EGG UR FAX: (818) 442-8127

- **Electronic Packaging Design & Manufacture**
- **Custom PCB Racks, Chassis, PCB Guides, Retainers**
- **Machined Subassemblies and Fabricated Enclosures**
- **Accessories & Assembly of Electronic Hardware**

Whether you need custom fabrication for commercial or military applications, you need quality and competitive prices. You'll find both at EG&G Birtcher. From single unit to thousands. From initial concept to final design and detail drawings. We meet the stringent QA requirements of MIL-1-45208A. Call or send us your drawings for a quote and ask for our free 52 page catalog of custom metal fabrication, PC board guides and retentive hardware.

CUSTOM 6U VME SUBRACK



EG&G Birtcher's custom rugged VME and Eurocard subracks offer superior structural rigidity through welded construction. The subracks meet documented VME Product Specifications per the VMEbus Manual, Revisions C.1. Euro-subracks meet specifications per IEC 297-3 and DIN 41494, Parts 1 and 5.

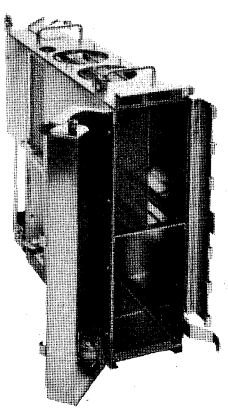
SHEET METAL CAPABILITIES

Available to all EG&G Birtcher customers are the combined resources of the Birtcher facilities and broad spectrum of technical and manufacturing knowledge.

Our fully equipped 60,000 square-foot plant with its top-of-the-line equipment enables us to fill almost any customer requirement including design, shearing, piercing, bending, milling, welding, chemical finishing and painting, silk screening and assembly of hardware.

CUSTOM FABRICATION

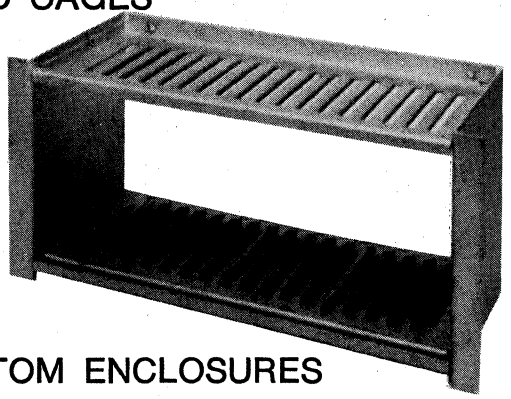
POWER SUPPLY CHASSIS



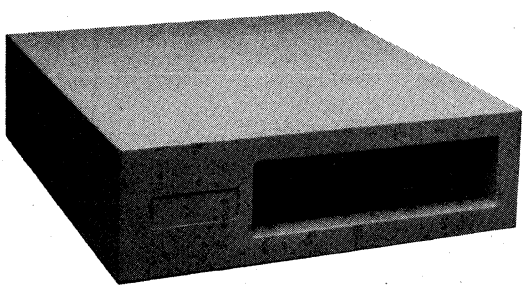
This custom power supply chassis is fabricated from cold rolled steel and perforated sheet metal, complete with formed metal guides, weld studs, self clinching fasteners, grommets, spring clips, hinges and a zinc-plated finish. The chassis is manufactured at a rate of 400 per week utilizing sophisticated numerically controlled punch presses and forming machinery plus welding, stamping, machining and plating.

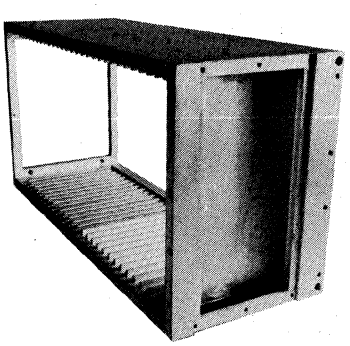
BRINGING DESIGN SOLUTIONS TO YOUR PCB SHOCK, VIBRATION AND THERMAL PROBLEMS

MIL-GRADE CARD CAGES



CUSTOM ENCLOSURES

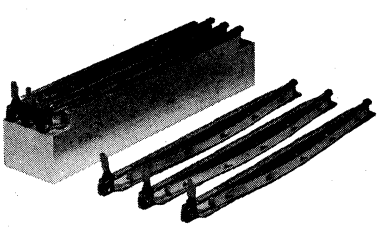




This custom milled and brazed aluminum chassis with five-piece, self-aligning Wedge-Lok™ retainers is an example of the type of Hi-Rel products produced by EG&G Birtcher.

NAVSEA LOK-TAINER®

RETAINERS



The SEM (Standard Electronic Module) Format D clamping retainer was designed by EG&G Birtcher engineers to meet stringent NAVSEA Systems specifications. The successful development produced a product now in service which meets MIL-S-901C Shock test procedures. The NAVSEA Lok-Tainer® Retainer was designed for use in a liquid cooled card drawer and provided intimate contact for heat dissipation from the module to the card drawer.

Also available is a SEM Format E Lok-Tainer® Retainer with screw actuation. These designs and others can be developed to meet your critical thermal or environmental specifications.

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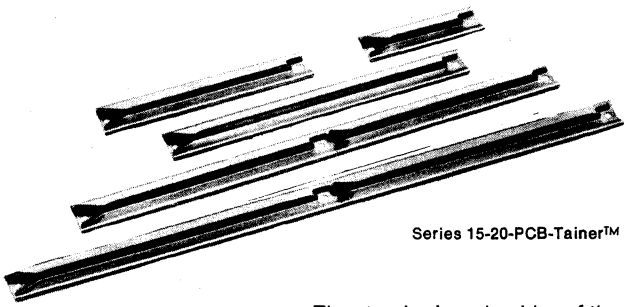
TLX: 247345 EGG UR FAX: (818) 442-8127

PCB-TAINER™ CARD GUIDES

Patent No. 3,186,554



Series 15-20-PCB-Tainer™

The standard card guides of the industry, EG&G Birtcher's patented PCB-Tainer™ card guides provide an economical way of securely fastening PC boards. EG&G Birtcher PCB-Tainer™ card guides come in standard or made-to-spec versions. They are made of cold rolled steel or beryllium copper for rivet, weld or adhesive bonding installation. They provide heat dissipation, electrical grounding, retention in shock and vibration applications.

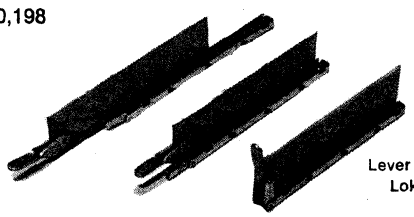
SERIES 38 SNAP-TAINER™ CARD GUIDE



- Provides a snap in feature which saves installation time
- Requires no custom installation tools
- Made of Beryllium Copper to provide electrical grounding and retention without riveting or screws

LOK-TAINER® RETAINERS

Pat. No. 3,970,198



Series 24
Lever Actuated
Lok-Tainer®

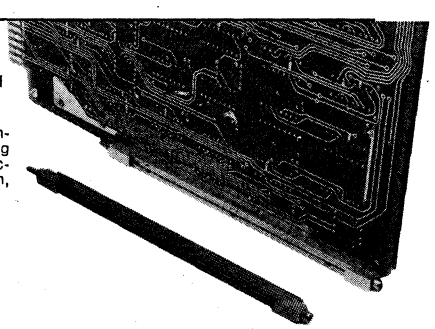


Series 27
Screw Actuated Lok-Tainer®

EG&G Birtcher patented screw and lever actuated Lok-Tainer® locking retainers are designed to provide high resistance to heavy shock and vibration while maintaining maximum contact for heat dissipation.

SERIES 40 WEDGE-LOK™

Meets or exceeds the performance requirements of drawing 84103 Rev. A, Defence Electronics Supply Center, Dayton, OH 45444.



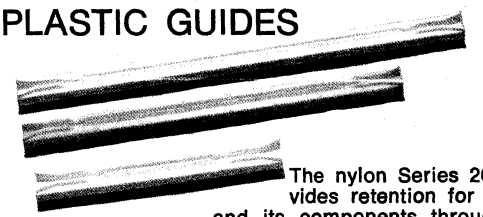
EXTRACTORS CARD HANDLES, AND INJECTOR/EXTRACTORS FOR PC BOARDS



Injectors/Extractors

Extractors provide for quick, damage free, removal of PC card. Injector/Extractors function in two different directions allowing the card to be easily inserted into the connector as well as providing quick removal.

PLASTIC GUIDES

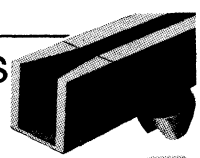


Series 26
Plastic Guides

The nylon Series 26 Guide provides retention for the PC card and its components through a unique gripping action. It is self-lubricating, non conductive with superior strength and durability.

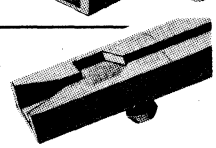
DEEP CHANNEL GUIDES

Nylon Type 6/6
For 1/16" and 1/8" P.C.B.'s



SPACE SAVER GUIDES

Nylon Type 6/6
For 1/16" P.C.B.'s



WEDGE-LOK™ LOCKING RETAINERS

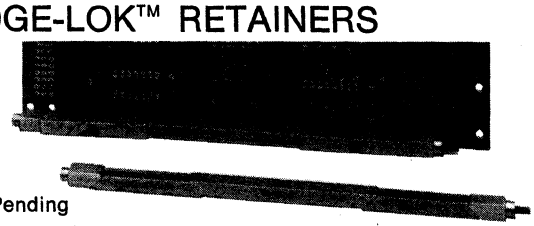
For Mil-Grade performance in commercial, industrial or military applications, secure PC boards with Wedge-Lok™ locking card retainers.

SERIES 41 WEDGE-LOK™

LOW PROFILE VERSION OF 40 SERIES



SELF-ALIGNING FIVE-PIECE WEDGE-LOK™ RETAINERS



Patent Pending

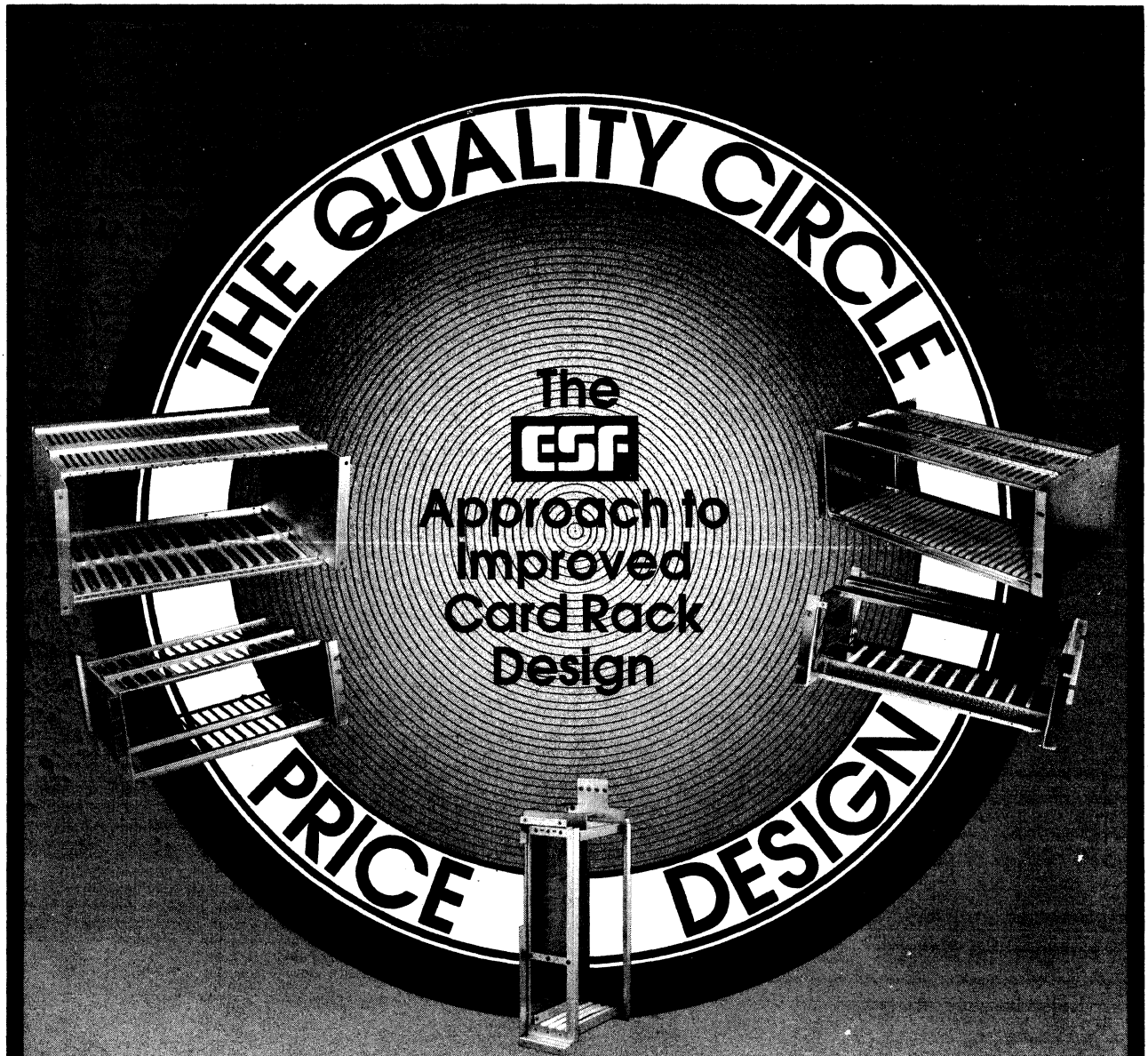
EG&G Birtcher introduces the patent pending, self-aligning Wedge-Lok™ Series, 40-5 and 42-5 designed for heavy shock, vibration and heat dissipation, in cold plate/heat sinking applications. Features zero entry force for insertion and removal of PC boards. Other standard and custom styles available. Visual indicator for locked and unlocked position available as an option.

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766



The "quality circle" approach at Electro-Space . . . a free, in-depth value analysis program . . . is the first step toward improved card rack design. Our engineering group works as a team with you to produce an enclosure that is both cost effective and production efficient.

Every card enclosure design is approached as if it were our own. Close tolerance requirements, structural integrity and cost effective design simplifications are as important to us as they are to you. After all, when you have the competitive edge, we have a solid, satisfied customer.

Your sketches, prints or sample racks are enough to start us on a design cycle geared towards saving you money without compromising quality. Whether you require 50 or 5000 units, you'll find that Electro-Space Fabricators is your best source.



The Engineers' Design Manual combines the latest technical information with answers to the most commonly asked questions on designing card racks.

For your free copy or additional information write or call Electro-Space Fabricators.

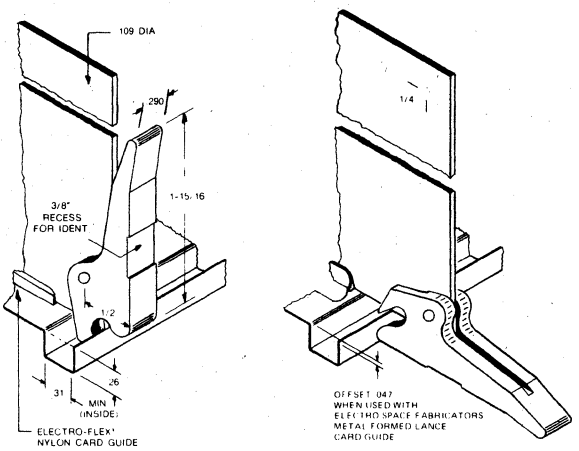
Electro-Space Fabricators, 300 W. High Street, P.O. Box 67, Topton, PA 19562-0067, (215) 682-7181

Electro-Space Fabricators, Inc.

ELECTRO-SPACE Packaging Accessories

Injector/Ejectors

Unique devices function in two directions . . . utilizing both surfaces of a single blade. Design eliminates the need for very close tolerances.

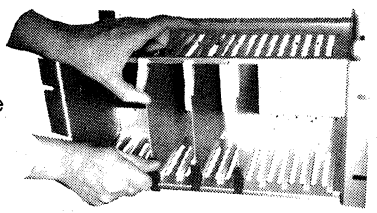


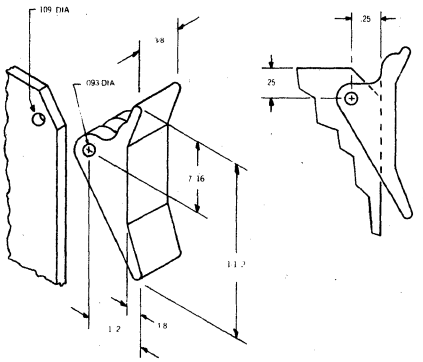
PART NO.	CARD	COLOR*
NE-3001-W	1/16	White
NE-3001-B		Black
NE-3003-W	1/8	White
NE-3003-B		Black

Includes .093 dia. stainless steel roll pin.
Material: 20V Nylon
per MIL-M-20693A, Composition A,
Type 1.
Temp Rating: – 40°C
to + 105°C UL APPROVED
*Special Colors Available

Ejectors

Improved lever action and greater strength for quick, damage-free extraction.





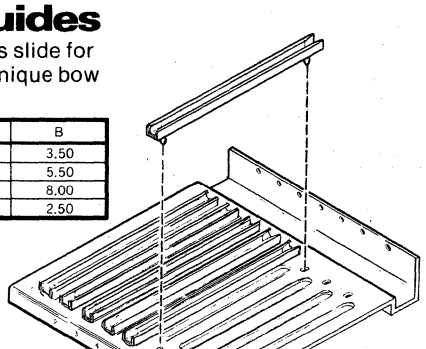
PART NO.	CARD	SLOT	COLOR*
EJ - 2001 - W	1/16	.072	White
EJ - 2001 - R			Red
EJ - 2002 - W	3/32	.100	White
EJ - 2002 - R			Red
EJ - 2003 - W	1/8	.135	White
EJ - 2003 - R			Red

Includes .093 dia. stainless steel roll pin.
Material: 20V Nylon
per MIL-M-20693A, Composition A,
Type 1.
Temp Rating: – 40°C
to + 105°C UL APPROVED
*Special Colors Available

Nylon Guides

Smooth, effortless slide for board insertion; unique bow feature.

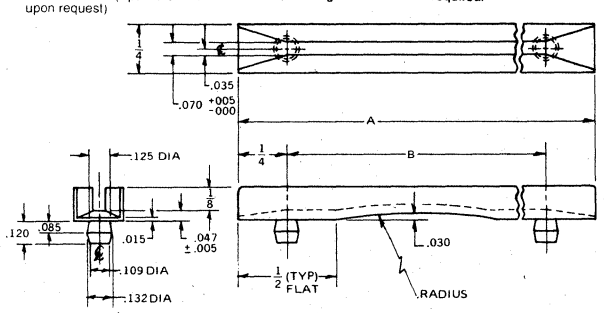
A-42870-	A	B
–1	4.00	3.50
–2	6.00	5.50
–3	8.50	8.00
–4	3.00	2.50



NOTE:
1. 1/64 Radius — All edges except bottom of guide and inside of .070 slot.
2. 20V Nylon MIL-M-20693A, composition A, Type I. Temp. Rating: – 40°C to + 105°C. UL Approved.
3 Color — White (Special colors upon request)

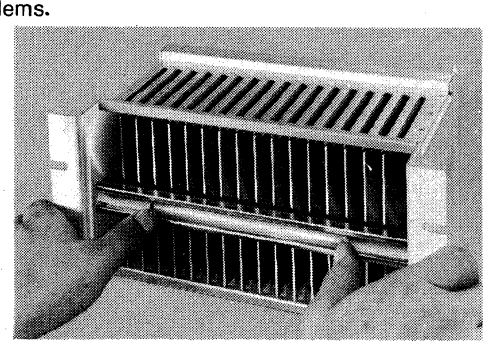
MOUNTING HOLES:
.125 dia. hole (front)
.120 x .218 slot (rear);
material range .048 to .080

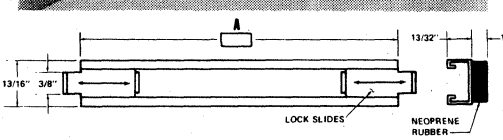
INSTALLATION:
Sharp impact, snap-in.
No special tools or hardware required.



Retaining Bars

Quick, low cost solution for PC board retention and shipping problems.





HOW TO SPECIFY AND ORDER

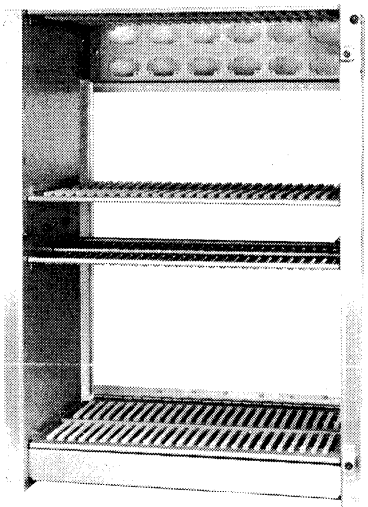
1. Deduct 1/8" from the inside dimension of your PC card enclosure. This is the "A" dimension shown above.
2. Develop part number by expressing the "A" dimension in three-place decimal form and writing it after the prefix RB-_____. (Example: A = 16-7/8". Part number is RB-16875.)
3. Use this part number in ordering. Specify clear or yellow zinc plate.

Electro-Space Fabricators, Inc.

FREE Value Analysis of Your Enclosure

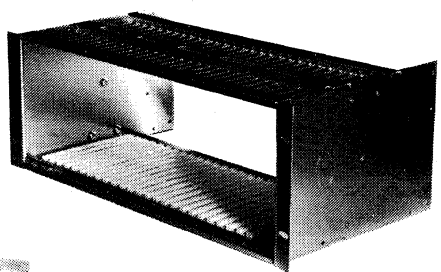
Improved card rack design begins with in-depth value analysis. And that's a free service of the ELECTRO-SPACE design group...aimed at delivering greater strength and better tolerances at lower unit cost. Our packaging techniques place no limitations on size, card spacing, special holes and hardware, connector or back plane mounting.

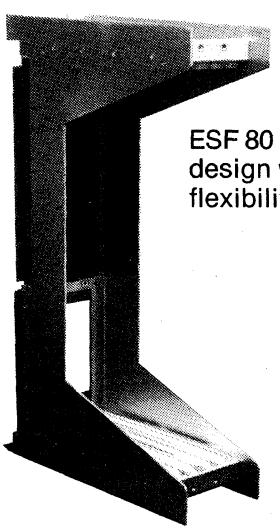
If your rack requirements are 50 or 100, 500 or 5000, why not draw upon our expertise? Our present customers have done so and enjoyed significant savings, both in unit cost and on their production lines. Send us your sketches, prints or sample rack at no obligation. Or, call and ask for one of our qualified design engineers.



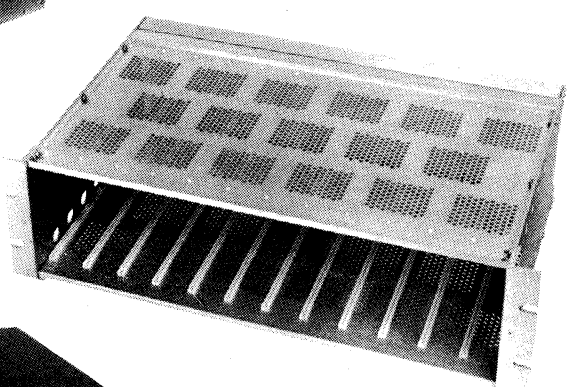
Double bay enclosure with fan mounting tray.

Stiffening hat section for greater strength.

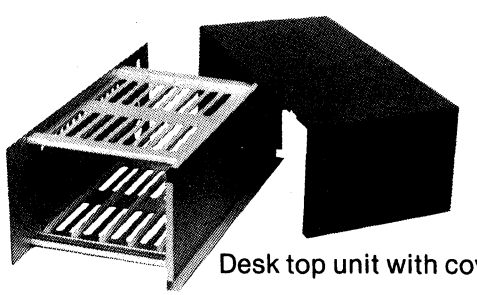




ESF 80 standard rack design with low cost flexibility.



Perforated guide plate with RF shielding.



Desk top unit with cover.



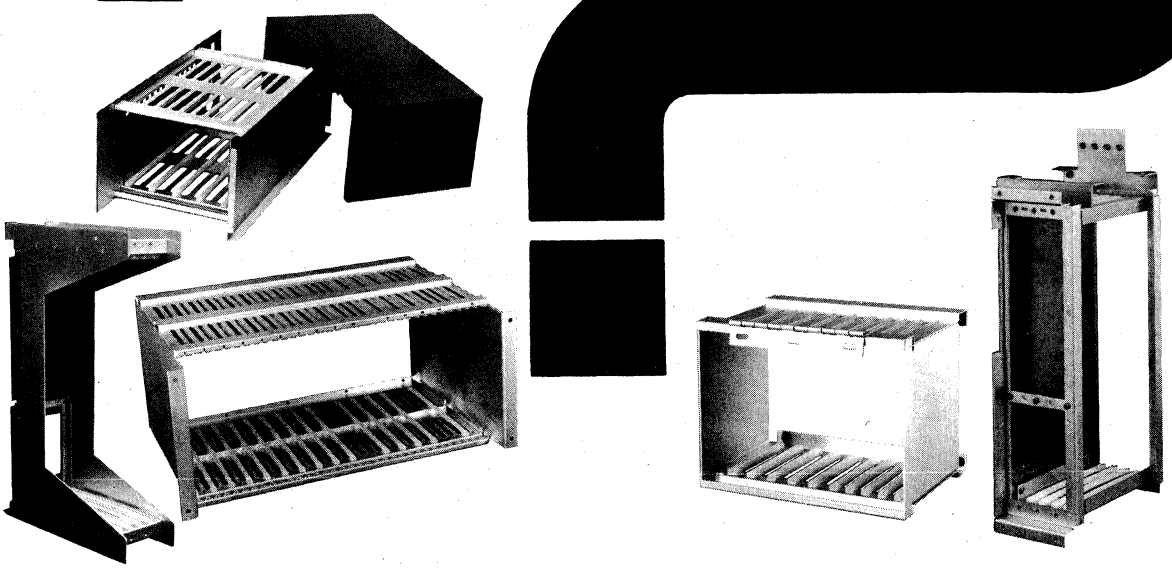
The Engineers' Design Manual is a compilation of the latest technology and most commonly asked questions concerning card enclosure design. Send for your free copy today.

Electro-Space Fabricators, Inc.

300 W. High St.•P.O. Box 67•Topton, PA 19562-0067
(215) 682-7181

THE CARD ENCLOSURE QUIZ
Does your supplier measure up?

- ☐ FREE Value Analysis service.
- ☐ Competitive pricing for maximum cost effectiveness.
- ☐ Complete in-house manufacturing and finishing.
- ☐ Consistent high quality and on-time delivery.
- ESF ALL OF THE ABOVE



ESF, America's card enclosure specialists, has the people, products and services to best fill your card enclosure needs. Starting with our Free Value Analysis, we work with you to provide a stronger, more cost effective rack design. This team effort continues through engineering into production and testing.

Just send us a sketch, print or sample of your present card rack. Whether you need 50 or 5000, our engineers can show you the first step to improved card enclosure design at lower unit cost.



The Engineers' Design Manual is a compilation of the latest technology and most commonly asked questions concerning card enclosure design. Send for your FREE copy.

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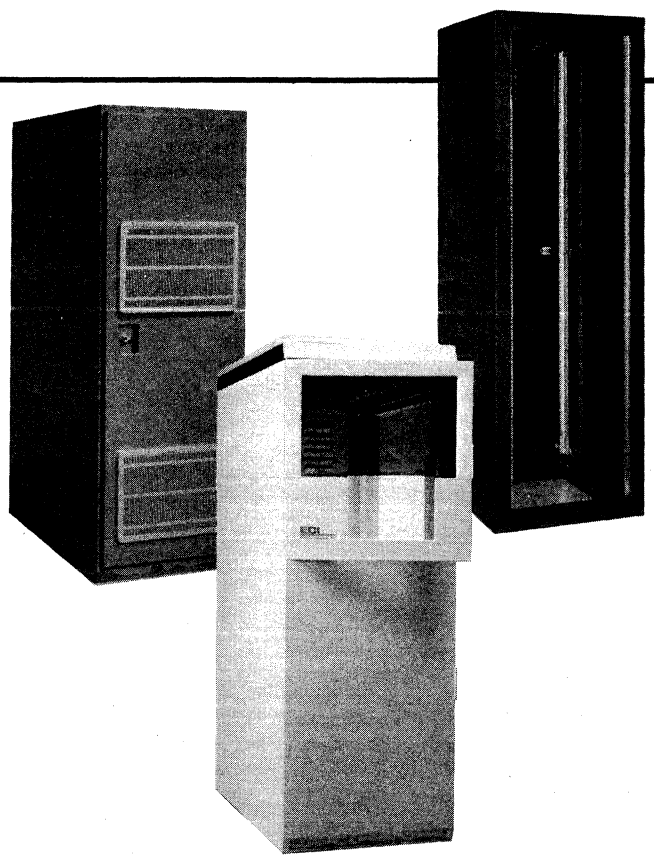
(215) 682-7181

Electronic Enclosures

for cost effective standard, modified-standard and custom designs



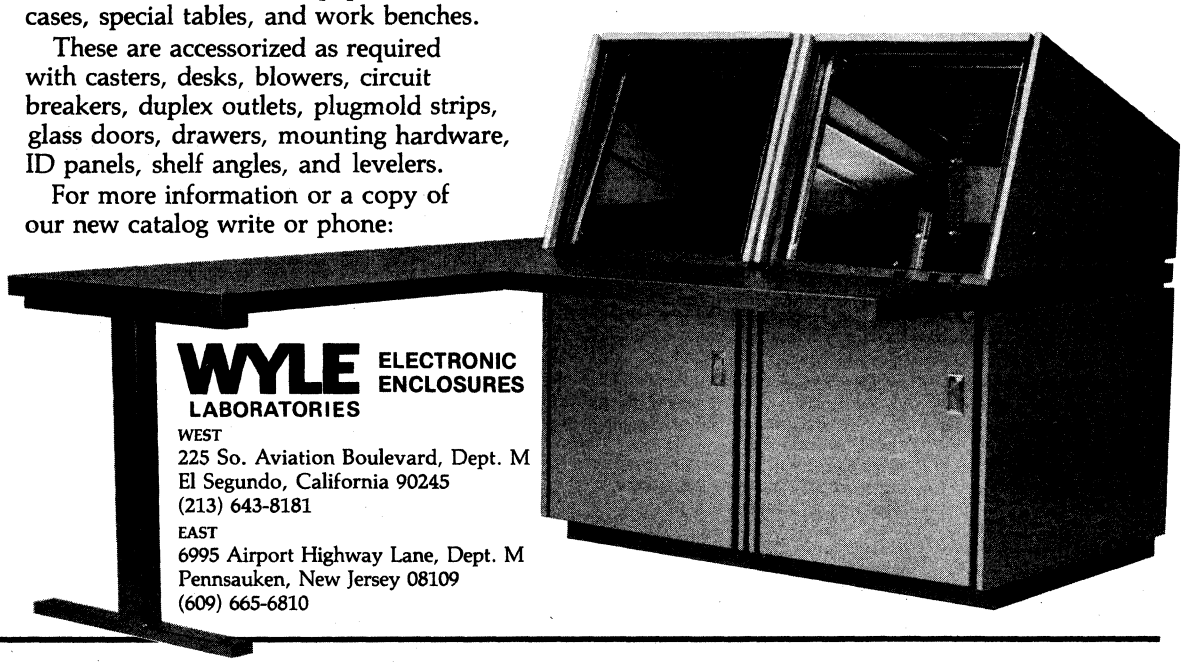
Wyle Laboratories Electronic Enclosures builds the industry's finest cabinets for electronics at prices that don't shut the doors on budgets. Our integrated line of standard and modified-standard designs and an extensive line of accessories make it possible to meet many customer requirements "off the shelf". This includes RFI/EMI shielded enclosures built to commercial, military, and high security (TEMPEST) specifications.

Even custom cabinets from Electronic Enclosures are cost effective. A large, constantly evolving design library and an engineering staff that keeps pace with the electronics industry allows Electronic Enclosures to meet specialized requirements without "reinventing the wheel" for each new order.

Cabinets from Electronic Enclosures' line include vertical enclosures, control consoles, sloping front consoles, custom consoles, mobile carts, small bench cabinets, turrets, equipment cases, special tables, and work benches.

These are accessorized as required with casters, desks, blowers, circuit breakers, duplex outlets, plugmold strips, glass doors, drawers, mounting hardware, ID panels, shelf angles, and levelers.

For more information or a copy of our new catalog write or phone:



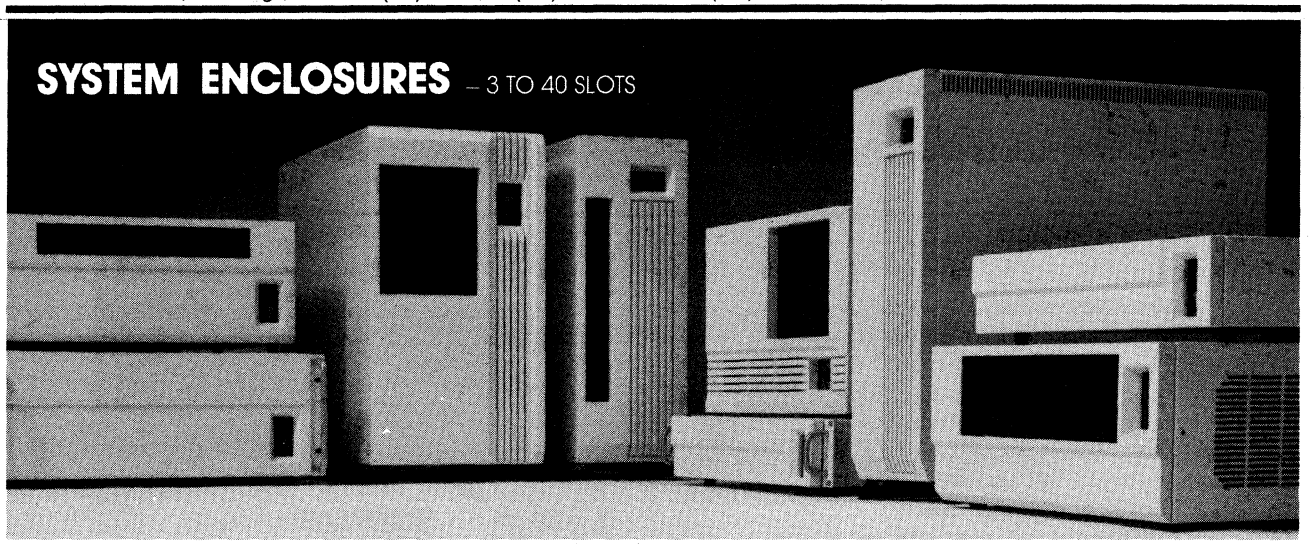
WYLE ELECTRONIC ENCLOSURES
LABORATORIES

WEST
225 So. Aviation Boulevard, Dept. M
El Segundo, California 90245
(213) 643-8181

EAST
6995 Airport Highway Lane, Dept. M
Pennsauken, New Jersey 08109
(609) 665-6810

ZERO Electronic Solutions
UNIT OF ZERO CORPORATION
6790 Flanders Drive, San Diego, CA 92121 (619) 452-9333 (800) 854-7086 In Cal. (800) 772-7086 TLX: 910-335-1169

System Packaging for



Electronic Solutions jumps out in front with an entire new series of system enclosures for VME, Multibus, and Multibus II. From the compact Series 3 to the hefty Gemini for large systems, you'll find the rugged construction, precision card cage and attention to detail that has made Electronic Solutions the leader in system packaging.

Choose from tabletop, rack mount or floor-standing DeskMate™ models. Models with front, rear or top card loading. Models with space for disk drives or other peripherals.

The 12 and 32-slot models have modular mounting for up to four half-height peripherals. The 20-slot models have a choice of front or rear card mounting. The 32 and 40-slot models have two card cages, one front and one rear loading.

All have high-performance P1/J1 backplanes (with a choice of P2/J2 options) and efficient switching power supplies. And every one is designed to meet FCC EMI/RFI, UL, CSA, IEC 380 and TUV/VDE standards—to make *your* job easier.

IEC380

SERIES 3

- Tabletop or rack mount only 3½" high
- 4 slots Multibus, 3 slots VME
- Front or rear card loading
- 175 Watt switching power supply

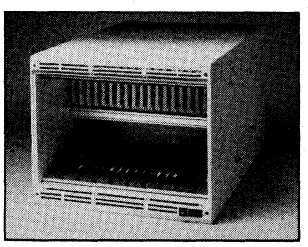
SERIES 7

- Tabletop or rack mount 7" high
  or
- DeskMate 19¾" high
- With provision for 4 half-height or 2 full-height peripherals: 7 slots VME or Multibus II, 10 slots Multibus; rear card loading
- With provision for 2 half-height peripherals: 5 slots VME or Multibus II, 7 slots Multibus; front or rear card loading
- Without peripheral mounting: 7 slots VME or Multibus II, 10 slots Multibus; front or rear card loading
- 325 Watt switching power supply

SERIES 10

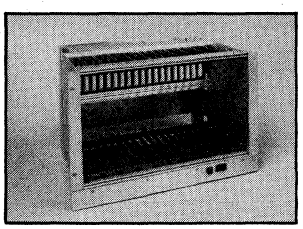
- Tabletop or rack mount 10½" high
  or
- DeskMate 19¾" high
- 12 slots VME, 15 slots Multibus; top card loading
  or
- 10 slots VME or Multibus II; rear card loading.
- Optional provision for 8 half-height or 4 full-height peripherals
- 325 or 500 Watt switching power supply

GEMINI



- Tabletop or rack mount
- 14" high (for 6U cards)
- 12, 20, 32 or 40 slots VME or Multibus II
- 400W, 600W or 800W power supplies
- Optional provision for 4 half-height or 2 full-height peripherals
- Models for 3U, 6U and 9U card heights
- Models for 100, 160, 220, 280, 340 and 400mm card depths (20 slots max for 280mm and up)

VME AND MULTIBUS II POWER CAGES

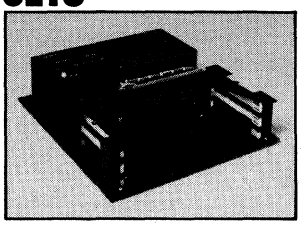


Here's the convenience of an enclosure with the easy access of a test set, in a compact, rack mount package. The power cage combines a rack mount VME or Multibus II card cage, a 400W or 600W power supply and triple fan cooling. It's fully wired and ready to go, but takes up only 3½" more rack space than the cage alone. 20 or 21 slots VME; 20 slots Multibus II. Or 12 slots plus up to 4 half-height peripherals. 3U, 6U or 9U card heights; 160mm, 220mm or 400mm card depths.

All Electronic Solutions enclosures, cards and card cages

THREE YEAR 3 LIMITED WARRANTY

BENCH TEST SETS



Get your board-level system up and running with a minimum of cost and effort. Use this fully wired combination card cage and 125 Watt power supply.

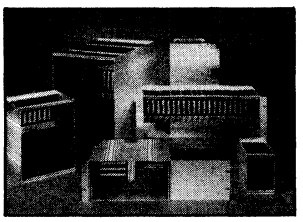
VME: TS-80x
x = 5, 7 or 9 slots
Multibus: TS-60x
x = 4, 5, 6, 8 or 9 slots

For more information call TOLL FREE
(800)854-7086 In Calif. **(800)772-7086**

VME, Multibus, Multibus II

ZERO Electronic Solutions
UNIT OF ZERO CORPORATION
6790 Flanders Drive, San Diego, CA 92121 (619) 452-9333 (800) 854-7086 In Cal. (800) 772-7086 TLX: 910-335-1169

VME AND MULTIBUS II CARD CAGES - 3 to 21 SLOTS



Strong, rugged Electronic Solutions Eurocard VME and Multibus II cages are ideal for system development and OEM applications. It's easy to match OEM mounting configurations, since each card cage can be mounted on the bottom or any side. All include high-performance P1/J1 backplane and are available with a variety of P2/J2 options.

For VME, a unique center adapter can convert a double height (6U) slot into two single size (3U) slots (or a 9U slot into a 6U and a 3U), making it easy to configure systems with multiple slot sizes.

Order No. V 80 3 - D N 160 T

Backplane Type
V: VME Backplane. **M:** Multibus II Backplane.
E: EuroCage Frame Only (i.e. no Backplane).

Card Spacing (Ctr-to-Ctr)
80: 0.80" spacing.

Number of Slots
3, 5, 7, 9, 12, 16, 20, and **21.**

Card Height
S: 3U (Single High) **D:** 6U (Double High) **T:** 9U (Triple High)

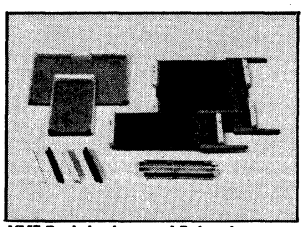
Termination Position
N: On-board terminations (for 3, 5, 7, 9, 12, 16, & 20 slot backplanes).
F: Off-board terminations (plug-on terminations like those on the 21 slot backplane).

Card Depth
100: 100mm **220:** 220mm **340:** 340mm
160: 160mm **280:** 280mm **400:** 400mm

Mounting Configuration
T: Table Top (Surface mount).
H: Horizontal Rackmount.
V: Vertical Rackmount.

• Fans and fan mounting brackets are available for all Electronic Solutions card cages

VME & MULTIBUS PROTOTYPING AND EXTENDER CARDS



VME Prototyping and Extender Cards

Electronic Solutions development cards have 0.1" hole spacing, I/O connectors, easy power and ground assignments with dedicated and undedicated bus strips.

VME:

VME-68HD	Prototyping board for up to 120 16-pin DIP packages in 6U version
VME-68HS	Prototyping board for 48 packages in 3U version
VME-68ED	6U Extender Card
VME-68ES	3U Extender Card

MULTIBUS I:

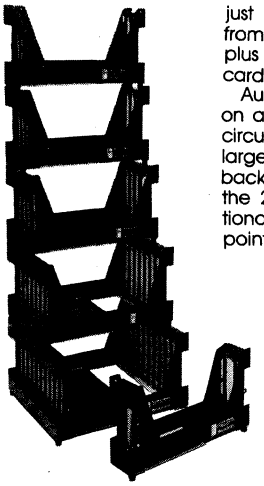
PR-100H	Prototyping board for up to 150 16-pin DIP packages
PR-100A	Prototyping board with interface circuitry, plus up to 75 16-pin DIP packages
PR-100WP2	Wire wrap board for up to 75 16-pin DIP packages. Two- or Three-level wire wrap.
PR-100WP3	
80EX-3	Extender card

FAX THE FACTS

In a hurry? Got a FAX? We'll FAX details on Electronic Solutions products to you right now. Call our toll free number and let us know the product data you need, and your FAX information (dialing number, type of facsimile machine).

For more information call TOLL FREE
(800)854-7086 In Calif. **(800)772-7086**

MULTI-CAGE™ CARD CAGES FOR MULTIBUS I



These rugged, durable anodized aluminum card cages are available with just the right capacity for your needs—from 3 slots to 26 slots, 0.6" or 0.75" spacing, plus accommodation for iSBX or wirewrap cards.

Auxiliary (P2) backplanes are available on all models. Parallel priority resolution circuitry (PPRC) is available on 8-slot and larger cages. All have multiple backplane power supply terminals, and the 21-slot and larger cages have an optional power distribution board for single point, high current power connections.

Models with .6 inch Card Centers

Model	No. of Slots	No. of iSBX slots available*	No. of w-w slots available*	Depth (in.)
ESBC 604	4	0	1	3.34
SBC 604A	4	1	0	3.34
ESBC 614G	4	0	1	3.34
SBC 605	5	0	1	3.94
SBC 606	6	0	1	4.54
SBC 608	8	2	2	6.68
SBC 609	9	1	1	6.68
SBC 6010	10	0	0	6.68
SBC 619	9	0	1	6.68
SBC 6012	12	3	4	10.02
SBC 6012B	12	0	1	8.04
SBC 6013B	13	0	1	8.69
SBC 6014	14	1	2	10.02
SBC 6015	15	0	1	10.02
SBC 6016	16	5	5	13.36
SBC 6020	20	1	1	13.36
SBC 6024	24	2	3	16.7
SBC 6026	26	0	1	16.7

Models with .75 inch Card Centers

Model	No. of Slots:	No. of iSBX slots available*	No. of w-w slots available*	Depth (in.)
SBC 753	3	0	1	3.34
SBC 754	4	0	1	3.94
SBC 755	5	0	1	4.54
SBC 757	7	1	1	6.68
SBC 7512	12	0	1	10.02
SBC 7516	16	1	1	13.36
SBC 7521	21	0	1	16.7

HORIZONTAL RACK MOUNT

Models with .6 inch Cord Centers

Model	No. of Slots	No. of iSBX slots available*	No. of w-w slots available*	Vertical Rack Space
ESBC 604H	4	0	1	3.5
SBC 604AH	4	1	0	3.5
SBC 605H	5	0	1	5.25
SBC 606H	6	0	1	5.25
SBC 608H	8	2	2	7.0
SBC 609H	9	1	1	7.0
SBC 6010	10	0	0	7.0
SBC 6012H	12	3	4	10.47
SBC 6014H	14	1	2	10.47
SBC 6015H	15	0	1	10.47

Models with .75 inch Cord Centers

Model	No. of Slots	No. of iSBX slots available*	No. of w-w slots available*	Vertical Rack Space
SBC 753H	3	0	1	3.5
SBC 754H	4	0	1	5.25
SBC 755H	5	0	1	5.25
SBC 757H	7	1	1	7.0
SBC 7512H	12	0	1	10.47

VERTICAL RACK MOUNT

Vertical rack space for all models 15-3/4"

Models with .6 inch Cord Centers

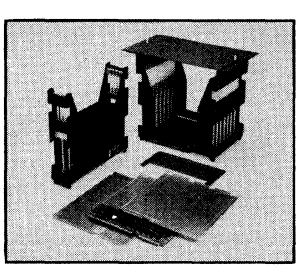
Model	No. of Slots	No. of iSBX slots available*	No. of w-w slots available*
SBC 6012V	12	4	4
SBC 6014V	14	2	2
SBC 6015V	15	1	1
SBC 6016V	16	5	5
SBC 6020V	20	1	1
SBC 6024V	24	3	3
SBC 6026V	26	0	1

Models with .75 inch Cord Centers

Model	No. of Slots	No. of iSBX slots available*	No. of w-w slots available*
SBC 7512V	12	0	1
SBC 7516V	16	1	1
SBC 7521V	21	0	1

*Without using additional slots.

DOUBLE HEIGHT MULTIBUS I



The Electronic Solutions 2X Multibus system uses 12 × 12" cards, offering double the useful circuit area of a standard size card. Or even more than double, considering the bus interface "overhead" on each card.

All Multibus I card cages, prototyping and extender cards are available in double height versions. Add "2X" before model number.

ELMA

ELMA Electronic Inc.

Elma's Modular Electronic

A Member Of The Sulzer Group, 41440 Christy Street, Fremont, CA 94538 • (415) 656-3400

All ELMA products are available off-the-shelf and REASONABLY PRICED

General Information

ELMA enclosures are designed for ease of assembly, versatility, and durability. Their modular design offers virtually unlimited electronic packaging flexibility. Standard Eurocard (100 x 160 mm, 3.94 x 6.30 in.) and card sizes derived therefrom are easily accommodated. Compatible to VMEbus and MULTIBUS II board formats. With internal subdivisions, any card size can be used. In addition, all edge connectors currently in use can be fitted using supplementary assembly sections.

Material

Aluminum extrusions form the framework of all these **ELMA** cabinets. Front and rear panels are 2½ mm clear anodized aluminum sheets. Cover panels are either 1.5 mm colored, vinyl coated aluminum sheet (models 14, 32, 36) or 3 mm colored, vinyl coated alucobond (two sheets of aluminum separated by a polyethylene core).

Accessories and Colors

Front and rear panels are accessories on all models except 36, for which rear panels are included. Hinged and folding front panels may also be obtained in a variety of sizes for some models. Extruded front panels in various heights and widths can be used for plug-in modules. Aluminum handles are also available.

Cover panels are included on models 32 and 36. Standard colors are neutral umbra-brown, and blue (model 36). Graphite black, brilliant blue, and gray cover panels are available on special order. Perforated top and bottom panels may also be obtained.

Dimensional Units
1U = 1.75″, 1T (HP) = 0.20″

The overall height of modules, card frames and plug-in cases and the acceptance height of cabinets is based on height units (U) per DIN Standard 41494. One U equals 1¾″ or 44.45 mm. The 5.08 mm (2/10″) horizontal pitch unit T is used for the acceptance width. The 19-inch insert width (483 mm) of the 19″ floor cabinet corresponds to the overall width of 19″ modules, 19″ card frames, 19″ cases and the 19″ cabinet front panels.

Economy Card Cage, Model 11



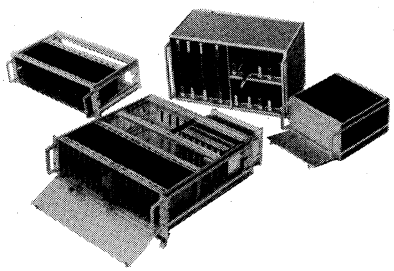
Application: The Model 11 is designed to accommodate single (3u), double (6u), and triple high (9u) Eurocards with depths of 160 mm, 220 mm, 280 mm, 340 mm and 400 mm. It can also accept card heights of 4.4″, 4.5″ and 9.65″. It is fully compatible to VMEbus, MULTIBUS II and Sun Systems.

Heights: 5.25″, 10.50″, 15.75″.

Widths installed: 8.4″, 16.8″.

Depths installed: 8.50″, 10.87″, 13.23″, 15.61″, 17.98″.

19-Inch Universal Enclosure, Model 14



Application: The extruded aluminum frame can be used as a desktop case on a subrack for mounting in to 19″ cabinets. It is possible to rack mount type 14 with cover plates.

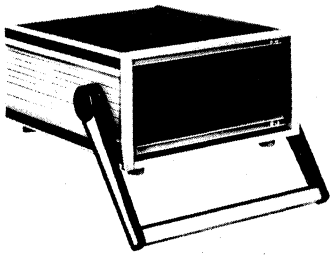
Accepts card sizes of 3u, 6u, 9u, 4.4″, 4.5″, 9.65″ and card depths of up to 400 mm.

Heights: 3.50″, 5.25″, 7.00″, 8.75″, 10.50″, 15.75″.

Widths installed: 8.4″, 12.6″, 16.2″, 16.8″.

Depths installed: 9.17″, 11.53″ 16.25″, 21″.

DIN Instrument Case, Model 36 (also panel-mount)



Features: front panel recessed by 10.5 mm (.41″).

Application: for control and regulating instruments, switches, etc. Panel mounting and tabletop case, available with angled feet; case dimensions and recess in accordance with standard governing built-in switchboard appliances (DIN standard 43 700).

Useable depths: 4.62″, 5.27″, 6.98″, 7.63″, 9.34″, 9.99″, 11.70″, 12.35″.

Heights: 2.84″, 3.78″, 5.59″.

Widths: 3.78″, 5.67″, 7.56″, 11.34″, 15.12″, 17.01″.

See section 2025 (Computers-Mini/Micro), section 2400 (Panel Hardware-Bezels, Dials, Knobs, etc.) and section 5100 (Switches) for additional ELMA products!

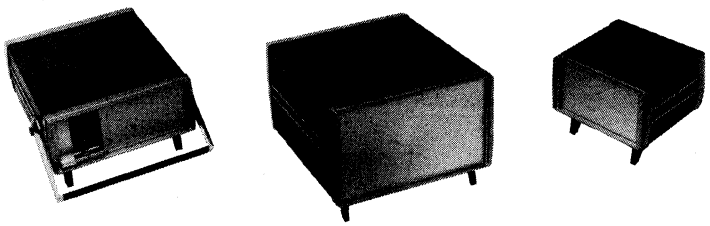
Packaging Enclosure Systems

ELMA Electronic Inc.

A Member Of The Sulzer Group, 41440 Christy Street, Fremont, CA 94538 • (415) 656-3400

All ELMA products are available off-the-shelf and REASONABLY PRICED

Desk Top Case, Model 32 Easy Assembly and Maintenance



Two sectional supports running full depth carry all inserts. These special supports permit versatile mounting with only simple assembly gear. The actual enclosure, which consists of front and rear frames and a top and base plate, has no supporting function. These parts are mounted on the mentioned supports using only four screws after the components have been inserted, wired-up and functional tests carried out. Therefore, no damage can be done to the cover plates during assembly. The cover plates are of scratch-resistant Sinaplast and are available in neutral umbra-brown. Unfinished aluminum plates for customer painting can also be furnished.

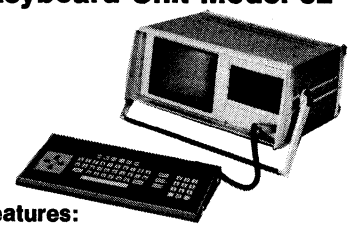
Heights: 5.25″, 10.50″, 3.50″, 7.00″.

Widths: 8.43″, 12.62″, 16.82″.

Depths: 9.02″, 12.17″, 15.31″, 18.46″.

Optional handles, front covers and component mounting chassis available.

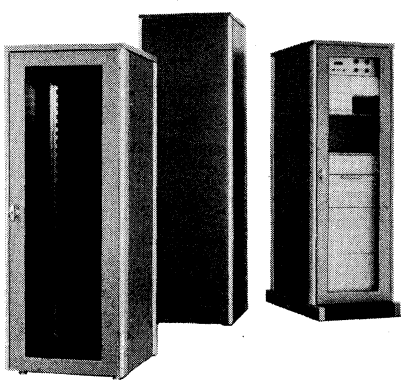
Portable Detached Keyboard Unit Model 32



Features:

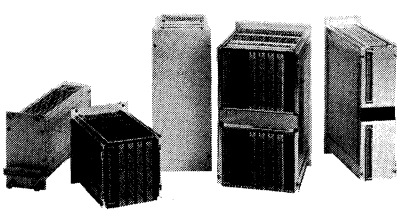
- Optimal flexibility
- Easy removal of keyboard from case
- Designed for numerous applications
- Sturdy construction for rugged field service use
- Accepts mountings per DIN 41494
- Mounting kits for 9″ CRT monitors available
- Standard or custom front panel design
- Accepts standard PC, PC-XT, PC-AT keyboards

Cabinets



Various models and colors available.
Height: 3, 4, 5, 6, 9, 10, 12, 14, 15, 20, 26, 32, 36, 39, 41, 46 U.
Acceptance Depth: 235, 289, 355, 379, 469, 470, 475, 495, 600, 670 mm.
Total Width: 505, 545, 548, 559, 600 mm.
Accessories: Telescoping rails, castors, bases, leveling feet, lifting eyes, grounding sets, slide/guide rails, coupling sets, drawers, pull-out trays, top covers with fan, slide-in fan trays, sealing kits, etc.

Cassettes and Modules Model 23



Equipment: with cover plates, bottom and cover plate perforated.

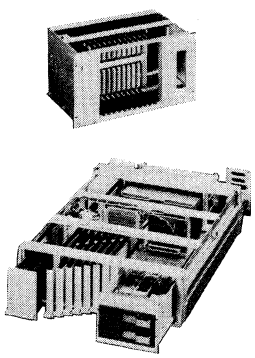
Application: to house printed circuit cards and components.

Heights: 5.25″, 10.50″.

Widths: 1.4″, 2.0″, 2.8″, 4.2″, 5.6″, 8.4″.

For card depths: 6.30″, 8.66″.

Modular VMEbus, Systems

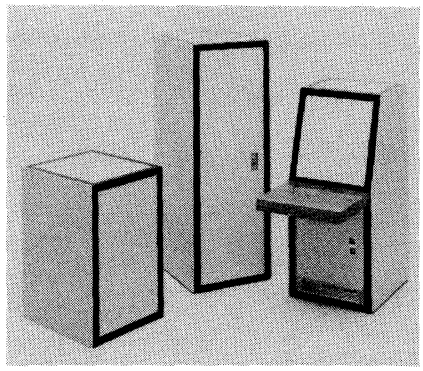


For complete family of VMEbus and Multibus II system enclosures, card cages, and components, see computers mini/micro section.

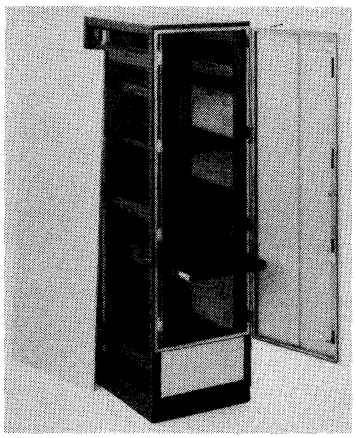
See section 2025 (Computers-Mini/Micro), section 2400 (Panel Hardware-Bezels, Dials, Knobs, etc.) and section 5100 (Switches) for additional ELMA products!

Emcor's super six

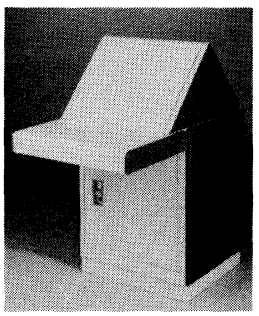
Six lines of Emcor enclosures, 8,000 standard items



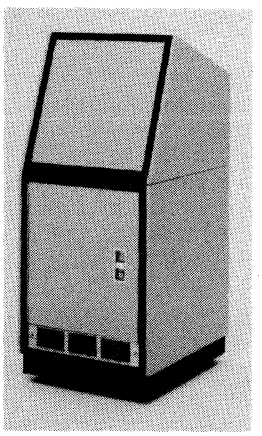
10 SERIES



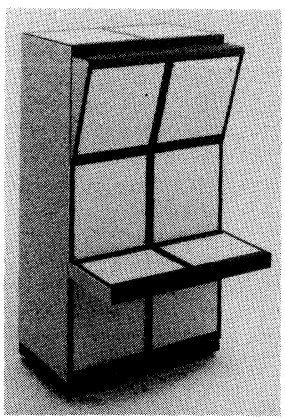
EMI/RFI ENCLOSURES



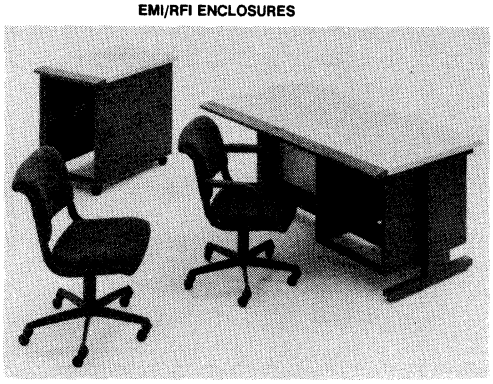
EMCOR I



EMCOR II



EMCOR ESQ



COMPUDESK

Emcor I

Emcor's original concept and broadest product line is available in vertical, slope front, low silhouette, desk height and turret configurations.

Emcor II

This top-of-the-line series features seamless construction and handsome, contemporary styling.

Emcor ESQ

Designed to combine the economy of Emcor I with the styling of Emcor II. This is currently Emcor's most popular product line.

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Emcor's newest and most rigid product line — available in vertical, desk height and slope front configurations with a full complement of accessories.

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Emcor offers two levels of standard catalog EMI/RFI shielded enclosures: one to meet FCC requirements and another to meet levels of attenuation required by the military. Both product lines have been tested to MIL STD 285.

Compudesk

Emcor's computer support furniture is available in two heights, two depths, four widths and in three different top styles. More than 500 models available.

And when you need it fast, there's Instant Emcor

775 items — available for shipment in just five working days, with option of color on selected items in ten working days.

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EMCOR

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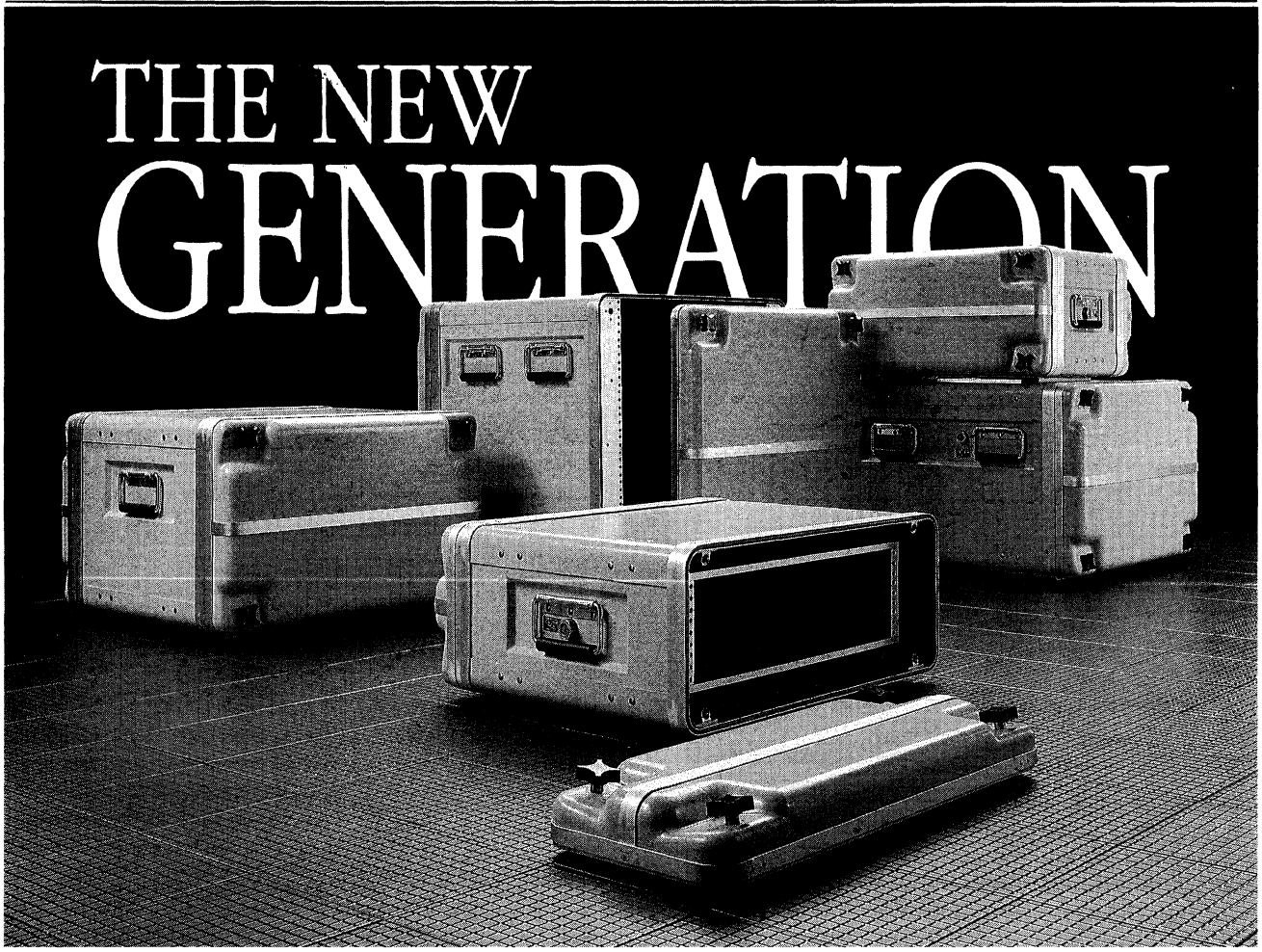


ECS electronic enclosures... Transportable protection for all 19 inch rack mounted equipment. Originally patented by ECS in 1965 (US Pat. 3,482,895). Now in the third generation of improved design and performance. After thousands of successful installations, this is the recognized, international leader.

ECS enclosures are available in 185 pre-engineered sizes. Rack heights from 5.25 inch (3U) up to 47.25 inch (27U). Standard rack depths from 8.63 inch to 24.00 inch. Ultra-compact exterior dimensions from 20.06W × 14.27D × 7.62H inches. All are available as Non Development Items (NDI) and can be specified by part number from the ECS catalog.

Options can be mixed and matched to meet the unique design requirements of any application... special sizes, unusual colors, clever hardware devices, EMI/RFI shielding, casters, fans, AC power receptacles... and much more. All specified by part number.

Creative utilization of thermoset and thermoplastic composites achieves maximum strength and minimum weight. Materials are corrosion proof, and resistant to contaminants, salt, humidity, fungi, solvents and fuels. Operating temperature range exceeds −65 F to +160 F. Exterior handles and latches are recessed. The Enclosure Selection Guide will quickly tailor the shock/vibration isolator system for ideal protection of individual electronic devices.

Consistently superb quality for military and non-military enclosures. Certification and testing available for all appropriate US Mil Specs including MIL-STD-108, MIL-T-28800, and MIL-C-4150. Quality assurance system per MIL-I-45208. Test procedures meeting FED-STD-101 and MIL-STD-810.

ECS Composites manufactures comprehensive families of enclosures, transit cases, EMI/RFI shielded products, conductive thermoplastic moldings, Thermo-Stamped Composite (TSC) moldings, and proprietary end-user products.

ECS COMPOSITES

3562 Rogue River Highway/P.O. Box 188
Grants Pass, Oregon 97526
(503) 476-8871
TWX 510-755-0777
FAX 503-474-2479

INDUSTRY STANDARD CASES

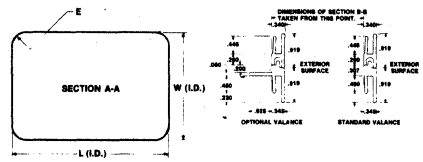
HEAVY DUTY TRANSIT CASE

MODEL*	W	L	H1	H2	A	B	C	D	E	F	AVAILABLE FOR WHEEL & HANDLE
GH0715RP-2	7-3/16	15-1/16	2-1/8 to 3-1/4 4 to 5-1/8	2-1/8 to 3-1/4 4 to 5-1/8	6	13-5/8	5-3/4	13-3/4	3/4	3/4	
GH0818RP-1	8-3/4	18-7/8	4-3/8 to 7	4-3/8 to 7	6-3/4	16-3/4	6-3/4	16-3/4	3/4	3/4	
GH0912RP-1	9	12-1/2	4 to 5	4 to 5	7-1/4	11	7-1/4	11	3/4	3/4	
GH1218RP-2	12-15/16	18-1/8	2-1/4 to 3-11/16	2-1/4 to 3-11 16	11-3/4	17	11-3/4	17	3/4	3/4	
GH1219RP-2	12-1/16	19-13/16	2 to 4	2 to 4	11-1/4	18-3/4	11-1/4	18-3/4	3/4	3/4	
GH1313RP-1	13-5/16	13-7/8	4-3/8 to 5-1/4	4-3/8 to 5-1/4	11-7/8	12-3/8	11-7/8	12-3/8	3/4	3/4	
GH1314RP-2	14-7/16	13-7/8	3-1/8 to 4 6-1/4 to 6-3/4	3-1/8 to 4 4-1 4 to 6-3/4	13-7/8	13-1 4	13-1 8	12-1 2	3 4	3 4	
GH1317RP-2	13-3/4	17	3-1 4 to 4	3-1 4 to 4	12-1 8	15-3 4	12-1 8	15-3 4	3 4	3 4	
GH1319RP-1	13	19-3/8	3-7 8 to 5	3-7 8 to 5	11-3 4	18	11-3 4	18	3 4	3 4	
GH1330RP-2	13-7/8	30-7/8	4 to 6-7 16	4 to 6-7 16	12-1 4	29-3 8	12-1 4	29-3 8	3 4	3 4	X
GH1419RP-2	14	19-7/16	3-1 4 to 3-3 4 4-1 4 to 6 7-5 8 to 9-3 4	3-1 4 to 3-3 4 4-1 4 to 6 7-5 8 to 9-3 4	12	17-1 2	12	17-1 2	3 4	3 4	
GH1420RP-2	14	20	4 to 5-1 2	4 to 5-1 2	12-1 2	18-1 2	12-1 2	18-1 2	3 4	3 4	
GH1423RP-2	14-7/16	23-3/4	4-3 16 to 6-5 16	4-3 16 to 6-5 16	13	22-3 8	13	22-3 8	3 4	3 4	X
GH1617RP-2	16-1/2	17-3/4	3-1 8 to 4-3 8 6-1 8 to 8	3-1 8 to 4-3 8 6-1 8 to 8	15	16-3 8	15-1 4	16-1 2	3 4	3 4	
GH1622RP-2	16-1/2	22-3/8	3-1 2 to 4 4-1 2 to 5-3 4 6-1 4 to 8-5 16	3-1 2 to 4 4-1 2 to 5-3 4 6-1 4 to 8-5 16	14-7 8	21-1 4	14-7 8	21-1 4	3 4	3 4	
GH1624RP-2	16-3/8	24-3/4	3-3 4 to 4-15 16	3-3 4 to 4-15 16	15-1 2	24-1 4	15-1 2	24-1 4	3 4	3 4	X
GH1727RP-2	17-13/16	27-3/4	3-3/4 to 4-1/2 5-1 2 to 7	3-3 4 to 4-1 2 5-1 2 to 7	16-1 4	26-1 2	16-1 4	26-1 2	3 4	3 4	X
GH1823RP-2	18-1/8	23-7/8	3-3/4 to 5-3/8 5-1 2 to 7-1 2	3-3 4 to 5-3 8 5-1 2 to 7-1 2	16-1 4	22-1 2	16-1 4	22-1 2	3 4	3 4	X
GH2020RP-2	20-13/16	20-13/16	4-1 2 to 5	4-1 2 to 5	19-1 4	19-1 4	19-1 4	19-1 4	3 4	3 4	
GH2122RP-2	21-3/16	22-5/8	2 to 3	2 to 3	19-5 8	21	19-5 8	21	3 4	3 4	
GH2325RP-2	23	25	5-1 4 to 7-3 16	5-1 4 to 7-3 16	21-1 4	23-1 4	21-1 4	23-1 4	3 4	3 4	X
GH2530RP-2	25-1/8	30-1/8	5-1 4 to 7	5-1 4 to 7	23	28	23	28	3 4	3 4	X

Gemini's standard line of **HEAVY DUTY TRANSIT CASES** are constructed from high density polyethylene, and extremely tough and resilient material ideally suited to the abuses transit cases are subjected to. The heavy wall (.100" nominal) shells and heavy duty 1.838" wide #6063 T52 aluminum valance combine to form a container capable of transporting delicate portable instruments under the most adverse conditions. Available with recessed wheels and folding handle.

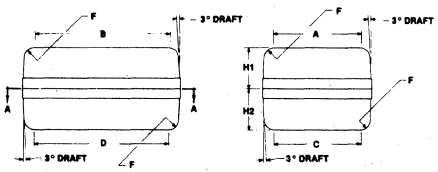
X-STACKING TRANSIT CASE

MODEL*	W	L	H1	H2	A	B	C	D	E	F
GH1021RP-X	10-1/2	21	2-3/4 to 3-13/16	2-3 4 to 3-13 16	8-15 16	19-7 16	8-15 16	19-7 16	3/4	3/4
GH1417RP-X	14-1/2	17	2-3/4 to 5-1 4	2-3 4 to 5-1 4	12-15 16	15-7 16	12-15 16	15-7 16	3 4	3 4
GH1717RP-X	17	17-1/2	3-to 3-7/8	3-to 3-7/8	15-7 16	15-15 16	15-7 16	15-15 16	3 4	3 4
GH1823RP-X	18-1/8	23-7/8	3-3/4 to 5-3/8 5-1/2 to 7-3/4	3-3 4 to 5-3 8 5-1 2 to 7-3 4	16-1 4	22-1 2	16-1 4	22-1 2	3 4	3 4
GH1921RP-X	19-1/8	21	3-1 4 to 4-3/8 5-1 4 to 6-5/8	3-1 4 to 4-3 8 5-1 4 to 6-5 8	17-1 2	19-1 2	17-1 2	19-1 2	3 4	3 4
GH1927RP-X	19	27	3 to 3-3/4 6-5/8 to 7-7/8	3 to 3-3 4 6-5 8 to 7-7 8	17-7 16	25-7 16	17-7 16	25-7 16	3 4	3 4
GH2325RP-X	23	25	5-1/4 to 7-3/16	5-1 4 to 7-3 16	21-1 4	23-1 4	21-1 4	23-1 4	3 4	3 4



HEAVY DUTY CARRYING CASE

MODEL*	W	L	H1	H2	A	B	C	D	E	F
GH0511R-1	5-7/8	11-3/8	3 to 3-3/4 7-1 4 to 8	3 to 3-3 4 7-1 4 to 8	4-7 8	10-1 4	4-3/8	10	3 4	3 4
GH0617R-1	6-1/8	17-1/8	2-5/8 to 2-15/16	2-5 8 to 2-15 16	4-3 4	15-3 8	5-3/8	16-3/8	3 4	5 8
GH0710R-1	7-1/2	10	3-1 8 to 3-3 8 4-3/16 to 5-3 8	3-1 8 to 3-3 8 4-3/16 to 5-3 8	6-1 2	8-3 4	6-1 4	8-5 8	3 4	1 2
GH0813R-2	8-5/8	13-7/8	2-3/4 to 3-1/4 5-1/2 to 6-1/2	2-3 4 to 3-1 4 5-1 2 to 6-1 2	6-15 16	12	6-15 16	12	3 4	5 8
GH0814R-2	8-11/16	14	4 to 5-1 16	4 to 5-1 16	7-1 4	12-1 2	7-1 4	12-1 2	7 8	3 4
GH0830R-1	8-13/16	30-11/16	1-1 4 to 2-3 4	1-1 4 to 2-3 4	8-1 4	30-1 4	8-1 4	30-1 4	3 4	1 2
GH0909R-1	9-7/8	9-7/8	2-11 16 to 3-9 16	2-11 16 to 3-9 16	8-5 16	8-5 16	8-5 16	8-5 16	3 4	5 8
GH0912R-1	9-1/16	12-1/16	1-1/2 to 1-3/4 3-1 4 to 3-3 4	3-1 4 to 3-3 4 7 to 7-13 16	8-1 4	11-1 2	6-1 4	9-1 2	3 4	1-1 4B
GH0914R-1	9-1/4	14	2-1/2 to 2-3/4, 3-1/2 to 6, 6-7/16 to 7-3/8	2-1 2 to 2-3 4, 3-1 2 to 6, 6-7 16 to 7-3 8	8-1 4	12-3 4	7-1 2	12-1 4	3 4	1 2T 3 4
GH0916R-1	9 3/4	16-13/16	1-3/4 to 2-11/16 7-3/4 to 10-3/4	1-3 4 to 2-11 16 7-3 4 to 10-3 4	9	16-3 8	8	15-1 4	3 4	3 4
GH0918R-1	9	18-15/16	2-1/2 to 3-1/2 8-13/16 to 9-9/16	2-1 2 to 3-1 2 8-13 16 to 9-9 16	7-7 8	18	7-1 2	17-3 8	3 4	3 4
GH0922R-1	9 5/8	22-11/16	2 to 3-1/16	2 to 3-1/16 6-5/8 to 10-1/2	8-3 8	21-1 8	8-1 4	21	3 4	3 4
GH0942R-1	9	42-5/8	1-1/4 to 2	1-1 4 to 2	8-3 8	41-3 4	8-3 8	41-3 4	3 4	1 2
GH1013R-1	10	13 1/8	2-3/4 to 3-1/2	2-3 4 to 3-1 2 9-3 4 to 10-1 2	8-1 2	11-3 4	7-3 4	11-1 4	3 4	3 4
GH1016R-1	10	16-1/16	1-3/4 to 2 7-1/4 to 9-3/8	1-3 4 to 2 7-1 4 to 9-3 8	9-1 4	15-1 4	8-1 4	14-1 4	3 4	1 2
GH1021R-1	10-1/4	21-15/16	4-3/8 to 5-1/4	4-3 8 to 5-1 4	9-1 8	20-1 2	9-1 8	20-1 2	3 4	3 4
GH1113R-1	11	13	2-1/4 to 2-3/4	2-1 4 to 2-3 4	10-1 8	12-1 8	10-1 8	12-1 8	3 4	1 2
GH1116R-2	11	16-1/2	2-5/8 to 3-15/16	2-5 8 to 3-15 16	10-1 2	16-1 16	10-1 2	16-1 16	3 4	1 2
GH1117R-2	11-5/8	17-1/2	2 to 3-1/4 3-1/2 to 4-3/4	2 to 3-1 4 3-1 2 to 4-3 4	10-3 8	16-1 2	10-3 8	16-1 2	3 4	3 4
GH1119R-1	11-5/16	19-5/16	2-3/16 to 3	2-3 16 to 3	10-5 8	18-1 2	10-5 8	18-1 2	3 4	3 4
GH1121R-2	11-7/16	20-15/16	3-1/16 to 4-1/16 6-5/8 to 8-13/16	3-1 16 to 4-1 16 6-5 8 to 8-13 16	10	19-1 2	10	19-1 2	3 4	3 4
GH1123R-2	11-11/16	23-3/4	1-1/4 to 2-1/4	1-1 4 to 2-1 4	11-1 4	23-3 8	11-1 4	23-3 8	3 4	1 4
GH1137R-2	11-7/8	37-3/4	1-1/4 to 2-1/4	1-1 4 to 2-1 4	11-11 16	37-3 4	11-11 16	37-3 4	3 4	1 4
GH1212R-2	12	12	3-9/16 to 4-1/4	3-9 16 to 4-1 4	10-5 8	10-5 8	10-5 8	10-5 8	3 4	5 8
GH1220R-2	12-7/16	20-5/16	3-1/8 to 4	3-1 8 to 4	11-3 4	19-3 4	11-3 4	19-3 4	1-1 32	1 4
GH1316R-1	13-13/16	16-13/16	2-5/16 to 3-1/8 3-5/8 to 6-1/4	2-5 16 to 3-1 8 3-5 8 to 6-1 4	12-13 16	15-3 4	12-5 8	15-1 2	3 4	3 4
GH1318R-2	13	18	3-9/16 to 5-1/4	3-9 16 to 5-1 4	11-5 8	16-1 2	11-5 8	16-1 2	3 4	1 2
GH1319R-2	13-13/16	19-3/4	2-3/4 to 3-5/8 7-1/4 to 8-1/8	2-3 4 to 3-5 8 7-1 4 to 8-1 8	11-1 2	17-1 4	11-1 2	17-1 4	3 4	5 8
GH1319R-2	13-7/8	19-5/8	3 to 3-3/4 4-3/4 to 6	3 to 3-3 4 4-3 4 to 6	12-5 8	18-1 4	12-5 8	18-1 4	3 4	1 2
GH1417M-1	14-7/8	17-3/4	3-3/4 to 5-3/16	3-3 4 to 5-3 16	14-1 8	17	14-1 8	17	M	45°
GH1419R-1	14-1/4	19-15/16	1-1/4 to 1-9/16 11-1/8 to 13-7/16	1-1 4 to 1-9 16 11-1 8 to 13-7 16	13-1 2	19-3 16	13-1 2	19-3 16	3 4	1 2
GH1444R-2	14-13/16	44-3/16	3-1/16 to 3-5/16	3-1 16 to 3-5 16	13-11 16	43-9 16	13-11 16	43-9 16	3 4	1 2
GH1523R-2	15-1/8	23-7/16	2-5/8 to 4-5/8 3-9/16 to 5-13/16	2-5 8 to 4-5 8 3-9 16 to 5-13 16	14	22-1 8	14	22-1 8	3 4	1 2
GH1528R-2	15-1/4	28-1/16	2-5/8 to 4-3/4 6-7/8 to 9-1/16	2-5 8 to 4-3 4 6-7 8 to 9-1 16	13-1 4	26-1 4	13	25-1 2	3 4	3 4
GH1631R-2	16	31	4-3/8 to 6-7/8	4-3 8 to 6-7 8	14-1 4	29-3 8	14-1 4	29-3 8	3 4	3 4
GH1733R-2	17-13/16	33-3/4	1-1/4 to 2-9/16	1-1 4 to 2-9 16	13-1 8	34-1 4	13-1 8	34-1 4	3 4	1 2
GH1820R-2	18	20	2 to 3-1/2	2 to 3-1 2	16-5 8	18-3 4	16-5 8	18-3 4	3 4	5 8
GH1825R-2	18	25-3/4	1-13/16 to 2-13/16 5-1/4 to 6-9/16	1-13 16 to 2-13 16 5-1 4 to 6-9 16	17	25-1 4	16-1 2	24-3 8	3 4	5 8
GH1828R-2	18-1/16	28-3/16	3-3/4 to 4-1/2 6-3/4 to 7-1/2	3-3 4 to 4-1 2 6-3 4 to 7-1 2	16-5 8	26-3 4	16-1 2	26-1 2	3 4	3 4
GH2121R-2	21-1/4	21-1/4	5-5/16 to 6-11/16	5-5 16 to 6-11 16	18-3 4	18-3 4	18-3 4	18-3 4	3 4	3 4
GH2131R-2	21	31	3 to 5	3 to 5	19-15 16	29-15 16	19-15 16	29-15 16	3 4	3 4
GH2639R-2	26-13/16	39-3/16	1-1/4 to 2-13/16 4-11/16 to 5-7/16	4-11 16 to 5-7 16	26	38-3 8	25-3 8	37-13 16	3 4	5 8



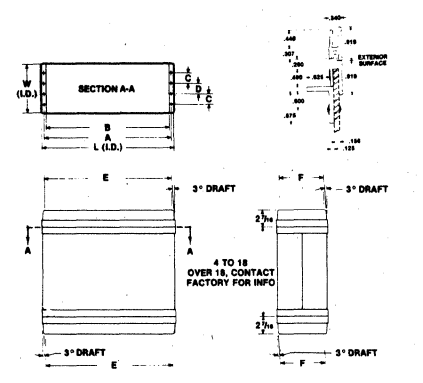
Gemini's standard line of **HEAVY DUTY CARRYING CASES** are constructed from rugged A.B.S. and feature a heavy wall aluminum valance to provide an extremely rugged case with contemporary lines for transporting delicate portable instruments under the most demanding conditions.

Standard Features Include:

- .100" to .150" nominal wall black A.B.S. shells
- variable case depth
- heavy wall 1.838" wide #6063 T52 aluminum valance with dust seal
- choice of handle, latch, hinge and bumpers

HEAVY DUTY RACK MOUNT CASE

MODEL	EIA STANDARD PANEL	W	L	A	B	C	D	E	F
GH0514M	—	5-5/16	14-3/16	12-3/4	12-5/16	—	—	14-3/8	5-9/16
GH0519M	5.219 x 19	5-5/16	19-1/4	18-5/16	17-7/8	2-1/4	—	19-1/4	5-7/16
GH0714M	—	6-15/16	13-11/16	12-3/4	12-5/16	—	—	13-11/16	7
GH0719M	6.969 x 19	7-1/16	19-1/4	18-5/16	17-7/8	4	—	19-1/4	7-1/4
GH0919M	8.719 x 19	8-13/16	19-1/4	18-5/16	17-7/8	5-3/4	—	18-7/8	8-7/16
GH1119M	10.469 x 19	10-9/16	19-1/4	18-5/16	17-7/8	2-1/4	3	19-1/4	10-3/4
GH1219M	12.219 x 19	12-5/16	19-1/4	18-5/16	17-7/8	3-1/2	2-1/4	19-1/4	12-1/2

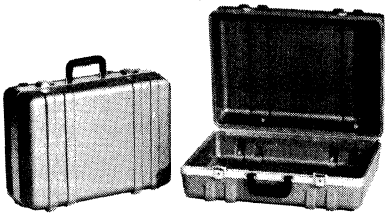


Gemini specializes in custom designed cases for industry. We have the capability to design a case specifically for your product and follow through from prototypes to production. If you are currently purchasing a standard case from another manufacturer, we may be able to duplicate that case at a lower cost. We welcome the opportunity to quote on your case requirements and to work with you on design.

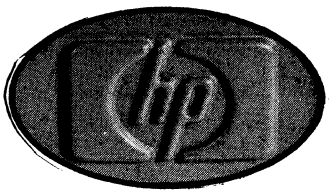
The above sizes are only a partial list, contact GEMINI for a complete catalog.

GEMINI
INCORPORATED
103 Mensing Way
Cannon Falls, MN 55009-0018
PHONE: (507) 263-3957
FAX: (507) 263-4887

INDUSTRY STANDARD CASES



TRANSIT CASE

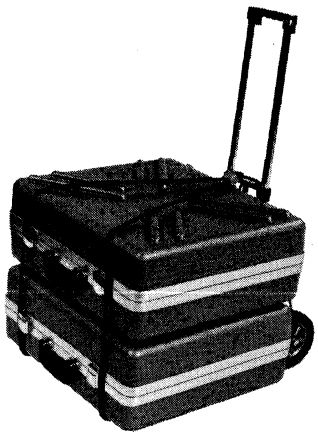


MOLDED LOGOS

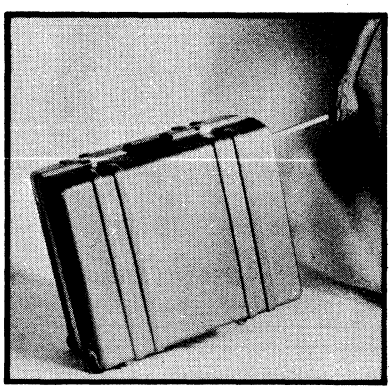


TOOL CASE

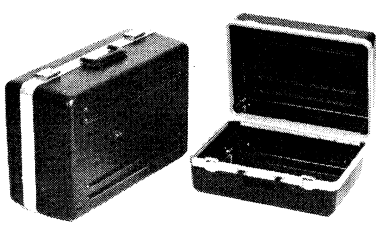




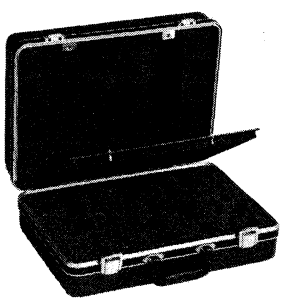
X-STACKING TRANSIT CASE & CART



WHEEL CASE



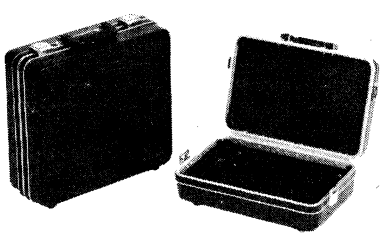
HEAVY DUTY CARRYING CASE



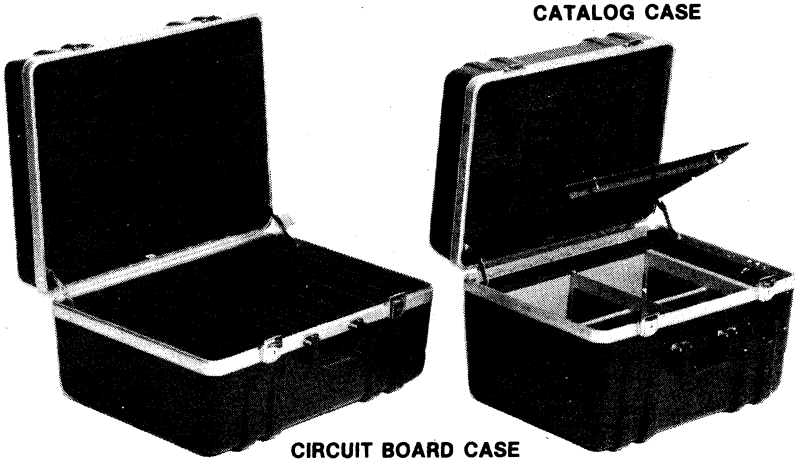
DOORS/HINGED DIVIDERS
DIE-CUT FOAM INSERTS



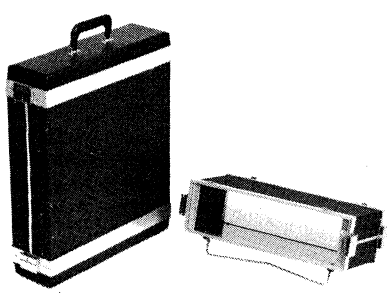
CATALOG CASE



ATTACHE STYLE CASE



CIRCUIT BOARD CASE



EIA RACK MOUNT CASE

Contact factory for:
Special hardware selections available
Special colors
Flame retardant material
Special brackets
Door/dividers/formed inserts
ATA Style - Rotational molded
EMI/RFI shielding
Foam filled
Foam die cut
Foam molded
Printed circuit board racks
MIL Spec - Metal cases

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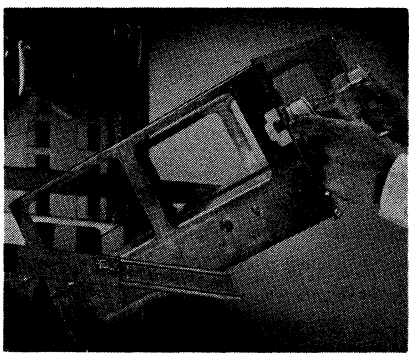
GENERAL DEVICES
Electronic Hardware Manufacturers

CHASSIS TRAK® Telescoping Slides

Enclosure slides for even the most unusual applications!

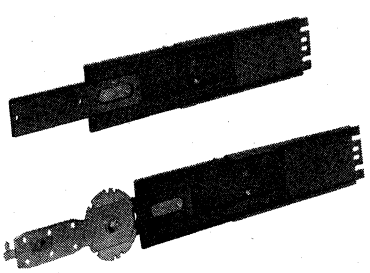
Rugged • Dependable • Economical



Chassis Trak solid bearing slides are exceptionally compact, durable and economical slides for commercial and military application. Permanently lubricated with Poxylube® molybdenum disulfide dry film lubricant to provide smooth sliding action. Chassis Trak solid bearing slides offer a high degree of immunity to shock and vibration and all slides offer lock-out and quick-disconnect as standard features.

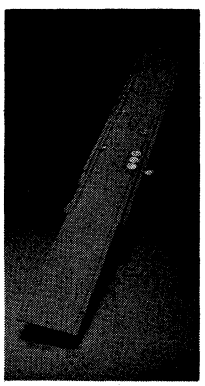
Series	Load Capacity lbs./pr.	Lengths
C300	85	10″ to 24″
C230	125	12″ to 24″
D-600	125	10″ to 24″
CT	175	10″ to 24″
CTR	175	10″ to 24″
CTH	275	14″ to 24″
CTHR	275	14″ to 24″

All solid bearing slides available in 2 inch increments affording complete installation versatility.



Pencil-thin design permits installation of standard 17″ chassis in standard 19″ panel racks. All solid bearing slides are cold-rolled steel except Model D-600 which is lightweight, hard coated aluminum.

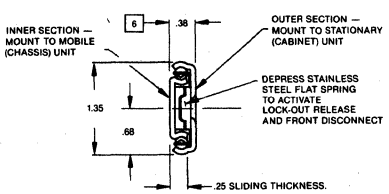
CC6400 Roller Bearing Slides



The CC-6400 bearing slide is designed with rollers that reduce drag and pull force and facilitate easy movement.

Features

- 175 lbs. weight capacity with only .38 clearance required.
- Quick disconnect with safety stop feature eliminates chassis from being inadvertently pulled out. The release must be activated for mechanism to disconnect.
- Automatic release option available.



CLB-203 Slides

Ball Bearing Disconnect Slides

The CLB-203 electronic slide is available with custom hole patterns for changing office environments. The disconnect feature makes it easy to install and maintain. Plus, the chassis and slide close very quietly.

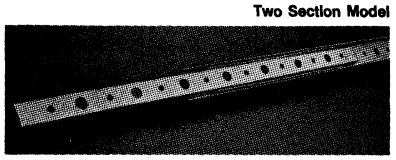
Standard Lengths Available: 10 to 30 inches in one inch increments.

- Symmetrical slide assemblies used as right or left hand.
- Quick disconnect to ease cabinet mounting and service.
- Friction hold-in feature.
- Rubber bumper to quiet final movement.
- Lock-out feature at full extension.
- Industry standard mounting holes.
- Zinc and clear chromate finish.

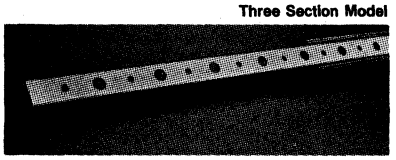
Linear Ball Bearing Slides

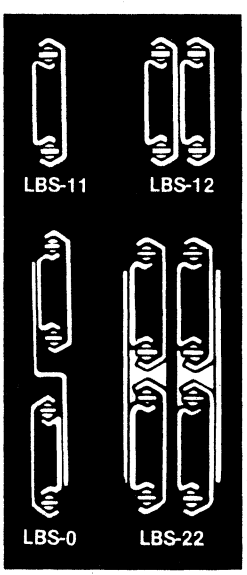
Designed for especially smooth travel and extra long life under maximum loads, these slides are made of cold-rolled steel raceways and operate on precision carbon steel ball bearings. Available in several models and lengths, with optional cabinet mount and/or lock out. Applicable to low cost commercial and tough military applications. Easy mounting system is calibrated for installation at 2 inch intervals.

LBS-11
Two Section Model



LBS-12
Three Section Model



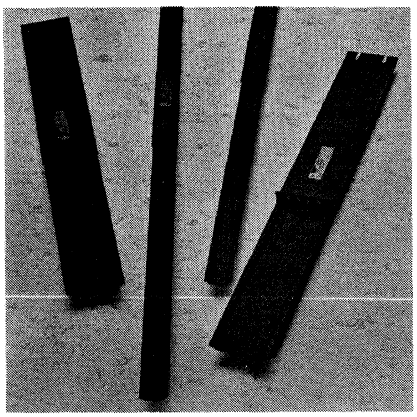


Series	Load Capacity lbs./pr.	Lengths
LBS-11	100	10″ to 40″
LBS-12	250	10″ to 40″
LBS-0	150	10″ to 30″
LBS-22	400	10″ to 30″

CHASSIS TRAK® Telescoping Slides

- *Rugged*
- *Dependable*
- *Economical*

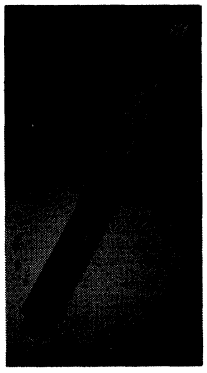
GENERAL DEVICES
Electronic Hardware Manufacturers



Two-Section Slides

These slides are thinner than normal slides. Sturdy construction allows these two section slides to be only .340 of an inch thick to provide additional chassis space. They are supplied as *direct mount* solid bearing slides but can be obtained with a return flange for standard mounting. Also designed to be easily disconnected. Mounting hardware is included.

CC3700 "Thin-Trak"



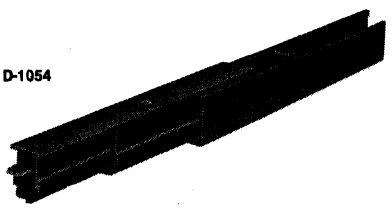
This two section slide series offers slides that are ultra thin and just as sturdy as standard units allowing for a much wider chassis application. Still designed as a "solid bearing" slide, the sliding section of this unit is only .188 of an inch thick.

Features

- Ultra thin sliding thickness - (.188″).
- 85 lb. capacity (per pr.).
- Can be furnished for direct flat-mount requirements (mount directly to side of cabinet - flanges, front and rear *not* required).
- Parts interchangeable - (No LH or RH).
- Other combinations of length and travel available on request.

Quick Disconnect - Chassis is easily removed by depressing both stop latches and pulling the chassis forward.

D-1054



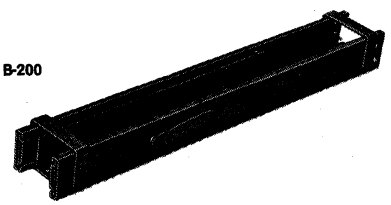
Bottom Mount Slides

Five different models offer load-carrying capacities from 150 lbs./pr to 1,500 lbs./pr. These slides are made from cold-rolled steel, cadmium plated and irridite dipped, and are available with solid-bearing surfaces or roller bearing, depending on the model. Slides feature smooth operation, dependability and long life for heavy-duty applications. Close tolerance rollers minimize pulling force required for extension and provide vertical alignment, while ball bearings carry any horizontal thrust.

Series	Load Cap. lbs./pr.	Lengths
B-200 (solid)	50	10″ to 24″
C-938 (roller)	400	12″ to 48″
D-1065 (roller)	600	12″ to 24″
D-1050 (roller)	1000	22″ to 48″
D-1054 (roller) (same as D-1050 except includes lock-in and lock out)	1000	22″ to 48″

(other lengths available upon request)

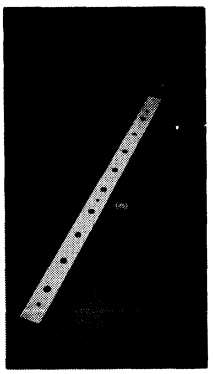
B-200



Top/Bottom Mount Slides

Telescoping, formed sections, bearing on a film of Poxylube® , a molybdenum disulfide dry film lubricant, makes this low-cost slide desirable for many light-weight applications.

CC4500 Hybrid Slide



This new design is a combination Linear Ball Bearing and Solid Bearing Slide, which combines ease of movement with economy and dependability.

This slide is 1/2″ thick and at full extension can carry up to 125 lbs. per pair.

Features include 16 in. through 30 in. lengths, disconnect, and safety stop feature at front.

Series	Load Cap. lbs./pr.	Lengths
CC4500	125	16″ to 30″

Options: • Strap mount
• Lock-out
• Automatic release

General Devices Offers:

Experience - Leader in Chassis Slides for commercial and military applications for over 30 years.

Low Cost - Advanced production techniques enable us to offer quality at a competitive price.

Stock - Commonly used models are stocked for off-the-shelf immediate delivery.

Specials - Engineers are ready to handle your special engineering requirements.

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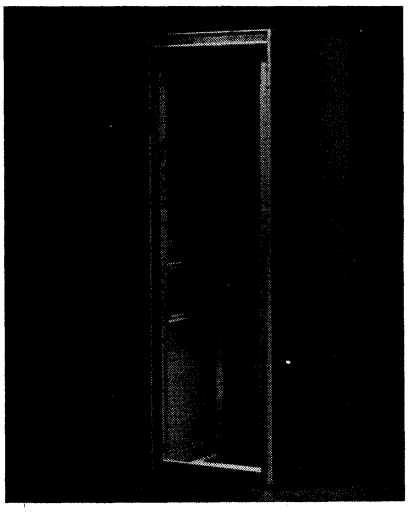
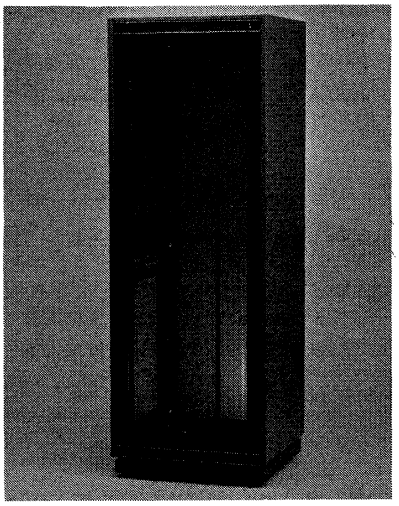


Light Duty 9500 Series

Series 9500 is constructed from standard pre-engineered parts featuring welded all steel construction.

Standard Features

- Frame is 14 gauge CRS.
- Lift-off removable 18 gauge CRS side panels.
- Hinged and removable flush 18 gauge rear door and key lock.
- Adjustable rear mounting angles punched and tapped #10-32 per EIA Standard RS-310.
- Front corner posts have .270 inch dia punched clearance holes in EIA Standard RS-310 pattern. Forty #10-32 clip nuts are furnished with each frame.
- Adjustable levelers.
- Available panel openings 35.06 inches through 70.06 inches in 1.75 inch increments.
- Available frame depths from 24.0 to 30.0 inches in 2.00 inch increments.
- Panel width 19.13 inches with 17.91 inches clear opening.
- Overall cabinet width is 24 inches.
- Overall cabinet height is 5.00 inches greater than the vertical panel opening.
- Aluminum extrusion horizontal trim and woodgrain insert.
- Ideal for EMI applications.

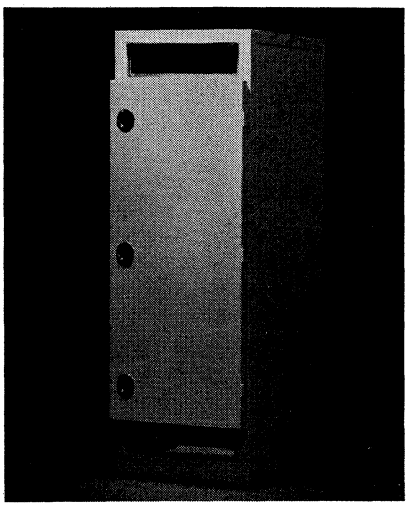


Medium/Heavy Duty 6200 Series

The Series 6200 line is designed and built to pass some of the most stringent commercial applications.

Standard Features

- Frame is 12 gauge CRS, Tig welded.
- Two 18 gauge CRS lift-off side panels.
- Surface mounted hinged 16 gauge CRS rear door with magnetic latch and aluminum extrusion pull.
- Removable 12 gauge CRS top cover.
- Available vertical panel openings 35.06 through 77.06 inches in 1.75 inch increments.
- Available frame depths from 24.00 inches to 30.00 inches in 2.00 inch increments.
- Four 12 gauge CRS mounting angles punched and tapped #10-32 per EIA Standard RS-310. Mounted on UNISTRUTS for infinite adjustment.
- Extruded aluminum front horizontal trim.
- Four levelers.
- Panel width 19.13 inches with 17.91 inches clear opening.



Heavy/Seismic Duty 7700 Series

The Series 7700 are standard cabinets pre-engineered with custom quality for special applications. This line is designed to conform with military specifications.

Standard Features

- EMI, EMP, RFI shielding capability.
- Frame 10 gauge CRS.
- Reinforced corner posts with 10 gauge CRS liners.
- Removable 16 gauge CRS side panels.
- Removable and flush mounted 16 gauge CRS rear door with multiple latches.
- Removable 12 gauge CRS bottom cover.
- Adjustable 10 gauge CRS rear mounting angles punched .27 inch diameter holes in RS-310 pattern.
- Front corner posts are punched and tapped #10-32 per EIA RS-310.
- Available in vertical panel openings from 35.13 inches through 84.13 inches in 1.75 inch increments.
- Available panel widths of 19.13 inches and 24.13 inches.
- Available frame widths with 19.13 inch panel width are 23.13 inches and 21.13 inches.
- Available frame width with 24.13 inch panel width are 28.13 inches and 26.13 inches.
- Available frame depths from 20.00 inches through 36.00 inches.

VENT RAK® Cabinets & Enclosures

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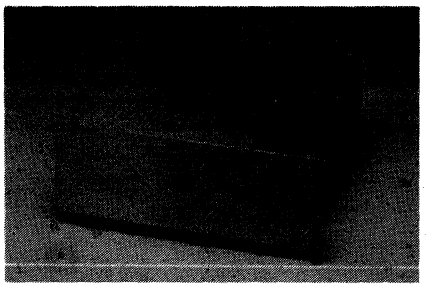
- *Hardware & Accessories*

GENERAL DEVICES
Electronic Hardware Manufacturers



Modular Chassis

- Finish is etch and clear chromate conversion per MIL-C-5541C.
- Mounting slots are located per EIA Standard RS-310-C.
- Standard 17 inch width for a 19 inch front panel width.
- Chassis plate is .090 aluminum, standard one piece or optional modular chassis sub-plates.
- Chassis sides .060 aluminum, available in four standard depths 8.50, 12.75, 17.00 and 21.25 inches. Chassis sides are .50 inch less the front panel height and are available in heights 1.75 inch through 14 inch in 1.75 inch increments.
- Top and bottom covers are perforated .060 aluminum.

Standard Chassis consists of:

A. Front Panel

B. Chassis Sides (Pair)

C. Chassis Plate (One piece)

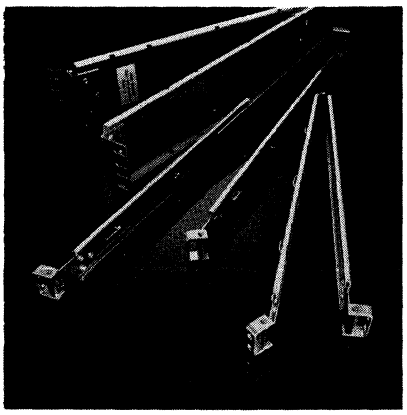
D. Rear Support Panel

Standard chassis are shipped unassembled with all required mounting hardware.

Standard options available on Vent Rak chassis include:

- Special cut outs
- Painted front panels
- Lettered front panels
- Assembled chassis
- Hardware mounting holes
- Perforated top cover
- Handles
- Chassis Trak slides

The Vent Rak facilities permit the fabrication of made-to-order chassis and our engineers welcome your inquiries.



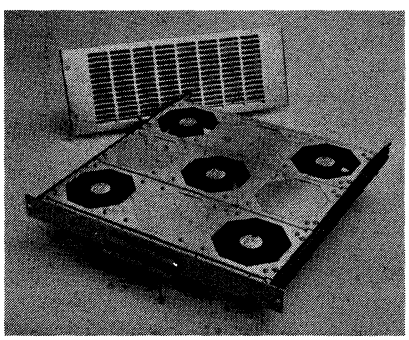
Cable Carriers

The D-329, C-990 and C-4555 will extend proportionately with cable movement and prevent sagging cable hazards that might damage the equipment housed and the lower chassis. The D-329 and C-990 with quick disconnects were designed for round cable. The C-4555 was designed to handle ribbon cable.

C-4555 Ribbon cable carrier

C-990 Quick disconnect cable carrier

D-329 Quick disconnect cable carrier

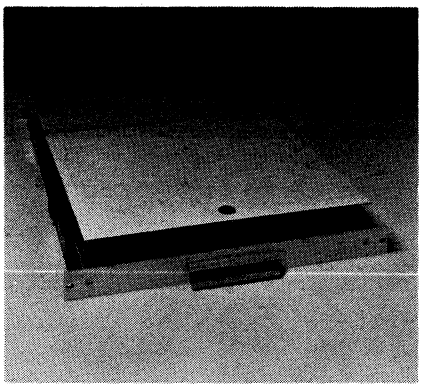


Cooling Modules

D-4118 cooling modules, the arrangeable cooling module enables you to choose the fan pattern that will best cool your equipment.

D-4119 cooling module provides air movement rated at 250 CFM and occupies 7 inches of vertical panel space.

Both cooling modules are fuse protected and supplied with easily replaceable fans; filters are optional on the D-4118 and standard on the D-4119.



D-4080 Retractable Writing Shelf

This readily accessable writing surface mounts directly to any standard 19.00 inch cabinet per RETMA/EIA universal or MIL-STD-189. Completely assembled unit requires 1.75 inches of vertical front panel space.

Features

- Writing surface covered with off-white laminate.
- Maximum extension of 20.88 inches.
- Quick disconnect slides for easy removal.
- Lock out slides that will hold up to 85 pound load.
- Adjustable rear mounting brackets to mount in cabinets 20 to 30 inches in depth.
- Finger tip desk top lid.
- Clear anodize aluminum handle.
- Zinc plate 1.5 inch body.

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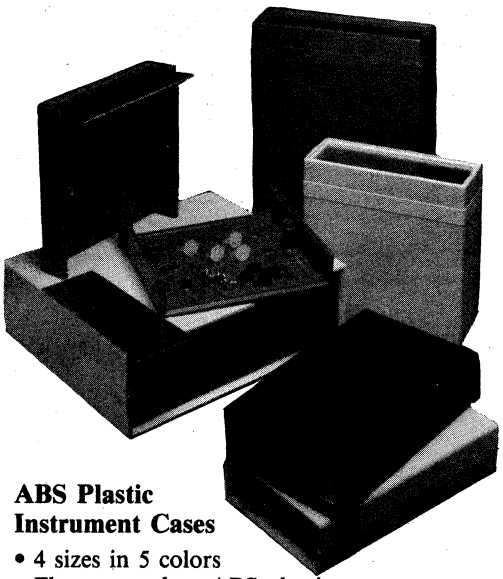
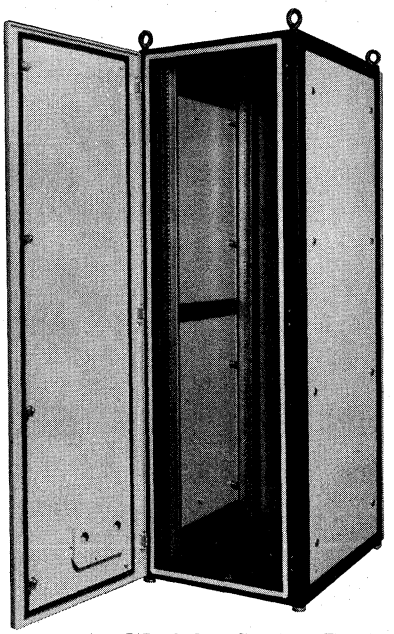
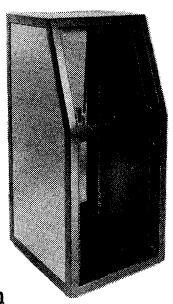
The Hammond Alternative For Small Cases and Rack Packaging



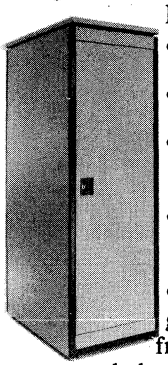
ABS Plastic Instrument Cases
- 4 sizes in 5 colors
- Flame retardant ABS plastic
- Integral P.C. mounting slots
- Two piece construction

NEMA 12 and NEMA 12 EMI/RFI Shielded Racks
- Oil and dust tight racks built to NEMA specifications
- 19″ or 24″ panel widths available in 9 heights (21″ to 77″ panel height)
- Two depths 24.5″ and 31.5″
- Cabinets are Gulf Blue or Sand with textured black frame
- A wide range of accessories are available



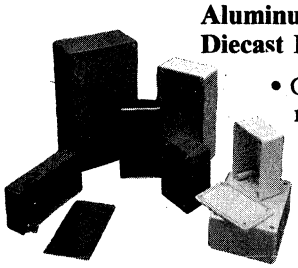


Console Racks
- 19″ or 24″ rack mount panel width
- 49″ overall height
- 24.5″ or 31.5″ deep
- Available in a wide range of colors
- Accessories include rack mount desks, front and rear doors and a wide range of universal accessories



Modular System Racks
- 12 heights 21″ to 84″
- 19″ or 24″ panel widths
- 3 depths 17.5″, 24.5″ and 31.5″
- Available in a wide range of colors
- Accessories include ganging kits, wedge kits, front and rear doors, rack mount desks, tops, gang tops and a wide range of universal accessories

Plastic and Aluminum Diecast Boxes



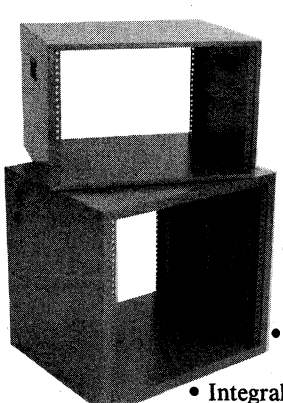
- Over 50 models to choose from
  - ABS plastic cases
  - Aluminum diecast cases
- ABS Plastic consoles
- EMI/RFI shielded plastic or metal cases
- Water tight metal cases
- Available in a wide variety of colors and finishes
- Custom punching and screening



Knockdown Economy Racks
- 4 piece construction
- 8 heights in two depths
- Accept most universal 19″ accessories
- Available in a wide range of colors

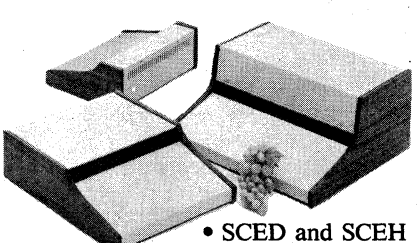


Heavy Duty Racks
- 19″ or 24″ panel widths
- 5 heights 49″ to 85″
- 3 depths 17.5″, 24.5″ or 31.5″
- Available in a wide range of colors
- Accessories include rack mount desks, ganging kits, variety of doors and side panels and a full range of universal accessories



19″ Panel Mount Rack Cases
- Panel heights 3.25″ to 28.0″
- Depths 13.5″ and 17.5″
- Available in a wide range of colors
- Many Universal 19″ Accessories
- Integral front and rear panel rails use 10-32 clipnuts for panel mounting

Desktop Cases and Consoles
- Hundreds of models in a wide range of colors and materials



- SCED and SCEH consoles shown here feature real walnut wood sides

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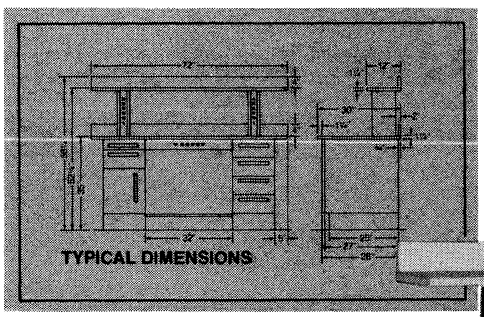

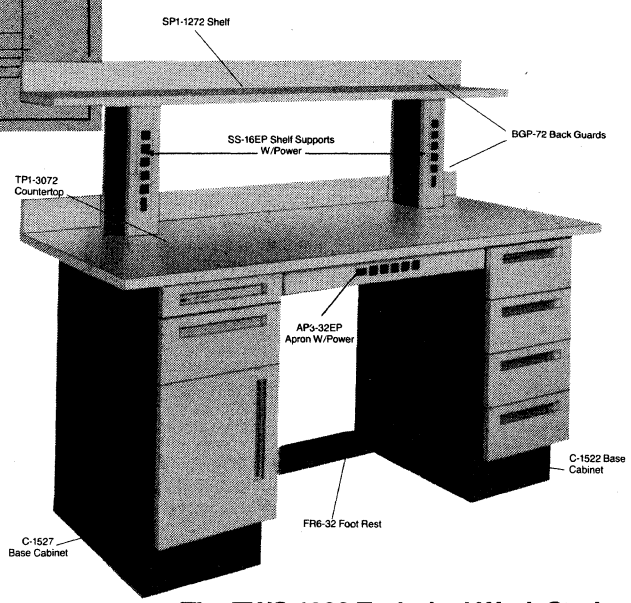

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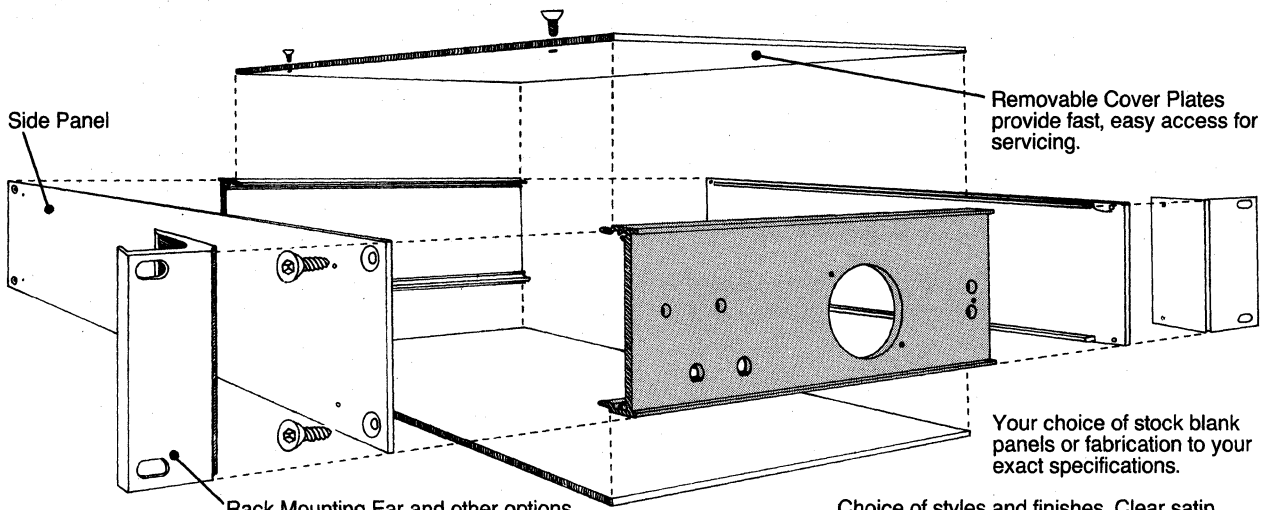
LANSING Electronic Instrument Enclosures

GrayBox™ Enclosures



Ready for use. Custom tailored. Economically priced.

Lansing electronic instrument enclosures look, feel, and perform like they were designed for your product alone — without the high cost and lead time of custom fabrication.

Our engineered system of aluminum extrusions and metal covers makes Lansing enclosures well suited for use in both prototype and production quantities. Printed circuit boards can be mounted in a variety of ways. Lansing enclosures are designed as submultiples of standard rack width and height, and work effectively for both stand-alone and rack-mount instruments.

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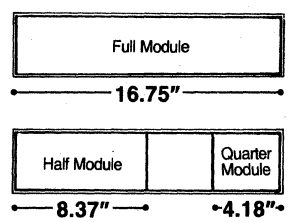
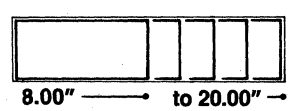
Most importantly of all, we work with you to ensure that your enclosure meets your product or instrumentation needs precisely. Then we get your enclosures to you *fast*.

Call our toll-free number or write today and find out how to put your product in a custom quality enclosure at an economical price.

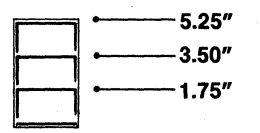
Widths



Depths



Heights



Only stock sizes shown — others available.

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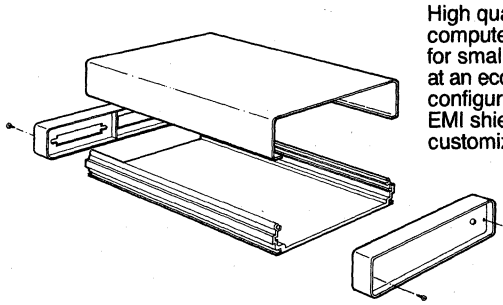

High quality construction and computer-compatible, desk-top styling for smaller electronic applications — at an economical price. Optional colors, configurations, materials, styles, and EMI shielding are available. Can be customized to your requirements.

Heights: 1.52″ and 2.52″

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Depths: 5″-9″ standard; others optional.

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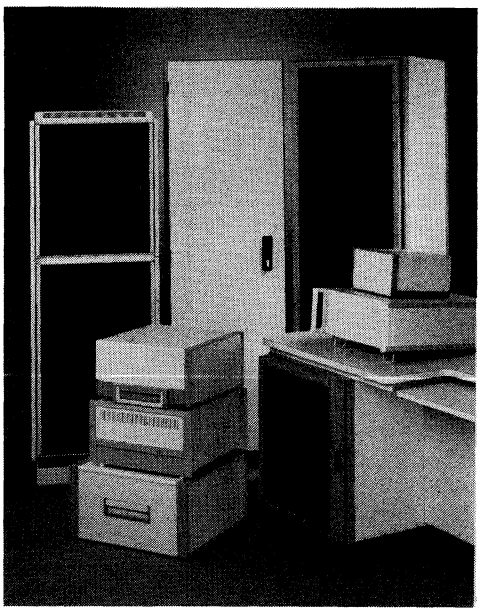

Optima Products:
- Vertical Cabinets
- EMI/RFI Shielded Cabinets and Cases
- Optima MPS (Modular Packaging Systems)
- Instrument Cases for 19" and 17" Systems
- Electronic Desk Systems
- Complete Accessories Line

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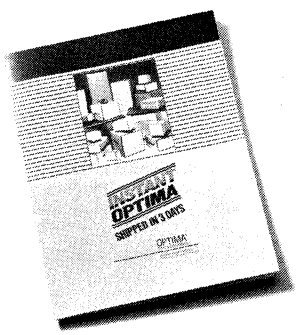
Instant Optima will ship your enclosures at our low regular pricing (previously reserved for 'build-to-order' product.)

Shipped in 3 days
For your prototype or short run needs, we're ready to ship 3 days after receipt of order. We're the fastest of the fast!

New Wider Selection
You can get more styles and sizes than ever. Including EMI/RFI shielded cabinets, Optima MPS (Modular Packaging System) and the new Optima Electronic Desk System.

Huge Inventory
With our large warehouse and automated inventory system, we track hundreds of styles, sizes and configurations 24 hours a day. And that means more 'in-stocks' than ever.



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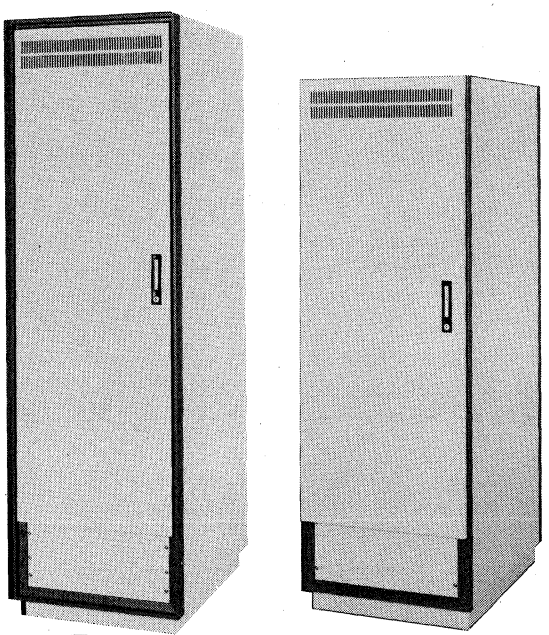
OPTIMA VERTICAL CABINETS

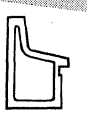
Optima offers two styles of vertical cabinets for 19" systems, the "NA Series" and the "NC Series". They differ only in appearance, with each providing superior strength-to-weight ratios along with a clean, professional look.

Vertical Cabinet features:

- Available in 48 sizes:
  Heights: 21, 28, 35, 42, 52, 61, 70, 77"
  Widths: 19, 24"
  Depths: 24, 30, 36"
- Basic frame features front and rear bezels of aluminum extrusions, joined by corner members.
- Side panels independent of the framework for ease of assembly and service.
- Extra strength framework withstands static loads in excess of 6,600 lbs.
- Steel bases with caster brackets and leveler provision.
- Acrylic latex textured finish.
- Superior paint adhesion through phosphate pre-treating.
- For more details and information re: standard colors, a broad selection of accessories and our INSTANT OPTIMA 3-day ship program call or send for FREE catalog.

OPTIMA Enclosures





Bezel Style
NC SERIES



Bezel Style
NA SERIES

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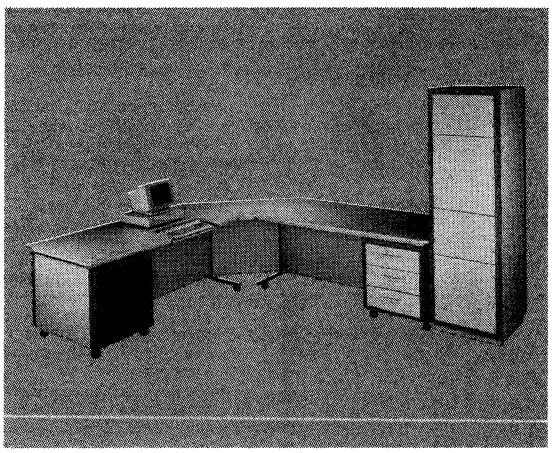
NEW OPTIMA ELECTRONIC DESK SYSTEM

OPTIMA Enclosures

Presenting Optima's new line of contemporary desk designs. Made to compliment today's office environments, and provide an integrated look to even the largest system.

Standard features include:

- Available in 3 sizes: Height: 28" Widths: 28, 50, 72" Depth: 32"
- Keyboard desktop version available; fits most standard keyboard sizes in recessed area.
- Optional operational pedestal; easily removed back panels provide quick access to electronic equipment mounting rails.
- Easy to move; uses attractive, heavy-duty, locking casters.
- Optima desks are available separately with a wide variety of accessories (multiple configurations also available).
- EMI/RFI shielded desks also available.
- For more details and information re: standard colors, a broad selection of accessories and our INSTANT OPTIMA 3-day ship program call or send for FREE catalog.

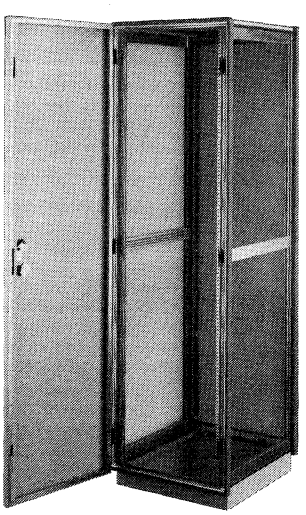


EMI/RFI SHIELDED CABINETS

OPTIMA Enclosures

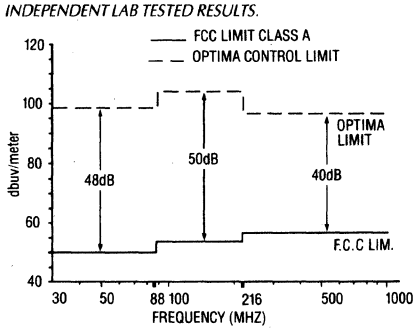
Standard features include:

- Available in 48 sizes:
  Heights: 21, 28, 35, 42, 52, 61, 70, 77"
  Widths: 19, 24" Depths: 24, 30, 36"
- Beryllium copper gasketing for all seams and joints to insure continuous conductive path at panel/framework interfaces.
- Paint-free, electrical contact areas provided with clear chemical chromate conversion coating.
- Extra strength framework withstands static loads in excess of 6,600 lbs.
- Easy to remove (from inside) top, bottom and side panels of .062" aluminum alloy.
- Heavy gauge (.090") aluminum doors, front and rear.
- Tough, 3-point door latch mechanism for tighter, uniform fit, with easy handle operation.
- Adjustable panel mounting brackets.
- For more details and information re: standard colors, a broad selection of accessories and our INSTANT OPTIMA 3-day ship program call or send for FREE catalog.
- Shielded case also available – See Optima 19.

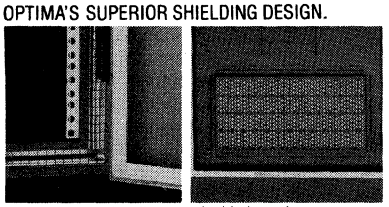


E.M.I. CABINET ATTENTUATION

INDEPENDENT LAB TESTED RESULTS.



OPTIMA'S SUPERIOR SHIELDING DESIGN.



BeCu gasketing for all seams and joints.

Shielded ventilation provided by vents with plenum.

Gichner

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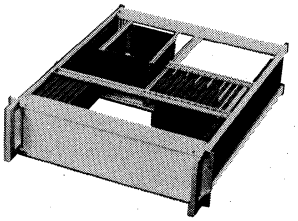
OPTIMA CASES

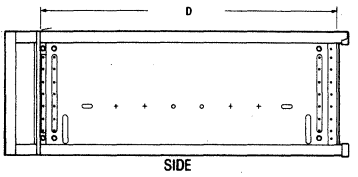
OPTIMA Enclosures

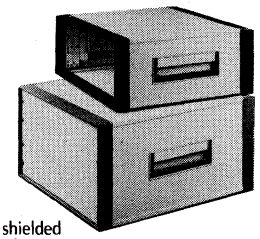


Rack Adaptable Kit

Optima Instrumate

- Available in 15 sizes:
  Panel Heights: 3.31", 5.06", 6.81", 8.56", 10.31".
  Width: 17" Depths: 16, 21, 23"
- Single solution to multiple application packaging.
- Use it as a chassis or a card cage, or both.
- Can be used as desk-top or rack-mounted unit.
- Each frame member has mounting holes for insertion of optional metalwork, card guides and card cages.
- Extra strength to accommodate 100 lbs. for components and subassemblies.
- Panel dividers and front panels available.
- Load from top, front or rear.
- Meets IEC/EIA standards.

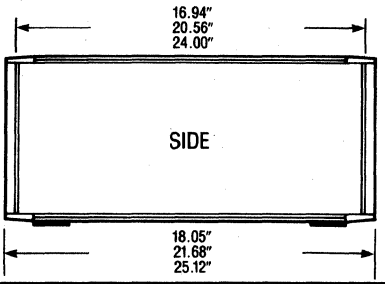


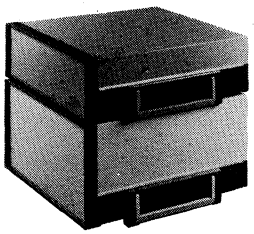


EMI/RFI shielded versions also available.

Optima 19" Instrument Cases

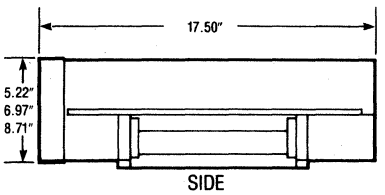
- Available in 45 sizes:
  Panel Heights: 15 available from 3½" to 28"
  Widths: 19" (24" by special order)
  Depths: 16, 20, 24"
- Structural strength achieved with rigid, welded aluminum bezels joined by rounded, extruded aluminum corner members.
- Exceptionally clean appearance.
- Baked acrylic finish.
- 18 ga. steel side, top, and bottom panels.
- Panel mounting screws and nuts.
- Stacks neatly, to maximum weight of 400 pounds.

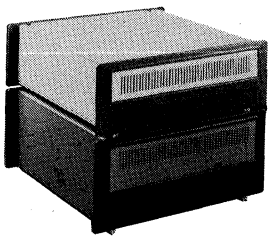




Optima 17" Instrument Cases

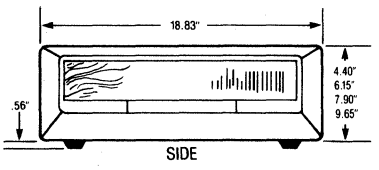
- Available in 3 sizes:
  Panel Heights: 4.74, 6.49, 8.24" Width: 17" Depth: 16"
- Combination chassis case in one integrated unit.
- Chassis consists of sides, front panel, sub-panel, rear panel and a lateral mounting or component shelf.
- Chassis construction offers full accessibility for assembly and checkout.
- Front panel, rear panel, and case parts are finished with baked acrylic paint.
- Sides include a matrix of holes for mounting component parts and sub-assemblies.

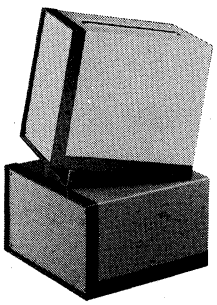




OptimaPak

- Available in 8 sizes:
  Panel Heights: 3.50", 5.25", 7.00", 8.75"
  Widths: 17, 19" Depth: 16"
- Molded structural foam side members, with strength-to weight ratio 2-5 times greater than steel. Dent resistant.
- Chassis can be removed for rack-mounting.
- Easily removed top and bottom panels.
- Cooling slots on side and bottom panels.
- Retractable handle neatly designed in.
- No visible front panel hardware.
- Acoustic dampening 5-10 times better than steel.
- Stacks neatly.

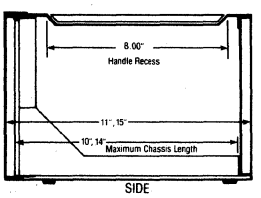




Small Portable Cases

Mobile, versatile, and rugged. Cases consist of two major elements: an easily removed one-piece cover, and bezel-and-bottom pan assembly.

- Available in 18 sizes:
  Panel Heights: 2.61", 4.36", 6.11", 7.86", 9.61"
  Widths: 5, 8, 11" Depth: 10, 14"
- Panel and chassis are loaded from the front.
- Tilt stand to raise the front of case 1½".
- Non-stain celcon plastic feet.
- Flush-mounted, self-retracting handle with trim strip.



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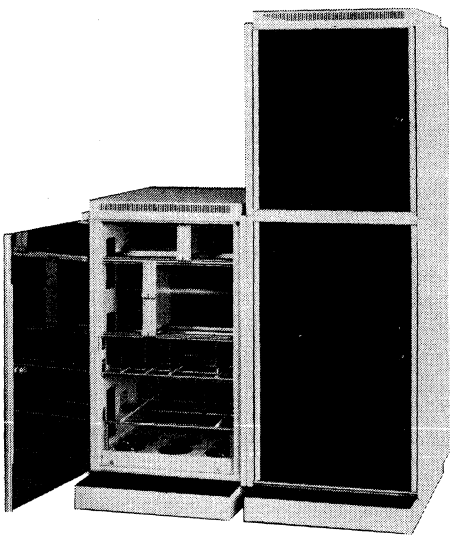
OPTIMA MPS (MODULAR PACKAGING SYSTEM)

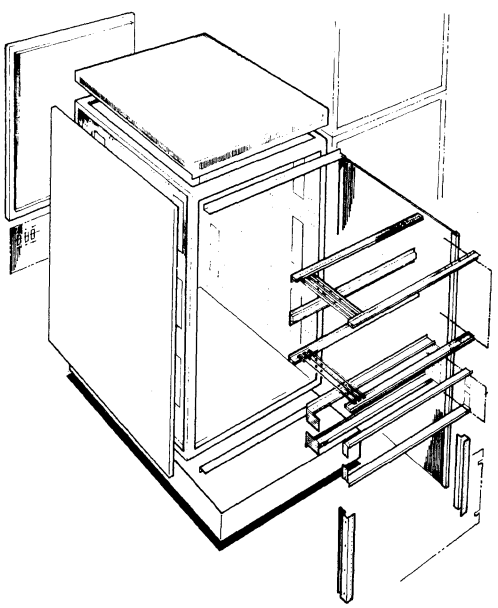
Optima MPS offers more flexibility, and at a lower cost, than conventional packaging systems. The system completely eliminates card cages and subracks. The result is 15% more usable space, with overall packaging costs significantly reduced.

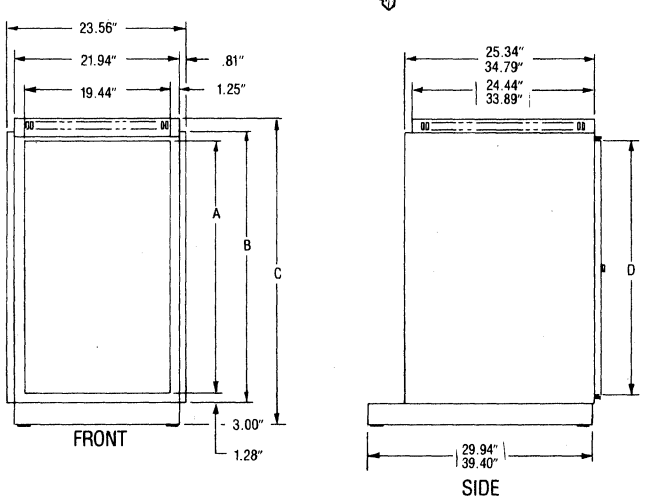
Standard features include:

- Available in 6 sizes:
  Heights: 22.75" (13U), 33.25" (19U), 43.75" (25U)
  Widths: 19" for EIA mounting rails
  Depths: 20,30"
- Flexibility, that accommodates inch cards, single, double, or triple Euro cards, and standard EIA 19" equipment.
- Ability to integrate different-sized cards and equipment without redesign.
- Modules can be stacked vertically and/or horizontally, while maintaining a uniform appearance.
- Available with EMI/RFI shielding (special order).
- Buy what you need now, add modules later.
- For more details and information re: standard colors, a broad selection of accessories and our INSTANT OPTIMA 3-day ship program call or send for FREE catalog.

OPTIMA Enclosures







Universal Application

Mounting provisions have been designed to accommodate:

Eurocards

Heights: from 100mm. Depth: from 160mm through 400mm (60mm increments). For VME bus, Multibus II, other bus configurations, and associated DIN products per IEC-297-3. Card guides are available.

Inch Cards

Heights: .250" increments, minimum height of 3.75". Depth: card rear support is infinitely adjustable for any card depth.

19" Equipment

By adding sections of standard EIA rails, Optima MPS also accommodates 19" panel equipment. Cards and 19" panel equipment can be mounted at any level and mixed to suit. Conversion from or integration with existing packaging systems is easily accomplished.

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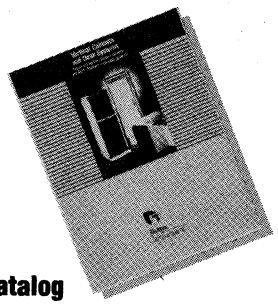
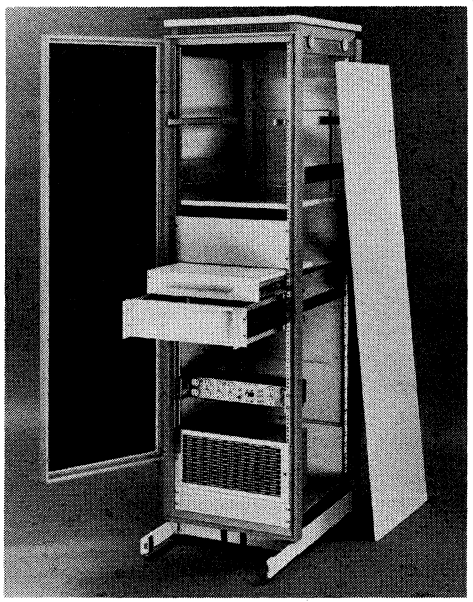
Optima accessories make your systems run like systems.



Free Catalog

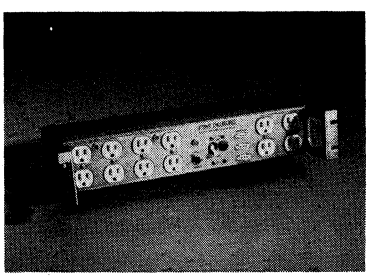
For more information and a complete catalog, call Optima customer service at (404) 496-4000 or write to the address below.



Complete Optima Product Line:

- Vertical Cabinets
- EMI/RFI Shielded Cabinets and Cases
- Optima MPS (Modular Packaging Systems)
- Instrument Cases for 19″ and 17″ Systems
- Electronic Desk Systems
- Complete accessories line

Optima Power and Distribution System:



Model #PDS-115-60

- 12 AC receptacles: 8 switched and 4 unswitched with remote control option
- Magnetic circuit breaker
- EMI/RFI line filter and transient suppression
- Surge voltage protection
- Indicators: power to controller, power to switched 1 outlets, power to switched 2 outlets
- Housing: 3½″ high, 19″ wide, 8⅝″ Depth
- Rack-mount hardware and remote I/O connectors provided with each model
- 16 ga. steel construction: zinc plated for electrical continuity
- Recognized under Component Program of UL

Power Outlet Strips

- 15 amp, 125 volts
- UL Listed
- Circuit breaker
- Switch and power light
- Power supply cord: 14/3 SJT with molded plug, 15′ long
- Case color: gray
- Outlets: U ground

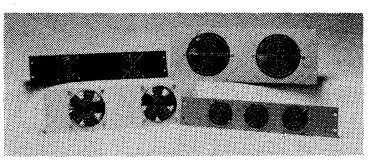
Model No.	Case Lengths	# Outlets
PO-0418	18″	4
PO-0712	12.25″	7
PO-0848	48″	8

Optima Packaged Centrifugal Blowers

- 19″ panel width, 17″ blower width
- Brushed alum. removable grille
- Permanent washable filter
- 3-conductor AC cord

Model No.	CFM at 0″	Panel Height
CB-300A	290	5.25″
CB-360A	350	7.0″
CB-500A	500	8.75″

Fan Packs



Fan packs (clockwise from top right): FP7-466, FP3-96, FP5-212, FP3-64.

- Fans: 115 volts, 50/60 Hz.
- Prepackaged for 19″ mounting
- .125″ alum. panels with finger guards
- UL listed

Model No.	Nominal Panel Height	Total CFM
FP3-64	3.5″	64
FP3-96	3.5″	96
FP5-212	5.25″	212
FP7-466	7.0″	466

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

Electronic Enclosures

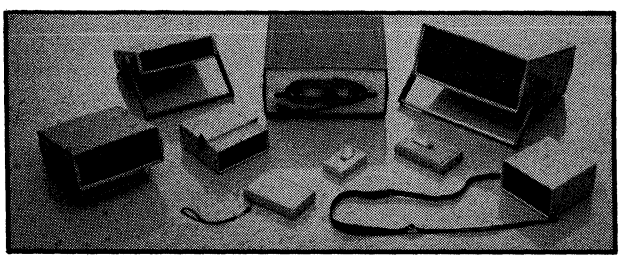


Stock Enclosures • Modifications • Design Engineering Assistance • Custom Panels • Options and Accessories

Designed to work for you.

- Easy to design into and easy to assemble
- Molded-through color means no chipping or scratching—and no need for refurbishing and painting during or after assembly
- Constructed of impact-resistant ABS—(flame-retardant grade to meet UL94V-0 standards, optional)
- Shielding against EMI/RFI available
- Standard colors: tan, gray, black, PC bone
- No tooling costs or set-up charges
- Molded-in mounting bosses, card guides, and panel grooves reduce assembly time and production costs
- Low-cost options and accessories available to meet end-user needs
- Available in kits and production quantities





Accessories

- Universal handle
- Strap handle
- Shoulder strap
- Wrist strap
- Mounting bracket
- Belt clip
- Cord wrap
- 1.5 Volt battery holder
- 9 Volt battery holder
- Tilt stand
- Vinyl carrying cases

PACTEC®

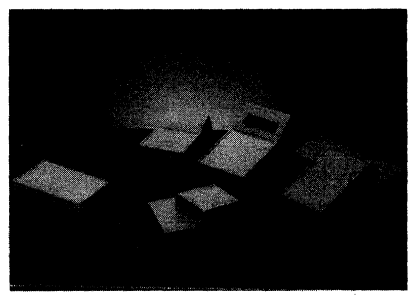
A LaFrance Company

Enterprise and Executive Avenues Philadelphia, PA 19153 Telephone (215) 365-8400 1-800-523-4813 Telex 50-6082

PacTec Electronic Enclosures

SERIES H

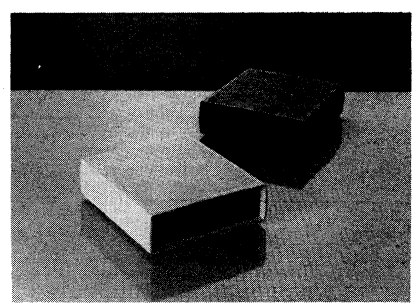
	WIDTH		LENGTH		HEIGHT		KIT MODELS	PRODUCTION MODELS
	in.	mm	in	mm	in	mm		
outside	2.40	60.96	3.80	96.52	.90	22.86	K-HM	HM
inside	2.19	55.63	3.52	89.41	.71	18.03		
outside	2.40	60.96	3.80	96.52	1.00	25.40	K-HM-9VB	HM-9VB
inside	2.19	55.63	2.20	55.88	.85	21.59		
outside	2.75	69.85	4.60	116.84	.90	22.86	K-HML	HML
inside	2.54	64.52	4.36	110.74	.75	19.05		
outside	2.75	69.85	4.60	116.84	1.00	25.40	K-HML-9VB	HML-9VB
inside	2.54	64.52	2.96	75.18	.85	21.59		
outside	3.60	91.44	5.75	146.05	1.12	28.45	K-HP	HP
inside	3.37	85.60	5.52	140.21	.92	23.37		
outside	3.60	91.44	5.75	146.05	1.29	32.77	K-HP-9VB	HP-9VB
inside	3.37	85.60	3.97	100.58	1.08	27.43		
outside	4.00	101.60	7.50	190.50	1.12	28.45	K-HPL	HPL
inside	3.78	96.01	7.28	184.91	.92	23.37		
outside	4.00	101.60	7.50	190.50	1.29	32.77	K-HPL-9VB	HPL-9VB
inside	3.78	96.01	5.75	146.05	1.08	27.43		
outside	3.60	91.44	5.75	146.05	1.92	48.77	K-HPS	HPS
inside	3.37	85.60	5.52	140.21	.92	23.37		
outside	3.60	91.44	5.75	146.05	2.09	53.09	K-HPS-9VB	HPS-9VB
inside	3.37	85.60	3.97	100.58	1.08	27.18		
outside	4.00	101.60	7.50	190.50	2.09	53.09	K-HPLS	HPLS
inside	3.78	96.01	7.28	184.91	.92	23.37		
outside	4.00	101.60	7.50	190.50	2.26	57.40	K-HLPS-9VB	HLPS-9VB
inside	3.78	96.01	5.75	146.05	1.08	27.43		



H SERIES

SERIES CF

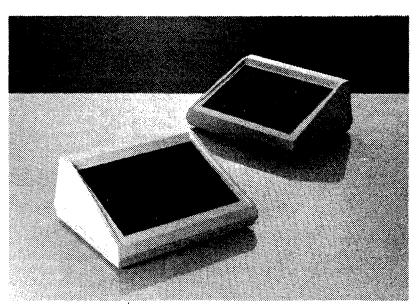
	WIDTH		LENGTH		HEIGHT		KIT MODELS		PRODUCTION MODELS	
	in.	mm	in	mm	in	mm	BASIC KIT	KIT W/ TILT STAND	BASIC CASE	CASE W/ TILT STAND
outside	8.36	212.3	9.12	231.7	1.65	41.9	K-CF-125	K-CFB-125	CF-125	CFB-125
inside	7.80	198.1	8.00	203.2	1.07	27.18				
outside	8.36	212.3	9.12	231.7	2.15	54.6	K-CF-175	K-CFB-175	CF-175	CFB-175
inside	7.80	198.1	8.00	203.2	1.57	39.88				
outside	8.36	212.3	9.12	231.7	2.65	67.3	K-CF-225	K-CFB-225	CF-225	CFB-225
inside	7.80	198.1	8.00	203.2	2.07	52.58				
outside	8.36	212.3	9.12	231.75	3.15	80.0	K-CF-275	K-CFB-275	CF-275	CFB-275
inside	7.80	198.1	8.00	203.2	2.57	65.28				



CF SERIES

SERIES KEU

	WIDTH		LENGTH		HEIGHT		KIT MODELS	PRODUCTION MODELS
	in.	mm	in.	mm	in.	mm		
outside	7.00	177.8	5.00	127.0	3.10	78.7	K-KE-U7	KE-U7
outside	10.00	254.0	8.03	204.0	4.20	106.7	K-KE-U10	KE-U10



KEU SERIES

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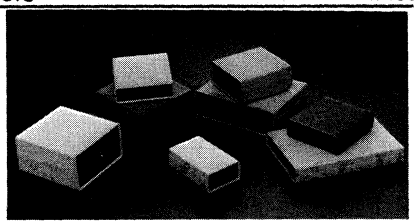
SERIES CM

	WIDTH in	WIDTH mm	LENGTH in	LENGTH mm	HEIGHT in	HEIGHT mm	KIT MODELS	PRODUCTION MODELS
outside	3.33	84.6			1.75	44.5	K-CM3-150	CM3-150
inside	2.34	59.4			1.19	30.2		
outside	5.08	129.0	5.25	133.4	1.50	38.1	K-CM5-125	CM5-125
inside	4.10	104.1	4.81	122.2	.95	24.1		
outside	5.08	129.0			2.25	57.2	K-CM5-200	CM5-200
inside	4.10	104.1			1.70	43.18		
outside	6.06	153.9			2.50	63.5	K-CM6-225	CM6-225
inside	4.85	123.0	6.25	158.8	1.95	49.3		
outside	6.06	153.9	5.75	146.1	3.25	82.6	K-CM6-300	CM6-300
inside	4.85	123.0			2.70	68.6		
outside	6.33	160.78	9.50	241.30	1.38	35.05	K-CM69-120	CM69-120
inside	5.12	130.1	8.94	227.08	.93	23.62		
outside	6.33	160.78	9.50	241.30	1.99	50.55	K-CM69-180	CM69-180
inside	5.12	130.1	8.94	227.08	1.54	39.12		
outside	6.33	160.78	9.50	241.30	2.59	65.79	K-CM69-240	CM69-240
inside	5.12	130.1	8.94	227.08	2.14	54.36		
outside	8.08	205.2	6.25	158.8	2.50	63.5	K-CM86-225	CM86-225
inside	6.87	174.5	5.75	146.0	1.95	49.5		



CM SERIES



SERIES C

	WIDTH in	WIDTH mm	LENGTH in	LENGTH mm	HEIGHT in	HEIGHT mm	KIT MODELS: BASIC KIT	KIT MODELS: KIT W/ HANDLE	KIT MODELS: KIT W/ TILT STAND	PRODUCTION MODELS: BASIC CASE	PRODUCTION MODELS: CASE W/ HANDLE	PRODUCTION MODELS: CASE W/ TILT STAND
outside	8.50	215.9	9.25	235.0	2.44	61.9				C-200	CH-200	CB-200
inside	7.80	198.1	8.00	203.2	1.68	42.7						
outside	8.50	215.9	9.25	235.0	2.69	68.3				C-225	CH-225	CB-225
inside	7.80	198.1	8.00	203.2	1.93	49.0						
outside	8.50	215.9	9.25	235.0	2.94	74.6				C-250	CH-250	CB-250
inside	7.80	198.1	8.00	203.2	2.18	55.4	K-C-23	K-CH-23	K-CB-23			
outside	8.50	215.9	9.25	235.0	3.19	81.0				C-275	CH-275	CB-275
inside	7.80	198.1	8.00	203.2	2.43	61.7						
outside	8.50	215.9	9.25	235.0	3.44	87.3				C-300	CH-300	CB-300
inside	7.80	198.1	8.00	203.2	2.68	68.1						
outside	8.50	215.9	9.25	235.0	3.69	93.7				C-325	CH-325	CB-325
inside	7.80	198.1	8.00	203.2	2.93	74.4						
outside	8.50	215.9	9.25	235.0	4.44	112.7	K-CS-400	K-CHS-400	K-CBS-400	CS-400	CHS-400	CBS-400
inside	7.80	198.1	8.00	203.2	3.68	93.5						
outside	8.50	215.9	9.25	235.0	5.44	138.2	K-CS-500	K-CHS-500	K-CBS-500	CS-500	CHS-500	CBS-500
inside	7.80	198.1	8.00	203.2	4.68	118.9						
outside	8.50	215.9	9.25	235.0	6.44	163.6	K-CS-600	K-CHS-600	K-CBS-600	CS-600	CHS-600	CBS-600
inside	7.80	198.1	8.00	203.2	5.68	144.3						

SERIES CLLP

	WIDTH in	WIDTH mm	LENGTH in	LENGTH mm	HEIGHT in	HEIGHT mm	KIT MODELS: BASIC KIT	KIT MODELS: KIT W/ HANDLE	KIT MODELS: KIT W/ TILT STAND	PRODUCTION MODELS: BASIC CASE	PRODUCTION MODELS: CASE W/ HANDLE	PRODUCTION MODELS: CASE W/ TILT STAND
outside	12.50	317.5	11.63	295.4	3.51	89.2				CLLP-300	CLLPH-300	CLLPB-300
inside	11.77	299.0	10.40	264.2	2.50	63.5						
outside	12.50	317.5	11.63	295.4	3.76	95.5				CLLP-325	CLLPH-325	CLLPB-325
inside	11.77	299.0	10.40	264.2	2.75	69.9	K-CLLP-34	K-CLLPH-34	K-CLLPB-34			
outside	12.50	317.5	11.63	295.4	4.01	101.9				CLLP-350	CLLPH-350	CLPB-350
inside	11.77	299.0	10.40	264.2	3.00	76.2						
outside	12.50	317.5	11.63	295.4	4.26	108.2				CLLP-375	CLLPH-375	CLLPB-375
inside	11.77	299.0	10.40	264.2	3.25	82.6						

SERIES CL

	WIDTH in	WIDTH mm	LENGTH in	LENGTH mm	HEIGHT in	HEIGHT mm	KIT MODELS: BASIC KIT	KIT MODELS: KIT W/ HANDLE	KIT MODELS: KIT W/ TILT STAND	PRODUCTION MODELS: BASIC CASE	PRODUCTION MODELS: CASE W/ HANDLE	PRODUCTION MODELS: CASE W/ TILT STAND
outside	12.50	317.5	11.63	295.4	4.51	114.6				CL-400	CLH-400	CLB-400
inside	11.77	299.0	10.40	264.2	3.50	88.9						
outside	12.50	317.5	11.63	295.4	4.76	120.9				CL-425	CLH-425	CLB-425
inside	11.77	299.0	10.40	264.2	3.75	95.3						
outside	12.50	317.5	11.63	295.4	5.01	127.3				CL-450	CLH-450	CLB-450
inside	11.77	299.0	10.40	264.2	4.00	101.6	K-CL-45	K-CLH-45	K-CLB-45			
outside	12.50	317.5	11.63	295.4	5.26	133.6				CL-475	CLH-475	CLB-475
inside	11.77	299.0	10.40	264.2	4.25	108.0						
outside	12.50	317.5	11.63	295.4	5.51	140.0				CL-500	CLH-500	CLB-500
inside	11.77	299.0	10.40	264.2	4.50	114.3						
outside	12.50	317.5	11.63	295.4	5.76	146.3				CL-525	CLH-525	CLB-525
inside	11.77	299.0	10.40	264.2	4.75	120.7						
outside	12.50	317.5	11.63	295.4	6.76	171.7	K-CLS-625	K-CLHS-625	K-CLBS-625	CLS-625	CLHS-625	CLBS-625
inside	11.77	299.0	10.40	264.2	5.75	146.1						
outside	12.50	317.5	11.63	295.4	7.76	197.1	K-CLS-725	K-CLHS-725	K-CLBS-725	CLS-725	CLHS-725	CLBS-725
inside	11.77	299.0	10.40	264.2	6.75	171.5						
outside	12.50	317.5	11.63	295.4	8.76	222.5	K-CLS-825	K-CLHS-825	K-CLBS-825	CLS-825	CLHS-825	CLBS-825
inside	11.77	299.0	10.40	264.2	7.75	196.9						

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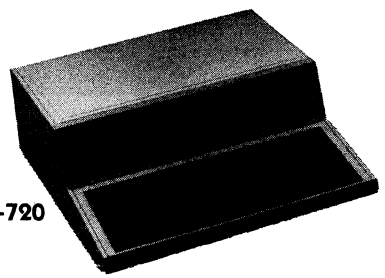
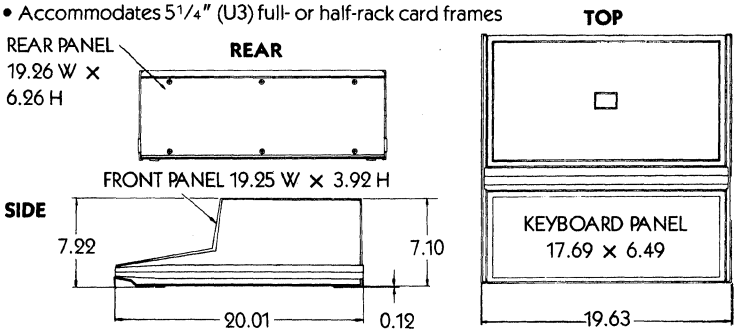
Desk Top Console

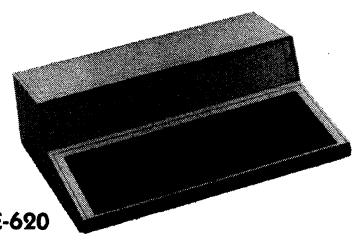


DE-720

- Accommodates 5¼" (U3) full- or half-rack card frames

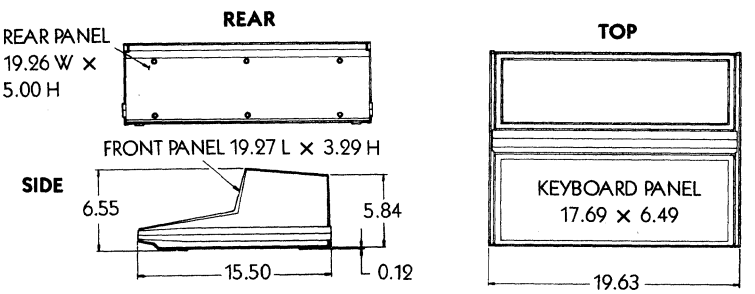


Desk Top Console

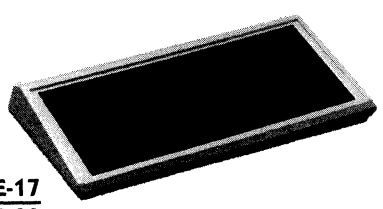


DE-620

- Available in custom widths
- All panels can be customized or modified

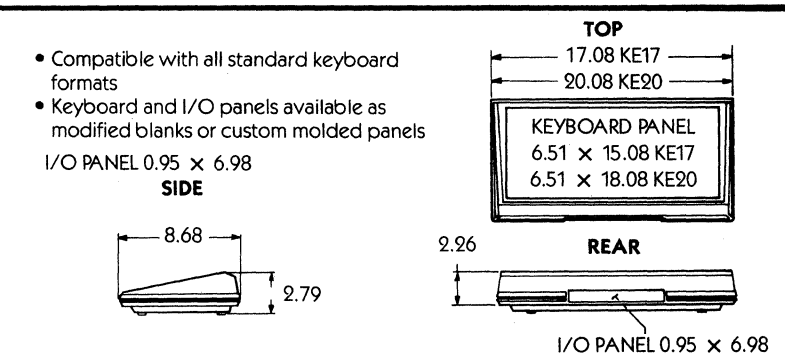


Keyboard Enclosure

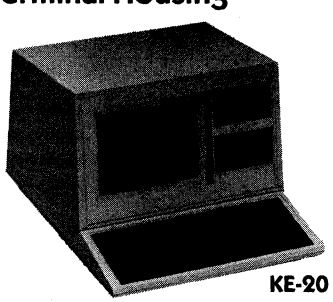


KE-17
KE-20

- Compatible with all standard keyboard formats
- Keyboard and I/O panels available as modified blanks or custom molded panels

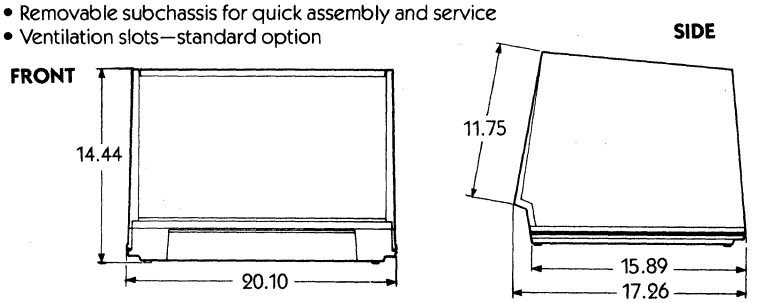


CRT Terminal Housing



CRT-20
KE-20

- Accommodates most common monitor and disc drive combinations
- Removable subchassis for quick assembly and service
- Ventilation slots—standard option



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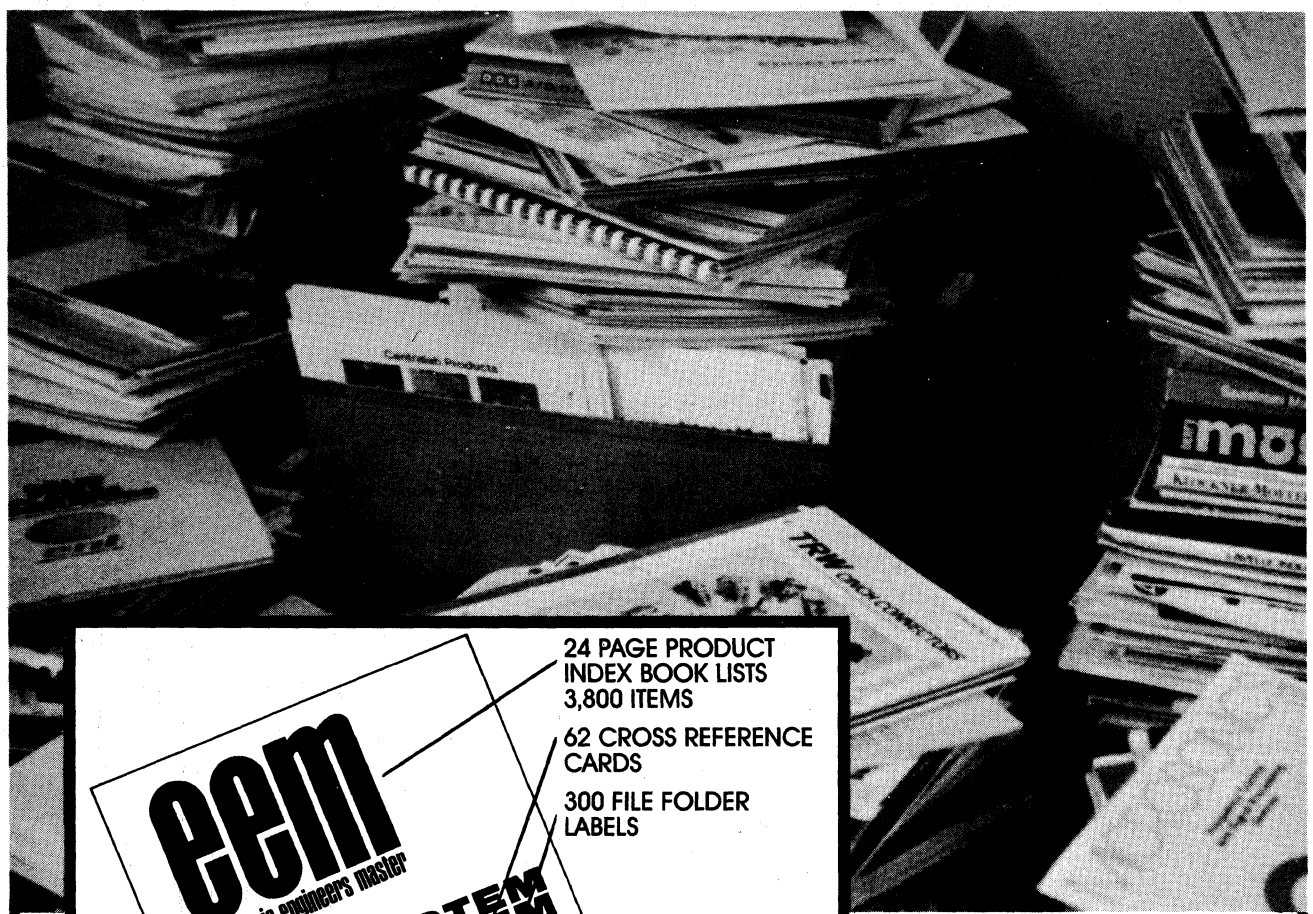

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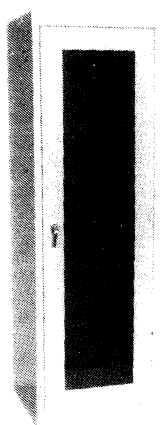
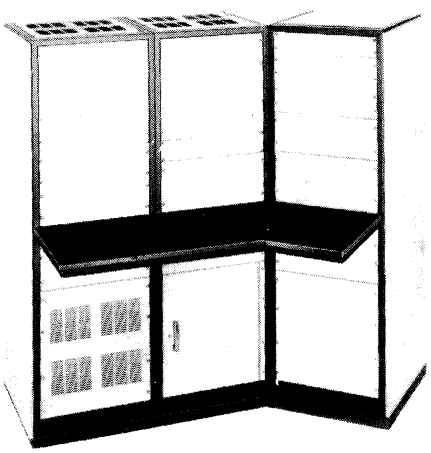
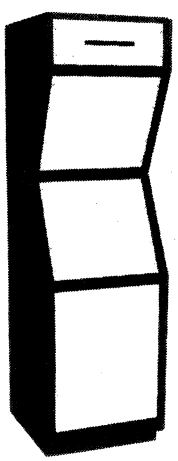


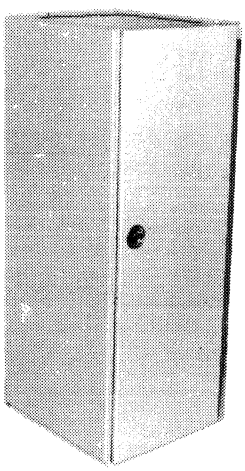
CONTEMPO VERTICAL UNIT WELDED RACKS



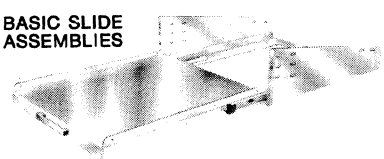
REVERSE SLOPE CONSOLE



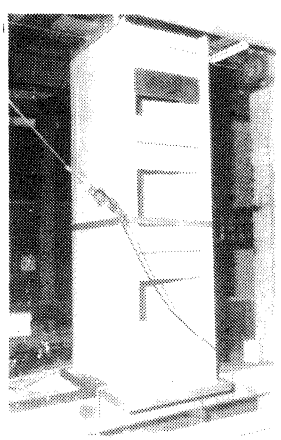
ALL ALUMINUM CABINETS



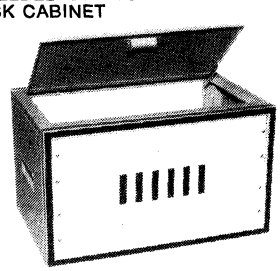
BASIC SLIDE ASSEMBLIES



SEISMIC CABINET



SHIELDED LIFT TOP DESK CABINET





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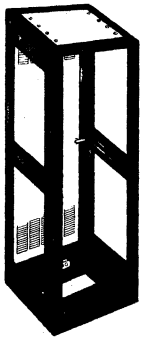
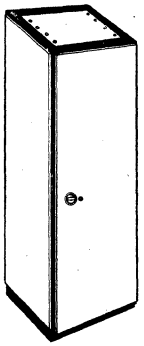


PC Series



FC Series

CONTEMPO VERTICAL UNIT WELDED RACKS

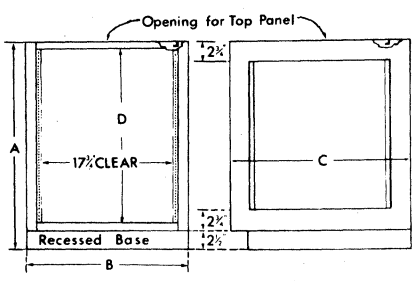
Available in PC Series with rear door only, or FC Series with front and rear doors. Pan shaped side panels and recessed sub-base available for all models. Models listed are for 19″ wide panels; models for 24″ and 30″ wide panels also available in same heights and depths.

Part Number		Rack Dimensions (Ins.)										
		Overall Size			Panel Space		Clear Inside Depth#	Clear Inside Width§ (Front)	Removable Top Panel		Pan Shaped Side Panels	Recessed Sub-Base
PC Series	FC Series	Height	Width†	Depth‡	Height	Width			Width	Depth		
FOR 19″ WIDE PANELS AND 26″ DEEP RACKS												
PC-4212	FC-4212	46 1/16	21 1/8	26 1/8	42	19	25	17 3/4	19	21	CS-422	CB-1926
PC-5212	FC-5212	56 5/16	21 1/8	26 1/8	52 1/2	19	25	17 3/4	19	21	CS-522	CB-1926
PC-6112	FC-6112	65 5/16	21 1/8	26 1/8	61 1/4	19	25	17 3/4	19	21	CS-612	CB-1926
PC-7012	FC-7012	74 1/16	21 1/8	26 1/8	70	19	25	17 3/4	19	21	CS-702	CB-1926
PC-7712	FC-7712	81 1/16	21 1/8	26 1/8	77	19	25	17 3/4	19	21	CS-772	CB-1926
PC-8412	FC-8412	88 1/16	21 1/8	26 1/8	84	19	25	17 3/4	19	21	CS-842	CB-1926
FOR 19″ WIDE PANELS AND 31″ DEEP RACKS												
PC-4213	FC-4213	46 1/16	21 1/8	31 1/8	42	19	30	17 3/4	19	24 1/2	CS-423	CB-1931
PC-5213	FC-5213	56 5/16	21 1/8	31 1/8	52 1/2	19	30	17 3/4	19	24 1/2	CS-523	CB-1931
PC-6113	FC-6113	65 5/16	21 1/8	31 1/8	61 1/4	19	30	17 3/4	19	24 1/2	CS-613	CB-1931
PC-7013	FC-7013	74 1/16	21 1/8	31 1/8	70	19	30	17 3/4	19	24 1/2	CS-713	CB-1931
PC-7713	FC-7713	81 1/16	21 1/8	31 1/8	77	19	30	17 3/4	19	24 1/2	CS-773	CB-1931
PC-8413	FC-8413	88 1/16	21 1/8	31 1/8	84	19	30	17 3/4	19	24 1/2	CS-843	CB-1931

Allow for latch. § For clear inside width at rear, add 1 3/8″.
† Add 3/4″ for each side panel used. ‡ Add 3/4″ for front door. Handles are flush mounted.

CONTEMPO

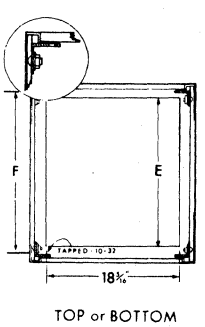
CP PEDESTALS



The basis for a variety of console constructions. Reinforced recessed base included with a solid 13 gauge removable bottom plate. Also included are two pairs of 1½″ x 1″ 12g. panel mounting angles. Optional accessories available.

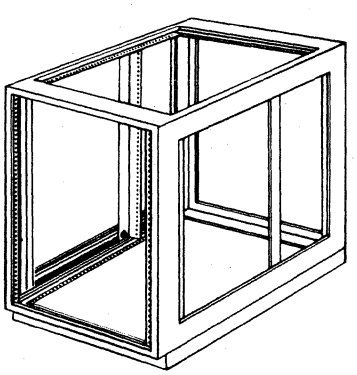
NOTE: To coordinate with CP Pedestals a full line of Desk Top Panel Cabinets, laminated table tops, is available.

PEDESTALS



TOP or BOTTOM

PEDESTALS are the basis for a variety of console constructions.



Catalog Number	Overall Dimensions			Panel Height#		Side Opening		Clear Inside Depth
	Height	Width*	Depth	Front/Back	Top	Height	Width	
	A	B	C	D	E			
CPD-24	29 1/16″	21 1/8″	24 1/4″	24 1/2″	19 1/4″	21″	19″	23 1/4″
CPD-34	29 1/16″	21 1/8″	34 3/4″	24 1/2″	29 3/4″	21″	30″	33 3/4″
CPS-24	39 1/16″	21 1/8″	24 1/4″	35″	19 1/4″	31 1/2″	19″	23 1/4″
CPS-34	39 1/16″	21 1/8″	34 3/4″	35″	29 3/4″	31 1/2″	30″	33 3/4″

* ADD 3/4″ for each side panel used. # These panel widths are 19″.

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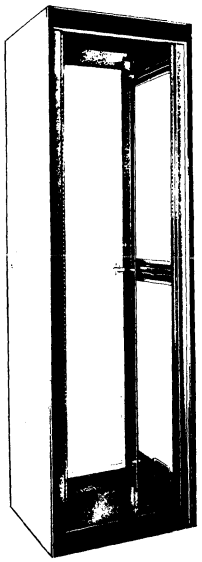
PAR-METAL PRODUCTS INC.

INTEGRA

a line of modern cabinets featuring smart extruded aluminum trim, rugged construction and unlimited adaptability.



- 13 gauge cold rolled steel tops, bottoms and corner posts
- Double hat-section reinforced rails
- Removable top panel
- Flush mounted side panels
- 13 gauge Panel Mounting Angles with 10-32 tapped holes on standard EIA spacing
- Rear door with recessed locking handle
- Dual receptacle in rear

Catalog Number	Panel Space	Metric (mm)	Depth	Metric (mm)
LAT or XAT-4818	42″ x 19″	1066.8 x 482.6	18⅜″	457.6
LAT or XAT-5818	52½″ x 19″	1333.5 x 482.6	18⅜″	457.6
LAT or XAT-6718	61¼″ x 19″	1555.8 x 482.6	18⅜″	457.6
LAT or XAT-7718	70″ x 19″	1778 x 482.6	18⅜″	457.6
LAT or XAT-8418	77″ x 19″	1955.8 x 482.6	18⅜″	457.6
LAT or XAT-4824	42″ x 19″	1066.8 x 482.6	24⅜″	610
LAT or XAT-5824	52½″ x 19″	1333.5 x 482.6	24⅜″	610
LAT or XAT-6724	61¼″ x 19″	1555.8 x 482.6	24⅜″	610
LAT or XAT-7724	70″ x 19″	1778 x 482.6	24⅜″	610
LAT or XAT-8424	77″ x 19″	1955.8 x 482.6	24⅜″	610
LAT or XAT-9024	84″ x 19″	2133.6 x 482.6	24⅜″	610
LAT or XAT-4827	42″ x 24″	1066.8 x 609.6	24⅜″	610
LAT or XAT-5827	52½″ x 24″	1333.5 x 609.6	24⅜″	610
LAT or XAT-6727	61¼″ x 24″	1555.8 x 609.6	24⅜″	610
LAT or XAT-7727	70″ x 24″	1778 x 609.6	24⅜″	610
LAT or XAT-8427	77″ x 24″	1955.8 x 609.6	24⅜″	610
LAT or XAT-9027	84″ x 24″	2133.6 x 609.6	24⅜″	610

Also comes in sizes 19″W x 30″D, 24″W x 30″D, 30″W x 30″D in all heights.

LAT includes Frame; two removable side panels with trim; rear door with flush mounted handle; one pair of panel mounting angles; removable top panel; receptacle.

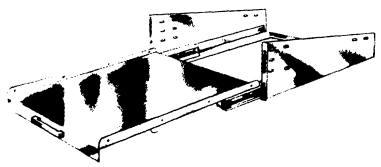
XAT includes Frame with solid side walls; trim; rear door; one pair of panel mounting angles; removable top panel; receptacle.

CABINETS with Front Doors available. When ordering, add prefix F. Example: FLAT or FXAT.

TRIM: Vinyl inlays in Dark Walnut and Black.

STANDARD UNITS MODIFIED TO SPECIFIC CUSTOMER REQUIREMENTS.

BASIC SLIDE ASSEMBLIES



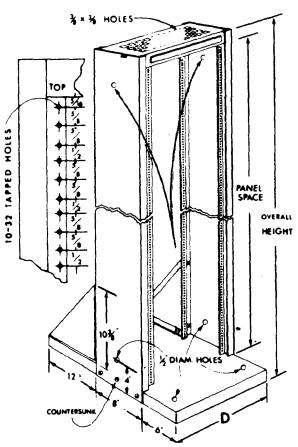
Basic Slide Assemblies consist of a readily removable shelf, a pair of slides, and a mounting cradle. Each part is pre-assembled and ready for installation in racks or consoles. All movable parts are mounted on ball bearing wheel rollers. Mounting or removal of slide section is extremely simple and does not require the use of tools. A chrome plated Pull Handle and ALL necessary hardware are furnished.

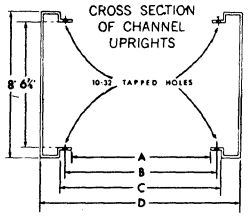
Installation may be made to rack (or console) panel mounting angles or to standard vertical side supports through holes pre-drilled in the side brackets. Four sizes are listed to fit equipment using either 19″ or 24″ wide panels. ALL parts are zinc plated.

Catalog No.	Usable Width	Space Depth	Panel Width	Bracket Height	Shelf Height	Load Capacity
BS-1980	17⅛″	14″	19″	7″	1¾″	50 lbs.
BS-2419	17⅛″	20″	19″	7″	1¾″	60 lbs.
BS-2424	22⅛″	20″	24″	7″	1¾″	55 lbs.

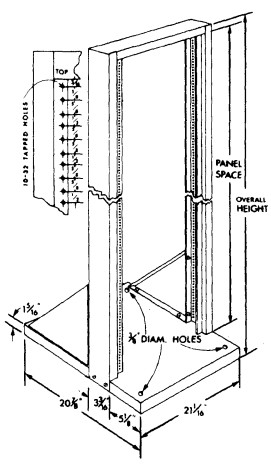
OPEN CHANNEL RELAY RACKS

RR Deluxe

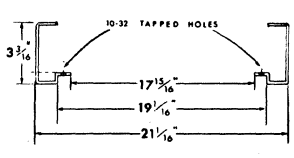




RX Standard



CROSS SECTION OF CHANNEL UPRIGHTS



DELUXE and STANDARD RELAY RACKS are made of No. 13 gauge steel throughout. Formed panel recesses add strength. Steel edges not exposed. Welded top cross brace. All necessary hardware included. Par-Metal Slide Assemblies, Chassis and Panels fit these racks. Finished in Gray Hammertone.

RR DELUXE

(for 19″ and 24″ wide panels)

6⅞″ front to back space between panel mounting flanges, permits mounting of Dish Chassis in rear and hinged Panel in front to form complete rack enclosure. Ventilation grill in Top Cross Brace. Side holes provided for bolting units together.

Catalog Number	Overall Height	Dim. D Overall Width	Overall Depth	Panel Space H	Panel Space W	Dim. A	Dim. B	Dim C	Sh. Wt. lbs.
RR-194	64⅝″	21 1/16″	26″	61¼″	19″	17 15/16″	18 5/16″	19 1/16″	88
RR-196	73⅜″	21 1/16″	26″	70″	19″	17 15/16″	18 5/16″	19 1/16″	95
RR-197	80⅜″	21 1/16″	26″	77″	19″	17 15/16″	18 5/16″	19 1/16″	102
RR-1922	64⅝″	26 1/16″	26″	61¼″	24″	22 15/16″	23 5/16″	24 1/16″	100
RR-1923	73⅜″	26 1/16″	26″	70″	24″	22 15/16″	23 5/16″	24 1/16″	105
RR-1924	80⅜″	26 1/16″	26″	77″	24″	22 15/16″	23 5/16″	24 1/16″	112

RX STANDARD

(for 19″ panels)

Panel mounting holes in front only (see diagram).

Cat. No.	Overall Dimensions Height	Width	Depth	Panel Space H	Panel Space W	Shipping Wt. Lbs.
RX-195	74 1/16″	21″	20⅞″	71¾″	19″	55
RX-193	39 1/16″	21″	20⅞″	36¾″	19″	45

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MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
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CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
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Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
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Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
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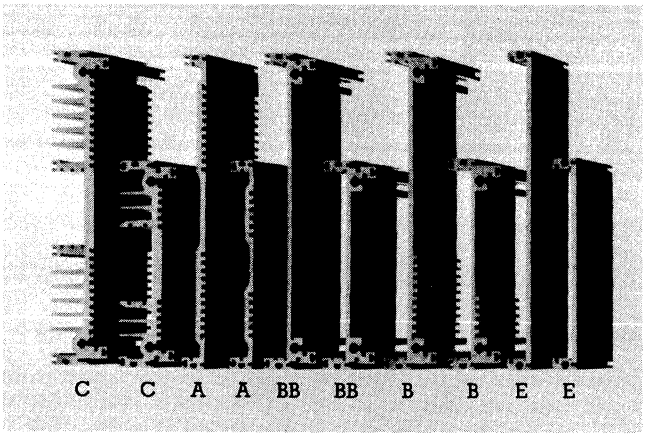
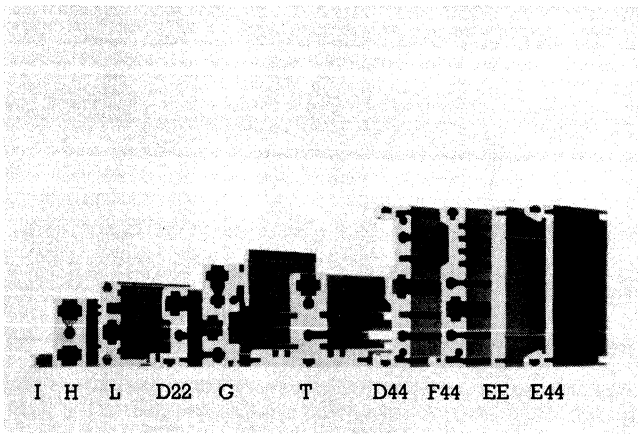
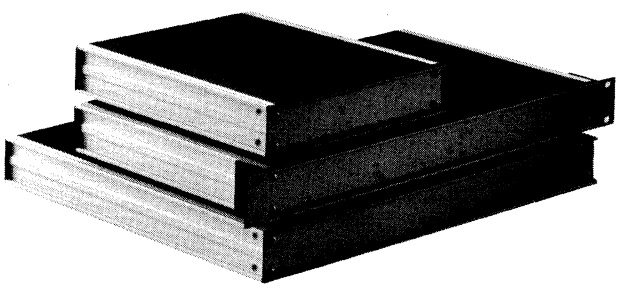
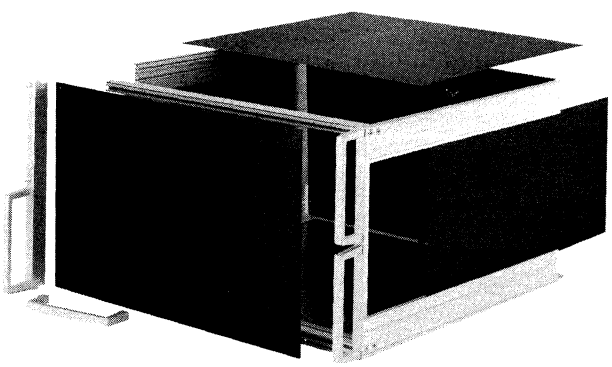




FEATURING:



THE MICROBOX
The 1–3/4" (1U) Tall Case Series



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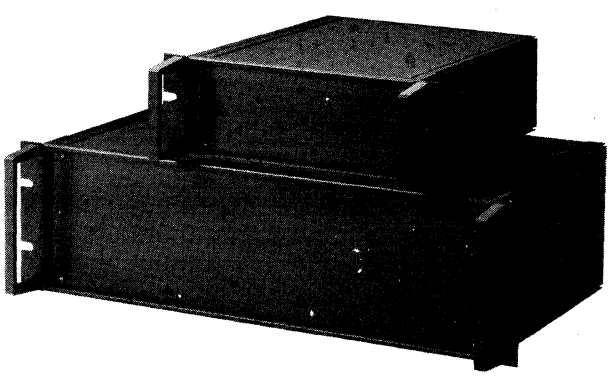

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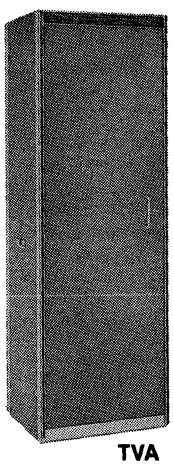
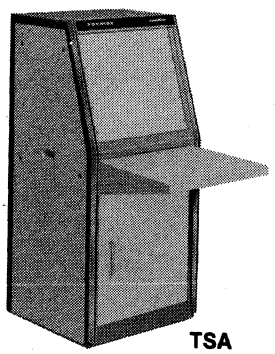


TVA



TSA

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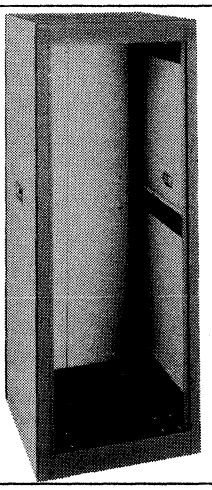
Welded modular units with extruded aluminum trim and decorative vinyl inlays. Available in 64 sizes.



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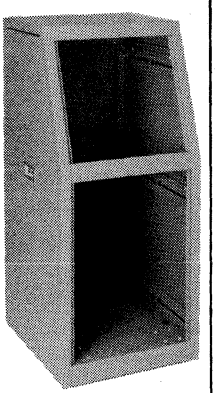
19" and 24" (EIA) Standard Rack Widths

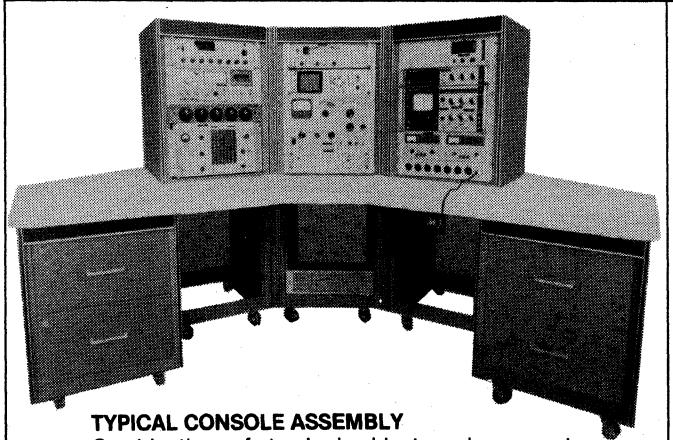
7 Panel Heights from 21" to 77"

4 Depths from 18" to 30"

Available in 64 sizes



SSA



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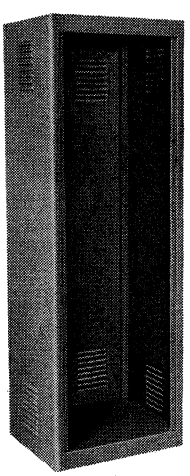

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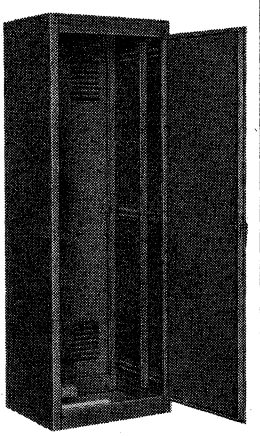
Solid side skin cabinets for economical applications. RMX & FDX are welded units, R series are knock-down units.



FDX SERIES

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Premier Metal Products Co. has specialized in sheet metal fabrication of electronic enclosures and accessories for over 35 years.

Premier Enclosures offer maximum flexibility, adaptability and esthetic values. The extensive range of standard units in various widths, depths, heights and shapes available, offer the variety of combinations and configurations necessary for modern packaging systems.

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Wedge Frames for Consoles

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Vertical & Sloped Front

Trimline Instrument Cases & Accessories
EIA Standard Rack Panels
Chassis Slides, Blowers, Fans & Accessories

Solid Side Cabinet Racks, Welded & KD
Open Channel Type Relay Racks
Sloped Front Instrument Cabinets
Desk Cabinets & Racks
Modular Vertical & Sloped Front Cabinets & Accessories

Turret Frames, Printed Circuit Card Frames & Guides, Shelves, Chassis Supports, Panel Handles, Outlet Strips, Casters, Cable Retractors, Misc. Hardware

Small cases, portable & utility, blank chassis and plates

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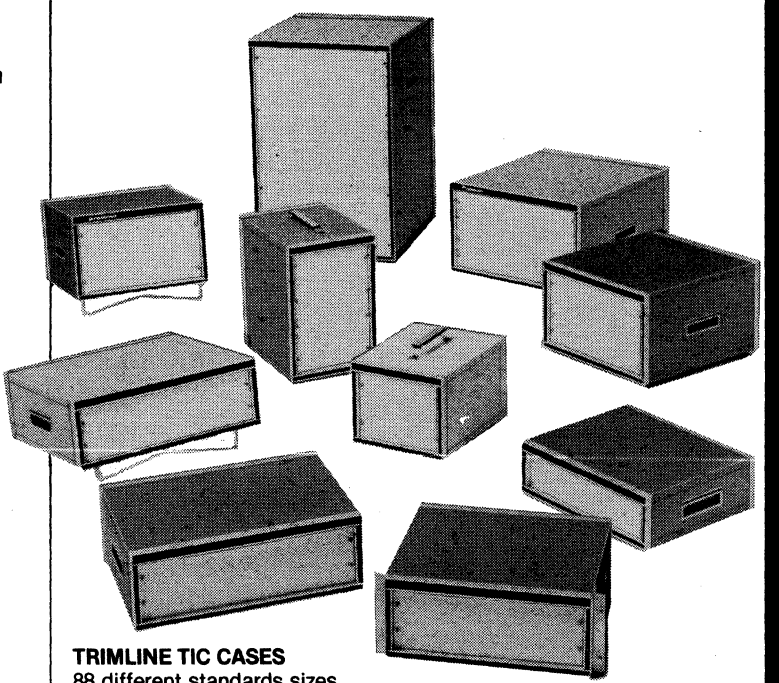
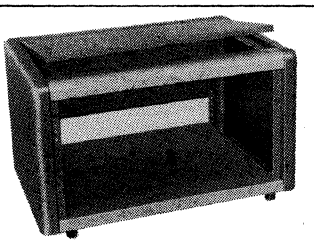
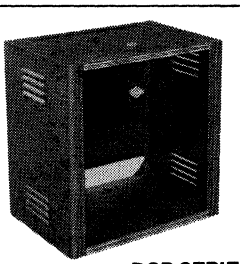


TRIMLINE TIC CASES
88 different standards sizes
11 panel heights, 3 depths, 3 widths.



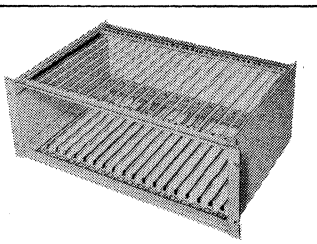
POR SERIES



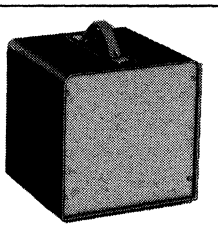
DCR SERIES



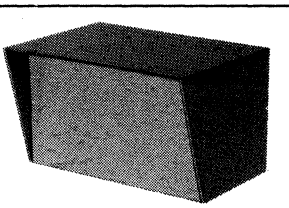
CSC SERIES



PCH SERIES



CC SERIES



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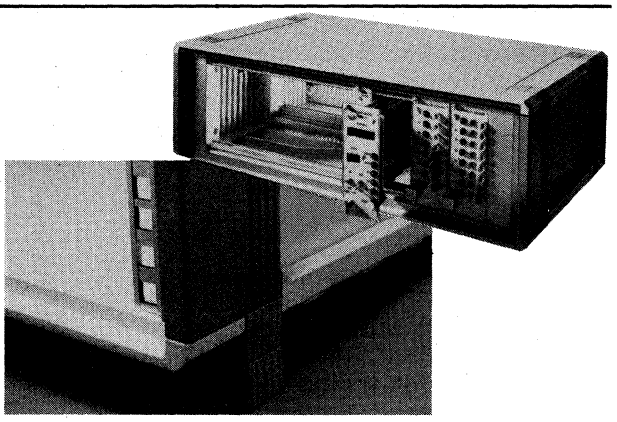
Switch to perfection RITTAL

RITTAL Vario-Case

The Vario-Case (VC) desk-top enclosure features sidewalls of extruded aluminum sections, and covers and rear wall are made of ABS plastic (self-extinguishing in accordance with UL 94 V1). The VC allows for application of 19″ subracks as well as the direct insertion of modules and PCBs. The side walls have 12.5mm/0.49″ pitch grooves that enable the 19″ card frames and assemblies to be mounted at variable positions in both height and depth. This is accomplished through the use of tapped inserts that slide into the sidewall grooves.
The VC feet can be unfolded once to ensure safe stacking of multiple cases without the risk of slipping. The second fold-out facility of these feet allows for two angles of tilt, and folded neatly, conceal the cover fixing screws.
The Vario-Case comes in heights from 3″ to 22.3″, and depths of 300mm/11.8″, 400mm/15.7″, and 500mm/19.7″, and widths of half or full 19″. Top or bottom covers are available with ventilation slots, and horizontal and vertical handles are optional. Please consult our catalog or your area representative for further details.

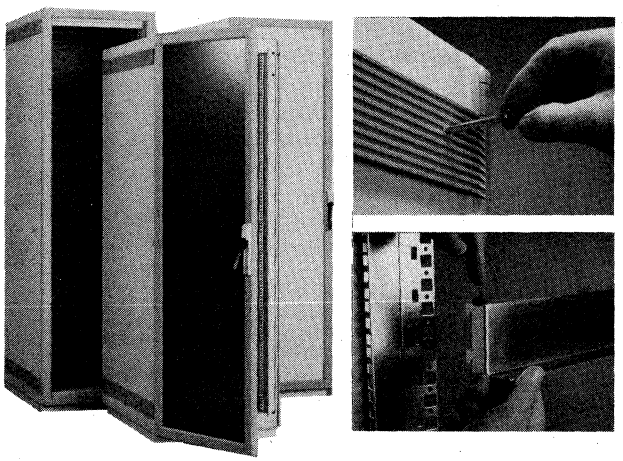


RITTAL Vario-Rack

The RITTAL Vario-Rack System is an enclosure which will not only safely house all your sophisticated electronics, but will also create a good impression in any surrounding in which it goes. It offers efficiency and aesthetics in one very versatile package. The Vario-Rack (VR) is a free-standing 19″ rack that offers several attractive features:

- Easy and fast door attachment due to a snap-in hinge. It can be hinged on either the right or left side.
- Access to the sides is simple due to removable side walls: release by a quick turn of the cam locks.
- Integrated cable base has a two-part entry plate through which cables and wires can easily be fed. There is also a foam rubber cable clamp strip to ensure sealing.
- Optional slide rails require no screws to attach. They simply hang in place and are secured by clips.
- Four levelling feet are included with the rack; twin casters for transport are available. Lifting eyebolts can also be added to the rack if necessary.
- The VR meets all specifications for IEC 297-2.
- Power outlet strips can be fitted in the rear corner sections without occupying any usable space. The corner sections can also be used as cable ducts.
- The 25mm/0.98″ spacing of round and square holes behind 19″ angles sections allows easy installation of system chassis accessories, PS4000, detailed in our full line Handbook.

The Vario-Rack is available with a smoked glass front door or an open front; it is also available in an EMI/RFI shielded version. The heights range from 31 to 87 inches, and three depths, 23.6″, 31.5″, and 35.4″.

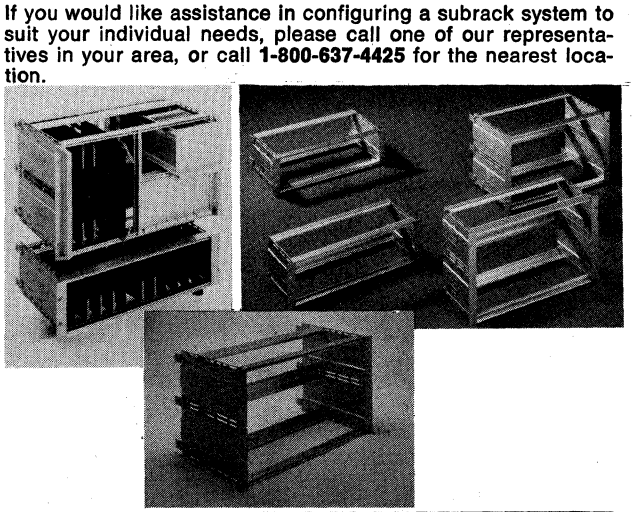


RITTAL Uniset®

RITTAL Uniset® is an easily manageable card frame system which fulfills all DIN 41494 parts 1-5 and IEC 297-1 to 3 requirements. The stability of the system is based on the die-cast aluminum side walls. Adaptability is an essential feature of the concept. Complete kits can be ordered with just one part number, and contains all the items needed to assemble a system. The parts can also be ordered individually. Some of the unique features of RITTAL Uniset:

- Card guides simply clip into the cross rails; lugs insure exact positioning.
- Cross rails have grooves on top into which tapped strips can be inserted. Countersunk screws can then be used to screw the guides down if desired.
- The kit packaging can be used as an assembly jig.
- Connectors can be fitted to the connector rails prior to assembling them to the subrack, since they are separate from the cross rails.
- A ground connection is made between cross rails and side walls due to fixing screws with a cutting edge. The cross rails also have a conductive alochrome plating to ensure conductivity. Punched holes in the side walls are used as fixing points for grounding wires (marked with grounding symbols).
- The hole locations for handle fixing are visible only from the rear. Simply pierce them for assembly.

If you would like assistance in configuring a subrack system to suit your individual needs, please call one of our representatives in your area, or call **1-800-637-4425** for the nearest location.



Relco

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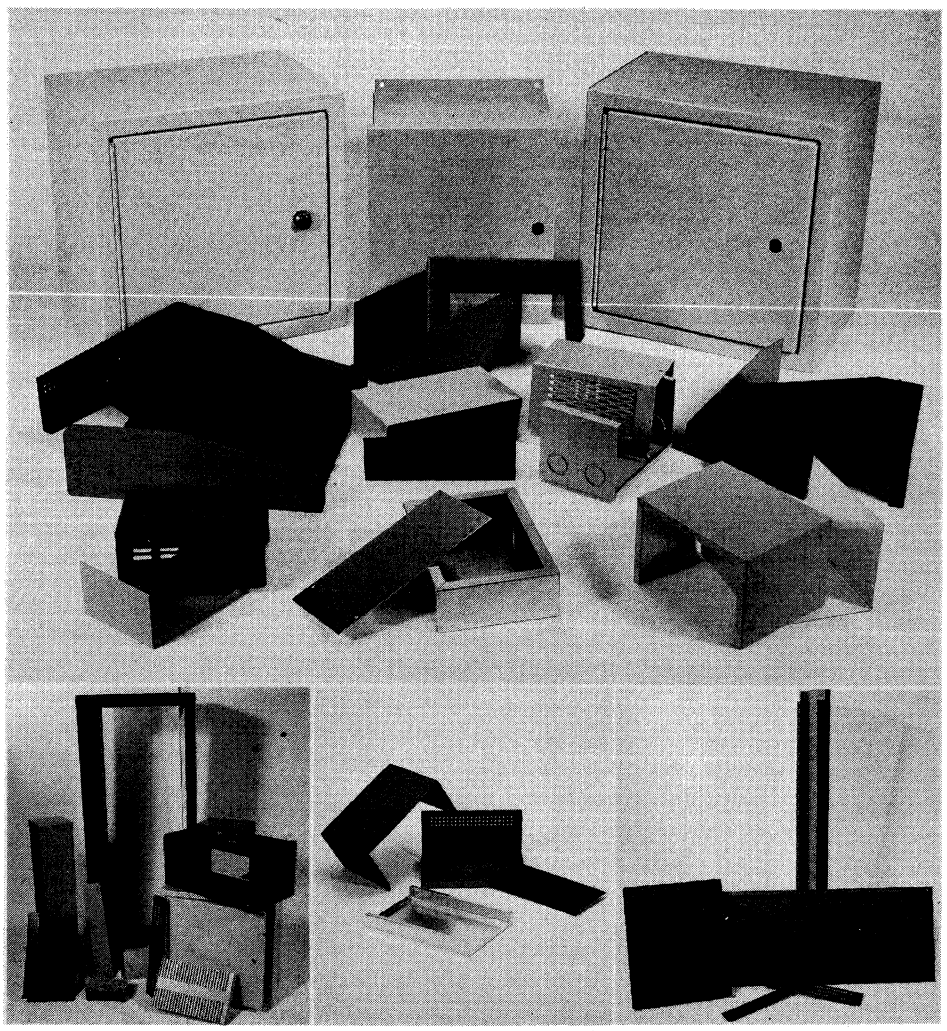

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ROSE® IS MOLDING THE FUTURE OF ENCLOSURE DESIGN

Hundreds of Models,
With Dozens of Options,
In Five Different Materials,
Mean Thousands of Boxes,
From One Company,
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Hundreds of Models (468 different enclosures) including standard, control enclosures, ABS cabinets, build-a-box, and other types are just the beginning with ROSE®. Each enclosure is molded to anticipate your application needs and to eliminate the need for custom-made boxes for your circuit designs.

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Five Different Materials allow you to select the material you need for shielding, durability, or any other design requirements. ROSE Enclosures are molded in aluminum, fiberglass, polycarbonate, and ABS.

Combine hundreds of models in five different materials with dozens of options, including a full range of custom machining services, and you get **Thousands of Boxes.** ROSE Enclosures give you such a complete range of off-the-shelf boxes that you may never need custom-built boxes again.

For highest quality, greatest selection and the latest in enclosure designs look for just **One Company**—ROSE Enclosures.

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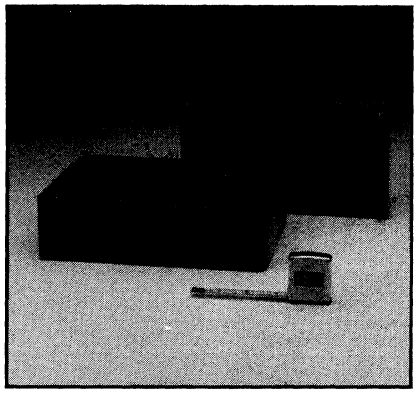
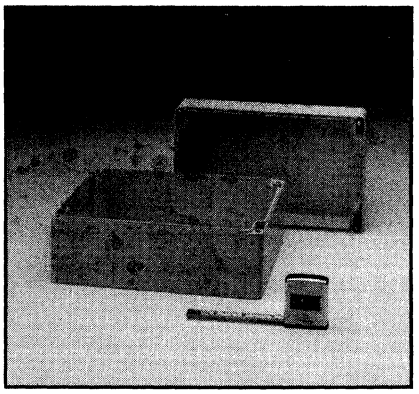
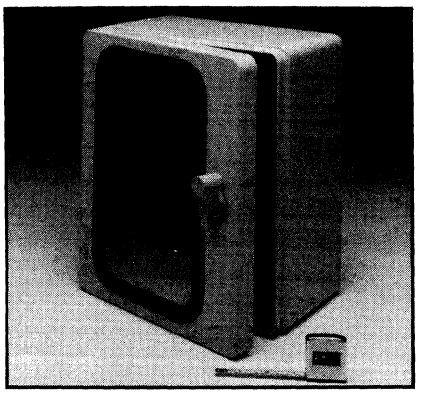
ENCLOSURES



Aluminum Enclosures
- 34 different sizes from just 4-cubic-inches to 2½-cubic-feet.
- All models are cast aluminum.
- Watertight.
- EMI/RFI gaskets avalable.
- UL

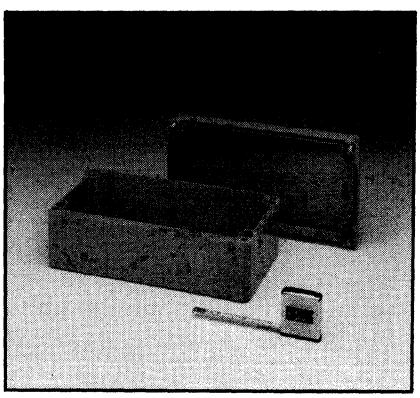


Polycarbonate/ABS Enclosures
- Clear lids available.
- EMI/RFI gasketing/shielding available.
- Economical ABS version available.
- Watertight.
- Polycarbonate enclosures are UL approved.
- UL

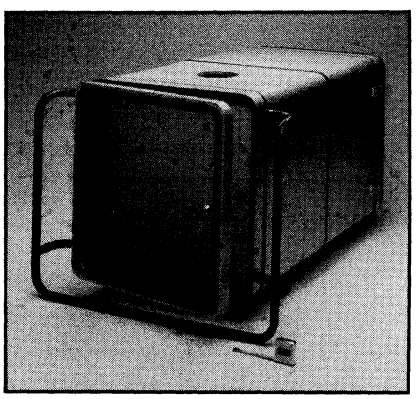


ABS Cabinets
- 6 lock/latch styles available.
- Windowed doors available.
- Watertight
- Economical.
- UL

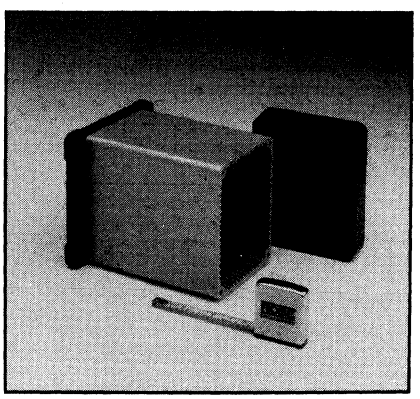
ROSE® ENCLOSURES ROSE® ENCLOSURES ROSE® ENCLOSURES



Fiberglass Enclosures
- Compression molded.
- Chemical resistant.
- Suitable for harsh environments.
- Watertight.
- UL



Control Enclosures
- Sizes up to 5-sq.-ft. panel area
- All enclosures can be shipped via express—lower freight costs.
- Easy to assemble.
- Most models are watertight.
- All-aluminum.



Build-A-Box Enclosures
- Lengths up to 3 meters.
- Suitable for Eurocards and other standard PCBs.
- Easy to assemble.
- All-aluminum.

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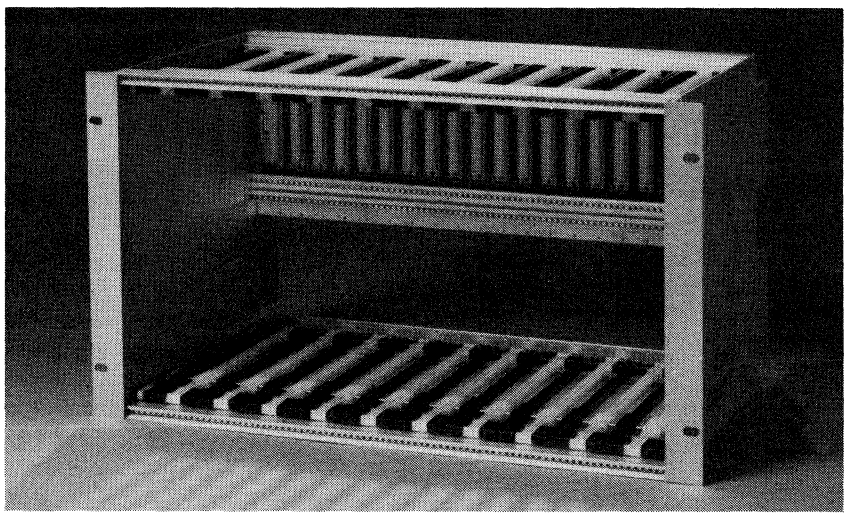
Enclosures...Card Cages...

CARD CAGES

Multibus II & VME

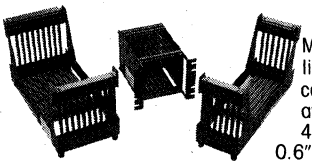


Scanbe's new Eurocard cages come in hundreds of combinations from 3U to 9U heights, 100mm to 400mm depths, and from 3 to 21 slots. For VMEbus or Multibus II, high quality J1 backplanes are installed and tested—J2 backplanes are optional.

Standard rack mounting (cards vertical), horizontal rack mounting and OEM/tabletop mounting are available. There is a full line of optional items, including disk drive modules (see one installed in the MaxChassis, below), front panels with E-Z-JECT™ card ejectors, and cooling fans.

Cards of various sizes—3U, 6U and 9U—may be mixed using either a divider section or a unique center adapter. Custom cages are available to meet any need for combinations of card height, depth, mounting or backplane configuration.

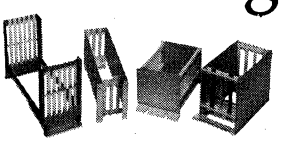
Multibus I and STD Bus



The MICRO-FILE™ line of Multibus cages is available with 4 to 26 slots, 0.6" or 0.75" card spacing, with or without low noise backplanes.

The STD-FILE™ is offered in 4,8,16,24 and 32-slot configurations, in table mount or rack mount versions, with backplanes or with wire wrap connectors.

Custom Card Cages



Scanbe's 25 years of card cage design and large variety of card cage components is your assurance of custom card cages that will meet your requirements. Request a copy of the "Customatic" brochure which describes the eight basic questions required to build a custom card cage.

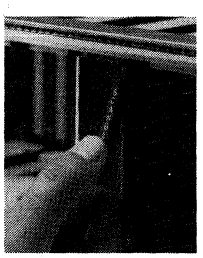
Scanbe's card cage components also may be used to build your own card cage. The "Here's How" and the "Snap File Card Mounting System" describe how to use Scanbe's components to build custom card files.

CARD ACCESSORIES

Injectors/Ejectors

Scanbe circuit card ejectors fit virtually all card support systems. They easily attach by means of roll pins to cards either 0.062" or 0.093" thickness, and operate by lever action against the card guide or mounting bar. The **S-217** (shown at right) is an injector/ejector for VME or other Eurocards, and provides a substantial mechanical advantage.

E-Z-JECT™ is specially designed for ejecting VMEbus cards while maintaining an attractive front panel appearance. Custom front panels for VME cards with E-Z-Ject are readily available from Scanbe.

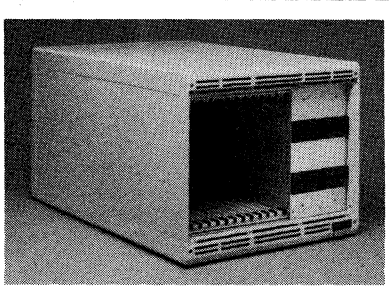


S-217 Injector/Ejector



E-Z-Ject

ENCLOSURES



The MaxChassis

The new MaxChassis solves nearly any VMEbus or Multibus II packaging problem with a 12 to 40-slot (dual 20-slot) card capacity, up to 800 Watts of built-in power supply, and an optional disk drive module for up to four half-height (or two full height) 5¼" peripherals.

It's available in a tabletop version (shown, with disk drive module) or will fit in a standard 19" rack. For regular 6U Eurocards (standard VME or Multibus II) the MaxChassis height is only 14.0".

MaxChassis for 3U and 9U cards are also available, and the card cages can accommodate mixtures of card heights. Card depths of 100mm, 160mm, 220mm, 280mm, 340mm and 400mm are supported (20 slots maximum above 220mm). Overall depth of the MaxChassis is only 20" for up to 20 slots of 220mm or smaller cards (which include all standard VME and Multibus II), or 26" for larger capacities.

All MaxChassis are designed to meet UL, CSA, TUV and FCC specifications.

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Card Ejectors...Wire Wrap

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WIRE WRAP

2D Panels, Frames, and Drawers

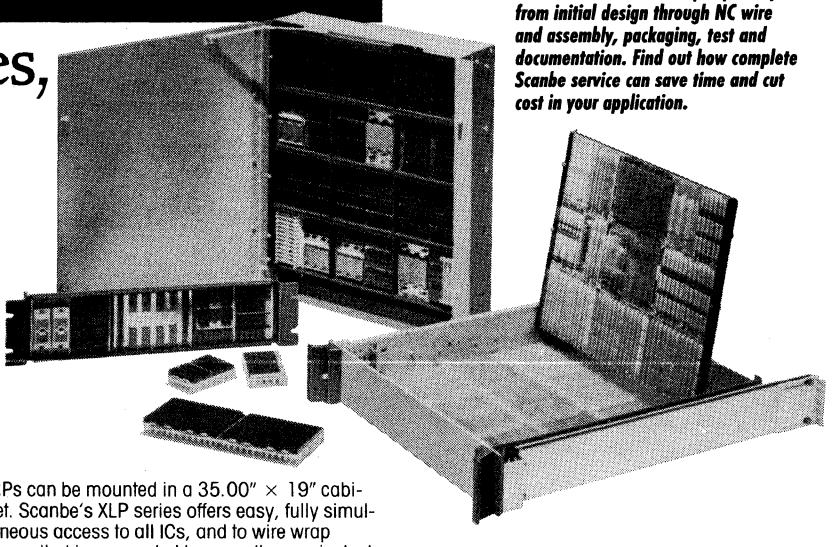
Building a complex wire wrap system requires the versatility of 2D, over 84 different building-block panels that may be mixed as required provides an almost limitless variety of combinations. Various size IC's may be mixed as well as family types (TTL, ECL, etc) and special components such as A-D converters, etc.

Socket boards and panels are available for:

- 14,16,18,20,24,28, 36 and 40-pin ICs
- ECL circuits
- Schottky circuits
- Matrix & universal layouts
- ECL/TTL translation
- I/O connectors, including ZIF

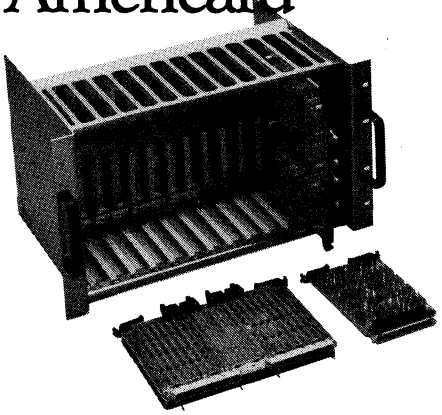
Single and double level, fixed and swing-out frame assemblies accommodate 6 to 60 board assemblies each, and may be mounted in a standard 19" rack cabinet. Frames are also available in 3½" and 5¼" drawers.

For extra large-scale packaging, over 6000 DIPs can be mounted in a 35.00" × 19" cabinet. Scanbe's XLP series offers easy, fully simultaneous access to all ICs, and to wire wrap areas, that is unequaled by any other equivalent size packaging.



Scanbe has full wire wrap capability from initial design through NC wire and assembly, packaging, test and documentation. Find out how complete Scanbe service can save time and cut cost in your application.

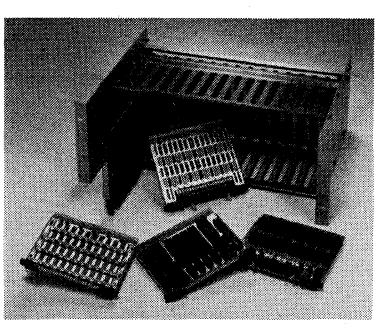
Americard



Scanbe's Americard family of wire wrap IC packaging hardware consists of plug-in cards, card cages, card extenders and related accessory items—all designed for use is high-reliability IC systems requiring wire wrap flexibility and plug-in modularity.

The series consists of four card sizes, card cages for both 19" and 24" racks, and features high density DIN connectors for system interconnect and IDC type test connectors. Ceramic and tantalum capacitors are installed. To protect the pins and wiring, shielded or transparent wire wrap covers are available for each card size.

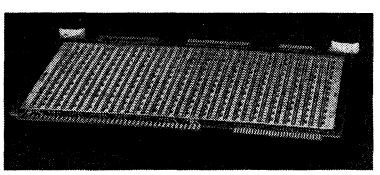
3D Cards and Card Cages



The 3D series is an integrated line of optimum size (6.25 × 5.56 in.) socketed wire wrap cards with card edge connectors and matching card cages. Universal mounting strips and alternate combinations of 14,16,24 and 40-pin sockets make possible a very close fit of hardware to the system design. Bypass and decoupling capacitors are already on the boards, assuring low noise power distribution.

Card cages in the 3D series allow a system with up to 1120 ICs to be mounted in a 7" space in a 19" rack. Cards feature a unique locking/ejector system which provides a mechanical advantage during insertion and extraction.

Multibus & VME Wire wrap Boards



Scanbe's VME and Multibus wire wrap boards give you the versatility of wire wrap and the assembly ease of quad contact pin sockets.

The Multibus Wire wrap Boards have a universal area holding up to 126 14-pin ICs, plus one 26-pin and two 50-pin I/O connectors. Order Part No. 12330-02 (2-level) or 12330-03 (3-level).

The VME Wire wrap Board has 54 dedicated locations for 14- to 20-pin ICs, plus a large undedicated area of 13 columns by 46 pins for larger ICs, SIPs and other devices. Bypass and decoupling capacitors are installed. The VME front panel is equipped with Scanbe E-Z-Ject ejectors. Order Part No. 12360.

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Standard off-the-shelf-products – the most economical way of presenting your electronics. The right cabinet, the right case and the right 19" subrack system for almost every application. At the same time you have a range of accessories to match the system and you can always add items at a later date without difficulty.

Take advantage of our experience with 19" systems and our extensive product range which only a specialized manufacturer like Schroff can offer.



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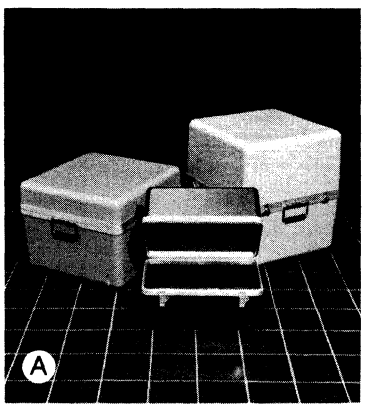
Standard Fiberglass Cases (A)
Excellent lightweight commercial shipping/transit containers. Can be modified to meet MIL specs or other specific requirements. Over 35 sizes to choose from.
- Extremely high strength-to-weight ratio
- Weather resistant/waterproof
- Inert to most chemicals
- High resistance to impact/will not dent
- Custom foam interior available

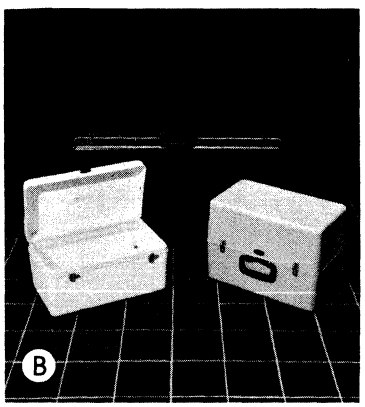
Standard Econoglass™ Cases (B)
All the rugged structural features of standard fiberglass at an economical price. Has standard mounting clips for easy panel installation.

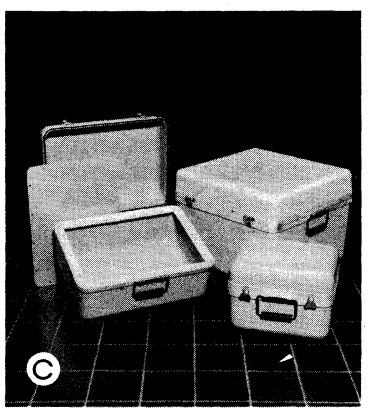
Standard Mounting Flange Cases (C)
Versatile standard fiberglass cases that allow you to adopt display or test equipment to field use through a built-in mounting flange in the edge frame. Over 35 sizes available.
- Pre-drilled flange has captive floating nuts
- Can be RFI/EMI shielded
- Flange can be gasketed
- Standard panels available
- Many accessories can be specified

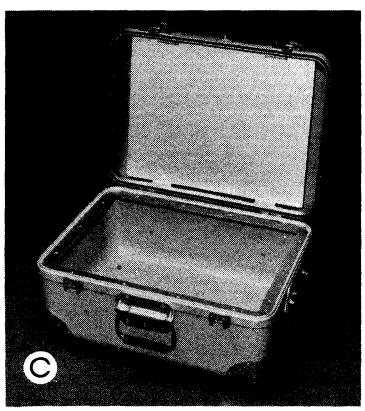
Standard ABS Thermoplastic Cases (D)
Combine high strength with light weight in commercial hand-portable shipping containers. Easily modified. Over 35 sizes.
- High energy absorption capability
- Extremely high ductility
- Wide temperature range characteristics
- Some models feature stacking ribs
- Custom foam interiors available

Standard ABS Industro-Cases™ (E)
Thermoplastic cases in a briefcase style design. Excellent sales sample and service kit container. Three versatile sizes.

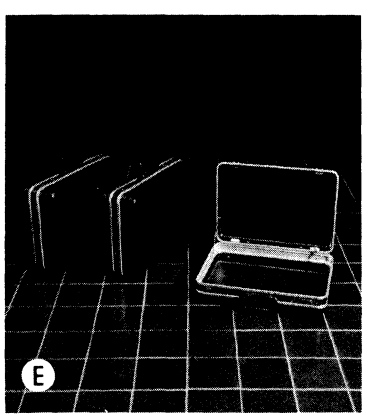












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for further information on these and other protective transit and operational cases and containers.

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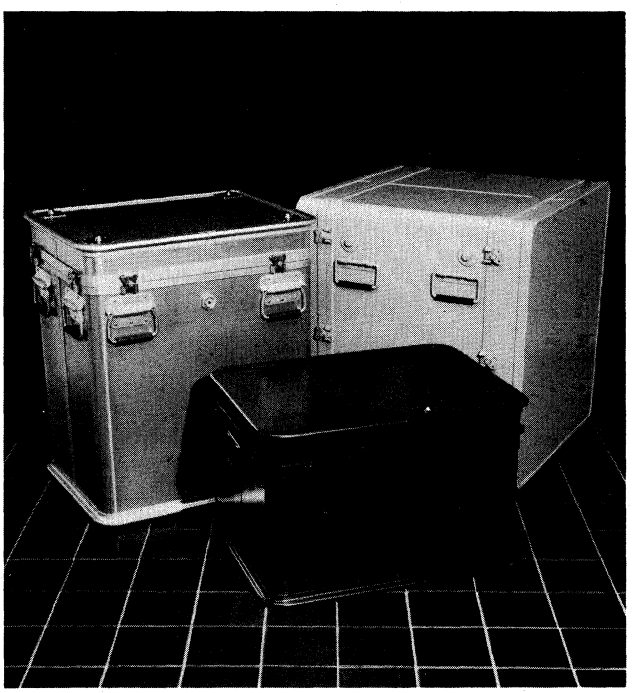
MINIMUM WEIGHT Skydyne® MAXIMUM STRENGTH

Quality Protection for Advanced Technology

Aluminum Composite and Aluminum Panel Cases and Containers

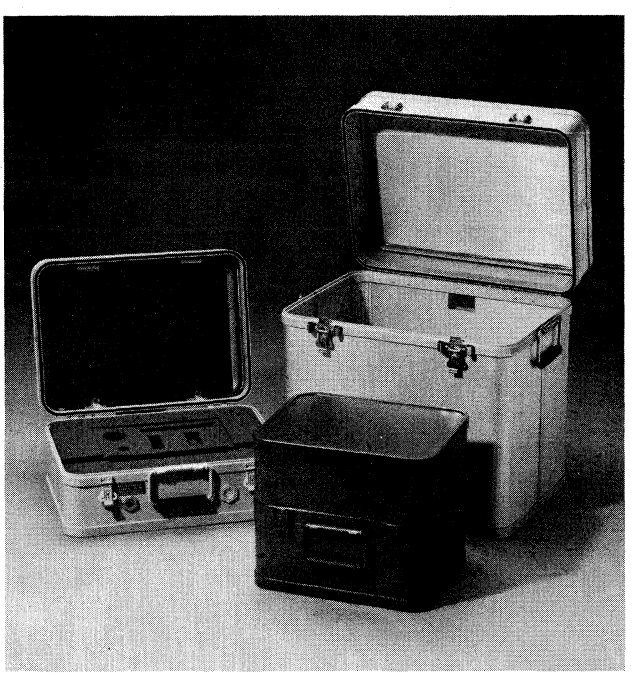
Aluminum Composite Panel Containers
As an originator of the bonded sandwich panel, Skydyne has had many years of experience working with this versatile, unique material. It has proven to be particularly adaptable to protective combination-type containers for both transit and operational use. For oversized or heavy objects, such containers are especially advantageous. Virtually any size structure can be made without costly tooling costs. The features of sandwich structures include:

- Designs to meet applicable MIL specifications
- Outstanding strength-to-weight ratio
- Water/weather resistance
- Available in virtually any configuration
- Easily adapted to special equipment mounts
- Many accessory items available



Modular Aluminum Panel Cases
If all-metal construction is a must for your application, Skydyne offers a complete line of all aluminum cases. The modular panel construction offers more ruggedness with better impact resistance than typical drawn metal types.

- Meets many MIL specifications
- Gasketed closures
- High thermal conductivity
- Treated for corrosion resistance
- Sizes from 5" x 5" x 5" to 9' x 2' x 6'
- Many custom features available



CALL TOLL FREE: 800-428-CASE
for further information on these and other protective transit and operational cases and containers.

SKYDYNE
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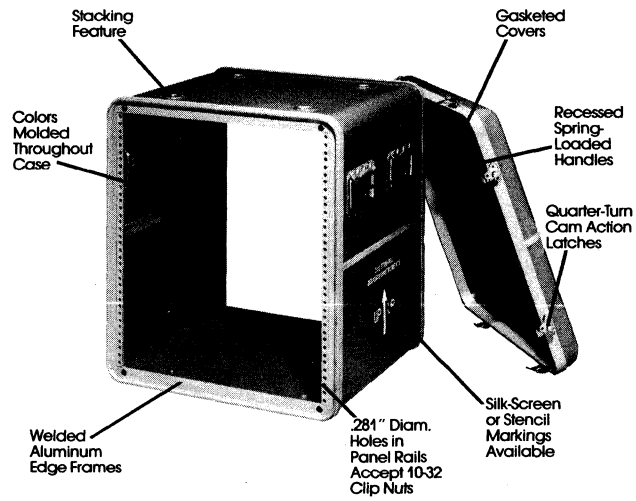
Quality Protection for Advanced Technology

Rigid or Shock-Isolated Rack Mount Cases and Containers

Fiberglass Construction

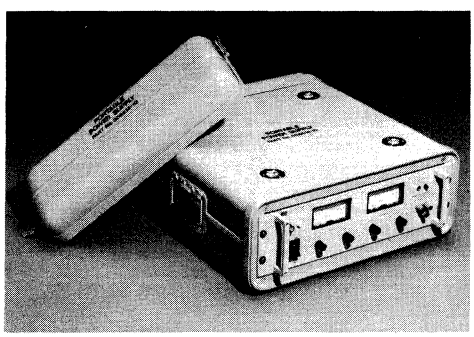
- Standard EIA sizes
- Extremely lightweight
- High strength-to-weight ratio
- High resistance to impact
- High thermal shock resistance
- Inert to most chemicals
- Choice of hard- or shock-mount



Size Range

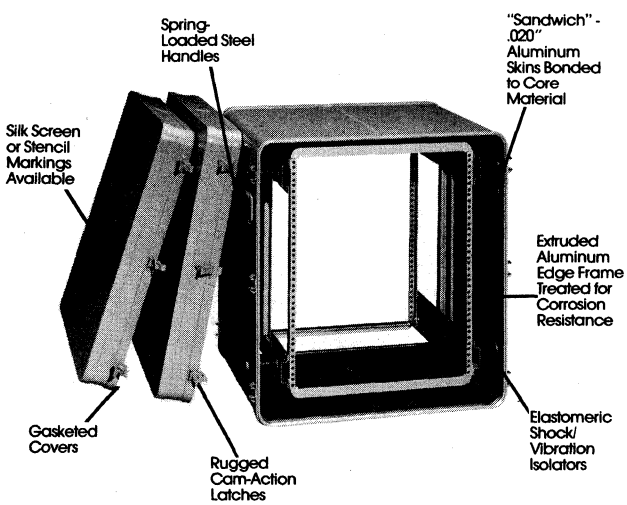
*EIA DESIGNATION	INSIDE RACK DIMENSION (in.)		
	H	W	D
3U	5.37	17.75	18.47
4U	7.12	17.75	18.47
5U	8.87	17.75	18.47
6U	10.62	17.75	18.47
7U	12.37	17.75	18.47
8U	14.12	17.75	18.47
9U	15.87	17.75	18.47
10U	17.62	17.75	18.47
11U	19.37	17.75	18.47
12U	21.12	17.75	18.47

Note 1: Shock-isolated sizes to 10U height.
Note 2: Consult factory for additional sizes.
*EIA: Electronic Industries Association



Composite Panel Construction

- Rugged aluminum sandwich panel walls
- Choice of core materials:
  - aluminum honeycomb
  - foam
  - basswood/plywood/balsa
  - non-metallic honeycomb
- High strength-to-weight ratio
- Standard EIA sizes
- Choice of hard- or shock-mount



Size Ranget

*EIA DESIGNATION	INSIDE RACK DIMENSIONS (in.)		
	H	W	D
3U	5.37	17.75	20.00
to 42U	73.62	17.75	20.00

†Hard mount cases only—shock-isolated range slightly smaller.
*EIA: Electronic Industries Association
NOTE 1: Consult factory for additional sizes available.
NOTE 2: Most portable rack-mounted electronic equipment is required to be protected to a range of 25 to 40 G's. These requirements are met in either F.G. or sandwich construction with isolated racks and elastomeric mounts. For specific requirements beyond this range, please consult the factory for materials and processes.

CALL TOLL FREE: 800-428-CASE
for further information on these and other protective transit and operational cases and containers

SKYDYNE
QUALITY PROTECTION FOR ADVANCED TECHNOLOGY
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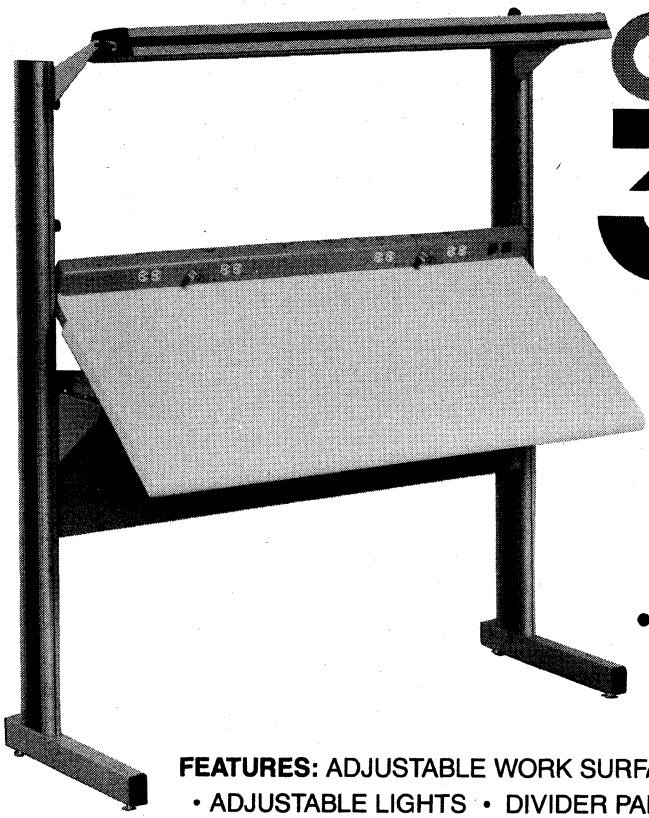

CHALLENGE 3000

NEW MODULAR PANEL WORK STATION

Complete versatility for electronic production, laboratories and clean room applications.

Aesthetically pleasing, yet functional, efficient and adaptable to any office environment.

- **AVAILABLE 48″-60″-72″ WIDTHS, 30″ DEEP**
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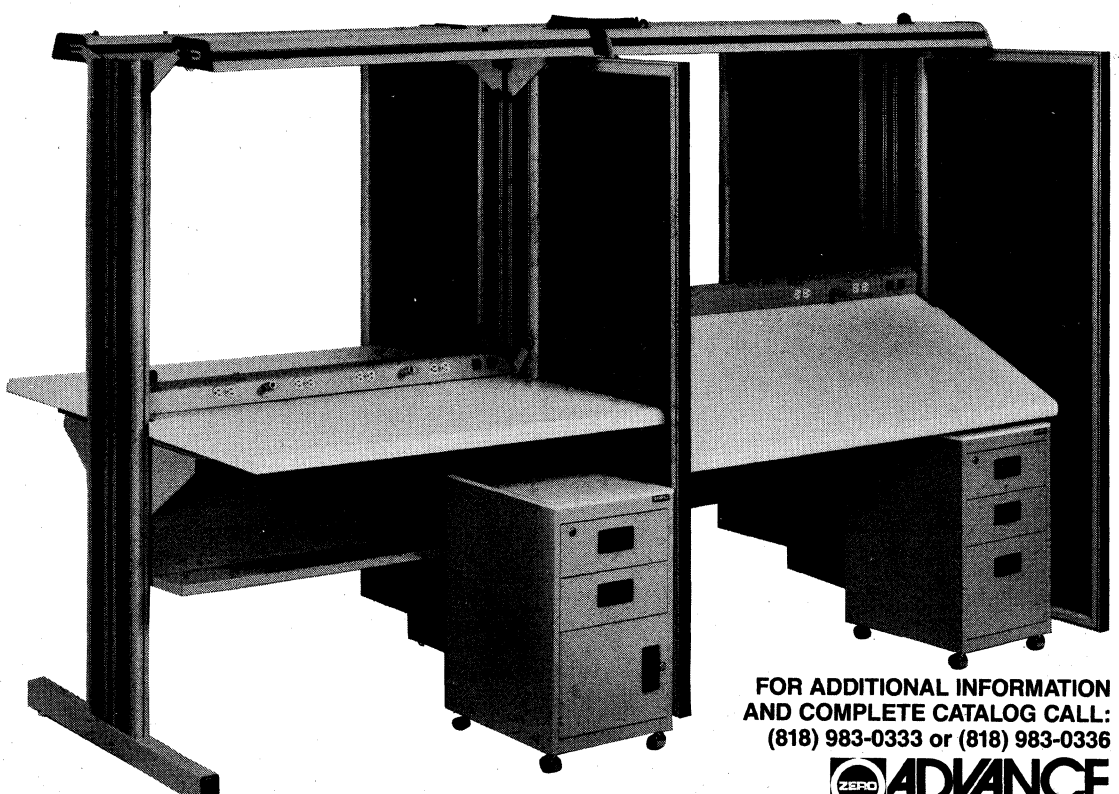
FEATURES: ADJUSTABLE WORK SURFACE • TILT TOP WORK SURFACE UP TO 90° • ADJUSTABLE LIGHTS • DIVIDER PANELS • ADJUSTABLE SHELVES (solid or wire) • FOOT REST • ROLL-AWAY DRAWER CABINET • STRUCTURAL INTEGRITY • AVAILABLE IN 22 STANDARD COLORS



FOR ADDITIONAL INFORMATION AND COMPLETE CATALOG CALL:
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VERTICAL CABINETS, SLOPING FRONT CABINETS, SLOPING FRONT INSTRUMENT CABINETS,
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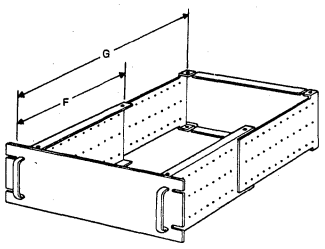
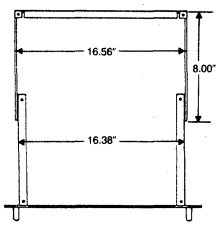
THE STRONGBOX™

E-SERIES EXTENSION KITS

E-Series depth Extension kits are user adjustable in ½" increments for intermediate and extended chassis depth. Thus any chassis depth from 9½" to 26" is available off-the-shelf.

E-Series kits contain 2 Extension Side Panels and 2 Extension Perforated Covers.





EXTENSION RANGE

Kit Number	F	+E-Series = G
SB9-	9.50"	9.50" - 16.50"
SB12-	12.00"	12.00" - 19.00"
SB19-	19.00"	19.00" - 26.00"

E-SERIES DEPTH EXTENSION KITS

Extension Kit Number	Mates With			Price
E-3	SB9-3	SB12-3	SB19-3	125.00
E-5	SB9-5	SB12-5	SB19-5	128.00
E-7	SB9-7	SB12-7	SB19-7	131.50
E-8	SB9-8	SB12-8	SB19-8	132.50

Add dash "—SAC" to kit number to get Solid instead of Perforated covers (deduct $20.00 from kit price). Add dash "—SAC 1" to kit number to get one, each, Solid and Perforated cover (deduct $10.00 from kit price).

Order SB9-, SB12-, SB19-Series parts from this table. Parts in each column mate with others of same length.

	KIT DEPTH	KIT DASH NUMBER			
		-3	-5	-7	-8
Front Panel	ALL	FP-3	FP-5	FP-7	FP-8
Handle	ALL	SBH-3	SBH-5	SHP-7	SBH-8
Interior Mounting Panel	ALL	IMP-3	IMP-5	IMP-7	IMP-8
Side Panel	SB9-	SP9-3	SP9-5	SP9-7	SP9-8
	SB12-	SP12-3	SP12-5	SP12-7	SP12-8
	SB19-	SP19-3	SP19-5	SP19-7	SP19-8
Perforated Cover	SB9-	PAC-9	PAC-9	PAC-9	PAC-9
	SB12-	PAC-12	PAC-12	PAC-12	PAC-12
	SB19-	PAC-19	PAC-19	PAC-19	PAC-19
Solid Cover	SB9-	SAC-9	SAC-9	SAC-9	SAC-9
	SB12-	SAC-12	SAC-12	SAC-12	SAC-12
	SB19-	SAC-19	SAC-19	SAC-19	SAC-19
Bottom Mounting Plate	SB9-	IMP-8	IMP-8	IMP-8	IMP-8
	SB12-	BMP-12	BMP-12	BMP-12	BMP-12
	SB19-	BMP-19	BMP-19	BMP-19	BMP-19
Heavy Cover Plate	SB9-	HCP-9	HCP-9	HCP-9	HCP-9
	SB12-	HCP-12	HCP-12	HCP-12	HCP-12
	SB19-	HCP-19	HCP-19	HCP-19	HCP-19
Solid Bearing Slide	SB9-	SLD-9/12	SLD-9/12	SLD-9/12	SLD-9/12
	SB12-	SLD-9/12	SLD-9/12	SLD-9/12	SLD-9/12
	SB19-	SLD-19	SLD-19	SLD-19	SLD-19
Depth Extension Kit	ALL	E-3	E-5	E-7	E-9

RACK-MOUNT CHASSIS KITS

Kit Dash Number	Number of Rack Units	Front Panel Height	Price		
			SB9	SB12	SB19
−3	2	3.47"	198.00	204.00	213.00
−5	3	5.22"	203.50	209.50	218.50
−7	4	6.97"	212.50	218.50	227.50
−8	5	8.72"	219.00	225.00	234.00

Add dash "—SAC" to kit number to get Solid instead of Perforated covers (deduct $20.00 from kit price). Add dash "—SAC 1" to kit number to get one, each Solid and Perforated cover (deduct $10.00 from kit price).

Detailed drawings available on request. Other sizes available; call for quote.

Prices subject to change.
Order Bottom Mounting Plates, Slides and additional Interior Mounting Panels as separate items.

STRONGBOX™ P.O. BOX 84508/LOS ANGELES, CA 90073
(213) 305-8288



THE STRONGBOX™

HEAVY-DUTY RACK-MOUNT CHASSIS

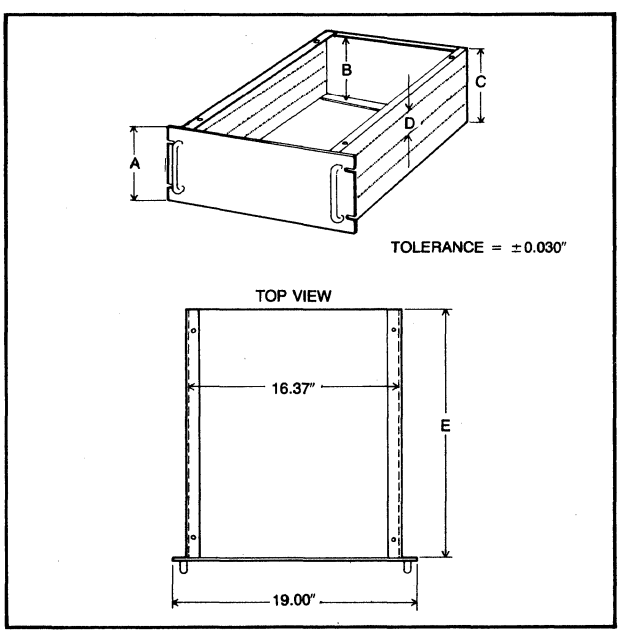
SB9-, SB12-, SB19-SERIES

Four EIA Front Panel heights: 3½", 5¼", 7" and 8¾" (3, 5, 7, 8 nominal).

Three standard depths: 9½" (SB9-Series), 12" (SB12-Series) and 19" (SB19-Series).

Components can be ordered as complete kits or by the part. See kit and parts tables. Kits and parts come with all required captive machine hardware. Front, Side and Mounting Panels are clear iridited. Covers and Handles are clear anodized. All surfaces are satin grained.

Each kit contains 1 Front Panel, 2 Handles, 2 Side Panels, 2 Perforated Covers and 1 Interior Mounting Panel.



SPECIFICATIONS

PARTS

FRONT PANEL — 0.125" thick, 19.00" wide. 6061-T6 aluminum. EIA notched.

SIDE PANEL — 0.090" thick, 5052-H32 aluminum. Three rows of holes on ½" centers for mounting panels, card cages, etc.

INTERIOR MOUNTING PANEL — 0.090" thick, 16.37" wide. 5052-H32 aluminum. For use as a rear panel or vertical or horizontal mounting panel.

PERFORATED ALUMINUM COVER — 0.063" thick. 16.85" wide. 3003 aluminum. Assembles with four screws and captive stainless steel nuts.

STRONGBOX™ HANDLE — Standard aluminum handle.

ACCESSORIES

BOTTOM MOUNTING PLATE — 0.090" thick, 16.37" wide. 5052-H32 aluminum. For mounting heavy components. Clear iridite finish.

SOLID BEARING SLIDE — .38" thick. Cad plated steel. Adjustable brackets for assembling to EIA tapped-rail.

SOLID ALUMINUM COVER — 0.063" thick, 16.85" wide. 5052-H32 aluminum. Clear anodize finish.

HEAVY COVER PLATE — 0.090" thick, 16.88" wide. 5052-H32 aluminum. For mounting heavy components flush with chassis bottom. Clear iridite finish.

Detailed drawings available on request. Other sizes available; call for quote.

DIMENSIONS

Kit Number	A	B	C	D	E
SB9-3	3.47	3.09	3.15	0.75	9.50
SB9-5	5.22	4.84	4.90	1.50	9.50
SB9-7	6.97	6.59	6.65	2.00	9.50
SB9-8	8.72	8.34	8.40	3.00	9.50
SB12-3	3.47	3.09	3.15	0.75	12.00
SB12-5	5.22	4.84	4.90	1.50	12.00
SB12-7	6.97	6.59	6.65	2.00	12.00
SB12-8	8.72	8.34	8.40	3.00	12.00
SB19-3	3.47	3.09	3.15	0.75	19.00
SB19-5	5.22	4.84	4.90	1.50	19.00
SB19-7	6.97	6.59	6.65	2.00	19.00
SB19-8	8.72	8.34	8.40	3.00	19.00

STRONGBOX™ P.O. BOX 84508/LOS ANGELES, CA 90073
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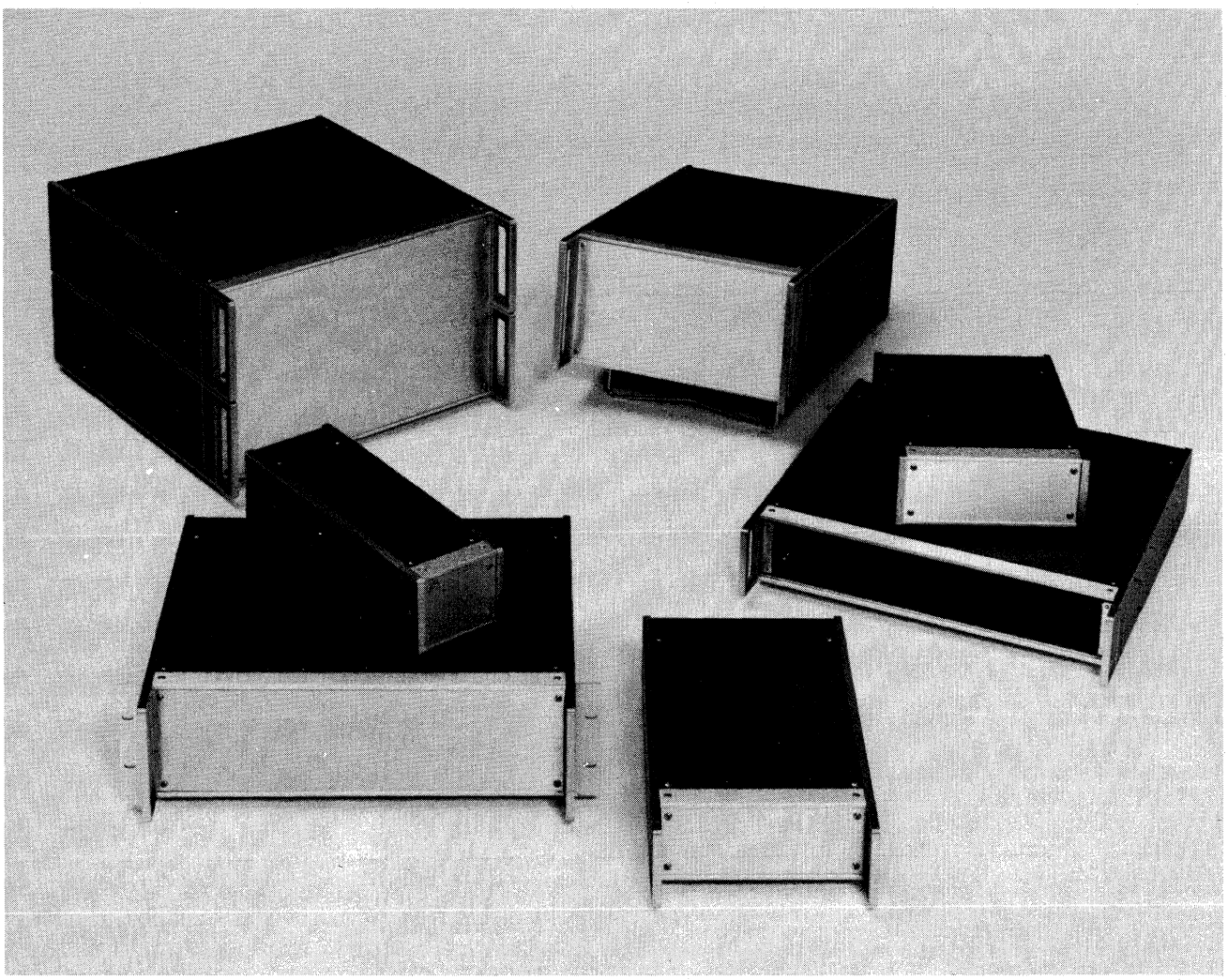
TDJ Company, Inc.
Instrument Enclosures



Available With or Without Handles

Easily Assembled

Sliding Top and Bottom Covers for Maximum Accessibility

Convenient Side Frame Mounting Hole Pattern

Will Accept Your Custom Removable Front and Rear Panels

Standard Colors — Black, Brown and Blue

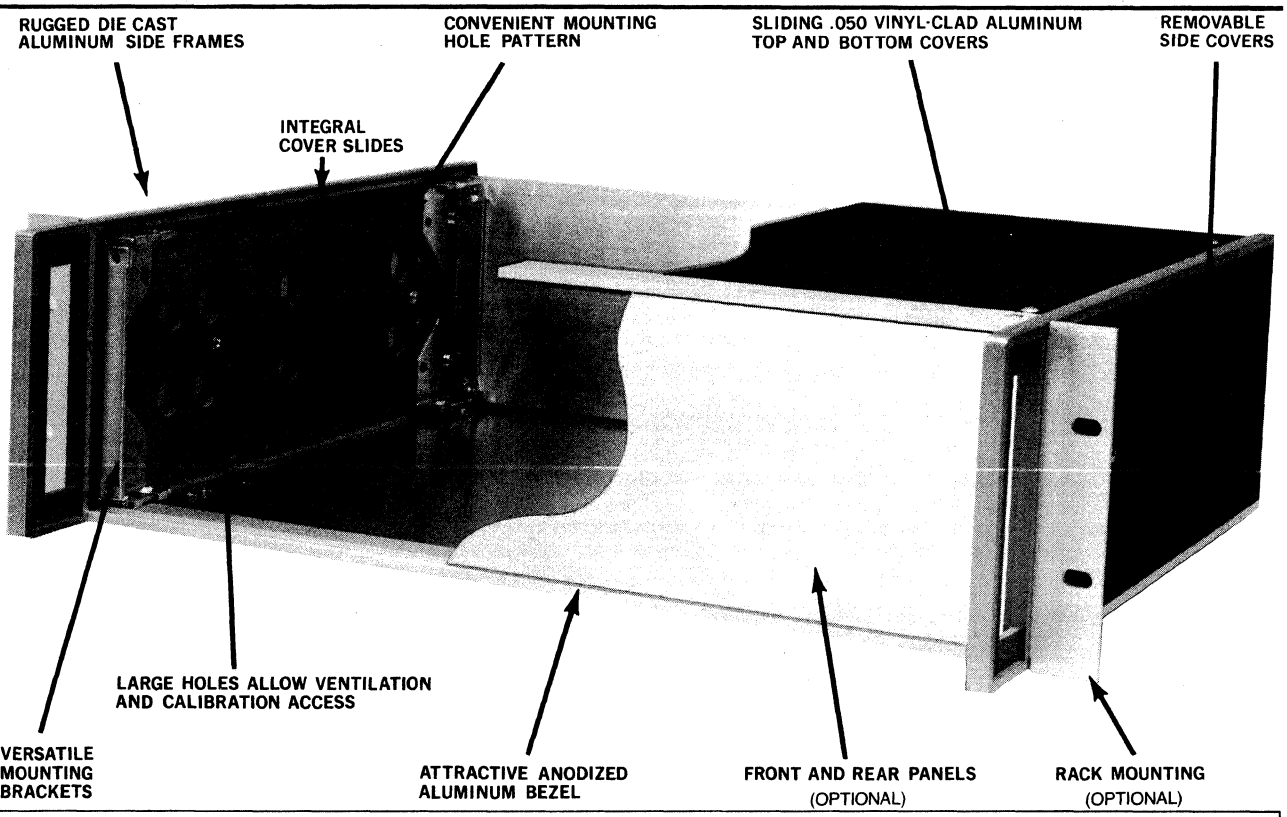
Over 100 Standard Models Available

The BETA-LINE Series enclosures offer the ultimate in quality and versatility and provide an extensive range of standard packaging dimensions. Rugged die cast aluminum side frames are uniquely engineered to accommodate the latest modular construction. The top and bottom as well as the side covers are easily removed for quick internal access. The beautifully finished side frames and vinyl clad aluminum covers combine to produce a superbly crafted enclosure. Standard vinyl colors include blue, black and brown. A full complement of optional accessories include instrument bails, rack mounting kits, rack mounting slides and aluminum front or rear panels. Rack mounting complies with MIL-STD-189. A retractable instrument bail is available for bench mounting applications. The flexible design of these enclosures permits us to provide customized enclosures for your special requirements.

TDJ COMPANY INC. — 1154 Morena Boulevard, San Diego, CA 92110 — (619) 276 5920

TDJ Company, Inc.

Instrument Enclosures



Model number is determined by outside dimensions of enclosure. Example for Model **B-350-13-1700** is:

B 350-13-1700 H

- 3.5 inches High
- 13.0 Inches Deep
- 17.0 Inches Wide
- Add "H" to Model No. to indicate "With Handle"

3.5 Inch Height	5.25 Inch Height	7 Inch Height	8.75 Inch Height
B-350-13-1700H	B-525-13-1700H	B-S700-13-1700H	B-S875-13-1700H
B-350-13-1275	B-525-13-1275	B-S700-13-1275	B-S875-13-1275
B-350-13-0850	B-525-13-0850	B-S700-13-0850	B-S875-13-0850
B-350-13-0425	B-525-13-0425	B-S700-13-0425	B-S875-15-1700H
B-350-15-1700H	B-525-15-1700H	B-S700-15-1700H	B-S875-15-1275
B-350-15-1275	B-525-15-1275	B-S700-15-1275	B-S875-15-0850
B-350-15-0850	B-525-15-0850	B-S700-15-0850	B-S875-17-1700H
B-350-15-0425	B-525-15-0425	B-700-17-1700H	B-S875-17-1275
B-350-17-1700H	B-525-17-1700H	B-700-17-1275	B-S875-17-0850
B-350-17-1275	B-525-17-1275	B-700-17-0850	
B-350-17-0850	B-525-17-0850		
	B-525-21-1700H		
	B-525-21-1275		
	B-525-21-0850		

10.5 Inch Height	12.25 Inch Height	14 Inch Height	15.75 Inch Height
B-S1050-13-1700H	B-S1225-13-1700H	B-S1400-13-1700H	B-S1575-17-1700
B-S1050-13-1275	B-S1225-13-1275	B-S1400-13-1275	B-S1575-17-1275
B-S1050-13-0850	B-S1225-13-0850	B-S1400-13-0850	B-S1575-17-0850
B-S1050-15-1700H	B-S1225-15-1700H	B-S1400-15-1700H	B-S1575-21-1700
B-S1050-15-1275	B-S1225-15-1275	B-S1400-15-1275	B-S1575-21-1275
B-S1050-15-0850	B-S1225-15-0850	B-S1400-15-0850	B-S1575-21-0850
B-S1050-17-1700H	B-S1225-17-1700H	B-S1400-17-1700H	
B-S1050-17-1275	B-S1225-17-1275	B-S1400-17-1275	
B-S1050-17-0850	B-S1225-17-0850	B-S1400-17-0850	
B-S1050-21-1700H			
B-S1050-21-1275			
B-S1050-21-0850			

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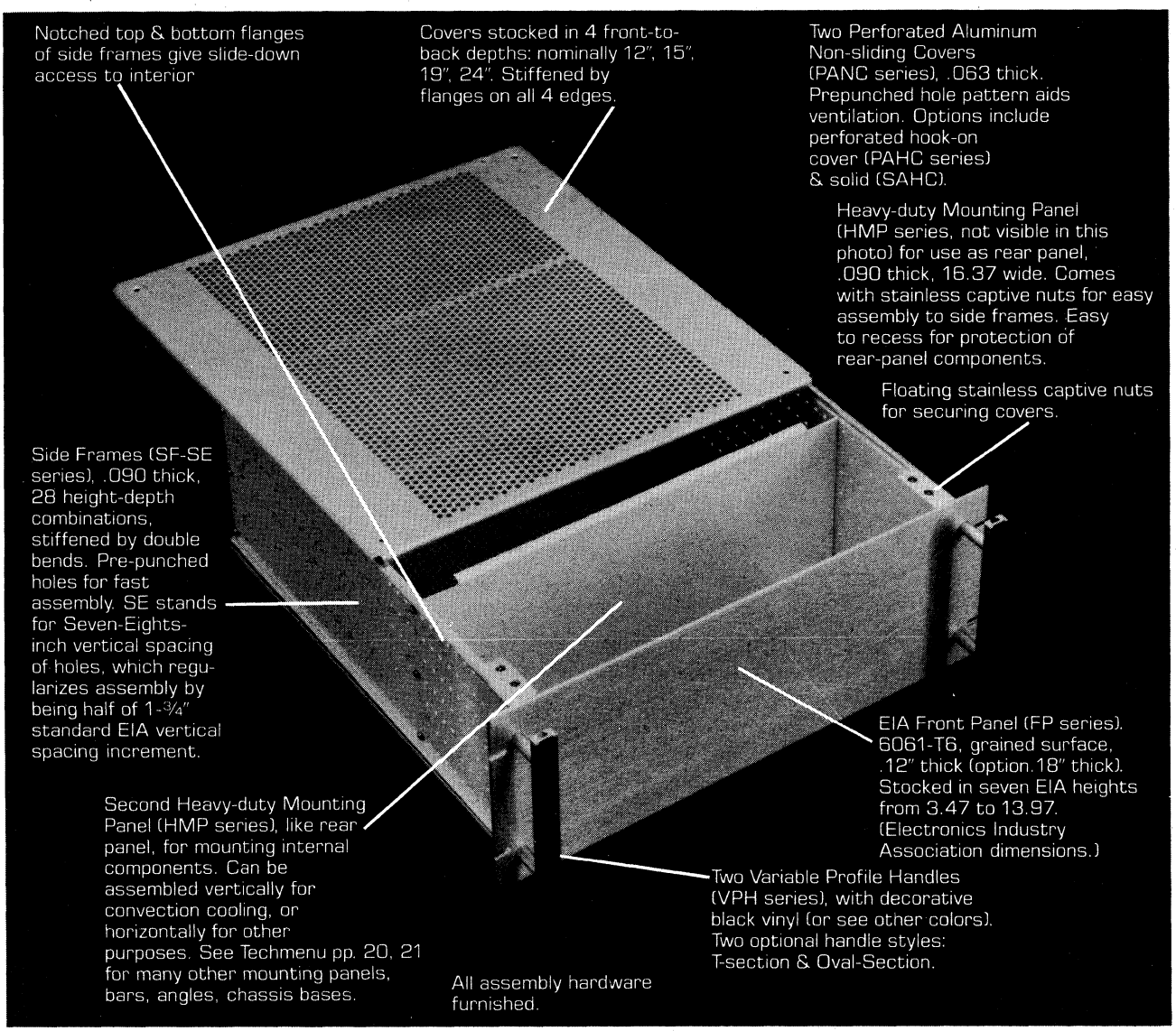
Here are Techmar's two leading lines of

(1) SRK/CRK SERIES Rackmount Enclosures

STOCKED IN ALL 28 COMBINATIONS OF FOUR DEPTHS & SEVEN HEIGHTS this advanced SRK series assembles in more ways without special hole punching or drilling than any other enclosure line we know of. And its unique 7/8" vertical hole spacing [half of the standard EIA rack-mounting height increment] regularizes the location of the horizontal rows of holes for maximum interchangeability in assembling parts of many sizes. How's that for modularity? Order the height/depth combinations that will do what you want. Order today, they're on their way tomorrow.



TECHMAR

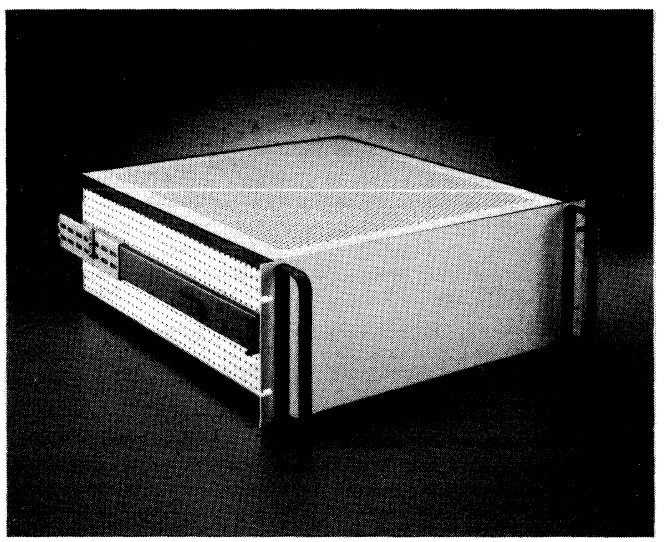
TECHMAR CORPORATION, 2232 SO. COTNER AVE., LOS ANGELES, CA 90064-1875.

From most states phone toll-free 800-TECHMAR. From California, phone toll-free 800-CHASSIS.

enclosures:

(2) VCD/VSA SERIES Variable Chassis Drawers/ Standalones

STOCKED IN ALL 28 COMBINATIONS OF 7 HEIGHTS AND 4 FRONT-TO-BACK DEPTHS for immediate shipping, this line has the appearance of an elegantly designed custom enclosure together with even more versatility than Techmar's long-proven SRK line. The side-hole pattern for assembling internal parts is spaced at .4375 [7/16"] hole centers both horizontally and vertically, for increased freedom to locate your parts at will, and accommodates 90° rotations of card cages, mounting panels, bars and angles according to your design. For the VSA the hole pattern is hidden by decorative side covers. Both versions are available in 9 color combinations of clear, lakeblue and black; contrasting or matching frames, panels & handles available.



VCD SERIES

"Variable Chassis Drawers" stocked for same-day or next-day shipping.

Components include

- One SFP series Standard Front Panel with assembly holes.
- One RFB / OBP Outside Back Panel. [Doubles as Recessed Front or Back panel for other applications.]
- One TPF Twelve-Piece Frame.
- Two SSP Structural Side Panels with assembly hole patterns.
- Two TBC-FP Top / Bottom Covers, Fully Perforated.
- Two DCH DieCast Handles or two TPH Two-Piece Handles [extruded].
- Assembly hardware including decorative screws and washers for assembly to tapped rails.

Available in 28 height / depth combinations, in choice of colors. Many options & substitutions.

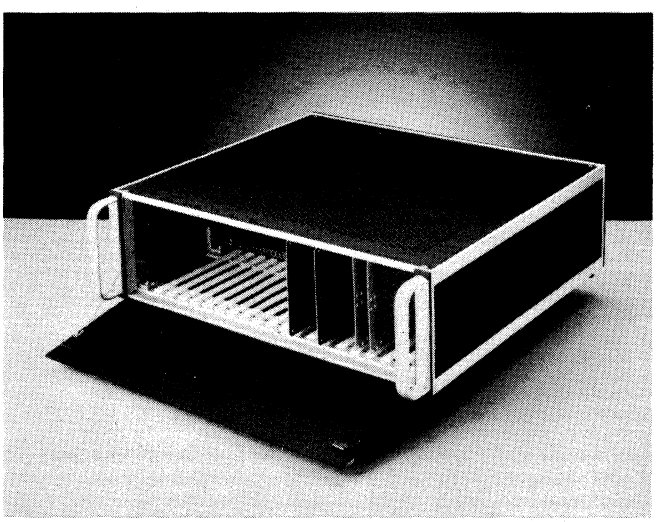
VSA SERIES

"Variable StandAlone" stocked for same-day or next-day shipping.

Components include

- Two RFB / OBP [See above under "VCD series"], one for use as Recessed Front panel, the other as Recessed Back panel.
- One TPF Twelve-Piece Frame.
- Two SSP Structural Side Panels with assembly hole patterns.
- Two TBC-FP Top / Bottom Covers, Fully Perforated.
- Two SC Side Covers.
- Four RF-SA Rubber Feet, Screw-Assembled.

Available in 28 height / depth combinations, in choice of colors. Many options & substitutions.



TECHMAR

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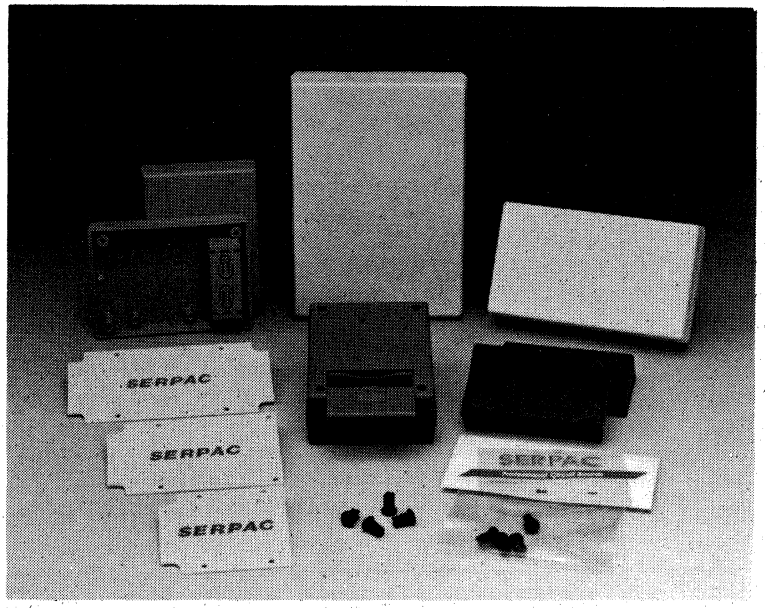
From most states phone toll-free 800-TECHMAR. From California, phone toll-free 800-CHASSIS.



SERPAC

Plastic Electronic Enclosures

Selection:

Serpac's wide variety of packaging products provide functional utility and a professional, high-tech appearance. Choose from an inventory of 24 enclosures in 9 colors (red, blue, black, white, gray, almond, green, orange and yellow). We offer models with or without 9 volt battery compartments, with card guides for vertical circuit boards, bossing for horizontal circuit boards and protective, non-skid elastomer feet to provide a complete line of versatile enclosures.

Quality:

Using UL rated high-impact ABS with a scratch resistant grain finish, **Serpac** professional packaging delivers durability and designer styling. Each color is molded-through, so there is no paint or veneer to chip or crack ... providing you with enclosures that are ideal for a wide range of applications.

Economy:

With **Serpac** professional packaging, there is absolutely **no tooling** or **setup expense.** The cost is only a fraction of the price of metal enclosures, and our off-the-shelf availability means significant savings over the cost of custom built packages. You save even more through reduced assembly time and labor.

Standard Enclosures

MODEL NO.	DIMENSION A		B		C	VERTICAL CARD POSITION	MOUNTING BOSSES
111	2	x	3	x	1.25	2	4
131	3	x	4	x	1.25	3	4
151	3	x	5.25	x	1.25	4	4
171	4.5	x	6.5	x	1.25	5	8
112	2	x	3	x	1.75	2	4
132	3	x	4	x	1.75	3	4
152	3	x	5.25	x	1.75	4	4
172	4.5	x	6.5	x	1.75	5	8
113	2	x	3	x	2.25	2	4
133	3	x	4	x	2.25	3	4
153	3	x	5.25	x	2.25	4	4
173	4.5	x	6.5	x	2.25	5	8

9 Volt Enclosures

MODEL NO.	DIMENSION A		B		C	VERTICAL CARD POSITION	MOUNTING BOSSES
211	2	x	3	x	1.25	2	4
231	3	x	4	x	1.25	2	4
251	3	x	5.25	x	1.25	3	4
271	4.5	x	6.5	x	1.25	4	6
212	2	x	3	x	1.75	2	4
232	3	x	4	x	1.75	2	4
252	3	x	5.25	x	1.75	3	4
272	4.5	x	6.5	x	1.75	4	6
213	2	x	3	x	2.25	2	4
233	3	x	4	x	2.25	2	4
253	3	x	5.25	x	2.25	3	4
273	4.5	x	6.5	x	2.25	4	6

Elastomer Non-Skid Feet

MODEL NO.	NO.
50	Fits all enclosures

Companion Circuit Boards:

Gridboards and cladboards are designed for immediate installation into our standard enclosures to facilitate easy board population. The gridboards feature standard hole diameter (.038 dia.) and spacing (.100 x .100 matrix) to provide flexibility in component mounting. Cladboards allow precise circuit construction of custom etched boards.

Standard Horizontal Grid and Clad Boards

MODEL NO. GRID BOARD	MODEL NO. CLAD BOARD	A		B		C
310	410	2	x	3	x	1/16
330	430	3	x	4	x	1/16
350	450	3	x	5.25	x	1/16
370	470	4.5	x	6.5	x	1/16

Vertical Grid Board

MODEL NO.	A		B		C
311	1	x	1.75	x	1/16
331	1	x	2.75	x	1/16
371	1	x	4.25	x	1/16
312	1.5	x	1.75	x	1/16
332	1.5	x	2.75	x	1/16
372	1.5	x	4.25	x	1/16
313	2	x	1.75	x	1/16
333	2	x	2.75	x	1/16
373	2	x	4.25	x	1/16

Custom Options

Serpac has the design expertise and tooling facilities to provide a complete custom packaging service. We can modify our standard enclosures to meet your needs, or create a custom design especially for your product. We also offer RFI and EMI shielding, custom board etching, transparent windows, opaque panels, and the use of fire retardant materials. **Serpac** is your one source for professional packaging products.

9V Horizontal Grid and Clad Boards

MODEL NO. GRID BOARD	MODEL NO. CLAD BOARD	A		B		C
319	419	2	x	2	x	1/16
339	439	3	x	3	x	1/16
359	459	3	x	4.25	x	1/16
379	479	4.5	x	5.5	x	1/16

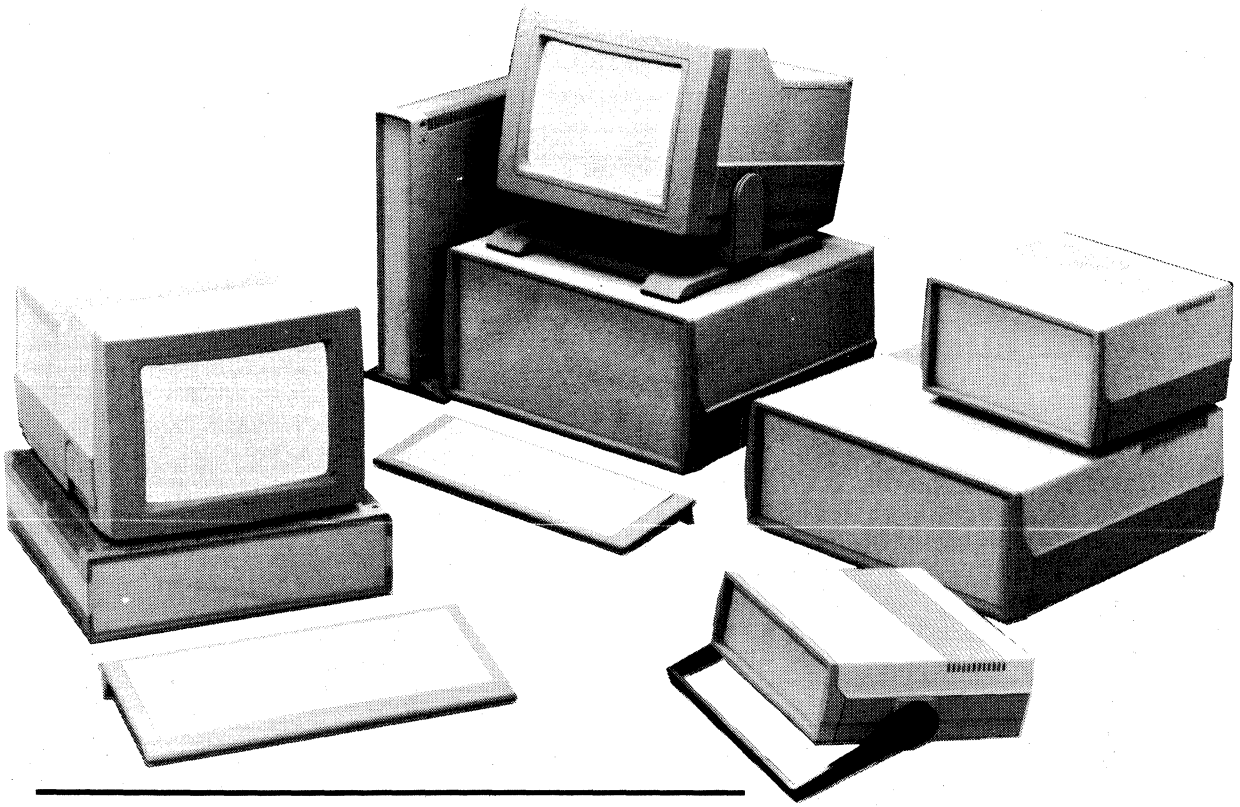
Vertical Clad Board

MODEL NO.	A		B		C
411	1	x	1.75	x	1/16
431	1	x	2.75	x	1/16
471	1	x	4.25	x	1/16
412	1.5	x	1.75	x	1/16
432	1.5	x	2.75	x	1/16
472	1.5	x	4.25	x	1/16
413	2	x	1.75	x	1/16
433	2	x	2.75	x	1/16
473	2	x	4.25	x	1/16

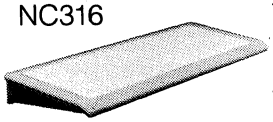
SERCO

Products Division 612 Commercial Ave. Covina, CA 91723 (818) 331-0517 (800) 843-8172 (California only)

NC Series Enclosures

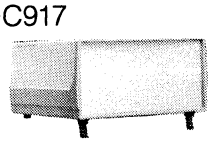


NC316



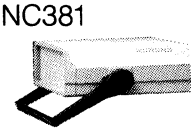
Two keyboard enclosures are available, Model NC116 and Model NC316 (shown). Both keyboard enclosures are designed to house most of today's popular keyboards.

NC917



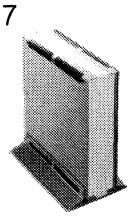
Two system enclosures are available, Model NC717 and Model NC917 (shown). Both system enclosures are designed to accept 19" hardware. A removable top vent gives access to the interior.

NC381



Two extension enclosures are available, Model NC681 and Model NC381 (shown). They are designed to be used with other NC enclosures, however, their size and styling make them ideal for individual instruments. Both units are available with an optional die cast aluminum handle.

NC517



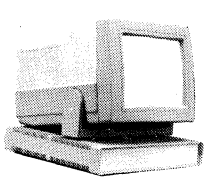
Two stand-alone enclosures are available, Model NC317 and Model NC517 (shown). Both enclosures can be used vertical or horizontal and fit many CPU applications.

The NC series is a complete line of electronic enclosures designed for large systems, small peripherals, adjustable CRTs, low-profile keyboards, and CPU-type housings.

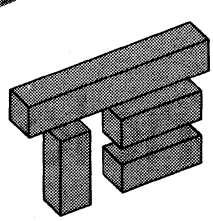
The product line is manufactured of injection-molded, glass reinforced polycarbonate.

The NC line features overlapping joints and vent openings with the proper slot geometry essential when shielding is required. The exterior finish on the NC series is a two coat textured polyurethane. The standard color is two-tone gray.

NC153



Five CRT enclosure configurations are available, from the basic CRT enclosure with mounting feet, to a CRT housing that tilts and swivels on a base enclosure. They are sized for 14" color or 15" monochrome tubes.

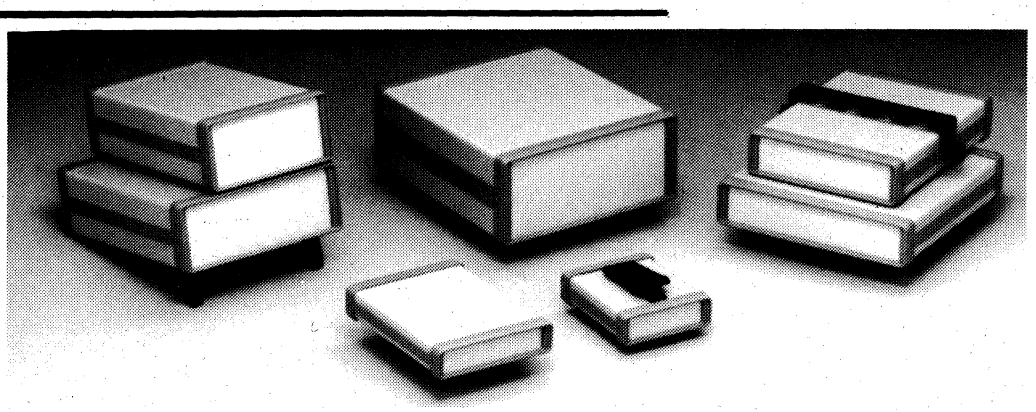


Tracewell Enclosures

7032 Worthington-Galena Road
Columbus, Ohio 43085
Ohio: (614) 846-6175

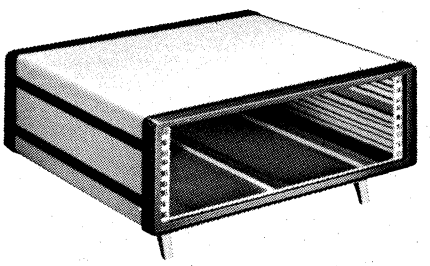
1-800-848-4525

SL Series Enclosures

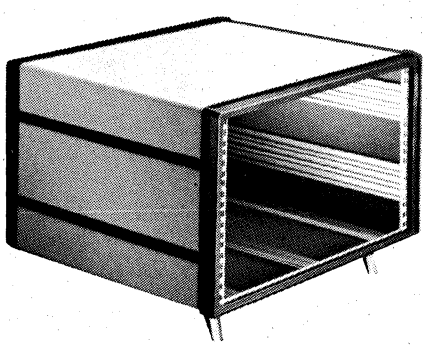


The SL series is available in seven models, from 3.5"W x .97"H x 3.7"D to 7.46"W x 3"H x 8"D. This series is constructed using extruded aluminum sides with PC grooves, aluminum front and rear panels, vinyl clad aluminum top and bottom covers. The bezels are injection molded polycarbonate. Pull down feet are standard. Options include: Chassis plate, mounting bracket and belt clip.

E Series Enclosures



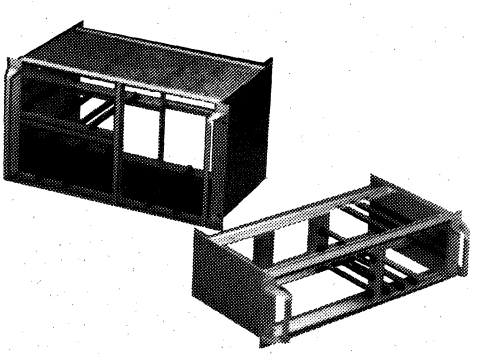
The E series enclosures are designed to accept standard 19" panels or sub-racks. They are available in two heights, 5.25 inches (3U) and 10.5 inches (6U). Standard depth is 17 inches. The aluminum construction provides a light weight enclosure, ideal for EuroCard systems.

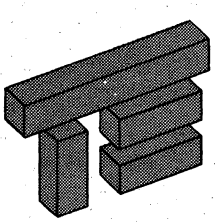


ET Series Sub-Racks

The ET series sub-racks and accessories conform to international standard dimensions (DIN, IEC, IEEE, etc.). The three models are designated ET3U to accommodate single height EURO cards and modules, ET6U to accommodate double height EURO cards and modules and ET4.5 to accommodate STD buss circuit cards.

The ET series sub-racks and accessories are designed for easy assembly, attractive appearance and rugged use. These 19" sub-rack systems are an ideal companion to the E3 and E6 series enclosures.





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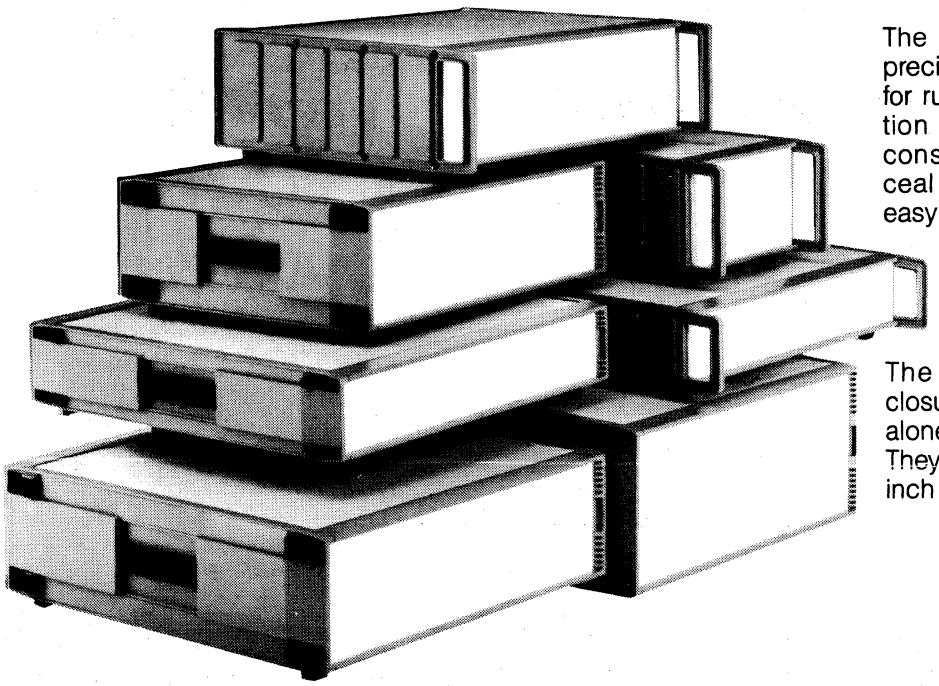
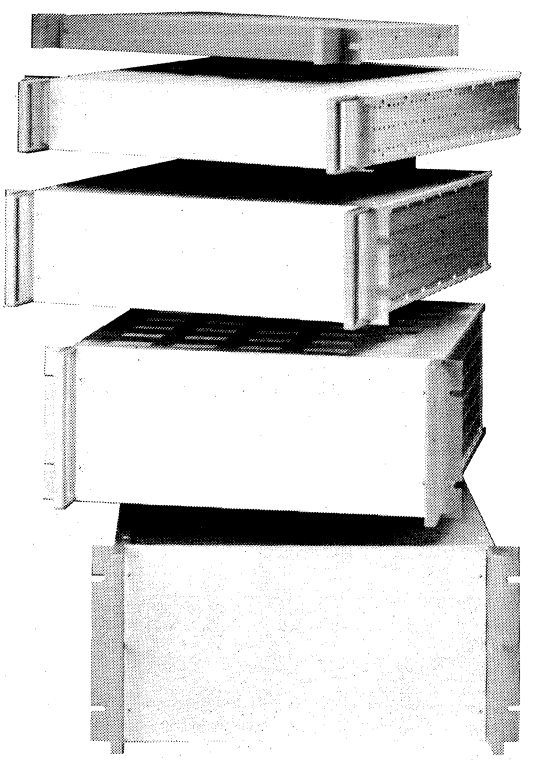
R/SR Series Enclosures



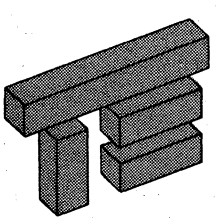
The R and SR enclosures use precision aluminum die castings for ruggedness as well as function and appearance. Unique construction techniques conceal the fasteners, yet provide easy access to the interior.

The R and SR series of enclosures can be used as stand-alone or as rack-mounted units. They are available in full EIA 19 inch rack and half-rack sizes.

CH Series Enclosures



The CH series is a heavy-duty 19 inch rack-mounted chassis enclosure designed to comply with EIA standard RS310-C. Units are available in five heights: 1.75 inches, 3.5 inches, 5.25 inches, 7 inches and 8.75 inches, and two standard depths: 12 inches and 19 inches. Precision die cast aluminum handles act as structural members and also as EIA mounting brackets.



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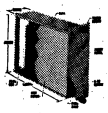
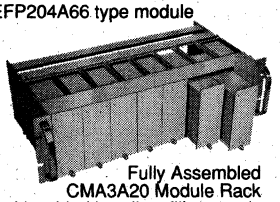
Rack Mounting Card & Module Racks
Desk Top Instrument Cases

VECTOR ELECTRONIC COMPANY

EXTENDED FRONT PANEL MODULE/RACKS



EFP204A66 type module



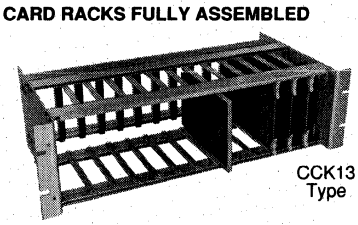
Fully Assembled CMA3A20 Module Rack with added handles, filler panels EFP204A66 modules

Vector-Pak® Module racks are supplied completely assembled, ready for EFP modules. Connectors mount anywhere along bracket-mounted struts which are pre-loaded with 4-40 nuts. All aluminum, natural anodized finished racks provide sturdy custom-looking housing. Fit standard 19" racks.

Part No.	Description	"A" Dim.	"B" Dim.
CMA3A16	Assembled module rack for ten 1.6" w. x 6.6" lg. modules EFP164A66	9"	5 1/4"
CMA3A20	Assembled module rack for eight 2" w. x 6.6" lg. modules (EFP204A66)	9"	5 1/4"
CMA4A20	Assembled module rack for eight 2" w. x 9.6" lg. modules (EFP204A97)	12"	5 1/4"
CMA4A30	Assembled module rack for five 3" w. x 9.7" lg. modules (EFP304A97)	12"	5 1/4"

Order modules separately • 66 module, 6 rack models available off the shelf • contact Vector for special requirements.

CARD RACKS FULLY ASSEMBLED



CCK13 Type

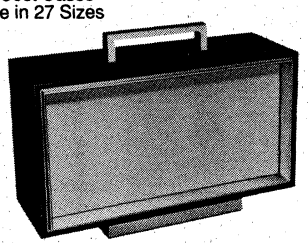
Vector Card Racks fit 19-inch racks and are supplied completely assembled ready for cards. Connectors mount without hole drilling to bracket mounted aluminum struts which have captive 4-40 nuts. 5 1/4" high unit holds cards 3" to 4 1/2" wide by 6.5" or 9.6" long. 8 3/4" high unit holds cards 6 1/2" to 7.98" wide by 9.6" long. Sturdy aluminum construction used throughout except on CCK13P which has nylon guides.

Part No.	Description
CCK13	Assembled rack 5 1/4" h. x 19" w. x 8.9" deep with 21 pairs of guides installed on 3/4" centers. Also available—CCK13P w/plastic guides.
CCK17	Assembled rack 8 3/4" h. x 19" w. x 12" deep with 21 pairs of guides installed on 3/4" centers.

Table top cases, doors, & accessories available • 20 models available off the shelf • Fast production on custom models

MULTI MOD SMALL INSTRUMENT CASES

Handsome,
Low Cost Cases
Come in 27 Sizes



Special

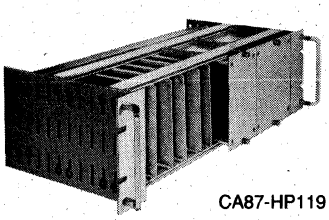
Elegant finish is clear anodize. Extruded aluminum frames for light weight, high strength, and fine appearance. Internal extruded grooves position and hold 1/16" circuit cards, spaced .150 or .160 Base and two side panels are quickly removable for easy access to contents. Optional accessories include bezels and handles.

Catalog No.	Width	Length	Height
W245-10-66B	4.5	10.00	6.61
W45-10-46B	4.5	10.00	4.61
W4586-46B	4.5	8.61	4.61
W30-6646B	3.0	6.61	4.61
W20-46-31B	2.0	4.61	3.10
W16031-31B	1.6	3.10	3.10

USER DESIGNED PACKAGING

All parts of the extensive Vector-Pak® system may be purchased separately to speed packaging prototypes.

RACK MOUNTING FRAME KITS

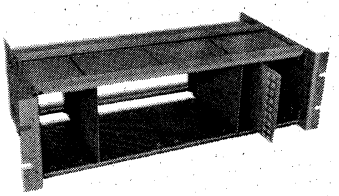


CA87-HP119

Adjusts to all card, module or receptacle size within range. Kits are supplied unassembled and have all required hardware. Major parts include 2 aluminum flanged side walls formed and slotted for standard rack mounting, 6 extruded aluminum T-struts (cross members) with mounting brackets and printed scale marking plus large assortment of required and extra screws, nuts, and lock washers. Card guides must be ordered separately. Special features of these kits are: slotted side walls for maximum mounting versatility—bracket mounting for all cross members (T-struts) for forward-backward positioning.

Type	Height (in.)	Depth (in.)	Max. Height Module	Max. Height Card
CA52-HP89	5.23	8.97	4.62	4.50
CA52-HP119	5.23	11.97	4.62	4.50
CA87-HP119	8.73	11.97	8.10	8.00

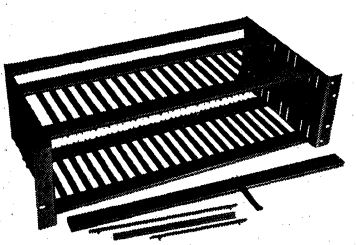
CONTINUOUS-PLATE CARD GUIDE RACKS



For maximum card density and position flexibility. 19" rack mounting cage in all aluminum with extruded plates having 0.075" wide by 0.10" deep grooves on 0.150" centers riveted to heavy cross struts. Comes completely assembled.

Type	Description
CCK3	Rack for 3.0-4.5" x 5.5" x 5.5"-7.0" cards
CCK4	Rack for 3.0-4.5" x 8.6" -10.1" cards
HA-12	Cage handles (2 per Package)
FP52-2	Filler panels for 5 1/4" high racks

UNASSEMBLED CARD RACK WITH SNAP-IN CARD GUIDES



Lower priced and more flexible. All-aluminum 19-inch rack mounting side walls and extruded cross members and holes for snap-in guides plus 4-way adjustable rear struts, preloaded with hardware for attaching connectors. Furnished molded snap-in nylon guides for 1/16" thick circuit cards. Cages accept 6 1/2" long cards 3" to 4 1/2" wide. Card spacing on .25" centers.

Type	Position	Width	Depth
CCK13S	21	19"	9"
CCK13AS	10	10.25"	9"

SNAP-IN CARD GUIDE

For use in Vector T-Strut, or user-supplied metal plates. Molded UL flame retardant 6/6 nylon guides can be installed in .156" diameter holes in metal thickness from .060" to .125". All used with P-type sidewalls. (*) indicates guide can also be used with E-type sidewalls.

Type	Length	Dimensions (inches) Centers	Dimensions (inches) Card Length
BR20-19S	8.43	7.50	9.50
BR20-17S	6.93	6.00	8.00
BR20-6S*	5.42	4.50	6.50
BR20-13S	3.17	2.25	4.50

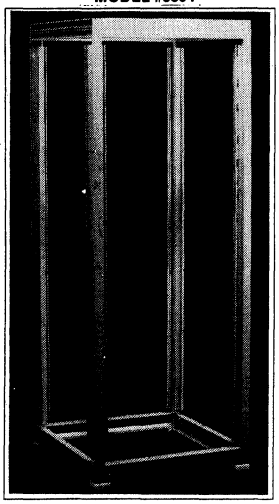
VECTOR ELECTRONIC COMPANY, 12460 Gladstone Ave., PO Box 4336, Sylmar, CA 91342-9988 Phone 818-365-9661, FAX: 818-365-5718
Call Toll Free in CA 800-426-4652, Outside CA 800-423-5659 (For custom configurations contact factory directly).

WATCO Inc.

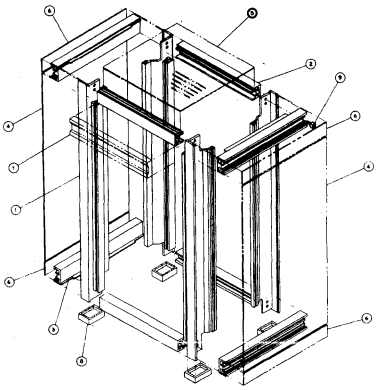
Power Electronics & Communications/ Electronic Enclosures
315 Racetrack Road, N.E. • Fort Walton Beach, Florida 32548 • (904) 863-2247

STANDARD 19" RACK

MODEL #8604



The series 8604 19" racks are constructed of rugged, clear anodized aluminium extrusions. They are modular, knock down units that can be easily assembled to meet your specific size requirements. Equipment mounting is accommodated by fully adjustable spring nuts located in the front panel track. Fully adjustable slide guide mounting is also provided for. Aluminium feet or solid rubber casters may be used for increased mobility. Panels and covers are .040", 3003 aluminium, vinyl laminated, with a chromate back. Prices start at $198. (Model 86041000).

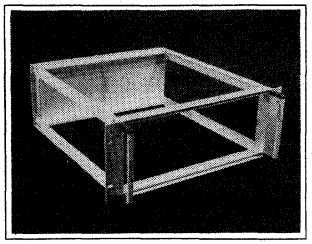


U	HEIGHT	WIDTH	CABINET DEPTH (In)	DRAWER DEPTH (In)	WEIGHT (LBS.)	ORDER #
30	58.12	21.63	22	21	45.2	86041000
30	58.12	21.63	30	29	48.0	86041001
35	66.87	21.63	22	21	49.2	86041002
35	66.87	21.63	30	29	52.0	86041003
38	72.12	21.63	22	21	51.6	86041004
38	72.12	21.63	30	29	54.4	86041005
40	75.62	21.63	22	21	53.2	86041006
40	75.62	21.63	30	29	56.0	86041007

*Other sizes available on request.
*Units are available assembled, in kits or extrusions.
*Steel panels available on special orders.

①	VERTICAL RAIL	- 86043702
②	HORIZONTAL RAIL	- 86043700
③	SIDE RAIL	- 86043701
④	SIDE PANEL	- 86043705
⑤	TOP COVER	- 86043707
⑥	SIDE RAIL COVER	- 36043706
⑦	FACE PLATE	- 86043703
⑧	FEET	- 86043704

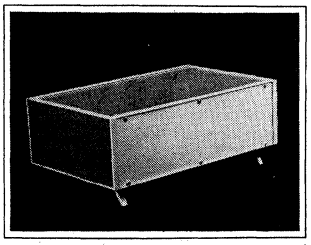
STANDARD SUB-RACK 8605A



8605A

HT. U	WDTH. HP.	DPTH. (IN)	WT. (LBS.)	ORDER #
3	80	12	4.8	86051000
3	80	8.66	4.4	86051001
4	80	19	5.4	86051002
4	80	12	4.7	86051003
4	80	8.66	4.4	86051004
5	80	24	6.1	86051005
5	80	19	5.6	86051006
5	80	12	4.9	86051007
5	80	8.66	4.5	86051008
6	80	24	6.2	86051009
6	80	19	5.7	86051010
6	80	12	5.0	86051011

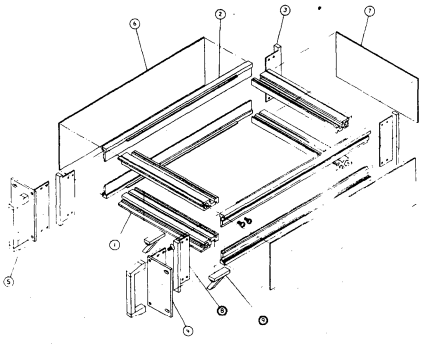
STANDARD INSTRUMENT CABINETS 8605B



8605B

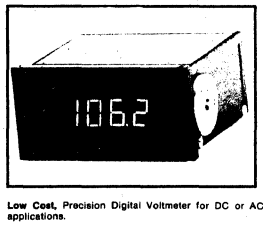
WDTH. (IN)	HT. (IN)	DPTH. (IN)	WT. (LBS.)	ORDER #
16.75	5.25	10.62	10.8	86051020
8.37	5.25	10.62	6.0	86051021
4.18	5.25	10.62	4.7	86051022

The series 8605 subracks and instrument cabinets are functional and attractive enclosures constructed of high quality, rugged, clear anodized aluminium. They are modular for packaging flexibility and can be configured for a rack mount chassis or a tabletop enclosure by changing the vertical rails and adding handles or feet. Front or rear panels are 0.11" anodized aluminium. Covers are .040" aluminium, vinly laminated. Prices start at $36. (Model 86051022).



①	HORIZONTAL RAIL	- 86053702
②	SIDE RAIL	- 86053703
③	VERTICAL RAIL (PLAIN)	- 86053701
④	VERTICAL RAIL (W/EARS)	- 86053700 *(W/19" Sub-Rack)
⑤	HANDLE	- 86053704 *(W/19" Sub-Rack)
⑥	SIDE PANEL	- 86053705
⑦	REAR PANEL	- 86053706
⑧	VERTICAL RAIL (PLAIN)	- 86053701 *(Instrument Cabinet)
⑨	LEGS	- 86053707 *(Instrument Cabinet)

DIGITAL VOLTMETER 8607



Low Cost, Precision Digital Voltmeter for DC or AC applications.

Display -	Four Characters .56 High, Negative Sign, Internal Decimal Selection
Overrage -	A "1" is displayed
Accuracy -	Better than 0.5%
Input Power -	5V DC, 115V or 220V AC
Applications -	Voltmeter for DC or AC Voltage
-	Ammeter for DC or AC Current
Input Resistance -	> 100 Megaohms
Mechanical -	Face 3.77" x 1.89" Mounting Slot 3.54" x 1.68" Depth (incl. pins) 3.25"

VOLTMETER

Range	Order #
0-199.9mV	86071000 - DC - *
0-1.999V	86071001 - DC - *
0-19.99V	86071002 - DC - *
0-199.9V	86071003 - DC - *
0-1999V	86071004 - DC - *
0-199.9mV	86071005 - AC - *
0-1.999V	86071006 - AC - *
0-19.99V	86071007 - AC - *
0-199.9V	86071008 - AC - *
0-1999V	86071009 - AC - *

AMMETER

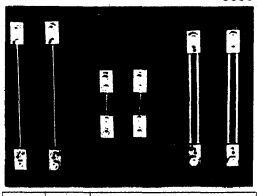
Range	Order #
0-199.9mA	86071010 - DC - *
0-1.999A	86071011 - DC - *
0-19.99A**	86071012 - DC - *
0-199.9A**	86071013 - DC - *
0-199.9mA	86071014 - AC - *
0-1.999A	86071015 - AC - *
0-19.99A**	86071016 - AC - *
0-199.9A**	86071017 - AC - *

*Indicate input power (-1, 5VDC)(-2, 115VAC)(-3, 220 VAC)
**Use with external shunts

The series 8607 DVMs offer an accurate, cost effective alternative for DC/AC voltage, current, temperature, or other digital metering. It is housed in a black anodized aluminium case which fits into a DIN standard cutout and features bright red .56" characters (see specification). Prices start at $39. (5VDC Model).

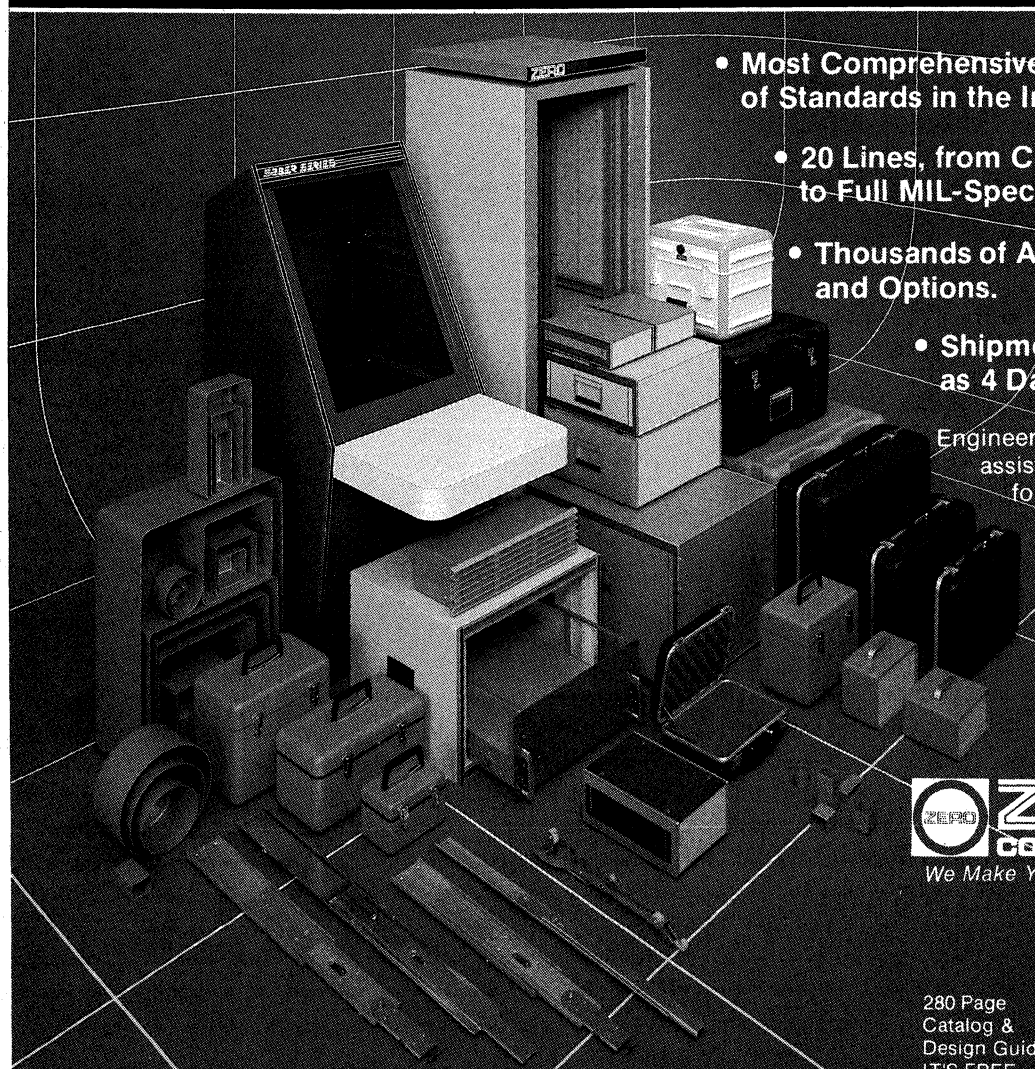
The series 8608 are high current, precision shunts for current measuring equipment and are readily available from stock. The base is constructed of copper. The resistive element is manganin (84Cu, 12Mn, 4Ni). The temperature coefficient of resistivity is 0.2% per 100°C. The thermoelectric coefficient is zero. Prices start at $9. (Model 86081000).

SHUNTS 8608



AMPS	MV	Order #
20	50	86081000
50	50	86081001
200	50	86081002
500	50	86081003
20	100	86081004
50	100	86081005
200	100	86081006
500	100	86081007
20	200	86081008
200	200	86081010

SINGLE SOURCE.



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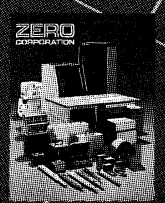

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Save design and engineering time. Simple part number ordering assures compliance to all major specs.

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Capacities from 80 to 275 lbs/pair. Roll formed steel or aluminum. Broad selection of handles, retractors, etc.

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SUPER 100 CLEANER AND LUBRICANT



SUPER 100 is a fast drying cleaner and lubricant that is excellent for all TV tuners and controls as well as electrical contacts and machined parts. SUPER 100 causes no destructive action on plastics, electrical insulation and wire coatings. Specially formulated with TF Freon for the industrial electronic industry. When you care to use the very best, this is the cleaner for you. Available in 3 oz., 6 oz., 16 oz.

ANTI-FUNGUS VARNISH



ANTI-FUNGUS VARNISH is a moisture and fungus resistant varnish conforming to MIL-173C specifications. It will produce a hard antifungus film that is acid and salt water resistant. It is an air drying varnish, natural in color and is recommended to be used on all electronic equipment especially in hot and humid climates. This insulating varnish is suitable for use on electrical windings, generators, transformers and electronic equipment. Available in 12 oz. spray and gallons.

PHOTO RESIST DEVELOPER

For Photo-Sensitized Boards



PHOTO RESIST DEVELOPER is a specially prepared solvent for developing photo resist images. It can be used for printed circuits, semiconductor parts and electroplating stopoff.

PHOTO RESIST DEVELOPER FOR NEGATIVE ACTING RESIST
Compatible with Kodak KPR resists.

No. D2-8	8 oz. can
No. D2G	1 gallon can

DRY FILM DEVELOPER

No. D1-6	6 oz. btl.
No. D1-P	16 oz. btl.
No. D1-G	1 gallon

CONCENTRATED PHOTO RESIST DEVELOPER FOR POSITIVE ACTING RESIST
Mix one part concentrate with 4 parts water.

No. D3-2	2 oz. bottle
No. D3-P	16 oz. bottle
No. D3G	1 gallon

STRIPPER—For negative or positive resists

No. PC194S-8	STRIPPER	8 oz. can
No. PC194S-G	STRIPPER	1 gallon

TAPE HEAD CLEANING STICKS

For Tape Recorder Heads



TAPE HEAD CLEANING STICKS are 6 inch cotton-tipped wooden swabs. They are excellent to reach dirty recorder heads without taking the tape recorder apart. Packed 100 on a hanging package.

No. 255	Cotton Tip 6″ wooden handle
No. 256	Foam Tip 6″ wooden handle
No. 257	Round Foam Tip 4″ poly handle
No. 258	Rect. Foam Tip 6″ poly handle
No. 259	Two-sided Foam Tips 6″ poly handle
No. 261	Mini Foam Tip 2¾″ poly handle

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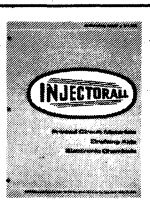
- Freezer Sprays
- Cleaners and Lubricants
- Drafting Aids
- Flat Ribbon Cable
- P.C. Wick
- Printed Circuit Kits



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SUPER JET AIR COMPUTER CLEANER



SUPER JET AIR is a pressurized chemical at 70 P.S.I. which is used for blowing dust, lint and dirt from electronic instruments as well as projection and camera lenses. It is ideal to use in computers and other precision instruments where a moisture and lint free dust remover is necessary. Replaces the use of a brush or cloth which may disturb circuitry or break fine wiring. Available in 14 oz. and 20 oz. spray can.

POLY SPRAY

Polyurethane Insulator For Coating Printed Circuits



POLY SPRAY is a polyurethane resin for application to printed circuit assemblies. When sprayed on printed circuits, it forms a smooth, homogeneous transparent coating so as not to obliterate color coding of electronic components. It has excellent resistance to moisture and abrasion and is suitable for continuous operation up to 125°C. Used by original equipment manufacturers, it should be used by all servicemen after a printed circuit repair to insure satisfactory performance.

No. 65-16 • POLY SPRAY
16 oz. spray can
No. 65G • one gallon

ETCHANT

For Printed Circuit Boards



Injectorall's ETCHANT is a ferric chloride solution to remove excess copper from printed circuit boards. It is an electronic-grade solution from which the impurities have been carefully removed to meet the most stringent requirements of the electronic industry. It is packaged in a plastic bottle. The specific gravity is 42 degrees.

	Packed
No. PC199-6 • 6 oz. plastic bottle	• 24 each
No. PC199P • 1 pint plastic bottle	• 12 each
No. PC199Q • 1 quart plastic bottle	• 12 each
No. PC199G • 1 gallon plastic bottle	• 1 or 4 each

*SHIPPED IN CARTONS ONLY

TYVEK JUMPSUIT



DuPont Tyvek® coverall is a tough, durable garment widely used and accepted throughout industry for many years. Tear and puncture resistant and resistant to most chemicals and acids. Fabric is: anti-static, lint free, washable, reusable, lightweight and comfortable. Wear it for any messy chore around the workshop. One size fits all.
No. PC-TYVEK

AMBIDEXTROUS NYLON TRICOT GLOVES



To be used to avoid fingerprints while handling copper clad boards. This low cost glove provides protection as well as a smooth untextured feel that allows the user to work with a natural touch. Reversible and can be worn on either hand. Outwears cotton gloves. Not to be used for protection against liquids.

1 Pair	12 Pair	Sizes
No. NG-SM	No. NG-SM-12	SM
No. NG-M	No. NG-M.12	M
No. NG-L	No. NG-L-12	L

NITRILE INDUSTRIAL GLOVES



This is the glove to be used while handling etchant, degreaser or stripper. Field tests indicate that the Nitrile compound has superior chemical and solvent resistance than neoprene while offering greater puncture, snag and abrasion resistance than natural latex.

1 Pair	12 Pair	Sizes
No. GN-8	No. GN-8-12	8
No. GN-9	No. GN-9-12	9
No. GN-10	No. GN-10-12	10

3M RESPIRATOR #PC8725



Good for Organic Vapor/ Acid Gas.
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For Research and Production in: Electronics, Medicine, Aerospace, Electro-Mechanics, Communications

CONDUCTIVE COATINGS SELECTOR TABLE

Conductive paint catalog numbers See descriptions below.	Most Frequent Uses							
	Gold Replace-ment	Surface Mounting	RF Shield	Aircraft Precip. Static	Membrane Switches	Static Shield	Anti-static Flooring	Sensors: Stretch, Bend, Timing
N and CN series			√		√	√		√
4c series	√	√						
CPA series	√	√						
RSE100				√		√	√	
RA2			√	√		√	√	
SC12, 13, 15, 20					√	√		√
RS17 series			√			√	√	√
RSE22			√				√	√

DESCRIPTIONS OF PAINTS LISTED ABOVE

4c SERIES OF GOLD CONTACT REPLACEMENTS

May be carried as a shirt pocket kit for field repair of worn or defective gold plated contacts or to upgrade base metal contacts. It is applied in seconds as part of normal trouble shooting procedure. Each $68, shirt pocket kit for electronic field service representatives can save over $3520 in reduced board float, call-backs, and preventative maintenance.

May also be applied on original equipment contacts by production methods. There is no need for electroplating equipment, chemical disposal, or product design changes except for the elimination of gold plating and the substitution of a 4c material by far simpler application methods which may include brushing, dipping, spraying, or banding. Even electronic and electrical battery-operated games and toys can have the dependability of gold without the cost.

These 4c gold substitutes offer one of the most effective technologies available to increase reliability in two areas: A — Reducing the cost and consumer irritation of servicing the millions of your products already in the field, and, B — By adding them to your future production, assure maximum reliability and the reputation that results from reduced manufacturing costs and reduced field repairs.

SHIELDING LARGE STRUCTURES FROM ELECTROMAGNETIC INTERFERENCE (EMI)

New Shielding Method:
Reduces cost up to 80%
Reduces time 90% to 95%
Simplifies planning
Stands rough treatment

The WORRY-FREE shielding for a building, a cabinet, or a phonograph cartridge.

The new NR2HF synthetic rubber shielding combines the three KEY advantages of, 1 — Fast, low cost application by painting, 2 — Very high shielding effectiveness (up to 90 dB and, 3 — Ability to survive warping, building settling, vibration, and shock that would crack prevous shielding paint or open the seams of metal enclosures. It is INSURANCE against FUTURE problems. Applied quickly in production or in the field by spray, roller, brush, or dip. Samples available to shielding consultants and to potential shielding users.

CPA SERIES OF CONDUCTIVE ADHESIVES

These new circuit assembly materials provide a fundamentally new approach to simplifying a wide range of electrical connections such as surface mounted components, simplified connectors, and elimination of mechanical fasteners. For example, a pocket radio or TV set or wrist watch or washing machine or auto dash board circuitry can be designed to be assembled with far fewer parts and assembly operations. Surface mounted circuit board manufacture using the new Micro-Circuits assembly methods eliminates seven out of eight major items of assembly equipment and 57 of the 72 areas of cost that now limit acceptance of surface mounting. Like the 4c materials above, these products offer one of the most powerful new technologies now available for simplifying and miniaturizing electronic products.

AIRCRAFT ANTISTATIC AND RAIN EROSION RESISTANT PAINT

RSE100 paint is used for radomes and antenna covers. Used world-wide for over 20 years. One of our most goof-proof products. May be overcoated with decorative aircraft paints if our RA2 Antistatic Additive is mixed into the decorative paint to prevent static puncture damage and loss of antistatic effectiveness. RSE100 is very abrasion and chemical resistant as an antistatic flooring. May be overcoated with conventional floor coatings containing RA2 Antistatic Additive. RSE22 is similar to RSE100 but has a resistance of less than 200 ohms for shielding, ground planes on boat hulls, etc.

STATIC ELECTRICITY PROTECTION

Static electricity protection is becoming critically important in sensitive equipment, computer rooms, electronic warehouses, assembly lines and assembly benches, many hospital areas, chemical processing plants, and similar areas. The RSE100 Antistatic paint (see above) may be used on floors, walls, tables, furniture, etc. The RA2 Antistatic Additive (see above) permits the use of decorative, protective, and color-coding where such paints would previously have caused static problems.

SC12, SC13. SC20, AND SC15 SILVER PAINTS

These are conductive silver paints and inks used to form "wires", electromagnetic shielding, cold soldering of fine wires, reversing contacts on recording tape, conductive areas on paper and plastic parts, adjusting resistors, coils, capacitors, and pots. They have been used by magicians and to indicate fracture of rocks and aircraft parts. SC20 is for human skin electrodes.

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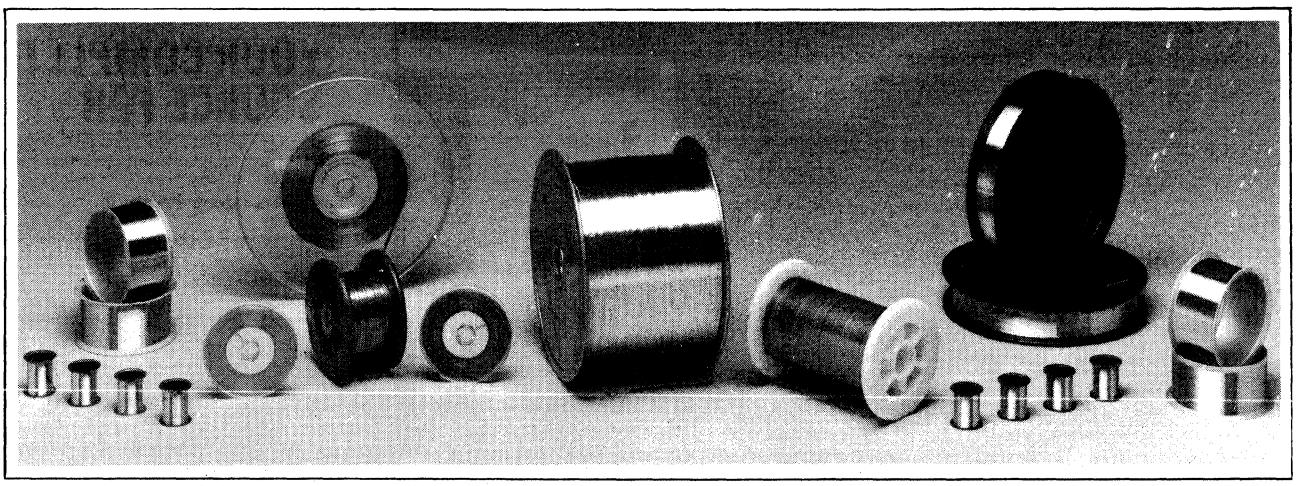
Precision Wire and Ribbon



SPM wire is widely used in the manufacturing of semiconductor devices as an electrical interconnect, either between a chip and substrate or between two chips.

The materials offered are of the highest quality, refined and alloyed by **SPM** to produce the excellent properties demanded of finished wire and ribbon products.

In addition to **pure gold**, the applications of which are well established, other alloys which offer alternate specific cost/performance characteristics are supplied.

Aluminum alloys, for example, are generally preferred to pure aluminum except in high-current devices because of greater drawing ease to fine sizes and higher pull-test strengths in finished devices. Commercially pure aluminum and 1% silicon-aluminum are most commonly used.

All-aluminum systems in semiconductor device fabrication, eliminate the "purple plague" (brittle gold-aluminum intermetallic compound) sometimes associated with pure gold bonding wire. Aluminum is particularly suitable for ultrasonic bonding.

SPM wire and ribbon standards are unsurpassed in the industry. Wires, for example, are supplied in diameters from 0.0005″ and up for applications where uniformity of elongation, tensile strength and diameter are of paramount importance. High-purity wire, like all **SPM** products for the electronics industry, is vacuum-processed from highly refined metals. Wire for automatic bonders are an **SPM** specialty.

Ribbons of pure gold and base metals for microwave and other applications are also available from **SPM** and are customed-manufactured to close specifications. As with wire, many of the base metals can be supplied plated with other metals for PC board repair and other applications.

Precision Stampings

SPM preforms, for brazing and soldering assembly operations, deliver controlled melting and flow points, high thermal conductivity, precise dopant characteristics, and close dimensional and volumetric tolerances.

SPM supplies all the popular alloys in soft base metal solders, gold eutectic solders, and hard braze materials. We also offer base metal alternatives to gold preforms.

Many shapes and sizes are available made from spectrographically analyzed metals, cast, rolled, and heat-treated under strictly controlled conditions. **SPM** preforms are stamped on precision equipment under continuous inspection, with tools, and dies made by **SPM**'s own toolmakers to tolerances of ±0.0001″.

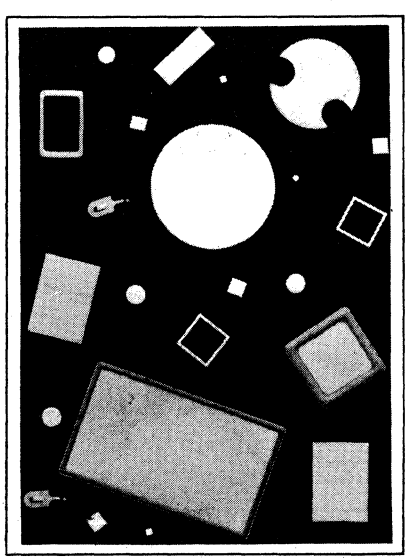
Nickel, F-15, alloy 42, molybdenum, stainless steel, and various other base metals and alloys are manufactured into lids, base tabs, and other parts by **SPM**.

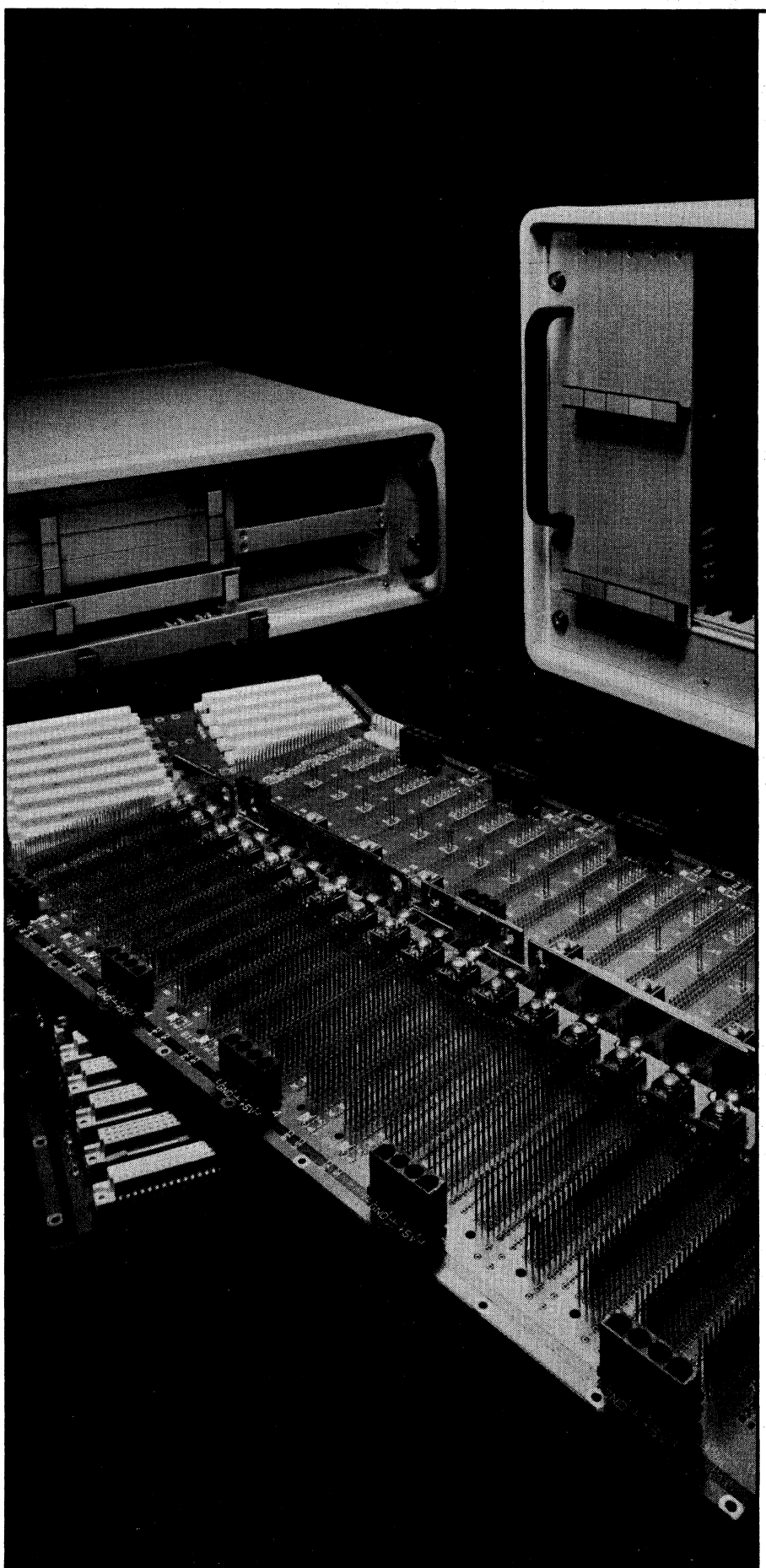
PREFLOW® LID

A low cost alternative to the gold plated lid, gold tin preform assembly — available NOW!

BRAZING ALLOYS AND TEMPERATURES

The **SPM** alloys shown below require moderate to high temperatures for brazing, and are often used to assemble metal parts, to metal and metalized ceramic packages, pedestals to bases, and other special applications.





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CIRCUIT BOARDS

Manufacturer	EEM Page No.	1-side	2-side	Clad	Unclad	Rigid	Flexible
C & C Jetronics	C•1110	¤	¤	¤		¤	
Injectorall	C•1111	¤	¤	¤	¤	¤	
Vector	C•1113			¤	¤		¤

ACCESSORIES & SERVICES

Manufacturer	EEM Page No.	Etchants	Dry Transfer Patterns & Symbols	Cleaners & Solvents	Assembly & Fabrication Services	Terminals & Pins
C & C Jetronics	C•1110				¤	
Injectorall	C•1111	¤	¤	¤	¤	
Vector	C•1113					¤

C & C JETRONIC, INC.

Printed Circuit Board Modules Assemblies.

- COMPLETE DESIGN AND ENGINEERING OF PCB MODULES FOR COMMERCIAL, INDUSTRIAL AND INSTRUMENTAL APPLICATION.
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- COMPETITIVE PRICES FOR LARGE VOLUME REQUIREMENT.
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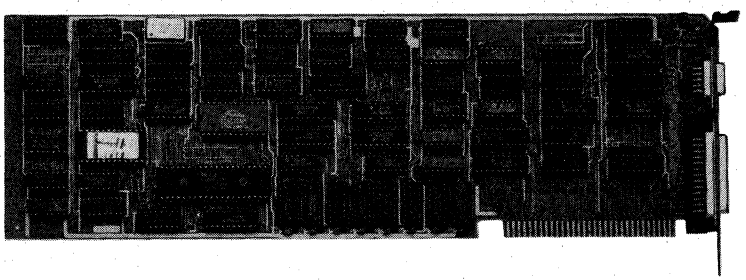
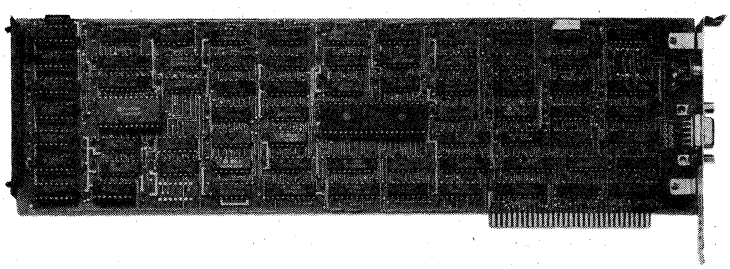
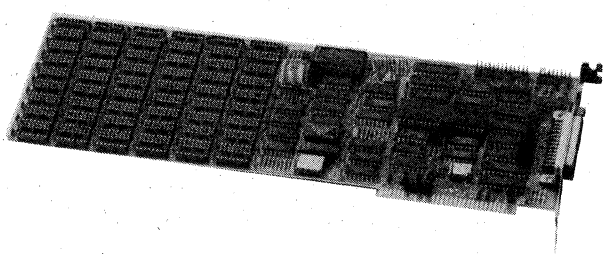
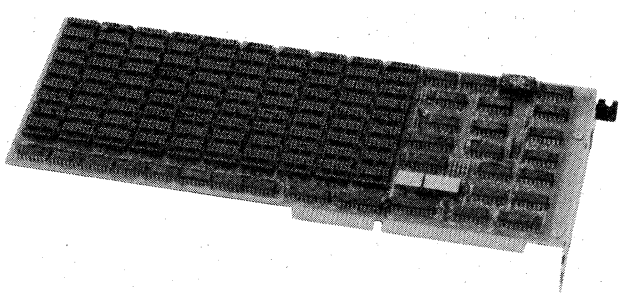
- STRICT QUALITY CONTROL THROUGHOUT THE PROCESS.
- WE CAN BUILD FOR YOU, MORE COST EFFECTIVELY, QUICKLY AND RELIABLE.
- SINGLE, DOUBLE, OR MULTILAYER SIDE BOARD.
- DRY FILM SOLDER MASK SCREEN PRINTING.
- NICKEL, GOLD, TIN/LEAD PLATING.
- UL APPROVED.
- RANGE OF LAMINATES: G-10, CR-4, CEM-3.
- COPPER PLATING THROUGH HOLES 0.0008 INCH MIN. — TIN LEAD PLATING 0.00010 INCH MIN. — NICKEL PLATING 0.0002 INCH MIN.
- COMPLETE PROTOTYPE TO PRODUCTION CAPABILITIES.
- SPECIALIZING IN HIGH VOLUME PRODUCTION.









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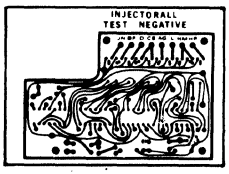
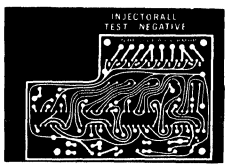


POSITIVE ARTWORK



NEGATIVE ARTWORK

Copper clad laminates available as:

1. Uncoated;
2. Negative resist coating; or
3. Positive resist coating.

UNCOATED

Size	Copper Thickness	CEM Cat. Nos. 1 side	CEM Cat. Nos. 2 sides	FR4 Cat. Nos. 1 side	FR4 Cat. Nos. 2 sides	Copper Thickness	CEM Cat. Nos. 1 side	FR4 Cat. Nos. 1 side	FR4 Cat. Nos. 2 sides	Copper Thickness	FR4 Cat. Nos. 1 side	FR4 Cat. Nos. 2 sides
3 x 4½	1 oz.	PC1-CEM	PC9-CEM	PC5	PC40	2 oz.	PC5-CEM	PC9	PC51	1 oz.	PC55	PC44
*3⅜ x 6″	1/16″	—	—	PC5A	PC40A	1/16″	—	—	—	1/32″	—	—
4 x 6″		PC2-CEM	PC10-CEM	PC6	PC41		PC6-CEM	PC10	PC52		PC56	PC45
6 x 9		PC3-CEM	PC11-CEM	PC7	PC42		PC7-CEM	PC11	PC53		PC57	PC46
*6 x 9 w/ 3⅜ edge		—	—	PC5B	PC40B		—	—	—		—	—
12 x 18		PC4-CEM	PC12-CEM	PC8	PC43		PC8-CEM	PC12	PC54		PC58	PC47
24 x 36		PC4-CEM-1	PC12-CEM-1	PC8-1	PC43-1		PC8-CEM-1	PC12-1	PC54-1		PC58-1	PC47-1
36 x 48		PC4-CEM-2	PC12-CEM-2	PC8-2	PC43-2		PC8-CEM-2	PC12-2	PC54-2		PC58-2	PC47-2

NEGATIVE RESIST BOARDS (BLACK BAG—RED HEADER) USE WITH INJECTORALL D2 DEVELOPER

3 x 4½	1 oz.	PC1-CEMS	PC9-CEMS	PC17	PC40S	2 oz.	PC5-CEMS	PC9S	PC51S	1 oz.	PC55S	PC44S
*3⅜ x 6″	1/16″	—	—	PC5AS	PC40AS	1/16″	—	—	—	1/32″	—	—
4 x 6		PC2-CEMS	PC10-CEMS	PC18	PC41S		PC6-CEMS	PC10S	PC52S		PC56S	PC45S
6 x 9		PC3-CEMS	PC11-CEMS	PC19	PC42S		PC7-CEMS	PC11S	PC53S		PC57S	PC46S
*6 x 9 w/ 3⅜ edge		—	—	PC5BS	PC40BS		—	—	—		—	—
12 x 18″		PC4-CEMS	PC12-CEMS	PC19A	PC43S		PC8-CEMS	PC12S	PC54S		PC58S	PC47S

POSITIVE RESIST BOARDS (BLACK BAG—BLUE HEADER) USE WITH INJECTORALL D3 DEVELOPER

3 x 4½	1 oz.	PC1-CEMP	PC9-CEMP	PC17P	PC40P	2 oz.	PC5-CEMP	PC9P	PC51P	1 oz.	PC55P	PC44P
*3⅜ x 6	1/16″	—	—	PC5AP	PC40AP	1/16″	—	—	—	1/32″	—	—
4 x 6		PC2-CEMP	PC10-CEMP	PC18P	PC41P		PC6-CEMP	PC10P	PC52P		PC56P	PC45P
6 x 9		PC3-CEMP	PC11-CEMP	PC19P	PC42P		PC7-CEMP	PC11P	PC53P		PC57P	PC46P
*6 x 9 w/ 3⅜ edge		—	—	PC5BP	PC40BP		—	—	—		—	—
12 x 18″		PC4-CEMP	PC12-CEMP	PC19AP	PC43P		PC8-CEMP	PC12P	PC54P		PC58P	PC47P

* FITS 22/44 CARD EDGE CONNECTOR **FLEXIBLE BOARDS AVAILABLE** **DRY FILM BOARDS AVAILABLE**

Special Cuts available in sizes from 3″ x 3″ up to 12″ x 18″. One or two sides copper clad and as uncoated or positive or negative coated. Please specify coating required and type from chart shown above. There is no charge for cutting and price is based on area. Minimum order for special cuts: 6 pieces each size.

WE ARE AFFILIATED WITH A QUALITY PC HOUSE FOR PROTOTYPES AND SMALL RUNS.

POSITIVE PHOTO RESIST PC197-3



For sensitizing boards. High quality positive resist which will cause less pinholing. Available in 3 oz. aerosol spray can. Has less sensitivity to white light than other resists.

CIRCUIT BOARD DRILL BITS

Specially designed for smooth, burr-free drilling in printed circuit boards. Made of high speed tool steel, straight shank.

Drill Bit No.	Diameter	No. PC 300— pkg. of 4 bits (1 of each)
69	.029	No. PC 300-69 10 pcs. of #69
66	.033	No. PC 300-66 10 pcs. of #66
60	.040	No. PC 300-60 10 pcs. of #60
52	.062	No. PC 300-52 10 pcs. of #52



QUIKBOARDS and BUS STRIPS

a Solderless Breadboard to make a Prototype as fast as you can think



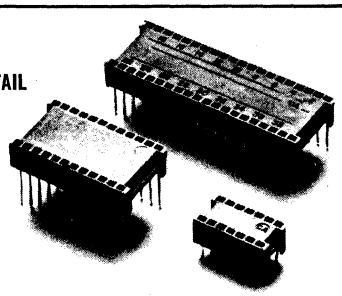
FEATURES

1. **EASY** ..... Plug any IC into the QUIKBOARD on a 1/10″ grid.
2. **ASSEMBLY** ..... Push #22AWG solid wire into any of five solderless tie-points.
3. **EXPAND** ..... Dove-tail extrusions expands breadboards to any size by simply locking QUIKBOARDS together.
4. **MOUNTING** ..... Mounts on any flat surface with #4 self-tapping screws.
5. **BUS STRIPS** ..... Bus Strips may be added to any board for power or ground lines. Bus Strips have 2 separate rows of common terminals grouped into clusters of five.

QUICKBOARD No.	Terminals	Length	BUS STRIPS No.	Terminals	Length
B9417	840	6½″	B9407	100	6½″
B9418 Project Bd.					

IC SOCKETS

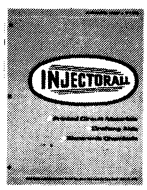
WIRE-WRAP and SOLDER TAIL



OTHER INJECTORALL QUALITY PRODUCTS

- P/C Chemicals and Suppplies
- IC Sockets
- "D" Sub-min Connectors
- Breadboards and Terminals
- Conformal Coatings: Anti-fungus Varnish Polyurethane Resin Acrylic
- Cleaners and Lubricants
- Freezer Sprays
- Drafting Aids
- Flat Ribbon Cable
- P.C. Wick
- Printed Circuit Kits

SEND FOR FREE COMPLETE CATALOG



INJECTORALL ELECTRONICS CORP. • 110 KEYLAND COURT • BOHEMIA, NY 11716 • (516) 563-3388
Woman Owned Small Business

See our other pages, Sections 1600, 4200, Volume C

MINIGLOSSARY ENCAPSULATION

MATERIALS/HANDLING

Catalyst: A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

Conformal coating Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

Curing agent: See catalyst.

Hardener: See catalyst.

Hermetic: A permanent gas-tight seal.

RTV: Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

Thermoplastic: Plastic materials which can be made to flow *repeatedly* with the application of heat.

Thermosetting: Plastics which once cured cannot be made to flow again.

Thixotropy: The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

Viscosity: Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

PROCESSING

Casting: Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

Dip coating: Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

Embedding: Wherein an encapsulant substantially fills all voids in and about an assembly.

Impregnation: A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

Molding: Similar to casting except this process usually implies multicavity molds and costly machines.

Potting: Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

DIELECTRIC

Arc resistance: An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

Breakdown voltage: The voltage at which an encapsulant fails electrically.

Capacitance: The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

Corona: A luminous discharge of electricity due to air ionization when a certain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

Dielectric: Insulator (Nonconductor.)

Dielectric constant: The property of a material that determines its ability to store electrostatic energy.

Dielectric strength: The ratio of dielectric breakdown to the thickness of insulating material.

Dissipation factor: The ratio of a dielectric material's energy losses.

Flashover: Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

Insulation resistance: (IR) An insulating material's total DC leakage.

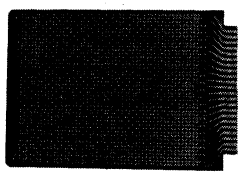
Surface resistivity: The resistance of the surface of an insulating material to the flow of direct current.

Voltage endurance: Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

Volume resistivity: The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.

Protyping Cards - Connectors
VECTORBORD™ Terminals

VECTOR ELECTRONIC COMPANY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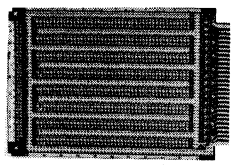
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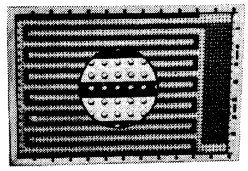
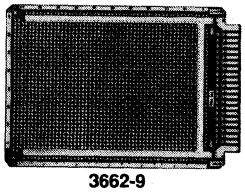

8002 Circbords®

Vectorboard® Pattern P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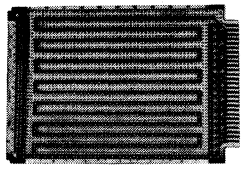
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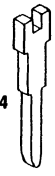
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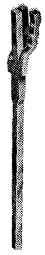
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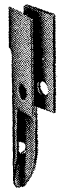
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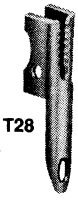

T28

PUSH IN TERMINALS

UNIVERSAL PROTOTYPING CARDS

Use for prototype, test, and short run plug-in circuits. All boards are 1/16" thick and have an overall grid of 0.042" holes on 0.1" centers (pattern "P"). All etched circuitry above contact area is tinned for easy soldering. Boards are available with varied contact arrangements and mating connectors are listed. Back-to-back contacts terminate in independent hole pads. Layout paper furnished with all boards.

PROTOTYPING CARD AND CIRCBORD® SPECIFICATIONS

Flame retardant epoxy glass composite.
Copper cladding: 2 oz. (.0027" thick) 1 or 2 sides.
Solder coated except contacts.
Plugboard contacts: Nickel plated and gold flashed.
Terminals: Stamped brass or phosphor bronze tinned

ORDERING INFORMATION

Part No	Size	Contacts Number	Contacts Spacing	Max. No. 16-pin DIPS Accom.	Circuitry Description	Mating Connectors Solder Tail	Mating Connectors Wrap Tail	Mating Connectors Extenders
3662	4.5 x 6.5	44	.156	50		R644	R644-3	3690
3662-2	4.5 x 9.6	44	.156	90	Contacts only	R644	R644-3	3690
3662-5	4.5 x 4.5	44	.156	40		R644	R644-3	3690
3662-9	4.5 x 6.5	44	.156	50	Same as 3662, but with plated thru holes	R644	R644-3	3690
3662A6	4.5 x 6.5	44	.156	54	Ground plane, component side	R644	R644-3	3690
3673	7.98 x 9.6	80	.125	152	Contacts only	R680-2	R680	3690-14
3677	4.5 x 9.6	44	.156	21	3-hole pad groups for component mounting and inter-	R644	R644-3	3690
3677-2	4.5 x 5.5	44	.156	12	connection. Interleaved ground & voltage buses	R644	R644-3	3690
3682	4.5 x 9.6	44	.156	48	For wire wrapping. Interleaved ground &	R644	R644-3	3690
3682-2	4.5 x 6.5	44	.156	24	voltage buses, 3682-4 has ground plane on	R644	R644-3	3690
3682-4	4.5 x 6.5	44	.156	24	component side	R644	R644-3	3690
3719-1	4.5 x 6.5	72	.100	60	Contacts only	R636-2	R636-1	3690-2
3719-2	4.5 x 6.5	72	.100	12	Horizontal etched conductor lines	R636-2	R636-1	3690-2
3719-4	4.5 x 9.6	72	.100	90	Contacts only	R636-2	R636-1	3690-2
3719-5	4.5 x 4.5	72	.100	30	Contacts only	R636-2	R636-1	3690-2
3619-6	4.5 x 6.5	72	.100	48	Contacts with or without pads and plated through holes	R636-2	R636-1	3690-2
3797	2.73 x 4.5	30	.156	16	Contacts only	R630	R630-1	3690-10
3797-2	2.73 x 4.5	30	.156	4	Power and ground buses and 3-hole solder pads	R630	R630-1	3690-10
4066-4	4.5 x 6.5	72	.100	34	Interleaved power & ground buses plus			
4066-5	4.5 x 4.5	72	.100	18	"free" space for large components	R636-2	R636-1	3690-2
					Ground plane on component side	R636-2	R636-1	3690-2
4112	4.5 x 9.6	44	.156	40	3-hole pads plus interleaved zig-zag voltage	R644	R644-3	3690
4112-4	4.5 x 6.5	44	.156	25	bus, overall ground plane other side	R644	R644-3	3690
4112-5	4.5 x 4.5	44	.156	15		R644	R644-3	3690
8001	4.5 x 6.5	--	--	20	3-hole pads, 2 buses, solder or wrap			
8002	4.5 x 6.5	--	--	35	2 buses-best for wire wrapping			
8003	4.5 x 6.5	--	--	60	Pad-per-hole board			
8004	4.5 x 6.5	--	--	40	Clearance ground plane			
8005	4.5 x 6.5	--	--	60	Bare, unclad			
8006	5.0 x 13.25	--	--	154	Pad-per-hole plated through			
8007	4.5 x 6.5	--	--	60	Pad-per-hole one side, clearance hole ground plane, other side			
8008	4.5 x 6.5	--	--	70	Pads and planes, plated through holes with pads for SMD caps with distributed power and ground planes			

These circbords®, except 8005, are Vector's popular plugbord patterns without the expensive plug section.

VECTORBORD®

Part No.	Description	Lgth.	Wth.	Thk.	Hole Dia	Spacing	Material
169P44	Vectorbord®	17.0	4.5	.062	.042"	0.1" x 0.1"	Epoxy glass comp.
169P44WE	Vectorbord®	17.0	4.5	.062	.042"	0.1" x 0.1"	Epoxy glass
169P84	Vectorbord®	17.0	8.5	.062	.042"	0.1" x 0.1"	Epoxy glass comp
169P84WE	Vectorbord®	17.0	8.5	.062	.042"	0.1" x 0.1"	Epoxy glass
170H48WE	Vectorbord®	17.0	4.8	.062	.042"	0.1" x 0.1"	Epoxy glass
170H85WE	Vectorbord®	17.0	8.5	.062	.062"	0.1" x 0.1"	Epoxy glass

PUSH IN TERMINALS

Part No.	Description	For Hole Dia.	Hand Insertion. Tool
T44	.025" Sq. W.W.	.042"	A13
T49	.025" Sq. W.W.	.042"	P156
T28	Solder	.062"	P91A

VECTOR ELECTRONIC COMPANY, 12460 Gladstone Ave., PO Box 4336, Sylmar, CA 91342-9988 Phone 818-365-9661, FAX: 818-365-5718
Call Toll Free in CA 800-426-4652, Outside CA 800-423-5659 (For custom configurations contact factory directly).



Where to look for AMP.

You can find AMP, our technology, and our field service all over the world. Here's where you can find AMP in EEM.

EEM Category	Volume	Section
Connectors	C	2100
Fiber Optics	B	2475
Filters	A	2700
Switches	B	5100
Keyboards and Key Pads	B	5150
Interconnection Systems	C	3200

AMP Interconnecting ideas

CONNECTORS, CABLE-TO-CABLE/PANEL

Manufacturer	Starting EEM Page No.	Series/ Model No.	Type Connector						Connector		No. Conductors		Angle		Special Features											
			Circular	Coax/Triax	Flat Cable	Rectangular	D-Submin.	DIN	Solder	Solderless	Single	Multi	Right Angle	Parallel	Herm. Sealed	Envir. Resistant	High Density	Power	Hi Rel	Low Signal	Quick Disconn.	Locking	LIF/ZIF	Free Hanging	Header	Polarization
AMP	C•1150	MATE-N-LOCK				¤			¤			¤	¤	¤								¤		¤	¤	
		AMPLIMITE			¤		¤			¤		¤	¤	¤				¤	¤					¤		
		Plastic	¤	¤						¤		¤		¤			¤	¤	¤		¤	¤		¤	¤	¤
		CHAMP			¤	¤				¤		¤	¤	¤		¤								¤	¤	
		MTA			¤	¤				¤		¤	¤	¤										¤	¤	
Associated/3M	C•1183	Headers			¤				¤			¤	¤	¤											¤	
Beau Products	C•1188	3300/5400				¤			¤			¤		¤										¤		
Carrot Component	C•1195						¤															¤			¤	
Caton*	C•1199	CCM, PM, RM	¤								¤	¤			¤			¤								
Ceramaseal	C•1204	Hi-temp./vac.		¤					¤		¤				¤									¤	¤	
		Instr.	¤						¤			¤			¤									¤		
Component Mftg	C•1205	Custom																								
Dai-Ichi Shoji	C•1215	TC/PR/RO	¤	¤					¤			¤									¤			¤	¤	
Fischer America	C•1231	Swiss made		¤					¤		¤			¤					¤	¤	¤	¤				
Fujitsu	C•1236				¤		¤		¤	¤		¤	¤	¤								¤			¤	
Richard Hirschmann	C•1286		¤					¤					¤	¤												
Holmberg	C•1291						¤		¤	¤			¤	¤	¤					¤						
Idec Electronics	C•1297				¤			¤	¤																	
E. F. Johnson	C•1312			¤				¤					¤	¤												
LEMO	C•1325	B/E/S	¤	¤					¤		¤	¤				¤			¤		¤	¤				
LZR Electronics	C•1334	BNC/A		¤			¤																			
Metuchen Capacitors	C•1344	Filtered					¤		¤			¤		¤												
Microdot *	C•1353	D-series	¤			¤	¤		¤				¤	¤	¤		¤		¤				¤			
National Electric Cable	C•1360			¤				¤	¤			¤								¤						
Pomona	C•1376	Audio	¤						¤			¤		¤						¤	¤	¤		¤		
Power Dynamics	C•1495	Power Cord				¤			¤	¤		¤		¤				¤							¤	
Rowe	C•1512	G/LL/RMC	¤	¤							¤	¤		¤							¤	¤		¤	¤	
Shogyo	C•1519	Various/RF	¤	¤					¤	¤	¤	¤	¤	¤												
Spectrum Control	C•1524	Filtered					¤		¤	¤		¤	¤	¤			¤							¤	¤	
Switchcraft	C•1536	Audio	¤						¤				¤	¤							¤	¤		¤	¤	
		DIN	¤						¤			¤	¤	¤						¤		¤		¤	¤	
Thomas & Betts	C•1542						¤	¤																	¤	
Virginia Plastics	C•1550	PCB											¤	¤								¤		¤		¤
Wall-Able	C•1554	F/Phono		¤					¤																	

* Mil. Spec.

CONNECTORS, PCB/FLAT CABLE

Manufacturer	Start-EEM Page C•	Series/Model/I.D.	Board to Chassis/Mother Board: One Piece	Board to Chassis/Mother Board: Two Piece	Board to Cable/I/O: One Piece	Board to Cable/I/O: Two Piece	Brd	Type or Feature	Contact Style: Cantilever	Contact Style: Pin	Bell	ZIF	Ext.	Gld	Cup	DIP	Inst	Wr	tIA	Pos	Coax	Pol
AirBorn*	1121	RM-3		¤		¤		2, 3 Rows		¤												
		MM		¤		¤	¤	2, 3, 4 Rows		¤						¤						
		WG		¤				3 Rows		¤			¤	¤	¤	¤		¤	¤	¤		¤
		WRG		¤				3 Rows	¤							¤						
		WTA/WTD				¤		Crimp Removable					¤	¤	¤	¤	¤	¤	¤	¤		
AMP	1150	STD	¤				¤		¤					¤		¤		¤				
		Low Profile	¤					Bifurcated	¤					¤	¤	¤						
		Pace	¤					Removable Contacts	¤					¤				¤				
C & C	1198																				¤	
Dale *	1216	EB4/6	¤					Card Edge	¤					¤		¤		¤	¤			¤
Eby	1221						¤															
Elfab	1226	Soc Pac		¤				Wire-wrap tail	¤	¤						¤		¤				
		Box-Pac		¤				Surface Mount	¤							¤						
Flight Connector	*1234								¤	¤					¤							
Holmberg	1291	Card Edge	¤						¤	¤				¤	¤	¤		¤	¤			¤
Hyper-tronics	1292	Submin.		¤						¤		¤			¤	¤		¤	¤			¤
Idec*	1297	JF,JG		¤																		
ISL	1301		¤	¤	¤	¤																
JAE	1304		¤		¤		¤	Crimp Contact		¤			¤						¤			
Johnson	1312		¤		¤																¤	
Mark Eyelet	1338				¤	¤				¤		¤				¤						
Mho-tronics	1348	FFC/MFC		¤		¤		Headers		¤					¤	¤			¤	¤		¤
3M	1339		¤	¤	¤	¤	¤			¤		¤		¤		¤						
Molex	1356	c-Grid/IDT/KK/MX-50	¤	¤	¤	¤	¤	Modular§		¤							¤		¤			
Panduit	1362	Lat-Con				¤		Flat cable§		¤	¤						¤					¤
		Hi-Con		¤				DIN		¤	¤					¤		¤	¤			
WECO	1558	Term. Blocks			¤			Screw Type								¤			¤			

* Mil Spec.

§ Surface Mount

TERMINALS, TERMINAL BOARDS, BLOCKS, ETC

Manufacturer	Starting EEM Page No.	Barrier Blocks	Terminal Boards	Terminal Strips	Feed-thru	Lug	PCB	Standoff	Terminals Threaded	Wire-wrap	Solder-less	Push-on/ Quick Discon.	Turret
Altech	C•1149	¤	¤										
AMP	C•1150					¤					¤		
Beau Products	C•1188	¤		¤									
Bussman	C•1194			¤									
Connector Corp.	C•1208	¤					¤						
Curtis Inds.	C•1212	¤		¤	¤	¤	¤		¤			¤	
Doran	C•1220		¤										
Electronic Molding	C•1222				¤			¤					
IDEC Electronics	C•1297		¤				¤		¤				
Kulka Smith	C•1320	¤	¤	¤	¤	¤					¤	¤	¤
Mill-Max	C•1355			¤				¤	¤	¤	¤		
Panduit	C•1362					¤							
Pomona	C•1376												¤
Precicontact	C•1500							¤		¤			¤
RDI/Reed Devices	C•1510	¤	¤	¤					¤	¤			
Samtec	C•1515												
Shogyo	C•1519		¤	¤									
Smith, HH	C•1522	¤	¤										
Underwriters	C•1546	¤		¤									
Wall-Able	C•1554		¤	¤							¤		
WECO	C•1559			¤									

CONNECTORS, RACK AND PANEL

Manufacturer	EEM Page No.	Series/ Model No.	Pin	Mating	Crimp	Wire-wrap	DIP Solder	Cup/Eye Solder	Locking	Heads	Jack Screw	Hi Rel/ Mil.
Dale	C•1216	MM22/24	¤	¤			¤	¤	¤			
Rowe	C•1512		¤	¤								

JACKS, PLUGS, ADAPTERS, PINS

Manufacturer	EEM Page No	Jacks	Jack Adapters	Plug & Jack Set	Plugs Electric	Plug Adapters	Binding Posts	Pins, Elec. Cond.	Contacts, Elec.-trical	Plugs, Power	Modules/ Recep-tacles, Power	Jumpers, Circuit Board	Clips, Test	Leads, Test	High Volt.
Alden	C•1147									¤	¤				¤
Aries	C•1176	¤		¤					¤			¤			
Concord	C•1206	¤	¤	¤	¤	¤	¤	¤	¤						
Connector Corp.	C•1208	¤			¤				¤						
Corcom	C•1211										¤				
Eby	C•1221	¤	¤												
EPD Electronics	C•1230	¤	¤	¤		¤									
Grayhill	C•1290						¤						¤		
Hiram Jones	C•1282	¤							¤						
Richard Hirschmann	C•1286	¤	¤	¤	¤	¤	¤						¤	¤	
Hypertronics	C•1292								¤						
Jettron Prods.	C•1308														¤
E. F. Johnson	C•1312		¤	¤	¤										
Lear Siegler	C•1324							¤	¤						
LEMO	C•1325	¤			¤										
LZR Electronics	C•1334	¤		¤											
Panel Comps.	C•1366									¤	¤				
PCK Elastomerics§	C•1373								¤						
Pomona	C•1376	¤	¤	¤	¤	¤	¤					¤	¤	¤	
Power Dynamics	C•1495									¤	¤				
Preh Electronics	C•1509								¤						
Schurter	C•1516				¤						¤				
Shogyo	C•1519	¤	¤	¤	¤	¤							¤		
Smith, H.H. (Dialight)	C•1522	¤		¤	¤		¤								
Superior Elec. Co.	C•1535			¤			¤								
Switchcraft	C•1536	¤		¤	¤						¤				
Tecknit	C•1541								¤						
Thomas & Betts	C•1542			¤											
Wall-Able	C•1554	¤							¤						
WECO	C•1558			¤											

§Surface Mount

SOCKETS

Manufacturer	EEM Page No.	IC	DIP/ SIP	Pin Grid Array	Carrier	Tran-sistor	Crystal	Battery/ Lamp	Relay	Tube	Test	Adapter
Alden Products	C•1147									¤		
Altech Corp.	C•1149								¤			
AMP	C•1150	¤	¤									
Aries	C•1176		¤	¤								
Bogan	C•1193							¤				
Connector Corp.	C•1208	¤				¤	¤		¤	¤		
Eby	C•1221			¤						¤	¤	
Electronic Molding	C•1222	¤	¤	¤								
Elfab	C•1226	¤	¤									
Elform	C•1225					¤		¤				
Grayhill	C•1290					¤		¤				
Idec Electronics	C•1297	¤	¤									
ITT Components	C•1302	¤	¤									
Jettron Products	C•1308									¤		
3 M	C•1339	¤	¤	¤	¤						¤	
J. M. Ney	C•1361	¤	¤								¤	
Panduit	C•1362	¤										
Pomona§	C•1376										¤	¤
Precicontact	C•1500	¤	¤	¤							¤	
RDI/Reed Devices	C•1510								¤	¤		
Samtec	C•1515	¤	¤									
Smith, HH (Dialight)	C•1522		¤									¤
Thomas & Betts	C•1542	¤	¤		¤							
Wall-Able	C•1554					¤			¤			
WECO	C•1559	¤	¤									

*Mil. Spec.

§Surface Mount Test Device

EEM MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.



Known for Quality Connectors and On-Time Delivery:

.100″

2-, 3-, and 4-row subminiature connectors on .100″ centers from 6 to 200+ contacts. Qualified to MIL-C-55302. See "W" Series connectors on the following pages **C**•1122-1135.

.075″

2- and 3-row subminiature connectors on .075″ centers from 10 to 206 contacts. Meet requirements of MIL-C-55302. See "R" Series connectors on the following pages **C**•1136-1138.

.050″

2-, 3-, and 4-row microminiature connectors on .050″ centers from 9 to 100 contacts. Now qualified to MIL-C-83513. See "M" Series on pages **C**•1139-1146. Also strip connectors on .050″ centers.

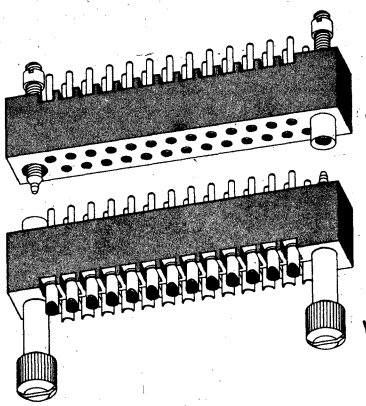
QPL

"W" Series connectors are qualified to MIL-C-55302. And now the "M" Series connectors are qualified to MIL-C-83513.

ADS

Our exclusive AirBorn Distributor Service can provide parts often within hours. Call the appropriate Customer Service Number on each catalog page for details, or call AirBorn's Distributor Service HOTLINE at 214-931-2800.

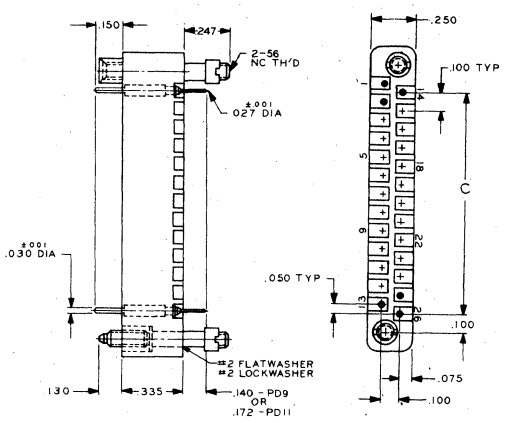
AIRBORN INC. / 4321 AIRBORN DRIVE / P.O. BOX 519/ADDISON TX 75001-0519



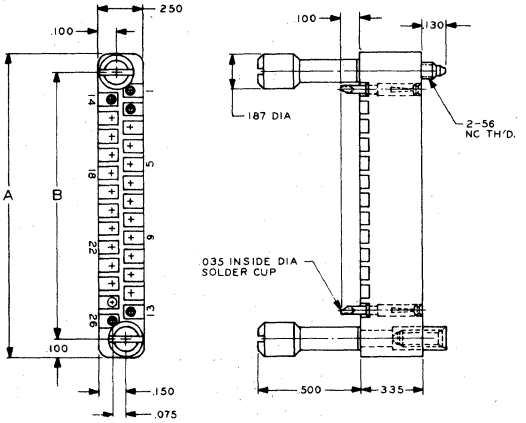
2 • ROW Connectors

Cable to Board or Panel

WTA-WTA



PLUG
EXAMPLE: WTA26PD9JL



RECEPTACLE
EXAMPLE: WTA26SECJT

TYPE OF CONTACTS

PLUG

PC	=	Pin, straight, solder cup
PD9	=	Pin, straight, dip solder, .140
PD11	=	Pin, straight, dip solder, .172
PF3	=	Pin, straight, flex-circuit, .047
PF6	=	Pin, straight, flex-circuit, .094
SEC	=	Socket, straight, solder cup, closed entry
SAC	=	Low force socket, straight, solder cup
SED9	=	Socket, straight, dip solder, .140
SAD9	=	Low force socket, straight, dip solder, .140
SED11	=	Socket, straight, dip solder, .172
SAD11	=	Low force socket, straight, dip solder, .172
SED15	=	Socket, straight, dip solder, .234
SAD15	=	Low force socket, straight, dip solder, .234
SF3	=	Socket, straight, flex-circuit, .047
SAF3	=	Low force socket, straight, flex-circuit, .047
SF6	=	Socket, straight, flex-circuit, .094
SAF6	=	Low force socket, straight, flex-circuit, .094

RECEPTACLE

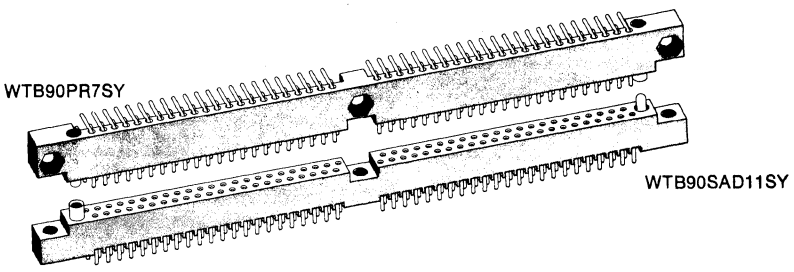
SEC	=	Socket, straight, solder cup, closed entry
SAC	=	Low force socket, straight, solder cup
SED9	=	Socket, straight, dip solder, .140
SAD9	=	Low force socket, straight, dip solder, .140
SED11	=	Socket, straight, dip solder, .172
SAD11	=	Low force socket, straight, dip solder, .172
SED15	=	Socket, straight, dip solder, .234
SAD15	=	Low force socket, straight, dip solder, .234
SF3	=	Socket, straight, flex-circuit, .047
SAF3	=	Low force socket, straight, flex-circuit, .047
SF6	=	Socket, straight, flex-circuit, .094
SAF6	=	Low force socket, straight, flex-circuit, .094
SW40	=	Socket, straight, Wire Wrap, .625
SAW40	=	Low force socket, straight, Wire Wrap, .625
PC	=	Pin, straight, solder cup
PD9	=	Pin, straight, dip solder, .140
PD11	=	Pin, straight, dip solder, .172
PF3	=	Pin, straight, flex-circuit, .047
PF6	=	Pin, straight, flex-circuit, .094
PW40	=	Pin, straight, Wire Wrap, .625

WTA-WTA DIMENSIONS

SIZE	A	B	C
10	.850	.650	.400
14	1.050	.850	.600
20	1.350	1.150	.900
24	1.550	1.350	1.100
26	1.650	1.450	1.200
30	1.850	1.650	1.400
36	2.150	1.950	1.700
40	2.350	2.150	1.900
44	2.550	2.350	2.100
50	2.850	2.650	2.400
54	3.050	2.850	2.600
56	3.150	2.950	2.700
60	3.350	3.150	2.900
66	3.650	3.450	3.200
70	3.850	3.650	3.400

* **WARNING:** When interchanging contact, position of male and female hardware is automatically reversed.

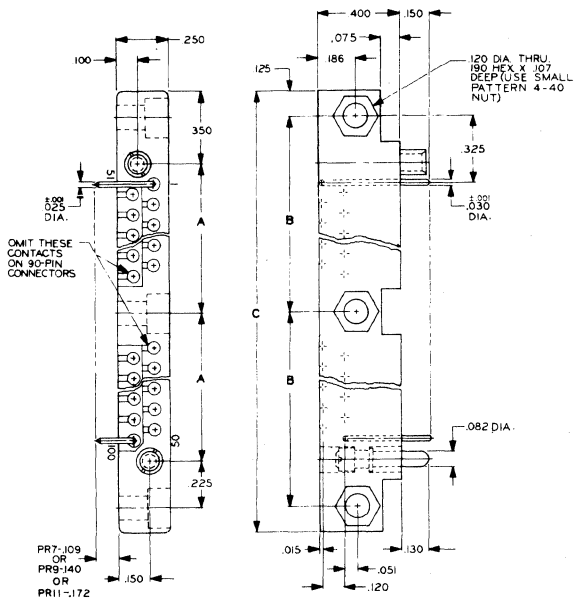
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



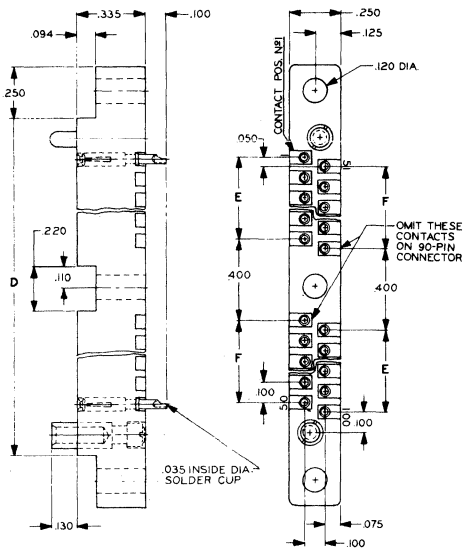
2 • ROW Connectors

PC Card to Chassis or Board

WTB-WTB (90-120)



PLUG
EXAMPLE: WTB100PR9SY



RECEPTACLE
EXAMPLE: WTB100SACSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW40 = Pin, right-angle, Wire Wrap, .625

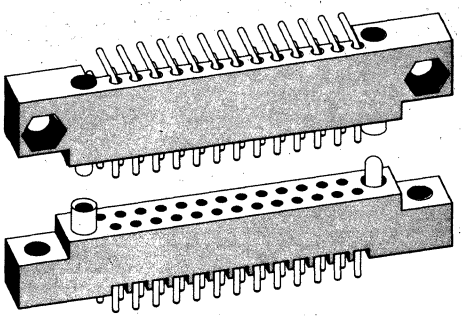
RECEPTACLE

SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD15 = Low force socket, straight, dip solder, .234
SAW40 = Low force socket, straight, Wire Wrap, .625

WTB-WTB DIMENSIONS

SIZE	A	B	C	D	E	F
90	2.475	2.700	5.650	5.150	2.200	2.100
100	2.725	2.950	6.150	5.650	2.400	2.400
120	3.225	3.450	7.150	6.650	2.900	2.900

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



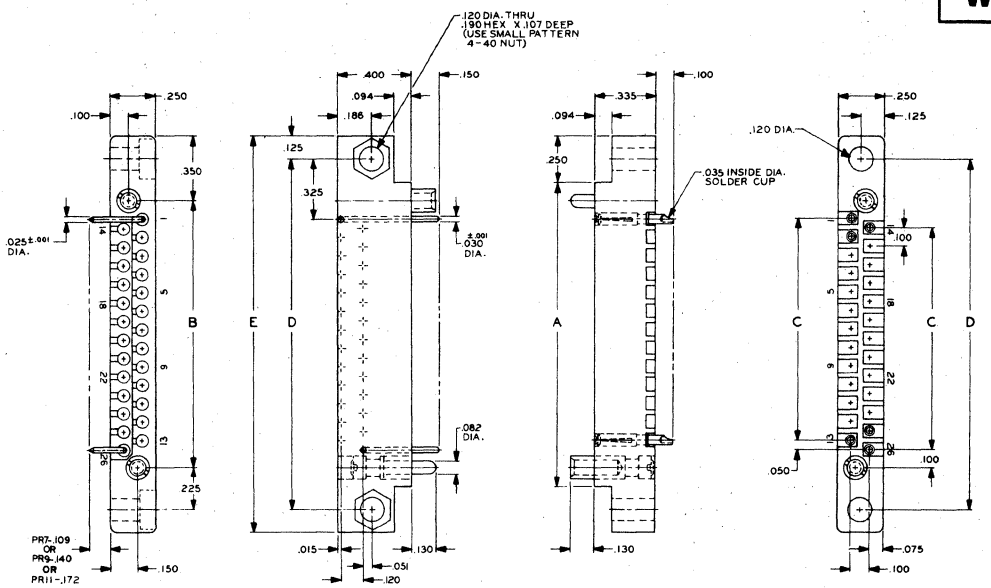
WTB26PR9SY

WTB26SAD11SY

2 • ROW Connectors

PC Card to Chassis or Board

WTB-WTB



PLUG
EXAMPLE: WTB26PR9SY

RECEPTACLE
EXAMPLE: WTB26SECSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW40 = Pin, right-angle, Wire Wrap, .625

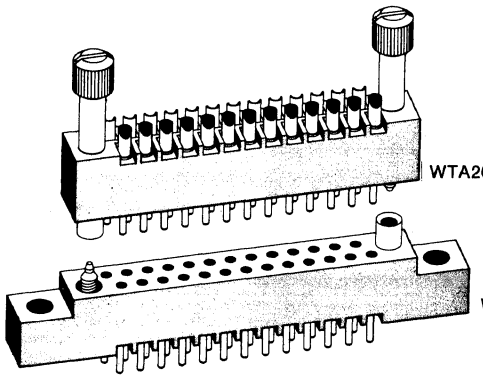
RECEPTACLE

SEC = Socket, straight, solder cup, closed entry
SAC = Low force socket, straight, solder cup
SED9 = Socket, straight, dip solder, .140
SAD9 = Low force socket, straight, dip solder, .140
SED11 = Socket, straight, dip solder, .172
SAD11 = Low force socket, straight, dip solder, .172
SED15 = Socket, straight, dip solder, .234
SAD15 = Low force socket, straight, dip solder, .234
SF3 = Socket, straight, flex-circuit, .047
SAF3 = Low force socket, straight, flex-circuit, .047
SF6 = Socket, straight, flex-circuit, .094
SAF6 = Low force socket, straight, flex-circuit, .094
SW40 = Socket, straight, Wire Wrap, .625
SAW40 = Low force socket, straight, Wire Wrap, .625

WTB-WTB DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

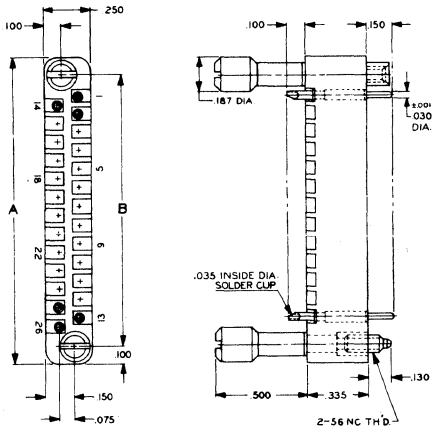
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



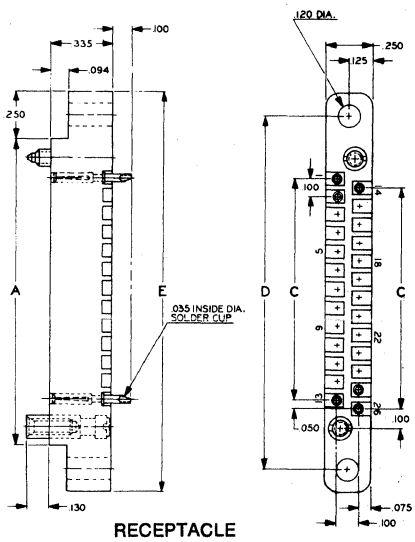
2 • ROW Connectors

Cable to Panel or Board

WTA-WTB



PLUG
EXAMPLE: WTA26PCJT



RECEPTACLE
EXAMPLE: WTB26SECJ

TYPE OF CONTACTS

PLUG

PC	=	Pin, straight, solder cup
PD9	=	Pin, straight, dip solder, .140
PD11	=	Pin, straight, dip solder, .172
PF3	=	Pin, straight, flex-circuit, .047
PF6	=	Pin, straight, flex-circuit, .094
SEC	=	Socket, straight, solder cup, closed entry
SAC	=	Low force socket, straight, solder cup
SED9	=	Socket, straight, dip solder, .140
SAD9	=	Low force socket, straight, dip solder, .140
SED11	=	Socket, straight, dip solder, .172
SAD11	=	Low force socket, straight, dip solder, .172
SED15	=	Socket, straight, dip solder, .234
SAD15	=	Low force socket, straight, dip solder, .234
SF3	=	Socket, straight, flex-circuit, .047
SAF3	=	Low force socket, straight, flex-circuit, .047
SF6	=	Socket, straight, flex-circuit, .094
SAF6	=	Low force socket, straight, flex-circuit, .094
SW40	=	Socket, straight, Wire Wrap, .625
SAW40	=	Low force socket, straight, Wire Wrap, .625

WARNING: When interchanging contacts, position of male and female hardware is automatically reversed.

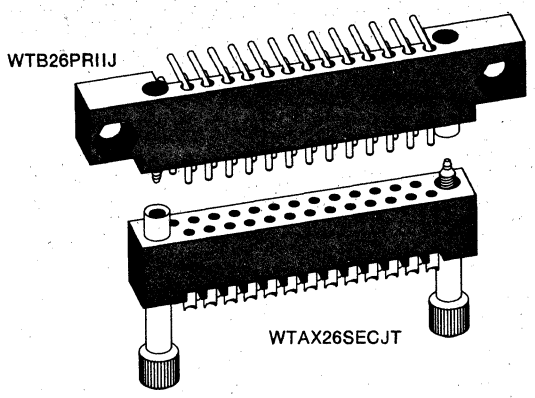
RECEPTACLE

SEC	=	Socket, straight, solder cup, closed entry
SAC	=	Low force socket, straight, solder cup
SED9	=	Socket, straight, dip solder, .140
SAD9	=	Low force socket, straight, dip solder, .140
SED11	=	Socket, straight, dip solder, .172
SAD11	=	Low force socket, straight, dip solder, .172
SED15	=	Socket, straight, dip solder, .234
SAD15	=	Low force socket, straight, dip solder, .234
SF3	=	Socket, straight, flex-circuit, .047
SAF3	=	Low force socket, straight, flex-circuit, .047
SF6	=	Socket, straight, flex-circuit, .094
SAF6	=	Low force socket, straight, flex-circuit, .094
PC	=	Pin, straight, solder cup
PD9	=	Pin, straight, dip solder, .140
PD11	=	Pin, straight, dip solder, .172
PF3	=	Pin, straight, dip solder, .047
PF6	=	Pin, straight, flex-circuit, .094
PW40	=	Pin, straight, Wire Wrap, .625

WTA-WTB DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

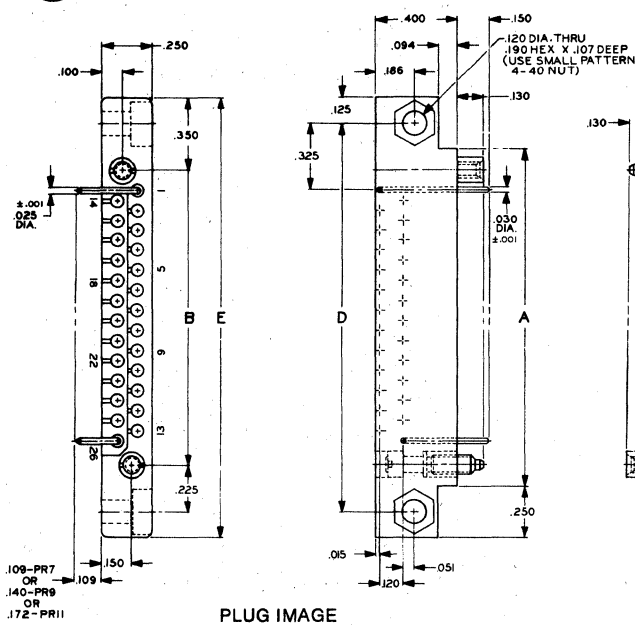
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



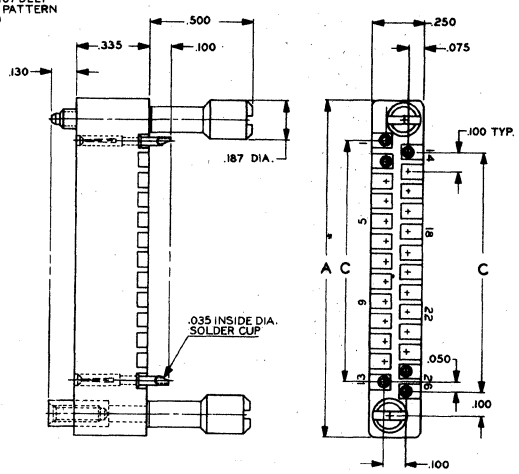
2 • ROW Connectors

Cable to Board

WTB-WTAX



PLUG IMAGE
EXAMPLE: WTB26PR7J



RECEPTACLE IMAGE
EXAMPLE: WTAX26SECJT

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW40 = Pin, right-angle, Wire Wrap, .625

RECEPTACLE

SEC = Socket, straight, solder cup, closed entry
SAC = Low force socket, straight, solder cup
SED9 = Socket, straight, dip solder, .140
SAD9 = Low force socket, straight, dip solder, .140
SED11 = Socket, straight, dip solder, .172
SAD11 = Low force socket, straight, dip solder, .172
SED15 = Socket, straight, dip solder, .234
SAD15 = Low force socket, straight, dip solder, .234
SF3 = Socket, straight, flex-circuit, .047
SAF3 = Low force socket, straight, flex-circuit, .047
SF6 = Socket, straight, flex-circuit, .094
SAF6 = Low force socket, straight, flex-circuit, .094

WTB-WTAX DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

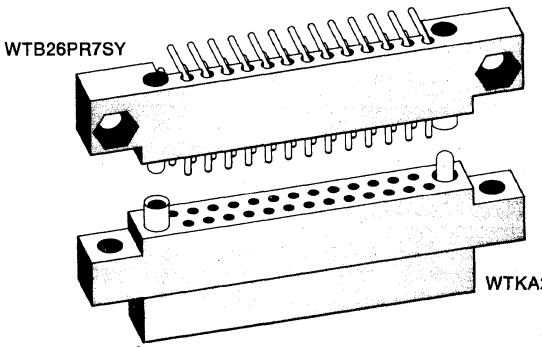
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

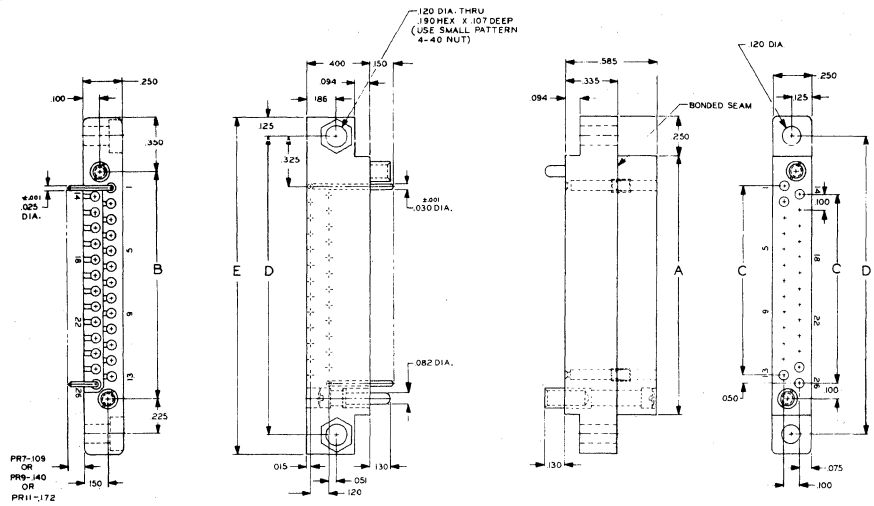
AirBorn

2 • ROW Connectors

PC Card to Chassis

WTB-WTKA





PLUG
EXAMPLE: WTB26PR9SY

RECEPTACLE
EXAMPLE: WTKA26SSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW40 = Pin, right-angle, Wire Wrap, .625

RECEPTACLE

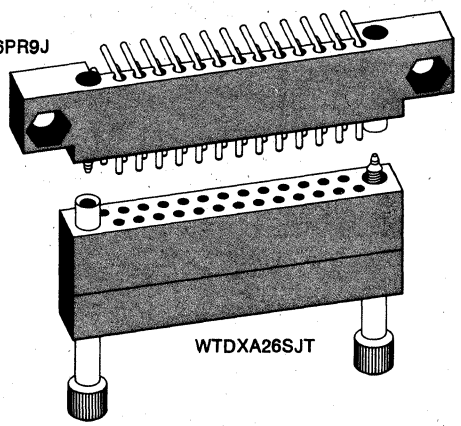
S = Socket contact, crimp removable
SA = Low force socket contact, crimp removable

WTB-WTKA DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

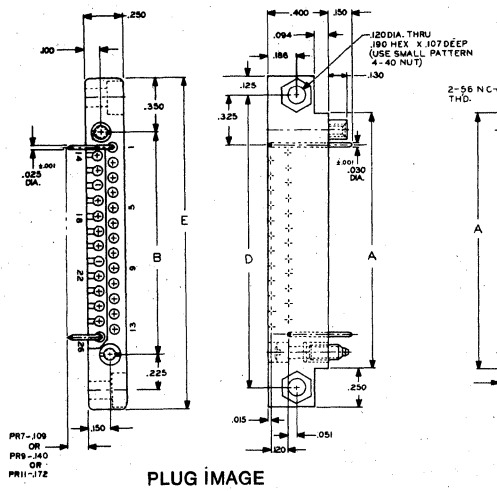
WTB26PR9J



2 • ROW Connectors

Cable to Board

WTB-WTDXA



PLUG IMAGE
EXAMPLE: WTB26PR9J

RECEPTACLE IMAGE
EXAMPLE: WTDXA26SJT

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172

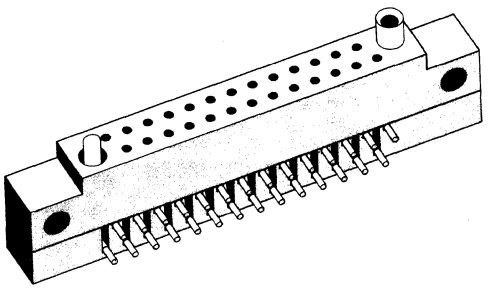
RECEPTACLE

S = Socket contact, crimp removable
SA = Low force socket contact, crimp removable

WTB-WTDXA DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

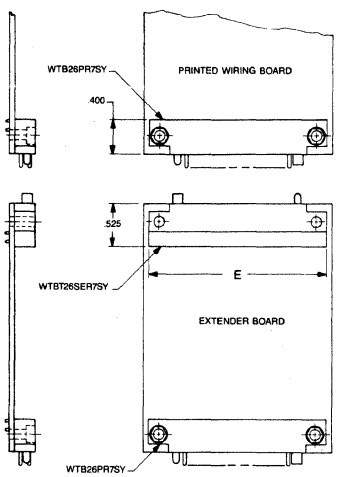
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

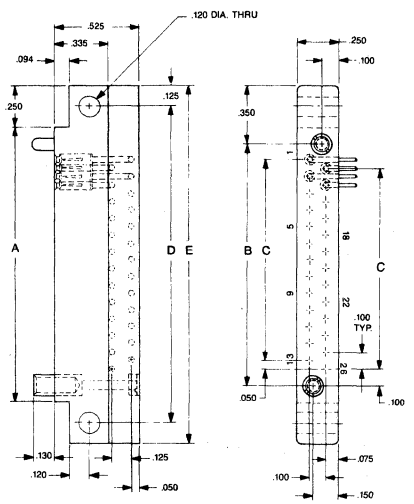


WTBT26SER7SY

Extender Board Connector for Test Application

WRTBT*





RECEPTACLE
WRTBT26SER7SY

TYPE OF CONTACTS
RECEPTACLE

SER7 = Socket, right-angle, dip solder, .109
SAR7 = Low force socket, right-angle, dip solder, .109
SER9 = Socket, right-angle, dip solder, .140
SAR9 = Low force socket, right-angle, dip solder, .140
SER11 = Socket, right-angle, dip solder, .172
SAR11 = Low force socket, right-angle, dip solder, .172

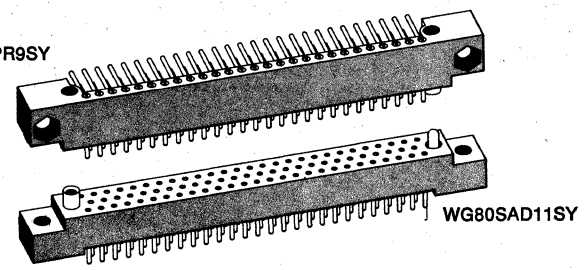
* Ryton only.

WRTBT
DIMENSIONS

SIZE	A	B	C	D	E
10	.850	.650	.400	1.100	1.350
14	1.050	.850	.600	1.300	1.550
20	1.350	1.150	.900	1.600	1.850
24	1.550	1.350	1.100	1.800	2.050
26	1.650	1.450	1.200	1.900	2.150
30	1.850	1.650	1.400	2.100	2.350
36	2.150	1.950	1.700	2.400	2.650
40	2.350	2.150	1.900	2.600	2.850
44	2.550	2.350	2.100	2.800	3.050
50	2.850	2.650	2.400	3.100	3.350
54	3.050	2.850	2.600	3.300	3.550
56	3.150	2.950	2.700	3.400	3.650
60	3.350	3.150	2.900	3.600	3.850
66	3.650	3.450	3.200	3.900	4.150
70	3.850	3.650	3.400	4.100	4.350

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

WG80PR9SY

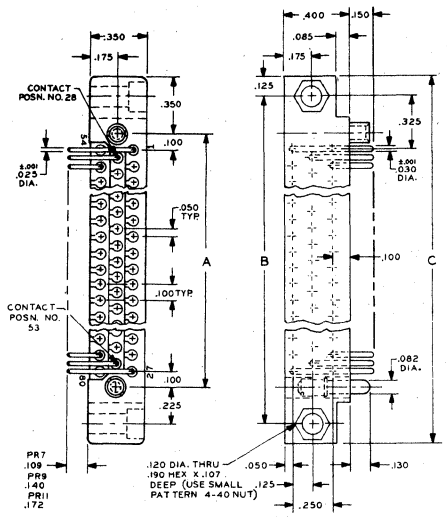


WG80SAD11SY

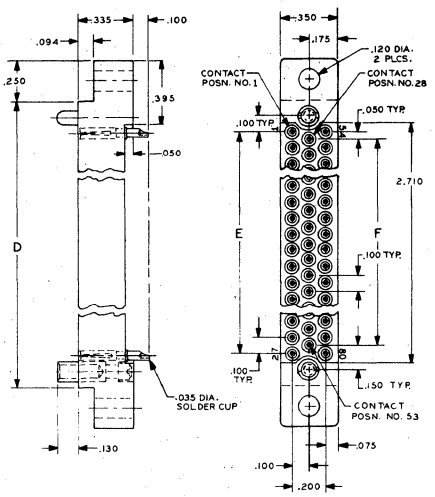
3 • ROW Connectors

PC Card to Board or Chassis

WG-WG (80)



PLUG
EXAMPLE: WG80PR9SY



RECEPTACLE
EXAMPLE: WG80SACSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW34 = Pin, right-angle, Wire Wrap, .531

RECEPTACLE

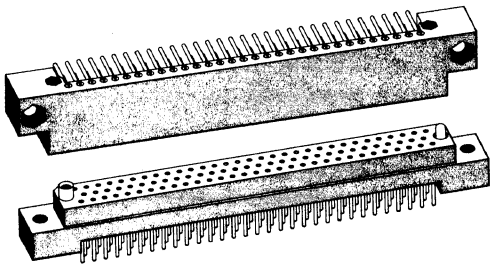
SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD15 = Low force socket, straight, dip solder, .234
SAW40 = Low force socket, straight, Wire Wrap, .625

WG-WG (80) DIMENSIONS

SIZE	A	B	C	D	E	F
80	2.800	3.250	3.500	3.000	2.600	2.500

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

WGE92PR9GY

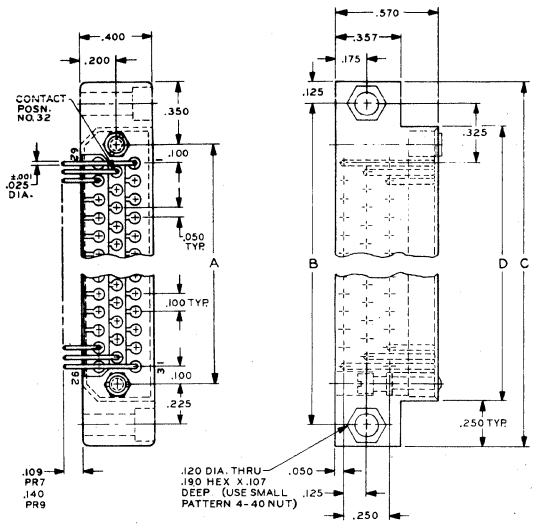


WGE92SED11GY

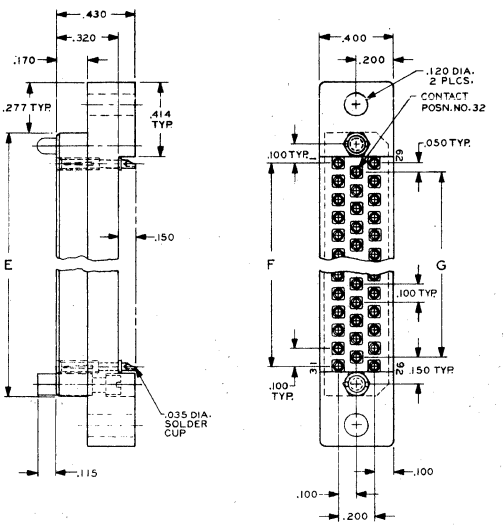
3 • ROW Connectors

PC Card to Board or Chassis

WGE-WGE



PLUG
EXAMPLE: WGE92PR7GY



RECEPTACLE
EXAMPLE: WGE92SECGY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140

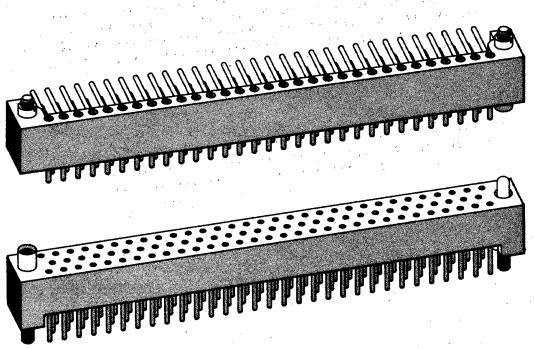
RECEPTACLE

SEC = Socket, straight, solder cup, closed entry
SED9 = Socket, straight, dip solder,. 140
SED11 = Socket, straight, dip solder, .172

WGE-WGE DIMENSIONS

SIZE	A	B	C	D	E	F	G
92	3.200	3.650	3.900	3.400	3.346	3.000	2.900

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



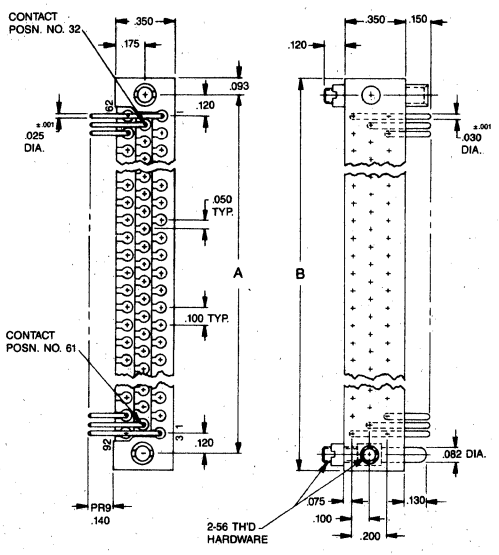
WGR92PR9SYCL

WGR92SAD11SYL

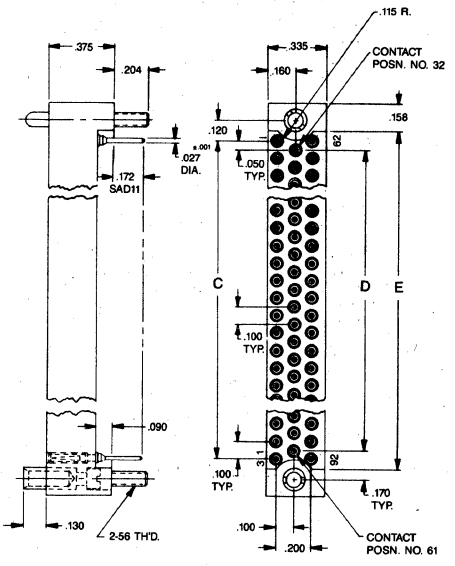
3 • ROW Connectors

PC Card to Board or Chassis

WGR-WGR



PLUG
EXAMPLE: WGR92PR9SYCL



RECEPTACLE
EXAMPLE: WGR92SAD11SYL

TYPE OF CONTACTS

PLUG

PR9 = Pin, right-angle, dip solder, .140

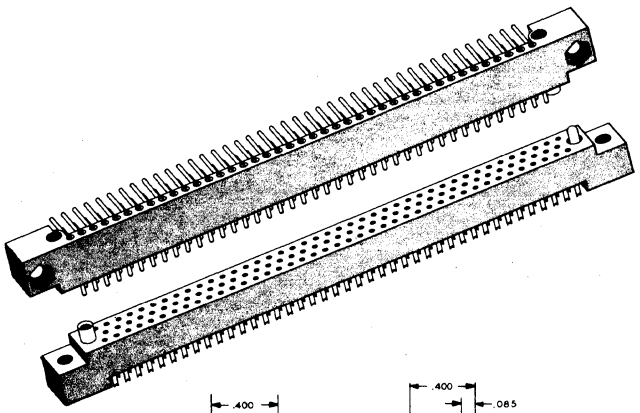
RECEPTACLE

SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD16 = Low force socket, straight, dip solder, .250

WGR-WGR DIMENSIONS

SIZE	A	B	C	D	E
92	3.240	3.426	3.000	2.900	3.110

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



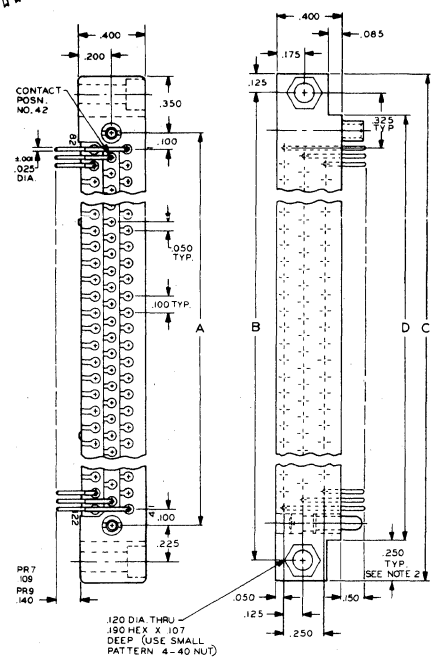
WGA122PR9SY

WGA122SACSY

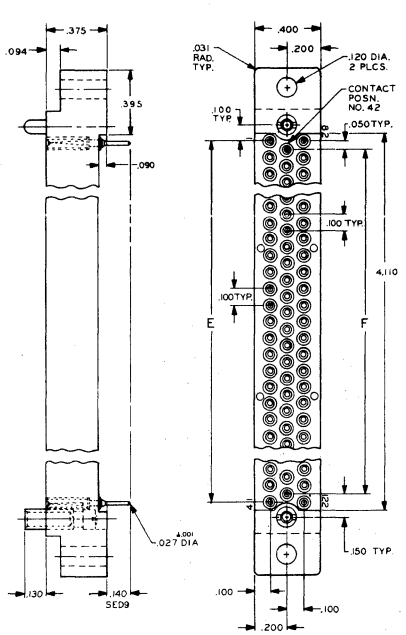
3 • ROW Connectors

PC Card to Board or Chassis

WGA-WGA



PLUG
EXAMPLE: WGA122PR9SY



RECEPTACLE
EXAMPLE: WGA122SAD9SY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PRW32 = Pin, right-angle, Wire Wrap, .500

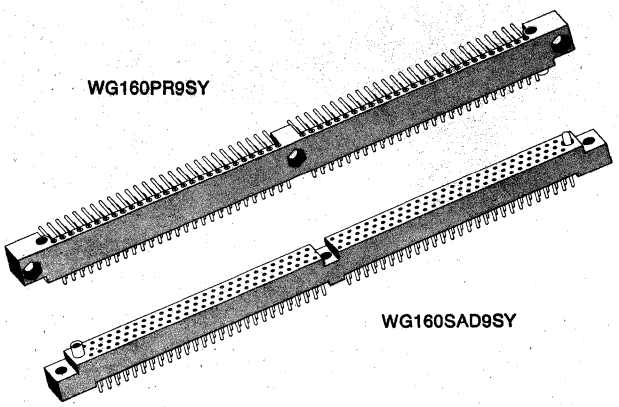
RECEPTACLE

SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD16 = Low force socket, straight, dip solder, .250
SAW40 = Low force socket, straight, Wire Wrap, .625

WGA-WGA DIMENSIONS

SIZE	A	B	C	D	E	F
122	4.200	4.650	4.900	4.400	4.000	3.900

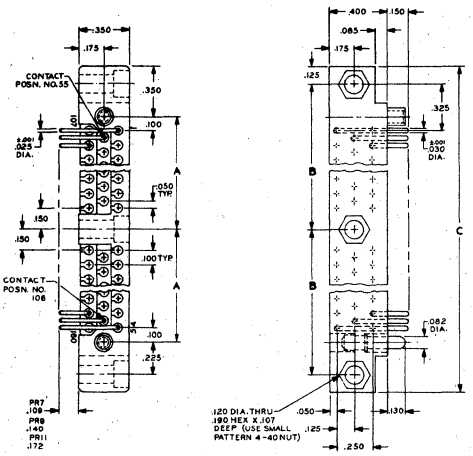
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



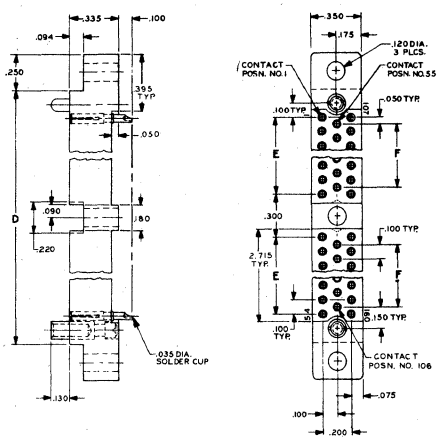
3 • ROW Connectors

PC Card to Board or Chassis

WG-WG (160)



PLUG
EXAMPLE: WG160PR9SY



RECEPTACLE
EXAMPLE: WG160SACSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172
PRW34 = Pin, right-angle, Wire Wrap, .531

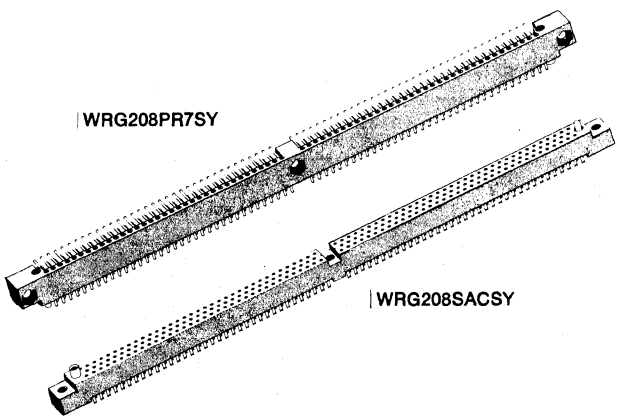
RECEPTACLE

SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD15 = Low force socket, straight, dip solder, .234
SAW40 = Low force socket, straight, Wire Wrap, .625

WG-WG (160) DIMENSIONS

SIZE	A	B	C	D	E	F
160	2.850	3.075	6.400	5.900	2.600	2.500

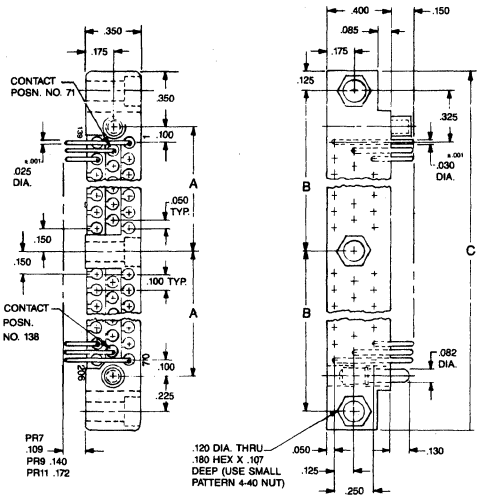
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



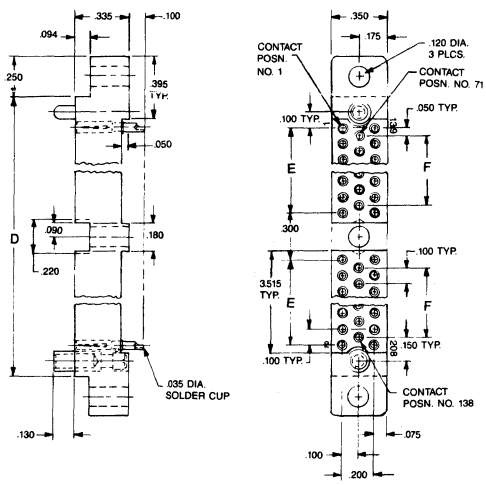
3 • ROW Connectors

PC Card to Board or Chassis

WRG-WRG (208)



PLUG
EXAMPLE: WRG208PR7SY



RECEPTACLE
EXAMPLE: WRG208SACSY

TYPE OF CONTACTS

PLUG

PR7 = Pin, right-angle, dip solder, .109
PR9 = Pin, right-angle, dip solder, .140
PR11 = Pin, right-angle, dip solder, .172

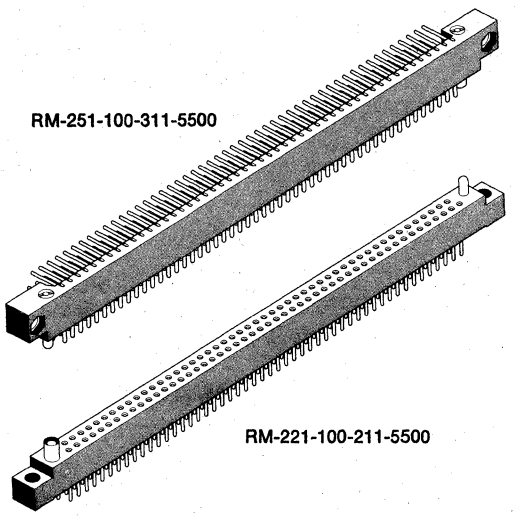
RECEPTACLE

SAC = Low force socket, straight, solder cup
SAD9 = Low force socket, straight, dip solder, .140
SAD11 = Low force socket, straight, dip solder, .172
SAD15 = Low force socket, straight, dip solder, .234

WRG-WRG (208) DIMENSIONS

SIZE	A	B	C	D	E	F
208	3.650	3.875	8.000	7.500	3.400	3.030

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

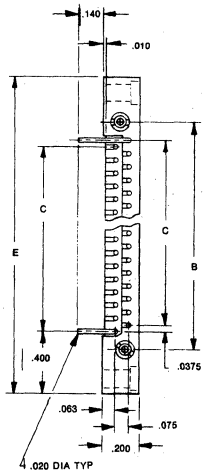


2 • ROW Connectors

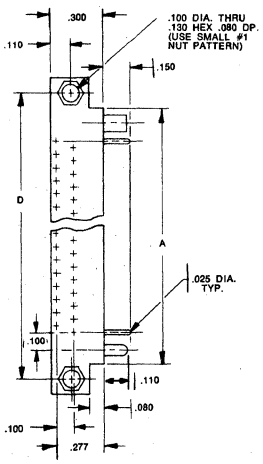
PC Card to Board or Chassis

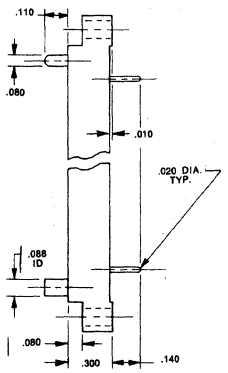
RM-2

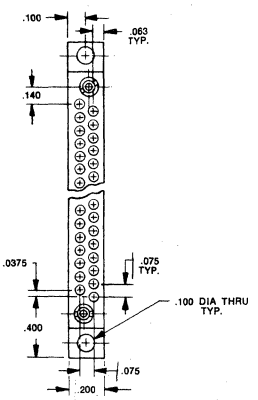
10 THRU 100 CONTACTS



PLUG
RM-251-100-321-5500



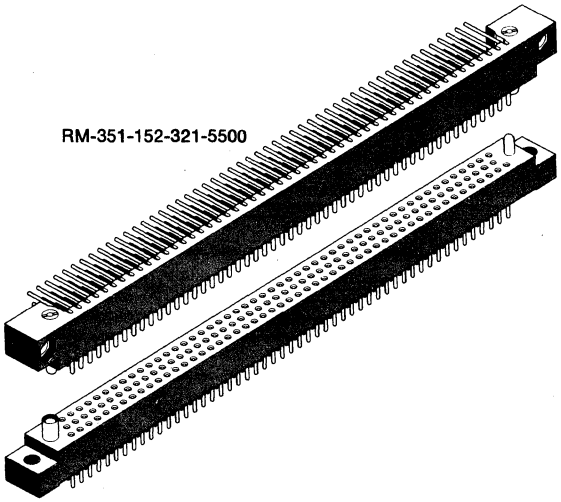




RECEPTACLE
RM-321-100-211-5500

NO. OF CONTACTS	A	B	C	D	E
10	.797	.617	.300	.967	1.137
20	1.172	.992	.675	1.342	1.512
30	1.547	1.367	1.050	1.717	1.887
40	1.922	1.742	1.425	2.092	2.262
50	2.297	2.117	1.800	2.467	2.637
60	2.672	2.492	2.175	2.842	3.012
70	3.047	2.687	2.550	3.217	3.387
80	3.422	3.242	2.925	3.592	3.762
90	3.797	3.617	3.300	3.967	4.137
100	4.172	3.992	3.675	4.342	4.512

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



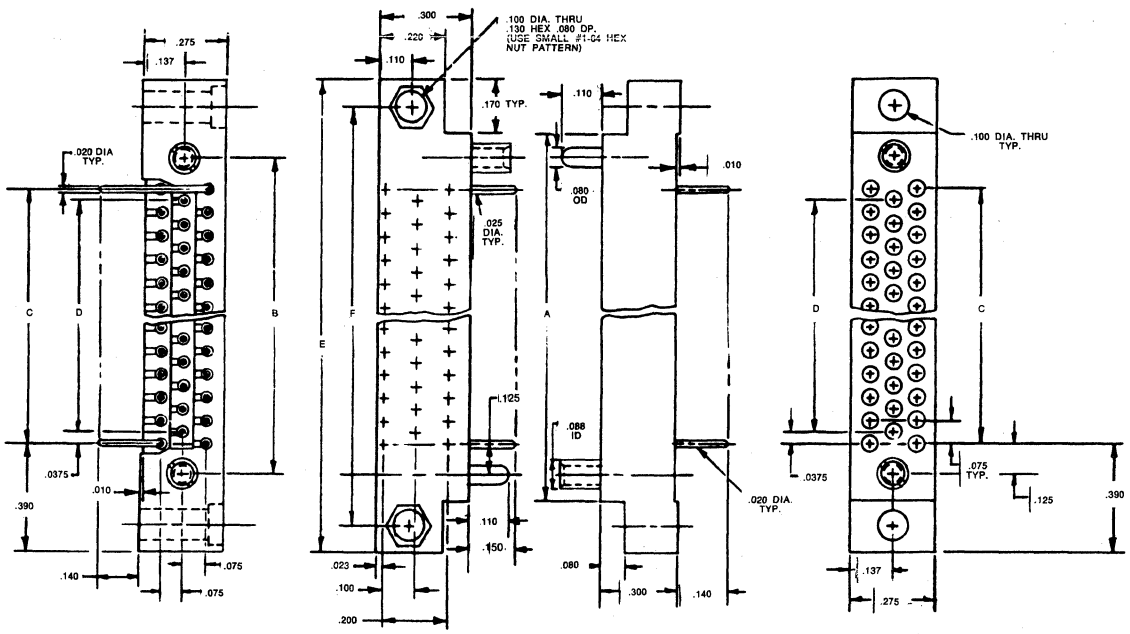
AirBorn

3 • ROW Connectors

PC Card to Board or Chassis

RM-3

152 CONTACTS
206 CONTACTS



PLUG
RM-351-152-321-5500

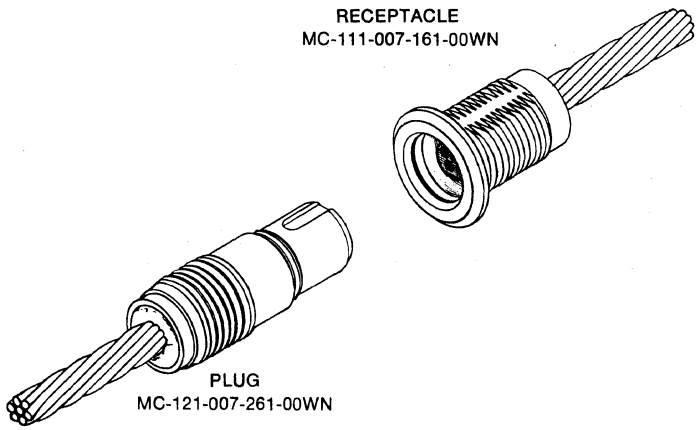
RECEPTACLE
RM-321-152-311-5500

NO. OF CONTACTS	A	B	C	D	E	F
152	4.190	4.000	3.750	3.675	4.530	4.360
206	5.540	5.350	5.100	5.025	5.880	5.710

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.

PLUG	RECEPTACLE
SERIES	
RM .075″ Screw Machine PC Connector	RM .075″ Screw Machine PC Connector
BODY	
ROWS: 2-Row and 3-Row	ROWS: 2-Row and 3-Row
BODY STYLE: Plug, straight, with mounting ears Plug, straight, no mounting ears Plug, right-angle, with mounting ears Pulg, right-angle, no mounting ears	BODY STYLE: Receptacle, straight, with mounting ears Receptacle, straight, no mounting ears
BODY MATERIAL: Rynite Thermoplastic Ryton Thermoplastic	BODY MATERIAL: Rynite Thermoplastic Ryton Thermoplastic
SIZE	
10-206 contacts	10-206 contacts
CONTACTS	
TYPE CONTACTS: Pin, straight, solder cup Pin, straight, Wire-Wrap, .375″ extensions Pin, straight, Flex-Circuit, .093″ extensions Pin, right-angle, dip solder, .109″ extensions Pin, right-angle, dip solder, .140″ extensions Pin, right-angle, dip solder, .172″ extensions	TYPE CONTACTS: Socket, straight, dip solder, .140″ extensions Socket, straight, dip solder, .172″ extensions Socket, straight, solder cup Socket, straight, Flex-Circuit, .093″ extensions Socket, straight, Wire-Wrap, .375″ extensions
PLATING OPTIONS: Military Specification (per MIL-C-55302) Pre-tinned Special Instructions	PLATING OPTIONS: Military Specification (per MIL-C-55302) Pre-tinned Special Instructions
HARDWARE	
STYLE OF HARDWARE: None Guide set Guide set, reversed Two guide pins Two guide sockets Fixed jackset Fixed jackset, reversed Two fixed jackscrews Two fixed jacksockets Fixed jackset, long Fixed jackset, long, reversed Two fixed jackscrews, long Two fixed jacksockets, long Turning jackset, .490″ Turning jackset, reversed, .490″ Two turning jackscrews, .490″ Two turning jacksockets, .490″ Hex turning jackset, .545″ Hex turning jackset, reversed, .545″ Two hex turning jackscrews, .545″ Two hex turning jacksockets, .545″	STYLE OF HARDWARE: None Guide set Guide set, reversed Two guide pins Two guide sockets Fixed jackset Fixed jackset, reversed Two fixed jackscrews Two fixed jacksockets Fixed jackset, long Fixed jackset, long, reversed Two fixed jackscrews, long Two fixed jacksockets, long Turning jackset, .490″ Turning jackset, reversed, .490″ Two turning jackscrews, .490″ Two turning jacksockets, .490″ Hex turning jackset, .545″ Hex turning jackset, reversed, .545″ Two hex turning jackscrews, .545″ Two hex turning jacksockets, .545″
POLARIZATION NONE Same configuration as 01 without Loctite (for customer keying) Special requirement (see remarks)	POLARIZATION NONE Same configuration as 01 without Loctite (for customer keying) Special requirement (see remarks)

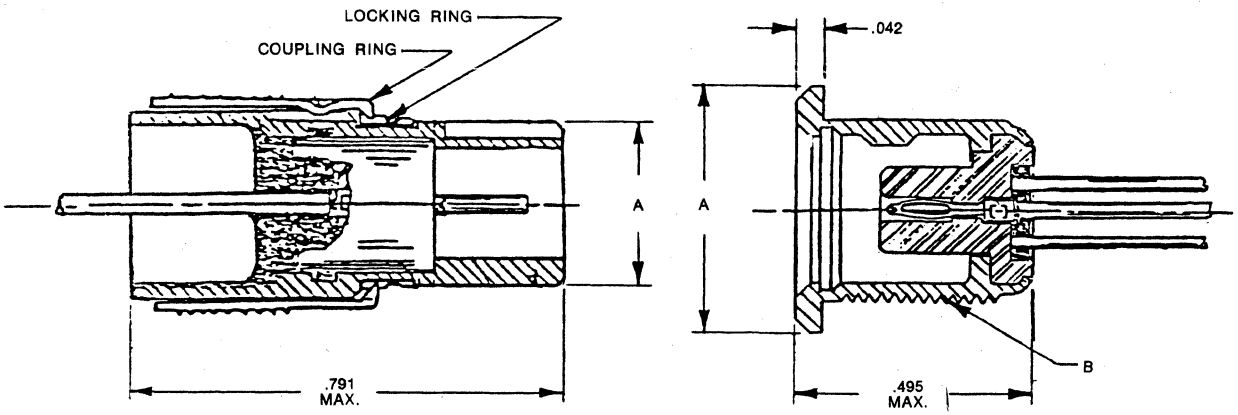
For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 214-931-3200 or TWX 910-860-5230 or TELEX 794200.



Circular Connectors

.050" Microminiature

MC

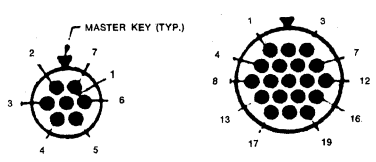


PLUG
(Socket Contacts)

RECEPTACLE
(Pin Contacts)

DIMENSIONS

SIZE	PLUG		RECEPTACLE
	A (MAX. DIA.)	B (THREAD)	A (MAX. DIA.)
1.	.305	3/8-32 UNEF-24	.510
2.	.405	7/16-24 UNEF-2A	.575



7 CONTACTS 19 CONTACTS

CONTACT ARRANGEMENTS

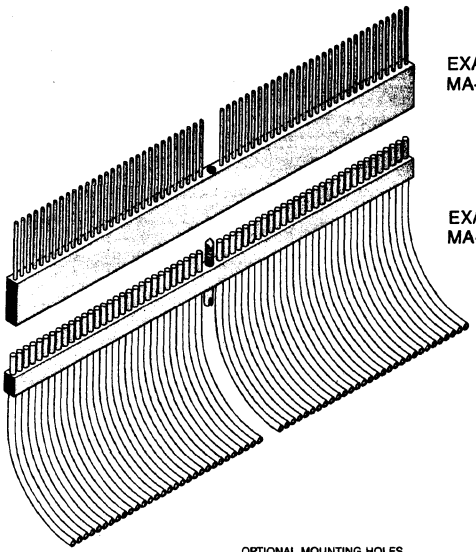
Face view, pin side (Male contacts)
Cavity identification numbers are for reference, do not appear on connectors.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.

PLUG	RECEPTACLE
SERIES	
.050″ Circular Connector	.050″ Circular Connector
BODY	
Shell Size 1 Shell Size 2	Shell Size 1 Shell Size 2
BODY STYLE: Quick Disconnect	BODY STYLE: Front Mount, Quick Disconnect Rear Mount, Quick Disconnect
BODY MATERIAL: Polyphenylene sulfide,, with Electroless Nickel Shell	BODY MATERIAL: Polyphenylene sulfide, Brass Shell with Electroless Nickel Plating
SIZE	
Number of Contacts Shell Size One Only (7 contacts) Shell Size Two (19 contacts) Shell Size One* (19 contacts)	Number of Contacts Shell Size One Only (7 contacts) Shell Size Two (19 contacts) Shell Size One* (19 contacts)
CONTACTS	
TYPE CONTACTS/TERMINATIONS: Socket, straight, .500″ pigtails Socket, straight, 1.000″ pigtails Socket, straight, crimped wire	TYPE CONTACTS/TERMINATIONS: Pin straight, solder cup Pin, straight, .500″ pigtails Pin, straight, 1.000″ pigtails Pin, straight, crimped wire
PLATING OPTIONS: 50 μ″ Au contacts 30 μ″ Au contacts 50 μ″ Au contacts; 10 μ″ Au terminations 30 μ″ Au contacts; 10 μ″ Au terminations 50 μ″ Au contacts; 100 μ″ Sn terminations 30 μ″ Au contacts; 100 μ″ Sn terminations	PLATING OPTIONS: 50 μ″ Au contacts 30 μ″ Au contacts 50 μ″ Au contacts; 10 μ″ Au terminations 30 μ″ Au contacts; 10 μ″ Au terminations 50 μ″ Au contacts; 100 μ″ Sn terminations 30 μ″ Au contacts; 100 μ″ Sn terminations
HARDWARE	
STYLE OF HARDWARE: None	STYLE OF HARDWARE: None
POLARIZATION/WIRING: NONE Special requirements (see remarks) For wiring codes, see section A	POLARIZATION/WIRING: NONE Special requirements (see remarks) For wiring codes, see section A

* Check with factory for availability.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.

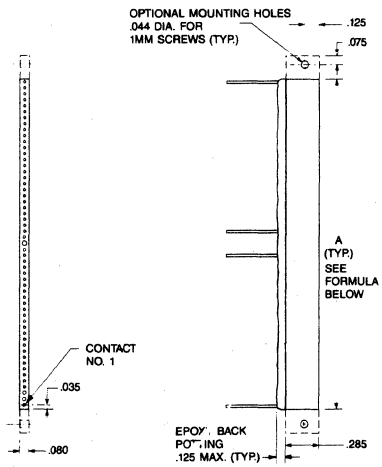


EXAMPLE: PLUG
MA-131-060-155-6900

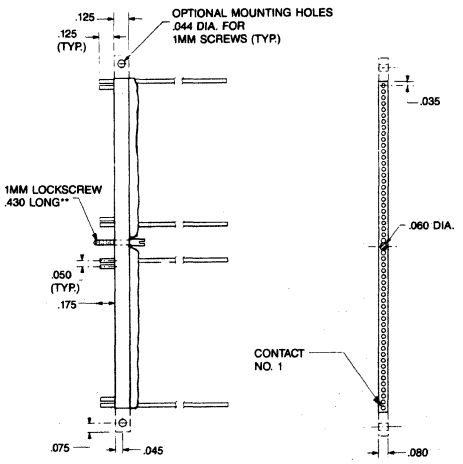
EXAMPLE: RECEPTACLE
MA-141-060-261-72WS

Strip Connectors
.050″ Microminiature

MA



PLUG



RECEPTACLE

NOTE: Lenghts over 2″ may require support to insure alignment.

TYPE OF CONTACTS
TERMINATIONS

Pin, straight, solder cup
Pin, straight, dip solder, .109″
Pin, straight, dip solder, .140″
Pin, straight, .500″ pigtails
Pin, straight, 1.000″ pigtails
Pin, straight, crimped wire
Pin, right-angle, dip solder, .109″
Pin, right-angle, dip solder, .140″

Socket, straight, solder cup
Socket, straight, dip solder, .109″
Socket, straight, dip solder, .140″
Socket, straight, .500″ pigtails
Socket, straight, 1.000″ pigtails
Socket, straight, crimped wire
Socket, right-angle, dip solder, .109″
Socket, right-angle, dip solder, .140″

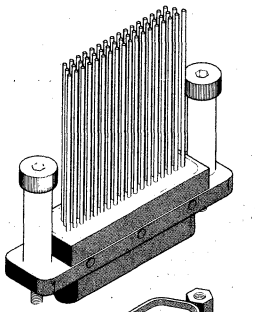
MA
DIMENSIONS

To determine connector length (Dim. "A"):

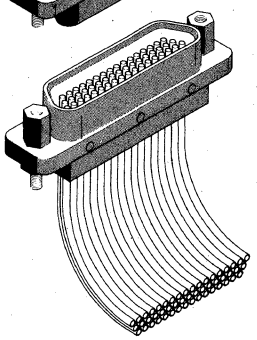
Multiply the number of contact cavities by .050″	. ″
Add fixed end lengths (constant)	.020″
Add .150″ for each mounting hole	. ″
Total Length*	. ″

NOTE:
* Maximum length is 6.020″. Maximum number of contacts must be reduced to accommodate hardware and mounting holes. Minimum length is .170″ (3 contact cavities).
** When locating one lockscrew, use the centermost available hole. Also, careful engagement is necessary to prevent damage to the plastic threads.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.



Example Plug
MM-313-051-155-4200
(Metal)
MN-211-025-113-4300
(Plastic)



Example Receptacle
MM-323-051-261-22WS
(Metal)
MN-221-025-261-22WS
(Plastic)

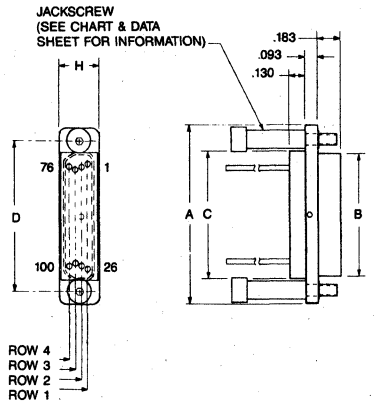
I/O Connectors

.050″ Rugged Metal

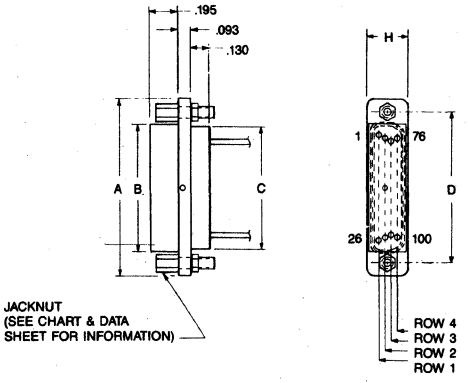
MM

.050 Rugged Plastic

MN



PLUG



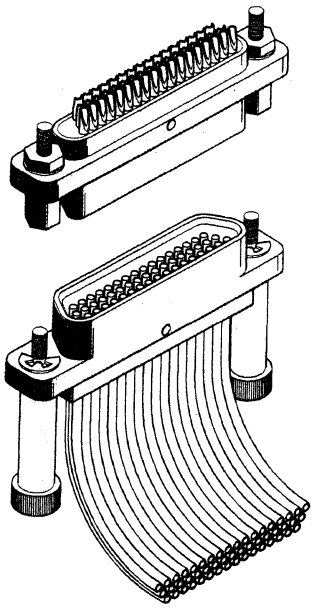
RECEPTACLE

DIMENSIONS

SIZES	CONTACT ROWS	A	B PLUG MAX.	B RECEPTACLE MAX.	C	D	H	JACKSCREW, JACKNUT SEE SHT. A-1
9	2	.775	.333	.400	.390	.565	.298	2-56 UNC THREAD
15		.925	.483	.550	.540	.715		
21		1.075	.633	.700	.690	.865		
25		1.175	.733	.800	.790	.965		
31		1.325	.883	.950	.940	1.115		
37		1.475	1.033	1.100	1.090	1.265		
51	3	1.425	.983	1.050	1.040	1.215	.341	
100	4	2.160	1.383	1.450	1.432	1.800	.384	4-40 UNC THREAD

Receptacle "B" dimension is "inside shroud" dimension.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.



EXAMPLE: PLUG
MQ-313-051-113-2200
(Metal)

MP-211-025-155-4100
(Plastic)

EXAMPLE: RECEPTACLE
MQ-323-051-261-42WS
(Metal)

MP-221-025-261-22WS
(Plastic)

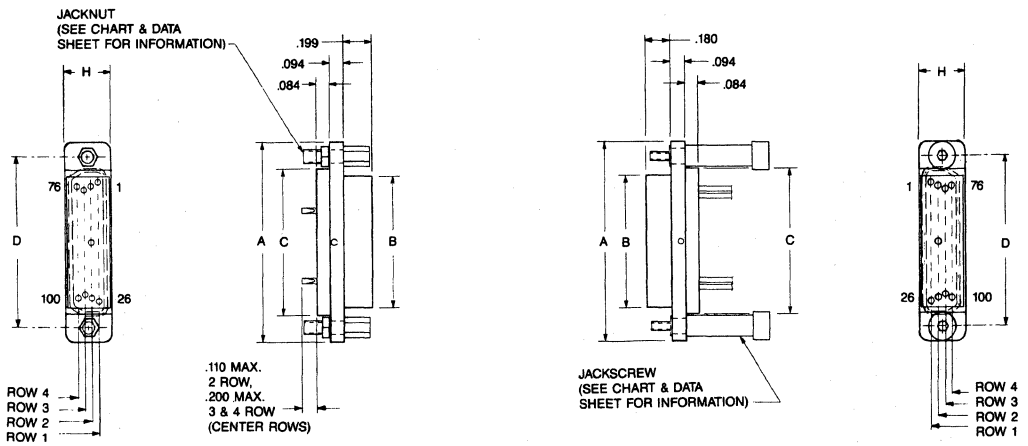
I/O Connectors

.050"
Low Profile Metal

MQ

.050
Low Profile Plastic

MP



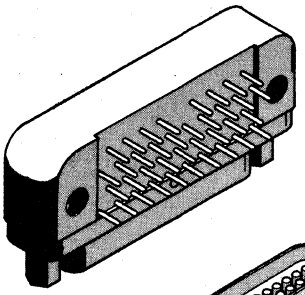
PLUG RECEPTACLE

DIMENSIONS

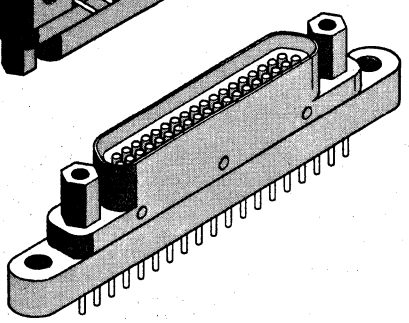
SIZES	CONTACT ROWS	A	B PLUG MAX.	B RECEPTACLE MAX.	C	D	H	JACKSCREW, JACKNUT SEE SHT. A-1
9	2	.778	.291	.400	.398	.565	.208	2-56 UNC THREAD
15		.928	.441	.550	.548	.715		
21		1.078	.591	.700	.698	.865		
25		1.178	.691	.800	.798	.965		
31		1.328	.841	.950	.948	1.115		
37		1.478	.991	1.100	1.098	1.265		
51	3	1.428	.941	1.050	1.048	1.215	.250	

Receptacle "B" dimension is "inside shroud" dimension.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.



EXAMPLE: PLUG
MK-263-037-435-220S
(Metal)
ML-261-037-435-220S
(Plastic)



EXAMPLE: RECEPTACLE
MK-223-037-225-2200
(Metal)
ML-221-037-225-220U
(Plastic)

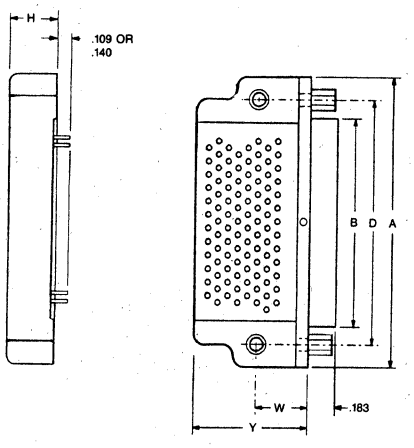
PC BOARD Mounted Connectors

.050" Rugged Metal

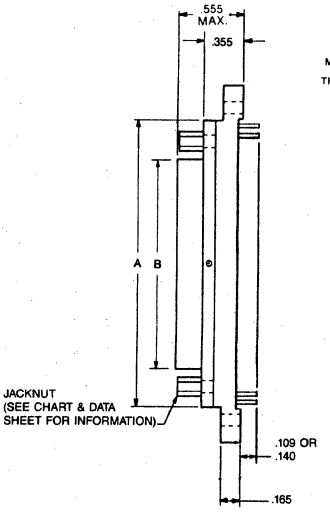
MK

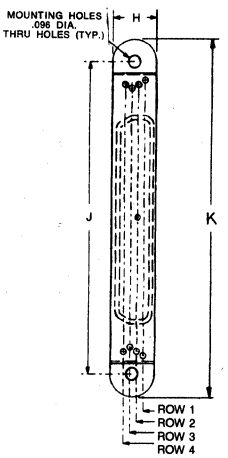
.050 Rugged Plastic

ML



RIGHT ANGLE PLUG





STRAIGHT RECEPTACLE

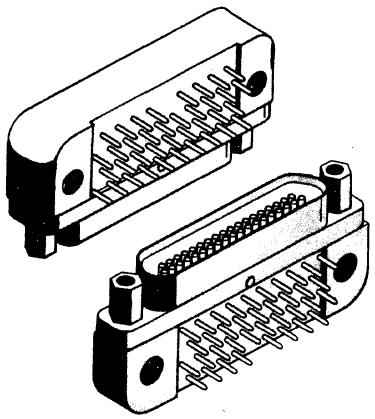
DIMENSIONS

SIZE	CONTACT ROWS	A	B		D	H	J	K	W	Y	FIXED JACKNUT
			PLUG MAX.	RECEPTACLE MAX.							
9	2	.775	.333	.400	.565	.298	1.150	1.390	.250	.420	2-56 UNC THREAD
15		.925	.483	.550	.715						
21		1.075	.633	.700	.865		1.450	1.690			
25		1.175	.733	.800	.965		1.500	1.740			
31		1.325	.833	.950	1.115		1.800	2.040		.520	
37		1.475	1.033	1.100	1.265		2.100	2.340			
51	3	1.425	.983	1.050	1.215	.342	2.000	2.270	.300	.650	
100	4	2.160	1.383	1.450	1.800	.384	2.800	3.240	.400	1.000	4-40 UNC THREAD

Receptacle "B" dimension is "inside shroud" dimension.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.

EXAMPLE: PLUG
MS-253-037-325-220S
(Metal)
MR-251-037-325-220S
(Plastic)



EXAMPLE: RECEPTACLE
MS-263-037-435-220S
(Metal)
MR-261-037-435-220S
(Plastic)

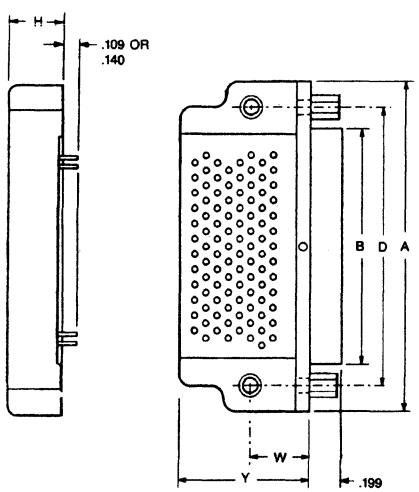
PC BOARD Mounted Connectors

.050" Low Profile Metal

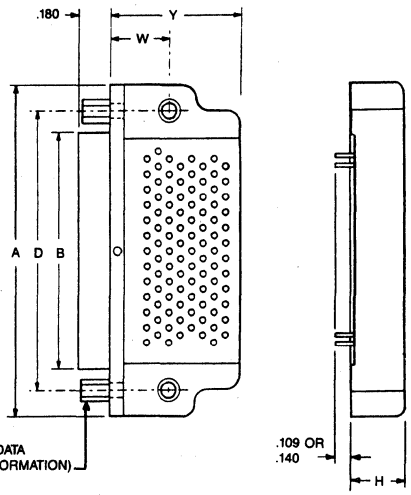
MS

.050 Low Profile Plastic

MR



RIGHT ANGLE PLUG



RIGHT ANGLE RECEPTACLE

DIMENSIONS

SIZE	CONTACT ROWS	A	B PLUG MAX.	B RECEPTACLE MAX.	D	H	W	Y	FIXED JACKNUT
9	2	.778	.291	.400	.565	.208	.250	.420	2-56 UNC THREAD
15		.928	.441	.550	.715				
21		1.078	.591	.700	.865				
25		1.178	.691	.800	.965				
31		1.328	.841	.950	1.115			.520	
37		1.478	.991	1.100	1.265				
51	3	1.428	.941	1.050	1.215	.250	.300	.650	

Receptacle "B" dimension is "inside shroud" dimension.

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.

PLUG	RECEPTACLE
SERIES	
.050″ Rugged Metal I/O Connector .050″ Rugged Plastic I/O Connector	.050″ Rugged Metal I/O Connector .050″ Rugged Plastic I/O Connector
BODY	
2-Row 3-Row 4-Row	2-Row 3-Row 4-Row
BODY STYLE: Plug, straight, with ears Plug, right-angle, with ears	BODY STYLE: Receptacle, straight, with ears Receptacle, right-angle, with ears
BODY MATERIAL: Polyphenylene sulfide, with electroless nickel shell Polyphenylene sulfide, with electrodeposited cadmium shell Polyphenylene sulfide, with hard anodized, black shell Polyphenylene sulfide, with zinc shell Polyphenylene sulfide	BODY MATERIAL: Polyphenylene sulfide, with electroless nickel shell Polyphenylene sulfide, with electrodeposited cadmium shell Polyphenylene sulfide, with hard anodized, black shell Polyphenylene sulfide, with zinc shell Polyphenylene sulfide
SIZE	
No. of contacts: 9, 15, 21, 25, 31, or 37 (2-rows) 51 contacts (3-rows) 100 contacts (4-rows) Other sizes available; check with factory.	No. of contacts: 9, 15, 21, 25, 31, or 37 (2-rows) 51 contacts (3-rows) 100 contacts (4-rows)
CONTACTS	
TYPE CONTACTS/TERMINATIONS: Pin, straight, solder cup Pin, straight, .500″ pigtails Pin, straight, 1.000″ pigtails Pin, straight, crimped wire	TYPE CONTACTS/TERMINATIONS: Socket, straight, solder cup Socket, straight. 500″ pigtails Socket, straight, 1.000″ pigtails Socket, straight, crimped wire
PLATING OPTIONS: 50 μ″ Au contacts 30 μ″ Au contacts 50 μ″ Au contacts; 10 μ″ Au terminations 30 μ″ Au contacts; 10 μ″ Au terminations 50 μ″ Au contacts; 100 μ″ Sn terminations 30 μ″ Au contacts; 100 μ″ Sn terminations	PLATING OPTIONS: 50 μ″ Au contacts 30 μ″ Au contacts 50 μ″ Au contacts; 10 μ″ Au terminations 30 μ″ Au contacts; 10 μ″ Au terminations 50 μ″ Au contacts; 100 μ″ Sn terminations 30 μ″ Au contacts; 100 μ″ Sn terminations
HARDWARE	
STYLE OF HARDWARE: None Two fixed jacknut assemblies Two turning jackscrews, Allen head, retaining ring Two long turning jackscrews, Allen head, retaining ring Two turning jackscrews, slot head, retaining ring Two long turning jackscrews, slot head, retaining ring	STYLE OF HARDWARE: None Two fixed jacknut assemblies Two turning jackscrews, Allen head, retaining ring Two long turning jackscrews, Allen head, retaining ring Two turning jackscrews, slot head, retaining ring Two long turning jackscrews, slot head, retaining ring
NOTE: When ordering by MIL number, hardware comes unassembled.	
POLARIZATION/WIRING: NONE For wiring codes, see section A	POLARIZATION/WIRING: NONE For wiring codes, see section A

For types of hardware and other specific design requirements to meet specific applications, call AirBorn Customer Service at 512-863-5585 or TWX 510-601-5238.

AIRBORN INC. / 4321 AIRBORN DRIVE / P.O. BOX 519/ADDISON TX 75001-0519

ALDEN PRODUCTS COMPANY

SPECIALTY CONNECTION PRODUCTS

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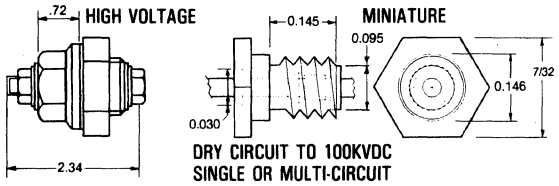
SPECIALTY SINGLE AND MULTI-LEAD ENVIRONMENTAL FEEDTHROUGHS AND CONNECTORS



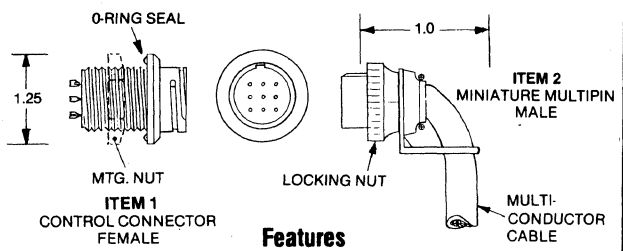
DRY CIRCUIT TO 100KVDC
SINGLE OR MULTI-CIRCUIT

Features

- High voltage panel mounting feedthroughs seal in liquid and gas dielectrics at operating voltages to 60KVDC.
- Miniature panel mounting feedthroughs are designed for use with single or multiple leads.

For Further Information Contact Alden's Product Manager For
Environmental Connection Devices

HIGH AND LOW VOLTAGE MULTI-PIN CIRCULAR CONNECTORS



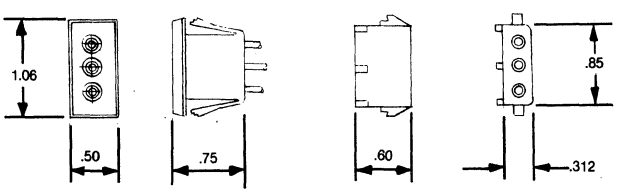
Features

- Alden's rugged control connectors stand up to tough environments in critical applications.
- Alden's miniature multi-pin connectors maximize pin counts in an environmentally sealed package.

For Further Information Contact Alden's Product Manager For
Circular Connector Products

HIGH AMPERAGE PANEL AND BACKPLANE MOUNTING CONNECTORS

Connectors Available
For Operation At 5 To 75 Amperes

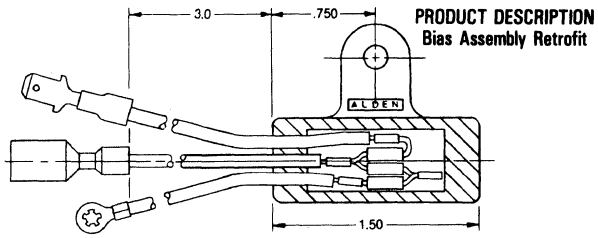


PANEL MOUNTING SNAP-IN FEATURE

BACKPLANE MOUNTING COMPLIANT PIN

For Further Information Contact Alden's Product Manager For
Business Machine Connector Products

SPECIALTY MINIATURE ENCAPSULATED CIRCUIT MODULES

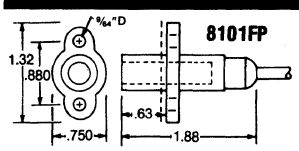


Features

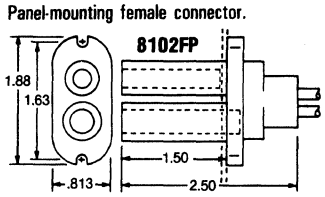
- Modules are designed to accommodate circuitry per customer specification.
- Mounting features and input/output connections are designed for easy retrofit of existing circuits.

For Further Information Contact Alden's Product Manager For
Encapsulated Products

HIGH VOLTAGE SINGLE OR MULTI-PIN CONNECTORS

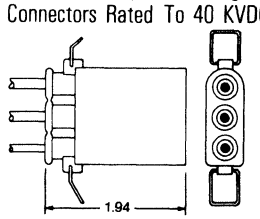


Panel-mounting female connector.



Polarized panel-mounting female connector.

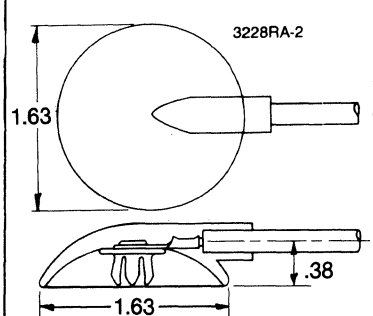
Ask For Our Complete Catalog Of Connectors Rated To 40 KVDC



8113M
Polarized, two-circuit, male connector with ground lead and optional locking wire latches. Mates with 8113FP.

For Further Information Contact Alden's Product Manager For
Standard High Voltage Products

HIGH VOLTAGE 3228 SERIES CRT ANODE CONNECTORS



Features

- High voltage up to 40 KVDC
- Low profile
- Available with contacts per JEDEC specs:
  J1-21 J1-22 J1-25 J1-30
- All connectors manufactured with UL rated materials
- Integral molding of boot to lead assembly maximizes HV performance

For Further Information Contact Alden's Product Manager For
CRT Anode Connectors

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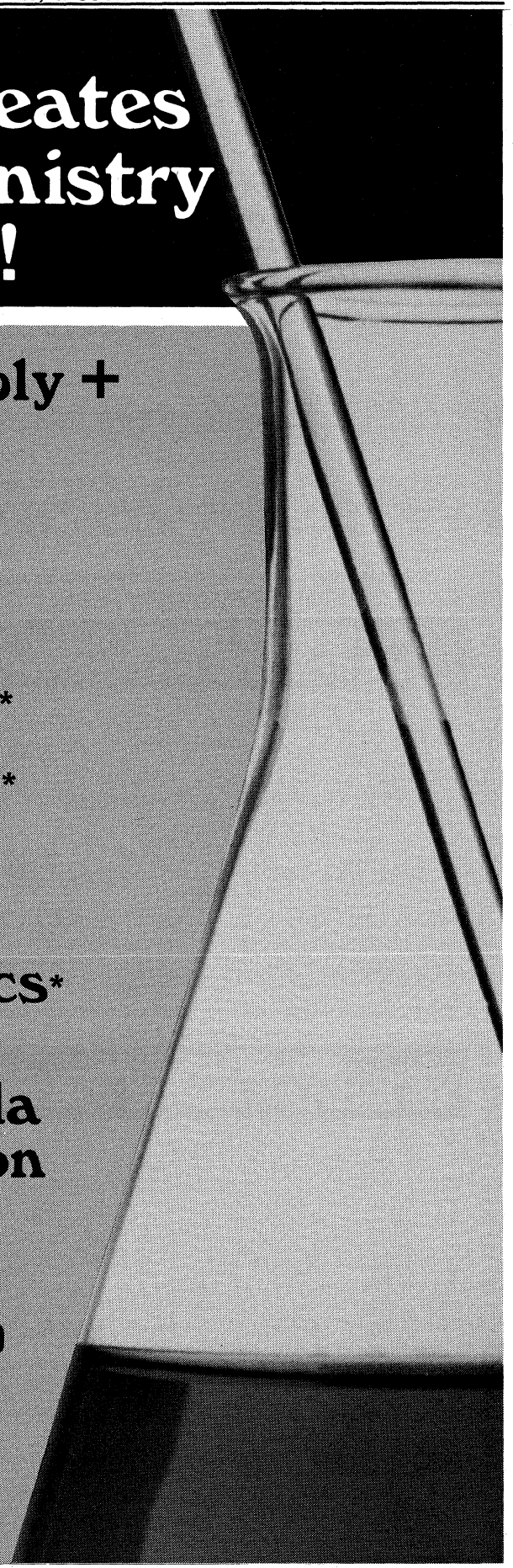

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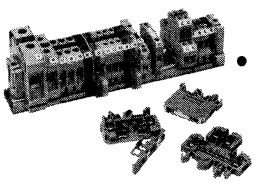
CONTA CLIP — MODULAR TERMINAL BLOCKS



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- Special space saving designs: 5 mm (.2 in.) wide and double level terminal blocks.



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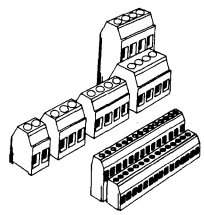
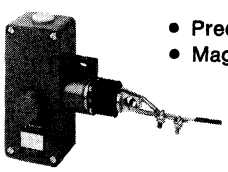


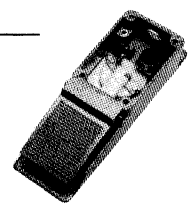
steute — SWITCHES



- Precision Limit Switches
- Magnetic Position Switches



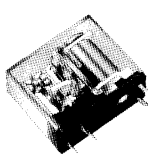
- Foot Operated Switches
- Tension Safety Switches



Available in miniature versions and suitable for standard and explosion proof environments.

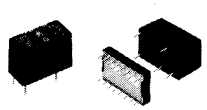
DOLD — INDUSTRIAL RELAYS

MICRO SIZED P.C. MOUNTED POWER RELAYS

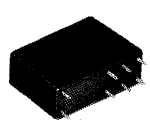


28.7 mm (L) X 12 mm (W) X 25.5 mm (H)

- Up to 50 million switching cycles
- Up to 16 amps

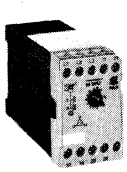


37 mm (L) X 10.8 mm (W) X 25 mm (H)



29 mm (L) X 12 mm (W) X 25.5 mm (H)

SPECIALTY RELAYS



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Insulated PIDG Terminals, Splices and FASTON Receptacles



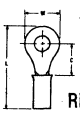
Insulated PLASTI-GRIP Terminals, Splices and FASTON Receptacles



Uninsulated DIAMOND GRIP Terminals

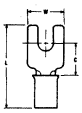


Uninsulated SOLISTRAND Terminals and Splices

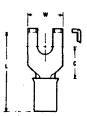


Ring

Insulation Color Code
22-16 AWG — Red
16-14 AWG — Blue
12-10 AWG — Yellow



Spade



Flanged Spade



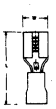
Spring Spade



Splice



Closed End Splice



FASTON Receptacle

Splices, Closed End

Wire Size	Vinyl (VS)	
	L	Part No.
22-14	.740	36964
16-14	.800	34864
12-10	.975	34308

Tooling

Hand Tools:

PIDG and PLASTI-GRIP Terminals, Butt Splices and FASTON Receptacles — 22-10 AWG — CERTI-LOK Tool No. 169400 or TETRA-CRIMP Tool No. 59824-1.

DIAMOND GRIP and SOLISTRAND Terminals and Splices — 22-10 AWG — Tool No. 49835.

PLASTI-GRIP Parallel Splices and Closed End Splices — 22-10 AWG — Tool No. 69364.

Other hand, power and automatic tooling is available for different production needs. Consult AMP Incorporated for information.

Rings

Wire Size	Stud Size	Dimensions C Min.	Dimensions W	PIDG L Max.	PIDG Part No.	PLASTI-GRIP L Max.	PLASTI-GRIP Part No.	DIAMOND GRIP L Max.	DIAMOND GRIP Part No.	SOLISTRAND L Max.	SOLISTRAND Part No.
22-16	4	.156	.218	.672	31878	.684	32944	.603	31094	.449	34104
	6	.156	.218	.672	31879	.684	32945	.603	31906	.449	34105
	8	.281	.312	.844	31888	.856	32951	.775	30996	.625	34111
	10	.281	.312	.844	31889	.856	32952	.775	30997	.625	34112
	1/4	.437	.469	1.078	31892	1.090	32953	1.009	31251	.855	34113
	5/16	.437	.469	1.078	31893	1.090	32954	1.009	31252	.855	34114
16-14	4	.171	.250	.703	32439	.715	32956	.634	32187	.480	34119
	6	.171	.250	.703	32440	.715	32957	.634	32188	.480	34120
	8	.281	.343	.859	31899	.871	32959	.790	30992	.636	34122
	10	.281	.343	.859	31900	.871	32960	.790	30993	.636	34123
	1/4	.437	.469	1.078	31904	1.090	32961	1.009	31256	.855	34124
	5/16	.437	.469	1.078	31905	1.090	32962	1.009	31257	.855	34125
12-10	8	.302	.375	1.083	32543	1.083	32968	1.007	31826	.760	32994
	10	.302	.375	1.083	32544	1.083	32969	1.007	31771	.760	33457
	5/16	.468	.531	1.322	32546	1.327	32971	1.251	31827	1.004	33459
	3/8	.531	.593	1.414	32547	1.421	32972	1.345	31828	1.098	33220
	1/2	.625	.750	1.594	35151	1.594	34837	—	—	1.273	35135

Spades

22-16	6	.203	.297	.753	34080	.765	327735	.684	33766	.530	36195
	8	.312	.375	.908	32050	.920	32981	.839	31638	.685	34117
	10	.312	.375	.908	32051	.920	32962	.839	31639	.685	34118
16-14	6	.312	.375	.908	32055	.920	32964	—	—	.685	34127
	8	.312	.375	.908	32056	.920	32965	—	—	.685	34128
12-10	8	.296	.406	1.095	32588	1.095	32974	1.019	31830	.772	32995
	10	.296	.406	1.095	32589	1.095	32975	1.019	31831	.772	33479

Spades, Flanged

22-16	6	.203	.296	.737	32561	.749	322249	.668	32419	.514	320749
	8	.250	.416	.830	32497	.842	324169	.761	32495	.607	323124
	10	.203	.296	—	—	.749	328516	—	—	—	—
16-14	8	.203	.294	.737	320862	.749	53874-1	.685	320859	.514	320856
	10	.203	.294	.737	320863	—	—	.685	320860	.514	320857
12-10	6	.250	.296	1.017	324577	1.017	324581	.941	324580	.694	324578
	8	.250	.416	1.017	32510	1.017	324172	.941	32417	.694	323143
	10	.250	.416	1.017	326865	—	—	.941	322715	.694	323144

Spades, Spring

22-16	6	.250	.250	.799	52929	.811	52949	—	—	.576	53120-1
	8	.281	.375	.860	52930	.872	52950	—	—	—	—
	10	.281	.406	.908	52931	.920	52951	—	—	—	—
16-14	6	.250	.250	.799	52935	.811	52955	—	—	.576	53123-1
	8	.281	.375	.860	52936	.872	52956	—	—	.637	53124-1
	10	.281	.406	.908	52937	.920	52957	—	—	.685	53125-1
12-10	6	.174	.250	.959	52941	.959	52961	—	—	.636	53126-1
	8	.276	.375	1.052	52942	1.052	52962	—	—	.729	53127-1
	10	.276	.406	1.100	52943	1.100	52963	—	—	.777	53128-1
	1/4	.338	.625	1.225	52945	1.225	52965	—	—	.902	53138-1

FASTON Receptacles, 250 Series Fits Tab (thk.) .032

Wire Size	W	PIDG L Max.	PIDG Part No.	PLASTI-GRIP L Max.	PLASTI-GRIP Part No.
22-18	.300	.900	640903-1	.900	640933-1
16-14	.300	.900	640905-1	.900	640935-1
12-10	.300	1.012	640907-1		

Splices, Butt

Wire Size	PIDG L Max.	PIDG Part No.	PLASTI-GRIP L Max.	PLASTI-GRIP Part No.	SOLISTRAND L Max.	SOLISTRAND Part No.
22-16	1.265	320559	1.065	34067	.591	31818
16-14	1.265	320562	1.065	34071	.572	31819
12-10	1.656	320570	1.160	34072	.567	32151

Splices Parallel

Wire Size	PLASTI-GRIP L Max.	PLASTI-GRIP Part No.	SOLISTRAND L Max.	SOLISTRAND Part No.
22-16	.760	34131	.301	34130
16-14	.760	34133	.301	34137
12-10	.843	34135	.343	34138

Need more details? **Request Catalog No. 75-338** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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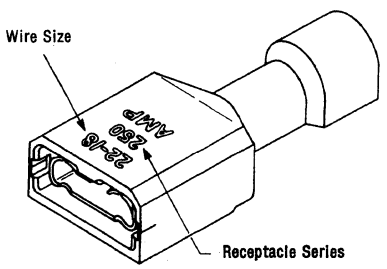
AMP Ultra-Fast Receptacles and Tabs

These fully-insulated terminals, available in right angle flag and tab configurations, are your most cost effective way to meet safety hazard requirements. With good reason. A one-step operation gets rid of a whole array of costly post insulation problems. And the result is compatible with the safety requirements of Underwriters Laboratories standards 1410, 478 and 560.

Color	Code	(Translucent)
Violet	26-22	AWG
Red	22-18	AWG
Blue	16-14	AWG
Yellow	12-10	AWG

Ultra-Fast Fully Insulated FASTON Receptacle

Material:
Housing — Nylon Type 6/6, 94V-2
Terminal — Tin-plated, copper alloy



Features

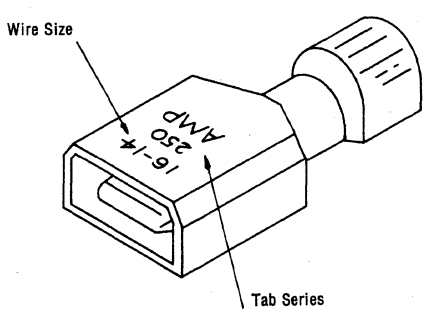
■ Prevents shock and short hazards ■ Insures correct lead-in of tab ■ Insures full mating with a variety of tab styles including those with shoulders ■ Terminals are color coded by wire size ■ Terminals contain wire size and tab size designation ■ Listed under the Component Program of Underwriters Laboratories Inc., Electrical File No. E66717 ■ CSA Certified under File No. LR 49710 ■ Nylon Type 6/6 housing meets UL temperature rating of 105°C ■ Terminates 26-10 AWG stranded wire ■ Meets UL-310 specification for quick connect terminals

Wire Range†	Ins. Dia. Max.	Mating Tab	Terminal Material	Part Nos. Strip	Part Nos. Loose Piece
.110 Series					
26-22	.100	.020 x .110	Brass	7-520365-2*	7-520366-2*
22-18	.120	.016 x .110	Brass	2-520080-2*	7-520366-2*
		.020 x .110	Brass	2-520083-2	2-520084-2
		.032 x .110	Brass	2-520272-2	2-520273-2
	.230	.020 x .110	Brass	2-520306-2	2-520307-2
16-14	.260	.020 x .110	Brass	3-520370-2*	3-520371-2*
		.032 x .110	Brass	3-520372-2*	3-520373-2*
.187 Series					
22-18	.135	.020 x .187	Brass	2-520181-2	2-520182-2
		.032 x .187	Brass	2-520193-2	2-520194-2
	.230	.020 x .187	Brass	2-520261-2	2-520262-4
		.032 x .187	Brass	2-520274-2	2-520275-2
16-14	.160	.020 x .187	Brass	3-350815-2	3-350816-2
		.032 x .187	Brass	3-520124-2	3-520125-2
	.260	.020 x .187	Brass	3-520150-2	3-520151-2
		.032 x .187	Brass	3-520276-2	3-520277-2
.250 Series					
22-18	.135	.032 x .250	Brass	2-520183-2	2-520184-2
			Phosphor Bronze	2-520183-4	2-520184-4
	.230	.032 x .250	Brass	2-520263-2	2-520264-2
			Phosphor Bronze	2-520263-4	2-520264-4
16-14	.160	.032 x .250	Brass	3-350819-2	3-350820-2
			Phosphor Bronze	3-520116-2	3-520117-2
	.260	.032 x .250	Brass	3-520140-2	3-520141-2
			Phosphor Bronze	3-520140-4	3-520141-4
12-10	.320	.032 x .250	Brass	4-520447-2	4-520448-2

†Stranded wire only. *Special UL/CSA status.

Ultra-Fast Fully Insulated FASTON Tab

Material:
Housing — Nylon Type 6/6
Terminal — Tin-plated, copper alloy



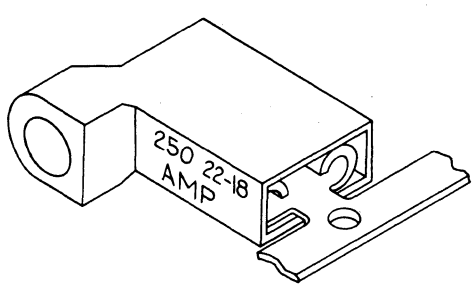
.250 Series

Wire Range†	Ins. Dia. Max.	Mating Tab	Terminal Material	Color Code (Translucent)	Part Numbers Strip Form	Part Numbers Loose Piece
22-18	.135	.032 x .250	Brass	Red	2-520102-2	2-520103-2
16-14	.160			Blue	3-520106-2	3-520107-2

† Stranded wire only.

Ultra-Fast Fully Insulated FASTON Flag Receptacle

Material:
Housing — Nylon Type 6/6
Terminal — Tin-plated, copper alloy



.187 Series

Wire Range†	Ins. Dia. Max.	Tab Size	Terminal Base Material	Part Nos. Strip Form	Part Nos. Loose Piece
22-18	.165	.020 x .187	Brass	2-520334-2	2-520335-2
		.032 x .187	Brass	2-520336-2	2-520337-2
16-14	.185	.020 x .187	Brass	3-520338-2	3-520339-2
		.032 x .187	Brass	3-520340-2	3-520341-2

.250 Series

Wire Range†	Ins. Dia. Max.	Tab Size	Terminal Base Material	Part Nos. Strip Form	Part Nos. Loose Piece
22-18	.165	.032 x .250	Brass	2-520128-2	2-520129-2
	.230	.032 x .250	Brass	2-520856-2	2-520851-2
16-14	.185	.032 x .250	Brass	3-520132-2	3-520133-2

†Stranded wire only.

Need more details? **Request Catalog No. 75-357** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

AMP, FASTON — Trademarks of AMP Incorporated

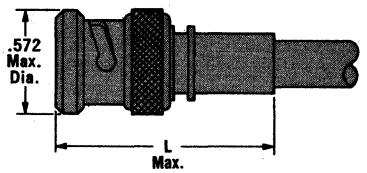
AMP INCORPORATED

AMP RF Connectors

BNC Series Dual Crimp Type
MIL-C-39012, Class II Category B

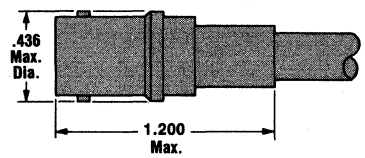
Features: ■ Low VSWR ■ Low initial cost ■ Low applied cost, solderless crimp ■ Fully intermateable with comparable UG/U Series connectors ■ Bayonet lock coupling for quick connect/disconnect ■ Positive insulation grip with crimped braid ferrule

Plugs



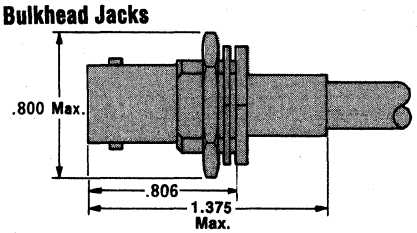
RG/U Cable	"L" Max.	Part No. Tarnish Resistant Finish	Part No. Silver Finish	MS 39012/ Designation*	Hand Tool No.	Die Insert No. for Tools Hand—69710 Pneu.—69365
58, 58B 58A, 58C	1.218	225395-1	2-331350-1	16-0004	69478-1	69727
			2-331350-1	16-0004	69478-3	69726
59, 59A, 59B 62, 62A, 62B, Belden 8241, 8279	1.218	225395-2	331350	16-0008	69477-1	69669-1
55B, 223 55, 55A,	1.218	225395-3	2-331350-7	16-0005	69478-1	69727
71, 71A, 71B	1.218	225395-4	2-331350-3	16-0012	69477-1	69669-1
141, 141A	1.218	225395-5	2-331350-8	16-0006	69478-3	69726
142, 142A, 142B	1.218	225395-6	2-331350-9	16-0007	69478-3	69726
174, 188, 316	1.218	225395-7	2-331350-4	—	220009-1	220026-1
179, 187	1.218	225395-8	2-331350-5	—	220009-1	220026-1
180, 180A, 195	1.218	225395-9	2-331350-6	—	69477-2	69669-2
Amphenol 21-597, Belden 8218	1.218	1-225395-0	2-331350-2	—	69477-2	69669-2
Belden 8281, 9231	1.312	—	4-331350-0	—	220043-1	220088-1

Jacks



RG/U Cable	Part No. Tarnish Resistant Finish	Part No. Silver Finish	MS 39012/ Designation*	Hand Tool No.	Die Insert No. for Tools Hand—69710 Pneu.—69365
58, 58B 58A, 58C	225396-1	2-331351-1	17-0004	69478-1	69727
		2-331351-1	17-0004	69478-3	69726
59, 59A, 59B 62, 62A, 62B, Belden 8241, 8279	225396-2	331351	17-0008	69477-1	69669-1
174, 188	225396-7	2-331351-4	—	220009-1	220026-1
179, 187	225396-8	2-331351-5	—	220009-1	220026-1
180, 180A, 195	225396-9	2-331351-6	—	69477-2	69669-2

Bulkhead Jacks

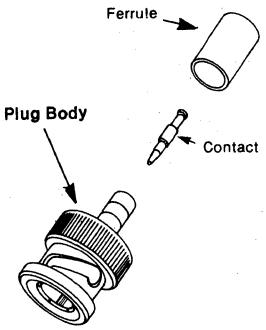


RG/U Cable	Part No. Tarnish Resistant Finish	Part No. Silver Finish	MS 39012/ Designation*	Hand Tool No.	Die Insert No. for Tools Hand—69710 Pneu.—69365
58, 58B 58A, 58C	225398-1	1-331693-1	19-0003	69478-1	69727
		1-331693-1	19-0003	69478-3	69726
59, 59A, 59B, 62, 62A, 62B, Belden 8241, 8279	225398-2	331693	19-0007	69477-1	69669-1
55, 55A, 55B, 223	225398-3	1-331693-6	19-0004	69478-1	69727
71, 71A, 71B	225398-4	1-331693-5	19-0012	69477-1	69669-1
174, 188, 316	225398-7	1-331693-2	—	220009-1	220026-1
179, 187	225398-8	1-331693-3	—	220009-1	220026-1
180, 180A, 195	225398-9	1-331693-4	—	69477-2	69669-2
Amphenol 21-597, Belden 8218	1-225398-0	1-331693-0	—	69477-2	69669-2

*Government designation applies only to silver plated parts.

Commercial BNC Dual Crimp Connector

Features: ■ Low cost ■ Smaller and lighter than standard BNC connectors ■ Fully crimpable ■ Captive center contact ■ Fully intermateable with all BNC UG/U connectors ■ Low VSWR ■ Tarnish resistant finish ■ Machine or hand tool applied.



RG/U Cable	Plug Part Numbers Tin Plated Center Contact	Plug Part Numbers Gold Plated Center Contact	Plug Part Numbers Silver Plated Center Contact	CERTI-CRIMP Hand Tool Part Number	Die Number for Commercial Hand Tool No. 220190-1	Die Number for Terminating Machine No. 220152-1
58, 58A, 58B, 58C, 141, 141A	227079-1	227079-5	227079-9	220187-1	220189-1	220191-1
55, 55A, 55B, 223, 142, 142A, 142B	227079-2	227079-6	1-227079-0	220187-1	220189-1	220191-1
59, 59A, 59B 62, 62A, 62B	227079-3	227079-7	1-227079-1	220187-2	220189-2	220191-2
71, 71A, 71B	227079-4	227079-8	1-227079-2	220187-2	220189-2	220191-2
RG174, 188, 316	1-227079-4	1-227079-6	1-227079-5	220009-5	220210-1	220198-1
RG179, 187	2-227079-0	2-227079-2	2-227079-1	220009-5	—	220198-1
AMPHENOL 21-597 Belden 8218 Essex 2003	1-227079-7	1-227079-9	1-227079-8	69477-4	—	220206-1
Belden 9248, 9114	3-227079-1	3-227079-0	3-227079-2	220247-1	220244-1	—
Belden 9266	—	1-227079-3	—	220187-2	220189-2	220191-4

Need more details? **Request Catalog No. 83-719** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C**•1174 .

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

AMP, CERTI-CRIMP — Trademark of AMP Incorporated

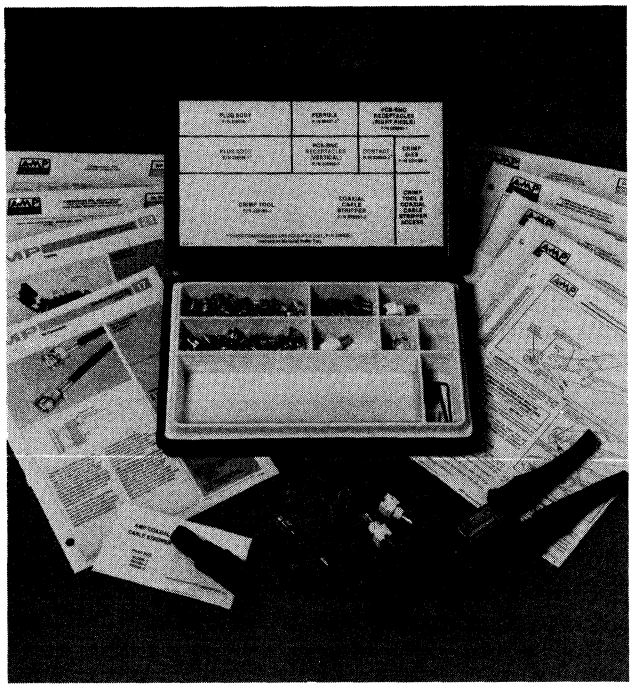
AMP INCORPORATED

AMP RF Connectors

Commercial BNC Designers Kits

Features: ■ Blough components for 40 BNC connectors ■ Four assorted vertical and right angle BNC pcb jacks ■ Stripping and crimping tools ■ Carrying case

Kits contain the following:



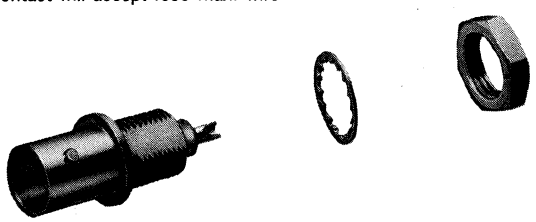
Kit No. 227070-3: For RG-58 cable applications

Kit No. 227070-8: For RG-59 cable applications

Kit No. 227070-7: For RG-58 and RG-59 applications (kit contains 20 connectors for each cable type)

Commercial BNC Solder Receptacles

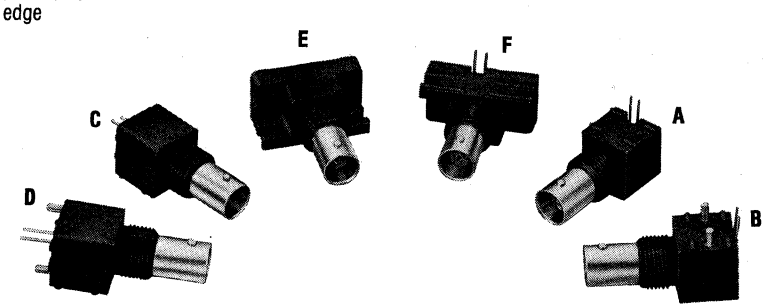
Features: ■ Low initial cost ■ Nylon insulating bushing ■ Front mounted ■ Accommodates .046-.250 panel thickness ■ Optional solder tab ■ Optional dielectric and contact plating ■ Contact will accept .059 max. wire



Assemblies	Part No.	Center Contact Pl.	Dielectric
Standard Receptacle with Standard Lockwasher and Nut	227169-1	Tin	Valox*
	227169-2	Tin	Teflon†
	227169-3	Gold	Valox*
	227169-4	Gold	Teflon†
	227169-9	Silver	Valox*
	1-227169-0	Silver	Teflon†
Standard Receptacle with Lockwasher Terminal and Nut	227169-5	Tin	Valox*
	227169-6	Tin	Teflon†
	227169-7	Gold	Valox*
	227169-8	Gold	Teflon†
	1-227169-1	Silver	Teflon†
	1-227169-2	Silver	Valox*
Isolated Receptacle with Standard Lockwasher and Nut	227726-1	Tin	Valox*
	227726-2	Silver	
	227726-3	Gold	
Sealed Receptacle	227426-1	Gold	Polypropylene Epoxy

Commercial BNC PCB and Panel Mount Receptacles

Features: ■Right angle and vertical styles ■ Mounting flanges or mounting posts ■ Isolated ground ■ Threaded body ■ Slim profile for high density packaging ■ Accommodates up to a .125 thick pc board and .250 panel thickness ■ .025 high standoff pads ■ Can be mounted inboard or at pcb edge



A Without Mounting Posts Part No. 226990-2

B With Solder Mounting Posts Part No. 227161-2

C Without Mounting Posts Part No. 226993-2

D With Solder Mounting Posts Part No. 227222-2

E Vertical PCB BNC Receptacle with Mounting Flanges Part No. 226987-2

F Right Angle PCB/Panel Mount BNC Receptacle with Mounting Flanges Part No. 226978-3

Need more details? **Request Catalog No. 83-719** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

AMP — Trademark of AMP Incorporated
†TEFLON — Trademark of E.I. duPont, Inc.
*VALOX — Trademark of General Electric Co.

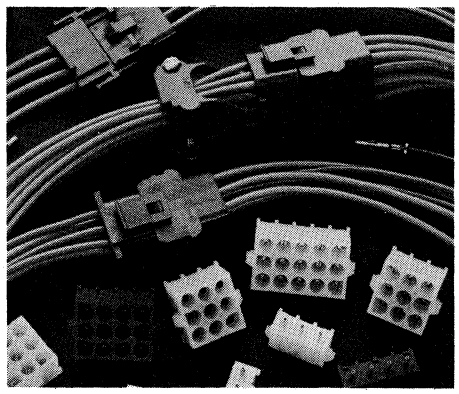
AMP INCORPORATED

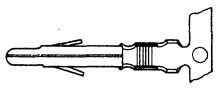
AMP Universal MATE-N-LOK Connectors

meet international standards and also handle 600 volts safely.

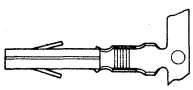
Features

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Pin or socket contact can be hot
- Available in phosphor bronze for high temperature applications
- Positive locking housings
- Insulation capability to .200 diameter
- Removable, crimp snap-in contacts
- Panel mount or free-hanging
- Available in 94V-0 flame retardant material
- pc board capability using pin or socket header assemblies
- Recognized under Component Program of Underwriters Laboratories Inc. File No. E28476
- CSA Certified — File No. LR 16455
- Tested by VDE under their Test Report 4751-800-2/A





Pin



Socket

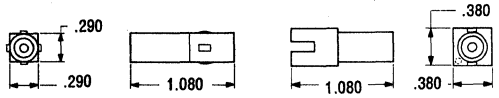
Universal Contacts — Pin and Sockets can be used in either plug or cap housings (Pin Diameter .084)

Wire Size Range AWG	Ins. Dia. Range	Stock Thickness	Material & Finish	Strip Form Contact No. Pin	Strip Form Contact No. Socket	Loose Piece Contact No. Pin	Loose Piece Contact No. Socket	Miniature Applicator Part No.	Hand Tool Part No.
24-18	.040-.100	.012	Brass, Pre-tin	350561-1	350570-1* 350851-1	350690-1	350689-1*	466320-1 466320-2	90300-1
			Brass, Gold	350561-2	350570-2* 350851-2	350690-2	350689-2* 640347-2		
20-14	.060-.130	.012	Brass, Pre-tin	350218-1	350536-1	350547-1	350550-1	687763-1 687763-2	90296-1
			Brass, Gold	350218-2	350536-2	350547-2	350550-2		
20-14	.130-.200	.012	Brass, Pre-tin	350538-1	350537-1	350552-1	350551-1	687926-1 687926-2	90298-1 90299-1
			Brass, Gold	350538-2	350537-2	350552-2	350551-2		
18-14‡	.130-.200	.012	Brass, Pre-tin	350873-1	350874-1	—	—	466588-1 466588-2	90299-1 90298-1
			Brass, Gold	350873-2	350874-2	—	—		
12-10	.200 Max.**	.012	Phos. Brz., Pre-tin	350922-3	350923-3	640309-3	640310-3	466597-1 466597-2	69710-1
			Phos. Brz., Gold	350922-6	350923-6	640309-6	640310-6		

*Socket Contact — .010 stock thickness.
Contact Extraction Tool **Part No.** 458994-1. Contact Insertion Tool **Part No.** 455830-1.
‡Has larger wire barrel. Recommended for predominant use of #14 AWG.
**No insulation barrel on this contact.

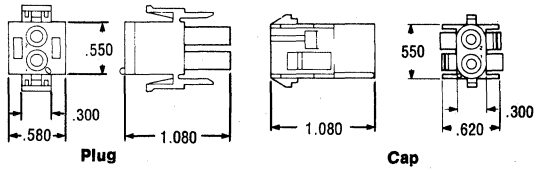
Connector Housing Specifications

1 Circuit Free-Hanging



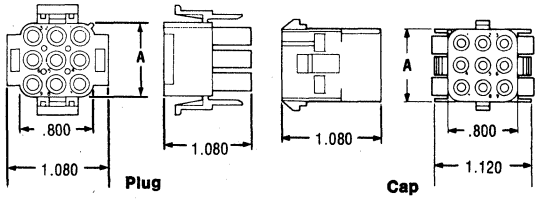
Plug Cap

2 Circuit



Plug Cap

9, 12 and 15 Circuit



Plug Cap

No. of Circuits	A Dim.	Housing Part Numbers Plug Nylon 94V-2	Plug Nylon 94V-0	Cap Nylon 94V-2	Cap Nylon 94V-0
1	—	1-350867-0	350865-1	1-350868-0	350866-1
2	—	1-480698-0	350777-1	1-480699-0	350778-1
3	.800	1-480700-0	350766-1	1-480701-0	350767-1
4	1.050	1-480702-0	350779-1	1-480703-0	350780-1
5	1.300	1-480763-0	350809-1	1-480764-0	350810-1
6	1.550	640585-1*	640581-1*	—	—
		1-480704-0	350715-1	1-480705-0	350781-1
8	2.050	640586-1	640582-1	—	—
9	.800	1-480706-0	350720-1	1-480707-0	350782-1
12	1.050	1-480708-0	350735-1	1-480709-0	350783-1
15	1.300	1-480710-0	350736-1	1-480711-0	350784-1

*In-line version. (See following page for PC headers.)

NOTES:

1. Nylon 94V-2 part numbers listed are for natural nylon color (NEMA colors available upon request).
2. Nylon 94V-0 is brick red color only.
3. Contacts are on .250 centerline spacing.

Need more retails? **Request Catalog No. 73-104** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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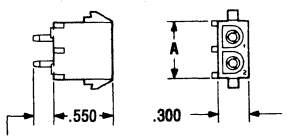
AMP INCORPORATED

AMP Universal MATE-N-LOK Connectors

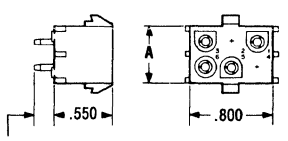
Printed Circuit Board Pin/Socket Header Assemblies

2, 3, 4 and 5 Circuit



.175 Standard Tail,
.235 Long Tail

6, 9, 12 and 15 Circuit



.175 Standard Tail,
.235 Long Tail

No. of Circuits	Pin Assembly Part Number		Socket Assembly Part Number		Housing Material (Nylon)	A Dim.	Finish
	Standard Tail*	Long Tail**	Standard Tail*	Long Tail**			
2	350428-1	350582-1	350759-4	350986-4	94V-2	.550	Pre-tin
	350428-2	350582-2	350759-3	350986-3			Gold
	350786-1	350787-1	350824-1	350831-1	94V-0		Pre-tin
	350786-2	350787-2	350824-2	350831-2			Gold
3	350429-1	350583-1	350760-4	350987-4	94V-2	.800	Pre-tin
	350429-2	350583-2	350760-3	350987-3			Gold
	350789-1	350790-1	350825-1	350832-1	94V-0		Pre-tin
	350789-2	350790-2	350825-2	350832-2			Gold
4	350430-1	350584-1	350761-4	350988-4	94V-2	1.050	Pre-tin
	350430-2	350584-2	350761-3	350988-3			Gold
	350792-1	350793-1	350826-1	350833-1	94V-0		Pre-tin
	350792-2	350793-2	350826-2	350833-2			Gold
5	640466-1	—	640467-1	643061-1	94V-2	1.300	Pre-tin
	640900-1	—	640901-1	643062-1	94V-0		
6	350431-1	350585-1	350762-4	350989-4	94V-2	.550	Pre-tin
	350431-2	350585-2	350762-3	350989-3			Gold
	350711-1	350732-1	350827-1	350834-1	94V-0		Pre-tin
	350711-2	350732-2	350827-2	350834-2			Gold
9	350432-1	350586-1	350763-4	350990-4	94V-2	.800	Pre-tin
	350432-2	350586-2	350763-3	350990-3			Gold
	350712-1	350742-1	350828-1	350835-1	94V-0		Pre-tin
	350712-2	350742-2	350828-2	350835-2			Gold
12	350433-1	350587-1	350764-4	350991-4	94V-2	1.050	Pre-tin
	350433-2	350587-2	350764-3	350991-3			Gold
	350713-1	350737-1	350829-1	350836-1	94V-0		Pre-tin
	350713-2	350737-2	350829-2	350836-2			Gold
15	350434-1	350588-1	350765-4	350992-4	94V-2	1.300	Pre-tin
	350434-2	350588-2	350765-3	350992-3			Gold
	350714-1	350738-1	350830-1	350837-1	94V-0		Pre-tin
	350714-2	350738-2	350830-2	350837-2			Gold

*Use Standard Tail for .062 thick printed circuit board.
**Use Long Tail for .125 thick printed circuit board.

NOTES:

Housing Material: 94V-2 rating, natural color (NEMA colors available); 94V-0 rating, brick red.

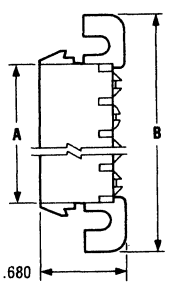
Pin Material: Phos. Bronze, pre-tin plate or .000030 min. gold over .000050 min. nickel.

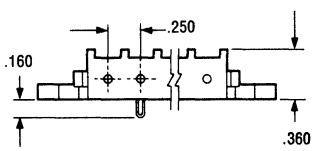
Right Angle Pin Header Assemblies

Contacts: Phos. Bronze

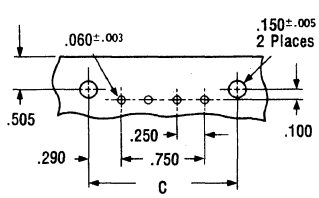
NOTE:

Mates with in-line plug housings only.





Board Layout



Use 6-32 UNC Pan Head Screw
3/8 long and hex nut for mounting

No. of Circuits	Dimensions			Assembly Part No.		Pin Finish
	A	B	C	94V-2	94V-0	
2	.550	1.245	.830	1-350946-0	1-350942-0	Pre-Tin
				2-350946-0	2-350942-0	Gold
3	.800	1.495	1.080	1-350947-0	1-350943-0	Pre-Tin
				2-350947-0	2-350943-0	Gold
4	1.050	1.745	1.330	1-350948-0	1-350944-0	Pre-Tin
				2-350948-0	2-350944-0	Gold
5	1.300	1.995	1.580	1-350949-0	1-350945-0	Pre-Tin
				2-350949-0	2-350945-0	Gold
6	1.550	2.245	1.830	640587-1	640583-1	Pre-Tin
				640587-2	640583-2	Gold
8	2.050	2.745	2.330	640588-1	640584-1	Pre-Tin
				640588-2	640584-2	Gold

Need more retails? **Request Catalog No. 73-104** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

AMP, MATE-N-LOK — Trademark of AMP Incorporated

AMP INCORPORATED

AMPLIMITE Mil-Spec-Type Series 109 and 90 Pin and Socket Connectors (Subminiature "D" Type)

Materials:
Shell—Steel, Class G; Cadmium plated per QQ-P-416, Type II, Class 2*
Insert—Diallyl Phthalate per MIL-M-14, Type SDG-F; Color, Blue
Retention Springs—Stainless Steel*

*Shells in non-magnetic brass and retention springs in beryllium copper can be supplied upon request.

AMPLIMITE Series 109 and 90 Connectors are compact pin and socket connectors especially designed for state-of-the-art high density packaging. They are ideally suited for such diverse applications as military and ground support, computer peripheral equipment, modems, and industrial control instrumentation. Series 90 Connectors provide even higher density than the Series 109 Connectors.

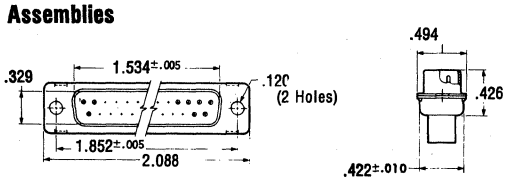
Features (Series 109 Connectors) ■ Wide choice of sizes — 9, 15, 25, 37 and 50 contact positions ■ Conforms to latest amendments of MIL-C-24308 ■ Optional mounting — standard or with floating bushings ■ Machine applied terminations of size 20 screw-machined and precision formed contacts assure highest production rates and lowest applied cost ■ Contacts accept 24-20 AWG wire range.

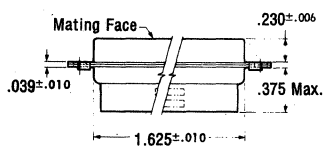
Features (Series 90 Connectors) ■ Wide choice of sizes — 15, 26, 44, 62, 78 and 104 contact positions ■ Connectors conform to latest amendments of MIL-C-24308 ■ High density connections — contacts spaced as close as .090" (in 15, 26 and 44 positions) ■ Size 22 contacts available in screw-machined or precision formed versions, accommodate No. 28-22 AWG wire range ■ Cadmium plated steel shells ■ Machine applied terminations assure highest production rates at lowest applied cost

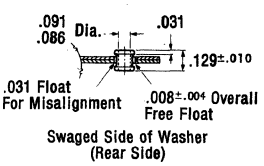
The Series 109 and 90 Connectors are also available with gold plated non-magnetic brass shells.

Series 109 Connectors

Plug Assemblies

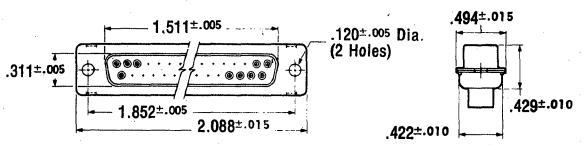


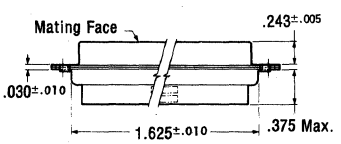




Floating Bushing

Receptacle Assemblies





(25 position connector illustrated.)

No. of Contact Pos.	Standard Mount Military Part No. (M24308/)	Standard Mount AMP Part No.	Floating Bushing Mount Military Part No. (M24308/)	Floating Bushing Mount AMP Part No.	Description
9	4-259	205162-1	4-324	205412-1	Plug only
	4-1	205556-2	4-302	205486-2	Plug with pins
	4-6	205556-3	4-313	205486-3	Plug with pins and tool*
15	4-260	205164-1	4-325	205408-1	Plug only
	4-2	205558-2	4-303	205409-2	Plug with pins
	4-7	205558-3	4-314	205409-3	Plug with pins and tool*
25	4-261	205166-1	4-326	205413-1	Plug only
	4-3	205560-2	4-304	205487-2	Plug with pins
	4-8	205560-3	4-315	205487-3	Plug with pins and tool*
37	4-262	205168-1	4-327	205414-1	Plug only
	4-4	205562-2	4-305	205488-2	Plug with pins
	4-9	205562-3	4-316	205488-3	Plug with pins and tool*
50	4-263	205170-1	4-328	205415-1	Plug only
	4-5	205564-2	4-306	205431-2	Plug with pins
	4-10	205564-3	4-317	205431-3	Plug with pins and tool*

No. of Contact Pos.	Standard Mount Military Part No. (M243081/)	Standard Mount AMP Part No.	Floating Bushing Mount Military Part No. (M243081/)	Floating Bushing Mount AMP Part No.	Description
9	2-281	205161-1	2-292	205416-1	Recpt. only
	2-1	205555-2	2-23	205483-2	Recpt. with sockets
	2-6	205555-3	2-34	205483-3	Recpt. with sockets and tool*
15	2-282	205163-1	2-293	205417-1	Recpt. only
	2-2	205557-2	2-24	205433-2	Recpt. with sockets
	2-7	205557-3	2-35	205433-3	Recpt. with sockets and tool*
25	2-283	205165-1	2-294	205418-1	Recpt. only
	2-3	205559-2	2-25	205484-2	Recpt. with sockets
	2-8	205559-3	2-36	205484-3	Recpt. with sockets and tool*
37	2-284	205167-1	2-295	205419-1	Recpt. only
	2-4	205561-2	2-26	205485-2	Recpt. with sockets
	2-9	205561-3	2-37	205485-3	Recpt. with sockets and tool*
50	2-285	205169-1	2-296	205420-1	Recpt. only
	2-5	205563-2	2-27	205432-2	Recpt. with sockets
	2-10	205563-3	2-38	205432-3	Recpt. with sockets and tool*

*Insertion/Extraction Tool, AMP **Part No.** 91067-2; Military **Part No.** M81969/1-oz.

Note: Pins and sockets supplied with connectors are loose piece. For ordering loose piece and/or tape-mounted pins and sockets separately, refer to Catalog No. 79-547.

Need more details? **Request Catalog No. 79-547** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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AMP INCORPORATED

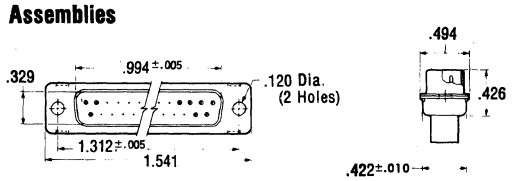
AMPLIMITE Mil-Spec-Type Series 109 and 90 Pin and Socket Connectors (Subminiature "D" Type) (Continued)

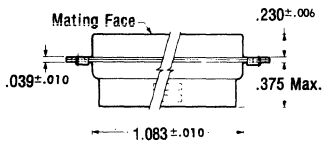
Materials:
Shell—Steel, Class G; Cadmium plated per QQ-P-416, Type II, Class 2*
Insert—Diallyl Phthalate per MIL-M-14, Type SDG-F; Color, Blue
Retention Springs—Stainless Steel*

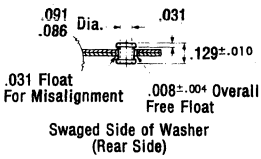
*Shells in non-magnetic brass and retention springs in beryllium copper can be supplied upon request.

Series 90 Connectors

Plug Assemblies

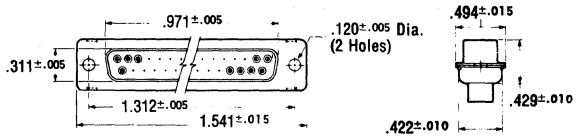


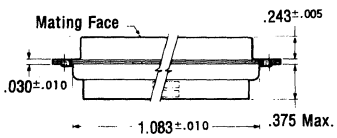




Floating Bushing

Receptacle Assemblies





(26 position connector illustrated.)

No. of Contact Pos.	Standard Mount		Floating Bushing Mount		Description
	Military Part No. (M24308/)	AMP Part No.	Military Part No. (M24308/)	AMP Part No.	
15	4-264	204501-1	4-329	204525-1*	Plug only
	4-11	204513-2	4-307	204537-2*	Plug with Pins
	4-17	204513-3	4-318	204537-3*	Plug with Pins and Tool**
26	4-265	204503-1	4-330	204527-1*	Plug only
	4-12	204515-2	4-308	204539-2*	Plug with Pins
	4-18	204515-3	4-319	204539-3*	Plug with Pins and Tool**
44	4-266	204505-1	4-331	204529-1*	Plug only
	4-13	204517-2	4-309	204541-2*	Plug with Pins
	4-19	204517-3	4-320	204541-3*	Plug with Pins and Tool**
62	4-267	204507-1	4-332	204531-1*	Plug only
	4-14	204519-2	4-310	204543-2*	Plug with Pins
	4-20	204519-3	4-321	204543-3*	Plug with Pins and Tool**
78	4-268	204509-1	4-333	204533-1*	Plug only
	4-15	204521-2	4-311	204545-2*	Plug with Pins
	4-21	204521-3	4-322	204545-3*	Plug with Pins and Tool**
104	4-269	204511-1	4-334	204535-1*	Plug only
	4-16	204523-2	4-312	204547-2*	Plug with Pins
	4-22	204523-3	4-323	204547-3*	Plug with Pins and Tool**

No. of Contact Pos.	Standard Mount		Floating Bushing Mount		Description
	Military Part No. (M24308/)	AMP Part No.	Military Part No. (M24308/)	AMP Part No.	
15	2-286	204500-1	2-297	204524-1	Recpt. only
	2-11	204512-2	2-28	204536-2	Recpt. with Sockets
	2-17	204512-3	2-39	204536-3	Recpt. with Sockets and Tool**
26	2-287	204502-1	2-298	204526-1	Recpt. only
	2-12	204514-2	2-29	204538-2	Recpt. with Sockets
	2-18	204514-3	2-40	204538-3	Recpt. with Tool and Sockets**
44	2-288	204504-1	2-299	204528-1	Recpt. only
	2-13	204516-2	2-30	204540-2	Recpt. with Sockets
	2-19	204516-3	2-41	204540-3	Recpt. with Tool and Sockets**
62	2-289	204506-1	2-300	204530-1	Recpt. only
	2-14	204518-2	2-31	204542-2	Recpt. with Sockets
	2-20	204518-3	2-42	204542-3	Recpt. with Tool and Sockets**
78	2-290	204508-1	2-301	204532-1	Recpt. only
	2-15	204520-2	2-32	204544-2	Recpt. with Sockets
	2-21	204520-3	2-43	204544-3	Recpt. with Tool and Sockets**
104	2-291	204510-1	2-302	204534-1	Recpt. only
	2-16	204522-2	2-33	204546-2	Recpt. with Sockets
	2-22	204522-3	2-44	204546-3	Recpt. with Tool and Sockets**

*No specific military part no. assigned. May be quoted and/or purchased by equivalent military part no., stating any variation from the military part no., or by AMP part no. only.

Insertion/Extraction Tool, AMP **Part No. 91067-1; **Military Part No.** M81969/1-04.

Note: Pins and sockets supplied with connectors are loose piece. For ordering loose-piece and/or tape-mounted pins and sockets separately, refer to Catalog No. 79-547.

Need more details? **Request Catalog No. 79-547** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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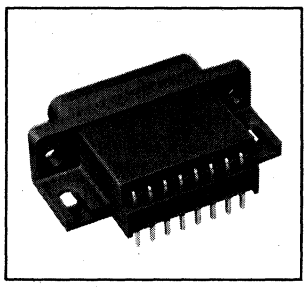
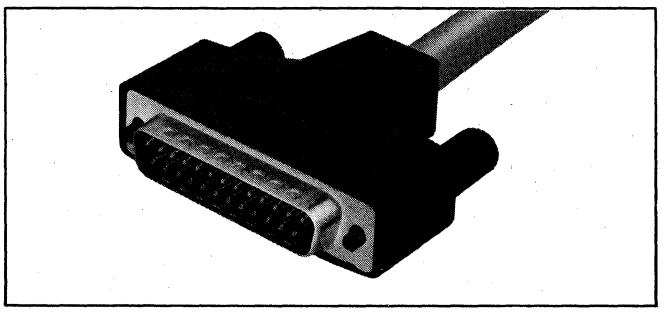
AMP INCORPORATED

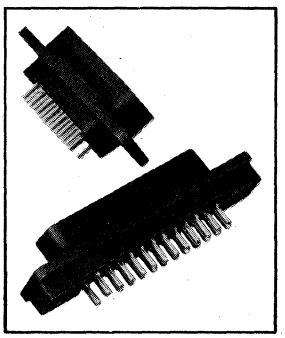
AMPLIMITE Commercial-Type Subminiature HD-20 High Density Pin and Socket Connectors



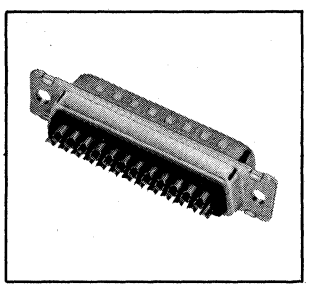
HDP-20 All-Plastic Connectors Preloaded with .026 Dia. Right-Angle Posted Contacts for Pc Board Mounting



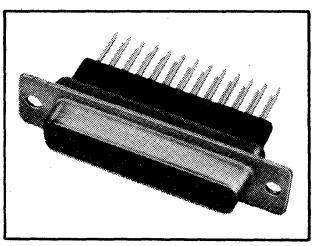
HDE with Shielding and Enclosure Kit. Request Catalog 85-770



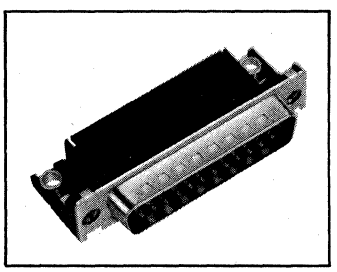
HDP-20 All-Plastic Connectors With and Without Integral Standoffs, Preloaded with .026 or .040 Dia. Straight Posted Contacts for Pc Board Mounting



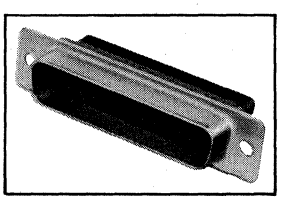
HDP-20 Solder Cup Connector Request Catalog 85-772



HD-20 Metal-Shell Connectors Preloaded with .025 Sq. Straight Posted Contacts for Pc Board Mounting and Wrap-Type Terminations



HD-20 Metal-Shell Connectors Preloaded with .026 Dia. Right-Angle Posted Contacts for Pc Board Mounting



HD-20 Metal-Shell Connectors for Snap-In Contacts

Features

- Available in various styles: metal shell, plastic insert HD-20 connectors for snap-in contacts and HDF-20 connectors for round conductor. Flat cable: all-plastic HDP-20 connectors for pc board mounting and HDJ-20 connectors for jacketed cable.
- Shell sizes 1 thru 5 offer wide choice of contact positions: 9, 15, 25, 37 and 50.
- HD-20 metal-shell connectors accept size 20 DF precision-formed and size 20 DM screw-machined contacts.
- HD-20 metal-shell connectors employ captivated plastic retention tines to eliminate need for spring clips.
- HDP-20 all-plastic connectors employ 94V-0 rated thermoplastic housings with straight and right-angle posted contacts.
- Broad selection of accessories for strain relief/cable clamping, connector-to-connector mating, connector-to-pc board mounting, circuit commoning and keying.
- Machine-applied terminations of size 20 DF and size 20 DM and insulation displacement contacts assure highest production rates at lowest applied cost.
- Filtered AMPLIMITE connectors are available, request Catalog No. 78-487 for specifications.

Crimp Type, Snap-In Contacts

Wire Size AWG	Ins. Dia. Max.	Plating Code	Loose Piece Pin	Contact Socket
28–24	.040	C	66507-8	66505-8
		A	66507-9	66505-9
	.060	A	66682-4	66683-4
		B	1-66507-0	1-66505-0
26–22	.050	A	745254-6	745253-6
		B	745254-7	745253-7
24–20	.060	C	66506-8	66504-8
		A	66506-9	66504-9
		B	1-66506-0	1-66504-0

Material: Pin-Brass; Socket-Phosphor Bronze.
Finish: A—Gold flash over .000050 nickel on entire contact, with additional .000030 gold on mating end.
B—Gold flash over .000030 nickel
C—.000050 gold over .000100 copper
Note: Other contacts available; request Catalog No. 79-546

HD-20 Connectors (for Snap-In Contacts)

Material and Finish:

Shell—Steel per QQ-S-698; Zinc plated per QQ-Z-325, Type II, Class 3 (Yellow Chromate)

Insert—Black Glass-Filled Nylon, Self-Extinguishing, 94V-0 Rated

HDP-20 All-Plastic Connectors Preloaded with .025 [0.64] Sq. Right-Angle Posted Contacts

Material and Finish:

Housing—Black Thermoplastic, 94V-0 Rated

Post Spacer—Black Thermoplastic, 94V-0 Rated

Pin Contacts (Posted)—Brass per MIL-C-50; plated

Socket Contacts (Posted)—Phosphor Bronze per QQ-B-750 plated as follows:

A—Gold flash over .000050 nickel on entire contact, with additional .000030 gold on mating end for length of .150 min.

B—Gold flash over .000030 nickel

Gold plating per MIL-G-45204; Nickel plating per QQ-N-290

Need more details? **Request Catalog Nos. 79-546, 85-770 and 85-772** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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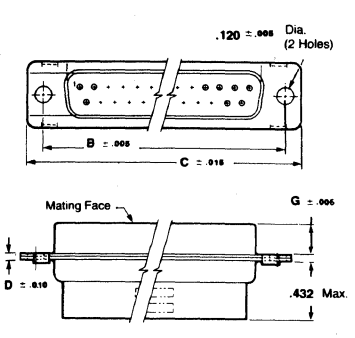
AMP INCORPORATED

AMPLIMITE Commercial-Type Subminiature HD20 High Density Pin and Socket Connectors (Continued)

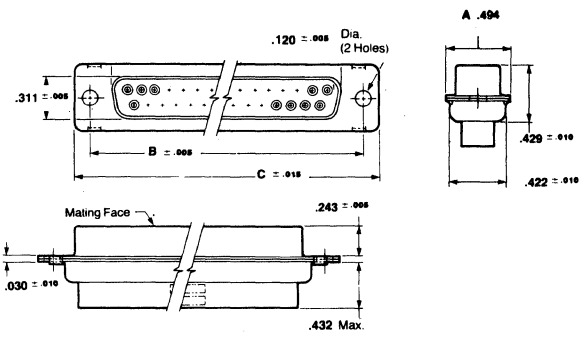
HD-20 Connectors (for Snap-In Contacts)

Plugs 9, 15, 25, 37 and 50 Positions



Floating Bushing

Receptacles 9, 15, 25, 37 and 50 Positions

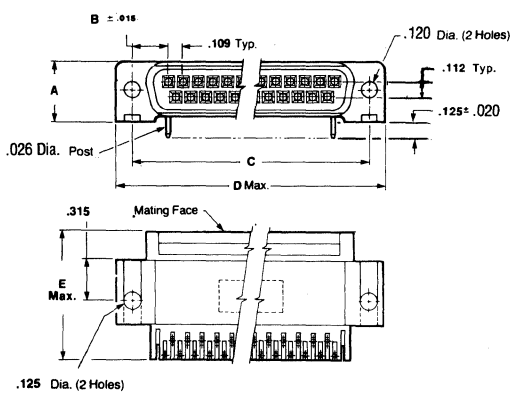


No. of Contact Pos. (Shell Size)	Dimensions						Part Nos.		Mounting Method
	A	B	C	D	G	H	Plug	Receptacle	
9 (1)	.494	.984	1.213	.030	.235	.130	205204-1	205203-1	Standard
							205434-1	205439-1	Floating Bushing
15 (2)	.494	1.312	1.541	.030	.235	.130	205206-1	205205-1	Standard
							205435-1	205440-1	Floating Bushing
25 (3)	.494	1.852	2.088	.039	.230	.139	205208-1	205207-1	Standard
							205436-1	205441-1	Floating Bushing
37 (4)	.494	2.500	2.729	.039	.230	.139	205210-1	205209-1	Standard
							205437-1	205442-1	Floating Bushing
50 (5)	.605	2.406	2.635	.039	.230	.139	205212-1	205211-1	Standard
							205438-1	205443-1	Floating Bushing

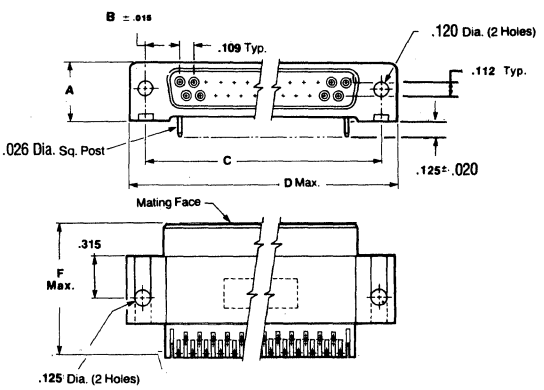
Note: See previous page for crimp snap-in contacts.

HDP-20 All-Plastic Connectors Preloaded with .026 Dia. Right-Angle Posted Contacts (for Pc Board Mounting)

Plug Assemblies 9, 15, 25 and 37 Positions



Receptacle Assemblies 9, 15, 25 and 37 Positions



No. of Contact Pos. (Shell Size)	Dimensions						Contact Finish (Plating Code)	Part Nos.	
	A	B	C	D	E	F		Plug Assembly	Receptacle Assembly
9 (1)	.452	.276	.984	1.228	1.023	1.035	A	747467-2	747459-2
							B	747467-1	747459-1
15 (2)	.452	.278	1.312	1.556	1.023	1.035	A	747468-2	747460-2
							B	747468-1	747460-1
25 (3)	.452	.274	1.852	2.095	1.023	1.035	A	747469-2	747461-2
							B	747469-1	747461-1
37 (4)	.452	.272	2.500	2.742	1.023	1.035	A	747470-2	747462-2
							B	747470-1	747462-1

Notes: 1. All plug assemblies are preloaded with size 20 DF posted pin contacts.
2. Recommended board thickness is .093 max.; recommended pc board hole size is .041.

Need more details? **Request Catalog 79-546** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.
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AMP INCORPORATED

AMPLIMITE Commercial-Type Subminiature HD20 High Density Pin and Socket Connectors (Continued)

HDP-20 All-Plastic Connectors Preloaded with Straight Posted Contacts (for Pc Board Mounting)

Material and Finish:

Housing—Black Thermoplastic, 94V-0 Rated

Pin Contacts (Posted)—Brass per MIL-C-50: plated

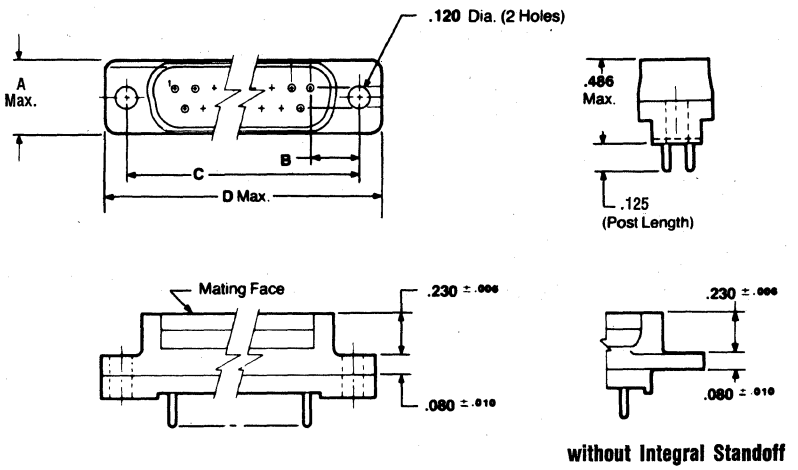
Socket Contacts (Posted)—Phosphor Bronze per QQ-B-750 plated as follows

A—Gold flash over .000050 nickel on entire contact, with additional .000030 gold on mating end for length of .150 min.

B—Gold flash over .000030 nickel

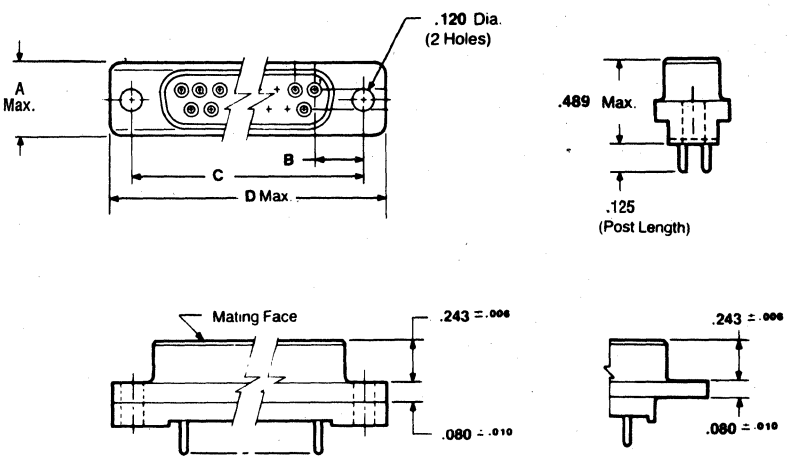
Gold plating per MIL-G-45204; Nickel plating per QQ-N-290

Plug Assemblies 9, 15, 25, 37 and 50 Positions



without Integral Standoff

Receptacle Assemblies 9, 15, 25, 37 and 50 Positions



without Integral Standoff

No. of Contact Pos. Shell Size	Dimensions A	B	C	D	Contact Finish Plating Code)	.040 [1.02] Dia. Post: Plug Assembly Part No. (Without Integral Standoff)	Plug Assembly Standard Mounting Holes	Receptacle Assembly Part No. (Without Integral Standoff)	Receptacle Assembly Standard Mounting Holes	.026 [0.66] Dia. Post: Plug Assembly Part No. (Without Integral Standoff)	Plug Assembly Standard Mounting Holes	Receptacle Assembly Part No. (Without Integral Standoff)	Receptacle Assembly Standard Mounting Holes
9 (1)	.420	.276	.984	1.228	A	208003-6	207663-4	208002-6	207665-4	208084-2	208006-2	208079-4	207826-4
					B	208003-5	207663-3	208002-5	207665-3	208084-1	208006-1	208079-3	207826-3
15 (2)	.420	.278	1.312	1.546	A	208065-4	207325-4	208066-4	207323-4	208085-2	208007-2	208080-4	207827-4
					B	208065-3	207325-3	208066-3	207323-3	208085-1	208007-1	208080-3	207827-3
25 (3)	.420	.274	1.852	2.095	A	207879-6	207089-6	207878-6	207090-6	208086-2	208008-2	208081-4	207828-4
					B	207879-5	207089-5	207878-5	207090-5	208086-1	208008-1	208081-3	207828-3
37 (4)	.420	.272	2.500	2.737	A	208005-6	207329-4	208004-6	207327-4	208087-2	208009-2	208082-4	207829-4
					B	208005-5	207329-3	208004-5	207327-3	208087-1	208009-1	208082-3	207829-3
50 (5)	.527	.333	2.406	2.643	A	208067-4	207667-4	208068-4	207669-4	208088-2	208010-2	208083-4	207830-4
					B	208067-3	207667-3	208068-3	207669-3	208088-1	208010-1	208083-3	207830-3

Plug and Receptacle Assemblies are also available with .170 and .250 post lengths. Refer to AMP Catalog No. 79-546 for specifications.

Need more details? **Request Catalog 79-546** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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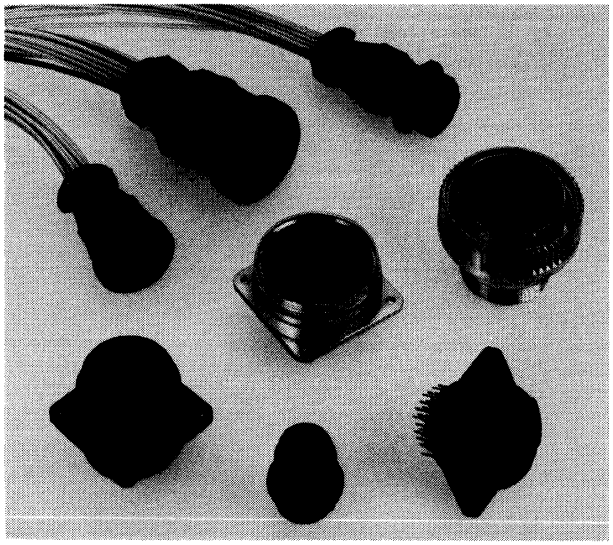
AMP INCORPORATED

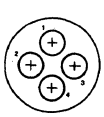
AMP Circular Plastic* and Metal Shell† Connectors



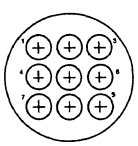
Features: ■ Light-weight, all-plastic connectors and metal-shell versions available. ■ CPC connectors made of UL recognized, high grade thermoplastic material. ■ Recognized under the Component Program of Underwriters Laboratories Inc. for 250-volt service*, File No. E28476. ■ CSA Certified, File No. LR16455. ■ Four connector series for different interconnection needs: • Series 1 — Standard density applications with Multimate contacts. • Series 2 — High density applications with Size 20 DM and 20 DF contacts (.040 pin diameter). • Series 3 — Power density applications with Type XII contacts capable of carrying up to 25 amperes of current. • Series 4 — Combination standard and power density applications with Series 1 and Series 3 contacts. ■ Available in panel or chassis mount versions and in free-hanging versions. ■ Quick connect/disconnect capability with thread assist, positive detent coupling. ■ Built-in pin and socket protection. ■ 5-key polarization for proper mating of connector halves. ■ Special connector configurations offer mixed coaxial cable sizes, special solder and posted contacts, special mounting designs, built-in strain relief and adaptability to snap-on cable boots. ■ Full complement of optional accessories.

Series 1 Contact Arrangement

Shell Size 11 and 13

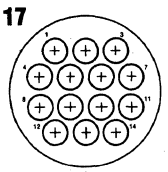


Arrangement 11-4*

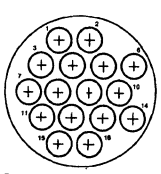


Arrangement 13-9*

Shell Size 17



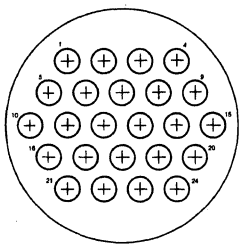
Arrangement 17-14*
22-14†



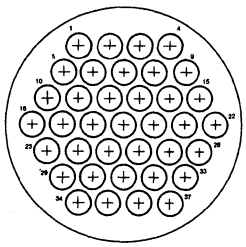
Arrangement 17-16*
22-16†

Note: Explanation of Contact Arrangement Codes —
Example: 23-24.
The first two numbers represent the shell diameter in increments of 1/16", i.e. 23/16. The second number(s) = number of contacts, i.e. 24.

Shell Size 23



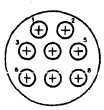
Arrangement 23-24*
28-24†



Arrangement 23-37*
28-37†

Series 2 Contact Arrangement

Shell Size 11

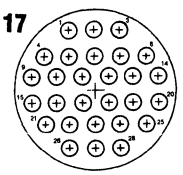


Arrangement 11-8*



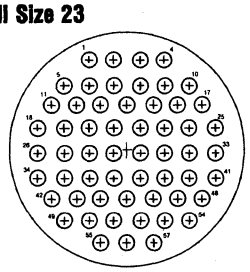
Arrangement 11-9*

Shell Size 17

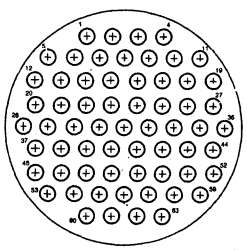


Arrangement 17-28*
22-28†

Shell Size 23



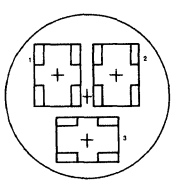
Arrangement 23-57*
28-57†



Arrangement 23-63*
28-63†

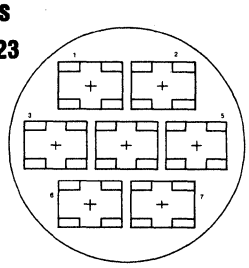
Series 3 Contact Arrangements

Shell Size 17



Arrangement 17-3*
22-3†

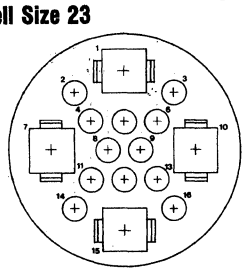
Shell Size 23



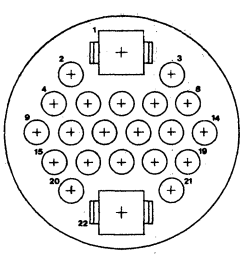
Arrangement 23-7*
28-7†

Series 4 Contact Arrangements

Shell Size 23



Arrangement 23-16M*
28-16M†



Arrangement 23-22M*
28-22M†

Need more details? **Request Catalog No. 73-204** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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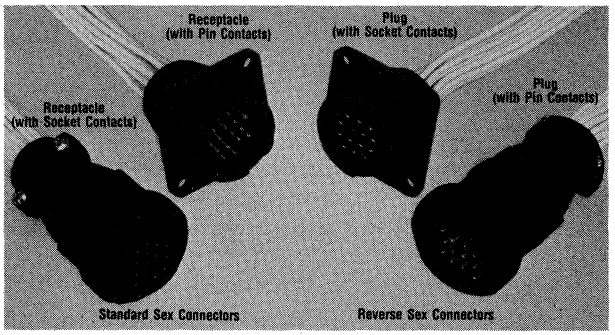
AMP Circular Plastic Connectors (Continued)



Material:
UL recognized 94V-1 rated, heat stabilized, fire resistant, self extinguishing thermoplastic: Color, black.

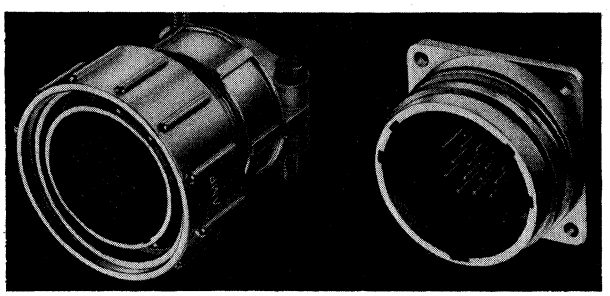
Contacts:
Series 1 — Size 16 (Signal, subminiature coaxial).
Series 2 — Size 20 (Signal).
Series 3 — Power.
Series 4 — Mix of Size 16 and Power.

Accessories available include:
Cable Clamps, Various Seals, Back-Shell Extender, Panel Mount Adaptor and Flexible Strain Relief.

Series (Class)	Arrangement No.	Sex*	Receptacles		Plugs
			Square Flanged	Free Hanging	
1 (A)	11-4	Rev.	206430-1	206430-2	206429-1
		Std.	206061-1	206153-1	206060-1
	13-9	Std.	206705-1	206705-2	206708-1
	17-14	Rev.	206043-1	206043-3	206044-1
	17-16	Std.	206036-1	206036-3	206037-1
	23-24	Std.	206838-1	206838-2	206837-1
	23-37	Rev.	206306-1	206306-2	206305-1
		Std.	206151-1	206151-2	206150-1
2 (A)	11-8	Std.	205841-1	205841-2	205838-1
		Rev.	206433-1	206433-2	206434-1
	11-9	Std.	206486-1	206486-2	206485-1
	17-28	Std.	205840-3	206152-1	205839-3
		Rev.	206038-1	206038-2	206039-1
	23-57	Rev.	206438-1	206438-2	206437-1
	23-63	Std.	205843-1	205843-2	205842-1
3 (A)	17-3	Std.	206036-2	206207-1	206037-2
		Rev.	206425-1	206425-2	206426-1
	23-7	Std.	206137-1	206137-2	206136-1
		Rev.	206227-1	206227-2	206226-1
4 (A)	23-16M	Std.	207486-1	207486-2	207485-1
	23-22M	Std.	206613-1	206613-3	206612-1

*Standard sex: pin contacts in receptacle housings, socket contacts in plug housings. Reverse sex: socket contacts in receptacle housings, pin contacts in plug housings.

AMP Circular Metal Shell Connectors (Continued)



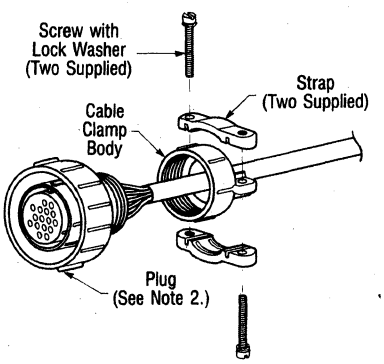
Material and Finish:
Receptacle
Insert — Black Thermoplastic
Outer Shell — Aluminum Alloy, Zinc plated; †Aluminum Alloy, unplated
Plug
Insert — Black Thermoplastic
Outer Shell and Coupling Ring — Aluminum Alloy, Zinc plated
Retainer Ring — Stainless Steel

Contacts:
Series 1 — Size 16 (Signal, subminiature coaxial and fiber optic).
Series 2 — Size 20 (Signal).
Series 3 — Power.
Series 4 — Mix of Size 16 and Power.
Request Catalog No. 73-204 for complete specifications.

Protective Caps
Shell Size 22
Part Number 211903-1
Shell Size 28
Part Number 211904-1

Series (Class)	Arrangement No.	Sex*	Square Flange Receptacles		Plugs	
			Without Peripheral Seal	With Peripheral Seal	Without Peripheral Seal	With Peripheral Seal
1(A)	14-5	Std.	208719-1	—	208718-1	208718-2
		Rev.	208721-1	—	208720-1	208720-2
	14-7	Std.	208715-1	—	208714-1	208714-2
		Rev.	208717-1	—	208716-1	208716-2
	22-14	Rev.	208487-1	208487-2	208486-1	208486-3
	22-16	Std.	208489-1	208489-2	208488-1	208488-3
	28-24	Std.	208459-1	208459-2	208457-1	208457-3
	28-37	Std.	208471-1	208471-2	208470-1	208470-3
		Rev.	208473-1	208473-2	208472-1	208472-3
2(A)	22-28	Std.	208491-1†	208491-2†	208490-1	—
		Rev.	208493-1†	208493-2†	208492-1	—
	28-57	Rev.	208475-1†	208475-2†	208474-1	—
	28-63	Std.	208477-1†	208477-2†	208476-1	—
3(A)	22-3	Std.	208495-1	208495-2	208494-1	208494-3
		Rev.	208497-1	208497-2	208496-1	208496-3
	28-7	Std.	208483-1	208483-2	208482-1	208482-3
		Rev.	208485-1	208485-2	208484-1	208484-3
4(A)	28-13M	Std.	211823-1	211823-2	211822-1	211822-3
	28-16M	Std.	208479-1	208479-2	208478-1	208478-3
	28-22M	Std.	208481-1	208481-2	208480-1	208480-3

*Standard sex: pin contacts in receptacle housings, socket contacts in plug housings. Reverse sex: socket contacts in receptacle housings, pin contacts in plug housings.
†Aluminum alloy — unplated.



Shell Size	Part Number
14	208945-5
22	208945-7
28	208945-8

Need more details? **Request Catalog No. 73-204** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

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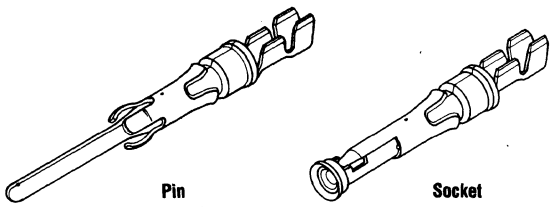
AMP Circular Plastic and Metal Shell Connectors (Continued)

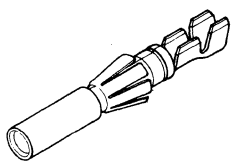
Series I Multimate Type III + (Crimp) Contacts



Pin Socket

Wire Size Range AWG	Ins. Dia. Range	Contact Finish	Loose Piece Contact	
			Pin	Socket
30–26	.070–.100	Gold-Nickel	66643-1	66483-1
	.040–.060	Gold-Nickel	66429-1	66428-1
		Tin	66429-2	66428-2
	.014–.030	Gold-Nickel	66046-1	66405-1
		Tin	66046-2	66405-2
26–24	.035–.055	Gold-Nickel	66107-1	66109-1
		Tin	66107-2	66109-2
24–20	.040–.080	Gold-Nickel	66103-1	66105-1
		Tin	66103-2	66105-2
	.080–.100	Tin	66400-1	66399-1
		Gold-Nickel	66400-2	66399-2
	.060–.135	Gold-Nickel	66566-1	66565-1
		Tin	66566-2	66565-2
18–16	.080–.100	Gold-Nickel	66099-1	66101-1
		Tin	66099-2	66101-2
14	.080–.100	Gold-Nickel	66361-1	66360-1
		Tin	66351-2	66360-2

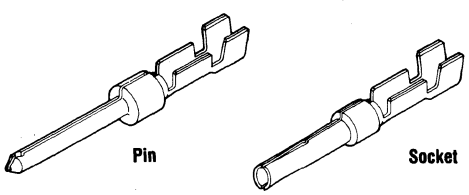
Series I Multimate Type X Contacts



Socket

Wire Size Range AWG	Ins. Dia. Range	Contact Finish	Loose Piece Contact
			Socket
28–24	.035–.055	Tin	66707-1
		Sel. Gold-Nickel	66707-2
24–20	.040–.080	Tin	66706-1
		Sel. Gold-Nickel	66706-2
18-14	.080–.110	Tin	66705-1
		Sel. Gold-Nickel	66705-2
	.100–.150	Tin	66704-1
		Sel. Gold-Nickel	66704-2

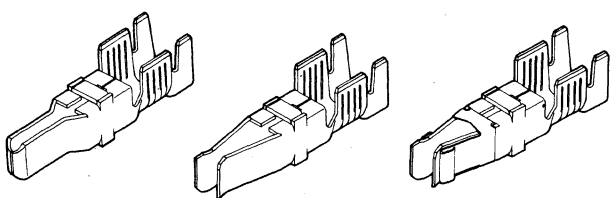
Series 2 Size 20 DF Contacts



Pin Socket

Wire Size Range AWG	Ins. Dia. Max.	Contact Finish	Loose Piece Contact	
			Pin	Socket
28–24	.040	Gold-Copper	66507-8	66505-8
		Sel. Gold-Nickel	66507-9	66505-9
	.060	Sel. Gold-Nickel	66682-4	66683-4
	.040	Gold-Nickel	1-66507-0	1-66505-0
24–20	.060	Gold-Copper	66506-8	66504-8
		Sel. Gold-Nickel	66506-9	66504-9
		Sel. Gold-Nickel	745037-3	—
		Gold-Nickel	1-66506-0	1-66504-0

Series 3 Type XII Contacts



Male Female Female (Antioverstress)

Wire Size Range AWG	Ins. Dia. Range	Contact Finish	Loose Piece Contact	
			Male	Female
16 and 14–12	.135–.160	Sel. Gold-Nickel	66261-2	66258-2
		Sel. Gold-Nickel	66262-2	—
		Sel. Gold-Nickel	—	66740-6
		Sel. Gold-Nickel	66261-3	66258-3
		Sel. Gold-Nickel	66262-3	—
		Sel. Gold-Nickel	—	66740-4
		Silver	66261-4	66258-4
		Silver	66262-4	—
		Silver	—	66740-2
10–8	.190–.220	Sel. Gold-Nickel	66259-2	66257-2
		Sel. Gold-Nickel	66260-2	—
		Sel. Gold-Nickel	—	66741-6
		Sel. Gold-Nickel	66259-3	66257-3
		Sel. Gold-Nickel	66260-3	—
		Sel. Gold-Nickel	—	66741-4
		Silver	66259-4	66257-4
		Silver	—	—
		Silver	—	66741-2

Note: Other contact types available including Series I Type II and Subminiature Coax Contacts. Tooling is available to terminate all contacts.

Need more details? **Request Catalog No. 73-204** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174 .

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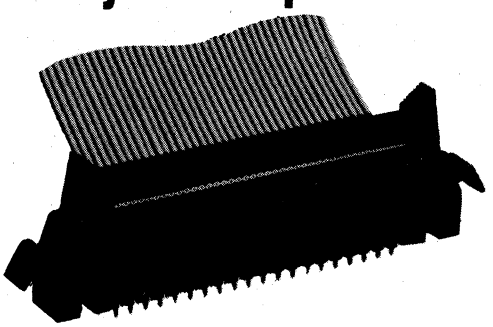
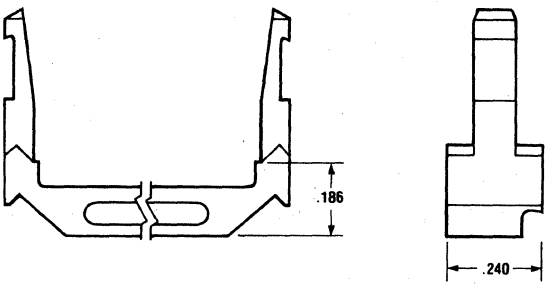
AMP AMP-LATCH Universal Ejection Style Receptacle Connector and Pin Headers

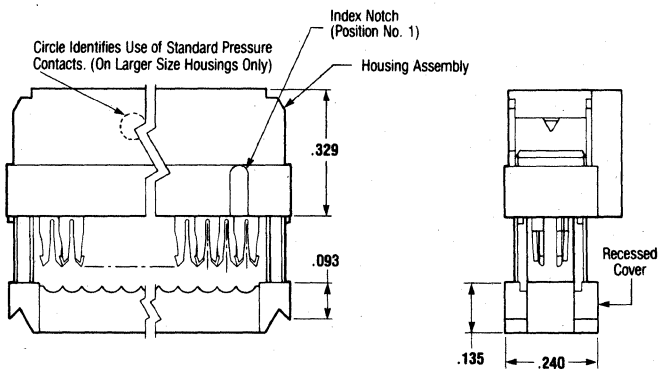


■ Broad line of products — straight-thru for vertical attachment, right angle for horizontal attachment and long feed-thru post tails to facilitate wrap-type terminations or thick printed circuit boards ■ Ejection latch accessory ■ One hand ejection of mated system ■ Headers accept all existing receptacle connectors with double row .100 center configurations ■ Polarized housing accepts double- or single-interference style polarization — also military-style polarization ■ Complete pin protection on all four sides, 3 sided headers also available ■ Duplex plated pins facilitate soldering to a printed circuit board, while retaining noble plating on mating end ■ Pin pattern on .100 centers and standard mounting holes ■ One-step termination of housing and cover ■ All-plastic system prevents shorting ■ All plastic parts made from UL recognized 94V-0 rated materials ■ Receptacle material: phosphor bronze; pin material: brass or phosphor bronze ■ Pins and receptacles plated .000030 gold over contact areas, .000100 to .000200 tin over solder and termination areas — both have nickel underplating ■ Filtered pin header assemblies are available, request Catalog No. 78-487.

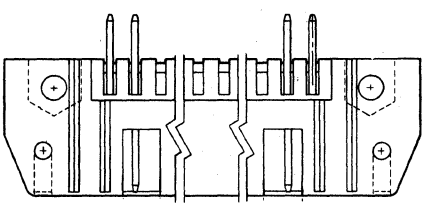
Strain Relief Cover



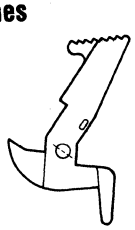
Receptacle Connector



Straight Thru Pin Header Assemblies

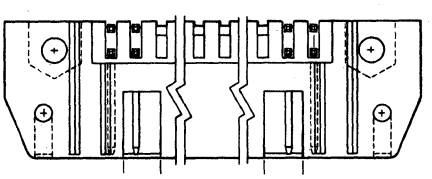


Latches



For use with	Part No.
Connector with Strain Relief Cover	102186-1
Connector without Strain Relief Cover	102185-1

Right Angle Pin Header Assemblies



No. of Positions	Polarized Connector Kit Nos.		Strain Relief Part Nos.	Straight Thru Pin Headers			Right Angle Pin Headers		
	With Strain Relief	Without Strain Relief		.110 Tail	.155 Tail	.610 Tail	.110 Tail	.155 Tail	.610 Tail
10	499499-1	746186-1	499252-5	102154-1	102156-1	499437-1	102160-1	102162-1	499439-1
14	499499-2	746186-2	499252-9	102154-2	102156-2	499437-2	102160-2	102162-2	499439-2
16	499499-3	746186-3	499252-8	102154-3	102156-3	499437-3	102160-3	102162-3	499439-3
20	499499-4	746186-4	499252-2	102154-4	102156-4	499437-4	102160-4	102162-4	499439-4
24	499499-6	746186-6	1-499252-0	102154-5	102156-5	499437-5	102160-5	102162-5	499439-5
26	499499-7	746186-7	499252-3	102154-6	102156-6	499437-6	102160-6	102162-6	499439-6
30	499500-8	746187-8	1-499252-2	102154-7	102156-7	499437-7	102160-7	102162-7	499439-7
34	499500-9	746187-9	499252-6	102154-8	102156-8	499437-8	102160-8	102162-8	499439-8
40	1-499500-0	1-746187-0	499252-1	102154-9	102156-9	499437-9	102160-9	102162-9	499439-9
50	1-499500-2	1-746187-2	499252-4	1-102154-0	1-102156-0	1-499437-0	1-102160-0	1-102162-0	1-499439-0
60	1-499500-3	1-746187-3	499252-7	1-102154-1	1-102156-1	1-499437-1	1-102160-1	1-102162-1	1-499439-1
64	1-499500-4	1-746187-4	1-499252-3	1-102154-2	1-102156-2	1-499437-2	1-102160-2	1-102162-2	1-499439-2

Need more details? **Request Catalog No. 73-177** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C•1174**.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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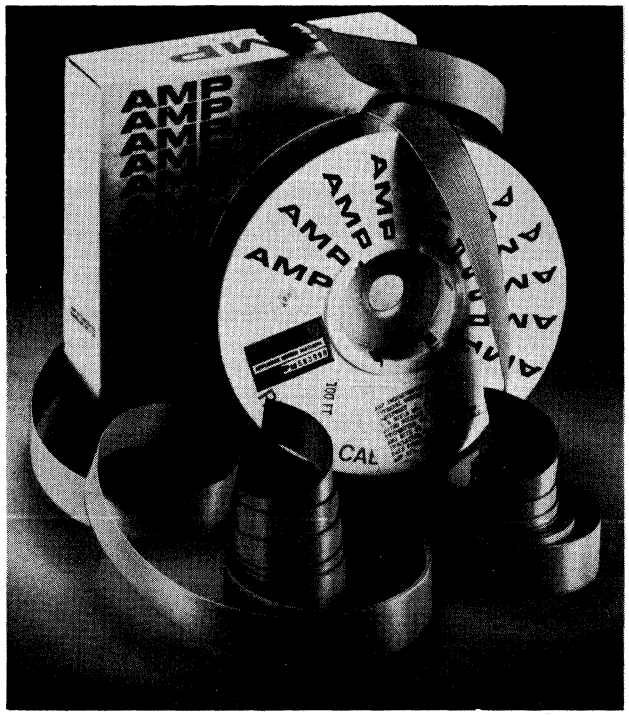
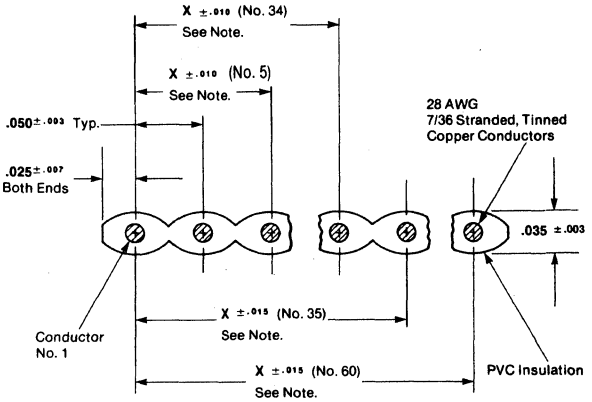
AMP INCORPORATED

AMP Ribbon Cable





Note: Tolerance of dimensions between conductors 1 and 5 thru 34 is ±.010; tolerance between conductors 1 and 35 thru 60 is ±.015.

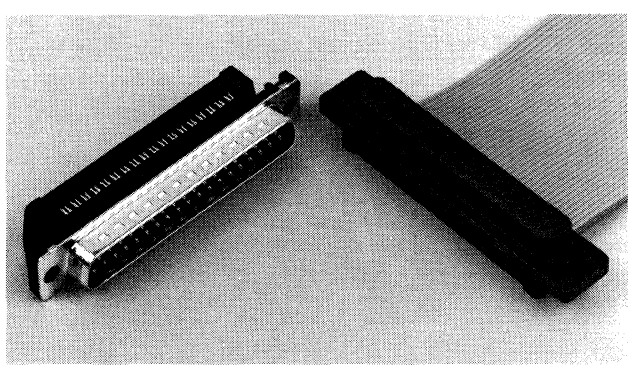
Temperature Rating: −20°C to +105°C
Voltage Rating: 300 volts per UL Style 2651
Insulation Resistance: 10,000 megohms per 10 ft. (minimum)
Insulation Color: Gray, with dark blue stripe on conductor no. 1 only

No. of Conductors	100′ Reel Part No.	100′ Reel Marked every fifth conductor Part No.	300′ Reel Part No.
9	2-499116-1	499998-1	1-499660-7
10	499116-7	499998-2	499660-2
14	499116-1	499998-3	499660-8
15	2-499116-0	499998-4	1-499660-8
16	499116-2	499998-5	499660-4
18	1-499116-7	499998-6	1-499660-4
20	499116-3	499998-7	499660-3
24	1-499116-1	499998-8	1-499660-1
25	1-499116-8	499998-9	1-499660-5
26	499116-4	1-499998-0	499660-5
30	1-499116-2	1-499998-1	1-499660-2
34	499116-8	1-499998-2	499660-1
36	1-499116-6	1-499998-3	1-499660-3
37	1-499116-9	1-499998-4	1-499660-6
40	499116-5	1-499998-5	499660-6
44	1-499116-0	1-499998-6	1-499660-0
50	499116-6	1-499998-7	499660-7
60	499116-9	1-499998-8	499660-9

Features: ■ Recognized under the component program of Underwriters Laboratories Inc. File No. E53793, UL Style ® 2651 ■ 100 feet and 300 feet lengths without splices ■ Available with evey fifth conductor marked in 100 foot lengths ■ Can be readily "ripped" or slit to obtain less no. of conductors ■ Symmetrical geometry for ease of registration while terminating on either side of cable ■ Manufacturing methods provide cable stability for consistently reliable terminations ■ Dark blue color stripe on number one conductor for easy cable orientation ■ Compatible with all slotted beam connector technologies on .050 centers

HDF-20 Low Profile Connectors

(for Round Conductor Flat Ribbon Cable)



Features: ■ Low profile design ■ One-step terminationof housing assembly and cover ■ Terminates .050 centerline flat ribbon cable with 30 AWG solid, 28 AWG solid or stranded and 26 AWG solid and stranded conductors ■ Mates with any standard AMPLIMITE subminiature HD-20 or military (D type) connector ■ Plug and receptacle assemblies, all plastic or with front metal shell, in 9, 15, 19 (receptacle metal shell only), 25, 37 and 50 positions ■ Strain relief available ■ Available with 4-40 threaded inserts ■ Two-piece construction; UL recognized black thermoplastic, 94V-0 rated ■ Right-angle (90°) and 18° cable terminations ■ Contact centerline transition from .109 at connector interface to .100 (.050 staggered) at cable termination ■ Duplex plated AMP-LATCH insulation displacement crimp contacts ■ No cable preparation required, except for cutting the cable end square ■ End-termination and daisy chain applications ■ Convenient circuit probe testing after cable termination

Need more details? **Request Catalog No. 73-177** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page **C**•1174 .

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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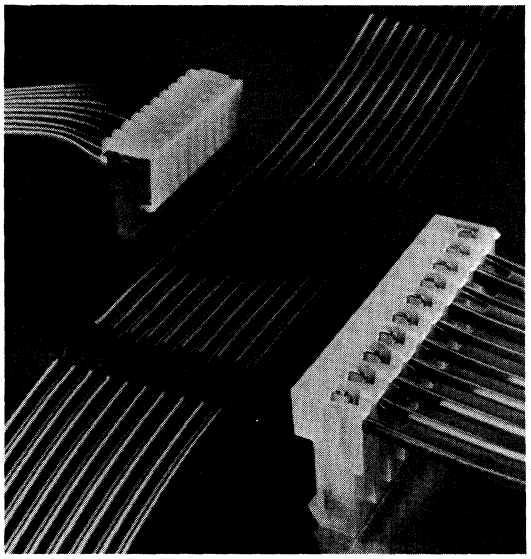
AMP INCORPORATED

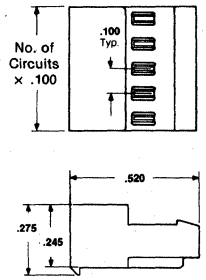
AMP Mass Termination Assembly (MTA) System



Features: ■ Mass termination for low applied cost ■ Four complete systems: MTA-100 for .025 square posts on .100 centers; MTA-156 for .045 round or square posts on .156 centers; MTA-156 cable-to-cable posted connectors on .156 centers; and MTA-156 card edge connectors for .062 thick printed circuit boards on .156 centers ■ Complete family of post headers ■ Available as components or complete ribbon cable assemblies ■ Preloaded dual beam insulation displacement contacts eliminate hand loading and the need for pre-stripped wires ■ Available in wire size range #28 AWG thru #18 AWG, solid, fused stranded or stranded wire (7 strands) ■ Accommodates discrete, ribbon or jacketed flat cable ■ Contacts post lubricated to prevent fretting corrosion ■ Wire-to-post housings made of thermoplastic 94V-2 material and color coded for wire size. Card edge housings made of 94V-0 rated material ■ Contacts are post tin-plated, copper alloy ■ Capable of terminating wire with an outside diameter of .060 max. for MTA-100 housings and .095 max. for MTA-156 housings ■ Meets the material requirements of Table 23.1 of UL 1410 Standards for Television Receiver and Video Products (wire-to-post connectors only)
■ Recognized under the Component Program of Underwriters Laboratories Inc.—File No. E28476
■ CSA Certified under File No. LR 16455-54

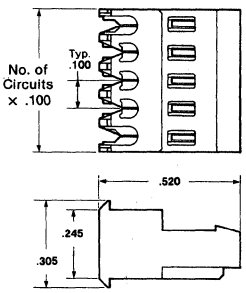
MTA-100 Closed End Housings .100 Centers

Wire Size	Base Part No.*
28 AWG [0.08-0.09 mm2]	640443
26 AWG [0.12-0.15 mm2]	640442
24 AWG [0.2 mm2]	640441
22 AWG [0.3-0.4 mm2]	640440



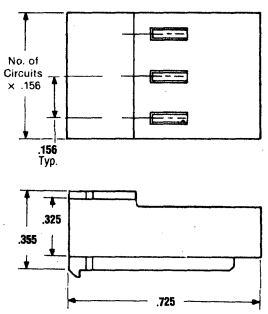
MTA-100 Feed-Thru Housings .100 Centers

Wire Size	Base Part No.*
28 AWG [0.08-0.09 mm2]	640623
26 AWG [0.12-0.15 mm2]	640622
24 AWG [0.2 mm2]	640621
22 AWG [0.3-0.4 mm2]	640620



MTA-156 Closed End Housings without Lock .156 Centers

Wire Size	Base Part No.*
26 AWG [0.12-0.15 mm2]	640435
24 AWG [0.2 mm2]	640434
22 AWG [0.3-0.4 mm2]	640433
20 AWG [0.5-0.6 mm2]	640432
18 AWG [0.8-0.9 mm2]	640431



*When ordering add prefix and suffix numbers to base part number to signify number of assembly circuits. See Ordering Code table.
Example:
18 circuit MTA-100 Closed End Housing for 26 AWG wire — 1-640442-8.

Ordering Code

No. of Circuits	Base No. Prefix and Suffix	No. of Circuits	Base No. Prefix and Suffix
2	-2	16	1- -6
3	-3	17	1- -7
4	-4	18	1- -8
5	-5	19	1- -9
6	-6	20	2- -0
7	-7	21	2- -1
8	-8	22	2- -2
9	-9	23	2- -3
10	1- -0	24	2- -4
11	1- -1	25	2- -5
12	1- -2	26	2- -6
13	1- -3	27	2- -7
14	1- -4	28	2- -8
15	1- -5		

Additional options including tab polarized receptacles and headers plus gold-plated receptacles and posts are available.

Need more details? **Request Catalog No. 77-451** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174 .

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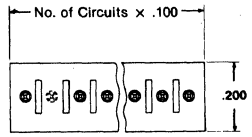
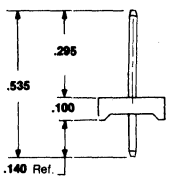
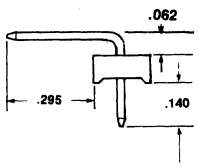
AMP Mass Termination Assembly (MTA) System

MTA-100 Post Header Assemblies
.100 Centers
.025 x .025 Posts

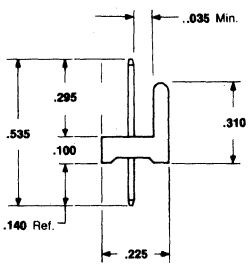




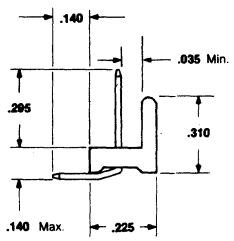
Straight Post Header Assembly



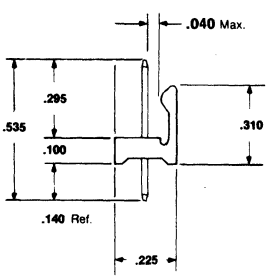
Right Angle Post Header Assembly



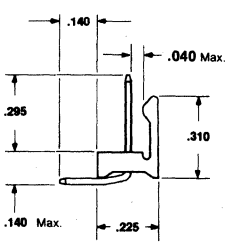
Polarized Straight Post Header Assembly



Polarized Right Angle Post Header Assembly



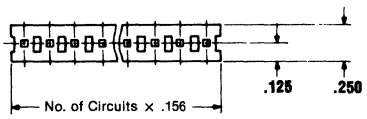
Friction Lock Straight Post Header Assembly

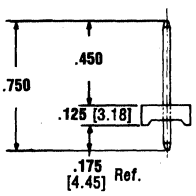


Friction Lock Right Angle Post Header Assembly

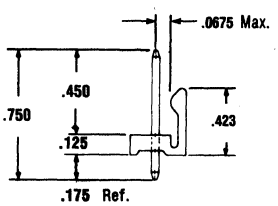
Header Assembly Type	Base Part No.*
Straight Post	640452
Polarized Straight Post	640454
Friction Lock Straight Post	640456
Right Angle Post	640453
Polarized Right Angle Post	640455
Friction Lock Right Angle Post	640457

MTA-156 Post Header Assemblies
.156 Centers
.045 Square and Round Posts

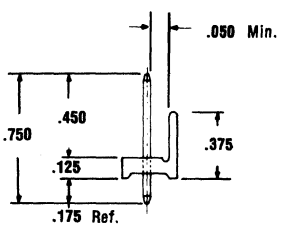




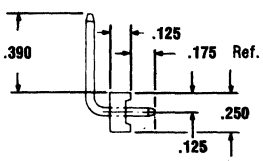
Straight Post Header Assembly (.045 Square and Round Posts)



Friction Lock Straight Post Header Assembly (.045 Square and Round Posts)



Polarized Straight Post Header Assembly (.045 Square and Round Posts)



Right Angle Post Header Assembly (.045 Square Posts)

Header Assembly Type	Base Part No.*	
	Square Post	Round Post
Straight Post	640383	640384
Polarized Straight Post	640444	640386
Friction Lock Straight Post	640445	640338
Right Angle Post	640385	—

*When ordering add prefix and suffix numbers to base part number to signify number of assembly circuits. See Ordering Code table on previous page.
Example: 18 circuit MTA-100 Post Header Assembly with Straight Posts — 1-640452-8

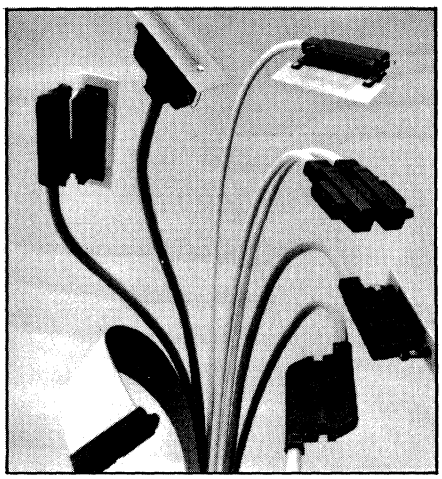
Need more details? **Request Catalog No. 77-451** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174 .

Specifications subject to change. Consult AMP Incorporated for latest design specifications.
AMP — Trademark of AMP Incorporated.

AMP INCORPORATED

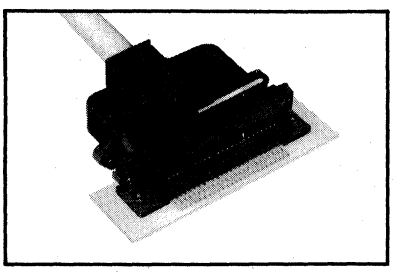
CHAMP Connector Systems

The CHAMP Connector is fully intermateable and interchangeable with existing connectors of a similar design. Applications for this type of connector are widely diversified and include all phases of the Telecommunications Industry, including original telephone manufacturing, Operating Telephone Companies, Cable Reclamation, Cable Manufacturing and Bay Connectorization. In addition the CHAMP connector line is ideally suited for use in computer terminals, test equipment, business and copying machines, telemetering and various equipment used in the security industry.



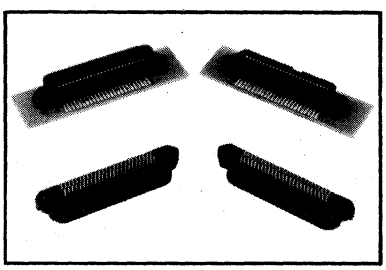
Insulation Displacement Connectors

Features: ■ Wide wire range ■ Eliminates costly wire preparation ■ Terminates unstripped solid and stranded (7 strand) wire, multi-conductor cable, and ribbon and laminated cable ■ Replaceable contacts ■ Accommodates wire with most soft insulation types in diameters to .045 ■ Connectors fully intermateable and interchangeable with others of similar design ■ Ideally suited for cable-to-cable and cable-to-panel connector applications ■ Exceptionally stable performance under various environmental conditions ■ Self-extinguishing thermoplastic housings and accessories ■ Contacts on .085 centers in dual-position arrangement ■ Optional accessories include: • Dust covers to protect contacts • Snap-on strain relief covers for 90° and 180° cable dress • Snap-in panel mount strain reliefs • 90° Slide-on strain relief covers for 50 position only ■ High speed applicator tooling assures reliable electrical and mechanical terminations at lowest installed cost ■ Connectors available in 14, 24, 36, 50 and 64 positions with a choice of mounting methods, screw type, bail mount type or locking latch type ■ Recognized under the Components Recognition Program of Underwriters Laboratories Inc., File No. E-28476



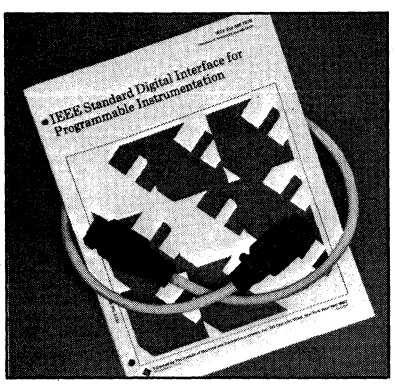
CHAMP PC Board Connectors

Available as Vertical Mount, Edge Mount and Right Angle Mount. Fully intermateable with existing connectors of a similar design. They are capable of accommodating printed circuit board thicknesses from .062–.125



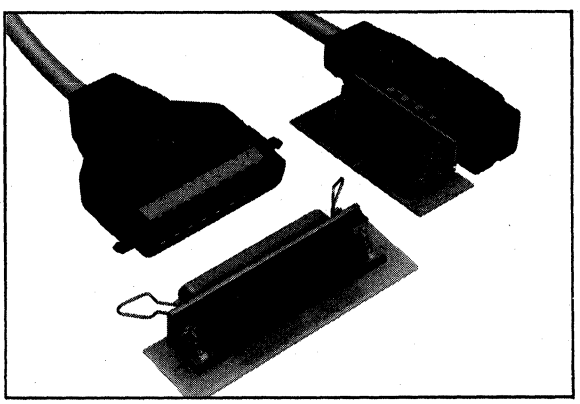
ACTION PIN PC Board Connectors

Combine the high reliability of the CHAMP insulation displacement connector interface with the utilization and cost savings of ACTION PIN terminals.



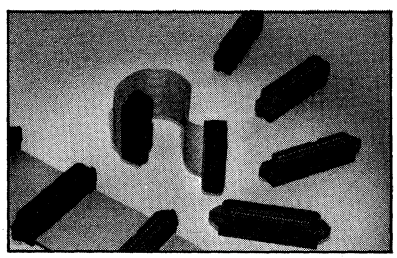
CHAMP Connectors for Interface Bus Applications per IEEE-488

Designed for the instrumentation industry and conforms to the applicable standard IEEE #488-1978. Also available shielded.



Shielded CHAMP Cable Connectors

Afford excellent protection from electromagnetic interference or electrostatic discharge to sensitive circuitry. For discrete wire, jacketed cable, ribbon cable or printed circuit board mounting.



CHAMP Latch Connectors (for ribbon cable on .050 centerline)

Provide a fast reliable means of mass terminating ribbon cable without time consuming soldering and prestripping of wire.

Request Catalog No. 73-152.

Need more details? **Request Catalog No. 73-152** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

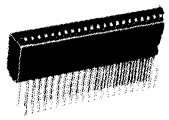
Specifications subject to change. Consult AMP Incorporated for latest design specifications.

AMP, ACTION PIN, CHAMP — Trademark of AMP Incorporated

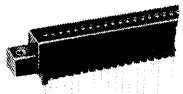
AMP INCORPORATED

AMP Standard Edge Connectors

Wrap-Type with ACTION PIN



Mid-High Mt. Ears and Inserts



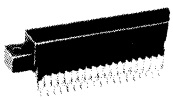
w/o Mt. Ears



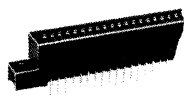
Solder Posts



Card Extender



Low Mt. Ears



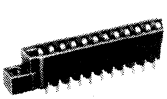
Features: ■ Maximum number of dual positions:
.100 ℄ — 70
.125 ℄ — 60
.156 ℄ — 43
■ Selective gold plating of contacts for high performance at low cost ■ .025 square solid posts meet standard wrap-type specification ■ Recognized under the component program of Underwriters Laboratories Inc., Electrical File No. E 28476 ■ Glass-filled polyester housing is 94V-0 rated ■ Accepts double sided pc boards, .054-.070 thick ■ Connectors are available with graphited gold contacts for extended durability

Contact Spacing	No. of Dual Positions	Post Type & Row-to-Row Spacing	Mid-High Mounting Ears: With Mounting Ears	Mid-High Mounting Ears: With Mounting Ears and Inserts	Without Mounting Ears	Low Mounting Ears: With Mounting Ears	Low Mounting Ears: With Mounting Ears and Inserts
.100	6, 10, 12, 15, 18, 22, 25, 28, 30, 31, 35, 36, 40, 43, 50, 55, 60, 70	Solder .200	X	X	X	X	X
		Wrap-Type .200	X	X	X	—	—
	6, 25, 28, 30, 35, 36, 40, 43, 50, 57, 60, 70	Wrap-Type with ACTION PIN .200	—	—	X	X	—
.125	6, 10, 15, 18, 22, 28, 30, 35, 36, 40, 43, 50, 60	Solder .250	X	X	X	X	X
	6, 10, 15, 18, 22, 28, 30, 31, 35, 36, 40, 43, 50, 60	Wrap-Type .250	X	X	X	—	—
	6, 10, 18, 22, 25, 28, 36, 40, 50, 60	Wrap-Type with ACTION PIN .250	—	—	×	×	—
.156	6, 10, 18, 22, 36, 43	Solder .200	—	—	X	X	—
		Wrap-Type .200	—	—	X	X	—
		Wrap-Type with .200	—	—	X	X	—
.100	10, 12, 15, 18, 22, 25, 28, 30, 31, 35, 36, 40, 43, 50, 60, 70	Card Extender .054-.070 Pc Boards	X	—	X	—	—
.125	6, 10, 15, 18, 22, 28, 30, 31, 35, 36, 40, 43, 50, 60	Card Extender .054-.070 Pc Boards	X	—	X	—	—

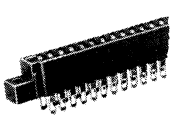
.000030 gold in contact area over nickel. Bright tin plating on posts.

AMP Low Profile Edge Connectors

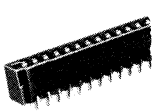
Solder Posts



Solder Eyelet



w/o Mt. Ears



Features: ■ Low profile housing is .460 deep ■ 6 through 44 dual positions on .156 centerline; 6 through 50 dual positions on .125 centerline ■ Solder eyelet for wire-to-board or solder post for mother-daughter board application ■ Selective gold plating of contact area for high performance at low cost ■ Alternate platings, including tin, are available on request ■ Contacts bifurcated for redundancy ■ Accepts .055-.070 thick printed circuit boards ■ UL 94V-0 rated, glass-filled polyester housings ■ Variety of solder post lengths ■ 5 amp current rating per contact

Contact Spacing	No. of Dual Positions	Post Type & Row-to-Row Spacing	Mounting Configuration: With Mounting Ears	Mounting Configuration: With Mounting Ears and Inserts	Mounting Configuration: Without Mounting Ears
.156	6, 10, 12, 15, 18, 22, 24, 25, 28, 30, 36, 43, 44	Solder .200	X	X	X
		Solder .140	X	X	X
		Solder Eyelet .235	X	X	—
.125	6, 10, 15, 18, 22, 28, 30, 31, 36, 40, 43, 50	Solder .200	X	X	X
		Solder .140	X	X	X
		Solder Eyelet .235	X	X	—

.000030 gold in contact area over nickel. Bright tin plating on posts.

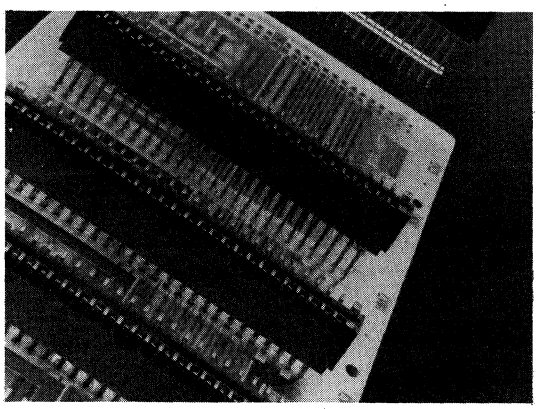
Need more details? **Request AMP Standard Edge Connectors Catalog No. 74-253, AMP Low Profile Edge Connectors Catalog No. 75-336** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174 .

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

ACTION PIN, AMP — Trademarks of AMP Incorporated

AMP INCORPORATED

AMP PACE Printed Circuit Card Edge Connectors



AMP PACE (Pre-Assembled Card Edge) Connectors are the latest innovation in the evolution of backplane architecture. Designed to shorten manufacturing time and reduce applied costs, these one-step, preassembled connectors come ready for mounting and mass terminating. In addition, design features such as removable housings and contacts that are replaceable through the top of the connector housing assure maximum flexibility in your backplane packaging.

At the heart of the AMP PACE Connector is AMP's proven and reliable ACTION PIN Contact. This unique contact has superior electrical and physical characteristics that are unmatched in the industry.

AMP PACE Connectors are available with post centerline spacings of:

.100 x .100	.125 x .125	.156 x .200
.100 x .200	.125 x .250	

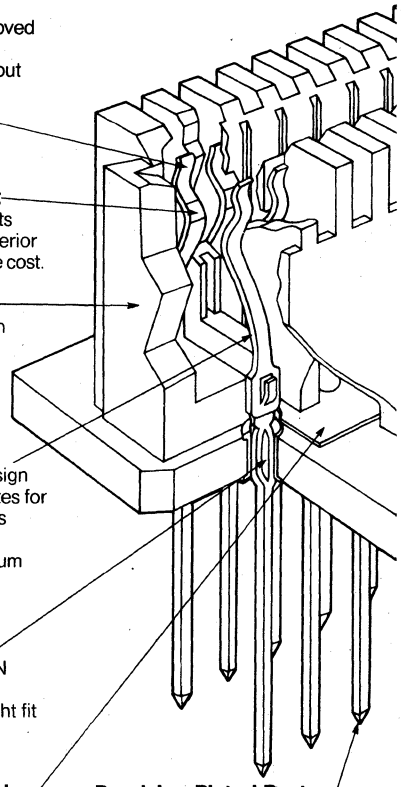
Regardless of your application, the AMP team of sales, field and staff engineers is available to help with your design requirements.

Features

Repairability :
Individual contacts can be removed without removing the housing; housings can be removed without removing posts.

Precision Plated Contacts:
Accu-plate precision plating puts gold where it is needed for superior electrical contact at a reasonable cost.

Housing Design:
Closed end, open end and high card scoop housings available.



Beam Contact Design:
The contact's unique beam design accommodates and compensates for daughter board warp and stress assuring long-term, reliable performance (100 gram minimum normal force).

Gas-Tight Connection:
Spring sections of ACTION PIN Contacts compress in opposite directions, maintaining a gastight fit with the pc board.

Contact Tip Alignment Strip:
Polyester strip assures straight and stable pin alignment for damage-free entry into the board

Precision Plated Post:
Accu-plate gold plating can be applied to the entire post, or just the post tip for improved pluggability.

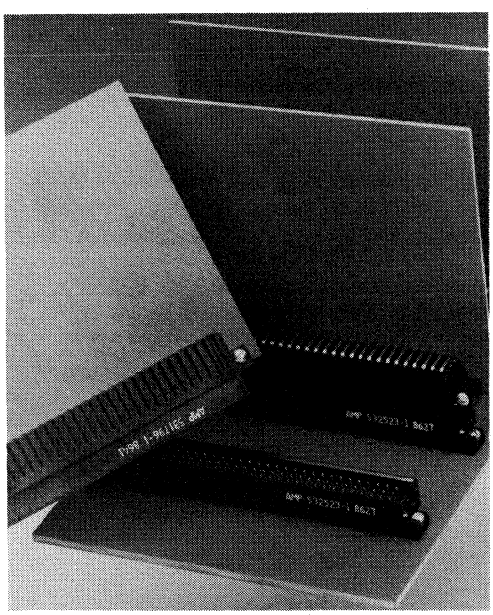
AMP Eurocard Printed Circuit Connectors

AMP Eurocard Connectors incorporate internationally accepted design advantages of DIN 41612/IEC 603-2 two-piece connectors with the universally known quality, service and delivery of AMP products.

The Eurocard Connectors are designed to mate with all DIN 41612/IEC 603-2 connectors of similar type and contact arrangement. AMP has the largest domestic manufacturing capability for board-to-board interconnect styles noted, of any of the domestic manufacturers.

Features

■ Compatible with DIN 41612 connectors. ■ Low cost ■ Two-piece ■ Polarized housings ■ Flame retardant ■ 2 and 3 row assemblies ■ Standard and inverse styles ■ DIN compatible size (32, 64, 96), as well as half sizes and expanded sizes. ■ AMP ACTION PIN assemblies for high reliability and economical motherboard assembly. ■ Multiple pin heights for make-first-break-last connectors. ■ Selective loading ■ Contact repairability in Type R & Q pins and some Type C receptacles. ■ Optional high temperature housing material for vapor phase reflow application. ■ Board-to-board connector systems, as well as crimp snap and IDC discrete wire-to-board connector systems and ribbon cable products. ■ Surface mount configurations available upon request. ■ Domestic and International manufacturing capability.



Need more details? **Request AMP PACE Printed Circuit Card Edge Connectors Catalog No. 79549, AMP Eurocard Connectors Catalog No. 80-566** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.

Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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AMP INCORPORATED

AMP IC Sockets

Complex printed circuits are too valuable to risk direct soldering to expensive integrated circuits (IC's). Socketing is the answer, and while the use of sockets obviously involves additional costs, it offers advantages that not only prove cost effective in the long run, but also simplify board design and manufacture. Some of these advantages are:

Repairability. The ability to remove socketed chip carriers easily aids troubleshooting and repair.

Lower service costs. Substituting a good chip for a bad one is less costly than substituting a good board for a bad one.

Reprogramming. Simple change of chips, such as ROM's or EPROM's allow circuits to be reprogrammed.

Future expansion. Sockets can be provided for future expansion of function.

Factory testing and burn-in. Testing a bare unmounted chip is not acceptable, therefore socketing is required.

Replacement of early-life failures. Advanced state-of-the-art chips, whose life cycle is still in the beginning of the learning curve, can have a high failure rate.

Manufacturing ease. During the startup of equipment, new IC packages are often not available in full quantity. Socketing allows assembly to proceed through testing by reusing on-hand chips. New chips can be plugged in when they arrive.

Following is an easy-to-use Semiconductor-to-AMP Socket Cross Reference which lists the most common devices by manufacturer, part number and description, including number of contact pins, and shows AMP part numbers of appropriate square and DIP sockets.

SQUARE Semiconductor/AMP Socket Cross Reference

Legend:

LHCC — Low Height Chip Carrier Socket
UNIV. HIGH SPEED — Universal Ceramic Chip Carrier Socket
HPT — High Pressure Tin Socket
STD. LIF-PGA — Standard Low Insertion Force Pin Grid Array Socket
PREM. LIF-PGA — Premium Low Insertion Force Pin Grid Array Socket
ZIF-PGA — Zero Insertion Force Pin Grid Array Socket
BURN-IN PGA/PLCC — Burn-in Pin Grid Array Socket/Plastic Leaded Chip Carrier Socket
SKT., LOW PROF. PGA —Socket, Low Profile Pin Grid Array

MANUFACTURER	PART NUMBER	DESCRIPTION	PACKAGE	I/O	LHCC	UNIV. HIGH SPEED	HPT	STD. LIF-PGA	PREM. LIF-PGA	ZIF-PGA	BURN-IN PGA/PLCC	SKT., LOW PROF. PGA SOLDER-TAIL	SKT., LOW PROF. PGA WRAP 3-HIGH
ALTERA	EP1800	EPLD	PLCC	68			821574-1				832682-6		
AMD	AMPAL16HD8	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16H8	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16LD8	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16L8	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16R4	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16R6	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AMPAL16R8	PAL	PLCC	20			821815-1				3-821682-1		
AMD	AM29325	32 BIT FPP	PGA 15X15	144*				916225-3	55275-4			916115-7	916135-7
AMD	AM29334	DUAL-ACC REG FILE	PGA 13X13	120				916223-1	55273-1			1-916113-3	1-916133-1
AMD	CA2068		LCCC/B	68	55159-2								
AMD	J8253A	COUNTER TIMER	PLCC	28			821581-1						
AMD	J8255A	PRG PRPHL INTERF	PLCC	44			821575-1				2-821682-4		
AMD	3500 SERIES	SCL	PGA 17X17	169				916227-3	55589-5			916117-3	916137-3
AMD	80186	16 BIT MP	LCCC/A	68	55159-2	821516-1							
AMD	80186	16 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
AMD	80186	16 BIT MP	PLCC	68			821574-1				821682-6		
AMD	80286	16/32 BIT MP	LCCC/A	68	55159-2	821516-1							
ANALOG DEVICES	ADSP1012	CO PROCESSOR	PGA 11X11	68				916221-3	55271-4			916111-3	916131-3
ANALOG DEVICES	ADSP1024	CO PROCESSOR	PGA 11X11	84				916221-3	55271-2			916111-7	916131-7
ANALOG DEVICES	ADSP-1009/10A	MULT/ACCUM	PGA 11X11	68				916221-3	55271-4			916111-3	916131-3
ANALOG DEVICES	ADSP-1016A	MULT	PGA 11X11	68				916221-3	55271-4			916111-3	916131-3
ANALOG DEVICES	ADSP-3210	F.P. MULT	PGA 13X13	100*				916223-5	55273-5			916113-7	916133-7
ANALOG DEVICES	ADSP-3220	F.P. ALU	PGA 15X15	144*				916225-3	55275-4			916113-7	916135-7
AT&T	DSP32	DSP	PGA 11X17	100					55488-1				
AT&T	32100	32 BIT MP	PGA 11X21	132					55487-1				
AT&T	32100	32 BIT MP	PGA 13X13	132*				916223-9	1-55273-2	1-55283-2	55383-9	2-916113-3	2-916133-1
AT&T	32101	MEM. MANG. UNIT	PGA 11X21	132					55487-1				
AT&T	32101	MEM. MANG. UNIT	PGA 13X13	132*				916223-9	1-55273-2	1-55283-2	55383-9	2-916113-3	2-916133-1
AT&T	32103	RAM	PGA 11X21	132					55487-1				
AT&T	32103	RAM	PGA 13X13	132*				916223-9	1-55273-2	1-55283-2	55383-9	2-916113-3	2-916133-1
AT&T	32104	DMA CONTROLLER	PGA 11X21	132					55487-1				
AT&T	32104	DMA CONTROLLER	PGA 13X13	132*				916223-9	1-55273-2	1-55283-2	55383-9	2-916113-3	2-916133-1
AT&T	32106	MATH ACCEL.	PGA 11X17	100					55488-1				
AT&T	32106	MATH ACCEL.	PGA 13X13	124*				916223-7	55273-8	55283-8	55383-6	1-916113-9	1-916133-7
FAIRCHILD	FGC6000	SCL	PGA 15X15	181				916225-4	55275-9	55285-3	55385-4	2-916115-1	1-916135-7
FAIRCHILD	FGE2500	SCL	PGA 15X15	156				916225-6	1-55275-2			1-916115-5	1-916135-3
HONEYWELL	HE2000	SCL	PGA 16X16	173						55286-2			
HONEYWELL	HM3500	SCL	PGA 14X14	152							55384-3		
INTEL	108517-001	MPC	PGA 15X15	149				916225-5	1-55275-1			1-916115-1	1-916135-1
INTEL	27C256	E PROM	PLCC, RECT	32			821665-1						
INTEL	27C64	E PROM	PLCC, RECT	32			821665-1						
INTEL	27128	E PROM	PLCC, RECT	32			821665-1						
INTEL	27512/3	E PROM	PLCC, RECT	32			821665-1						
INTEL	80C31	8 BIT MP	PLCC	44			821575-1				2-821682-4		
INTEL	80C51	8 BIT MP	PLCC	44			821575-1				2-821682-4		
INTEL	80186	16 BIT MP	LCCC/A	68	55159-2	821516-1							
INTEL	80186	16 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
INTEL	80188	16 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
INTEL	80188	16 BIT MP	LCCC/A	68	55159-2	821516-1							
INTEL	80286	16/32 BIT MP	LCCC/A	68	55159-2	821516-1							
INTEL	80286	16/32 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
INTEL	80386	32 BIT MP	PGA 14X14	132				916224-1	55274-1	55583-1	55573-2	916114-3	916134-3
INTEL	8051/8031	8 BIT MP	PLCC	44			821575-1				2-821682-4		

*Package contains 1 additional pin for polarization (i.e. 120 actually 121)

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Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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SQUARE Semiconductor/AMP Socket Cross Reference (Continued)

MANUFACTURER	PART NUMBER	DESCRIPTION	PACKAGE	I/O	LHCC	UNIV. HIGH SPEED	HPT	STD. LIF-PGA	PREM. LIF-PGA	ZIF-PGA	BURN-IN PGA/PLCC	SKT., LOW PROF. PGA SOLDER-TAIL	SKT., LOW PROF. PGA WRAP 3-HIGH
INTEL	8052/8032	8 BIT MP	PLCC	44			821575-1				2-821682-4		
INTEL	8096/8097	16 BIT MC	PLCC	68			821574-1				821682-6		
INTEL	8096/8097	16 BIT MC	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
INTEL	82786	CO PROCESSOR	PGA 13X13	88				916223-8	1-55273-0	55283-9	55383-7	916113-5	916133-5
INTEL	83967	16 BIT MC	PLCC	68			821574-1				821682-6		
INTEL	83967	16 BIT MC	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
LSI LOGIC	AB	PACKAGE SCL	LCCC/A	68	55159-2	821516-1							
LSI LOGIC	AK	PACKAGE SCL	LCCC/B	68	55159-2								
LSI LOGIC	AL	PACKAGE SCL	LCCC/A	84	55571-2								
LSI LOGIC	AM	PACKAGE SCL	LCCC/B	84	55225-2								
LSI LOGIC	FA	PACKAGE SCL	PGA 10X10	64				916220-3	55270-4	55280-2	55380-5	916110-3	916130-3
LSI LOGIC	FB	PACKAGE SCL	PGA 11X11	68*				916221-4	55271-5	55281-3	55381-5	916111-5	916131-5
LSI LOGIC	FC	PACKAGE SCL	PGA 11X11	84*				916221-2	55271-3	55281-4	55381-6	916111-9	916131-9
LSI LOGIC	FD	PACKAGE SCL	PGA 13X13	120*				916223-2	55273-2	55283-2	55383-4	1-916113-5	1-916133-3
LSI LOGIC	FE	PACKAGE SCL	PGA 15X15	144*				916225-3	55275-4	55285-2	55385-3	916115-7	916135-7
LSI LOGIC	FF	PACKAGE SCL	PGA 15X15	180*				916225-4	55275-9	55285-3	55385-4	2-916115-2	1-916135-7
LSI LOGIC	FG	PACKAGE SCL	PGA 13X13	100*				916223-5	55273-5	55283-5	55383-2	916113-7	916133-7
LSI LOGIC	FH	PACKAGE SCL	PGA 14X14	132				916224-1	55274-1	55284-1	55384-2	916114-3	916134-3
LSI LOGIC	LCA10000	SCL	PGA 17X17	225				916227-2	55589-4			916117-7	916137-7
LSI LOGIC	L64032	F.P. MULT	PGA 14X14	132				916224-1	55274-1	55284-1	55384-2	916114-3	916134-3
MOSTEK	GA1000D	SCL	PGA 11X11	68*				916221-4	55271-5	55281-3	55381-5	916111-5	916131-5
MOSTEK	GA2000D	SCL	PGA 11X11	84*				916221-2	55271-3	55281-4	55381-6	916111-9	916131-9
MOSTEK	GA3000D	SCL	PGA 13X13	100*				916223-5	55273-5	55283-5	55383-2	916113-7	916133-7
MOSTEK	GA4000D	SCL	PGA 13X13	120*				916223-2	55273-2	55283-2	55383-4	1-916113-5	1-916133-3
MOSTEK	GB1000D	SCL	PLCC	44			821575-1				2-821682-4		
MOSTEK	GB10000D	SCL	PGA 17X17	208*				916227-1	55589-2			916117-5	916137-5
MOSTEK	GB2000D	SCL	PLCC	52			821551-1						
MOSTEK	GB2000D	SCL	PLCC	68			821574-1				821682-6		
MOSTEK	GB6000D	SCL	PGA 15X15	144*				916225-3	55275-4	55285-2	55385-3	916115-7	916135-7
MOSTEK	GB8000D	SCL	PGA 15X15	180*				916225-4	55275-9	55285-3	55385-4	2-916115-1	1-916135-7
MOSTEK	68200	16 BIT MP	PGA 11X11	84*				916221-2	55271-3	55281-4	55381-6	916111-9	916131-9
MOTOROLA	MCA 1200	SCL	LCCC/A	68	55159-2	821516-1							
MOTOROLA	MCA 2500	SCL	PGA 15X15	149				916225-2	55275-3		55573-1	916115-9	916135-9
MOTOROLA	MCA 2800	SCL	PGA 15X15	149				916225-2	55275-3		55573-1	916115-9	916135-9
MOTOROLA	MCA 600	SCL	LCCC/A	68	55159-2	821516-1							
MOTOROLA	68HC11	16 BIT MP	PLCC	52			821551-1						
MOTOROLA	68000	16/32 BIT MP	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68000	16/32 BIT MP	LCCC/B	68	55159-2								
MOTOROLA	68000	16/32 BIT MP	PLCC	68			821574-1				821682-6		
MOTOROLA	68010	16/32 BIT MP	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68010	16/32 BIT MP	LCCC/A	68	55159-2	821516-1							
MOTOROLA	68010	16/32 BIT MP	PLCC	68			821574-1				821682-6		
MOTOROLA	68012	16 BIT MP	PGA 10X10	84				916220-1	55270-2	55280-4	55380-4	916110-7	916130-7
MOTOROLA	68012	16 BIT MP	PLCC	84			821573-1						
MOTOROLA	68020	32 BIT MP	PGA 13X13	114				11916223-3	55273-3	55283-4	55383-3	916113-9	916133-9
MOTOROLA	68030	32 BIT MP	PGA 13X13	128				1-916223-1	1-55273-8		1-55383-1	2-916133-3	2-916133-3
MOTOROLA	68440	DUAL DMA	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68442	EXP DUAL DMA	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68450	DMA CONTROLLER	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68451	MEMORY MGMT	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
MOTOROLA	68461	MEMORY	PGA 13X13	124				916223-4	55273-4	55583-2	55573-3	1-916113-7	1-916133-5
MOTOROLA	68824	BUS CONTROLLER	PGA 10X10	84				916220-1	55270-2	55280-4	55380-4	916110-7	916130-7
MOTOROLA	68851	PMMU	PGA 13X13	132				1-916223-0	1-55273-4	1-55283-4		2-916113-1	1-916133-9
MOTOROLA	68881	CO-PROCESSOR	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
NAT'L SEMI	E68B	PACKAGE SCL	LCCC/B	68	55159-2								
NAT'L SEMI	NS32032	16/32 BIT MP	LCCC/A	68	55159-2	821516-1							
NAT'L SEMI	NS32032	32 BIT MP	PLCC	68			821574-1				821682-6		
NAT'L SEMI	NS32032	MMU	PLCC	68			821574-1				821682-6		
NAT'L SEMI	NS32081	FPU	PLCC	28			821581-1						
NAT'L SEMI	NS32106	16/32 BIT MP	PLCC	68			821574-1				821682-6		
NAT'L SEMI	NS32201	TCU	PLCC	28			821581-1						
NAT'L SEMI	NS32203	ICU	PLCC	44			821575-1				2-821682-4		
NAT'L SEMI	NS32332	32 BIT MP	PGA 13X13	85				916223-6	55273-7	55283-7	55383-5	916113-3	916133-3
NAT'L SEMI	NS32332	32 BIT MP	PLCC	84			821573-1						
NAT'L SEMI	SCX6232	SCL	LCCC/B	68	55159-2								
NAT'L SEMI	U124A	PACAKGE SCL	PGA 13X13	124				916223-4	55273-4	55283-6	55573-3	1-916113-7	1-916133-5
NAT'L SEMI	U172A	PACKAGE SCL	PGA 16X16	172						55286-5			
NAT'L SEMI	U68A AND B	PACKAGE SCL	PGA 10X10	68				916220-2	55270-3	55280-3	55380-2	916110-5	916130-5
NAT'L SEMI	U84B	PACKAGE SCL	PGA 10X10	84				916220-1	55270-2	55280-4	55380-4	916110-7	916130-7
NAT'L SEMI	V28A	PACKAGE	PLCC	28			821581-1						
NAT'L SEMI	V44A	PACKAGE SCL	PLCC	44			821575-1				2-821682-4		
NAT'L SEMI	V68A	PACKAGE SCL	PLCC	68			821574-1				821682-6		
NAT'L SEMI	V84A	PACKAGE	PLCC	84			821573-1						
NEC	UPD70208	16 BIT MP	LCCC/A	68	55159-2	821516-1							
SIEMENS	SAB80286	16 BIT MP	LCCC/A	68	55159-2	821516-1							
SIEMENS	SAB80286	16 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
SIEMENS	SAB80515/35	8 BIT MC	PLCC	68			821574-1				821682-6		
SIEMENS	SAB82258	ADMA CONTROL	LCCC/A	68	55159-2	821516-1							
T.I.	SMJ32020	DSP	PLCC	68			821574-1				821682-6		
T.I.	TIBPALR19L8	REG. PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALR19R4	REG. PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALR19R6	REG. PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALR19R8	REG. PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALT19L8	LATCH PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALT19R4	LATCH PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALT19R6	LATCH PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPALT19R8	LATCH PAL	PLCC	28			821581-1				2-821682-8		

*Package contains 1 additional pin for polarization (i.e. 120 actually 121)

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SQUARE Semiconductor/AMP Socket Cross Reference (Continued)

MANUFACTURER	PART NUMBER	DESCRIPTION	PACKAGE	I/O	LHCC	UNIV. HIGH SPEED	HPT	STD. LIF-PGA	PREM. LIF-PGA	ZIF-PGA	BURN-IN PGA/PLCC	SKT., LOW PROF. PGA SOLDER-TAIL	SKT., LOW PROF. PGA WRAP 3-HIGH
T.I.	TIBPAL16L8-12	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16L8-15	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16L8-25	LOW POWER PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R4-12	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R4-15	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R4-25	LOW POWER PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R6-12	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R6-15	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R6-25	LOW POWER PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R8-12	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R8-15	IMPACT PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL16R8-25	LOW POWER PAL	PLCC	20			821815-1				3-821682-1		
T.I.	TIBPAL20L10-20	E/OR PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20L8-15	IMPACT PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20R4-15	IMPACT PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20R6-15	IMPACT PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20R8-15	IMPACT PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20X10-20	E/OR PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20X4-20	E/OR PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TIBPAL20X8-20	E/OR PAL	PLCC	28			821581-1				2-821682-8		
T.I.	TI32032T-2	32 BIT MP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
T.I.	TI32032T-2	32 BIT MP	PLCC	68			821574-1				821682-6		
T.I.	TMS32010	DSP	PLCC	44			821575-1				2-821682-4		
T.I.	TMS32020	DSP	PGA 11X11	68				916221-3	55271-4	55281-2	55381-4	916111-3	916131-3
T.I.	TMS38030	SYS INTERFACE	PGA 10X10	100				916220-4	55270-5	1-55280-0	55380-1	916110-1	916130-1
VTI	VL86C010	32 BIT MC	LCCC/B	84	55225-2								
WEITEK	WTL1164/5	CO PROCESSOR	PGA 11X11	68				916221-3	55271-4			916111-3	916131-3
WEITEK	WTL1164/5	CO PROCESSOR	LCCC/A	68	55159-2	821516-1							
WEITEK	1032/1033	FPM/ALU	LCCC/A	68	55159-2	821516-1							
WEITEK	1232/1233	FPM/ALU	PGA 11X11	68				916221-3	55271-4			916111-3	916131-3
WEITEK	1232/1233	FPM/ALU	LCCC/A	68	55159-2	821516-1							
WEITEK	2010	MULT/ACC	PGA 11X11	68				916221-3	55271-4			916111-3	916131-2
WEITEK	2010	MULT/ACC	LCCC/A	68	55159-2	821516-1							
WEITEK	2264/2265	FPM/D/ALU	PGA 15X15	144				916225-1	55275-1	55285-1	55385-5	916115-5	916135-5
WEITEK	7137	32 BIT INT PROC	PGA 15X15	144				916225-1	55275-1	55285-1	55385-5	916115-5	916135-5

DIP Semiconductor/AMP Socket Cross Reference

LEGEND: **SL** — Single Leaf DIPLOMATE Socket; **DL** — Dual Leaf DIPLOMATE Socket; **LF** — Low Force DIPLOMATE Socket; **HT** — High Temperature DIPLOMATE Socket; **ZIF-Lock** — Zero Insertion Force DIP Socket; **SKT., LOW PROF. PGA** — Socket, Low Profile Pin Grid Array

MANUFACTURER	PART NUMBER	DESCRIPTION	PACKAGE	I/O	SL	DL	LF	HT	ZIF-LOCK	SOCKET, LOW PROF. PGA SOLDER-TAIL	SOCKET, LOW PROF. PGA WRAP 3-HIGH
ANALOG DEVICES	ADSP-1009/10A	MULT/ACCUM	DIP	64		643575	643007	643310		916102	916162
ANALOG DEVICES	ADSP-1012	CO PROCESSOR	DIP	64		643575	643007	643310		916102	916162
ANALOG DEVICES	ADSP-1016A	MULT	DIP	64		643575	643007	643310		916102	916162
FUJITSU	MBL8086	8 BIT MP	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
FUJITSU	MBL8088	8 BIT MP	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
FUJITSU	MBM27128	128K EPROM	DIP	28	641873	640362	641894	641713	54994-1	916089	916149
FUJITSU	MBM27256	256K EPROM	DIP	28	641873	640362	643894	641713	54994-1	916089	916149
FUJITSU	MBM2764	64K EPROM	DIP	28	641873	640362	643894	641713	54994-1	916089	916149
FUJITSU	MB81256-15P	256K DRAM	DIP	16	641868	640358		641708	55174-1	916083	916143
FUJITSU	MB8264A-15P	64K DRAM	DIP	16	641868	640358		641708	55174-1	916083	916143
FUJITSU	MB8416A-15LP	16K RAM	DIP	24	641872	640361	641893	641712	54993-1	916088	916148
FUJITSU	MB8464-15LP	64K RAM	DIP	24	641872	640361	641893	641712	54993-1	916088	916148
INTEL	27010	U.V. EPROM	DIP	32		644018		644002			
INTEL	27011	P.A. EPROM	DIP	28	641873	640362	641894	641713	54994-1	916089	916149
INTEL	27210	WW / U.V. EPROM	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
INTEL	8086	8 BIT MP	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
INTEL	8088	8 BIT MP	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
MOSTEK	68200	16 BIT MP	DIP	48		643574	643287	643309		916101	916161
MOSTEK	68201/44	16 BIT MP	DIP	48		643574	643287	643309		916101	916161
MOTOROLA	68HC11	16 BIT MP	DIP	48		643574	643287	643309		916101	916161
MOTOROLA	68000	16/32 BIT MP	DIP	64		643575	643007	643310		916102	916162
MOTOROLA	68010	16/32 BIT MP	DIP	64		643575	643007	643310		916192	916162
NAT'L SEMI	D20A	PACKAGE SCL	DIP (GOLD)	20	641870	640464		641710	55176-6	916085	916145
NAT'L SEMI	D28C	PACKAGE SCL	DIP (GOLD)	28	641873	640362	643894	641713	54994-6	916069	916149
NAT'L SEMI	D40C	PACKAGE SCL	DIP (GOLD)	40	641874	640379	641895	641714	54995-6	916090	916150
NAT'L SEMI	J40A	PACKAGE SCL	DIP (GOLD)	40	641874	640379	641895	641714	54995-5	916090	916150
NAT'L SEMI	N20A	PACKAGE SCL	DIP (GOLD)	20	641870	640464		641710	55176-5	916085	916145
NAT'L SEMI	N28B	PACKAGE SCL	DIP (GOLD)	28	641873	640362	641894	641713	54994-5	916089	916150
NAT'L SEMI	N40A	PACKAGE SCL	DIP (GOLD)	40	641874	640379	641895	641714	54995-5	916090	916150
T.I.	TMS32010	DSP	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
T.I.	9650	PARA I.O. PORTS	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
T.I.	9914A	PARA I.O. PORTS	DIP	40	641874	640379	641895	641714	54995-1	916090	916150
WEITEK	WTL11645	CO PROCESSOR	DIP	64		643575	643007	643310		916102	916162
WEITEK	1232/1233	FPM/ALU	DIP	64		643575	643007	643310		916102	916162
WEITEK	2010	MULT/ACCUM	DIP	64		643575	643007	643310		916102	916162
ZILOG	Z8000	16 BIT MP	DIP	40	641874	640379	641895	641714	54995-1	6090	916150
ZILOG	Z8000	16 BIT MP	DIP	48		643574	643287	643309		6101	916161
ZILOG	Z8100	16 BIT MP	DIP	64		643575	643007	643310		6102	916162

NOTES:
1. Dash numbers (suffix) matrix for DIP-SL, DL and LF (Note -4 in LF is PHBR/30mm Gold)
   -1 BECU/Tin -3 PHBR/Tin
   -2 BECU/30mm Gold -4 PHBR/10mm Gold
2. Dash numbers (suffix) matrix for DIP-HT
   -2 BECU/30mm Gold
   -4 BECU/10mm Gold
3. Dash numbers (suffix) matrix for socket, Low Profile sleeve plating combinations
   -1 BECU Gold Plated Spring; Gold Body
   -2 BECU Gold Plated Spring; Tin Body
   -3 BECU Tin Plated spring; Tin Body

Need more details? **Request Catalog No. 87-798** or call AMP Customer Service at (717) 780-4400, or write AMP Incorporated, Harrisburg, PA 17105. For Distributor Marketing Division reference see page C•1174.
Specifications subject to change. Consult AMP Incorporated for latest design specifications.

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AMP Interconnecting ideas

for AMP

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FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide ..... C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide ..... B•1233
Relay Contact Forms ..... B•1339
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Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
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Voltage Drop Nomographic ..... C•1830, D•1698
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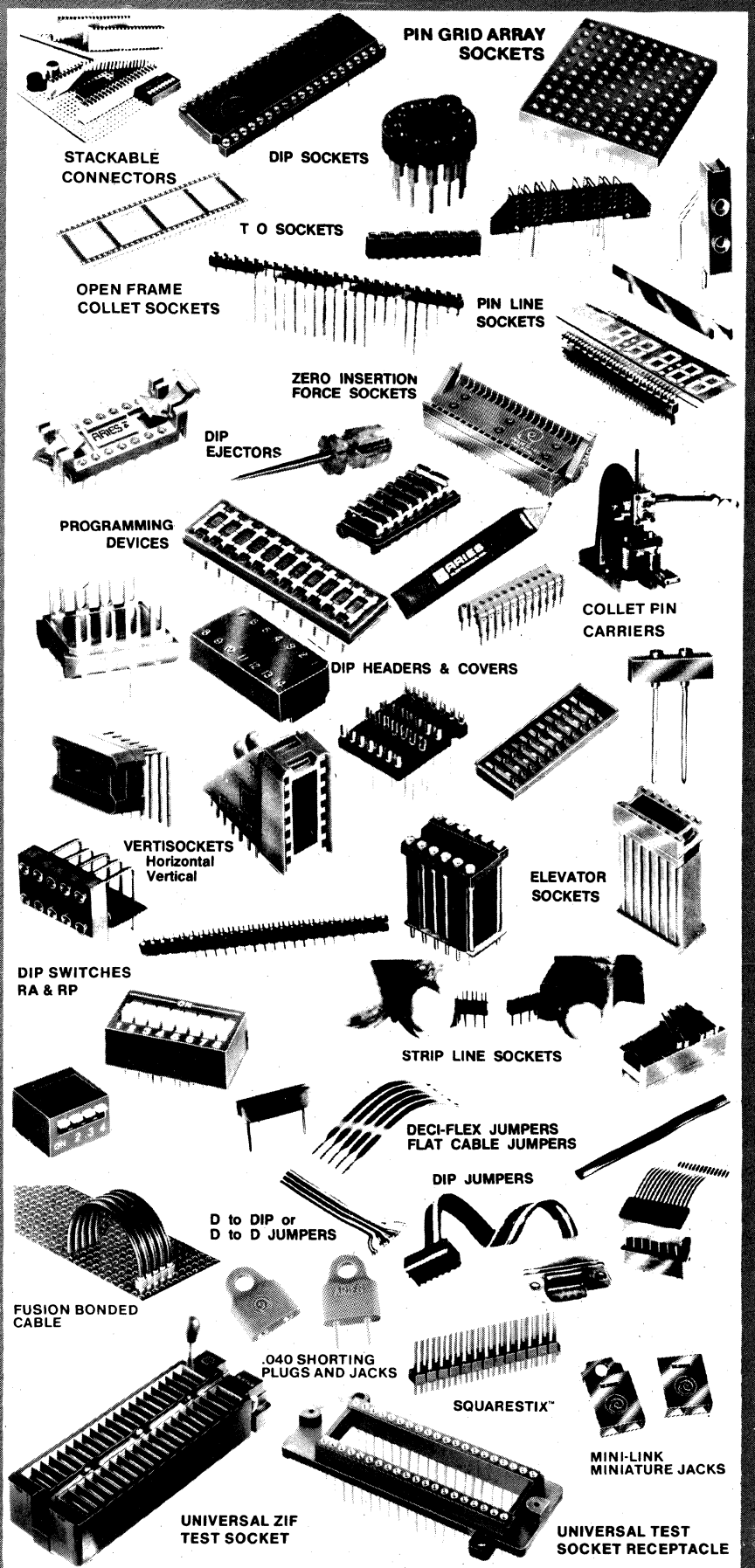
Wire Guages—Diameter, Area, Copper Weight ..... C•1766



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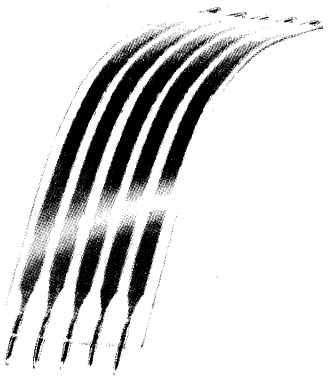
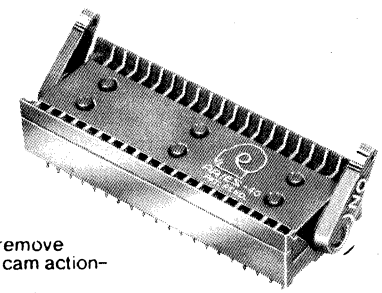
DIP SOCKETS—6 STYLES



DECI-FLEX®
(SERIES 160)
Low cost, flexible multi-conductor interconnection. Available any number of conductors on .100 centers. Lengths 1", 2", 3", with polyester, nomex or teflon insulation.

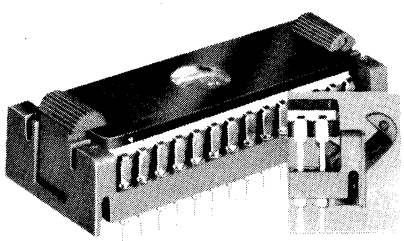


NEW! ANTI-STATIC
T516AS
DIP-R-SIZER
HAND TOOL
Molded of anti-static material...ideal for MOS devices susceptible to static damage.

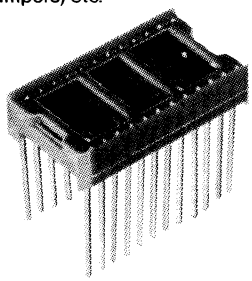


ZERO INSERTION
FORCE SOCKET
(SERIES 516)
Normally Open—
No force to insert component.
Closed—Holds component firmly.
Open—No force to remove component. Smooth cam action—no tools required.
Available 24, 28, 40 and 64 contacts.

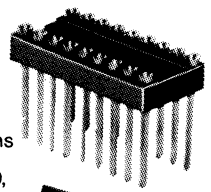
Collet EJECT-A-DIP Sockets
Rugged, solderable DIP socket with unique latch to lock-in jumpers, ICs, etc. Latch also ejects DIP packages without damage to pins. Ideal for high vibration environments or applications in which device leads get bent during removal. High reliability collet contacts accept round or rectangular pins. Available solder tail or wire wrap in 14, 16, 24, 28 and 40 pin sizes. Locking latch heights available for many manufacturers' connectors. Consult factory for specials.



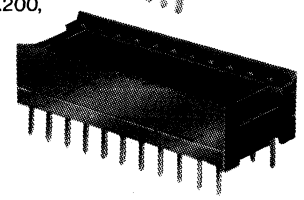
DIP SOCKETS
For mounting IC's, logic jumpers (see DIP-R-LOGIC Jumpers) etc.



SERIES 501
Wire Wrap* Type Pins with Aries bifurcated contacts. Available: 8-10-14-16-18-20-22-24-28-32-34-36-38-40-48 Pins on .200, .300, .400 and .600 centers.

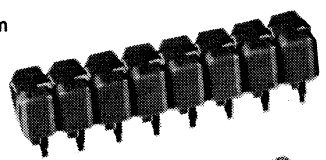


SERIES 503
LO-PRO®file Sockets—Wire wrap pins with collet style contacts. Available 2 to 64 pins in increments of 2 on .200, .300, .400, .600 or .900 centers.

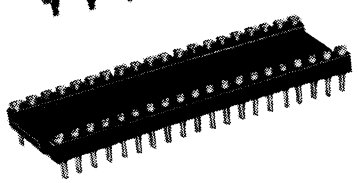


SERIES 511
Solder Type Pins with Aries bifurcated contacts. Available: 8-10-14-16-18-20-22-24-28-32-36-40 Pins on .200, .300, .400 and .600 centers.

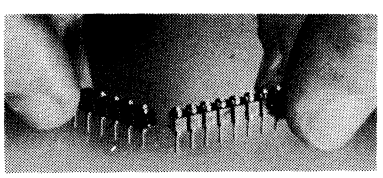
SERIES 0520 and 0525
Single row in-line sockets with "Breakable" feature. Uses stamped single beam face-grip contacts. 40 solder tail pins to a strip. Body breaks off cleanly to any desired number of contacts. Series 0525 mates with .025 square pins.



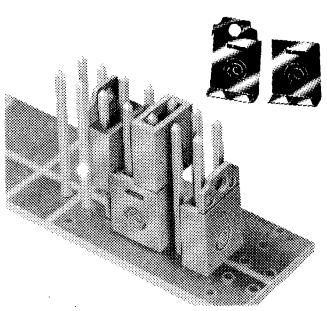
SERIES 513 and 518
Lo-PRO™ file Collet Style Sockets. Available 6 to 64 pins on .200, .300, .400, .600 and .900 centers. Series 518 is open frame.



STRIP LINE SOCKETS
SERIES 0513, 0503
with "break" feature for any desired number of positions (1 to 25 pins). Available solder tail, 2 and 3 wrap pins.



MINI-LINK™ and
SQUARESTIX™
Miniature jacks and a complete line of single and dual row .025 square pin products. Squarestix available up to 40 pins single row and 80 pins dual rows, both straight and right angle.



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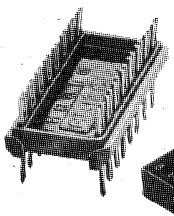
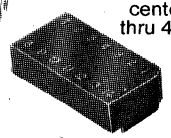
The Industry's most complete line of DIP products

DIP HEADERS and COVERS – 5 STYLES and SPECIALS



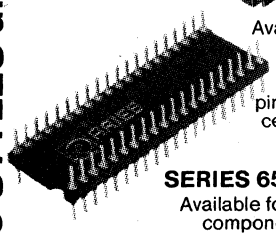
DIP HEADERS & COVERS for mounting components.

SERIES 600 with coined contacts. 2 Styles of Terminals: Post and Fork. Available 2 thru 20 pins on .300 centers; 22 pins on .400 centers; 24 thru 40 pins on .600 centers. Contact styles shown below.



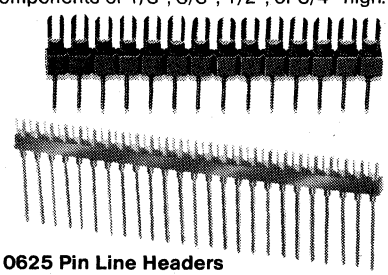
SERIES 625 with screw machine terminals. 5 Styles of Terminals. Available 2 to 40 pins—.200, .300, .400 and .600 centers.

SERIES 8625 with screw machine terminals. Available in 14-16-18-32 pins in single and double rows on .800 centers. Terminal styles shown below.



SERIES 650 COVERS: FOR HEADERS

Available for 8-14-16-24-40 pin sizes to accept components of 1/8", 3/8", 1/2", or 3/4" high.



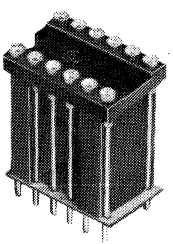
"BREAK" to length desired.

SERIES 0600 and 0625 Pin Line Headers

A single header strip both end and side stackable on .100 centers. (0600 with coined contacts). (0625 with screw machine terminals). Available: 1 to 25 pins on .100 centers.

ELEVATOR SOCKETS

Useful to bring device to level required. Available from 1/4" to 1-1/4" high. Standard heights in stock; specials 3 weeks.

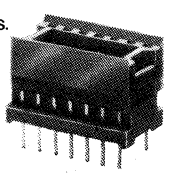


SERIES 8XXX (XXX=height)

Available 14 or 16 pin. Aries bifurcated pins on .300 centers.

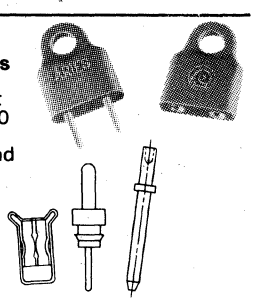
COLLET STYLE CONTACTS

2 to 64 pin. Any height 1/4" to 1-1/4"



.040 Shorting Plugs and Jacks and .040 DIP Strips and Loose Pins

Plugs and jacks used to interconnect .040 sockets and/or .040 pins on .200 centers. Convenient ring handle for insertion or removal. Male straight and right angle and female socket DIP strips in convenient 10 position size ("break-off" feature for any smaller size). Also available are loose .040 female sockets, .040 male pins for staking and .040 pins for press fit.

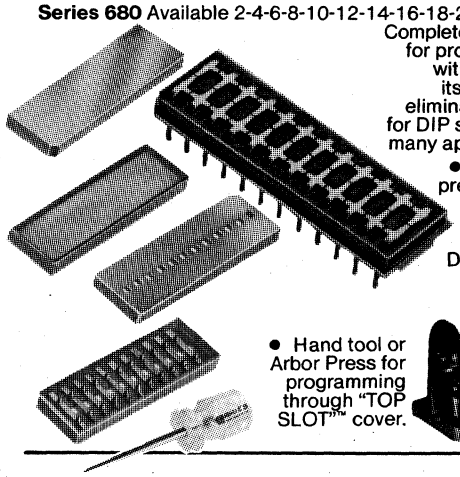


DIP PROGRAM HEADERS and COVERS

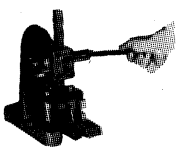
TOP-SLOT Programmable Headers and Covers

Series 680 Available 2-4-6-8-10-12-14-16-18-20-24 pins. Complete versatility for programming within header itself . . . thus eliminating need for DIP switches in many applications.

- Available pre-programmed from Aries Stocking Distributors.

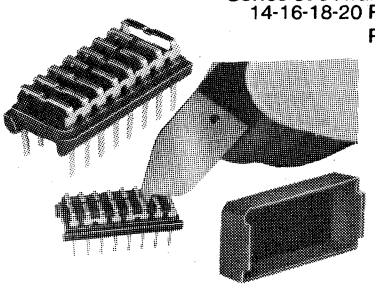


- Hand tool or Arbor Press for programming through "TOP SLOT"™ cover.



Series 675 Available 2-4-6-8-10-12-14-16-18-20 Pins on .300 centers

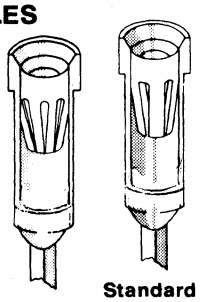
Program the header! Available pre-programmed or can be programmed by customer with needle-nose pliers or Aries Program Header Tool.



ARIES PIN CONTACT STYLES

ARIES COLLET CONTACT PINS

These high quality, high performance-to-cost ratio contacts use gold plated beryllium copper contacts within a brass socket body available either tin or gold plated. Collet contacts accept .015-.022 dia. round leads.

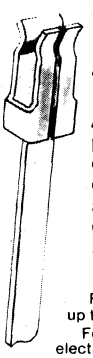


Standard **Low Insertion**



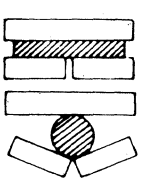
ARIES SINGLE BEAM FACE-GRIP CONTACT

Excellent electrical performance for a competitively priced production socket. Spring design and copper alloy (688) material assure long life performance of contacts.



ARIES BIFURCATED CONTACT PIN

Aries bifurcated contacts produce superior electrical contact characteristics, as well as firm physical spring grip. A secure mating is assured.



For flat leads up to .020 thick. For maximum electrical contact, grip is on thickness. Redundant 3 point round leads up to .020 dia. contact for

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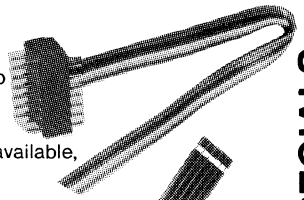
The Industry's most complete line of DIP products

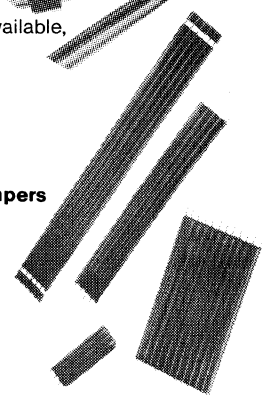
DIP JUMPERS – 10 STANDARD STYLES and SPECIALS

DIP JUMPERS
SERIES 100—DIP board to DIP board.
Available 4 thru 40 pins.
Any length cable.
Any connector orientation available, 12 standard configurations.

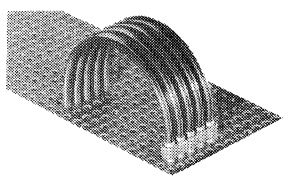
Also available with twisted pair cable or flat conductor cable.



SERIES 152FB
Fusion Bonded Cable Jumpers

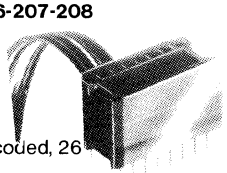


Available in 1" to 12" lengths in ¼" increments.
Conductors: 4 thru 12 on .100" centers.
Flexible, extruded PVC insulation on 26 gauge stranded wire conductors which are fusion bonded with an over-coat of tin for easy solderability and/or pluggability.
Fusion Bonded Cable Jumpers can be soldered directly to p.c. board or pluggable into Aries pin line sockets (Series 0513) or low cost (Series 0520).



DIP-ER LOGIC SOCKET/JUMPER
SERIES 206-207-208

Dip-er Logic Socket Jumpers saves the space on the board for a plug in position and can be used to impose two devices into one position.
Plugs into standard 8-14-16-24 and 40 position logic panels.
Any length cable. Cable—EIA color coded, 26 AWG (7 strands 34 AWG).
Type B—600 V 105° C.



D TO DIP JUMPERS
SERIES 225

Cable assemblies using "D" Series subminiature connectors (9, 15, 25, 37 and 50 pin) on one end and Aries DIP Headers on other ends. Other end can be furnished stripped and tinned also. Cable is EIA color coded 26 AWG. Other sizes and types of cable can be accommodated.



SPECIALS Aries will promptly respond to your special jumper requirements.

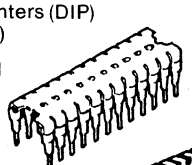
Series 540
COLLET PIN CARRIERS
DIP and Single Row

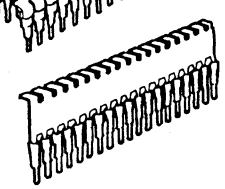
- 6 thru 24 pins on .300 centers
- 6 thru 48 pins on .600 centers (DIP)
- 2 thru 40 pins (single row)

Use Aries precision stamped collet pin insertion carriers and eliminate time consuming hand insertion of pins. Accurate alignment with the board hole pattern makes it fast and easy.

Collet sockets provide high reliability contacts to .015-.022 (.38 - .56) dia. leads or flat IC leads.



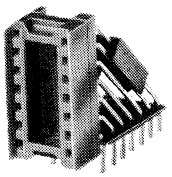




VERTISOCKETS 22 STYLES and SPECIALS

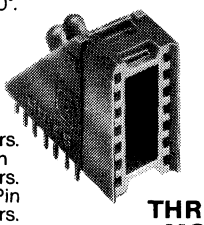
VERTISOCKETS®

For mounting LED Displays, Switches, Test Points. A complete line—from 2 pin for decimal to 40 pins for multiple displays.
Available for vertical, horizontal or edge card displays with optional mounting angles of 30°, 45°, 60° or 90°. Device mounting centers .200, .300 and .600.



VERTICAL MOUNTING

SERIES 2810— Available: 8-10 Pin (Aries bifurcated pins) on .200 centers.
SERIES 810—Available: 8-14-16 Pin (Aries bifurcated pins) on .300 centers.
SERIES 6810—Available: 8-10-14 Pin (Aries bifurcated pins) on .600 centers.

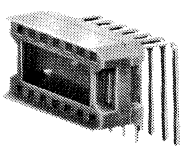


HORIZONTAL MOUNTING

SERIES 2820, 2822 and 2823—Available: 8-10 Pins (Aries bifurcated pins) on .200 centers.
SERIES 820, 822, 823—Available: 8-14-16-18 Pins (Aries bifurcated pins) on .300 centers.
SERIES 6823—Available: 8 to 40 Pins (Aries bifurcated pins) on .600 centers.
SERIES 822E (Economy Model)—Available: 8-14-16-18 Pins. (Aries bifurcated pins) on .300 centers. Note: One row of pins .025 x .006 with other row .025 sq.

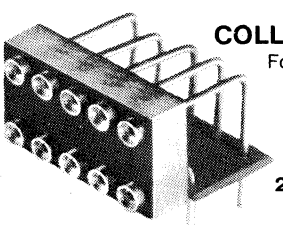
THRIFTY MODEL VERTISOCKET

High volume—low cost—bifurcated contacts 14 Pin—.300 centers
Cat. No. 14-810-90R



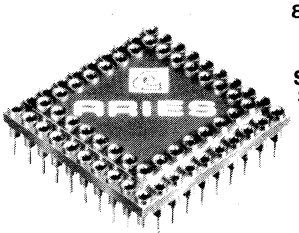
COLLET STYLE VERTISOCKET

For displays using round pins (Solder or Wire Wrap). Excellent for military applications. Can be provided with FR4 base material.



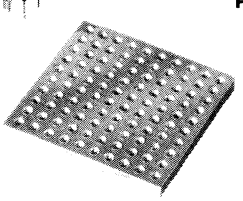
Horizontal
SERIES 2820C, 2822C, 2823C—Available: 8 and 10 pins on .200 centers.
SERIES 820C, 822C and 823C—Available: 8 to 20 pins on .300 centers in increments of two (2).

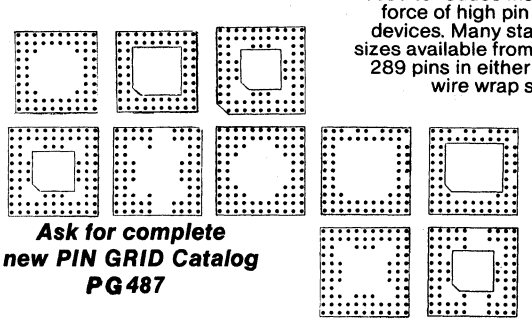
Vertical
SERIES 2810C—Available 8-10 pins.
SERIES 0810C—Available: 2 pin (for decimal) on .150 center.



PIN GRID ARRAY SOCKETS

Collet contacts on .100 centers in a square matrix for acceptance of components not on conventional DIP matrix. Available to meet any configuration of pin positions. Special low insertion force collet contacts are used to reduce insertion force of high pin count devices. Many standard sizes available from 64 to 289 pins in either tail or wire wrap styles.





Ask for complete new PIN GRID Catalog PG487

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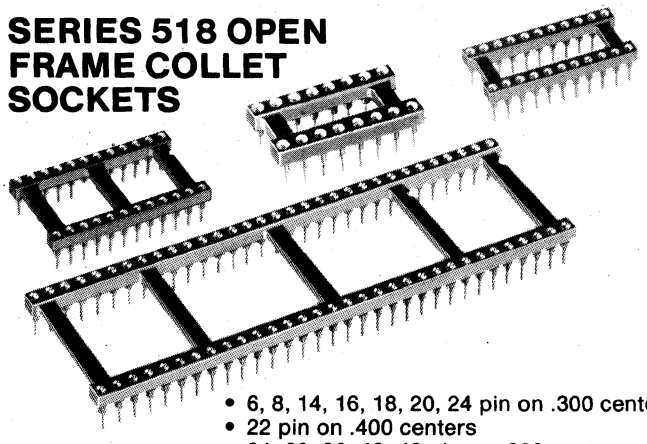
NEW ARIES PRODUCTS FOR '87

SERIES 518 OPEN FRAME COLLET SOCKETS

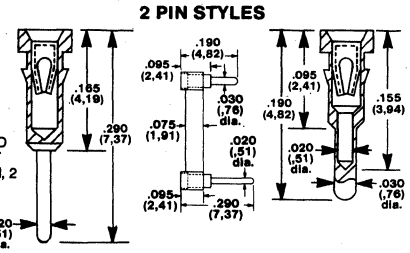


- 6, 8, 14, 16, 18, 20, 24 pin on .300 center
- 22 pin on .400 centers
- 24, 28, 32, 40, 48 pin on .600 centers
- 50, 64 pin on .900 centers

FEATURES

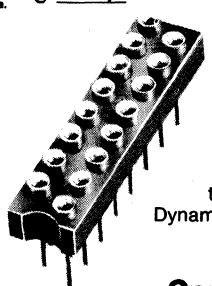
- Low cost, high production use sockets with Aries high reliability, screw-machined collet contacts. . . with four point contact redundancy and superior insertion-to-withdrawal ratios.
- Open frame allows more efficient utilization of board space.
- Open frame design for better cooling.
- Two pin styles: standard collet contact pins and new low profile midget pin to accept longer leads.
- Collet accepts .015-.022 diameter leads.
- Platform UL94V-O rated.

2 PIN STYLES



ARIES STANDARD COLLET SOCKET PINS in solder tail, 2 and 3 wrap types.

MIDGET (M) LOW PROFILE COLLET PIN SOCKET which accepts longer leads solder tail only.



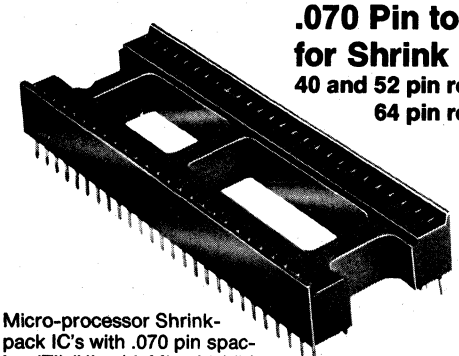
ZIP SOCKET

16, 20 or 24 pin (staggered)

A .100 × .100 matrix in-line socket with collet pins staggered in zig-zag configuration to fit Mitsubishi, Fujitsu, etc., Dynamic Rams. There is also a ZIP DRAM Adaptor from zig-zag to standard .300 center p.c.b.

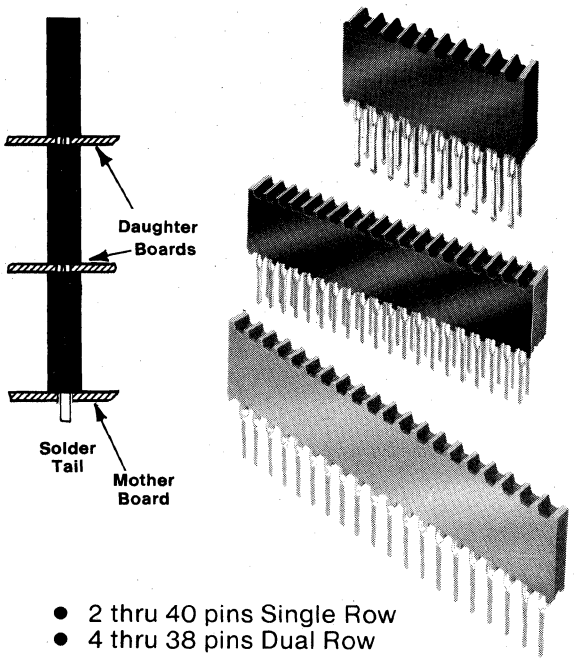
Series 570 .070 Pin to Pin Sockets for Shrink DIP Chips

40 and 52 pin rows on .600 center
64 pin rows on .750 center

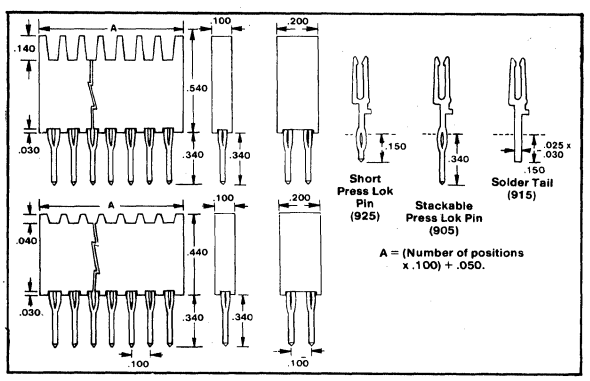


Micro-processor Shrink-pack IC's with .070 pin spacing (TI) (Hitachi, Mitsubishi) have extremely low insertion force for these high pin count devices. Body UL94VO rated.

SERIES 900 PRESS-LOK™ STACKABLE CONNECTORS



- 2 thru 40 pins Single Row
- 4 thru 38 pins Dual Row



Hermaphroditic Stackable Connectors allow the stacking of 1/16 inch PCB's on .500 or .600 board centers. As many boards as desired may be stacked by soldering the solder tail version in the bottom mother board and then press fitting equivalent pin count units with the stackable style pin in the daughter boards. (Connectors with stackable pins can plug into each other or into the solder tail version in the mother board).

Connectors are available in standard 20 (single) and 40 pin (dual) row .100 x .100 grid. Other pin counts of 4 through 38 pin dual row or 2 through 19 pin single row are available as non-returnable specials.

These connectors are side-to-side stackable (for end-to-end stacking, skip one pin position). Phosphor bronze contact pins are available in tin, gold, or selective gold. The housing is glass filled thermoplastic with UL 94V-0 rating.

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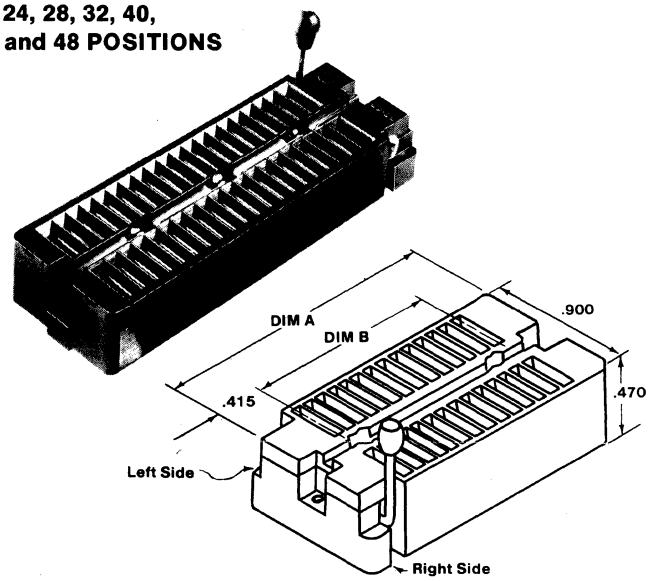
NEW ARIES PRODUCTS FOR '87

UNIVERSAL ZIF TEST SOCKET and RECEPTACLE

24, 28, 32, 40, and 48 POSITIONS

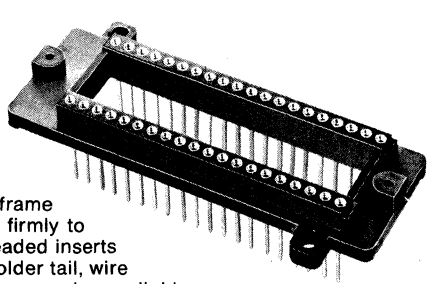


The new Aries Universal ZIF Socket is a direct replacement for other test sockets currently on the market, with a number of significant advantages:

- Priced 20% or more below competitive units!
- One socket accepts devices on either .300, .400 or .600 centers.
- All pin count sockets (24, 28, 32, 40, 48) go into p.c.b.'s with either .300 or .600 centers.
- Sockets can be soldered into p.c. boards or plugged into any socket. Socket fits into Aries or any competitive test socket receptacle.
- Contacts are normally closed to eliminate dependence on plastic to sustain contact.
- Accepts .015 to .045 wide leads.
- Contacts available tin plated (for up to 105°C) or gold plated (for up to 150°C) or nickel boron over CuNiSn spinodal alloy (for up to 200°C).
- Socket handle available UP or DOWN for closed position. Handle can also be reversed side-to-side (left or right hand).
- Available 24, 28, 32, 40, 48 pins in body of UL94VO rated polyphenylene sulfide.
- The unit is truly a Universal ZIF Socket. It accepts all pin counts from 6 thru 48 pins on .300, .400 or .600 centers!
- Insulation Resistance - 1000 megohms min.
- Dielectric withstanding voltage - 1000 VAC min.
- Contact rating - 1 amp.
- 25,000 - 50,000 cycles.

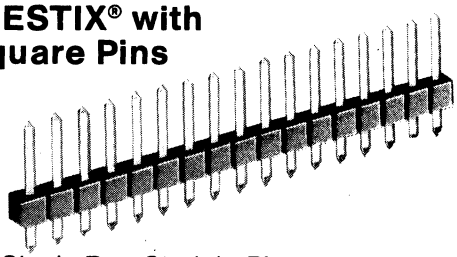
Test Socket Receptacle

24, 28,32, 40 and 48 positions



Sturdy, open frame socket mounts firmly to board and threaded inserts hold socket. Solder tail, wire wrap and solder cup pins available.

SQUARESTIX® with .025 Square Pins

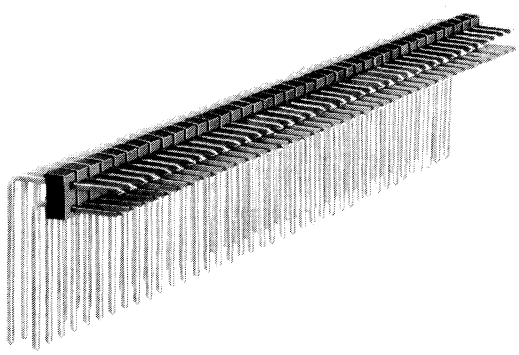


- 1 to 40 Single Row Straight Pins
- 2 to 80 Double Row Straight Pins
- 11 Pin Lengths
- Break-off to any length

Squarestix™ are straight .025 (.64) square pins in a single or double row body with 1 to 40 pins or 2 to 80 pins and available with 11 different pin lengths. The "break" feature allows full length strips to be broken to any number of pins without loss of any pins. They also can be ordered to any desired number of pins. Squarestix can be butted end-to-end or side-by-side on .100 (2.54) matrix. The body of Squarestix is UL94VO rated. To prevent solder wicking, Squarestix have .015 (.38) high standoffs.

SQUARESTIX™

.025 Single and Double Pin Rows on 90°



- 1 to 40 Single Row 90° Pins
- 2 to 80 Double Row 90° Pins
- 13 Pin Lengths (Single Row)
- 7 Pin Length (Double Row)

.025 (.64) square pins at a 90° angle in a single or double row plastic body, UL94VO rated, are available with 13 and 8 pin lengths respectively. A full single row contains 40 pins (single) to 80 pins (double). However, Squarestix can be ordered to any number of pins. The unique "break" feature allows breaking off any number of wanted pins. Single or double row 90° Squarestix are end-to-end buttable on .100 (2.54) matrix. Double row 90° pins are on .100 matrix vertically and horizontally. A .020 (.51) high standoff facilitates cleaning and prevents solder wicking.

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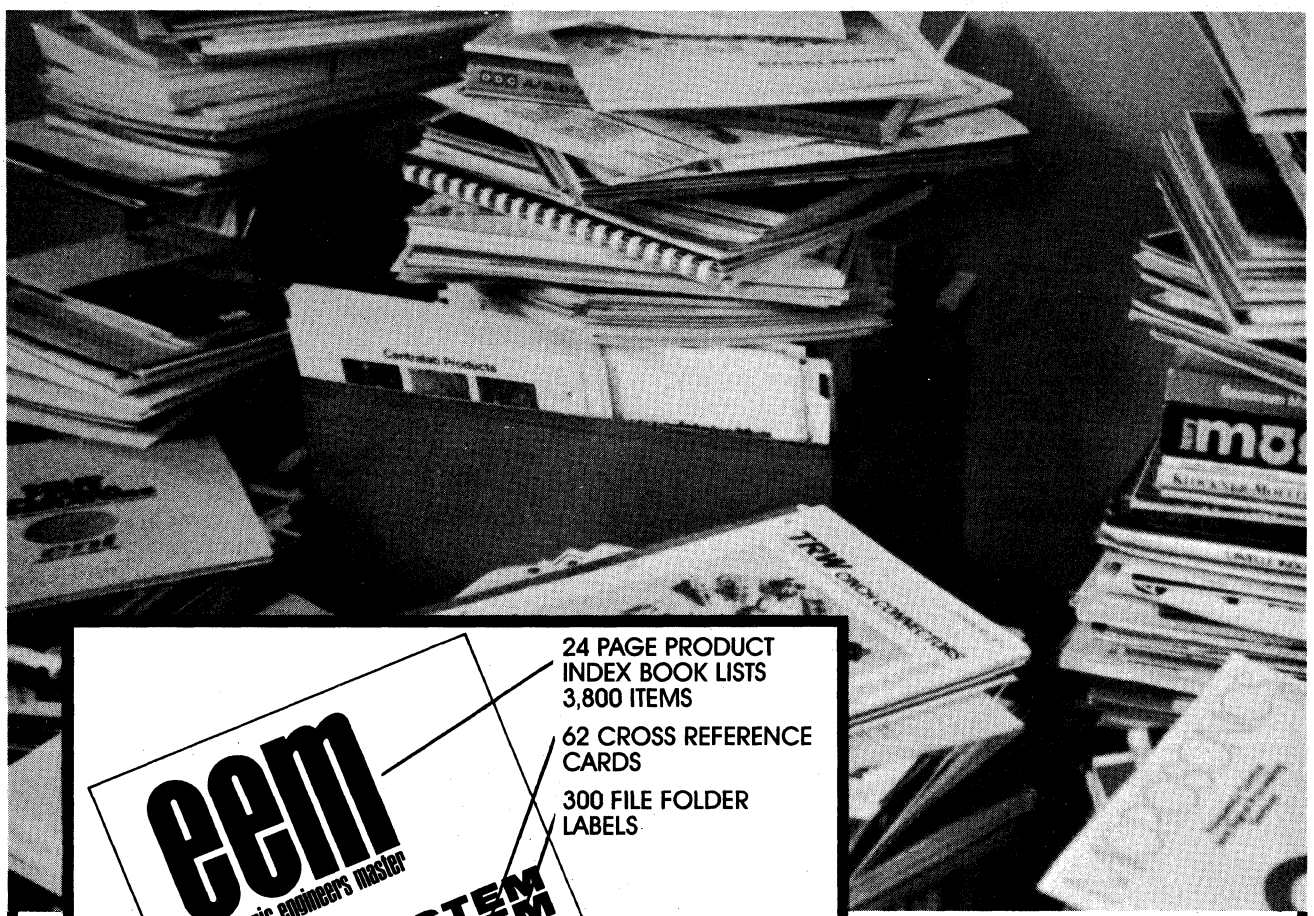

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3M Associated Electronics Department — IDC Ribbon Cable Assemblies

1. Molded construction. Cable and contacts are molded into the termination body to form an inseparable unit.

2. Integral strain-relief results from molding the termination onto the cable.

3. Typically lower profiles maximize space savings and address dense packaging requirements.

4. 100% testing to guarantee application performance and ship to stock conformance.

5. Gold and non-gold contact options.

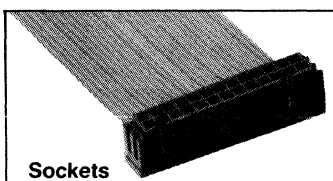
6. Industry compatible for alternate sourcing.

7. Broad product line that is UL recognized and CSA certified.

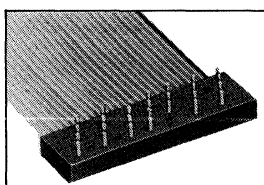
8. Dependable delivery to meet your schedule demands and inventory needs.

9. Complete system price eliminates all assembly and scrap costs. Just purchase and install.

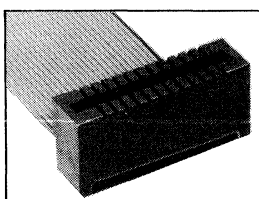
Terminations



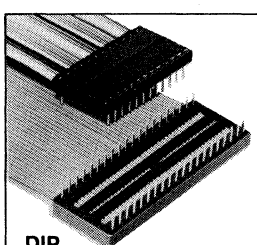
Sockets
High profile ● Low profile ● with tab key ● without tab key; sizes — 10, 12, 14, 16, 18, 20, 26, 30, 34, 36, 40, 42, 50, 60, 64; mirror image sizes — 36, 40, 42, 50



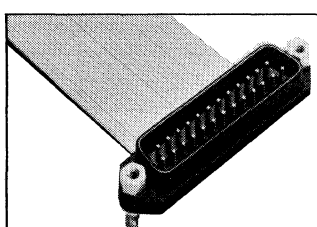
PCB / Transition
Short pin ● Long pin
sizes — 10, 14, 16, 20, 26, 34, 40, 44, 50



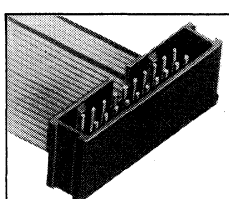
Card-edge
With ears ● without ears
sizes — 20, 26, 34, 40, 50, 60



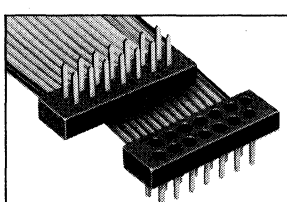
DIP
sizes — 8, 14, 16, 18, 20, 24, 28, 40
mirror image sizes — 16, 18



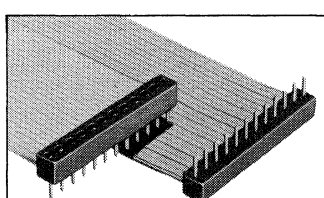
D-Sub Min
sizes — 9, 15, 25, 37
male only size — 19



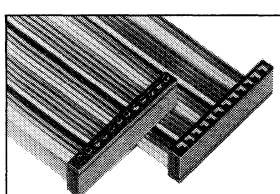
DRP (Dual Row Plug)
With ears ● without ears ● with tab key ● without tab key; sizes — 10, 14, 16, 20, 26, 34, 40, 50



DRB (Dual Row Boards)
sizes — 10, 14, 16, 18, 20, 24, 26, 34, 36, 40, 42, 50, 60



SRB (Single Row Board)
sizes — 8, 9, 10, 11, 12, 13, 14, 20



SRS (Single Row Socket)
sizes — 2, 5, 7, 8, 10, 11, 12, 13, 14, 16, 18, 20, 24, 32

Daisy chains and custom configurations available

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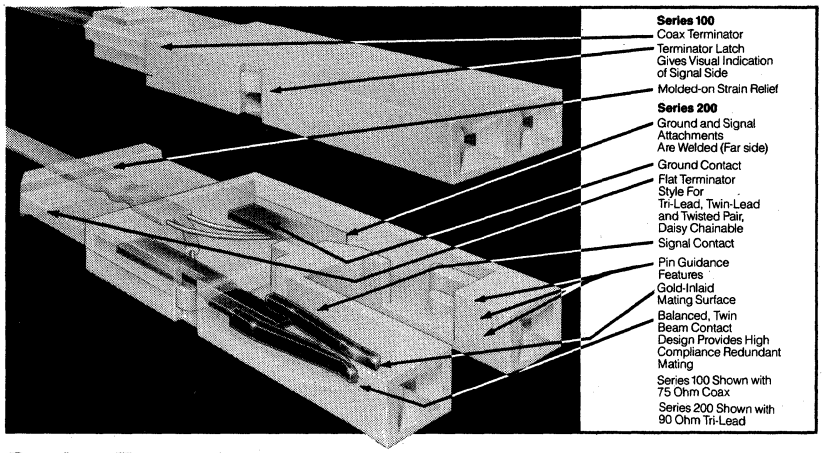
East	Massachusetts	617-449-0300
	New Jersey	609-662-7077
Midwest	Minnesota	612-736-9378
	Ohio	216-354-0925
	Texas	214-324-8100
West	California	415-571-6700
		213-726-6423
		916-893-5010

Interconnect Assembly Systems
3M Associated Electronics Department
72 Corwin Dr., Box 938
Painesville, OH 44077

1020 Marauder St.
Chico, CA 95926

3M Associated Electronics Department

Mono Signal TLA®



3M's single-signal Transmission Line Assembly — TLA — set the industry standard. They allow pluggability of discrete cable runs that require different types of transmission line cable constructions.

Mono Signal TLAs are tough and reliable. Molded strain relief construction allows full strength in a small package. Signal and ground conductors are welded to appropriate contacts and encapsulated as the connector body is molded.

3M's Mono Signal TLAs can also be terminated to several types of BNC connectors that allow cable runs to be plugged onto the backplane while supplying a strong I/O interface.

Design Features:

- Controlled Impedance — The assembly is impedance matched to line driver's gate.
- Minimized Crosstalk — Signal lines are separated by ground wires.
- Reduced Attenuation — The assemblies feature low dielectric current cable for minimal signal attenuation.
- Minimized Rise Time Degradation or Pulse Distortion — Low loss dielectric materials and silver plated conductors help reduce distortion.
- Fully Tested One Piece Construction — Provides integral strain-relief as connector is molded to the cable. Assemblies are 100% tested.
- Modular and Versatile — .100″ and .200″ sizes mate with standard headers. Also available with BNC connectors.
- Fast and Repeatable — Can be used for high-speed signals or as delay line.

Specifications:

Mechanical

Insertion Force	14 oz. nom./contact
Withdrawal Force	8 oz. min./contact
Plating	30 μ″ gold plate/50 μ″ nickel
Insertion/Withdrawal Cycles	50 minimum
Strain Relief Axial Pull	8 lbs. minimum
Mating Device	.025″ ± .001″ pins
Contact Material	Phosphor Bronze Alloy 510 spring temper
Dielectric Materials	Unfilled nylon, white, UL-rated 94 V-O

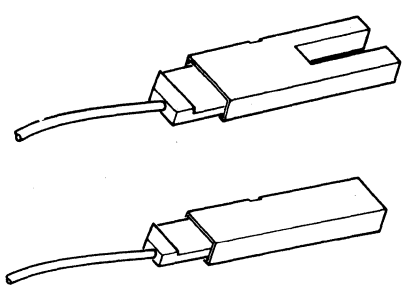
Electrical

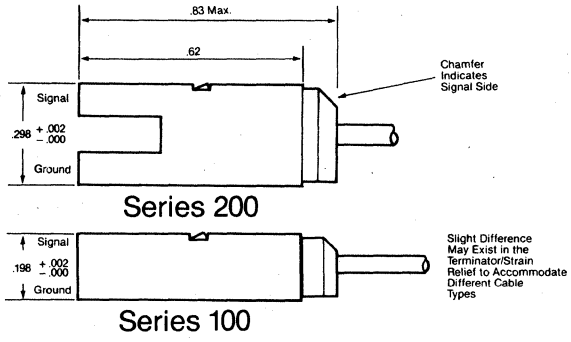
Current	1.0 amp max./contact
Contact Resistance	25 milliohm maximum
Insulation Resistance	5,000 megohms minimum
Dielectric Withstanding Voltage	500 VRMS

Environmental

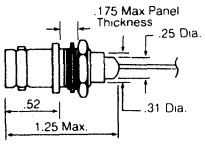
Temperature — PTFE Cable	−60°C to +105°C
Vibration	10 to 2,000 Hz.
Moisture Resistance	25°C to 65°C; 80%-98% R.H.

Single Line Assemblies

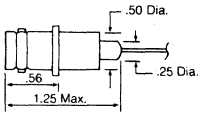




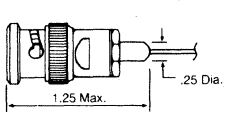
BNC Front Panel Mount Jack W/Isolated Ground



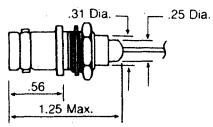
BNC Cable End Jack



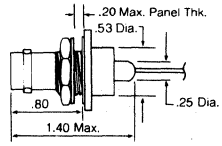
BNC Cable End Plug



BNC Front Panel Mount Jack



BNC Rear Panel Mount Jack



Call 3M today with your high speed interconnect applications.

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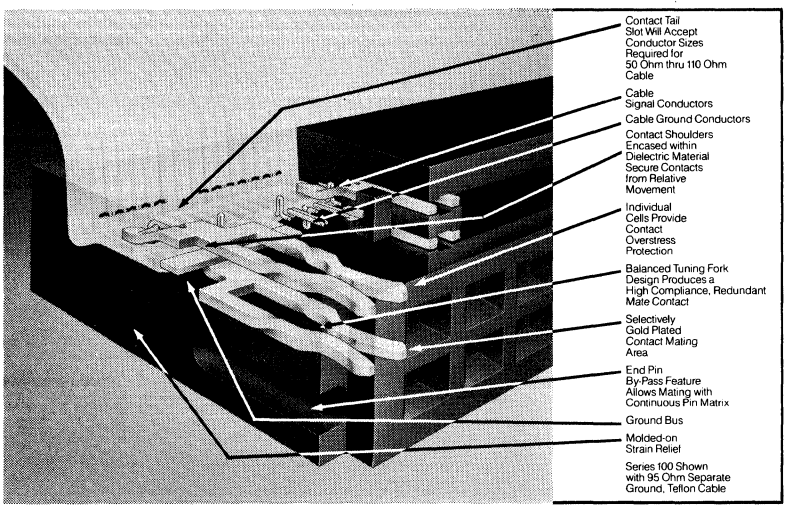
Multiple Signal TLA®



Fast rise times, reduced noise margins and fast switching speeds are all realities of working with today's high-speed digital circuits such as TTL, Schottky TTL and ECL.

Successful systems designers must be acutely aware of noise sources and how to control them. Connector and cable choices are crucial. This is especially true when long assembly lengths are involved, since cross-talk is related to cable length. 3M's Multiple Signal Transmission Line Assembly — TLA — is the perfect match for these high performance logic families.

The TLA system is a connector/cable interconnect assembly designed exclusively to maximize signal fidelity by controlling areas commonly associated with noise generation.

Design Features:

- Controlled Impedance — TLA assembly is impedance matched to line driver's gate.
- Minimized Crosstalk — Signal lines are separated by ground wires which are adjacent to, but isolated from signal lines.
- Reduced Propagation Delay/Attenuation — The assemblies feature low dielectric current cable for high-speed signals and minimal signal attenuation.
- Minimized Rise Time Degradation or Pulse Distortion — Low loss dielectric materials and silver plated conductors help reduce distortion.
- Advanced Design Ground Bus Connector — All grounds are bussed common within the connector, can exit at any selected positions.
- Fully Tested One Piece Construction — Provides integral strain-relief as connector is molded to the cable. Assemblies are 100% tested.
- Standard Connector Dimensions — .100″ × .100″ socket and .100″ × .200″ socket mates with standard headers. Card-edge also available.

Specifications:

Electrical

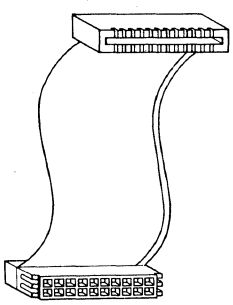
Current	1.0 amp max./contact
Contact Resistance	25 milliohm maximum
Insulation Resistance	5,000 megohms minimum
Dielectric Withstanding Voltage	500 VRMS

Environmental

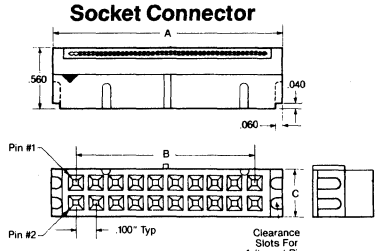
Temperature — PTFE Cable	−60°C to +105°C
Vibration	10 to 2,000 Hz.
Moisture Resistance	25°C to 65°C; 80%-98% R.H.

Mechanical	Socket	Card-Edge
Insertion Force	4 oz. nom./contact	4 oz. nom./contact
Withdrawal Force	1.5 oz. min./contact	2.4 oz. nom./contact
Plating	30 μ″ gold plate/50 μ″ nickel	30 μ″ gold plate/50 μ″ nickel
Insertion/Withdrawal Cycles	100 minimum	
Strain Relief Axial Pull	75 lbs. minimum	75 lbs. minimum
Mating Device	.025″ ± .001″ pins	.060″ PC Board
Contact Material	Copper Alloy CDA 77000 spring temper	Copper Alloy CDA 77000 3/4 hard
Dielectric Materials	Polyester thermoplastic, black, UL-rated 94 V-O	Polyester thermoplastic, black, UL-rated 94 V-O

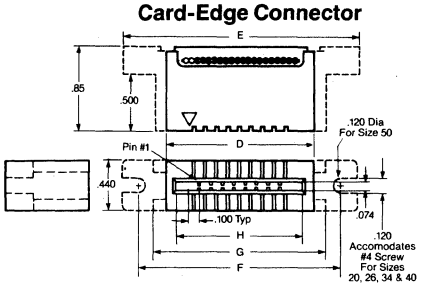
Multiple-Signal Assemblies



Socket Connector



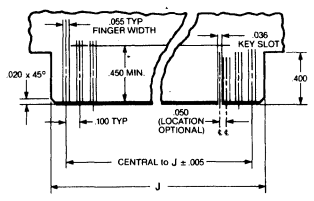
Card-Edge Connector



Connector Sizes Socket/Card-Edge

Size	Socket			Card-Edge					
	A	B	C	D	E	F	G	H	J
10	.660	.400							
20	1.160	.900	.240″ for	1.290	2.000	1.800	1.500	1.104	1.095
26	1.460	1.200	Series 100	1.590	2.300	2.100	1.800	1.404	1.395
34	1.860	1.600		1.990	2.700	2.500	2.200	1.804	1.795
40	2.160	1.900		2.290	3.000	2.800	2.500	2.104	2.095
44	2.360	2.100	.340″ for						
50	2.660	2.400	Series 200	2.790	3.900	3.400	3.000	2.604	2.595
60	3.160	2.900							

Recommended P.C. Board Layout



Call 3M today with your high speed interconnect applications.

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3M Associated Electronics Department — Headers

MALE HEADERS

Direct replacement industry standard .093, .235, .295 and .318 interface headers. Posts are .025" sq. spaced on .100" centers. Thermoplastic dielectric UL Rated 94V-O with copper alloy posts. Choice of tail lengths including wire wrap. Choice of tin plated or selective gold-over-nickel finish. Single row headers can be snapped to length and dual row headers can be cut to length. See ordering instructions below.

MALE HEADERS – STRAIGHT SINGLE ROW Fig. A & Fig. A1

Dim. I	Dim. B	Tin Plated Contact Type	Gold Plated Contact Type
.093	.110	929800-01-36	929805-01-36
.235	.110	929834-01-36	929647-01-36
.235	.410	929834-03-36	929647-03-36
.295	.130	929400-01-36	929450-01-36
.318	.110	929700-01-36	929705-01-36
.318	.125	929700-11-36	929705-11-36
.318	.710	929700-06-36	929705-06-36

MALE HEADERS – STRAIGHT DUAL ROW Fig. B

.093	.110	929810-01-36	929815-01-36
.235	.110	929836-01-36	929665-01-36
.235	.410	929836-03-36	929665-03-36
.318	.110	929710-01-36	929715-01-36
.318	.125	929710-11-36	929715-11-36
.318	.410	929710-03-36	929715-03-36

MALE HEADERS – STRAIGHT THREE ROW Fig. B1

.235	.110	929831-01-36	929663-01-36
.318	.110	929760-01-36	929765-01-36
.400	.110	929230-01-36	929235-01-36

MALE HEADERS – RIGHT ANGLE SINGLE ROW Fig. C & Fig. C1

.235	.105	929835-01-36	929648-01-36
.235	.605	929835-03-36	929648-03-36
.295	.130	929500-01-36	929550-01-36
.318	.105	929730-01-36	929735-01-36
.318	.385	929730-15-36	929735-15-36

MALE HEADERS – RIGHT ANGLE DUAL ROW Fig. D

.235	.105	929838-01-36	929667-01-36
.235	.605	929838-03-36	929667-03-36
.318	.105	929740-01-36	929745-01-36

MALE HEADERS – RIGHT ANGLE THREE ROW Fig. D1

.235	.110	929833-01-36	929664-01-36
.318	.110	929770-01-36	929775-01-36
.400	.110	929270-01-36	929275-01-36

FEMALE HEADERS

Female Headers mate with standard .025" round or square post male headers on .100" centers. Thermoplastic dielectric UL Rated 94V-O with copper alloy contacts. Choice of tin plated or selective gold-over-nickel finish.

FEMALE HEADERS – STRAIGHT SINGLE ROW Fig. E & Fig. F

Dim. A	Dim. B	Tin Plated Contact Type	Gold Plated Contact Type
.150	.125	929984-01-36	929870-01-36
.325	.125	929974-01-36	929850-01-36

FEMALE HEADERS – STRAIGHT DUAL ROW Fig. G & Fig. H

.150	.125	929985-01-36	929872-01-36
.325	.125	929975-01-36	929852-01-36

FEMALE HEADERS – STRAIGHT THREE ROW Fig. H1

.325	.125	929976-01-36	929853-01-36

MIDGIE®

Miniature shunt for plug-on programming eliminates costly DIP switches and soldering. The Low-Profile design is fully stackable and is ideal for high-density applications. Mates with standard .025" round or square posts on .100" centers. Choice of unplated finish or 10 microinch gold-over-nickel plating.

MIDGIE FEMALE 2 – POSITION JUMPER Fig. I

Color	Unplated Contact Type	Color	Gold Plated Contact Type
Black	929950-00	Blue	929955-06

HOW TO ORDER:
To order full length headers (30 or 36 pins per row) use the part number shown above. To order less than 30 or 36 pins per row: change last 2 digits to number required.

Example: 929647-01-20

Example indicates 20 pins per row.

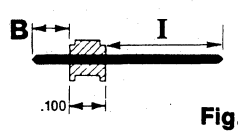


Fig. A

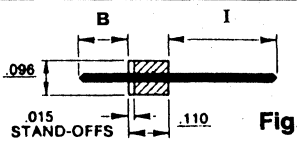


Fig. A-1

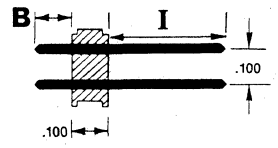


Fig. B

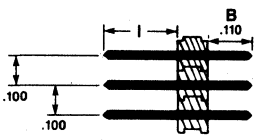


Fig. B-1

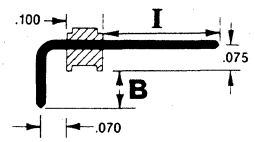


Fig. C

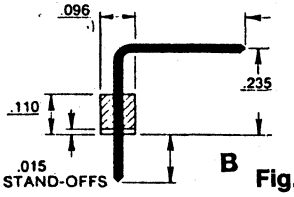


Fig. C-1

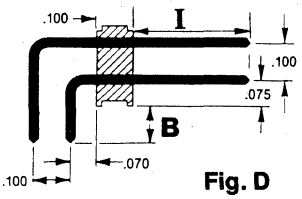


Fig. D

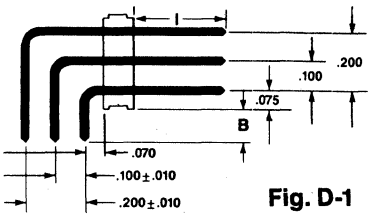


Fig. D-1

Fig. E

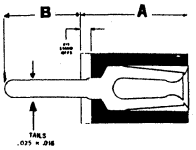


Fig. F

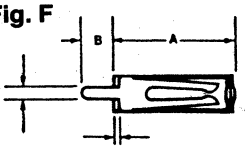


Fig. G

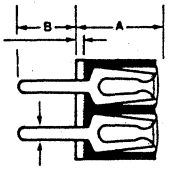


Fig. H

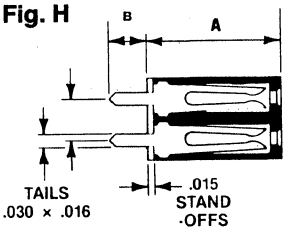


Fig. H-1

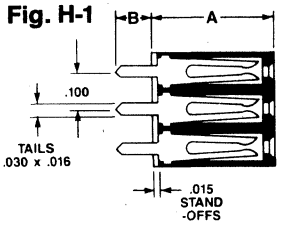
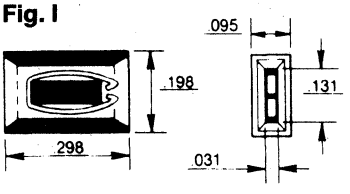
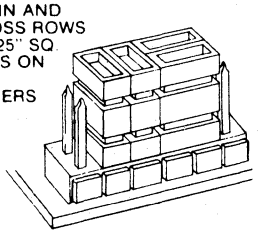


Fig. I



FULLY STACKABLE WITHIN AND ACROSS ROWS OF .025" SQ POSTS ON .100" CENTERS



Board Mount Interconnect Components
3M Associated Electronics Department

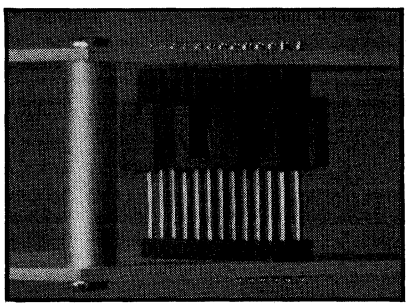
9450 Pineneedle Drive
Mentor, Ohio 44060
800-792-0137 outside Ohio (216) 354-9239 in Ohio

3M Associated Electronics Department — Board Stacking Systems

Board Stacking Systems from 3M eliminate the need for time consuming, expensive customization for board-to-board interconnection. Six standard configurations provide all the flexibility you'll need. Stack boards as close as a quarter inch or as wide as an inch with our standard systems. Choose gold plated or tin plated contacts. Some types allow up to 72 positions per system.

These modular building blocks eliminate the guesswork and custom requirements associated with board stacking of the past. You get electrical integrity at lower cost with popular off-the-shelf configurations.

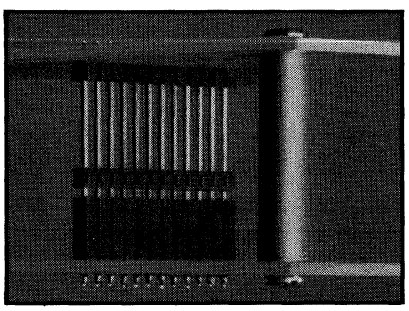
Note: Components not intended to be used as board spacers.



Dual Row Pin Strip with Shroud/Board Mounted Socket System.

Two pieces make up this system. Available in ten sizes from 10 to 60 positions, the dual row pin strip with shroud allows spacing from 7/16″ to 1″. The dual row pin strip with shroud is mated with a matching board mounted socket. The shrouded header assures positive alignment to the board mount socket. The pin strips are soldered to the PC Boards. Headers can be plugged and unplugged.

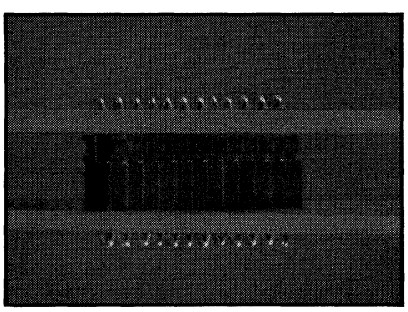
Design Features
- Choice of 5 standard stacking surface to surface dimensions.
- Choice of tin-plate or selective gold plating.
- 100″ standard spacing between all contacts and posts.
- Available with shroud on pin strip header in 10, 14, 16, 20, 26, 34, 40, 50, 60, and 64 positions.
- Assures positive alignment to board mount socket.



Pin Strip Header/Board Mounted Socket System.

The two piece pin strip/board mounted socket combination is available in both double row and single row configurations. Both pin strip and board mounted socket are soldered to the opposing boards and plug in between. Five standard spacing dimensions permit placement of boards from 7/16″ to 1″ apart. Single row systems are available with up to 36 positions and dual row systems accommodate up to 72 positions.

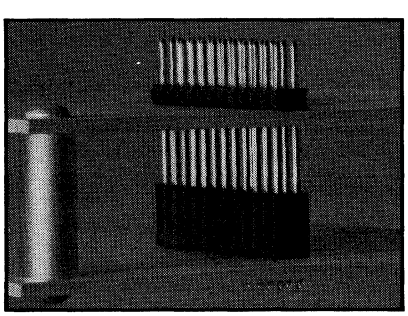
Design Features
- Choice of 5 standard stacking surface to surface dimensions.
- Choice of tin-plate or selective gold plating.
- .100″ standard spacing between all contacts and posts.
- Available in 1 to 36 positions per row.



Low Profile Pin Strip/Low Profile Board Mounted Socket System.

The two piece low profile board mounted socket to single insulator pin strip header system is available in single row systems only. Both headers are soldered to the opposing boards and plug in between. Three sizes include 1/4″, 5/16″ and 3/8″ spacing. The system is available with up to 36 contacts.

Design Features
- Choice of 3 standard stacking surface to surface dimensions.
- Choice of tin-plate or selective gold plating.
- .100″ standard spacing between all contacts and posts.
- Available in 1 to 36 positions.
- Provides low profile stacking capability.



Top Mount Pin Strip/Board Mounted Socket System.

The two piece top mount pin strip/board mounted socket system mates a pin strip to a board mounted socket, board-to-board, with contacts extending through the top side of the board holding the pin strip. This allows not only the board-to-board connection but the connection of an IDC socket to the top mount pin strip header. Board-to-board spacing of 3/8″ to 7/8″ is available with a .235″ standard pin length on the top mount pin strip. Single row systems are available with up to 36 positions and dual row systems accommodate up to 72 positions.

Design Features
- Allows for parallel mating of up to 3 printed circuit boards or cable to 2 PC boards
- Choice of 5 standard stacking surface to surface dimensions.
- Choice of tin-plate or selective gold plating.
- .100″ standard spacing between all contacts and posts.
- Available in 1 to 36 positions per row.

Materials
Insulator: Glass filled polyester; color — black; UL-rated — 94 V-O
Contacts: Full Hard Copper Alloy CA 764

Contact Finish Options: 100 μ inch 90/10 tin plate; 10, 15 or 30 μ inch selective gold plate over nickel on contact post; 100 μ inch 90/10 tin on solder tails.

Board Mount Interconnect Components
3M Associated Electronics Department
9450 Pineneedle Drive
Mentor, Ohio 44060
800-792-0137 outside Ohio
(216) 354-9239 in Ohio

Beau® Barrier Terminal Strips

CONSIDER THE ADVANTAGES OF BEAU THERMOPLASTIC STRIPS

Beau thermoplastic strips offer many significant advantages. The strong, resilient barriers. The quality and uniformity of the product. Our determined commitment to engineering excellence. And, with our large selection, you're sure to find the strip you need. Design in or cross over to Beau thermoplastic strips—the advantage is yours.

BEND BARRIERS WITHOUT BREAKING

Resilient thermoplastic reduces breakage dramatically. Production line and in-field damage are virtually eliminated.

TERMINAL TAILS ENCLOSED

Cavities are eliminated around solder terminal tails. Allows mounting on PCB without affecting circuit isolation. Eliminates entrapment of foreign matter. Reduces solder wicking.

CLOSED-SIDE STRIPS OFFER EXTRA PROTECTION

Closed side serves as a wire stop. Permits mounting components close to strip without shorting. Wires or screwdrivers can't pass through closed side to contact other wires, leads or PCB components.

HIGHEST U.L. RATING

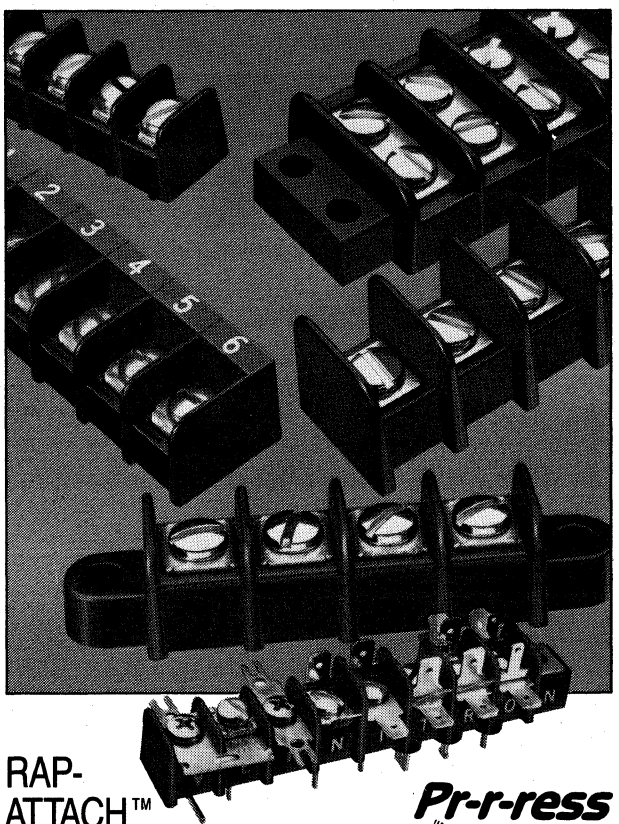
Our thermoplastic materials all carry the highest U.L. flame retardant rating: UL 94V-0 (self-extinguishing).

NEAT, ACCURATE MOUNTING ENDS

All our thermoplastic strips are molded to length. None are cut down from longer strips. They're neater, without ugly saw cuts. And they are precisely the same length every time.

WIDE VARIETY OF TERMINALS

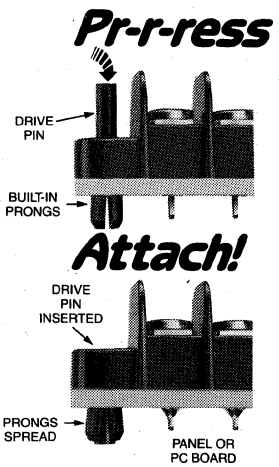
There is a broad selection of top-side and bottom terminals—including quick-connect terminals which speed assembly time, cut costs and improve connections.



RAP-ATTACH™ MOUNTS SAVE 40% OF INSTALLED COST

Rap-Attach mounts (option) are the rapid new way to attach barrier terminal strips to PCBs or panels. Just press in the drive pins. The built-in prongs spread like a blind rivet. It's so easy, you can cut installed cost dramatically.

Non-conductive mounting.
Strain-free joints.
Wave solderable.



U.L. RECOGNIZED. CSA CERTIFIED.

	SINGLE-ROW						SINGLE-ROW, CLOSED SIDE			DOUBLE-ROW		
Series No.	61000	70000	71000	72000	73000	74000	60000	69000	75000	76000	77000	78000
Terminal ctrs	¼"	.325"	⅜"	⅜"	7/16"	7/16"	¼"	.325"	⅜"	⅜"	⅜"	7/16"
Current (UL)	10A	20A	20A	20A	20A	20A	10A	20A	20A	20A	20A	20A
Volts rms (UL)												
Gen Indl	150	150	150	150	300	300	150	150	150	150	150	300
Comml	250	250	250	250	250	250	250	250	250	250	250	250
Width	.55"	.50"	.63"	.63"	.75"	.63"	.55"	.60"	.68"	.88"	.88"	1.13"
Height	.50"	.50"	.56"	.66"	.75"	.58"	.50"	.50"	.56"	.63"	.44"	.55"
No. circuits	1-32	1-30	1-26	1-26	1-30	1-30	1-32	1-30	1-26	2-30	2-30	1-30
Back types	Feed thru; closed						Feed thru; closed			Feed thru; closed		

VERNITRON CORPORATION

BEAU PRODUCTS DIVISION
Dept. A5-5, Box 10, Laconia, New Hampshire 03247
TWX: 710-364-1843 FAX: 603-524-1627

For immediate action, call:
(603) 524-5101

Beau® Barrier Terminal Strips

VERSATILE PHENOLIC STRIPS CROSS WITH THE POPULAR SIZES.

Vernitron offers one of the widest lines of phenolic barrier terminal strips available anywhere—and we have a wide variety of options to go with them. We have all the most popular sizes and styles. Compare our quality, price and lead times—we think you'll cross over to Beau.

SINGLE-ROW STRIPS IN MANY STYLES

Series 12000 and 13000 have high-impact glass-filled phenolic bases for excellent breakage resistance; color, green. The other single-row series are made of general-purpose phenolic; color, black. All styles are available with a wide choice of terminals, marker/insulation strips, imprinting, with or without mounting ends, and many other options.

DOUBLE-ROW STRIPS RANGE FROM 10 TO 50 AMPS

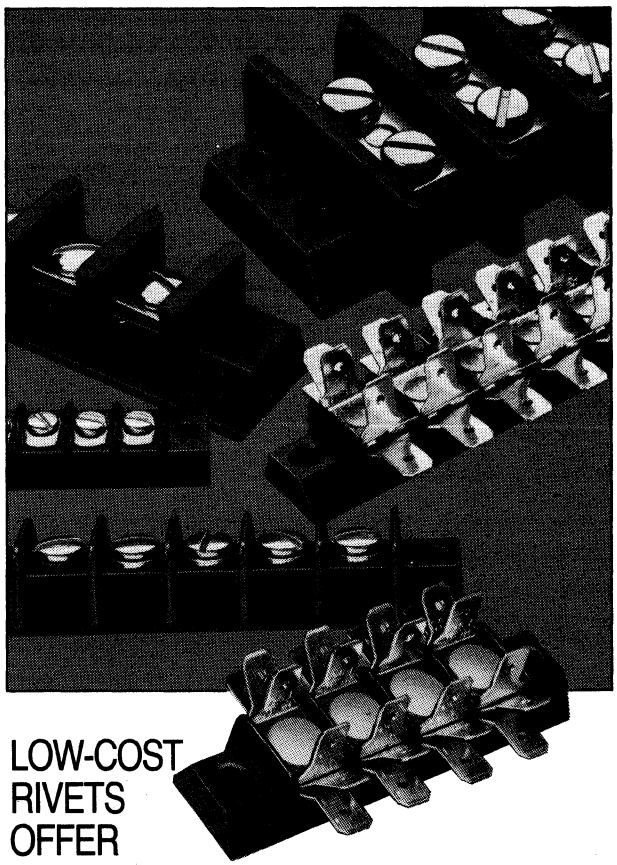
Available in general-purpose phenolic; color, black. Wide choice of terminal styles, marker/insulation strips, imprinting, with or without mounting ends, and many other options.

WIDE VARIETY OF TERMINALS

There is a broad selection of top-side and bottom terminals —including quick-connect terminals which speed assembly time, cut costs and improve connections.

OUR HIGHEST CURRENT STRIP

Series 28000 is rated at 50 A. It's our highest current strip. Series 28000 is a direct cross with series 603.



LOW-COST RIVETS OFFER GREATER SECURITY

Four series of single-row strips come with either screw or rivet (option) construction. Low-cost rivets are vibration resistant and offer greater in-field security. These strips are exact replacements for the styles shown in the table below.

Beau Series	23000	24000	25000	26000
Replaces	411,511	599, 799	699, 899	812, 912

U.L. RECOGNIZED.
CSA CERTIFIED.

AVAILABLE WORLDWIDE through agents in Canada, England, Europe, Japan, Taiwan, and other Far Eastern countries.

	SINGLE-ROW		SINGLE-ROW, SCREWS OR RIVETS				DOUBLE-ROW						
Series No.	12000	13000	23000	24000	25000	26000	10000	14000	18000	19000	21000	22000	28000
Terminal ctrs	3/8"	7/16"	1/4"	3/8"	7/16"	9/16"	1/4"	3/8"	7/16"	7/16"	9/16"	9/16"	11/16"
Current (UL)	15A	20A	10A	15A	20A	30A	10A	15A	20A	20A	30A	30A	50A
Volts rms (UL)													
Gen Indl	150	150	150	150	150	150	150	150	300	300	600	600	150
Comml	250	250	250	250	250	250	250	250	250	250	600	600	250
Width	.57"	.73"	.41"	.56"	.69"	.75"	.63"	.88"	1.13"	1.13"	1.31"	1.31"	1.81"
Height	.44"	.55"	.31"	.41"	.50"	.72"	.31"	.41"	.50"	.55"	.63"	.66"	.75"
No. circuits	1-31	1-26	1-22	1-30	1-30	1-18	1-20	1-30	1-30	1-30	1-25	1-26	1-12
Back types	Feed thru; closed		Open				Open			Closed	Open	Closed	Open

VERNITRON CORPORATION

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Dept. A5-5, Box 10, Laconia, New Hampshire 03247
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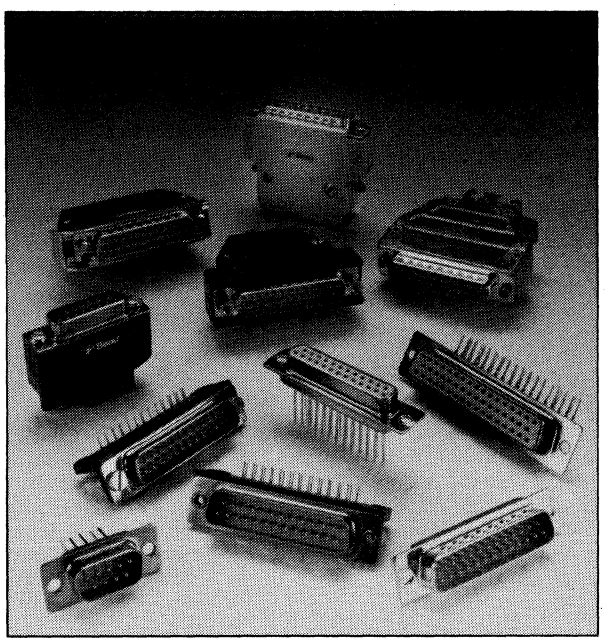
For immediate action, call:
(603) 524-5101

Beau® Interconnection Components

CHOOSE FROM A FULL LINE OF D-SUBMINIATURE CONNECTORS



Vernitron offers you a full line of high quality, highly reliable Beau D-subminiature connectors, including the new Theta-D series designed especially for PCBs.

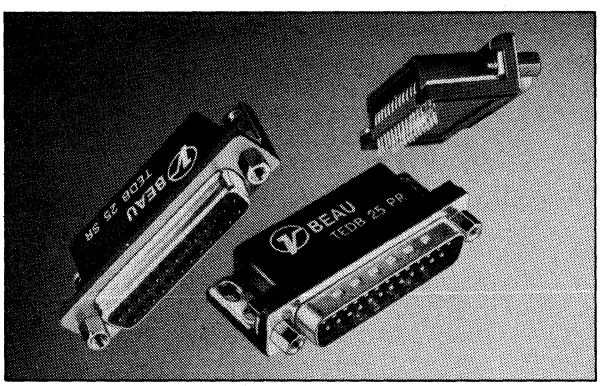
Beau D-subminiature connectors are fully compatible with all industry-standard D-subminiature connectors, and are competitively priced. You can choose from our broad line of high-quality machined-contact styles and more economical connectors with machined or stamped contacts. There are flat cable connectors, PC board connectors with a variety of setback options, and much more.

Theta-D: New, low-cost, plastic D-subs for PCBs.

The new, right-angle mounted Theta-D series of D-subminiature connectors is highly reliable, and the pricing is especially attractive. The one-piece design eliminates the need for separate right-angle mounting brackets and the cost of assembly.

Designed specifically for PC board applications, they have an all-plastic housing and metal shell design, and are fully compatible with all D-subminiature connectors.

Setback configurations are .590", in addition to the European .318" style. Several mounting options and grounding arrangements are available.

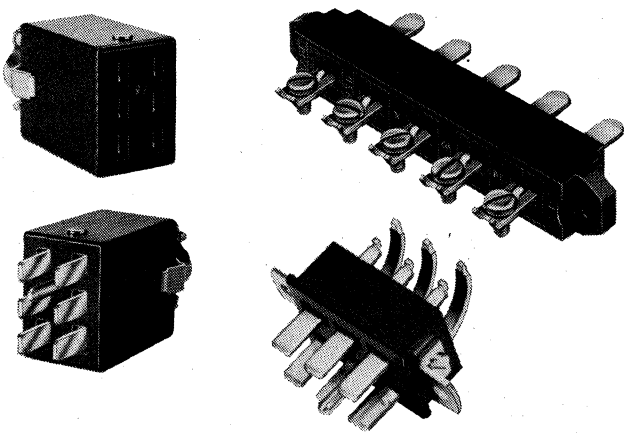


A wide variety of options.

With our broad selection of accessories and options, you're sure to find just what you're looking for. Choose from a variety of contact styles, backshells, and hardware. Choices include locking devices, metal and plastic backshells, right-angle mounting brackets, and cable-clamping options.

PLUG & SOCKET CONNECTORS

From 10 to 60 Amp ratings, Beau connectors offer a number of significant advantages. Differences like standard pregrounding connectors. Rugged, durable blade contacts. Uniform-float contacts that make mating and unmating smooth and sure. Double-wipe contacts. Available in panel and cable-mounting styles.

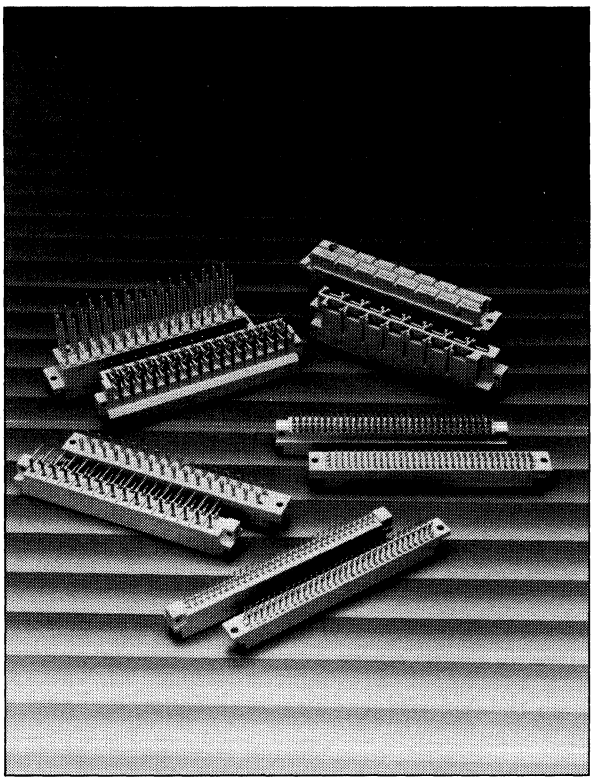


SERIES	AMPS	CONTACTS
3300	10	2-33
5400	15	4-16
5500	40,45,60	2-16
5600	40,45,60	1-5

VERNITRON CORPORATION
BEAU PRODUCTS DIVISION
Dept. A5-5, Box 10, Laconia, New Hampshire 03247
TWX: 710-364-1843 FAX: 603-524-1627
For immediate action, call:
(603) 524-5101

Beau® Interconnection Components

DIN 41612 PC CONNECTORS: MORE CONNECTIONS IN LESS SPACE, FOR LESS MONEY



Vernitron offers DIN 41612 printed circuit connectors that give you economical and highly reliable pin and socket connections to PC boards.

The DIN 41612 connectors also provide much higher contact density than edgeboard PC connectors, while eliminating problems with PC board warpage or variations in thickness. The price per circuit for the DIN connectors is comparable to edgeboard versions, and the amount of gold required on the PC board is greatly reduced.

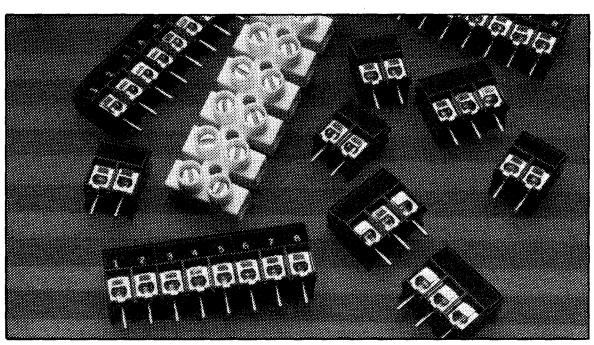
The DIN connectors consist of types B, C, R, D, F, and H, as well as type C connectors for flat cable. They feature contact spacing from .100" to .400", and 11 to 96 contacts, depending on type. All types conform to MIL, DIN, and IEC standards.

New, low-cost contacts.

Types B and C contacts are available with a new bifurcated cantilever option that offers lower cost and lower insertion and withdrawal forces. Tuning fork contact styles are standard.

You can choose from three quality classes of contacts made of copper alloy with hard gold or hard silver-plated finish. Contact tail types include right-angle PC, PC pin, solder lug, wire wrap, wire clamp, and quick-connect.

EUROSTYLE™ TERMINAL STRIPS AND TWO-SCREW TERMINAL STRIPS

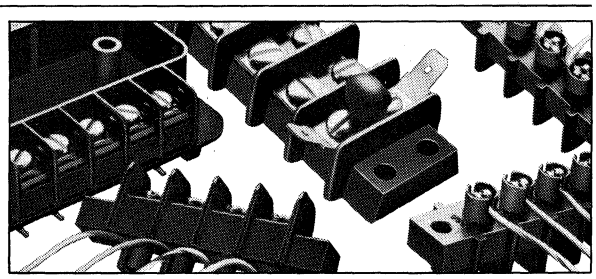


Series 85: These compact, single-row terminal strips are designed especially for PC boards. They can be molded to any length from 2 to 24 positions. Modular in design, they snap together easily while maintaining center-to-center spacing.

The strips have high circuit density (.197" contact spacing), and a very small footprint. Made in USA.

Series C: These two-screw terminal strips also are modular in design. They can be cut into smaller sections with a utility knife, while maintaining center-to-center spacing when installed end to end.

LOW-COST SOLUTIONS TO SPECIAL INTERCONNECTION PROBLEMS



There's almost no limit to the ways we can design cost-saving interconnection devices. By integrating barrier terminal strips with other parts, we can reduce your installed cost. Similarly, blade-type connectors have a wide range of possibilities. We can design for greater electro-mechanical performance, faster assembly, and more. We not only welcome your design problems, we thrive on them.

VERNITRON CORPORATION

BEAU PRODUCTS DIVISION
Dept. A5-5, Box 10, Laconia, New Hampshire 03247
TWX: 710-364-1843 FAX: 603-524-1627

For immediate action, call:
(603) 524-5101

Beau® Reps & Distributors

REPRESENTATIVES

AL	Huntsville	DHR Marketing, Inc	205-533-5165
AR	Little Rock	Erickson Sales, Inc	501-455-0618
AZ	Phoenix	The Knight Co	602-582-8506
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NJ	Cherry Hill	Trinkle Sales, Inc	609-795-4200
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AZ	Tempe	Harper SID	602-967-1464
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CA, SO	Anaheim	Control Design Sup	714-821-1516
CO	Denver	Integrated Elex	303-292-5537
CO	Englewood	Ragon Electronics	303-762-0670
CT	Hartford	Atlantic Switch	203-527-7705
CT	Wallingford	Mid State Elex	203-265-9900
CT	Wallingford	Sager Elex	203-265-4600
FL	Alamonte Springs	Control Design Sup	305-788-3220
FL	Miami	Electronic Equip	305-871-3500
FL	Tampa	Sunex Elex	813-885-4074
FL	Lakeland	Switch Controls	813-644-7564
GA	Stone Mountain	Control Design Sup	404-979-3500
GA	Doraville	Specialty Dist	404-448-4004
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IL	Chicago	Newark Electronics	312-638-4411
IL	Peoria	Klaus Radio	309-691-4840
IN	Indianapolis	Control Design Sup	317-788-4559
IN	Fort Wayne	Graham Electric	219-423-3422
IA	Marion	Control Design Sup	319-373-2923
IA	Cedar Rapids	Dee Electronics	319-365-7551
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KY	Louisville	P I Burks	502-589-3960
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LA	Baton Rouge	Industrial Elex	504-357-4244
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MI	Grand Rapids	S-F Elec Sup Inc	616-459-0216
MI	St Clair Shores	SPEMCO	313-771-2700
MN	Minneapolis	Control Design Sup	612-721-1628
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MO	Kansas City	Walters Radio	816-531-7015
MO	St Louis	Van Sickle	314-621-5000
NV	Reno	Walker Distrib	702-323-2766
NH	Hudson	C & H Elex	603-882-1133
NJ, NO	Hanover	State Electronics	201-887-2550
NJ, SO	Camden	General Radio	609-964-8560
NM	Albuquerque	Electronic Parts	505-243-6161
NM	Albuquerque	Walker Electronics	505-883-2992
NY, Metro	Bohemia	Key Components	516-567-7500
NY, Metro	Mt Vernon	QAR	914-699-2224
NY, Metro	Hauppauge	Sager Electronic	516-348-1300
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NY, Upstate	Buffalo	Summit	716-884-3450
NY, Upstate	Albany	E E Taylor	518-438-7813
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NC	Raleigh	Southeastern Elex	919-828-2311
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OH	Cleveland	Roberts Electric	216-238-1711
OK	Tulsa	Carlton Bates	918-850-1626
OK	Tulsa	Radio Inc	918-587-9123
OR	Beaverton	Component Resources	503-641-8488
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PA	Malvern	Control Design Sup	215-296-0150
PA	Allentown	P A Peters	215-434-5237
PA	Wayne	PEAK	215-293-9000
PA	Philadelphia	Shap	215-969-3300
PA	Philadelphia	PEI	215-568-7400
RI	Providence	Wm Dandretta	401-861-2800
RI	Pawtucket	Major/Edwards	401-781-8000
SC	Greenville	Hamond	803-233-4121
SC	Charleston	Wholesale Ind Elec	803-722-2634
TN	Memphis	Bluff City	901-345-9500
TN	Chattanooga	Curle Electronics	615-266-4727
TN	Knoxville	Bondurant Bros	615-573-9151
TX	Dallas	Control Design Sup	214-358-1441
TX	Addison	Connec/Tek	214-733-4411
TX	Corpus Christi	Douglas Elect	512-883-5103
TX	San Antonio	Sherman Elec	512-224-1004
TX	El Paso	Ideal/Ind Elec	915-779-6647
TX	Houston	Wofford Elex	713-847-3583
UT	Salt Lake City	Kimball	801-328-2075
UT	Salt Lake City	Standard	801-486-3371
VA	Charlottesville	VEC	804-296-4184
WA	Bellevue	Intergrated Elex	206-455-2727
WA	Seattle	Radar	206-282-2511
WV	Huntington	State Electric Sup	304-523-7491
WI	New Berlin	Control Design Sup	414-784-1015

VERNITRON CORPORATION
BEAU PRODUCTS DIVISION
Dept. A5-5, Box 10, Laconia, New Hampshire 03247
TWX: 710-364-1843 FAX: 603-524-1627
For immediate action, call:
(603) 524-5101

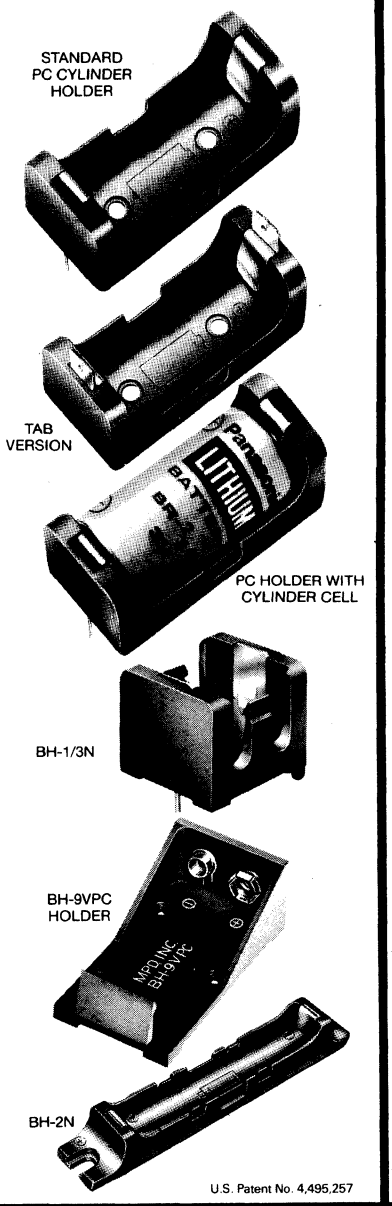
BATTERY HOLDERS

For Lithium, NiCd, Carbon, Carbon-Zinc & Alkaline Cells.

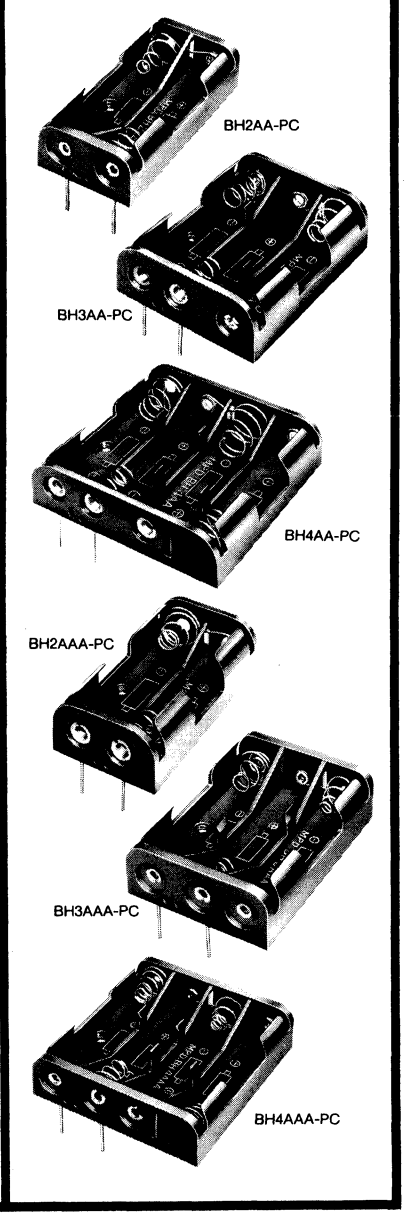
NEW POSITIVE CONTACT



U.S. Patent No. 4,487,820



U.S. Patent No. 4,495,257



FOR MEMORY BACK-UP SYSTEMS

COIN CELL SERIES

Printed circuit board-mounted lithium coin cell battery holders eliminate the need for permanent solder tab mounting of cells. Unique molded design permits easy insertion and removal of battery without desoldering or special tools. Fits 3-volt coin cells: sizes 12mm, 20mm, 23mm and 24mm. UL flammability rating — UL94V-0.

HORIZONTAL SERIES

Fits 3-volt lithium and other horizontal cells: sizes 2/3A, 1/2AA, AA, C, 2N and 1/3N, 9 volt batteries, too. Simple PC board mounting with fast-on tab terminals for hardware soldering and eyelet mounting. UL94V-0 rating.

BATTERY PACK SERIES

Three styles: PC (Printed Circuit), W (Wire), SF (Snap Fastener, male/female terminals). Fits all AA and AAA type cells, 2, 3 and 4 cell capacity. Corrosion-free nickel plated contacts; impact-resistant nylon #6, UL flammability rating — UL94V-2.

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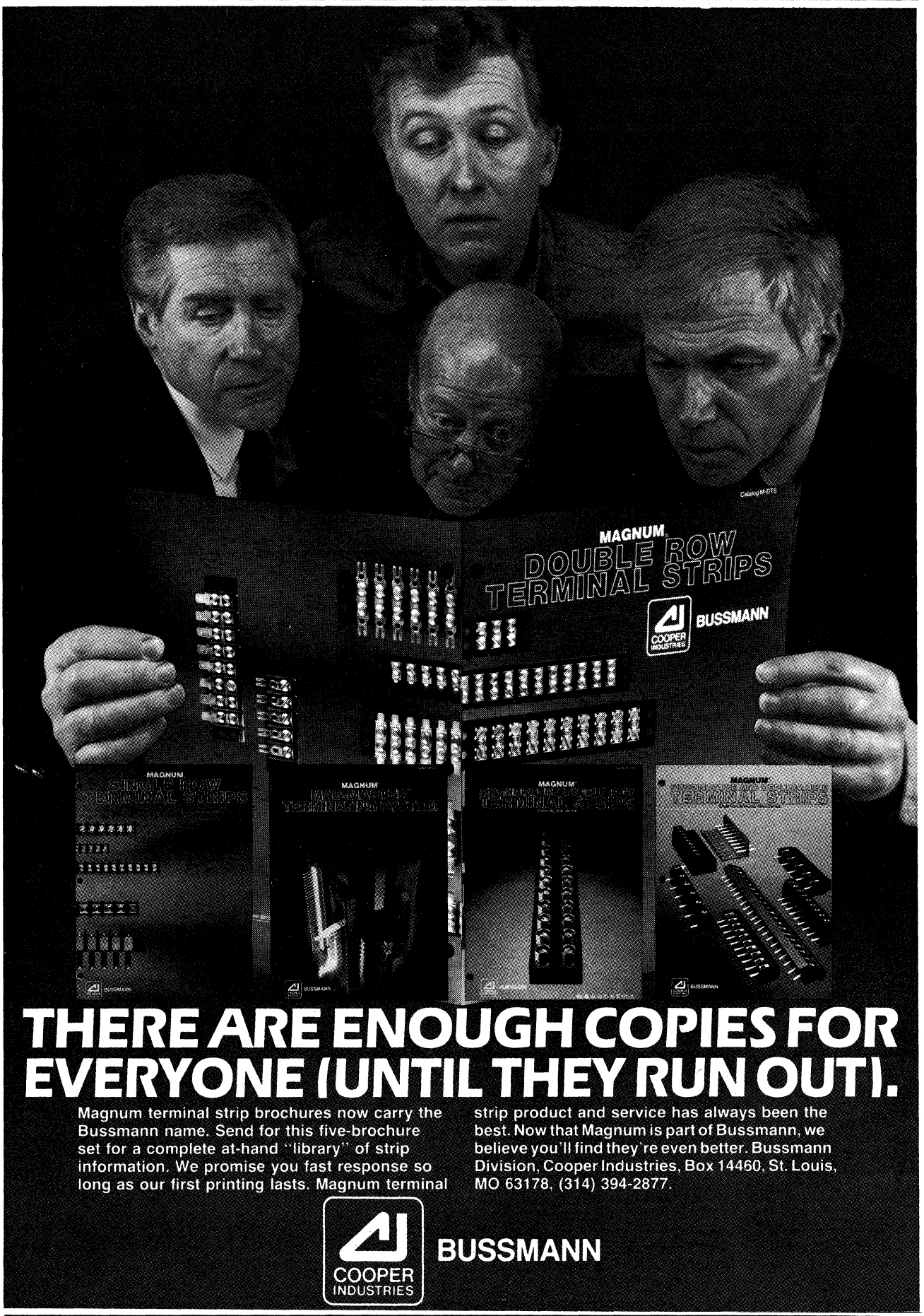


THERE ARE ENOUGH COPIES FOR EVERYONE (UNTIL THEY RUN OUT).

Magnum terminal strip brochures now carry the Bussmann name. Send for this five-brochure set for a complete at-hand "library" of strip information. We promise you fast response so long as our first printing lasts. Magnum terminal strip product and service has always been the best. Now that Magnum is part of Bussmann, we believe you'll find they're even better. Bussmann Division, Cooper Industries, Box 14460, St. Louis, MO 63178, (314) 394-2877.

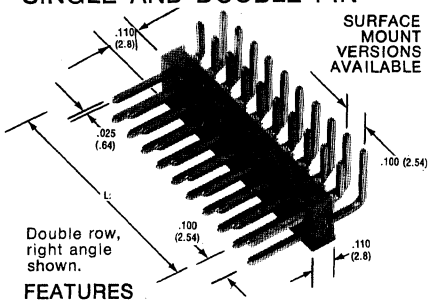
COOPER INDUSTRIES

BUSSMANN

Carrot Components Corporation
750 W. Ventura Blvd. / Camarillo, CA 93010 / (805) 484-0540 / TWX: 910-336-1237

INSULATION DISPLACEMENT CONNECTORS

HEADERS
UNPROTECTED (PIN STRIPS) SINGLE AND DOUBLE PIN



FEATURES
- Drawn pins provide smooth non-abrasive surfaces
- Straight and right angle solder terminals
- Compatible with other leading manufacturers
- Mates with any .100″ (2.54 mm) grid socket
- End-to-end butting without grid loss

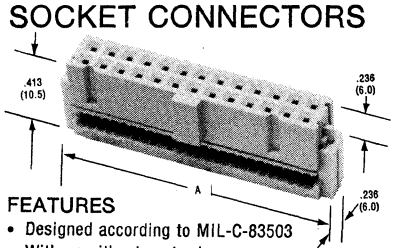
ELECTRICAL SPECIFICATIONS

Current Rating:	5 A
Contact Resistance:	≤ 4 mΩ pin/socket
Insulation Resistance:	> 5 GΩ
Proof voltage:	1500 V
Humidity Resistance:	MIL-C-21097 B DIN 40040

MECHANICAL SPECIFICATIONS

Insulation Material:	Polyamid
Pins:	Springhard copper alloy
Contact Plating:	50 μ inch nickel all over, contact area, 15 μ inch gold acc. to MIL-G-45204 class 0 solder tail tin
Terminations:	Solder pins
Temperature Rating:	−65°C to +105°C

SOCKET CONNECTORS



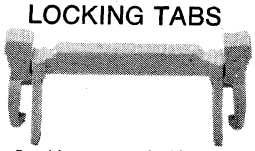
FEATURES
- Designed according to MIL-C-83503
- With or without center key
- Compatible with other leading manufacturers
- Mates with header pins .025″ or .031″
- Feedthrough covers permit chain interconnections
- Available with or without strain relief
- Dual polarization

MATERIALS & FINISHES

Moldings:	Glass-filled polyester. UL flammability rating 94 V-O
Contacts:	Be Cu
Contact Plating:	50 μ inch (1.25 μ m) nickel all over. 20 μ inch (0.5 μ m) gold at plug area - others flash gold or IDC-part tin.

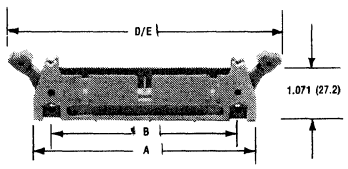
# of Pos.	A inch	A mm
10	.681	17.3
14	.882	22.4
16	.980	24.9
20	1.181	30.0
26	1.480	37.6
34	1.882	47.8
40	2.181	55.4
50	2.681	68.1

STRAIN RELIEF LOCKING TABS



- Provides secure locking of sockets into low profile headers
- Short travel of locking tabs permits dense board layouts
- Locking tabs also serve as removal tabs

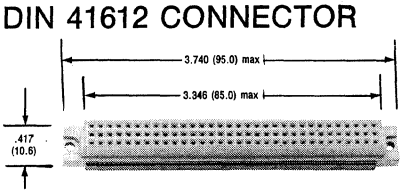
HEADERS
PROTECTED HEADERS



FEATURES
- Designed according to MIL-C-83503
- Straight and right angle flow solder terminals
- Positive locking/ejection latches
- Shielded on all four sides for polarization and contact protection
- Polarizing keys for correct socket alignment without contact loss
- Deep stand-off pads prevent trapping of flux or solvent between header and PCB
- Compatible with other leading manufacturers
- Wire wrappable posts available
- Drawn pins provide smooth non-abrasive surfaces

# of Pos.	Dimensions A	B	D	E
10	1.260 (32.0)	0.858 (21.8)	1.890 (48.0)	2.047 (52.0)
14	1.460 (37.1)	1.063 (27.0)	2.090 (53.1)	2.248 (57.1)
16	1.559 (39.6)	1.165 (29.6)	2.189 (55.6)	2.346 (59.6)
20	1.760 (44.7)	1.358 (34.5)	2.390 (60.7)	2.547 (64.7)
26	2.059 (52.3)	1.661 (42.2)	2.689 (68.3)	2.846 (72.3)
34	2.461 (62.5)	2.063 (52.4)	3.091 (78.5)	3.248 (82.5)
40	2.760 (70.1)	2.362 (60.0)	3.390 (86.1)	3.547 (90.1)
50	3.260 (82.8)	2.862 (72.7)	3.890 (98.8)	4.047 (102.8)

DIN 41612 CONNECTOR



FEATURES
- 4 point conductor to connector contact
- Twin cantilever socket contact
- Designed to mate with 96 position DIN 41612 Type C male connectors with contacts in rows a + c only
- Feedthrough covers permit chain interconnection
- Available with or without strain relief
- Contact alignment plate prevents damage to terminations by limiting pin insertion depth
- Compatible with other leading manufacturers

ELECTRICAL SPECIFICATIONS

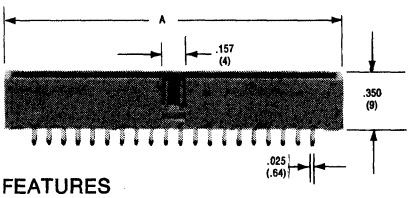
Current Rating at 25°C:	1.0 A max. per contact with 30 AWG and 28 AWG conductors 1.5 A max. per contact with 26 AWG conductors
Proof Voltage (Sea Level):	1000 V DC or AC peak.
Insulation Resistance:	>5.0 Gohms
Contact Resistance:	8.0 mohms max.

MATERIALS & FINISHES

Moldings:	Glass-filled polyester. UL flammability rating 94 V-O
Contacts:	Copper based alloy
Contact Plating:	Socket: 50 μ inch (1.25 μ m) nickel all over. 20 μ inch (0.50 μ m) gold at plug area - others flash gold or IDC-part tin.

HEADERS
LOW PROFILE

SURFACE MOUNT VERSIONS AVAILABLE



FEATURES
- Drawn pins provide smooth non-abrasive surfaces
- Straight and right angle solder terminals
- Shielded on all four sides for polarization and contact protection
- Deep stand-off pads prevent trapping of flux or solvent between header and PCB
- Compatible with other leading manufacturers

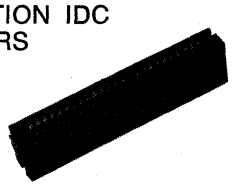
MATERIALS & FINISHES

Moldings:	Glass-filled polyester. UL flammability rating 94 V-O
Contacts:	Copper based alloy
Contact Plating:	50 μ inch (1.25 μ m) nickel all over. 15 μ inch (0.375 μ m) gold at plug area - others flash gold or solder parts
Polarizing Keys:	tin. Glass-filled polyester

# of Pos.	A inch	A mm
10	.8	20.3
14	1.0	25.4
16	1.1	27.9
20	1.3	33.0

# of Pos.	A inch	A mm
26	1.6	40.6
34	2.0	50.8
40	2.3	58.4
50	2.8	71.1

CARD EDGE
10-64 POSITION IDC CONNECTORS



FEATURES
- Directly accepts 0.05″ (1.27mm) cable
- Accepts standard industry cable sizes
- Molded alignment grooves for accurately locating cable during assembly
- Pre-loaded spring contacts maintain contact forces on PC boards .002″ (.054mm) to .003″ (.071mm) thick
- Strain relief optional for most sizes
- Bifurcated contacts

ELECTRICAL SPECIFICATIONS

Working Voltage:	230 V AC RMS, 330 V DC
Current Rating at 25°C:	1.0 A Max.
Dielectric Withstanding Voltage (Sea Level):	500 V AC, RMS
Insulation Resistance:	>5.0 Gohms
Contact Resistance:	<30 mohms

MATERALS & FINISHES

Contacts:	Glass-filled polester. UL flammability rating 94V-0
Contact Plating:	Beryllium Copper
Moldings:	Tin alloy IDC tines, 30 μ inch (0.75 μ m) gold at board contact area, over 50 μ inch (0.75 μ m) nickel

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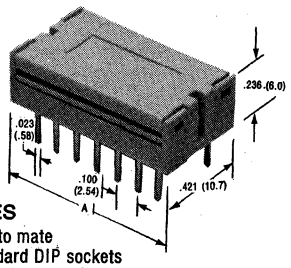
750 W. Ventura Blvd. / Camarillo, CA 93010 / (805) 484-0540 / TWX: 910-336-1237

INSULATION DISPLACEMENT CONNECTORS

DUAL IN-LINE PRODUCTS

DIP PLUGS & SOCKETS



FEATURES
- Designed to mate with standard DIP sockets
- Feedthrough covers permit chain interconnections
- Compatible with other leading manufacturers
- Available with or without strain relief/locking latch which also polarizes the connector
- Matching socket and header

MATERIALS & FINISHES

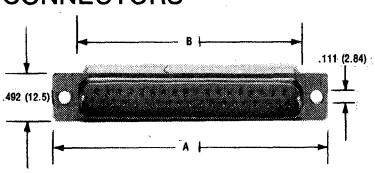
Molding: Glass-filled polyester. UL flammability rating 94 V-O
Contacts: Copper based alloy
Contact Plating: 50 μ inch (1.25 μ m) nickel all over. 150 μ inch (4.0 μ m) tin/lead.

# of Pos.	A inch	A mm
10	.567	14.4
14	.768	19.5
16	.870	22.1

NOTE: Consult factory for additional sizes.

"D" SUBMINIATURE

9-50 POSITION IDC CONNECTORS



FEATURES
- Accepts directly 0.05" (1.27 mm) pitch cable
- Feedthrough covers permit chain interconnection
- Metal shell protection at mating interface
- Available with or without strain relief
- Male and female connectors
- Compatible with other leading manufacturers
- Mating interface dimensions as IEC 48 B-106 and MIL-C-24308 where applicable
- Low profile
- Full cover plastic strain relief optional

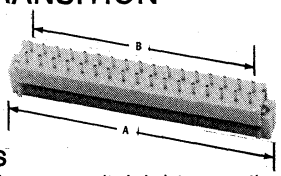
MATERIALS & FINISHES

Moldings: Glass-filled polyester. UL flammability rating 94 V-O
Contacts: Be Cu
Contact Plating: 50 μ inch (1.25 μ m) nickel all over. 2 μ inch (0.5 μ m) gold at plug area - others flash gold or IDC-parf tin.
Shells: Steel, tin-plated. Yellow chromate or zinc yellow optional Dimpled shell on male optional.

# of Pos.	A inch	A mm	B inch	B mm
9	1.212	30.8	0.646	16.4
15	1.539	39.10	0.970	24.70
25	2.090	53.10	1.515	38.50
37	2.736	69.50	2.161	54.90
50	2.705	68.71	2.126	54.00

PCB TRANSITION

2 ROW



FEATURES
- Feedthrough covers permit chain interconnections
- Available with or without strain relief
- Compatible with other leading manufacturers
- Low profile and size for high density packaging
- .100 inches standard grid

MATERIALS & FINISHES

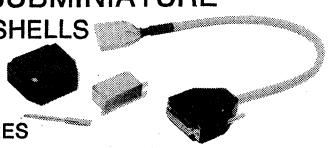
Molding: Glass-filled polyester. UL flammability rating 94 V-O
Contacts: Copper based alloy
Contact Plating: 150 μ inch tin/over 50 μ inch nickel

# of Pos.	Dimensions A	Dimensions B
10	.681 (17.3)	.400 (10.16)
14	.882 (22.4)	.600 (15.24)
16	.980 (24.9)	.700 (17.78)
20	1.18 (30.0)	.900 (22.86)

# of Pos.	Dimensions A	Dimensions B
26	1.48 (37.6)	1.200 (30.48)
34	1.882 (47.8)	1.600 (40.65)
40	2.181 (55.4)	1.900 (48.26)
50	2.681 (68.1)	2.400 (60.96)
60	2.619 (66.52)	2.900 (73.66)
64	2.900 (73.66)	3.100 (78.74)

"D" SUBMINIATURE

BACKSHELLS



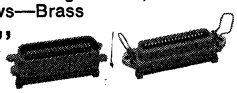
FEATURES

Plastic Shell with Metal Insert
- For round or flat cable
- Separate inner drawn can for optional shielding
- Satisfies requirements of FCC
- Embossed outer shell for non-slip grip
- Accepts new "round and flat" cables
- UL flammability rating 94 V-0

SPECIFICATIONS

Shells: High impact molded plastic, metal finish
Inner Can: One-piece drawn steel
Hardware: 4/40 threaded, cadmium plated locking screws, Jack Screws—Brass

RIBBON "D"



FEATURES
- "Centronics"-type connector for 28 AWG 0.05" (1.27mm) pitch cable, 36 & 50 pos
- Built-in balelock; Bifurcated contacts
- Strain relief included
- Feedthrough covers permit chain interconnections

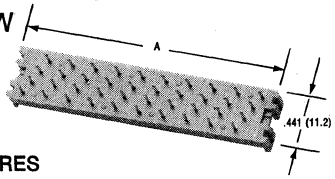
MATERIALS & FINISHES

Contacts: Glass-filled polester. UL flammability rating 94V-0
Contact Plating: Beryllium Copper
Moldings: Tin alloy IDC tines, 30 μ inch (0.75 μ m) gold at board contact area, over 50 μ inch (0.75 μ m) nickel

Description	Part Numbers
Male Connector	570-060-053-036/050
Female Connector with balelock	571-060-035-036/050

PCB TRANSITION

4 ROW



FEATURES
- Feedthrough covers permit chain interconnections
- Available with or without strain relief
- Compatible with other leading manufacturers
- Heavy tin plate for easy soldering

MATERIALS & FINISHES

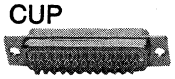
Molding: Glass-filled polyester. UL flammability rating 94 V-O
Contacts: Copper based alloy
Contact Plating: 150 μ inch tin/lead over 50 μ inch nickel

# of Pos.	Dimensions A	Dimensions B
20	1.201 (30.5)	0.950 (24.13)
26	1.500 (38.1)	1.250 (31.75)
34	1.902 (48.3)	1.650 (41.91)

# of Pos.	Dimensions A	Dimensions B
40	2.201 (55.9)	1.950 (49.53)
50	2.701 (68.6)	2.450 (62.23)

"D" SUBMINIATURE

CRIMP/SOLDER CUP



FEATURES
- Conforms to MIL-C-24308
- Crimp contacts hand or machine terminable, snap into place, removable from rear, fully compatible with AMP. Accepts 20 to 24 AWG wire
- Solder cup accepts up to 20 AWG wire

MATERIALS & FINISHES

Shells: Steel, zinc plated, tin overplate. Male w/ grounding dimples
Moldings: Glass-filled nylon, UL flammability rating 94V-0
Male Contacts: Copper based alloy, stamped
Female Contacts: Phospher bronze, stamped
Plating 30 μ-inch (0.75 μ m) nickel all over flash gold overplate

# of Pos.	Gender	Crimp Housing Part Numbers	Solder Cup Part Numbers
9 Shell Size E	Male (Plug)	620-DET-000-009	620-SDR-003-009
	Female (Socket)	621-DET-000-009	621-SDR-003-009
15 Shell Size A	Male (Plug)	620-DAT-000-015	620-SDR-003-015
	Female (Socket)	621-DAT-000-015	621-SDR-003-015
25 Shell Size B	Male (Plug)	620-DBT-000-025	620-SDR-003-025
	Female (Socket)	621-DBT-000-025	621-SDR-003-025
37 Shell Size C	Male (Plug)	620-DCT-000-037	620-SDR-003-037
	Female (Socket)	621-DCT-000-037	621-SDR-003-037
50 Shell Size D	Male (Plug)	621-DDT-000-050	620-SDR-003-050
	Female (Socket)	620-DDT-000-050	621-SDR-003-050
Male Pins	Pack of 100*	620-DRT-100-000	—
	Reel of 10,000	620-DRT-10K-000	—
Female Pins	Pack of 100*	620-DRT-100-000	—
	Reel of 10,000	620-DRT-10K-000	—

* Pack of 100 loose pins

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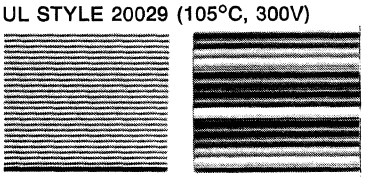
INSULATION DISPLACEMENT CONNECTORS

PLANAR IDC CABLE
EXTRUDED GRAY
UL STYLE 2651 (105°C, 300V)
BONDED COLOR
UL STYLE 20029 (105°C, 300V)



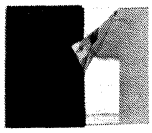
FEATURES
- Easy Termination: To .050" I.D.C. connectors
- Pitch Tolerance: ±.002"
- Polarity Mark: Red Edge
- Profile: Both sides ridged for easy connector termination and cable flexibity
- UL Flammability Rating: VW-1
- 200 ft/reel

2651
- Color: Gray
- S-R PVC type acquired CSA approval

20029
- Easy Circuit Identification: Ten brilliant colors used
- Color Code: Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White, Black (repeat)

Available in 9-64 conductors.

PLANAR IDC CABLE
JACKETED SHIELDED
UL STYLE 2651 (105°C, 300V)



FEATURES
- Jacketed Shield Flat Cable contains a core of Extruded Gray (code: EG-28)
- Easy Termination: To .050" I.D.C. connectors
- Pitch Tolerance: ±.002"
- Color (Jacket): Black
- UL Flammability Rating: VW-1
- EMI/RFI Shielding
- 2 drain wires with tin overcoating for added reliability
- For external/internal equipment usage
- Thin wall jacket UL Style 2912 is available
- 100 ft/reel

Available in 9-64 conductors.

PLANAR IDC CABLE
LAMINATED QUICK TWIST
UL STYLE 20184 (105°C, 300V)



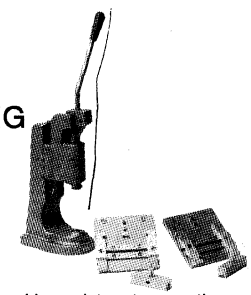
FEATURES
- Easy Termination: To .050" I.D.C. connectors
- Pitch Tolerance: ±.002"
- Easy Circuit Identification: Ten brilliant colors used
- Color Code: Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White, Black (repeat), Tan (common)
- UL Flammability Rating: VW-1
- Low cross talk flat cable
- High stability 0.007" laminate film is used to increase dimensional stability
- 100 ft/reel

Available in 5-32 pairs.

ELECTRICAL CHARACTERISTICS

Capacitance:	21pF/ft nom.
Characteristic Impedance:	100Ω nom.
Crosstalk:	Near end 3.8%/10ft-far end 1.5%/10ft (10ns rise time pulse)
Propagation Delay:	1.65ns/ft

TOOLING



FEATURES
- Three platen and base plate sets cover the complete range of Carrot connectors
- Platens and base plates may be turned through 90° for chain interconnections
- Positive toggle action bench press
- Built-in cable guide and stop ensures correct cable to connector alignment

ORDERING INFORMATION

Description	Part Numbers
Universal bench press	099-100-000-000
Platen & base plate set for: Sockets, DIP Plugs, Transition connectors, DIP Sockets 'D' Subminiature connectors DIN 41612 Socket connector	598-110-001-600 598-110-002-600 598-110-003-600
Hand press - for small size sockets only	080-000-008-000
Hand press - for all sizes D Subminiature connectors	080-000-016-000
Cable shears	080-001-001-000
Height setting gauge	098-002-029-000

ORDERING INFORMATION

UNPROTECTED HEADERS (PIN STRIPS)
511-AAA-003-0XX
AAA = Style: 020 = Single Row, Straight Pin
280 = Single Row, Rt. Angle Pin
030 = Double Row, Straight Pin
270 = Double Row, Rt. Angle Pin
XX = No. of Pins (10, 14, 16, 20, 26, 34, 50, 60, 64) Single Row Avail. 01 to 30 Double Row Avail. 02 to 60 (2x1, 2x30)

PROTECTED HEADERS
511-BBB-003-0XX
BBB = Style: 060 = Straight Pin, No Latches
061 = Straight Pin, Short Latches
062 = Straight Pin, Long Latches
260 = Rt. Angle Pin, No Latches
261 = Rt. Angle Pin, Short Latches
262 = Rt. Angle Pin, Long Latches
XX = No. of Pins (10, 14, 16, 20, 26, 34, 40, 50)

LOW PROFILE HEADERS
511-C65-003-0XX
C = Pin Style: 065 = Straight Pin
265 = Rt. Angle Pin
XX = No. of Pins (10, 14, 20, 26, 34, 40, 56)

SOCKETS
517-06D-003-0XX
D = Cap. Option
5 = Standard Cap
6 = Strain Relief
XX = No. of Positions (10, 14, 16, 20, 26, 34, 40, 50)

SOCKET STRAIN RELIEF CAP WITH LOCKING TABS FOR USE WITH LOW PROFILE HEADERS
517-063-7XX-923 (10, 14, 16, 20, 26, 34, 40, 50)
XX = No. of Positions
Locking Tabs Only
517-063-101-923

DIP PLUGS
533-060-003-0XX
XX = No. of Positions (10, 14, 16)
Strain Relief for Dip Plugs
533-060-7XX-700
XX = No. of Positions (10, 14, 16)

PCB TRANSITION
2 ROW
533-065-024-0XX
XX = No. of Positions (10, 14, 16, 20, 26, 34, 40, 50, 60, 64)
4 ROW
533-061-024-0XX
XX = No. of Positions (20, 26, 34, 40, 50)
Strain Relief for 4 Row Transition
533-061-7XX-700
XX = No. of Positions (20, 26, 34, 40, 50)

DIN 41612
538-060-003-064
Strain Relief for DIN 41612
538-060-764-711

CARD EDGE
353-060-035-0XX
XX = No. of Positions (10 thru 64)

D-SUBMINIATURE
62E-0FF-035-0XX
E = 0 = Male (Plug)
1 = Female (Socket)
FF = Shell Plating
060 = Zinc Chromate, 9-37 Position (Optional)
061 = Tin, 9-37 Position (Standard)
066 = Tin, with Dimpled Shell, Male Only, 9-37 Position (Standard)
085 = Tin, 50 Position
086 = Tin with Dimpled Shell Male Only, 50 Position
XX = No. of Positions (9, 15, 25, 37, 50)

D-SUBMINIATURE HARDWARE
Plastic Backshell with Hardware
620-05G-9XX-923
G = Cable Configuration
8 = Round Cable
9 = Flat Cable
XX = No. of Positions (25, 50)
Jackscrew for Plastic Backshell (Set of 2) 408-000-218-232
Metal Shielding Can for Plastic Backshell
620-05H-9XX-724
H = Cable Configuration
XX = No. of Positions (25, 50)

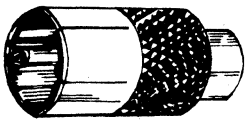
RIBBON D
Male: 570-060-053-036/050
Female: 571-060-035-036/050

CRIMP/SOLDER CUP
D-Subminiature
See Product Description

FLAT CABLE
Extruded Gray (200 Ft. Rolls)
CEG-287-200-0XX
XX = No. of Conductors (9 through 64)
Bonded Color Coded (200 Ft. Rolls)
CBC-287-200-0XX
XX = No. of Conductors (9 through 64)
Jacketed and Shielded Extruded Gray (100 Ft. Rolls)
CJS-287-100-0XX
XX = No. of Conductors (9 through 64)
Twisted Pairs with Flat (100 Ft. Rolls)
CLQ-287-100-0XX (10 through 64)

C & C JETRONIC, INC.

RF COAXIAL CONNECTOR



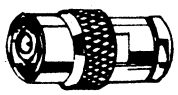
UHF

GENERAL PURPOSE, WEATHERPROOF.
IMPEDANCE: NON-CONSTANT. FREQUENCY RANGE: 0-500 MHz.
VOLTAGE RATING: 500 VOLTS PEAK.



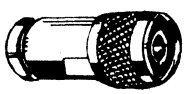
BNC

MINIATURE, LIGHTWEIGHT, WEATHERPROOF, BAYONET LOCKING.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-4 GHz.
VOLTAGE RATING: 500 VOLTS PEAK. 1,500 VOLTS RMS.



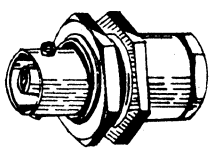
TNC

MINIATURE, LIGHTWEIGHT, WEATHERPROOF.
IMPEDANCE: 50 OHMS.
FREQUENCY VOLTAGE RATING: 500 VOLTS PEAK, 1,500 VOLTS RMS.



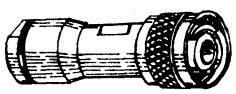
N

MEDIUM SIZE, WEATHERPROOF, THREADED COUPLING.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-11 GHz.
VOLTAGE RATING: 1,000 VOLTS PEAK.



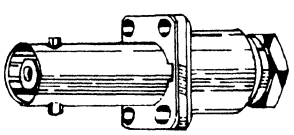
C

MEDIUM SIZE, WEATHERPROOF.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-11 GHz.
VOLTAGE RATING: 1,500 VOLTS PEAK.



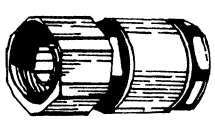
HN

MEDIUM SIZE, WEATHERPROOF, THREADED LOCKING.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-4 GHz.
VOLTAGE RATING: 5,000 VOLTS PEAK.



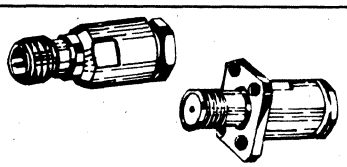
MHV

MINIATURE, BAYONET LOCKING, WEATHERPROOF, LIGHTWEIGHT.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-1 GHz.
VOLTAGE RATING: 5,000 VOLTS PEAK.



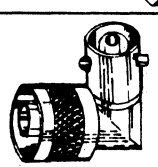
LC

WEATHERPROOF, HIGH VOLTAGE, THREADED LOCKING.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-1 GHz.
VOLTAGE RATING: 5,000 VOLTS PEAK.



SMA

MINIATURE, LIGHTWEIGHT, WEATHERPROOF, THREADED LOCKING.
IMPEDANCE: 50 OHMS. FREQUENCY RANGE: 0-18 GHz.
VOLTAGE RATING: 5,000 VOLTS PEAK.



BETWEEN SERIES ADAPTERS

THEY ARE USED FOR TWO INCOMPATIBLE SERIES

WE WELCOME YOUR OWN SPECIFICATIONS

MAILING ADDRESS: P.O. BOX 1308, PRINCETON, NJ 08540 TELEX: 4971717

RESEARCH PARK, 318 WALL ST., PRINCETON, NJ 08540 TELEPHONE: (609) 921-8540 FAXSIMILI: 609 921-7971

CATON
Caton Connector Corporation

High Voltage, Corona-Free Connectors and Cable Assemblies

Some of our best connector designs are 35 years old...

Our staff has been designing and manufacturing pulse cables and connectors for over 35 years. We are still designing and adapting them for new needs and applications and have over 1,000 items to fill virtually any need.

Our cable and connectors are water-tight, corona-free and ultra-reliable. They should be. We have more experience in the field than just about anyone.

We make hi-voltage lines from 1KV all the way up to 75KV for radar pulse systems, video, halographic, laser, infra-red optics, spectro-photographic and many other uses.

If you need special connectors, call the people who have been involved with them for a long time.

...some were developed this week.

Jones River Industrial Park • Wapping Road (Route 106)
Kingston, Massachusetts 02364-1333
Telephone: 617-585-4315 • TWX: 710-391-7546 • FAX: 617-585-2973

CCM Series

High Voltage Cable Assemblies

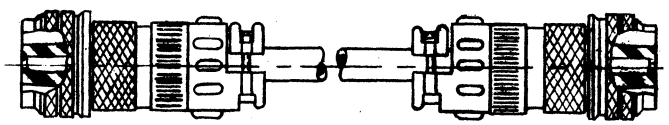
The **CCM Series** is a basic and proven design. Standard quality materials, customization and a twenty year track record make this series ideal for most High Voltage Corona-Free cable assembly requirements.

Pictured here are some typical cable assembly configurations... but not limited to just these, please consult sales rep or CATON directly with your requirements, **1 thru 8 conductors available.**

The **CCM Series** utilizes standard MIL-C-5015 Class E aluminum shells. The inserts are resilient silicone per ZZ-R-765 with tapered self centering contours. When mated all air is excluded thereby making the connection impervious to the outside environment. All shields are circumferentially terminated using a grounding wedge which provides an excellent ground circuit and overall assembly durability.

Factory terminated assemblies have corona inception voltages of 4 KVAC thru 20 KVAC when measured on a corona test set with a minimum sensitivity of 15 picocoulombs.

TYPE



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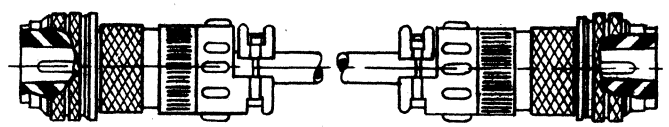

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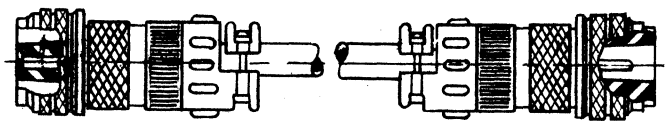

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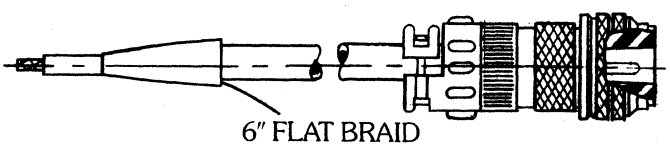

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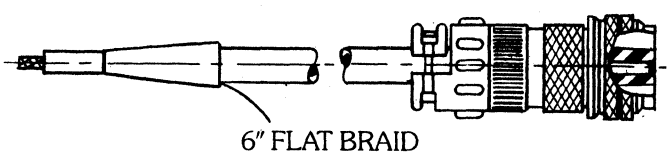

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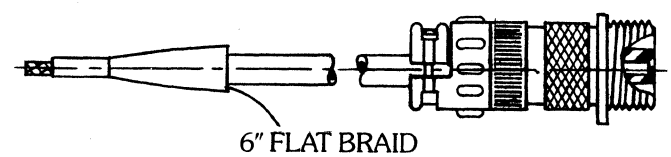

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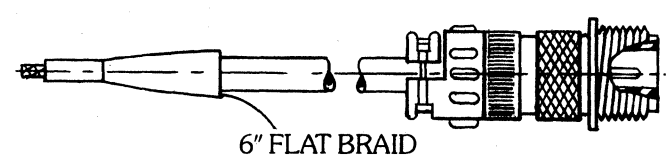

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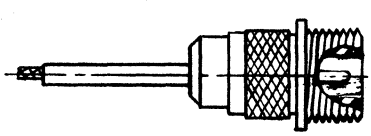

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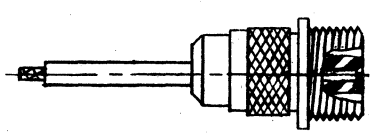


9

CATON

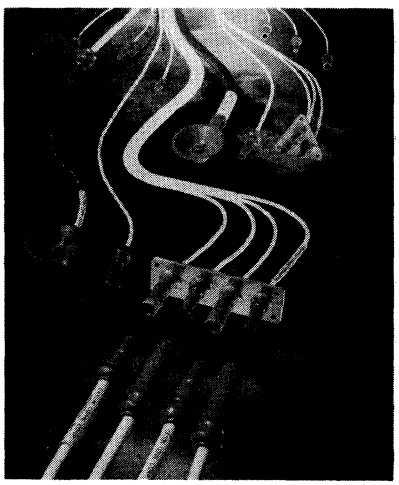
Caton Connector Corporation

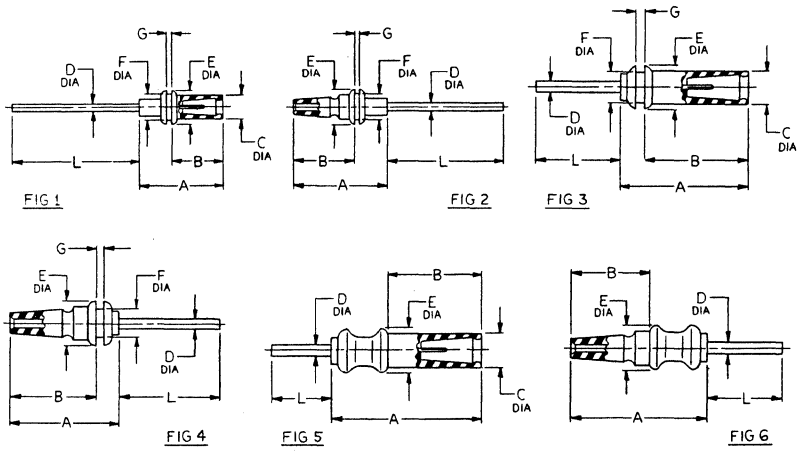
Jones River Industrial Park • Wapping Road (Route 106)
Kingston, Massachusetts 02364-1333
Telephone: 617-585-4315 • TWX: 710-391-7546
FAX: 617-585-2973

PM 200•300 Series
Silicone In-Line Connectors

Whether the application is a Clean Room test hook up or an oil and water laden harsh environment, the PM Series offers space saving reliable High Voltage, Corona-free performance at costs below conventional shell type connectors.

Air is completely excluded when these connectors are mated thereby making the connection impervious to air, water and most oils. The resilient silicone connector bodies offer quick connect and disconnect while still maintaining pull out force of 10–13 lbs.





Features

- 10-45 KVDC operating voltages
- 7.5-30 amp continuous
- grommet or in-line mounting
- wire directly molded to connector body
- −55° to +125°C
- no degradation to 70,000 feet

Specifications

Connector body: silicone rubber per ZZ-R-765
55 (female)–75 (male) durometer, color red
Female socket contacts: bronze per ASTMB-140, alloy B, gold plated MIL-G-45204
Male contacts: ½ hard brass per QQ-B-611A.
gold plated per MIL-G-45204
Wire: silicone tinned copper stranded, color white per MIL-W-16878/8

Applications

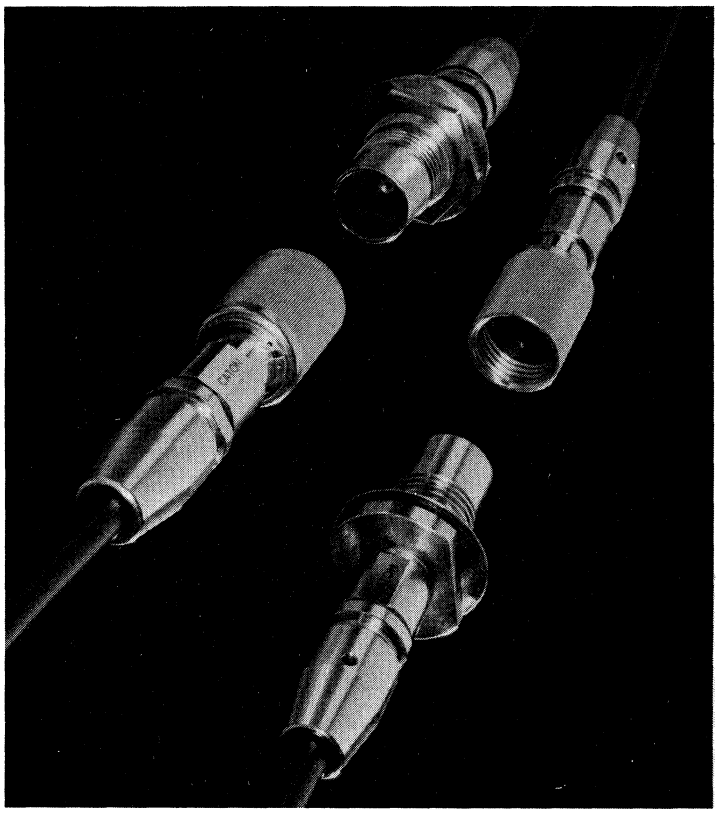
The PM Series has been used on applications such as land or air-borne radar, photocopy equipment (corona spells trouble in these machines), CRT displays, printing presses, and laboratory hook-ups.

CATON P/N	VOLTAGE RATING	FIG	CONTACT SIZE	A	B	C	D	E	F	G	MATING P/N'S
PM105M	10KVDC	1	.040	1.20	.75	.35	.10	.48	.36	.06	PM105F
PM105F	10KVDC	2	.040	1.30	.85	---	.10	.48	.36	.06	PM105M
PM200M	30KVDC	3	.062	1.81	1.47	.47	.14	.62	.43	.12	PM200F PM210F
PM200F	30KVDC	4	.062	1.96	1.22	---	.14	.62	.43	.12	PM200M PM210M
PM210M	30KVDC	5	.062	2.16	1.37	.47	.14	.62	---	---	PM200F PM210F
PM210F	30KVDC	6	.062	1.94	1.12	---	.14	.62	---	---	PM200M PM210M
PM300M	45KVDC	3	.080	2.23	1.87	.49	.30	.78	.53	.12	PM300F PM310F
PM300F	45KVDC	4	.080	1.93	1.60	---	.30	.78	.53	.12	PM300M PM310M
PM310M	45KVDC	5	.080	2.62	1.72	.59	.30	.78	---	---	PM300F PM310F
PM310F	45KVDC	6	.080	2.37	1.47	---	.30	.78	---	---	PM300M PM310M

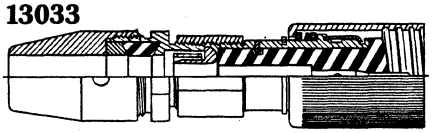
CATON
Caton Connector Corporation
Jones River Industrial Park • Wapping Road
(Route 106) • Kingston, Massachusetts 02364-1333
Telephone: 617-585-4315 • TWX: 710-391-7546 • FAX: 617-585-2973

KAM Series

High Voltage Cable Assemblies

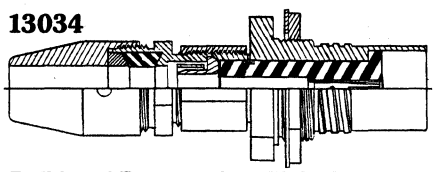


13033



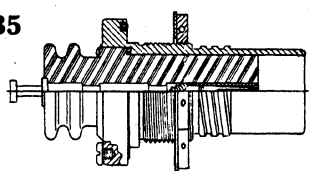
Cable Plug—Field Assembly
Mates with: 13034 and 13035

13034



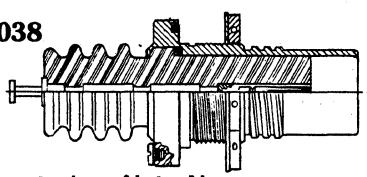
Bulkhead Receptacle—Field Assembly
Mates with: 13033

13035



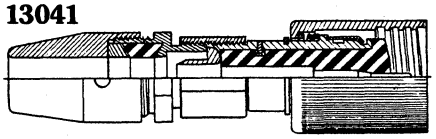
Chassis Receptacle
Mates with: 13033

13038



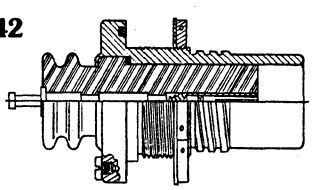
Receptacle—Air to Air
Mates with: 13033

13041



Cable Plug—Field Assembly
Mates with: 13042

13042



Chassis Receptacle
Mates with: 13041

KAM Series

The KAM Series are high quality, high voltage, corona-free connectors which are designed for use with RG-214 coaxial cable.

General Specifications and Capabilities

Connectors are designed for use with RG-214 Coaxial Cable (13 AWG .425 jacket O.D.)

MECHANICAL: Shell and Basic Hardware: 1/2 Hard Brass per QQ-B-626 Alloy 360 Nickel Plate per QQ-N-290, Class 2 Type VI, Over Copper Flash per MIL-C-14550, Class 4

MOUNTING HARDWARE: 1/2 Hard Brass per QQ-B-626 Alloy 360 Nickel Plate per QQ-N-290, Class 2 Type VI, Over Copper Flash per MIL-C-14550, Class 4.

ELECTRICAL: (When properly assembled and mated)
Operating Voltage: 6.6 KVRMS
Dielectric Withstanding Voltage: 10 KVRMS
Current: 20 Amps
Corona Extinction Voltage: 5.3 KVRMS

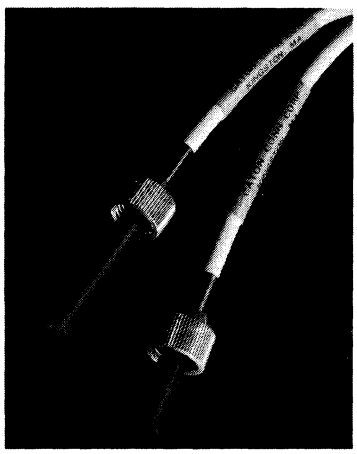
ENVIRONMENTAL: (When properly assembled and mated)
Operating Temperature: 0 to +125°C
Altitude: Rated values shall be maintained to an altitude of 10,000 feet.

Jones River Industrial Park • Wapping Road
(Route 106) • Kingston, Massachusetts 02364-1333
Telephone: 617-585-4315 • TWX: 710-391-7546
FAX: 617-585-2973

CATON
Caton Connector Corporation

LGG Series

High Voltage Lead Connectors



Tripping of sensitive logic circuitry, power loss and eventual failure are the three main problems Corona can cause. The **CATON LGG Series** is designed for Corona-Free performance... 2½ times superior than AMP assemblies.

CATON assemblies have corona inception voltages of at least 5KVAC as measured on a corona test set with a minimum sensitivity of 5 picocoulombs.

AMP P/N	CATON P/N	AMP P/N	CATON P/N	AMP P/N	CATON P/N
	S13046-L				
830126-2	S13057-L	862550-4	S13057-L	1-849104-5	S13060-L
830637-5	S13047-L	862550-6	S13057-L	1-849104-6	S13060-L
830638-2	S13059-L	862550-8	S13057-L	1-849616-0	S13061-L
830638-6	S13059-L	862550-9	S13057-L	1-849616-5	S13061-L
830638-9	S13059-L	862551-1	S13047-L	1-861814-5	S13061-L
837655-0	S13056-L	862551-4	S13047-L	1-861814-6	S13061-L
837655-5	S13056-L	862551-6	S13047-L	1-861814-9	S13061-L
837655-7	S13056-L	862551-8	S13047-L	1-862550-3	S13057-L
837701-7	S13056-L	863701-5	S13056-L	1-862551-2	S13047-L
846938-8	S13062-L	863701-8	S13056-L	1-862551-5	S13047-L
849099-4	S13063-L	863702-2	S13057-L	1-863701-0	S13056-L
849099-7	S13063-L	863703-1	S13056-L	1-863701-1	S13056-L
849099-9	S13063-L	863703-4	S13056-L	1-863701-3	S13056-L
849103-1	S13063-L	863703-6	S13056-L	1-863702-2	S13057-L
849103-5	S13063-L	863703-8	S13056-L	1-863702-3	S13057-L
849104-1	S13060-L	863703-9	S13056-L	1-863702-6	S13057-L
849616-7	S13061-L	863705-5	S13047-L	1-863702-7	S13057-L
861811-1	S13063-L	863706-2	S13059-L	1-863705-2	S13047-L
861811-4	S13063-L	863706-6	S13059-L	1-863705-3	S13047-L
861811-5	S13063-L	863706-9	S13059-L	1-863706-5	S13059-L
861812-1	S13060-L	863707-1	S13047-L	1-863706-9	S13059-L
861812-2	S13060-L	863707-4	S13047-L	1-863707-2	S13047-L
861812-3	S13060-L	863707-6	S13047-L	1-863707-5	S13047-L
861812-4	S13060-L	863707-8	S13047-L	2-830126-1	S13057-L
861813-1	S13062-L	1-830126-2	S13057-L	2-830637-1	S13047-L
861813-2	S13062-L	1-830126-3	S13057-L	2-830637-4	S13047-L
861813-6	S13062-L	1-830126-6	S13057-L	2-830637-8	S13047-L
861814-1	S13061-L	1-830126-7	S13057-L	2-830638-0	S13059-L
862444-3	S13048-L	1-830637-2	S13047-L	2-846930-0	S13062-L
862484-4	S13048-L	1-830637-3	S13047-L	2-846938-0	S13062-L
862484-7	S13048-L	1-830638-5	S13059-L	2-849616-2	S13061-L
862484-8	S13048-L	1-830638-9	S13059-L	2-861814-1	S13061-L
862549-1	S13056-L	1-837655-0	S13056-L	2-863637-8	S13047-L
862549-4	S13056-L	1-837655-1	S13056-L	2-863702-1	S13057-L
862549-6	S13056-L	1-837655-3	S13056-L	2-863705-1	S13047-L
862549-8	S13056-L	1-846938-6	S13062-L	2-863705-4	S13047-L
862549-9	S13056-L	1-849099-2	S13063-L	2-863705-8	S13047-L
862550-1	S13057-L	1-849103-9	S13063-L	2-863706-0	S13059-L

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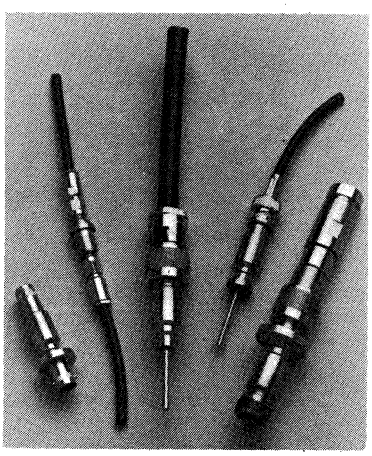
Ceramaseal

HERMETIC 50-OHM CONNECTORS

CERAMIC-METAL HIGH TEMPERATURE ULTRA HIGH VACUUM

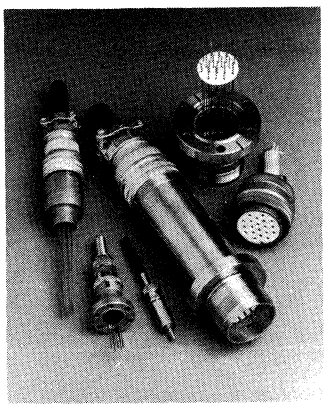


- N, BNC, SMA, HN
- VSWR typically less than 1.3 up to 8 GHz (SMA)
- −50°C to +400°C*
- Pressure ratings 10^{-3} up to 10^{-10} torr or 1 atm. to 750 psig at 20°C BNC
- Operating voltages to 1500 volts peak (HN)

* with plug disconnected above 200°C

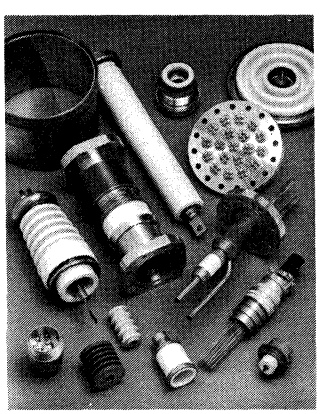
400°C VACUUM-TIGHT CONNECTORS

- **STANDARD OR 400°C PLUGS**
- **INSTRUMENTATION**
- **1 TO 37 PINS**
- ceramic-metal bonded
- single- and double-ended
- operating pressures $<10^{-10}$ torr to 100 psig
- some models have temperature range from −196°C to +400°C
- bakeable vacuum flange and weld type mountings



REQUEST CATALOG

for your CUSTOM-ENGINEERED CERAMIC-METAL DEVICES:



COME TO EXPERIENCE: When a standard product won't solve your problem, turn to Ceramaseal for a special unit. We've engineered and manufactured custom devices since 1951 for a wide range of markets.

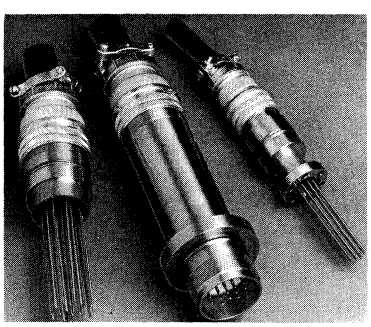
VERSATILITY: Using both the refractory- and active-metal processes, we can offer many metal-ceramic combinations.

PERFORMANCE: Designs withstand temperatures from −268°C to +1000°, operating pressures from $< 1 \times 10^{-10}$ torr to > 30,000 psig, voltages to 180 KV.

STANDARD UNITS, TOO: We have hundreds of designs available from stock stock for immediate shipment.

VACUUM-TIGHT THERMOCOUPLE CONNECTORS

- **STANDARD OR SPECIAL 350° PLUGS**
- **THERMOCOUPLE MATERIALS TYPE E, J, OR K**
- **5 OR 10 PAIRS**



- **conductors and contacts are thermocouple material throughout**
- **ceramic-metal bonded receptacles will withstand temps to 450° C**
- **single- and double-ended**
- **operating pressures < 10^{-10} torr to 100 psig**
- **operating temps -55° C to 125° C with standard plugs***
- **bakeable vacuum flange and weld type mountings**

***Special plugs can extend the operating temps from -184° C + 350° C**

REQUEST CATALOG

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Advanced Ceramic/Metal Technology

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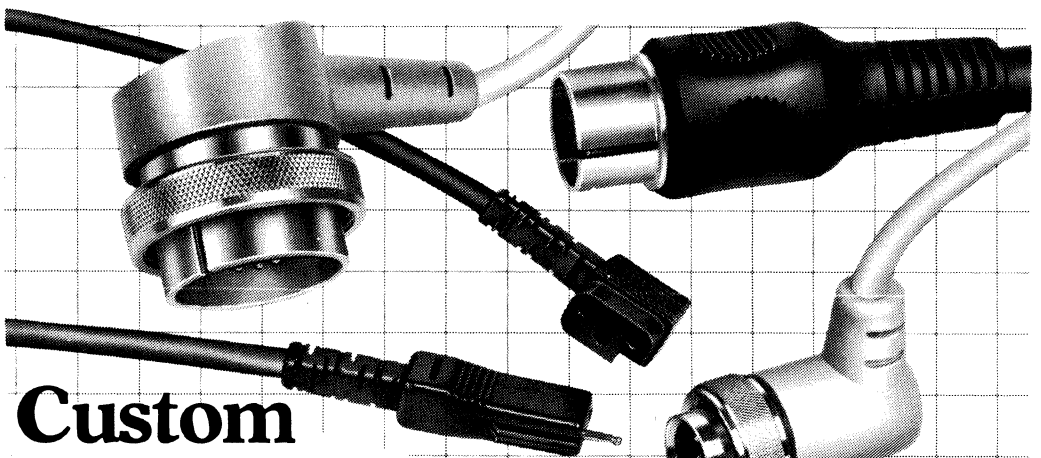
Molded-On® Cable Assemblies



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CMS can assist you in every facet of Molded-On® cable assemblies. From developing your interconnect concept to taking advantage of the industry's largest selection of standard products, to producing the dies or new tooling required when your application is better served by a custom tool. Our expertise was developed with 40 years of experience producing the highest quality Molded-On products. Unleash the full potential of your products with Molded-On assemblies from CMS.

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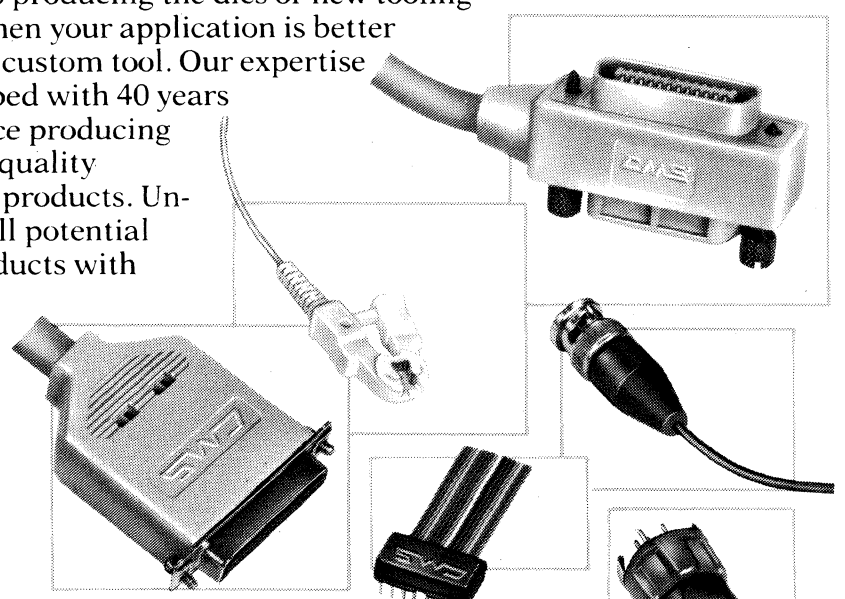

Standard

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One Component Park
West Bridgewater, MA 02379
TEL: 617-580-0111 TWX: 710-390-1081
the Molded-On® Connector Company

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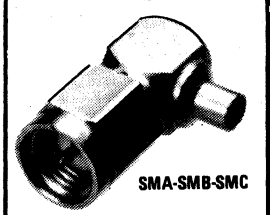
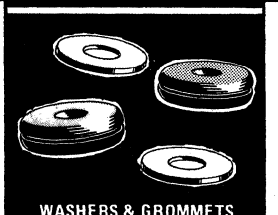
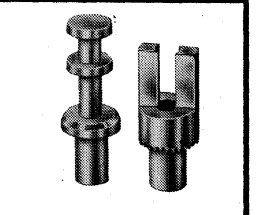
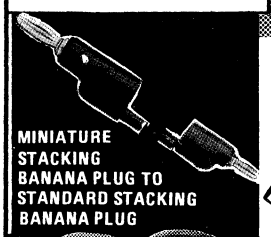

SMA-SMB-SMC
RF CONNECTORS

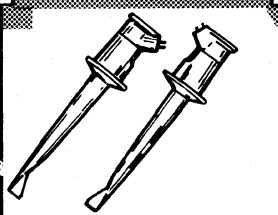

TEFLON* TERMINALS

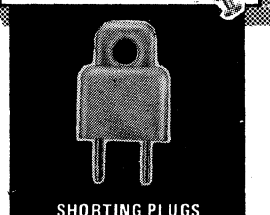

HEXHEAD BINDING POST

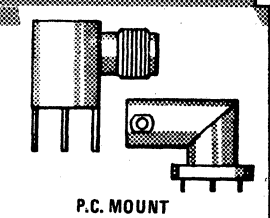

WASHERS & GROMMETS

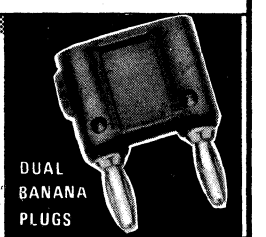

SOLDER LUGS

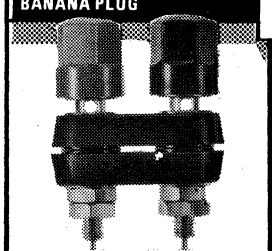

MINIATURE STACKING BANANA PLUG TO STANDARD STACKING BANANA PLUG


SAFETY HOOK TEST CLIPS

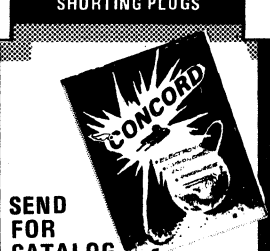

SHORTING PLUGS


P.C. MOUNT CONNECTORS

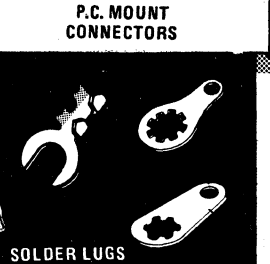

DUAL BANANA PLUGS

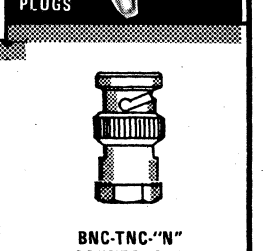

DUAL BINDING POST

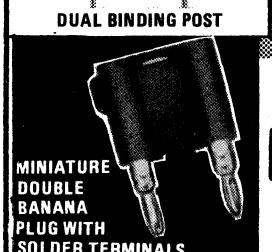

BANANA PLUGS

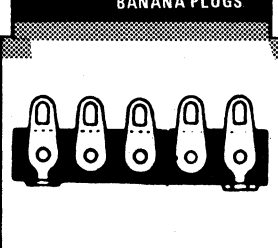


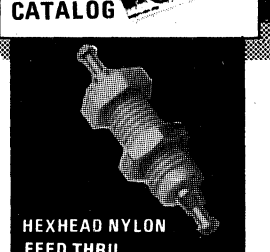
SEND FOR CATALOG

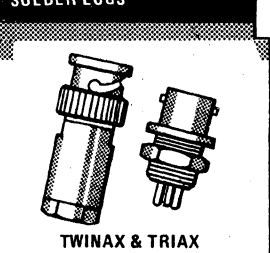

SOLDER LUGS

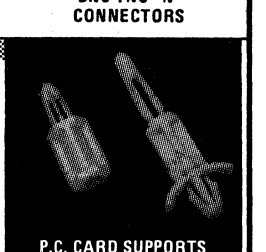

BNC-TNC-"N" CONNECTORS

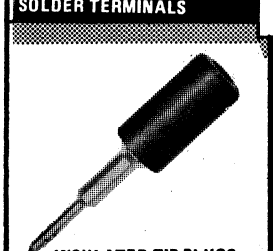

MINIATURE DOUBLE BANANA PLUG WITH SOLDER TERMINALS

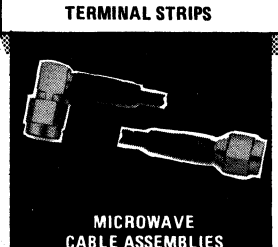

TERMINAL STRIPS

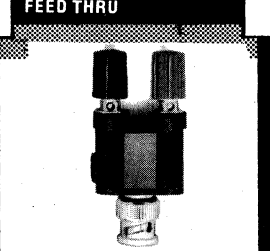

HEXHEAD NYLON FEED THRU


TWINAX & TRIAX CONNECTORS

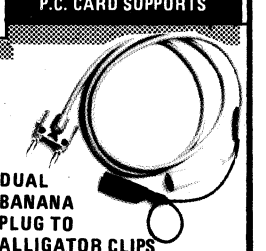

P.C. CARD SUPPORTS


INSULATED TIP PLUGS


MICROWAVE CABLE ASSEMBLIES


BNC MALE TO BINDING POST


90 NYLON PC JACK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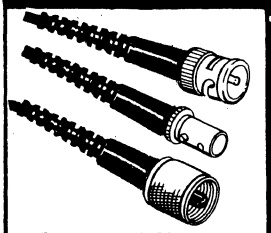
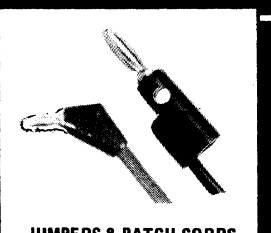
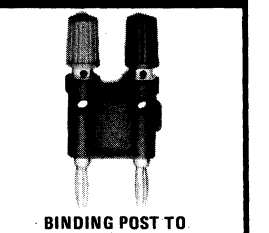
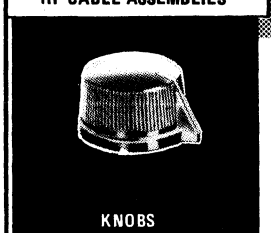

RF CABLE ASSEMBLIES

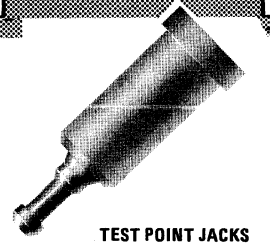

SOLDERLESS LUGS & TERMINALS


JUMPERS & PATCH CORDS


RF CONNECTORS


BINDING POST TO DOUBLE BANANA PLUG


KNOBS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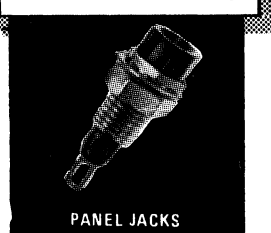
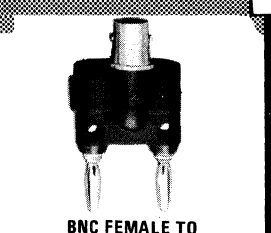
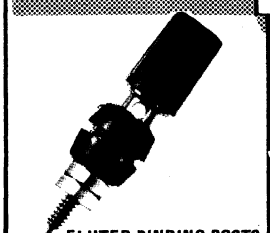
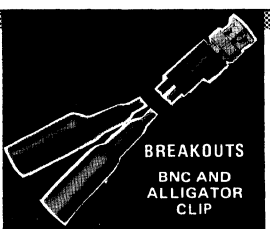

PANEL JACKS


BNC FEMALE TO BANANA PLUGS


P.C. PINS

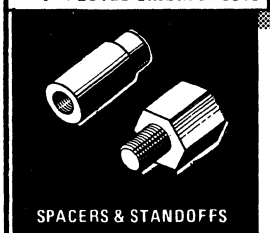

FLUTED BINDING POSTS

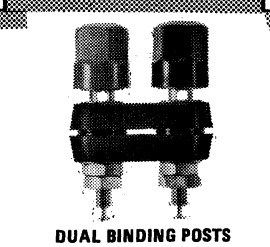

BREAKOUTS BNC AND ALLIGATOR CLIP

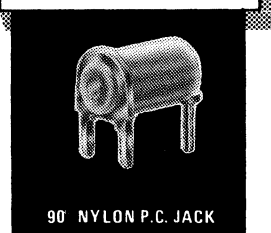
TEST ACCESSORIES

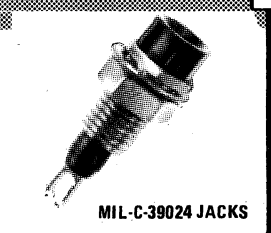

SHORTING PLUGS

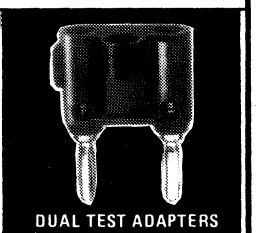

OSCILLOSCOPE PROBES

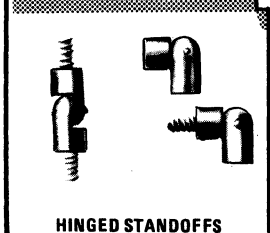

SPACERS & STANDOFFS

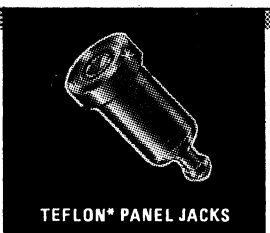

DUAL BINDING POSTS


90° NYLON P.C. JACK

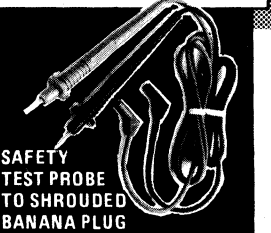

MIL-C-39024 JACKS


DUAL TEST ADAPTERS


HINGED STANDOFFS


TEFLON* PANEL JACKS


SAFETY HOOK TEST CLIPS


SAFETY TEST PROBE TO SHROUDED BANANA PLUG


HANDLES

Teflon® is Du Pont's registered trademark

THE MANUFACTURER'S MANUFACTURER

CONCORD®

THE DEPENDABLE COMPONENT SOURCE

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CONNECTOR CORPORATION

Manufacturer of Innovative, Quality American Made Connectors

Connectors, Sockets and

Industrial • Military • Commercial

STANDARD, CUSTOMIZED AND NEW DESIGNS

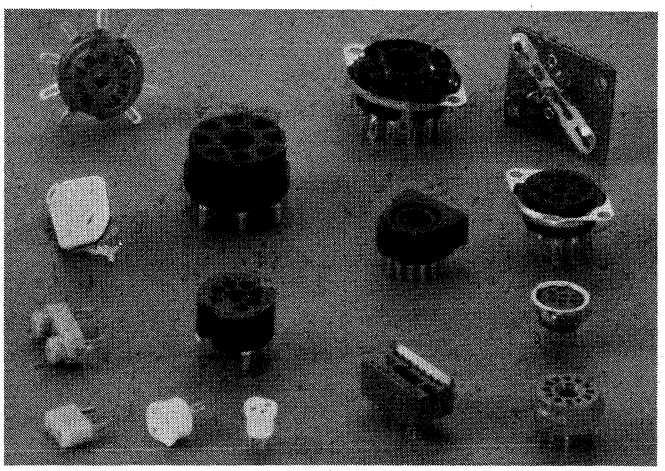
Because we have so many parts tooled, we are an excellent choice to produce your new and customized designs. Using our large tool library and in-house tool and mold making facilities, we get you into production fast, at an economical cost. **Call our engineers with your design ideas.**

Your order is expressly made to agreed specifications. As each requirement usually involves special features and combinations of materials and finishes, we do not stock finished products. However, we do stock most of the materials, enabling us to manufacture your parts as needed to meet your schedule.

ZERO DEFECT QUALITY

Our production facilities are fully integrated from raw materials to final assembly. We do our own stamping and molding. We also design and build our own automatic assembly equipment. This allows us to control our processes and thus serve you with our Zero Defect Program quality.

For samples and quotes, call our engineers at 312/539-3108 or TWX 910-221-6059.

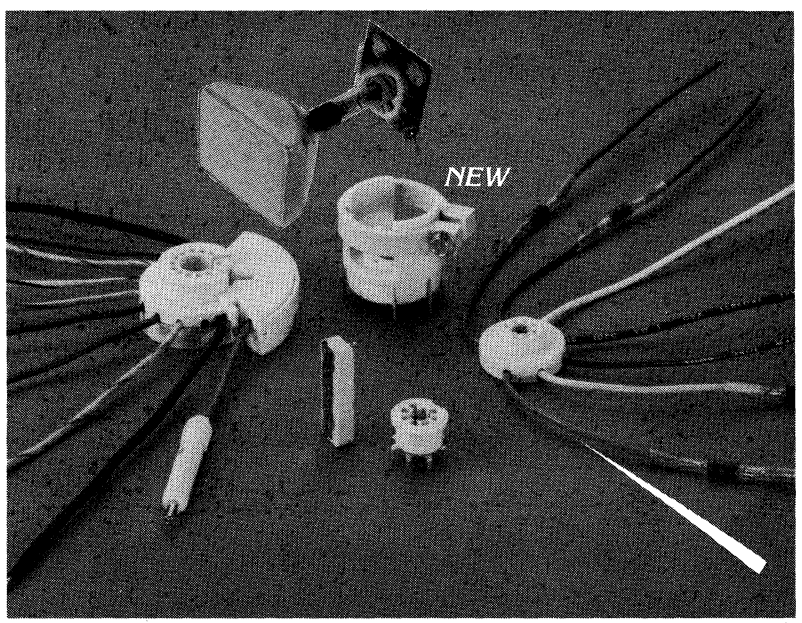


SOCKETS

- **Tube/Relay:** 4, 5, 7, 8, 9, 10, 11, 12, 14, 16, 20, 22 and other pin configurations. PC, solder tab and chassis mount. Molded and laminated constructions. Metal or molded saddle, top or bottom mount.
- **Transistor:** T03, 5, 9, 11, 12, 18, 33, 39, 40, 46, 52, 60, 66, 72, 104 and others.
- **Crystal:** For .486" centers (HC6/U, MIL-S-12883/4), .273", .192" (HC25) centers and others.

CRT SOCKETS

- For high resolution CRT's used in Aeronautics, CAD/CAM, Sonar, Radar, Medical and Measurement Instruments and Information Displays.
- **Tube neck retaining clamp available on most sockets.**
- Mate with most JEDEC and other base configurations.
- PC, solder tab and wire lead connections.
- With or without Spark Gaps.
- In-line resistors, chokes and capacitors.



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CONNECTOR CORPORATION

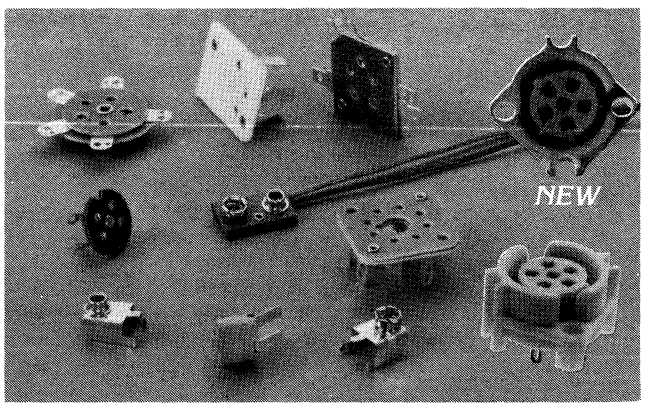
Manufacturer of Innovative, Quality American Made Connectors

Plugs to Your Requirements

- *Prototype through Production*

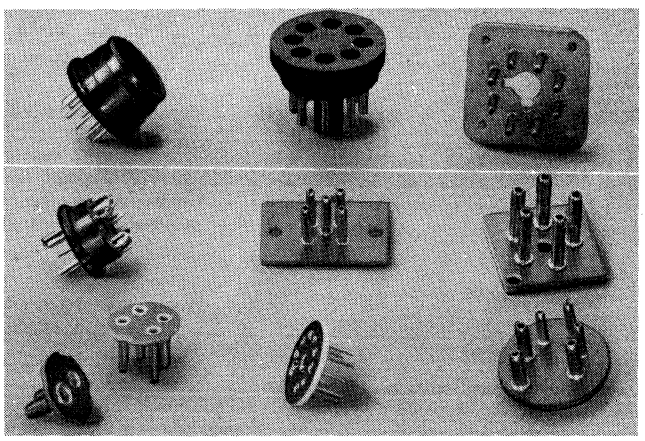
BATTERY CONNECTORS, SOCKETS AND PLUGS

- Commercial and Military grades.
- Molded or laminated constructions.



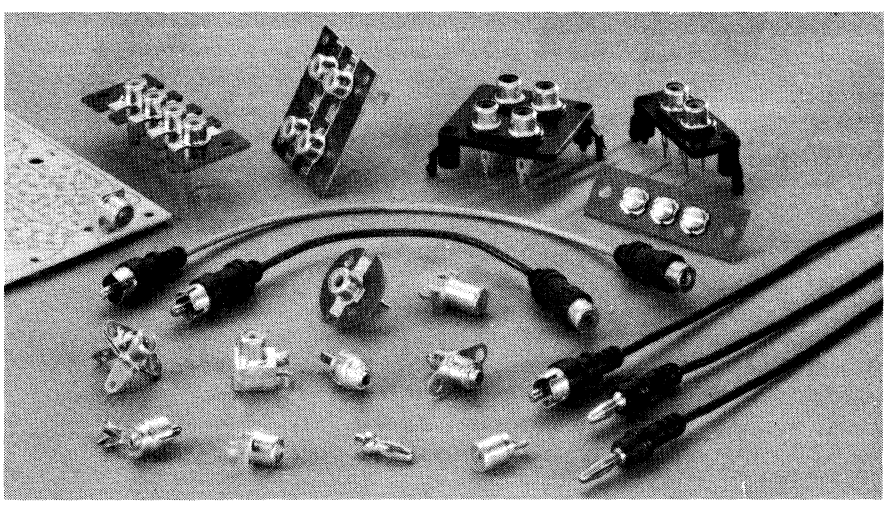
PLUGS

- Industrial, Military and Commercial grades.
- Mate with many of our sockets.
- Molded and laminated constructions.
- Molded Boots.



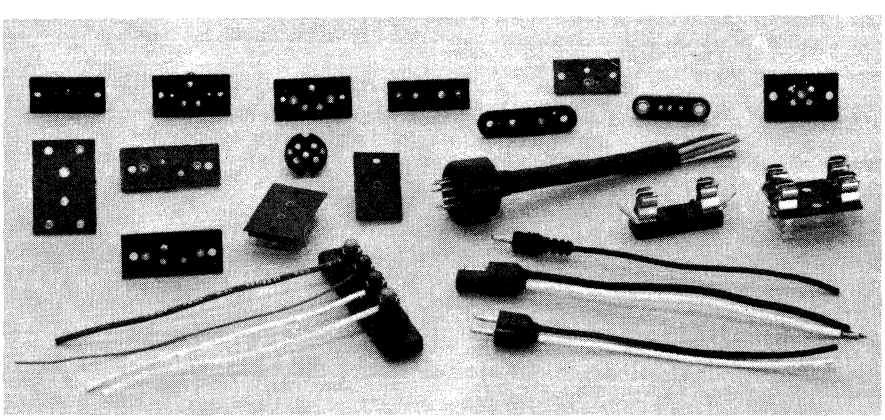
AUDIO & RF CONNECTORS

- Sockets, plugs and cable assemblies.
- Vertical and right angle.
- PC, chassis or free standing mounting options.
- UHF and VHF.



OTHER INTERCONNECTING DEVICES

- Wyrlok™ molded quick connecting device.
- Molded and laminated connectors.
- Laminated receptacles.
- Fuse holders.



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eem MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

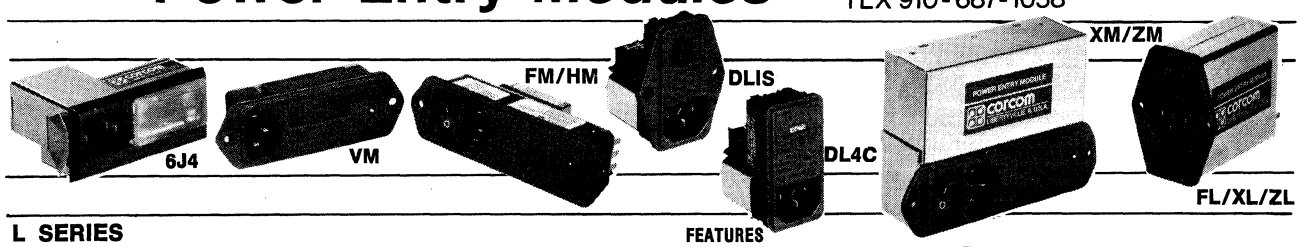
Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

corcom

Power Entry Modules

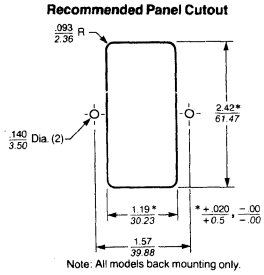
World Leader In RFI Technology
1600 Winchester Road
Libertyville, IL 60048 USA
312-680-7400
TLX 910-687-1058



L SERIES

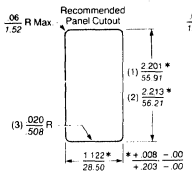
The L series is a multi-function power entry module with exceptional RFI filtering capability. By combining in one unit all the necessary primary power components, the L series meets the requirements of the manufacturer whose products are marketed worldwide.

FL/XL/ZL
Recommended Panel Cutout

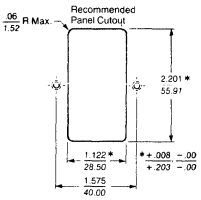


Note: All models back mounting only.

DL Snap-in models



DL Flange models



FEATURES

- High performance RFI filter
- IEC power line connector
- North American or European fusing capability
- DPST on/off switch or voltage selection
- EXL designed for emission control/FCC-B
- EZL designed for emission control/FCC-B, VDE-B

Part	Features	Size L x W x D	Rated Current
5EFL2S	2 volt select, DPST Switch	1.97 x 2.57 x 2.87″	5A
3EXL2S	2 volt select, DPST Switch	1.97 x 2.41 x 4.12″	3A
3EZL2S	2 volt select, DPST Switch	1.97 x 2.4 x 4.12″	3A
2EDL1S*	DPST On/Off Switch	1.98 x 2.30 x 2.01″	2A
4EDL1S*	DPST On/Off Switch	1.98 x 2.30 x 2.01″	4A
6EDL1S*	DPST On/Off Switch	1.98 x 2.30 x 2.01″	6A
2EDL4*	4 voltage selection	1.98 x 2.30 x 2.01″	2A
4EDL4*	4 voltage selection	1.98 x 2.30 x 2.01″	4A
6EDL4*	4 voltage selection	1.98 x 2.30 x 2.01″	6A

* These models available as snap in units (add C suffix) 1.28 x 2.30 x 2

M SERIES

Power Entry Module

The power entry module expands the options of the manufacturer whose products are marketed worldwide, One, component, fully assembled and tested, provides the capability of interfacing your multi-voltage power supply to any common voltage or fusing scheme in the world, without modification.

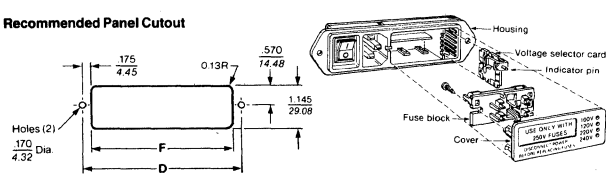
Filtered Power Entry Modules

Combines the power entry modules with a choice of three filter performances: FM models for susceptibility control, XM models for emission control/FC-C-B, and ZM models for emission controls/FCC-B and VDE-B. HM models available for medical applications for UL 544 low leakage current requirements.

FEATURES OF M SERIES

- IEC power line connector
- North American Metric fusing
- DPST on/off switch
- 2 or 4 voltage selection
- 3-6 amps (prefix indicates rated current)
- Offered in Filtered or Non-filtered models

Recommended Panel Cutout



Type	Description	Size L x W x D	Rated Current
6VM4S	IEC Connector, DPST On/Off Switch 4 voltage selection, selectable fuse holder	4.65 x 1.13 x 1.45″	6A
6VM2S	IEC Connector, DPST On/Off Switch 2 voltage selection, selectable fuse holder	4.65 x 1.13 x 1.45″	6A
6VM1S	IEC Connector, DPST On/Off Switch selectable fuse holder	4.17 x 1.13 x 1.45″	6A
6VM4	IEC Connector, 4 voltage selection selectable fuse holder	3.88 x 1.13 x 1.45″	6A
6VM2	IEC Connector, 2 voltage selection selectable fuse holder	3.88 x 1.13 x 1.45″	6A
6VM1	IEC Connector, selectable fuse holder	3.39 x 1.13 x 1.45″	6A

Part	Features	Size L x W x D	Rated Current
5EFM1/ 5EHM1	IEC Connector, selectable fuse holder	3.39 x 1.13 x 2.12″	5A
5EFM1S/ 5EHM1S	DPST On/Off Switch	4.17 x 1.13 x 2.12″	5A
5EFM4/ 5EHM4	4 voltage selection	3.88 x 1.13 x 2.12″	5A
5EFM4S/ 5EHM4S	4 voltage selection DPST On/Off Switch	4.65 x 1.13 x 2.12″	5A
3EXM1S	DPST On/Off Switch	4.17 x 3.09 x 2.12″	3A
3EXM4	4 voltage selection	3.88 x 3.09 x 2.12″	3A
3EXM4S	4 voltage selection DPST On/Off Switch	4.65 x 3.09 x 2.12″	3A
3EZM1S	DPST On/Off Switch	4.17 x 3.09 x 2.12″	3A
3EZM4	4 voltage selection	3.88 x 3.09 x 2.12″	3A
3EZM4S	4 voltage selection DPST On/Off Switch	4.65 x 3.09 x 2.12″	3A

Note: FM and HM Models allow front and back mounting.
XM and ZM Models allow back mounting only.

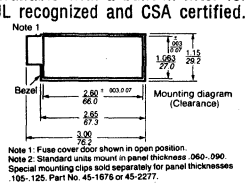
* FM Models only ** VM Models only

J SERIES

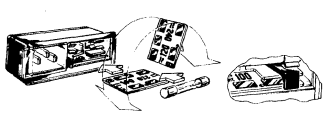
Voltage Selecting & Fused Connectors

Developed for the manufacturer who markets his products worldwide. Eliminates internal wiring changes, special power supplies or stocking various line cords.

VS & F, in less than 3½ square inches of panel space, provides an internationally approved connector, fuse holder and a means to change transformer primary connections with a unique voltage selector card. Can be operated any place in the world without modification at time of installation. Available with a built-in filter for RFI protection of the equipment. UL recognized and CSA certified. 6VJ1 is VDE approved.



Note 1: Fuse cover door shown in open position.
Note 2: Standard units mount in panel thickness .060-.090. Special mounting clips sold separately for panel thicknesses .105-.125. Part No. 45-1675 or 45-2277.



Type	Description	Max. Size L x W x D	Rated Current
6VJ1	Unfiltered	2.68 x 1.17 x 1.23″	6A
6J4	Filtered	2.68 x 1.17 x 1.57″	6A

Replacement Circuit Cards

Type	For Voltages
70-1470	100, 120, 220, 240
70-1495	115 & 230

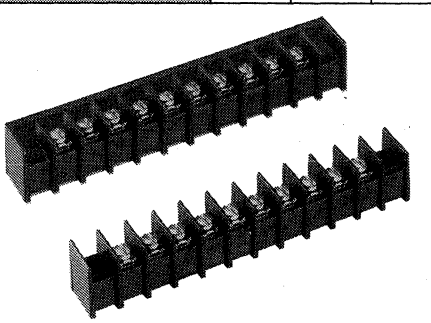
Additional Mounting Clips (for panels thicker than .090″)

Type	Description
45-1676	Plated (for 6J4)
45-2277	Insulated (for 6VJ1)

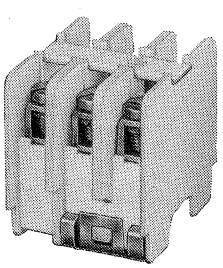
CURTIS INDUSTRIES, INC.

ELECTRONIC/ELECTRICAL TERMINAL BLOCKS

SERIES/TYPE	31000	32000	37000	38000	CFT	CB	GFT	GB	1500/2000	E	SEI	SE	FT/FTS
BLOCK STYLE OPEN		•		•									
TRI-BARRIER	•		•										
TERMINAL SPACINGS Center-to-Center (Dim. in parentheses equal mm.)	.325 (8.25)	.325 (8.25)	3/8" (9.52)	3/8" (9.52)	3/8" (9.52)	3/8" (9.52)	7/16" (11.11)	7/16" (11.11)	3/8" & 7/16" (9.52 & 11.11)	38" (9.52)	1/4" (6.35)	1/4" (6.35)	5/8" (15.87)
Wire Range (AWG)	22 to 12	22 to 12	22 to 12	22 to 12	22 to 12	22 to 12	22 to 12	22 to 12	22 to 10	22 to 16	22 to 16	22 to 16	22 to 12
No. of Terminals	1 thru 26	1 thru 26	1 thru 26	1 thru 26	1 thru 26	1 thru 26	1 thru 26	1 thru 26	1 thru 22	1 thru 22	1 thru 26	1 thru 26	1 thru 16
TERMINAL TYPES Feed-Thru (fully insulated)	•	•	•	•	•		•				•		•
Feed Thru	•	•	•	•		•		•	•	•		•	
Printed Circuit	•	•	•	•	•	•	•	•	•	•	•	•	
Surface (fully insulated)								•	•	•		•	
RATING Voltage	300V	300V	300V	300V	300V	300V	300V	300V	300V	300V	300V	300V	300V
Current (Amps)	20	20	20	20	20	20	20	20	30	15	5	5	30
HOUSING Material (Black) Phenolic 150° C (302° F)							•	•		•	•	•	
Polyphenylene Oxide 110° C (230° F)	•	•	•	•			•	•	•	•	•	•	
Thermoplastic-Polyester 140° C (284° F)					•	•							•
Flammability Rating	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0	94V-0
RECOGNITION Underwriter's Laboratories Components Recognition	•	•	•	•	•	•	•	•	•	•	•	•	
CSA Certified	•	•	•	•	•	•	•	•	•				



ELECTRONIC BLOCKS



ELECTRICAL BLOCKS

SERIES/TYPE	SW	W	ETA Circuit Breaker	CDM/CT	M	H/BT	T/U	L	O	S
TERMINAL SPACINGS Center-to-Center (Dim. in parentheses equal mm.)	3/8" (9.52)	7/16" (11.11)	7/8" (22.22)	35/64" (13.86)	1/2" (12.7)	.652" (16.56)	N/A →			
Wire Range (AWG)	22 to 8	22 to 8		CDM— 22 to 10 CT— 22 to 12	22 to 12	H— 16 to 4 BT— 22 to 10	T— 6 to 1/0 U— 6 to 250 MCM	Up to 1	Up to 1/0	Up to 4/0
No. of Terminals	2 thru 192	2 thru 164	1	1 thru 50	1 thru 24	1 thru 30	1 thru 6	1 thru 12	1 thru 4	1 thru 4
MOUNTING METHOD Surface				•	•	•	•	•	•	•
Snap-In Track Modular Assembly	•	•	•							
RATING Voltage	600V	600V	250V	600V	300V	600V	600V	600V	600V	600V
Current (Amps)	25-50	25-50	Up to 30	20-30	15-25	30-75	125-250	100	125	225
HOUSING Material (Black) Phenolic 150° C (302° F)		•	•		•		•	•	•	•
Thermoplastic-Polyester 130° C (266° F)				•		•				
Polyamide (Nylon) 125° C (257° F)	•									
Flammability Rating	94V-2	94V-1	94V-1	94V-0	94V-1	94V-0	94V-1	94V-1	94V-1	94V-1
RECOGNITION Underwriter's Laboratories Components Recognition	•	•		•	•	•	•	•	•	•
CSA Certified	•	•		•	•	•	•	•	•	•

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MINIGLOSSARIES
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CODES

TECHNICAL INFORMATION

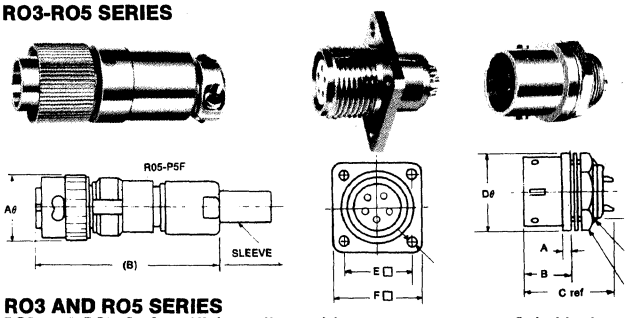
WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide ..... C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide ..... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

T.M.W QUALITY CONNECTORS of *TAJIMI*/DSA

MINIATURE CIRCULAR CONNECTORS

RO3-RO5 SERIES



RO3 AND RO5 SERIES

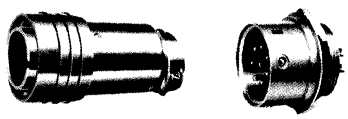
RO3 and RO5 Series: High quality multi-contact connectors. Suitable for miniaturized high density use in electronic equipment. Both series have metal body and gold plated contacts. RO3 offers threaded mating, RO5 features easy bayonet coupling.

SPECIFICATIONS

- Number of Contacts: 2 to 12
- Insulation Resistance: DC 500V 1000M ohm min.
- Contact Resistance: 5M ohm max. at DC 1A
- Voltage Rating: AC150V to AC300V (rms)
- Current Rating: 2A
- Vibration, Moisture and Corrosion Resistance: MIL-C-STD-202E

No. of Contacts	RO3 A	Plug B	RO3, RO5 OD (P)	RO3, RO5 OD (PB)	Receptacle RO3 & RO5 A	Receptacle RO3 & RO5 B	Receptacle RO3 & RO5 E	Mounting Hole Diameter
2, 3, 5	12.0	32.0	6.4	5.2	9.5	18.0	12.0	9.2mm
6, 8	15.5	34.0	7.4	6.2	9.5	18.0	15.5	12.2mm
12	20.0	39.0	10.5	10.5	9.0	18.0	20.0	16.2mm

PRC SERIES QUICK CONNECT—DISCONNECT



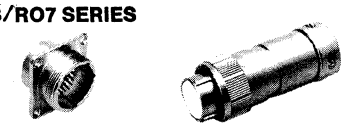
PRC 03, 04, and 05 Series: Strong and dependable push-pull connectors are not loosened by vibration and impact. Superior quality light weight. PRC05 series are miniature high density connectors and available straight PCB mount receptacle.

SPECIFICATIONS

- No. of Contacts: 2 to 37
- Insulation Resistance: DC 500V 1000M ohm min.
- Contact Resistance: 5M ohm max. at DC 1A
- Voltage Rating: AC150V to AC600V (rms)
- Current Rating: 2A to 10A
- Vibration, Moisture and Corrosion Resistance: MIL-C-STD-202E

Series	No. of Contacts	Plug A	Plug B	Receptacle: Bulk, Box Type B	C	D	E	F	Mntg. Hole	Cable OD	Wire AWG
PRC05	2,3,5	13.5	32.0	9.5	17.8	13.0	11.5	16.0	9.2	5.2	22
	6,8	16.7	34.0	9.5	17.8	16.0	13.5	18.0	12.2	6.2	22
	12	21.0	39.0	9.5	17.8	16.0	13.5	18.0	12.2	6.2	16
PRC03	2,3,4, 5,7	21.0	46.0	12.5	26.5	19.0	16.0	21.0	15.2	10.5	20
PRC04	8,14	28.0	55.5	13.5	25.5	25.0	21.5	28.0	21.2	12.5	16/20
	12,19	34.0	63.5	14.0	26.0	32.0	26.0	33.0	26.2	14.5	16/20
	21,37	41.0	71.0	14.0	26.0	38.0	31.0	38.0	32.2	18.0	16/20

R18/RO7 SERIES



TRC-21RB30M TRC-21PB30FC

37 (RO7) & 30 (R18) PINS TV CAMERA CONNECTORS.

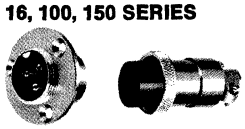
QUICKFIT R16



R16-R6F R16-LP6M-A

6 & 8 PINS. AVAILABLE W/MOLDED VARY LENGTH CABLE.

12, 16, 100, 150 SERIES

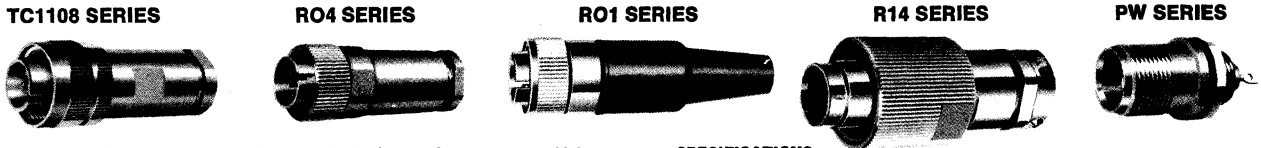


16-R3M 16-P3F

GENERAL PURPOSE CONNECTOR.

WATER-PROOF CIRCULAR CONNECTORS

TC1108 SERIES / RO4 SERIES / RO1 SERIES / R14 SERIES / PW SERIES



TC1108 Series: Miniature underwater/splash proof connectors. Voltage rating 350-600V (AC Vrms). Withstanding voltage 900-1800V (AC Vrms). Current rating 3-10 Amp.

RO4 Series: Ultra-miniature connectors will function satisfactorily in 20 meters of water or for any outdoor application. Available mating HERMETICALLY SEALED receptacle.

R14 Series: High standard stainless steel waterproof connectors.

RO1 Series: Outer diameter 16mm max. miniature waterproof connectors.

PW Series: Coaxial connectors waterproof to 30 meters depth.

IN ADDITION TO THE STANDARD TYPE, RECEPTACLES ARE ALSO AVAILABLE FOR SPECIAL APPLICATION MODIFICATIONS.

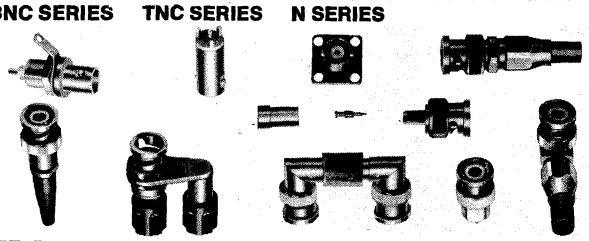
SPECIFICATIONS:

- Insulation Resistance: DC 500V 1000M ohm min.
- Contact Resistance: DC3V 1A 8M ohm max.
- Shock: 50G
- Vibration, Moisture and Corrosion Resistance: MIL-C-STD-202E
- Temperature: −25C to +85C

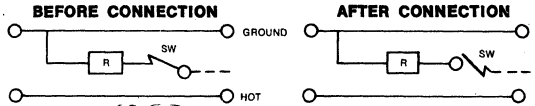
Models	Contacts	A	E	OD	AWG (max.)
TC1108	2 to 37	21 to 40	52 to 65	5mm-16.3mm	20/16
RO4	2 to 12	12 to 20	38 to 43	4.8 to 8.5mm	24
R14	2 to 7	27.0	68.5	10.3	20/16
PW	Coaxial	19.0	59.0-60.5	6.0-11.0	3C/5C/7C 2V
RO1	6 & 8	16.0	35 +20	6.0	24

RF COAXIAL CONNECTORS

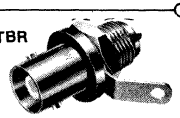
BNC SERIES TNC SERIES N SERIES



Self Terminating Receptacles built in resistor eliminates need for external terminator. Internal resistor can be used in or out of circuit.



BNC312-TBR



BNC312-TBR	Bulkhead Receptacle
BNC313-TBR	Isolated Panel mounting
BNC314-TR	Panel Receptacle
BNC315-TR	PCB mounting

SEE DSA PAGE IN EEM — SECTION 5100.

DSA-DAI-ICHI SHOJI OF AMERICA, INC. 150 Fifth Avenue, Suit 845, New York, NY 10011
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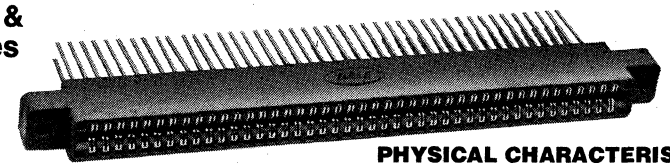
DALE® EDGEBOARD CONNECTORS

[Numbers in brackets indicate millimeters]

SERIES EB4, DUAL READOUT—.100 C-C x .200 GRID [2.54 x 5.08]
SERIES EB6, DUAL READOUT—.125 C-C x .250 GRID [3.17 x 6.35]
Military, Industrial & Commercial Grades



FEATURES

- Designed to meet the requirements of MIL-C-21097/23 (EB4) and MIL-C-21097/24 (EB6).
- Great design latitude...
  4 body materials: *Diallyl phthalate, phenolic, glass-filled polyester, High-Temperature, glass-filled phenolic.*
  3 contact termination styles.
  19 body sizes.
  5 mounting styles.
- Selective gold plating.
- Will accept printed circuit board thickness from .054 [1.37] to .071 [1.80].
- Polarization between contact positions permits polarizing without loss of contact position.
- Bifurcated Cantilever Beam.
- Right angle styles available—see below.

PHYSICAL CHARACTERISTICS

Number of Contacts (EB4): 10, 12, 15, 18, 20, 22, 25, 28, 30, 31, 35, 36, 40, 43, 44, 48, 49, 50 and 60 per side.

Number of Contacts (EB6): 6, 10, 14, 15, 18, 22, 24, 25, 28, 30, 31, 32, 35, 36, 40, 43, 44, 49 and 50 per side.

Contact Terminal Variation:
Type "C"—Dip Solder, .025 [0.63] square terminals, .175 [4.44] nominal terminal length below standoffs.
Type "D"—Dip Solder, .025 [0.63] square terminals, .115 [2.92] nominal terminal length below standoffs.
Type "K"—Wire Wrap™, .025 (0.63) square terminals, .570 (14.47) nominal terminal length below standoffs.

Contact Spacing: EB4 = .100 [2.54] center to center.
EB6 = .125 [3.17] center to center.

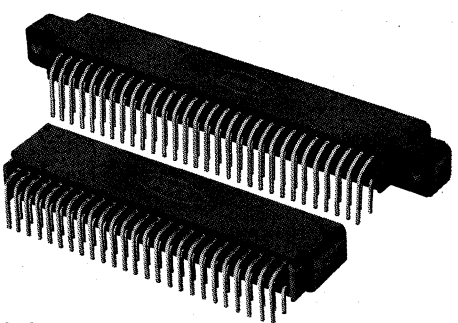
Contact Terminal Row Spacing: EB4 = .200 [5.08] nominal.
EB6 = .250 [6.35] nominal.

Card Slot Depth: .300 [7.62].

Connector Polarization: Between contact polarization key(s) are located to the right of the contact position(s) designated.

DALE® RIGHT ANGLE EDGEBOARD CONNECTORS

SERIES EB4, DUAL READOUT, RIGHT ANGLE— .100 C-C x .150 GRID [2.54 x 3.81] or .100 C-C x .200 GRID [2.54 x 5.08]
SERIES EB6 DUAL READOUT, RIGHT ANGLE— .125 C-C x .150 GRID [3.18 x 3.81] or .125 C-C x .200 GRID [3.18 x 5.08]



FEATURES

- Identical to Series EB4 and EB6 (shown above) but utilize right angle contacts for special mounting situations and are available in 4 mounting styles.
- Military, industrial and commercial grades in a wide choice of body sizes and materials. Termination and mounting styles.

PHYSICAL CHARACTERISTICS

Contact Type: Bifurcated Cantilever Beam.

Number of Contacts (EB4): 10, 12, 15, 18, 20, 22, 25, 28, 30, 31, 35, 36, 40, 43, 44, 48, 49, 50 and 60 per side.

Number of Contacts (EB6): 6, 10, 14, 15, 18, 22, 24, 25, 28, 30, 31, 32, 35, 36, 40, 43, 44, 49 and 50 per side.

Contact Spacing: EB4 = .100 [2.54] center to center
EB6 = .125 [3.17] center to center.

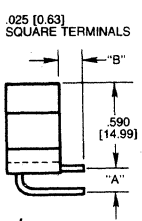
Contact Terminal Row Spacing: .200 [5.08] nominal and .150 [3.81] nominal.

Card Thickness: .054 [1.37] to .071 [1.80].

Card Slot Depth: .300 [7.62].

Connector Polarization: Between contact polarization key(s) are located to the right of the contact position(s) designated.

Contact Terminal Variation:
Type "1R"—Dip Solder, .025 [0.63] square terminals, .120 [3.05] nominal terminal length x .150 [3.81] nominal terminal row spacing.
Type "2R"—Dip Solder, .025 [0.63] square terminals, .120 [3.05] nominal terminal length x .200 [5.08] nominal terminal row spacing.
Type "3R"—Dip Solder, .025 [0.63] square terminals, .180 [4.57] nominal terminal length x .150 [3.81] nominal terminal row spacing.
Type "4R"—Dip Solder, .025 [0.63] square terminals, .180 [4.57] nominal terminal length x .200 [5.08] nominal terminal row spacing.



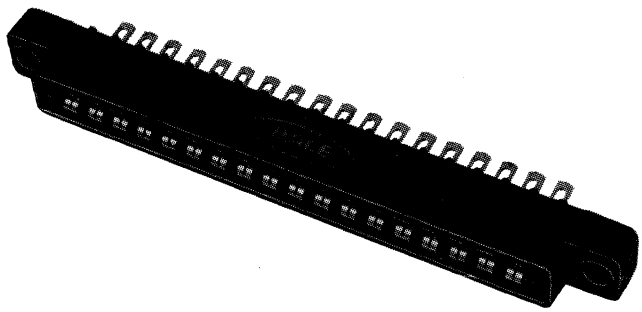
TYPE	"A"	"B"
1R	.150 [3.81]	.120 [3.05]
2R	.200 [5.08]	.120 [3.05]
3R	.150 [3.81]	.180 [4.57]
4R	.200 [5.08]	.180 [4.57]

For complete information write or phone
DALE ELECTRONICS, INC., East Highway 50, Yankton, SD 57078 • Phone 605-665-9301

DALE® EDGEBOARD CONNECTORS

[Numbers in brackets indicate millimeters]

SERIES EB 7S, SINGLE READOUT—.156 [3.96] C-C SPACING
SERIES EB 7D, DUAL READOUT—.156 C-C x .140 GRID [3.96 x 3.56]



FEATURES

- Bifurcated bellows contacts assure positive contact under adverse conditions such as vibration or P.C. board irregularities.
- Will accept printed circuit board thickness from .054 [1.37] to .071 [1.80].
- Polarization between contact positions permits polarizing without loss of contact position.
- Selective gold plating.
- Polarizing key is reinforced nylon, may be inserted by hand, requires no adhesive.
- Protected entry, provided by recessed leading edge of contact, permits the card slot to straighten and align the board before electrical contact is made. Prevents damage to contacts.
- Recognized under the Component Program of Underwriters Laboratories Inc. Listed under File E65524, Project 77CH3889.

PHYSICAL CHARACTERISTICS

Contact Type: Bifurcated bellows.

Number of Contacts: **EB 7S** = 6, 10, 12, 15, 18 and 22 per side.
EB 7D = 6, 10, 12, 15, 18, 22, 36 and 43 per side.

Card Thickness: .054 [1.37] to .071 [1.80].

Card Slot Depth: Single Readout = .300″ [7.62].
Dual Readout = .260″ [6.60].

Contact Spacing: .156 [3.96] center to center.

ELECTRICAL CHARACTERISTICS

	EB4*	EB6*	EB7S	EB7D
Current Ratings (Amps)	3	3	5	5
Test Voltage Between Contacts (VRMS)				
At Sea Level	650	1500	1800	1800
At 70,000 feet [21,336 meters]	275	325	450	450
Operating Temperature (°C)	−65 to +150		−55 to +150	
Insulation Resistance	5000 megohms minimum at 500 VDC potential.			
Contact Resistance	30 millivolts maximum at rated current with gold plating			
Humidity	96 hours at 90% relative humidity at 40°C dried at room temperature for 3 hours minimum, insulation resistance was greater than 5000 megohms.			
Durability	After 500 cycles of insertion and withdrawal of a .070 [1.78] thick steel test board, contact resistance less than .030V at 3 amps for EB4, EB6, and 5 amps on EB7S and EB7D. Contacts were gold plated and individual contact pair separation force when measured with a .054 [1.37] thick steel test blade was greater than 1/2 oz.			
Shock	Three 50G shocks in each of 3 mutually perpendicular planes with no loss of continuity.			
Vibration	2 hours in each of 3 mutually perpendicular planes, frequency sweep 10 to 55 cps at .06 double amplitude with no loss of continuity.			

*Includes right angle styles

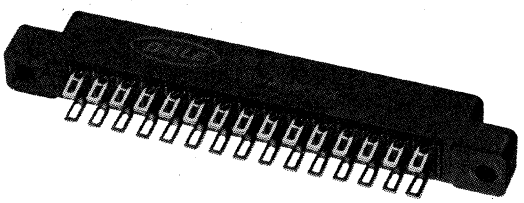
For complete information write or phone
DALE ELECTRONICS, INC., East Highway 50, Yankton, SD 57078 • Phone 605-665-9301

DALE® EDGEBOARD CONNECTORS

[Numbers in brackets indicate millimeters]

SERIES EB8, DUAL READOUT—.156 C-C x .200 GRID [3.96 x 5.08]

Military, Industrial & Commercial Grades



FEATURES

- Designed to meet MIL-C-21097C.
- Great design latitude...
  4 body materials: *Diallyl phthalate, phenolic, glass-filled polyester, High-Temperature, glass-filled phenolic.*
  6 contact termination styles.
  8 body sizes.
  7 mounting styles.
- Selective gold plating.
- Bifurcated bellows contacts provide 2 flexing contact surfaces.
- Will accept printed circuit board thickness from .054 [1.37] to .071 [1.80].
- Polarization between contact positions in all sizes.

PHYSICAL CHARACTERISTICS

Contact Type: Bifurcated bellows.
Number of Contacts: 6, 10, 12, 15, 18, 22, 24 and 25 per side.
Contact Spacing: .156 [3.96] center to center.
Card Thickness: .054 [1.37] to .071 [1.80].
Card Slot Depth: .330 [8.38].

SERIES EBT 156, SINGLE READOUT—.156[3.96] C-C SPACING

Dip Solder, Eyelet and Wire Wrap™ Termination



FEATURES

- Modified tuning fork contacts reduce wear on printed circuit board contacts without sacrificing contact pressure and wiping action.
- Will accept printed circuit board thickness from .054 [1.37] to .070 [1.78].
- Polarization on or between contacts position permits polarizing without loss of contact position.
- Polarizing key is reinforced nylon, may be inserted by hand, requires no adhesive.
- Protected entry permits the card slot to straighten and align the board before electrical contact is made. Prevents damage to contacts.
- Optional terminal configurations, including eyelet (Type A), dip-solder (Type B, C, D and R) wire wrap (Type E and F).
- Meets or exceeds MIL-C-21097/6.
- Connectors with Type A, B, C, D or R contacts are recognized under the Component Program of Underwriters Laboratories Inc. Listed under File E65524, Project 77CH3889.

PHYSICAL CHARACTERISTICS

Number of Contacts: 6, 10, 12, 15, 18 and 22.
Contact Spacing: .156 [3.96]
Card Thickness: .054 [1.37] to .070 [1.78].
Card Slot Depth: .330 [8.38].

COMPONENT MATERIAL

Body: Glass-filled phenolic per MIL-M-14, Type MFH, black, flame retardant (UL 94V-0).
Contacts: Style(s) A, B, C, D, E and F = Alloy 688. Style "R" (Right Angle) = CA725.
Finish: -1 = Electro Tin Plate
-2 = Gold Flash
Polarizing Key: Glass-filled nylon.
Optional Threaded Mounting Insert: Nickel plated brass. (Type Y)
Optional Floating Mounting Bushing: Cadmium plated brass. (Type Z)

ELECTRICAL CHARACTERISTICS

	EB8	EBT 156
Current Ratings (Amps)	5	5
Test Voltage Between Contacts (VRMS) At Sea Level At 70,000 feet [21,336 meters]	 1800 450	 1800 450
Operating Temperature (°C)	−55 to +150	—
Insulation Resistance	5000 megohms minimum at 500 VDC potential.	
Contact Resistance	30 millivolts maximum at rated current with gold plating (gold flash, EBT 156)	
Humidity	96 hours at 90% relative humidity at 40°C dried at room temperature for 3 hours minimum, insulation resistance was greater than 5000 megohms.	
Durability	After 500 cycles of insertion and withdrawal of a .070 [1.78] thick steel test board, contact resistance less than .030V at 3 amps for EB8. Contacts were gold plated, and individual contact pair separation force when measured with a .054 [1.37] thick steel test blade was greater than 1/2 oz.	
Shock	Three 50G shocks in each of 3 mutually perpendicular planes with no loss of continuity.	
Vibration	2 hours in each of 3 mutually perpendicular planes, frequency sweep 10 to 55 cps at .06 double amplitude with no loss of continuity.	

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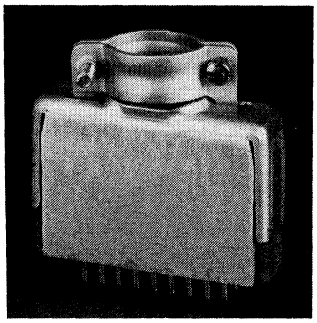
DALE®

RACK AND PANEL CONNECTOR



MICROMINIATURE RECTANGULAR
DALE SERIES MM22 and MM24
with Optional Hoods

FEATURES

- Qualified to MIL-C-28748/7 and /8
- Solder cup contacts
- Dip solder contacts
- Fixed and turnable screwlocks
- Optional closed entry socket contacts

PHYSICAL CHARACTERISTICS

No. of Contacts: 5, 7, 9, 11, 14, 18, 20, 26, 29, 34, 44 or 50*

Contact Gauge:
MM22 Series = 22 AWG
MM24 Series = 24 AWG

Minimum Creepage Path between Contacts: .08 [2.03]

Minimum Air Space between Contacts: .05 [1.27]

ELECTRICAL CHARACTERISTICS

Current Rating: MM22 Series = 5 amps
MM24 Series = 3 amps

Breakdown Voltage: At Sea Level: 2000 VRMS
At 70,000 feet: 500 VRMS

COMPONENT MATERIAL

Contact Pin: Phosphor Bronze

Contact Socket: Phosphor Bronze
(Beryllium copper available on request.)

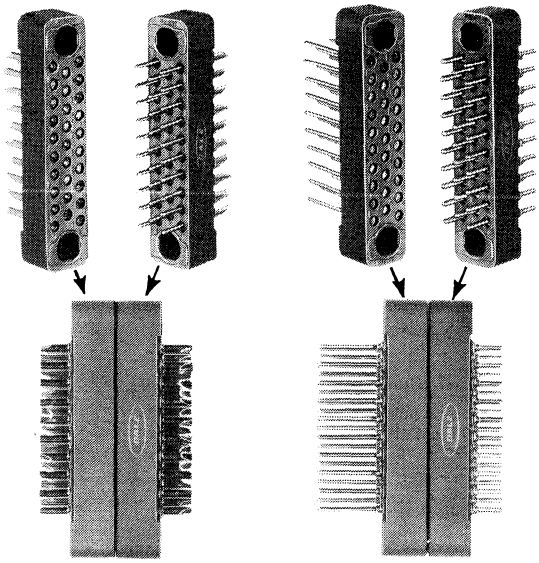
Contact Plating: Gold

Screwlocks: Stainless steel, passivated

*Includes special 5-row contact arrangement.

SOLDER CUP **DIP SOLDER**

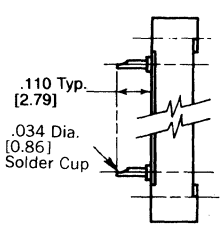
MMS **MMP** **MMD2S** **MMD1P**



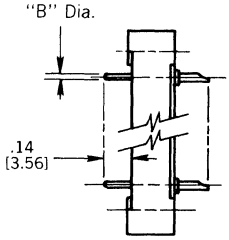
Guides: Brass, gold plated or stainless steel, passivated

Standard Body: Glass-filled diallyl phthalate per MIL-M-14, Type GDI-30F, green.

[Numbers in brackets indicate millimeters]

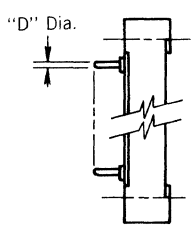


MMS WITH SOLDER CUP CONTACTS

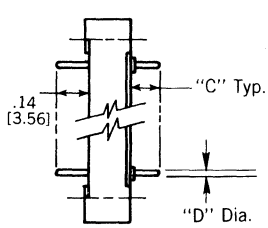


MMP WITH SOLDER CUP CONTACTS

CONTACT GAUGE	"B" DIA.
22 AWG	.030 ± .001 [0.762 ± 0.025]
24 AWG	.025 ± .001 [0.635 ± 0.025]



MMDS WITH DIP SOLDER CONTACTS



MMDP WITH DIP SOLDER CONTACTS

CONTACT GAUGE	"C" DIP TAIL LENGTH	"D" DIA.
22 AWG	.16 or .35 Nom. [4.06 or 8.89]	.025 ± .002 [0.635] ± 0.05]
24 AWG	.16 or .35 Nom. [4.06 or 8.89]	.025 ± .002 [0.635 ± 0.051]

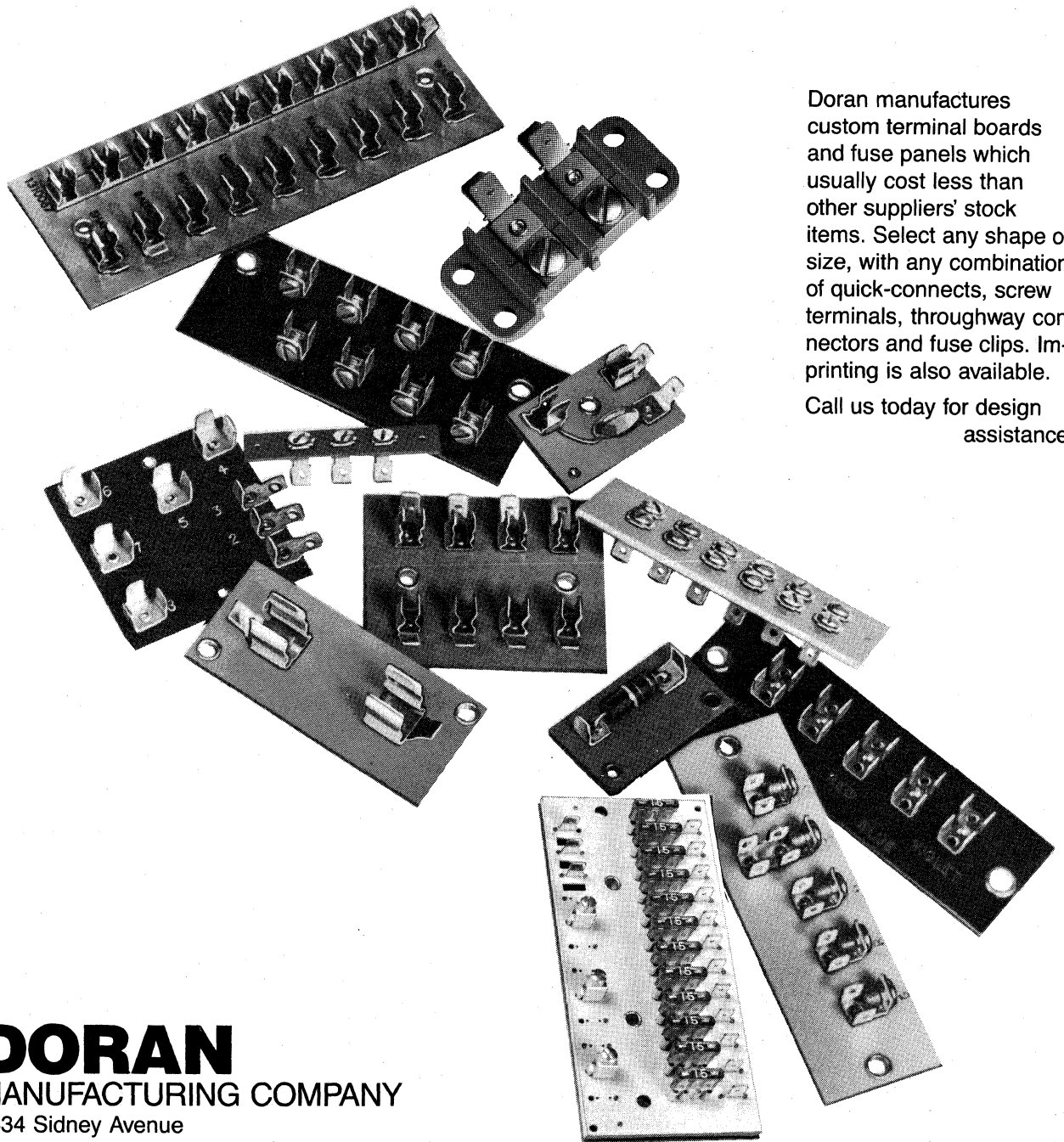
HARDWARE OPTIONS: Available with fixed guides, short turnable screwlocks, turnable screwlocks and fixed screwlocks. Consult factory for details.

HOOD VARIATIONS: Consult factory.

For complete information write or phone
DALE ELECTRONICS, INC., East Highway 50, Yankton, SD 57078 • Phone 605-665-9301

EXACTLY
to your design specs

Terminal Boards
Fuse Panels
Circuit Assemblies

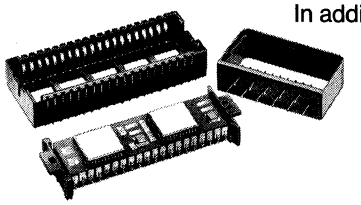


Doran manufactures custom terminal boards and fuse panels which usually cost less than other suppliers' stock items. Select any shape or size, with any combination of quick-connects, screw terminals, throughway connectors and fuse clips. Imprinting is also available.

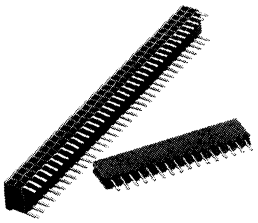
Call us today for design assistance.

DORAN
MANUFACTURING COMPANY
2834 Sidney Avenue
Cincinnati, Ohio 45225 Phone: (513) 681-5424

Problem Solving Design Capabilities

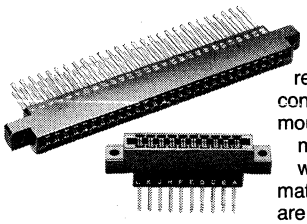


In addition to our full line of connectors, EBY will design custom connectors to your specifications. For additional information on the EBY family of products call 215-969-4200 or write: EBY Company, a Pullman Company, 2751 Southampton Rd., Philadelphia, PA 19154.



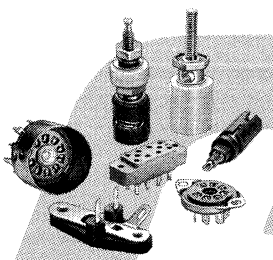
Box Connectors

EBY Box Connectors are available in a variety of sizes and platings—2 through 65 dual positions with .100 centers and a single-row version with vertical and horizontal mountings in 2 through 36 positions. Connectors can be plated with full gold, selective gold or tin.



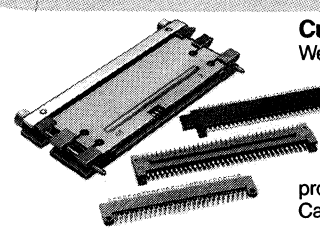
Card Edge Connectors

EBY Card Edge Connectors feature reliable, durable cantilever or bellows contacts and are available in numerous mounting configurations. Choice of PC mount or square tails for automatic wirewrapping. Various insulating materials and full gold or selective plating are available.



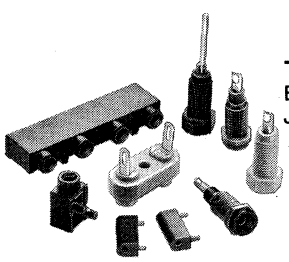
Binding Posts/Sockets

EBY is still the leading source for binding posts (MIL-P-55149) and sockets (TO-3/TO-66) for instruments, communication devices and electronic equipment. Binding posts and sockets have been a part of our product family for more than 60 years.



Custom/Connectors

We provide a wide range of custom connectors for both military and commercial applications in high, medium and low volume production runs. We also offer our connector design, value engineering and full production capabilities for Connector/Cable assemblies.

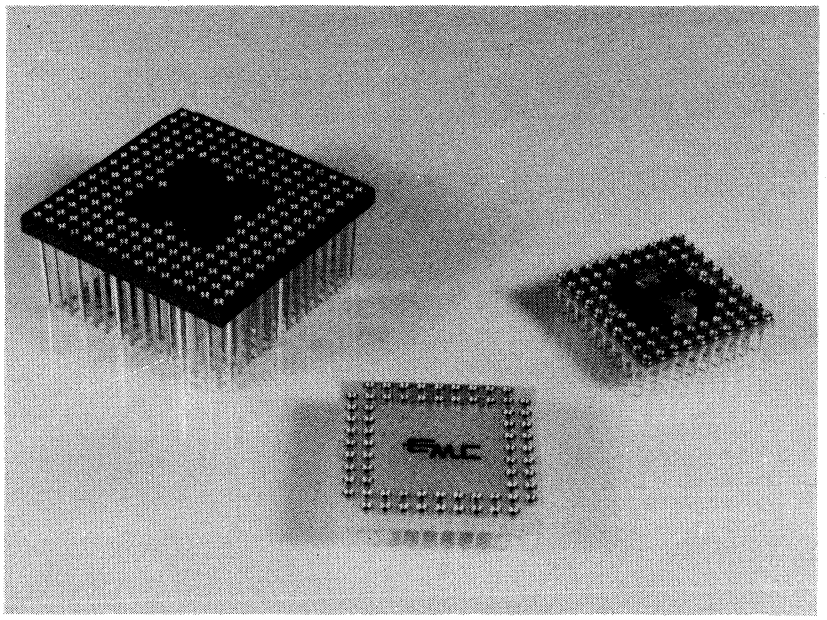


Tip Jacks

EBY produces a variety of standard Tip/Test Jacks for the telecommunications industry as well as modified and custom designed jacks which are available in a variety of colors, contact material and finishes.

EMC®
Interconnection Specialists

PIN-GRID-ARRAY SOCKETS



Pin-Grid-Array Sockets

EMC features the most comprehensive package of pin-grid array footprints in the industry. These PGA Sockets are available in grid sizes from 5 X 5 through 20 X 20. A wide variety of terminal styles with your choice of insulation material make your design-in easy.

EMC also features a complete line of PGA Sockets with SMD decoupling capacitors (Silencer™ PGA). These sockets have specific VCC and GND locations for dedicated gate-array devices. Two caps are used to ensure proper decoupling; a 0.1 MFD for low frequencies and a .01 MFD for high frequencies. The Silencer™ PGA's employ a ground plane as an interconnection vehicle between the GND termination of the pin thereby further reducing induction and providing a greater sheild against noise.

SPECIFICATIONS:

INSULATION THICKNESS: .100" (2,54mm)
INSERTION FORCE: 2.3 oz. (65g) avg. with .018" (.457mm) pin
WITHDRAWAL FORCE: 1.0 oz. (28.35g) avg. with .018" (.457mm) pin
FOR IC LEADS: Up to .150" (3,81mm) long X .015"-.022" (.381-.559mm) in diameter
HOLE SIZE: .035" ±.003" (.89mm ±.0762mm) PC Tail
.040" ±.003" (1.016mm ±.0762mm) W/W Tail
CONTACT: Beryllium Copper (Four-finger) QQ-C-533
TERMINAL: Brass QQ-B-626
BULK CONTACT RESISTANCE: 3.5 milliohms (Mil-Std-1344 Method 3004)
CONTACT RATING: 3 Amps
INSULATION RESISTANCE AT 500V DC: 5K megohms (Mil-Std-1344 Method 3003)
DIELECTRIC WITHSTANDING VOLTAGE AT 60Hz: 2100 volts max. (Mil-Std-202 Method 301)
FLAMMABILITY: UL 94V-0
OPERATING TEMPERATURE: -65 TO +125 degrees C
CAPACITOR: 0.1 MFD AT 50V. X 7R
0.01 MFD AT 50V. X 5R

PLATING:

-445: 30μ" Gold (0,76μm) contact, Tin outer sleeve
-446: 30μ" Gold (0,76μm) contact, Gold outer sleeve
-461: Tin contact, Tin outer sleeve
-489: 10μ" Gold (0,25μm) contact, Tin outer sleeve

ORDERING INFORMATION

P 11 10 084 - 1A - 445

(G) GLASS EPOXY (P) MOLDED PLASTIC	GRID SIZE	FOOT PRINT	# OF PINS	TERMINAL STYLE	PLATING

GATE-ARRAY-DEVICE/EMC
Cross-Reference Guide

DEVICE MANUFACTURER	PART #	EMC PART #
Analog Devices	ADSP1016A	BA113302
	ADSP1010A	BA113301
	ADSP3210	BA132601
	ADSP3220	BA151801
Hitachi	HD68HC000	FA100606
	HD68450Y	FA100607
Intel	80186	HA113301
	80188	HA113302
	80286	HA113303
Logic Devices	LRF08G	KA113309
Motorola	MC68000	PA100601
	MC68010	PA100602
	MC68012	PA100301
	MC68020	PA132401
	MC68440	PA100603
	MC68442	PA100604
	MC68450	PA100605
	MC68451	PA100606
	MC68605	PA100301
	MC68881	PA100607
T.I.	TMS3202	TA113305
Wafer Scale	WS59032	YA132601

Fast Turn-a-round Part Numbers

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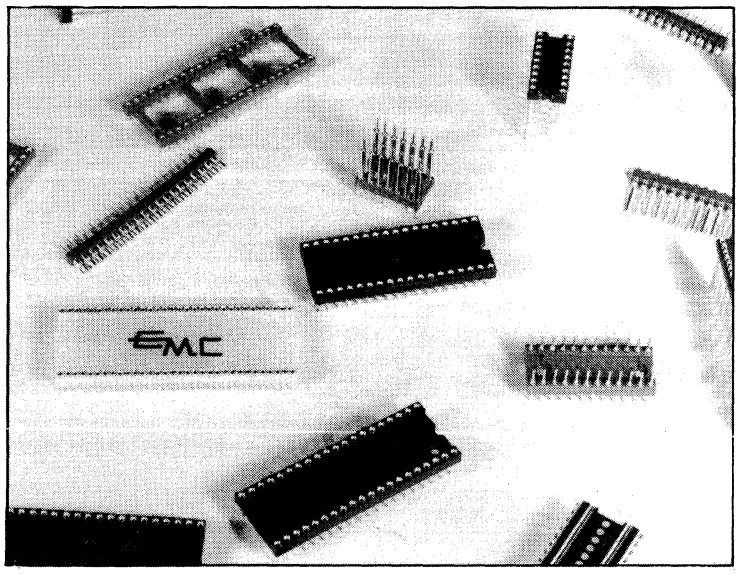
EMC®

ELECTRONIC MOLDING CORPORATION
96 Mill Street, Woonsocket, RI 02895 USA TEL. 401-769-3800 • TWX 710-387-1350

EMC®
Interconnection Specialists

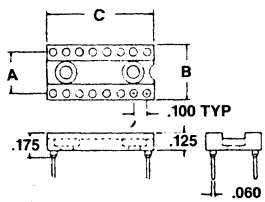
IC SOCKETS



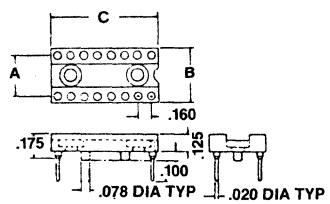
- Open and closed frame sockets are available in a variety of styles. Open-frame design allows for maximum cooling of device and for visual inspection of area beneath the socket. Closed-frame design yields 100% protection against solder wicking into contact area.
- Four-finger, BeCu inner contact with a funnel entry design allows for easy insertion of IC lead.
- Precision screw machine outer sleeve incorporates an entirely closed bottom which yields 100% protection against solder wicking into contact area.
- End-to-end and side-to-side ("X", "Y") stackable.
- Available in 6 to 64 pin DIP configurations.
- Many terminal styles from which to choose.

# OF PINS	DIP SPACING A DIM."	WIDTH B DIM."	LENGTH C DIM."
06	.300	.400	.300
08	.300	.400	.400
10	.300	.400	.500
14	.300	.400	.700
16	.300	.400	.800
16	.400	.500	.800
18	.300	.400	.900
20	.300	.400	1.000
22	.400	.500	1.100
24	.300	.400	1.200
24	.400	.500	1.200
24	.600	.700	1.200
28	.600	.700	1.400
32	.600	.700	1.600
36	.600	.700	1.800
*48	.600	.700	2.400
*50	.900	1.000	2.500
*52	.900	1.000	2.600
*64	.900	1.000	3.200

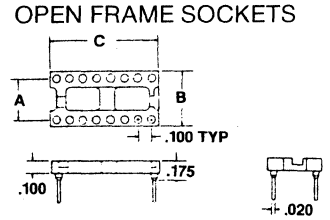
10000 SERIES — CLOSED FRAME SOCKET



11000 SERIES — CLOSED FRAME WITH STANDOFFS



17000 SERIES — OPEN FRAME SOCKETS



*Available only in open frame.

TERMINAL STYLES (Brass)

-01	PC Mount	.115" Tail	.020" Dia. Pin
-02	2 Level W/W	.375" Tail	.025" Sq. Pin
-03	3 Level W/W	.500" Tail	.025" Sq. Pin
-08	PC Mount	.170" Tail	.020" Dia. Pin
-09	PC Mount	.280" Tail	.020" Dia. Pin
-10	PC Mount	.018" Dia. Pin (Phosphor Bronze)	
-11	PC Mount	.135" Tail	.20" Dia. Pin

MATERIAL

Glass-Filled Polyester to 94-VO
Operating Temperature:
-65° C-+175° C

PLATING

-445 Gold Contact, Tin Sleeve
-446 Gold Contact, Gold Sleeve

ORDERING INFORMATION

10 3 06 - 01 - 445

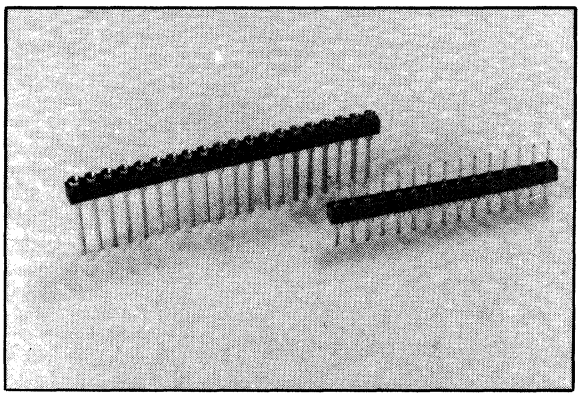
SERIES NUMBER | DIP SPACING | # OF PINS | TERM STYLE | PLATING

ELECTRONIC MOLDING CORPORATION
96 Mill Street, Woonsocket, RI 02895 USA TEL. 401-769-3800 • TWX 710-387-1350

EMC®

EMC®
Interconnection Specialists

IC SOCKETS



Solid-SIP IC Sockets And Adaptors

EMC'S 15000 Series Single-in-Line Sockets feature a solid body construction for those who desire the convenience of a single-in-line socket but who don't require the ability or the risk of the socket breaking away into smaller sections. All terminal styles incorporated in this series are precision machined to ensure hi-reliability.

Snap-SIP IC Sockets

EMC'S 14000 Series Single-in-Line Sockets feature a convenient break-away design which allows the user to customize his pin count and configuration to whatever he desires. All terminal styles are precision machined to ensure hi-reliability.

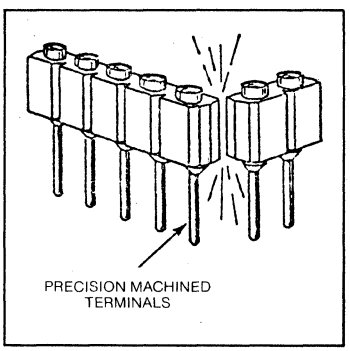
TERMINAL STYLES

-01	PC Mount	.115" Tail	.020 Dia. Pin
-02	2 Level W/W	.375" Tail	.025" Sq. Pin
-03	3 Level W/W	.500" Tail	.025" Sq. Pin
-04	DBL Male	.025" Round Upper — .020" Lower Round	
-05	Solder Cup		
-06	Bifurcated Pin		
-07	Hollow Pin		
-08	PC Mount	.170" Tail	.020" Dia. Pin

-01, -02, -03, -08 Brass —
-04 thru -07 Phosphor Bronze

PLATING

-445 Gold Contact, Tin Sleeve
-446 Gold Contact, Gold Sleeve



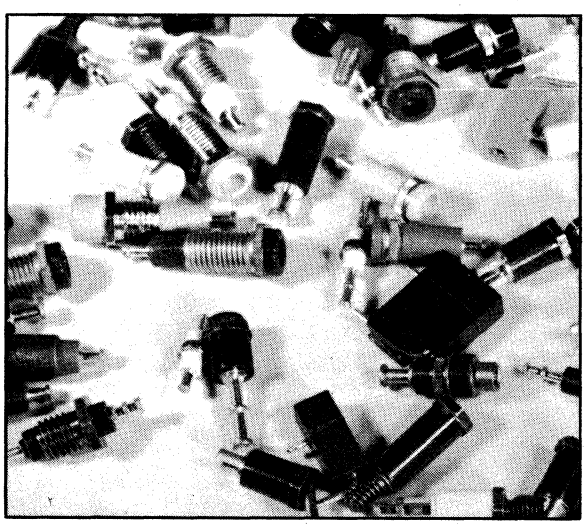
PRECISION MACHINED TERMINALS

ORDERING INFORMATION

14 1 20 - 01 - 445

SERIES # | # OF PINS | TERMINAL STYLE | PLATING

TERMINALS AND TEST JACKS



Nurl-Loc® Terminals

- EMC'S Nurl-Loc® Terminals contain ribs which allow material displacement without tearing the board. The Nurl-Loc® ribs prevent terminals from spinning during wire-wrapping.
- EMC'S Test Jacks are made to rigid specifications for military and commercial use. EMC also features a wide variety of molded standoffs and feed-thru terminals.

®Registered Trademark, Electronic Molding Corp.

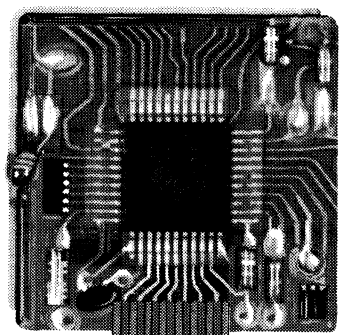
EMC®
ELECTRONIC MOLDING CORPORATION
96 Mill Street, Woonsocket, RI 02895 USA TEL. 401-769-3800 • TWX 710-387-1350

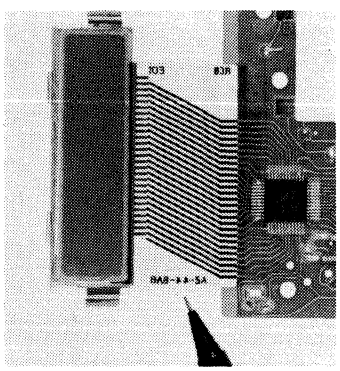
FLEXIBLE CIRCUIT HEAT SEAL CONNECTORS

The fast, reliable and economical way of connecting circuit boards to LCDs or membrane switches. Easy connections are made using heat and pressure. Align the connector, seal with heat and pressure for 10 seconds. That's all there is to it.

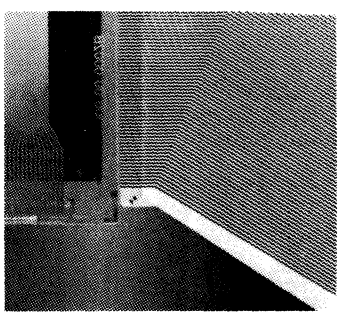
The Heat Seal connectors are available in the Graphite-Silver series and the Graphite only series. Connectors are built to conform to your engineering drawings. Contact spaces are offered down to .013" centers with as little as .05 ohms square resistance on a polyester backing. Our technology is based on years of development and is proven through mass usage.

Flexible circuit connectors save space and enhance product reliability. Overcome the aging problems and mechanical clamping of elastomeric connectors. The price is competitive and the quality is assured.

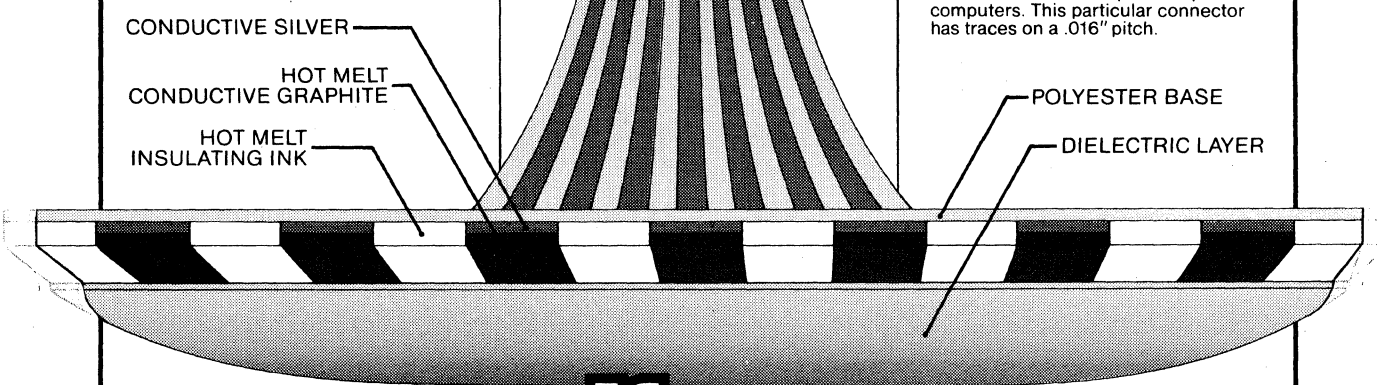




Connectors used to interface a PCB to an LCD in a hand held calculator.



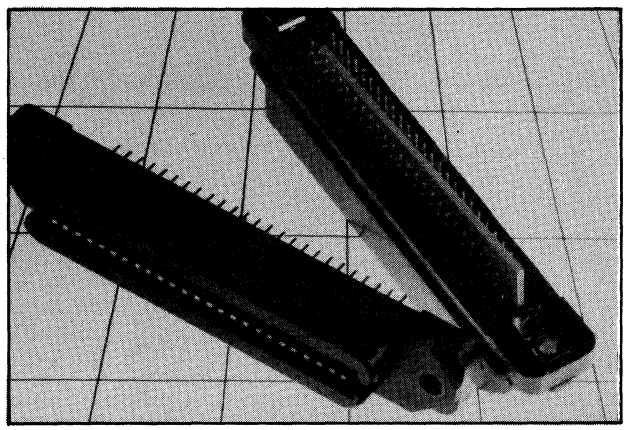
Connector for the type of LCD display used as the monitor in portable personal computers. This particular connector has traces on a .016" pitch.



elform

P.O. Box 7362, Reno, Nevada 89510 • Tel. (702) 356-1734 • Fax. (702) 356-1742

Discrete Connectors from Elfab



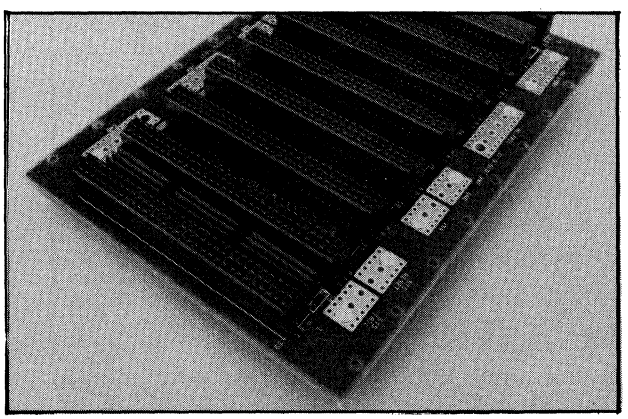
Tele Pac®

Used throughout the telecommunications industry in a variety of applications, the Tele Pac® connector mates with other industry standard connectors of its type. Tele Pac® is available in both solder and press fit styles with an all plastic housing. Although this PCB mounted connector is primarily intended as an I/O interface (cable to board), it can also be used as a board to board interface.

Adding a capacitor element to the standard version provides an EMI/RFI filtering capability which can eliminate the need for expensive shielded cable.

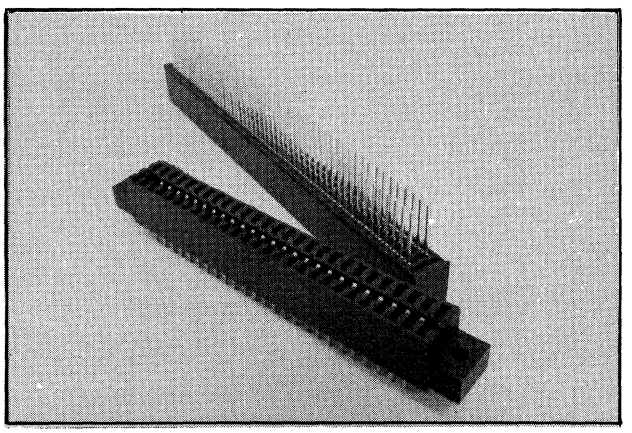
FEATURES:

- Press fit assembly without "special" assembly tooling. Only a flat plate press and board support fixture are required for assembly of press fit connectors
- Custom filters available for EMI/RFI "noise" suppression



VME Backplane

Elfab VME backplanes are designed to meet industry standard requirements. They are offered in 5, 9, 12, 20 and 21 slot configurations. Our VME backplanes are 100% electrically tested prior to leaving our factory to ensure total reliability.



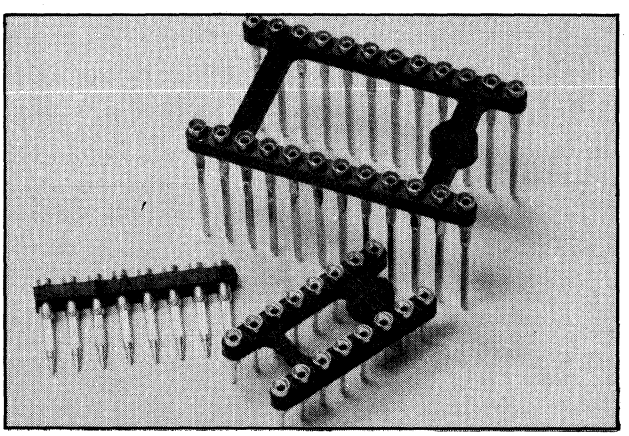
Value Pac™

Value Pac™ card edge connectors are available in solder and compliant pin press fit styles with a variety of tail lengths to provide direct interchangeability with most currently available connectors.

For the ultimate in simplicity, the assembly of press fit connectors requires only a flat plate to press directly on top of the insulator housing. No special tooling is required.

FEATURES:

- Available in three grid sizes: .100 × .200, .125 × .250, .156 × .200
- Available in both .550 and .610 high housings with .410 card slot depth
- Selective plating for efficient gold use



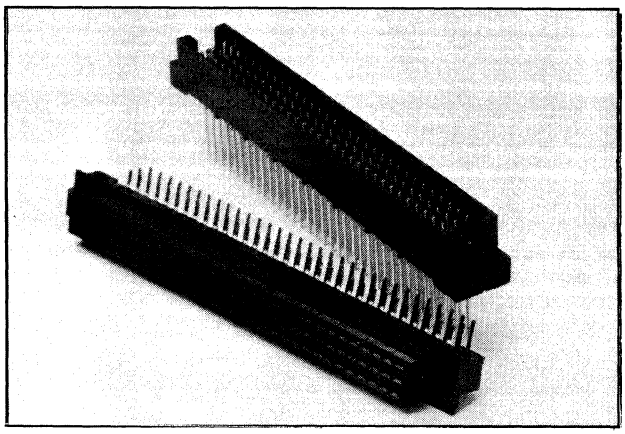
Soc Pac®

Soc Pac® precision I.C. socket connectors are available in either standard SIP or DIP configurations as well as loose pins. All connector sizes are available in standard solder or new press fit styles with 0, 2, or 3 level wire wrap tail lengths.

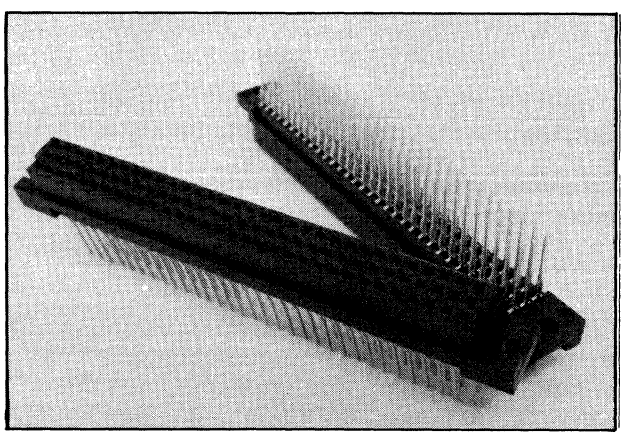
FEATURES:

- Precision machined brass body
- Beryllium copper spring contact
- 100% oriented contact clip
- Wire wrap tail allows rear plug up of box connectors

Discrete Connectors from Elfab



Inverse DIN



Standard DIN

DIN Connectors

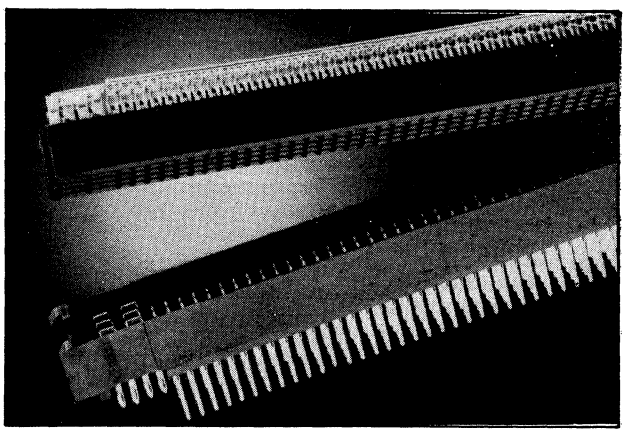
The DIN connectors are primarily used as a board to board interface system. These connectors are directly interchangeable with others designed to meet the international DIN 41612 standards. The standard and inverse versions differ only in the placement of the plug and receptacle connectors. In the standard application, the receptacle or female connector is backplane or rack mounted. In the inverse application, the plug or male connector is utilized in this location. Backplane mounted connectors in both versions are offered in either solder or compliant pin press fit styles. The DIN series is an excellent alternative to a card edge connector system as it offers greater contact density and lower insertion forces at comparable per line cost.

FEATURES:

- Rear shrouds available for rear cable or board interface
- Solder and wire wrap tails available

AUGAT® ELFAB®

Quality and Innovation

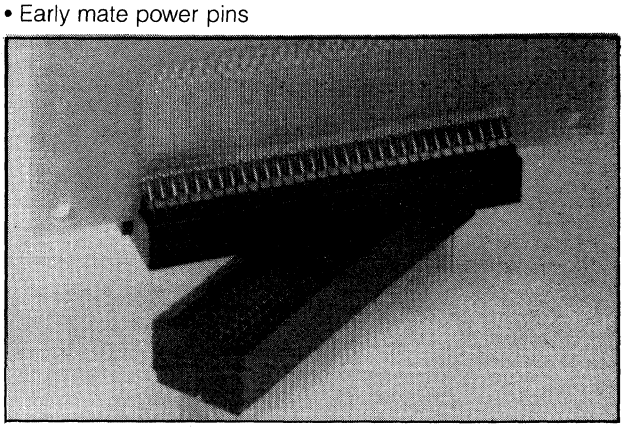


Four Row Box Pac™

The Four Row Box Pac™ high density interconnect system has 4 rows on .100 grid. This system allows for the shortest conductor path between module board and backpanel, with consistency of distance between all four rows. The female surface mount adapts to either vapor phase or reflow soldering. The male is available in either press fit or solder tail.

FEATURES:

- Optional power and ground busses
- Optional keying
- Low insertion force
- Early mate power pins



Six Row "Double-Din"

The six row version of the Four Row Box Pac (above) is double the density of a standard DIN connector. Available immediately from production with 6 rows, 32 pins per row. Female surface mount connector allows for the shortest conductor path between module board and backpanel with consistency of distance between all 6 rows. It adapts to either vapor phase or reflow solder. The male connector is available in either press fit or solder tail.

For more information call toll free: 1-800-527-0753
1097 Yates • Lewisville, Texas 75067 • (214) 221-8776

eem SI UNITS

RELATIVE QUANTITY SYMBOLS

$\neq$	not equal to
$\approx$	approximately equal to
$\propto$	proportional to
$<$	smaller than
$\leq$	smaller than or equal to
$\ll$	much smaller than
$>$	larger than
$\geq$	larger than or equal to
$\gg$	much larger than
$\equiv$	identical to or equivalent
$\uparrow$	increases
$\downarrow$	decreases

PREFIXES FOR SI UNITS

Multiple	Prefix	Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p

Quantity	Symbol	SI Unit	Symbol	Derivation
acceleration	a	m s^{-2}	—	velocity/time
acceleration due to gravity	g	m s^{-2}	—	velocity/time
amount of substance	n	mole	mol	mole fraction (n) used
amplification factor	μ	*a ratio*	—	—
angle	$\theta_1, \varphi_1, \alpha_1$	—	—	—
angle of incidence	i	degree or radian	°	—
angle of refraction	r	degree or radian	°	—
angle, Bragg	θ	number	—	—
angle, critical	c	degree or radian	°	—
anode slope resistance	R_A	ohm	Ω	$\Delta V_a / \Delta I_a$
area	A	metres squared	m^2	$l \times b$
atomic number	Z	a number	—	number of protons
Avogadro constant	L, N_A	number	—	—
breadth	b	metre	m	fundamental unit
capacitance	C	farad	F	charge/p.d.
charge, electric	Q	coulomb	C	current × time
charge on electron	e	coulomb	C	$1{\cdot}6 \times 10^{-19}$ C
conductance	G	ohm^{-1}	Ω^{-1}	reciprocal of resistance
current, electric	I	ampere	A	fundamental unit
decay constant	λ	*a ratio*	—	—
density	ρ	kg m^{-3}	—	m/V
distance along path	s	metre	m	fundamental unit
efficiency	η	*a ratio*	—	work output/work input
electrochemical equiv.	z	g C^{-1}	—	mass/charge
electromotive force	E	volt	V	energy/charge
electron	e	—	—	—
energy	E	joule	J	N m
energy, kinetic	E_k	joule	J	N m. $E_k = 1/2mv^2$
energy, potential	E_p	joule	J	N m. $E_p = mgh$
Faraday constant	F	coulomb mol^{-1}	C mol^{-1}	96,500 C mol^{-1}
field strength, electric	E	V m^{-1}	—	potential gradient: p.d./dist.
field-strength magnetic	H	ampere-turns	—	current × no. of turns
flux, magnetic	Φ	weber	Wb	e.m.f/rate of change of flux
flux density	B	tesla	T	flux/area
focal length	f	metre	m	—
force	F	newton	N	kg m s^{-2}
free energy	ΔG	joule	J	—
frequency	f	hertz	Hz	oscillations/time
gas constant	r	joule	J	energy
half-life,radioactivity	$t_{1/2}$	second	s	fundamental unit
heat capacity	C	J K^{-1}	—	quantity of heat/temp. rise
heat of reaction	ΔH	joule	J	heat energy
heat capacity, specific	c	J K^{-1} kg^{-1}	—	heat capacity/mass
heat, quantity of	q	joule	J	energy

eem SI UNITS

Quantity	Symbol	SI Unit	Symbol	Derivation
height	h	metre	m	fundamental unit
image distance	υ	metre	m	fundamental unit
inductance, mutual	M	henry	H	induced e.m.f./rate of change of current
inductance, self	L	henry	H	—
intensity of radiation	I	*a number*	—	—
latent heat	L	joule	J	quantity of heat
latent heat, specific	l	J kg^{-1}	—	quantity of heat
latent heat, molar	L_m	joule mol^{-1}	J	quantity of heat
length	l	metre	m	fundamental unit
magnetizing force	H	ampere-turns	—	—
magnetic moment	m	Wb m	—	torque in unit magnetic field
magnification, linear	m	*a ratio*	—	—
mass	m	kilogramme	kg	fundamental unit
mass number	A	*a number*	—	number of neutrons + protons
molar volume	V_m	(dm^3)	—	volume of 1 mole
molar solution	M	*a ratio*	—	moles/dm^3
moment of force	—	N m	—	force × perp. distance
neutron number	N	*a number*	—	number of neutrons
number	n	—	—	—
number of molecules	N	—	—	—
number turns on coil	n	*a number*	—	—
number order spectrum	p	*a number*	—	—
object distance	u	metre	m	fundamental unit
peak current	I_O	ampere	A	see current
peak e.m.f.	E_O	volt	V	see e.m.f.
period	T	second	s	fundamental unit
permeability	μ	H m^{-1}	—	henry/metre
permeability, vacuum	μ_o	H m^{-1}	—	—
permeability, relative	μ_r	*a ratio*	—	$\mu = \frac{\mu}{\mu_O}$
permittivity	ε	F m^{-1}	—	farad/metre
permittivity, vacuum	ε_o	F m^{-1}	—	farad/metre
permittivity, relative	ε_r	*a ratio*	—	$\varepsilon_r = \frac{\varepsilon}{\varepsilon_o}$
potential, electric	V	volt	V	energy/charge
potential difference	V	volt	V	energy/charge
power	P	watt	W	J s^{-1}
pressure	p	pascal	Pa	N m^{-2}: force/area
radius	r	metre	m	fundamental unit
reactance	X	ohm	Ω	E_O/I_O
refractive index	n	*a ratio*	—	—
resistance	R	ohm	Ω	p.d./current
resistivity, electrical	ρ	ohm-metre	—	resistance × length
relative density	d	*a ratio*	—	ρ_{sub}/ρ_{water}
r.m.s. current	$I_{r.m.s}$	ampere	A	see current
r.m.s. voltage	$V_{r.m.s}$	volt	V	see e.m.f.
slit separation	s	metre	m	fundamental unit
tension	T	newton	N	see force
temperature, Celsius	θ	degree C	°C	from kelvin
temp. interval	θ	degree	° or K	—
temp. absolute	T	kelvin	K	fundamental unit
thickness	d	metre	m	fundamental unit
time	t	second	s	fundamental unit
torque	T	Nm	—	see moment
turns ratio	T	*a ratio*	—	n_{sec}/n_{prim}
(unit of electricity)	—	kW h	—	kilowatt × hour
velocity	u,υ	ms^{-1}	—	distance/time
velocity, angular	ω	$second^{-1}$	s^{-1}	angle/time
velocity, e.m.waves	c	m s^{-1}	—	—
velocity of sound	υ	m s^{-1}	—	—
volume	V	metre cubed	m^3	l × b × h
wavelength	λ	metre	m	fundamental unit
work	w	joule	J	force x distance (Nm)
weight	W	newton	N	kg m s^{-2}or mg

EPD
ELECTRONICS INC.
P.O. BOX 2517, GARDENA, CA 90247
16921 S. Western Ave., No. 110, Gardena, CA 90247 (213) 515-4996

CONNECTORS AND ADAPTERS

850(F59)

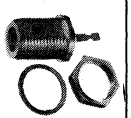
"F" Male plug for RG-59U cable with ¼" ring

851(F59)

"F" Male ring attached for RG-59U cable

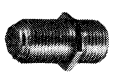
815

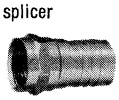
RCA Phono plug with crimping ring for RG-59U cable

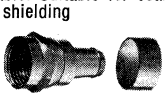
861(F61)

"F" Type female chassis mount. ⅜" mount. hole

861A(F61)

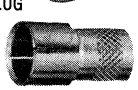
"F Type female chassis mount. With back screw

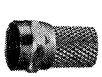
848(F81)

"F" Dual female splicer

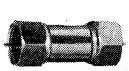
851C(F59)

"F" Male with long crimping barrel, for RG-59U cable. Suitable for coax with foil type shielding

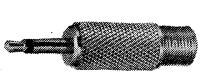
816(F56)

"F" Male plug for RG-6/U cable with ¼" ring


NUTS
WASHER
SOLDER LUG

863

"F" Type solderless push on plug for RG-59U cable. Strip cable and screw on

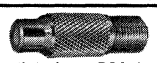
863A

"F" Type solderless screw on for RG-59U cable. Strip and screw on cable

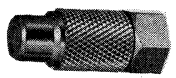
848M(F71)

"F" Type dual male splicer

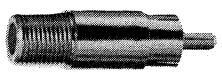
854

⅛" Mini phone plug to "F" type female

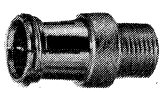
855

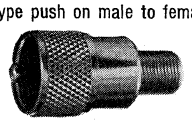
Right angle "F" male to "F" female

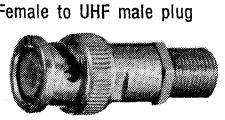
856

"F" Type female to RCA female

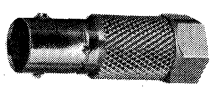
858

RCA Type female to "F" male adapter

860

"F" Type female to RCA male adapter

853

"F" Type push on male to female

862

"F" Female to UHF male plug

864

"F" Type female to BNC male

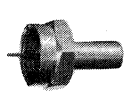
865

"F" Male to BNC female

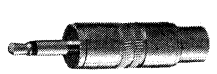
890

Push on balum matching transformer 75-300 ohm for UHF/VHF/FM

840

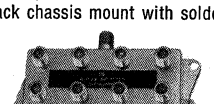
75-300 Ohm balum matching transformer UHF/VHF/FM

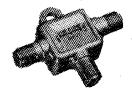
852

"F" Type 75 ohm terminator

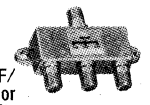
326

¼" mini phone plug to RCA phono jack

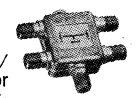
500

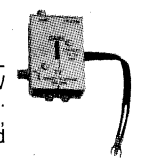
RCA Jack chassis mount with solder lug

846

8-Way splitter. UHF/VHF indoor/outdoor 75 ohm signal splitter

842

2-Way splitter. UHF/VHF indoor/outdoor 75 ohm signal splitter

843

3-Way splitter. UHF/VHF indoor/outdoor 75 ohm signal splitter

844

4-Way splitter. UHF/VHF indoor/outdoor 75 ohm signal splitter

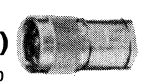
898

TV Game switch. Select your game or TV for instant viewing. 300/75 ohm input, 300 ohm output lead

811

ABC Switch. Shielded low loss switcher. "F" type connector. Permits instant selection of 3 different signals

899

Crimping tool for "F" connector

N-101(UG-21)

Male standard clamp
GOLD PLATED CONTACTS

N-101A (UG-536B/U)

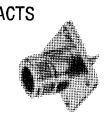
Male standard clamp
GOLD PLATED CONTACTS

N-101B (UG-21) LONG

Male standard clamp
GOLD PLATED CONTACTS

N-102

Male mil crimp
GOLD PLATED CONTACTS

N-105 (UG-58B/U)

Standard panel female square mount
GOLD PLATED CONTACTS

N-111 (UG-29B/U)

Inline female to female
GOLD PLATED CONTACTS

N-112 (UG-27B/U)

Right angle male to female
GOLD PLATED CONTACTS

N-216 (UG-107/U)

Tee female-male-female

N-207 (UG-201/U)

Male N to female BNC

N-208 (UG-349/U)

Female N to BNC male

B-135A (For RG59/U)

BNC Male with crimp ferrell attached

B-191 (For RG59/U)

BNC male twist on cable

B-193

BNC Female chassis mount

B-220 (For RG58/U)

BNC Male with crimp ferrel

N-207 (UG-201/U)

Male N to female BNC

N-208 (UG-349/U)

Female N to BNC male

864

"F" Type female to BNC male

865

"F" Male to RCA female

867

BNC Female to RCA female

868

BNC Female to male RCA

FISCHER AMERICA, INC.

High Performance, Automatic Locking, Circular Connectors



The Fischer Interconnection System offers you excellent performance in an aesthetically pleasing package. Highly reliable electrical and mechanical performance is achieved through use of precision machined shells and gold plated contacts.

The unique automatic locking system provides positive and reliable coupling, while eliminating any possibility of contact damage through use of a patented, metal semicircular polarization system.

Over 3,000 combinations of shell and contact configurations provide you with unparalleled design flexibility. The modular construction allows non-standard combinations to be achieved easily without NRE or tooling charges.

Our sealed connectors' standard features include vacuum tightness to 10^{-8} Torr, pressure to 8 Atms., and immersion depths to 200 meters. These qualities are ideal for medical and other applications requiring general environmental sealing or sterilization by autoclave, chemical, gas, or gamma radiation.

Connectors are listed by series.

Connectors are listed below by series with maximum voltage/current ratings and number of pins. The popular 102 through 105 Series are described in greater detail on the following two pages.

Please contact us regarding catalog information on these connectors as well as the 101, 106, 107 and 400 Series, custom connectors, cable assemblies, and delay lines. Application and engineering assistance is our forte.

101 Series: miniature (6.5mm dia.) 50 Ohm coaxial connectors meeting the international NIM-Camac standard for electronic instrumentation use. Maximum ratings are 3kVDC and 2 Amps.

102 Series: metal shell connectors provide a maximum of 4 contacts, 7kVDC, and 8 Amps.

103 Series: metal shell connectors provide a maximum of 7 contacts, 9kVDC, and 25 Amps.

104 Series: metal shell connectors provide a maximum of 16 contacts, 8kVDC, and 50 Amps.

105 Series: metal shell connectors provide a maximum of 24 contacts, 25kVDC, and 35 Amps.

106 Series: metal shell connectors provide a maximum of 24 contacts, 20kVDC, and 25 Amps.

107 Series: metal shell connectors provide a maximum of 55 contacts, 55kVDC, and 180 Amps.

400 Series: lightweight, intrinsically safe, plastic shell connectors provide a maximum of 15 contacts, 3kVDC, and 3 Amps.

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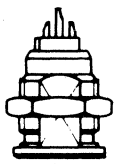
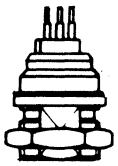
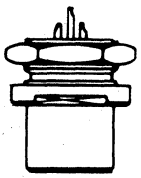


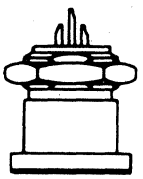
D–FRONT MOUNT



DBP–REAR MOUNT
DBPE–SEALED REAR MOUNT

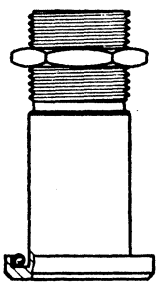


DBEE–SEALED

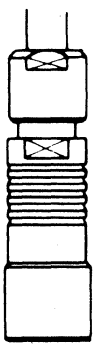


DEE–SEALED

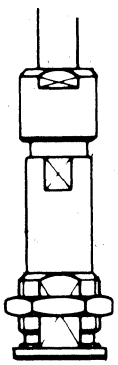
RECEPTACLES



WDE–SEALED FEED-THRU



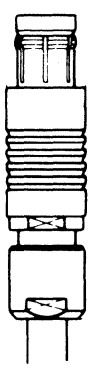
K–CABLE MOUNT
KE–SEALED CABLE MOUNT



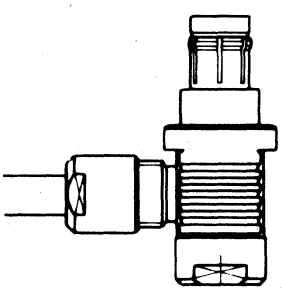
DK–CHASSIS MOUNT W/CABLE CLAMP
DKE–SEALED CHASSIS MOUNT W/CABLE CLAMP

ANY PLUG MATES WITH ANY RECEPTACLE

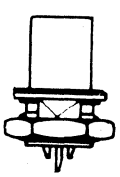
PLUGS



S–CABLE MOUNT
SE–SEALED CABLE MOUNT



WS–RIGHT ANGLE
WSE–SEALED RIGHT ANGLE



SF–PANEL PLUG
SFE–SEALED PANEL PLUG

Receptacles/ Plugs	SERIES 102		SERIES 103		SERIES 104		SERIES 105	
	Max. Length (mm)	Max. Diam. (mm)	Max. Length (mm)	Max. Diam. (mm)	Max. Length (mm)	Max. Diam. (mm)	Max. Length (mm)	Max. Diam. (mm)
D	19.0	11.0	23.0	14.0	25.0	19.0	32.5	22.0
DBP	19.0	11.0	23.0	14.0	23.0	19.0	32.5	22.0
DBEE	19.5	14.0	25.0	18.0	27.0	22.0	32.5	27.0
DEE	20.0	14.0	25.0	18.0	27.0	22.0	32.5	27.0
WDE	39.0	14.0	40.0	17.0	40.0	22.0	62.0	27.0
K/KE	35.0	10.0	43.0	13.0	47.0	16.0	60.0	19.0
DK	35.0	11.0	43.0	14.0	50.0	19.0	60.0	22.0
DKE	35.0	14.0	43.0	18.0	50.0	22.0	60.0	27.0
S/SE	35.0	9.0	45.0	12.0	50.0	15.0	60.0	18.0
WS	28.0	9.0	33.0	12.0	35.5	15.0	52.0	18.0
SF	19.0	11.0	23.5	14.0	27.0	18.0	29.0	22.0
SFE	–	–	28.0	17.0	27.0	22.0	–	–

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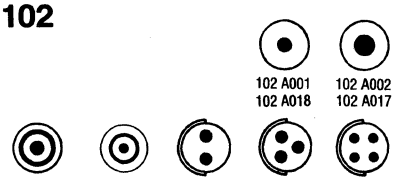
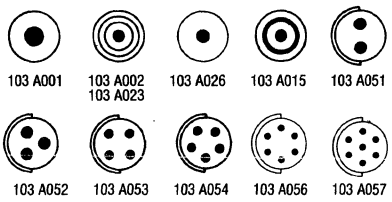
102



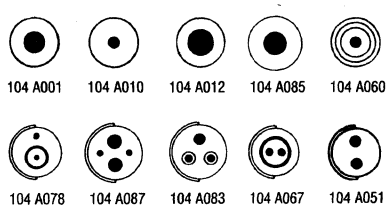
Ref. No.	Description	Contacts	Test Voltage (kVAC @ 50 Hz) Contact to Body	Test Voltage (kVAC @ 50 Hz) Contact to Contact	Imped. (Ohms)	Max. I (Amps)	Contact Dia.(mm)/AWG	Cable O.D. (mm)
102 A001	Single pole	1	1.4			6	1.6/14	unshielded: 1.4-4.5 shielded: 1.4-4.5 sealed: 1.5-4.3
102 A018	Single pole	1	7.0 DC			2	0.9/22	
102 A002	Coaxial	1	1.8		50	2	0.9/22	
102 A017	Coaxial	1	1.5		75	4	1.3/18	
102 A014	Triaxial	2				2	0.9/22	
102 A021	Triaxial	2	0.16/1.4	0.7	50	2	0.9/22	
102 A051	Multipole	2	0.7	0.9		2	0.9/22	
102 A052	Multipole	3	0.7	0.9		2	0.9/22	
102 A053	Multipole	4	0.5	0.7		1	0.7/24	

103



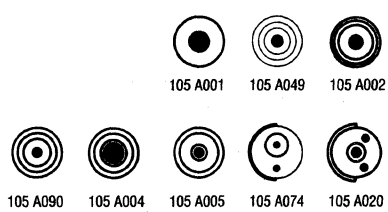
Ref. No.	Description	Contacts	Test Voltage (kVAC @ 50 Hz) Contact to Body	Test Voltage (kVAC @ 50 Hz) Contact to Contact	Imped. (Ohms)	Max. I (Amps)	Contact Dia.(mm)/AWG	Cable O.D. (mm)
103 A001	Single pole	1	2.6			8	2.0/12	unshielded: 2.5-6.5 shielded: 2.4-6.5 sealed: 1.5-6.0
103 A002	Coaxial	1	3.2		75	4	1.3/18	
103 A023	Coaxial	1	9.0 DC		50	4	1.3/18	
103 A026	Coaxial	1	1.8		50	6	1.6/14	
103 A015	Coaxial	2	1.1	1.0		4	1.3/18	
103 A051	Multipole	2	0.7	1.2		4	1.3/18	
103 A052	Multipole	3	0.7	0.8		4	1.3/18	
103 A053	Multipole	4	0.7	1.3		2	0.9/22	
103 A054	Multipole	5	0.7	0.9		2	0.9/22	
103 A056	Multipole	6	0.6	0.5		2	0.7/24	
103 A057	Multipole	7	0.6	0.5		2	0.7/24	

104



Ref. No.	Description	Contacts	Test Voltage (kVAC @ 50 Hz) Contact to Body	Test Voltage (kVAC @ 50 Hz) Contact to Contact	Imped. (Ohms)	Max. I (Amps)	Contact Dia.(mm)/AWG	Cable O.D. (mm)
104 A001	Single pin	1	3.2			10	3.0/10	unshielded: 3.0-8.5 shielded: 2.8-8.5 sealed: 2.9-8.5
104 A010	Single pin	1	8.0 DC			8	2.0/12	
104 A012	Single pin	1	2.5			15	4.0/8	
104 A085	Single pin	1	1.7			50	5.0/8	
104 A060	Coaxial	1	4.0		50	8	2.0/12	
104 A078	Single pin	1	1.0			2	0.9/22	
	Coaxial	2	1.0/3.8		50	2	0.7/24	
104 A087	Low current	2	1.1	1.0		2	0.9/22	
	High current	2	1.0	1.0		25	2.3/12	
104 A083	Mixed	1	1.2	2.7		6	1.6/14	
		2	2.5	2.5		2	0.9/22	
104 A067	Multipole	2	0.7	0.9		2	0.9/22	
104 A051	Multipole	2	1.3	1.8		6	1.6/14	
104 A040	Multipole	3	1.25	1.3		6	1.6/14	
104 A037	Multipole	4	1.3	1.4		4	1.3/18	
104 A062	Multipole	4	6.0 DC	6.0 DC		2	0.9/22	
104 A053	Multipole	5	0.9	1.2		4	1.3/18	
104 A065	Multipole	6	1.2	1.5		2	0.9/22	
104 A054	Multipole	7	0.9	1.1/1.8		2	0.9/22	
104 A066	Multipole	8	0.9	1.1		2	0.9/22	
104 A055	High current	1	2.9	1.5		4	1.3/18	
	Low current	8	0.6	0.8/1.0		2	0.9/22	
104 A056	Multipole	11	0.6	0.8/1.0		2	0.9/22	
104 A086	Multipole	16	0.5	0.8		1	0.7/24	

105

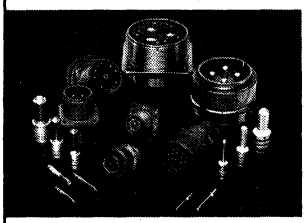


Ref. No.	Description	Contacts	Test Voltage (kVAC @ 50 Hz) Contact to Body	Test Voltage (kVAC @ 50 Hz) Contact to Contact	Imped. (Ohms)	Max. I (Amps)	Contact Dia.(mm)/AWG	Cable O.D. (mm)
105 A001	Single pole	1	4.0			15	4.0/8	unshielded: 3.1.10.5 shielded: 3.1-10.5 sealed: 3.1-10.5
105 A049	Single pole	1	25.0 DC			8	2.0/12	
105 A002	Coaxial	1	5.0		50	10	3.0/10	
105 A090	Coaxial	1	5.0		75	8	2.0/12	
105 A004	Coaxial	1	13.0 DC		40	15	4.0/8	
105 A005	Coaxial	1	14.0 DC		75	8	2.0/12	
105 A074	Signal	1				4	1.3/18	
	Coaxial	2	8.0 DC	7.1/1.0	50	4	1.3/18	
105 A020	High voltage	1	14.0 DC			8	2.0/12	
	Low voltage	2	0.8	4.9		4	1.3/18	
105 A036	High voltage	1	14.0 DC			8	2.0/12	
	Low voltage	4	0.8	3.5		4	1.3/18	
105 A060	High voltage	1	14.0 DC			8	2.0/12	
	Low voltage	7	0.9	1.0		4	1.3/18	
105 A087	Multipole	2	1.1	1.5		35	3.0/10	
105 A057	Multipole	3	5.5 DC	8.0 DC		4	1.3/18	
105 A039	Multipole	5	7.0 DC	7.0 DC		4	1.3/18	
105 A051	Multipole	2	2.0	1.8		2	2.0/12	
105 A052	Multipole	3	1.3	1.6		8	2.0/12	
105 A053	Multipole	4	0.8	1.3/2.0		8	2.0/12	
105 A054	High current	1	2.4	1.3		8	2.0/12	
	Low current	6	1.1	0.9/2.7		4	1.3/18	
105 A067	Multipole	8	0.95	1.0		4	1.3/18	
105 A062	Multipole	10	0.9	0.9		4	1.3/18	
105 A069	Multipole	12	0.7	0.8		4	1.3/18	
105 A058	Multipole	15	0.7	1.0		2	0.9/22	
105 A038	Multipole	18	0.7	1.0		2	0.9/22	
105 A093	Multipole	24	0.7	0.7		1	0.7/24	

BREEZE ILLINOIS / T.J.ELECTRONICS

CELMARK ENGINEERING / FLIGHT CONNECTOR

- Military Cylindrical Connectors
- Commercial Cylindrical Connectors
- High Pressure Hermetic Connectors
- Geophysical & Hydro-Pressure Connectors
- Specially Engineered Connectors
- Terminal Junction Systems
- Lighted Panel Connectors
- Bonding Jumpers
- Contact Pins
- Sealing Plugs



MIL-C-5015

Circular Connectors
Front Release

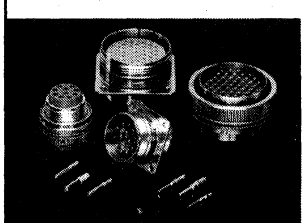
SHELL STYLES
3400 Receptacle, Wall Mounting
3401 Receptacle, Cable
3402 Receptacle, Box Mounting
3404 Receptacle, Jam Nut Mounting
3406 Plug
3408 Plug, 90° Assembly
3409 Plug, 45° Assembly
3412 Receptacle, Box Mounting Rear Accessory Threads

CONNECTOR CLASSES
D = High Impact
DJ = Environmentally Sealed Backshell
W = General Purpose (Rear Release only)
KT = Firewall (Rear Release only)
L = High Temp. (Rear Release only)

FEATURES

The Mil-C-5015 (Navy) connector specification is one of the most widely used specifications for circular connectors. The latest series is suggested for new design in both Mil-Std-1353B and Aerospace Recommended Practice 1308B. Its use is increasingly popular in both military and commercial environments where high reliability and low installed cost are important.

These MS circular connectors are manufactured by Flight Connector in the above classes in shell sizes 10 through 44 for use in all Aerospace/Military applications. Threaded couplings provide for high shock low cost. The high shock standard of class D is perhaps the most demanding of all military specifications. Front release removable contacts are utilized where the specific application requires more convenience for the wiring of the assembly. An audible click insures positive contact retention.



MIL-C-5015

Circular Connectors
Rear Release

SHELL STYLES
MS3450 Receptacle, Wall Mounting
MS3451 Receptacle, Cable Mounting
MS3452 Receptacle, Box Mounting
MS3454 Receptacle, Jam Nut Mtng.
MS3456 Plug, cable connecting

CONNECTOR CLASSES
Class KS - Firewall, st. steel
Class KT - Firewall
Class L - High temp., fluid resistant
Class LS - High temp., st. steel
Class W - General purpose

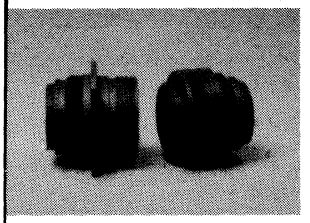
FEATURES

The Flight Connector MS345X series incorporates a threaded coupling and removable rear release crimp contacts and is fully intermatable with existing Mil-C-5015 and threaded Mil-C 83723 Series II (USAF) connectors. Construction is similar to the front release connectors except that the contacts are removed through the rear release cavity.

Connectors are protected against degradation caused by caustic substances and are rated for temperature ranges from -50C to +200C. Electroless nickel or cadmium plating may be specified for applications finishes.

Flight Connectors offers construction in aluminum as well as stainless steel. Shells, hardware and backshells offered are finished with olive drab cadmium for corrosion resistance. Stainless steel components are finished in black cadmium. Elastomers are silicone and insulators are glass filled thermosetting epoxy. As a QPL Approved source for this MS series TransTechnology units provide both connector and cable requirements.

Along with these off-the shelf connectors we offer the capability to design and manufacture complete cable systems, interconnection assemblies, individual cables, and/or modified connectors according to the dictates of the application need



MIL-C-28840

Circular Connectors
Front Release

EMI/RFI Grounding Fingers With or Without Backshell Hardware

SHELL STYLES
MS28840/10 Receptacle, Wall Mounting
MS28840/11 Receptacle, Cable Mounting
MS28840/12 Receptacle, Box Mounting
MS28840/14 Receptacle, Jam Nut Mntg.
MS28840/16 Plug, Cable Mounting
MS28840/17 Plug, Cable w/ strain relief 0°
MS28840/18 Plug, Cable w/ strain relief 90°
MS28840/19 Plug, Cable w/ strain relief 45°

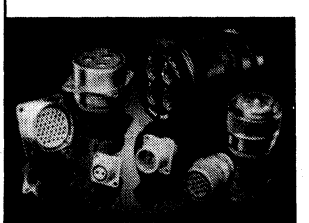
CONNECTOR CLASSES
D = Aluminum with cadmium olive drab over electroless nickel finish
DS = Stainless steel with cadmium black finish
DJ = Aluminum backshell with cadmium over electroless nickel finish
DJS = Stainless steel backshell with cadmium black finish

FEATURES

The Mil-C-28840 connector is designed for extreme environmental conditions. With EMI/RFI spring fingers for shielding, it features high impact shock, vibrations, corrosion and water resistance. Temperature withstanding range is from -55°C to +200°C.

Designed primarily for Navy shipboard use with Mil-C-915 and Mil-W-16878 cables, this hostile environment connector can provide an ideal connector in many applications. Modifications for hermetics and shielded cable assemblies are available.

When used in conjunction with flex metallic conduit, superior EMI Shielding characteristics can be achieved. Contact TTE for further details on shielded flexible cable applications.

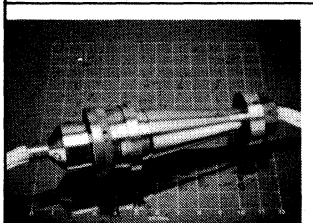


COMMERCIAL

Circular Connectors
Front Release Contacts

These threaded coupling cylindrical connectors are constructed to the Mil-C-5015 specifications. The high reliability, quality and low cost have made them much in demand by major air-frame and industrial users.

Flight Connector designs, manufactures and markets a complete line of environmentally resistant firewall and general purpose electrical connectors that are intended for use in high temperature aircraft firewall and electrical system applications requiring maximum functional integrity consistent with installation ease.



HYDRO-PRESSURE
and Geophysical

SERIES
- Mil-C-24217
- Mil-C-22539
- Mil-C-24231 Plus Variations

FEATURES

Celmark geophysical and underwater connectors and cable assemblies represent the very latest in high performance connector technology. With over three decades of experience and engineering leadership in missiles and high altitude aircraft and subsea connectors, Celmark has been improving and producing these rugged connectors to withstand the severe ocean environment. Pressure rating of the hermetic glass sealed header exceeds 10,000 PSI. Celmark has also perfected a plastic material that incorporates a patent pending Cel-seal design also tested to 10,000 PSI.

Products shown on these pages represent the major portion of the broad connector product line offered by the TransTechnology Electronics division family of Connector Companies - Flight Connector, Celmark Engineering, T.J. Electronics and Breeze-Illinois.

We design and manufacture these products to provide Quality, Value and service for every interconnection application. Call us today with your requirements.

TransTechnology TE Electronics



MIL-T-24552
Casualty Power Connector

SERIES

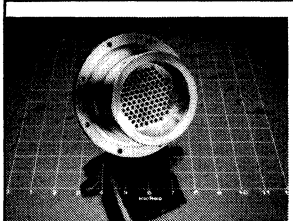
24552/1 Terminal, casualty power, receptacle type, 200 ampere, 450 volts/AC, 3 phase. Back connected. Symbol #1046.
24552/2 Terminal, casualty power, receptacle type, 200 ampere, 450 volts/AC, 3 phase. Back connected. Upper and lower riser. Symbol #1047.
24552/3 Terminal casualty power seal. Symbol #1048.
24552/4 Terminal, casualty power, plug, 100 ampere, 450 volts/AC. Symbol #1049.

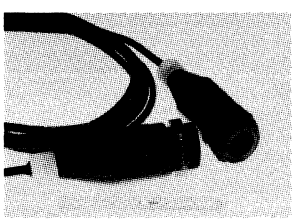
FEATURES

Casualty power connectors provide Navy shipboard electrical power distribution in emergency and maintenance situations. Power distribution between bulkheads provides patching capabilities for alternate arrangements as required. Operating temperatures are -40°C to +125°C.

The casualty power connector is a ruggedized connector capable of high electrical rating under the extremes of high shock, vibration, watertightness, and spraytightness.

The casualty power connector interfaces well with other Navy interconnection hardware in the TTE family of products.





HYDRO-PRESSURE
Specially Engineered Connectors

- Feed thru bulkheads, single pin
- Co-axial feed thru bulkhead
- Tri-axial feed thru bulkhead
- Hi-voltage feed thru bulkhead
- Nuclear connectors and penetrators
- Plastic miniature type connectors
- Make and break underwater co-axial connectors

FEATURES

Flight Connector specializes in Geophysical underwater connectors. We also manufacture connectors for nuclear power stations, meeting high radiation and L.O.C.A. requirements, specialty connectors for the medical, aircraft and the computer industries.

MAKE AND BREAK UNDERWATER CONNECTORS

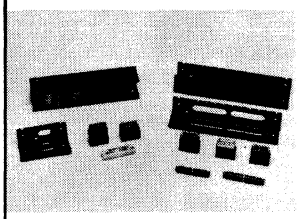
Celmark has produced, in conjunction with specific customers, make and break underwater connectors of various sizes. A large co-axial design approximately 2 and ½ feet long by 6 inches high carries a 50 ohm co-axial power cable. It features pressure compensation at any depth in the ocean.

MINIATURE AND SUBMINIATURE PENETRATORS AND PLUGS

Celmark produces a variety of ultra-small underwater type penetrators and plugs meeting a need for high-density packaging. Celmark's series 92 has a variety of options, from stainless steel hermetically sealed units to titanium, aluminum or other metals using a plastic sealed barrier puck. Series 92 also has pressure compensated plugs with straight and right angle adapters for the attachment of oil-filled tubing.

BULKHEAD FEED-THROUGH CONNECTORS

Single pin bulkhead feed-through connectors are offered in many styles per customer requirements. They come with size 16 contacts and larger for both pipe-thread installation or conventional "O" ring and screw thread retention. A co-axial design is also available: Pressure rating of the hermetic glass sealed header exceeds 10,000 PSI. Celmark has also perfected a plastic material system which incorporates a patent pending Cel-seal design also tested to 10,000 PSI.



MIL-T-81714
Terminal Junction System
Front & Rear Release

TRACKS BLOCKS SPLICES

Mil-T-81714/2-XXX Module, feedback, size 20.
Mil-T-81714/3-XXX Module, feedback, size 16.
Mil-T81714/5-XX Track, feedback, std. wt.
Mil-T-81714/11-16X Splice, size 16.
Mil-T-81714/11-20X Splice, size 20.
Mil-T-81714/12-16X Dual Splice, size 16.
Mil-T-81714/12-20X Dual Splice, size 10.
Mil-T-81714/16-XX Track, feedback, lt. wt.

CLASSES

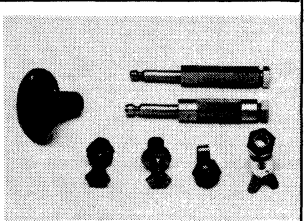
A: 150°C, environmental type.
B: 175°C, environmental type.
C: 200°C, environmental type.
D: Combines A, B, C

Contacts:
Mil-C-39029/1-16-20
Mil-C-39029/1-14-16

FEATURES

Terminal Junction Systems Mil-T-81714B (QPL approved) are available in feedback sizes of 16 and 20 with a full selection of bussing arrangements, including mount track variations.

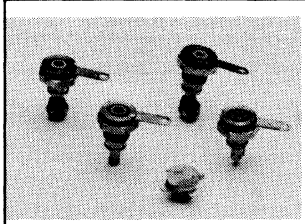
GROUNDING CONNECTORS



STANDARD DESIGN	HIGH RELIABILITY DESIGN	
	AIR FORCE	NATIONAL STOCK NO.
MS90298-1	8240704-1	NSN 5935-01-139-5430
MS90298-2	8240704-2	NSN 5935-01-140-0665
	8240704-3	NSN 5935-01-141-1414

FEATURES

T.J. Electronics supplies the standard Mil Spec grounding connectors as well as the new high reliability grounding receptacle illustrated in the photo above. This new receptacle, designed and patented by T.J. Electronics is becoming today's standard for grounding connectors.



MS90335-1
THROUGH - 9
Lighted Panel Connectors

Because internally illuminated instrument and control panel face plates require periodic removal for maintenance or modification MS90335 lighted panel connectors were developed to facilitate connecting and disconnecting the lighting circuits.

T.J. Electronics manufactures the entire line of MS90335 connectors plus several modifications of the standard numbers.

BREEZE ELECTRONICS TransTechnology TE Electronics CELMARK ENGINEERING

T.J. ELECTRONICS FLIGHT CONNECTOR

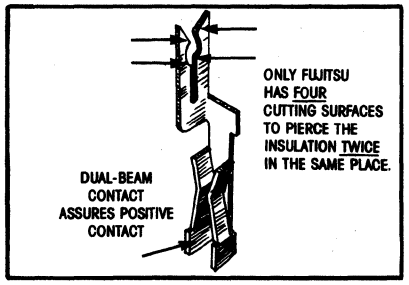
8823 North Industrial Rd., Peoria, IL 61615-1584 • (309) 693-3300

FUJITSU: FLAT CABLE CONNECTORS

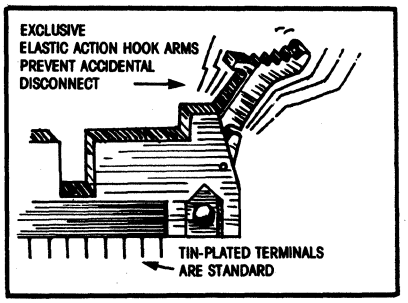


Flat cable connectors are easy enough to find. The trick is finding connectors that can handle every one of your needs consistently, conveniently and economically. Fujitsu flat cable connectors do it all. And they do it better than most.

When you buy Fujitsu, you know you're getting components that will always fit your usage because our connectors are compatible with 3M and other major brands. You won't be getting hit-or-miss construction, either. Thanks to Fujitsu's standardized automated manufacturing. Each piece must meet our rigid quality control standards before it is shipped.



Assembling Fujitsu connectors is a snap, too, because of their simplified design. Like u-contacts that pierce the insulation twice at the same place to provide a gas-tight metal surface that is electrically reliable. And can withstand excessive pulling forces. And when you order Fujitsu flat cable connectors, you know you will always get tin-plated terminals that improve solderability and prevent gold contamination of the solder bath. Can your source say that?



A Fujitsu exclusive is the ingenious elastic hook arm that prevents accidental disconnection at the receptacle. And our dual-beam contact assures positive contact even during vibration and excessive handling.

Concerned about cleaning? Fujitsu's superior PBT resin stands up to chemical agents such as Trickren and Chlorosen which can't be used on cheaper, conventional thermoplastics.

Fujitsu considers it a point of pride, as well as good business, to cater to your company's needs before, during and after the sale is made. Our warehouse is stocked to supply your company with samples of our fine products. And Fujitsu can match *any* source's lead time for processing and shipping ... at a competitive price.

The FCN-700 series offers vertical, right angle and wire wrap plugs *and* open or closed covers for both end-cable and through-cable applications.

Considering all these points, you'd be smart to come to the source with the best connections. Where quality, reliability and service are part of our product. Fujitsu.

For more information on components, call or write your local FCA rep or distributor today.

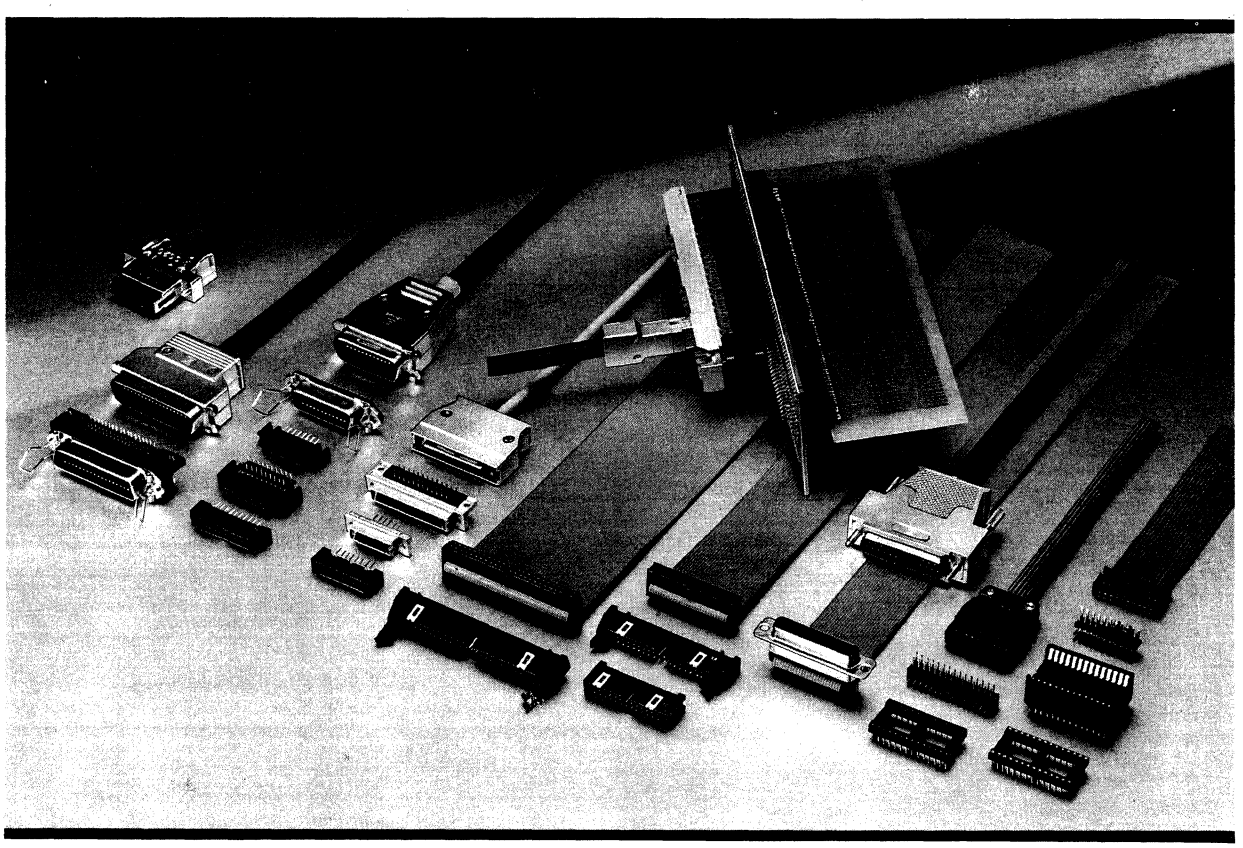
FUJITSU

FUJITSU
COMPONENT OF AMERICA INC.
3320 Scott Boulevard
Santa Clara, CA 95054-3197
(408) 562-1000

FUJITSU

TABLE OF CONTENTS

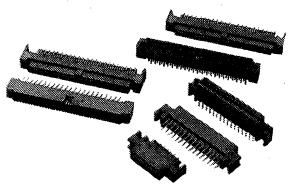
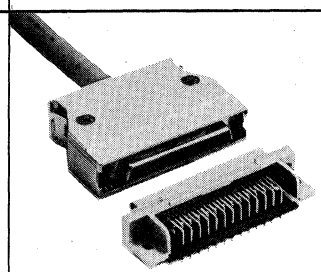
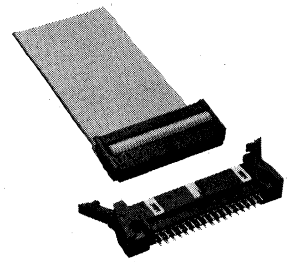
Connector selection table 3
FCN-210 Board to Board I/O Connectors 7
FCN-220 Card Edge Connectors 7
FCN-230 Board to Board and I/O Connectors 12
FCN-700 IDC Sockets and Headers 16
FCN-720 Socket Housings, Crimp Contacts and Headers 20
FCN-740 Mini Sockets and Headers 27
FCN-770 D-Sub Connectors 30
FCN-780 Ribbon Contact Type Connectors 34
FCN-710 DIP Connectors 37
FCN-730 4-Row Transition Connectors 38
FCN-750 2-Row Transition Connectors 39
FCN-760 IDC Card Edge Connectors 40
FCN-120 Serpent Connectors 42
CONSYSE Backplane—I/O System 45
IC Sockets Model K Burn In Sockets 46



FUJITSU

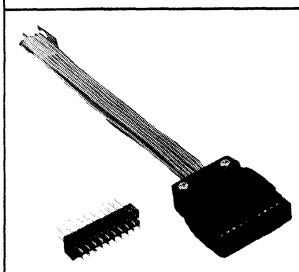
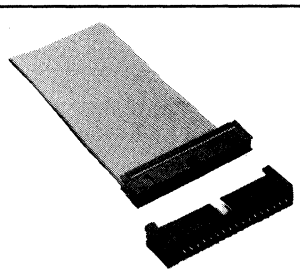
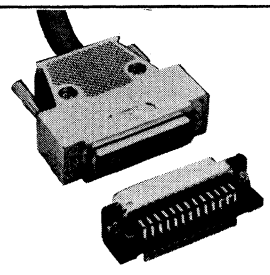
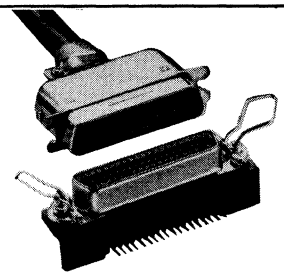
CONNECTORS

CONNECTOR SELECTION TABLE

MODEL			FCN-210/220	FCN-230	MODEL 700
Appearance					
Structure	Contact pitch mm (in.)		1.27 x 1.905 (0.050 x 0.075) Zig Zag 4 rows	1.27 x 1.905 (0.050 x 0.075) Zig Zag 4 rows	2.54 x 2.54 (0.100 x 0.100)
	Number of contacts		30, 34, 40, 50, 60, 80, 92, 100, 120	20, 28, 34, 36, 48 50, 68, 96	10, 14, 16, 20, 26, 30, 34, 40, 50, 60
	Termination: Solder eyelet		—	P: — / J: Cup solder	—
	Termination: Wire-wrap (post cross section)		—	—	P: □0.64 (0.025) / J: —
	Termination: Crimp (AWG no.)		—	—	—
	Termination: Straight solder dip (PCB hole dimensions)		ϕ0.8 (0.031) 1.27 x 1.905 (0.050 x 0.075) 4 rows Zig Zag	P: ϕ0.8 (0.031) 1.27 x 1.905 (0.050 x 0.075) 4 rows Zig Zag / J: —	ϕ0.8 (0.031) 2.54 x 2.54 (0.100 x 0.100)
	Termination: Right-angle solder dip (PCB hole dimensions)		ϕ0.8 (0.031) 1.27 x 1.905 (0.050 x 0.075) 4 rows Zig Zag	ϕ0.8 (0.031) 1.27 x 1.905 (0.050 x 0.075) 4 rows Zig Zag	P: ϕ0.8 (0.039) 2.54 x 2.54 (0.100 x 0.100) / J: —
	Termination: IDC (AWG no.)		#332, Flat cable	P: — / J: #30, Discrete wire	#28, Flat cable
Contact plating	Gold over palladium		O	O	O
	Silver				
	Tin				
Specifications	Temperature range		−55°C to +105°C	−55°C to +105°C	−55°C to +105°C
	Current rating (A DC)		2 (IDC: 0.5)	2 (IDC: 0.5)	3 (IDC: 1)
	Voltage rating (VAC)		250	250	250
	Contact resistance (MΩ) (6V DC, 0.3A)		35	35	20
	Insulation resistance (MΩ) (500V DC)		1,000	1,000	1,000
	Dielectric withstand voltage (AC/min.)		500V	500V	500V
	Insulator (washable with trichloroethane and trichloroethylene)		P.B.T. (Washable)	P.P.S./P.B.T. (Washable)	P.B.T. (Washable)
Typical Parts Numbers			FCN-215Q050-G/0 FCN-225J050-G/0	FCN-235P04B-G/0 FCN-237J050-G/E	FCN-705P050-AU/M FCN-707J050-AU/B
Remarks			Unmatable with FCN-230	EMI Cover Unmatable with FCN-210	Optional hood
Page No.			7	12	16

FUJITSU

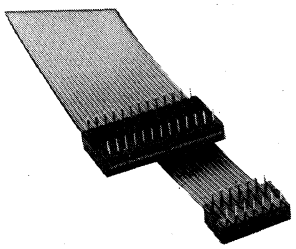
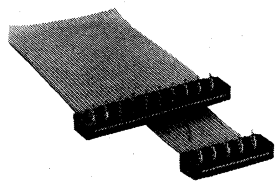
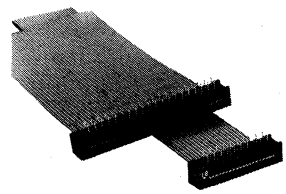
CONNECTORS

MODEL 720	MODEL 740	MODEL 770	MODEL 780
			
1-row 2.54 (0.100) 2-row 2.54 x 2.54 (0.100 x 0.100)	2.54 x 2.54 (0.100 x 0.100)	2.76 x 2.84 (0.109 x 0.112)	2.16 x 4.29 (0.085 x 0.169)
1-row 2 ~ 36 2-row 4 ~ 72 (by 2 way)	10, 14, 16, 20, 26, 30, 34, 40, 50, 60	9, 15, 25, 37	14, 24, 36, 50
—	—	—	P 1.5 x 0.8 (0.054 x 0.031) J —
P □0.64 (0.025) J — P — J AWG #20 ~ 32	— —	—	— —
P: 1-row φ1 (0.039) 2.54 (0.100); 2-row φ0.8 (0.031) φ1 (0.039) 2.54 x 2.54 (0.100 x 0.100)	P φ0.8 (0.031) 2.54 x 2.54 (0.100 x 0.100) J —	—	P — J φ0.8 (0.031) 2.16 x 4.29 (0.085 x 0.169)
P: 1-row φ1 (0.039) 2.54 (0.100); 2-row φ08 (0.031) φ1 (0.039) 2.54 x 2.54 (0.100 x 0.100)	P φ0.8 (0.031) 2.54 x 2.54 (0.100 x 0.100)	— φ1 (0.039) 2.76 x 2.84 (0.109 x 0.112)	P — J φ0.8 (0.031) 2.16 x 4.29 (0.085 x 0.169)
—	P — J #28, Flat cable	#28, Flat cable	#28, Flat cable
O	O	O	O
−55°C to +85°C	−55°C to +105°C	−55°C to +105°C	−55°C to +105°C
3	3 (IDC: 1)	3 (IDC: 1)	3 (IDC: 1)
250	250	250	250
20	20	30	30
1,000	1,000	1,000	1,000
500V	500V	500V	500V
P: P.B.T. (Washable) J: P.P.O. (Non-washable)	P.B.T. (Washable)	P.B.T. (Washable)	P.P.S./P.B.T. (Washable)
FCN-725P020-AU/L FCN-723J020/2	FCN-744P020-AU/R FCN-747J020-AU/B	FCN-777P025-G/A	FCN-781P036-G/P FCN-785J036-G/Q
Optional hood		Optional hood	Optional hood
20	27	30	34

FUJITSU

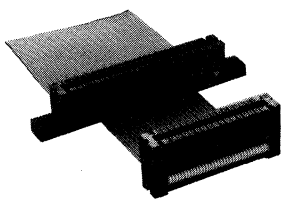
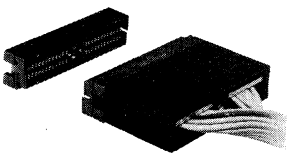
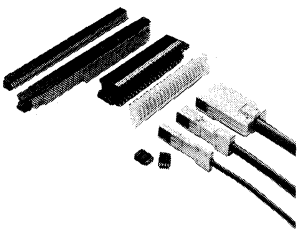
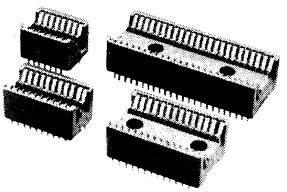
CONNECTORS

CONNECTOR SELECTION TABLE CONTINUED

MODEL			MODEL 710	MODEL 730	MODEL 750
Appearance					
Structure	Contact pitch mm (in.)		2.54 x 7.62 (0.100 x 0.300) 10 to 16 ways 2.54 x 15.24 (0.100 x 0.600) 20 to 60 ways	1.27 x 2.54 (0.050 x 0.100) 4 row	2.54 x 2.54 (0.100 x 0.100)
	Number of contacts		10, 14, 16, 20, 24, 26, 34, 40, 50, 60	10, 16, 20, 26, 30, 34, 40, 50, 60	10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60
	Termination	Solder eyelet	—	—	—
		Wire-wrap (post cross section)	—	—	—
		Crimp (AWG no.)	—	—	—
		Straight solder dip (PCB hole dimensions)	ϕ0.8 (0.031) Same as contact pitch	ϕ1 (0.039) Same as contact pitch	ϕ0.8 (0.031) 2.54 x 2.54 (0.100 x 0.100)
		Right-angle solder dip (PCB hole dimensions)	—	—	—
		IDC (AWG no.)	AWG #28, Flat cable	AWG #28, Flat cable	AWG #28 Flat cable
Contact plating	Gold over palladium		Gold	Gold	Gold
	Silver				
	Tin		O	O	O
Specifications	Temperature range		−55°C to +105°C	−55°C to +105°C	−55°C to +105°C
	Current rating (A DC)		1	1	1
	Voltage rating (VAC)		250	250	250
	Contact resistance (MΩ) (6V DC, 0.3A)		—	—	—
	Insulation resistance (MΩ) (500V DC)		1,000	1,000	1,000
	Dielectric withstand voltage (AC/min.)		500V	500V	500V
	Insulator (washable with trichloroethane and trichloroethylene)		P.B.T. (Washable)	P.B.T. (Washable)	P.B.T. (Washable
Typical Parts Numbers			FCN-714P050-AU/0	FCN-734P050-AU/0	FCN-754P050-AU/0
Remarks			Matable with I/C socket	PC board type	Mini-solder dip type
Page No.			37	38	39

FUJITSU

CONNECTORS

MODEL 760	MODEL 120	CONSYSE	MODEL K
			
2.54 (0.100)	3.175 x 6.35 (0.125 x 0.250)	2.54 x 2.54 (0.050 x 0.050)	2.54 x 2.54 (0.100 x 0.100)
10, 16, 20, 26, 30, 34, 40, 50, 60	48	I/O: 8, 16, 24, 40, 56 2 Piece: 256	8, 10, 14, 16, 18, 20, 22, 24, 28, 36, 40, 42, 48, 64
—	—	—	—
—	0.65 x 0.4 (0.026 x 0.016)	—	0.4 x 0.6
—	AWG #24 ~ #32	—	—
—	—	P — J —	φ0.8 (0.031)
—	—	P — J —	—
AWG #28 Flat cable	—	P — J #20 – #30 Discrete wire	—
O	O	Gold	Gold
−55°C to +105°C	−25°C to +85°C	−55°C to +150°C	−55°C to +170°C
1	6	3 (Power pin: 5)	1
250	250	750	—
20	10	30	20
1,000	1,000	1,000	1,000
500V	1,000V	750V	700
P.B.T. (Washable)	Polycarbonate (Non-washable)	P.B.T./P.P.S. (Washable)	P.P.S. (Washable)
FCN-767J034-AU/1	C630-5170-	N630-9505- N630-9506-	FCN-064K028-K/6B
Double-sided contact type	Optional hood		
40	42	45	46

FUJITSU

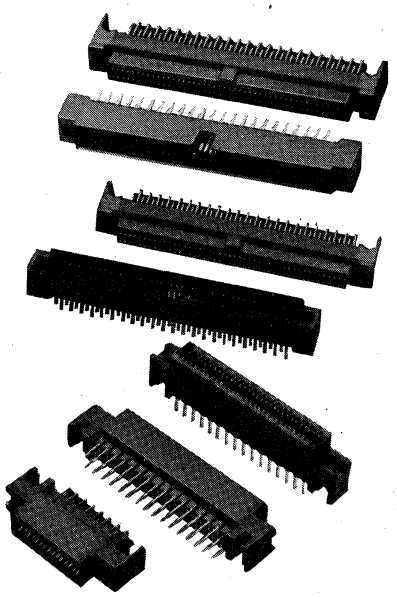
CONNECTORS

BOARD TO BOARD & I/O CONNECTORS

MODEL FCN-210

CARD EDGE CONNECTORS

MODEL FCN-220



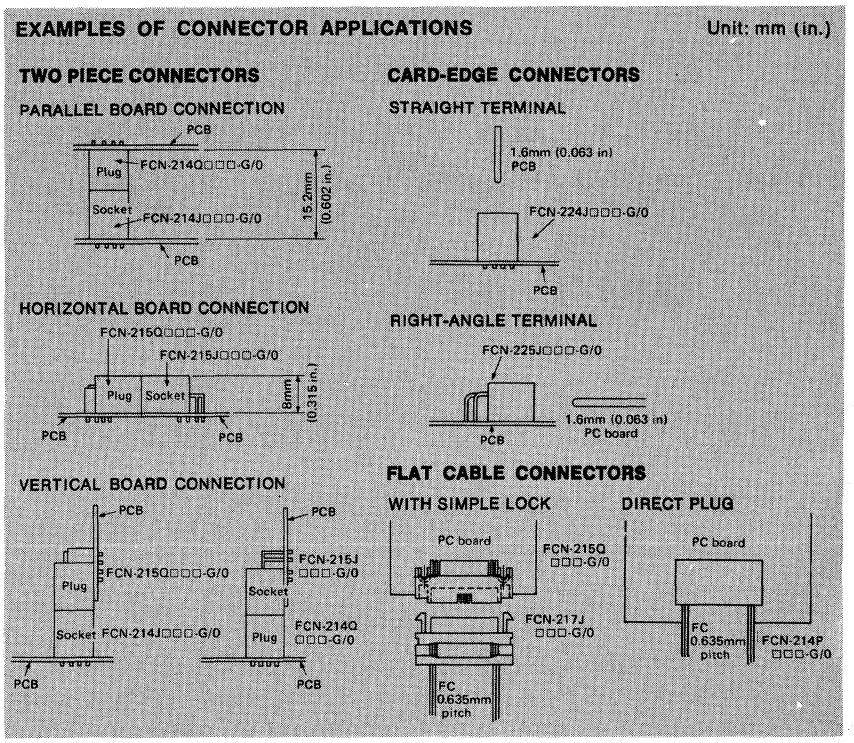
FEATURES

- 1.27 mm (0.05 in) pitch contact arrangement in two rows enables high-density mounting.
- They can be used for any type of connection between boards.
- The card-edge connectors can accommodate double-sided independent PC boards of 1.6 mm (0.063 in) in thickness.
- Terminals are space in a four-row .zigzag array (1.27 mm (0.05 in) x 1.905 mm (0.075 in)) for easy PC board design.
- Insulation is UL-approved (94V-0), and is cleanable.

PART NUMBERING SYSTEM

FCN-21 4 Q 050-G/O

- **With mounting ears**
- **Plating** G: PAGOS plating (Gold over Palladium over Nickel plating)
- **Number of contacts:** 30, 34, 40, 50, 60, 62, 80, 92, 100, 120
- **Frame:** J: Socket P: Dip connector Q: Plug
- **Terminal type:** 4: Straight 5: Right-angle 7: IDC
- **Connector type:** 21: Two-piece connector 22: Card-edge connector
- **Fujitsu Connector**



SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	2A DC
Voltage rating	250V AC
Contact resistance	35 mΩ max. (6V DC, 0.1A)
Insulation resistance	1,000 MΩ min. (500V AC)
Dielectric withstand voltage	500V AC for 1 minute
Insertion force	Two-piece connectors: 3 kg max. (10-way)
	Card-edge connectors: 2 kg max. (10-way)
Withdrawal force	Two-piece connectors: 250g min. (10-way)
	Card-edge connectors: 125 min. (10-way)
Applicable PC board	Two piece connectors: 1.6 mm (0.063 in.)
	Card-edge connectors: 1.6 mm (0.063 in.)
Applicable wire	Flat cable: 0.635 mm (0.025 in.) pitch AWG #30 (solid wire) AWG #32 (stranded wire)

MATERIALS

Contact	Phosphor bronze
Insulator	PBT, UL94V-0
Contact plating	Gold over Palladium over Nickel (PAGOS plating)

FUJITSU

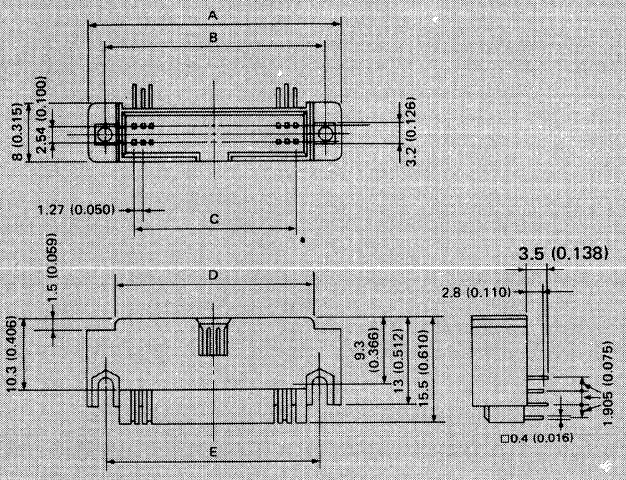
CONNECTORS

MODEL FCN-210/220 CONTINUED

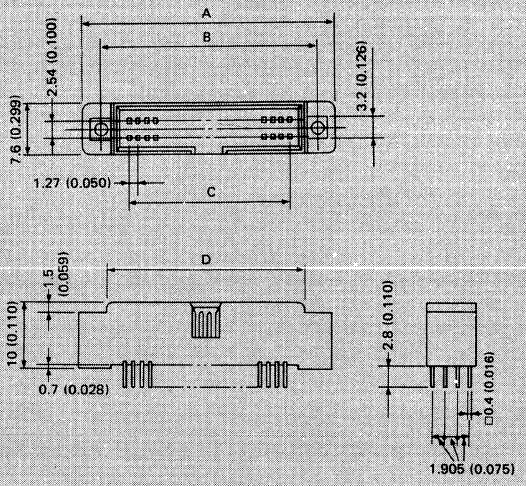
TWO-PIECE TYPE, PLUG CONNECTORS/DIMENSIONS

Unit: mm (in.)

RIGHT-ANGLE



STRAIGHT

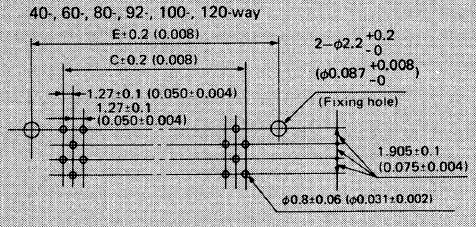


MOUNTING HOLE LAYOUT

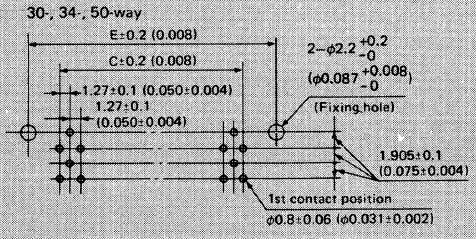
Unit: mm (in.)

RIGHT-ANGLE

40-, 60-, 80-, 92-, 100-, 120-way

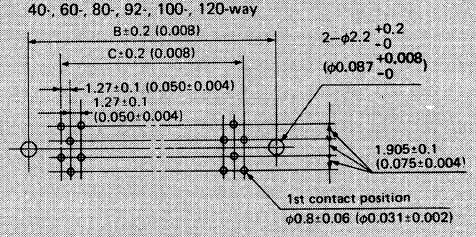


30-, 34-, 50-way

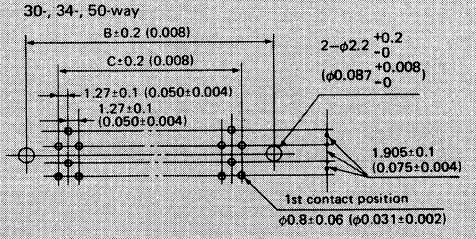


STRAIGHT

40-, 60-, 80-, 92-, 100-, 120-way



30-, 34-, 50-way



PART NUMBERS

No. of contacts	Part Number		Dimensions				
	Right-angle	Straight	A	B	C	D	E
30	FCN-215Q030-G/0	FCN-214Q030-G/0	31.83 (1.253)	26.28 (1.035)	17.78 (0.700)	23.08 (0.909)	25.28 (0.995)
34	FCN-215Q034-G/0	FCN-214Q034-G/0	34.37 (1.353)	28.82 (1.135)	20.32 (0.800)	25.62 (1.009)	27.82 (1.095)
40	FCN-215Q040-G/0	FCN-214Q040-G/0	38.18 (1.503)	32.63 (1.285)	24.13 (0.950)	29.43 (1.159)	31.63 (1.245)
50	FCN-215Q050-G/0	FCN-214Q050-G/0	44.53 (1.753)	38.98 (1.535)	30.48 (1.200)	35.78 (1.409)	37.98 (1.495)
60	FCN-215Q060-G/0	FCN-214Q060-G/0	50.88 (2.003)	45.33 (1.785)	36.83 (1.450)	42.13 (1.659)	44.33 (1.745)
80	FCN-215Q080-G/0	FCN-214Q080-G/0	63.58 (2.503)	58.03 (2.285)	49.53 (1.950)	54.83 (2.159)	57.03 (2.245)
92	FCN-215Q092-G/0	FCN-214Q092-G/0	71.20 (2.803)	65.65 (2.585)	57.15 (2.250)	62.45 (2.459)	64.65 (2.545)
100	FCN-215Q100-G/0	FCN-214Q100-G/0	76.28 (3.003)	70.73 (2.785)	62.23 (2.450)	67.53 (2.659)	69.73 (2.745)
120	FCN-215Q120-G/0	FCN-214Q120-G/0	88.98 (3.503)	83.43 (3.285)	74.93 (2.950)	80.23 (3.159)	82.43 (3.245)

FUJITSU

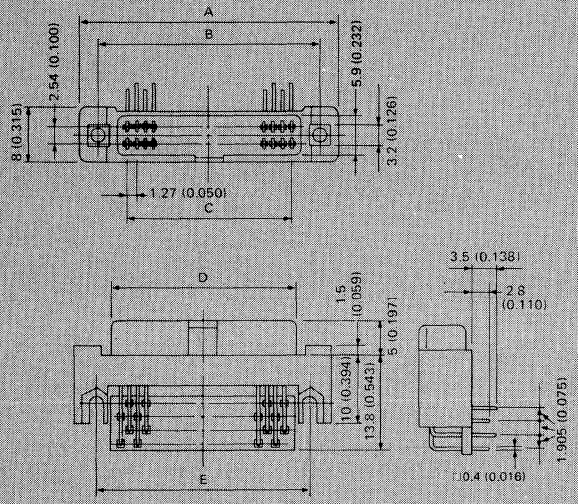
CONNECTORS

MODEL FCN-210/220 CONTINUED

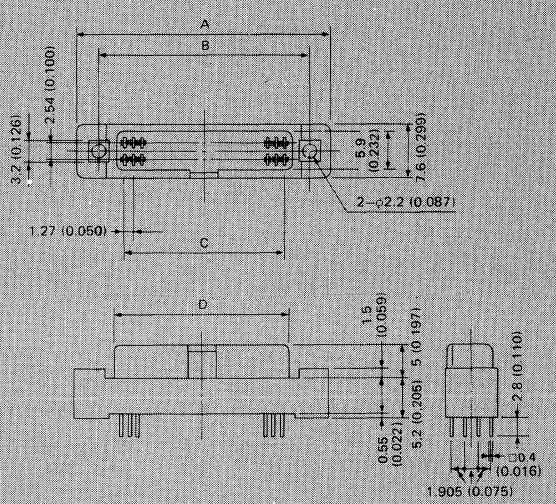
TWO-PIECE TYPE, SOCKET CONNECTORS/DIMENSIONS

Unit: mm (in.)

RIGHT-ANGLE



STRAIGHT

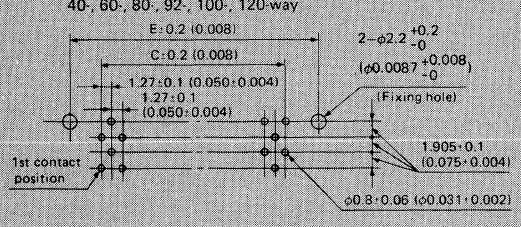


MOUNTING HOLE LAYOUT

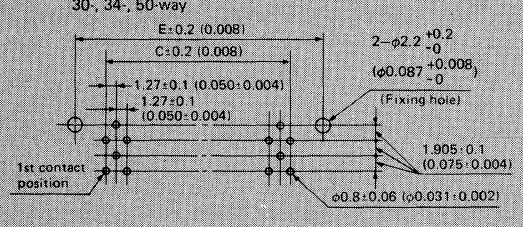
Unit: mm (in.)

RIGHT-ANGLE

40-, 60-, 80-, 92-, 100-, 120-way

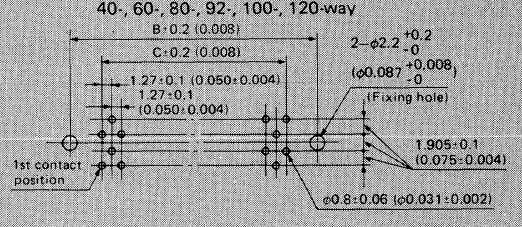


30-, 34-, 50-way

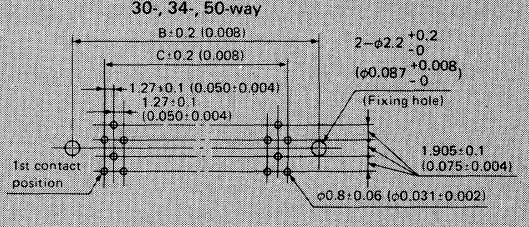


STRAIGHT

40-, 60-, 80-, 92-, 100-, 120-way



30-, 34-, 50-way



PART NUMBERS

No. of contacts	Part Number		Dimensions				
	Right-angle	Straight	A	B	C	D	E
30	FCN-215J030-G/0	FCN-214J030-G/0	31.83 (1.253)	26.28 (1.035)	17.78 (0.700)	20.68 (0.814)	25.28 (0.995)
34	FCN-215J034-G/0	FCN-214J034-G/0	34.37 (1.353)	28.82 (1.135)	20.32 (0.800)	23.22 (0.914)	27.82 (1.095)
40	FCN-215J040-G/0	FCN-214J040-G/0	36.18 (1.503)	32.63 (1.285)	24.13 (0.950)	27.03 (1.064)	31.63 (1.245)
50	FCN-215J050-G/0	FCN-214J050-G/0	44.53 (1.753)	38.98 (1.535)	30.48 (1.200)	33.38 (1.314)	37.98 (1.495)
60	FCN-215J060-G/0	FCN-214J060-G/0	50.88 (2.003)	45.33 (1.785)	36.83 (1.450)	39.73 (1.564)	44.33 (1.745)
80	FCN-215J080-G/0	FCN-214J080-G/0	63.58 (2.503)	58.03 (2.285)	49.53 (1.950)	52.43 (2.064)	57.03 (2.245)
92	FCN-215J092-G/0	FCN-214J092-G/0	71.20 (2.803)	65.65 (2.585)	57.15 (2.250)	60.05 (2.364)	64.65 (2.545)
100	FCN-215J100-G/0	FCN-214J100-G/0	76.28 (3.003)	70.73 (2.785)	62.23 (2.450)	65.13 (2.564)	69.73 (2.745)
120	FCN-215J120-G/0	FCN-214J120-G/0	88.98 (3.503)	83.43 (3.285)	74.93 (2.950)	77.83 (3.064)	82.43 (3.245)

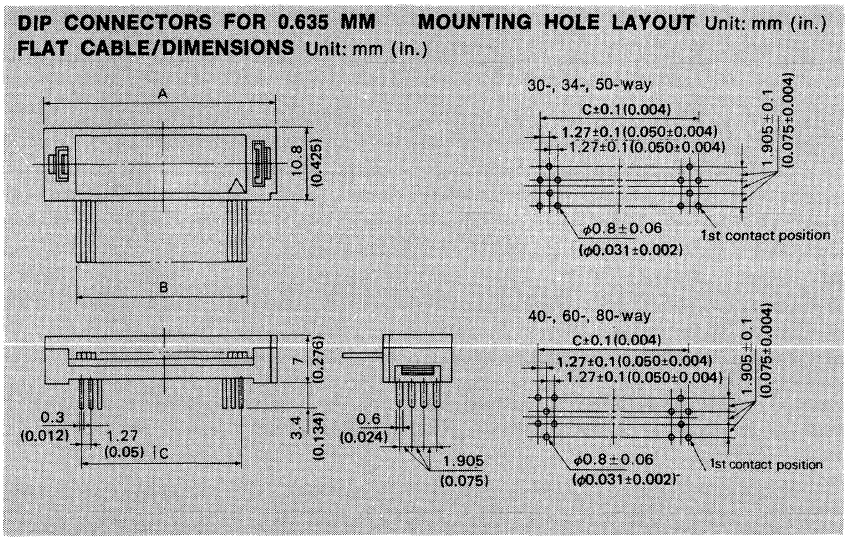
FUJITSU

CONNECTORS

MODEL FCN-210/220 CONTINUED

DIP CONNECTORS FOR 0.635 MM FLAT CABLE/DIMENSIONS Unit: mm (in.)

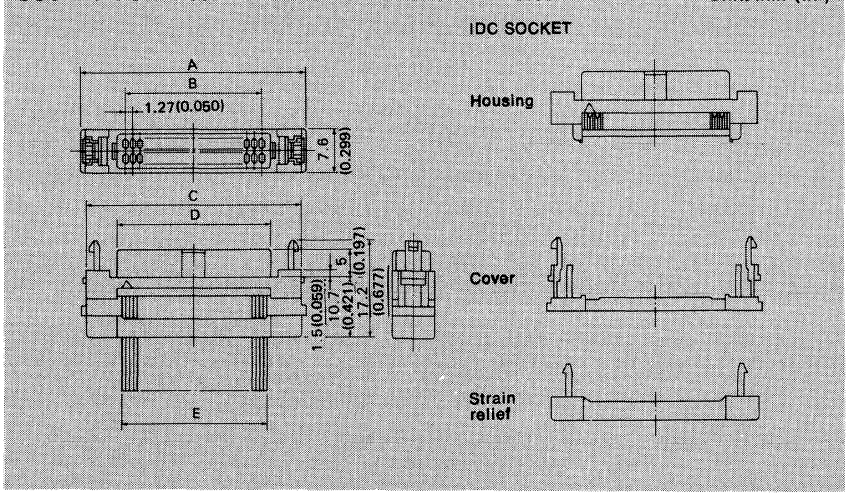
MOUNTING HOLE LAYOUT Unit: mm (in.)



PART NUMBERS

No. of contacts	Part Number	Dimensions		
		A	B	C
30	FCN-214P030-G/0	28.35 (1.116)	19.05 (0.750)	17.78 (0.700)
34	FCN-214P034-G/0	30.89 (1.216)	21.59 (0.850)	20.32 (0.800)
40	FCN-214P040-G/0	34.70 (1.366)	25.40 (1.000)	24.13 (0.950)
50	FCN-214P050-G/0	41.05 (1.616)	31.75 (1.250)	30.48 (1.200)
60	FCN-214P060-G/0	47.40 (1.866)	38.10 (1.500)	36.83 (1.450)
80	FCN-214P080-G/0	60.10 (2.366)	50.80 (2.000)	49.53 (1.950)

SOCKET FOR 0.635 MM FLAT CABLE/DIMENSIONS Unit: mm (in.)



PART NUMBERS

No. of contacts	Part Number	Dimensions				
		A	B	C	D	E
30	FCN-217J030-G/0	33.43 (1.316)	17.78 (0.700)	31.83 (1.253)	20.68 (0.814)	19.05 (0.750)
34	FCN-217J034-G/0	35.97 (1.416)	20.32 (0.800)	34.37 (1.353)	23.22 (0.914)	21.59 (0.850)
40	FCN-217J040-G/0	39.78 (1.566)	24.13 (0.950)	38.18 (1.503)	27.03 (1.064)	25.40 (1.000)
50	FCN-217J050-G/0	46.13 (1.816)	30.48 (1.200)	44.53 (1.753)	33.38 (1.314)	31.75 (1.250)
60	FCN-217J060-G/0	52.48 (2.066)	36.83 (1.450)	50.88 (2.003)	39.73 (1.564)	38.10 (1.500)
80*	FCN-217J080-G/0	65.18 (2.566)	49.53 (1.950)	63.58 (2.503)	52.43 (2.064)	50.80 (2.000)

IDC TOOLS

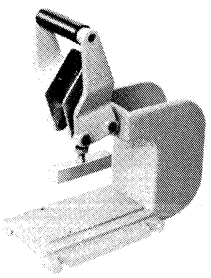
Special tools are needed for FCN-210 Series connectors: a cable cutter, a locator plate for positioning connectors and cables, and a hand press to apply pressure. (See the figure below.)

FEATURES

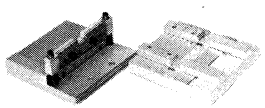
- All tools are easy to use, so even a beginner can install Fujitsu connectors.
- The number of pins can be changed easily only by setting the connector guide to a specified pin hole.
- The cable cutter remains sharp, providing fast, easy cuts for a long time.

Note:

- Instruction manual for each tool is attached with each.



HAND PRESS



CABLE CUTTER , LOCATOR PLATE

Name	Part Number
Cable cutter	FCN-707T-T001/H
Hand press	FCN-707T-T101/H
Locator plate for socket	FCN-217T-T032/H
Locator plate for DIP connector	FCN-217T-T034/H

FUJITSU

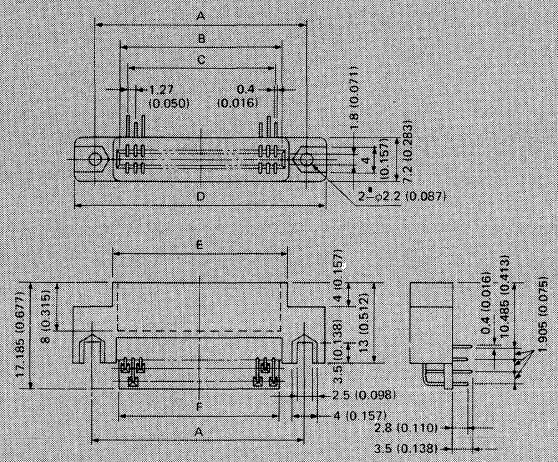
CONNECTORS

MODEL FCN-210/220 CONTINUED

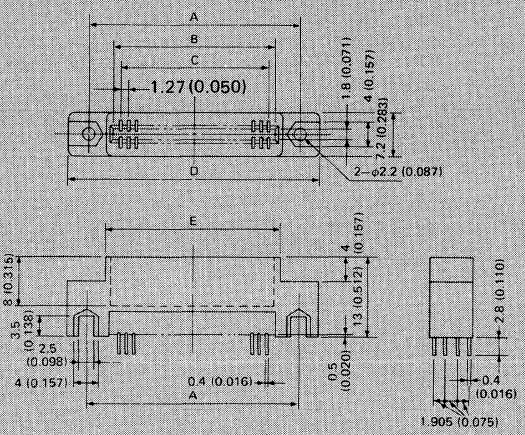
CARD-EDGE TYPE CONNECTORS/DIMENSIONS

Unit: mm (in.)

RIGHT-ANGLE



STRAIGHT

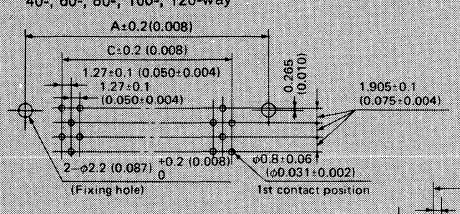


MOUNTING HOLE LAYOUT

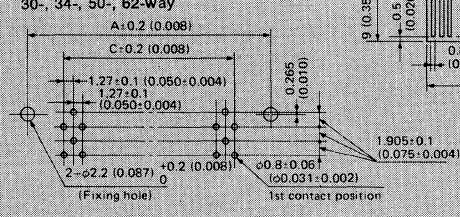
Unit: mm (in.)

RIGHT-ANGLE

40-, 60-, 80-, 100-, 120-way

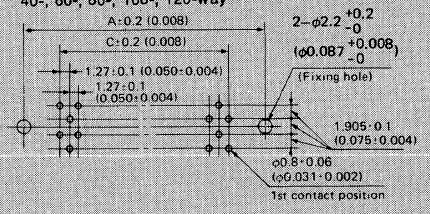


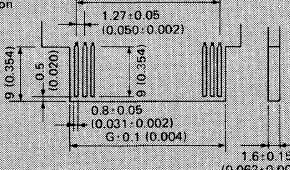
30-, 34-, 50-, 62-way

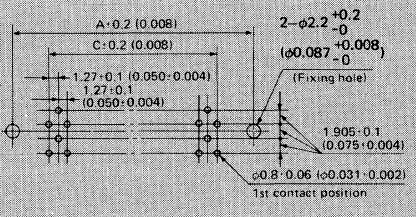


STRAIGHT

40-, 60-, 80-, 100-, 120-way







PART NUMBERS

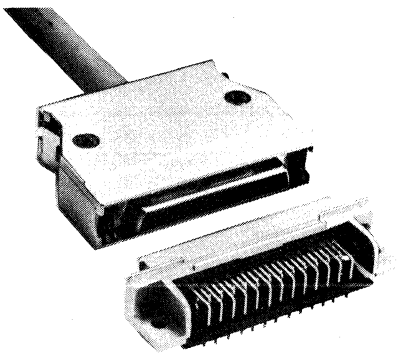
No. of contacts	Part Number		Dimensions						
	Right-angle	Straight	A	B	C	D	E	F	G
30	FCN-225J030-G/0	FCN-224J030-G/0	28.05 (1.104)	20.32 (0.800)	17.78 (0.700)	34.55 (1.360)	22.25 (0.876)	19.65 (0.774)	20.12 (0.792)
34	FCN-225J034-G/0	FCN-224J034-G/0	30.59 (1.204)	22.86 (0.900)	20.32 (0.800)	37.09 (1.460)	24.79 (0.976)	22.19 (0.874)	22.66 (0.892)
40	FCN-225J040-G/0	FCN-224J040-G/0	34.40 (1.354)	26.67 (1.050)	24.13 (0.950)	40.90 (1.610)	28.60 (1.126)	26.00 (1.024)	26.47 (1.042)
50	FCN-225J050-G/0	FCN-224J050-G/0	40.75 (1.604)	33.02 (1.300)	30.48 (1.200)	47.25 (1.860)	34.95 (1.376)	32.35 (1.274)	32.82 (1.292)
60	FCN-225J060-G/0	FCN-224J060-G/0	47.10 (1.854)	39.37 (1.550)	36.83 (1.450)	53.60 (1.110)	41.30 (1.626)	38.70 (1.524)	39.17 (1.542)
62	FCN-225J062-G/0	FCN-224J062-G/0	48.37 (1.904)	40.64 (1.600)	38.10 (1.501)	54.87 (2.160)	42.57 (1.676)	39.97 (1.574)	40.44 (1.592)
80	FCN-225J080-G/0	GCN-224J080-G/0	59.80 (2.354)	52.07 (2.050)	49.53 (1.950)	66.30 (2.610)	54.00 (2.126)	51.40 (2.024)	51.87 (2.042)
100	FCN-225J100-G/0	FCN-224J100-G/0	72.50 (2.854)	64.77 (2.550)	62.23 (2.450)	79.00 (3.110)	66.70 (2.626)	64.10 (2.524)	64.57 (2.542)
120	FCN-225J120-G/0	FCN-224J120-G/0	85.20 (3.354)	77.47 (3.050)	74.93 (2.950)	91.70 (3.610)	79.40 (3.126)	76.80 (3.024)	77.27 (3.042)

FUJITSU

CONNECTORS

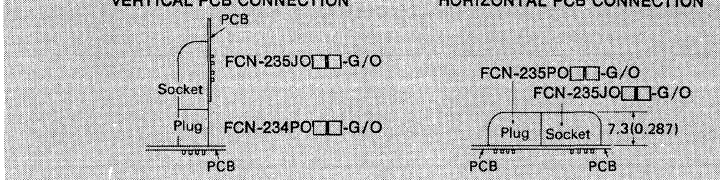
BOARD TO BOARD & I/O CONNECTORS

MODEL FCN-230

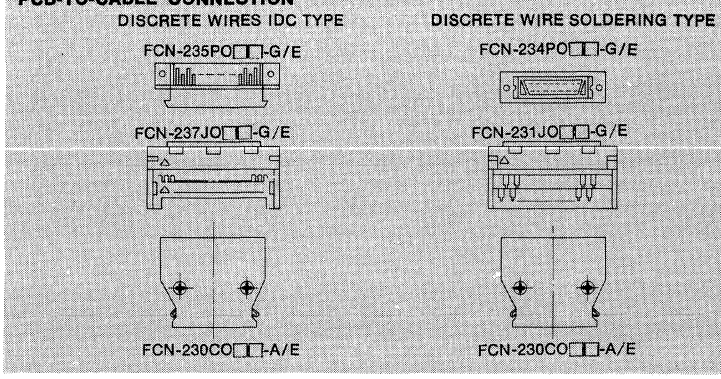


EXAMPLES OF CONNECTOR APPLICATIONS Unit: mm (in.)

PCB-TO-PCB CONNECTION



PCB-TO-CABLE CONNECTION



FEATURES

- 1.27 mm (0.05 in.) pitch contact arrangement in two rows enables high density mounting.
- Terminals are spaced in a four-row zigzag array (2.54 mm (0.1 in.) x 1.905 mm (0.075 in.)) for easy PC board design.
- IDC termination for discrete wire is available.
- Metal cover enables EMI protection.
- The insulation material is recognized by UL (94V-0).
- Insulation material is not affected by chemical cleaning agents, such as trichloroethylene and trichloroethane.
- Each of the contacts on the female connector are alternately inset to facilitate two step coupling, significantly reducing insertion force.

PART NUMBERING SYSTEM

FCN-23 4 P 050-G/O

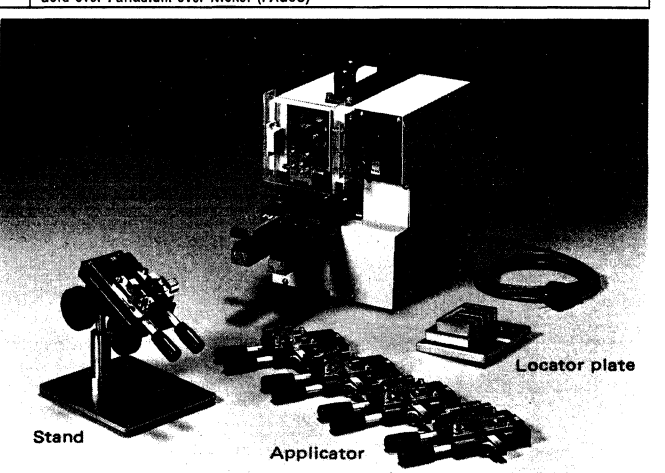
- **Others** O: Mold type, E: Metal type
- **Plating, others** A: Metal cover, G: PAGOS-plating
- **No. of contacts** PCB to PCB: 34, 48, 68, 96; PCB to cable: 20, 28, 36, 50
- **Main body type** C: Cover, J: Socket, P: Plug
- **Terminal type** 1: For soldering, 4: For straight, 5: For right angle, 7: For IDC, 0: Cover
- **Connector type** 23: Two-piece connector
- **Fujitsu connector**

SPECIFICATIONS

Operating temperature range	−55°C to +105°C
Maximum rated current	2A DC (IDC type: 0.5A)
Maximum rated voltage	250V AC
Contact resistance	35 mΩ max. (6V DC, 0.1A)
Insulation resistance	1000 mΩ min. (500V DC)
Insulation withstanding voltage	500V AC for 1 minute
Insertion force	1.5 kg max. (10 contacts)
Withdrawal force	200 g min. (10 contacts)
Applicable PC board	0.8 to 1.6 mm (0.031 to 0.063 in.) thick
Applicable wire	IDC type: AWG #30 (wire diameter: ϕ0.5 to 0.7 mm (ϕ0.020 to 0.028 in.) Solder type: AWG #30

MATERIALS

Material	Phosphor bronze
Insulator	PBT, UL94V-0 (PPS for solder)
Plating	Gold over Palladium over Nickel (PAGOS)



CABLE ALIGNER

Set	Main body	No. of contact	Applicator	Head	Stand
FCN-M550-1/A (mainbody/applicator/head/stand)	FCN-M551	20	FCN-A550-1/A-020	FCN-H550-1/A	FCN-D550
		28	FCN-A550-1/A-028		
		36	FCN-A550-1/A-036		
		50	FCN-A550-1/A-050		
		68	FCN-A550-1/A-068		

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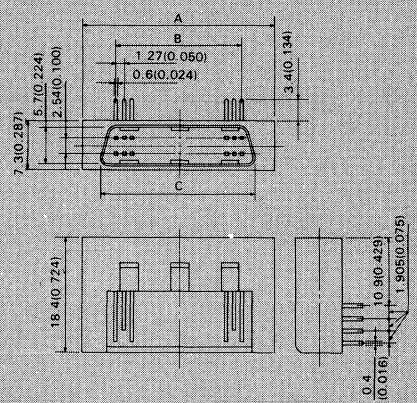
CONNECTORS

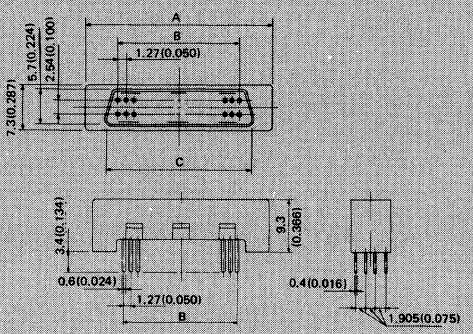
MODEL FCN-230 CONTINUED

MOLD TYPE PLUG CONNECTOR/DIMENSIONS Unit: mm (in.)

RIGHT ANGLE

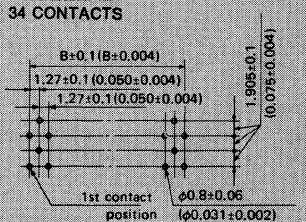


STRAIGHT

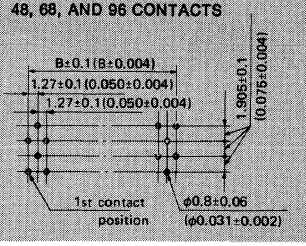


MOUNTING HOLE LAYOUT Unit: mm (in.)

RIGHT ANGLE, STRAIGHT
34 CONTACTS



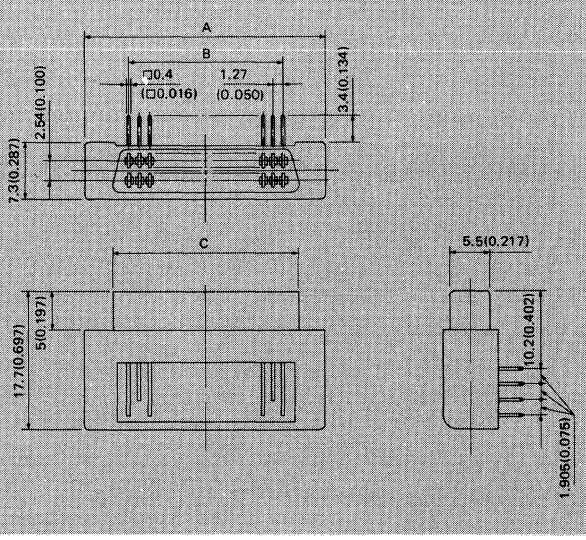
48, 68, AND 96 CONTACTS



PART NUMBERS

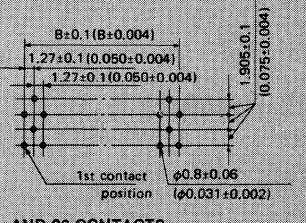
No. of contacts	Part Number		Dimensions		
	Right angle	Straight	A	B	C
34	FCN-235P034-G/0	FCN-234P034-G/0	31.63 (1.245)	20.32 (0.800)	24.69 (0.972)
48	FCN-235P048-G/0	FCN-234P048-G/0	40.52 (1.595)	29.21 (1.150)	33.58 (1.322)
68	FCN-235P068-G/0	FCN-234P068-G/0	53.22 (2.095)	41.91 (1.650)	46.28 (1.822)
96	FCN-235P096-G/0	FCN-234P096-G/0	71.00 (2.795)	59.69 (2.350)	64.06 (2.522)

MOLD TYPE SOCKET CONNECTOR/DIMENSIONS Unit: mm (in.)

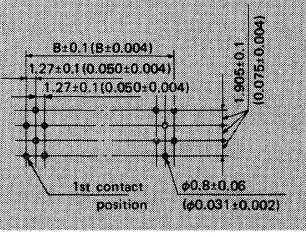


MOUNTING HOLE LAYOUT Unit: mm (in.)

34 CONTACTS



48, 68, AND 96 CONTACTS



PART NUMBERS

No. of contacts	Part Number Right angle	Dimensions		
		A	B	C
34	FCN-235J034-G/0	31.63 (1.245)	20.32 (0.800)	24.49 (0.964)
48	FCN-235J048-G/0	40.52 (1.595)	29.21 (1.150)	33.38 (1.314)
68	FCN-235J068-G/0	53.22 (2.095)	41.91 (1.650)	46.08 (1.814)
96	FCN-235J096-G/0	71.00 (2.795)	59.69 (2.350)	63.86 (2.514)

FUJITSU

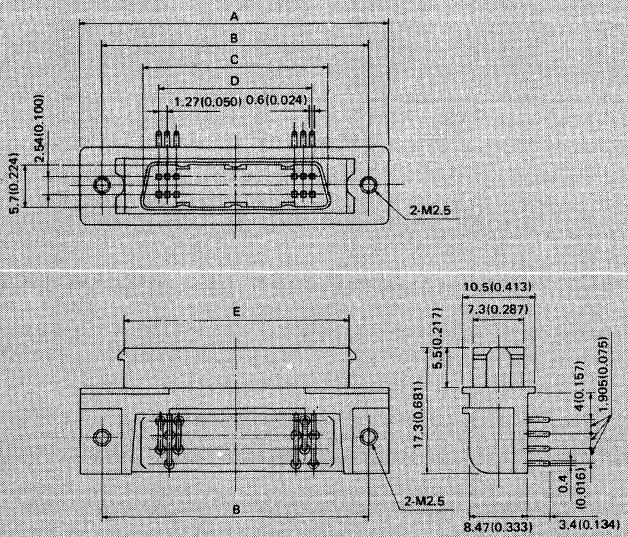
CONNECTORS

MODEL FCN-230 CONTINUED

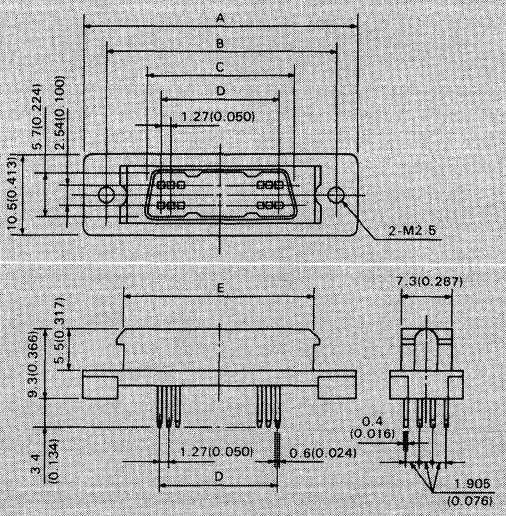
METAL SHELL TYPE PLUG CONNECTOR/DIMENSIONS

Unit: mm (in.)

RIGHT ANGLE



STRAIGHT

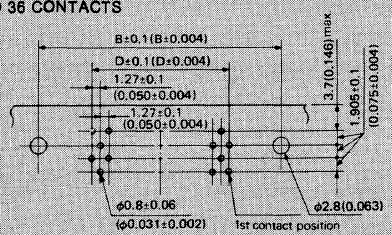


MOUNTING HOLE LAYOUT

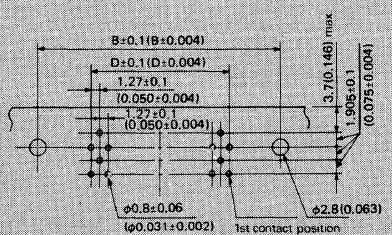
Unit: mm (in.)

RIGHT ANGLE

20, 28, AND 36 CONTACTS

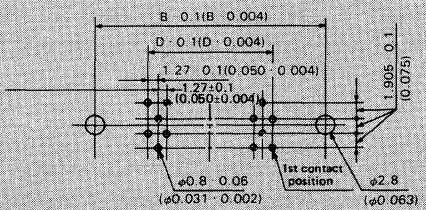


50 WAYS

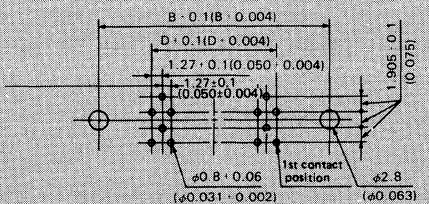


STRAIGHT

20, 28, AND 36 CONTACTS



50 WAYS



PART NUMBERS

No. of contacts	Part Number		Dimensions				
	Right angle	Straight	A	B	C	D	E
20	FCN-235P020-G/E	FCN-234P020-G/E	33.40 (1.315)	27.40 (1.079)	15.80 (0.622)	11.43 (0.450)	21.60 (0.850)
28	FCN-235P028-G/E	FCN-234P028-G/E	38.48 (1.515)	32.48 (1.279)	20.88 (0.822)	16.51 (0.650)	26.68 (1.050)
36	FCN-235P036-G/E	FCN-234P036-G/E	43.56 (1.715)	37.56 (1.479)	25.96 (1.022)	21.59 (0.350)	31.76 (1.250)
50	FCN-235P050-G/E	FCN-234P050-G/E	52.45 (2.065)	46.45 (1.829)	34.85 (1.372)	30.48 (1.200)	40.65 (1.600)

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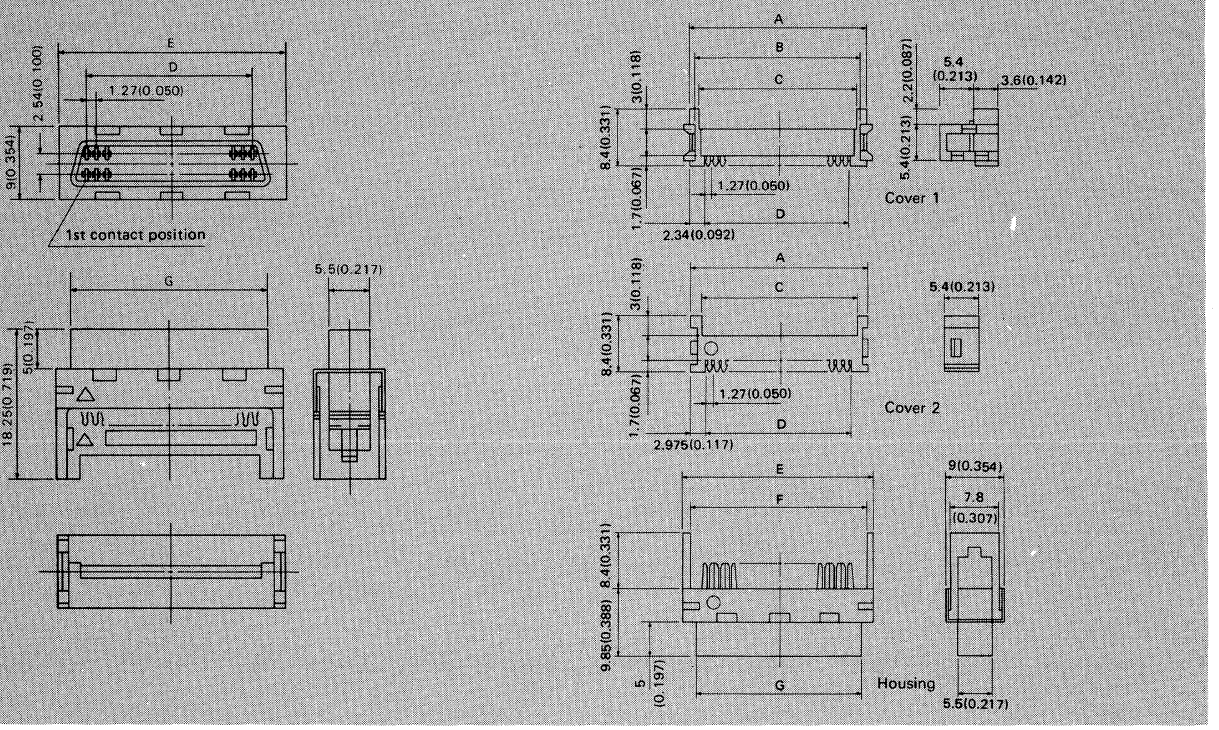
CONNECTORS

MODEL FCN-230 CONTINUED

METAL SHELL TYPE IDC SOCKET CONNECTOR/DIMENSIONS

Unit: mm (in.)

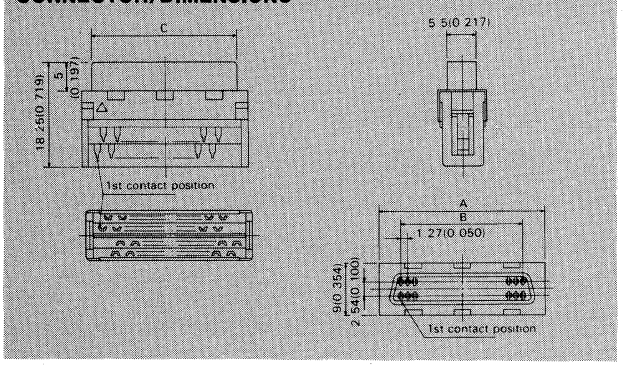


PART NUMBERS

No. of contacts	Part Number	Dimensions						
		A	B	C	D	E	F	G
20	FCN-237J020-G/E	16.75 (0.659)	14.95 (0.589)	13.55 (0.533)	11.43 (0.450)	19.25 (0.758)	16.85 (0.663)	15.60 (0.614)
28	FCN-237J028-G/E	21.83 (0.859)	20.03 (0.789)	18.63 (0.733)	16.51 (0.650)	24.33 (0.958)	21.93 (0.863)	20.68 (0.814)
36	FCN-237J036-G/E	26.91 (1.059)	25.11 (0.989)	23.7 (0.933)	21.59 (0.850)	29.41 (1.158)	27.01 (1.063)	25.76 (1.014)
50	FCN-237J050-G/E	35.80 (1.409)	34.00 (1.339)	32.60 (1.283)	30.48 (1.200)	28.30 (1.508)	35.90 (1.413)	34.65 (1.364)

METAL SHELL TYPE SOLDER SOCKET CONNECTOR/DIMENSIONS

Unit: mm (in.)

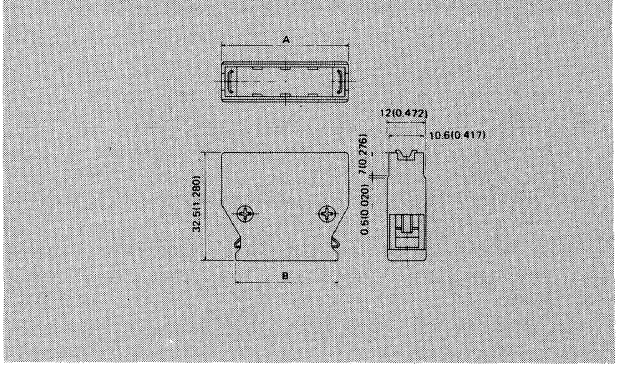


PART NUMBERS

No. of contacts	Part Number	Dimensions		
		A	B	C
20	FCN-231J020-G/E	19.25 (0.758)	11.43 (0.450)	15.60 (0.614)
28	FCN-231J028-G/E	24.33 (0.958)	16.51 (0.650)	20.68 (0.814)
36	FCN-231J036-G/E	29.41 (1.158)	21.59 (0.850)	25.76 (1.014)
50	FCN-231J050-G/E	38.30 (1.508)	30.48 (1.200)	34.65 (1.364)

METAL COVER/DIMENSIONS

Unit: mm (in.)



PART NUMBERS

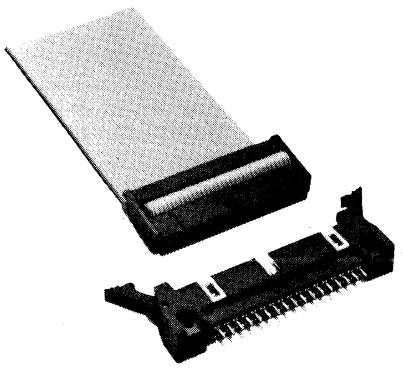
No. of contacts	Part Number	Dimensions	
		A	B
20	FCN-230C020-A/E	28.95 (1.140)	21.15 (0.833)
28	FCN-230C028-A/E	34.03 (1.340)	26.23 (1.033)
36	FCN-230C036-A/E	39.11 (1.540)	31.31 (1.233)
50	FCN-230C050-A/E	48.00 (1.890)	40.20 (1.583)

FUJITSU

CONNECTORS

IDC SOCKETS & HEADERS

MODEL FCN-700



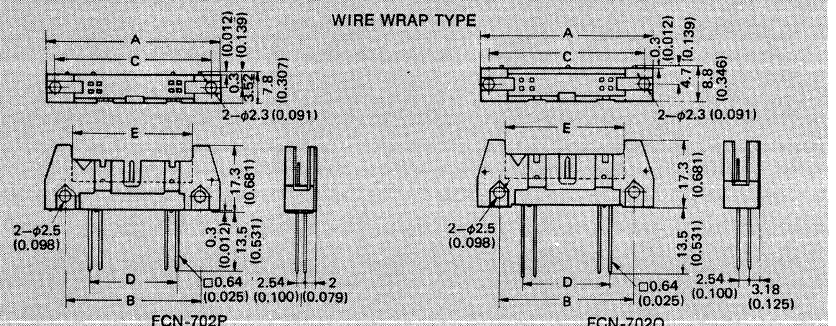
FEATURES

The Model 700 connector has a superior ejector with a unique flexible hook. Header terminals are tin-plated and have superior cost performance; the solder dip section is made into a 0.5 mm (0.020 in.) square and can be used in a ϕ0.8 mm (0.031 in.) through-hole. A special strain relief prevents wire breakage, and incorrect insertion is prevented by two kinds of keys and bump polarization. Connectors with 4 mm (0.157 in.) terminals have also been serialized for mounting on multi-layer PC boards.

HEADER DIMENSIONS (WITHOUT HOOK) Unit: mm (in.)

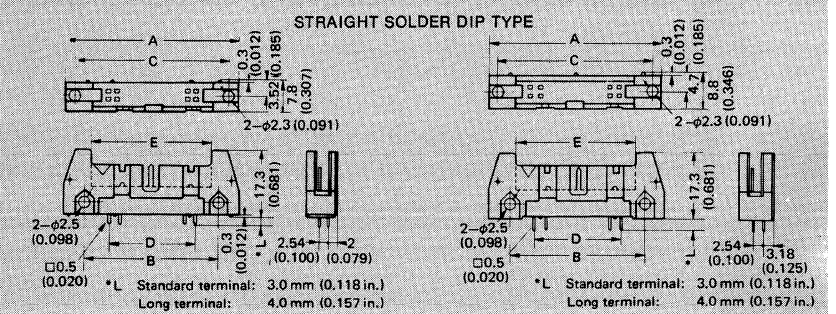
P (F) TYPE (PARTIALLY SHROUDED HEADERS) **Q (G) TYPE (FULLY SHROUDED HEADERS)**

WIRE WRAP TYPE



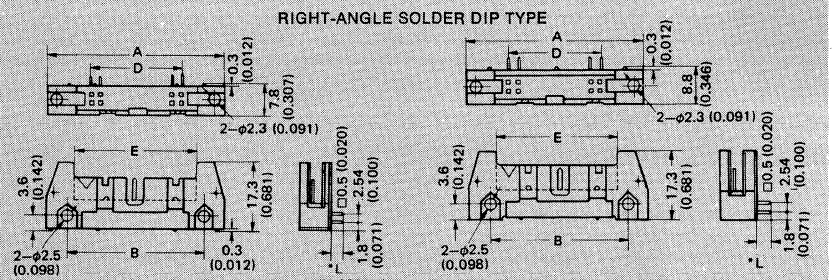
FCN-702P FCN-702Q

STRAIGHT SOLDER DIP TYPE



FCN-704P FCN-704Q

RIGHT-ANGLE SOLDER DIP TYPE



FCN-705P FCN-705Q

SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Contact resistance	20 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	500V AC for 1 min.
Maximum insertion force	3.5 kg (10 ways) 21 kg (60 ways)
Minimum withdrawal force	0.25 kg (10 ways) 2.5 kg (60 ways)
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable wire-wrapping wire	AWG #26 to #30 (solid wire)
Applicable PC board (standard)	1.6 mm (0.062 in.) (standard terminals)/3.2 mm (0.125 in.) (long terminal)

MATERIALS

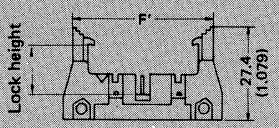
Contact	Phosphor bronze (spring grade)	
Insulator	PBT and polycarbonate, UL94V-0	
Plating	Contacts	Gold over palladium
	Terminals	Tin

FUJITSU

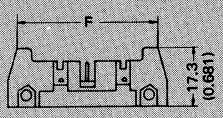
CONNECTORS

MODEL FCN-700 CONTINUED

HOOK FORM (P, Q, F, G TYPES COMMON) Unit: mm (in.)



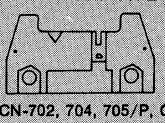
M hook



Without hook

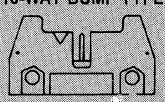
MAIN BODY FORM DEPENDS ON THE NUMBER OF CONTACTS

10-WAY CLIP TYPE



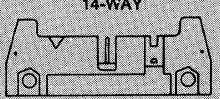
FCN-702, 704, 705/P, Q

10-WAY BUMP TYPE



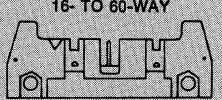
FCN-702, 704, 705/F, G

14-WAY



FCN-702, 704, 705/P, Q

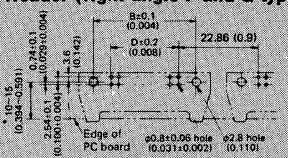
16- TO 60-WAY



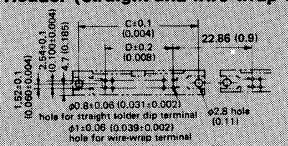
FCU-702, 704, 705/P, Q

MOUNTING HOLE LAYOUT Unit: mm (in.)

Header (right-angle P and Q-types)



Header (straight and wire-wrap Q type)



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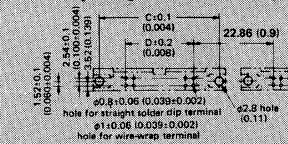


Note: *When mating with FCN-720 hood, mounting holes of ϕ2.8 should be less than 9 mm (0.354 in.) from PC board edge.

Note 1: Connectors with cables are given as a group later.

Note 2: IDC tools are given as a group later.

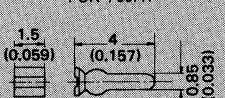
Note 3: The 0 at the end of the designation is the numeral 0.

PART NUMBERS FOR HEADERS

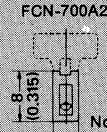
Number of contacts	Hook type	Header type: Designate: P for P type header (partially shrouded); Q for Q type header (fully shrouded); F for partially shrouded 10-way bump type header; or G for fully shrouded 10-way bump type header; in the □. Terminal length: Standard terminal Straight solder dip: 3.0 mm (0.118 in.) Right-angle solder dip: 2.5 mm (0.098 in.). Terminal type: Wire-wrap type	Standard terminal Straight solder dip: 3.0 mm (0.118 in.) Right-angle solder dip: 2.5 mm (0.098 in.). Terminal type: Straight solder dip type	Standard terminal Straight solder dip: 3.0 mm (0.118 in.) Right-angle solder dip: 2.5 mm (0.098 in.). Terminal type: Right-angle solder dip type	Long terminal Straight/Right-angle solder dip: 4 mm (0.157 in.). Terminal type: Straight solder dip type	Long terminal Straight/Right-angle solder dip: 4 mm (0.157 in.). Terminal type: Right-angle solder dip type (P type only)
10	Without hook	FCN-702□010-AU/0	FCN-704□010-AU/0	FCN-705□010-AU/0	FCN-704□010-AU/A	FCN-705P010-AU/A
	M hook	FCN-702□010-AU/M	FCN-704□010-AU/M	FCN-705□010-AU/M	FCN-704□010-AU/C	FCN-705P010-AU/C
14	Without hook	FCN-702□014-AU/0	FCN-704□014-AU/0	FCN-705□014-AU/0	FCN-704□014-AU/A	FCN-705P014-AU/A
	M hook	FCN-702□014-AU/M	FCN-704□014-AU/M	FCN-705□014-AU/M	FCN-704□014-AU/C	FCN-705P014-AU/C
16	Without hook	FCN-702□016-AU/0	FCN-704□016-AU/0	FCN-705□016-AU/0	FCN-704□016-AU/A	FCN-705P016-AU/A
	M hook	FCN-702□016-AU/M	FCN-704□016-AU/M	FCN-705□016-AU/M	FCN-704□016-AU/C	FCN-705P016-AU/C
20	Without hook	FCN-702□020-AU/0	FCN-704□020-AU/0	FCN-705□020-AU/0	FCN-704□020-AU/A	FCN-705P020-AU/A
	M hook	FCN-702□020-AU/M	FCN-704□020-AU/M	FCN-705□020-AU/M	FCN-704□020-AU/C	FCN-705P020-AU/C
26	Without hook	FCN-702□026-AU/0	FCN-704□026-AU/0	FCN-705□026-AU/0	FCN-704□026-AU/A	FCN-705P026-AU/A
	M hook	FCN-702□026-AU/M	FCN-704□026-AU/M	FCN-705□026-AU/M	FCN-704□026-AU/C	FCN-705P026-AU/C
30	Without hook	FCN-702□030-AU/0	FCN-704□030-AU/0	FCN-705□030-AU/0	FCN-704□030-AU/A	FCN-705P030-AU/A
	M hook	FCN-702□030-AU/M	FCN-704□030-AU/M	FCN-705□030-AU/M	FCN-704□030-AU/C	FCN-705P-030-AU/C
34	Without hook	FCN-702□034-AU/0	FCN-704□034-AU/0	FCN-705□034-AU/0	FCN-704□034-AU/A	FCN-705P034-AU/A
	M hook	FCN-702□034-AU/M	FCN-704□034-AU/M	FCN-705□034-AU/M	FCN-704□034-AU/C	FCN-705P034-AU/C
40	Without hook	FCN-702□040-AU/0	FCN-704□040-AU/0	FCN-705□040-AU/0	FCN-704□040-AU/A	FCN-705P040-AU/A
	M hook	FCN-702□040-AU/M	FCN-704□040-AU/M	FCN-705□040-AU/M	FCN-704□040-AU/C	FCN-705P040-AU/C
50	Without hook	FCN-702□050-AU/0	FCN-704□050-AU/0	FCN-705□050-AU/0	FCN-704□050-AU/A	FCN-705P050A-U/A
	M hook	FCN-702□050-AU/M	FCN-704□050-AU/M	FCN-705□050-AU/M	FCN-704□050-AU/C	FCN-705P050-AU/C
60	Without hook	FCN-702□060-AU/0	FCN-704□060-AU/0	FCN-705□060-AU/0	FCN-704□060-AU/A	FCN-705P060-AU/A
	M hook	FCN-702□060-AU/M	FCN-704□060-AU/M	FCN-705□060-AU/M	FCN-704□060-AU/C	FCN-705P060-AU/C

ACCESSORIES (POLARIZING KEY, LOCK SPRING) Unit: mm (in.)

FCN-700A1

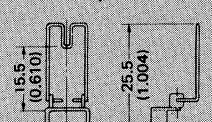


FCN-700A2



Note: Bend and remove section indicated by dotted lines to use.

FCN-700A3 (LOCK SPRING)



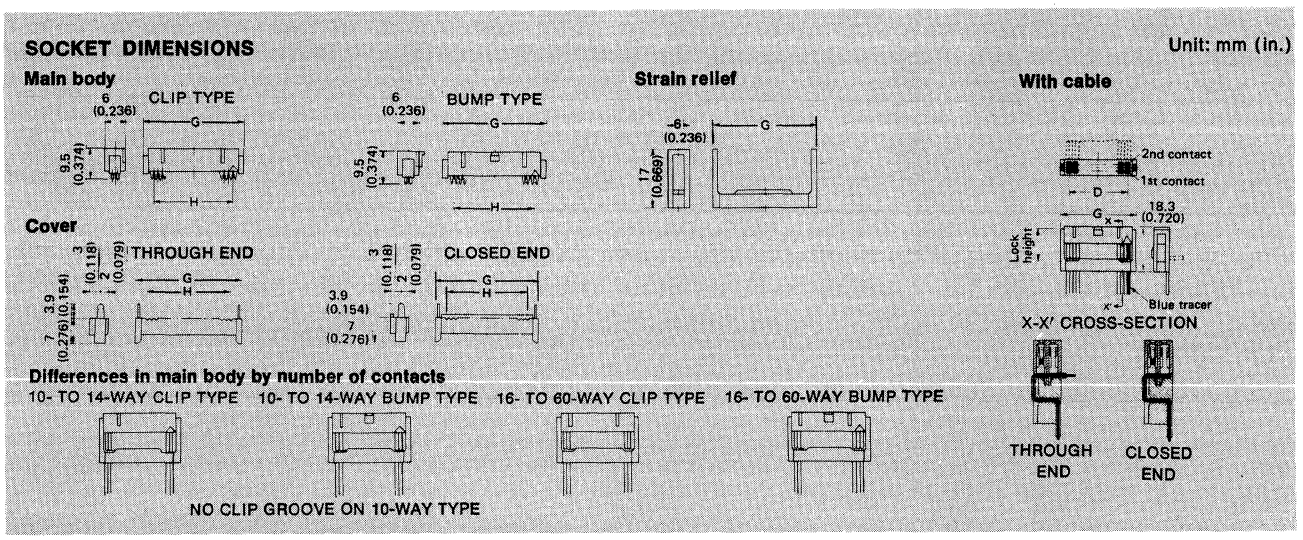
FUJITSU

CONNECTORS

MODEL FCN-700 CONTINUED

SOCKET DIMENSIONS

Unit: mm (in.)



PART NUMBERS FOR SOCKETS

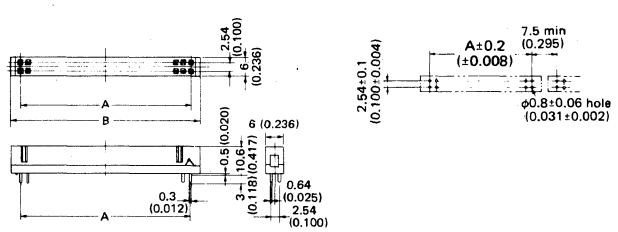
Number of contacts	Type / Configuration	Clip type		Bump type	
		Through end	Closed end	Through end	Closed end
10		FCN-707J010-AU/0	FCN-707J010-AU/B	FCN-707B010-AU/0	FCN-707B010-AU/B
14		FCN-707J014-AU/0	FCN-707J014-AU/B	FCN-707B014-AU/0	FCN-707B014-AU/B
16		FCN-707J016-AU/0	FCN-707J016-AU/B	FCN-707B016-AU/0	FCN-707B016-AU/B
20		FCN-707J020-AU/0	FCN-707J020-AU/B	FCN-707B020-AU/0	FCN-707B020-AU/B
26		FCN-707J026-AU/0	FCN-707J026-AU/B	FCN-707B026-AU/0	FCN-707B026-AU/B
30		FCN-707J030-AU/0	FCN-707J030-AU/B	FCN-707B030-AU/0	FCN-707B030-AU/B
34		FCN-707J034-AU/0	FCN-707J034-AU/B	FCN-707B034-AU/0	FCN-707B034-AU/B
40		FCN-707J040-AU/0	FCN-707J040-AU/B	FCN-707B040-AU/0	FCN-707B040-AU/B
50		FCN-707J050-AU/0	FCN-707J050-AU/B	FCN-707B050-AU/0	FCN-707B050-AU/B
60		FCN-707J060-AU/0	FCN-707J060-AU/B	FCN-707B060-AU/0	FCN-707B060-AU/B

DIMENSIONS FOR HEADERS AND SOCKETS

Number of contacts	A	B	C	D	E	F	F	G	H
10	32.0 (1.260)	21.8 (0.858)	27.9 (1.098)	10.16 (0.400)	18.3 (0.720)	32.3 (1.272)	26.3 (1.035)	17.3 (0.681)	11.43 (0.450)
14	37.1 (1.461)	26.9 (1.059)	33.0 (1.299)	15.24 (0.600)	23.4 (0.921)	37.4 (1.472)	31.4 (1.236)	22.4 (0.882)	16.51 (0.650)
16	39.6 (1.559)	29.4 (1.157)	35.5 (1.398)	17.78 (0.700)	25.9 (1.020)	39.9 (1.571)	33.9 (1.335)	24.9 (0.980)	19.05 (0.750)
20	44.7 (1.760)	34.5 (1.358)	40.6 (1.598)	22.86 (0.900)	31.0 (1.220)	45.0 (1.772)	39.0 (1.535)	30.0 (1.181)	24.13 (0.950)
26	52.3 (2.059)	42.2 (1.661)	48.3 (1.902)	30.48 (1.200)	38.6 (1.520)	52.6 (2.071)	46.6 (1.835)	37.6 (1.480)	31.75 (1.250)
30	57.4 (2.260)	47.2 (1.858)	53.3 (2.098)	35.56 (1.400)	43.7 (1.720)	57.7 (2.272)	51.7 (2.035)	42.7 (1.681)	36.83 (1.450)
34	62.5 (2.461)	52.3 (2.059)	58.4 (2.299)	40.64 (1.600)	48.8 (1.921)	62.8 (2.472)	56.8 (2.236)	47.8 (1.882)	41.91 (1.650)
40	70.1 (2.760)	59.9 (2.358)	66.0 (2.598)	48.26 (1.900)	56.4 (2.220)	70.4 (2.772)	64.4 (2.535)	55.4 (2.181)	49.53 (1.950)
50	82.8 (3.260)	72.6 (2.858)	78.7 (3.098)	60.96 (2.400)	69.0 (2.717)	83.0 (3.268)	77.0 (3.031)	68.1 (2.681)	62.23 (2.450)
60	95.5 (3.760)	85.3 (3.358)	91.4 (3.598)	73.66 (2.900)	81.8 (3.220)	95.8 (3.772)	89.8 (3.535)	80.8 (3.181)	74.93 (2.950)

DIMENSIONS FOR SOLDER DIP SOCKET

Unit: mm (in.)



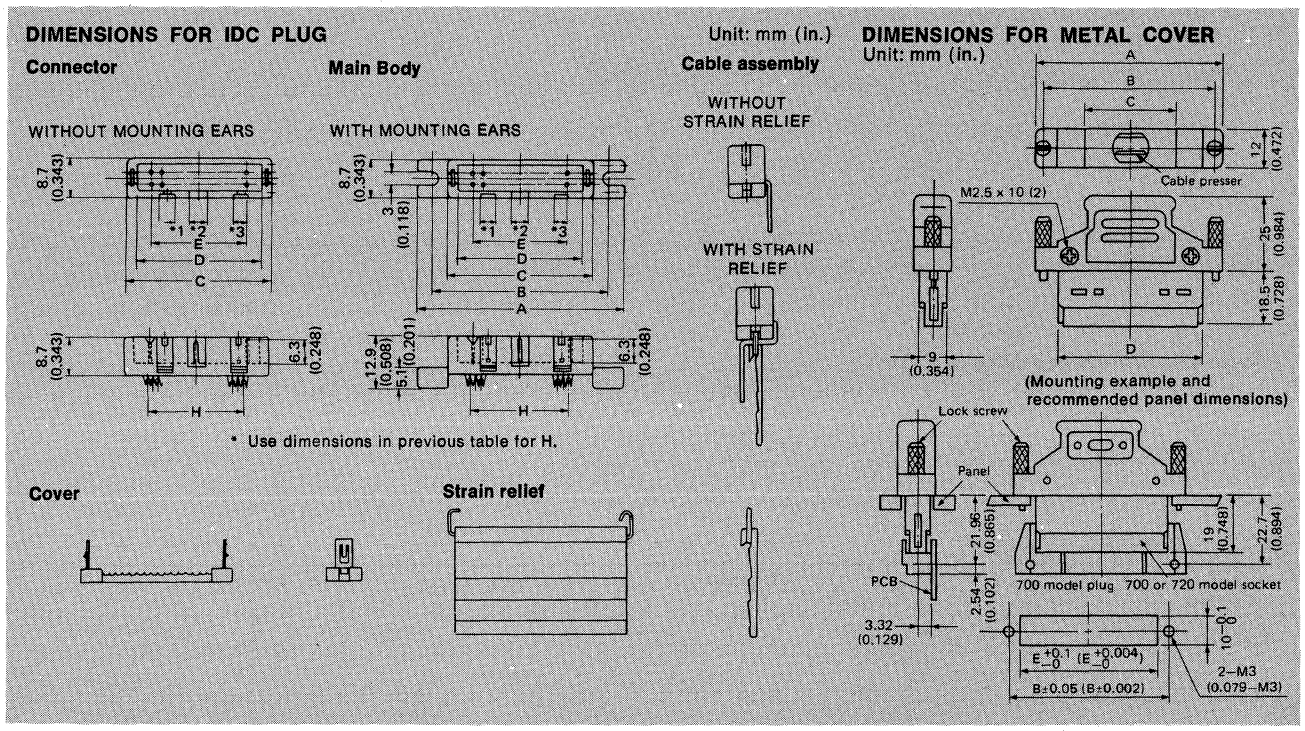
PART NUMBERS

Number of contacts	Part Number	A	B
10	FCN-704J010-AU/0	10.16 (0.400)	17.3 (0.681)
14	FCN-704J014-AU/0	15.24 (0.600)	22.4 (0.882)
16	FCN-704J016-AU/0	17.78 (0.700)	24.9 (0.980)
20	FCN-704J020-AU/0	22.86 (0.900)	30.0 (1.181)
26	FCN-704J026-AU/0	30.48 (1.200)	37.6 (1.480)
30	FCN-704J030-AU/0	35.56 (1.400)	42.7 (1.681)
34	FCN-704J034-AU/0	40.64 (1.600)	47.8 (1.882)
40	FCN-704J040-AU/0	48.26 (1.900)	55.4 (2.181)
50	FCN-704J050-AU/0	60.96 (2.400)	68.1 (2.681)
60	FCN-704J060-AU/0	73.66 (2.900)	80.8 (3.181)

FUJITSU

CONNECTORS

MODEL FCN-700 CONTINUED



PART NUMBERS FOR IDC PLUG

Number of contacts	Mounting ears	Without strain relief	With strain relief	A	B	C	D	E
10	Without	FCN-707□010-AU/1	FCN-707□010-AU/6			22.86 (0.900)	18.03 (0.710)	10.16 (0.400)
	With	FCN-707□010-AU/2	FCN-707□010-AU/7	38.10 (1.500)	30.48 (1.200)			
14	Without	FCN-707P014-AU/1	FCN-707P014-AU/6			27.94 (1.100)	23.11 (0.910)	15.24 (0.600)
	With	FCN-707P014-AU/2	FCN-707P014-AU/7	43.18 (1.700)	35.56 (1.400)			
16	Without	FCN-707P016-AU/1	FCN-707P016-AU/6			30.48 (1.200)	25.65 (1.010)	17.78 (0.700)
	With	FCN-707P016-AU/2	FCN-707P016-AU/7	45.72 (1.800)	38.10 (1.500)			
20	Without	FCN-707P020-AU/1	FCN-707P020-AU/6			35.56 (1.400)	30.73 (1.210)	22.86 (0.900)
	With	FCN-707P020-AU/2	FCN-707P020-AU/7	50.80 (2.000)	43.18 (1.700)			
26	Without	FCN-707P026-AU/1	FCN-707P026-AU/6			43.18 (1.700)	38.35 (1.510)	30.48 (1.200)
	With	FCN-707P026-AU/2	FCN-707P026-AU/7	58.42 (2.300)	50.80 (2.000)			
30	Without	FCN-707P030-AU/1	FCN-707P030-AU/6			48.26 (1.900)	43.43 (1.710)	35.56 (1.400)
	With	FCN-707P030-AU/2	FCN-707P030-AU/7	63.50 (2.500)	55.88 (2.200)			
34	Without	FCN-707P034-AU/1	FCN-707P034-AU/6			53.34 (2.100)	48.51 (1.910)	40.64 (1.600)
	With	FCN-707P034-AU/2	FCN-707P034-AU/7	68.58 (2.700)	60.96 (2.400)			
40	Without	FCN-707P040-AU/1	FCN-707P040-AU/6			60.96 (2.400)	56.13 (2.210)	48.26 (1.900)
	With	FCN-707P040-AU/2	FCN-707P040-AU/7	76.20 (3.000)	68.58 (2.700)			
50	Without	FCN-707P050-AU/1	FCN-707P050-AU/6			73.66 (2.900)	68.83 (2.710)	60.96 (2.400)
	With	FCN-707P050-AU/2	FCN-707P050-AU/7	88.90 (3.500)	81.28 (3.200)			
60	Without	FCN-707P060-AU/1	FCN-707P060-AU/6			86.36 (3.400)	81.53 (3.210)	73.66 (2.900)
	With	FCN-707P060-AU/2	FCN-707P060-AU/7	101.60 (4.000)	93.98 (3.700)			

Note: No slits of *1 and *2 on 10-way P type; no slits of *1 and *3 on F type; no slit of *1 on 14-way type. All slits on other way types.

Note: The FCN-700A3 lock spring can be mounted on products with ears to prevent accidental disconnection. Designate: P for connectors matable with clip type sockets; F for connectors with type sockets; in the □.

PART NUMBERS FOR METAL COVER

No. of contacts	Part Number		Dimensions				
	Built-in connector	Cover only	A	B	C	D	E
20	FCN-707□020-AU/BE	FCN-700C020/E	44.7 (1.760)	38.98 (1.535)	30 (1.181)	30.25 (1.191)	32.0 (1.260)
26	FCN-707□026-AU/BE	FCN-700C026/E	52.3 (2.059)	46.60 (1.835)	30 (1.181)	37.85 (1.490)	39.6 (1.559)
34	FCN-707□034-AU/BE	FCN-700C034/E	62.5 (2.461)	56.76 (2.235)	30 (1.181)	48.05 (1.892)	49.8 (1.961)
40	FCN-707□040-AU/BE	FCN-700C040/E	70.1 (2.760)	64.38 (2.535)	30 (1.181)	55.65 (2.191)	57.4 (2.260)
50	FCN-707□050-AU/BE	FCN-700C050/E	82.8 (3.260)	77.08 (3.035)	35 (1.378)	68.35 (2.691)	70.1 (2.760)
60	FCN-707□060-AU/BE	FCN-700C060/E	95.5 (3.760)	89.78 (3.535)	35 (1.378)	81.05 (3.191)	82.8 (3.260)

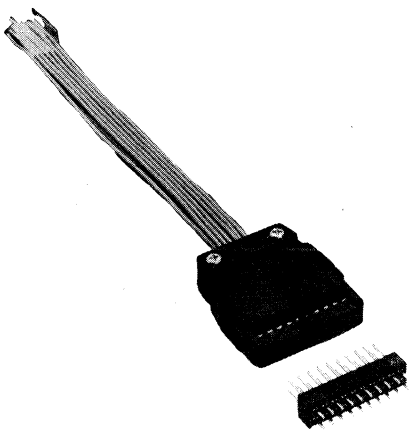
Designate the following: J: Clip type; B: Bump type; in the □. Note: The covers are applied for connecting I/O cable and FCN-700, 720 sockets.

FUJITSU

CONNECTORS

SOCKET HOUSINGS, CRIMP CONTACTS & HEADERS

MODEL FCN-720



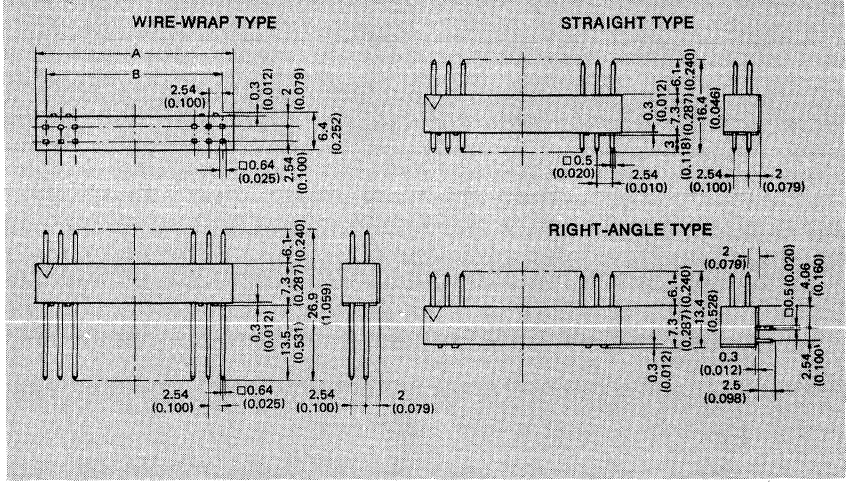
FEATURES

This crimp connector has been designed for wide use, and comes in many shapes and contact arrangements (one and two rows). The Model 720 block headers are matable with the Model 700 and 740 sockets, and Model 720 sockets are lockable with Model 700 headers when a special cover is used. Female contacts are secured in the housing by a unique internal spring structure. High-pressure contacts are also available which prevent accidental disconnection in applications using only a few contacts. For the W and S type headers, insulation molds can be broken into the necessary size.

DIMENSIONS

Unit: mm (in.)

0 TYPE BLOCK HEADER



SPECIFICATIONS

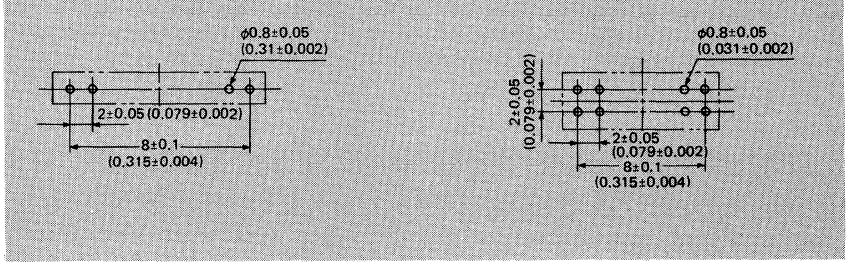
Temperature range		−55°C to +85°C
Current rating		3A DC
Voltage rating		250V AC
Contact resistance		20 mΩ max. (6V DC, 0.3A)
Insulation resistance		1,000 mΩ min. (500V DC)
Dielectric withstand voltage		500V AC for 1 min.
Maximum insertion force	Standard contacts	1.05 kg (3 way) 25.2 kg (72 way)
	High-pressure contacts	2.1 kg (3 way) 50.4 kg (72 way)
	M series	12.6 kg (36 way)
Minimum withdrawal force	Standard contacts	0.09 kg (3 way) 21.6 kg (72 way)
	High-pressure contacts	0.18 kg (3 way) 43.2 kg (72 way)
	M series	0.72 kg (36 way)
Applicable wire		Wire-wrapping: AWG #26 to #30 (solid wire) Crimping: AWG #20 to #32 M series: AWG #26 to #34
Applicable PC board (standard)		1.6 mm (0.063 in.)

MATERIALS

Contact		Phosphor bronze (spring grade)
Insulator	Header	PBT, UL94V-0
	Socket	Noryl 94V-1
	Cover	Nylon 6, UL94V-2
Plating	Contacts	Gold over palladium
	Terminals	O, L, types: Tin S, W types: Gold over palladium

MOUNTING HOLE LAYOUT

Unit: mm (in.)



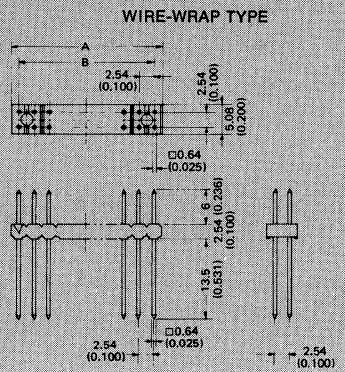
FUJITSU

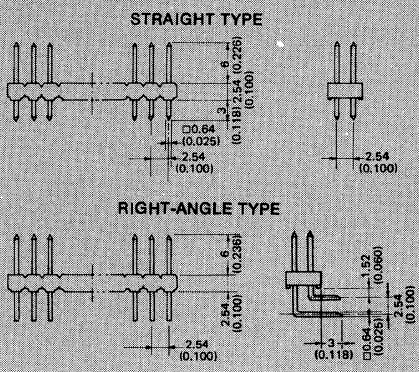
CONNECTORS

MODEL FCN-720 CONTINUED

L TYPE BLOCK HEADER

Unit: mm (in.)



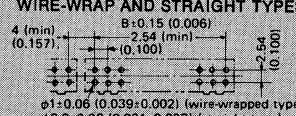


PART NUMBERS FOR O AND L TYPE BLOCK HEADER

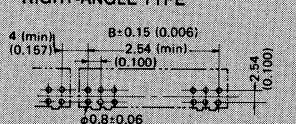
Number of contacts \ Type	Header: Designate O for O type or L for L type in the □			Dimensions (mm (in.))	
	Wrap type	Straight type	Right-angle type	A	B
8	FCN-722P008-AU/O	FCN-742P008-AU/O	FCN-725P008-AU/O	11.16 (0.439)	7.62 (0.300)
10	FCN-722P010-AU/□	FCN-724P010-AU/□	FCN-725P010-AU/□	13.70 (0.539)	10.16 (0.400)
12	FCN-722P012-AU/□	FCN-724P012-AU/□	FCN-725P012-AU/□	16.24 (0.639)	12.70 (0.500)
14	FCN-722P014-AU/□	FCN-724P014-AU/□	FCN-725P014-AU/□	18.78 (0.739)	15.24 (0.600)
16	FCN-722P016-AU/□	FCN-724P016-AU/□	FCN-725P016-AU/□	21.32 (0.839)	17.78 (0.700)
18	FCN-722P018-AU/□	FCN-724P018-AU/□	FCN-725P018-AU/□	23.86 (0.939)	20.32 (0.800)
20	FCN-722P020-AU/□	FCN-724P020-AU/□	FCN-725P020-AU/□	26.40 (1.039)	22.86 (0.900)
22	FCN-722P022-AU/□	FCN-724P022-AU/□	FCN-725P022-AU/□	28.94 (1.139)	25.40 (1.000)
24	FCN-722P024-AU/□	FCN-724P024-AU/□	FCN-725P024-AU/□	31.48 (1.239)	27.94 (1.000)
26	FCN-722P026-AU/□	FCN-724P026-AU/□	FCN-725P026-AU/□	34.02 (1.339)	30.48 (1.200)
28	FCN-722P028-AU/□	FCN-724P028-AU/□	FCN-725P028-AU/□	36.56 (1.439)	33.02 (1.300)
30	FCN-722P030-AU/□	FCN-724P030-AU/□	FCN-725P030-AU/□	39.10 (1.539)	35.56 (1.400)
32	FCN-722P032-AU/□	FCN-724P032-AU/□	FCN-725P032-AU/□	41.64 (1.639)	38.10 (1.500)
34	FCN-722P034-AU/□	FCN-724P034-AU/□	FCN-725P034-AU/□	44.18 (1.739)	40.64 (1.600)
36	FCN-722P036-AU/□	FCN-724P036-AU/□	FCN-725P036-AU/□	46.72 (1.839)	43.18 (1.700)
38	FCN-722P038-AU/□	FCN-724P038-AU/□	FCN-725P038-AU/□	49.26 (1.939)	45.72 (1.800)
40	FCN-722P040-AU/□	FCN-724P040-AU/□	FCN-725P040-AU/□	51.80 (2.039)	48.26 (1.900)
42	FCN-722P042-AU/□	FCN-724P042-AU/□	FCN-725P042-AU/□	54.34 (2.139)	50.80 (2.000)
44	FCN-722P044-AU/□	FCN-724P044-AU/□	FCN-725P044-AU/□	56.88 (2.239)	53.34 (2.100)
46	FCN-722P046-AU/□	FCN-724P046-AU/□	FCN-725P046-AU/□	59.42 (2.339)	55.88 (2.200)
48	FCN-722P048-AU/□	FCN-724P048-AU/□	FCN-725P048-AU/□	61.96 (2.439)	58.42 (2.300)
50	FCN-722P050-AU/□	FCN-724P050-AU/□	FCN-725P050-AU/□	64.50 (2.539)	60.96 (2.400)
52	FCN-722P052-AU/□	FCN-724P052-AU/□	FCN-725P052-AU/□	67.04 (2.639)	63.50 (2.500)
54	FCN-722P054-AU/□	FCN-724P054-AU/□	FCN-725P054-AU/□	69.58 (2.739)	66.04 (2.600)
56	FCN-722P056-AU/□	FCN-724P056-AU/□	FCN-725P056-AU/□	72.12 (2.839)	68.58 (2.700)
58	FCN-722P058-AU/□	FCN-724P058-AU/□	FCN-725P058-AU/□	74.66 (2.939)	71.12 (2.800)
60	FCN-722P060-AU/□	FCN-724P060-AU/□	FCN-725P060-AU/□	77.20 (3.039)	73.66 (2.900)

MOUNTING HOLE LAYOUT Unit: mm (in.)

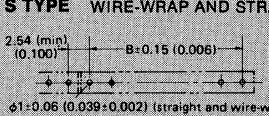
O, L TYPES WIRE-WRAP AND STRAIGHT TYPES



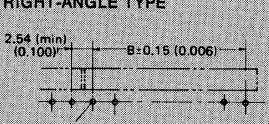
RIGHT-ANGLE TYPE



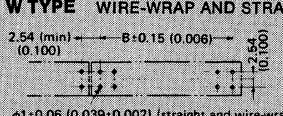
S TYPE WIRE-WRAP AND STRAIGHT TYPES



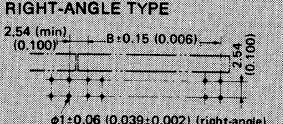
RIGHT-ANGLE TYPE



W TYPE WIRE-WRAP AND STRAIGHT TYPES



RIGHT-ANGLE TYPE



Note: For thin wire crimping (AWG #30 to #32), the crimp height must be correctly adjusted for increased reliability

Please contact us for further information.

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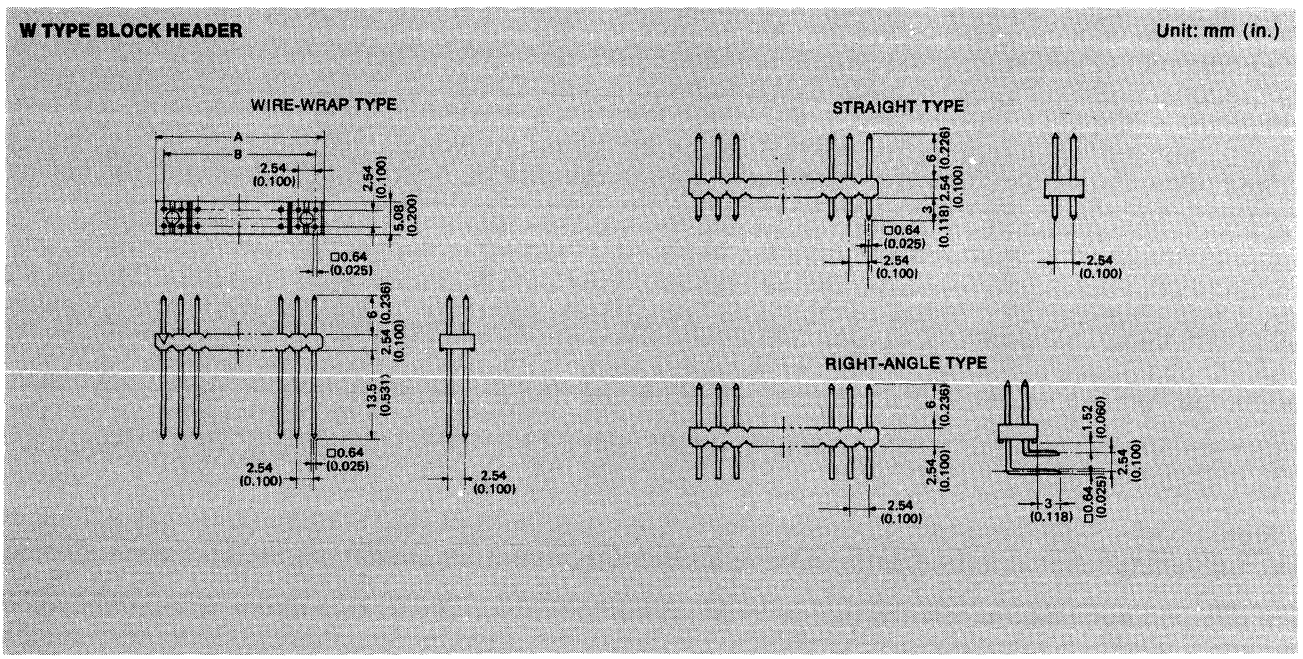
CONNECTORS

MODEL FCN-720 CONTINUED

W TYPE BLOCK HEADER Unit: mm (in.)



PART NUMBERS FOR W TYPE BLOCK HEADER

Number of contacts \ Type	W type header			Dimensions (mm (in.))	
	Wire-wrap type	Straight type	Right-angle type	A	B
4	FCN-722P004-AU/W	FCN-724P004-AU/W	FCN-725P004-AU/W	5.08 (0.200)	2.54 (0.100)
6	FCN-722P006-AU/W	FCN-724P006-AU/W	FCN-725P006-AU/W	7.62 (0.300)	5.08 (0.200)
8	FCN-722P008-AU/W	FCN-724P008-AU/W	FCN-725P008-AU/W	10.16 (0.400)	7.62 (0.300)
10	FCN-722P010-AU/W	FCN-724P010-AU/W	FCN-725P010-AU/W	12.70 (0.500)	10.16 (0.400)
12	FCN-722P012-AU/W	FCN-724P012-AU/W	FCN-725P012-AU/W	15.24 (0.600)	12.70 (0.500)
14	FCN-722P014-AU/W	FCN-724P014-AU/W	FCN-725P014-AU/W	17.78 (0.700)	15.24 (0.600)
16	FCN-722P016-AU/W	FCN-724P016-AU/W	FCN-725P016-AU/W	20.32 (0.800)	17.78 (0.700)
18	FCN-722P018-AU/W	FCN-724P018-AU/W	FCN-725P018-AU/W	22.86 (0.900)	20.32 (0.800)
20	FCN-722P020-AU/W	FCN-724P020-AU/W	FCN-725P020-AU/W	25.40 (1.000)	22.96 (0.904)
22	FCN-722P022-AU/W	FCN-724P022-AU/W	FCN-725P022-AU/W	27.94 (1.100)	25.40 (1.000)
24	FCN-722P024-AU/W	FCN-724P024-AU/W	FCN-725P024-AU/W	30.48 (1.200)	27.94 (1.100)
26	FCN-722P026-AU/W	FCN-724P026-AU/W	FCN-725P026-AU/W	33.02 (1.300)	30.48 (1.200)
28	FCN-722P028-AU/W	FCN-724P028-AU/W	FCN-725P028-AU/W	35.56 (1.400)	33.02 (1.300)
30	FCN-722P030-AU/W	FCN-724P030-AU/W	FCN-725P030-AU/W	38.10 (1.500)	35.56 (1.400)
32	FCN-722P032-AU/W	FCN-724P032-AU/W	FCN-725P032-AU/W	40.64 (1.600)	38.10 (1.500)
34	FCN-722P034-AU/W	FCN-724P034-AU/W	FCN-725P034-AU/W	43.18 (1.700)	40.64 (1.600)
36	FCN-722P036-AU/W	FCN-724P036-AU/W	FCN-725P036-AU/W	45.72 (1.800)	43.18 (1.700)
38	FCN-722P038-AU/W	FCN-724P038-AU/W	FCN-725P038-AU/W	48.26 (1.900)	45.72 (1.800)
40	FCN-722P040-AU/W	FCN-724P040-AU/W	FCN-725P040-AU/W	50.80 (2.000)	48.26 (1.900)
42	FCN-722P042-AU/W	FCN-724P042-AU/W	FCN-725P042-AU/W	53.34 (2.100)	50.80 (2.000)
44	FCN-722P044-AU/W	FCN-724P044-AU/W	FCN-725P044-AU/W	55.88 (2.200)	53.34 (2.100)
46	FCN-722P046-AU/W	FCN-724P046-AU/W	FCN-725P046-AU/W	58.42 (2.300)	55.88 (2.200)
48	FCN-722P048-AU/W	FCN-724P048-AU/W	FCN-725P048-AU/W	60.96 (2.400)	58.42 (2.300)
50	FCN-722P050-AU/W	FCN-724P050-AU/W	FCN-725P050-AU/W	63.50 (2.500)	60.96 (2.400)
52	FCN-722P052-AU/W	FCN-724P052-AU/W	FCN-725P052-AU/W	66.04 (2.600)	63.50 (2.500)
54	FCN-722P054-AU/W	FCN-724P054-AU/W	FCN-725P054-AU/W	68.58 (2.700)	66.04 (2.600)
56	FCN-722P056-AU/W	FCN-724P056-AU/W	FCN-725P056-AU/W	71.12 (2.800)	68.58 (2.700)
58	FCN-722P058-AU/W	FCN-724P058-AU/W	FCN-725P058-AU/W	73.66 (2.900)	71.12 (2.800)
60	FCN-722P060-AU/W	FCN-724P060-AU/W	FCN-725P060-AU/W	76.20 (3.000)	73.66 (2.900)
62	FCN-722P062-AU/W	FCN-724P062-AU/W	FCN-725P062-AU/W	78.74 (3.100)	76.20 (3.000)
64	FCN-722P064-AU/W	FCN-724P064-AU/W	FCN-725P064-AU/W	81.28 (3.200)	78.74 (3.100)
66	FCN-722P066-AU/W	FCN-724P066-AU/W	FCN-725P066-AU/W	83.82 (3.300)	81.28 (3.200)
68	FCN-722P068-AU/W	FCN-724P068-AU/W	FCN-725P068-AU/W	86.36 (3.400)	83.82 (3.300)
70	FCN-722P070-AU/W	FCN-724P070-AU/W	FCN-725P070-AU/W	88.90 (3.500)	86.36 (3.400)
72	FCN-722P072-AU/W	FCN-724P072-AU/W	FCN-725P072-AU/W	91.44 (3.600)	88.90 (3.500)

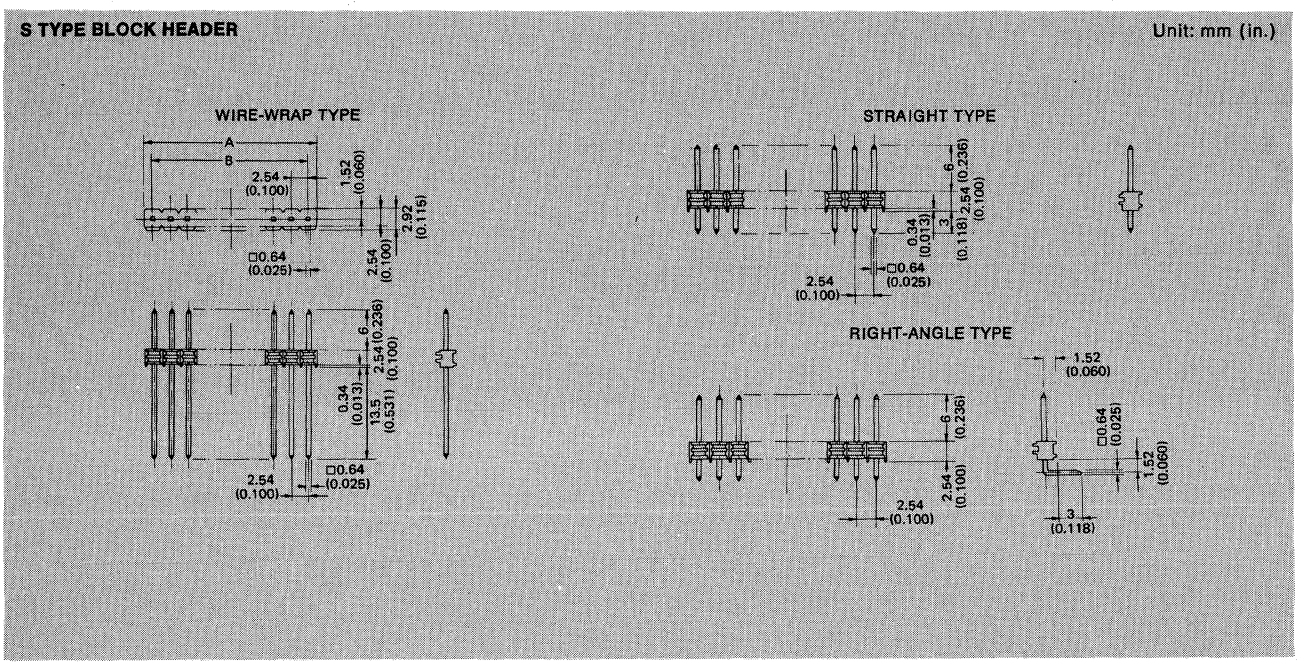
FUJITSU

CONNECTORS

MODEL FCN-720 CONTINUED

S TYPE BLOCK HEADER

Unit: mm (in.)



PART NUMBERS FOR S TYPE BLOCK HEADER

Number of contacts \ Type	S type header			Dimensions (mm (in.))	
	Wire-wrap type	Straight type	Right-angle type	A	B
2	—	—	FCN-725P002-AU/S	5.08 (0.200)	2.54 (0.100)
3	FCN-722P003-AU/S	FCN-724P003-AU/S	FCN-725P003-AU/S	7.62 (0.300)	5.08 (0.200)
4	FCN-722P004-AU/S	FCN-724P004-AU/S	FCN-725P004-AU/S	10.16 (0.400)	7.62 (0.300)
5	FCN-722P005-AU/S	FCN-724P005-AU/S	FCN-725P005-AU/S	12.70 (0.500)	10.16 (0.400)
6	FCN-722P006-AU/S	FCN-724P006-AU/S	FCN-725P006-AU/S	15.24 (0.600)	12.70 (0.500)
7	FCN-722P007-AU/S	FCN-724P007-AU/S	FCN-725P007-AU/S	17.78 (0.700)	15.24 (0.600)
8	FCN-722P008-AU/S	FCN-724P008-AU/S	FCN-725P008-AU/S	20.32 (0.800)	17.78 (0.700)
9	FCN-722P009-AU/S	FCN-724P009-AU/S	FCN-725P009-AU/S	22.86 (0.900)	20.32 (0.800)
10	FCN-722P010-AU/S	FCN-724P010-AU/S	FCN-725P010-AU/S	25.40 (1.000)	22.86 (0.900)
11	FCN-722P011-AU/S	FCN-724P011-AU/S	FCN-725P011-AU/S	27.94 (1.100)	25.40 (1.000)
12	FCN-722P012-AU/S	FCN-724P012-AU/S	FCN-725P012-AU/S	30.48 (1.200)	27.94 (1.100)
13	FCN-722P013-AU/S	FCN-724P013-AU/S	FCN-725P013-AU/S	33.02 (1.300)	30.48 (1.200)
14	FCN-722P014-AU/S	FCN-724P014-AU/S	FCN-725P014-AU/S	35.56 (1.400)	33.02 (1.300)
15	FCN-722P015-AU/S	FCN-724P015-AU/S	FCN-725P015-AU/S	38.10 (1.500)	35.56 (1.400)
16	FCN-722P016-AU/S	FCN-724P016-AU/S	FCN-725P016-AU/S	40.64 (1.600)	38.10 (1.500)
17	FCN-722P017-AU/S	FCN-724P017-AU/S	FCN-725P017-AU/S	43.18 (1.700)	40.64 (1.600)
18	FCN-722P018-AU/S	FCN-724P018-AU/S	FCN-725P018-AU/S	45.72 (1.800)	43.18 (1.700)
19	FCN-722P019-AU/S	FCN-724P019-AU/S	FCN-725P019-AU/S	48.26 (1.900)	45.72 (1.800)
20	FCN-722P020-AU/S	FCN-724P020-AU/S	FCN-725P020-AU/S	50.80 (2.000)	48.26 (1.900)
21	FCN-722P021-AU/S	FCN-724P021-AU/S	FCN-725P021-AU/S	53.34 (2.100)	50.80 (2.000)
22	FCN-722P022-AU/S	FCN-724P022-AU/S	FCN-725P022-AU/S	55.88 (2.200)	53.34 (2.100)
23	FCN-722P023-AU/S	FCN-724P023-AU/S	FCN-725P023-AU/S	58.42 (2.300)	55.88 (2.200)
24	FCN-722P024-AU/S	FCN-724P024-AU/S	FCN-725P024-AU/S	60.96 (2.400)	58.42 (2.300)
25	FCN-722P025-AU/S	FCN-724P025-AU/S	FCN-725P025-AU/S	63.50 (2.500)	60.96 (2.400)
26	FCN-722P026-AU/S	FCN-724P026-AU/S	FCN-725P026-AU/S	66.04 (2.600)	63.50 (2.500)
27	FCN-722P027-AU/S	FCN-724P027-AU/S	FCN-725P027-AU/S	68.58 (2.700)	66.04 (2.600)
28	FCN-722P028-AU/S	FCN-724P028-AU/S	FCN-725P028-AU/S	71.12 (2.800)	68.58 (2.700)
29	FCN-722P029-AU/S	FCN-724P029-AU/S	FCN-725P029-AU/S	73.66 (2.900)	71.12 (2.800)
30	FCN-722P030-AU/S	FCN-724P030-AU/S	FCN-725P030-AU/S	76.20 (3.000)	73.66 (2.900)
31	FCN-722P031-AU/S	FCN-724P031-AU/S	FCN-725P031-AU/S	78.74 (3.100)	76.20 (3.000)
32	FCN-722P032-AU/S	FCN-724P032-AU/S	FCN-725P032-AU/S	81.28 (3.200)	78.74 (3.100)
33	FCN-722P033-AU/S	FCN-724P033-AU/S	FCN-725P033-AU/S	83.82 (3.300)	81.28 (3.200)
34	FCN-722P034-AU/S	FCN-724P034-AU/S	FCN-725P034-AU/S	86.36 (3.400)	83.82 (3.300)
35	FCN-722P035-AU/S	FCN-724P035-AU/S	FCN-725P035-AU/S	88.90 (3.500)	86.36 (3.400)
36	FCN-722P036-AU/S	FCN-724P036-AU/S	FCN-725P036-AU/S	91.44 (3.600)	88.90 (3.500)

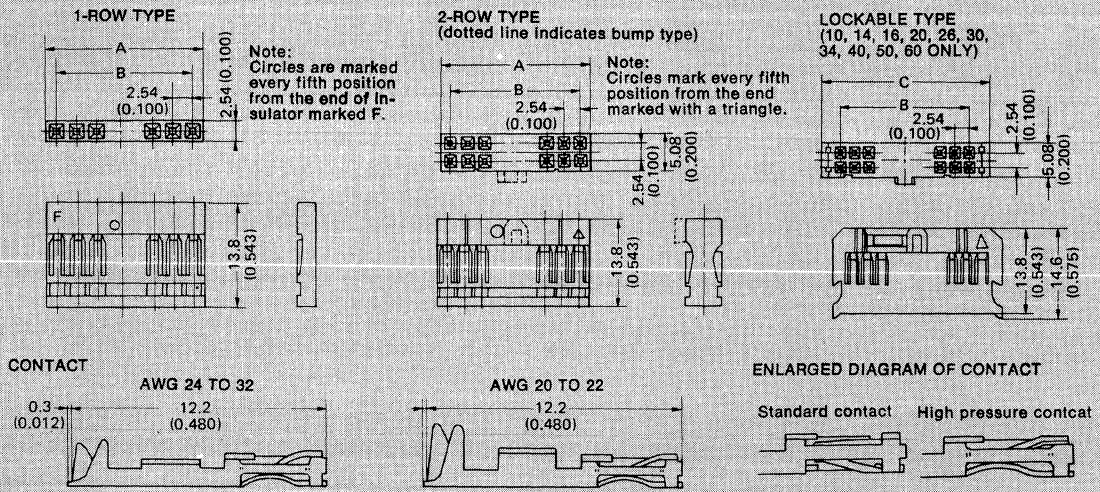
FUJITSU

CONNECTORS

MODEL FCN-720 CONTINUED

SOCKET AND COTACT

Unit: mm (in.)



PART NUMBERS FOR SOCKETS

Housing: Designate J standard type; B for bump type or D for lockable types (10 to 34 ways) in the □.							Contacts
Number of contacts	1 row	Number of contacts	2 row	A	B	C	
2	FCN-723J002/1	4	FCN-723J004/2	5.08 (0.200)	2.54 (0.100)	–	**Wire size: AWG #24 to #32**
3	FCN-723J003/1	6	FCN-723J006/2	7.62 (0.300)	5.08 (0.200)	–	
4	FCN-723J004/1	8	FCN-723J008/2	10.16 (0.400)	7.62 (0.300)	–	
5	FCN-723J005/1	10	FCN-723□010/2	12.70 (0.500)	10.16 (0.400)	17.30 (0.681)	
6	FCN-723J006/1	12	FCN-723J012/2	15.24 (0.600)	12.70 (0.500)	–	*Standard contacts
7	FCN-723J007/1	14	FCN-723□014/2	17.78 (0.700)	15.24 (0.600)	22.40 (0.882)	• Loose piece: FCN-723J-AU/Q
8	FCN-723J008/1	16	FCN-723□016/2	20.32 (0.800)	17.78 (0.700)	24.50 (0.965)	
9	FCN-723J009/1	18	FCN-723J018/2	22.86 (0.900)	20.32 (0.800)	–	• Strip form: FCN-723J-AU/R
10	FCN-723J010/1	20	FCN-723□020/2	25.40 (1.000)	22.86 (0.900)	30.00 (1.181)	
11	FCN-723J011/1	22	FCN-723J022/2	27.94 (1.100)	25.40 (1.000)	–	*High-pressure contacts
12	FCN-723J012/1	24	FCN-723J024/2	30.48 (1.200)	27.94 (1.100)	–	• Loose piece: FCN-723J-OU/S
13	FCN-723J013/1	26	FCN-723□026/2	33.02 (1.300)	30.48 (1.200)	37.60 (1.480)	
14	FCN-723J014/1	28	FCN-723J028/2	35.56 (1.400)	33.02 (1.300)	–	• Strip form: FCN-723J-AU/T
15	FCN-723J015/1	30	FCN-723□030/2	38.10 (1.500)	35.56 (1.400)	42.70 (1.681)	
16	FCN-723J016/1	32	FCN-723J032/2	40.64 (1.600)	38.10 (1.500)	–	
17	FCN-723J017/1	34	FCN-723□034/2	43.18 (1.700)	40.64 (1.600)	47.80 (1.882)	
18	FCN-723J018/1	36	FCN-723J036/2	45.72 (1.800)	43.18 (1.700)	–	
19	FCN-723J019/1	38	FCN-723J038/2	48.26 (1.900)	45.72 (1.800)	–	
20	FCN-723J020/1	40	FCN-723□040/2	50.80 (2.000)	48.26 (1.900)	55.40 (2.181)	
21	FCN-723J021/1	42	FCN-723J042/2	53.34 (2.100)	50.80 (2.000)	–	**Wire size: AWG #20 to #22**
22	FCN-723J022/1	44	FCN-723J044/2	55.88 (2.200)	53.34 (2.100)	–	
23	FCN-723J023/1	46	FCN-723J046/2	58.42 (2.300)	55.88 (2.200)	–	
24	FCN-723J024/1	48	FCN-723J048/2	60.96 (2.400)	58.42 (2.300)	–	*Standard contacts
25	FCN-723J025/1	50	FCN-723□050/2	63.50 (2.500)	60.96 (2.400)	68.10 (2.681)	• Loose piece: FCN-723J-AU/U
26	FCN-723J026/1	52	FCN-723J052/2	66.04 (2.600)	63.50 (2.500)	–	
27	FCN-723J027/1	54	FCN-723J054/2	68.58 (2.700)	66.04 (2.600)	–	• Strip form: FCN-723J-AU/V
28	FCN-723J028/1	56	FCN-723J056/2	71.12 (2.800)	68.58 (2.700)	–	
29	FCN-723J029/1	58	FCN-723J058/2	73.66 (2.900)	71.12 (2.800)	–	*High-pressure contacts
30	FCN-723J030/1	60	FCN-723□060/2	76.20 (3.000)	73.66 (2.900)	80.80 (3.181)	• Loose piece: FCN-723J-AU/W
31	FCN-723J031/1	62	FCN-723J062/2	78.74 (3.100)	76.20 (3.000)	–	
32	FCN-723J032/1	64	FCN-723J064/2	81.28 (3.200)	78.74 (3.100)	–	• Strip form: FCN-723J-AU/X
33	FCN-723J033/1	66	FCN-723J066/2	83.82 (3.300)	81.28 (3.200)	–	
34	FCN-723J034/1	68	FCN-723J068/2	86.36 (3.400)	83.82 (3.300)	–	
35	FCN-723J035/1	70	FCN-723J070/2	88.90 (3.500)	86.36 (3.400)	–	
36	FCN-723J036/1	72	FCN-723J072/2	91.44 (3.600)	88.90 (3.500)	–	

FUJITSU

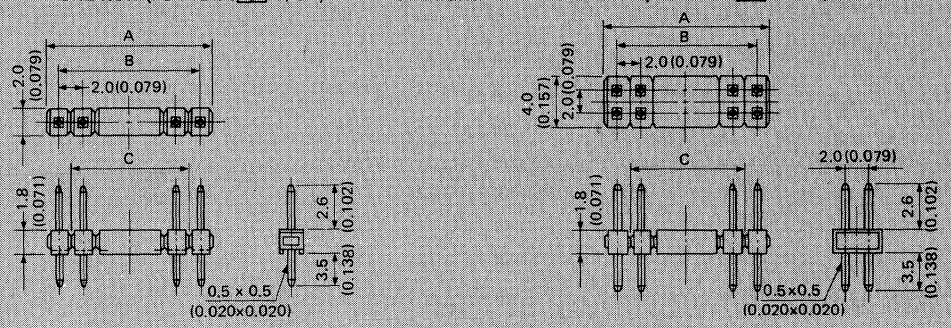
CONNECTORS

MODEL FCN-720 CONTINUED

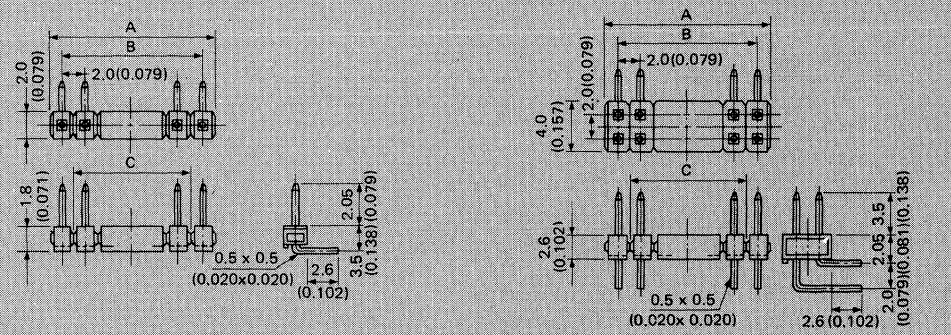
M TYPE (2 MM PITCH) DIMENSIONS (PLUG)

Unit: mm (in.)

ONE-ROW (FCN-724P0□□-G/SM) STRAIGHT TWO-ROW (FCN-724P0□□-G/WM)



ONE-ROW (FCN-725P0□□-G/SM) RIGHT-ANGLE TWO-ROW (FCN-725P0□□-G/WM)



PART NUMBERS ONE-ROW CONNECTORS

No of contacts	Part Number	A	B	C
2	FCN-72□P002-G/SM	4.0 (0.157)	2.0 (0.079)	—
3	FCN-72□P003-G/SM	6.0 (0.236)	4.0 (0.157)	2.0 (0.079)
4	FCN-72□P004-G/SM	8.0 (0.315)	6.0 (0.236)	4.0 (0.157)
6	FCN-72□P006-G/SM	12.0 (0.472)	10.0 (0.394)	8.0 (0.315)
7	FCN-72□P007-G/SM	14.0 (0.551)	12.0 (0.472)	10.0 (0.394)
8	FCN-72□P008-G/SM	16.0 (0.630)	14.0 (0.551)	12.0 (0.472)
9	FCN-72□P009-G/SM	18.0 (0.709)	16.0 (0.630)	14.0 (0.551)
10	FCN-72□P010-G/SM	20.0 (0.787)	18.0 (0.709)	16.0 (0.630)
11	FCN-72□P011-G/SM	22.0 (0.866)	20.0 (0.787)	18.0 (0.709)
12	FCN-72□P012-G/SM	24.0 (0.945)	22.0 (0.866)	20.0 (0.787)
13	FCN-72□P013-G/SM	26.0 (1.024)	24.0 (0.945)	22.0 (0.866)
14	FCN-72□P014-G/SM	28.0 (1.102)	26.0 (1.024)	24.0 (0.945)
15	FCN-72□P015-G/SM	30.0 (1.181)	28.0 (1.102)	26.0 (1.024)
16	FCN-72□P016-G/SM	32.0 (1.260)	30.0 (1.181)	28.0 (1.102)
17	FCN-72□P017-G/SM	34.0 (1.339)	32.0 (1.260)	30.0 (1.181)
18	FCN-72□P018-G/SM	36.0 (1.417)	34.0 (1.339)	32.0 (1.260)

□ = 4: Straight
□ = 5: Right angle

PART NUMBERS TWO-ROW CONNECTORS

No of contacts	Part Number	A	B	C
4	FCN-72□P004-G/WM	4.0 (0.157)	2.0 (0.079)	—
6	FCN-72□P006-G/WM	6.0 (0.236)	4.0 (0.157)	2.0 (0.079)
8	FCN-72□P008-G/WM	8.0 (0.315)	6.0 (0.236)	4.0 (0.157)
10	FCN-72□P010-G/WM	10.0 (0.394)	8.0 (0.315)	6.0 (0.236)
12	FCN-72□P012-G/WM	12.0 (0.472)	10.0 (0.394)	8.0 (0.315)
14	FCN-72□P014-G/WM	14.0 (0.551)	12.0 (0.472)	10.0 (0.394)
16	FCN-72□P016-G/WM	16.0 (0.630)	14.0 (0.551)	12.0 (0.472)
18	FCN-72□P018-G/WM	18.0 (0.709)	16.0 (0.630)	14.0 (0.551)
20	FCN-72□P020-G/WM	20.0 (0.787)	18.0 (0.709)	16.0 (0.630)
22	FCN-72□P022-G/WM	22.0 (0.866)	20.0 (0.787)	18.0 (0.709)
24	FCN-72□P024-G/WM	24.0 (0.945)	22.0 (0.866)	20.0 (0.787)
26	FCN-72□P026-G/WM	26.0 (1.024)	24.0 (0.945)	22.0 (0.866)
30	FCN-72□P030-G/WM	28.0 (1.102)	26.0 (1.024)	24.0 (0.945)
32	FCN-72□P032-G/WM	30.0 (1.181)	28.0 (1.102)	26.0 (1.024)
34	FCN-72□P034-G/WM	32.0 (1.260)	30.0 (1.181)	28.0 (1.102)
36	FCN-72□P036-G/WM	36.0 (1.417)	34.0 (1.339)	32.0 (1.260)

□ = 4: Straight
□ = 5: Right angle

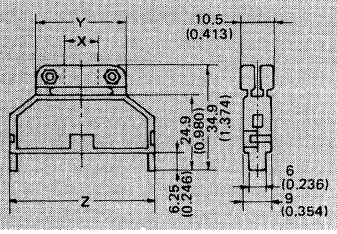
FUJITSU

CONNECTORS

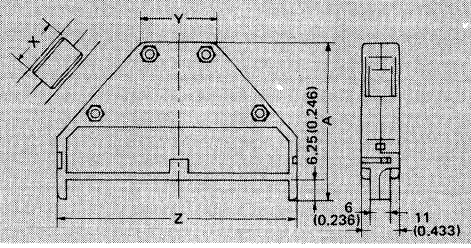
MODEL FCN-720 CONTINUED

COVER Unit: mm (in.)

S YYPE



P TYPE



Number of contacts	S Type Part Number	X	Y	Z
10	FCN-720C016/2S	9 (0.354)	24.92 (0.981)	24.92 (0.981)
20	FCN-7E20C020/S	10 (0.394)	24 (0.945)	30 (1.181)
26	FCN-720C026/2S	11.0 (0.433)	27.0 (1.063)	37.62 (1.481)
34	FCN-720C034/2S	12 (0.472)	30 (1.181)	47.78 (1.881)

Number of contacts	P Type Part Number	X	Y	Z	A
34	FCN-720C034/2P	12.5 (0.492)	10.0 (0.394)	47.78 (1.881)	46.3 (1.823)
40	FCN-720C040/2P	13.5 (0.531)	10.0 (0.394)	55.4 (2.181)	46.3 (1.823)
50	FCN-720C050/2P	15.0 (0.591)	20.0 (0.787)	68.1 (2.681)	46.3 (1.823)
60	FCN-720C060/2P	17.5 (0.689)	32.2 (1.268)	80.8 (3.181)	48.3 (1.902)

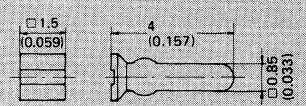
Note: EMI products are also available. See page 22 for the schematics. A spacer (N630-7008-X103) will be attached to the 700 type.

PART NUMBERS

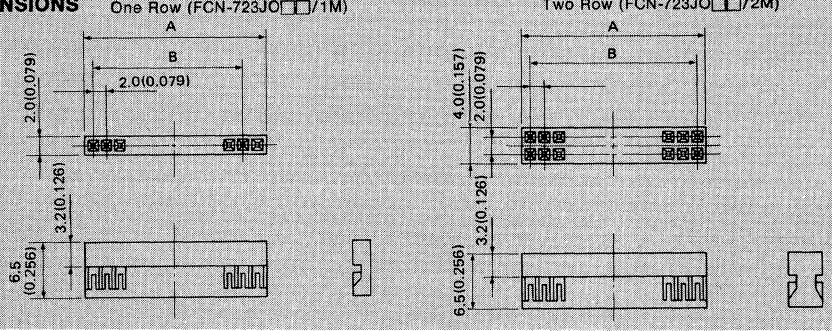
Number of ways	Built-in connector	Cover only
20	FCN-723□020/2E	FCN-720C020/2E
26	FCN-723□026/2E	FCN-720C026/2E
34	FCN-723□034/2E	FCN-720C034/2E
40	FCN-723□040/2E	FCN-720C040/2E
50	FCN-723□050/2E	FCN-720C050/2E
60	FCN-723□060/2E	FCN-720C060/2E

Designate in the □: J: Clip type; B: Bump type

POLARIZING KEY Unit: mm (in.)



M TYPE HOUSING/DIMENSIONS One Row (FCN-723JO□□/1M) Two Row (FCN-723JO□□/2M) Unit: mm (in.)



PART NUMBERS ONE-ROW CONNECTORS

No. of contacts	Part Number	A	B
2	FCN-723J002/1M	4.0 (0.157)	2.0 (0.079)
3	FCN-723J003/1M	6.0 (0.236)	4.0 (0.157)
4	FCN-723J004/1M	8.0 (0.315)	6.0 (0.236)
5	FCN-723J005/1M	10.0 (0.394)	8.0 (0.315)
6	FCN-723J006/1M	12.0 (0.472)	10.0 (0.394)
7	FCN-723J007/1M	14.0 (0.551)	12.0 (0.472)
8	FCN-723J008/1M	16.0 (0.630)	14.0 (0.551)
9	FCN-723J009/1M	18.0 (0.709)	16.0 (0.630)
10	FCN-723J010/1M	20.0 (0.787)	18.0 (0.709)
11	FCN-723J011/1M	22.0 (0.866)	20.0 (0.787)
12	FCN-723J012/1M	24.0 (0.945)	22.0 (0.866)
13	FCN-723J013/1M	26.0 (1.024)	24.0 (0.945)
14	FCN-723J014/1M	28.0 (1.102)	26.0 (1.024)
15	FCN-723J015/1M	30.0 (1.181)	28.0 (1.102)
16	FCN-723J016/1M	32.0 (1.260)	30.0 (1.181)
17	FCN-723J017/1M	34.0 (1.339)	32.0 (1.260)
18	FCN-723J018/1M	36.0 (1.417)	34.0 (1.339)

PART NUMBERS TWO-ROW CONNECTORS

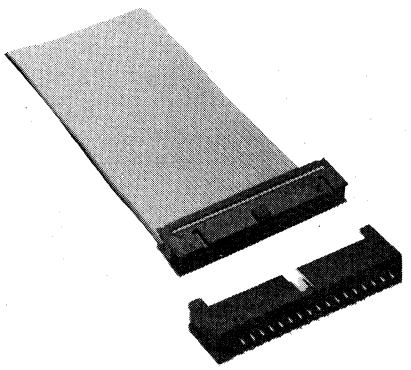
No. of contacts	Part Number	A	B
4	FCN-723J004/2M	4.0 (0.157)	2.0 (0.079)
6	FCN-723J006/2M	6.0 (0.236)	4.0 (0.157)
8	FCN-723J008/2M	8.0 (0.315)	6.0 (0.236)
10	FCN-723J010/2M	10.0 (0.394)	8.0 (0.315)
12	FCN-723J012/2M	12.0 (0.472)	10.0 (0.394)
14	FCN-723J014/2M	14.0 (0.551)	12.0 (0.472)
16	FCN-723J016/2M	16.0 (0.630)	14.0 (0.551)
18	FCN-723J018/2M	18.0 (0.709)	16.0 (0.630)
20	FCN-723J020/2M	20.0 (0.787)	18.0 (0.709)
22	FCN-723J022/2M	22.0 (0.866)	20.0 (0.787)
24	FCN-723J024/2M	24.0 (0.945)	22.0 (0.866)
26	FCN-723J026/2M	26.0 (1.024)	24.0 (0.945)
28	FCN-723J028/2M	28.0 (1.102)	26.0 (1.024)
30	FCN-723J030/2M	30.0 (1.181)	28.0 (1.102)
32	FCN-723J032/2M	32.0 (1.260)	30.0 (1.181)
34	FCN-723J034/2M	34.0 (1.339)	32.0 (1.260)
36	FCN-723J036/2M	36.0 (1.417)	34.0 (1.339)

FUJITSU

CONNECTORS

MINI SOCKETS & HEADERS

MODEL FCN-740

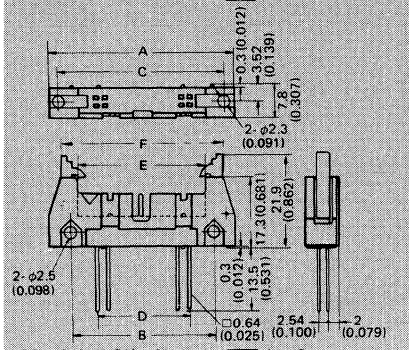


FEATURES

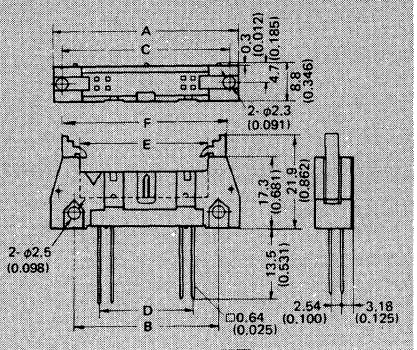
This mini-header and socket were developed to provide a compact set of connectors—their combined height is less than half that of the Model 700 connector. Unique plastic retention clips prevent disconnection due to vibration. There are up to 34 contact header and socket combinations, and the socket can be mated with all contact numbers of the FCN-700 header with S hooks and locked. The mini-header has an integral polarization to ensure correct insertion.

DIMENSIONS FOR S-HOOK HEADER FOR MINI SOCKETS Unit: mm (in.)
(Main body is the same as that of FCN-700 Header except hooks.)

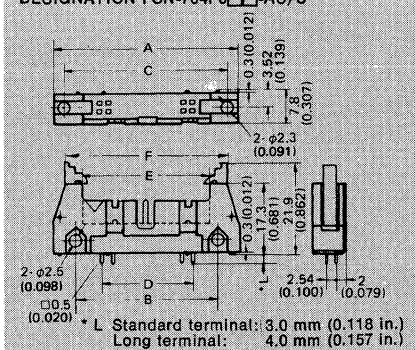
P (F) type (partially shrouded)
DESIGNATION FCN-702P0□□-AU/S



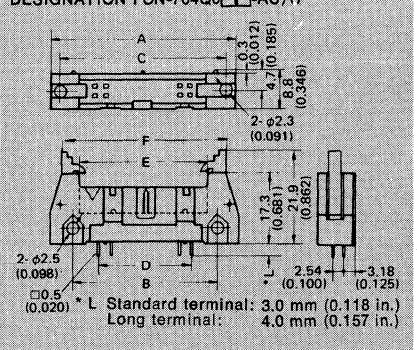
Q (G) type (fully shrouded)
DESIGNATION FCN-702Q0□□-AU/S



DESIGNATION FCN-704P0□□-AU/S

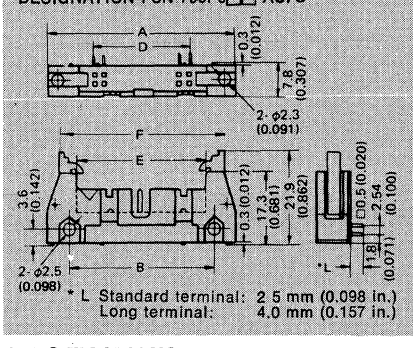


DESIGNATION FCN-704Q0□□-AU/S

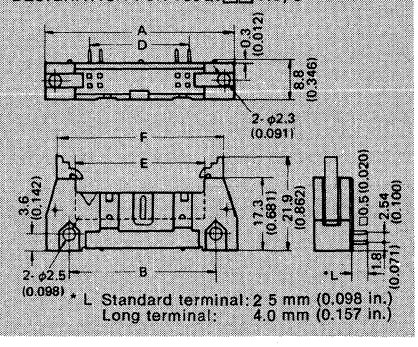


* L Standard terminal: 3.0 mm (0.118 in.)
Long terminal: 4.0 mm (0.157 in.)

DESIGNATION FCN-705P0□□-AU/S



DESIGNATION FCN-705Q0□□-AU/S



* L Standard terminal: 2.5 mm (0.098 in.)
Long terminal: 4.0 mm (0.157 in.)

SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Contact resistance	20 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. 500V DC)
Dielectric withstand voltage	500V AC for 1 min.
Maximum insertion force	3.5 kg (10 way), 10.5 kg (30 way)
Minimum withdrawal force	0.30 kg (1 way), 1.25 kg (30 way)
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable PC board standard	1.6 mm (0.063 in.)

MATERIALS

Contact	Phosphor bronze (spring grade)	
Insulator	PBT, UL94V-0	
Contact plating	Contacts	Gold over palladium
	Terminals	Tin (Mini-header: Gold over paladium)

FUJITSU

CONNECTORS

MODEL FCN-740 CONTINUED

PART NUMBERS FOR S-HOOK HEADER

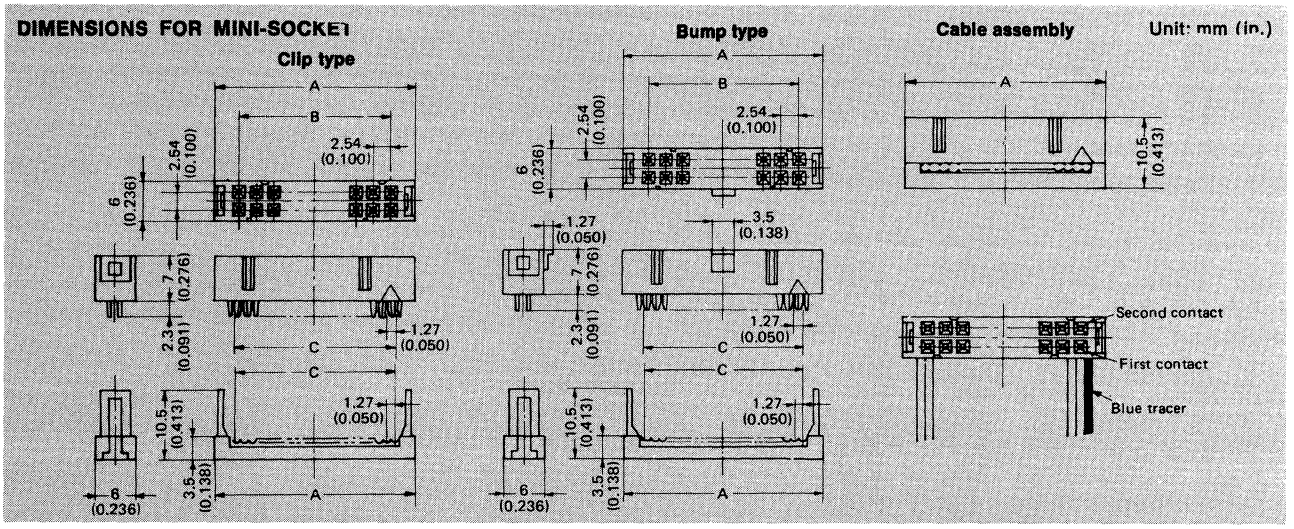
Header / Terminal / Termination		Header: Designate P for P type (partially shrouded); Q for Q type (fully shrouded); for 10-way bump type only: F for partially shrouded headers; or G for fully shrouded headers in the □.				
		Standard terminal Straight: 3.0 mm (0.118 in.) Right angle: 2.5 mm (0.098 in.)			Long terminal Straight/Right-angle: 4.0 mm (0.157 in.)	
Number of contacts	Hook type	Wire-wrap type	Straight type	Right-angle type	Straight type	Right-angle type (P type only)
10	S hook	FCN-702□010-AU/S	FCN-704□010-AU/S	FCN-705□010-AU/S	FCN-704□010-AU/E	FCN-705P010-AU/E
14	S hook	FCN-702□014-AU/S	FCN-704□014-AU/S	FCN-705□014-AU/S	FCN-704□014-AU/E	FCN-705P014-AU/E
16	S hook	FCN-702□016-AU/S	FCN-704□016-AU/S	FCN-705□016-AU/S	FCN-704□016-AU/E	FCN-705P016-AU/E
20	S hook	FCN-702□020-AU/S	FCN-704□020-AU/S	FCN-705□020-AU/S	FCN-704□020-AU/E	FCN-705P020-AU/E
26	S hook	FCN-702□026-AU/S	FCN-704□026-AU/S	FCN-705□026-AU/S	FCN-704□026-AU/E	FCN-705P026-AU/E
30	S hook	FCN-702□030-AU/S	FCN-704□030-AU/S	FCN-705□030-AU/S	FCN-704□030-AU/E	FCN-705P030-AU/E
34	S hook	FCN-702□034-AU/S	FCN-704□034-AU/S	FCN-705□034-AU/S	FCN-704□034-AU/E	FCN-705P034-AU/E
40	S hook	FCN-702□040-AU/S	FCN-704□040-AU/S	FCN-705□040-AU/S	FCN-704□040-AU/E	FCN-705P040-AU/E
50	S hook	FCN-702□050-AU/S	FCN-704□050-AU/S	FCN-705□050-AU/S	FCN-704□050-AU/E	FCN-705P050-AU/E
60	S hook	FCN-702□060-AU/S	FCN-704□060-AU/S	FCN-705□060-AU/S	FCN-704□060-AU/E	FCN-705P060-AU/E

DIMENSIONS FOR S-HOOK HEADER

Number of contacts	A	B	C	D	E	F	G	H
10	32.0 (1.260)	21.8 (0.858)	27.9 (1.098)	10.16 (0.400)	18.3 (0.720)	26.3 (1.035)	17.3 (0.681)	11.43 (0.450)
14	37.1 (1.461)	26.9 (1.059)	33.0 (1.299)	15.24 (0.600)	23.4 (0.921)	31.4 (1.236)	22.4 (0.882)	16.51 (0.650)
16	39.6 (1.559)	29.4 (1.157)	35.5 (1.398)	17.78 (0.700)	25.9 (1.020)	33.9 (1.335)	24.9 (0.980)	19.05 (0.750)
20	44.7 (1.760)	34.5 (1.358)	40.6 (1.598)	22.86 (0.900)	31.0 (1.220)	39.0 (1.535)	30.0 (1.181)	24.13 (0.950)
26	52.3 (2.059)	42.2 (1.661)	48.3 (1.902)	30.48 (1.200)	38.6 (1.520)	46.6 (1.835)	37.6 (1.480)	31.75 (1.250)
30	57.4 (2.260)	47.2 (1.858)	53.3 (2.098)	35.56 (1.400)	43.7 (1.720)	51.7 (2.035)	42.7 (1.681)	36.83 (1.450)
34	62.5 (2.465)	52.3 (2.059)	58.4 (2.299)	40.64 (1.600)	48.8 (1.921)	56.8 (2.236)	47.8 (1.882)	41.91 (1.650)
40	70.1 (2.760)	59.9 (2.358)	66.0 (2.598)	48.26 (1.900)	56.4 (2.220)	64.4 (2.535)	55.4 (2.181)	49.53 (1.950)
50	82.8 (3.260)	72.6 (2.858)	78.7 (3.098)	60.96 (2.400)	69.1 (2.720)	77.0 (3.031)	68.1 (2.681)	62.23 (2.450)
60	95.5 (3.760)	85.3 (3.358)	91.4 (3.598)	73.66 (2.900)	81.8 (3.220)	89.8 (3.535)	80.8 (3.181)	74.93 (2.950)

DIMENSIONS FOR MINI-SOCKET

Unit: mm (in.)



PART NUMBERS FOR MINI-SOCKET

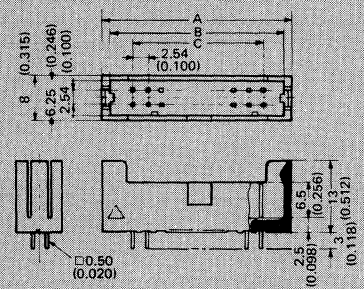
Designate 0 for through end or B for closed end in the □.		Dimensions			
Clip type	Bump type	Number of contacts	A	B	C
FCN-747J010-AU/□	FCN-747B010-AU/□	10	17.27 (0.680)	10.16 (0.400)	11.43 (0.450)
FCN-747J014-AU/□	FCN-747B014-AU/□	14	22.35 (0.880)	15.24 (0.600)	16.51 (0.650)
FCN-747J016-AU/□	FCN-747B016-AU/□	16	24.89 (0.980)	17.78 (0.700)	19.05 (0.750)
FCN-747J020-AU/□	FCN-747B020-AU/□	20	29.97 (1.180)	22.86 (0.900)	24.13 (0.950)
FCN-747J026-AU/□	FCN-747B026-AU/□	26	37.59 (1.480)	30.48 (1.200)	31.75 (1.250)
FCN-747J030-AU/□	FCN-747B030-AU/□	30	42.67 (1.680)	35.56 (1.400)	36.83 (1.450)
FCN-747J034-AU/□	FCN-747B034-AU/□	34	47.75 (1.880)	40.64 (1.600)	41.91 (1.650)
FCN-747J040-AU/□	FCN-747B040-AU/□	40	55.37 (2.180)	48.26 (1.900)	49.54 (1.950)
FCN-747J050-AU/□	FCN-747B050-AU/□	50	68.07 (2.680)	60.96 (2.400)	62.23 (2.450)
FCN-747J060-AU/□	FCN-747B060-AU/□	60	80.77 (3.180)	73.66 (2.900)	74.93 (2.950)

FUJITSU

CONNECTORS

MODEL FCN-740 CONTINUED

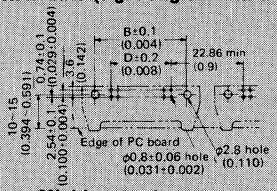
DIMENSIONS FOR MINI-HEADER (Straight Type)



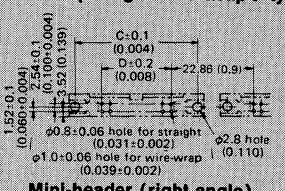
MOUNTING HOLE LAYOUT

Unit: mm (in.)

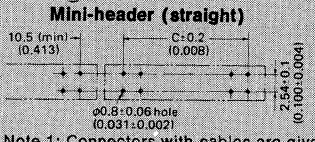
S-hook header (right-angle P and Q types)



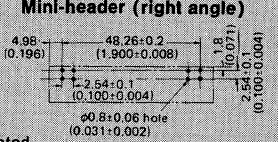
S-hook header (straight/wire-wrap P type)



Mini-header (straight)



Mini-header (right angle)



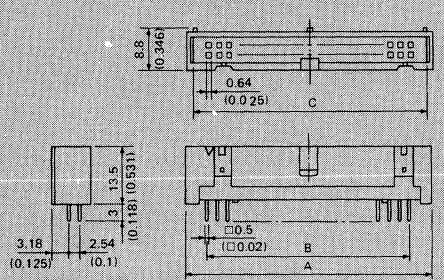
Note 1: Connectors with cables are given as a group lated.
Note 2: IDC tools are given as a group later.
Note 3: The 0 at the end of the designation is the numeral 0.

PART NUMBERS FOR MINI-HEADER

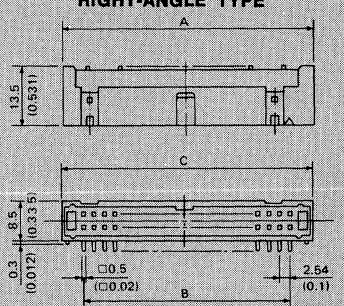
Part Number	Number of contacts	Dimensions		
		A	B	C
FCN-744P010-AU/R	10	20.12 (0.292)	17.72 (0.698)	10.16 (0.400)
FCN-744P014-AU/R	14	25.20 (0.992)	22.80 (0.898)	15.24 (0.600)
FCN-744P016-AU/R	16	27.74 (1.092)	25.34 (0.998)	17.78 (0.700)
FCN-744P020-AU/R	20	32.82 (1.292)	30.42 (1.198)	22.86 (0.900)
FCN-744P026-AU/R	26	40.44 (1.592)	38.04 (1.498)	30.48 (1.200)
FCN-744P030-AU/R	30	45.52 (1.792)	43.12 (1.698)	35.56 (1.400)
FCN-744P034-AU/R	34	50.60 (1.992)	48.20 (1.898)	40.64 (1.600)

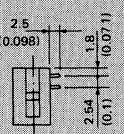
Unit: mm (in.)

STRAIGHT TYPE

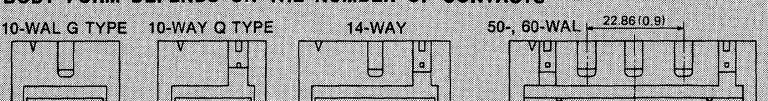


RIGHT-ANGLE TYPE



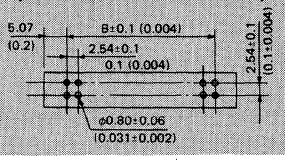


MAIN BODY FORM DEPENDS ON THE NUMBER OF CONTACTS



Note: For 16- to 40-way, see the figures at the top of this page.

MOUNTING HOLE LAYOUT (STRAIGHT/RIGHT-ANGLE)



PART NUMBERS FOR MINI-HEADER II Unit: mm (in.)

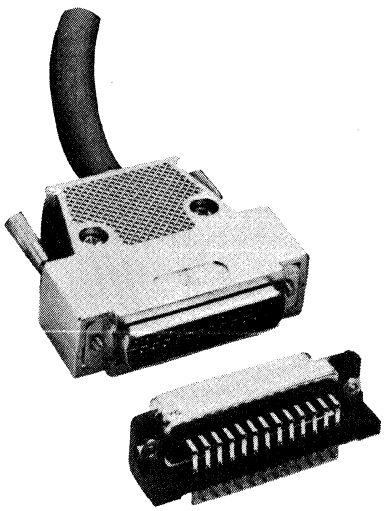
Number of contacts	Part Number	Dimensions		
		A	B	C
10	FCN-74□G010-AU/0	20.3 (0.799)	10.16 (0.400)	17.72 (0.698)
10	FCN-74□Q010-AU/0	20.3 (0.799)	10.16 (0.400)	17.72 (0.698)
14	FCN-74□Q014-AU/0	25.4 (1.000)	15.24 (0.600)	22.80 (0.898)
16	FCN-74□Q016-AU/0	27.9 (1.098)	17.78 (0.700)	25.34 (0.998)
20	FCN-74□Q020-AU/0	33.0 (1.299)	22.86 (0.900)	30.42 (1.198)
26	FCN-74□Q026-AU/0	40.6 (1.598)	30.48 (1.200)	38.04 (1.498)
30	FCN-74□Q030-AU/0	45.7 (1.799)	35.56 (1.400)	43.12 (1.698)
34	FCN-74□Q034-AU/0	50.8 (2.000)	40.64 (1.600)	48.20 (1.898)
40	FCN-74□Q040-AU/0	58.4 (2.299)	48.26 (1.900)	55.82 (2.198)
50	FCN-74□Q050-AU/0	71.1 (2.799)	60.96 (2.400)	68.52 (2.698)
60	FCN-74□Q060-AU/0	83.8 (3.299)	73.66 (2.900)	81.22 (3.198)

Designate "4" for straight type; "5" for right-angle type in the □.

FUJITSU

CONNECTORS

D-SUB CONNECTORS
MODEL FCN-770



SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	3A DC, (flat cable type: 1A)
Voltage rating	250V AC
Contact resistance	30 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstanding voltage	500V AC for 1 minute
Maximum insertion force	10 kg (25 way)
Minimum withdrawal force	0.75 kg (25 way)
Applicable flat cable	1.27 mm (0.050 in.) pitch AWG, AWG #28 (stranded wire) AWG #30 (solid wire)

MATERIALS

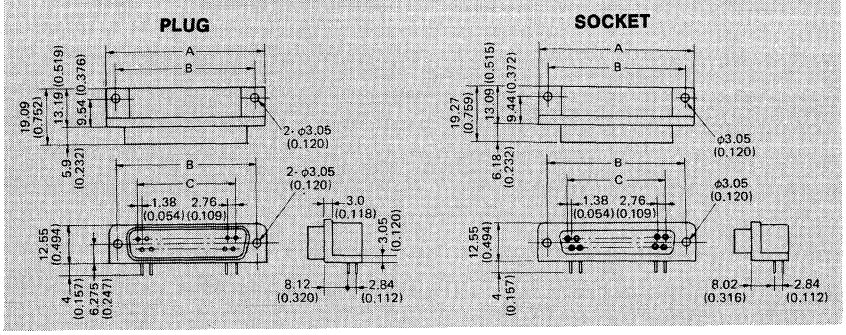
• Contact		Phosphor bronze (spring grade)
Insulator		PBT, UL90V-0
Contact plating	Contacts	Gold over palladium
	Terminals	Tin

PART NUMBERS

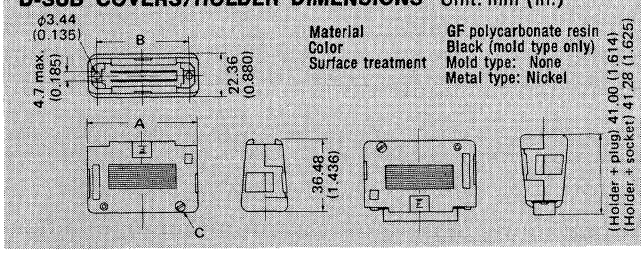
Number of contacts	Part Number		A	B	C
9	Plug	FCN-775P009-G/A	30.89 (1.216)	24.99 (0.984)	11.04 (0.435)
	Socket	FCN-775J009-G/A			
15	Plug	FCN-775P015-G/A	39.22 (1.544)	33.32 (1.312)	19.32 (0.761)
	Socket	FCN-775J015-G/A			
25	Plug	FCN-775P025-G/A	52.93 (2.084)	47.04 (1.852)	33.12 (1.304)
	Socket	FCN-775J025-G/A			
37	Plug	FCN-775P037-G/A	69.39 (2.732)	63.50 (2.500)	49.68 (1.956)
	Socket	FCN-775J037-G/A			

FEATURES
- The 1.27 mm (0.050 in.) pitch flat cable can be used.
- The connectors are matable with MIL specification D-type connectors.
- Fujitsu-developed highly reliable U-contacts are used.
- Molded and metalized (plated) holders are available.
- UL-recognized (94V-0) insulation material is used.

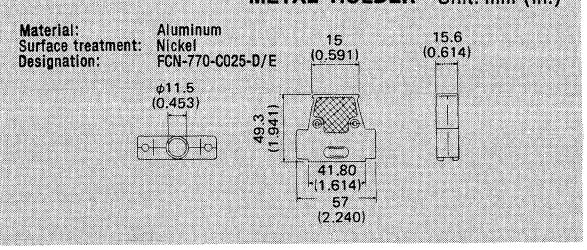
MOLD TYPE (RIGHT ANGLE) DIMENSIONS
Unit: mm (in.)



D-SUB COVERS/HOLDER DIMENSIONS
Unit: mm (in.)



METAL HOLDER
Unit: mm (in.)



PART NUMBERS FOR COVERS

	Number of contacts	Part Number	A	B	C
Mold type	9	FCN-770C009-F	33.40 (1.315)	24.99 (0.984)	No. 2-56 nut embedded 2 small round No. 2-56 x 5/18″ screws appended
	15	FCN-770C015-F	41.73 (1.643)	33.32 (1.312)	
	25	FCN-770C025-A	55.45 (2.183)	47.02 (1.851)	
	37	FCN-770C037-F	71.91 (2.831)	63.50 (2.500)	
Metallized type	9	FCN-770C009-C/E	33.40 (1.315)	24.99 (0.984)	2 small round M2.6 x 12 screws and 2 M2.6 nuts appended
	15	FCN-770C015-C/E	41.73 (1.643)	33.32 (1.312)	
	25	FCN-770C025-C/E	55.45 (2.183)	47.02 (1.851)	
	37	FCN-770C037-C/E	71.91 (2.831)	63.50 (2.509)	

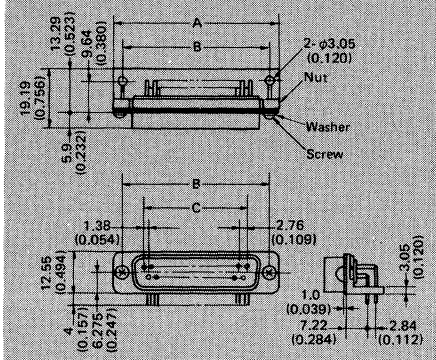
FUJITSU

CONNECTORS

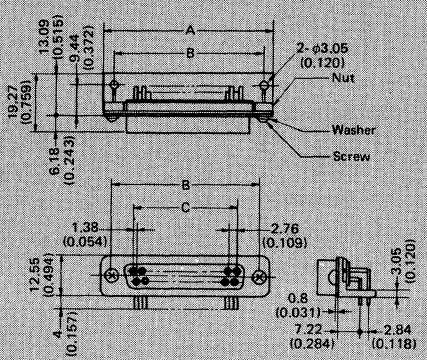
MODEL FCN-770 CONTINUED

METAL TYPE (RIGHT ANGLE)/DIMENSIONS Unit: mm (in.)

PLUG

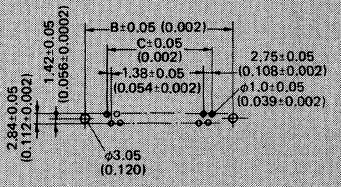


SOCKET



MOUNTING HOLE LAYOUT Unit: mm (in.)

PC BOARD MOUNTING HOLE LAYOUT (PLUG AND SOCKET COMMON)



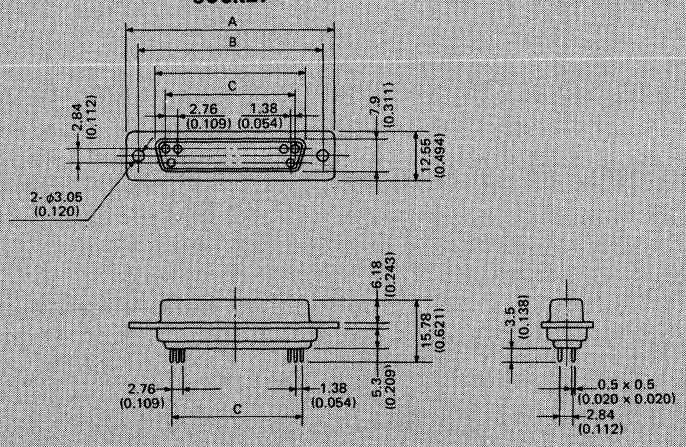
Common to molded and metal types.

PART NUMBERS

Number of contacts	Part Number		A	B	C
9	Plug	FCN-775P009-G/C	30.89 (1.216)	24.99 (0.984)	11.04 (0.435)
	Socket	FCN-775J009-G/C			
15	Plug	FCN-775P015-G/C	39.22 (1.544)	33.32 (1.312)	19.32 (0.761)
	Socket	FCN-775J015-G/C			
25	Plug	FCN-775P025-G/C	52.93 (2.084)	47.04 (1.852)	33.12 (1.304)
	Socket	FCN-775J025-G/C			
37	Plug	FCN-775P037-G/C	69.39 (2.732)	63.50 (2.500)	49.68 (1.956)
	Socket	FCN-775J037-G/C			

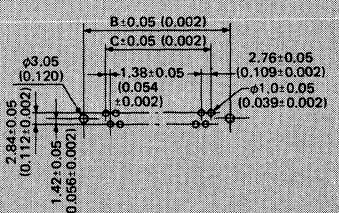
METAL TYPE (STRAIGHT)/DIMENSIONS Unit: mm (in.)

SOCKET



MOUNTING HOLE LAYOUT Unit: mm (in.)

PC board mounting hole layout



PART NUMBERS

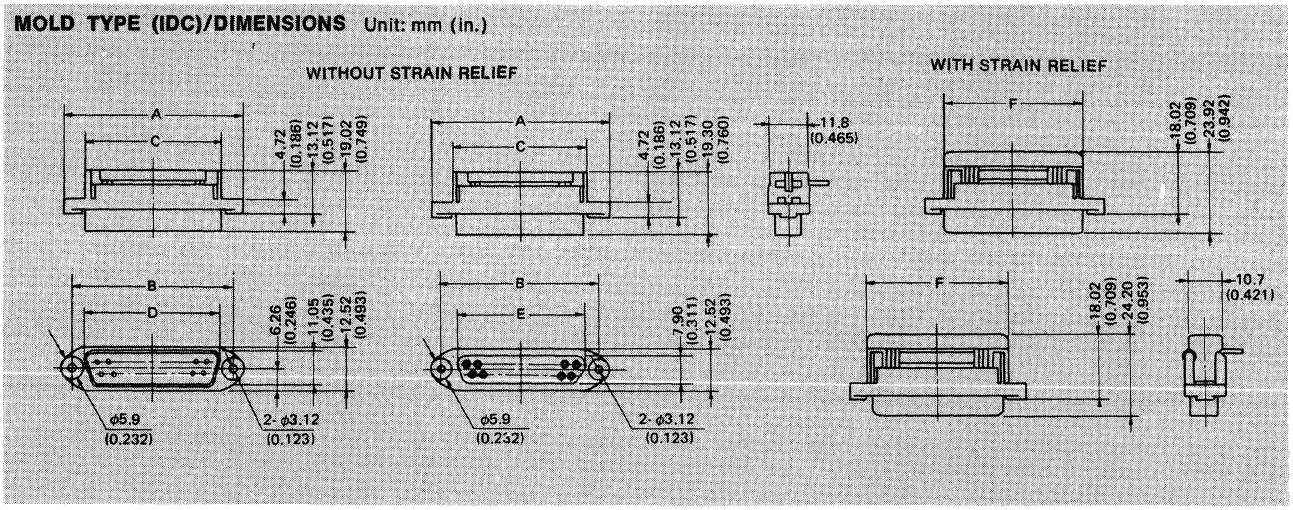
Number of contacts	Type	Part Number	A	B	C
9	Plug		30.89 (1.216)	24.99 (0.984)	11.04 (0.435)
	Socket	FCN-774J009-G/C			
15	Plug		39.22 (1.544)	33.32 (1.312)	19.32 (0.761)
	Socket	FCN-774J015-G/C			
25	Plug		52.93 (2.084)	47.04 (1.852)	33.12 (1.304)
	Socket	FCN-774J025-G/C			
37	Plug		69.39 (2.732)	63.50 (2.500)	49.68 (1.956)
	Socket	FCN-774J087-G/C			

FUJITSU

CONNECTORS

MODEL FCN-770 CONTINUED

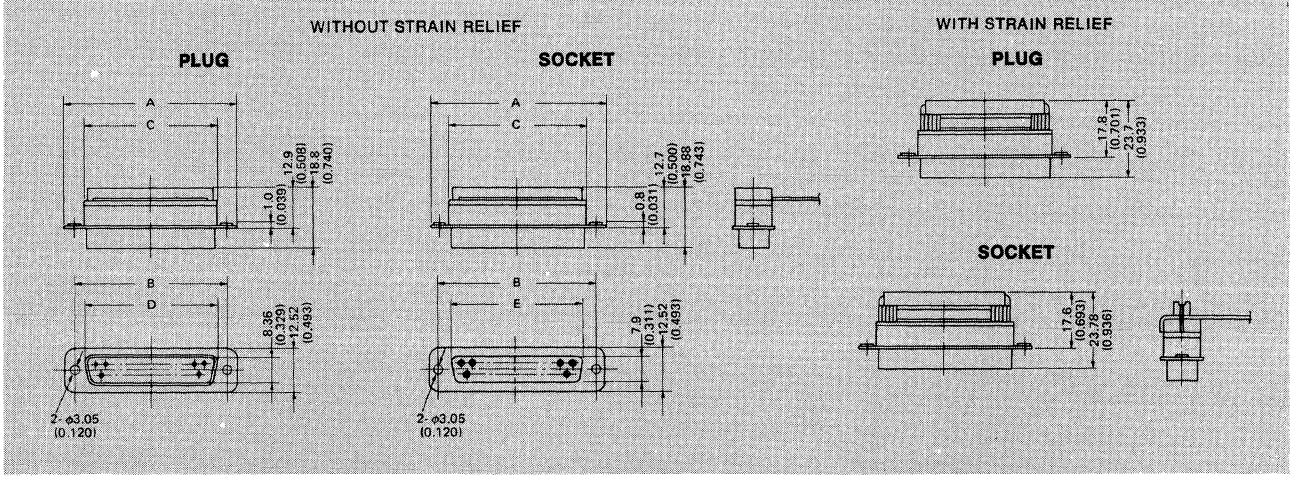
MOLD TYPE (IDC)/DIMENSIONS Unit: mm (in.)



PART NUMBERS

Number of contacts	Type	Part Number		A	B	C	D	E	F
		With strain relief	Without strain relief						
9	Plug	FCN-777P009-G/A	FCN-777P009-G/B	30.89	24.99	16.23	18.69	16.33	18.73
	Socket	FCN-777J009-G/A	FCN-777J009-G/B	(1.216)	(0.984)	(0.639)	(0.736)	(0.643)	(0.737)
15	Plug	FCN-777P015-G/A	FCN-777P015-G/B	39.22	33.32	24.54	27.00	24.66	27.04
	Socket	FCN-777J015-G/A	FCN-777J015-G/B	(1.544)	(1.312)	(0.966)	(1.063)	(0.971)	(1.065)
25	Plug	FCN-777P025-G/A	FCN-777P025-G/B	52.93	47.04	38.38	40.84	38.38	40.88
	Socket	FCN-777J025-G/A	FCN-777J025-G/B	(2.084)	(1.852)	(1.511)	(1.608)	(1.511)	(1.609)
37	Plug	FCN-777P037-G/A	FCN-777P037-G/B	69.39	63.50	54.99	57.33	54.84	57.49
	Socket	FCN-777J037-G/A	FCN-777J037-G/B	(2.732)	(2.500)	(2.165)	(2.257)	(2.159)	(2.263)

METAL TYPE (IDC)/DIMENSIONS Unit: mm (in.)



PART NUMBERS

Number of contacts	Type	Part Number		A	B	C	D	E
		With strain relief	Without strain relief					
9	Plug	FCN-777P009-G/C	FCN-777P009-G/D	30.89	24.99	19.28	17.82	16.33
	Socket	FCN-777J009-G/C	FCN-777J009-G/D	(1.216)	(0.984)	(0.759)	(0.702)	(0.643)
15	Plug	FCN-777P015-G/C	FCN-777P015-G/D	39.22	33.32	27.51	20.15	24.66
	Socket	FCN-777J015-G/C	FCN-777J015-G/D	(1.544)	(1.312)	(1.083)	(0.793)	(0.971)
25	Plug	FCN-777P025-G/C	FCN-777P025-G/D	52.93	47.04	41.28	40.27	38.38
	Socket	FCN-777J025-G/C	FCN-777J025-G/D	(2.084)	(1.852)	(1.625)	(1.585)	(1.511)
37	Plug	FCN-777P037-G/C	FCN-777P037-G/D	69.39	63.50	57.71	56.73	54.84
	Socket	FCN-777J037-G/C	FCN-777J037-G/D	(2.732)	(2.500)	(2.272)	(2.233)	(2.159)

FUJITSU

CONNECTORS

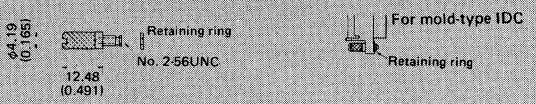
MODEL FCN-770 CONTINUED

MOUNTING ACCESSORIES/PART NUMBERS Unit: mm (in.)

PART NUMBERING FORMAT: FCN-770 □□□

DESIGNATE THE FOLLOWING IN THE □□□

A01



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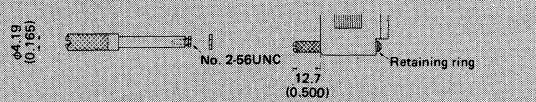

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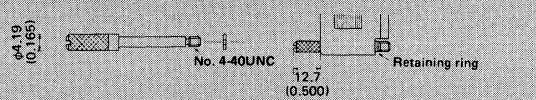

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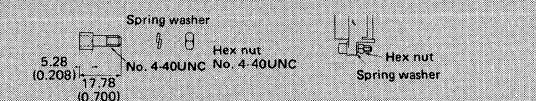
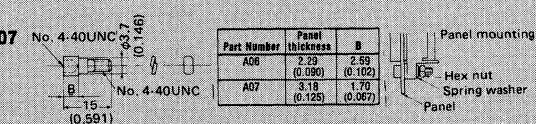
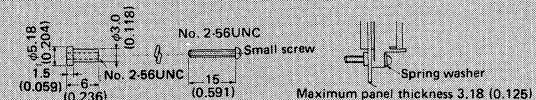


A06 A07



Part Number	Panel thickness	B
A06	2.29 (0.090)	2.59 (0.102)
A07	3.18 (0.125)	1.70 (0.067)

A08



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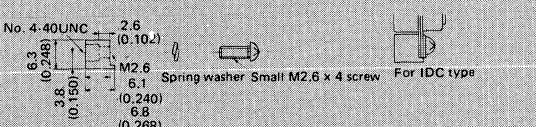

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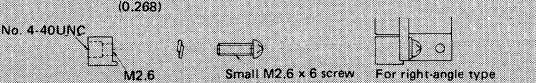

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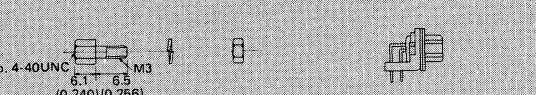

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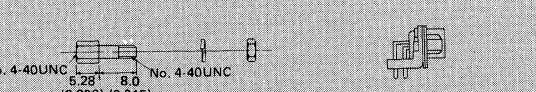

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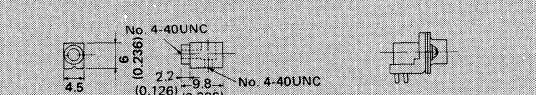

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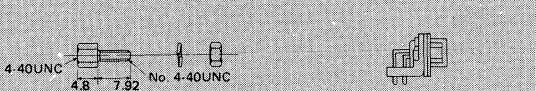

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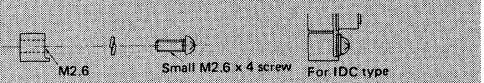

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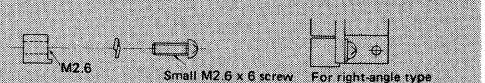

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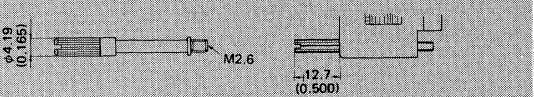

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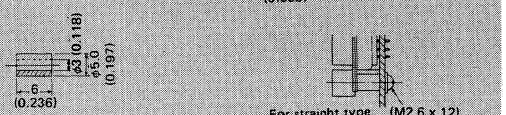

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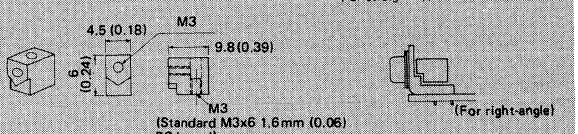

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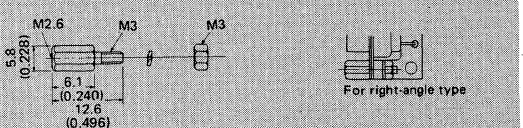

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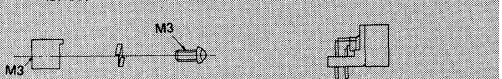


A58



A59



A60



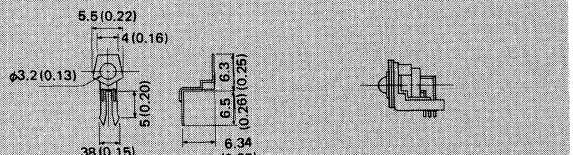
A61



A81



A82

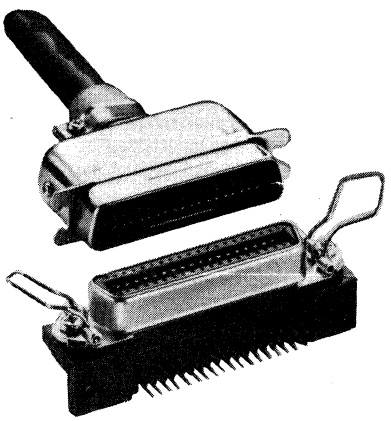


FUJITSU

CONNECTORS

RIBBON CONTACT TYPE CONNECTORS

MODEL FCN-780



FEATURES

- The connectors are matable with other ribbon-type connectors, and have a sturdy metal shell that enables easy EMI shieldings.
- The connectors are made of PBT, a superior solvent-resistant material, enabling flux cleaning with chlorosin and other solvents.
- UL-recognized (94V-0) insulation material is used.
- 1.27 mm (0.050 in.) pitch flat cable can be used.

SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	3A DC IDC: 1A DC
Voltage rating	250V AC
Contact resistance	30 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstanding voltage	500V AC for 1 min.
Maximum insertion force	13.6 kg (36 way)
Minimum withdrawal force	0.72 kg (36 way)
Flat cable	1.27 mm (0.050 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)

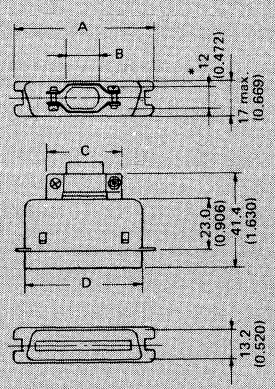
MATERIALS

Contacts		Phosphor bronze (spring grade)	Gold over palladium plating
Insulator	Solder type	PPS resin	—
	RA, ST, IDC type	PBT resin	
Shell		Iron	Nickel plating
Holder		Iron	Nickel plating

SOLDER-EYELET TYPE DIMENSIONS

Unit: mm (in.)

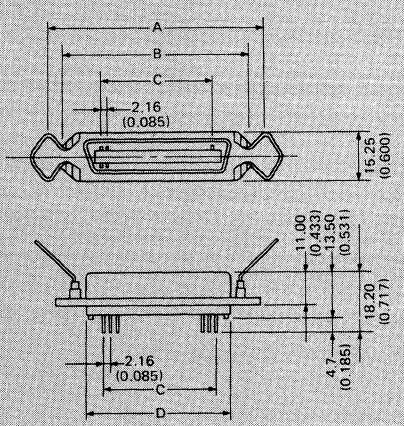
PLUG WITH HOLDER



Note: * is 11 mm (0.433 in.) for 14-way plugs.

SOLDER DIP TYPE (STRAIGHT)/DIMENSIONS

SOCKET



PART NUMBERS/PLUG

Number of contacts	Part Number	A	B	C	D
14	FCN-781P014-G/P	37.82 (1.489)	8.20 (0.323)	23.92 (0.942)	26.84 (1.057)
24	FCN-781P024-G/P	48.62 (1.914)	12.08 (0.476)	27.80 (1.094)	37.64 (1.482)
36	FCN-781P036-G/P	61.58 (2.424)	16.18 (0.637)	31.90 (1.256)	50.60 (1.992)
50	FCN-781P050-G/P	76.70 (3.020)	19.28 (0.759)	35.00 (1.378)	65.72 (2.587)

PART NUMBERS/SOCKET

Number of contacts	Part Number	A	B	C	D
14	FCN-784J014-G/Q	43.92 (1.729)	35.98 (1.417)	12.96 (0.510)	23.00 (0.960)
24	FCN-784J024-G/Q	54.72 (2.15)	46.78 (1.842)	23.76 (0.935)	33.80 (1.331)
36	FCN-784J036-G/Q	67.68 (2.665)	59.74 (2.352)	36.72 (1.446)	46.76 (1.841)
50	FCN-784J050-G/Q	82.80 (3.260)	74.86 (2.947)	51.84 (2.04)	61.88 (2.436)

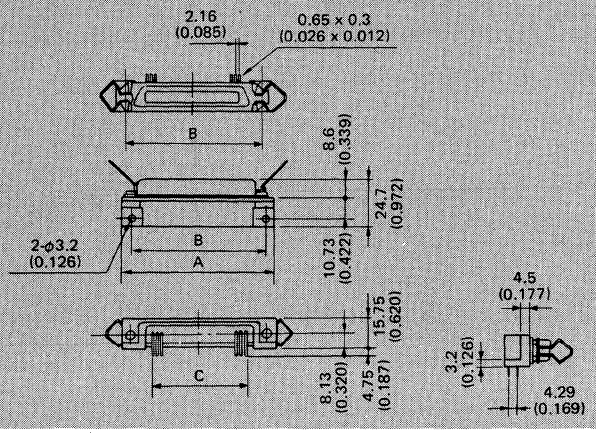
FUJITSU

CONNECTORS

MODEL FCN-780 CONTINUED

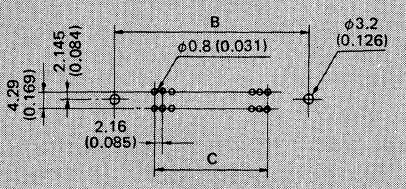
SOLDER DIP TYPE (RIGHT ANGLE)/DIMENSIONS Unit: mm (in.)

SOCKET



MOUNTING HOLE LAYOUT Unit: mm (in.)

PC board mounting hole layout



Dimension tolerance: ±0.05 (0.002)

(Common to straight and right-angle types)

PART NUMBERS

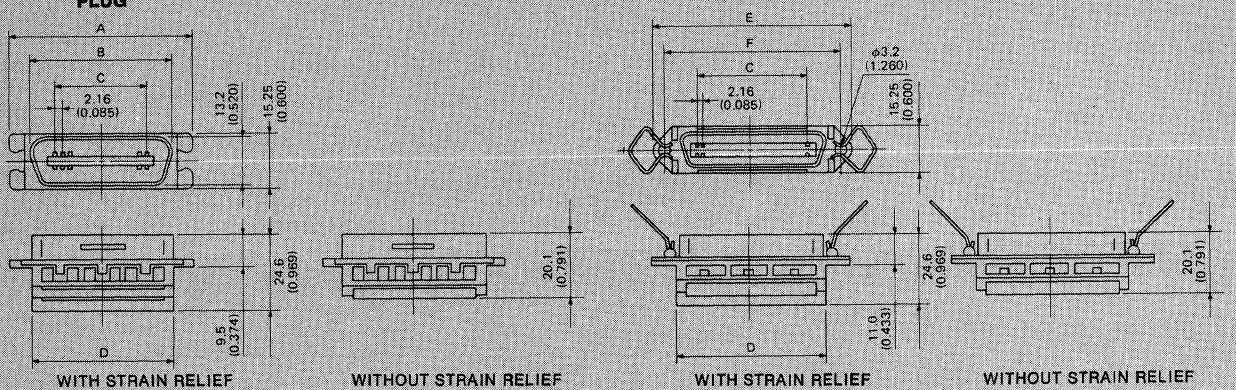
Number of contacts	Part Number	A	B	C	
14	FCN-785J014-G/☐	43.92 (1.729)	35.98 (1.417)	12.96 (0.510)	Designate F for mold shell; J for mold shell with 2 L-shaped fittings (780A01); Q for metal shell: T for metal shell with 2 L-shaped fittings (780A01) in the ☐.
24	FCN-785J024-G/☐	54.72 (2.154)	46.78 (1.842)	23.76 (0.935)	
36	FCN-785J036-G/☐	67.68 (2.665)	59.74 (2.352)	36.72 (1.446)	
50	FCN-785J050-G/☐	82.80 (3.260)	74.86 (2.947)	51.84 (2.041)	

Please consult us for other combinations.

IDC TYPE/DIMENSIONS Unit: mm (in.)

PLUG

SOCKET



PART NUMBERS

No. of contacts	Type	Part Number		A	B	C	D	E	F
		With strain relief	Without strain relief						
14	Plug	FCN-787P014-G/R	FCN-787P014-G/V	37.82 (1.489)	26.84 (1.057)	12.96 (0.510)	23.20 (0.913)		
	Socket	FCN-787J014-G/Q	FCN-787J014-G/U					43.92 (1.729)	35.98 (1.417)
24	Plug	FCN-787P024-G/R	FCN-787P024-G/V	48.62 (1.914)	37.64 (1.482)	23.76 (0.935)	36.30 (1.429)		
	Socket	FCN-787J024-G/Q	FCN-787J024-G/U					54.72 (2.154)	46.78 (1.842)
36	Plug	FCN-787P036-G/R	FCN-787P036-G/V	61.58 (2.424)	50.60 (1.992)	36.72 (1.446)	51.50 (2.028)		
	Socket	FCN-787J036-G/Q	FCN-787J036-G/U					67.88 (2.665)	59.74 (2.352)
50	Plug	FCN-787P050-G/R	FCN 787P050-G/V	76.70 (3.020)	65.72 (2.587)	51.84 (2.041)	68.50 (2.697)		
	Socket	FCN-787J050-G/Q	FCN-787J050-G/U					82.80 (3.260)	74.86 (2.947)

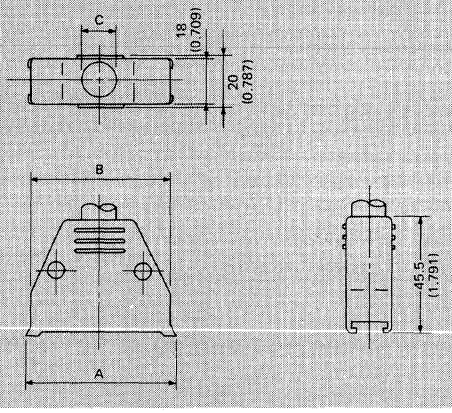
FUJITSU

CONNECTORS

MODEL FCN-780 CONTINUED

METAL HOLDER

Unit: mm (in.)



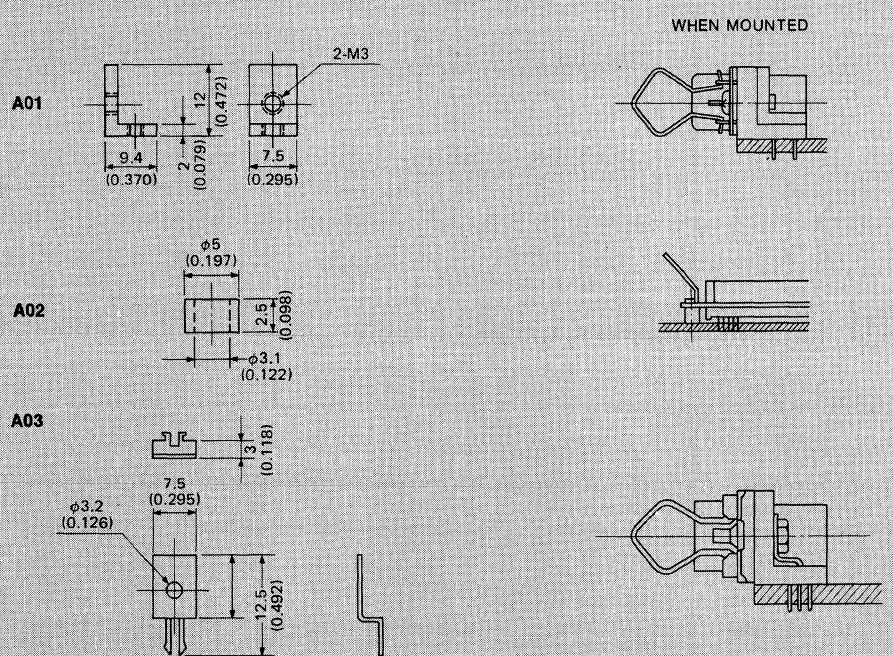
Material: Zinc
Plating: Nickel

Part Number	Number of contacts	A	B	C
FCN-780C014-D/E	14	33.20 (1.307)	26.70 (1.051)	7.40 (0.291)
FCN-780C024-D/E	24	44.00 (1.732)	39.80 (1.567)	10.70 (0.421)
FCN-780C036-D/E	36	57.00 (2.244)	55.00 (2.165)	14.30 (0.563)
FCN-780C050-D/E	50	72.10 (2.839)	72.00 (2.835)	17.00 (0.669)

ACCESSORIES

Unit: mm (in.)

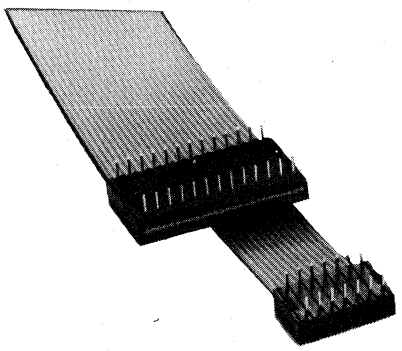
PART NUMBERS: FCN-780 □□□
Designate as follows in the □□□



FUJITSU

CONNECTORS

DIP CONNECTORS
MODEL FCN-710



SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	500V AC for 1 min.
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable PC board (standard)	1.6 mm (0.063 in.)

MATERIALS

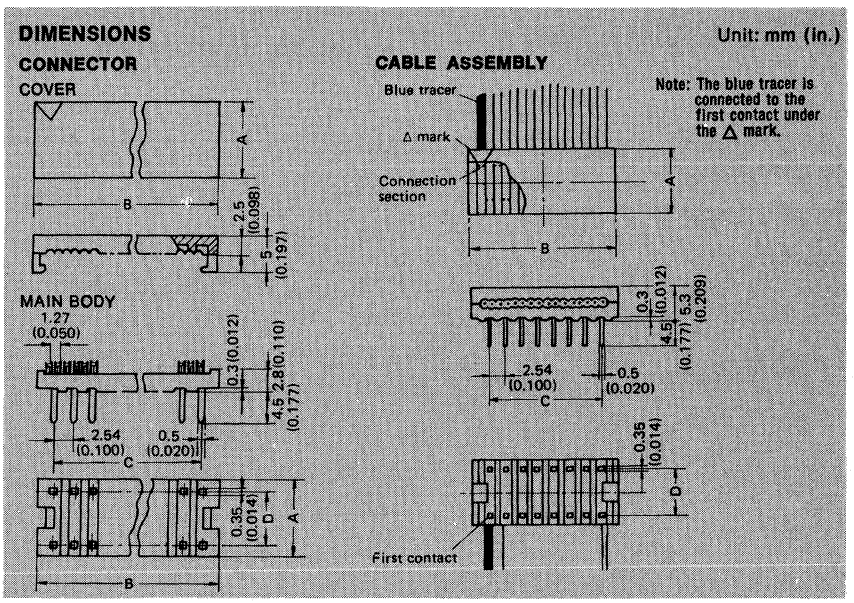
Contact	Phosphor bronze (spring grade)	
Insulator	PBT, UL94V-0	
Contact plating	Contacts	Gold or tin
	Terminals	Gold or tin

FEATURES

The Model 710 connector has been designed to plug into ordinary IC and LSI sockets, and directly onto a PC board. It has an abundant series of 10 types including 10-, 14-, 16-, and 20- to 60-contact types.
Mounting height from the PC board is only 5.3 mm (0.208 in.). The U contact of the proven high-reliability 700 connector is used for flat cable connections.

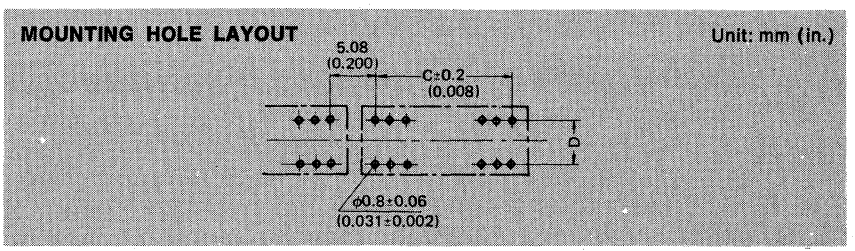
DIMENSIONS

Unit: mm (in.)



MOUNTING HOLE LAYOUT

Unit: mm (in.)



PART NUMBERS

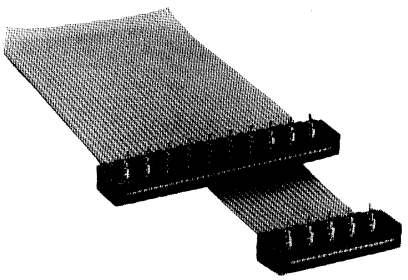
Number of contacts	Part Number		Dimensions (Unit: mm (in.)			
	Gold plating	Tin plating	A	B	C	D
10	FCN-714P010-AU/0	FCN-714P010-SN/0	10.67 (0.420)	14.74 (0.580)	10.16 (0.400)	7.62 (0.300)
14	FCN-714P014-AU/0	FCN-714P014-SN/0	10.67 (0.420)	19.82 (0.780)	15.24 (0.600)	7.62 (0.300)
16	FCN-714P016-AU/0	FCN-714P016-SN/0	10.67 (0.420)	22.36 (0.880)	17.78 (0.700)	7.62 (0.300)
20	FCN-714P020-AU/0	FCN-714P020-SN/0	18.29 (0.720)	27.44 (1.080)	22.86 (0.900)	15.24 (0.600)
24	FCN-714P024-AU/0	FCN-714P024-SN/0	18.29 (0.720)	32.52 (1.280)	27.94 (1.100)	15.24 (0.600)
26	FCN-714P026-AU/0	FCN-714P026-SN/0	18.29 (0.720)	35.06 (1.380)	30.48 (1.200)	15.24 (0.600)
34	FCN-714P034-AU/0	FCN-714P034-SN/0	18.29 (0.720)	45.22 (1.780)	40.64 (1.600)	15.24 (0.600)
40	FCN-714P040-AU/0	FCN-714P040-SN/0	18.29 (0.720)	52.84 (2.080)	48.26 (1.900)	15.24 (0.600)
50	FCN-714P050-AU/0	FCN-714P050-SN/0	18.29 (0.720)	65.54 (2.580)	60.96 (2.400)	15.24 (0.600)
60	FCN-714P060-AU/0	FCN-714P060-SN/0	18.29 (0.720)	78.24 (1.080)	73.66 (2.900)	15.24 (0.600)

Note 1: Connectors with cables are given as a group later.
Note 2: Some 20-contact IC sockets are not intermatable.
Note 3: IDC tools are given as a group later.
Note 4: The 0 at the end of the designation is the numeral 0.

FUJITSU

CONNECTORS

4 ROW TRANSITION CONNECTORS
MODEL FCN-730



FEATURES
The Model 730 connector is an IDC connector used particularly for direct connection between the PC board and flat cable. It has four rows of contacts, and is compatible with products from other companies. Low mounting height of 5.3 mm (0.206 in.) above the PC board enables compact equipment design.

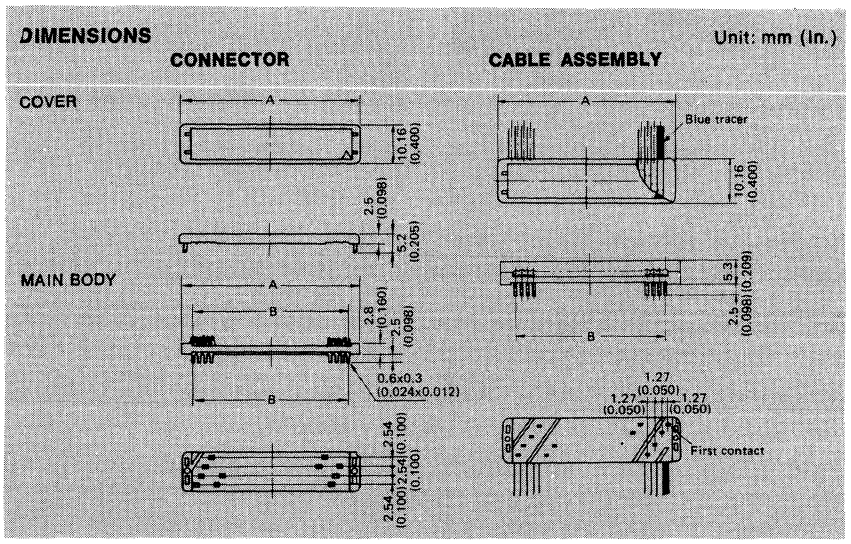
SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	500V AC for 1 min.
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable PC board (standard)	1.6 mm (0.063 in.)

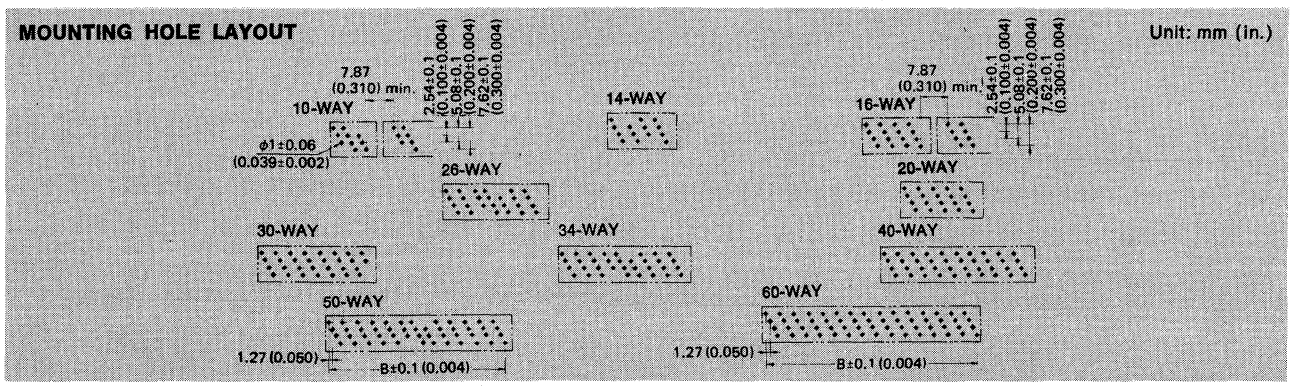
MATERIALS

Contact	Phosphor bronze (spring grade)	
Insulator	PBT, UL94V-0	
Contact plating	Contacts	Gold or tin
	Terminals	Gold or tin

DIMENSIONS
Unit: mm (In.)



MOUNTING HOLE LAYOUT
Unit: mm (in.)



PART NUMBERS

Number of contacts	Part Number		Dimensions (mm (in.))	
	Gold plating	Tin plating	A	B
10	FCN-734P010-AU/0	FCN-734P010-SN/0	17.78 (0.700)	11.43 (0.450)
14	FCN-734P014-AU/0	FCN-734P014-SN/0	22.86 (0.900)	16.51 (0.650)
16	FCN-734P016-AU/0	FCN-734P016-SN/0	25.40 (1.000)	19.05 (0.750)
20	FCN-734P020-AU/0	FCN-734P020-SN/0	30.48 (1.200)	24.13 (0.950)
26	FCN-734P026-AU/0	FCN-734P026-SN/0	38.10 (1.500)	31.75 (1.250)
30	FCN-734P030-AU/A	FCN-734P030-SN/A	43.18 (1.700)	36.83 (1.450)
34	FCN-734P034-AU/0	FCN-734P034-SN/0	48.26 (1.900)	41.91 (1.650)
40	FCN-734P040-AU/0	FCN-734P040-SN/0	55.88 (2.200)	49.53 (1.950)
50	FCN-734P050-AU/0	FCN-734P050-SN/0	68.58 (2.700)	62.23 (2.450)
60	FCN-734P060-AU/0	FCN-734P060-SN/0	81.28 (3.200)	74.93 (2.950)

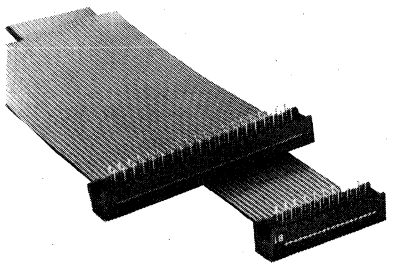
Note: The 0 at the end of the designation is the numeral 0.

FUJITSU

CONNECTORS

2 ROW TRANSITION CONNECTORS

MODEL FCN-750



FEATURES

The Model 750 connector is slim—only 7 mm (0.275 in.) high and wide—and takes up very little space. The pins are in a 2.54 mm (0.100 in.) grid. It can be changed from a two-piece type connector to a direct solder dip connection without changing the PC board, because the mounting hole layout is the same as the Model 700 connector. And the series offers 10 to 60 contacts like the Model 700 connector.

SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Insulation resistance	1,000 mΩ min. (500 VDC)
Dielectric withstand voltage	500V AC for 1 min.
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable PC board (standard)	1.6 mm (0.063 in.)

MATERIALS

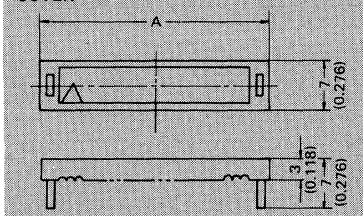
Contact		Phosphor bronze (spring grade)
Insulator		PBT, UL94V-0
Contact plating	Contacts	Gold or tin
	Terminals	Gold or tin

DIMENSIONS

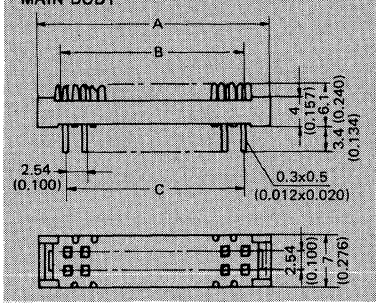
Unit: mm (in.)

CONNECTOR

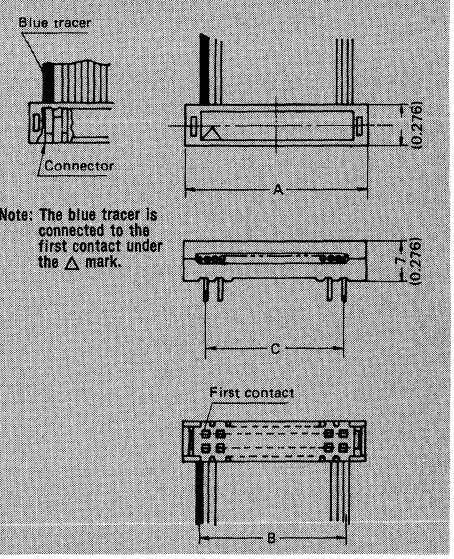
COVER



MAIN BODY



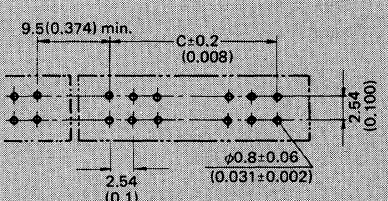
CABLE ASSEMBLY



Note: The blue tracer is connected to the first contact under the △ mark.

MOUNTING HOLE LAYOUT

Unit: mm (in.)



PART NUMBERS

Number of contacts	Part Number		Dimensions (mm (in.))		
	Gold plating	Tin plating	A	B	C
10	FCN-754P010-AU/0	FCN-754P010-SN/0	19.2 (0.756)	11.43 (0.450)	10.16 (0.400)
14	FCN-754P014-AU/0	FCN-754P014-SN/0	24.3 (0.957)	16.51 (0.650)	15.24 (0.600)
16	FCN-754P016-AU/0	FCN-754P016-SN/0	26.8 (1.055)	19.05 (0.750)	17.78 (0.700)
20	FCN-754P020-AU/0	FCN-754P020-SN/0	31.9 (1.256)	24.13 (0.950)	22.86 (0.900)
24	FCN-754P024-AU/0	FCN-754P024-SN/0	37.0 (1.457)	29.21 (1.150)	27.94 (1.100)
26	FCN-754P026-AU/0	FCN-754P026-SN/0	39.5 (1.555)	31.75 (1.250)	30.48 (1.200)
30	FCN-754P030-AU/0	FCN-754P030-SN/0	44.6 (1.756)	36.83 (1.450)	35.56 (1.400)
34	FCN-754P034-AU/0	FCN-754P034-SN/0	49.7 (1.957)	41.91 (1.650)	40.64 (1.600)
40	FCN-745P040-AU/0	FCN-754P040-SN/0	57.3 (2.256)	49.53 (1.950)	48.26 (1.900)
50	FCN-754P050-AU/0	FCN-754P050-SN/0	70.0 (2.756)	62.23 (2.450)	60.96 (2.400)
60	FCN-754P060-AU/0	FCN-754P060-SN/0	82.7 (3.256)	74.93 (2.950)	73.66 (2.900)

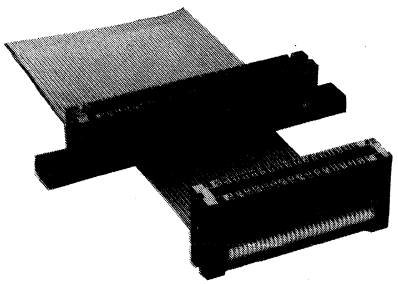
Note: The 0 at the end of the designation is the numeral 0.

FUJITSU

CONNECTORS

IDC CARD EDGE CONNECTORS

MODEL FCN-760



FEATURES

Model 760 connectors are card-edge connectors which meet conventional PC boards 1.6 mm (0.063 in.) thick with 2.54 mm (0.100 in.) pitch, and also connect to flat cables with 1.27 mm (0.05 in.) pitch. Contacts use highly reliable bifurcated contacts to assure stable connection with PC boards. A wide variety of contact numbers and three types of mounting ears are available for different needs. A closed-end cover is also available for convenience.

Designate the following in the □.

Through end cover	Closed end cover	Mounting ear	Strain relief
1	A	Without	Without
2	B	With (half-ears)	Without
3	C	With (full-ears)	Without
6	D	Without	With
7	E	With (half-ears)	With
8	F	With (full-ears)	With

SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC
Voltage rating	250V AC
Contact resistance	20 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	500V AC for 1 min.
Applicable wire	Flat cable: 1.27 mm (0.05 in.) pitch, AWG #28 (stranded wire), AWG #30 (solid wire)
Applicable PC board (standard)	1.6 mm (0.063 in.)

MATERIALS

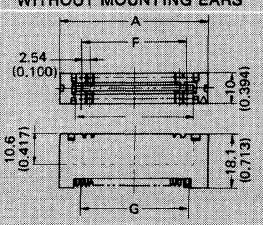
Contact	Phosphor bronze (spring grade)
Insulator	PBT, UL94V-0
Contact plating	Gold over palladium

DIMENSIONS

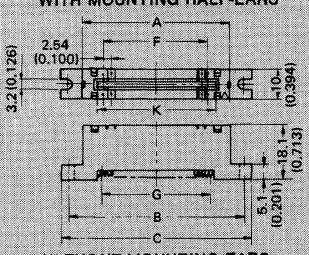
Unit: mm (in.)

CONNECTOR

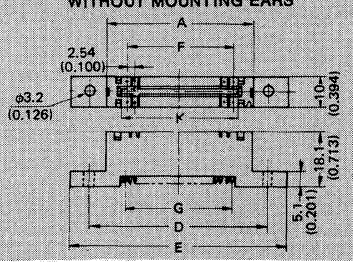
WITHOUT MOUNTING EARS



WITH MOUNTING HALF-EARS

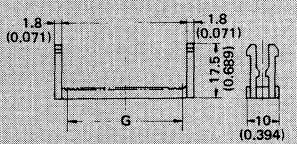


WITHOUT MOUNTING EARS

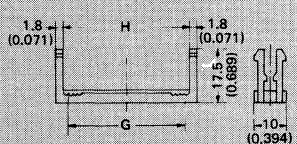


COVER

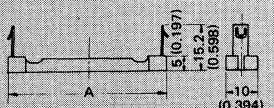
THROUGH END



CLOSED END



STRAIN RELIEF



Note: The blue tracer of the cable is connected to the extreme right on the side of the connector marked by the △.

PART NUMBERS

Number of contacts	Part Number	Dimensions (mm (in.))									
		A	B	C	D	E	F	G	H	J	K
10	FCN-767J010-AU/□	24.36 (0.959)	33.02 (1.300)	38.10 (1.500)	35.56 (1.400)	43.69 (1.720)	10.16 (0.400)	11.43 (0.450)	13.95 (0.549)	15.11 (0.595)	15.34 (0.604)
16	FCN-767J016-AU/□	31.98 (1.259)	40.64 (1.600)	45.72 (1.800)	43.18 (1.700)	51.31 (2.020)	17.78 (0.700)	19.05 (0.750)	21.57 (0.849)	22.73 (0.895)	22.96 (0.904)
20	FCN-767J020-AU/□	37.06 (1.459)	45.72 (1.800)	50.80 (2.000)	48.26 (1.900)	56.39 (2.220)	22.86 (0.900)	24.13 (0.950)	26.65 (1.049)	27.81 (1.095)	28.04 (1.104)
26	FCN-767J026-AU/□	44.68 (1.759)	53.34 (2.100)	58.42 (2.300)	55.88 (2.200)	64.01 (2.520)	30.48 (1.200)	31.75 (1.250)	34.27 (1.349)	35.43 (1.395)	35.65 (1.404)
30	FCN-767J030-AU/□	49.76 (1.959)	58.42 (2.300)	63.50 (2.500)	60.96 (2.400)	69.09 (2.720)	35.56 (1.400)	36.83 (1.450)	39.35 (1.549)	40.51 (1.595)	40.74 (1.604)
34	FCN-767J034-AU/□	54.84 (2.159)	63.50 (2.500)	68.58 (2.700)	66.04 (2.600)	74.17 (2.920)	40.64 (1.600)	41.91 (1.650)	44.43 (1.733)	45.59 (1.795)	45.82 (1.804)
40	FCN-767J040-AU/□	62.46 (2.459)	71.12 (2.800)	76.20 (3.000)	73.66 (2.900)	81.79 (3.220)	48.26 (1.900)	49.53 (1.950)	52.05 (2.049)	53.21 (2.095)	53.44 (2.104)
50	FCN-767J050-AU/□	75.16 (2.959)	83.82 (3.300)	88.90 (3.500)	86.36 (3.400)	94.49 (3.720)	60.76 (2.392)	62.23 (2.450)	64.75 (2.549)	65.91 (2.595)	66.14 (2.604)
60	FCN-767J060-AU/□	87.88 (3.460)	96.52 (3.800)	101.60 (4.000)	99.06 (3.900)	107.19 (4.220)	73.66 (2.900)	74.93 (2.950)	77.45 (3.049)	78.61 (2.095)	78.84 (3.104)

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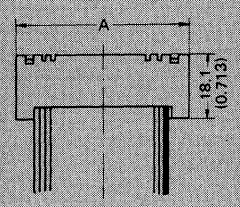
CONNECTORS

MODEL FCN-760 CONTINUED

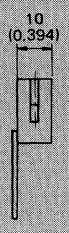
DIMENSIONS Unit: mm (in.)

CABLE ASSEMBLY

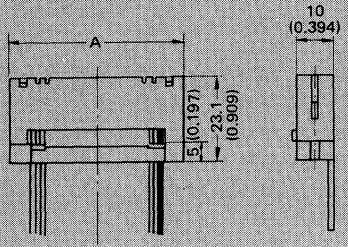
WITHOUT STRAIN RELIEF



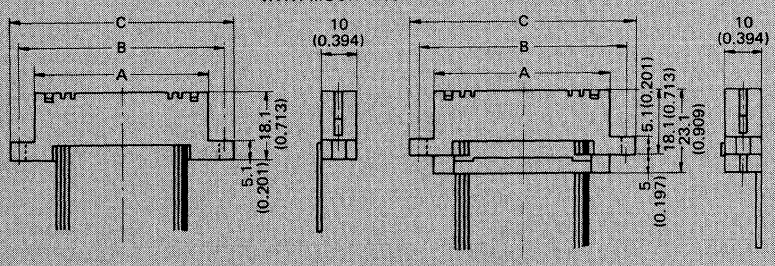
WITHOUT MOUNTING EARS



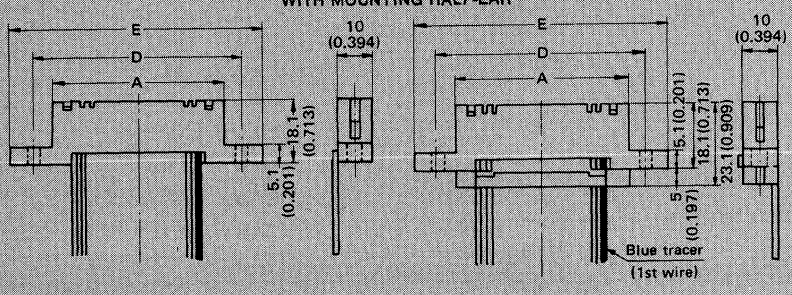
WITH STRAIN RELIEF



WITH MOUNTING HALF EAR

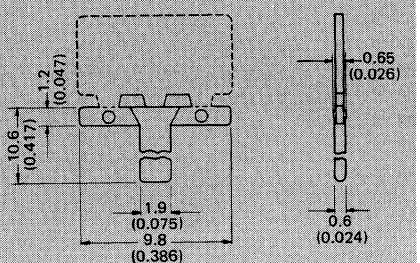


WITH MOUNTING HALF-EAR

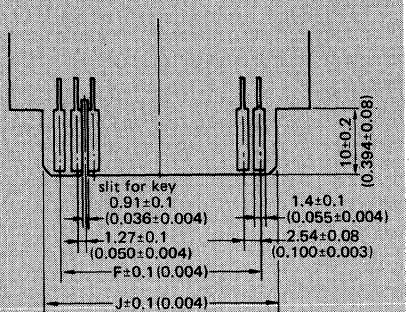


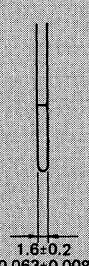
POLARIZING KEY

FCN-760A1



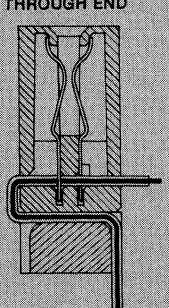
PC BOARD PATTERN



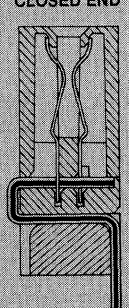


CROSS-SECTION

THROUGH END



CLOSED END

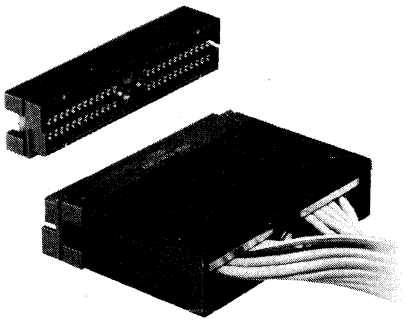


Note: Broken lines show the state at shipping.
Bend and remove after fixing.

FUJITSU

CONNECTORS

SERPENT CONNECTORS
MODEL FCN-120



SPECIFICATIONS

Temperature range	−25°C to +85°C
Current rating	6A DC
Voltage rating	250V AC
Contact resistance	10 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	1,000V AC for 1 min.

FEATURES

This connector type must be used by all manufacturers of computers compatible with IBM*. The different types allow various connections. Products for EMI are also available. (See next page.)

MATERIALS

Contact	Phosphor bronze (spring grade)
Insulator	GF polycarbonate, PBT
Contact plating	Gold over palladium

PART NUMBERS

Name	Part Number	Insulator	Contact	Cover	Cable holder	Use
Connector A	C630-5170-T001	Brown	Sold separately	None	None	Crimp connections, panel mounting
Connector B	C630-5170-T002	Black	Sold separately	None	None	Crimp connections, panel mounting
Cable connector A	C630-5170-T003	Brown	Sold separately	With cover for cable connection	None	Crimp connections, cable connection
Cable connector B	C630-5170-T004	Black	Sold separately	With cover for cable connection	None	Crimp connections, cable connection
WW connector A	C630-5170-T005	Brown	Equipped with WW contacts	None	None	Wire-wrap connections, panel mounting
WW connector B	C630-5170-T006	Black	Equipped with WW contacts	None	None	Wire-wrap connections, panel mounting
Panel connector A	C630-5170-T007	Brown	Sold separately	None	Attached	Crimp connections, panel mounting
Panel connector B	C630-5170-T008	Black	Sold separately	None	Attached	Crimp connections, panel mounting
Termination box connector	C630-5170-T902	Black	Equipped with plug-in contacts	With cover for termination box	None	Plug-in connection, termination resistor connection
WW contact	C630-5170-X013		Sold individually			For WW connector
Plug-in contact	C630-5170-V012		Sold individually			For termination box connector
Contact (Loose piece)	C630-5170-X011		Sold individually			For connector, panel connector/ Wire size: AWG #24~#32
Contact (Strip form)	C630-5170-X012		Sold individually			For connector, panel connector/ Wire size: AWG #24~#32

* IBM is a registered trademark of International Business Machines Corporation.

ASSEMBLY TOOLS

	Wire gauge	Part Number
Manual crimping tool	AWG24—28 AWG30—32	FCN-123T-T001/H FCN-123T-T006/H
Automatic crimping tool	AWG24—28 AWG30—32	Press: FCN-M100 (common) Applicator: FCN-A101 FCN-A106

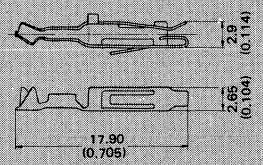
FUJITSU

CONNECTORS

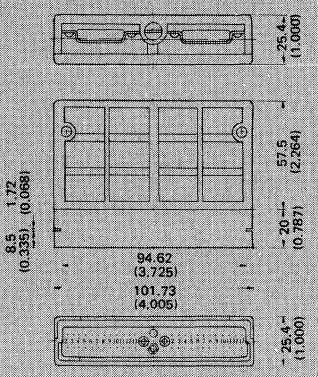
MODEL FCN-120 CONTINUED

DIMENSIONS Unit: mm (in.)

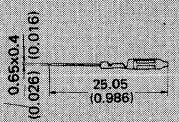
CONTACT



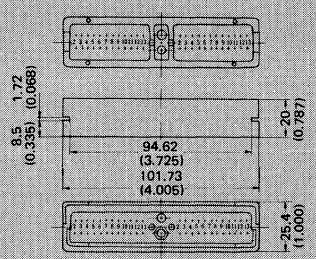
CABLE CONNECTOR A AND B



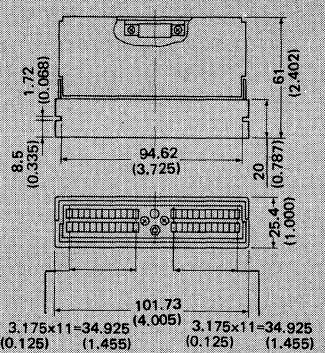
WW CONTACT



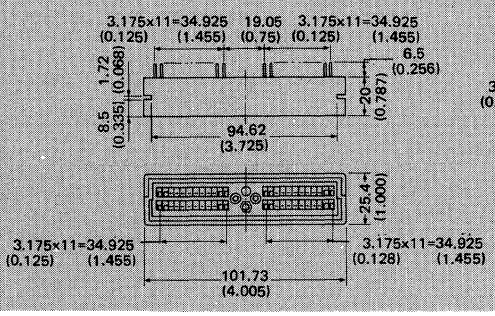
CONNECTOR A AND B



PANEL CONNECTOR A AND B



WW CONNECTOR A AND B



PLATED PLASTIC HOUSING VERSIONS

Name	Part Number	Insulator	Contact	Cover	Cable holder	Use
EMI protected (without ears) Reflow type connector A	C630-5170-T011	Brown	Loaded with reflow contact	None	None	PCB mounting
EMI protected (without ears) Reflow type connector B	C630-5170-T012	Black	Loaded with reflow contact	None	None	PCB mounting
EMI protected (with ears) Reflow type connector A	C630-5170-T013	Brown	Loaded with reflow contact	None	None	PCB mounting
EMI protected (with ears) Reflow type connector B	C630-5170-T014	Black	Loaded with reflow contact	None	None	PCB mounting
EMI protected (with ears) Connector A	C630-5170-T521	Brown	Option	None	None	Crimp connection, Panel mounting
EMI protected (with ears) Connector B	C630-5170-T522	Black	Option	None	None	Crimp connection, Panel mounting
EMI protected Cable connector A	C630-5170-T545	Brown	Option	With cover for cable connection	None	Crimp connection, Cable connection
EMI protected Cable connector B	C630-5170-T546	Black	Option	With cover for cable connection	None	Crimp connection, Cable connection
EMI protected WW connector A	C630-5170-T535	Brown	Loaded with WW contact	None	None	Wire-wrap connection, Panel mounting
EMI protected WW connector B	C630-5170-T536	Black	Loaded with WW contact	None	None	Wire-wrap connection, Panel mounting
EMI protected Panel connector A	C630-5170-T527	Brown	Option	None	Attached	Crimp connection, Panel mounting
EMI protected Panel connector B	C630-5170-T528	Black	Option	None	Attached	Crimp connection, Panel mounting
EMI protected (with ears) WW connector A	C630-5170-T525	Brown	Loaded with WW contact	None	None	Wire-wrap connection, Panel mounting
EMI protected (with ears) WW connector B	C630-5170-T526	Black	Loaded with WW contact	None	None	Wire-wrap connection, Panel mounting
EMI protected (with ears) Cable connector A	C630-5170-T513	Brown	Option	With cover for cable connection	None	Crimp connection, Cable connection
EMI protected (with ears) Cable connector B	C630-5170-T514	Black	Option	With cover for cable connection	None	Crimp connection, Cable connection
EMI protected Connector A	C630-5170-T511	Brown	Option	None	None	Crimp connection, Panel mounting
EMI protected Connector B	C630-5170-T512	Black	Option	None	None	Crimp connection, Panel mounting

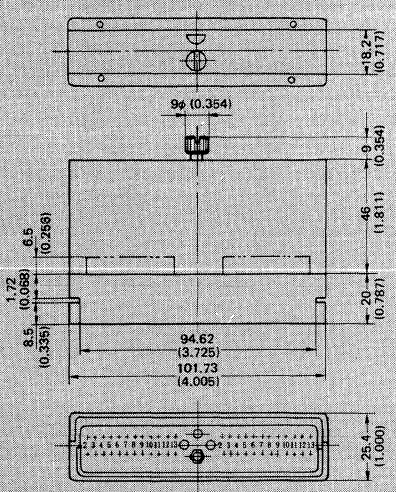
FUJITSU

CONNECTORS

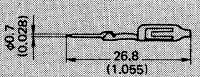
MODEL FCN-120 CONTINUED

DIMENSIONS

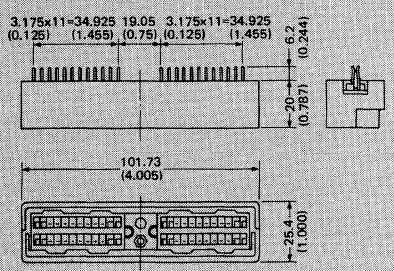
TERMINATION BOX CONNECTOR



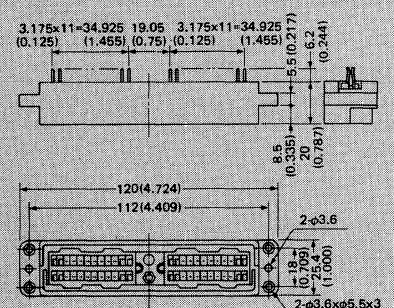
PLUG-IN CONTACT



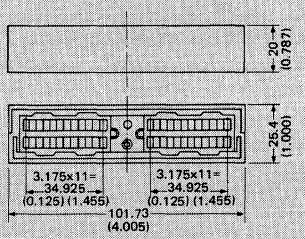
EMI protected Without ears reflow type connector A and B



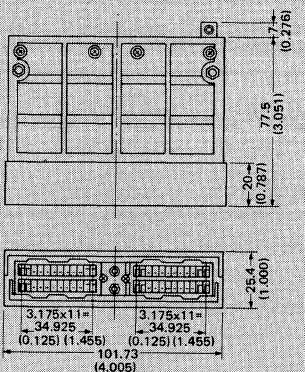
EMI protected With ears reflow type connector A and B



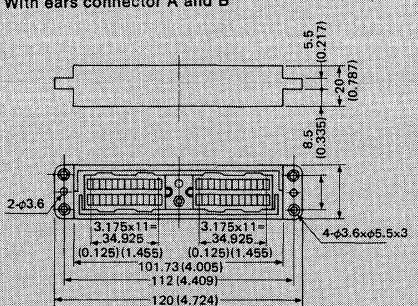
EMI protected Without ears reflow type connector



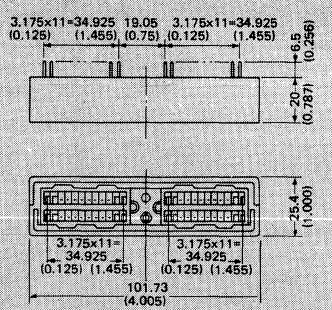
EMI protected Cable connector A and B



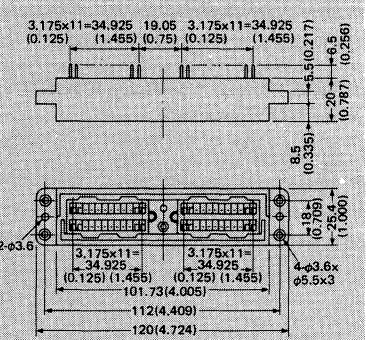
EMI protected With ears connector A and B



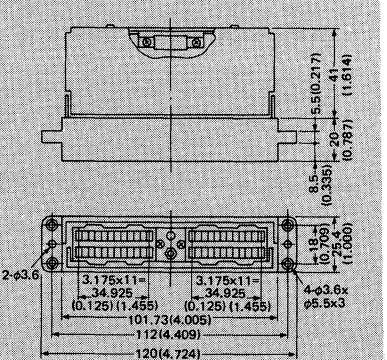
EMI protected Without ears WW connector A and B



EMI protected With ears WW connector A and B



EMI protected With ears panel connector A and B

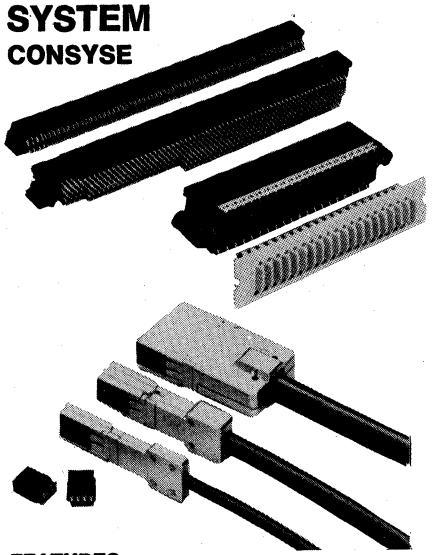


FUJITSU

CONNECTORS

BACKPLANE—I/O SYSTEM

CONSYSE



FEATURES

I/O Connector

- Superior EMI shielding design of tin-plated zinc diecasting shield back shell, shield-cover-plate and alignment-shroud.
- Double-IDC contacts for discrete wires.
- Automatic IDC machine is available.

Two Piece Connector

- High-density (4-rows on, 100 center, 256 positions).
- SMT socket for daughter-board and complaint pin header for mother-board.
- Early mate ground pins.

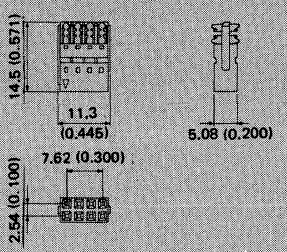
SPECIFICATIONS

Temperature range	−55°C to +105°C
Current rating	1A DC (5A for power/ground pins)
Contact resistance	30 mΩ max. at 6V DC, 0.1A
Insulation resistance	1000 mΩ min. at 500V DC
Dielectric withstanding voltage	750V AC for 1 minute
Contact material	Copper alloy
Insulator material	PBT/PPS
Plating	Contact: Gold, Shell: Tin

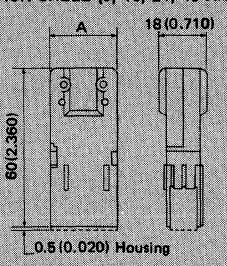
DIMENSIONS I/O CONNECTOR

Unit: mm (in.)

PRELOADED HOUSING (8 POS.)



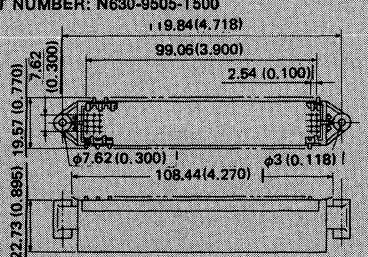
SHIELD BACK SHELL (8, 16, 24, 40 AND 56 POS.)



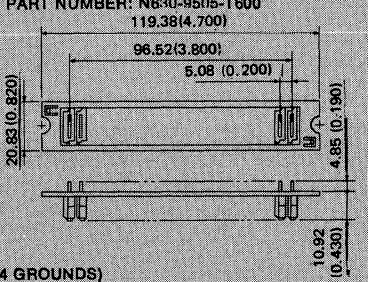
No. of positions	Part Number (Applicable wires)			Dimensions
	#20 to #22 AWG	#24 to #26 AWG	#28 to #30 AWG	A
8	N630-9505-T108	N630-9505-T208	N630-9505-T308	5.08 (0.200)
16	N630-9505-T116	N630-9505-T216	N630-9505-T316	10.16 (0.400)
24	N630-9505-T124	N630-9505-T224	N630-9505-T324	15.24 (0.600)
40	N630-9505-T140	N630-9505-T240	N630-9505-T340	25.40 (1.000)
56	N630-9505-T156	N630-9505-T256	N630-9505-T356	35.56 (1.400)

Note: These part numbers indicated shield back shell with preloaded housings.

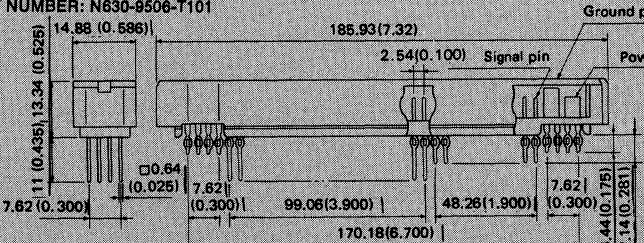
ALIGNMENT SHROUD (160 POS.)
PART NUMBER: N630-9505-T500



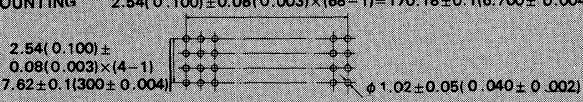
SHIELD COVER PLATE (20 POS.)
PART NUMBER: N630-9505-T600



HEADER (256 POS.: 240 SIGNALS, 12 POWERS AND 4 GROUNDS)
PART NUMBER: N630-9506-T101



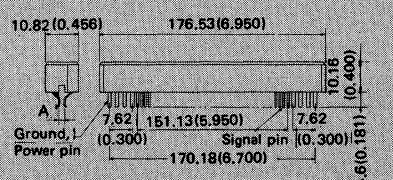
RECOMMENDED MOUNTING HOLE LAYOUT



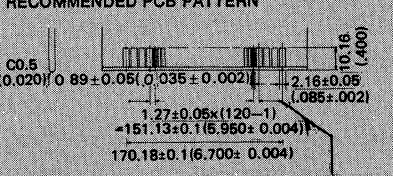
TWO-PIECE CONNECTOR

Unit: mm (in.)

SOCKET (256 POS.: 240 SIGNALS, 12 POWERS AND 4 GROUNDS)



RECOMMENDED PCB PATTERN



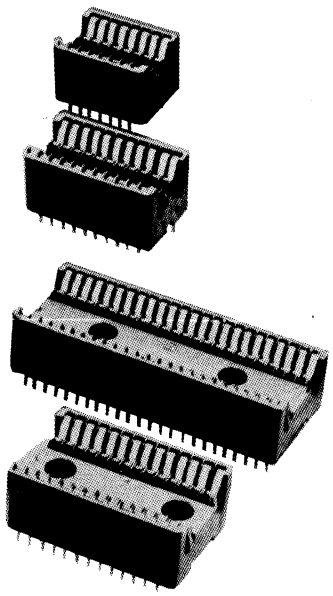
Part Number	Applicable PCB thickness	Dimensions A
N630-9506-T201	1.98 to 2.28 (0.078 to 0.090)	2.4 (0.095)
N630-9506-T202	1.37 to 1.57 (0.054 to 0.062)	1.6 (0.067)

FUJITSU

CONNECTORS

BURN-IN SOCKETS

IC SOCKETS MODEL K



FEATURES

- Low insertion force and wide entry make it easy to mate with ICs.
- With beryllium copper contacts, the sockets are good for up to 20,000 insertions and extractions, providing a long service life.
- The sockets show excellent performance in continuous operations at +170°C.
- Side-wipe contacts and preloading guarantee highly reliable contact.
- The insulation material is UL-recognized (94V-0).

SPECIFICATIONS

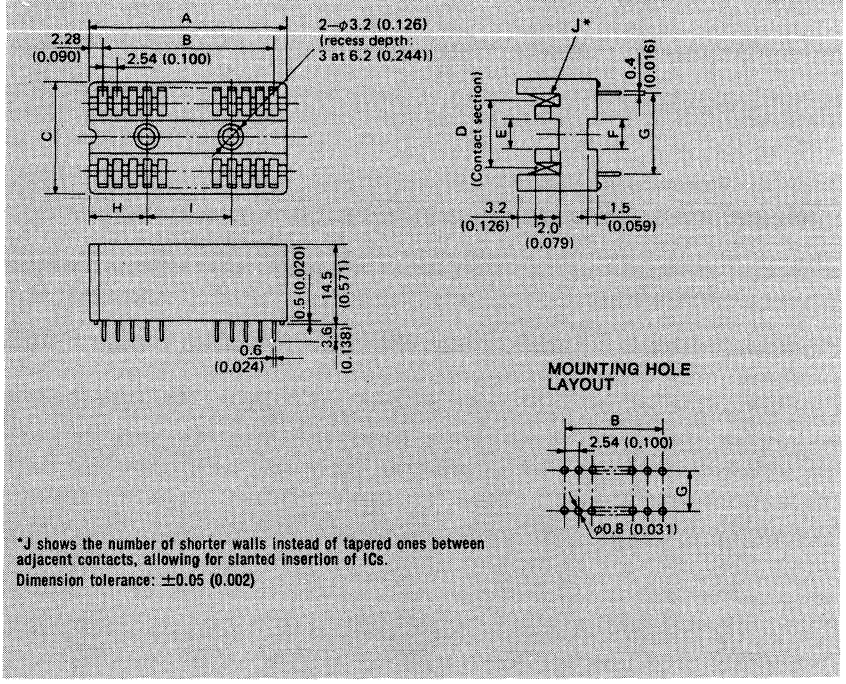
Temperature range	−55°C to +170°C
Current rating	1A DC
Durability	20,000 operations
Contact resistance	20 mΩ max. (6V DC, 0.3A)
Insulation resistance	1,000 mΩ min. (500V DC)
Dielectric withstand voltage	700V AC for 1 min.

MATERIALS

Material	Contact	Beryllium copper
	Insulator	PPS
Plating	Contact	Gold

DIMENSIONS

Unit: mm (in.)



*J shows the number of shorter walls instead of tapered ones between adjacent contacts, allowing for slanted insertion of ICs.

Dimension tolerance: ±0.05 (0.002)

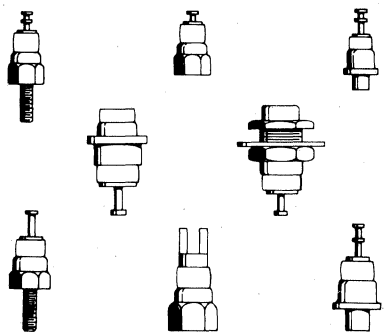
PART NUMBERS

Part Number	Number of contacts	A	B	C	D	E	F	G	H	I	J
FCN-064K008-K/3B	8	12.18 (0.480)	7.62 (0.300)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	0
FCN-064K010-K/3B	10	14.72 (0.580)	10.16 (0.400)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	0
FCN-064K014-K/3B	14	19.80 (0.780)	15.24 (0.600)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	2
FCN-064K016-K/3B	16	22.34 (0.880	17.78 (0.700)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	2
FCN-064K018-K/3B	18	24.88 (0.980)	20.32 (0.800)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	2
FCN-064K020-K/3B	20	27.42 (1.080)	22.86 (0.900)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	2
FCN-064K022-K/3B	22	29.96 (1.180)	25.40 (1.000)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	2
FCN-064K024-K/3B	24	32.50 (1.280)	27.94 (1.100)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	4
FCN-064K028-K/3B	28	37.58 (1.480)	33.02 (1.300)	17.0 (0.669)	7.8 (0.307)	2.0 (0.079)	2.7 (0.106)	11.4 (0.449)	—	—	4
FCN-064K020-K/4B	20	27.42 (1.080)	22.86 (0.900)	19.5 (0.768)	10.3 (0.406)	4.5 (0.177)	5.2 (0.205)	13.9 (0.547)	—	—	2
FCN-064K022-K/4B	22	29.96 (1.180)	25.40 (1.000)	19.5 (0.768)	10.3 (0.406)	4.5 (0.177)	5.2 (0.205)	13.9 (0.547)	—	—	2
FCN-064K024-K/4B	24	32.50 (1.280)	27.94 (1.100)	19.5 (0.768)	10.3 (0.406)	4.5 (0.177)	5.2 (0.205)	13.9 (0.547)	—	—	4
FCN-064K028-K/4B	28	37.58 (1.480)	33.02 (1.300)	19.5 (0.768)	10.3 (0.406)	4.5 (0.177)	5.2 (0.205)	13.9 (0.547)	—	—	4
FCN-064K024-K/6B	24	32.50 (1.280)	27.94 (1.100)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	6.09 (0.240)	20.32 (0.880)	4
FCN-064K028-K/6B	28	37.58 (1.480)	33.02 (1.300)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	6.09 (0.240)	25.40 (1.000)	4
FCN-064K036-K/6B	36	47.74 (1.880)	43.18 (1.700)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	11.17 (0.440)	25.40 (1.000)	4
FCN-064K040-K/6B	40	52.82 (2.080)	48.26 (1.900)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	13.71 (0.540)	25.40 (1.000)	4
FCN-064K042-K/6B	42	53.36 (2.101)	50.80 (2.000)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	14.98 (0.590)	25.40 (1.000)	4
FCN-064K048-K/6B	48	62.98 (2.480)	58.42 (2.300)	24.6 (0.969)	15.4 (0.606)	9.6 (0.378)	10.3 (0.406)	19.0 (0.748)	16.25 (0.640)	30.48 (1.200)	4
FCN-064K064-K/9B	64	83.30 (3.280)	78.74 (3.100)	32.2 (1.268)	23.0 (0.906)	17.2 (0.677)	17.9 (0.705)	26.6 (1.047)	16.25 (0.640)	30.80 (1.213)	4

manufacture and design of circuit components

HIRAM JONES
11607 VANOWEN STREET, NORTH HOLLYWOOD, CALIF. 91605
(213) 875-0213

Teflon† Insulated * One-Piece * Terminals and Test Jacks



*** DELIVERY** Immediate—from stock on catalog items.

*** QUALITY** QPL facility, insuring highest product reliability. Complete traceability on all raw material and processes.

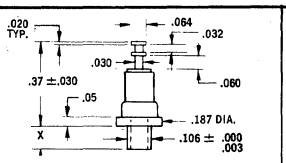
*** PRODUCTION** Precision Swiss automatic machines—long or short runs to customer design and specifications.

† Reg. Trademark, E. I. DuPont de Nemours and Co.

*** ONE-PIECE ***

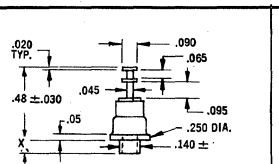
Teflon† Insulated Terminals

Male-Female Threads and Swage Types and Test Jacks



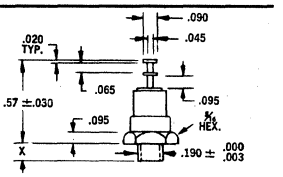
Single Turret also available O/A Height above Board: .30 ±.030 P/N TS-111-A/-4

Part No.	X	Board Thickness
TS-112-A	.055	1/64
TS-112-0	.075	1/32
TS-112-1	.095	.050
TS-112-2	.105	1/16
TS-112-3	.135	3/32
TS-112-4	.165	1/8



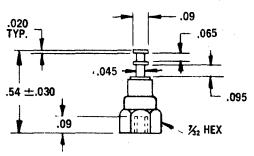
Single Turret also available O/A Height above Board: .39 ±.030 P/N TS-231-0/-4

Part No.	X	Board Thickness
TS-232-0	.075	1.32
TS-232-1	.095	050
TS-232-2	.105	1/16
TS-232-3	.135	3/32
TS-232-4	.175	1/8



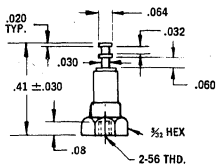
Single Turret also available O/A Height above Board: .50 ±.030 P/N TS-351-0/-4

Part No.	X	Board Thickness
TS-352-0	.075	1/32
TS-352-1	.095	.050
TS-352-2	.105	1/16
TS-352-3	.135	3/32
TS-352-4	.165	1/8



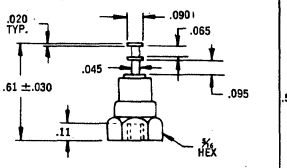
Part No.	Thread
TS-232-8F	4-40
TS-232-9F	6-32

Single Turret also available O/A Length: .47 ±.030 P/N TS-231-8F/-9F



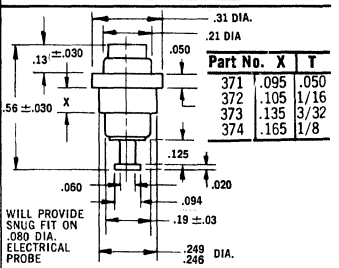
Part No.	Thread
TS-112-6F	2-56

Single Turret also available O/A Length: .35 ±.030 P/N TS-111-6F



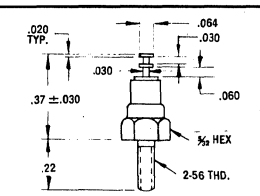
Part No.	Thread
TS-352-8F	4-40
TS-352-9F	6-32

Single Turret also available O/A Length: .54 ±.030 P/N TS-351-8F/-9F



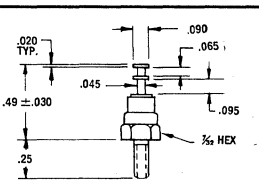
Part No.	X	T
371	.095	.050
372	.105	1/16
373	.135	3/32
374	.165	1/8

SWAGE TEST JACK
Available in 10 Standard E.I.A. colors



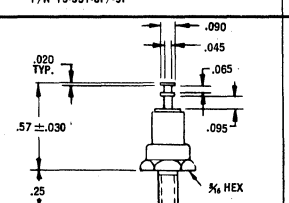
Part No.	Thread
TS-112-6M	2-56

Single Turret also available O/A Height above Board: .34 ±.030 P/N TS-111-6M



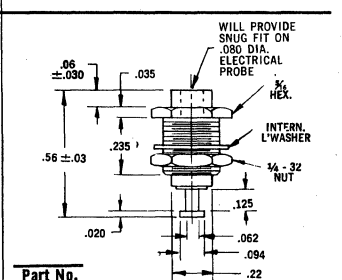
Part No.	Thread
TS-232-8M	4-40
TS-232-9M	6-32

Single Turret also available O/A Height above Board: .42 ±.030 P/N TS-231-8M/-9M



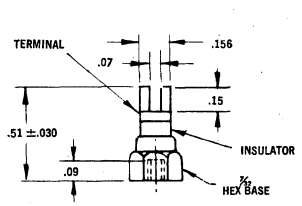
Part No.	Thread
TS-352-8M	4-40
TS-352-9M	6-32

Single Turret also available O/A Height above Board: .50 ±.030 P/N TS-351-8M/9M

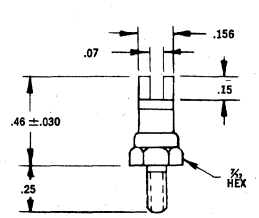


Part No.
375

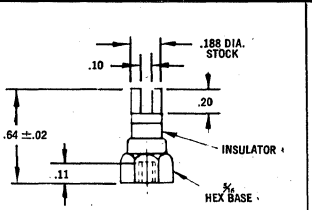
THREADED TEST JACK



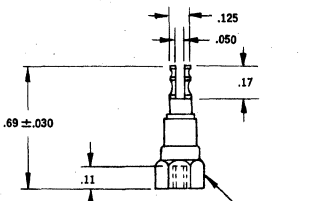
Part No.	Thread
TS-233-8F	4-40
TS-233-9F	6-32



Part No.	Thread
TS-233-8M	4-40
TS-233-9M	6-32



Part No.	Thread
TS-353-8F	4-40 NC-2B
TS-353-9F	6-32 NC-2B



Part No.	Thread
338-2050	6-32

manufacture and design of circuit components

HIRAM JONES
11607 VANOWEN STREET, NORTH HOLLYWOOD, CALIF. 91605
(213) 875-0213

Teflon† Insulated * Press-Type * Terminals and Test Jacks

*** PRESS-TYPE ***

For simple, fast economical installation

TEFLON†

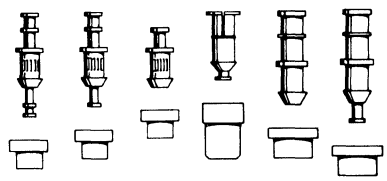
(TFE-FLUOROCARBON) per MIL-P-19468 has outstanding mechanical and electrical properties over a wide range of frequencies and temperatures (−100°C to +250°C), extreme chemical inertness, high heat resistance, zero water absorption and complete anti-hesiveness which make it a superior insulation.

TERMINALS

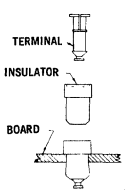
MATERIAL: Half-hard Brass per QQ-B-626, CDA360.
FINISH: Standard plating is Gold per MIL-G-45204. Other finishes supplied on request.

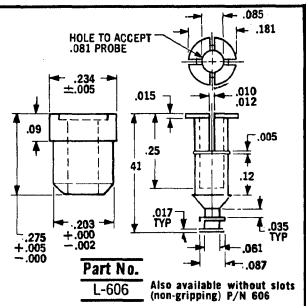
INSTALLATION TOOLS

Tools are available for all HIRAM JONES components. Specify Part Number and prefix "S." Example: S-602 Assembly Tool.

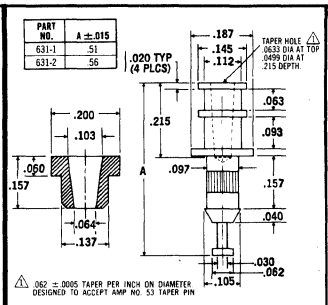


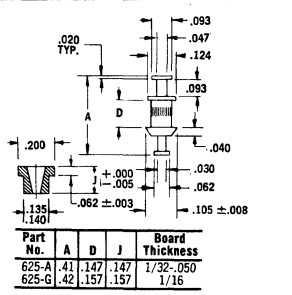
*** PRESS-TYPE ***
Teflon† Insulated Components



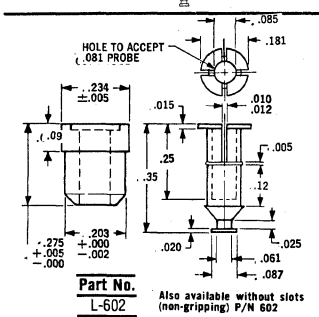


Part No. L-606 — Also available without slots (non-gripping) P/N 606

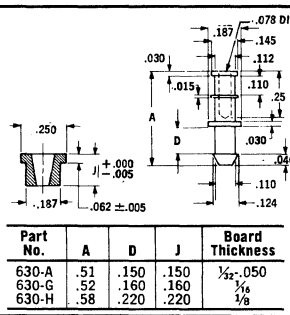




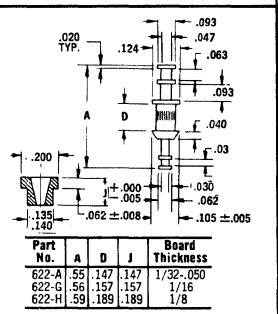
Part No.	A	D	J	Board Thickness
625-A	.41	.147	.147	1/32-.050
625-G	.42	.157	.157	1/16



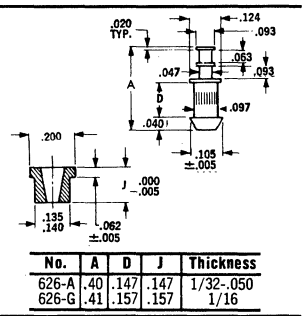
Part No. L-602 — Also available without slots (non-gripping) P/N 602



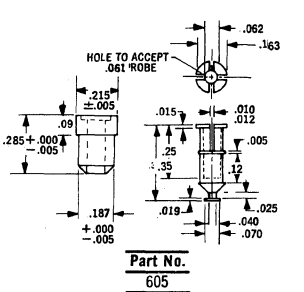
Part No.	A	D	J	Board Thickness
630-A	.51	.150	.150	1/32-.050
630-G	.52	.160	.160	1/16
630-H	.58	.220	.220	1/8



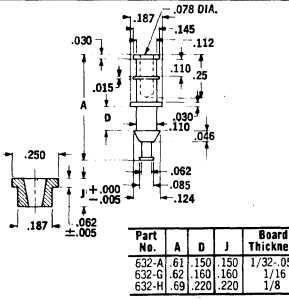
Part No.	A	D	J	Board Thickness
622-A	.55	.147	.147	1/32-.050
622-G	.56	.157	.157	1/16
622-H	.59	.189	.189	1/8



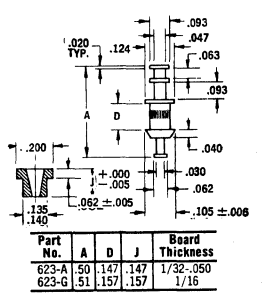
No.	A	D	J	Thickness
626-A	.40	.147	.147	1/32-.050
626-G	.41	.157	.157	1/16



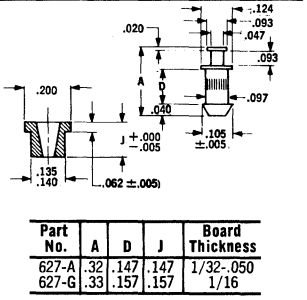
Part No. 605



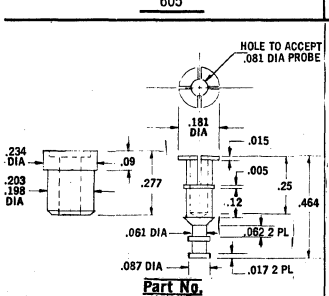
Part No.	A	D	J	Board Thickness
632-A	.61	.150	.150	1/32-.050
632-G	.62	.160	.160	1/16
632-H	.69	.220	.220	1/8



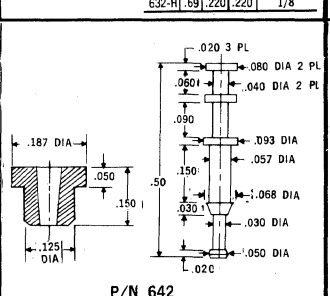
Part No.	A	D	J	Board Thickness
623-A	.50	.147	.147	1/32-.050
623-G	.51	.157	.157	1/16



Part No.	A	D	J	Board Thickness
627-A	.32	.147	.147	1/32-.050
627-G	.33	.157	.157	1/16

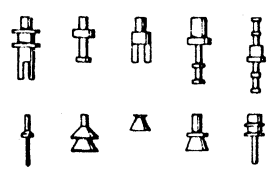


Part No. L-607



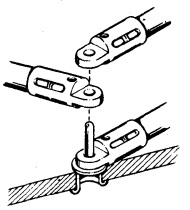
P/N 642

Other Hiram Jones Products:
Non-Insulated Terminals, Test Jacks and Contacts
Printed Circuit, MS and MIL-T-55155 Terminals



HIRAM JONES
manufacture and design of circuit components
11607 VANOWEN STREET, NORTH HOLLYWOOD, CALIF. 91605
(213) 875-0213

9W WIRE TERMINATION SYSTEM



Design Features

SOLDER-WICKING BARRIER

The design of HIRAM JONES 9W Wire Termination Systems provides a solder-wicking barrier, assuring flexibility of the wire and thus minimizing wire failures due to fatigue.

Wires are inserted in the 9W Crimp Terminals and crimped in place. Full engagement of the wire is determined by means of the inspection hole provided in each crimp terminal. The 9W Crimp Terminals are then attached to their mating Terminal Posts and soldered in place.

The entire termination is made without application of solder to the wire itself. It is, therefore, impossible for solder to "wick" up the wire.

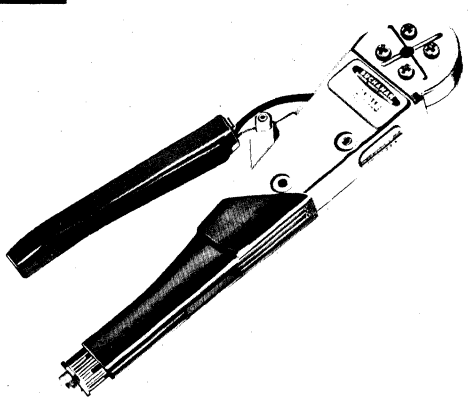
EQUIPMENT SERVICEABILITY

HIRAM JONES 9W Wire Termination System provides all the advantages of a hard wired system without the disadvantages of foreshortening of the service loop when disconnection and reconnection is required. The ease with which connections are made is a feature which is particularly advantageous in systems where connectors are undesirable, yet assemblies or sub-assemblies must be disconnected from time to time for service or replacement. To disconnect HIRAM JONES 9W Crimp Terminals, simply heat and lift off the mating terminal post. Reconnect by resoldering the 9W Crimp Terminals to the terminal post. Neither the mechanical nor electrical joint is affected by repeated removal and resoldering.

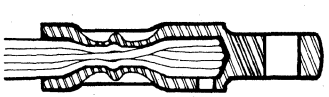
Increased Production Efficiency

By permitting pre-assembly of wires by unskilled operators, HIRAM JONES 9W Wire Termination Systems reduce production costs. Wires may be cut to length, stripped, and the 9W Crimp Terminals crimped in place. Final assembly consists of simply laying the pre-assembled Crimp Terminal on its mating terminal post and soldering in place.

9W MINIATURE MICROCRIMP TOOL



CROSS-SECTION OCTADENT CONFIGURATION



The 9W Miniature Microcrimp Tool (Buchanan No. 612118) is cycle-controlled to assure crimping to the selected depth. Once the crimping operation is started, the tool cannot be opened without completing its cycle.

9W LOCATORS — Specially designed locators are available for each of HIRAM JONES 9W Crimp Terminals. The use of one 9W Miniature Microcrimp Tool and the custom-designed 9W Locators is recommended to guarantee the precise crimp depth setting for each Crimp Terminal. When ordering, specify part number — i.e., 9W-206 Locator.

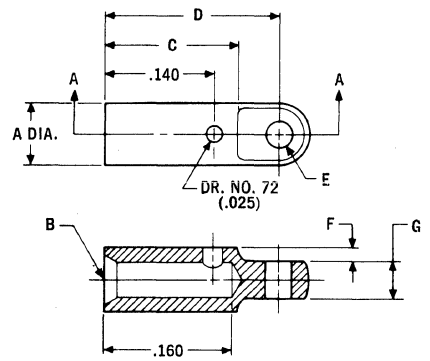
OCTADENT CRIMP — The 9W Miniature Microcrimp Tool produces an octadent configuration which provides uniform displacement of wire and crimp terminal material. The wire strands and the crimp terminal material are formed together in a solid mass with little or no reduction of the mil area of the wire strands.

manufacture and design of circuit components

HIRAM JONES
11607 VANOWEN STREET, NORTH HOLLYWOOD, CALIF. 91605
(213) 875-0213

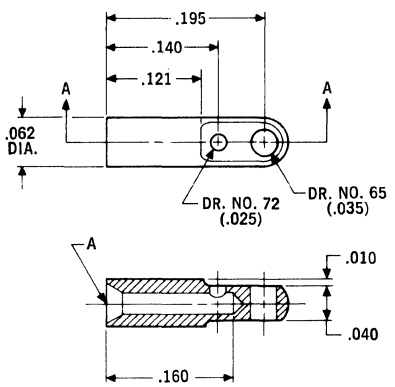
WIRE TERMINATION SYSTEM COMPONENTS

CRIMP TERMINAL



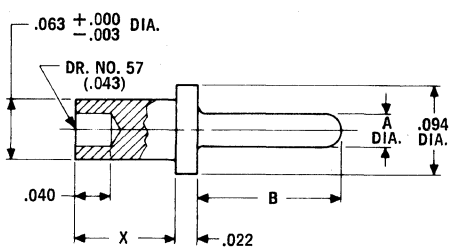
PART NO.	A DIA.	B DRILL	C	D	E DRILL	F	G	WIRE SIZE
9W-206	.078	3/64	.170	.220	.035	.017	.044	20 & 22
9W-230	.094	1/16	.175	.235	.046	.020	.054	16 & 18
9W-209	.078	.028	.170	.220	.046	.017	.044	24 & 26
9W-205	.078	3/64	.170	.220	.046	.017	.044	20 & 22

CRIMP TERMINAL



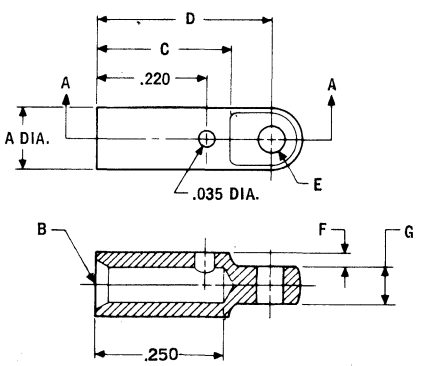
PART NO.	A DIA.	WIRE SIZE
9W-207	.028	24 & 26
9W-208	.020	28 & 30

STANDOFF TERMINAL



PART NO.	A ±.001	B ±.010	X +.004 −.000	T
9W-507-1	.031	.187	.115	3/32"
9W-507-3	.041	.225	.115	3/32"
9W-507-5	.031	.187	.084	1/16"
9W-507-7	.041	.225	.084	1/16"
9W-507-9	.031	.187	.141	1/8"
9W-507-0	.031	.187	.048	1/32"

CRIMP TERMINAL



PART NO.	A DIA.	B DRILL	C	D	E DRILL	F	G	WIRE SIZE
9W-212	.156	.098	.280	.375	.100	.028	.100	12
9W-214	.125	.079	.280	.360	.070	.025	.075	14

TOLERANCES: ±.005 Unless Otherwise Noted.
X = Shank Length T = Board Thickness
Wire size is AWG

MATERIAL: Brass per QQ-B-626, ½ Hard, Composition 22.

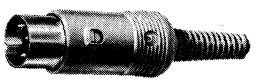
FINISH: Electrodeposited Solder Plate over Copper Plate.

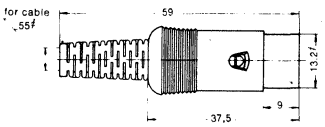
Other Sizes Available.
Contact Factory.

Hirschmann

CIRCULAR DIN CONNECTORS

Circular DIN Mas Plug





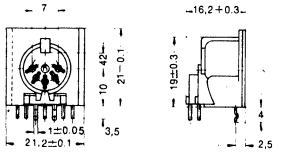
SPECIFICATIONS
Contact Resistance: 4 mOhm
Current Rating: 4 Amp
Dielectric Withstanding Voltage: 500 V RMS
Insulation Resistance: 10^{11} Ohm
Insertion Force: 0.7-1.2 N per contact
Withdrawal Force: Max. 0.8 N per contact
Cycle Life: 5000 Insertions/ Withdrawals
Color: Grey (other colors upon request)
Standard Carton: 50

Pin Arrangement					
Type	**Mas 30**	**Mas 40**	**Mas 50**	**Mas 50 W**	**Mas 50 S**
Ordering Code	**930014-317**	**930015-317**	**930016-317**	**930805-317**	**930131-317**
Positions	3	4	5	5	5
Pin Arrangement in Accordance With:	DIN 41524	—	—	DIN 45327	DIN 41524

Pin Arrangement					
Type	**Mas 60**	**Mas 70 S**	**Mas 80 S**	**Mas 80 SN**	
Ordering Code	**930017-317**	**930356-317**	**930298-317**	**931518-317**	
Positions	6	7	8	8	
Pin Arrangement in Accordance With:	DIN 45322	DIN 45329 IEC 10	Pos. 1-5 DIN 41524	DIN 45326	

Circular DIN Mab Right Angle Socket for Printed Board Mount



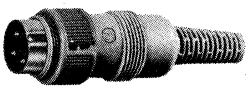


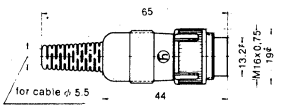
SPECIFICATIONS
Contact Resistance: 4 mOhm
Current Rating: 4 Amp
Dielectric Withstanding Voltage: 500 V RMS
Insulation Resistance: 10^{11} Ohm
Insertion Force: 0.7-1.2 N
Withdrawal Force: Max. 0.8 N per contact
Cycle Life: 5000 Insertions/ Withdrawals
Standard Carton: 200

Pin Arrangement			
Type	**Mab 3 SH**	**Mab 5 WH**	**Mab 5 SH-SA**
Ordering Code	**930360-100**	**930236-100**	**931744-200**
Positions	3	5	5
Pin Arrangement in Accordance With:	DIN 41524	DIN 45327	DIN 41524

Pin Arrangement			
Type	**Mab 6 H**	**Mab 7 SH-L**	**Mab 8 SH**
Ordering Code	**930778-100**	**930518-100**	**931399-100**
Positions	6	7	8
Pin Arrangement in Accordance With:	DIN 45322	DIN 45328	Pos. 1-5 DIN 41524

Circular DIN Mas Plug with Screw Lock



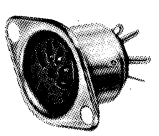


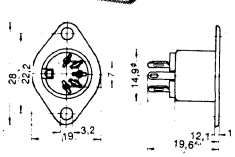
SPECIFICATIONS
Contact Resistance: 4 mOhm
Current Rating: 4 Amp
Dielectric Withstanding Voltage: 500 V RMS
Insulation Resistance: 10^{11} Ohm
Insertion Force: 0.7-1.2 N per contact
Withdrawal Force: Max. 0.8 N per contact
Cycle Life: 5000 Insertions/ Withdrawals
Color: Grey (other colors upon request)
Standard Carton: 50

Pin Arrangement				
Type	**Mas 3100**	**Mas 4100**	**Mas 5100**	**Mas 5100 S**
Ordering Code	**930304-117**	**930963-117**	**930964-117**	**930965-117**
Positions	3	4	5	5
Pin Arrangement in Accordance With:	DIN 41524	—	—	DIN 41524

Pin Arrangement				
Type	**Mas 6100**	**Mas 7100 S**	**Mas 8100 S**	**Mas 8100 SN**
Ordering Code	**930966-117**	**930688-117**	**930539-117**	**931750-117**
Positions	6	7	8	8
Pin Arrangement in Accordance With:	DIN 45322	DIN 45329	Pos. 1-5 DIN 41524	DIN 45326

Circular DIN Panel Mount with Mounting Flange and Solder Tabs





SPECIFICATIONS
Contact Resistance: 4 mOhm
Current Rating: 4 Amp
Dielectric Withstanding Voltage: 500 V RMS
Insulation Resistance: 10^{11} Ohm
Insertion Force: 0.7-1.2 N
Withdrawal Force: Max. 0.8 N per contact
Cycle Life: 5000 Insertions/ Withdrawals
Standard Carton: 200

Pin Arrangement					
Type	**Mab 3**	**Mab 3 S**	**Mab 4**	**Mab 5 W**	**Mab 5**
Ordering Code	**930204-100**	**930018-100**	**930009-100**	**930469-100**	**930010-100**
Positions	3	3	4	5	5
Pin Arrangement in Accordance With:	—	DIN 41524	—	DIN 45327	—

Pin Arrangement					
Type	**Mab 5 S**	**Mab 6**	**Mab 7 S**	**Mab 8 S**	**Mab 8 SN**
Ordering Code	**930071-100**	**930011-100**	**930343-100**	**930345-100**	**931613-100**
Positions	5	6	7	8	8
Pin Arrangement in Accordance With:	DIN 41524	DIN 45322	DIN 45329	Pos. 1-5 DIN 41524	DIN 45326

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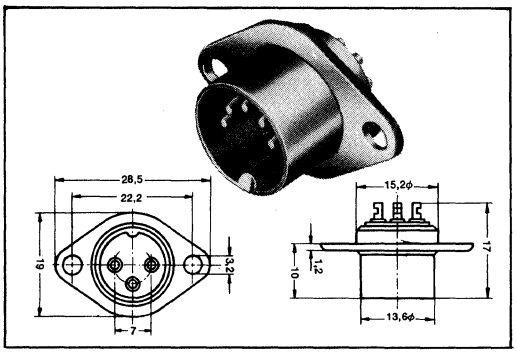
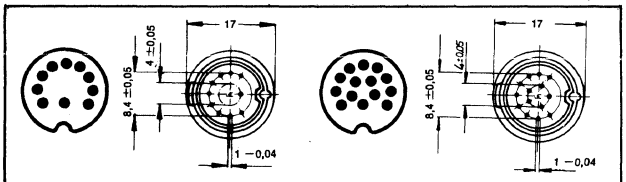
CIRCULAR DIN CONNECTORS

Circular DIN Masei Male Panel Mount (Consult factory for specifications)

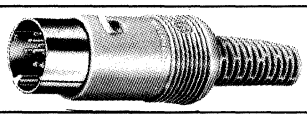


Pin Arrangement	Type	Ordering Code	Description
	**Masei 3**	**930063-100**	3-pin, solder connection, pin arrangement in accordance with DIN 41524.
	**Masei 5 S**	**930934-100**	5-pin, solder connection, pin arrangement in accordance with DIN 41524.
	**Masei 8 S**	**930396-100**	8-pin, solder connection, pin arrangement in accordance with DIN 41524.

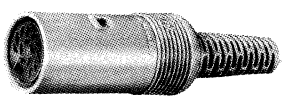
Circular DIN 10 and 14 Pin Connectors (Consult factory for specifications)



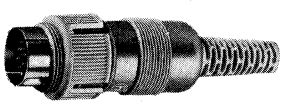
Mis Plug



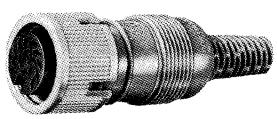
Mik Socket



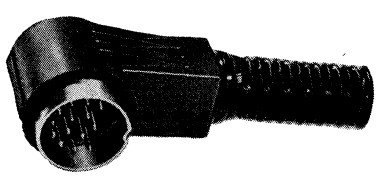
Mis Screw Lock Plug



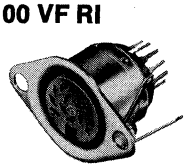
Mik Screw Lock Socket



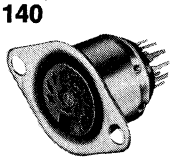
Miwi Right Angle Plug



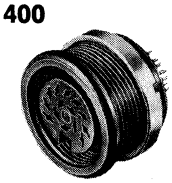
Mib 100 VF RI



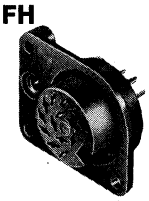
Mib 140



Mib 1400



Mib 14 FH



Type	Ordering Code	Description
Mis 100	**931826-117**	10-pin plug.
Mis 140	**932222-117**	14-pin plug.
Mis 140 FH	**931559-117**	14-pin plug with shorter shield and gold plated pins.
Mik 100	**931844-117**	10-pin socket.
Mik 140	**932223-117**	14-pin socket.
Mis 1400	**932219-117**	14-pin screw lock plug with gold plated pins.
Mik 1400	**932220-117**	14-pin screw lock socket with gold plated contacts.
Miwi 100	**931846-117**	10-pin right angle plug.
Miwi 140	**931847-117**	14-pin right angle plug.
Miwi 140 FH	**931658-117**	14-pin right angle plug with shorter shield and gold plated pins.
Mib 100 VF RI	**931823-100**	10-pin socket with switch for printed circuits solder connection.
Mib 140	**931842-100**	14-pin socket for panel mount, solder connection.
Mib 1400	**932221-100**	14-pin panel mount socket with screw lock, gold plated contacts, solder connection.
Mib 14 FH	**931558-100**	14-pin flange socket for printed circuits, gold plated contacts, solder connection, shorter shield.

RICHARD HIRSCHMANN OF AMERICA INC. • PO Box 229/Industrial Row, Riverdale, NJ 07457 • 201/835-5002

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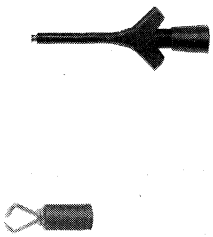
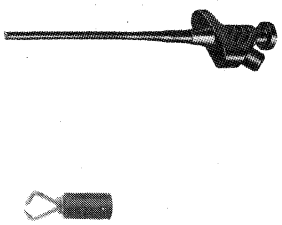
TEST PROBES, PATCH CORDS, AND ALLIGATOR CLIPS

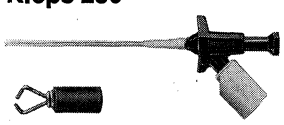
Kleps 3 St 0,64
Kleps 3
Kleps 4



Kleps 30



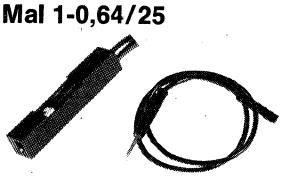
Kleps 250



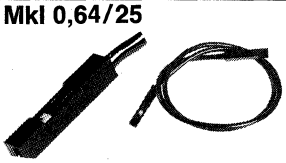
Pruef 2 S



Mal 1-0,64/25

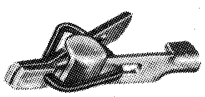


Mkl 0,64/25



Type	Ordering Code	Description
Kleps 3 St 0.64	**973592-500**	Test clip with gold pin accepts Mkl 0.64/25 or Mal 1-0.64/25.
Kleps 3	**973554-100**	Miniature test clip with rotating claws. 1 mm socket accepts Mal 1-0.64/25 pin.
Kleps 4	**973649-100**	Test clip with 2 gold plated sockets, accepts Mal 1-0.64/25 pin.
Kleps 30	**930113-100**	Test probe with flexible shank and turnable gripping claws. Socket for 4 mm plug connection and screw for direct wire termination.
Kleps 250	**973528-100**	Test probe with sleeve for 250 V. Accepts 4 mm plugs. Flexible shank.
Pruef 2 S	**973659-100**	Test probe with 4 mm socket for banana plug and insulation sleeve for applications up to 250 V AC/DC.
Mal 1-0.64/25	**973637-100**	Miniature test lead with 0.64 socket and 1 mm plug. 24 AWG-250 mm long.
Mkl 0.64/25	**973604-100**	Miniature test lead with 25² socket each end. 250 mm long — 24 AWG.

Agf 1



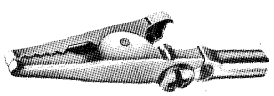
Agf 2



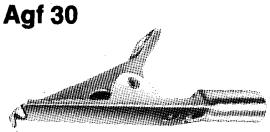
Agf 20



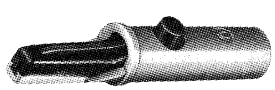
Ags 20



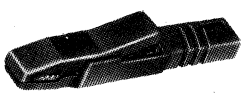
Agf 30



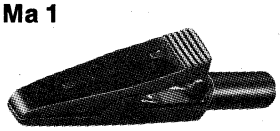
Ak 10



Ak 2 S



Ma 1



Type	Ordering Code	Description
Agf 1	**930476-000**	Miniature clip for printed circuit contacts, crimp or solder connection.
Agf 2	**931272-100**	Alligator clip for measuring closely spaced contacts.
Agf 20	**930120-000**	Nickel plated steel clip for measuring very thin to 4 AWG max., solder or 4 mm banana plug connection.
Ags 20	**603006-000**	Nickel plated steel clip, solder, screw, or 4 mm banana plug connection.
Agf 30	**930122-000**	All metal clip. Acid resistant steel. 4 mm plug or solder connection.
Ak 10	**930126-100**	Insulated clip for very thin wires. 4 mm socket for banana plug.
Ak 2 S	**932146-101**	Fully insulated clip. Socket for 4 mm plug. Screw connection for wires 12 AWG max.
Ma 1	**930317-100**	Miniature insulated alligator clip for thin wires, 2 mm socket.

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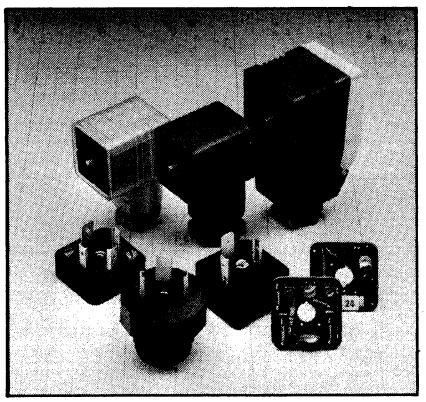
INDUSTRIAL CONNECTORS

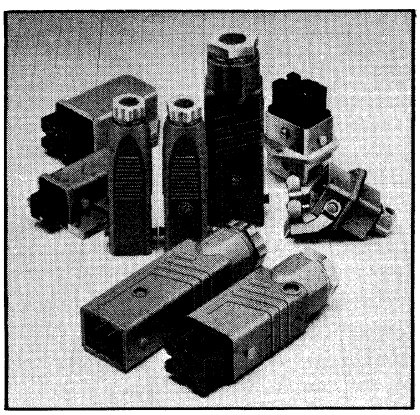
G-Series



Three and four pole industrial power connectors, made to Din 43650 specifications. Screw or crimp style wire attachment with rubber compression gland, offers protection against dust and hose down conditions. Features vibration proof locking via a center screw. Male plugs are available for a variety of installations including panel mount, ½" and metric port mount, for injection molding and for flat or cylindrical surfaces. Female sockets are available with indicator lights, rectifiers, surge suppression or to custom specifications. Available prewired with your choice of wire size and length.

Series	Reference voltage	Permanent current	Protection mode	Contact #
GDM	250 VAC/300 VDC	20 A	IP 65	3 pole +
GDME	380 VAC/450 VDC	16 A	IP 65	3 pole +
GM	250 VAC/300 VDC	16 A	IP 65	2 pole +

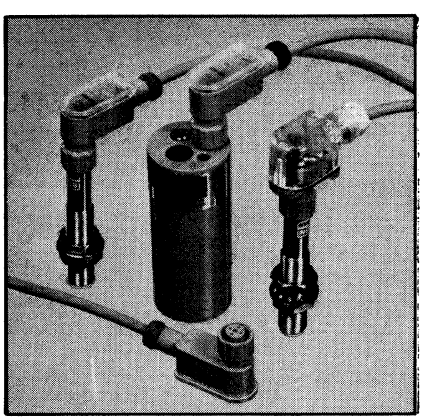
STAS-STAK



The three different sizes offer a variety of control and power distribution applications. 2-, 3-, and 5-pole (plus ground) versions are available with screw or crimp style wire attachment. Each series has both a metric rubber compression gland and an internal wire clamp to insure proper strain relief. Both male and female connectors are designed for 90° and parallel panel mounting, as well as inline applications. A metal security clip provides a vibration proof connection. STAS-STAK 5 is available with optional fiber-optic contacts and would enable the user to run both fiber-optic and power cables through one connector. All the STAS-STAK line is available prewired to your specifications.

Series	Reference voltage	Permanent current	Protection mode	Contact #
2	250 VAC/300 VDC	16 A	IP 54	2 pole +
3	380 VAC/450 VDC	16 A	IP 54	3 pole +
5	380 VAC/450 VDC	10 A	IP 54	5 pole +

E-Series



Four pole connector system, designed for use with proximity switches and other sensor equipment. Offers protection against dust and water immersion. Locking ring provides a vibration proof connection. Male connectors in the ELWIKA series mount to either an M12 or M18 metric barrel. ELKA series mount to either M18 or M30 tube. Both connector series are available with LED's to indicate on and off positions. ELWIKA female connectors are available with molded 2 meter or 5 meter cable. ELKA female connectors mount at both straight and 90° positions. Both series are available prewired to your specifications.

Series	Reference voltage	Permanent current	Protection mode	Contact #
ELWIKA	60 VAC/75 VDC	4 A	IP 67	4 pole
ELKA	250 VAC/300 VDC	16 A	IP 67	4 pole

Clips, Posts, Sockets

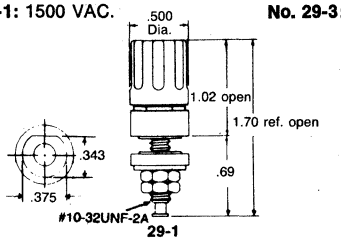
Termination Hardware

Test Clips

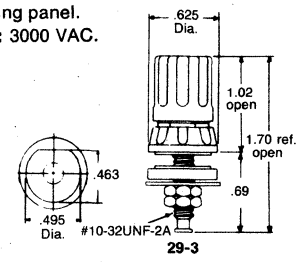
Designed for panel mounting on test equipment or for breadboarding to allow rapid connections without manual opening and closing of jaws. Hex nut under clip allows for tension adjustment of individual clip. Applicable to part numbers 2-0, 2-4, 2-20, 2-24, 2-41, and 2-42.

Binding Posts

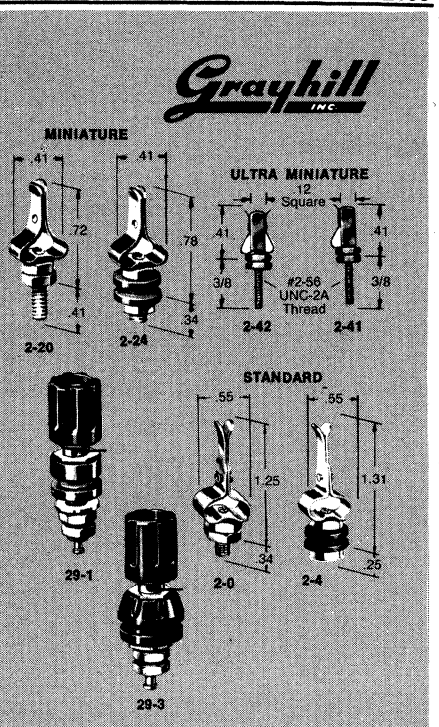
Rating at 120 VDC: 15 amps continuously with a max. temperature rise of 20°C.
Insulation Resistance: Between stud and mounting panel.
No. 29-1: 120,000 megohms. **No. 29-3:** 200,000 megohms.
Voltage Breakdown: Between studs and mounting panel.
No. 29-1: 1500 VAC. **No. 29-3:** 3000 VAC.



29-1 Standard Screw Type Binding Post with Straight Skirt. Fits ⅜" Diameter Mounting Hole Allowing Close Spacing.



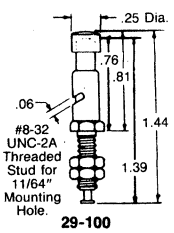
29-3 Standard Screw Type Binding Post with Flared Skirt Fits ½" Diameter Mounting Hole Allowing Wider Spacing.

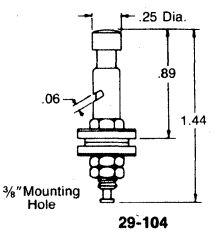


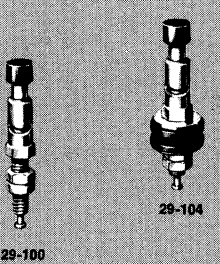
Push Post™

New plunger type binding post for positive connections. To operate, button is depressed, lead is placed in slot, and button is released. Spring pressure assures firm positive contact. Extends only ⅞" above mounting board.

Rating at 120 VDC: 20 amps continuously with a max. temperature rise of 20°C.

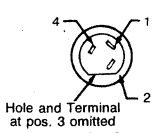


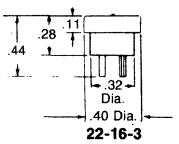




Sockets

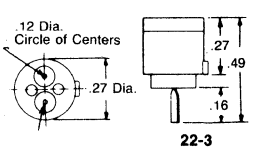
Also available in 4 terminal, different pin to flat orientation and 4 pin, screw or rivet mount. See GRAYHILL Hardware catalog.





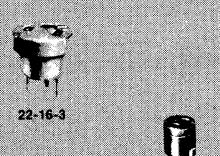
TRANSISTOR TYPE

Designed to accept the standard outline (TO-5, 9, 11, 16, 26, 29, 31 & 39). Leads fit on standard 100 mil grid for PC mount or fit a "D" hole to be held by a ring fastener. Wrap around terminals and molded-in indicator line for can tab orientation.



BI-PIN LAMP

Accepts standard T-1¼ and T-1¾ outline lamps when leads are trimmed to 0.215". PC mount terminals fit .032" diameter hole.



ORDERING INFORMATION

Test Clips

Part Number	Price 1-1999	Price 2000-4999
2-0	$.85	$.72
2-4	1.10	.94
2-20	.85	.72
2-24	1.10	.94
2-41	.85	.72
2-42	.90	.77

Sockets

Part Number	Price 1-499	Price 500-999
22-3	$1.54	$1.23
22-16-3	1.29	1.03

Binding Posts

Part Number	Button Cap Color	Prices 1-99	Prices 100-499
29-1 RED	Red	$1.84	$1.56
29-1 BLK	Black	1.84	1.56
29-3 RED	Red	1.84	1.56
29-3 BLK	Black	1.84	1.56

Push Post

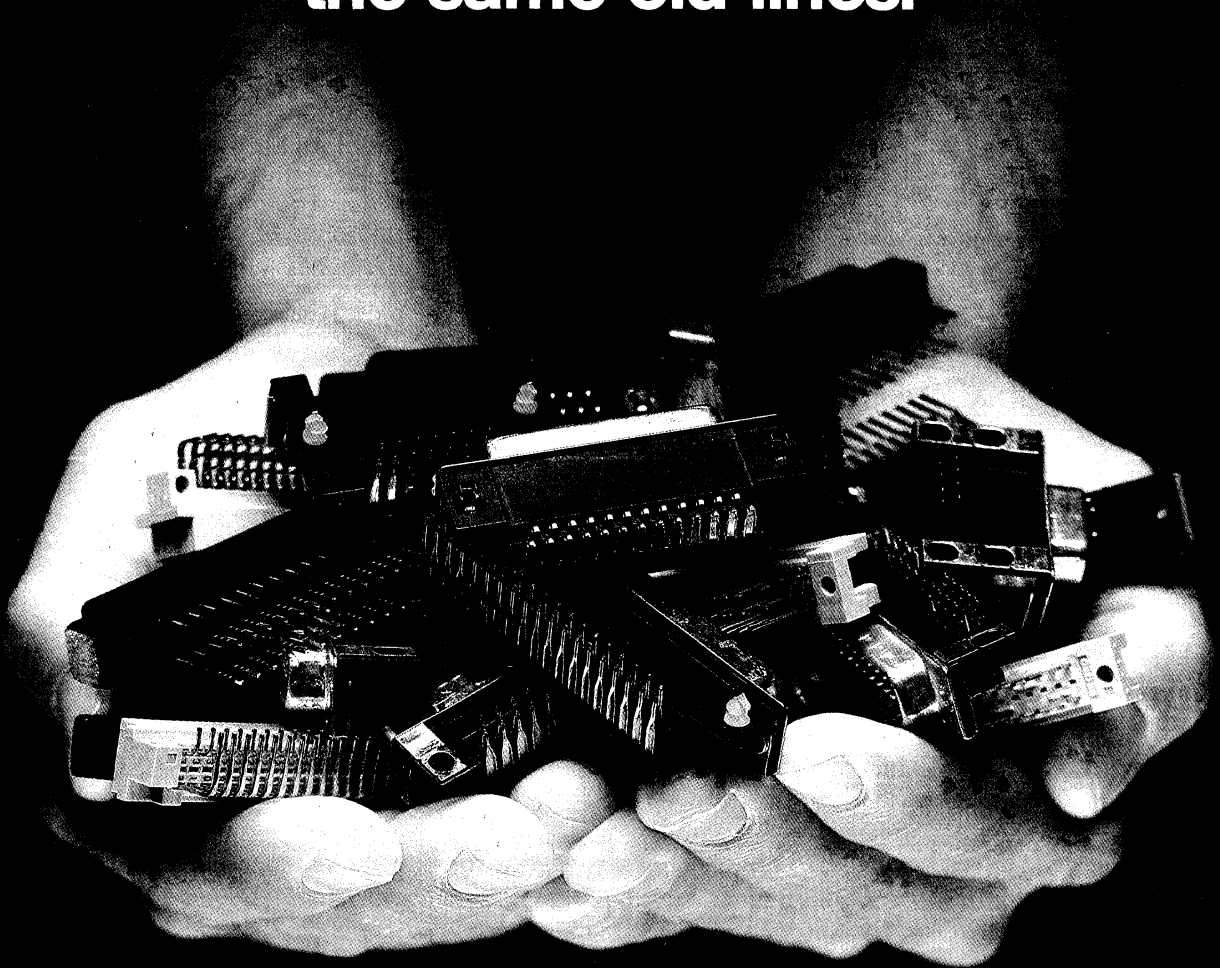
Part Number	Button Cap Color	Prices 1-99	Prices 100-499
29-100 RED	Red	$1.28	$1.09
29-100 BLK	Black	1.28	1.09
29-104 RED	Red	1.75	1.49
29-104 BLK	Black	1.75	1.49

Prices and Discounts subject to change without notice.
For additional quantity pricing contact your local distributor or Grayhill.

• 561 HILLGROVE, • P.O. BOX 10373, • LA GRANGE, ILLINOIS 60525, • PHONE: (312) 354-1040 •

Available Locally Through Your Grayhill Distributor

At Holmberg, we're not handing you the same old lines.



What we are handing you is an outstanding line of high-quality connectors:

D-Subminiature
- All plastic and metal shell
- .590 and .318 footprints
- Crimp-snap
- Surface mount
- Press fit

Printed Circuit Card Edge
- Low cost cantilever contacts
- Modified bellows wire wrap

DIN
- Standard and reverse

Pin Headers
- Unshrouded, straight and right angles

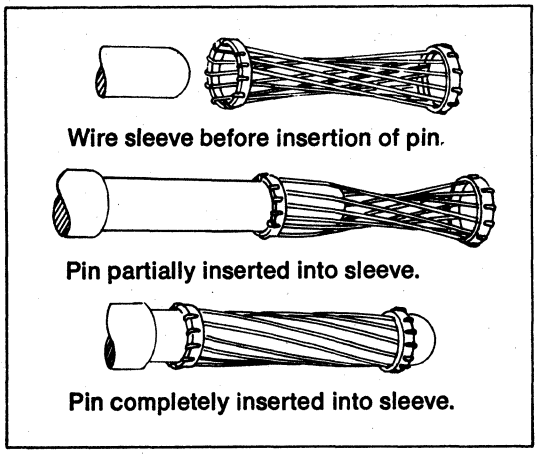
Our design innovations can provide you with substantial cost savings plus the greatest variety of mounting options available. At Holmberg, we'll do whatever it takes to make your job successful.

HOLMBERG ELECTRONICS

The Innovation Connection

P.O. Box 37, Inman, SC 29349 • 803/472-4141 • Telex II 810/690-2302 • Fax No. 803/472-8568

Hypertac® LOW INSERTION FORCE CONNECTORS



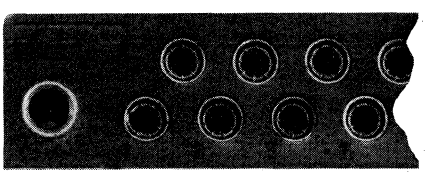
Hypertac® (HYPERboloid conTACt) is an advanced design that satisfies performance requirements previously considered impossible. Radically different in concept (principle is shown in the drawing), it is used in connectors having the highest performance requirements. The distinguishing feature of the Hypertac® socket is the hyperboloid-shaped sleeve formed by wires strung at an angle to the socket's axis. When the pin is inserted into this sleeve, the wires stretch to accommodate it. In so doing they wrap themselves around the pin providing a number of linear contact paths. This superior mating principle offers many advantages:

Lower Contact Resistance: Contact resistance is largely a function of contact area and surface condition. The multiple line contacts in the Hypertac® provide far greater contact area than other contacts of comparable size. The positive wiping action of the wires insures a clean and polished contact surface. Tests have shown Hypertacs® have about ½ the resistance of conventional contact designs.

Higher Current Ratings: The design parameters of the Hypertac® (e.g., the number, diameter, and angle of the wires) may be modified for any requirement. For example, the number of wires (no less than 5) can be increased so the contact area is distributed over a larger surface of the mating pin. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times. At the same time the lower resistance reduces heat buildup. Therefore, Hypertacs® are able to handle far greater currents in smaller contact assemblies without the detrimental effects of high temperature.

Lower Insertion-Extraction Forces: Complete encirclement of the pin, along with greater contact area, make high contact forces unnecessary. The spring rate and resultant stress are therefore very low. The smooth insertion-extraction force is so low that even our 700 pin connectors can be easily disconnected without jack screws.

Less Wear and Longer Life: Reduced contact pressure also means a lower rate of wear. The taut wires having a small deflection relative to their span insure constant pressure, voltage drop and current ratings. Hypertacs® have a life of over 100,000 insertion-extraction cycles with almost no degradation in performance. Test pins with 50 micro inches gold plating had no base metal exposed after 8000 cycles (MIL-STD requires only 500 cycles for the same plating thickness).



Greater Reliability: The contact redundancy of multiple wires wrapped around the pin insures the ultimate in contact integrity. Elasticity of the wires also enables the socket to accommodate bent or misaligned pins.

Exceptional Electrical Continuity Under Shock and Vibration: The low mass and resultant low inertia of the wires relative to their resilience enables them to follow the most abrupt or extreme excursions of the pin without loss of contact. Tests conducted over the entire frequency range showed no discontinuity even when measured as low as 8 nanoseconds at 50 g rms. Moreover, the contact area is not limited to a single plane. It extends 360° around the pin and is uniform over its entire length. The three dimensional symmetry of design guarantees electrical continuity regardless of the direction or intensity of external or inertial forces.

Higher Uniformity: Machined rather than stamped parts, simple contact surfaces and selective plating before assembly avoids the possibility of shadow effects, gradients or trapped residues which could affect performance. Excellent physical and performance uniformity is thereby assured within each unit as well as perfect repeatability from unit to unit.

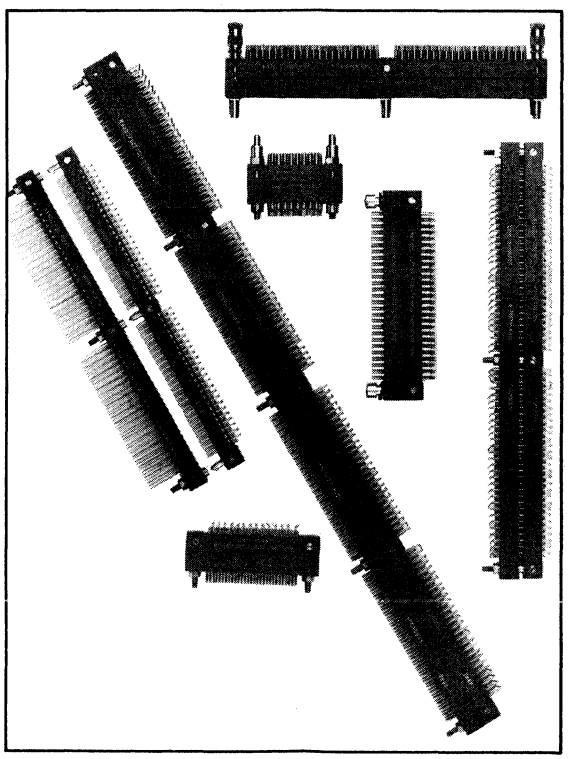
Requirements for connectors are such, that no matter how many details are incorporated in a brochure or catalog, we cannot include all types and variations. We would be pleased to consider your particular requirements; simply furnish all pertinent data to our Customer Service Department.

HYPERTRONICS CORPORATION
16 Brent Drive, Hudson, MA 01749-2904
Toll free: 800-225-9228 Fax: (617) 568-0680
MA & Canada Tel: (617) 568-0451 Tlx: 95 1152

SUBMINIATURE 2-PIECE P.C. BOARD CONNECTORS

NOW QPL'D

Low Insertion Force with Removable Contacts



1.27mm (.050″) grid spacing [KA section of catalog].

17, 29, 33, 41, 53, 62, 65, 72, 80, 84, 96, 98, 120, 126, 160, or 320 contacts.

Rated Current: 3 Amps/contact.

Breakdown Voltage: 1,200 Volts.

Temperature Range: −55° +125°C (−65° +260°F).

Various mounting styles and locking hardware available.

Various tail styles available: wire wrap,® crimp, solder cup, straight p.c. solder, right angle p.c. solder, surface mount, and others.

KA Series has more than 15,000 possible combinations.

QPL'ed to D55302/159-164

SUBMINIATURE LOW PROFILE 2-PIECE P.C. BOARD CONNECTORS

NEW

Low Insertion Force



2.54mm X 2.54mm (.100″ X .100″) center spacing [KG and KN section of catalog].

4 through 112 contacts.

Rated Current: 2.5 Amps/contact.

Breakdown Voltage: 1,200 Volts.

Temperature Range: KG = −55° + 105°C (−65° + 220°F).
KN = −55° + 125°C (−65° + 260°F)

Various tail styles available: crimp, solder cup, straight p.c. solder and right angle p.c. solder.

Various mounting styles available: p.c. board parallel sandwich [as thin a profile as 5.8 mm (.228″)], p.c. board to cable, chassis to chassis, low profile daughter board to mother board and others.

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INDIVIDUAL CONTACTS

Low Insertion Force

NEW

Individual pins and sockets are available for those applications where special constraints prohibit the use of multi-pin connectors.

Rated Current: 2.5 to 500 Amps/contact.

Breakdown Voltage: Depends on mounting.

Temperature Range: −55° to 600°C (−65° + 1100°F).



MINI-MODULAR HIGH DENSITY CONNECTORS

Low Insertion Force

Like the modular series, this mini-modular series also allows you to build your own connector quickly and inexpensively without special tooling. However, with the mini-modular series, much higher density and pin counts are possible. Virtually any design requirement can be met by assembling signal and power contacts in various combinations [N section of catalog].

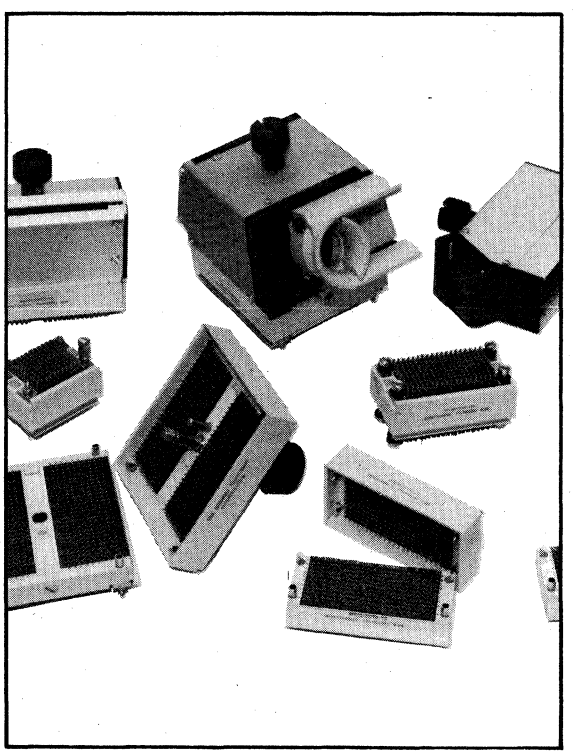
Building Blocks:

5 contacts @ 9 Amps/contact;
6 contacts @ 7 Amps/contact;
10 contacts @ 5 Amps/contact;
Breakdown Voltage: 2,250 Volts; 1,500 Volts.
Temperature Range: −55° +105°C (−65° +220°F).
Types: signal and power.

Frames:

7 thru 35 building block units.
25 thru 700 contacts.
Also available with keys, hoods, cable clamps, float mountings or jack screws.

N Series has over 40,000 possible combinations.



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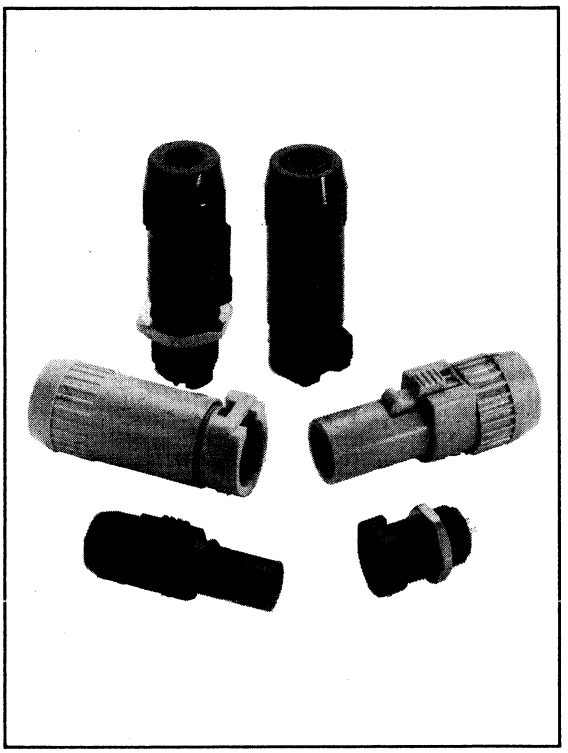
MINIATURE QUICK-DISCONNECT CIRCULAR CONNECTORS

Low Insertion Force



This series features fast, secure and easy-to-use coupling action [D section of catalog].

3 thru 7 contacts.

Rated Current: 3 thru 8 Amps/contact.

Breakdown Voltage: 2,000 thru 2,250 Volts.

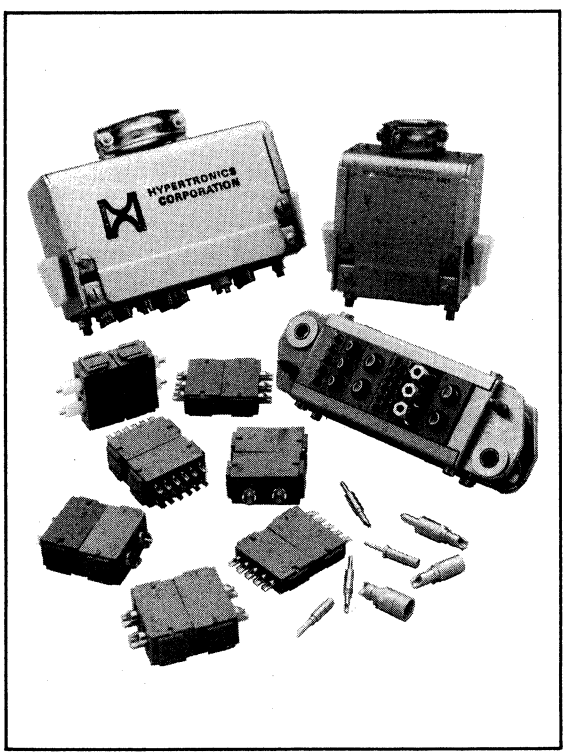
Temperature Range: −40° +85°C (−40° +185°F).

These connectors are also available in a high temperature plastic suitable for sterilization [−40° +125°C (−40° +260°F)].

Available in special colors as well as standard black and gray.

MODULAR CONNECTORS

Low Insertion Force



These do-it-yourself connectors, on the building block principle, offer a wide variety of combinations to meet any design requirement. Combinations to 255 contacts per connector are possible [L section of catalog].

Building Blocks:

- 2, 3, 5 or 17 contacts.
- Rated Current: 5 thru 50 Amps/contact.
- Breakdown Voltage: 2,000 thru 12,000 Volts.
- Temperature Range: −55° +125°C (−65° +260°F).
- Types: signal, power, coax, high voltage or shielded cable.

Frames:

- 4 thru 30 building block units.
- 8 thru 255 contacts.
- Also available with keys, hoods, cable clamps, float mountings or jack screws.

L Series has over 40,000 possible combinations.

We have the ability to mold the connector as one piece when your design moves from prototype to production, thus giving low cost and fast delivery in all phases of your product.

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16 Brent Drive, Hudson, MA 01749-2904

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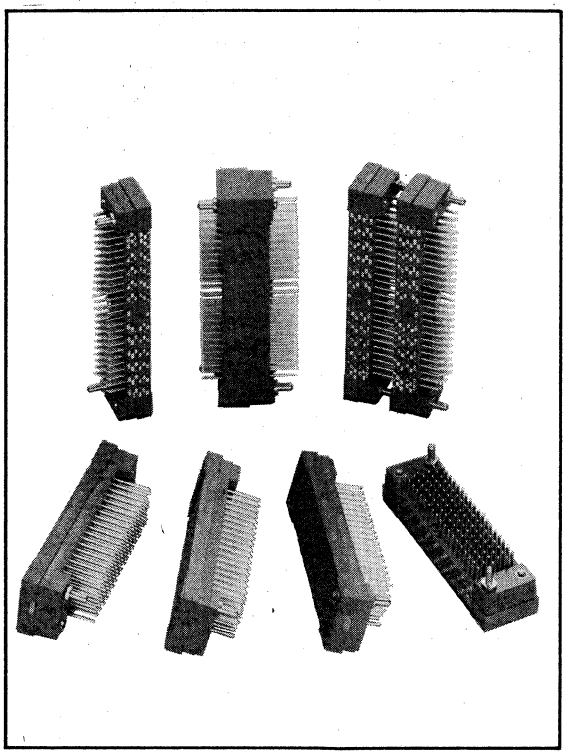
STACKING/BUSSING P.C. BOARD CONNECTORS

NEW

Low Insertion Force



These stacking connectors are composed of contact sockets at one end and tails, which are mating pins, at the other. The series allows PCB's to be placed one on top of another with all electrical connections between boards routed through the stacking connectors. This forms an electrical buss with drops to every board in the stack. This eliminates the traditional backplane, increases system speed, reduces size, all of which decreases cost.

111 and 135 position models with various standoffs to accommodate different component heights.

Various accessories which include dummy pins and sockets allow selective circuit interruption.

2.5mm (.100″) grid spacing with 1.27mm (.050″) alternate row offset provides high density.

Front removable contacts .76mm (.030″) allows quick repairs.

Rated Current: 5 Amps/Contact.

Breakdown Voltage: 1,200 Volts.

Temperature Range: −55° + 125°C (−65° + 260°F).

®Wire wrap is a registered trademark of Gardner Denver.
Front page photo courtesy of NASA 10K-9-84.

HYPERTAC®

Low Insertion Force Connectors

- Computers
- Test Equipment
- Communications
- Military Systems
- Medical Systems
- Avionics
- Aerospace
- Machine Tools
- Naval Systems
- Seismologic Equipment
- Transportation Systems
- Laboratory Equipment
- Robotics
- and many others.

HYPERTRONICS CORPORATION

"New Horizons in Connectors"

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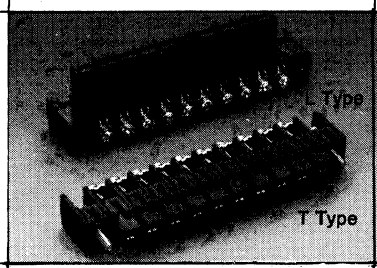
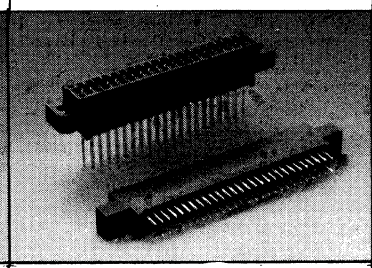
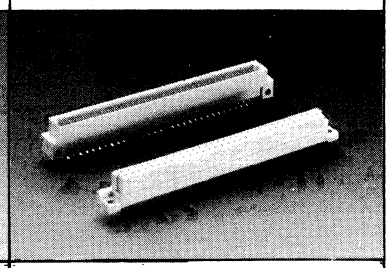
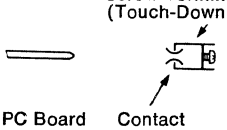
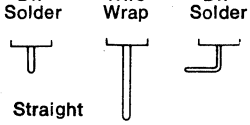
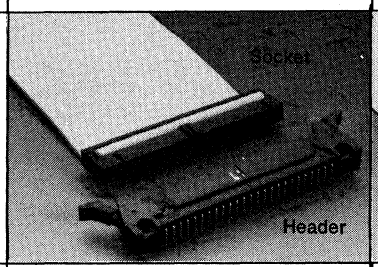
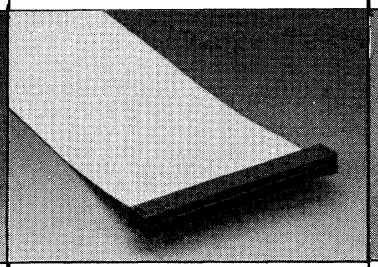
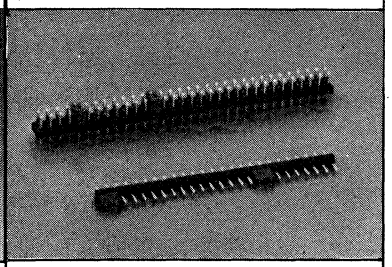
CONNECTORS

Name	CONNECTOR TERMINAL BLOCK	CARD EDGE CONNECTORS	DIN CONNECTORS
Series	JA SERIES	JC SERIES	JD SERIES
Style			
Type	T Type L Type	.100 (Dual Contact) .125 (Dual Contact)	2-Row Type (Standard & Inverted) 3-Row Type (Standard & Inverted)
Contact Spacing	.300	.100 x .200 .125 x .250	.100 x .100
Number of Contacts	2 to 20	44, 56, 62, 72, 100 40, 60, 80, 100	64, 32 96, 64, 32
Termination	Screw Terminal (Touch-Down Terminal) 	DIP Solder Wire Wrap 	DIP Solder Wire Wrap DIP Solder Right Angle 
Electrical Ratings: Current	10A	3A	2A
Electrical Ratings: Contact Resistance	16 mΩ maximum	16 mΩ maximum	16 mΩ maximum
Electrical Ratings: Insulation Resistance	5,000 MΩ minimum (600V DC)	5,000 MΩ minimum (600V DC)	10^6 MΩ minimum (600V DC)
Electrical Ratings: Dielectric Strength	2,000 V AC minimum	800V AC minimum 1,600V AC minimum	1,000V AC minimum
Materials & Finish: Contact	Copper Alloy Selective Gold-Plate Over Nickel Underplate	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin-Plate Tails	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin-Plate Tails
Materials & Finish: Insulator	Polyphenylene ether (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black
Features	• Captivated 'Touch-Down' terminal screws. • Bifurcated contacts. • IDEC's exclusive horizontal type. • Accessories are interchangeable with the BP series.	• Applicable PC board thickness: .062 • Dual contact position • Low cost	• Compliance with DIN and IEC Standards • Inverted types are available on JD4 and JD6 series • Ideal for High Density Installation

idec

CONNECTORS

Name	**FLAT CABLE CONNECTORS**		**POST HEADER CONNECTORS**	
Series	**JE SERIES**	**JG SERIES**	**JE7 SERIES**	
Style				
Type	Socket / Header	DIL Terminal Arrangement	Shorting Plug	Header
Contact Spacing	.100 x .100	.100 x .100	.100	.100 x .100
Number of Contacts	10, 14, 16, 20, 26, 30, 34, 40, 50, 60	10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60	2	1-row: 2 to 32 2-row: 2 to 64
Termination	Insulation Displacement Contact; DIP Solder: Straight, Right Angle	Insulation Displacement Contact; DIP Solder: Straight	Right Angle	Straight
Electrical Ratings — **Current**	1A	1A	3A	
Electrical Ratings — **Contact Resistance**	16 mΩ maximum	16 mΩ maximum	20 mΩ maximum	
Electrical Ratings — **Insulation Resistance**	5,000 MΩ minimum (600V DC)	5,000 MΩ minimum (600V DC)	1,000 MΩ minimum (500V DC)	
Electrical Ratings — **Dielectric Strength**	800V AC minimum	800V AC minimum	1,000V AC minimum	
Materials & Finish — **Contact**	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin-Plate Tails	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin-Plate Tails	Copper Alloy Selective Gold-Plate Over Nickel Underplate	
Materials & Finish — **Insulator**	Glass-filled polyester (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black	
Features	• Compliance with MIL Standard • Polarized Mechanism • Low-Profile Box Headers without Ejector/Latch are also available on JE3 Series	• Economical Connection by Direct Mounting on PC Boards • Use in combination with the JE Series is possible • Retention Terminals	• Low profile • Straight and double row • Straight and right angle mount • Breakaway position 2 thru 64	

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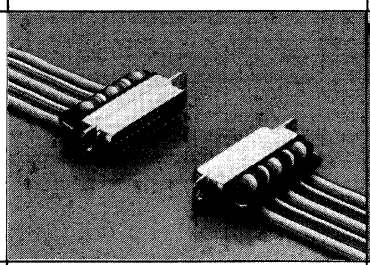
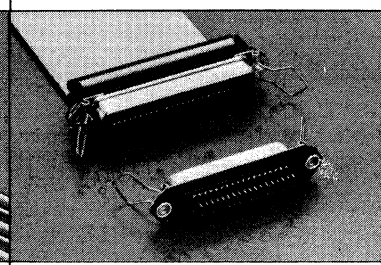
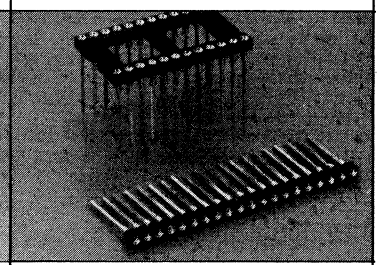
idec

CONNECTORS

		D-SUB CONNECTORS	MINI-RIBBON CONNECTORS	IC SOCKETS
Name				
Series		JF SERIES	JR SERIES	JJ SERIES
Style				
Type		Plug Receptacle	Plug/Receptacle	Single & Dual In Line
Contact Spacing		.109 x .112	.85 x .169	.100 x .300 x .600 x .400 x .900
Number of Contacts		9, 15, 25, 37	14, 24, 36, 50	6-64
Termination		DIP Solder Straight, Right Angle, Insulation Displacement Contact	Insulation Displacement Contact, DIP Solder Straight, Right Angle	DIP Solder, Wire Wrap
Electrical Ratings	Current	3A	1A	3A
	Contact Resistance	12 mΩ maximum	16 mΩ maximum	16 mΩ maximum
	Insulation Resistance	5,000 MΩ minimum (600V DC)	5,000 MΩ minimum (600V DC)	5,000 MΩ minimum (600V DC)
	Dielectric Strength	500V AC minimum	800 V AC minimum	800V AC minimum
Materials & Finish	Contact	Copper Alloy Selective Gold-Plate Over Nickel Underplate	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin-Plate Tails	Copper Alloy Selective Gold-Plate Over Nickel Underplate Tin or Gold Plate Tails
	Insulator	Glass-filled polyester (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black	Glass-filled polyester (UL94V-0) Black
Features		• RS232 Application • Short footprint available • Straight and right angle mounting	• IEEE 488 Standard • Straight and Right Angle Mounting • Fully Interchangeable	• High Reliability • Gold/Tin Contact Plating • Wire Wrap and DIP Solder

eem MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination.* This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float.* Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof.* May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card.* The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement.*

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage.* Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage.* The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

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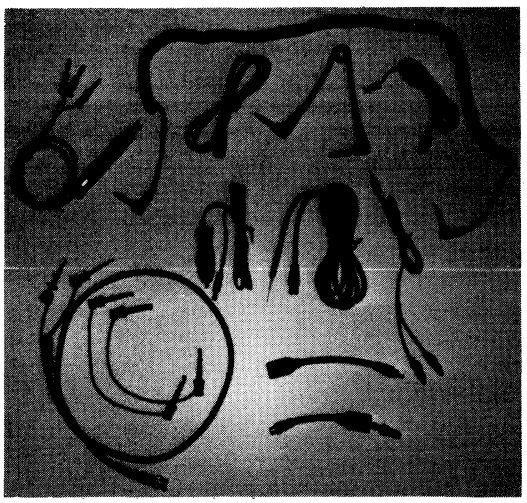
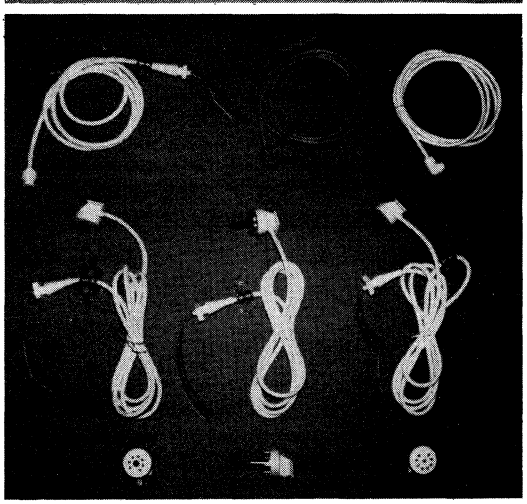


TOOLING SERVICES AVAILABLE FOR CUSTOM MOLDED CABLE ASSEMBLIES AND CUSTOM CONNECTORS

DESIGN OPTIONS

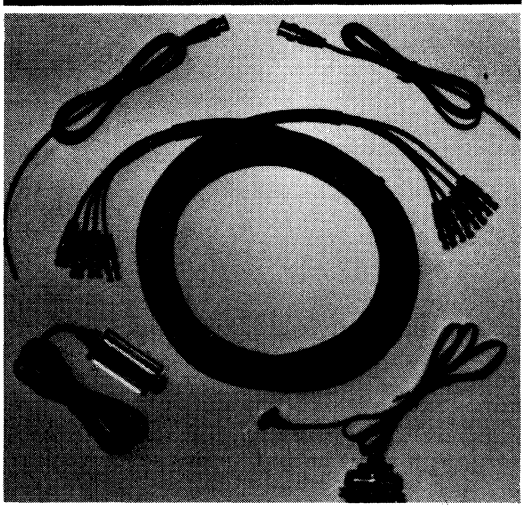
CABLE
- Conductor Type
  - Solid, Stranded, & Gauge
  - Number of Conductors
  - Paired or Unpaired
- Dielectric Type
- Types of Shields
  - Braided Copper
  - Foil/Drain Wire
  - Foil/Braid
  - 100% Shield
- Insulation of Conductors & Jacket
- Other

TERMINATION
- Stripped and Tinned
- Terminals
- Connectors
- Other



CONNECTORS

- AUDIO
- F CONNECTORS
- BNC
- TNC
- DIN CONNECTORS
- D SUB CONNECTORS
- UHF
- PCB MOUNT COAXIAL





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ISL PRODUCTS INTERNATIONAL LTD.

ITT Components
A Division of ITT Corporation

IC Precision Sockets

DIP SOCKET FEATURES SERIES 11 AND 21

- Low profile 0.11 in. (2.8 mm) open and closed frame, machine loadable IC sockets.
- Compact design allows for front and side stacking on .100 in. (2.54 mm) centered PC boards.
- Chamfered lead-in allows easy insertion of round contacts .016-.022 in. (0.40-0.56 mm) or square contacts 0.01 in. x 0.02 in. (0.25 mm x 0.45 mm).
- Four fingered inner contact, made of precision machined beryllium copper, ensures 4 gas-tight connections with durability of a minimum of 1000 mating cycles.
- Reduced contact height provides excellent characteristics with short IC leads.
- Precision machined brass shell has closed bottom design eliminating solder of flux wicking.
- Solder pin or wire-wrap termination.
- Mounting options with wire-wrap pins are standard mount with 0.04 in. (1 mm) PCB holes or low profile with 0.06 in. (1.4 mm) PCB holes.
- Series 11 open frame sockets, available in 6-64 contacts, allow visual inspecion of traces and solder joints, even with IC inserted.
- Series 21 closed frame sockets, available in 8-40 contacts, are for applications requiring greater stability and vibration resistance.

MATERIALS

Insulator — Polyester GF flame retardant (UL 94-V0)

Inner Contact — Mechined beryllium copper, copper flash with gold or tin over 79-118 μin. (2-3 μm) nickel.

Sleeve — Machined brass, copper flash with gold or tin over 79-118 μin. (2-3 μm) nickel.

PERFORMANCE DATA

Operating Temperature — −55°C to +185°C short term temperature peak +260°C.

Operating Voltage — 10 mV-60V

Breakdown Voltage — 1000V rms min.

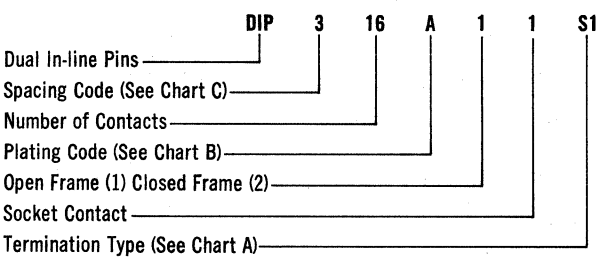
Contact Resistance — 7 mOhm max.

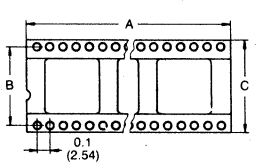
Insulator Resistance — 10 Ohm min.

Socket Insertion Force — 180 Grams (6.3 oz.)

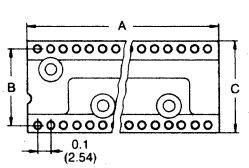
Socket Extraction Force — 90 Grams (3.2 oz.)

ORDERING INFORMATION





Number of crossbars varies with the number of contacts.



Hole placement varies with the number of contacts.

CHART A

Termination Type

S1	Solder pin 0.13 in. (3.18 mm) for PC boards up to 0.08 in. (2 mm)
S3	Solder pin 0.17 in. (4.20 mm) for PC boards up to 0.14 in. (3.5 mm)
W2	2 level wire-wrap 0.37 in. (9.52 mm)
W3	3 level wire-wrap 0.51 in. (13.08 mm)

CHART B

Plating Available

Code	Innter Contact	Sleeve
A	16 μin. (0.4 μm) Au	197 μin. (5 μm) Sn
B	30 μin. (0.75 μm) Au	197 μin. (5 μm) Sn
C	30 μin. (0.75 μm) Au	10.0 μin. (0.25 μm) Au
D	157 μin. (4 μm) Sn	197 μin. (5 μm) Sn

CHART C

DIMENSIONS AND STANDARD PACKAGING

Spacing Code	Number of Contacts	Dimensions			Standard Packaging		
		A	B	C	Sockets Per Tube	Tubes Per Box	Total Sockets Per Box
3(1)	06	0.3	0.3	0.4	70	120	8400
3	08	0.4	0.3	0.4	52	120	6240
3	10	0.5	0.3	0.4	42	120	5040
3	14	0.7	0.3	0.4	30	120	3600
3	16	0.8	0.3	0.4	26	120	3120
3	18	0.9	0.3	0.4	23	120	2760
3	20	1.0	0.3	0.4	21	120	2520
3	24	1.2	0.3	0.4	17	120	2040
4	22	1.1	0.4	0.5	19	100	1900
4	24	1.2	0.4	0.5	17	100	1700
6	24	1.2	0.6	0.7	17	63	1071
6	28	1.4	0.6	0.7	15	63	945
6	32	1.6	0.6	0.7	13	63	819
6	36	1.8	0.6	0.7	11	63	693
6	40	2.0	0.6	0.7	10	63	630
6(1)	48	2.4	0.6	0.7	8	63	504
9(1)	50	2.5	0.9	1.0	8	50	400
9(1)	64	3.2	0.9	1.0	6	50	300

(1) Not available on series 21 open frame sockets.

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IC Precision Sockets

SINGLE IN-LINE PIN STRIP FEATURES SERIES 30

- Universal strips for PC boards up to 0.14 in. (3.5 mm) thick strips can be aligned in any direction on PC boards with .100 in. (2.54 mm) hole spacing.
- 20, 32 and 64 contact standard lengths snap apart for easy separation.
- Five contact types available.
- Solder or wire-wrap termination.
- Wire-wrap pins mounting options are standard mount with 0.04 in. (1 mm) PCB holes or low profile with 0.06 in. (1.4 mm) PCB holes.

MATERIALS

Insulator — Polyester GF flame retardant (UL 94-VO)

Inner Contact — (Sockets only)
Precision machined beryllium copper. Copper flash with gold or tin over 79-118 μin. (2-3 μm) Ni.

Adapter PC Pins — Machined beryllium copper, copper flash with gold or tin over 79-118 μin. (2-3 μm) Ni.

Wire-Wrap Pins and Socket Pins — Machined brass, copper flash with gold or tin over 79-118 μin. (2-3 μm) Ni.

PERFORMANCE DATA

Operating Temperature — −55°C to +185°C Short term temperature peak +260°C

Operating Voltage — 10 mV-60V

Breakdown Voltage — 1000V rms min.

Contact Resistance — 7 mOhm max.

Insulator Resistance — 10^{12} Ohm min.

Socket Insertion Force — 180 Grams (6.3 oz.)

Socket Extraction Force — 90 Grams (3.2 oz.)

ORDERING INFORMATION

SIP 0 20 E 3 1 W3

- SIP — Single In-line Pins
- 0 — Spacing
- 20 — Number of Contacts (20, 32, 64)
- E — Plating (See Chart A)
- 3 — Insulator Type
- 1 — Contact Type (See Chart B)
- W3 — Termination Type (See Charts B & C)

CHART A
PLATING

Code	Inner Contact	Sleeve/ Header	Available with Contact Type
A	16 μin. (0.4 μm) Au	197 μin. (5 μm) Sn	1
B	30 μin. (0.75 μm) Au	197 μin. (5 μm) Sn	1
C	30 μin. (0.75 μm) Au	10.0 μin. (0.25 μm) Au	1
D	157 μin. (4 μm) Sn	197 μin. (5 μm) Sn	1
E	—	10.0 μin. (0.25 μm) Au	2, 3, 4, 5
F	—	197 μin. (5 μm) Sn	2, 3, 4, 5

CHART B
CONTACT TYPE & TERMINATIONS AVAILABLE

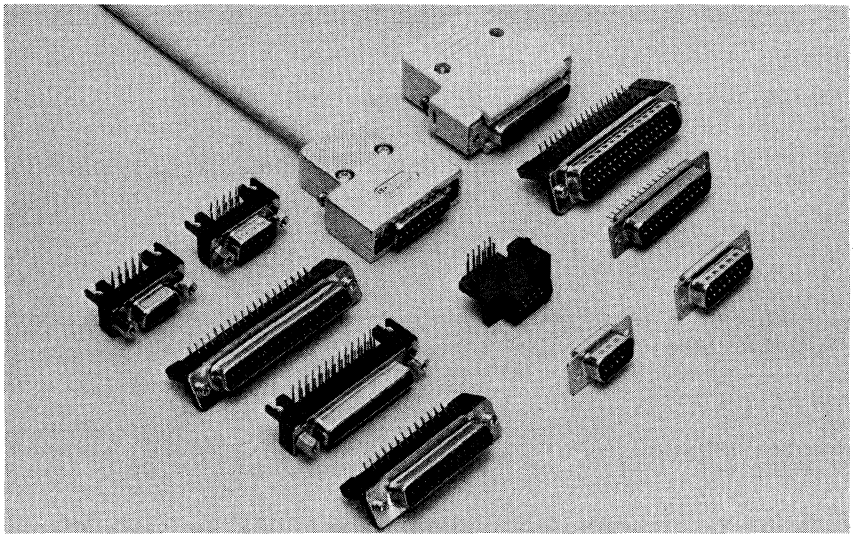
Contact Type	Contact Description	Termination Options
1	Socket	S1, S3, W2, W3
2	Through pin header	S2, W3
3	Slotted header	S2, W3
4	Solder cup header	S2, W3
5	Turret header	S2, W3

CHART C
TERMINATION SPECIFICATIONS

S1	Solder pin 0.13 in. (3.18 mm) for PC boards up to 0.08 in. (2 mm)
S2	Solder pin 0.15 in. (3.90 mm) for PC boards up to 0.14 in. (3.5mm)
S3	Solder pin 0.17 in. (4.2 mm) for PC boards up to 0.14 in. (3.5 mm)
W3	3 level wire-wrap 0.51 in. (13.08 mm)

INPUT/OUTPUT CONNECTORS

Rectangular Connectors



D Subminiature

The versatile D Subminiature Series of rectangular connectors is available in a wide variety of styles. These popular general-purpose connectors are ideal for use in applications such as computers, office equipment, telecommunications, instrumentation and industrial equipment. Features include:

- Five shell sizes and five contact arrangements (9, 15, 25, 37 and 50 contacts).
- Various termination styles: crimp, insulation displacement, solder, PCB through hole, and wire wrapping.
- Optional accessories for cable-to-panel, cable-to-PC board (straight and right angle mount), and cable-to-cable applications.

Standard D Subminiature Connectors

- **D*U:** Low cost general purposes connectors with crimp or through hole contacts.
- **D*SP:** Insulation displacement contacts for ribbon cable.
- **D*-N:** Low cost, stamped contact connectors with solder or through hole contacts.
- **D*M:** High reliability connectors available with standard contacts, or contact arrangements to accommodate coaxial contacts.
- **D*MA:** High reliability, crimp contact type connectors.

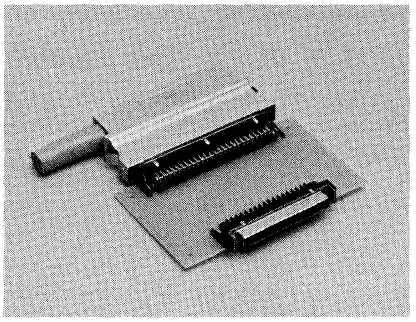
EMI Shielding D Subminiature Connectors

Designed to meet the demand for noise suppression and FCC regulations controlling electro-magnetic interference (EMI). Features include lightweight and compact aluminum or plastic clamp hoods and nickel-plated metal shells with grounding dimples on plug side of connector to ensure firm connections and meet shielding requirements.

- **D*U-F:** Crimp terminations.
- **D*SP-F:** Insulation displacement terminations.
- **D*-F-N:** Solder terminations.
- **D*LC:** Through hole terminations.
- **D*-AF-N:** Through hole terminations.

Low Cost D Subminiature Connectors

- **D*LC:** PCB connectors with right angle through hole contacts. 5A rated current. 9, 15, 25, and 37 contact layouts. Standard or metric screw-lock assembly. Grounding lugs available.



D05 Series

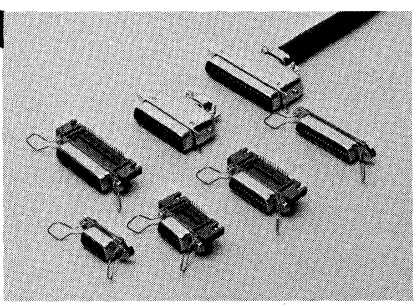
These connectors combine the standard features of D Subminiature connectors with .100″ (2.54mm) contact spacing and EMI shielding.

- Receptacle with .100″ right angle through hole contacts.
- Plug with metal front shell and easy-termination contacts.
- Clamp hood junction shell has a spring locking mechanism and provides for EMI protection of complete connector.
- 20, 26, 36 and 50 contact layouts.
- 5A current rating.

JD Series

Compact and lightweight, the JD Series of connectors feature unique rib-style contacts. Ideal for various electronic equipment interface applications, they are available with solder terminations for cable, and straight or right angle through hole terminations for PC boards.

- Rack and panel, panel-to-cable, and cable-to-PC board applications.
- Latch springs for cable applications.
- Receptacles with floating mounting rivets for rack and panel applications.
- 14, 24, 36 and 50 contact layouts.
- 5A current rating.
- Expansion post-type grounding lug.



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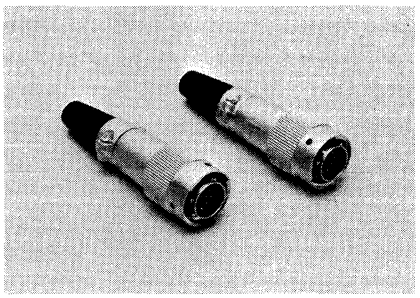
INPUT/OUTPUT CONNECTORS

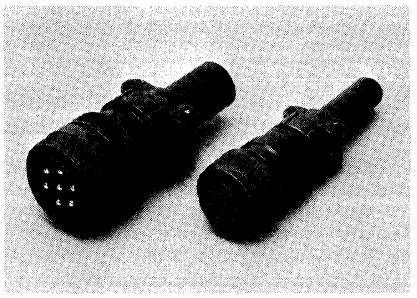
Circular Connectors



SRC Series

The low cost and lightweight SRC Series of miniature circular connectors is ideal for use in general purpose applications where size and reliability are primary considerations.

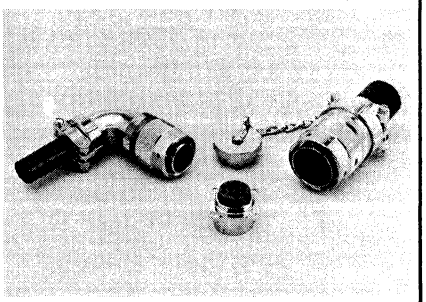
- Panel-to-cable and cable-to-cable applications.
- Machined or stamped contacts.
- Solder termination.
- Insulators constructed of UL94V-0 flame-retardant material.
- Three shell styles and four shell sizes with pin and socket inserts provided.
- 3, 5, 7, 10 (2 versions), 16 (2 versions) and 24 contact layouts.
- 5A and 10A current ratings.
- Recognized under UL Component Program, File No. E-67741(S).
- Bayonet and threaded couplings.



JA Series

This highly reliable series of general purpose circular connectors is similar to MIL-C-5015 for use in applications not requiring a MIL-qualified connector. Available in a wide variety of styles, sizes and contact layouts, the JA Series offers combinations of receptacles, plugs and accessories for panel-to-cable and cable-to-cable connections for all types of electronic equipment.

- Similar to MIL-C-5015.
- High performance and high reliability.
- Available in most popular contact arrangements.
- 13A to 150A current rating.
- Solder and crimp terminations are available.



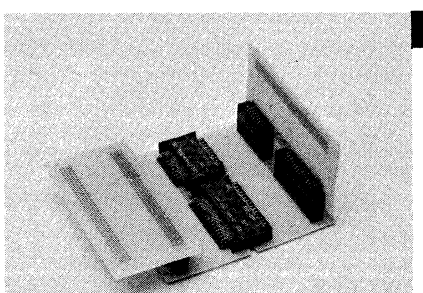
GT/D Series

The GT/D Series circular connectors are well suited to industrial applications where a current rating of up to 13 amperes is required. The bright nickel plating of the connector body makes the GT/D Series connectors attractive and highly durable.

- Bayonet coupling.
- 500 mating cycles.
- Removable crimp contacts, size 16.
- 4, 8, 21, 31, 37, and 55 position contact arrangements.
- DWV: 2000 VAC RMS.
- Five key polarization with three alternate insert clocking options.

PCB CONNECTORS

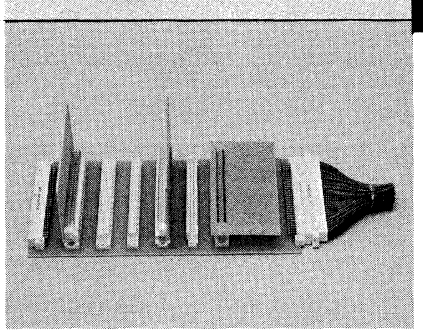
Two Piece Circuit Board Connectors



PICL

These two-piece, miniature connectors are ideal for use in products having limited space for PC interconnections.

- High contact density (.050" pitch).
- Board-to-board applications.
- Through hole, right angle and straight interconnections.
- Optional polarizing key available.
- 30, 40, 50 and 60 contact layouts.
- 5A rated current.

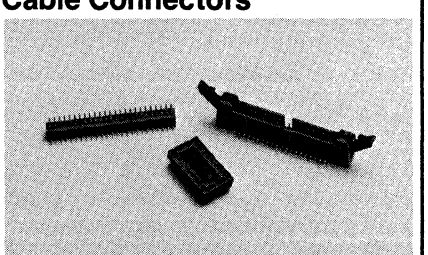


ME03 Series

The ME03 Series of two-piece circuit board connectors are compatible with IEC Pub. 603-2 and DIN41612 Standards. Used worldwide as internationally standard connectors, their space saving construction makes them suitable for use in communications, telecommunications and computer equipment, and with 19" card frames designed to IEC Standards.

- .100" contact spacing.
- Low insertion/removal force.
- Dual wipe contact configuration.
- Low cost.
- 64, 90 and 96 contact layouts.
- 3A rated current.
- Crimp and press fit termination options available.

Modular Interconnections & IDC Flat Ribbon Cable Connectors



PS Series

These IDC connectors are designed for flat ribbon cable applications. The PS Series includes socket connectors for discrete wires; board mounting pin headers with pin posts; and high performance connectors compatible with MIL-C-83503

- High contact density (.100" pitch).
- Board-to-board and board-to-cable applications.
- Crimp-socket contacts for high volume termination of discrete wires.
- 10, 16, 20, 26, 30, 34, 40, 50 and 60 standard contact layouts.
- 3A rated current.
- Insulators constructed of UL94V-0 flame-retardant material.

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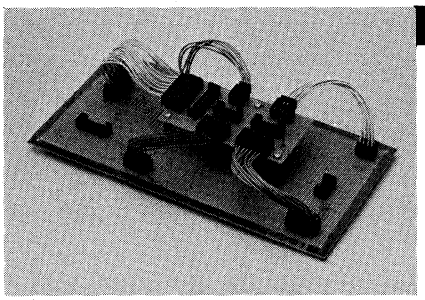
PCB CONNECTORS

Modular Interconnections & IDC Flat Ribbon Cable Connectors



LX Series

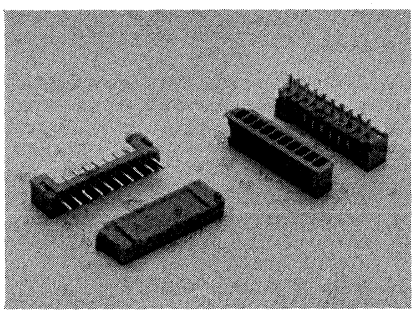
Similar to the PS Series and other .100″ pitch connectors, the LX Series offers high density packaging with its 2mm contact pitch.

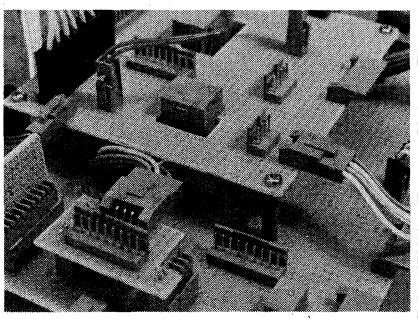
- High contact density (.079″, 2mm pitch).
- Dual wipe crimp contacts.
- Straight through hole and right angle through hole pin headers with tinned leads.
- 4 to 30 contact layouts (even numbers).
- 3A rated current.
- Accommodates 26 to 36AWG wire.

PS-LA Series

Low cost and compact, the PS-LA Series of low profile connectors are ideal for high density packaging in board-to-cable applications.

- Mated height is just .374-inches.
- Locking mechanism to resist high vibration levels and tensile forces.
- Dual wipe contact crimp contacts.
- Straight through hole and right angle through hole pin headers.
- 4 to 20 contact layouts.
- 3A rated current.
- Accommodates 24 to 28 AWG wire.





IL Series

These general purpose connectors are designed for indirect PCB interconnect applications in commercial/industrial and consumer electronics equipment. The IL Series includes the Original IL Series; the IL/G/J/M/P Series; and the IL-W Series.

- High contact density (2.00mm and 2.5mm pitch).
- Low cost.
- IDC, crimp and through hole types.
- Friction locking mechanism.
- 3A rated current.
- Accommodates 22 to 28AWG wire.

IL-S/T Series

The low cost IL-S/T Series of connectors feature compact spacing of 2.00mm for high contact density. Suitable for cable-to-board applications, with combinations of straight, right angle and bottom pin headers, and crimp sockets.

- 2.00mm contact spacing.
- Mated height is just .295-inches.
- Light locking mechanism.
- 2 to 15 contact layouts.
- 3A rated current.
- Accommodates 24 to 28AWG wire.

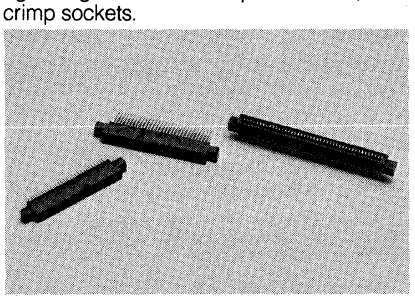
Edge Card Connectors



PB17 Series

The PB17 Series of insulation displacement edge card connectors are designed for use with flat ribbon cable with .050″ centers. These self-piercing connectors allow termination of the cable with one single action, and without the need to strip insulation.

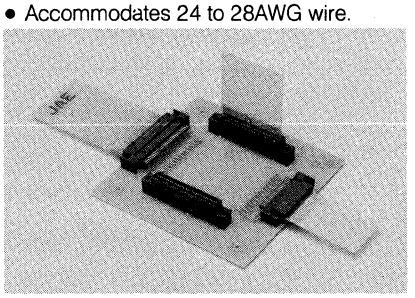
- Preloaded cantilever contacts with double (bifurcated) contact configuration and laminated springs to ensure stable electrical contact.
- Double readout contact arrangements spaced at .100″ centers, with or without panel mounting flange.
- Accommodates 24AWG ribbon cable.
- Applicable PCB thickness is .063″.



PB21 Series

These versatile, low cost edge card connectors are designed for direct PCB interconnections.

- Variety of contact layouts (.100″, .125″ and .156″ pitch).
- Low insertion/removal force.
- Through hole and wire wrapping terminations.
- Optional polarization key available.
- Pre-loaded cantilever contacts with double contact configuration.



PB22 Series

These high density, lightweight edge card connectors have contact spacing of just .050″ and are ideal for compact, high density packing applications.

- Straight through hole and right angle through hole types.
- Two rows of the right angle through hole solder tails are staggered, and the third row is a surface mount configuration.
- 40 and 60 contact layouts.
- 0.5A rated current.
- Applicable PCB thickness of .039″ and .063″.

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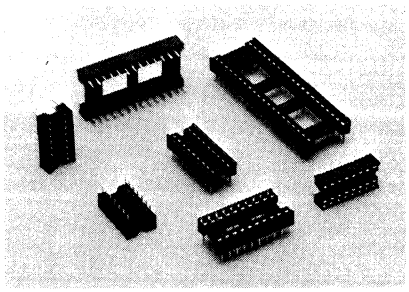
SOCKETS

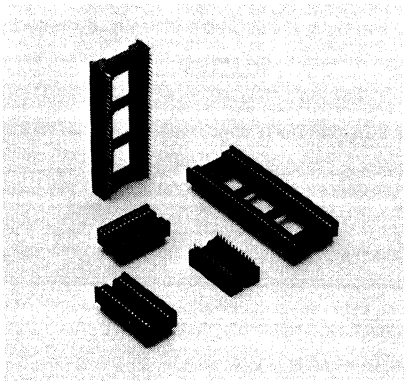
IC Sockets



DICF Series E

These low profile sockets have the bottom side of the insulator filled and sealed with a special synthetic resin to prevent any flux invasion from the bottom while soldering. In addition, the contact portion of the socket is protected from scattered flux invasion from the top with masking tape.

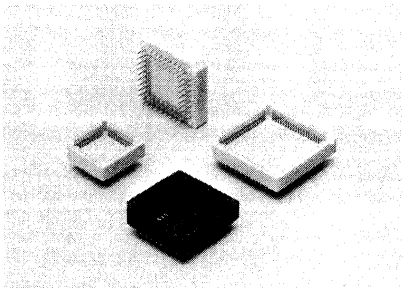
- Low profile design.
- .197″ (5.0mm) socket height.
- Dual wipe contacts.
- Gold or tin plated contacts.
- 8, 14, 16, 18, 22, 24, 28, 40 and 42 contact layouts (additional layouts available).
- 1A rated current.



DICS Series

The DICS Series of IC sockets is suitable for "shrink"-type DIP ICs with spacing of .070″ (1.78mm) spacing between adjacent contacts.

- Low profile.
- Highly reliable, with double contact configuration and excellent spring characteristics.
- UL approved insulator material.
- Anti-flux version also available.
- 24, 28, 30, 42 and 64 contact layouts.
- 1A rated current.

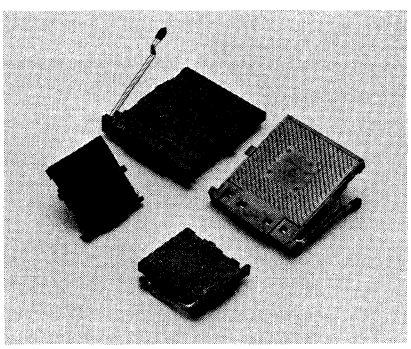


PLPS Series

The PLPS Series of chip carrier sockets accepts the JEDEC type A plastic leaded chip carriers with 44, 68 and 84 leads on .050″ (1.27mm) spacing.

- Solder posts on .100″ (2.54mm) square grid.
- Index for polarization.
- Excellent spring action of preloaded contacts.
- Standoffs and drain holes for easy PC board cleaning.
- Substrate removal tool available.

ZIF Sockets



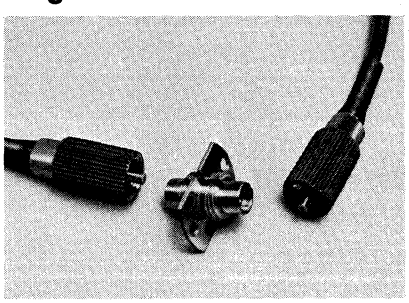
PCPS Series

The PCPS Series of Zero Insertion Force (ZIF) sockets is designed for use with high density (Pin Grid Array) LSI packages. Spacing of the pin grid array is .100″ (2.54mm). A single lever operation permits the insertion or withdrawal of the LSI.

- Highly reliable sockets with excellent spring characteristics.
- Compact configuration for high-speed signal transmission.
- Low profile. Socket height is .213″ (5.4mm).
- 68, 132 and 208 contact layouts.
- .018″ (.46mm) pin diameter.

FIBER OPTIC SYSTEM COMPONENTS

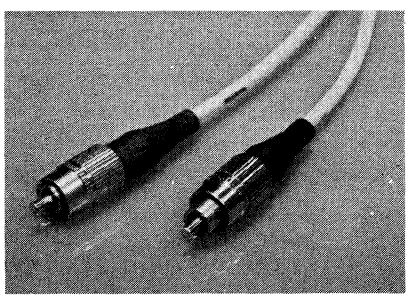
Single Mode & Multi-Mode Connectors



FOJD Series

Small-sized and lightweight, the FOJD Series is a high reliability, self-aligning fiber optic connector. They are most suitable for long-distance transmission, where single-mode fibers are used.

- .079″ (2mm) ferrule outside diameter.
- 125μm fiber diameter.
- 1dB maximum single mode connection loss. 0.7dB multi-mode connection loss.



FOFC Series

Highly reliable, the FOFC Series of fiber optic connectors are most suitable for multi-mode short or medium-distance transmission, and for single mode long-distance transmission.

- .098″ (2.5mm) ferrule outside diameter.
- 125μm fiber diameter.
- 1dB maximum single mode connection loss. 0.7dB multi-mode connection loss.

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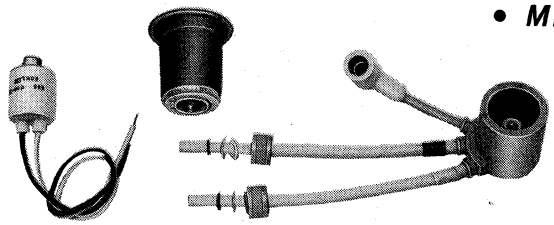
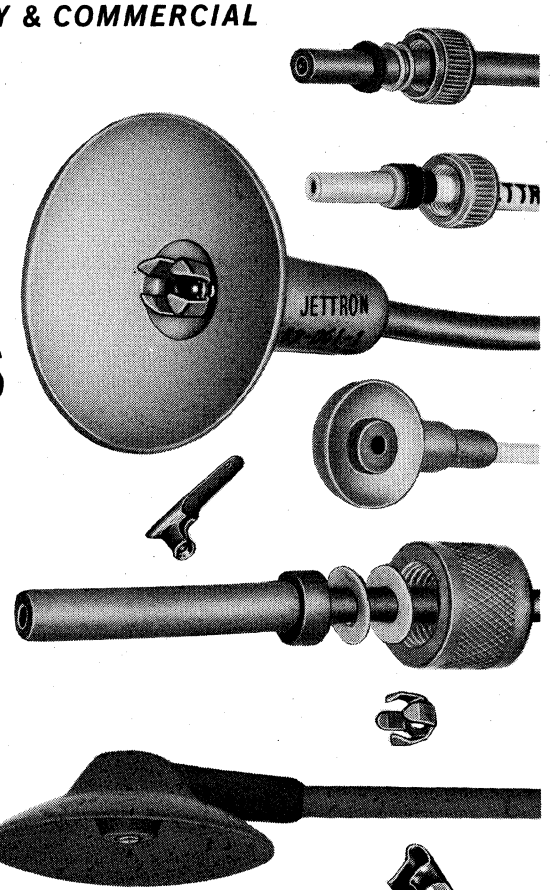
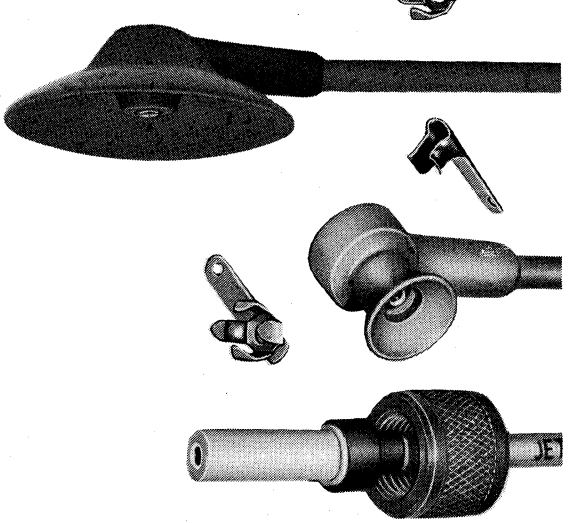


MAGNETRON CONNECTORS



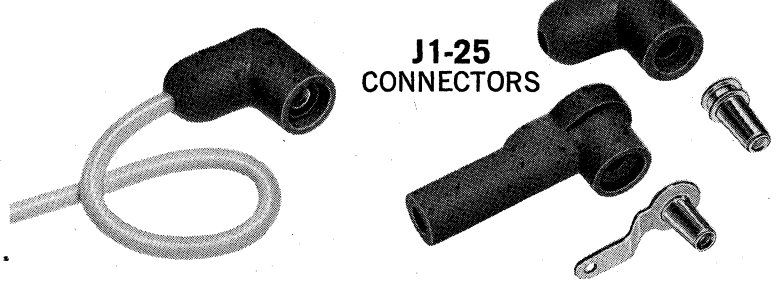
JETTRON'S

Extensive line of high voltage connections to 50KVDC including molded silicone CRT anode leads (leakproof & corona free), in-line connectors, splices, and CRT anode connector kits for customer assembly. Potting contacts of BeCu for the JEDEC J1-21, J1-22, J1-25, J1-30, and J1-32 anode terminals.





Custom Molding
IN SILICONE RUBBER



J1-25
CONNECTORS

Page 1 of 3

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MOLDED HV RECEPTACLES

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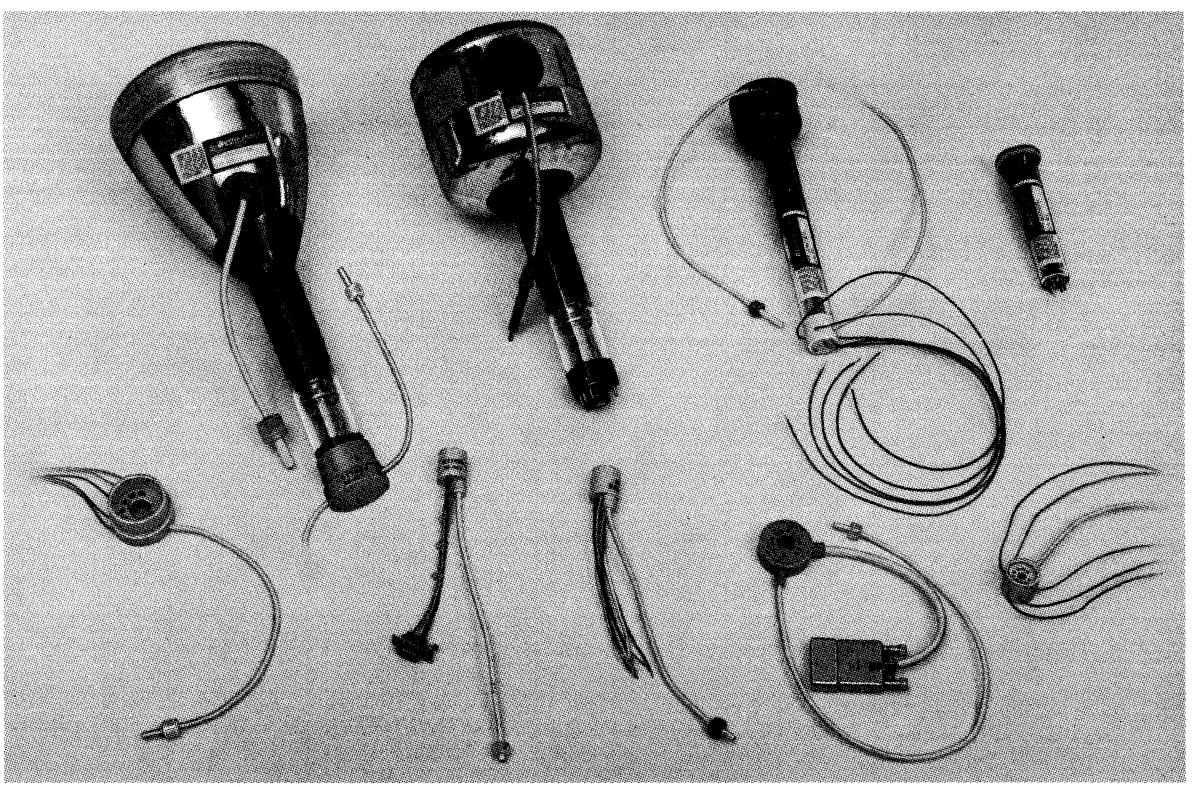
NOTE: HIGHER KV RECEPTACLES ARE MADE ON SPECIAL ORDER FOR TEST AND APPLICATION REQUIREMENTS

SILICONE CRT ANODE CONNECTORS

BONDED TO WIRE INSULATION OR KITS FOR EASY ASSEMBLY



New!

SILICONE CRT BASE CONNECTORS

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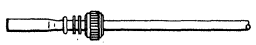
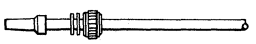
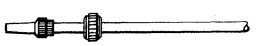
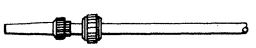
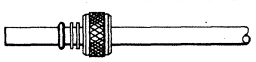
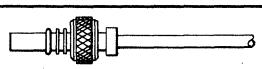
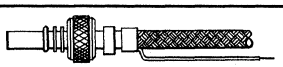
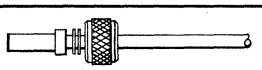
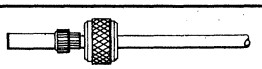
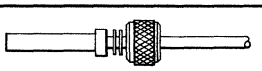
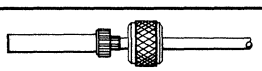
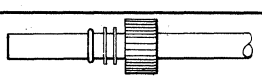
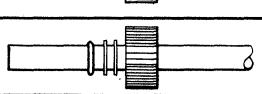
PARTIAL LISTING OF JETTRON LEAD ASSEMBLIES

TYPES

***O** = "O" Ring End* ***M** = Molded* ***MF** = Molded End With Positive-Seal Ferrule*

LEAD OUTLINES	CATALOG NO.	*KVDC	TYPE	BARREL DEPTH	NUT DIA.	† LGH REFERENCE	JETTRON MATING RECEPTACLE
	**56-073**	**10 & 15**	**O**	**—**	**.44**	**½ I**	81-030
	**56-069**	**10 & 15**	**O**	**—**	**.44**	**½ I**	81-030
	**56-094**	**10**	**M**	**.51**	**.44**	**½ I**	81-030
	**57-157**	**10**	**MF**	**.51**	**.44**	**½ I**	81-030
	**56-119**	**15**	**M**	**.88**	**.44**	**½ LI**	—
	**57-119**	**15**	**MF**	**.88**	**.44**	**½ LI**	—
	**56-102**	**20 & 25**	**O**	**—**	**.75**	**1 I**	81-040
	**56-065**	**20 & 25**	**O**	**—**	**.75**	**1 I**	81-040
	**56-079**	**20 & 25**	**O**	**—**	**.75**	**1 I**	81-040
	**56-064**	**20**	**M**	**.88**	**.75**	**1 I**	81-040
	**57-064**	**20**	**MF**	**.88**	**.75**	**1 I**	81-040
	**56-128**	**25**	**M**	**1.69**	**.75**	**1 LI**	81-043
	**57-128**	**25**	**MF**	**1.69**	**.75**	**1 LI**	81-043
	**56-075**	**30**	**O**	**—**	**.97**	**2 I**	81-026
	**56-141**	**50**	**O**	**—**	**1.25**	**4 I**	81-023

** Rated Values: Apply when lead properly engaged in receptacle*
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MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

JOHNSON

COAXIAL CONNECTORS
JCM-A (SMA), JCM-B (SMB), JCM-C (SMC)
COMMERCIAL TYPE

ELECTRICAL RATINGS

Impedance: 50 ohms
Frequency Range: JCM-A: 0-8 GHz; JCM-B: 0-4 GHz; JCM-C: 0-10 GHz
VSWR: JCM-A: See curve below
JCM-B: Straight connector, RG-188/U cable, 1.25 +.04F
Right angle connector, RG-188/U, 1.35 +.04F
JCM-C: Straight connector, RG-188/U, 1.20 +.04F
Right angle connector, RG-188/U, 1.30 +.04F
Working Voltage: 335 Vrms maximum at sea level, RG-58/U or RG-188/U cable
Dielectric Withstanding Voltage: 1000 Vrms minimum at sea level with RG-58/U or RG-188/U cable
Corona Level at 70,000 Feet: JCM-A: 250 volts minimum RG-58/U
JCM-B: 250 volts minimum RG-188/U
JCM-C: 250 volts minimum RG-188/U
Insulation Resistance: JCM-A: 5000 megohm minimum
JCM-B: 1000 megohm minimum
JCM-C: 1000 megohm minimum
RF Leakage at 2 to 3 GHz: JCM-A: −60dB minimum
JCM-B: −55dB minimum
JCM-C: −60dB minimum

Contact Resistance:

	Milliohms Max			
	JCM-A		JCM-B, JCM-C	
	Initial	After Environment	Initial	After Environment
Straight Connector (Gold Plated)				
Center Contact	3.0	4.0	6.0	8.0
Outer Contact	2.0	n/a	1.0	1.5
Braid to Body	0.5	n/a	1.0	n/a
RA Connector (Gold Plated)				
Center Contact	4.0	6.0	12.0	16.0
Outer Contact	2.0	n/a	1.0	1.5
Braid to Body	0.5	n/a	1.0	n/a

RF High Potential Withstanding Voltage at 5MHz:
JCM-A: 670 Vrms, RG-58/U cable
JCM-B, JCM-C: 700 Vrms, RG-188/U cable

MECHANICAL RATINGS

Engagement Design: MIL-C-39012, Series SMA, SMB, SMC
Engagement/Disengagement Force:
JCM-A: 2 pound-inch maximum
JCM-B: 2.0 pounds min. to 14.0 pounds max. axial force
JCM-C: 16 ounce-inch max. torque
Mating Torque: JCM-A: 3 to 4 pound-inch
JCM-C: 35 to 50 ounce-inch
Coupling Proof Torque: JCM-A: 6 pound-inch minimum
JCM-C: 100 ounce-inch minimum
Coupling Nut Retention: JCM-A: 40 pounds minimum
JCM-C: 35 pounds minimum

Contact Retention:
JCM-A: 6 pounds minimum axial force (captivated contacts)
JCM-B, JCM-C: 4 pounds minimum axial force (captivated contacts)
Cable Acceptability:
JCM-A: Group 1, Group 2, Group 3, Group 4, 0.086″ and 0.141″ Semi-Rigid
JCM-B, JCM-C: Group 1, Group 2, 0.086″ Semi-Rigid
Cable Retention:
JCM-A: Group 1-10 lbs.; Group 2-20 lbs.; Group 3-40 lbs.; Group 4-45 lbs.; .086″ S-R-30 lbs.; .141″ S-R-60 lbs.
JCM-B, JCM-C: Group 1-10 lbs. minimum; Group 2-20 lbs. minimum; .086″ S-R-60 lbs.
Durability: 500 cycles minimum

ENVIRONMENTAL RATINGS

Thermal Shock: MIL-STD-202, Method 107, Condition B
Corrosion: MIL-STD-202, Method 101, Condition B
Shock: MIL-STD-202, Method 213, Condition I (JCM-A), Condition B (JCM-B), Condition C (JCM-C)
Vibration: MIL-STD-202, Method 204, Condition D (JCM-A, JCM-C), Condition B (JCM-B)
Moisture Resistance: MIL-STD-202, Method 106

MATERIAL SPECIFICATIONS

Contacts: Male—Brass per QQ-B-626
Female—Beryllium copper per QQ-C-530
Insulators: TFE Fluorocarbon per L-P-403
Expansion Caps: Brass per QQ-B-613
Crimp Sleeve: Copper per WW-T-799
Finish: Center Contacts—Gold per MIL-G-45204; Bodies and Mounting Hardware—Gold per MIL-G-45204 or Nickel per QQ-N-290

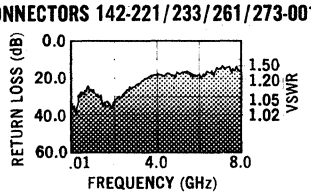
Group 1	Nominal
RG-178/U	0.079″ O.D.
RG-196/U	0.080″ O.D.

Group 2	Nominal
RG-161/U	0.100″ O.D.
RG-174/U	0.100″ O.D.
RG-179/U	0.100″ O.D.
RG-187/U	0.110″ O.D.
RG-188/U	0.110″ O.D.
RG-316/U	0.102″ O.D.

Group 3	Nominal
RG-58/U	0.195″ O.D.
RG-141/U	0.190″ O.D.
RG-303/U	0.195″ O.D.

Group 4	Nominal
RG-55/U	0.206″ O.D.
RG-142/U	0.206″ O.D.
RG-223/U	0.195″ O.D.
RG-400/U	0.216″ O.D.

TYP. RETURN LOSS AND VSWR FOR JCM CONNECTORS 142-221/233/261/273-001



SEMI-RIGID CABLE

	CABLE GROUP	CABLE TYPE	GOLD PLATED	NICKEL PLATED
STRAIGHT PLUG			* Uses cable for center contact	
JCM-A	.141″ (3.58mm)	RG-402	142-0281-001*	142-0281-006*
JCM-A	.086″ (2.18mm)	RG-405	142-0282-001	142-0282-006
JCM-B	.086″ (2.18mm)	RG-405	131-3693-001	131-3693-016
JCM-C	.086″ (2.18mm)	RG-405	131-6693-001	131-6693-006
STRAIGHT JACK				
JCM-A	.141″ (3.58mm)	RG-402	142-0283-001	142-0283-006
JCM-A	.086″ (2.18mm)	RG-405	142-0284-001	142-0284-006
JCM-B	.086″ (2.18mm)	RG-405	131-3593-001	131-3593-006
JCM-C	.086″ (2.18mm)	RG-405	131-6593-001	131-6593-006
STRAIGHT BULKHEAD JACK				
JCM-A	.141″ (3.58mm)	RG-402	142-0285-001	142-0285-006
JCM-A	.086″ (2.18mm)	RG-405	142-0285-501	142-0285-506
JCM-B	.086″ (2.18mm)	RG-405	131-3593-401	131-3593-406
JCM-C	.086″ (2.18mm)	RG-405	131-6593-401	131-6593-406
FLANGE MOUNT JACK				
JCM-A	.141″ (3.58mm)	RG-402	142-0286-001	142-0286-006
JCM-A	.086″ (2.18mm)	RG-405	142-0286-501	142-0286-506
RIGHT ANGLE PLUG				
JCM-B	.086″ (2.18mm)	RG-405	131-3693-101	131-3693-116
JCM-C	.086″ (2.18mm)	RG-405	131-6693-101	131-6693-106

	CABLE GROUP	CABLE TYPE	GOLD PLATED	NICKEL PLATED
RIGHT ANGLE PLUG—DIE CAST				
JCM-B	.086″ (2.18mm)	RG-405	131-1693-101	131-1693-116

FLEXIBLE CABLE

STRAIGHT CRIMP PLUG

JCM-A	Group 1	RG-178/U, 196	142-0301-001	142-0301-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0321-001	142-0321-006
JCM-A	Group 3	RG-58/U, 141	142-0361-001	142-0361-006
JCM-B	Group 1	RG-178/U, 196	131-3402-001	131-3402-016
JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-3403-001	131-3403-016
JCM-C	Group 1	RG-178/U, 196	131-6402-001	131-6402-006
JCM-C	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-6403-001	131-6403-006

STRAIGHT CRIMP PLUG—DIE CAST

JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-1403-001	131-1403-016

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JOHNSON

COAXIAL CONNECTORS
JCM-A(SMA), JCM-B(SMB), JCM-C(SMC)
COMMERCIAL TYPE

FLEXIBLE CABLE

	CABLE GROUP	CABLE TYPE	GOLD PLATED	NICKEL PLATED
RIGHT ANGLE CRIMP PLUG				
JCM-A	Group 1	RG-178/U, 196	142-0402-101	142-0402-106
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0403-101	142-0403-106
JCM-A	Group 3	RG-58/U, 141, 303	142-0407-101	142-0407-106
JCM-B	Group 1	RG-178/U, 196	131-3402-101	131-3402-116
JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-3403-101	131-3403-116
JCM-C	Group 1	RG-178/U, 196	131-6402-101	131-6402-106
JCM-C	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-6403-101	131-6403-106
RIGHT ANGLE CRIMP PLUG—DIE CAST				
JCM-B	Group 1	RG-178/U, 196	131-1402-101	131-1402-116
JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-1403-101	131-1403-116
STRAIGHT CRIMP JACK				
JCM-A	Group 1	RG-178/U, 196	142-0302-001	142-0302-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0303-001	142-0303-006
JCM-A	Group 3	RG-58/U, 141, 303	142-0307-001	142-0307-006
JCM-B	Group 1	RG-178/U, 196	131-3302-001	131-3302-006
JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-3303-001	131-3303-006
JCM-C	Group 1	RG-178/U, 196	131-6302-001	131-6302-006
JCM-C	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-6303-001	131-6303-006
STRAIGHT CRIMP BULKHEAD JACK				
JCM-A	Group 1	RG-178/U, 196	142-0311-001	142-0311-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0331-001	142-0331-006
JCM-A	Group 3	RG-58/U, 141, 303	142-0371-001	142-0371-006
JCM-B	Group 1	RG-178/U, 196	131-3302-401	131-3302-406
JCM-B	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-3303-401	131-3303-406

FLEXIBLE CABLE

	CABLE GROUP	CABLE TYPE	GOLD PLATED	NICKEL PLATED
STRAIGHT CRIMP BULKHEAD JACK				
JCM-C	Group 1	RG-178/U, 196	131-6302-401	131-6302-406
JCM-C	Group 2	RG-161/U, 174, 179, 187, 188, 316	131-6303-401	131-6303-406
STRAIGHT CLAMP PLUG				
JCM-A	Group 1	RG-178/U, 196	142-0201-001	142-0201-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0221-001	142-0221-006
JCM-A	Group 3	RG-58/U, 141	142-0261-001	142-0261-006
JCM-A	Group 4	RG-55/U, 142, 223, 400	142-0261-001	142-0261-006
RIGHT ANGLE CLAMP PLUG				
JCM-A	Group 1	RG-178/U, 196	142-0202-001	142-0202-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0222-001	142-0222-006
JCM-A	Group 3	RG-58/U, 141, 303	142-0262-001	142-0262-006
JCM-A	Group 4	RG-55/U, 142, 223, 400	142-0262-001	142-0262-006
STRAIGHT CLAMP JACK				
JCM-A	Group 1	RG-178/U, 196	142-0211-001	142-0211-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0231-001	142-0231-006
JCM-A	Group 3	RG-58/U, 141, 303	142-0271-001	142-0271-006
JCM-A	Group 4	RG-55/U, 142, 223, 400	142-0271-001	142-0271-006
STRAIGHT CLAMP BULKHEAD JACK				
JCM-A	Group 1	RG-178/U, 196	142-0213-001	142-0213-006
JCM-A	Group 2	RG-161/U, 174, 179, 187, 188, 316	142-0233-001	142-0233-006
JCM-A	Group 3	RG-58/U, 141, 303	142-0273-001	142-0273-006
JCM-A	Group 4	RG-55/U, 142, 223, 400	142-0273-001	142-0273-006

BULKHEAD/PANEL MOUNTS

	GOLD	NICKEL
REAR MOUNT BULKHEAD JACK RECEPTACLE		
JCM-A	142-0294-001	142-0294-006
JCM-B	131-3701-401	131-3701-406
JCM-C	131-6701-401	131-6701-406
2-HOLE FLANGE MOUNT JACK RECEPTACLE—		
JCM-A	142-0293-001	142-0293-006
4-HOLE FLANGE MOUNT PLUG RECEPTACLE		
JCM-A	142-0287-001	142-0287-006
2-HOLE FLANGE MOUNT JACK RECEPTACLE, FLUSH DIELECTRIC		
JCM-A	142-0701-621	142-0701-626
JCM-B	131-3701-621	131-3701-626
JCM-C	131-6701-621	131-6701-626
REAR MOUNT BULKHEAD JACK RECEPTACLE—DIE CAST		
JCM-B	131-1701-401	131-1701-406
2-HOLE MOUNT JACK RECEPTACLE		
JCM-A	142-0296-001	142-0296-006
4-HOLE FLANGE MOUNT JACK RECEPTACLE—FLUSH DIELECTRIC		
JCM-A	142-0701-631	142-0701-636
JCM-B	131-3701-631	131-3701-636
JCM-C	131-6701-631	131-6701-636
4-HOLE FLANGE MOUNT JACK RECEPTACLE		
JCM-A	142-0297-001	142-0297-006
FRONT MOUNT BULKHEAD JACK RECEPTACLE		
JCM-B	131-3701-411	131-3701-416
JCM-C	131-6701-411	131-6701-416
BULKHEAD RECESSED JACK RECEPTACLE		
JCM-B	131-3701-421	131-3701-426

PC MOUNTS
(All 0.200" centers unless noted)

	GOLD	NICKEL
STRAIGHT PLUG RECEPTACLE		
JCM-A	142-0801-201	142-0801-206
JCM-B	131-3801-201	131-3801-216
JCM-C	131-6801-201	131-6801-206
0.281" CENTERS STRAIGHT PLUG RECEPTACLE		
JCM-A	142-0300-001	142-0300-006
STRAIGHT JACK RECEPTACLE		
JCM-A	142-0701-201	142-0701-206
JCM-B	131-3701-201	131-3701-206
JCM-C	131-6701-201	131-6701-206
0.281" CENTERS STRAIGHT JACK RECEPTACLE		
JCM-A	142-0298-001	142-0298-006
RIGHT ANGLE PLUG RECEPTACLE		
JCM-A		
JCM-B	131-3801-301	131-3801-316
JCM-C	131-6801-301	131-6801-306
RIGHT ANGLE JACK RECEPTACLE		
JCM-A	142-0701-301	142-0701-306
JCM-B	131-3701-301	131-3701-306
JCM-C	131-6701-301	131-6701-306
RIGHT ANGLE JACK RECEPTACLE—DIE CAST		
JCM-B	131-1701-301	131-1701-306
RIGHT ANGLE BULKHEAD JACK RECEPTACLE		
JCM-B	131-3701-341	131-3701-346
JCM-C	131-6701-341	131-6701-346
RIGHT ANGLE PLUG RECEPTACLE—DIE CAST		
JCM-B	131-1801-301	131-1801-316

PC MOUNTS
(All 0.200" centers unless noted)

	GOLD	NICKEL
END LAUNCH JACK RECEPTACLE—.062" BOARD		
JCM-A	142-0701-801	142-0701-806
JCM-B	131-3701-801	131-3701-806
JCM-C	131-6701-801	131-6701-806
STRAIGHT JACK RECEPTACLE—DIE CAST		
JCM-B	131-1701-201	131-1701-206
JCM-B	131-1701-211	131-1701-216

ADAPTERS

IN-SERIES JACK-JACK		
JCM-A	142-0901-801	142-0901-806
JCM-B	131-3901-801	131-3901-806
JCM-C	131-6901-801	131-6901-806
IN-SERIES JACK-BULKHEAD JACK		
JCM-A	142-0901-401	142-0901-406
JCM-B	131-3901-401	131-3901-406
JCM-C	131-6901-401	131-6901-406
IN-SERIES PLUG-PLUG		
JCM-A	142-0901-811	142-0901-816
IN-SERIES PLUG-JACK		
JCM-A	142-0901-821	142-0901-826
IN-SERIES JACK-JACK-JACK		
JCM-A	142-0901-901	142-0901-906
JCM-B	131-3901-901	131-3901-906
JCM-C	131-6901-901	131-6901-906
IN-SERIES JACK-PLUG-JACK		
JCM-A	142-0901-911	142-0901-916
JCM-B	131-3901-911	131-3901-926
JCM-C	131-6901-911	131-6901-916
JUNCTION BLOCK-CABLE CRIMP-PLUG-CABLE CRIMP GROUP 2, TYPES—161/U, 174, 179, 187, 188, 316		
JCM-B	131-3003-901	131-3003-916
JCM-C	131-6003-901	131-6003-906

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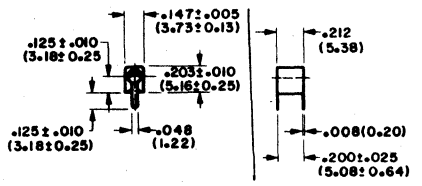
JOHNSON

TEST JACKS

HORIZONTAL TEST JACKS

For Standard Tip Plug: .080" (2mm) Diameter
RATINGS
Current: 5 amps
Breakdown Voltage: 3000 VDC minimum
Contact Resistance: Gold: 0.005 ohm maximum
Silver: 0.010 ohms maximum
Adjacent Jack C: 1 pF maximum at 1 MHz

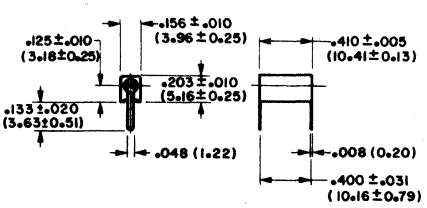
INSULATED MINIATURE



Silver Plating

PART NO.	COLOR	PART NO.	COLOR
105-1101-001	White	105-1107-001	Yellow
105-1102-001	Red	105-1108-001	Brown
105-1103-001	Black	105-1110-001	Blue
105-1104-001	Green	105-1112-001	Violet
105-1106-001	Orange	105-1113-001	Gray

INSULATED STANDARD



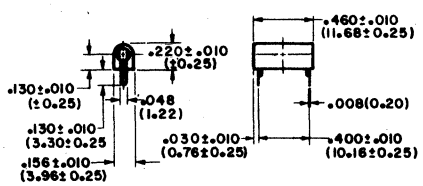
Gold Plating

PART NO.	COLOR	PART NO.	COLOR
105-0751-150	White	105-0754-150	Green
105-0752-150	Red	105-0757-150	Yellow
105-0753-150	Black	105-0760-150	Blue

Silver Plating

PART NO.	COLOR	PART NO.	COLOR
105-0751-001	White	105-0757-001	Yellow
105-0752-001	Red	105-0758-001	Brown
105-0753-001	Black	105-0760-001	Blue
105-0754-001	Green	105-0762-001	Violet
105-0756-001	Orange	105-0763-001	Gray

INSULATED RUGGEDIZED



Gold Plating

PART NO.	COLOR	PART NO.	COLOR
105-2201-105	White	105-2207-105	Yellow
105-2202-105	Red	105-2208-105	Brown
105-2203-105	Black	105-2210-105	Blue
105-2204-105	Green	105-2212-105	Violet
105-2206-105	Orange	105-2213-105	Gray

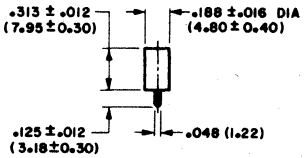
Silver Plating

PART NO.	COLOR	PART NO.	COLOR
105-2201-101	White	105-2207-101	Yellow
105-2202-101	Red	105-2208-101	Brown
105-2203-101	Black	105-2210-101	Blue
105-2204-101	Green	105-2212-101	Violet
105-2206-101	Orange	105-2213-101	Gray

VERTICAL TEST JACKS

For Standard Tip Plug: .080" (2mm) Diameter
RATINGS
Current: 5 amps
Breakdown Voltage: 5000 VDC minimum
Contact Resistance: Gold: 0.005 ohms maximum
Silver: 0.010 ohms maximum
Adjacent Jack C: 1 pF maximum at 1 MHz

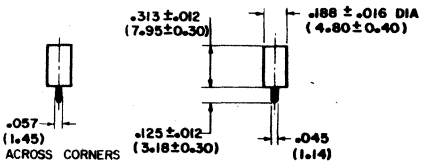
INSULATED: MACHINED CONTACT



Silver Plating

PART NO.	COLOR	PART NO.	COLOR
105-0851-001	White	105-0857-001	Yellow
105-0852-001	Red	105-0858-001	Brown
105-0853-001	Black	105-0860-001	Blue
105-0854-001	Green	105-0862-001	Violet
105-0856-001	Orange	105-0863-001	Gray

INSULATED: FORMED CONTACT



Gold Plating

PART NO.	COLOR	PART NO.	COLOR
105-2201-205	White	105-2204-205	Green
105-2202-205	Red	105-2207-205	Yellow
105-2203-205	Black	105-2210-205	Blue

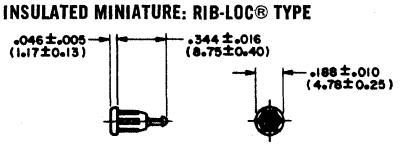
Silver Plating

PART NO.	COLOR	PART NO.	COLOR
105-2201-201	White	105-2207-201	Yellow
105-2202-201	Red	105-2208-201	Brown
105-2203-201	Black	105-2210-201	Blue
105-2204-201	Green	105-2212-201	Violet
105-2206-201	Orange	105-2213-201	Gray

TIP JACKS

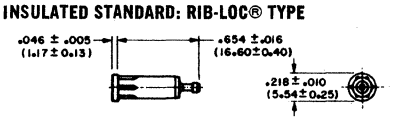
For Miniature Tip Plug: .040" (1mm) Diameter
RATINGS
Current: 5 amps
Breakdown Voltage: 5000 VDC
Contact Resistance: 0.005 ohms maximum
Contact-To-Panel C: 1 pF nominal

INSULATED MINIATURE: RIB-LOC® TYPE



PART NO.	COLOR
264-0002-001	Red
264-0003-001	Black

INSULATED STANDARD: RIB-LOC® TYPE

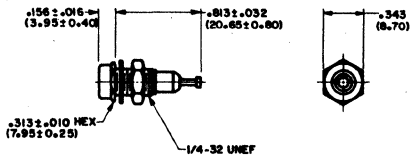


PART NO.	COLOR	PART NO.	COLOR
105-1041-001	White	105-1047-001	Yellow
105-1042-001	Red	105-1048-001	Brown
105-1043-001	Black	105-1050-001	Blue
105-1044-001	Green	105-1052-001	Violet
105-1046-001	Orange	105-1053-001	Gray

TIP JACKS

For Standard Tip Plug: .080" (2mm) Diameter
RATINGS
Current: 10 amps
Breakdown Voltage: 8000 VDC
Contact Resistance: 0.010 ohms maximum
Contact-To-Panel C: 2 pF nominal

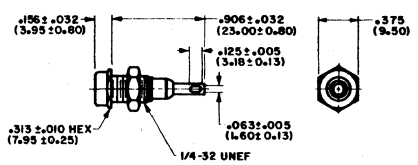
INSULATED METAL CLAD: MILITARY TYPE



EFJ PART NO. TO MIL-SPEC. PART NO. CROSS REFERENCE

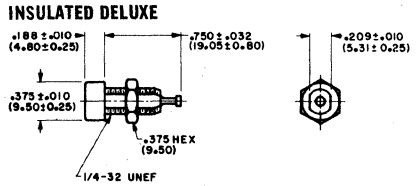
PART NO.	COLOR	MIL-C-39024/10	COLOR
105-0201-200	White	-01	-1A
105-0202-200	Red	-02	-2A
105-0203-200	Black	-03	-3A
105-0208-200	Brown	-04	-4A
105-0204-200	Green	-05	-5A
105-0206-200	Orange	-06	-6A
105-0210-200	Blue	-07	-7A
105-0207-200	Yellow	-08	-8A
105-0213-200	Gray	-09	-9A
105-0212-200	Violet	-10	-10A

INSULATED METAL CLAD: STANDARD TYPE



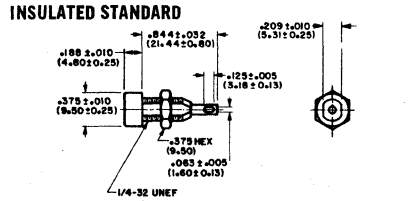
PART NO.	COLOR	PART NO.	COLOR
105-0251-001	White	105-0257-001	Yellow
105-0252-001	Red	105-0258-001	Brown
105-0253-001	Black	105-0260-001	Blue
105-0254-001	Green	105-0262-001	Violet
105-0256-001	Orange	105-0263-001	Gray

INSULATED DELUXE



PART NO.	COLOR	PART NO.	COLOR
105-0601-001	White	105-0607-001	Yellow
105-0602-001	Red	105-0608-001	Brown
105-0603-001	Black	105-0610-001	Blue
105-0604-001	Green	105-0612-001	Violet
105-0606-001	Orange	105-0613-001	Gray

INSULATED STANDARD



PART NO.	COLOR	PART NO.	COLOR
105-0801-001	White	105-0807-001	Yellow
105-0802-001	Red	105-0808-001	Brown
105-0803-001	Black	105-0810-001	Blue
105-0804-001	Green	105-0812-001	Violet
105-0806-001	Orange	105-0813-001	Gray

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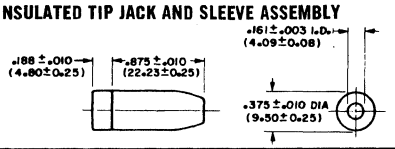
JOHNSON

BANANA PLUGS & JACKS
TIP JACKS & PLUGS

TIP JACKS

INSULATED TIP JACK AND SLEEVE ASSEMBLY

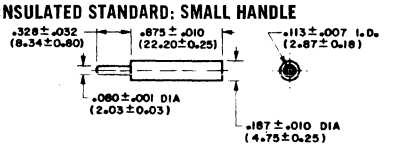


PART NO.	COLOR	PART NO.	COLOR
105-0701-001	White	105-0704-001	Green
105-0702-001	Red	105-0707-001	Yellow
105-0703-001	Black	105-0710-001	Blue

TIP PLUGS

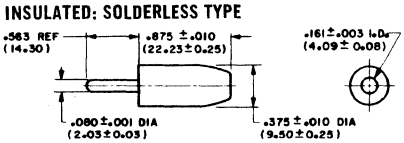
For Standard Tip Jack: .080″ (2mm) Diameter
RATINGS
Current: 10 amps
Breakdown Voltage: 5000 VDC
Contact Resistance: 0.010 ohms maximum

INSULATED STANDARD: SMALL HANDLE



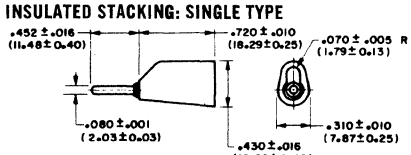
PART NO.	COLOR	PART NO.	COLOR
105-0771-001	White	105-0774-001	Green
105-0772-001	Red	105-0777-001	Yellow
105-0773-001	Black	105-0780-001	Blue

INSULATED: SOLDERLESS TYPE



PART NO.	COLOR	PART NO.	COLOR
105-0301-001	White	105-0307-001	Yellow
105-0302-001	Red	105-0308-001	Brown
105-0303-001	Black	105-0310-001	Blue
105-0304-001	Green	105-0312-001	Violet
105-0306-001	Orange	105-0313-001	Gray

INSULATED STACKING: SINGLE TYPE

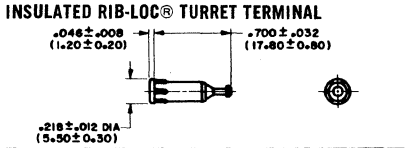


PART NO.	COLOR	PART NO.	COLOR
105-1201-001	White	105-1204-001	Green
105-1202-001	Red	105-1207-001	Yellow
105-1203-001	Black	105-1210-001	Blue

MINIATURE BANANA JACKS AND PLUGS

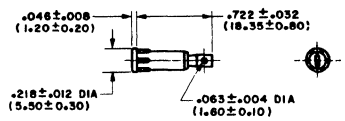
For Miniature Banana Plug: .120″ (3mm) Across Flats
RATINGS
Current: 10 amps
Breakdown Voltage: 5000 VDC
Contact Resistance: 0.010 ohms maximum
Contact-To-Panel C: 2.4 pF nominal

INSULATED RIB-LOC® TURRET TERMINAL



PART NO.	COLOR	PART NO.	COLOR
108-1101-001	White	108-1104-001	Green
108-1102-001	Red	108-1107-001	Yellow
108-1103-001	Black	108-1110-001	Blue

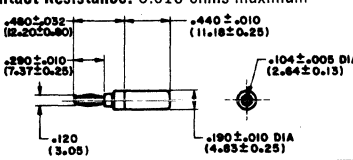
INSULATED RIB-LOC® SOLDER TERMINAL



PART NO.	COLOR	PART NO.	COLOR
108-2101-801	White	108-2104-801	Green
108-2102-801	Red	108-2107-801	Yellow
108-2103-801	Black	108-2110-801	Blue

INSULATED SOLDER TYPE

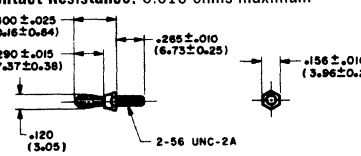
For Miniature .104″ (2.64mm) Dia. Banana Jack: .120″ (3mm) Across Flats
RATINGS
Current: 10 amps
Breakdown Voltage: 5000 VDC
Contact Resistance: 0.010 ohms maximum



PART NO.	COLOR	PART NO.	COLOR
108-1001-001	White	108-1004-001	Green
108-1002-001	Red	108-1007-001	Yellow
108-1003-001	Black	108-1010-001	Blue

UNINSULATED THREADED STUD

For Miniature .104″ (2.64mm) Dia. Banana Jack: .120″ (3mm) Across Flats
RATINGS
Current: 10 amps
Contact Resistance: 0.010 ohms maximum

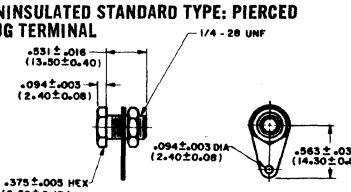


PART NO.
108-1000-106

BANANA JACKS

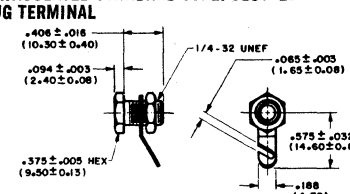
For Standard Banana Plug: .175″ (4.44mm) Across Flats
RATINGS
Current: 15 amps
Contact Resistance: 0.010 ohms maximum

UNINSULATED STANDARD TYPE: PIERCED LUG TERMINAL



PART NO.
108-0740-001

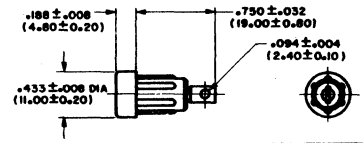
UNINSULATED STANDARD TYPE: SLOTTED LUG TERMINAL



PART NO.
108-0740-102

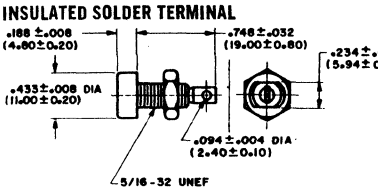
INSULATED RIB-LOCK® SOLDER TERMINALS

RATINGS
Current: 15 amps
Breakdown Voltage: 10,000 VDC
Contact Resistance: 0.010 ohms maximum
Contact-To-Panel C: 2.4 pF nominal



PART NO.	COLOR	PART NO.	COLOR
108-2301-801	White	108-2304-801	Green
108-2302-801	Red	108-2307-801	Yellow
108-2303-801	Black	108-2310-801	Blue

INSULATED SOLDER TERMINAL

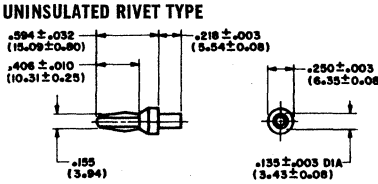


PART NO.	COLOR	PART NO.	COLOR
108-0901-001	White	108-0907-001	Green
108-0902-001	Red	108-0908-001	Yellow
108-0903-001	Black	108-0910-001	Blue
108-0904-001	Green	108-0912-001	Violet
108-0906-001	Orange	108-0913-001	Gray

BANANA PLUGS

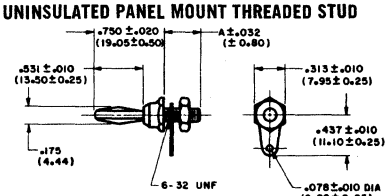
For Standard Banana Jack: .175″ (4.44mm) Across Flats
RATINGS
Current: 15 amps
Breakdown Voltage: 5000 VDC
Contact Resistance: 0.010 ohms maximum

UNINSULATED RIVET TYPE



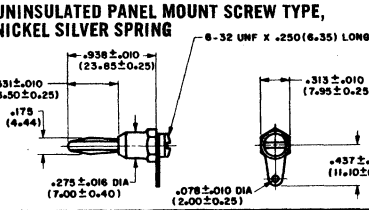
PART NO.
108-0754-001

UNINSULATED PANEL MOUNT THREADED STUD



PART NO.	STUD LENGTH "A"
108-0750-001	.375″(9.50mm)
108-0750-002	.750″(19.05mm)

UNINSULATED PANEL MOUNT SCREW TYPE, NICKEL SILVER SPRING



PART NO.
108-0753-001

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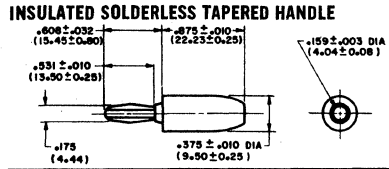
JOHNSON

BANANA PLUGS BINDING POSTS

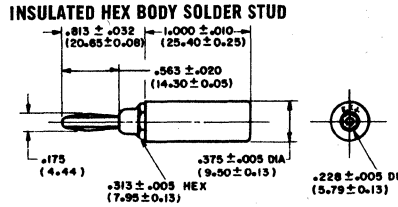
BANANA PLUGS

INSULATED SOLDERLESS TAPERED HANDLE



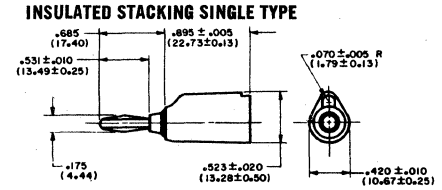
PART NO.	COLOR	PART NO.	COLOR
108-0301-001	White	108-0307-001	Yellow
108-0302-001	Red	108-0308-001	Brown
108-0303-001	Black	108-0310-001	Blue
108-0304-001	Green	108-0312-001	Violet
108-0306-001	Orange	108-0313-001	Gray

INSULATED HEX BODY SOLDER STUD



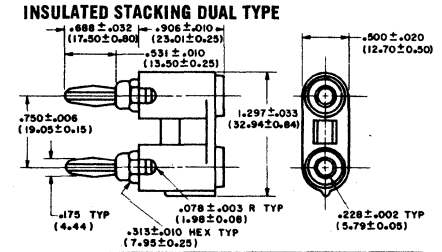
PART NO.	COLOR	PART NO.	COLOR
108-1761-101	White	108-1764-101	Green
108-1762-101	Red	108-1767-101	Yellow
108-1763-101	Black	108-1770-101	Blue

INSULATED STACKING SINGLE TYPE



PART NO.	COLOR	PART NO.	COLOR
108-1081-001	White	108-1084-001	Green
108-1082-001	Red	108-1087-001	Yellow
108-1083-001	Black	108-1090-001	Blue

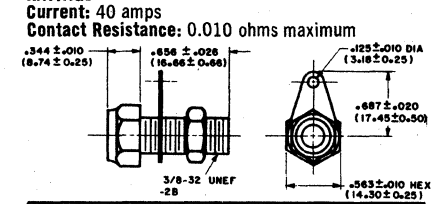
INSULATED STACKING DUAL TYPE



SOLDERLESS WIRE WRAP
(Accepts wire sizes up to 16 gauge)

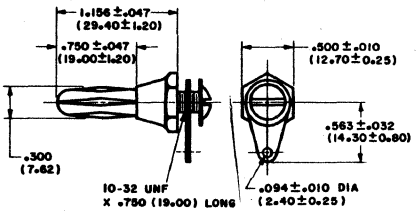
PART NO.	COLOR
108-0202-001	Red
108-0203-001	Black

UNINSULATED HEAVY DUTY
For Jumbo Size Banana Plug: .300″ (7.62mm) Across Flats
RATINGS
Current: 40 amps
Contact Resistance: 0.010 ohms maximum



PART NO.
108-0760-001

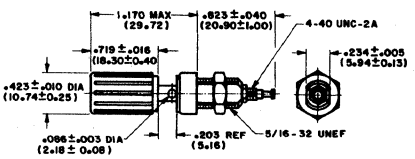
UNINSULATED PANEL MOUNT SCREW TYPE, PIERCED LUG TERMINAL
For Jumbo Size Banana Jack: .300″ (7.62mm) Across Flats
RATINGS
Current: 40 amps
Contact Resistance: 0.010 ohms maximum



PART NO.
108-0771-001

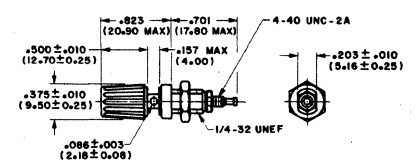
BINDING POSTS

INSULATED STANDARD
For Standard Banana Plug: .175″ (4.44mm) Across Flats
RATINGS
Current: 15 amps
Breakdown Voltage: 8000 VDC
Stud-To-Panel C: 3.3 pF nominal



PART NO.	COLOR	PART NO.	COLOR
111-0101-001	White	111-0107-001	Yellow
111-0102-001	Red	111-0108-001	Brown
111-0103-001	Black	111-0110-001	Blue
111-0104-001	Green	111-0112-001	Violet
111-0106-001	Orange	111-0113-001	Gray

INSULATED MINIATURE
For Standard Tip Plug: .080″ (2mm) Diameter and **Miniature Banana Plug:** .120″ (3mm) Across Flats
RATINGS
Current: 5 amps
Breakdown Voltage: 5000 VDC
Stud-To-Panel C: 2.0 pF nominal
Contact Resistance: 0.010 ohms maximum



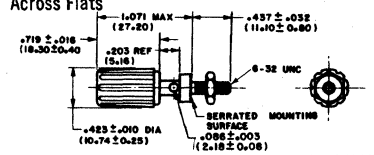
ACCOMMODATES .080″ (2mm) DIAMETER TIP PLUG

PART NO.	COLOR	PART NO.	COLOR
111-0201-001	White	111-0204-001	Green
111-0202-001	Red	111-0207-001	Yellow
111-0203-001	Black	111-0210-001	Blue

ACCOMMODATES .120″ (3mm) ACROSS FLATS MINIATURE BANANA PLUG

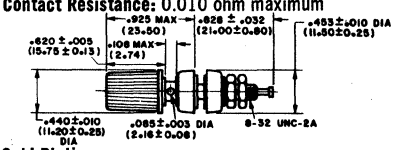
PART NO.	COLOR	PART NO.	COLOR
111-0401-101	White	111-0404-101	Green
111-0402-101	Red	111-0407-101	Yellow
111-0403-101	Black	111-0410-101	Blue

INSULATED STANDARD WITH THUMB NUT GROUNDED TYPE
For Standard Banana Plug: .175″ (4.44mm) Across Flats



PART NO.	COLOR	PART NO.	COLOR
111-0701-001	White	111-0704-001	Green
111-0702-001	Red	111-0707-001	Yellow
111-0703-001	Black	111-0710-001	Blue

INSULATED STANDARD UL TYPE, W/KEYED INSULATOR
For Standard Banana Plug: .175″ (4.44mm) Across Flats
RATINGS
Current: 15 amps
Minimum Withstanding Voltage: 1000 VAC RMS
Stud-To-Panel C: 3.0 pF nominal
Contact Resistance: 0.010 ohm maximum



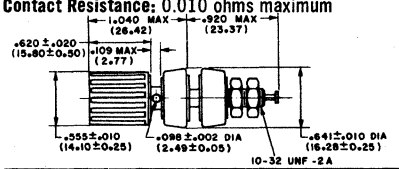
Gold Plating

PART NO.	COLOR	PART NO.	COLOR
111-0741-002	White	111-0744-002	Green
111-0742-002	Red	111-0747-002	Yellow
111-0743-002	Black	111-0750-002	Blue

Bright Tin Plating

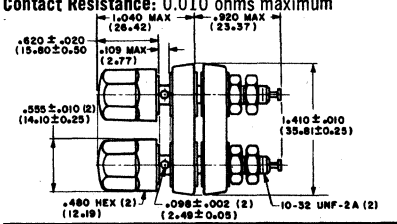
PART NO.	COLOR	PART NO.	COLOR
111-0741-003	White	111-0744-003	Green
111-0742-003	Red	111-0747-003	Yellow
111-0743-003	Black	111-0750-003	Blue

INSULATED 30 AMP W/KEYED INSULATOR
For Standard Banana Plug: .175″ (4.44mm) Across Flats
RATINGS
Current: 30 amps
Minimum Withstanding Voltage: 1000 VAC RMS
Stud-To-Panel C: 5.0 pF nominal
Contact Resistance: 0.010 ohms maximum



PART NO.	COLOR	PART NO.	COLOR
111-0941-002	White	111-0944-002	Green
111-0942-002	Red	111-0947-002	Yellow
111-0943-002	Black	111-0950-002	Blue

INSULATED 30 AMP DUAL UL HEX TYPE, W/KEYED INSULATOR
For Standard Banana Plug: .175″ (4.44mm) Across Flats
RATINGS
Current: 30 amps
Minimum Withstanding Voltage: 1000 VAC RMS
Stud-To-Panel C: 5.0 pF nominal
Contact Resistance: 0.010 ohms maximum



PART NO.	COLOR
111-0992-002	Red-Black

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OUTSTATE CALL TOLL FREE: 1-800-247-8256 IN MINN. CALL: 1-507-835-6222 TLX: 290470 FAX: 1-507-835-8356

JOHNSON

PATCH CORDS

MINI-HOOK TO MINI-HOOK



Minihook with gold-plated beryllium copper contact molded to stranded, extra-flexible, 20 AWG. PVC insulated wire.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
8	417-9902-008	417-9903-008
12	417-9902-012	417-9903-012
18	417-9902-018	417-9903-018
24	417-9902-024	417-9903-024
36	417-9902-036	417-9903-036

MINI-HOOK TO STD. STACKING BANANA PLUG



Mini-hook molded to 20 AWG. PVC insulated wire. Multi-stacking, standard banana plug molded of Polypropylene.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
12	417-8902-012	417-8903-012
18	417-8902-018	417-8903-018
24	417-8902-024	417-8903-024
36	417-8902-036	417-8903-036
48	417-8902-048	417-8903-048
60	417-8902-060	417-8903-060

MINI-HOOK TO MINIATURE STACKING BANANA PLUG



Minihook molded to 20 AWG. PVC insulated wire. Miniature stacking banana plug molded of Polypropylene.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
8	417-4902-008	417-4903-008
12	417-4902-012	417-4903-012
18	417-4902-018	417-4903-018
24	417-4902-024	417-4903-024
36	417-4902-036	417-4903-036

MINI-HOOK TO CLIPPED WIRE



Minihook molded to 20 AWG. PVC insulated wire. Unterminated end for custom connections.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
24	417-0902-024	417-0903-024
36	417-0902-036	417-0903-036

STD. STACKING BANANA PLUG TO STD. STACKING BANANA PLUG



Multi-stacking, standard banana plug with cross hole molded of Polypropylene to extra-flexible. 18 AWG. PVC insulated wire.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
4	417-8802-004	417-8803-004
8	417-8802-008	417-8803-008
12	417-8802-012	417-8803-012
18	417-8802-018	417-8803-018
24	417-8802-024	417-8803-024
36	417-8802-036	417-8803-036

INSULATED ALLIGATOR CLIP AT EACH END



Nickel-plated steel clips with red or black matching insulator boots and soldered connection to 18 AWG, extra-flexible. PVC insulated wire.

LENGTH INS.	E.F. JOHNSON NO.	
	RED	BLACK
12	417-1102-012	417-1103-012
24	417-1102-024	417-1103-024
36	417-1102-036	417-1103-036

STRAIN-RELIEVED BNC MALE TO STRAIN-RELIEVED BNC MALE (50 OHM CABLE)



BNC male connectors crimped to RG-58 C U cable. Molded strain relief covers connectors for long service life.

LENGTH (INS.)	E.F. JOHNSON NO.
	BLACK
12	417-7223-012
24	417-7223-024
36	417-7223-036
48	417-7223-048
60	417-7223-060

STRAIN-RELIEVED BNC MALE TO STRAIN RELIEVED BNC MALE (75-OHM CABLE—TWISTED PAIR)



BNC male connectors crimped to RG-59 B U cable. Molded strain relief covers connectors for long service life.

LENGTH (INS.)	E.F. JOHNSON NO.
	BLACK
12	417-7224-012
24	417-7224-024
36	417-7224-036
48	417-7224-048
60	417-7224-060

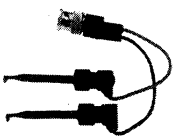
BNC MALE TO MINI-HOOKS (FIELD REPAIRABLE)



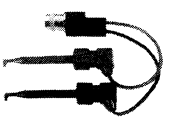
Clamp-type BNC connectors make repairs easy. Hooks feature insert molded parts with reliable stainless steel spring for quick, secure connections. Wire is RG-58 C U cable and 20 AWG ("Y" termination).

LENGTH (INS.)	E.F. JOHNSON NO.
	RED-BLACK
18	417-7921-018
24	417-7921-024
36	417-7921-036
48	417-7921-048
60	417-7921-060

BNC MALE TO MINI-HOOKS MOLDED BREAKOUTS



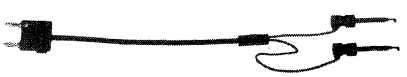
BNC FEMALE TO MINI-HOOKS MOLDED BREAKOUTS



Nickel-plated BNC male and female connectors molded into breakout. Hooks feature insert molded parts with reliable stainless steel spring for quick, secure connections. Wire is 20 AWG.

LENGTH (INS.)	E.F. JOHNSON NO.
	RED-BLACK
—	417-7920-001
—	417-7930-001

DUAL STACKING BANANA PLUG TO MINI-HOOKS



Dual stacking banana plug features marked ground connection, side stacking and multiple parallel stacking connection capability. Wire is RG-58 C U cable and 20 AWG ("Y" termination).

LENGTH (INS.)	E.F. JOHNSON NO.
	RED-BLACK
18	417-7981-018
24	417-7981-024
36	417-7981-036
48	417-7981-048
60	417-7981-060

TEST PRODS

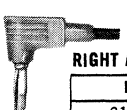


BANANA PLUG



STANDARD BANANA PLUG

PART NO.	COLOR
217-8102-001	Red
217-8103-001	Black



RIGHT ANGLE STANDARD BANANA PLUG

PART NO.	COLOR
217-8302-001	Red
217-8303-001	Black



SHROUDED STANDARD BANANA PLUG*

PART NO.	COLOR
217-8202-001	Red
217-8203-001	Black



RIGHT ANGLE SHROUDED STANDARD BANANA PLUG*

PART NO.	COLOR
217-8402-001	Red
217-8403-001	Black

TIP PLUG



STANDARD TIP PLUG

PART NO.	COLOR
217-5102-001	Red
217-5103-001	Black

*Cutaway view shown.



RIGHT ANGLE STANDARD TIP PLUG

PART NO.	COLOR
217-5302-001	Red
217-5303-001	Black

BANANA JACK



SHROUDED STANDARD BANANA JACK*

PART NO.	COLOR
217-6202-001	Red
217-6203-001	Black



RIGHT ANGLE SHROUDED STANDARD BANANA JACK*

PART NO.	COLOR
217-6402-001	Red
217-6403-001	Black

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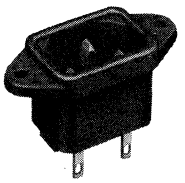
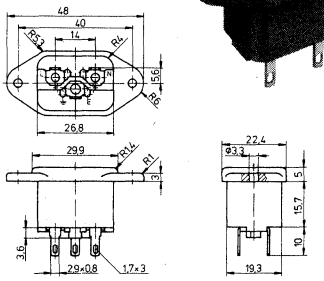
CONNECTORS

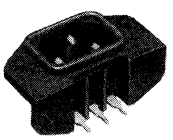
P.O. BOX 867/675 TOWER ROAD/MUNDELEIN, IL 60060
TE: 312/949-8505/TELEX: 6871289/KBMUN UW

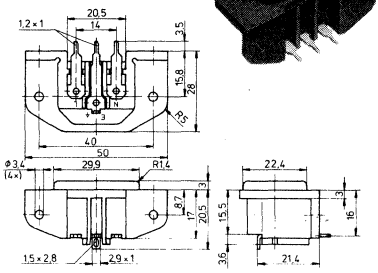
STF 73
6 A 250 V—
10 A 250 Vac*



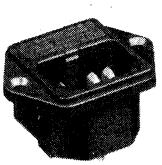


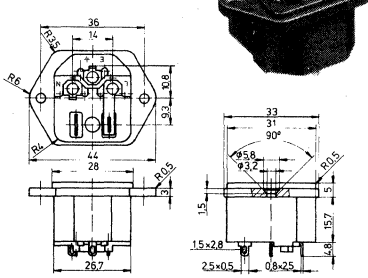
STF 309
10 A 250 Vac



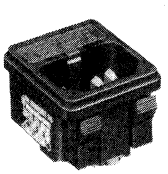


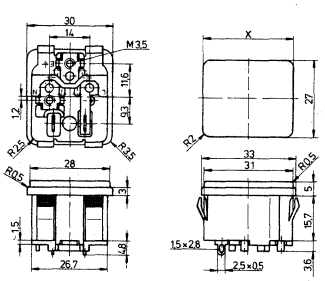
SST 11
10 A 250 Vac



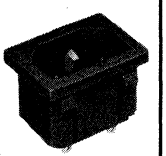


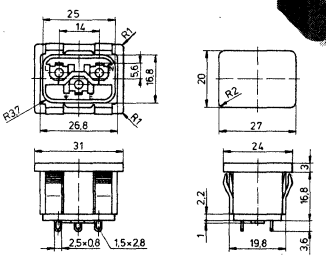
SST 21/SST 23
SST 25/SST 26
10 A 250 Vac



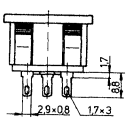


STS 320/STS 330
STS 340/STS 350
10 A 250 Vac

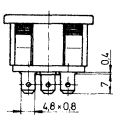




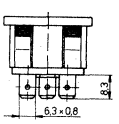
15 A 125 Vac
10 A 250 Vac



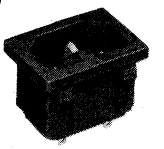
15 A 125 Vac
10 A 250 Vac

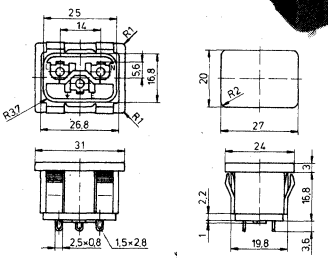


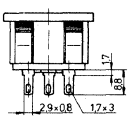
15 A 125Vac
10 A 250 Vac

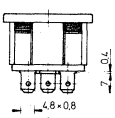


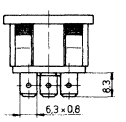
STS 520/STS 530
STS 540/STS 550
10 A 250 Vac



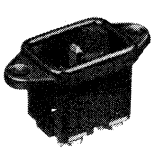


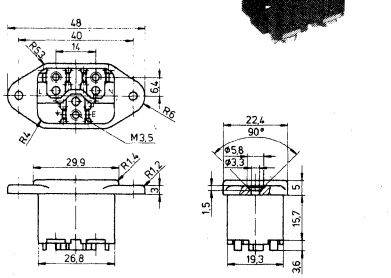


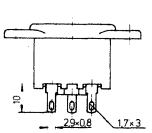


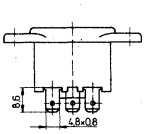


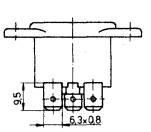
STF 90/STF 91
STF 95/STF 96
10 A 250 Vac



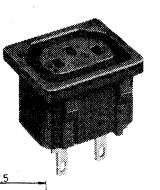


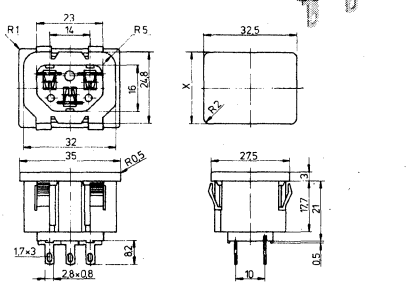


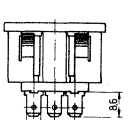


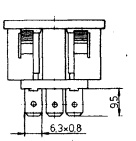


SFS 330/SFS 340
SFS 350
10 A 250 Vac









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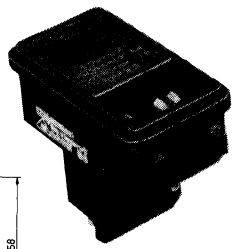
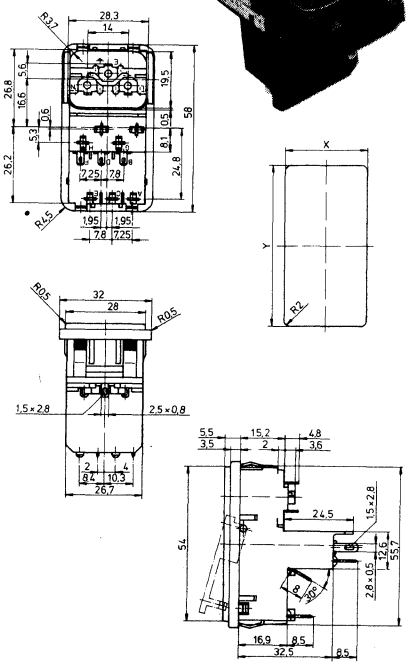
CONNECTORS

P.O. BOX 867/675 TOWER ROAD/MUNDELEIN, IL 60060
TE: 312/949-8505/TELEX: 6871289/KBMUN UW

SW 1/SW 2

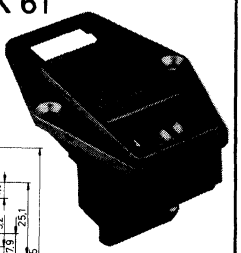
6 A 250 V—
10 A 250 Vac*





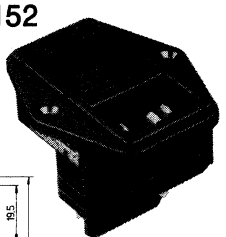
SWK 41/SWK 61

6 A 250 V—
10 A 250 Vac*



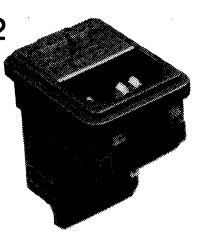
SW 151/SW 152

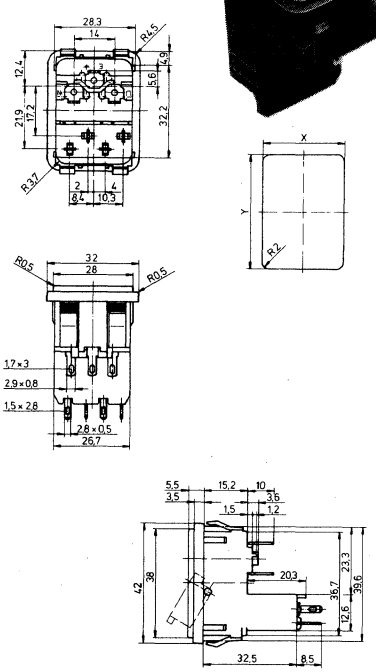
6 A 250 V—
10 A 250 Vac*



SST 41/SST 42

6 A 250V—
10 A 250 Vac*



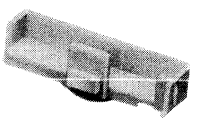


GENERAL CONNECTOR STANDARDS

max. pin temperature	65°C
suitable for appliance class	I
insulating resistance	10 MΩ
Testing voltage to accessible surfaces	2000 Vac
Material flammability classified	UL 94-V2 (VO)

FUSE HOLDERS

SW, SWK, SST4
682350
light grey
USA-fuse measurement
6.3 x 32 mm



SW, SWK SST4
682351
black
European fuse measurement
5 x 20 mm



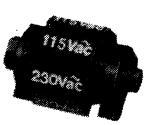
SELECTION WHEELS

FOR VOLTAGE SELECTOR OF THE TYPES SW, SWK

100 Vac, 120 Vac 220 Vac, 240 Vac
682352
black white



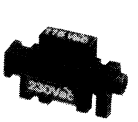
115 Vac, 115 Vac, 230 Vac, 230 Vac
682354
black white



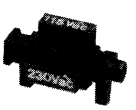
110 Vac, 220 Vac, 240 Vac
682353
black white



115 Vac, 230 Vac
682594
black white



115 Vac, 230 Vac
683418
black white



Kulka®

World's Leading Supplier Of Terminal Blocks

Kulka offers the widest variety of terminal blocks in the industry, all manufactured to unsurpassed quality standards. Our selection of insulator materials, hardware variations and terminal block accessories mean fast, easy solutions for virtually any wiring problem. With terminal spacing from 3.5 MM to 1.125" and current ratings from 5 amps to 1000 amps you can fill all of your standard terminal block needs. And for special applications, Kulka can help you design the most efficient and economical custom configurations.

KLIPTITE QUICK CONNECT

Kulka's Kliptite™ terminal blocks, which accept standard female wire terminals, feature self-locking, quick-connect tabs. This feature is ideal for vending machines, appliances, or any application that requires a positive, yet quick disconnect termination. Kliptite tabs are available riveted to the block or assembled with screws. All of Kulka's Kliptite terminal blocks are UL recognized and CSA certified.



411 SERIES
Screw Construction
(2-56 B.H. Screw)
511 SERIES
Rivet Construction
Tab Width .110
Tab Thickness .020

599 SERIES
Screw Construction
(5-40 B.H. Screw)
799 SERIES
Rivet Construction
Tab Width .187
Tab Thickness .020

600A & 670A SERIES
Screw Construction
(6-32 B.H. Screw)
800 SERIES
Rivet Construction
Tab Width .187
Tab Thickness .020

601 & 671 SERIES
Screw Construction
(6-32 B.H. Screw)
801 SERIES
Rivet Construction
Tab Width .250
Tab Thickness .032

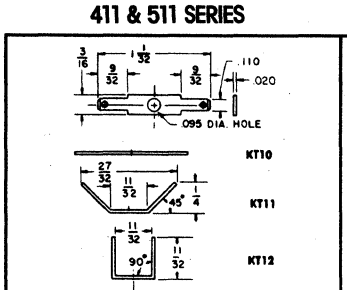
602 & 672 SERIES
Screw Construction
(8-32 B.H. Screw)
802 SERIES
Rivet Construction
Tab Width .250
Tab Thickness .032

603 SERIES
Screw Construction
(10-32 B.H. Screw)
Tab Width .250
Tab Thickness .032

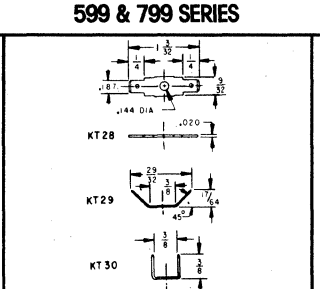
699 SERIES
Screw Construction
(6-32 B.H. Screw)
899 SERIES
Rivet Construction
Tab Width .250
Tab Thickness .032

812 SERIES
Screw Construction
(8-32 B.H. Screw)
912 SERIES
Rivet Construction
Tab Width .250
Tab Thickness .032

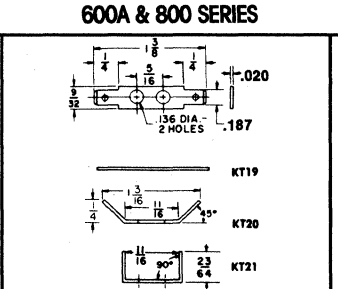
411 & 511 SERIES



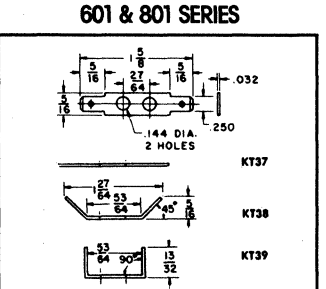
599 & 799 SERIES

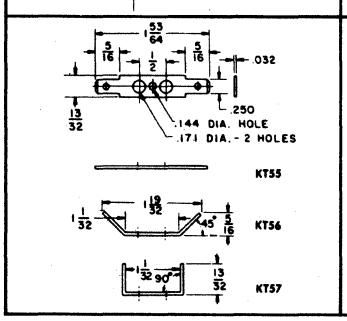


600A & 800 SERIES

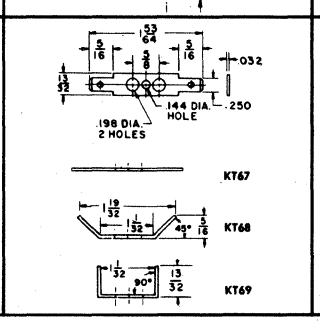


601 & 801 SERIES

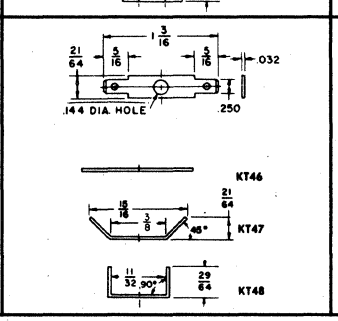




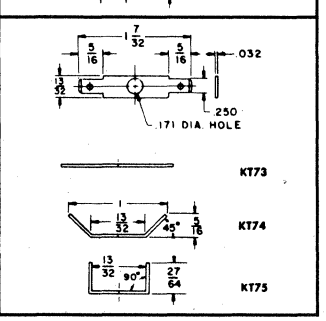
602 & 802 SERIES



603 SERIES

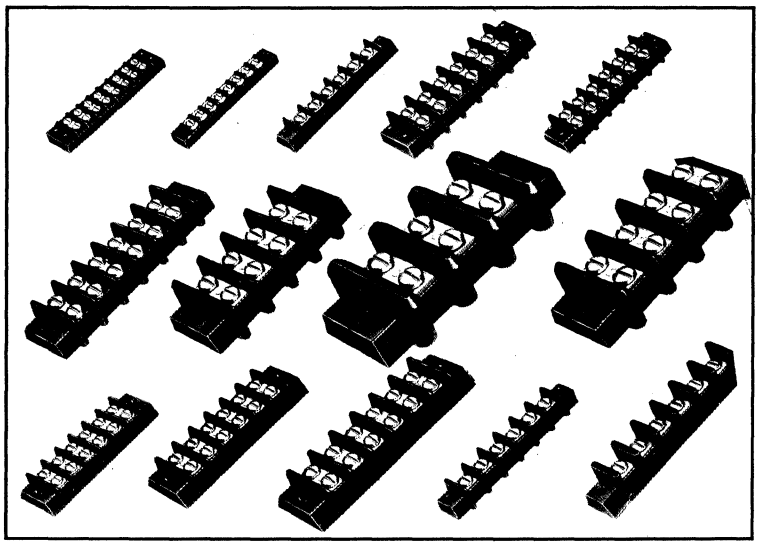


699 & 899 SERIES



812 & 912 SERIES

FLAT MOUNT TERMINAL BLOCKS

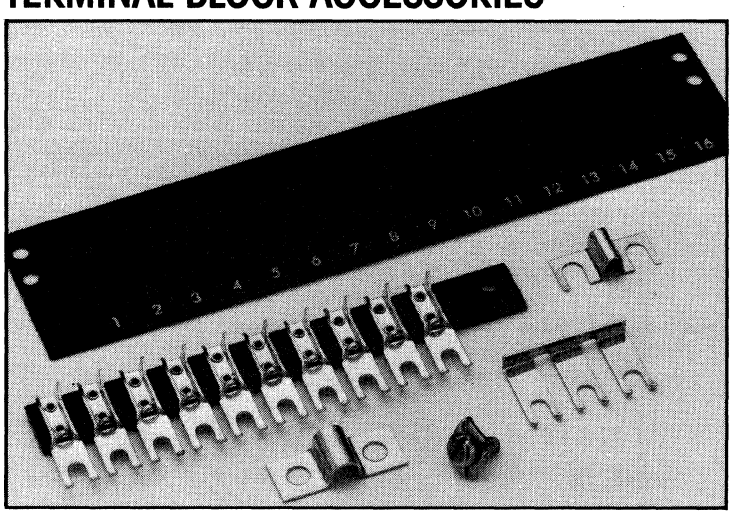


- Current ratings from 5 AMPs to 90 AMPs
- Voltage ratings from 150 V to 600 V UL/CSA Ratings
- Terminal spacing from 1/4" to 1⅛"
- Available in a wide variety of molded materials
- Hardware and service options
- Lengths up to 30 positions

Current Rating AMPs	*Voltage Rating Volts RMS	Maximum Wire Size	Terminal Spacing C to C (inches)	Overall Width (inches)	Overall Height (inches)	No. of Terminals	Special Features	Series No.
5A	1000	18 AWG	¼	⅝	5/16	1 thru 22	Miniature	410
5	1000	18	¼	13/32	5/16	1 thru 22	Miniature-single row	411
15	1100	16	⅜	9/16	13/32	1 thru 30	Single row	599
15	1100	16	⅜	⅞	13/32	1 thru 22	Standard series	600A
20	1100	14	7/16	1⅛	½	1 thru 23	Standard series	601
30	1600	12	9/16	1 5/16	⅝	1 thru 26	Standard series	602
50	1700	10	11/16	1 13/16	¾	1 thru 12	Heavy duty	603
70	1800	4	⅞	2	15/16	1 thru 8	Heavy duty	604
90	2100	2	1⅛	2½	1⅛	1 thru 6	Heavy duty	605
15	2500	16	⅜	⅞	29/64	1 thru 30	Closed back	670A
20	3000	14	7/16	1⅛	35/64	1 thru 30	Closed back	671
30	3300	12	9/16	1 5/16	21/32	1 thru 26	Closed back	672
20	1100	14	7/16	11/16	½	1 thru 23	Single row	699
30	1600	12	9/16	¾	23/32	1 thru 18	Single row	812

*Based on ⅓ actual breakdown voltage

TERMINAL BLOCK ACCESSORIES

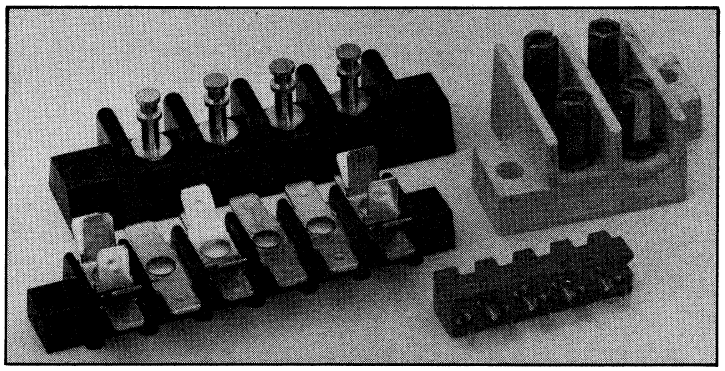


- Marker and insulator strips in a wide variety of materials and printing styles, feed-thru or non-feed thru
- Fanning strips
- Solder terminal lugs; five configurations
- Strip and over-barrier jumpers
- Variety of screw and washer options
- Printing and hot-stamping of terminal blocks

DIALIGHT CORPORATION (201) 223-9400
DIALIGHT • KULKA • HHSMITH
A North American Philips Company

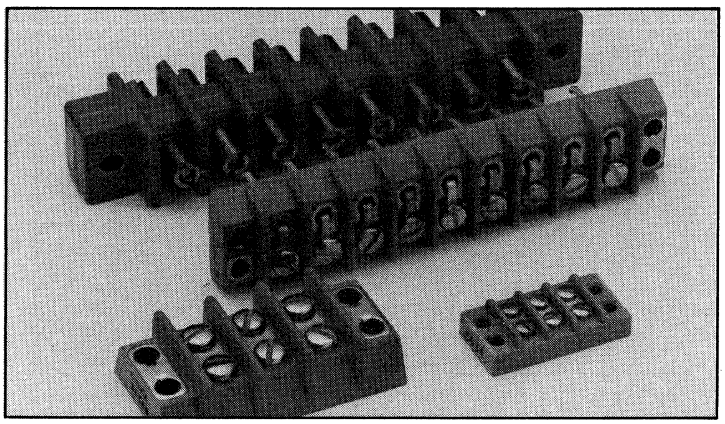
Kulka® World's Leading Supplier Of Terminal Blocks

CUSTOM TERMINAL BLOCKS



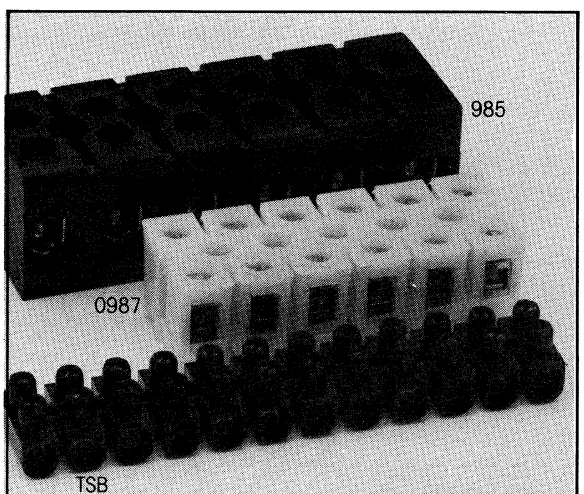
- Custom made designs manufactured to your specifications
- Heat resistant terminal blocks
- High density terminations
- Kliptite quick connect tabs; screw or rivet construction
- Stud and turret terminal blocks
- Wire wrap terminal blocks

MILITARY AND NAVY CLASS TERMINAL BLOCKS



- Designed & Manufactured in accordance with Mil-T-55164
- Molded-in terminals for greater strength and reliability
- Mounting holes covered with molded-in reinforcement straddle plates
- Ideal for severe service applications and assembly wiring
- Available in Military Series 37 TB thru 44 TB and Navy Series 3 TB thru 27 TB
- Accessories Available
- Insulation Material: GDI-30F and MAI-60

PRESSURE CONTACT TERMINAL BLOCKS



"Dead-front" construction—both screws and tubular contacts are recessed in housing for safety and to prevent short circuits.

985 SERIES

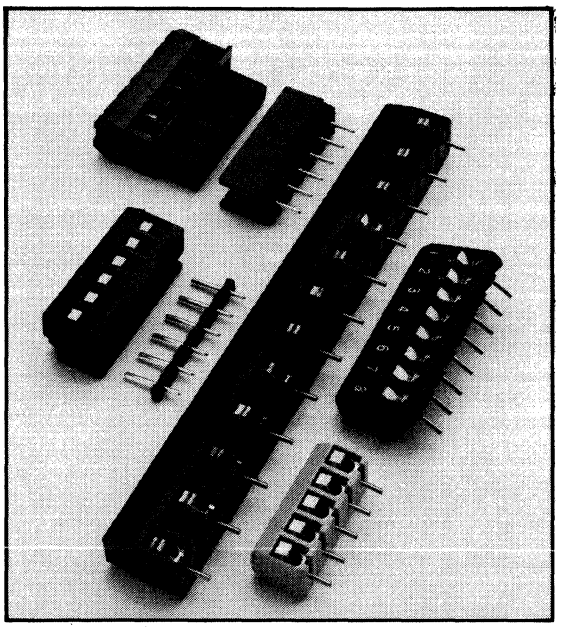
- Rated voltage—600 VOLTS
- Tubular terminals and screws—brass, nickel plated
- Current rating—85 AMPS
- Maximum wire size—#4 AWG; Material—general purpose phenolic 94VO

0987 SERIES

- Tubular contacts—with pressure wire clamps. Connect stripped, unterminated solid or stranded wire directly to each contact—no wire lugs needed. Copper alloy nickel plated.
- Captive screws—nickel plated steel screws are captive in copper alloy contacts.
- High voltage and circuit ratings—rated at 600 volts and up to 50 amps depending on wire size used.
- Maximum Wire Size—#8 AWG; Material-nylon rated 94VO

TSB SERIES	TSB01	TSB03	TSB05	TSB07	TSB09
• Contact Spacing:	(8mm),	(9mm)	(11mm),	(13mm),	(18mm)
• Maximum Wire Size:	#12 AWG	#10 AWG	#8 AWG	#6 AWG	#4 AWG
• Operating Voltage:	380V	380V	500V	500V	500V
• Current rating per circuit:	20amp	25amp	35amp	50amp	70amp

MINIATURE TERMINAL BLOCKS

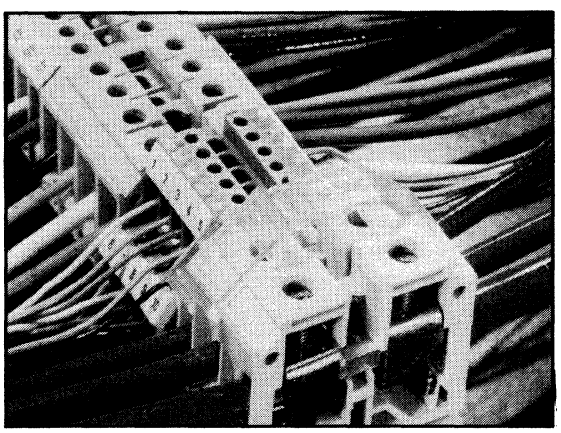


- High Circuit Density—Up to five circuits per inch. 5mm and 10mm center line spacing.
- Variety of Configurations—one piece and two piece plug-in types.
- Any Number of Circuits—Design also allows adjacent mounting while maintaining end terminal center-to-center spacing.
- Captive Copper Alloy Wire Protectors Under Each Screw—Connect finely stranded wire directly to block via easily accessible wire entry.
- "Dead-Front" Construction—Screws are recessed to avoid shock hazard.
- Current rating 15 and 20 AMPs
- 6/6 Nylon Housing—Resists breakage and solvent damage. Ideal for flow solder applications.
- Bright Tin Plated Brass Contacts—Assure reliable connection to PC boards.

Plug-In Series

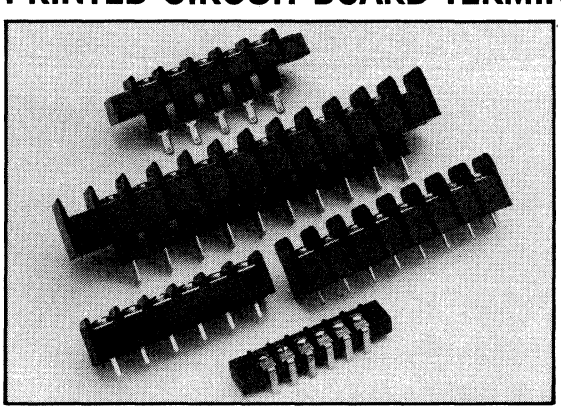
- Speed and convenience—Screw termination is combined with fast plug-in connection.
- Simultaneous Connection of Multiple Wires—Many wires can be connected and disconnected at once, resulting in faster field service, board replacement, and reduced error.
- Flush-mount Design—Reduces stress on solder joints and provides higher quality terminal connections.
- Silver-plated Contacts—Assure reliable connections.
- Locking Tabs—Integral tabs secure connector to header.

SECTIONAL HIGH DENSITY TERMINAL BLOCKS



- Multi-channel mounting
- Block supplied ready to wire with captive screws backed out
- Increased thread design withstands over-torquing
- Wide funnel shaped cable entry allows easy wire insertion
- Barrier design prevents wire insertion beneath clamp
- Tubular clamp mount resists vibration
- Provision for snap-in circuit identification
- Maximum Application Flexibility

INSULATED FEED THRU AND PRINTED CIRCUIT BOARD TERMINAL BLOCKS



Insulated Feed Thru Terminal Blocks

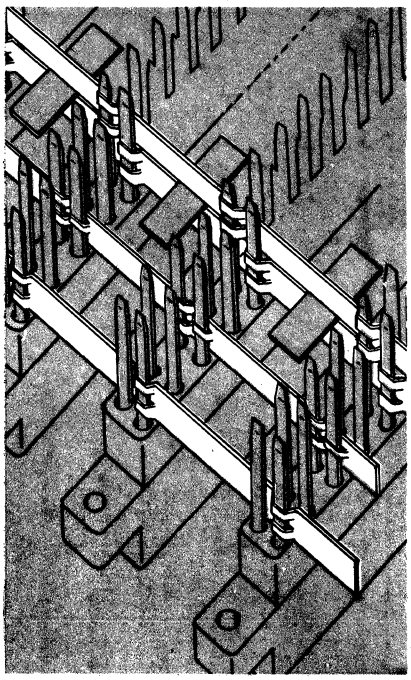
- Ideal for thru-panel and sub-chassis connections
- Available in thermoset or thermoplastic material
- Optional "Kliptite" quick connect tabs, solder lugs, screw clamps
- Variety of solder terminal lengths

Printed Circuit Board Terminal Block

- Choose from thermoset or thermoplastic materials
- Terminal spacing available in ¼", ⅜", 7/16"
- Nine printed circuit termination options
- Suitable for wave-soldering applications
- Pin lock design eliminates "pin twist"

DIALIGHT CORPORATION (201) 223-9400
DIALIGHT • KULKA • HHSMITH
A North American Philips Company

Pin Bar® means:



- Thousands of "hi-rel" solderless bussing connections per hour at a fraction the cost of your present busing method.
- Fast, simple, "foolproof" connections that lower production costs — eliminate continuity checks.
- Low uniform contact resistance that will electrically enhance any circuit—especially frequency applications.
- Efficient back panel design (greater pin exposure, increased discrete wiring area and easier checkout).
- A "spec" performance electrical component produced to your exact requirements.

solderless bus bar for common connections

SPECIFICATIONS

Terminal Spacing and Length: Selectable.

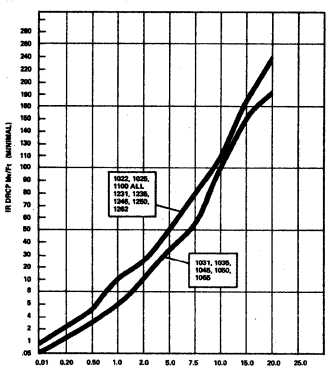
Spacing Tolerance: ±0.010" between terminals — ±0.020/foot cumulative.

Material: 1000, 1200 Series: Beryllium Copper Alloy #172 per QQ-C-533.
1100 Series: Beryllium Copper Alloy #175 per QQ-C-533.

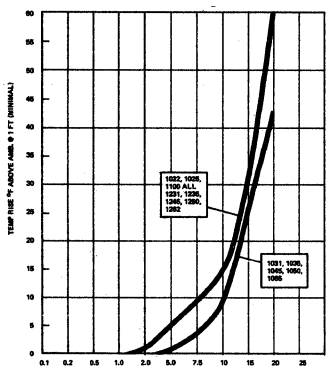
Standard Finishes:
Tin: Electro-tin plate, fused, per MIL-T-10727, Type I, 0.0003" thickness.
Gold: Gold plate per MIL-G-45204, Type II, 0.000050" minimum thickness over nickel plate per QQ-N290, 0.000050" minimum thickness.

Options: Insulation, special finishes, unique end configurations.

PERFORMANCE DATA



IR DROP



TEMPERATURE RISE

The following performance data meets or exceeds MIL-STD-202 "D" (Full Report Available).

Thermal Shock: Method 107, Condition A.

Mechanical Shock: Method 213, Condition H.

Vibration: Method 201.

Corrosion Resistance: Method 101, Condition B 48 Hour Exposure Salt Spray.

Contact Voltage Drop: 0.533 millivolts maximum per amp.

Gas Tight Contact: 10 minutes of 1:1 hydrochloric/nitric acid followed by 10 minutes of ammonium sulfide fumes.

DESIRED PIN BAR CONFIGURATION

Alternate Pins (Series 1000 & 1200)	Connector Pin Size	Adjacent Pins (Series 1100)
1022	.022" x .036"	1122
1025	.025" x .025"	1125
1031 1231	.031" x .062"	1131
1035 1235	.035" x .050"	1135
1045 1245	.045" x .045"	1145
1050 1250	.050" x .035"	1150
1062 1262	.062" x .031"	1162

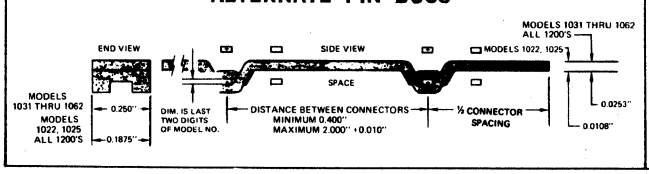
HOW TO ORDER

An 11-digit number is used for ordering. An example would be as follows:

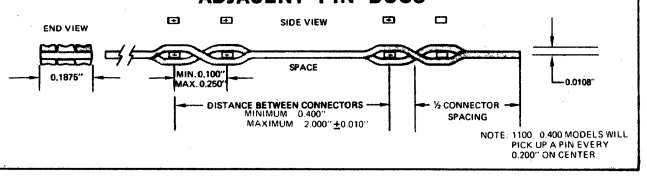
1031 — 0.500 — 32 — G or T

Model No. | Connector Spacing | No. of Connectors | gold finish | tin finish

MODEL 1000 & 1200 SERIES
ALTERNATE PIN BUSS



MODEL 1100 SERIES
ADJACENT PIN BUSS



LEAR SIEGLER INC.
TELECOMMUNICATIONS DIVISION
PIN BAR PRODUCTS
714 NORTH BROOKHURST STREET, ANAHEIM, CALIFORNIA 92801
TEL. (714) 774-1010 • FAX (714) 535-4679

LEMO's Family of Connectors

LEMO's Family of Connectors
All LEMO connectors have the unique Quick-Lok self-latching, quick connect-disconnect system.

- **B Series:** These connectors are keyed to protect contacts and insulators, and have high contact density.
- **K Series:** Environmentally sealed and keyed connectors. Insert configurations available are identical to B Series sizes 0 through 4 (on pages 5 - 9). Cable collet range is the same as E Series, sizes 0 through 4 (on pages 18 - 23).
- **S Series:** Inserts are hermaphroditic (2 half-moons), permitting easy polarization and insertion.
- **E Series:** Environmentally sealed with hermaphroditic inserts.
- **Video Triax:** LEMO's 75Ω, high quality quick connect-disconnect connectors specially designed for the video industry.

New Products for 1986

- **P Series:** LEMO's new plastic series made of polysulfone (PSU) provides LEMO's quick connect-disconnect system with 6, 10 or 14 contacts plus one ground. Availability January 1986. (See page 29).
- **High voltage:** LEMO has expanded its high voltage family with very favorable size to operating voltage ratios. Available by early 1986. Please call for more information.
- **Fiber Optic:** By mid 1986 LEMO's quick connect-disconnect system will be available for fiber optic applications.

Introduction for Connector Specifiers

This handbook is to help you quickly determine which LEMO connector meets your needs.

There are 4 variables you should identify in specifying a connector:

1. Number of contacts
2. AWG
3. Voltage and current
4. Cable jacket outer diameter (for collet)

The tables on the following pages present this information concisely.

FIRST: Find the tables for the connector family which interests you. **See Table of Contents.**

SECOND: On the table selected, locate the size which accommodates the 4 variables noted above.

THIRD: Locate the outer shell configuration in the back section of this booklet. Other configurations may be available for special applications.

If after using this reference you require additional information, please request our full-line catalogs for more details and other special application connectors. For your convenience use the attached business reply card.

PLEASE NOTE: If you do not see what you need please ask us. LEMO is constantly developing new products; therefore, all available connectors could not be included in this reference.

Voltage Test Procedure

PROCEDURE FOR DETERMINING TEST VOLTAGES AND WORKING VOLTAGES FOR LEMO CONNECTORS:

Test Voltage: Test voltages are determined by taking an average of the points at which arcing occurred and reducing it by 1/3.

Working Voltage: Working voltages are determined by taking test voltages and reducing them further by 2/3.

LEMO guarantees the proper functioning of the connector at working voltages.

Although this may appear quite conservative, it is in keeping with LEMO's insistence on assuring proper functioning and maintenance of high-quality standards.

AMPS noted are per contact.

Other LEMO Connectors Available

Thermocouples

Compact Series

Hermetically sealed receptables

CUSTOM REQUESTS WELCOMED

LEMO USA INC
P.O. Box 11488, Santa Rosa, CA 95406
(707) 578-8811, Telex 340-933, Telefax (707) 578-0869

B & K Series Inserts

K Series Environmental, Sizes 0-4— Multi- and Mixed Contact Connectors

Contact types: C = solder contact
S = crimp contact
P = printed circuit contact

Wire sizes in this table are valid for solder-type contacts (standard version). For crimp contacts please contact LEMO.

MULTI-CONTACT INSERTS

Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
2	C S P	22	460	660	10	0
3	C S P	22	420	600	8	
4	C S	24	460	660	7	
5	C S	24	260	400	6.5	
Collet Range 1.5 - 5.5 MM. (.059 - .217 In.)						
2	C S	20	530	760	15	1
3	C S	20	420	600	12	
4	C S	22	630	900	10	
5	C S	22	460	660	9	
6	C S P	24	460	660	7	
7	C S P	24	460	660	7	
Collet Range 2.0 - 7.5 MM. (.079 - .295 In.)						
2	C S	14	700	1000	30	2
3	C S	16	560	830	17	
4	C S	20	1000	1300	15	
5	C S	20	860	1200	14	
6	C S	20	630	900	12	
7	C S	20	500	730	11	
8	C S	22	1000	1500	10	
10	C S P	22	560	830	8	
12	C S P	24	560	830	7	
14	C S P	24	560	830	6.5	
16	C S P	24	500	730	6	
18	C S P	24	460	660	5.5	
19	C S P	24	460	660	5	
Collet Range 1.5 - 9.7 MM. (.059 - .382 In.)						

MULTI-CONTACT INSERTS

Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
2	C	10	760	1100	50	3
3	C S	14	1200	1600	25	
4	C S	14	830	1100	22	
5	C	16	860	1200	19	
6	C	16	730	1000	17	
7	C	16	730	1000	15	
8	C S	20	700	1000	13	
10	C S	20	460	660	12	
12	C S	22	560	830	9	
14	C S	22	560	830	9	
16	C S	22	460	660	8	
18	C S	22	460	660	7	
20	C S	24	500	730	6	
22	C S	24	400	560	5.5	
24	C S	24	400	560	5	
26	C S	24	260	400	4.5	
30	C S	24	260	400	3.5	
Collet Range 4.1 - 11.7 MM. (.161 - .461 In.)						
4	C	10	930	1300	30	4
6	C	14	930	1300	24	
10	C	16	700	1000	17	
12	C	20	500	700	7.5	
16	C	22	1000	1400	10	
20	C	22	700	1000	8	
24	C	22	630	900	7	
30	C	22	460	660	5	
40	C	24	560	800	2	
Collet Range 5.1 - 16.0 MM. (.201 - .630 In.)						
4	S	8	2500	3500	25	5
10	S	10	1200	1800	20	
16	S	14	1500	2100	12	
48	C S	20	630	900	6	
64	S	22	530	700	3	
Collet Range 11.6 - 25.0 MM. (.457 - .984 In.)						

MIXED CONTACT INSERTS

Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
1 coax 50 ohms 2 multi	C S	22	330	500	8	2
1 coax 50 ohms 4 multi	C S	24	400	600	5	
Collet Range 1.5 - 9.7 MM. (.059 - .382 In.)						
1 coax 50 ohms 6 multi	C S	24	400	600	5	3
1 coax 50 ohms 9 multi	C S	24	400	600	5	

Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
1 coax 50 ohms 12 multi	C S	22	400	600	5	3
1 coax 50 ohms 13 multi	C S	24	400	600	5	
2 coax 50 ohms 4 multi	C S	22	400	600	8	
1 HV 18 multi	C S	22	40	60	5.5	
Collet Range 4.1 - 11.7 MM. (.161 - 4.61 In.)						

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B & K Series Inserts

Mixed Contact Connectors

MIXED CONTACT INSERTS

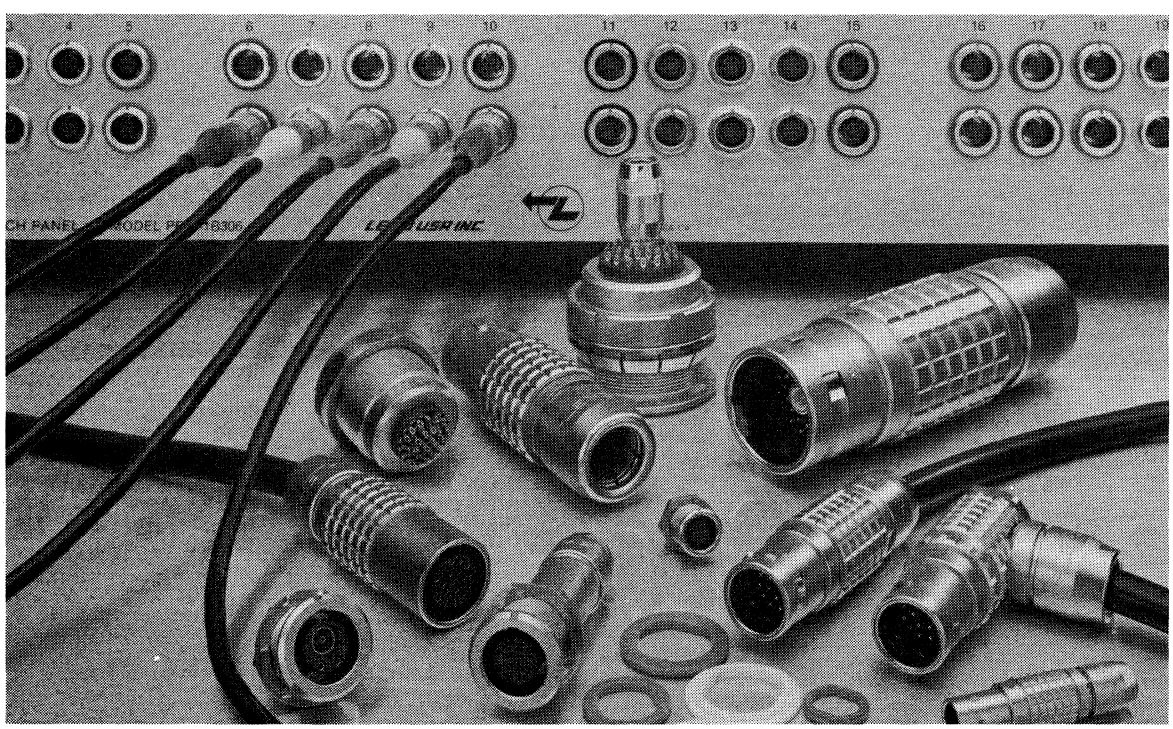
Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
1 coax 50 ohms OR 75 ohms 2 multi	C S	22	400	600	8	4
1 coax 50 ohms OR 75 ohms 4 multi	C S	22	400	600	7	
1 coax 50 ohms OR 75 ohms 6 multi	C S	22	400	600	5	
2 coax 50 ohms 2 multi	C S	22	400	600	8	
2 coax 50 ohms 4 multi	C S	22	400	600	7	
2 coax 50 ohms 12 multi	C S	22	400	600	4	
2 coax 50 ohms 16 multi	C S	22	400	600	4	
2 coax 50 ohms 18 multi	C	24	500	700	2	
3 coax 50 ohms 12 multi	C	24	30	50	2	
Collet Range 5.1 - 16.0 MM. (.201 - .630 In.)						

Number of Contacts	Contact Types Available	Wire Max	Working Voltage		Amps	Shell Size
		AWG	AC	DC		
2 coax 50 ohms OR 75 ohms 10 multi	S	22	50	70	8	5
2 coax 50 ohms OR 75 ohms 16 multi	S	22	50	70	8	
2 coax 50 ohms OR 75 ohms 17 multi	S	14 22	50 50	70 70	30 8	
1 triax 75 ohms 32 multi	C	20	50	70	8	
Collet Range 11.6 - 25.0 MM. (.457 - .984 In.)						

Many new mixed contact configurations are available. Please call for information.

K SERIES: Environmentally sealed and keyed connectors. Insert configurations available are identical to B Series sizes 0 through 4. Cable collet range for cable O/D is the same as E Series, sizes 0 through 4 (on pages 18-23).

Many new mixed contact configurations are available. Please call for information.



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S Series Inserts

Single, Coaxial, Triaxial, and Multi-Contact Connectors

01 SERIES 50 Ohms — Coaxial

Range of Contacts: Coaxial 50Ω
Electrical Properties:
Impedance: 50 ohms ± 4%
VSWR: 1.045:1 @ 1 GHz; 1.14:1 @ 10 GHz
Insulator Resistance: $\geq 7\times10^{12}$ ohms
Contact Resistance: $\leq 3\times10^{3}$ ohms
Recommended Cables: RG.196A/U, RG.178B/U, RG.174A/U

00 SERIES 50 Ohms — Coaxial

Range of Contacts: Coaxial 50Ω
Electrical Properties:
Impedance: 50 ohms ± 2%
Frequency: over 1 GHz
Contact Resistance: $<8m\Omega$
Insulator Resistance: $>10^{12}\Omega$
Recommended Cables: RG.174A/U, RG.188A/U, RG.316/U, RG.58C/U, RG. 178 B/U, RG.187A/U, RG.196A/U

SINGLE CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage	Amps	Shell Size
1	20		4	00
Collet Range 1.5 - 3.1 MM. (.059 - .122 In.)				
1	18	500	6	0
Collet Range 1.7 - 4.2 MM. (.066 - .165 In.)				
1	14	500	10	1
1	12	500	15	
Collet Range 1.7 - 6.2 MM. (0.66 - .244 In.)				
1	12	1000	15	2
1	8	700	20	
Collet Range 2.7 - 8.5 MM. (.106 - .334 In.)				
1	8	1000	20	3
1	5	700	25	
Collet Range 3.7 - 10.2 MM. (.145 - .401 In.)				
1	8	1500	20	4
1	5	1000	25	
Collet Range 5.2 - 13.2 MM. (.204 - .519 In.)				
1		1000	250	5
Collet Range 9.2 - 22.2 MM. (.362 - .874 In.)				

COAXIAL INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1	24	1200	1600	4	0
Collet Range 1.7 - 4.2 MM. (.066 - .165 In.)					
1	18	1200	1600	12	1
1	20	1000	1500	8	
Collet Range 1.7 - 6.2 MM. (.066 - .244 In.)					
1	14	1300	1800	20	2
1	18	700	1000	12	
Collet Range 2.7 - 8.5 MM. (.106 - .334 In.)					

COAXIAL INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1 50 ohms	12	1400	2000	50	3
1 75 ohms	14	1100	1600	20	
Collet Range 3.7 - 10.7 MM. (.145 - .421 In.)					
1 50 ohms	8	700	1100	190	4
1 75 ohms	12	600	900	50	
Collet Range 5.2 - 13.2 MM. (.204 - .519 In.)					
1 50 ohms	10	1500	2200	130	5
Collet Range 8.2 - 22.2 MM. (.322 - .874 In.)					

TRIAXIAL INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1 50 ohms	24	100	150	4	0
Collet Range 1.7 - 4.2 MM. (.066 - .165 In.)					
1 50 ohms	24	300	400	4	1
Collet Range 1.7 - 6.2 MM. (.066 - .244 In.)					
1 50 ohms	18	500	700	12	2
1 75 ohms	24	600	800	4	
Collet Range 2.7 - 8.5 MM. (.106 - .334 In.)					
1 50 ohms	14	200	300	20	3
Collet Range 3.7 - 10.7 MM. (.145 - .421 In.)					
1 50 ohms	12	500	700	50	4
Collet Range 5.2 - 13.2 MM. (.204 - .519 In.)					

S-SERIES HIGH VOLTAGE INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1	24	3000		1	0
Collet Range 1.7 - 4.2 MM. (.066 - .165 In.)					
1	19	5000		3	1
Collet Range 1.7 - 6.2 MM. (.066 - .244 In.)					
1	14	8000		6	2
Collet Range 2.7 - 7.7 MM. (.106 - .303 In.)					
1	14	5000		6	3
1	14	10000		6	
1	20	15000		2	
Collet Range 3.7 - 10.5 MM. (.145 - .413 In.)					

Y-SERIES HIGH VOLTAGE INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1	18	5kV		2	1
1	18	10kV		2	
Collet Range 4.7 - 6.2 MM. (.185 - .244 In.)					
1	12	15		10	3
Collet Range 6.2 - 10.2 MM. (.244 - .401 In.)					

PLEASE NOTE:
New high-voltage connectors will be available in early 1986. Please call regarding your application.

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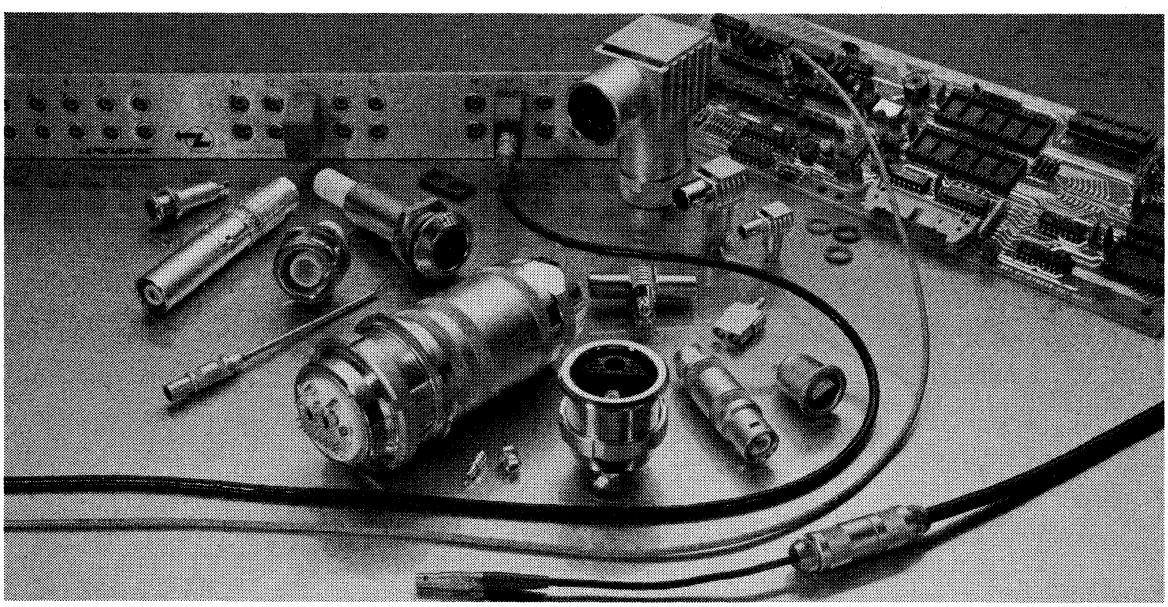
S Series Inserts

Single, Coaxial, Triaxial, and Multi-Contact Connectors

MULTI-CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
2	24	500	700	10	0
3,4	26	300	500	7,8	
Collet Range 1.7 - 4.2 MM. (.066 - .165 In.)					
2	20	400	600	12	1
3,4	24	400	600	11,10	
5,6	26	500	700	8,7	
Collet Range 1.7 - 6.2 MM. (.066 - .244 In.)					
2	18	600	900	20	2
3,4,5,6	20	500	700	17-11	
3 4	20 24	300 300	400 400	10 8	
8,10	24	300	400	9,8	
Collet Range 2.7 - 8.5 MM. (.106 - .334 In.)					
2,3	14	1000	1400	23,20	3
4	14	500	700	18	
2 3	14 20	500 500	700 700	16 9	
6	20	700	1000	14	
7,8,10	20	300	500	12-9	
12,13,14	24	400	600	8-7	
16	24	300	500	7	
18	24	300	400	6	
Collet Range 3.7 - 10.7 MM. (.145 - .421 In.)					
2	8	700	1000	28	4
1 2	8 12	700 700	1000 1000	24 18	
4	12	700	1000	21	
2 3	12 14	700 700	1000 1000	18 14	
6	14	700	1000	16	
3 4	14 20	700 700	1000 1000	14 8	
8	20	900	1300	13	
9,10,12,13,14	20	700	1000	13-8	
16,18,20 22,24	24	700	1000	7	
Collet Range 5.2 - 13.2 MM. (.204 - .519 In.)					

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
2	5	1200	1800	35	5
1 2	5 8	1200 1200	1600 1600	33 30	
4	8	1200	1800	30	
2 3	8 12	1000 1000	1500 1500	28 16	
6	12	1000	1400	27	
8	12	800	1100	23	
10,12	14	700	1000	20,18	
2 12	12 14	700 700	1000 1000	23 18	
16	14	700	1000	14	
2 16	12 18	600 600	800 800	12 9	
20	18	600	800	11	
2 20	12 18	600 600	800 800	10 9	
24	18	700	1100	9	
30,36	20	600	800	8,7	
40,44,48	20	400	600	7,6,6	
Collet Range 8.2 - 22.2 MM. (.539 - .874 In.)					
4		1000	1400	38	6
12	7	700	1000	22	
18	8	400	500	16	
20	12	500	700	14	
24	12	400	600	12	
30	12	700	1100	10	
48	20	500	700	7	
60	14	500	700	5	
64	20	700	1000	4	
72	20	300	500	4	
106	24	300	400	2	
Collet Range 12.2 - 30.2 MM. (.480 - 1.188 In.)					



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S Series Inserts

Mixed Contact Connectors

MIXED CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1 HV	20		3000	6	3
2 multi	14	500	700	18	
1 HV	20		3000	6	
4 multi	20	300	500	10	
1 HV	20		3000	6	
5 multi	20	300	500	9	
1 HV	20		3000	6	
6 multi	20	400	600	8	
1 HV	20		3000	6	
7 multi	20	400	600	7	
1 HV	20		3000	6	
8 multi	24	300	500	7	
2 HV	20		3000	6	
2 multi	20	500	700	18	
2 HV	20		3000	6	
4 multi	20	300	500	10	
2 HV	20		3000	6	
1 coax 00 50 ohms 1 multi	26 20	400 1000	500 1400	1 23	
1 coax 00 50 ohms 2 multi	26 20	400 500	500 700	1 18	
1 coax 00 50 ohms 3 multi	26 20	400 700	500 1000	1 14	
1 coax 00 50 ohms 4 multi	26 20	400 300	500 500	1 10	
1 coax 00 50 ohms 5 multi	26 24	400 300	500 500	1 9	
Collet Range 3.7 - 10.7 MM. (.145 - .421 In.)					
1 HV	14		3000	8	4
2 multi	12	700	1000	21	
1 HV	14		3000	8	
6 multi	20	700	1000	9	
1 HV	14		3000	8	
12 multi	24	700	1000	7	
2 HV	14		3000	8	
5 multi	20	700	1000	11	
2 HV	14		3000	8	
7 multi	20	700	1000	8	
2 HV	14		3000	8	
9 multi	24	700	1000	7	
2 HV	14		3000	8	
10 multi	24	700	1000	7	
2 HV	14		3000	8	
3 HV	14		3000	8	
4 HV	14		3000	8	
1 coax 00 50 ohms 6 multi	26 20	400 700	500 1000	1 9	

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
					4
1 coax 50 ohms 9 multi	26 24	400 700	500 1000	1 7	
1 coax 00 50 ohms 12 multi	26 24	400 700	500 1000	1 7	
2 coax 00 50 ohms 4 multi	26 20	400 900	500 1300	1 13	
2 coax 00 50 ohms 16 multi	26 24	400 500	500 800	1 5	
Collet Range 5.2 - 13.2 MM. (.204 - .519 In.)					
1 HV	14		5000	6	5
8 multi	14	700	1000	14	
2 HV	14		5000	6	
4 multi	12	800	1100	23	
2 HV	14		5000	6	
8 multi	14	700	1000	14	
2 HV	14		5000	6	
16 multi	20	600	800	7	
1 HV	12		10KV	8	
10 multi	14	600	800	11	
4 HV	14		5KV	6	
8 HV	14		3KV	5	
2 coax 0 50 ohms 8 multi	24 20	600 700	800 1000	2 14	
2 coax 0 50 ohms 12 multi	24 20	600 700	800 1100	2 9	
2 coax 0 50 ohms 20 multi	24 20	600 400	800 600	2 7	
2 coax 0 50 ohms 24 multi	24 20	600 400	800 600	2 6	
Collet Range 8.2 - 22.2 MM. (.322 - .874 In.)					
4 coax 1 75 ohms	20	500	700	4	6
3 coax 0 50 ohms 26 multi	24 14	600 500	800 700	2 5	
8 coax 1 50 ohms 20 multi	26 18	500	700	5	
3 coax 1 75 ohms 26 multi	20 20	500	700	4 5	
Collet Range 12.2 - 30.2MM. (.480 - 1.188 In.)					

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E Series Inserts

Environmentally Sealed
Single, Coaxial, Triaxial, Multi-Contact Connectors

SINGLE CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage	Amps	Shell Size
1	18	500	6	0
Collet Range 1.2 - 5.2 MM. (.047 - .204 In.)				
1	14	500	10	1
1	12	500	15	
Collet Range 1.7 - 6.7 MM. (.066 - .263 In.)				
1	12	1000	15	2
1	10	700	20	
Collet Range 2.2 - 8.5 MM. (.086 - .334 In.)				
1	10	1000	20	3
1	8	700	25	
Collet Range 3.2 - 10.5 MM. (.125 - .413 In.)				

COAXIAL INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1	24	1200	1600	4	0
Collet Range 1.2 - 5.2 MM. (.047 - .204 In.)					
1	18	1200	1600	12	1
1	20	1000	1500	8	
Collet Range 1.7 - 6.7 MM. (.066 - .263 In.)					
1	14	1300	1800	20	2
1	18	700	1000	12	
Collet Range 2.2 - 8.5 MM. (.086 - .334 In.)					
1	12	1400	2000	50	3
1	14	1100	1600	20	
Collet Range 3.2 - 10.5 MM. (.125 - .413 In.)					
1	10	700	1100	90	4
1	12	600	900	50	
Collet Range 5.2 - 14.2 MM. (.204 - .559 In.)					

TRIAXIAL INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1	24	100	150	4	0
1	24	300	500	4	
Collet Range 1.2 - 5.2 MM. (.047 - .204 In.)					
1	24	300	400	4	1
1	24	300	400	4	
Collet Range 1.7 - 6.7 MM. (.066 - .263 In.)					
1	18	400	600	12	2
1	18	500	700	12	
1	24	500	700	4	
1	24	600	800	4	
Collet Range 2.2 - 8.5 MM. (.086 - .334 In.)					
1	14	500	700	20	3
Collet Range 3.2 - 10.5 MM. (.125 - .413 In.)					
1	12			50	4
1	12	500	700	50	
1					
1					
Collet Range 5.2 - 14.2 MM. (.204 - .559 In.)					

MULTI-CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
2	24	500	700		0
3,4	26	300	500		
Collet Range 1.2 - 5.2 MM. (.047 - .204 In.)					
2	20	400	600	12	1
3,4	24	400	600	11,10	
5,6	26	500	700	8,7	
Collet Range 1.7 - 6.7 MM. (.066 - .263 In.)					
2	18	600	900	20	2
3,4,5,6	20	500	700	17-11	
3	20	300	400	10	
4	24	300	400	8	
8,10	24	300	400	9,8	
Collet Range 2.2 - 8.5 MM. (.086 - .334 In.)					
2,3	14	1000	1400	23,20	3
4	14	500	700	18	
2	14	500	700	16	
3	20	500	700	9	
6	20	700	1000	14	
7,8,10	20	300	500	12,10,9	
12,14	24	400	600	8,7	
16,18	24	300	400	7,6	
Collet Range 3.2 - 10.5 MM. (.125 - .413 In.)					
2	8	700	1000	28	4
1	8	700	1000	24	
2	12	700	1000	18	
4	12	700	1000	21	
2	12	700	1000	18	
3	14	700	1000	14	
6	14	700	1000	16	
3	14	700	1000	14	
4	20	700	1000	8	
8	20	900	1300	13	
9,10,12,14	20	700	1000	12-8	
16,18,20, 22	24	700	1000	7	
24	24	700	2000	7	
Collet Range 5.2 - 14.2 MM. (.204 - .559 In.)					
2	5	1200	1800	35	5
1	5	1200	1600	33	
2	8	1200	1600	30	
4	8	1200	1800	30	
6	12	1000	1400	27	
8	12	800	1100	23	
10,12	14	700	1000	20,18	
2	12	700	1000	23	
12	14	700	1000	18	
2	12	600	800	12	
16	18	600	800	9	
20	18	600	800	11	
2	12	600	800	10	
20	18	600	800	9	
24	18	700	1100	9	
30,36	20	600	800	8,7	
44,48	20	400	600	6	
Collet Range 10.2 - 22.2 MM. (.401 - .874 In.)					
12	7	700	1000	22	6
24	12	400	600	12	
30	12	700	1100	10	
48	20	500	700	7	
60	14	500	700	5	
64	20	700	1000	4	
72	20	300	500	4	
106	24	300	400	2	
Collet Range 15.2 - 27.2 MM. (.598 - 1.070 In.)					

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E Series Inserts

Mixed Contact Connectors

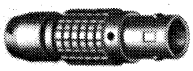
MIXED CONTACT INSERTS

Number of Contacts	Wire Max AWG	Working Voltage AC	Working Voltage DC	Amps	Shell Size
1HV	20		3000	6	3
5 multi	20	300	500	9	
1 HV	20		3000	6	
6 multi	20	400	600	8	
1 HV	20		3000	6	
8 multi	24	300	500	7	
2 HV	20		3000	6	
4 multi	20	300	500	10	
1 coax					
50 ohms	26	400	500	1	
5 multi	24	300	500	9	
Collet Range 3.2 - 10.5 MM. (.125 - .413 In.)					
1 HV	14		3000	8	4
3 multi	14	700	1000	16	
1 HV	14		3000	8	
10 multi	24	700	1000	7	
2 HV	14		3000	8	
5 multi	20	700	1000	11	
2 HV	14		3000	8	
12 multi	24	700	1000	7	
1 coax					
50 ohms	26	400	500	1	
6 multi	20	700	1000	9	
1 coax					
50 ohms	26	400	500	1	
12 multi	24	700	1000	7	
2 coax					
50 ohms	26	400	500	1	
4 multi	20	900	1300	13	
Collet Range 5.2 - 14.2 MM. (.204 - .559 In.)					
2 HV	14		5000	6	5
8 multi	14	700	1000	14	
8 HV	14		3KV	5	
2 coax					
50 ohms	24	600	800	2	
12 multi	20	700	1100	9	
2 coax					
50 ohms	24	600	800	2	
24 multi	20	400	600	6	
1 coax					
75 ohms	18				
3 multi	12				
Collet Range 10.2 - 22.2 MM. (.401 - .874 In.)					
3 coax					6
50 ohms	24	600	800	2	
26 multi	14	500	700	5	
2 coax					
75 ohms	20				
26 multi	14				
4 coax					
75 ohms	20	500	700	4	
20 multi	20	500	700		
8 coax					
50 ohms	26				
20 multi	18	500	700	5	
3 coax					
75 ohms	20	500	700	4	
26 multi	20	500	700	5	
6 multi					
30 multi	20				
Collet Range 14.2 - 30.2 MM. (.559 - 1.188 In.)					

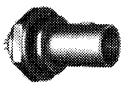
B Series Shells

Shell Configurations for Multi- and Mixed Contact Connectors

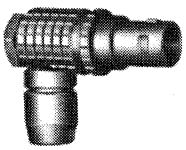
PLUGS



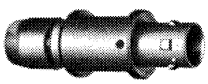
FGG, FG (A...M)
Straight Plug



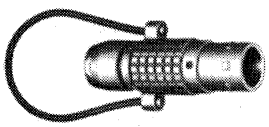
FAG Fixed Plug
(without Latching)



FHG, FH (A...L)
Elbow Plug

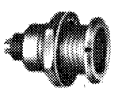


FZG, FZ (A...L)
Straight Plug
(Robotics)



FNG, FN (A...L)
Straight Plug
(with Lanyard)

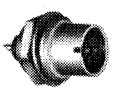
RECEPTACLES



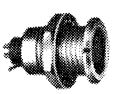
EGG, EG (A...L)
Fixed Receptacle



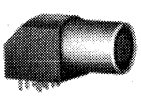
ECG, EC (A...L)
Fixed Receptacle
(Mount From Rear)



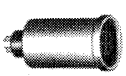
EHG, EH (A...L)
Fixed Receptacle (Raised)



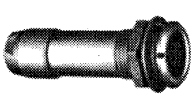
ENG, EN (A...L)
Fixed Receptacle
(with Grounding Tab)



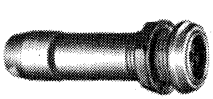
EPG Fixed Receptacle
(PC Board Mount)



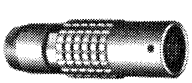
EJG Fixed Receptacle
(Force Fit)



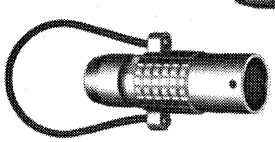
PKG, K (A...L)
Fixed Receptacle
(Cable Terminated)



PFG, PF (A...L)
Fixed Receptacle
(Cable Terminated–
Mount From Rear)



PHG, PF (A...L)
Free Receptacle



PNG, PN (A...L)
Free Receptacle
(with Lanyard)

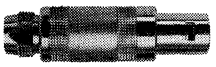
LEMO USA INC
P.O. Box 11488, Santa Rosa, CA 95406
(707) 578-8811, Telex 340-933, Telefax (707) 578-0869

Shells & Connectors

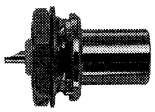
S Series Shells

Shell Configurations for Single, Coaxial, Triaxial, Multi- and Mixed Contact Connectors

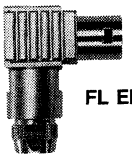
PLUGS



F Straight Plug

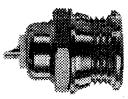


FA Straight Plug
Non-Latching

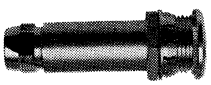


FL Elbow Plug

Receptacles



RA Straight Receptacle



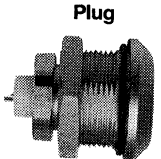
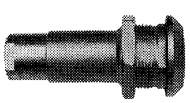
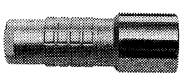
RASC Straight Receptacle



RC Straight Receptacle

K & E Series Shells (Environmental)

Shell Configurations for Single, Coaxial, Triaxial, Multi- and Mixed Contact Connectors

K SERIES		E SERIES
FGG	 Plug	FE
EGG	 Panel Mount Receptacle	RAE
PKG	 Panel Mount Cable Terminated Receptacle	RASCE
PHG	 Cable Receptacle	RCE

P Series

Plastic Multi-Contact Connectors

TECHNICAL CHARACTERISTICS

Electrical Properties

Contacts	Working Voltage	Amps Per Contact
6	0.9 kV rms	6A
10	0.8 kV rms	5A
14	0.4 kV rms	4A

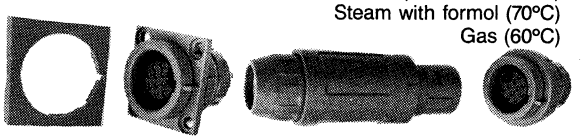
Contacts/screen insulating resistance > 10^{12} Ohms per MIL Std. 1344A meth. 3003.1; IEC-130-1 > 14.4a

Material

Outershell, sleeve, collet	PSU (MIL-P-46120 (MR)
Insulator	PEEK
Male contacts solder	Brass ASTM C 385
Male crimp and earthing	Brass ASTM C 345
Female contact solder, crimp and earthing	Bronze ASTM C 544
Collet washer	Silicone rubber VRP 3003/40 A-B (FS ZZ-R765, cl. 2a/2b, gr. 40)

Climatic Properties

Working temperature	−50°C + 150°C (−58°F + 302°F)
Waterproofness	Splashproof CEI 61 (mated connectors)
Sterilization	Steam (130° C to 140°C) Steam with formol (70°C) Gas (60°C)



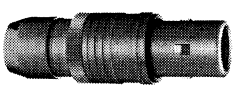
Video Triax Connectors

Triaxial Connectors

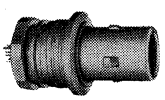
TECHNICAL CHARACTERISTICS:

- Nominal impedance: 75 ohms
- Operating frequency: 2.5 GHz
- VSWR: 1.01 + 0.076f[GHz]
- Insertion loss: <0.4 dB
- Contact resistance: center contacts ≤3mΩ
  internal ground ≤1mΩ
- Breakdown voltage:
  - center contact/internal ground: 4 kV rms
  - internal/external ground: 9.5 kV rms
- Operating temperatures: −50°C + 260°C (−58°F + 500°F)
- Connector retention force, engaged: min. 28N
- Cable retention force: min. 500N
- Recommended cables:
  - Triax Felten & Guillaume Part No. 127657 and 127664
  - Triax BIW Part No. 10069-C-G20 and 10070-C-G14
  - Triax Belden types 9232, 8233, 9267 and 8232

PLUGS

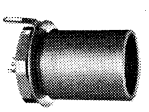


Straight Plug with Cable Collet and Safety Ring

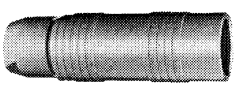


Straight Plug with Nut Fixing and Round Flange

RECEPTACLES



Fixed Receptacles with Nut Fixing and Visible Shell



Free Receptacles with Cable Collet

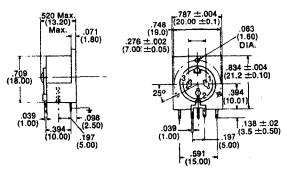
LEMO USA INC
P.O. Box 11488, Santa Rosa, CA 95406
(707) 578-8811, Telex 340-933, Telefax (707) 578-0869

DIN CONNECTORS

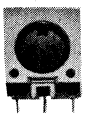
ALL MODELS AVAILABLE FROM 3 PIN TO 8 PIN CONFIGURATIONS

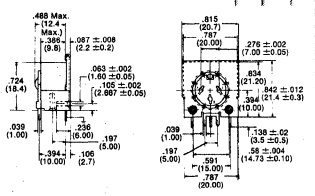
A. PC DIN JACK
DJ-020-3P
(3P 180°)





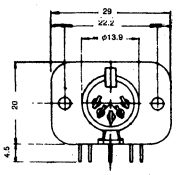
B. PC DIN JACK-SHIELDED
DJ-020-3PS
(3P 180°)





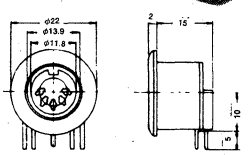
C. PC DIN JACK-WIDE
1785S040





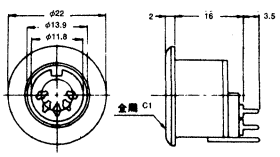
D. PC CIRCULAR DIN JACK
1825J070



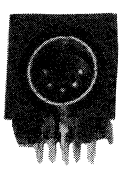


E. PC DIN JACK VERTICAL
1825J068

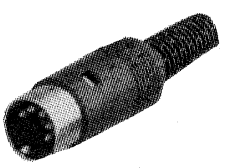




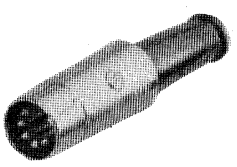
F. PC MALE DIN PLUG
DJ-014-PS
(5P 180°)



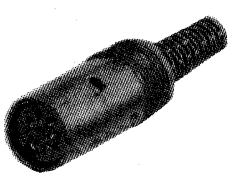
G. DIN PLUG
SD-50



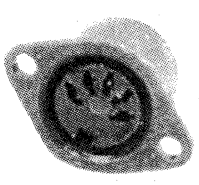
H. DIN PLUG-METAL SHIELDED
SD-50N



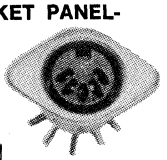
I. DIN JACK
SD-50J

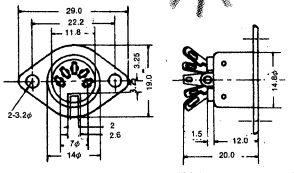


J. DIN SOCKET-PANEL
SD-50S

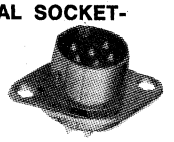


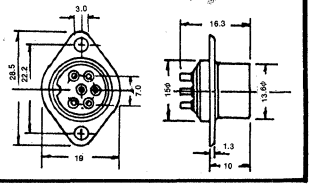
K. DIN SOCKET PANEL-METAL
SD-50-SN





L. DIN METAL SOCKET-PANEL
SD-61SM





Configuration		3 Pin 180°	4 Pin 210°	5 Pin 180°	5 Pin 240°	5 Pin 360°	6 Pin 240°	7 Pin 270°	8 Pin 270°	8 Pin 262°
A.	PC DIN Jack	DJ-020-3P	DJ-022-4P	DJ-021-5P	DJ-023-5P	N/A	DJ-024-6P	DJ-025-7P	DJ-026-8P	DJ-027-8P
B	PC DIN Jack-Shielded	DJ-020-3PS	DJ-022-4PS	DJ-021-5PS	DJ-023-5PS	N/A	DJ-024-6PS	DJ-025-7PS	DJ-026-8PS	DJ-027-8PS
C.	PC DIN Jack-Wide	N/A	N/A	1785S040	N/A	N/A	1826J096	N/A	N/A	N/A
D.	PC Circuiar DIN Jack	N/A	N/A	1825J070	N/A	N/A	1826J101	N/A	1828J071	N/A
E.	PC DIN Jack Vertical	N/A	N/A	1825J068	N/A	N/A	1826J076	N/A	1828J069	N/A
F.	PC Male DIN Plug	N/A	N/A	DJ-014-P5	N/A	N/A	N/A	DJ-014-P7	N/A	N/A
G.	DIN Plug	SD-30	SD-40	SD-50	SD-51	SD-52	SD-60	SD-70	SD-80	SD-81
H.	DIN Plug-Metal Shielded	SD-30N	SD-40N	SD-50N	SD-51N	SD-52N	SD-60N	SD-70N	SD-80N	SD-81N
I.	DIN Jack	SD-30J	SD-40J	SD-50J	SD-51J	SD-52J	SD-60J	SD-70J	SD-80J	SD-81J
J.	DIN Socket-Panel	SD-30S	SD-40S	SD-50S	SD-51S	SD-52S	SD-60S	SD-70S	SD-80S	SD-81S
K.	DIN Socket Panel-Metal	SD-30SN	SD-40SN	SD-50SN	SD-51SN	SD-52SN	SD-60SN	SD-70SN	SD-80SN	SD-81SN
L.	DIN Metal Socket-Panel	N/A	N/A	N/A	SD-51SM	N/A	SD-60SM	N/A	N/A	N/A

For DIN Plug/Jack Cable Assemblies, Straight, Coiled or Shielded Type. Please contact our sales office.

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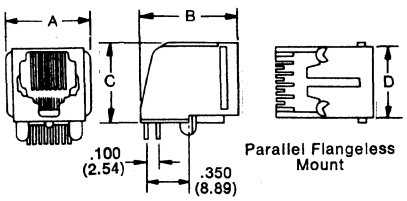
8174 Beechcraft Ave., Gaithersburg, MD 20879
Tel: (301) 921-9440
Telex: 71-3746453 (LZR INC USA) Telefax: (301) 6700436

MODULAR TELEPHONE CONNECTORS

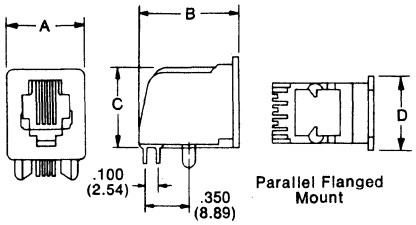
Parallel Flangeless Mount



Model	No. of Position	No. of Contacts	Dimensions A	B	C	D
LZ249-4	4	4	.540 13.72	.810 20.57	.630 16	.440 11.18
LZ250-4	6	4	.620 15.75	.810 20.57	.630 16	.520 13.51
LZ250-6	6	6	.620 15.75	.810 20.57	.630 16	.520 15.24
LZ251-6	8	6	.700 17.78	.810 20.57	.630 16	.600 15.24
LZ251-8	8	8	.700 17.78	.810 20.57	.630 16	.600 15.24
LZ252-6	8K†	6	.700 17.78	.810 20.57	.630 16	.600 15.24
LZ252-8	8K†	8	.700 17.78	.810 20.57	.630 16	.600 15.24

* All dimensions are in inches and millimeters.
† Keyed

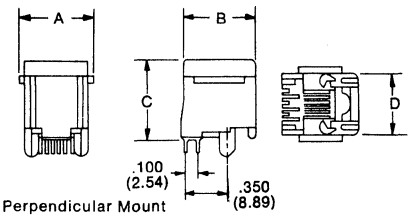
Parallel Flanged Mount



Model	No. of Position	No. of Contacts	Dimensions A	B	C	D
LZ241-4	4	4	.570 14.48	.810 20.57	.680 17.27	.440 11.18
LZ242-4	6	4	.650 16.51	.810 20.57	.680 17.27	.520 13.21
LZ242-6	6	6	.650 16.51	.810 20.57	.680 17.27	.520 13.21
LZ243-6	8	6	.730 18.54	.810 20.57	.680 17.27	.600 15.24
LZ243-8	8	8	.730 18.54	.810 20.57	.680 17.27	.600 15.24
LZ244-6	8K†	6	.730 18.54	.810 20.57	.680 17.27	.600 15.24
LZ244-8	8K†	8	.730 18.54	.810 20.57	.680 17.27	.600 15.24

* All dimensions are in inches and millimeters.
† Keyed

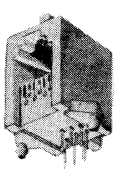
Perpendicular Mount



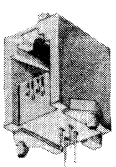
Model	No. of Position	No. of Contacts	Dimensions A	B	C	D
LZ257-4	4	4	.550 13.97	.625 15.88	.645 16.38	.450 11.43
LZ258-4	6	4	.630 16	.625 15.88	.645 16.38	.530 13.46
LZ258-6	6	6	.630 16	.625 15.88	.645 16.38	.530 13.46
LZ259-6	8	6	.710 18.03	.625 15.88	.645 16.38	.610 15.49
LZ259-8	8	8	.710 18.03	.625 15.88	.645 16.38	.610 15.49
LZ260-6	8K†	6	.710 18.03	.625 15.88	.645 16.38	.610 15.49
LZ260-8	8K†	8	.710 18.03	.625 15.88	.645 16.38	.610 15.49

* All dimensions are in inches and millimeters.
† Keyed

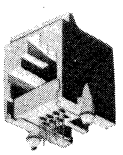
623 Type
2, 4, 6 Contacts



616 Type
2, 4 Contacts

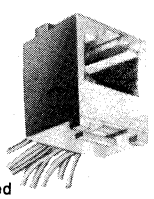


641 Type
8 Wire



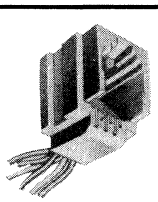
Keyed or non-keyed

641D
8 Contacts
Color: Gray

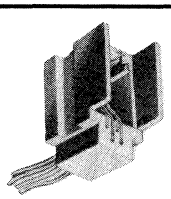


Keyed or non-keyed

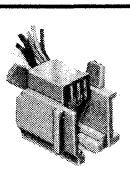
623K
2, 4, 6 Contacts



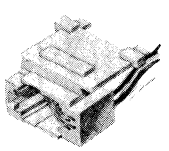
616M
2, 4, 6 Contacts



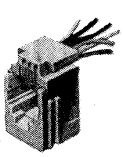
623T
2, 4, 6 Contacts



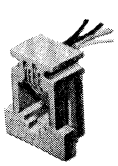
616T
2, 4 Contacts



623P
2, 4, 6 Contacts



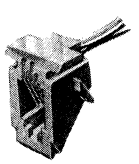
616B
2, 4 Contacts



616P
2, 4 Contacts

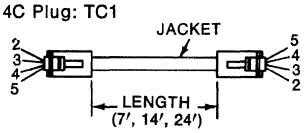


616W
2, 4 Contacts

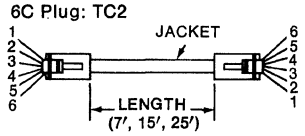


TELEPHONE LINE CORDS AND COILED CORDS

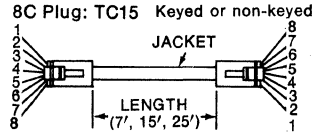
4C Plug: TC1



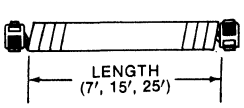
6C Plug: TC2



8C Plug: TC15 Keyed or non-keyed



4C Coiled Cord: TC8
6C Coiled Cord: TC9



Custom Color, Custom Length and Cords to your own specification are welcome.
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We carry a complete line of Telephone Accessories, Line Cords, Coiled Cords etc.
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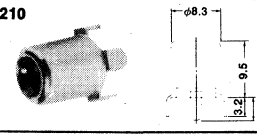
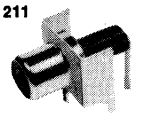
PCB MOUNT RCA CONNECTORS

210



1771P145

211



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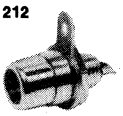

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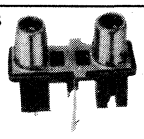

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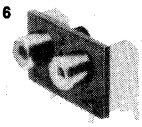


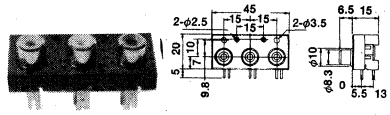
1812P347

217



8203P0440

218 L Type



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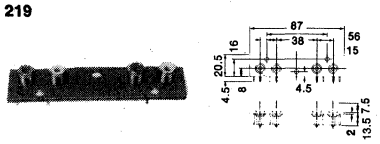


1774P132

222



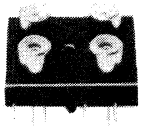
18118P352

10P	18110P356
12P	18112P355
14P	18114P354
16P	18116P353
18P	18118P352

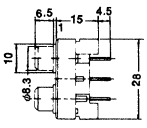
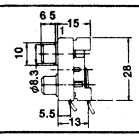
223



04P0317



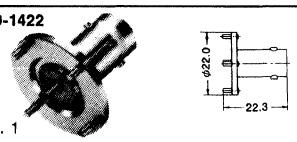
1814P343

	2 Position	4 Position	6 Position
	02P0413	04P0317	06P0414
	02P0438	1814P343	06P0344

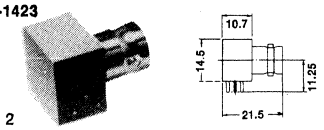
PCB MOUNT COAXIAL CONNECTORS

BNC TYPE

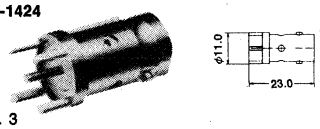
050-1422 Fig. 1



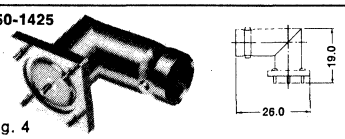
050-1423 Fig. 2



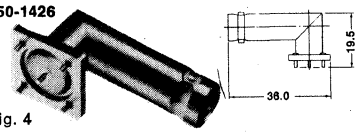
050-1424 Fig. 3



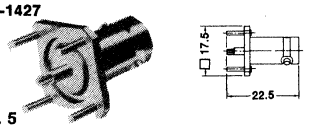
050-1425 Fig. 4



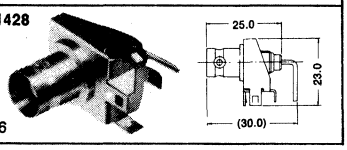
050-1426 Fig. 4



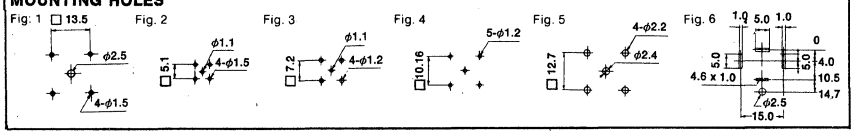
050-1427 Fig. 5



050-1428 Fig. 6

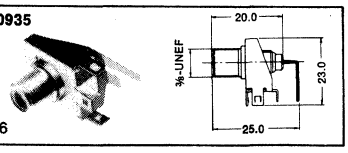


MOUNTING HOLES

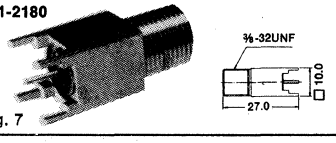


F TYPE

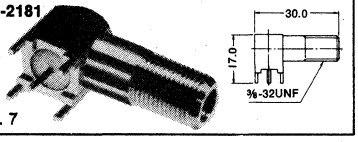
030-0935 Fig. 6



031-2180 Fig. 7



031-2181 Fig. 7



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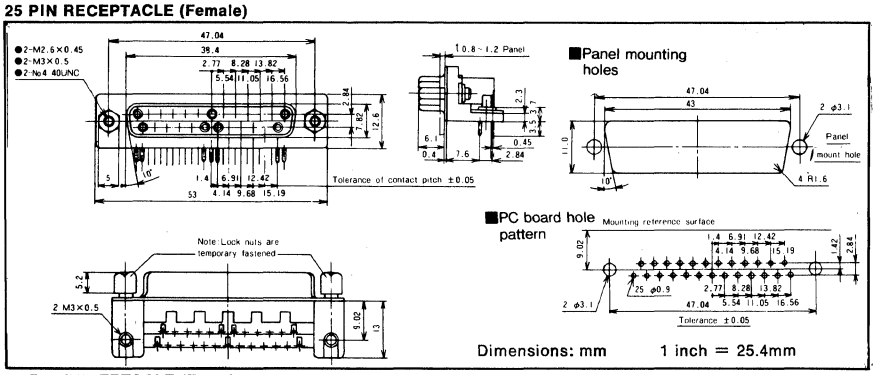
PCB MOUNT "D"-SUB RECEPTACLES

WAKA 'WD' SERIES

LOW COST, HIGH QUALITY SOLUTION

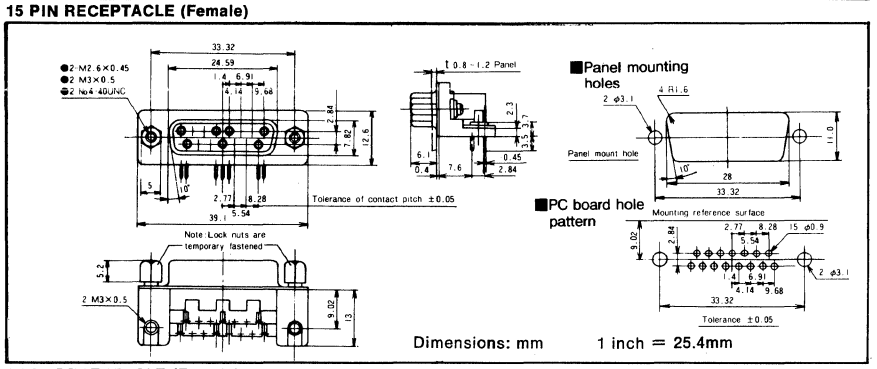
A SERIES: Right Angle PC Board Mount

25 PIN RECEPTACLE (Female)



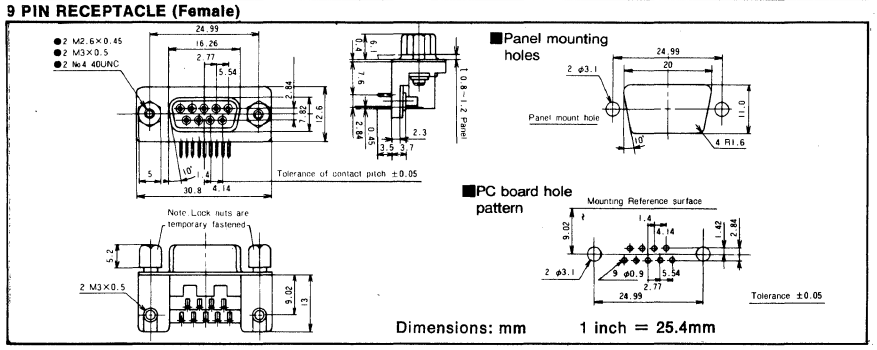
Dimensions: mm 1 inch = 25.4mm

15 PIN RECEPTACLE (Female)



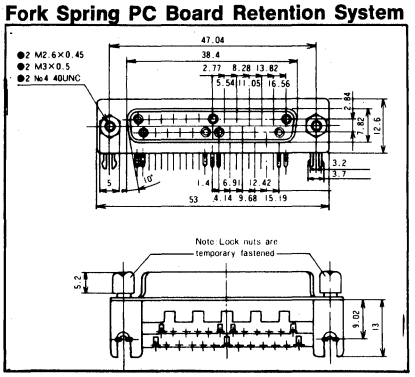
Dimensions: mm 1 inch = 25.4mm

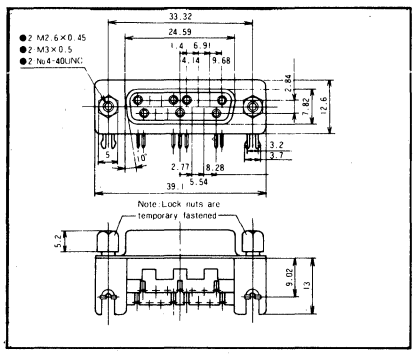
9 PIN RECEPTACLE (Female)

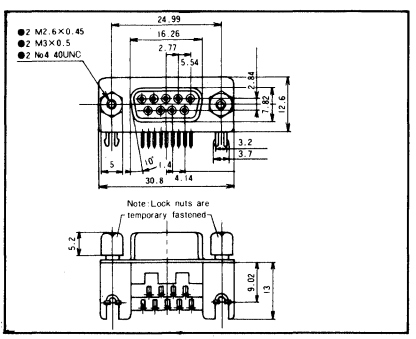


Dimensions: mm 1 inch = 25.4mm

B SERIES: Fork Spring PC Board Retention System







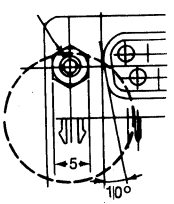
■ How To Order:

WD F — A

- Series Prefix: WD
- Contact Arrangeemnt: F
  - 9—9 contacts
  - 15—15 contacts
  - 25—25 contacts
- Contact Type (Female) Right Angle PCB Type: —
- Jackscrew Type: A
- Earth Lug Type: B
- Finish of contacts:
  - 0—0.1 micron gold
  - 1—2 micron Tin
  - 2—0.2 micron gold
  - 7—0.76 micron gold
- Jackscrew Type:
  - A—Type A R/A Type
  - B—Type B Fork Spring Type
  - 2—M2.6
  - 3—M3
  - 4—No. 4-40 UNC

Example: WD25F-A4B2
25 Contacts, Jackscrew No. 4-40 UNC, Earth Lug B Type,
Finish of Contacts—0.2 micron gold.

Unique Fork Spring PCB Retention System will hold connection in position for wave soldering or other assembly applications.
Eliminates need for hardware and saves assembly time.



FORK SPRING

- **Electrical Data**

Current Rating: 5A
Dielectric Withstanding Voltage: 1,200 VAC r.m.s.
Insulation Resistance: 5,000 MΩ min
Operating Temperature: —55°C ~ 125°C
(—67°F ~ 257°F)

- **Material and finish**

	Material	Finish, Color
Insulator	Glass reinforced thermoplastic (PBT, UL rated)	Black
Shell	Steel	Nickel over copper plating
Contacts	Phosphorous bronze	• Contact portion: Gold over nickel plating • Terminal portion: Solder over nickel plating

- **Mechanical Data:**

Contact Insertion/ Extraction Force	Insertion force	408g max with ϕ1.041 test pin		
	Extraction force	28.4g min with ϕ0.991 test pin		
Connector Insertion/ Extraction Force		9 Contacts	15 Contacts	25 Contacts
	Insertion force	3,972kg max	6.52kg max	10.8kg max
	Extraction force	2,748kg max	4.48kg max	7.4kg max
Contact Retention	2.0kg min in direction of contact Insertion/Extraction axis.			

Manufactured By: WAKA MANUFACTURING CO., LTD. JAPAN

For further information, prices, samples, please contact:

LZR ELECTRONICS, INC.
8174 Beechcraft Ave., Gaithersburg, MD 20879
Tel: (301) 921-9440
Telex: 71-3746453 (LZR INC USA) Telefax: (301) 6700436

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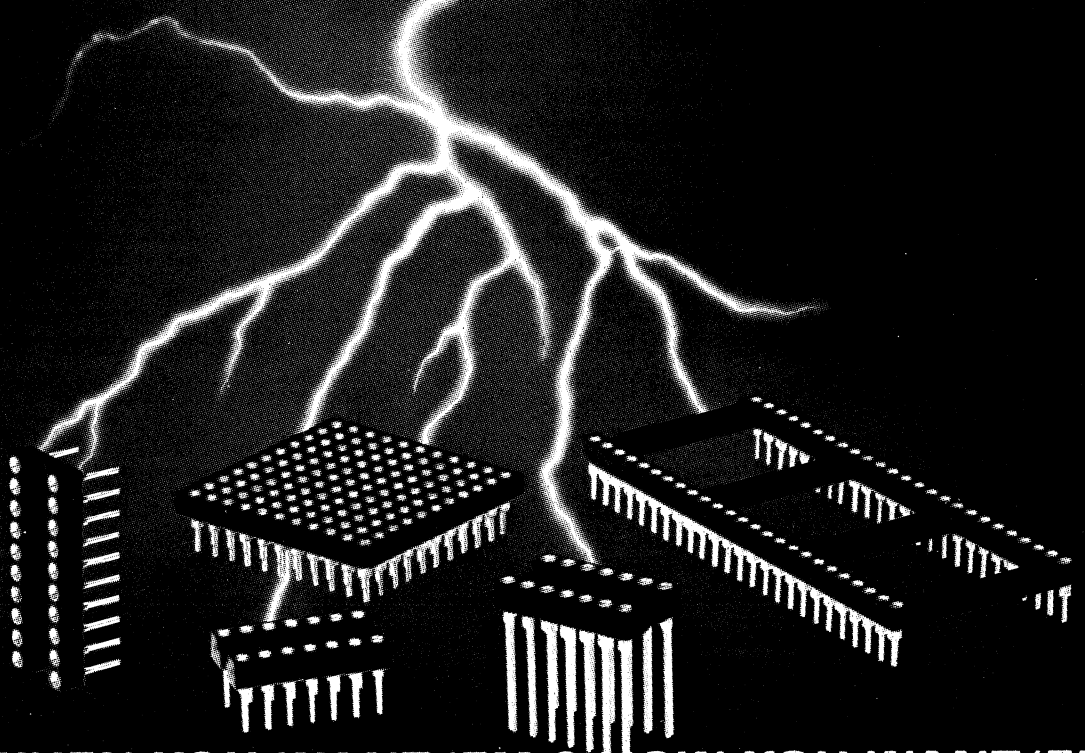

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Choose from the more than 1,000 new Mark precision socket/arrays with Omni-Tact, the first, seamless drawn BeCu contact. Available in standard lead sizes and shapes . . . and, more important, *in configurations to meet your special needs.* Here's what we give you:

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- Tight socket-to-socket spacing.
- Uncompromised quality, manufactured to meet and exceed "Mil-Specs".
- On-the-spot, problem solving technical assistance.
- Instant response service from people who care.
- Fastest turnaround in the industry.

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63 Wakelee Rd, Wolcott, CT 06716
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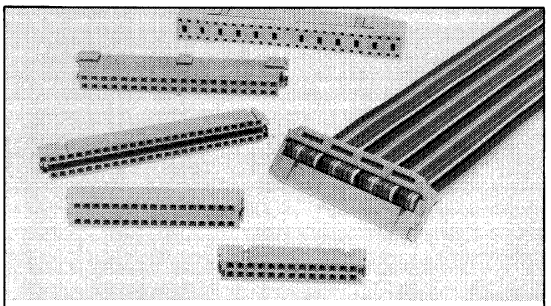
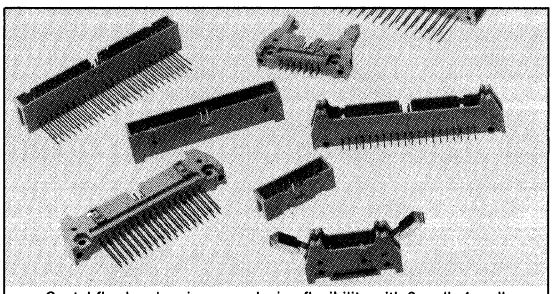
Design flexibility stiffens when you can't get all the connector features you need from one source.

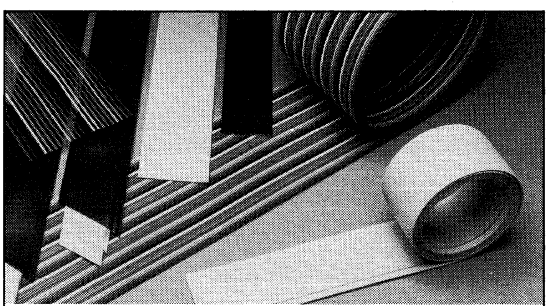
With 3M's broader line, you're covered.



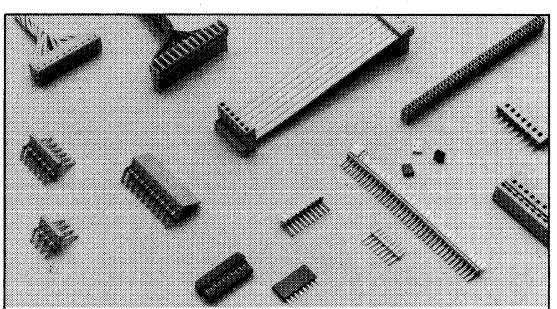
Scotchflex® sockets, available in many grid spacings and pin counts, offer patented U-contacts for reliable terminations, polarizing keys and strain relief.



Scotchflex headers increase design flexibility with 3-wall, 4-wall and boxed low-profile designs, plus pin strip headers. 3M pin strip headers, offering straight and right-angle mounting, can be stacked side-to-side or end-to-end for maximum design flexibility.



Scotchflex ribbon cable is available in flat-jacketed round, color-coded, ground plane, jacketed, jacketed/shielded and high-flex designs.



Our new Modular Connector System, or MCS line, broadens our range of printed wiring board connectors and cables, allowing you to specify 3M reliability for more applications than ever before.

Now 3M's broader line of connector/cable products substantially increases your design flexibility, with a vast array of interconnection systems for .100″ and .156″ applications.

Our patented "U-contact" gives all our connectors increased reliability when terminated to flat cable. Our patented L/H contact lowers the insertion force necessary to make a connection while raising its retention capability, creating a reliable connection that stands the test of time. All 3M contacts are beryllium copper, phosphor bronze or nickel-silver, with gold or tin alloy plating, for maximum design flexibility. Bodies are nylon and polyester.

3M flat cable comes in 18–30 AWG gauge with shielded and round jacketed versions available to complement the Scotchflex/MCS connector line.

Choose from sockets, headers, plugs, PCBs, DIPs, card-edge connectors, D-subminiature, Delta Ribbon, DIN, Splice and Tap, Flex Circuit connectors and much more.

Our new, broader line of components is backed by The 3M Risk Reduction Plan, which helps cut scheduling and design risks by getting you the connectors and reliable specs you need, when you need them. For further information, see your 3M distributor or call our toll-free product information hotline: 1-800-328-7732.

To order, call our Order Express hotline: 1-800-Call EPD

3M hears you...

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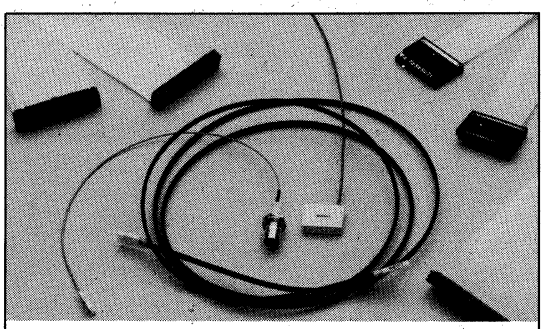
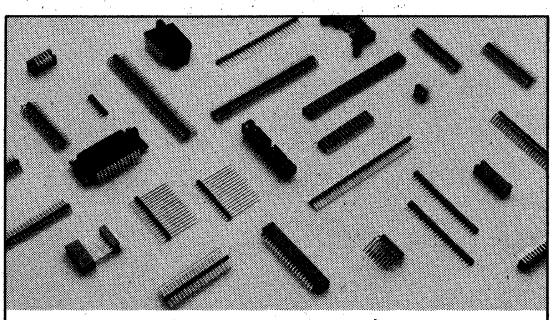
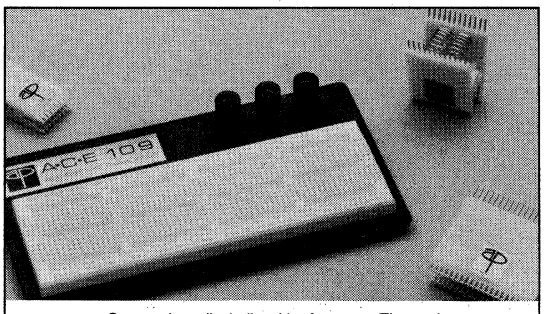
Design time is wasted when you can't get standard and customized connectors from one source. With 3M's broader line, you're covered.



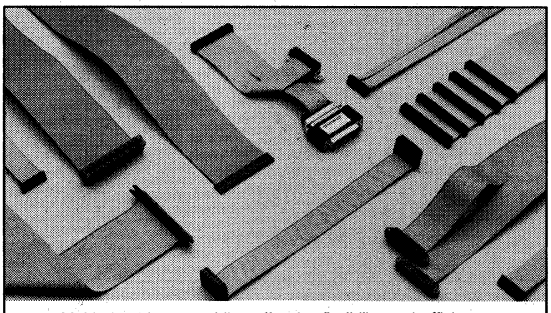
Chabin™ transmission line assemblies maximize signal fidelity in high speed computer and peripheral applications.



Our line of pin strip and shrouded headers is broad enough to provide the pin length you need to meet any of your design criteria.



Custom breadboarding kits from our Electronic Specialties unit offer quick and easy prototyping and modifying of circuits. IC test clips in a variety of sizes.



Molded cable assemblies offer the flexibility and efficiency of ordering a one-piece cable and connector product to your exact specs.

3M's broader line now includes off-the-shelf and customized connectors that eliminate wasted design time by providing you with the connectors that fit your specs, whether they're standard or special.

Our wide range of molded cable assemblies features cable and contacts integrally molded, forming a one-piece interconnect system with built-in strain-relief. Choose from a wide selection of terminations, including high and low profile sockets, PCB/Transition, card-edge, DIP, male/female D-Sub Min, Dual Row Plug, Dual Row Board, Single Row Board and Single Row Socket.

The full line of Chabin advanced transmission line assemblies maximizes signal fidelity and minimizes the effects of high frequency data loss in high speed applications like computers and peripheral devices.

Our .100″ x .100″ pitch strip headers are available in .235″, .295″ and .318″ pin lengths with tin-plate finish or selective gold-over-nickel plating and a choice of tail lengths for soldering or wire wrapping applications.

Solderless plug-in/tie-point breadboarding kits let you build and test custom circuits quickly and easily. All sizes of DIPs and discrete components with lead diameters to .032″ quickly and easily plug into the solderless tie-point matrix.

Our new, broader line of components is backed by The 3M Risk Reduction Plan, which helps cut scheduling and design risks by getting you the connectors and reliable specs you need, when you need them. For further information on any 3M product, see your 3M distributor or call our toll-free product information hotline: 1-800-328-7732.

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Designs go nowhere when you can't get what you need, when you need it.
With 3M distributors, you're covered.

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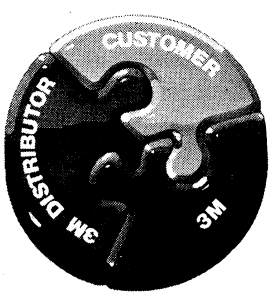

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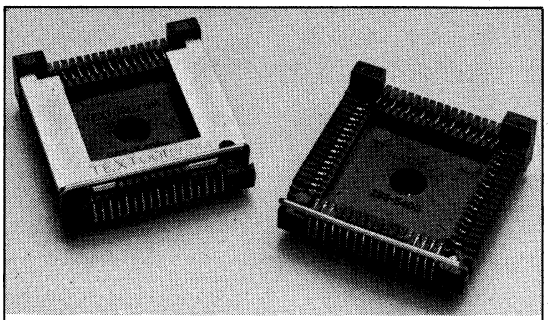
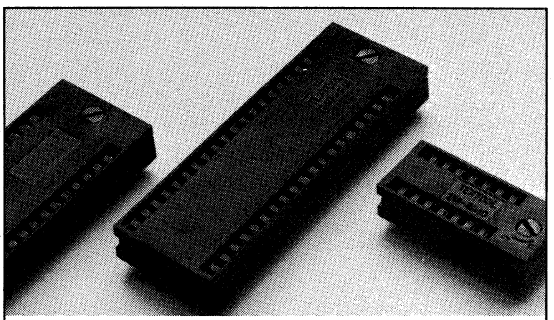
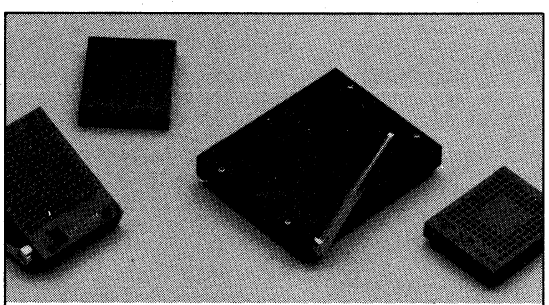
Design integrity is compromised when you can't get the right IC sockets from one source. With 3M Textool™ products, you're covered.



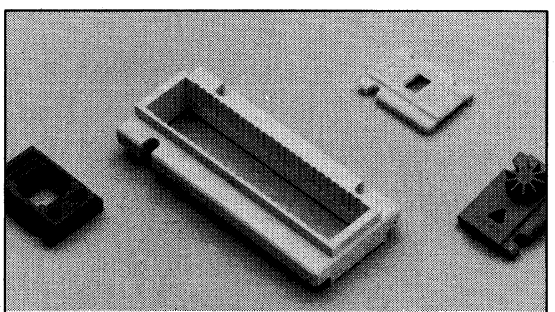
End-use 68-lead chip carrier sockets accept JEDEC leadless type A packages with .100" x .100" pin patterns.



Econo-Zip® end-use DIP sockets accept a wide range of pin counts, from 14 to 64 pins, increasing your products' flexibility.



Pin grid array sockets, for test, burn-in and end-use applications, feature matrix sizes to 21 x 21 to accept high density VLSI packages.



One- and 2-piece carriers protect delicate ICs during automated assembly and testing of all package types.

3M makes it easy to get the right IC sockets for your needs with our selection of Textool designs for test, burn-in and end-use applications. Socket types include chip carriers, flat packs, pin grid arrays, DIPs and discrete components in a variety of body, contact and plating materials.

Econo-Zip end-use DIP sockets are designed for applications requiring field replacement or reprogramming of packages: PROM, EPROM, mobile telephones, PABX equipment, programmable auto horns, robotics and more.

The patented Zip® (Zero Insertion Pressure) feature on our pin grid array and Econo-Zip sockets protects expensive leads from damage. The low profile and durable leads of our chip carrier sockets make them ideal for high volume production applications.

We also offer 1 and 2-piece IC carriers useful in automated assembly and testing. Special anti-static materials protect ICs during handling.

For further information on Textool products, contact the Textool Test and Interconnect Products Department, 1001 Fountain Parkway, Grand Prairie, TX 75050 (214) 647-0392. Or get in touch with the distributor near you. **ARIZONA:** DC ELECTRONICS, 2211 So. 48th St., Suite H, Tempe, AZ 85282 (602) 438-1234; **CALIFORNIA:** DC ELECTRONIC SUPPLY, 1600 Wyatt Drive, #3, Santa Clara, CA 95054 (408) 980-1199, MULVIN & CO., 2414 Foothill Boulevard, La Crescenta, CA 91214 (213) 245-1081; **FLORIDA:** TECH SALES, INC., 5777 Myerlake Circle, P.O. Box 6260, Clearwater, FL 33518 (800) 237-8931 or (813) 539-7429; **ILLINOIS:** EL/MECH, INC., 8430 Gross Point Road, Skokie, IL 60076 (800) 647-7788 or (312) 967-8530; **MASSACHUSETTS:** VECTOR SALES, 90 Braintree Street, Allston MA 02134 (617) 787-2790; **MISSOURI:** EL/MECH, INC., 537 Redbridge Court, St. Louis, MO 63011 (314) 527-4830 or (800) 647-7788 (Niles, IL office); **NEW JERSEY:** MERIDIAN SUPPLY CO., 2810 Morris Avenue, Union, NJ 07083 (201) 687-6220; **NEW MEXICO:** ALLIANCE ELECTRONICS, 11030 Cochiti S.E., Albuquerque, NM 87123 (505) 292-3360 or (800) 545-6288; **NORTH CAROLINA:** MERIDIAN SUPPLY CO., 3125 Poplarwood Court, Aspen Suite 151, Raleigh, NC 27625 (919) 872-1565; **TEXAS:** PRIME DISTRIBUTING CO., P.O. Box 946, Allen, TX 75002 (214) 231-0170 or (800) 442-4008 (Texas only); TACTIC ELECTRONICS, INC., 1111 Jupiter Road North, Suite A-106, Plano, TX 75074 (214) 422-0777 or (800) 345-6005 (In Texas), (800) 626-2183 (Outside Texas); **WASHINGTON:** BLAIR HIRSH COMPANY, INC., P.O. Box 2250, Lynnwood, WA 98036 (206) 774-8151.

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3)
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

METUCHEN CAPACITORS INC.

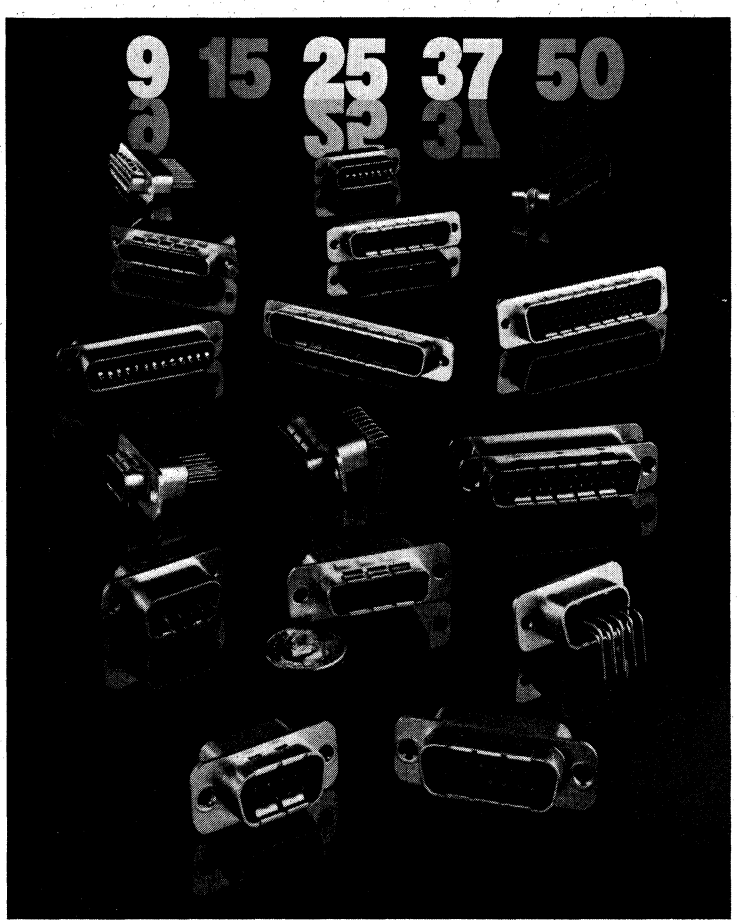
EMI Filtered D Subminiature Connectors

PRODUCT BENEFITS

- Provides optimum positioning of interference control at interconnect interface.
- Provides maximum volumetric efficiency.
- Design is based on proprietary ceramic technology of proven reliability and RF performance.
- Connectors mount in existing chassis hole pattern.
- A cost effective solution to electro-magnetic compatibility (EMC).
- Provides a wide range of filter performance options.
- Adaptor styles provide for ease of retrofitting existing equipment.
- Testing 100% for key parameters ensures quality levels.
- Designed to provide compatibility with EIA RS-232 and RS-449.

M.C.I. has the world's largest inventory of filtered D-Subminiature connectors. These connectors are manufactured by the leader of the industry... Spectrum Control, Inc. Spectrum Control's Filtered D Subminiature connectors are designed to provide a cost effective method of complying with FCC Part 15, Sub Part J, VDE and MIL STD 461 A/B regulations. The filters are feed-thru capacitors and pi sections.

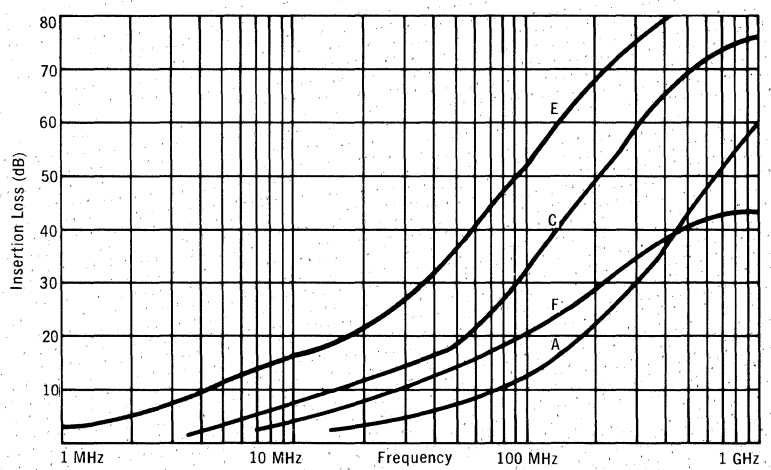
Our in-house stock includes all five shell sizes, 9, 15, 25, 37 and 50 position connectors in pin contacts (plugs), socket contacts (receptacles) and in the very versatile pin/socket adaptors. The four standard electrical configurations along with their performance values follows:



EMI FILTER PERFORMANCE

Filter Designation	*Filter Circuits	Capacitance		3 dB Max Cut-Off Frequency (MHz)	Dielectric W'Standing Voltage	Contact Rating	Contact Resist.	DC Working Voltage	Minimum Insertion Loss — Decibels (dB)						
		Value	Tolerance					−55°C to +125°C	5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz
A	Pi	310 pF	±20%	17	300V	5A	.010 Ω Max.	100V	—	—	—	5	10	18	39	52
C	Pi	1000 pF	+100 −0%	3.2	300V	5A	.010 Ω Max.	100V	—	5	9	15	25	43	65	70
E	Pi	4000 pF	+100 −0%	0.8	150V	5A	.010 Ω Max.	200V	8	13	18	31	46	60	75	75
F	FT	830 pF	±20%	6.4	600V	5A	.010 Ω Max.	200V	—	3	6	12	17	23	30	35

TYPICAL PI FILTER AND FEED THROUGH CAPACITOR PERFORMANCE*



The following pages depict HM RS-232 series (shell size 25)

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The world's leading manufacturer of Electro-Magnetic Components. Distributed for Spectrum Control Inc.

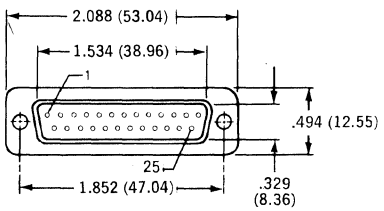
Metuchen Capacitors Inc. / Dept. EM, 420 Park Avenue, Perth Amboy, NJ 08861 / (201) 442-0500 / TWX 710-998-0892 / FAX 201-442-9145

METUCHEN CAPACITORS INC.

EMI Filtered D Subminiature Connectors: 25 Pin Plug

PIN CONTACT (PLUG)

FRONT VIEW
(All Configurations)

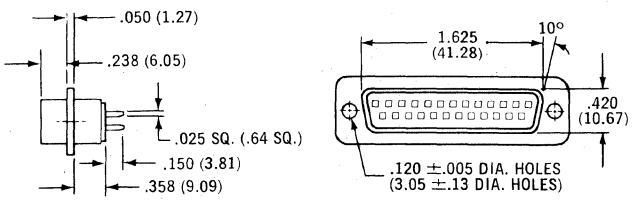


MOUNTING OPTIONS
THREADED SELF-LOCKING INSERTS

Self-locking, threaded and soldered #4-40 UNC inserts available for all connectors and adaptors. Allows ease in fastening and mounting from pin or socket side. Ordering information adding L.I. for Locking Inserts to end of Part Number (eS-56-725-005LI).

Dimensions Shown in Inches (mm)

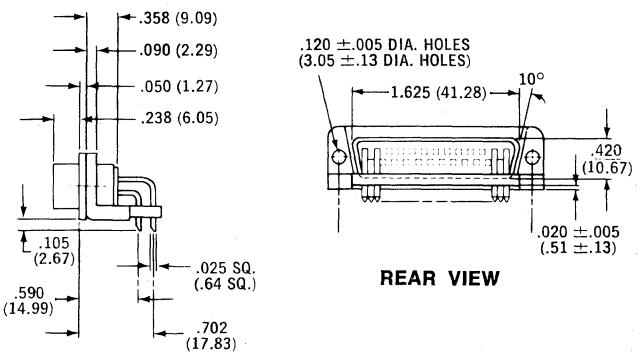
PRINTED CIRCUIT BOARD MOUNT



REAR VIEW

Part Number	EMI Filter			Voltage Rating
	Type*	Cap Value	Lines Filtered	
56-721-001	A	310 pF Pi	25	100 VDC
56-721-003	C	1000 pF Pi	25	100 VDC
56-721-005	E	4000 pF Pi	25	50 VDC
56-721-033	F	830 pF FT	25	200 VDC

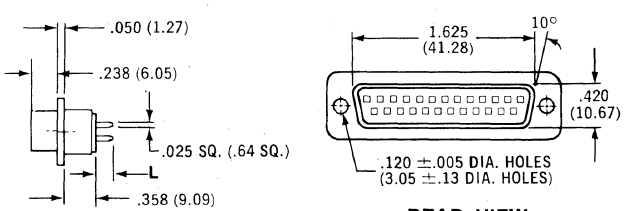
PRINTED CIRCUIT RIGHT ANGLE MOUNT



REAR VIEW

Part Number	EMI Filter			Voltage Rating
	Type*	Cap Value	Lines Filtered	
56-722-001	A	310 pF Pi	25	100 VDC
56-722-003	C	1000 pF Pi	25	100 VDC
56-722-005	E	4000 pF Pi	25	50 VDC
56-722-008	F	830 pF FT	25	200 VDC

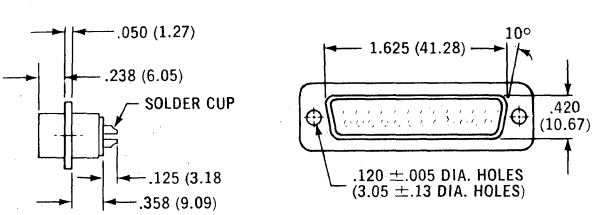
SOLDERLESS WIRE WRAP



REAR VIEW

Part Number	L .500	L .375	L .225	EMI Filter			Voltage Rating
				Type*	Cap Value	Lines Filtered	
56-721-	006	028	024	A	310 pF Pi	25	100 VDC
56-721-	008	030	026	C	1000 pF Pi	25	100 VDC
56-721-	010	032	027	E	4000 pF Pi	25	50 VDC
56-721-	042	039	036	F	830 pF FT	25	200 VDC

SOLDER CUP TERMINATION



REAR VIEW

Part Number	EMI Filter			Voltage Rating
	Type*	Cap Value	Lines Filtered	
56-721-011	A	310 pF Pi	25	100 VDC
56-721-013	C	1000 pF Pi	25	100 VDC
56-721-015	E	4000 pF Pi	25	50 VDC
56-721-045	F	830 pF FT	25	200 VDC

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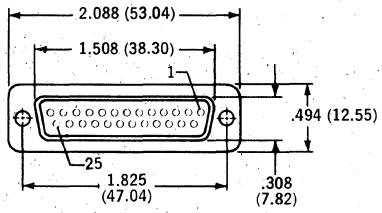
METUCHEN CAPACITORS INC.

EMI Filtered D Subminiature Connectors: 25 Socket Receptacle

SOCKET CONTACT (RECEPTACLE)

FRONT VIEW (All Configurations)

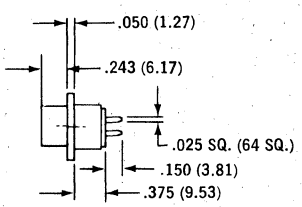


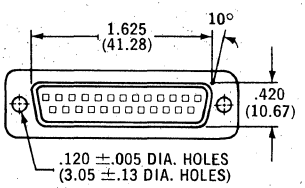
MOUNTING OPTIONS
THREADED SELF-LOCKING INSERTS

Self-locking, threaded and soldered #4-40 UNC inserts available for all connectors and adaptors. Allows ease in fastening and mounting from pin or socket side. Ordering information adding L.I. for Locking Inserts to end of Part Number (eS-56-725-005LI).

Dimensions Shown in Inches (mm)

PRINTED CIRCUIT BOARD MOUNT

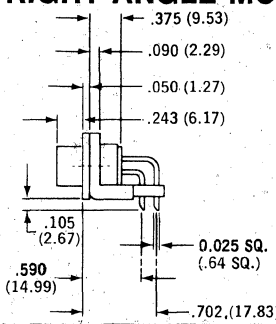


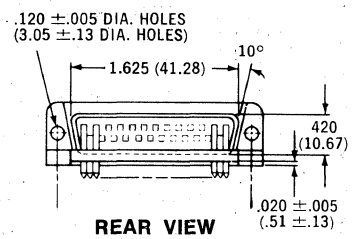


REAR VIEW

Part Number	EMI Filter Type*	EMI Filter Cap Value	EMI Filter Lines Filtered	Voltage Rating
56-723-001	A	310 pF Pi	25	100 VDC
56-723-003	C	1000 pF Pi	25	100 VDC
56-723-005	E	4000 pF Pi	25	50 VDC
56-723-023	F	830 pF FT	25	200 VDC

PRINTED CIRCUIT RIGHT ANGLE MOUNT

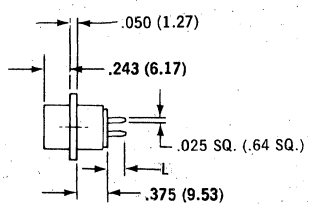


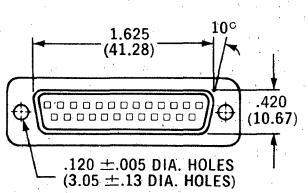


REAR VIEW

Part Number	EMI Filter Type*	EMI Filter Cap Value	EMI Filter Lines Filtered	Voltage Rating
56-724-001	A	310 pF Pi	25	100 VDC
56-724-003	C	1000 pF Pi	25	100 VDC
56-724-005	E	4000 pF Pi	25	50 VDC
56-724-008	F	830 pF FT	25	200 VDC

SOLDERLESS WIRE WRAP

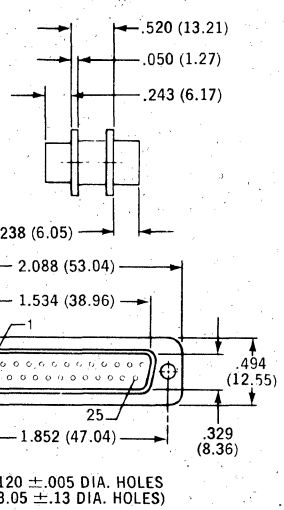




REAR VIEW

Part Number	L .500	L .375	L .250	EMI Filter Type*	EMI Filter Cap Value	EMI Filter Lines Filtered	Voltage Rating
56-723-	006	017	012	A	310 pF Pi	25	100 VDC
56-723-	008	019	014	C	1000 pF Pi	25	100 VDC
56-723-	010	021	016	E	4000 pF Pi	25	50 VDC
56-723-	032	029	026	F	830 pF FT	25	200 VDC

EMI FILTERED CONNECTOR ADAPTOR: PIN/SOCKET (PLUG/ RECEPTACLE)



Part Number	EMI Filter Type*	EMI Filter Cap Value	EMI Filter Lines Filtered	Voltage Rating
56-725-001	A	310 pF Pi	25	100 VDC
56-725-003	C	1000 pF Pi	25	100 VDC
56-725-005	E	4000 pF Pi	25	50 VDC
56-725-019	F	830 pF FT	25	200 VDC

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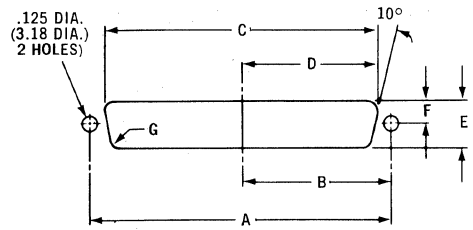
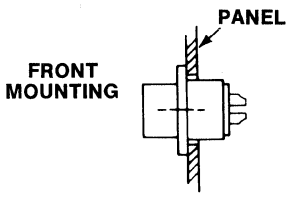
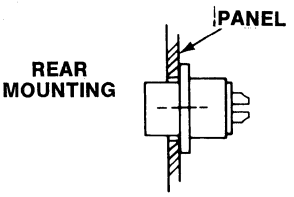
METUCHEN CAPACITORS INC.

Application Notes

25 D SUBMINIATURE PANEL CUTOUTS





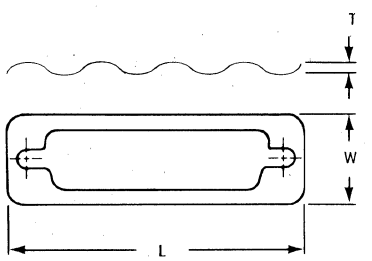


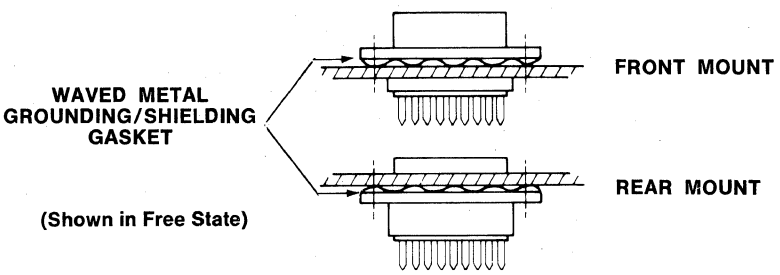
Mounting Method*	A ±.005 (0,13)	B ±.005 (0,13)	C ±.005 (0,13)	D ±.005 (0,13)	E ±.005 (0,13)	F ±.005 (0,13)	G ±.002 (0,05)
Front Mounting	1.852 (47,04)	.926 (23,52)	1.645 (41,78)	.822 (20,89)	.440 (11,18)	.220 (5,59)	.150 (3,81)
Rear Mounting	1.852 (47,04)	.926 (23,52)	1.528 (38,81)	.764 (19,41)	.360 (9,14)	.180 (4,57)	.110 (2,79)

* When Rear Mounting Pin (Plug) Connector use Front Mounting Panel Cutout.

Mounting Considerations Waved Metal Gaskets...For Complete EMI Protection

Proper mounting of any EMI filter — including the EMI filtered D Subminiature — is critical to the achievement of electromagnetic compatibility. The mounting surface for grounding the connector must be free from paint or any other insulating material. The sketches below indicate the use of one of Spectrum's EMI gaskets to fill any tolerance gaps and adjust for irregularities in the flatness of the mounting surface.



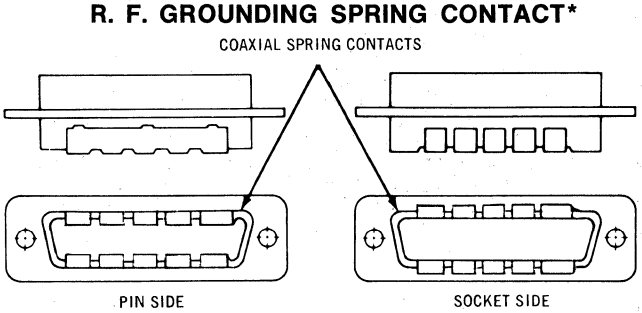


Shell Size	Mounting Configuration	L	W	T Free State	T Compressed	Part No.
25	Front - Socket	2.088 (53,04)	.600 (15,24)	.030 (0,76)	.005 (0,13)	572019-00102-70
	Rear - Pin					
	Rear - Socket	2.088 (53,04)	.600 (15,24)	.030 (0,76)	.005 (0,13)	572019-00107-70

Spectrum EMI Filtered D Subminiature...Unique

Spectrum D subminiature connectors feature a unique ground plane to effectively block bulkhead leakage of EMI. The design also provides line to line isolation separation to limit cross talk (line to line mutual coupling) to an absolute minimum. Another, and a most important feature, is the coaxial spring contact that provides proper electrical grounding when mating one connector to another connector.

R. F. GROUNDING SPRING CONTACT*



* Provided on all shell sizes — all termination styles Patent Pending.

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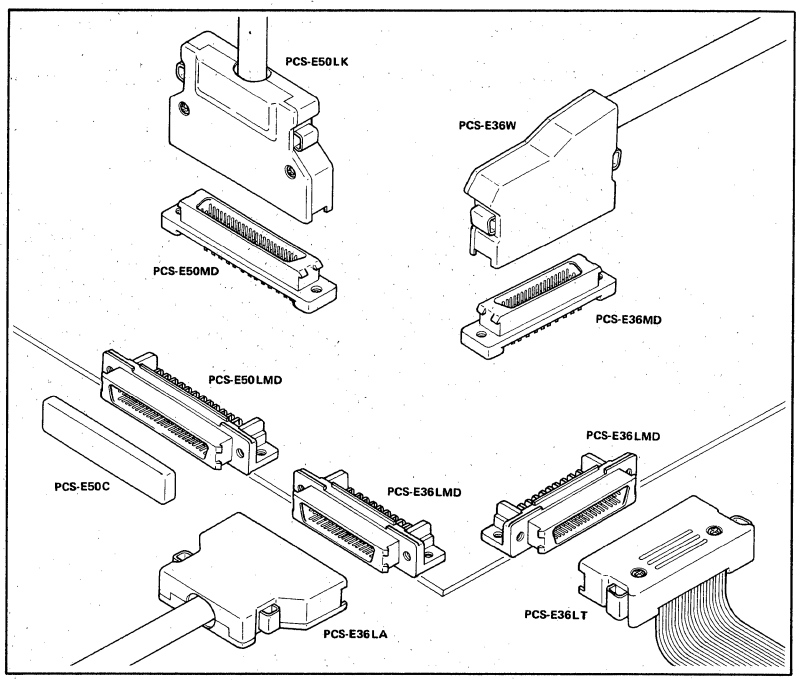
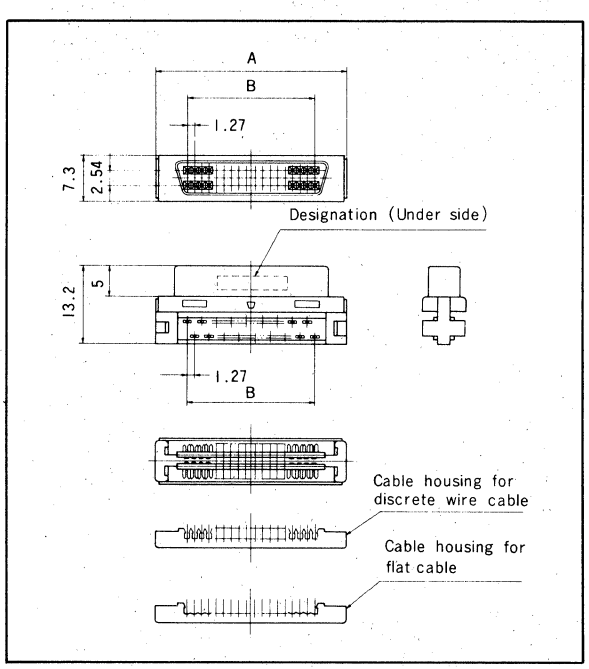
Honda Connectors

PCS Series (Micro-D) Board-to-Cable

PCS board-to-cable connectors condense input to one-half the space of conventional D-subminiature connectors. They have a .050 in. center spacing that makes use of 28 and 30 AWG, .050 in. center cable. PCS connectors are designed to prevent EMI and facilitate product compliance with FCC standards. IDC configuration significantly reduces wiring time. Zinc die cast receptacle shells provide additional noise reduction. Available unassembled or as custom cable assemblies in 20 to 80 contacts.





No. of Contacts	Part No.	A	B
20	PCS-E20F( )	21.65	11.43
28	PCS-E28F( )	26.7	16.51
36	PCS-E36F( )	31.8	21.59
50	PCS-E50F( )	40.7	30.48
68	PCS-E68F( )	52.1	41.91
80	PCS-E80F( )	—	—

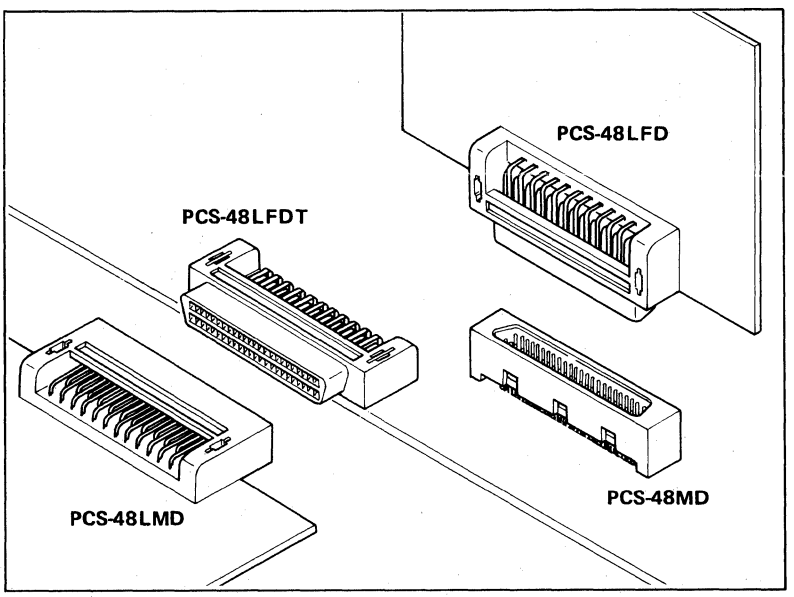
Honda offers a wide variety of other connector series. For product literature, or more information, please write: Mhotronics, Inc., 444 Lake Cook Rd., Suite 8, Deerfield, IL 60015...or call: 312/948-5600

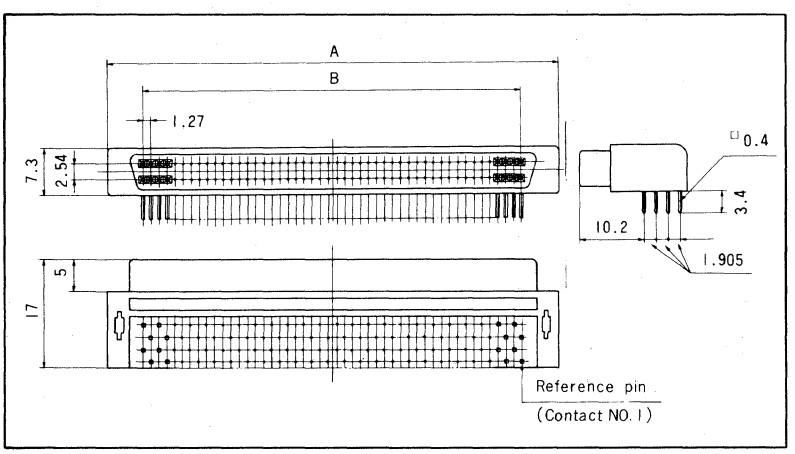
MHO TRONICS

Honda Connectors

PCS Series (Micro-D) Board-to-Board

PCS board-to-board connectors make the most of circuit board space. They feature low insertion and extraction forces for smooth operation, and .050 in. center spacing. Available in 34 to 96 contacts.





No. of Contacts	Part No.	A	B
34	PCS-34LFD	31.63	20.32
48	PCS-48LFD	40.52	29.21
68	PCS-68LFD	53.22	41.91
96	PCS-96LFD	71.00	59.69

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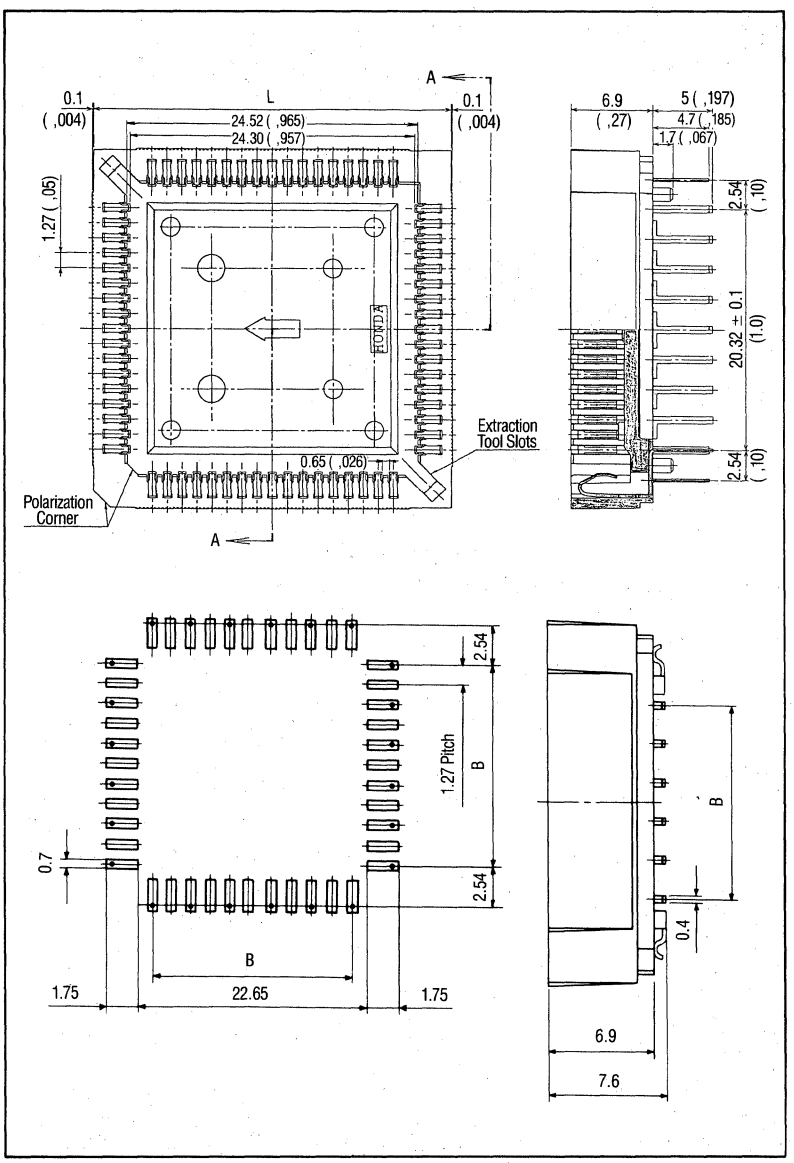
MHO TRONICS

Honda Connectors

TC Series (Chip Carrier Sockets)

TC Series Chip Carrier Sockets are mounted on the same footprint as the chip packages they carry. Even if the board was designed for direct chip application, TC Series provides the perfect interface for trouble-free surface mount. Special structure allows the socket to conform to pin spacing deviations of the chip carrier package. Closed bottom version requires no cleaning since solder can't reach contact surfaces. Open bottom version has wide spaces between insulation and PCB for easy cleaning. TC Series accepts JEDEC Types B, C and D plastic leaded chip carrier packages of 20 to 84 contacts with .050 pin spacing.



Parts No.	L	B
TC-A 20D( )	15.01	5.08
TC-A 28D( )	17.55	7.62
TC-A 44D( )	22.63	12.70
TC-A 52D( )	25.17	15.24
TC-A 68D( )	30.25	20.32
TC-A 84D( )	35.33	25.40

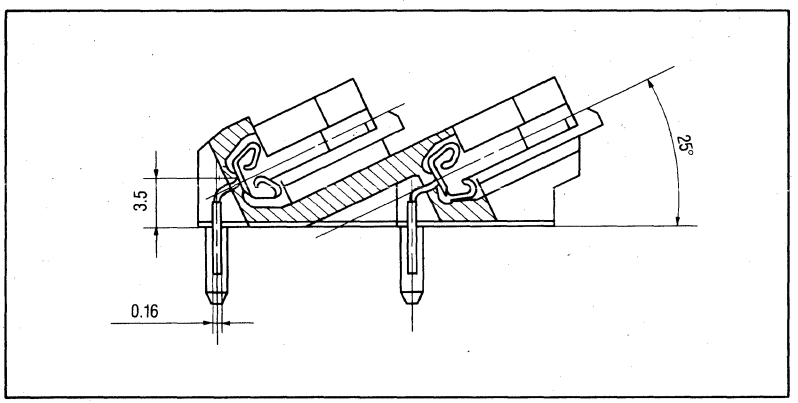
Honda offers a wide variety of other connector series. For product literature, or more information, please write: Mhotronics, Inc., 444 Lake Cook Rd., Suite 8, Deerfield, IL 60015...or call: 312/948-5600

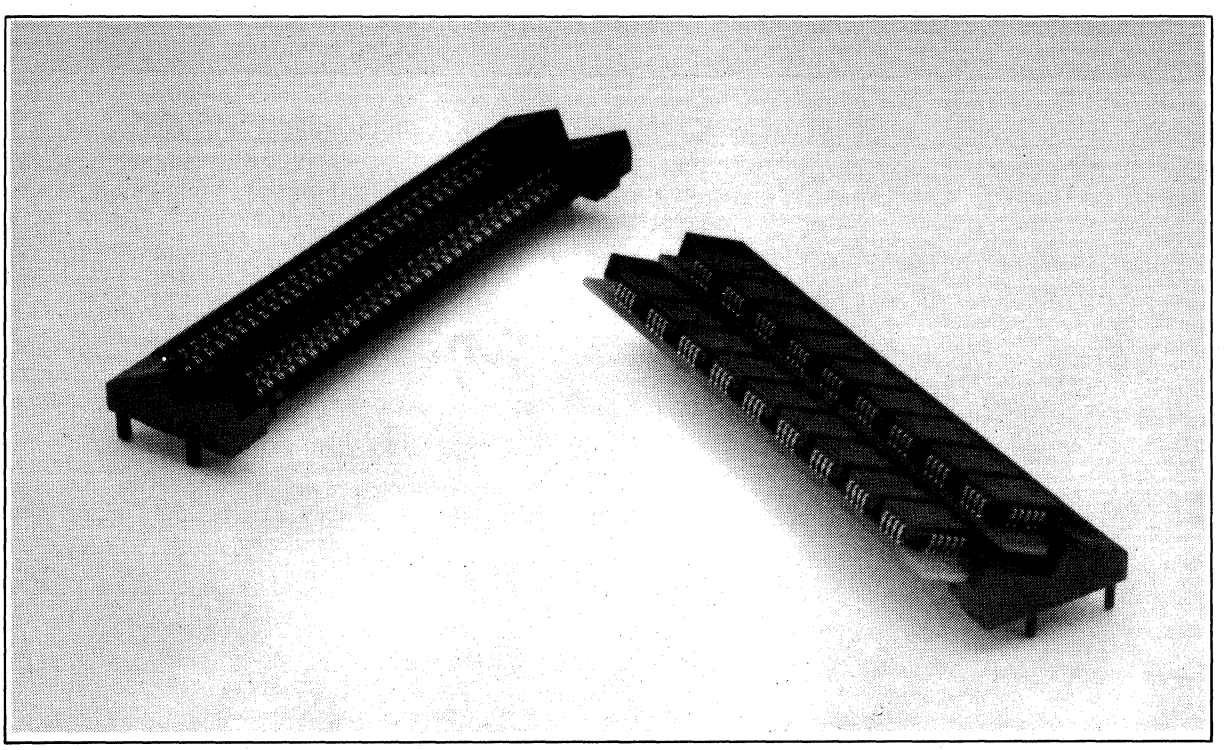
MHO TRONICS

Honda Connectors

SIMM Sockets

Honda SIMM Sockets provide fully compatible high density memory module interconnections for industry standard processing equipment. Designed for straight-in module insertion, Honda's dual slanted 30-position version saves space with .500 side stack centers. Separate mechanical latch holds module tight. Integral standoffs make cleaning easy. High-pressure tin-to-tin contacts assure reliable performance. Select gold plating is also available.



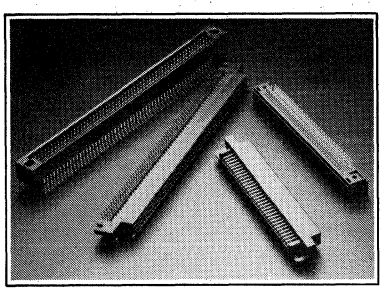


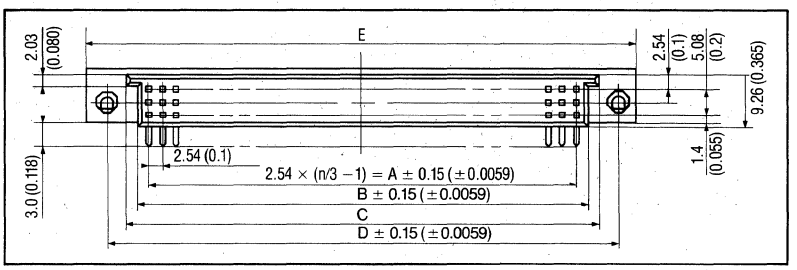
Honda offers a wide variety of other connector series. For product literature, or more information, please write: Mhotronics, Inc., 444 Lake Cook Rd., Suite 8, Deerfield, IL 60015... or call: 312/948-5600

MHO TRONICS

Honda Connectors AKC/AKD Series

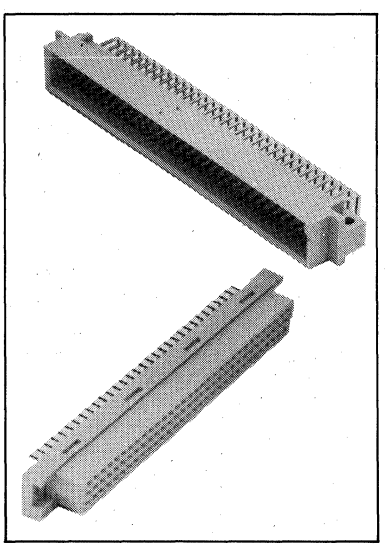
AKC Series two-piece box contact connectors are designed for backplane applications requiring low cost, industry compatible connectors for computers, telecommunication and test equipment. Two areas of redundant contact give AKC connectors low insertion and extraction forces. Press-fit male connectors provide fast termination with no soldering. Polarized housings prevent improper insertion. Available in 96, 165 pin configurations using standard .100 in. center spacing.

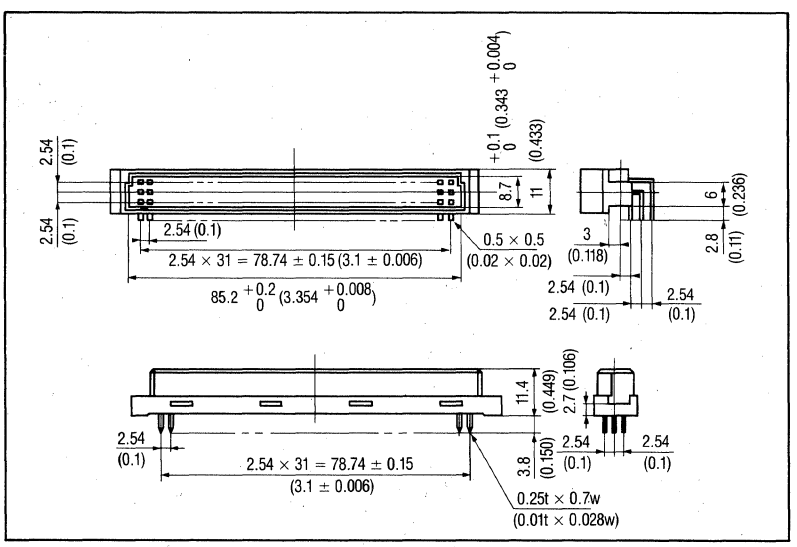




Parts No.	n	A	B	C	D	E
AKC-96TLFD	96	78.74 (3.1)	81.89 (3.22)	85.45 (3.36)	92.71 (3.65)	100.33 (3.95)
AKC-165TLFD	165	137.16 (5.4)	140.31 (5.52)	143.87 (5.66)	151.13 (5.95)	158.75 (6.25)

AKD Series DIN Connectors are standard PC mount connectors that conform to DIN 41612 and IEC 603-2 standards. Two areas of redundant contact provide low insertion and extraction forces. Closed bottom requires no cleaning since solder can't reach contact surfaces. Available with up to 96 contacts.



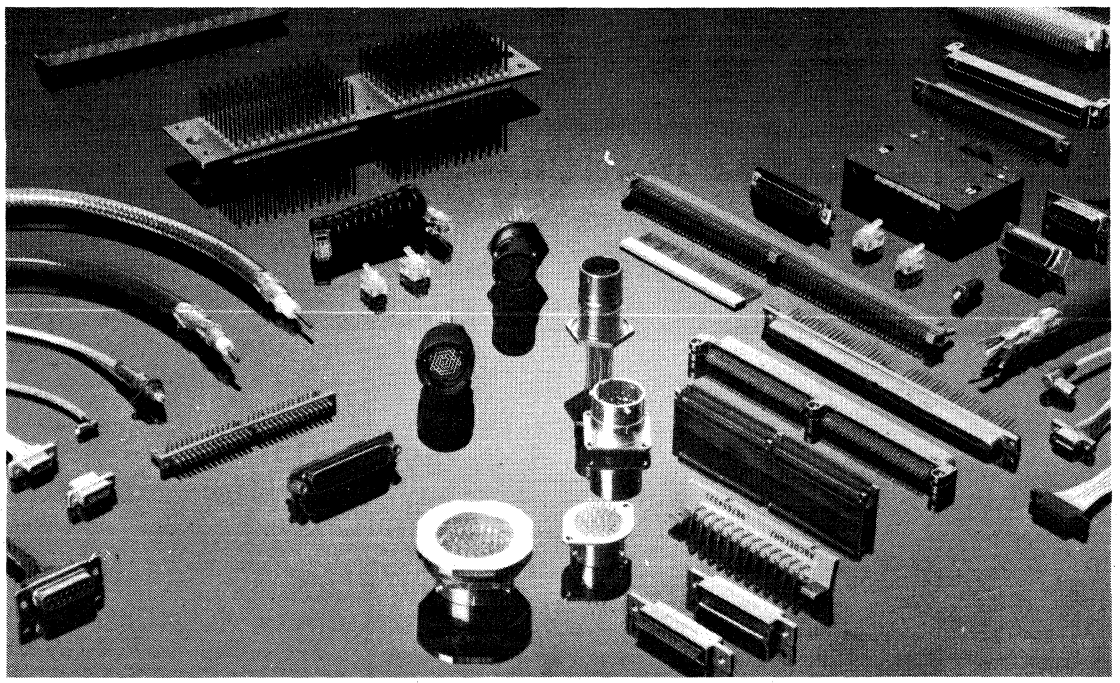


Honda offers a wide variety of other connector series. For product literature, or more information, please write: Mhotronics, Inc., 444 Lake Cook Rd., Suite 8, Deerfield, IL 60015... or call: 312/948-5600

MHO TRONICS

INTERCONNECT SYSTEMS DIVISION
MICRODOT INC.

12 Progress Drive, Montgomeryville, PA 18936, (215) 699-5373,



The INTERCONNECT SYSTEMS DIVISION, MICRODOT INC. has a longstanding worldwide reputation as a respected supplier of a broad array of electronic/electromechanical connecting devices and specialty cable. The INTERCONNECT SYSTEMS DIVISION charter encompasses the engineering and manufacture of a high-reliability MIL-Spec and commercial electronic/electromechanical connectors, as well as automotive switches, components and assemblies, specialty electronic cable and cable assemblies, and metal backpanels and plastic/metal headers. Products range from simple, low-cost wire-to-wire connectors, to highly sophisticated interconnect systems for electronic equipment.

PRODUCTS

MALCO

Malco-Montgomeryville & Malco South Pasadena manufactures an array of connector products:

- **High density microminiature 'D' connectors meeting MIL-C-83513**
- **Coaxial connectors & cable**
- **Back Plane assembly & headers QPL'd to MIL-C-28754**
- **Telephone Modular Plugs & Jacks**
- **'D' sub crimp & boardside connectors & accessories**
- **High Density circular connectors**

CONNECTOR INDUSTRIES OF AMERICA

Circular Hermetically Sealed Environmental connectors are designed & fabricated to the following military specifications:

- **MIL-C-5015**
- **MIL-C-25955**
- **MIL-C-26500**
- **MIL-C-38999 Series III**
- **MIL-C-83723**
- **MIL-C-81703**

Custom hermetics are also manufactured to customer drawings

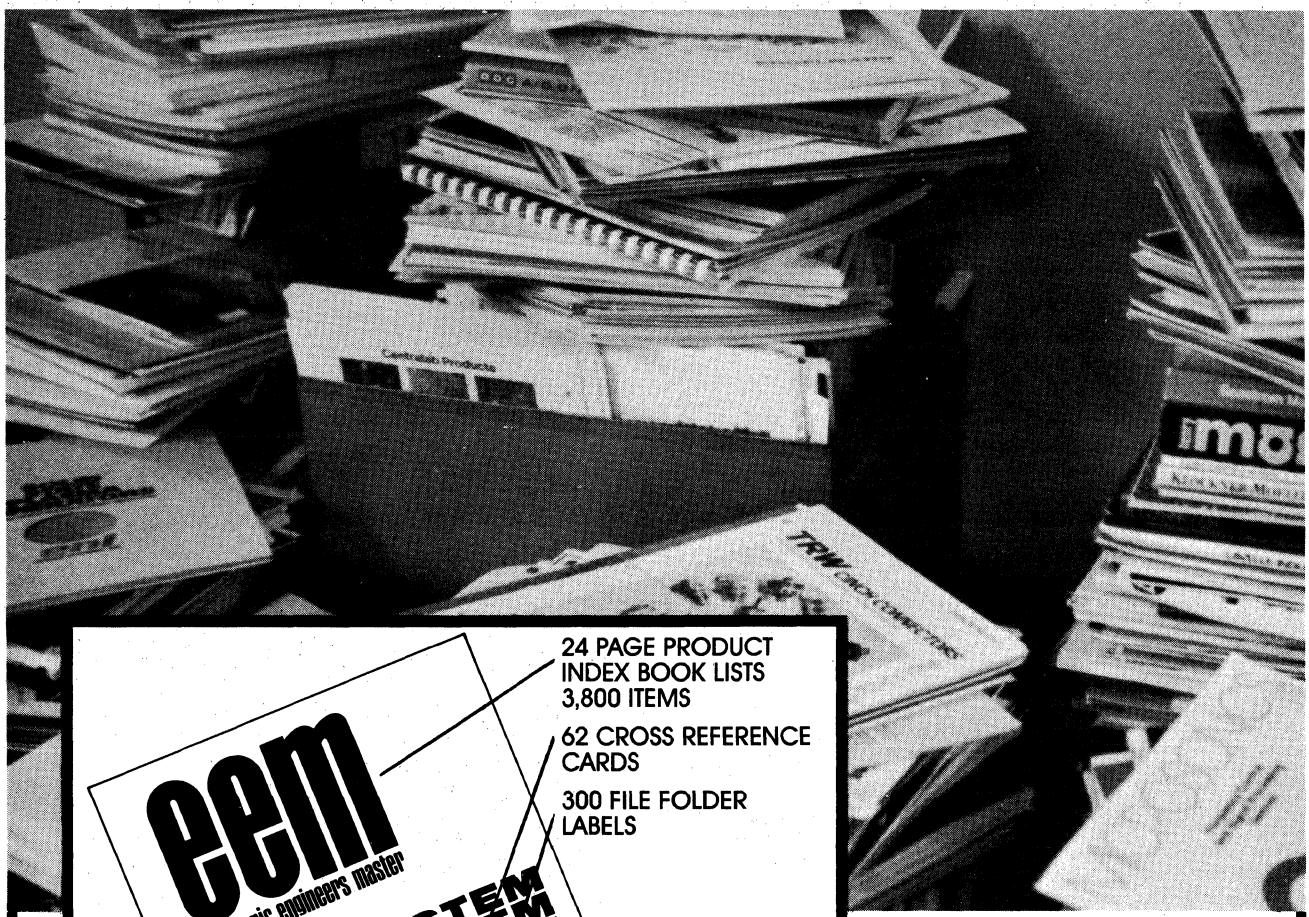
MALCO®
INTERCONNECT SYSTEMS DIVISION
MICRODOT INC

MALCO-Montgomeryville
12 Progress Drive
Montgomeryville, PA 18936
Phone No. (215) 699-5373

MALCO-South Pasadena
306 Pasadena Avenue
South Pasadena, CA 91030
Phone No. (818) 799-9171

Connector Industries of America
639 North Wayne Avenue
Cincinnati, OH 45215
Phone No. (513) 733-3680

Connector Industries of America
INTERCONNECT SYSTEMS DIVISION
MICRODOT INC



24 PAGE PRODUCT INDEX BOOK LISTS 3,800 ITEMS

62 CROSS REFERENCE CARDS

300 FILE FOLDER LABELS

ALL NEW with this edition of EEM

GET ORGANIZED!

Are your catalog files organized? Can you find any given catalog in a matter of seconds? If your answer is "Yes," you probably already have the EEM File System. But, if you said "No," you really ought to look into this simple system. It will save hours of time and tons of aggravation.

The EEM File System was invented over twenty-five years ago to help people who specify, buy, or work with electronic products and equipment. It is upgraded on a constant basis to reflect the current state of the art. It's easy to use and easy to customize to your particular needs.

You say you want to file catalogs by type of product? That's easy to do with The System. But, what are you going to do when there are multiple products in one catalog? Take Mallory for example. There are all kinds of products in the Mallory Short Form Catalog. With the EEM File System all you do is file the catalog under "M" for Mallory and refer to it on all of the cross reference cards that apply.

There are thousands of EEM File Systems in everyday use in engineering and procurement offices all over the world. Shouldn't you be using this proven system?

The EEM File System is shipped in one neat package. The package contains everything you need to set up your very own filing system. Best of all, it's easy to get and very affordable. Send a check or money order for $25.00 and EEM will pay the postage and sales tax. If you must use a purchase order, please add $5.00 for postage and handling. An invoice will accompany your System.

Don't waste any more time. Get organized now!

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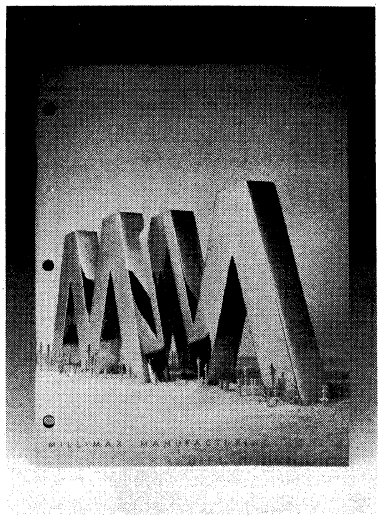
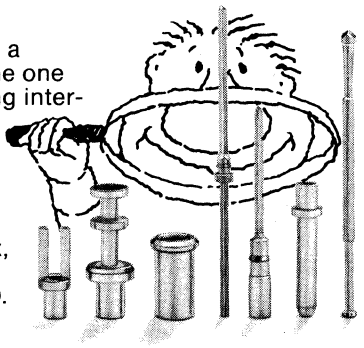


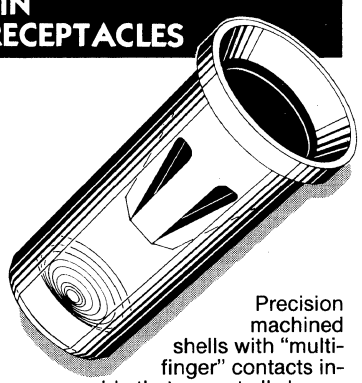
PIN POINT THE RIGHT PIN RIGHT AWAY WITH A FREE MILL-MAX® CATALOG

Tired of hunting down parts through a clutter of catalogs? Then discover the one that takes the intrigue out of selecting interconnect components. The Mill-Max catalog. Buried beneath its covers are hundreds of parts — all neatly organized with drawings as vivid as a good set of fingerprints.

For your **free** copy, write to Mill-Max, 190 Pine Hollow Road, Oyster Bay, New York 11771 or call **516-922-6000**.

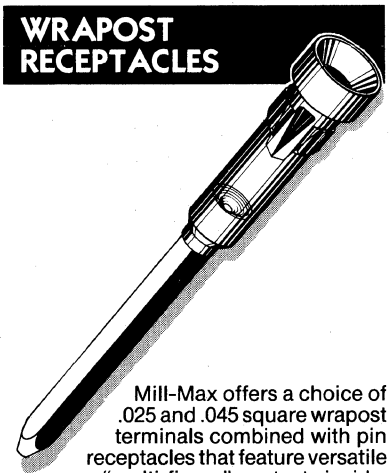


PIN RECEPTACLES



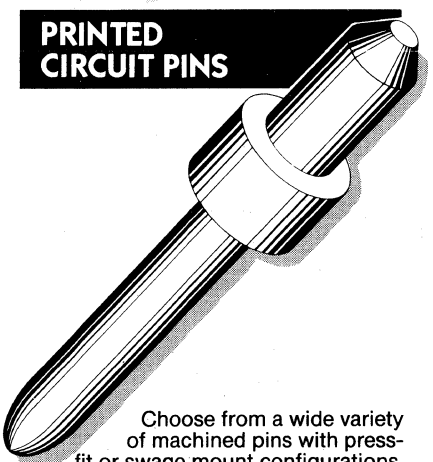
Precision machined shells with "multi-finger" contacts inside that accept all shapes and sizes of pins and component leads. Hundreds of styles available for pin diameters from .010 to .100.

WRAPOST RECEPTACLES



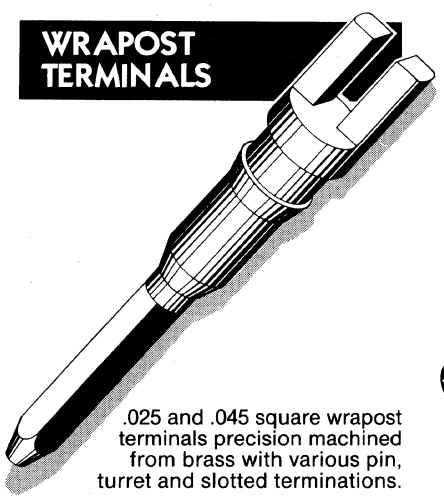
Mill-Max offers a choice of .025 and .045 square wrapost terminals combined with pin receptacles that feature versatile "multi-finger" contacts inside.

PRINTED CIRCUIT PINS



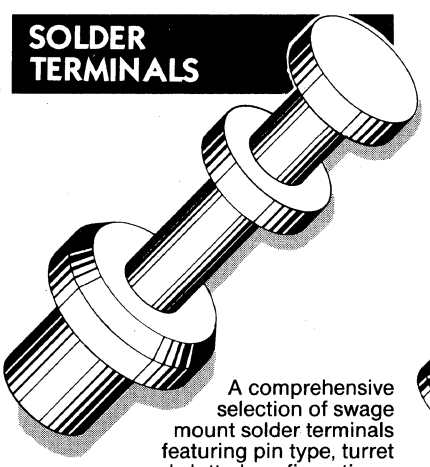
Choose from a wide variety of machined pins with press-fit or swage mount configurations. Pin diameters range from .017 to .080.

WRAPOST TERMINALS



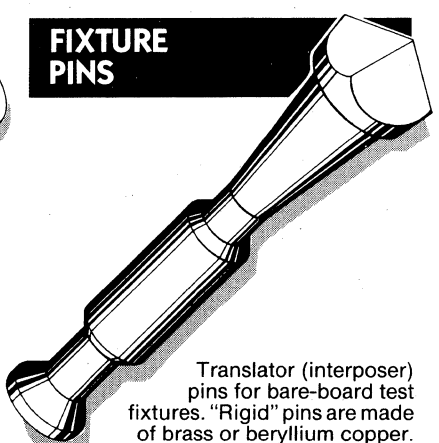
.025 and .045 square wrapost terminals precision machined from brass with various pin, turret and slotted terminations.

SOLDER TERMINALS



A comprehensive selection of swage mount solder terminals featuring pin type, turret and slotted configurations.

FIXTURE PINS



Translator (interposer) pins for bare-board test fixtures. "Rigid" pins are made of brass or beryllium copper. "Flex" pins are made of beryllium copper, in a variety of head geometries.

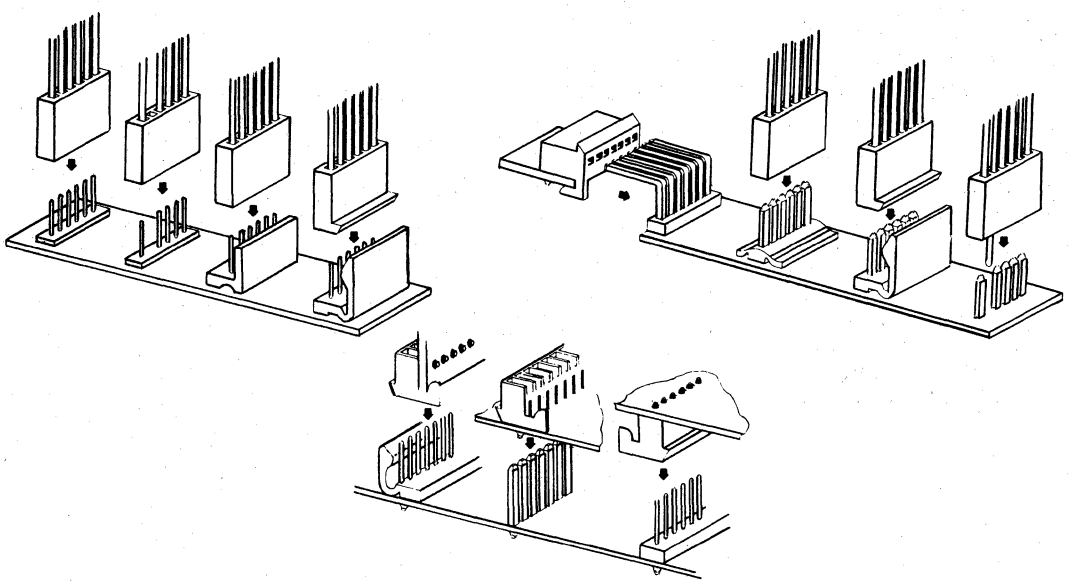
MILL-MAX MFG. CORP.

TAKING THE LEAD

Service to the Customer ... Worldwide

KK® Modular Interconnection System

A system of "building block" connectors for printed circuit board applications on .098", .100", .156", .197" and .200" centers. The system includes components for wire-to-board, board-to-board, and board- or wire-to-chassis connections.



UL Recognized File #29179
CSA Recognized File #19980

KK Technical Data*

Voltage Rating - 250 VAC max.
Current Rating - (.098" and .100") 2.5 amps max. with 22 AWG wire
- (.156" and .200") 7.0 amps max. with 18 AWG wire
Resistance - 20 milliohms max.
Dielectric Withstanding Voltage - 1500 VAC for 60 seconds
Insulation Resistance - Greater than 500K megohms (24°C and 50% R.H.)

Temperature Range - -40°C to 105°C
*Detailed product specifications should be requested for approval testing.

Features

Crimp Terminal Housings
- .197" and .100" versions 94V-0 material
- Variety of polarization methods
- Locking ramp
- Many circuit sizes

Solder Tail Connectors
- Accepts mating pins vertically, horizontally, thru board
- Strain relieving board hooks
- Stackable end-to-end
- Pre-assembled with double cantilever gas tight terminals

Headers
- Polarization thru voided positions, polarizing walls, non-symmetrical pin spacing
- Locking wall option
- .156" chassis or board mount version for feed thru applications
- Stackable end-to-end
- Industry compatible

Male Pins
- .045" or .025" square or round
- Press fit and solder to board
- Variety of platings and lengths

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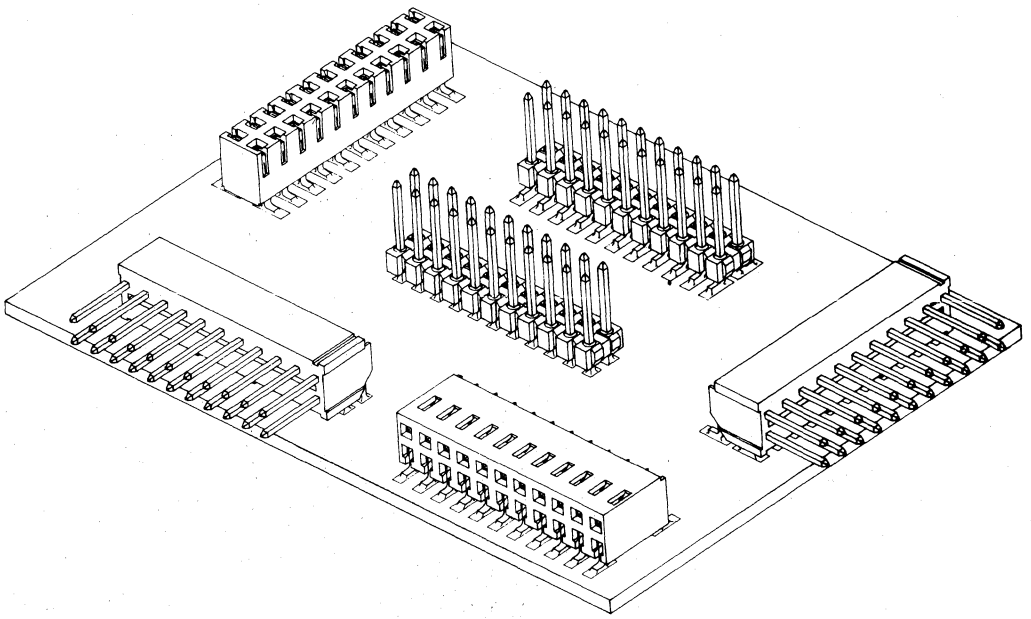
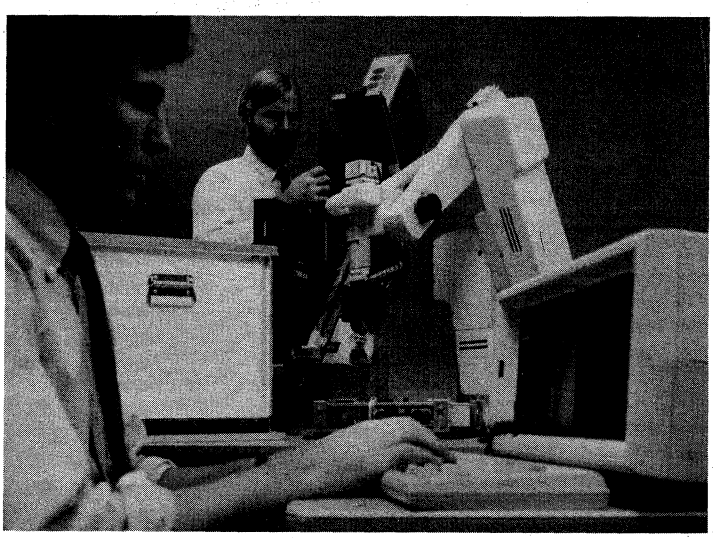
Surface Mount Connectors and Robotic Placement Capabilities



Surface mount technology permits denser electronic packaging and improves productivity during manufacturing. Molex has designed several printed circuit board interconnection components for surface mounting, as well as connector packaging/ delivery systems for placement robots.



Molex engineers working with Intellidax® brand robot and Molex connector packaging and delivery system.



Ask for your free copy of our SMT Handbook.

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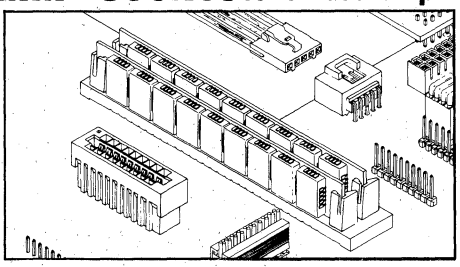
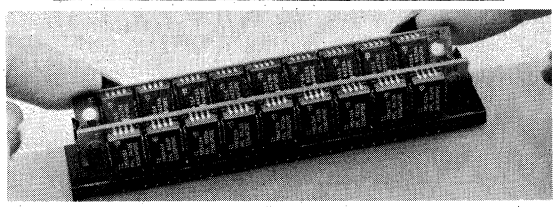
SIMM* Socket saves board space





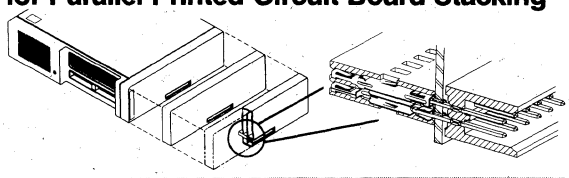
Serving as the connector portion of a high-density memory packaging system, the SIMM Socket provides a convenient means of expanding RAM capabilities.

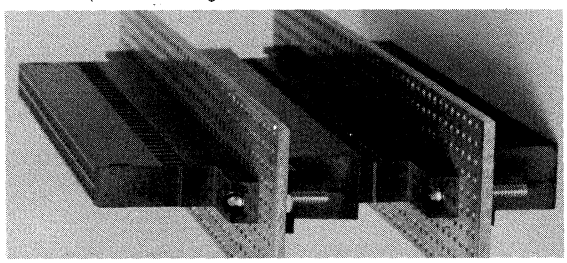
Using current technology, the maximum memory capacity of a discrete IC chip is 256K x 1 DRAM in a 16-pin package. Using the SIMM Socket, memory capacity can be increased to 1,152K DRAM bits (128K x 9 DRAM bits in a 60-pin package).

***Single In Line Memory Module. SIMM is a trademark of Wang Laboratories. Write for data sheet.**

Go-Thru™ Interconnection System

for Parallel Printed Circuit Board Stacking





Designed for easy plug-in by the end-user, the two-piece Molex GO-THRU™ system provides the parallel interface for personal computer add-ons such as disc drive controller, modem, additional memory, networking module and printer. The GO-THRU also provides the interconnect for internal parallel printed circuit board stacking.

Write for data sheet.

Fiber Optic Systems

User Friendly! You needn't be an optics expert!

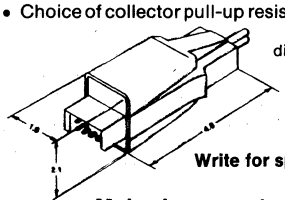
Molex's series of fiber optic links are unique systems that transfer electronic signals using fiber optics. Each system includes a fiber optic transmitter and receiver, housing and preterminated cable assembly. The Molex systems are available in SIMPLEX (single channel) or DUPLEX (two channels) configurations to process either digital or analog electronic signals. They have TTL output and can solve grounding, EMI, and RFI signal transmission problems.

Features:

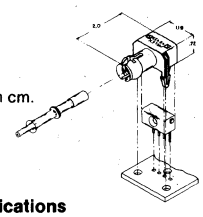
- Low cost packages
- LSTTL/TTL compatible output level
- Single +5V receiver power supply
- 40 kHz analog or 10 K baud digital
- Sealed against dust and moisture
- Low profile (Simplex)
- Electrical connector interface (Duplex)
- Predetermined cable assemblies
- Low electromagnetic susceptability and emissions
- Operation to 60 meters
- .100" center line electrical leads
- Standard or special length cable assemblies
- Color coded transmitter and receiver
- Choice of collector pull-up resistors

Applications:

- Electronic control systems
- Static protection
- High voltage isolation
- Extremely wet or dirty environments
- Inter/intra-system data links
- EMC regulated systems (FCC, VDE)
- Secure data communications
- Medical equipment



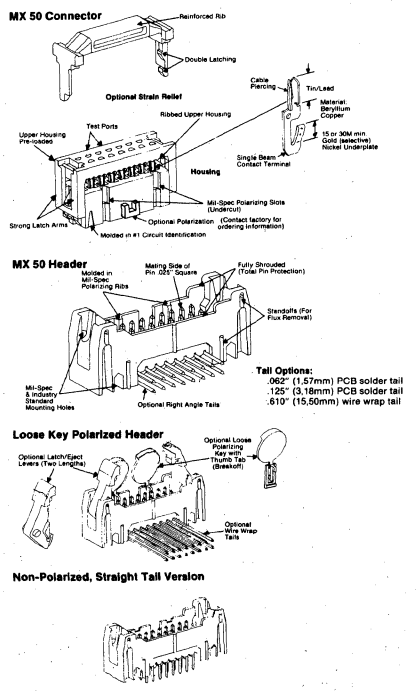
dims. in cm.



Write for specifications

MX-50™

.050" Center Ribbon Cable Interconnection System



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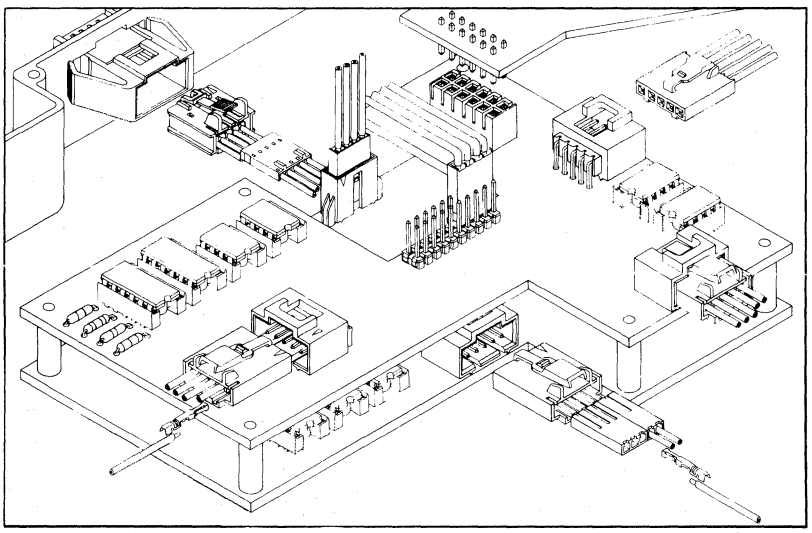
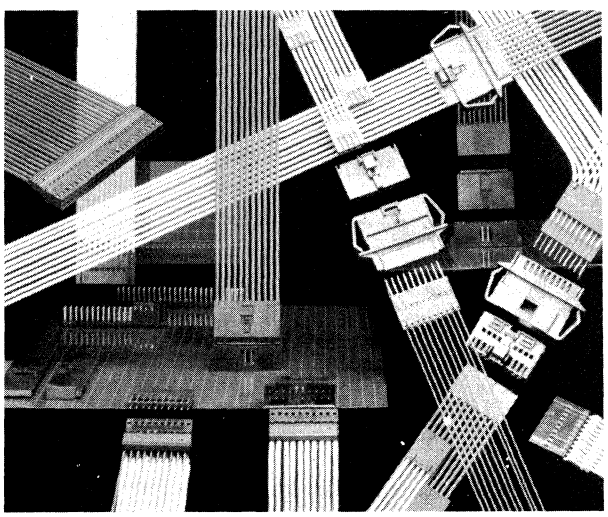
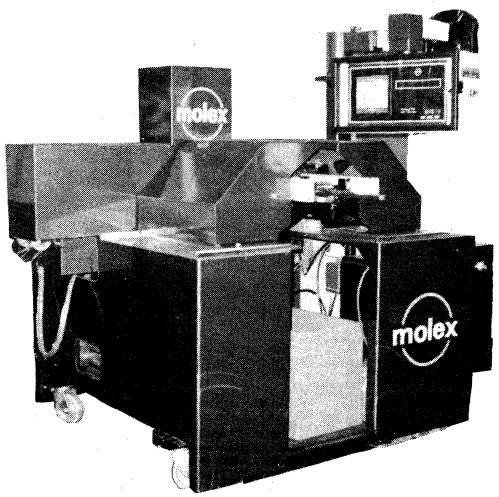
C-Grid™ .100" x .100" Center Interconnection System for Digital Electronics Applications







Fully automated harness making machine

Molex presents its modular .100" center interconnection products ... **C-Grid™**, our **dual row system for digital circuit boards** and **C-Grid SL™**, our new **single row fully stackable wire-to-board and wire-to-wire system.**

Both families feature similar material and electrical specifications and both utilize .025" pins, and selective plating.

C-Grid, based on a .100" grid, is designed for dense electronic packaging. It is comprised of straight and right angle headers in several styles including break-away, shrouded, and end-to-end stackable. Also featured are board-to-board and wire-to-board connectors. A two-circuit shunt, which acts as a switch, completes the C-Grid product family. A line of insulation displacement type application tooling is offered to terminate the wire-to-board connector.

C-Grid boasts preassembled, single piece construction, modularity, design flexibility and automated harness-making capabilities when combined with our tooling. (See photo above)

Four low profile, stackable housings form the basis of the system. Each housing accommodates either male or female terminals, ID-type OR crimp.

Write for Free Catalog

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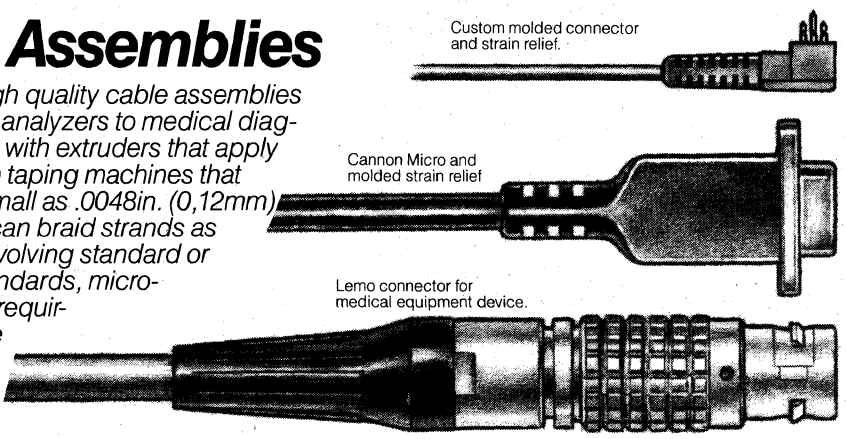
MICRO INTERCONNECTIONS

National Electric Cable designs, tests, produces, and improves cables, connectors and complete cable assemblies for specific applications in instrumentation and medical electronics. Our experience has taught us that advanced cable technology not only influences system design but frequently determines whether a system is functionally and economically viable and reliable. We are the leading U.S. manufacturer of micro-miniature cable assemblies and have successfully supplied companies like General Electric Medical Systems, Hewlett-Packard, Tektronix, and Phillips.

Electronic Cable Assemblies

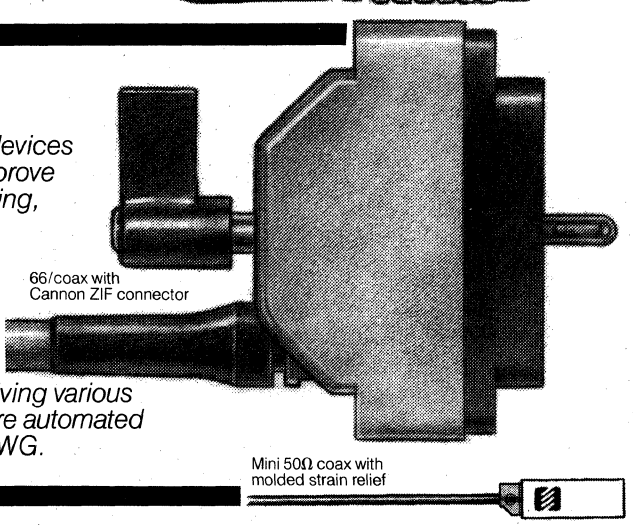
We design and produce exceptionally high quality cable assemblies for high tech products ranging from logic analyzers to medical diagnostic machines. We manufacture cables with extruders that apply insulation as thin as .002in. (0,05mm) with taping machines that apply low density materials on wires as small as .0048in. (0,12mm) in diameter, with braiding machines that can braid strands as small as .002in. (0,05mm). Assemblies involving standard or molded connectors, stringent military standards, micro-miniature soldering and other processes requiring automated termination techniques are typical of the ongoing projects in our new manufacturing facility. Tell us your needs and we will build you a prototype.



Cables & Connectors

If you are designing electronic equipment using hand-held devices or high speed data transmission, let us show you ways to improve miniaturization, flexibility, flex life, abrasion resistance, shielding, capacitance, specific impedance and other critical cable requirements. Think of us as an extension of your design department for the latest in cable technology.

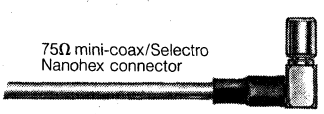
We usually terminate our cables to connectors like Cannon Micro-D and ZIF, Fischer, Lemo, Amp CPC's and Coaxicon, Berg Mini PV, SMA and SMB, Selectro Nanohex and military circulars. We also design and build custom connectors involving various moldings and strain reliefs in our cable assembly plant, where automated crimping is done to 36 AWG and precision soldering to 40 AWG.



NATIONAL ELECTRIC CABLE

(503) 620-9400
16640 S.W. 72nd Ave.
Portland, OR 97224 U.S.A.

Telex 36-0963 NEC PTL
Facsimilie (503) 620-7131

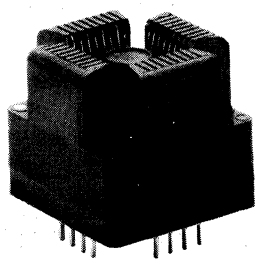


After 7/1/87 name changed to Precision Interconnect Corp.

Test & Burn-in Chip Carrier Sockets From Ney

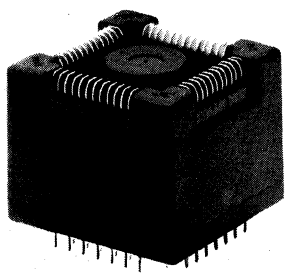
- Complete compatibility with manual or automatic carrier equipment. Small center to center dimension for cost effective test board density.
- Pop-in, pop-out design wipes contacts clean from surface oxides and contaminants. Makes complete contact with minimal, normal force: Contacts cannot be overstressed. Fully inspected for electrical contact and complete alignment.
- Open socket top allows access for visual examination or electrical probing. Rounded terminal tips for easy board loading. Standoffs for ease of cleaning. Dead bug loading allows in-socket probing.
- Socket bodies molded from polyphenylene sulfide. Nickel-boron plated BeCu socket contacts for wear-resistance, reliability to 150° C. NiB plating, stainless steel spring.
- Will accommodate .050" (1.27 mm) contact centers. Initial contact resistance 20mΩ per MIL-STD-1344A. Minimum 12,000 cycles.

LCC Test and burn-in sockets for ceramic leadless chip carrier packages.



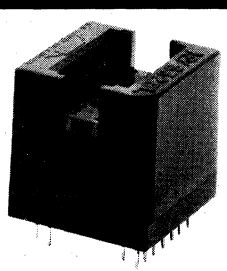
Ney Model No.	Package Depth	Package Length	Package Width
LCC-5020	.060 -.085" (1.52 - 2.16 mm)	.350 ± .008" (8.89 ± 0.2 mm)	.350 ± .008" (8.89 ± 0.2 mm)
LCC-5028	.060 - .085" (1.52 - 2.16 mm)	.450 ± .008" (11.43 ± 0.2 mm)	.450 ± .008" (11.43 ± 0.2 mm)
LCC-5118	.060 - .075" (1.52 - 1.90 mm)	.425 ± .008" (10.8 ± 0.2 mm)	.290 ± .008" (7.37 ± 0.2 mm)

PCC Test and burn-in sockets for plastic leaded chip carrier packages.



Ney Model No.	Package Depth	Package Length	Package Width
PCC-6020	.180 ± .005" (4.57 ± 0.13 mm)	.390 ± .005" (9.91 ± 0.13 mm)	.390 ± .005" (9.91 ± 0.13 mm)
PCC-6028	.180 ± .005" (4.57 ± 0.13 mm)	.490 ± .005" (12.45 ± 0.13 mm)	.490 ± .005" (12.45 ± 0.13 mm)
PCC-6044	.180 ± .005" (4.57 ± 0.13 mm)	.690 ± .005" (17.53 ± 0.13 mm)	.690 ± .005" (17.53 ± 0.13 mm)
PCC-6052	.180 ± .005" (4.57 ± 0.13 mm)	.790 ± .005" (20.1 ± 0.13 mm)	.790 ± .005" (20.1 ± 0.13 mm)
PCC-6068	.180 ± .005" (4.57 ± 0.13 mm)	.990 ± .005" (25.15 ± 0.13 mm)	.990 ± .005" (25.15 ± 0.13 mm)
PCC-6084	.180 ± .005" (4.57 ± 0.13 mm)	1.190 ± .005" (30.23 ± 0.13 mm)	1.190 ± .005" (30.23 ± 0.13 mm)
PCC-6118	.136 ± .003" (3.45 ± .076 mm)	.462 ± .005" (11.73 ± 0.13 mm)	.322 ± .005" (8.18 ± 0.13 mm)
PCC-6122	.136 ± .005" (3.45 ± 0.13 mm)	.5275 ± .0075" (13.4 ± 0.19 mm)	.3275 ± .0075" (8.32 ± 0.19 mm)
PCC-6132	.125" (3.18 mm)	.590 ± .005" (14.99 ± 0.13 mm)	.490 ± .005" (12.45 ± 0.13 mm)

SOIC Test and burn-in sockets for small outline .300 / .150" plastic packages.



Ney Model No.	Package Depth	Package Length	Package Width
Peripheral Lead SOIC-6328L	.099" (2.50 mm)	.705" (17.90 mm)	.407" (10.33 mm)
'J' Lead SOIC-6428	.125" (3.18 mm)	.724" (18.39 mm)	.340" (8.64 mm)
Peripheral Lead SOIC-6316L	.065" (1.05 mm)	.394" (10.06 mm)	.158" (4.01 mm)

Ney manufactures a full line of contacts, assemblies and sockets. We can also engineer and build a socket for your most demanding LCC,PCC or SOIC device. In business for 175 years, the J.M. Ney Company has been manufacturing electronic parts for over ten decades.

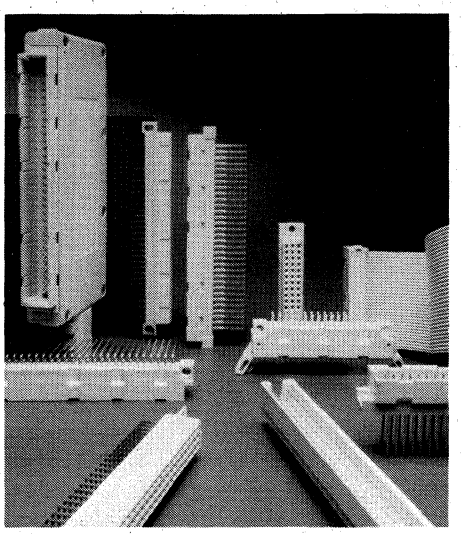
NEY

The J. M. Ney Company, Electronics Division
Ney Industrial Park
Bloomfield. CT 06002

1-800-243-1942

PANDUIT® HI-CON™ | EUROCARD DIN CONNECTORS

Performance rated to meet all your specific application requirements with maximum cost effectiveness. Standard DIN .100″ contact grid. Designed to meet DIN 41612; MIL-C-55302/131, /132, /133, /134; BS 9525 F0004; IEC 603-2; and VG 95324 specifications. Series 100 compatible with VMEbus P1/P2 or J1/J2 applications and Multibus II packaging.

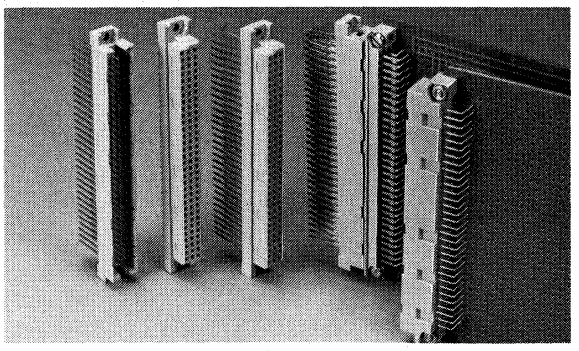


An Evolving Connector Standard

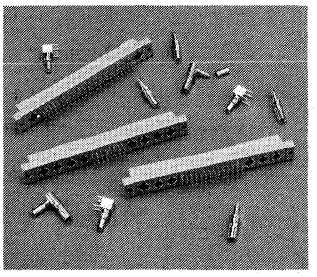
New technology and applications have required a continuing evolution of original DIN 41612 product selections. A recent addition of DIN 41612 is the introduction of "Performance Levels I, II and III." These levels establish testing conditions after which connectors must still meet minimum performance standards. The chart below describes one of the most often referenced test procedures, in which connectors are subjected to a number of mating cycles, exposed to a harsh environment for a period of days, then subjected to more mating cycles.

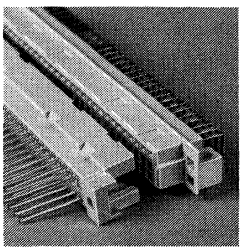
The performance level can now be specified in lieu of a costly gold specification. This is an important design concept, allowing for the most cost effective purchase.

Performance Level	Test Conditions per DIN			Total Mating Cycles Per Panduit Spec.
	Mating Cycles	Environ. Test	Mating Cycles	
I	250	21 days	250	250 + 250
II	200	4 days	200	200 + 200
III	50	0		200



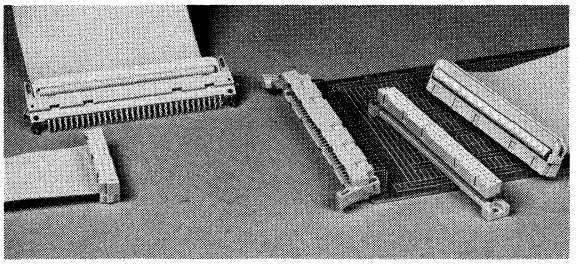
- Series 100/101—Standard DIN 41612—Types B, half B, C, half C, D, F; up to 96 pins: two- and three-row versions
- Series 100S—Special Wrap Pins—Type C; up to 96 pins; for interface systems
- Series 105—Mixed Contact—Type M; 16 to 78 pins plus 2 to 8 inserts, including coax, high voltage and high power contacts
- Series 120—Flat Cable—Types B, C, half C; up to 64 pins; for use with .050″ flat cable
- Series 130—Inverse—Type R; up to 96 pins; permit mounting lower cost male to backplane
- Series 133—Surface Mount Females—Type R; up to 96 pins; for high density SMT applications
- Series 135—Economy Females—Types B, half B, C, half C; up to 96 pins; for building economical backplanes with traditional female units
- Series 136—Stretched Inverse—Type R; up to 195 pins; semi-custom three-row series
- Series 140—Press Fit—Type R; up to 96 pins; compliant pins replaceable from either front or backplane





Complete Line of Accessories

A variety of accessories and tooling designed to lower your installed cost are available: press fit connector insertion dies; pin alignment tools; front and backplane adapters; coding combs; unique coding wedge system.



PANDUIT CORP.
ELECTRONICS GROUP

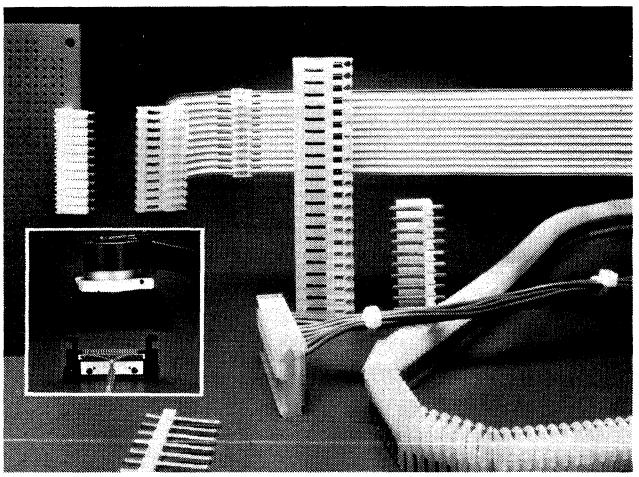
**DEPT. EM, 17301 Ridgeland Avenue,
Tinley Park, IL 60477-0981
Telex 25-4560**

For further information and samples,
Call 1-800-323-4439
(in Illinois: 1-312-532-1800)

PANDUIT® MAS-CON® MASS-TERMINATED CONNECTORS

Preloaded insulation displacement contacts eliminate wire stripping, manual crimping and hand loading of contacts.

- End and through connectors for discrete wire, notched round conductor flat cable and pre-split ribbon cable
- Industry intermateable and stackable end to end
- Bright acid tin or selective gold over nickel plating
- Housings of 6/6 nylon color coded for wire gauge



.100″ Centerline Connectors

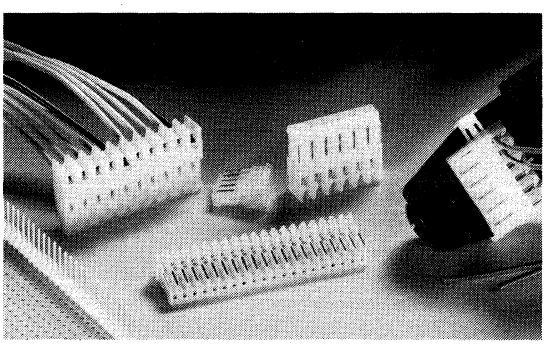
- 2 through 28 circuit positions
- For 22, 24, 26 and 28 AWG wire
- Rated 300 VAC/VDC, up to 4 amps with 22 AWG

.156″ Centerline Connectors

- 2 through 24 circuit positions
- For 18, 20, 22, 24 and 26 AWG wire
- Rated 300 VAC/VDC, up to 8 amps with 18 AWG

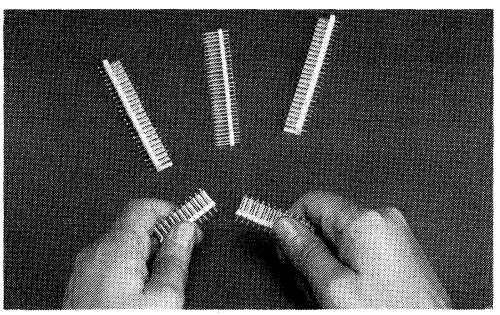
PCB Header Assemblies

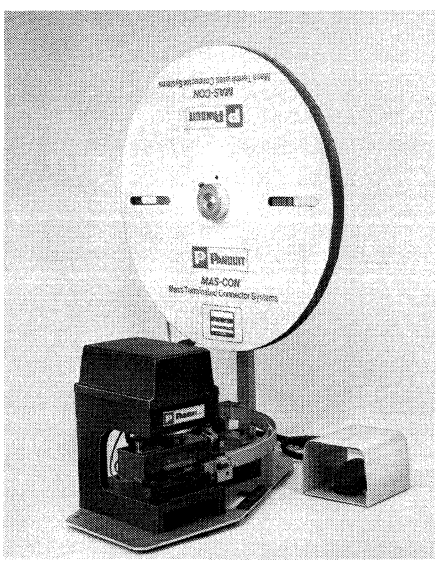
- Straight or angled posts in flat, locking or polarizing types
- .100″ centerline headers have .025″ square posts, offer 2 through 36 circuit positions
- .156″ centerline headers have .045″ square posts, offer 2 through 24 circuit positions
- Available tin plated or with 15 or 30 μinch gold plating

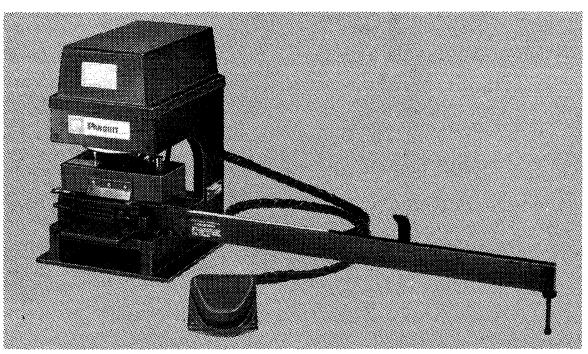


High Efficiency Production Tooling and Accessories Designed to Lower Your Installed Cost

Manual and pneumatic hand tools with interchangeable nose sections for .100″ and .156″ connectors; bench mounts for manual tools; header cutting tools; manual and pneumatic presses; mass termination and flat cable notching die sets; electric single wire termination tools; pneumatic automatic track-fed presses; high volume automatic reel-fed presses; automatic harness assembly machines for up to 33,600 circuit terminations per hour; harness board tooling and accessories.







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ELECTRONICS GROUP

DEPT. EM, 17301 Ridgeland Avenue,
Tinley Park, IL 60477-0981
Telex 25-4560

For further information and samples,
Call 1-800-323-4439
(in Illinois: 1-312-532-1800)

PANDUIT® LAT-CON™ | .050" FLAT CABLE CONNECTORS

- Unique, open-sided connector permits lateral cable insertion
- Cuts installation time up to 75%
- Reduces rework up to 90%
- For end or daisychain terminations
- Unique polarization methods available on sockets and card edge connectors—without loss of contact

Preassembled Sockets

- 10 to 60 circuits
- MIL-C-83503 intermateable

Card Edge Connectors

- 28 to 60 circuits
- Three housing styles

Two-Row Transition Connectors

- For permanent installation on PC board—eliminate need for headers
- 10 to 64 circuits

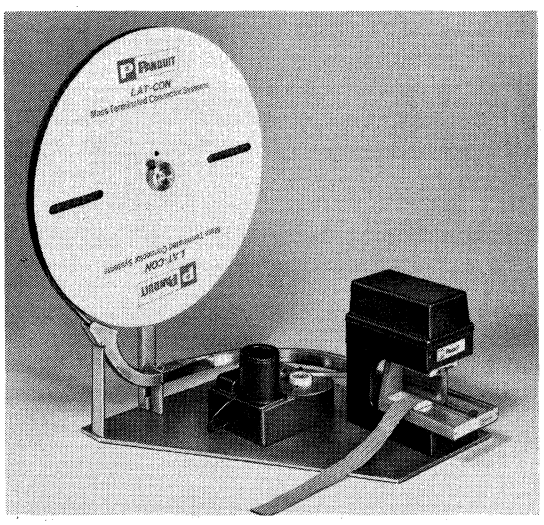
Four-wall headers available for 10 to 60 circuits; .025" square contacts; straight or angled tail; furnished with or without ejector/latch, with MIL spec latch, or with Panduit one-length latch installed. Loose piece MIL spec or one-length latches available.

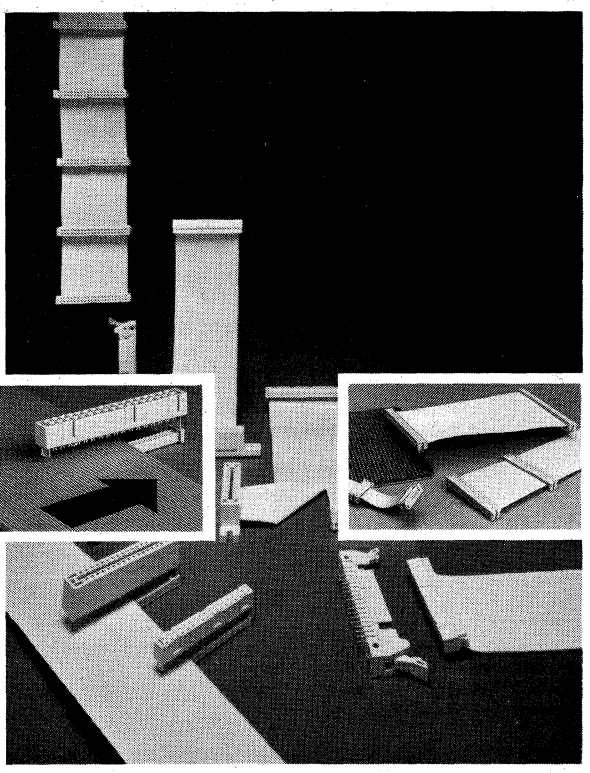
Unshrouded headers available for 10 to 60 circuits; .025" square contacts; right angle or straight pins; tin plated or 15 or 30 μinch gold plated.

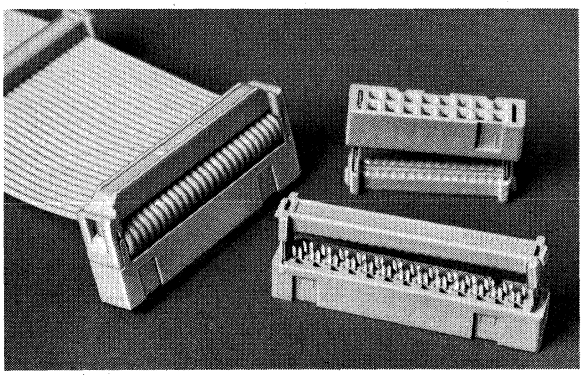
Shunts for .100" system; for adjacent .025" square or round posts; female jumpers for unshrouded headers; tin or 15 μinch gold plated.

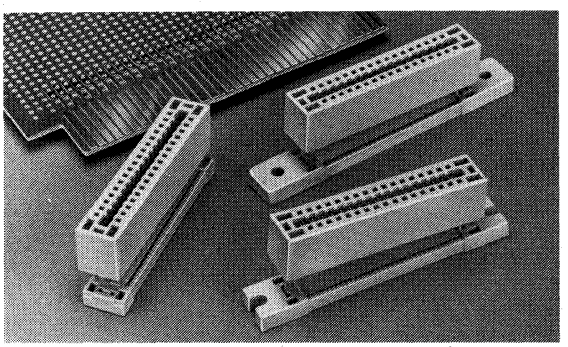
Lower your installed cost with PANDUIT® tools

Full line of termination tooling; manual tools; manual and pneumatic presses; high volume reel-fed pneumatic presses; header cutting tools.









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Telex 25-4560

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(in Illinois: 1-312-532-1800)

EEM MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement.*

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

INTERNATIONAL Primary Power Connectors

Use of a primary power connector and cordset instead of a permanently installed power supply cord makes it possible for the equipment user to easily replace a cordset if it is damaged. It also makes it very easy and economical for the equipment manufacturer to supply the correct cordset for a foreign client because cordsets with a molded IEC-320/CEE-22 primary power connector are available with virtually any of the world's power plugs installed on the other end.

The IEC-320/CEE-22 connector is by far the most commonly used 3-wire (grounded) primary power connector in North American and Europe, It is also used in Australia and Japan as well as major developing countries.

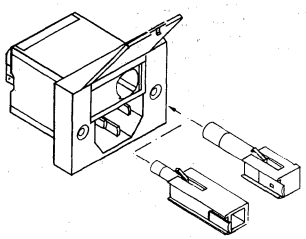
The connector illustrated at right is the most widely used of the IEC-320/CEE-22 types. Rated for use at 65°C.

65°C 

The connector at right has a polarizing key which prevents insertion of "cool" cord connector above. Rated for use at 120°C.

120°C 

INTERNATIONAL COMBICON™



The International Combicon™ combines two functions: a universal IEC 320 AC power connector and a fuseholder which accepts **either** the North American standard ¼ x 1¼ inch fuse or the international 5 x 20 mm fuse. The Combicon makes it easy to adapt your product to any major North American or international wall plug and fuse requirement.

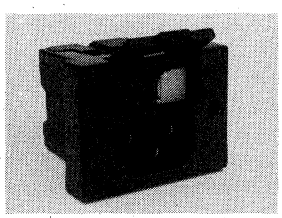
Fuse carriers sold separately; see below.
Materials: Contacts: Nickel-plated brass
Body: UL-94 V-O glass reinforced PBTP

65°C 

Approvals: Agency	File #	Current Rating
UL	E63278	10A/250V
SEV	83.10346	6A/250V
OVE	15/84	10A/250V
NEMKO	M57704	10A/250V
SEMKO	83 73426	10A/250V
VDE		6A/250V
CSA	36885-17	10A/250V
DEMKO	71459	10A/250V
KEMA		10A/250V

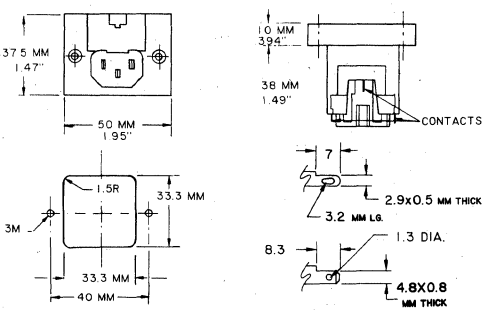
SINGLE FUSED MODELS (Double fused models available on special order)

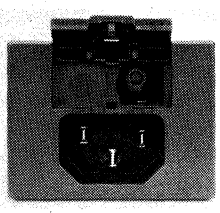
Dimensions are in mm.



SCREW MOUNTING MODELS

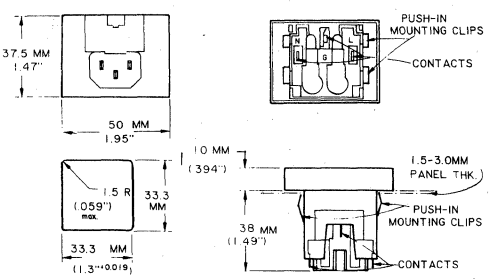
Part No.	Description	Weight w/o Fuse Carrier
83010250	Single fused Combicon™ with solder contacts, screw mount	42.6 grams
83010270	Single fused Combicon™ with 4.8 mm (.187") quick disconnects, screw mount	42.6 grams





PUSH-IN MOUNTING MODELS

Part No.	Description	Weight w/o Fuse Carrier
83010150	Single fused Combicon™ with solder contacts, push-in mount	42.6 grams
83010170	Single fused Combicon™with 4.8 mm (.187") quick disconnects, push-in	42.6 grams

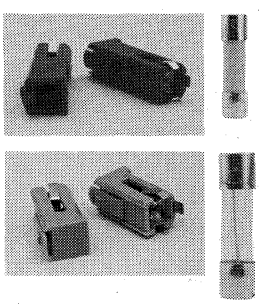


Combicon™ Fuse Carriers

(Fuse carriers sold separately)

Color-coding: Red - International 5 x 20 mm fuse
Gray - North American 6.3 x 32 mm (¼" x 1¼") fuse

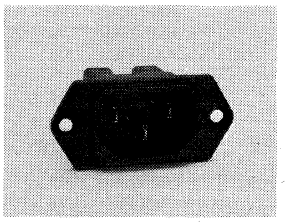
Materials: Fuse carrier: UL-94 V-2 unreinforced polycarbonate
Contacts: Nickel-plated brass

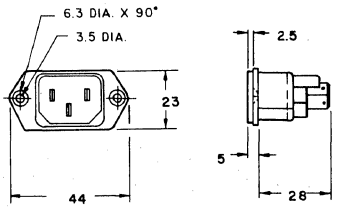


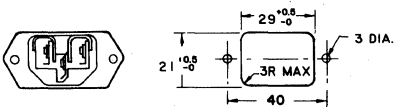
	Part No.	Description	Weight w/o fuse
International 5 x 20 mm fuse	83010130	Red fuse carrier for 5 x 20 mm fuse	2.3 grams
North American ¼ x 1¼" fuse	83010140	Gray fuse carrier for 6.3 x 32 mm (¼ x 1¼") fuse	1.6 grams

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

From Panel Components Corporation







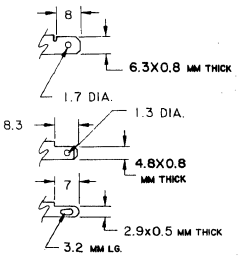
65°C



83011010 (Prev. 8843.FSGA.40.60)
with 6.3 x 0.8 mm (.250 x .032 inch)
solder/quick disconnect tab terminals

83011020 (Prev. 8843.FSM.40.60)
with 4.8 x 0.8 mm (.187 x .032 inch)
solder/quick disconnect tab terminals

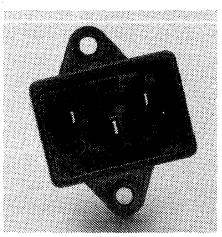
83011030 (Prev. 8843.Z.40.60)
with soldering tabs

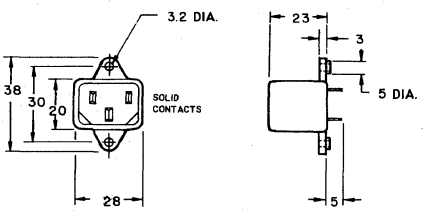


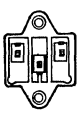
Approval/Certification/Recognition
CSA NEMKO SEV DEMKO
OVE UL KEMA SEMKO VDE

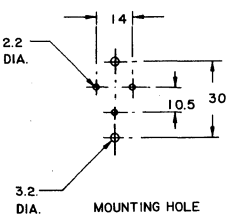
Especially recommended for new applications, this general purpose power cord receptacle is rated at 6 amps, 65°C by the European agencies and 15 amps at UL. Note that CSA certifies model 83011010 at 15 amps; models 83011020 and 83011030 at 10 amps. Mounting holes are 40 mm on center and oriented horizontally. Contacts are formed from brass strip stock and are nickel plated.

Insulator is molded from a polyamide-type thermoplastic. Weight is 9 grams.









65°C



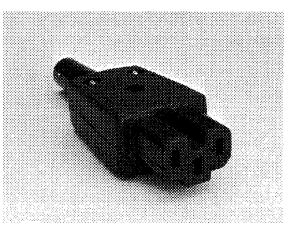
83011070 (Prev. 8843.ZP.30.60)
Vertical printed circuit board mounting receptacle with 6 amps, 65°C rating for use on electrical equipment. Contacts are solid brass and nickel plated.

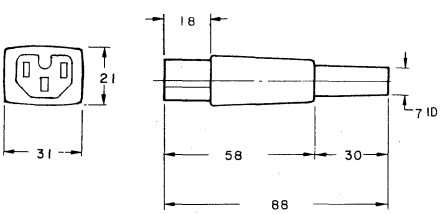
Insulator is molded from a polyamide-type thermoplastic. Weight is 10 grams.

Approval/Certification/Recognition

CSA	NEMKO	SEV
DEMKO	OVE	UL
KEMA	SEMKO	VD

Dimensions are in mm.





120°C

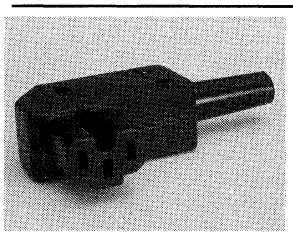


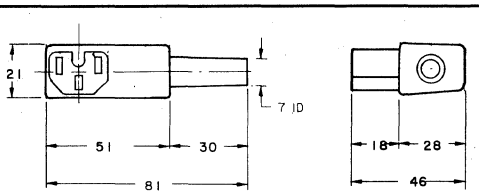
83011040 (Prev. 8943.W.60)
General purpose power cord plug with 10 amp, 120°C rating (15 amps, UL and CSA) for use on electrical equipment. Mates with all 6 amp, 65°C and 10 amp, 120°C receptacles. Contains integral cable-clamp strain relief and screw-type connections.

Plug body and insulator molded from a polyamide-type thermoplastic. Weight is 24 grams.

Approval/Certification/Recognition
CSA SEV SECV OVE UL SEMKO VDE

Dimensions are in mm.





120°C



83011050 (Prev. 8943.L.W.60)
Angle power cord plug with 10 amp, 120°C rating (15 amps at UL and CSA) for use on electrical equipment. Mates with all 6 amp, 65°C and 10 amp, 120°C receptacles. Contains integral cable-clamp strain relief and screw-type connections.

Plug body and insulator components are molded from a polyamide thermoplastic. Weight is 27 grams.

Approval/Certification/Recognition

CSA	SEV
OVE	UL
SEMKO	VDE

Dimensions are in mm.

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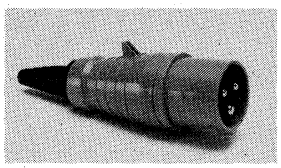
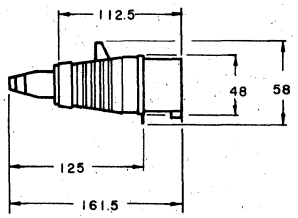
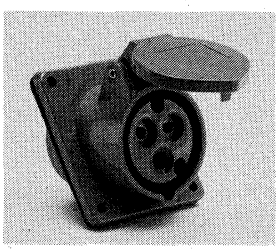
16A/220-240V
single phase, 50-60 Hz



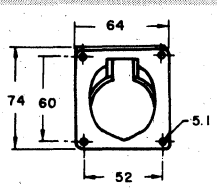
Part Number 83313230: 3-pole IEC 309 plug
Current rating: 16A/220-240V
Color: blue
IP rating: IP 44 (splashproof)
Approvals: VDE, SEMKO, OVE, SEV, DEMKO
Recommended wire size (per IEC 309, para. 23.1): 1.5 mm²
Mates with P/N 83311130 socket and P/N 83312220 in-line socket

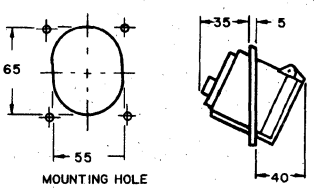
Range of cable opening: 6-15 mm

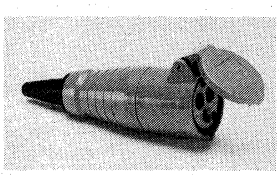




Part Number 83311130: 3-pole IEC 309 wall-mount socket
Current rating: 16A/220-240V
Color: blue
IP rating: IP 44 (splashproof)
Approval: VDE
Mates with P/N 83313230 plug

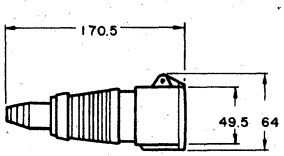






Part Number 83312220: 3-pole IEC 309 in-line socket
Current rating: 16A/220-240 VAC
Color: blue
Ground contact position: 6 o'clock
IP rating: IP 44 (splashproof)
Approvals: VDE, SEMKO, SEV, OVE, DEMKO
Wire size (per IEC 309, para. 23.1): 1.5 mm²
Mates with P/N 83313230 plug

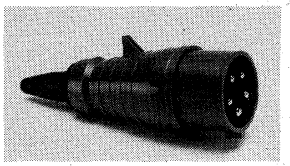
Range of cable opening: 6-15 mm



Ground contact position of all IEC 309 connectors in this data sheet is 6 o'clock

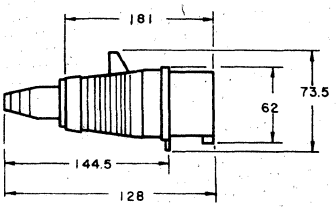


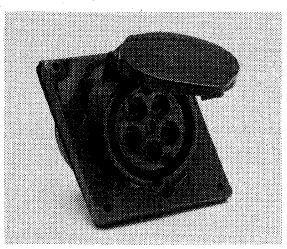
16A/380-415V
3-phase, 50-60 Hz



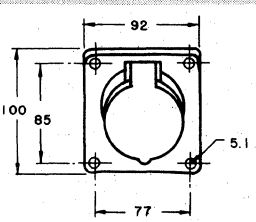
Part Number 83313830: 5-pole IEC 309 plug (3-phase)
Current rating: 16A/380-415 VAC
Color: red
IP rating: IP 44 (splashproof)
Approvals: VDE, KEMA, SEMKO, SETI, OVE, SEV, NEMKO, DEMKO
Recommended wire size (per IEC 309, para. 23.1): 1.5 mm²
Mates with P/N 83311540 socket and P/N 83312830 in-line socket

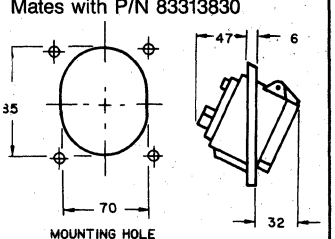
Range of cable opening: 7-17 mm

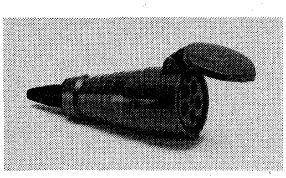




Part Number 83311540: 5-pole IEC 309 socket (3-phase)
Current rating: 16A/380-415 VAC
IP rating: IP 44 (splashproof)
Ground contact position: 6 o'clock
Color: red
Approvals: VDE, SEMKO
Mates with P/N 83313830

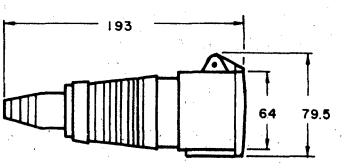






Part Number 83312830: 5-pole IEC 309 in-line socket (3-phase)
Current rating: 16A/380-415 VAC
Color: red
IP rating: IP 44 (splashproof)
Approvals: VDE, KEMA, SEMKO, SETI, OVE, SEV, NEMKO, DEMKO
Recommended wire size (per IEC 309, para. 23.1): 1.5 mm²
Mates with P/N 83313830

Range of cable opening: 7-17 mm



all dimensions in mm

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

INTERNATIONAL IEC 309 CONNECTORS
for high current mains connections

The most widely accepted international standard on high power plugs and sockets is IEC pub. 309. IEC 309 connectors can be used in applications to 750 VAC; current ratings, 125A; and mains power frequencies, 50 Hz up. For more information on IEC 309 connectors, ask for our Technical Note #5.

Note: These connectors are designed for use on or with products that will be exported primarily to Europe; they are not UL recognized or listed nor are they CSA certified.

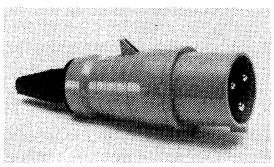
Connectors rated at 63A and 125A/380 VAC (three-phase) are also available.

Delivery: Call Panel Components' Customer Service Department for stock level.

See our ad in EEM section 6000 for harmonized cordage which can be used with these connectors.

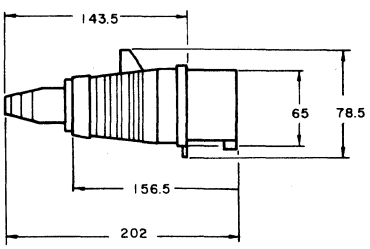


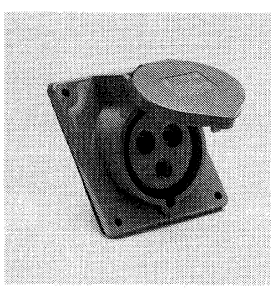
32A/220-240V
single phase, 50-60 Hz



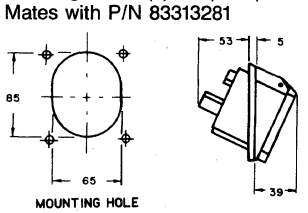
Part Number 83313281: 3-pole IEC 309 plug
Current rating: 32A/220-240 VAC
Color: blue
IP rating: IP 44 (splashproof)
Recommended wire size (per IEC 309, para. 23.1): 4 mm²
(must be rubber insulated)
Mates with P/N 83311191

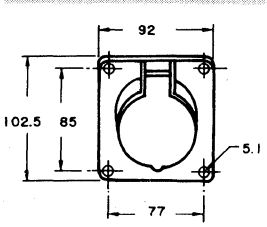
Range of cable opening: 10-24 mm





Part Number 83311191: 3-pole IEC 309 wall-mount socket
Current rating: 32A/220-240 VAC
Color: blue
IP rating: IP 44 (splashproof)
Mates with P/N 83313281

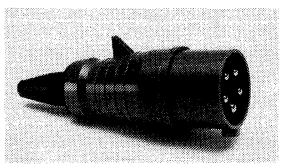




Ground contact position of all IEC 309 connectors in this data sheet is 6 o'clock

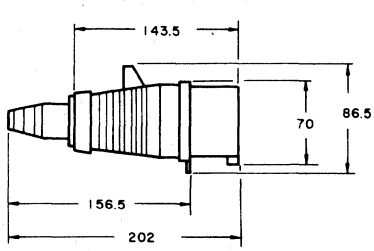


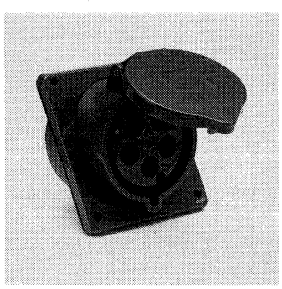
32A/380-415V
3-phase, 50-60 Hz



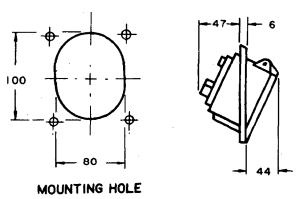
Part Number 83313930: 5-pole IEC 309 plug (3-phase)
Current rating: 32A/380-415 VAC
Color: red
IP rating: IP 44 (splashproof)
Recommended wire size (per IEC 309, para. 23.1): 4 mm²
(must be rubber insulated)
Approvals: VDE, KEMA, SEMKO, SETI, OVE, SEV, DEMKO
Mates with P/N 83311700

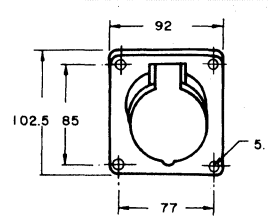
Range of cable opening: 10-24 mm





Part Number 83311700: 5-pole IEC 309 wall-mount socket (3-phase)
Current rating: 32A/380-415 VAC
Color: red
IP rating: IP 44 (splashproof)
Approvals: VDE, SEMKO
Mates with P/N 83313930





all dimensions in mm

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

INTERNATIONAL Plugs, Sockets, Socket Strips

INTERNATIONAL Plugs, Sockets and Socket Strips

These sockets and socket strips are especially useful in test and burn-in racks for equipment that is being exported.

Mating plugs are available for each of the sockets listed.

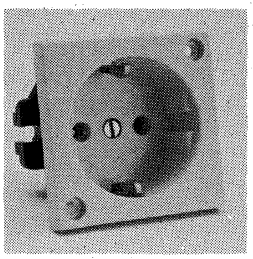
Mating cords and cordsets are shown in our ad in Section 6000.

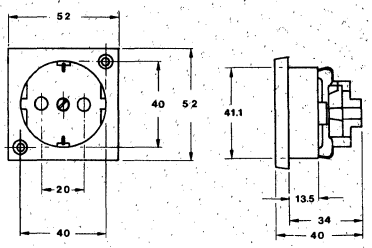
Call or write for our catalog and designer's reference which contains our complete line of international primary power components.

Most models on these pages are stocked in Santa Rosa.

Dimensions are in mm.

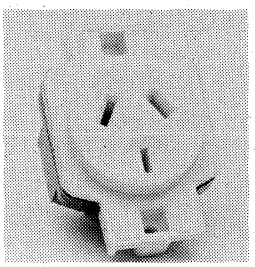
Continental European

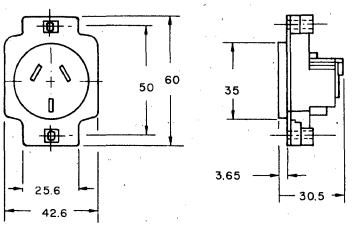




Model 88010610 (Prev. 1061): "Schuko" socket with square face plate.
Current rating: 16 amps/250 volts
Approvals: VDE, KEMA
Color: Ivory

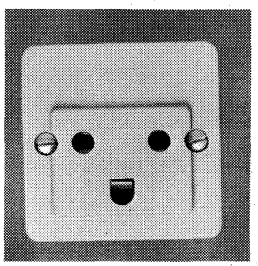
Australian

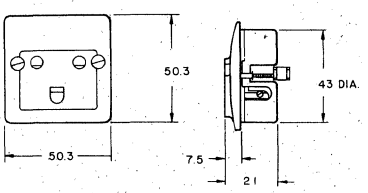




Model 88010512: "Low-profile" Australian socket.
Current rating: 10 amps/250 volts
Approval: EANSW
Color: White

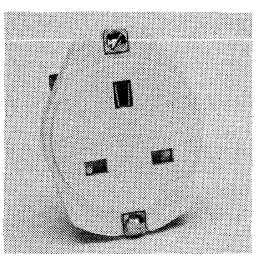
Danish

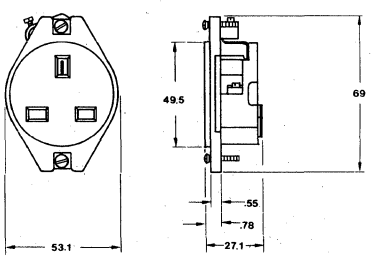




Model 88010540 (Prev. 1054): Danish socket.
Note: Although the Continental European plug can be plugged into Danish socket, this presents an extreme safety hazard because the plug will not be grounded to the socket.
Current rating: 10 amps/250 volts
Approval: DEMKO
Color: Gray

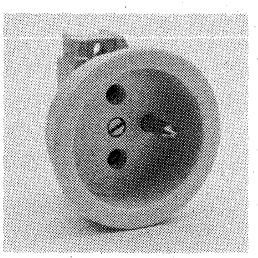
British

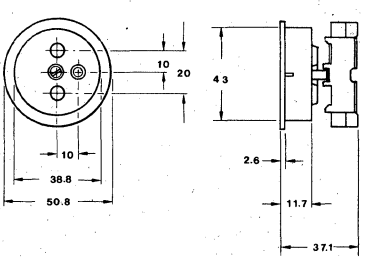




Model 88010621: British socket for mounting in round panel cutout conforms to BS 1363. Line and neutral contacts are shuttered to minimize the possibilities of accidental entry of an object other than the mating plug.
Current rating: 13 amps/250 volts
Color: White

French

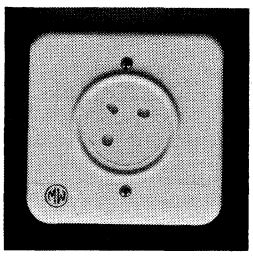


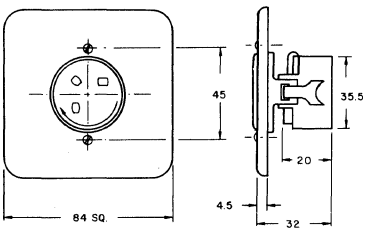


Model 88010550: French socket (mates with all PCC Continental European cords). See section 6000.
Current rating: 16 amps/250 volts
Color: Ivory

From Panel Components Corporation

Israeli

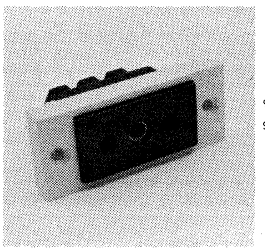


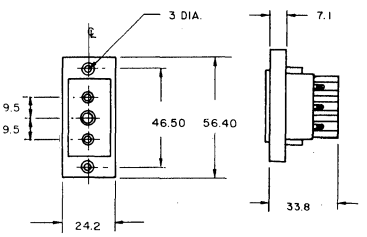


Model 88010580: Israeli socket.
Current rating: 16 amps/250 volts
Approval: SII
Color: White

Dimensions are in mm.

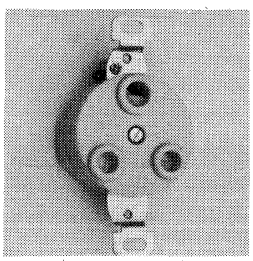
Italian

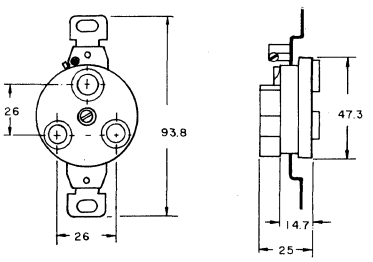




Model 88010570: Italian socket; comes with mounting bracket and hardware.
Current rating: 10 amps/250 volts (16 amps/250 volts socket also available)
Approval: IMQ
Color: Brown/Beige Dimensions are in mm.

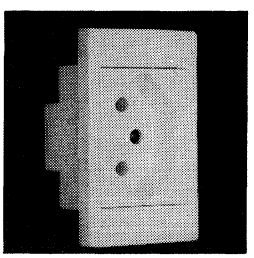
Indian (BS-546)

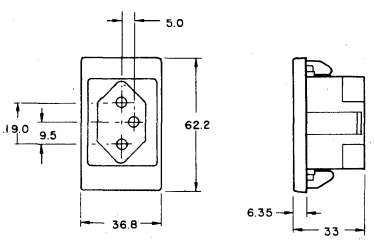




Model 88010560 (Prev. 1056): Indian socket (old BS-546). Line and neutral contacts are shuttered to minimize the possibilities of accidental entry of an object other than mating plug.
Current rating: 16 amps/250 volts
Color: Ivory Dimensions are in mm.

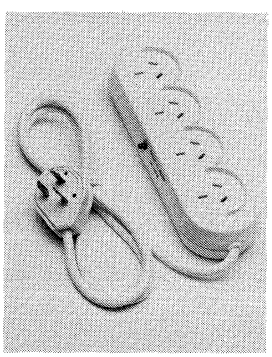
Swiss





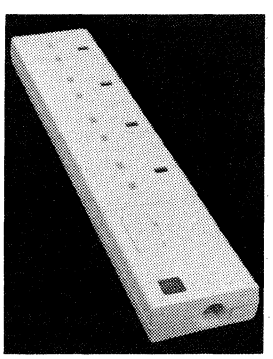
Model 88010530 (Prev. 1053): Swiss socket; push-in mounting.
Current rating: 10 amps/250 volts
Approval: SEV
Color: Ivory
Dimensions are in mm.

Australian



Model 85010020: Australian Socket strip.
Current rating: 10 amps/250 volts
Color: White

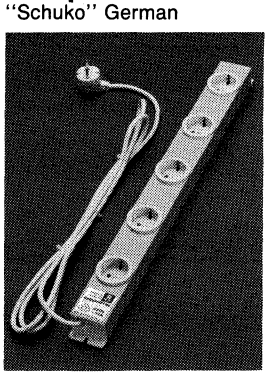
British



Model 85010321: British socket strip conforms to BS 1363. Each socket is shuttered to minimize the possibility of accidental entry of an object other than the mating plug.
Note: Cord is not provided. Made of impact resistant thermoplastic.
Current rating: 13 amps/250 volts
Number of sockets: 4
Circuit protection: 13A fuse (BS1362)
Color: Black

European Continental

"Schuko" German



Model 85023050 (Prev. 3.002.305.2): German socket strip without switch rated at 16 amps. Cable length is 2.5 meters with VDE-approved Schuko plugs.
Color: Orange
Note: Models with rocker switch or circuit breaker also available.

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

Interpower™ INTERNATIONAL Socket Strip

The Interpower™ International Socket Strip incorporates seven of the world's primary socket standards in one device. Use it in burn-in racks or test labs where products with international cords or cordsets are being prepared for export. Or, use it for receiving inspection on international cords and cordsets.

These sockets are included: "Schuko" German, Danish, Italian, India, South African, Swiss, Australia/New Zealand, and British. Table and rack mounting styles are available.

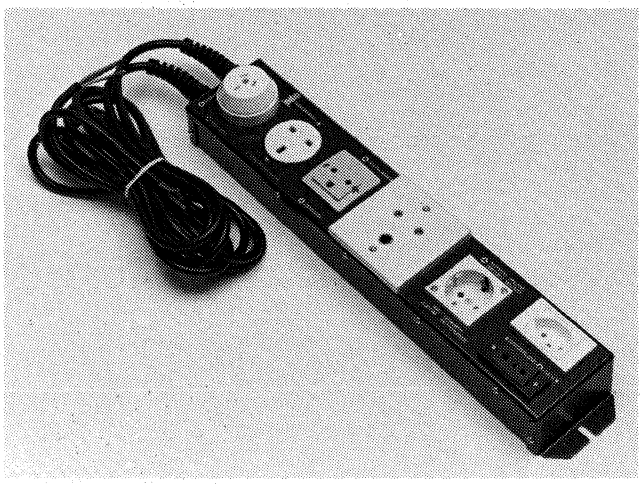
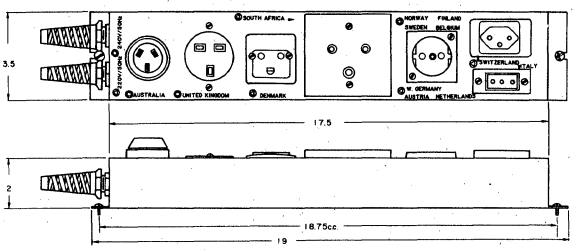
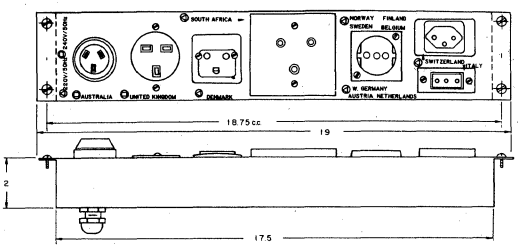


Table Mounting Model
P/N 85010100



Rack Mounting Model
P/N 85010110



Also see our "International Power Supply" with outputs from 100-250V at 50/60 Hz in EEM section 4050.

Installation to Power Source:

The International Socket Strip is equipped with two unterminated power cords – one for connection to a 220VAC/50Hz power source; the other to a 240VAC/50Hz power source. The conductor size is 1.5 mm² which is slightly larger than 16 AWG (16 AWG = 1.23 mm²). Each cord is 2.5 meters long and clearly marked as to voltage. The jacket and primary insulation are stripped and ready for installation to the appropriate power source. The primary insulation is color coded in accordance with international standards: green/yellow ground; brown (line); blue (neutral).

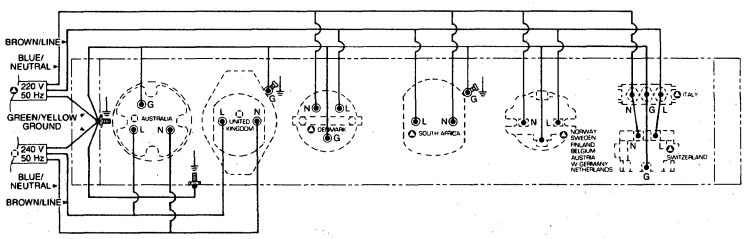
Internal Wiring

220VAC/50 Hz circuit
The cord marked "220VAC/50Hz" supplies power to these sockets:

Socket standard	Socket rating
"Schuko" (German)	16A
Danish	10A
Italian	10A
India/South African	16A
Swiss	10A

240VAC/50Hz circuit
The cord marked "240VAC/50Hz" supplies power to these sockets:

Socket standard	Socket rating
Australia/New Zealand	10A
United Kingdom	13A



Each circuit is rated at 16 amps maximum for all of the sockets combined.

Testing

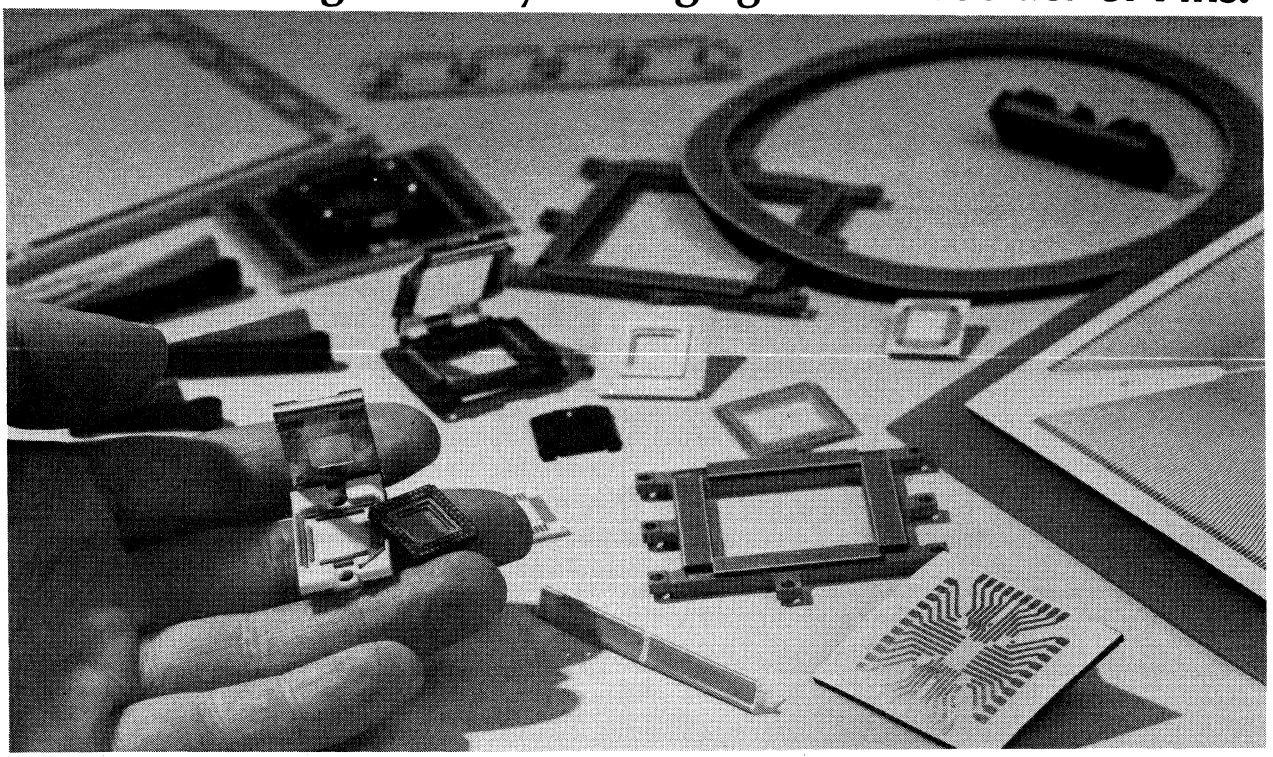
In addition to visual inspection at all manufacturing stages, each socket of both circuits is checked for correct polarity and continuity. The entire socket strip is then hi-pot tested at 2500 VAC; this test is done on each circuit between ground and line and neutral shorted together.

Delivery: Usually available from stock; call PCC Customer Service Department for stock level.

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

ENGINEERED SOLUTIONS

For *Reliable* High Density Packaging Without *Solder* or *Pins!*



Elastomeric Connectors From PCK For:

- ☐ **Surface Mount Compatibility**
- ☐ **High Contact Density**
- ☐ **Remateability**
- ☐ **Environmental Contact Sealing**
- ☐ **Low Profile Board Spacing**
- ☐ **High Speed Compatibility**

High density packaging without solder or pins...sounds almost too good to be true, but in fact, it's something we've been doing for many years. At PCK Elastomerics, we make it possible through the use of elastomeric connectors which have proven, long-term reliability in a variety of applications. Our technology enables us to design unique interconnection systems that solve a wide range of packaging problems, such as connections for board-to-board, chip carrier sockets, test fixtures, flat-panel displays, etc.

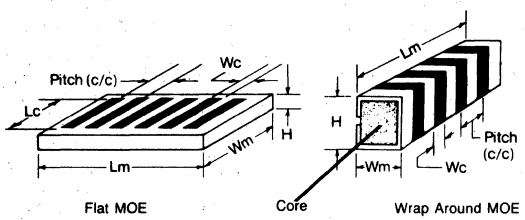
Elastomeric connector elements are available in two types; STAX and MOEs (Metal On Elastomers). STAX are composed of alternating layers of conductive and non-conductive silicone rubber. Silver is used as the conductive material where low resistance contact is desired, while carbon is used for higher resistance contact to liquid crystal displays. MOEs have metal traces deposited on a silicone substrate, providing either redundant or dedicated paths for low resistance connection.

STAX and MOEs create reliable contact when clamped between closely spaced pads on mated substrates. Gas tight seals exclude harsh environments over a wide temperature range. Silicone rubber's superior electrical properties ensure low capacitance and dielectric loss over the entire temperature range at up to 100% relative humidity.

PCK**ELASTOMERICS**, INC.

2940 Turnpike Drive, Hatboro, PA 19040
Phone: (215) 672-0787, or (215) 672-4741
FAX: 215-672-4633 TWX: 510 387236

MOE (METAL-ON-ELASTOMER) Elastomeric Connectors



Metal-on-elastomer connectors, or MOEs, are gaining widespread use in electronics packaging and test by providing high density, remateable connections with gold contacts. They allow easy installation and quick access, while providing a long life of gas-tight contact.

MOEs consist of metallic conducting paths laminated to electrically insulating elastomers, usually silicone. These conductive paths of gold on nickel on copper are artwork generated patterns facilitating microstrip designs.

MOEs are available with as many as 125 lines per inch (.004" lines on .008" centers), for redundant contacts or very accurate one-to-one contacts on wider centers.

Contact the applications engineering department of PCK Elastomerics for connector design assistance.

CONDUCTOR METALLURGY (in.)

a. 50u" Gold over 0.0001 Nickel over 0.0005 Copper (Standard)
b. 100u" Gold over .0001 Nickel over .0005 Copper
c. 0.0001 Nickel on 0.0005 Copper

PROPERTIES

Contact Resistance:
0.060-0.080 ohms per contact, Gold-over Nickel-on-copper conductors†

Current Carrying Capacity: 3 Amperes‡

Capacitance Between Conductors: Less than 0.10pf per 0.100" of parallel length, 0.030" separation

Substrate Material: Silicone rubber, foam or solid

Durometer: A 50 standard

Humidity Range: 0-100%

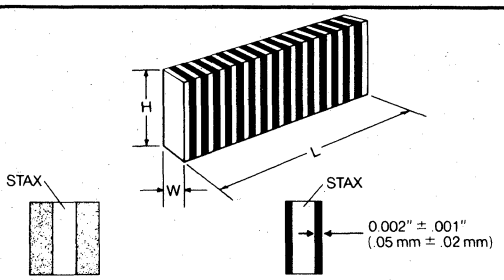
Temperature Range: −67° to + 347°F, (−55° to + 175°C)

Dielectric Constant: 2.8

†Typical for a path of 50u - in Gold plate over 0.0001" Nickel on 0.0005" Copper, 0.020"W x 0.125"L.
‡Maximum, for conductors of 50u - in gold plate over 0.0001" Nickel on 0.0005" Copper on .025" wide PCB traces

Silver Stax
ELASTOMERIC CONNECTORS

Silver STAX are low resistance connectors with contact resistances down to 100 milliohms. They consist of silver impregnated layers of silicone which are separated by nonconductive silicone layers. The silver material is an integral part of the STAX and is not susceptible to silver migration. STAX are typically inserted between two surfaces to be connected and clamped in position with a lid or matching surface. When deflected 5% to 20% STAX conform to contact surfaces to create gas-tight seals.



Details show foam padding (left), and insulation (right), each available on one or both sides. Configurations may also include foam on one side and insulation on the other.

SPECIFICATIONS and PROPERTIES

Conductive Layers Per Inch: 200 minimum

Layer Thickness: .001" to 0.0035" (.025 to .089 mm)

Deflection: 5-20%

Skew: 3% of height maximum (can be less if specified)

Contact Resistance*: 0.1 ohms

Current Carrying Capacity*: 500 mA

Resistance Between Conductor Layers: 10^{12} ohms min.

Dielectric Constant: 2.8

Temperature Range: −67° to +347°F, −55°to +175°C

Humidity Range: 0 to 100%

Layer Durometer: Conductive: A70
Non-conductive: A50

*Typical to metallic conductors 0.025" wide, for STAX 0.050" wide x 0.100" high, compressed 15%.

Chip Carrier Socket
for Leadless JEDEC Type A 68 I/O

PROPERTIES

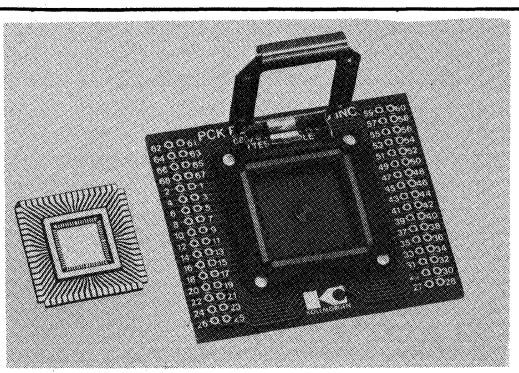
Contact resistance: Max. 150mΩ

Current-carrying capacity: Max. 100mA

Insulation resistance between layers: 1 X 10^{12} ohms-cms

Temperature range: −60°F to 260°F (−50°C to 125°C)

Humidity range: 85% @ 85°C for 96 hrs.

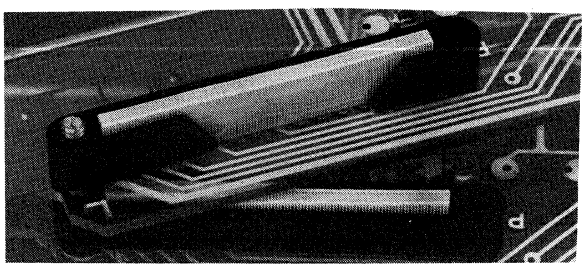


LET US DESIGN AN ELASTOMERIC INTERCONNECTION SYSTEM FOR ALL YOUR PACKAGING NEEDS

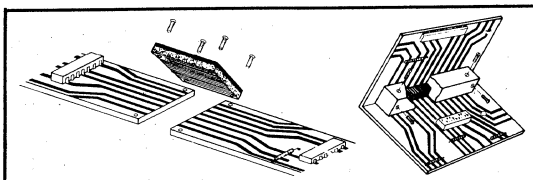
Here are some typical applications

☐ Board-to-Board

Board interconnection is easy with elastomeric connectors. The STAX and MOEs provide redundant connections when compressed between surface contact pads as tightly spaced as .025" center-to-center. We can design and provide an entire connection system including holders, hardware, and board layout. STAX and MOEs make it easy and cost effective.



Typical board-stacking application

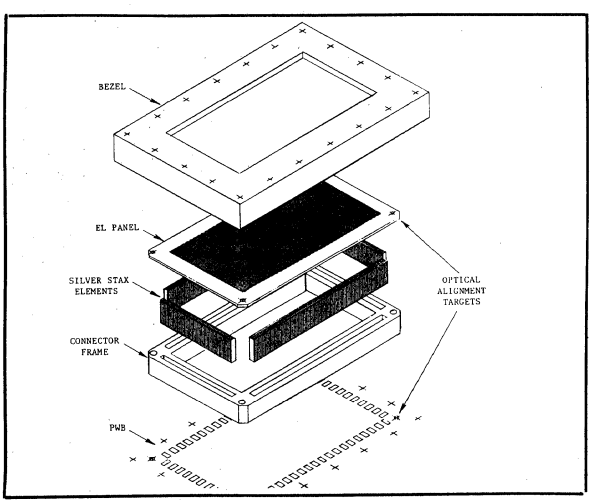


Typical coplanar connection

Typical right angle connection

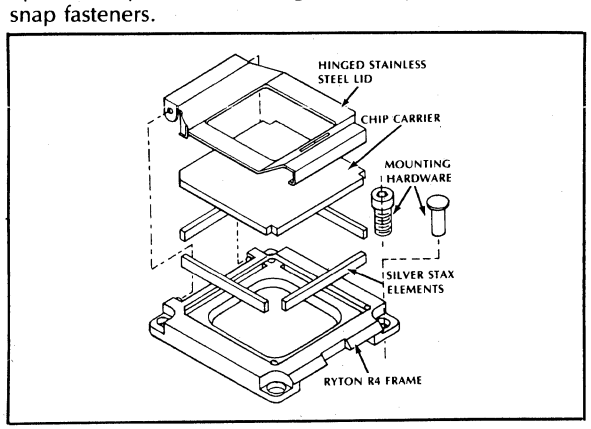
☐ Flat Panel Displays

Elastomeric Connectors provide redundant connections to tightly spaced pads on Electroluminescent, Plasma, Liquid Crystal, LED, and other displays while sealing out contaminates and making alignment less critical.



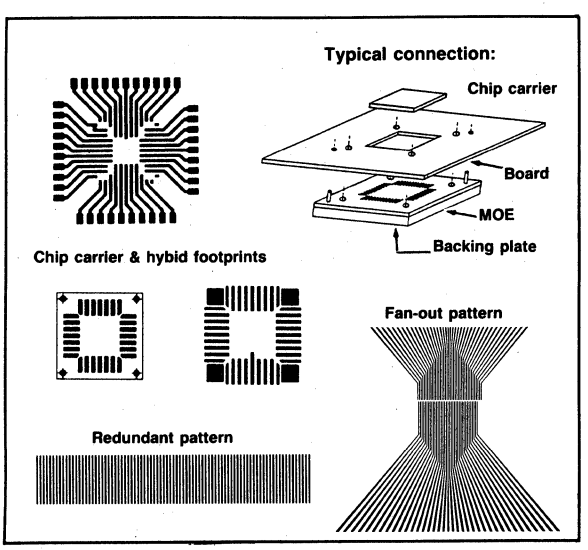
☐ Chip Carrier Sockets

By eliminating soldering and plated through-holes, leadless chip carrier sockets that use STAX or MOEs simplify assembly and replacement, while saving considerable board real estate. The use of Silver STAX also allows very low profile packages. Lead lengths can be shortened to reduce inductance for high speed compatability. Several mounting options are possible including screws, eyelets, rivets, and snap fasteners.



☐ Test Fixtures

MOEs maintain low resistance, repeatable connections through a broad temperature range, making them ideal for test applications. Since their patterns are artwork generated, they are readily adaptable to a wide variety of devices and substrates such as hybrids, chip carriers, etc. Below are just some of the types of patterns used in test applications. Let the Applications Engineering Department at PCK Elastomerics show you how to use MOE's for your testing requirements.



PCK ELASTOMERICS, INC.

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Phone: (215) 672-0787, or (215) 672-4741
FAX: 215-672-4633 TWX: 510 387236

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
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Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

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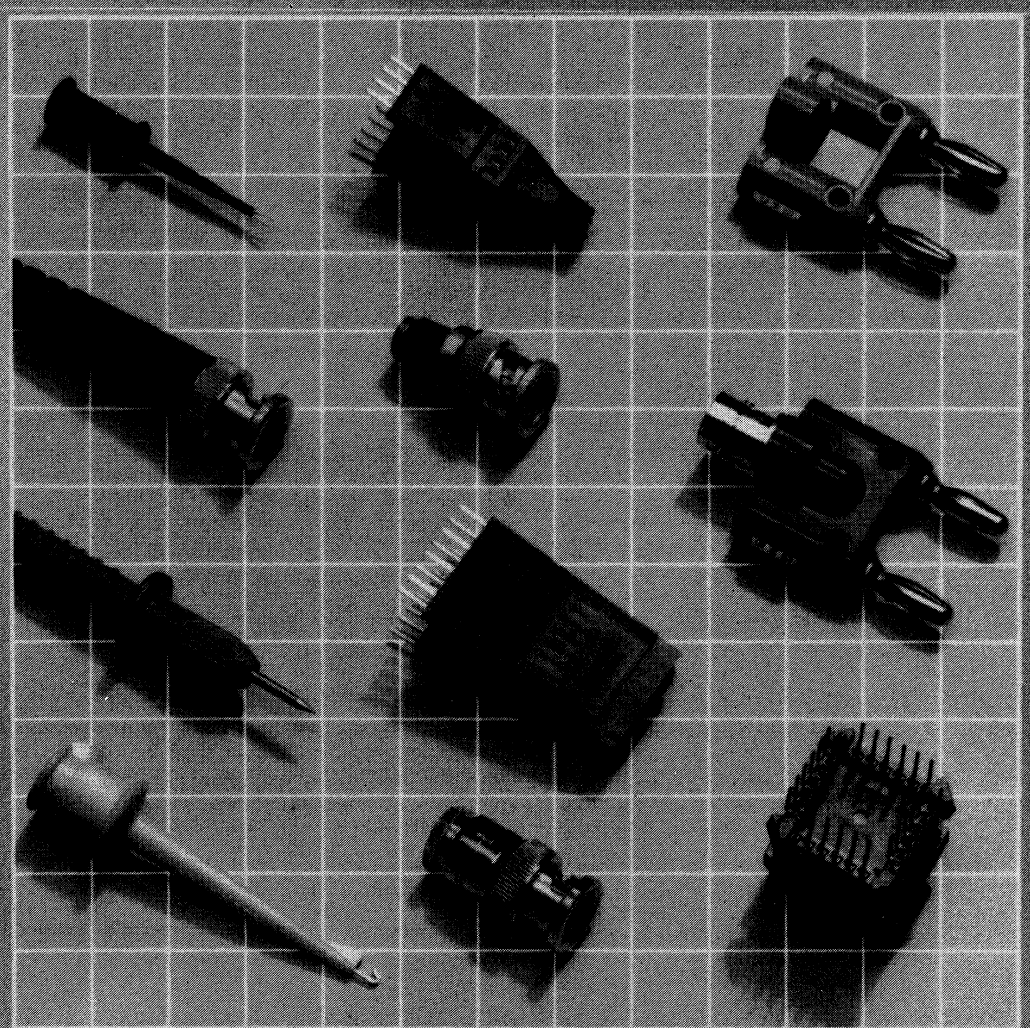
1988



TEST ACCESSORIES

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1988 CATALOG TABLE OF CONTENTS

A

ADAPTERS
- Alligator Clip ... 31
- Banana Jack/Plug, Mini ... 20, 21, 24, 27, 31
- Banana Jack/Plug, Std. ... 15, 17, 18, 21, 24-31, 62
- Bantam Plug ... 28, 30
- Binding Post ... 16-18, 21, 24-28, 30
- BNC ... 18, 25, 27-30, 35, 36, 39, 41
- "C" ... 36
- Coaxial Connectors ... 30, 35, 36, 39, 41
- Connector Test ... 24
- "F" ... 29, 36
- IC Test Tip ... 88
- Large Test Clip ... 79
- Maxigrabber® ... 62
- MHV ... 27
- Microdot ... 30
- Micrograbber® ... 61
- Microplug ... 29
- Minigator ... 31
- Minigrabber® ... 61, 62
- "N" ... 26, 35, 36, 39
- Phone Jack/Plug ... 28-30
- Phono Jack/Plug ... 29, 30
- Pin Tip Jack/Plug ... 22-24, 27, 31, 62
- SMA ... 39
- Spade Lug ... 31
- Square Pin/Receptacle (.025) ... 15, 16, 20, 22, 31, 61
- Test Socket ... 121
- Tini Plug ... 29
- TNC ... 35, 36, 39
- Triaxial ... 41
- Twinaxial ... 30
- UHF ... 26, 36
- Video ... 30

ALLIGATOR CLIPS
- Adapters ... 31
- Cable Assemblies ... 42, 101, 108, 115, 116, 118
- Patch Cords ... 91, 97

ANTISTATIC DEVICES
- Boxes ... 46
- Dip Removers ... 71
- Wrist Straps ... 79

ATTENUATORS, COAXIAL ... 43

AUDIO CONNECTORS ... 45, 120

B

BANANA JACKS/PLUGS
- Adapters ... 15, 17, 18, 20, 21, 24-31, 62
- Cable Assemblies ... 67, 69, 75, 77, 78, 86, 93, 101, 107, 108, 112-116, 120
- Do-It-Yourself ... 11
- Double ... 13, 15
- European ... 16
- Gold Plated ... 11, 13, 14, 17
- High Temperature ... 11, 13, 14
- In-Line ... 11
- Isolation ... 12, 18, 19, 21
- Low Thermal EMF ... 14
- Matching Pad ... 25
- Miniature ... 19-21, 27
- Patch Cords ... 63-65, 67, 68, 70, 74, 76-87, 89-98, 97-99, 103
- Polarized ... 23
- Resistor, Molded In ... 13
- Rivet Type ... 12, 19, 20
- Series-Parallel Isolation Plugs ... 12
- Sheathed ... 11, 14
- Shielded ... 14, 25
- Shorting ... 13, 14, 19, 21
- Splice ... 15, 19, 22
- Triple ... 12, 16
- Wrapped Wire ... 15, 20

BANTAM PLUGS
- Adapters ... 28, 30
- Cable Assemblies ... 118-120

BINDING POSTS
- Adapters ... 16-18, 21, 24-28, 30
- Double ... 17
- Gold Plated ... 16, 17
- Hex Head ... 17
- High Temperature ... 16
- Low Thermal EMF ... 16
- Military ... 17
- Miniature ... 20
- Shorting Link for ... 16, 20
- Spring Loaded ... 17
- Triple ... 17
- Wrapped Wire ... 15, 20

BNC CONNECTORS
- Adapters ... 18, 25, 27-30, 35, 36, 39, 41
- Attenuators ... 43
- Cable Assemblies ... 66, 69, 70, 75, 77, 78, 80, 86, 93, 101-103, 105-112, 115, 117
- Cable Jacks/Plugs ... 34
- Capacitor Feed Thru ... 43
- Dust Caps for ... 37
- Field Serviceable ... 43
- Hermetically Sealed ... 33, 35
- Isolated Ground ... 35
- Matching Pad ... 25
- Panel/Bulkhead Receptacles ... 33
- PC Mounts ... 37
- Push-On ... 34
- Resistor Terminated ... 43
- Shorting Plug ... 36

BOOTS, STRESS RELIEF ... 107

BOXES
- Aluminum ... 50-58
- Antistatic ... 46
- Component Mounting ... 47-49, 53-58
- Covers for ... 59
- Gasket for ... 58
- Mounting Covers for ... 59
- Plastic ... 46-49
- Screws for ... 32

BREADBOARD SOCKETS ... 121

BREAKOUTS, CABLE ... 74, 76, 101-103

BULKHEAD RECEPTACLES ... 33, 36, 40-42

BURN-IN SOCKET ... 70

C

CABLE ASSEMBLIES
- Alligator ... 42, 101, 108, 115, 116, 118
- Audio ... 120
- Banana ... 67, 69, 75, 77, 78, 86, 101, 107, 108, 112-116, 120
- Bantam ... 66, 69, 118-120
- BNC ... 66, 69, 70, 74-78, 80, 86, 93, 101-103, 105-112, 115, 117
- Breakouts ... 74, 76, 101-103
- "F" ... 117
- Holder for ... 109
- IC Jumper Cable ... 71
- Maxigrabber® ... 70
- Micrograbber® ... 69, 102
- Microwave ... 104
- Minigator ... 101, 108, 114-116
- Minigrabber® ... 66, 67, 102
- Minipincer™ ... 74, 75
- "N" ... 104, 110, 112
- Phone Plug ... 66, 118-120
- Phono Plug ... 117
- Pin Tip ... 101, 114, 115
- Retractile Cable ... 106, 113
- SMA ... 104, 111
- SMD Grabber™ ... 76, 77
- Spade Lug ... 100, 102
- Square Pin (.025) ... 103, 108
- Test Probe ... 80, 86
- Test Tweezers ... 78
- TNC ... 110, 111
- Triaxial ... 42
- UHF ... 106, 108, 111
- Video ... 117

CABLE BREAKOUTS ... 74, 76, 101-103

CABLE PLUGS ... 34, 38, 40, 42, 43, 45

CLIPS
- Alligator ... 31
- Dip ... 72
- Dip Grip ... 71
- Large Test ... 79
- Maxigrabber® ... 60, 62
- Micrograbber® ... 60, 61
- Minigator ... 31
- Minigrabber® ... 60-62
- Minipincer™ ... 74
- P.C. Board ... 97
- SMD Grabber™ ... 75
- SOIC ... 73
- Quad ... 73

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1988 CATALOG TABLE OF CONTENTS (Con't)

COAXIAL CONNECTORS (See Connectors, Coaxial)
COIL CORD 122
COIL CORD ASSEMBLIES 65, 68, 89, 106, 113
CONNECTORS, AUDIO 45
CONNECTORS, COAXIAL
- Adapter 30, 35, 36, 39, 41
- Attenuators 43
- BNC 33-37, 39, 41, 43
- Bulkhead Receptacles 33, 38, 40
- C 36
- Cable Assemblies 66, 69, 70, 74-78, 80, 86, 93, 101-112, 115, 117
- Cable Jacks/Plugs 34, 38, 40, 43
- Dust Caps for 37
- "F" 34, 36
- Feed Thrus 43
- Field Serviceable 43
- Gaskets for 32
- Hermetically Sealed 33, 35
- Isolated Ground 35, 36
- "N" 33-36, 39
- Panel Receptacles 33, 40
- PC Mount 37
- Push-on BNC, F, UHF 34
- Resistor Terminated 43
- Shorting Plugs 36, 40
- SMA 37, 39, 40
- SMB 37, 38
- SMC 38
- Stress Relief Boots for 107
- Terminations 40, 43
- TNC 33-36, 39
- UHF 33, 34, 36

CONNECTORS, TRIAXIAL/TWINAXIAL 41, 42
CONNECTOR TEST ADAPTERS 24
COVERS 59
CRIMP-ON CABLE PLUGS 34, 38, 40

D

DIE CAST ALUMINUM BOXES 50, 51, 53-57
DIP CLIP™ TEST CLIPS 72
DIP GRIP® TEST CLIP 71
DIP REMOVERS 71
DO-IT-YOURSELF DEVICES
- Banana Jacks/Plugs 11
- Pin Tip Jacks/Plugs 22
- Test Probe 85

DUST CAPS, COAXIAL 37

E

EXTRUDED ALUMINUM BOXES 52, 58

F

"F" CONNECTORS
- Adapters 29
- Cable Assemblies 117
- Cable Plug, Push On 34

FEED THRU RESISTORS/CAPACITORS 43
FIELD SERVICEABLE BNC CABLE PLUGS 43
FLANGE MOUNT CONNECTORS 33, 35, 40

G

GASKETS 32, 58
GRABBERS 60-70, 75-77

H

HERMETICALLY SEALED CONNECTORS 33, 35, 41
HEX HEAD BINDING POST 17
HIGH TEMPERATURE DEVICES 11, 13, 14
HOLDERS, TEST LEAD 109
HOOKUP WIRE 122
HOUSINGS (See Boxes)

I

IC JUMPER CABLES 71
IC TEST CLIP/ACCESSORIES 71, 72
IC TEST TIP ADAPTERS 88
ISOLATED GROUND CONNECTORS 35, 36, 41
ISOLATION JACKS/PLUGS/COMPONENTS 12, 18, 19, 21

J

JACKS (See BANANA, PIN TIP, etc.)
JUMPERS (See PATCH CORDS)

K

KITS
- Micrograbber® 61
- Minigrabber® 61
- Oscilloscope Probe 88
- SMD Grabber™ 75
- Spade Lug 31
- Test Probe 80, 81

L

LARGE TEST CLIP 79
LOW THERMAL EMF DEVICES 14, 16, 31, 93, 100

M

MATCHING PAD 25
MAXIGRABBER® TEST CLIPS 60, 62, 70
MEDICAL PATCH CORD 90
MHV CONNECTORS 27
MICRODOT RECEPTACLE 30
MICROGATOR PATCH CORD 98
MICROGRABBER® TEST CLIPS
- Adapters 61
- Cable Assemblies 69, 102
- Patch Cords 67, 68
- Test Clips 60, 61

MICRO PLUG 29
MICROTIP™ PROBE 78
MICROWAVE CABLE ASSEMBLIES 104, 111
MILITARY BINDING POSTS 17
MINIGATORS
- Adapters 31
- Cable Assemblies 101, 108, 114-116
- Patch Cords 64, 98, 99

MINIGRABBER® TEST CLIPS
- Adapters 61, 62
- Cable Assemblies 66, 67
- Patch Cords 63-65
- Test Clips 60-61

MINIPINCER™ TEST CLIPS 74, 75
MOUNTING BASES 32
MULTIMETER REPLACEMENT TEST LEADS 81, 82

N

"N" CONNECTORS
- Adapters 26, 35, 39
- Cable Assemblies 104, 110, 112
- Cable Plugs 34
- Panel/Bulkhead Receptacles 33
- Resistor Terminated 43

NEEDLE TIPS, REPLACEMENT 80

O

OSCILLOSCOPE TEST PROBE 88

P

PANEL RECEPTACLES 33, 40
PATCH CORDS
- Alligator 91, 97
- Banana Jack/Plug, Mini 63, 67, 70, 83, 94, 98
- Banana Jack/Plug, Std 63-65, 67, 70, 74, 77-81, 83-87, 89-91, 93-95, 97-99
- BNC, Push-On 103
- Fused 91
- Holder for 109
- Large Test Clip 79
- Low Thermal EMF 100
- Maxigrabber™ 70
- Medical 90
- Microgator 98
- Micrograbber® 67, 68
- Minigator 64, 98, 99
- Minigrabber® 63-65
- Minipincer™ 74
- Multimeter 81, 82
- PC Board Test Clip 97
- Pin Tip Jack/Plug 64, 68, 83, 85, 95, 96, 99
- Retractile Cord 65 68, 89, 92

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1988 CATALOG TABLE OF CONTENTS (Con't)

- Sheathed Banana Jack/Plug 63, 68, 76, 81, 82, 84-86, 92, 93
- SMD Grabber™ 76
- Spade Lug 79, 90, 93, 97, 100
- Square Pin/Receptacle (.025) 64, 67, 76, 99
- Test Probe 78, 82-87
- Wrist Strap 79

PC BOARD TEST CLIP 97
PCC ADAPTER 73
PC MOUNTS 37
PHONE PLUGS
- Adapters 28-30
- Cable Assemblies 66, 118-120
- Cable Plugs 29

PHONO JACKS/PLUGS 29, 30
PIN TIP JACKS/PLUGS
- Adapters 24, 27
- Cable Assemblies 69, 114, 115
- Do-It-Yourself 22
- Isolation 18
- Miniature 22, 23
- Patch Cord 83, 85, 95, 96, 99
- Polarized 23
- Shorting Bar 22, 23
- Splice 22
- Standard 22, 23
- Wrapped Wire 22

PIN/RECETACLE, (.025)(See Square Pin/Receptacle)
PJ051 PLUGS 28-30, 66, 118-120
PJ068 PLUGS 28
PLUGS (See Banana, Pin Tip, etc.)
POLARIZED JACKS/PLUGS 23
PROBES 78, 80-87
PUSH-ON BNC, F, UHF CONNECTORS 34

Q

QUAD CLIP™ 73

R

REPLACEMENT PARTS
- Binding Post Mounting Bases 32
- Box Covers 59
- Burn-in Socket Contact 70
- Minigrabber® Screw-on Tip 61
- Oscilloscope Probe Accessories 88
- Screws 32
- Test Probe Tips 80
- Wrist Strap 79

REPLACEMENT PROBES 82
RESISTORS, MOLDED IN 13
RETRACTABLE SHEATH BANANA PLUGS 63, 68, 76, 84-86, 92, 93
RETRACTILE PATCH CORDS 65, 68, 89, 92, 106, 113
RFI/EMC GASKETS 32, 58
RIVET TYPE BANANA JACKS/PLUGS 12, 19

S

SCREWDRIVER 32
SCREWS 32
SHEATHED BANANA JACKS/PLUGS 63, 68, 76, 84-86, 92, 93
SHIELDED BANANA PLUGS 14, 25
SHIELDED TEST PROBES 86
SHIELDING GASKETS 32, 58
SHORTING ADAPTERS
- Banana, Mini 19, 21
- Banana, Std. 13, 14
- Binding Post Link 16, 20
- Coaxial 36
- Pin Tip 23
- SMA 40

SIGNAL ISOLATOR 25
SMA CONNECTORS
- Adapters 39
- Cable Assemblies 104, 111
- Cable Plugs 40
- Panel/Bulkhead Receptacles 40
- PC Mounts 37
- Shorting Plug 40
- Termination 40

SMB CONNECTORS 38
SMC CONNECTORS 38
SMD DEVICES
- Minipincer™ 74, 75
- SMD Grabber™ 75-77
- SMD Microtip™ Probe 78
- SMD Test Tweezer™ 78
- SOIC Clip™ 73
- Quad Clip™ 73

SOCKET SAVER™ 121
SOIC CLIP™ 73
SPADE LUGS
- Adapters 31
- Cable Assemblies 100, 102
- Kit 31
- Patch Cords 79, 93, 97, 100

SPLICES
- Banana Plug, Mini 19
- Banana Plug, Std 15, 22
- Pin Tip Plug 22

SPRING LOADED BINDING POST 17
SQUARE PIN/RECEPTACLE (.025)
- Adapters 15, 16, 20 22
- Cable Assemblies 103, 108
- Patch Cords 64, 67, 76, 99

STRESS RELIEF BOOTS 107

T

TERMINATIONS
- BNC 43
- "N" 43
- SMA 40

TEST CLIPS
- Dip Clip™ 72
- Dip Grip® 71
- Maxigrabber® 60, 62
- Micrograbber® 60, 61
- Minigrabber® 60-62
- Minipincer™ 74
- PC Board 97
- Quad Clip™ 73
- SMD Grabber™ 75
- SOIC Clip™ 73

TEST LEAD HOLDERS 109
TEST PROBES
- Cable Assemblies 80
- Do-It-Yourself 87
- Extension 85
- Flexible Tip for 80
- IC Test Tip for 88
- Kits 80
- Miniature 80-85
- Multimeter 82
- Oscilloscope 88
- Patch Cords 80-87
- Repairable 85
- SMD Microtip™ 78
- Standard (Large) 86, 87
- Tips for 80

TEST SOCKET ADAPTERS 121
TEST TWEEZERS 78
TINI PLUG 29
TNC CONNECTORS
- Adapters 35, 36, 39
- Cable Assemblies 110, 111
- Cable Jacks/Plugs 35
- Panel/Bulkhead Receptacles 33

TRANSISTOR BURN-IN SOCKET 70
TRIAXIAL CONNECTORS 41, 42
TWINAXIAL CONNECTORS 30, 42

U

UHF CONNECTORS
- Adapters 36
- Cable Assemblies 106, 108
- Cable Plugs/Jacks 34
- Panel/Bulkhead Receptacles 33

V

VIDEO PLUGS 34, 36, 117

W

WE-309 CONNECTORS (See PJ068 Plugs)
WE-310 CONNECTORS (See PJ051 Plugs)
WIRE 122
WRAPPED WIRE PINS/
SOCKETS (.025)(See Square Pin/Receptacle)
WRIST STRAP, ANTISTATIC 79

X

XLR CONNECTORS 45

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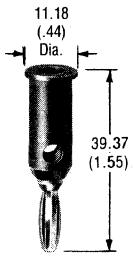
STANDARD BANANA PLUGS/JACKS

SOLDERLESS STACKUP BANANA PLUG

Wire firmly held in place with internal setscrew, eliminating soldering. Assembly of test leads simplified.
UPPER: Banana jack. 4.22 mm (.166) dia., brass.
LOWER: Banana plug. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +50°C (+122°F.) Max. (Model 5230, +220°C. (+428°F.) Max.)



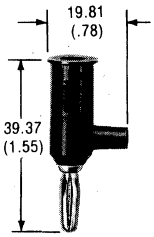
NEW

(**Pkg. Ten Per Color)

MODEL	FINISH	INSULATION	*STD COLORS:	NET
1325-*	Nickel plated	ABS	-0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet -8 Gray, -9 White	1.05 EA.**
5406-*	Gold plated	ABS	-0 Black, -2 Red	1.95
5230-*	Nickel plated	Polyphenylene Sulfide	-0 Black, -6 Blue	1.25 EA.**

SOLDERLESS STACKUP STANDARD BANANA PLUG WITH SAFETY COLLAR

Features integral safety collar that insulates exposed wire leads. Wire firmly held in place with internal setscrew, eliminates soldering, simplifies assembly of test leads.
UPPER: Banana jack. 4.22 mm (.166) dia., brass.
LOWER: Banana plug. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max. (Model 4899, +220°C. (+428°F.) Max.)

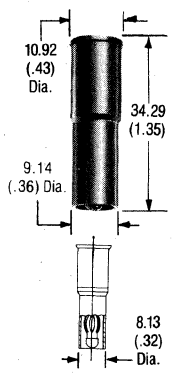


**(Pkg. Ten Per Color)

MODEL	FINISH	INSULATION	*STD COLORS:	NET
1825-*	Nickel plated	ABS	-0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet -8 Gray, -9 White	1.05 EA.**
4897-*	Gold plated	ABS	-0 Black, -2 Red	1.95
4899-*	Nickel plated	Polyphenylene Sulfide	-0 Black, -6 Blue	1.25 EA.**

DO-IT-YOURSELF IN-LINE SHEATHED BANANA PLUG

This sheathed in-line banana plug provides protection from accidental shorting when dropped. A plastic tip on the banana plug offers further protection. A threaded, two piece design allows wire to be crimped or soldered to banana plug. This plug fits models 4912, 4921, 4934 & 4987.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
INSULATION: Nylon.
RATING (Independent of Wire): 1200 V AC/DC, 15 Amps, +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

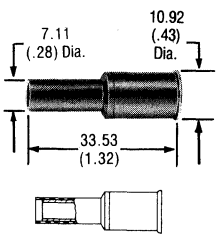


MODEL	Accepts wire AWG	Wire access hole
4933-*	22, 20, 18	4.04 (.159) Dia.
4986-*	16, 14	5.08 (.200) Dia.

(unassembled) **NET 2.60**

DO-IT-YOURSELF IN-LINE SHEATHED BANANA JACK

This sheathed in-line banana jack provides protection from accidental shorting when dropped. This banana jack will accept all sheathed plugs described herein. It will also accept any standard banana plug. A threaded, two piece design allows wire to be crimped or soldered to banana jack.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Nylon.
RATING (Independent of Wire): 1200 V AC/DC, +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

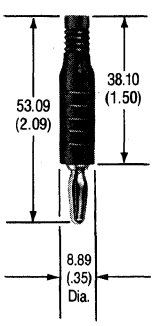


MODEL	Accepts wire AWG	Wire access hole
4934-*	22, 20, 18	4.04 (.159) Dia.
4987-*	16, 14	5.09 (.200) Dia.

(unassembled) **NET 2.50**

DO-IT-YOURSELF IN-LINE BANANA PLUG WITH FLEXIBLE BOOT

This in-line banana plug is ideal for making patch cords and field repairs. A snap-on two piece design allows the wire to be crimped or soldered to the banana plug.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
INSULATION: Flexible PVC.
RATING (Independent of Wire): 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



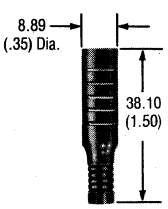
**Max. wire dia. 3.94 (.155)

MODEL	Accepts wire AWG**
5169-*	22, 20, 18
5170-*	16, 14

(unassembled) **NET 1.65**

DO-IT-YOURSELF IN-LINE BANANA JACK WITH FLEXIBLE BOOT

This in-line banana jack is ideal for making patch cords and field repairs. A snap-on two piece design allows the wire to be crimped or soldered to the banana jack.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Flexible PVC.
RATING (Independent of Wire): 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



**Max. wire dia. 3.94 mm (.155)

MODEL	Accepts wire AWG**	NET
5167-*	22, 20, 18	1.30
5168-*	16, 14	1.60

(unassembled)

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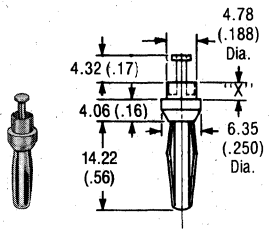
POMONA

STANDARD BANANA PLUGS/JACKS

RIVET TYPE BANANA PLUG WITH TURRET

Excellent for riveting to panels or boards. Solder turrent for rapid attachment of wires.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
RATING: 5000 WVDC, 15 Amps.

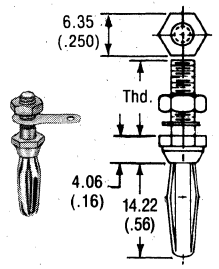


MODEL	"X" Dim.	Panel
3260	2.67 (.105)	1.57 (.062)
3261	3.43 (.135)	2.37 (.093)

NET .95 EA.
(Ten Per Pkg.)

BANANA PLUG WITH THREADED STUD

Threaded stud for rapid mounting. Furnished with hex nut and tin plated solder lug.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
RATING: 5000 WVDC, 15 Amps.

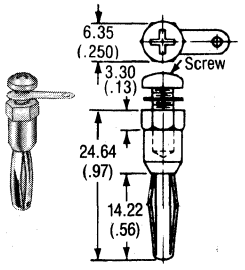


MODEL	Thread	NET
3263	6-32x12.7 (.50)	1.10 EA.
3264	8-32x12.7 (.50)	1.10 EA.
4511	6-32x15.9 (.63)	1.10 EA.
4512	8-32x15.9 (.63)	1.20 EA.

(Ten Per Pkg. unassembled)

BANANA PLUG WITH SCREW

Mounts to various size panels. Furnished with screw and tin plated solder lug.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
RATING: 5000 WVDC, 15 Amps.



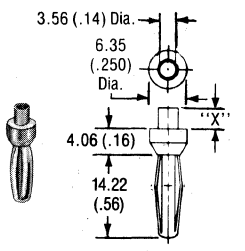
MODEL	Screw
3265	6-32x6.4 (.25)
3266	8-32x6.4 (.25)

(unassembled)

NET 1.25 EA.
(Ten Per Pkg.)

RIVET TYPE BANANA PLUG

Excellent for riveting to panels or boards.
MATERIAL: Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
RATING: 5000 WVDC, 15 Amps.

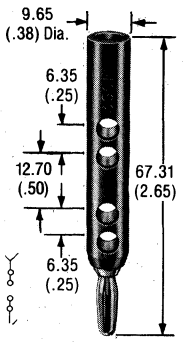


MODEL	"X" Dim.	Panel	NET
3257	2.39 (.094)	1.57 (.062)	.95 EA.
3258	3.18 (.125)	3.27 (.093)	.85 EA.

(Ten Per Pkg.)

SERIES-PARALLEL ISOLATION PLUG

Top banana jack and upper pair of cross holes isolated from lower pair of cross holes and banana plug. 4 cross holes 4.22 mm (.166) dia.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS, red.
LOWER: Banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, + 50°C. (+ 122°F.) Max.

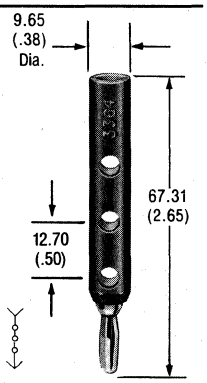


MODEL
3501

NET 5.95

QUAD STACKING PLUG

Features four parallel connectors to the same point. 3 cross holes, 4.22 mm (.166) dia. provide side stackup connection.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, + 50°C. (+ 122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

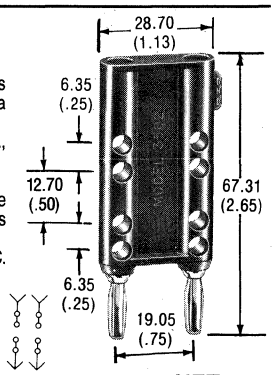


MODEL
3364-*

NET 5.95

DUAL SERIES-PARALLEL ISOLATION PLUG

Top banana jacks and upper pair of cross holes isolated from lower pair of cross holes and banana plugs. 8 cross holes 4.22 mm (.166) dia.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS, red.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, + 50°C. (+ 122°F.) Max.

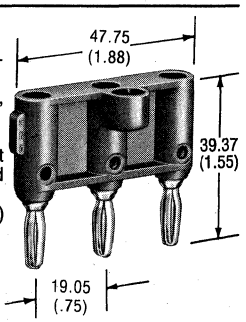


MODEL
3502

NET 9.85

TRIPLE BANANA PLUG

Setscrews secure leads. Ideal for balanced line 2 conductor shielded cable assemblies.
UPPER: Triple banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Triple banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, + 50°C. (+ 122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL
2970-*

NET 3.50

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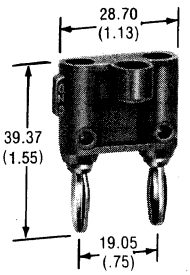
POMONA

STANDARD BANANA PLUGS/JACKS

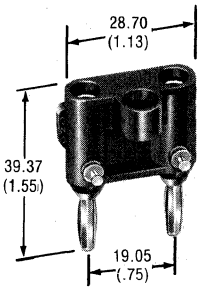
STANDARD DOUBLE BANANA PLUG



Setscrews secure leads. Simplifies cable construction or component mounting.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max. (Model 4898, +220°C. (+428°F.) Max.)

MODEL	FINISH	INSULATION	*STD COLORS:	NET
MDP-*	Nickel plated	ABS	-0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet -8 Gray, -9 White	1.85
4892-*	Gold plated	ABS	-0 Black, -2 Red	3.25
4898-*	Nickel plated	Polyphenylene Sulfide	-0 Black, -6 Blue	1.95

DOUBLE BANANA PLUG WITH SOLDER TURRET TERMINALS

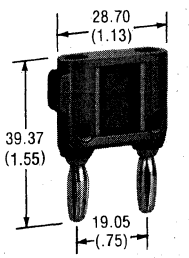


Similar to Model MDP, except has bright tin plated solder turret terminals for permanent noise-free connections of cables and components.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene, black.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +55°C. (+131°F.) Max.

MODEL
MDP-ST

NET 2.35

COMPONENT MOUNTING DOUBLE BANANA PLUG

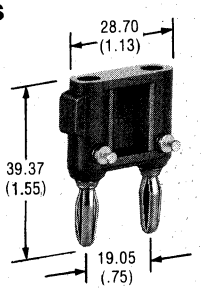


Setscrews secure leads. Features recess for mounting small components.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black. -2 Red.

MODEL
1330-*

NET 1.95

COMPONENT MOUNTING DOUBLE BANANA PLUG WITH SOLDER TURRET TERMINALS

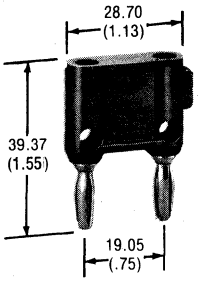


Similar to Model 1330, except has bright tin plated solder turret terminals.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
1330-ST-*

NET 2.35

DOUBLE BANANA PLUG WITH SHORTING BAR

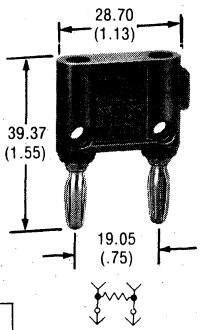


Banana plugs internally shorted with #14 AWG wire. Banana jacks provide top stackup. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -9 White.

MODEL
MDP-S-*

NET 2.95

MOLDED PRECISION RESISTOR

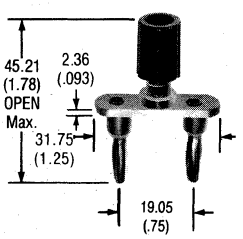


Ideal where rapid interchange of resistance values is required. Deposited carbon 1% resistor, ½ watt, molded internally. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections. Resistance value stamped on top of plug.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS, red.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: ½ Watt Max, 350 WVDC, +50°C. (+122°F.) Max.

MODEL	*Specify Resistance in Ohms				
MDP-R-*	50	150	900	10K	100K
	75	200	1K	20K	1 Meg.
	130	600	5K	50K	10 Meg.

NET 5.95

DOUBLE BANANA PLUG SHORTING BAR WITH BINDING POST

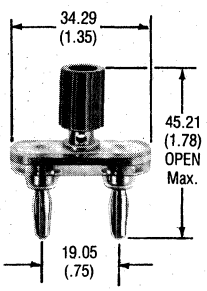


Double banana plugs are swaged to 2.36 mm (.093) thick bar. A fully insulated binding post accepts standard banana plug and eases insertion/removal.
MATERIAL: Binding post, thumb nut, shorting bar and banana plug bodies, brass. Spring, one piece heat treated beryllium copper. Banana plugs fit standard 4.22 (.166) dia. banana jack.
FINISH: Nickel plated.
INSULATION: Polycarbonate.
RATING: 15 Amps, +115°C. (+239°F.) Max. resistance less than 1.5 milliohms.
BINDING POST COLOR: -0 Black, -2 Red.

MODEL
4665-*

NET 5.25

ENCAPSULATED DOUBLE BANANA PLUG SHORTING BAR WITH BINDING POST



Same as 4665 (above) except shorting bar is completely encapsulated in clear ABS thermoplastic.
MATERIAL: Binding post, thumb nut, shorting bar and banana plug bodies, brass. Spring, one piece heat treated beryllium copper. Banana plugs fit standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
INSULATION: Binding post, polycarbonate. Shorting bar, ABS, clear.
RATING: 2500 WVDC, 15 Amps, +50°C. (+122°F.) Max. Resistance less than 1.5 Milliohms.
BINDING POST COLOR: -0 Black, -2 Red.

MODEL
5165-*

NET 6.50

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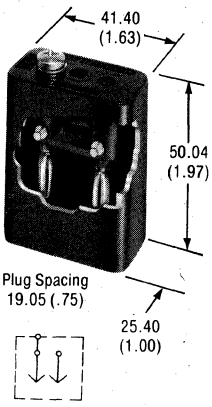
POMONA

STANDARD BANANA PLUGS/JACKS

SHIELDED DOUBLE BANANA PLUG WITH IN-LINE CABLE ENTRY

Shielded double banana plug with GND molded in shell. Bright tin plated solder turret terminals for cable connections. 5.56 mm (.219) dia. cable opening.
MATERIAL: Shell, die cast aluminum. Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Shell, black anodized. Banana plug, nickel plated.
INSULATION: Polypropylene, black.
RATING: 1200 WVDC, 15 Amps, +55°C. (+131°F.) Max., 2.5 pF @ 1 MHz.

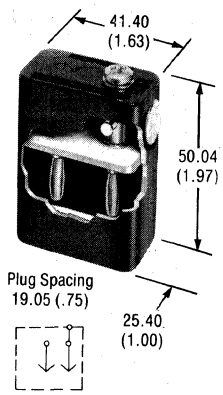


MODEL
1433

NET 10.95

SHIELDED DOUBLE BANANA PLUG WITH RIGHT ANGLE CABLE ENTRY

Shielded double banana plug with GND clearly molded in shell. Bright tin plated solder turret terminals for cable connections. Vinyl grommet (one side) and nickel plated snap button (other side) supplied. 6.35 mm (.25) dia. side entry.
MATERIAL: Shell, die cast aluminum. Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Shell, black anodized. Banana plug, nickel plated.
INSULATION: Polycarbonate base, white.
RATING: 2800 W V Peak, 15 Amps, +55°C. (+133°F.) Max. 2.0 pF @ 1 MHz.

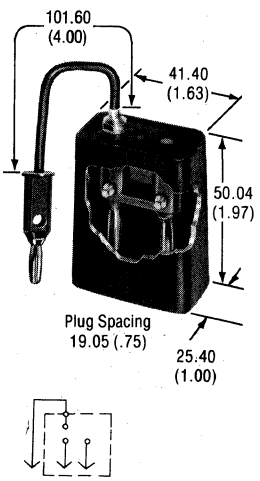


MODEL
1791

NET 14.95

BALANCED LINE SHIELDED DOUBLE BANANA PLUG

Three terminal design allows connection to shielded two conductor cable while maintaining balanced conditions. Minimizes ground loop errors in low signal level applications. Bright tin plated solder turret terminals for reliable noise-free connections.
MATERIAL: Shell, die cast aluminum. Banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Shell, black anodized. Banana plug, nickel plated.
INSULATION: Polypropylene, red.
RATING: 1000 W V Peak, Line to Shield; 2000 W V Peak, Line to Line; 2.0 pF @ 1 MHz, Line to line; 3.0 pF @ 1 MHz, both lines to shield; 15 Amps, + 55°C. (+131°F.) Max.

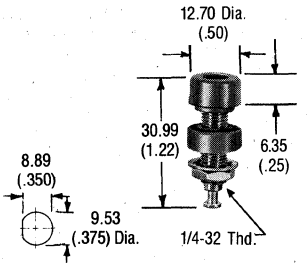


MODEL
1921

NET 19.95

BANANA JACK

Closed entry jack 4.22 mm (.166) dia. x 23.37 mm (.920) deep. Mounts in panels from 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated lockwasher and ¼-32 hex nut.
MATERIAL: Brass.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max. (Model 4900, +220°C. (+428°F.) Max.)

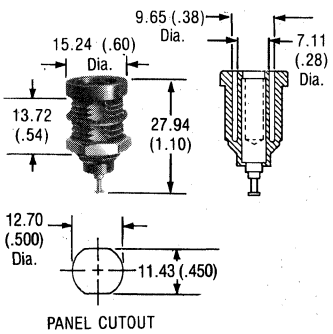


(**Pkg. Ten Per Color)

MODEL	MATERIAL	INSULATION	*STD COLORS	NET
1581-*	Brass, bright tin plated	Polycarbonate	-0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White	.75 EA.**
2854-*	Brass, gold plated			1.50 EA.**
4900-*	Brass, bright tin plated	Polyphenylene Sulfide	-0 Black, -6 Blue	1.05 EA.**
5294-*	Tellurium copper, gold plated	Polycarbonate	-0 Black, -2 Red, -5 Green, -6 Blue, -9 White.	3.25

PANEL MOUNT BANANA JACK FOR SHEATHED PLUGS

This banana jack will accept all sheathed plugs described herein. It will also accept any standard banana plug. Nickel plated lockwasher and ½-28 nut included.
MATERIAL: Brass.
FINISH: Bright tin plated.
INSULATION: Polycarbonate.
RATING: 1200 V AC/DC Max., 15 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



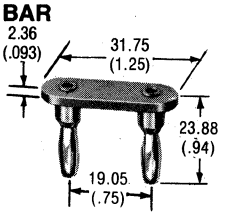
MODEL
4921-*

(unassembled)

NET 1.95

DOUBLE BANANA PLUG SHORTING BAR

MATERIAL: Bar and banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
RATING: 15 Amps, +125°C. (+257°F.) Max., resistance less than 1.5 milliohms.

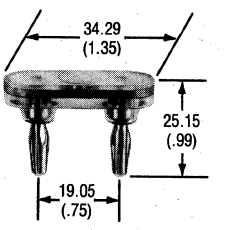


MODEL
1855

NET 2.95

ENCAPSULATED DOUBLE BANANA PLUG SHORTING BAR

Low profile, completely insulated shorting bar. Insulation has finger ridge for ease of insertion and removal.
MATERIAL: Bar and banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits standard 4.22 mm (.166) dia. banana jack.
FINISH: Nickel plated.
INSULATION: ABS, Clear.
RATING: 15 Amps, + 50°C. (+122°F.) Max., resistance less than 1.5 milliohms.



MODEL
5145

NET 3.95

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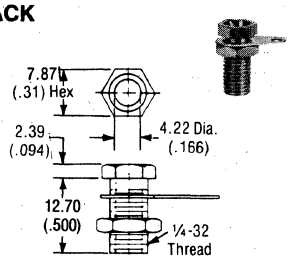
POMONA

STANDARD BANANA JACKS

UNINSULATED BANANA JACK

Threaded for rapid mounting. Used with standard banana plugs. Furnished with hex nut and solder lug.
MATERIAL: Banana jack and hex nut, brass. Solder lug, copper.
FINISH: Banana jack and hex nut, nickel plated. Solder lug, tin plated.
RATING: 15 Amps.

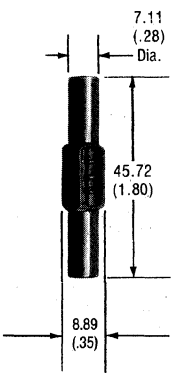


MODEL
3267

(unassembled) **NET .65 EA.** (Ten Per Pkg.)

BANANA PLUG SPLICE FOR SHEATHED PLUGS

This banana jack will accept all sheathed plugs described herein. It will also accept any standard banana plug.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Polypropylene.
RATING: 1200 V AC/DC Max., 15 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

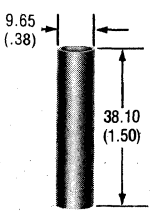


MODEL
4922-*

NET 1.50

SINGLE BANANA PLUG SPLICE

Provides rapid method for splicing single banana plug patch cords. Reduces the necessity of storing extra long patch cords. Molded thermoplastic body provides protective insulation. 4.22 mm (.166) dia. banana jack.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Polypropylene.
RATING: 5000 WVDC, 15 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

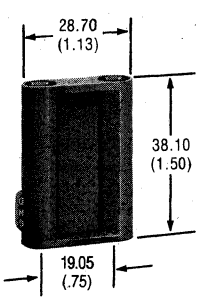


MODEL
1829-*

NET 1.10 EA. (Pkg. Ten Per Color)

DOUBLE BANANA PLUG SPLICE

Provides rapid method for splicing cables. Reduces necessity of storing extra long cables. 4.22 mm (.166) dia. banana jacks.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Polypropylene.
RATING: 5000 WVDC, 15 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

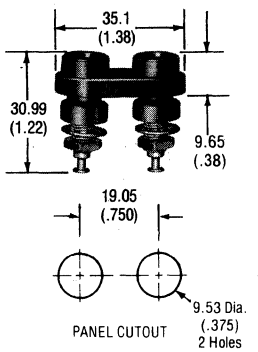


MODEL
1823-*

NET 1.95

DOUBLE BANANA JACK

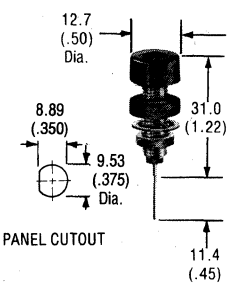
Closed entry receptable 4.22 mm (.166) dia. x 23.37 (.920) deep on 19.05 mm (.750) centers. Mounts in panels from 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated lockwasher and ¼-32 hex nut. One black and one red jack. Choice of black or red mounting base.
MATERIAL: Brass.
FINISH: Bright tin plated.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max.



MODEL	INSULATION	*STD COLORS:	NET
2269-*	Polycarbonate	-0 Black, -2 Red	2.15
5233-*	Polyphenylene sulfide	-0 Black	2.95

BANANA JACK WITH WRAPPED WIRE TERMINAL

Closed entry receptacle, 4.22 mm (.166) dia. x 23.37 mm (.920) deep. Excellent for rapid connection of wires using wrapped wire tools or machines. Mounts in panels from 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated lockwasher and ¼-32 hex nut.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polycarbonate.
LOWER: 0.64 mm (.025) sq. Wrapped Wire Terminal. Phosphor bronze, gold plated.
RATING: 2500 WVDC, 3 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

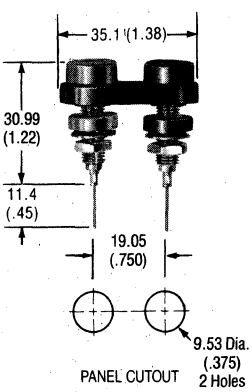


MODEL
4005-*

(unassembled) **NET 1.45**

DOUBLE BANANA JACK WITH WRAPPED WIRE TERMINAL

Excellent for rapid connection of wire using wrapped wire tools or machines. Closed entry receptacle 4.22 mm (.166) dia. x 23.37 (.920) deep on 19.05 mm (.750) centers. Mounts in panels from 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated lockwasher and ¼-32 hex nut. One black and one red jack. Choice of black or red mounting base.
UPPER: Banana jack. Brass, nickel plated.
INSULATION: Polycarbonate.
LOWER: 0.64 mm (.025) sq. Wrapped Wire Terminal. Phosphor bronze, gold plated.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.



MODEL
4069-*

(unassembled) **NET 3.15**

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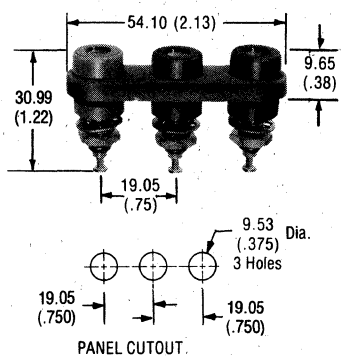
STANDARD BANANA JACKS/BINDING POSTS

TRIPLE BANANA JACK

Closed entry receptacle 4.22 mm (.166) dia. x 23.37 mm (.920) deep. Mounts in panels from 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated ¼-32 lockwasher and hex nut. One black, one red and one green jack.
MATERIAL: Brass.
FINISH: Bright tin plated.
INSULATION: Polycarbonate.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.

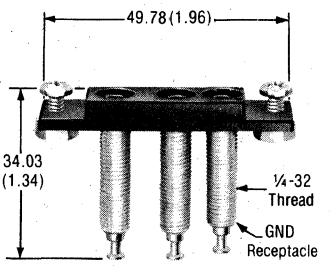


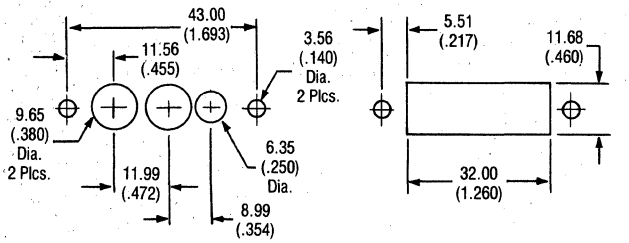
MODEL
4601-*

(unassembled) **NET 3.10**

EXTRA DEEP TRIPLE BANANA JACK

Initial connection made with ground receptacle. Accepts 20.32 mm (.800) long banana plugs. Supplied with two 6-32 hex nuts and screws, unassembled.
MATERIAL: Brass.
FINISH: Bright tin plated.
INSULATION: Polycarbonate, black.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max.





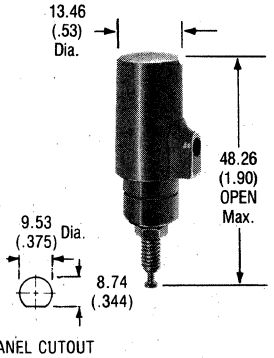
BOTTOM MOUNTING PATTERN TOP MOUNTING PATTERN

MODEL
4163-0

NET 3.95

FULLY INSULATED SPRING-LOADED BINDING POST

Spring loaded, fully insulated binding post allows fast and simple attachment of wires or plugs up to 2.16 mm (.085) dia. with insulation up to 4.06 mm (.160) dia. Nickel plated lockwasher and 8-32 hex nut included. Mounts in panels 1.57 mm (.062) to 9.53 mm (.375) thick.
MATERIAL: Brass.
FINISH: Bright tin plated.
INSULATION: Polycarbonate.
RATING: 630 V Peak, 15 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -4 Yellow, -5 Green, -6 Blue, -9 White.

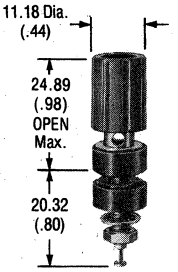


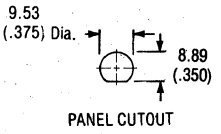
MODEL
4770-*

(unassembled) **NET 6.25**

STANDARD BINDING POST

Accepts standard banana plug. Thin line design for high-density packaging. Nickel plated 8-32 hex nut and lockwasher included. 2.54 mm (.100) dia. cross hole is perpendicular with flat on insulator. Mounts in panels 1.57 mm (.062) to 6.35 mm (.250) thick.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max. (Model 4901, +220°C. (+428°F.) Max.)

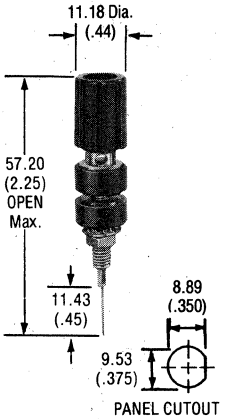




MODEL	MATERIAL	INSULATION	*STD COLORS	NET
3750-*	Brass, gold plated	Polycarbonate	-0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow -5 Green, -6 Blue, -7 Violet -8 Gray, -9 White	2.95
3760-*	Brass, bright tin plated			2.10
3770-*	Tellurium copper, gold plated			4.15
4901-*	Brass, bright tin plated	Polyphenylene Sulfide	-0 Black, -6 Blue	2.35

STANDARD BINDING POST WITH WRAPPED WIRE TERMINAL

Excellent for rapid connection of wires using wire-wrapping tools or machines. Accepts standard banana plug. Thin line design for high-density packaging. 8-32 hex nut and lockwasher included. 2.54 mm (.100) dia. cross hole is perpendicular with flat on insulator. Mounts in panels 1.57 mm (.062) to 6.35 mm (.250) thick.
UPPER: Binding post with captive thumb nut. Brass, nickel plated.
INSULATION: Polycarbonate.
LOWER: 0.63 mm (.025) sq. wrapped wire terminal. Phosphor bronze, gold plated.
RATING: 2500 WVDC, 3 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -4 Yellow, -5 Green, -9 White.

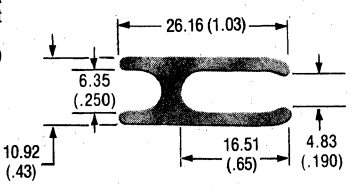


MODEL
4098-*

(unassembled) **NET 3.15**

SHORTING LINK FOR STANDARD BINDING POSTS

Shorting link for standard binding posts on 19.05 mm (.750) centers. A snap-on feature holds link on post when short not needed.
MATERIAL: Brass, 0.79 mm (.031) thick.
FINISH: Nickel plated.
RATING: 15 Amps.



MODEL
4115

NET .50 EA.
(Ten Per Pkg.)

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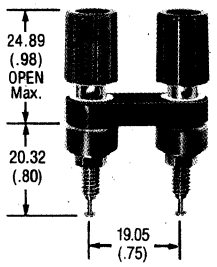
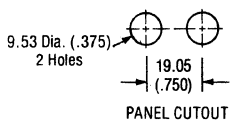
POMONA

BANANA PLUGS/BINDING POSTS

DOUBLE BINDING POST ASSEMBLY

Nickel plated 8-32 hex nut and lockwasher included. One red and one black tin plated binding post (type 3760) with double mounting base.
MATERIAL: Double binding post with captive thumb nut, brass. Accepts standard banana plug.
FINISH: Bright tin plated.
INSULATION: Polycarbonate.
RATING: 2500 WVDC, 15 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.



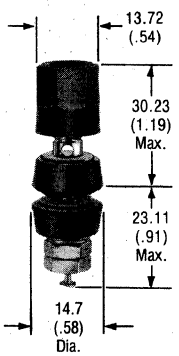


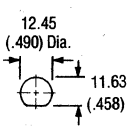
MODEL
4243-*

(unassembled) **NET 3.95**

HEX HEAD BINDING POST

Designed to meet all the requirements of MIL-P-55149/1A. Gold plated 10-32 hex nuts and lockwashers included. 2.54 mm (.100) dia. cross hole is perpendicular with flat on insulator. Mounts in panels up to 6.35 mm (.250) thick. Accepts standard banana plug.
MATERIAL: Binding post body with captive thumb nut, brass.
FINISH: Gold plated.
INSULATION: Nylon per MIL-P-20693, Type IV.
RATING: 1500 VRMS, 30 Amps, +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -4 Yellow, -5 Green, -6 Blue, -9 White.



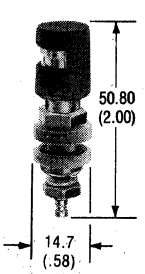


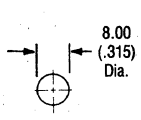
MODEL
5018-*

NET 6.35

BINDING POST PER MIL-P-55149/8

Spring-loaded insulated binding post that meets the requirements of MIL-P-55149/8 (U106/U). Silicone rubber O-rings provide water resistant seal when mounted in panels from 1.57 mm (.062) to 3.18 mm (.125) thick. Nickel plated 10-32 hex nut and lockwasher included.
MATERIAL: Brass.
FINISH: Nickel plated.



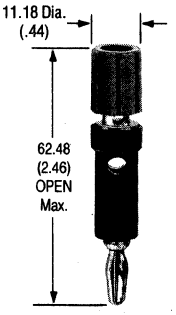


MODEL	Boot Color	Military No.
4995-0	Black	PB08NA01
4995-2	Red	PB08NA02

(unassembled) **NET 11.50**

BINDING POST TO SINGLE BANANA PLUG

Features insulated binding post for rapid mounting and interchangeability of components. Center cross hole 4.22 mm (.166) dia. provides side stackup connections.
UPPER: Binding post. Body with captive thumb nut, brass, nickel plated. Accepts standard banana plug. Insulation, polycarbonate.
INSULATION: ABS, black.
LOWER: Single banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***BINDING POST COLOR:** -0 Black, -2 Red.

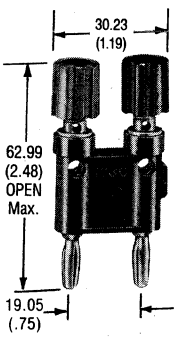


MODEL
2894-*

NET 3.25

BINDING POSTS TO DOUBLE BANANA PLUG

Features insulated binding posts on 19.05 mm (.750) centers for rapid mounting and interchangeability of components. Center cross hole 4.22 mm (.166) dia. provides side stackup connections.
UPPER: Double binding post. Body with captive thumb nut, brass, nickel plated. Accepts standard banana plug. Insulation, polycarbonate. One black and one red.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +50°C. (+122°F.) Max.

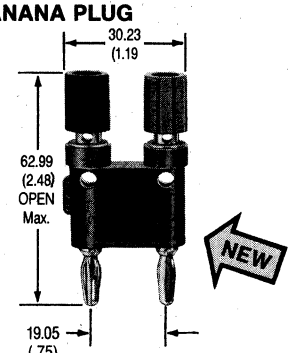


MODEL
1286

NET 5.95

BINDING POSTS TO DOUBLE BANANA PLUG GOLD PLATED

Similar to Model 1286 (above) except gold plated.
UPPER: Double binding post. Gold plated brass body with captive thumb nut. Accepts standard banana plug. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Double banana plug. Gold plated brass body, beryllium copper spring. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +50°C. (+122°F.) Max.

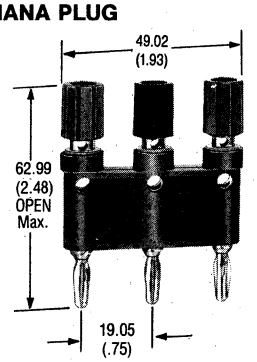


MODEL
5405

NET 7.95

BINDING POSTS TO TRIPLE BANANA PLUG

Features insulated binding posts on 19.05 mm (.750) centers for rapid mounting and interchangeability of components. Center cross hole 4.22 mm (.166) dia. provides side stackup connections.
UPPER: Triple binding post. Body with captive thumb nut, brass, nickel plated. Accepts standard banana plug. Insulation, polycarbonate. Red, black (center), green.
INSULATION: ABS, black.
LOWER: Triple banana plug. Body, brass. Spring, one piece beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +50°C. (+122°F.) Max.



MODEL
3405

NET 9.75

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POMONA

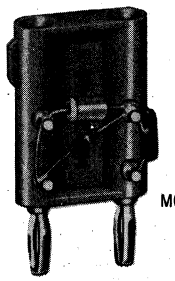
COMPONENT MOUNTING ISOLATION PLUGS

SPLIT-TERMINAL ISOLATION PLUGS

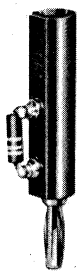
Create passive and active networks, voltage dividers, isolation networks or attenuators with the split-terminal isolation plugs described below.

Tough thermoplastic material molded to plug body and connectors insures maximum strength, moisture resistance and excellent insulative properties.

TYPICAL APPLICATION



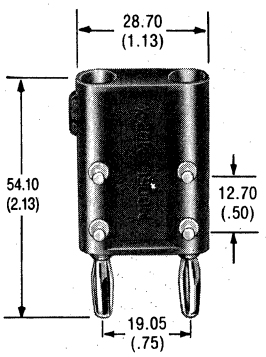
MODEL MDP-X SHOWN



MODEL 1390 SHOWN

DOUBLE BANANA PLUG FOUR TERMINAL ISOLATION

Provides four terminal isolation. Top stackup receptacles isolated from lower plugs. Ideal for insertion of matching network in laboratory VTVM's signal generators, etc. Bright tin plated solder turret terminals for permanent noise-free connections.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene, red.
LOWER: Double banana plug. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +55°C. (+131°F.) Max.



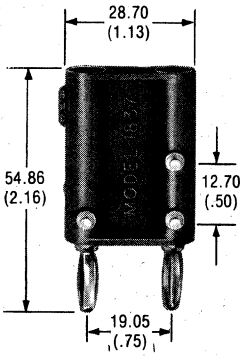


MODEL
MDP-X

NET 5.95

DOUBLE BANANA PLUG THREE TERMINAL ISOLATION

Provides three terminal isolation. Excellent for "L" and "Pi" networks. Bright tin plated solder turret terminals for permanent noise-free connections. "Ground" is straight feed-thru. Hot side isolated.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene, blue.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +55°C. (+131°F.) Max.



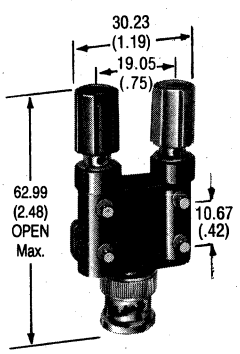


MODEL
1837

NET 6.50

ADAPTER — BINDING POSTS TO BNC MALE FOUR TERMINAL ISOLATION

Permits single or double banana plugs to be used with equipment having BNC female. Provides isolation for a four terminal network. Binding posts facilitate connections of test leads or additional components. Bright tin plated solder turret terminals provide permanent noise-free connections.
UPPER: Double binding post. Body with captive thumb nut, brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: Polypropylene, black.
LOWER: BNC male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +55°C. (+131°F.) Max.



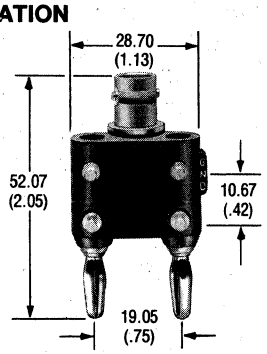


MODEL
1469

NET 17.50

ADAPTER — BNC FEMALE TO DOUBLE BANANA PLUG — FOUR TERMINAL ISOLATION

Permits BNC male to be used with equipment having banana jacks. Provides isolation for a four terminal network. Excellent for matching pad networks. Bright tin plated solder turret terminals for permanent noise-free connections.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: Polypropylene, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: Operating Voltage: 500 VRMS Max., +55°C. (+131°F.) Max.



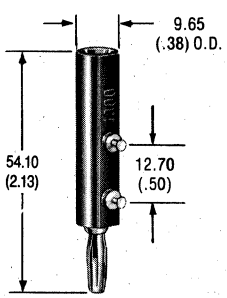


MODEL
1468

NET 13.80

SINGLE BANANA PLUG TWO TERMINAL ISOLATION

Provides two terminal isolation. Top stackup receptacle is isolated from lower plug to permit addition of series resistors, diodes, etc. Ideal for computers, lab, circuit design and testing. Bright tin plated solder turret terminals for permanent noise-free connections.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene.
LOWER: Banana plug. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 15 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



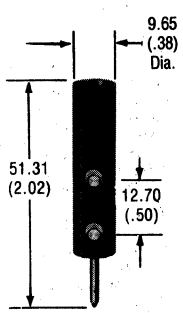


MODEL
1390-*

NET 3.85

PIN TIP PLUG TWO TERMINAL ISOLATION

Pin tip jack is isolated from 2.03 mm (.080) pin tip plug. Provides for addition of series components. Ideal for use with computer boards, lab circuit designs, etc. Bright tin plated solder turret terminals for permanent noise-free connections.
UPPER: Tip jack. Beryllium copper, gold plated. Accepts 2.03 mm (.080) dia. pin.
INSULATION: Polypropylene.
LOWER: Pin tip plug. Brass, nickel plated.
RATING: 3000 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.





MODEL
1910-*

NET 4.95

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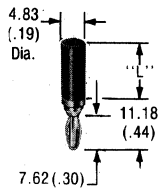
POMONA

MINIATURE BANANA PLUGS/JACKS

MINIATURE SOLDER TYPE BANANA PLUG

Miniature in-line plug for use with miniature binding posts or banana jacks. Wire is soldered directly to threaded plug.
MATERIAL: Miniature banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits miniature 2.64 mm (.104) dia. banana jack.
FINISH: Gold plated.
INSULATION: Nylon.
RATING: 2500 WVDC, 5 Amps, + 80°C. (+ 176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

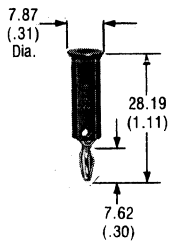


MODEL	"L"	NET
3690-*	11.43 (.45)	1.30 EA.
4617-*	25.4 (1.00)	2.25 EA.

(Pkg. Ten Per Color)

MINIATURE SOLDERLESS STACKUP BANANA PLUG

Wire firmly held in place with internal setscrew.
UPPER: Miniature banana jack. 2.64 mm (.104) dia., brass, gold plated.
INSULATION: ABS.
LOWER: Miniature banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, + 50°C. (+ 122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



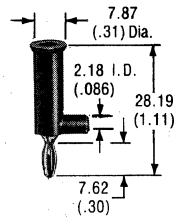
MODEL
2944-*

(Recommend using Screwdriver No. 3736)

NET 2.30

MINIATURE SOLDERLESS STACKUP BANANA PLUG WITH SAFETY COLLAR

Wire firmly held in place with setscrew. The integral collar insulates leads and acts as a strain relief by preventing the flexing of lead at setscrew.
UPPER: Miniature banana jack. 2.64 mm (.104) dia., brass, gold plated.
INSULATION: ABS.
LOWER: Miniature banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, + 50°C. (+ 122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



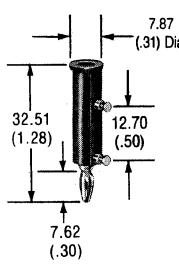
MODEL
2945-*

(Recommend using Screwdriver No. 3736)

NET 2.30

SINGLE BANANA PLUG ISOLATION

Provides two terminal isolation. Gold plated solder turret terminals.
UPPER: Miniature banana jack. 2.64 mm (.104) dia., brass, gold plated.
INSULATION: Polypropylene.
LOWER: Miniature banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, + 55°C. (+ 131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

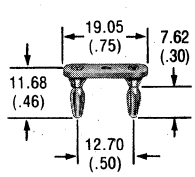


MODEL
2831-*

NET 6.75

METAL SHORTING BAR

Low profile 1.57 mm (.062) thick brass shorting bar. Center hole accepts #4-40 screw, for easy removal.
MATERIAL: Bar and miniature banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits miniature 2.64 mm (.104) dia. banana jack.
FINISH: Gold plated.
RATING: 5 Amps. Resistance less than 1.5 milliohms.

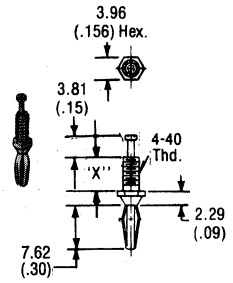


MODEL
3030

NET 2.50

MINIATURE BANANA PLUG WITH THREADED STUD

Threaded stud for rapid mounting. Solder turret for attachment of wires. Furnished with nickel plated 4-40 hex nut, unassembled.
MATERIAL: Miniature banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits miniature 2.64 mm (.104) dia. banana jack.
FINISH: Gold plated.
RATING: 2500 WVDC, 5 Amps.

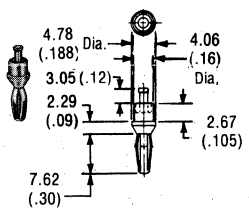


MODEL	"X" Dim.	NET
3276	5.84 (.230)	.95 EA.
4513	12.19 (.480)	1.25 EA.

(Ten Per Pkg., unassembled)

MINIATURE RIVET TYPE BANANA PLUG WITH TURRET

Excellent for riveting to panels or boards. Solder turret for rapid attachment of wires. Mounts in 1.57 mm (.062) panel.
MATERIAL: Miniature banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits miniature 2.64 mm (.104) dia. banana jack.
FINISH: Gold plated.
RATING: 2500 WVDC, 5 Amps.

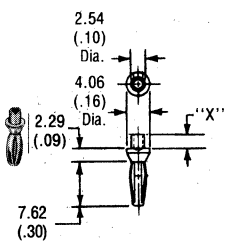


MODEL
3273

NET .75 EA.
(Ten Per Pkg.)

MINIATURE RIVET TYPE BANANA PLUG

Excellent for riveting to panels or boards.
MATERIAL: Miniature banana plug body, brass. Spring, one piece heat treated beryllium copper. Fits minature 2.64 mm (.104) dia. banana jack.
FINISH: Gold plated.
RATING: 2500 WVDC, 5 Amps.

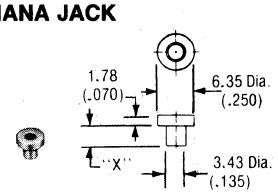


MODEL	"X" Dim.	Panel
3268	2.39 (.094)	1.57 (.062)
3271	3.18 (.125)	2.37 (.093)
3272	3.96 (.156)	3.17 (.125)

NET .75 EA.
(Ten Per Pkg.)

MINIATURE RIVET TYPE BANANA JACK

Excellent for riveting to panels or boards.
MATERIAL: Miniature banana jack. 2.64 mm (.104) dia., leaded copper.
FINISH: Gold plated.
RATING: 1500 WVDC, 5 Amps.

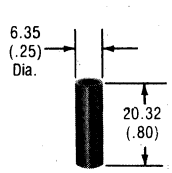


MODEL	"X" Dim.	Panel	NET
3280	2.67 (.105)	1.57 (.062)	.40 EA.
3281	3.43 (.135)	2.37 (.093)	.60 EA.
3282	4.19 (.165)	3.18 (.125)	.50 EA.

(Ten Per Pkg.)

MINIATURE BANANA PLUG SPLICE

Permits splicing of single miniature banana plugs.
UPPER: Miniature banana jack. 2.64 mm (.104) dia., brass, nickel plated.
INSULATION: Polypropylene.
LOWER: Same as upper.
RATING: 1500 WVDC, 5 Amps, + 55°C. (+ 131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL
3833-*

NET 1.50 EA.
(Pkg. Ten Per Color)

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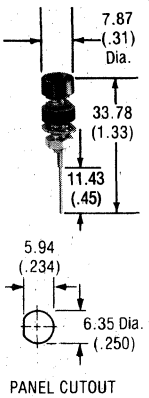
POMONA

MINIATURE BINDING POSTS/BANANA JACKS

MINIATURE INSULATED BANANA JACK WITH WRAPPED WIRE TERMINAL

Excellent for rapid connection of wires using wrapped wire tools or machines. Closed entry 2.64 mm (.104) dia. jack. Mounts in panels up to 6.35 mm (.250) thick. Nickel plated 8-32 hex nut and lockwasher included.
UPPER: Miniature banana jack. Brass, nickel plated.
INSULATION: Polycarbonate.
LOWER: 0.64 mm (.025) Sq. Wrapped Wire Terminal. Phosphor bronze, gold plated.
RATING: 1500 WVDC, 3 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -4 Yellow, -5 Green, -6 Blue, -9 White.

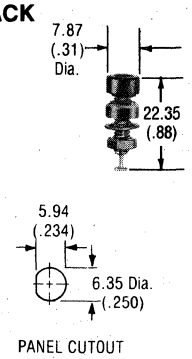


MODEL
4022-*

(unassembled) **NET 1.35 EA.** (Pkg. Ten Per Color)

MINIATURE INSULATED BANANA JACK

Closed entry 2.64 mm (.104) dia. jack. Mounts in panels up to 6.35 mm (.250) thick. Nickel plated 8-32 hex nut and lockwasher included.
MATERIAL: Brass.
FINISH: Gold plated.
INSULATION: Polycarbonate.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

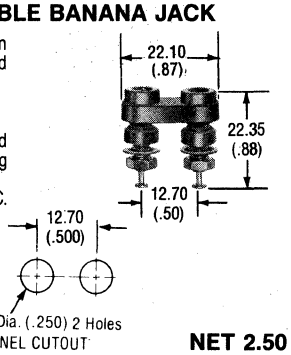


MODEL
2142-*

(unassembled) **NET .95 EA.** (Pkg. Ten Per Color)

MINIATURE INSULATED DOUBLE BANANA JACK

Closed entry 2.64 mm (.104) dia. jack. Mounts in panels up to 4.77 mm (.188) thick. Nickel plated 8-32 hex nut and lockwasher included.
MATERIAL: Brass.
FINISH: Gold plated.
INSULATION: Polycarbonate. One black and one red jack. Choice of black or red mounting base.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.

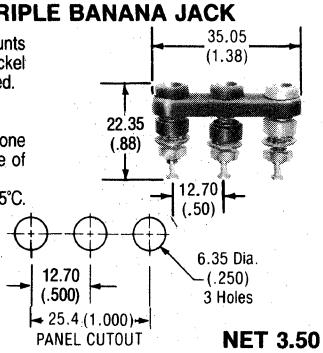


MODEL
2143-*

(unassembled) **NET 2.50**

MINIATURE INSULATED TRIPLE BANANA JACK

Closed entry 2.64 mm (.104) dia. jacks. Mounts in panels up to 4.77 mm (.188) thick. Nickel plated 8-32 hex nut and lockwasher included.
MATERIAL: Brass.
FINISH: Gold plated.
INSULATION: Polycarbonate. One red, one black and one green banana jack. Choice of black or red mounting base.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.

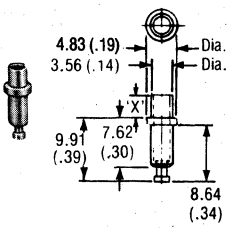


MODEL
4618-*

(unassembled) **NET 3.50**

MINIATURE RIVET TYPE BANANA JACK WITH TURRET

Excellent for riveting to panels or boards. Solder turret for rapid attachment of wires.
MATERIAL: Miniature banana jack. 2.64 mm (.104) dia., tellurium copper.
FINISH: Gold plated.
RATING: 1500 WVDC, 5 Amps.

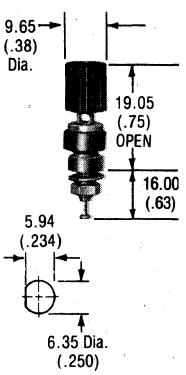


MODEL	"X" Dim.	Panel	NET
3277	2.67 (.105)	1.57 (.062)	.55 EA.
3278	3.43 (.135)	2.37 (.093)	.60 EA.
3279	4.19 (.165)	3.18 (.125)	.55 EA.

(Ten Per Pkg.)

MINIATURE BINDING POST

Accepts miniature banana plug. #8-32 hex nut and lockwasher included. 2.18 mm (.086) dia. crossholes is perpendicular with flat on insulator. Mounts in panels up to 4.77 mm (.188) thick.
MATERIAL: Binding post body, captive thumb nut and hex nut, brass. Lockwasher, steel.
FINISH: Binding post with one captive thumb nut, gold or bright tin plated. Hex nut and lockwasher, nickel plated.
INSULATION: Polycarbonate.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

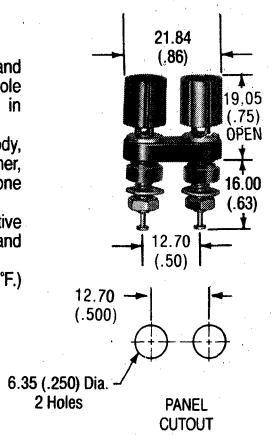


MODEL	Finish	NET
2382-*	Gold Plated	2.95
2439-*	Tin Plated	2.30

(unassembled)

MINIATURE INSULATED DOUBLE BINDING POST

Accepts miniature banana plug. #8-32 hex nut and lockwasher included. 2.18 mm (.086) dia. crosshole is perpendicular with flat on insulator. Mounts in panels up to 4.77 mm (.188) thick.
MATERIAL: Miniature double binding post body, captive thumb nut and hex nut, brass. Lockwasher, steel. Polycarbonate insulaton. One red and one black.
FINISH: Miniature binding post body and captive thumb nut, gold or bright tin plated. Lockwasher and hex nut, nickel plated.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLOR:** -0 Black, -2 Red.

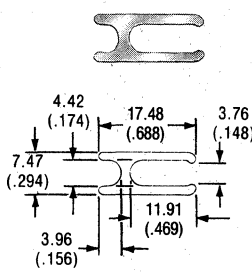


MODEL	Finish	NET
2383-*	Gold Plated	5.95
2440-*	Tin Plated	4.60

(unassembled)

SHORTING LINK FOR MINIATURE BINDING POSTS

Shorting link for miniature binding posts on 12.70 mm (.500) centers. A snap-on feature holds link on posts when short not needed.
MATERIAL: Brass, 0.79 mm (.031) thick.
FINISH: Nickel or gold plated.
RATING: 5 Amps.



MODEL	Finish	NET
3478	Gold Plated	1.95 EA.
3479	Nickel Plated	1.50 EA.

(Ten Per Pkg.)

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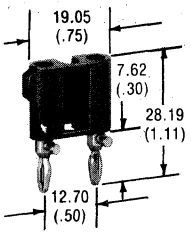
POMONA

MINIATURE BANANA PLUGS

MINIATURE DOUBLE BANANA PLUG WITH SOLDER TURRET TERMINALS

UPPER: Miniature double banana jack. Brass, gold plated.
INSULATION: Polypropylene.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack. Solder turret terminals. Brass, gold plated.
RATING: 2500 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

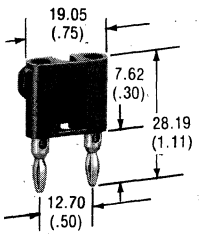


MODEL
2245-*

NET 3.95

MINIATURE DOUBLE BANANA PLUG WITH SETSCREWS

Internal setscrews to secure cable or component leads.
UPPER: Miniature double banana jack. Brass, gold plated.
INSULATION: ABS.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack. Setscrew, steel, cadmium plated.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



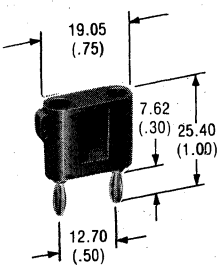
MODEL
2244-*

(Recommend using Screwdriver No. 3736)

NET 3.50

MINIATURE DOUBLE BANANA PLUG WITH SHORTING BAR

UPPER: Miniature double banana jack. Brass, gold plated.
INSULATION: ABS.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

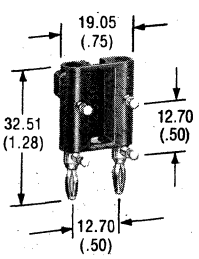


MODEL
2035-*

NET 3.65

DOUBLE BANANA PLUG — 4 TERMINAL ISOLATION

Provides four terminal isolation. Top stackup jacks isolated from lower plugs.
UPPER: Miniature double banana jack. 2.64 mm (.104) dia., brass, gold plated.
INSULATION: Polypropylene.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits 2.64 mm (.104) dia. miniature banana jack. Solder turrets brass, gold plated.
RATING: 2500 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

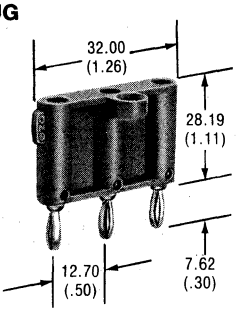


MODEL
2830-*

NET 11.50

MINIATURE TRIPLE BANANA PLUG

Ideal for balanced line 2 connector shielded cable assemblies. Setscrews secure leads.
UPPER: Miniature triple banana jack. Brass, gold plated.
INSULATION: ABS, black.
LOWER: Miniature triple banana plug. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.

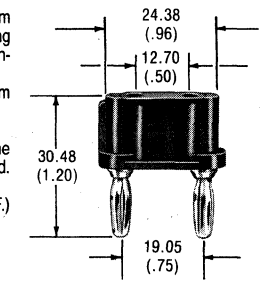


MODEL
4653-0

NET 6.65

MINIATURE DOUBLE BANANA JACK TO STANDARD DOUBLE BANANA PLUG

Permits miniature double banana plug on 12.70 mm (.500) centers to be used with equipment having standard double banana jacks on 19.05 (.750) centers.
UPPER: Miniature double banana jack. 2.64 mm (.104) dia., brass, nickel plated.
INSULATION: ABS, black.
LOWER: Standard double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits 4.22 mm (.166) dia. standard banana jacks.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.

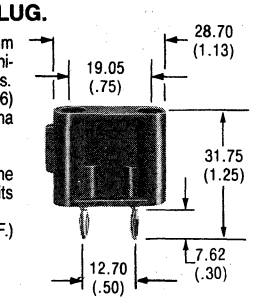


MODEL
2943

NET 7.50

STANDARD DOUBLE BANANA JACK TO MINIATURE DOUBLE BANANA PLUG.

Permits standard double banana plug on 19.05 mm (.750) centers to be used with equipment having miniature double banana jacks on 12.70 mm (.500) centers.
UPPER: Standard double banana jack. 4.22 mm (.166) dia., brass, nickel plated. Accepts standard banana plug.
INSULATION: ABS, black.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits miniature banana jacks.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.

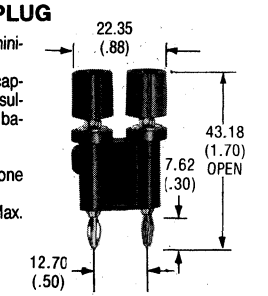


MODEL
2952

NET 4.95

MINIATURE BINDING POSTS TO MINIATURE DOUBLE BANANA PLUG

This adapter converts miniature banana jacks to miniature binding posts.
UPPER: Miniature double binding post body with captive thumb nut. Brass, gold plated. Polycarbonate insulation. One black and one red. Accepts miniature banana plugs.
INSULATION: ABS, black.
LOWER: Miniature double banana plug. Spring, one piece heat treated beryllium copper, gold plated.
RATING: 2500 WVDC, 5 Amps + 50°C. (+122°F.) Max.



MODEL
3822

NET 8.95

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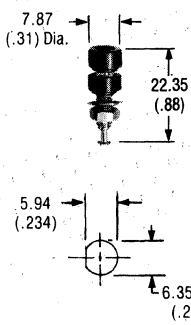
POMONA

PIN TIP PLUGS/JACKS

PIN JACK

Closed entry 2.03 mm (.080) pin jack. Mounts in panels to 6.35 mm (.250) thick. Nickel plated 8-32 hex nut and lockwasher included.
MATERIAL: Pin jack body, brass. Spring, beryllium copper.
FINISH: Pin jack, gold plated.
INSULATION: Polycarbonate.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

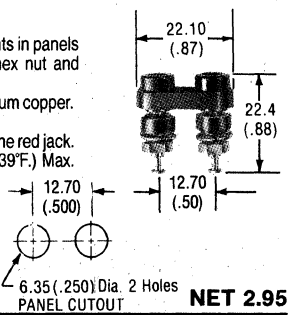


MODEL
3542-*

(unassembled) **NET 1.15 EA.** (Pkg. Ten Per Color)

MINIATURE INSULATED DOUBLE PIN TIP JACKS 2.03 mm (.080) DIA.

Closed entry 2.03 mm (.080) dia. pin jack. Mounts in panels to 4.77 mm (.188) thick. Nickel plated 8-32 hex nut and lockwasher included.
MATERIAL: Pin jack body, brass. Spring, beryllium copper.
FINISH: Pin jack, gold plated.
INSULATION: Polycarbonate. One black and one red jack.
RATING: 1500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLORS:** -0 Black, -2 Red.

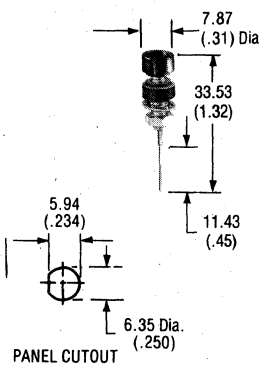


MODEL
4543-*

(unassembled) **NET 2.95**

INSULATED PIN JACK WITH WRAPPED WIRE TERMINAL

Closed entry 2.03 mm).080) dia. pin jack. Mounts in panels to 6.35 mm (.250) thick. Nickel plated 8-32 hex nut and lockwasher included.
UPPER: Pin jack. Body, brass, nickel plated. Spring, beryllium copper, gold plated.
INSULATION: Polycarbonate.
LOWER: 0.64 mm (.025) sq. pin wrapped wire terminal, beryllium copper, gold plated.
RATING: 1500 WVDC, 3 Amps, +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -4 Yellow, -5 Green, -6 Blue, -9 White.

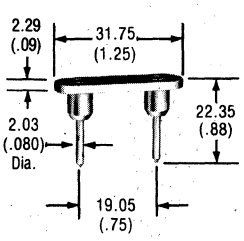


MODEL
4773-*

(unassembled) **NET 1.75**

METAL SHORTING BAR

Used as connecting link with equipment having pin jacks.
MATERIAL: Brass.
FINISH: Nickel plated.
RATING: 5 Amps, +125°C. (+257°F.) Max. Resistance less than 1.5 milliohms.

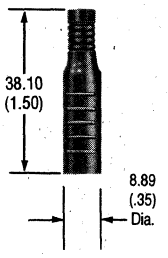


MODEL
2072

NET 3.05

DO-IT-YOURSELF IN-LINE PIN JACK WITH FLEXIBLE BOOT

This in-line 2.03 mm (.080) dia. pin jack is ideal for making patch cords and field repairs. A snap-on two piece design allows the wire to be crimped or soldered to the pin jack.
MATERIAL: Pin jack body, brass. Spring, beryllium copper.
FINISH: Pin jack body, nickel plated. Spring, gold plated.
INSULATION: Flexible PVC.
RATING (Independent of Wire): 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



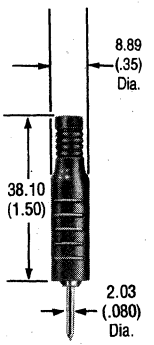
**Max wire dia. 3.94 (.155)

MODEL	Accepts wire AWG**	NET
5171-*	22, 20, 18	1.30
5172-*	16, 14	1.60

(unassembled)

DO-IT-YOURSELF IN-LINE PIN TIP JACK WITH FLEXIBLE BOOT

This in-line 2.03 mm (.080) dia. pin tip plug is ideal for making patch cords and field repairs. A snap-on two piece design allows the wire to be crimped or soldered to the pin tip plug.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Flexible PVC.
RATING (Independent of Wire): 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

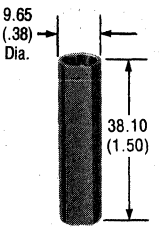


**Max wire dia. 3.94 (.155)

MODEL	Accepts wire AWG**	NET
5173-*	22, 20, 18	1.75
5174-*	16, 14	1.75

PIN TIP PLUG SPLICE

Permits splicing of 2.03 mm (.080) dia. pin tip patch cords.
UPPER: Pin jack. Body, brass, nickel plated. Spring, beryllium copper. Gold plated.
INSULATION: Polypropylene.
LOWER: Same as upper.
RATING: 3000 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

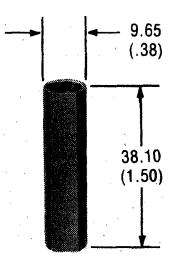


MODEL
3832-*

NET 2.50

STANDARD BANANA PLUG TO 2.03 mm (.080) DIA. PIN TIP PLUG SPLICE

This splice accepts a standard banana plug on one end and a 2.03 mm (.080) pin tip plug on the other end.
UPPER: Standard banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polypropylene.
LOWER: Pin jack. Spring, beryllium copper, gold plated, accepts 2.03 mm (.080) dia. pin.
RATING: 3000 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL
3834-*

NET 1.75

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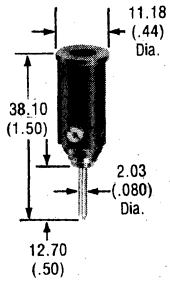
POMONA

MINIATURE PIN TIP PLUGS/JACKS

SOLDERLESS STACKUP PIN TIP PLUG

Wire firmly held in place with internal setscrew, eliminates soldering. Assembly of test leads simplified.
UPPER: Pin jack. Spring, beryllium copper, gold plated. Accepts 2.03 mm (.080) dia. pin.
INSULATION: ABS.
LOWER: Pin tip plug. Brass, nickel plated. Nylon setscrew.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

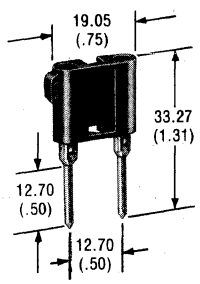


MODEL
1922-*

NET 3.25

MINIATURE DOUBLE PIN TIP PLUG WITH SETSCREWS

2.03 mm (.080) dia. double pin tip plug on 12.70 mm (.500) centers. Setscrews secure cable or component leads.
UPPER: Double pin jack. Spring, beryllium copper, gold plated.
INSULATION: ABS.
LOWER: Double pin tip plug. Brass, gold plated. Setscrew, steel cadmium plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



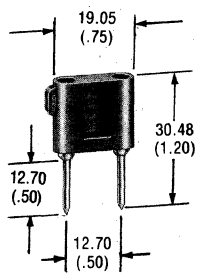
MODEL
3544-*

(Recommend using Screwdriver No. 3736)

NET 3.75

MINIATURE DOUBLE PIN TIP PLUG WITH SHORTING BAR

Ideal as a connecting link for use with 12.70 mm (.500) spaced pin jacks. 2.03 mm (.080) double pin tip plug internally solder-bonded with #20 AWG wire. "Shorting bar" stamped on insulation.
UPPER: Double pin jack. Spring, beryllium copper, gold plated.
INSULATION: ABS.
LOWER: Double pin tip plug. Brass, gold plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



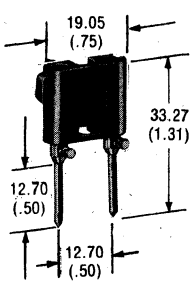


MODEL
3452-*

NET 3.50

MINIATURE DOUBLE PIN TIP PLUG WITH SOLDER TURRET TERMINALS

2.03mm (.080) dia. double pin tip plug on 12.70 mm (.500) centers. Solder turret terminals for permanent noise-free connection of cables.
UPPER: Double pin jack. Spring, beryllium copper, gold plated.
INSULATION: Polypropylene.
LOWER: Double pin tip plug with solder turret terminals. Brass, gold plated.
RATING: 3000 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

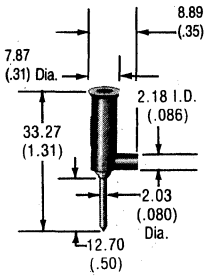


MODEL
3545-*

NET 5.75

SOLDERLESS PIN TIP PLUG WITH SAFETY COLLAR

This integral collar insulates exposed wire leads and acts as a strain relief by preventing the flexing of the lead at the setscrew. Wire firmly held in place with internal setscrew.
UPPER: Miniature banana jack. Brass, gold plated.
INSULATION: ABS.
LOWER: Pin tip plug. Brass, gold plated. Setscrew, steel, cadmium plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122° F.) Max.
***STD COLORS:** -0 Black, -2 Red.



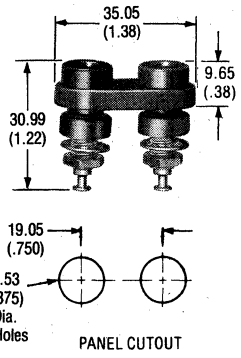
MODEL
3548-*

(Recommend using Screwdriver No. 3736)

NET 2.25

POLARIZED DOUBLE JACK

This polarized double jack is used with Model 4966. One side is a black pin jack and the other is a red banana jack. Mounts in panels 1.60 mm (.063) to 9.53 mm (.375) thick. Nickel plated ¼-32 hex nut and lockwasher included.
MATERIAL: Banana jack, brass. Pin jack spring, beryllium copper.
FINISH: Banana/Pin jack, tin plated.
INSULATION: Polycarbonate.
RATING: 2500 WVDC, 5 Amps, +115°C. (+239°F.) Max.
***MTG BASE COLORS:** -0 Black, -2 Red.



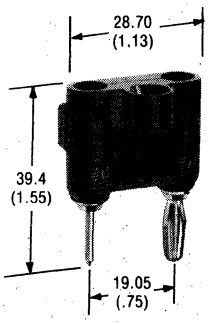
MODEL
4967-*

(unassembled)

NET 2.50

POLARIZED DOUBLE PLUG

This polarized double plug makes it virtually impossible to insert into a mating jack incorrectly. Setscrews secure leads. (Used with Model 4967).
UPPER: Double banana jack. Brass, nickel plated.
INSULATION: ABS.
LOWER: Banana/Pin tip plug. Brass, nickel plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL
4966-*

NET 2.25

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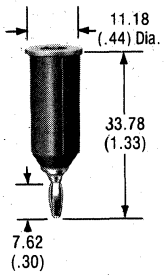
POMONA

BANANA PLUG/JACK ADAPTERS

STANDARD BANANA JACK TO MINIATURE BANANA PLUG

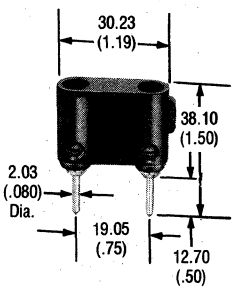


Permits standard banana plug to be used with equipment having miniature banana jacks.
UPPER: Standard banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Miniature banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits 2.64 mm (.104) dia. miniature banana jacks.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
2138-*

NET 1.45 EA.
(Pkg. Five Per Color)

BANANA JACKS TO DOUBLE PIN TIP PLUG WITH SETSCREWS

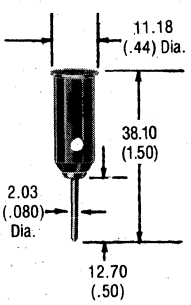


Permits single or double banana plugs to be used in equipment having tip jacks. Features recess for component mounting. Internal setscrews firmly secure wire leads.
UPPER: Double banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS, black.
LOWER: Double pin tip plug. Brass, nickel plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.

MODEL
1858

NET 2.80

BANANA JACK TO PIN TIP PLUG

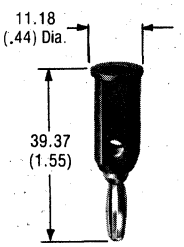


Permits standard banana plug patch cords to be used with equipment having tip jacks. Cross hole 4.22 mm (.166) dia. provides side stackup connection.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Pin tip plug. Brass, nickel plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
1432-*

NET .80 EA.
(Pkg. Ten Per Color)

MINIATURE BANANA JACK TO STANDARD BANANA PLUG

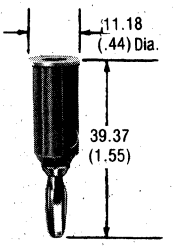


Permits miniature banana plugs to be used with equipment having standard banana jacks.
UPPER: Miniature banana jack. 2.64 mm (.104) dia., brass, nickel plated.
INSULATION: ABS.
LOWER: Standard banana plug. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: 2500 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
2477-*

NET 1.35 EA.
(Pkg. Five Per Color)

PIN JACK TO BANANA PLUG

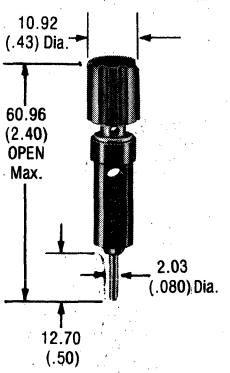


Permits pin tip cords to be used with equipment having banana jacks.
UPPER: Pin jack. Spring, beryllium copper, gold plated. Accepts 2.03 mm (.080) dia. pin.
INSULATION: ABS.
LOWER: Banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
1809-*

NET 1.50

BINDING POST TO SINGLE PIN TIP PLUG



Center cross holes 4.22 mm (.166) dia. in body provide side stackup connection.
UPPER: Binding post with captive thumb nut. Brass, nickel plated. Polycarbonate insulation. Accepts standard banana plug.
INSULATION: ABS, black.
LOWER: Pin tip plug. Brass, nickel plated.
RATING: 3000 WVDC, 5 Amps, +50°C. (+122°F.) Max.
***BINDING POST COLOR:** -0 Black, -2 Red.

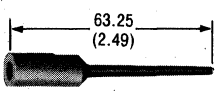
MODEL
2953-*

NET 3.95

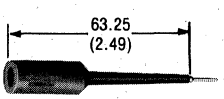
CONNECTOR TEST ADAPTERS

An ideal test adapter for rapid testing of the hard-to-get at contacts of multipin/socket rack or panel connectors. Flexible tip allows testing of adjacent contacts. Flexibility and full insulation protects against shorting or contact damage. The model 4690 also fits .635 mm (.025) sq. pins.
UPPER: Banana jack. 4.22 mm (.166) dia., brass, nickel plated.
INSULATION: Polyvinyl chloride (PVC).
LOWER: Socket type, copper. Pin type, brass. Gold plated. See tab block.
RATING: 2500 WVDC, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

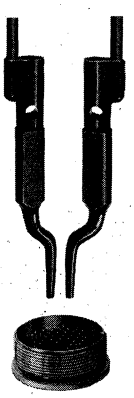
MODEL	Contact Size		Type	Current Rating	NET
4690-*	22		Socket	5 Amps	3.30
4691-*	22	.762 (.030) dia.	Pin	5 Amps	2.50
3560-*	20		Socket	7.5 Amps	2.50
3561-*	20	1.02 (.040) dia.	Pin	7.5 Amps	2.75
3562-*	16		Socket	13 Amps	2.75
3563-*	16	1.60 (.063) dia.	Pin	13 Amps	2.25
3564-*	12		Socket	23 Amps	4.25
3565-*	12	2.36 (.093) dia.	Pin	23 Amps	2.25



3562
SOCKET TYPE



3561
PIN TYPE



TYPICAL APPLICATION

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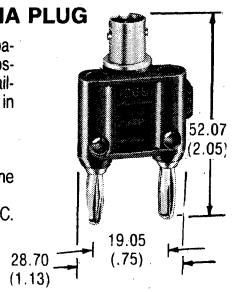
POMONA

BNC ADAPTERS

BNC FEMALE TO DOUBLE BANANA PLUG

Permits BNC male to be used with equipment having banana jacks. Excellent for adapting laboratory VTVM, oscilloscopes and signal generator inputs to readily available coaxial cables. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

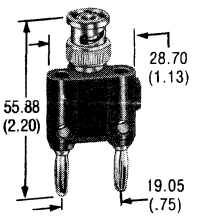


MODEL
1269

NET 4.95

BNC MALE TO DOUBLE BANANA PLUG

Permits BNC female to be used with equipment having banana jacks. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: BNC male. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

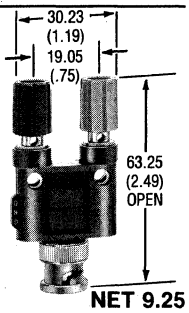


MODEL
1270

NET 7.50

STANDARD DOUBLE BINDING POSTS TO BNC MALE

Permits single or double banana plugs to be used with equipment having a BNC female.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: BNC male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

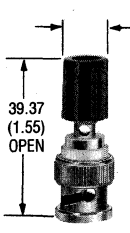


MODEL
1296

NET 9.25

SINGLE BINDING POST TO BNC MALE

Permits single banana plug to be used with equipment having a BNC female.
UPPER: Binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs.
INSULATION: Polycarbonate.
LOWER: BNC Male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

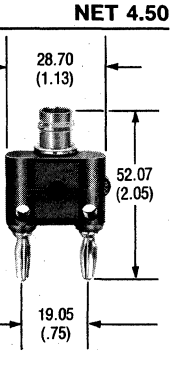


MODEL
3430-*

NET 4.50

SIGNAL ISOLATOR — BNC FEMALE TO DOUBLE BANANA PLUG

Permits BNC male connector to be used with equipment having banana jacks. General purpose ceramic capacitor molded internally. Rated @ .01 uf ± 20%, 200 W VDC. Insulation resistance 10,000 megohms min. Ideal for isolating DC signals from VTVM inputs and signal generator outputs. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, blue.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper.
RATING: 200 WVDC, +50°C. (+122°F.) Max.



MODEL
1868

Note: Can not pass continuity test due to capacitor.

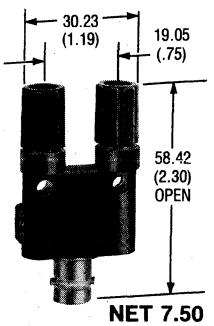
NET 11.95



Now! Increase the flexibility of your laboratory with the use of POMONA ELECTRONICS test accessories. Minimize the necessity of stocking a large quantity and variety of coaxial cables by using POMONA ELECTRONICS molded adapters. Tough thermoplastic material molded to plug body or connectors insures maximum strength, moisture resistance and excellent insulative properties.

BINDING POSTS TO BNC FEMALE

Permits single or double banana plugs to be used with equipment having a BNC male.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: BNC female. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

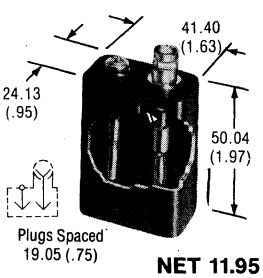


MODEL
1452

NET 7.50

BNC FEMALE TO SHIELDED DOUBLE BANANA PLUG

Permits BNC male to be used with equipment having banana jack binding posts. Black anodized aluminum shield.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks. Shielded can, aluminum, black anodized.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.

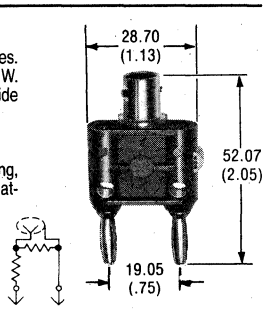


MODEL
1645

NET 11.95

BNC MATCHING PAD

Adapts 600 Ohm sources to 50 or 75 Ohm cables. Molded in deposited carbon resistors 1%, ¼W. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated.
RATING: 300 WVDC, +50°C. (+122°F.) Max.

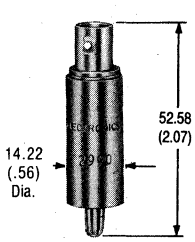


MODEL	Color	Match in Ohms
1656-1	Yellow	600 to 50
1656-2	Red	600 to 75

NET 15.95

BNC FEMALE TO SHIELDED BANANA PLUG

Permits BNC male to be used with equipment having banana jacks or binding posts. All metal construction for proper shielding.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: Shielded banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks. Shield, brass, nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.



MODEL
2990

NET 7.95

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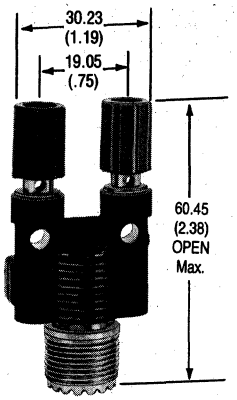
POMONA

UHF & TYPE N ADAPTERS

BINDING POSTS TO UHF FEMALE

Permits single or double banana plugs to be used with equipment having UHF male. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plug. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: UHF female. Impedance: Nonconstant.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

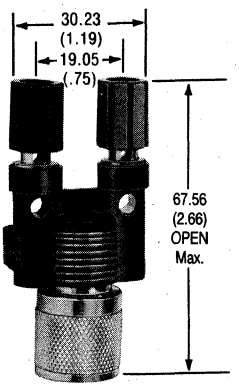


MODEL
1792

NET 19.95

BINDING POSTS TO UHF MALE

Permits single or double banana plugs to be used with equipment having a UHF female. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plug. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: UHF male. Impedance: Nonconstant.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

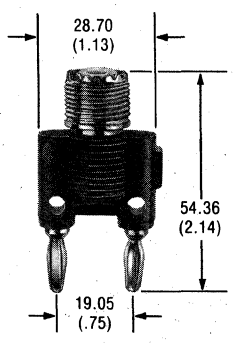


MODEL
1699

NET 13.95

UHF FEMALE TO DOUBLE BANANA PLUG

Permits UHF male to be used with equipment having banana jacks. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: UHF female. Impedance: Nonconstant.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

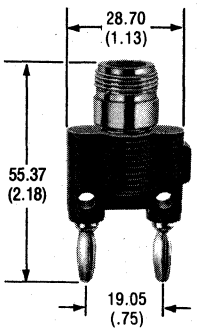


MODEL
1707

NET 15.80

TYPE "N" FEMALE TO DOUBLE BANANA PLUG

Permits type "N" male to be used with equipment having banana jacks. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Type "N" female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: Operating Voltage: 1000 VRMS Max., +50°C. (+122°F.) Max.

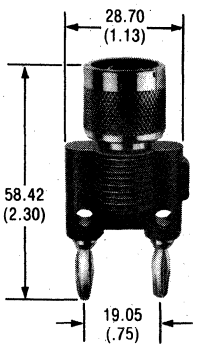


MODEL
1740

NET 15.95

TYPE "N" MALE TO DOUBLE BANANA PLUG

Permits type "N" female plugs to be used with equipment having banana jacks. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Type "N" male. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper. Nickel plated. Fits standard 4.22 mm (.166) dia. banana jack.
RATING: Operating Voltage: 1000 VRMS Max., +50°C. (+122°F.) Max.

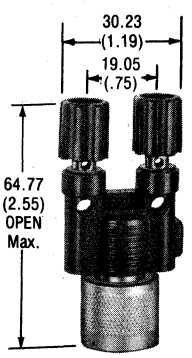


MODEL
1770

NET 13.95

BINDING POSTS TO TYPE "N" MALE

Permits single or double banana plugs to be used with equipment having type "N" female. Cross holes 4.22 (.166) dia. in body provide side stackup connections.
UPPER: Double binding post body with captive thumb nut. Brass, nickel plated. Accepts standard banana plug. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Type "N" male. Impedance: 50 Ohms.
RATING: Operating Voltage: 1000 VRMS Max., +50°C. (+122°F.) Max.



MODEL
1796

NET 17.50

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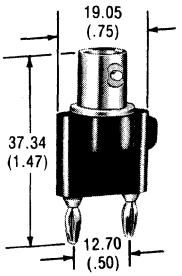
POMONA

COAXIAL ADAPTERS

BNC FEMALE TO MINIATURE DOUBLE BANANA PLUG

Allows a BNC male to be used with equipment having 12.70 mm (.500) spaced miniature 2.64 mm (.104) dia. banana jacks. Excellent for adapting test equipment to standard coaxial cables.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Miniature double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, gold plated. Fits miniature 2.64 mm (.104) dia. banana jack.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

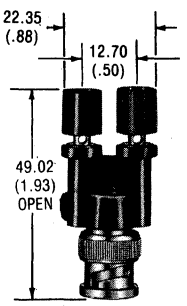


MODEL
3269

NET 6.95

MINIATURE BINDING POSTS TO BNC MALE

Converts a BNC female to miniature 12.70 mm (.500) spaced binding posts.
UPPER: Miniature double binding post with captive thumb nut. Brass, gold plated. Accepts miniature banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: BNC male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

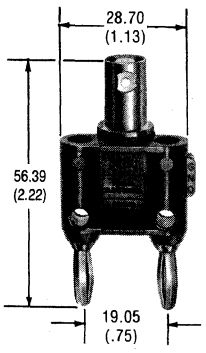


MODEL
3296

NET 12.95

MHV FEMALE TO DOUBLE BANANA PLUG

This adapter allows an MHV male to be used with equipment having 19.05 mm (.750) spaced banana jacks. Cross holes 4.22 mm (.166) dia. provide side stackup connections.
UPPER: MHV female.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated.
RATING: 5000 V peak, +50°C. (+122°F.) Max.

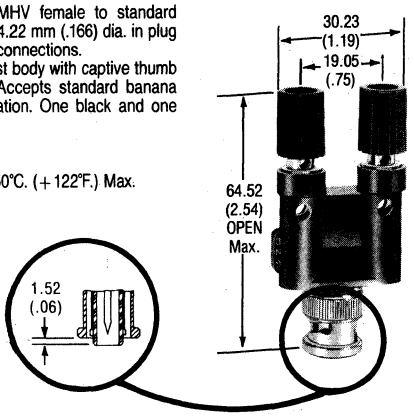


MODEL
3290

NET 20.95

BINDING POSTS TO MHV MALE

This adapter converts a MHV female to standard binding posts. Cross holes 4.22 mm (.166) dia. in plug body provide side stackup connections.
UPPER: Double binding post body with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: MHV male.
RATING: 5000 V peak, +50°C. (+122°F.) Max.

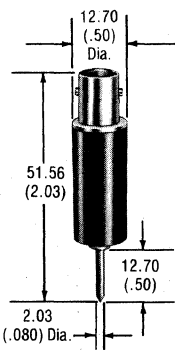


MODEL
3291

NET 24.95

BNC FEMALE TO SINGLE PIN TIP PLUG

Permits BNC male to be used with equipment having 2.03 mm (.080) dia. pin tip jacks. Inner conductor connected only. Excellent for adapting laboratory VTVM, oscilloscopes and signal generator inputs to readily available coaxial cables.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Pin tip plug. Brass, nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.

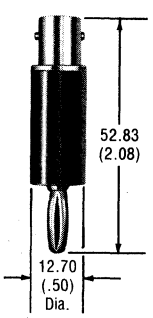


MODEL
3415

NET 4.25

BNC FEMALE TO SINGLE STANDARD BANANA PLUG

Permits BNC male to be used with equipment having banana jacks. Inner conductor connected only. Excellent for adapting laboratory VTVM, oscilloscopes and signal generator inputs to readily available coaxial cables.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard banana jack.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.



MODEL
1894

NET 4.95

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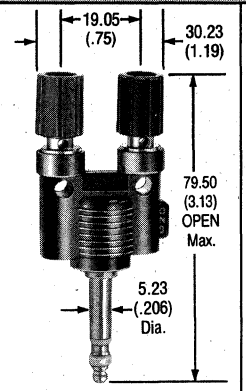
POMONA

PHONE ADAPTERS

BINDING POSTS TO PJ-068/WE-309 PHONE PLUG

Permits single or double banana plug to be used with equipment having three circuit phone jacks. Tip connected to red post, ring to black. Sleeve, no connection. Cross holes 4.22 mm (.166) dia. in plug body provide side stackup.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Phone plug, PJ-068 (equivalent to WE-309).
RATING: 500 V peak, +50°C. (+122°F.) Max.

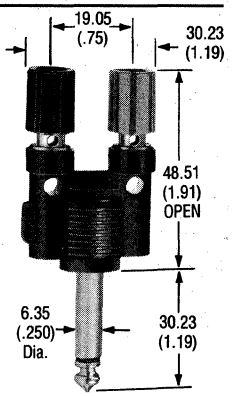


MODEL 3365

NET 25.95

BINDING POSTS TO PHONE PLUG

Permits single or double banana plug to be used with equipment having phone jacks. Cross holes 4.22 mm (.166) dia. in plug body provide side stackup.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Standard phone plug.
RATING: 500 WVDC, +50°C. (+122°F.) Max.

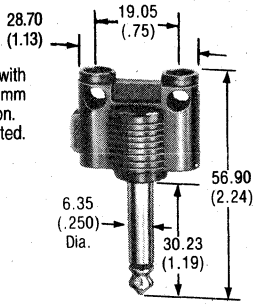


MODEL 1285

NET 9.95

BANANA JACKS TO PHONE PLUG

Permits single or double banana plug to be used with equipment having phone jacks. Cross holes 4.22 mm (.166) dia. in plug body provide side stackup connection.
UPPER: Double banana jack. Brass, nickel plated. Accepts standard banana plugs.
INSULATION: ABS, black.
LOWER: Standard phone plug.
RATING: 500 WVDC, +50°C. (+122°F.) Max.

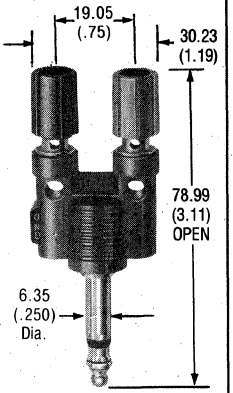


MODEL 1980

NET 8.75

BINDING POSTS TO PJ-051/WE-310 PHONE PLUG

Permits single or double banana plug to be used with equipment having three circuit phone jacks. Tip connected to hot side of adapter and ring connected to ground side. Sleeve, no connection. Cross holes 4.22 mm (.166) dia. in plug body provide side stackup.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Phone plug, PJ-501 (equivalent to WE-310).
RATING: 500 V peak, +50°C. (+122°F.) Max.

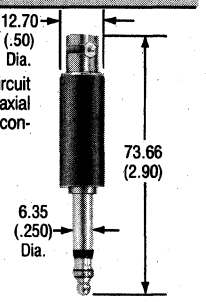


MODEL 2112

NET 15.95

BNC FEMALE TO PJ-051/WE-310 PHONE PLUG

Permits BNC male to be used with equipment having three circuit phone jacks. Readily adapts equipment to available BNC coaxial cables. Tip connected to inner contact of connector and ring connected to shell. Sleeve, no connection.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Phone plug, PJ-051 (equivalent to WE-310).
RATING: 500 V peak, +50°C. (+122°F.) Max.

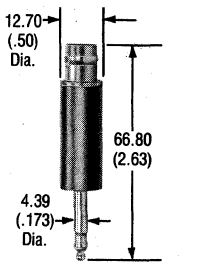


MODEL 2798

NET 15.50

BNC FEMALE TO MINIATURE (BANTAM) PLUG

Permits BNC male to be used with equipment having miniature (bantam) jacks. Readily adapts equipment with BNC jacks through the use of BNC coaxial cables. Tip is connected to inner contact of connector and the ring is connected to the shell. The sleeve is not connected.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Miniature (Bantam) phone plug.
RATING: 500 V peak, +50°C. (+122°F.) Max.

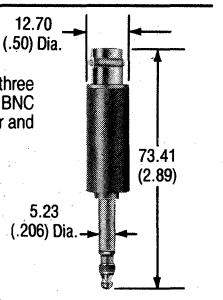


MODEL 4719

NET 14.50

BNC FEMALE TO PJ-068/WE-309 PHONE PLUG

Permits BNC male to be used with equipment having three circuit phone jacks. Readily adapts equipment to available BNC coaxial cable. Tip connected to inner contact of connector and ring connected to shell. Sleeve, no connection.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: ABS, black.
LOWER: Phone plug, PJ-068 (equivalent to WE-309).
RATING: 500 V peak, +50°C. (+122°F.) Max.

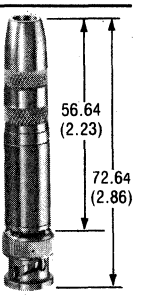


MODEL 1794

NET 24.95

PHONE JACK TO BNC MALE

Permits a standard 2 conductor 6.35 mm (.250) dia. phone plug to be used with equipment having BNC female. All metal construction to insure proper shielding.
UPPER: Phone jack. Accepts standard 6.35 mm (.250) dia. phone plug, 30.23 mm (1.190) long.
LOWER: BNC male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.

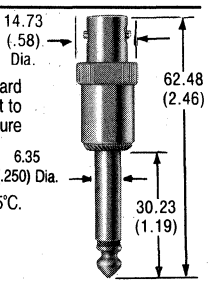


MODEL 4043

NET 17.50

BNC FEMALE TO PHONE PLUG

Permits BNC male to be used with equipment having standard 6.35 mm (.250) dia. phone jacks. Readily adapts equipment to available BNC coaxial cables. All metal construction to insure proper shielding.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: Standard phone plug.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.



MODEL 1297

NET 7.95

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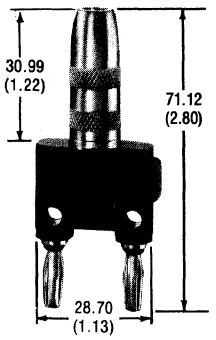
POMONA

PHONE/PHONO ADAPTERS

PHONE JACK TO DOUBLE BANANA PLUG

Permits a standard 2 conductor 6.35 mm (.250) dia. phone plug to be used with equipment having banana jacks or binding posts. Cross holes 4.22 mm (.166) dia. in body provide side stackup connections.
UPPER: Phone jack. Accepts standard 6.35 mm (.250) dia. phone plug.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks.
RATING: 500 VRMS, +50°C. (+122°F.) Max.

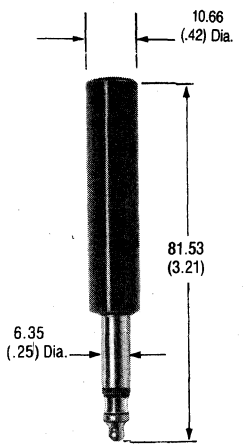


MODEL
4044

NET 12.95

PHONE PLUG PJ051 (WE-310)

MATERIAL: Phone plug, PJ051 (equivalent to WE310), brass.
INSULATION: Phenolic.
RATING: 500 V peak.
HANDLE COLOR:
-0 Black, -2 Red.

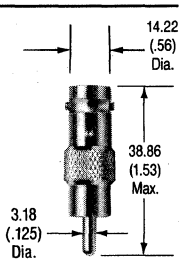


MODEL
4797-*

NET 10.25

BNC FEMALE TO PHONO PLUG

Permits BNC male to be used with equipment having phono jacks. Similar to model 2957 except for length and contact plating.
UPPER: BNC female. Nickel plated center contact. Impedance: 50 Ohms.
LOWER: Phono plug. Brass, nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +102°C. (+216°F.) Max.

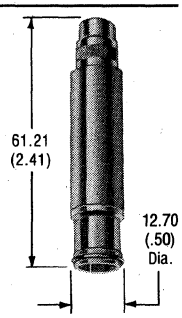


MODEL
5319

NET 4.35

PHONO JACK TO TYPE "F" MALE PUSH-ON

This adapter is a must for the home computer user. It allows a phono cable to be plugged into the type "F" female connector in the rear of TV sets.
UPPER: Phono jack. Brass, nickel plated.
LOWER: Type "F" male push-on.
RATING: +50°C. (+122°F.) Max.

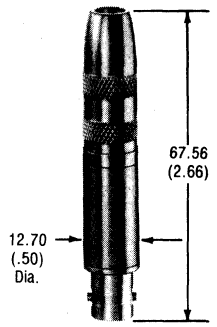


MODEL
4984

NET 8.95

PHONE JACK TO BNC FEMALE

This adapter allows a cable with a 2 conductor 6.35 mm (.250) dia. phone plug to be attached to a cable with a BNC male. All metal construction for proper shielding.
UPPER: Phone jack. Accepts standard 6.35 mm (.250) dia. phone plug. Brass, nickel plated.
LOWER: BNC female. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +85°C. (+185°F.) Max.

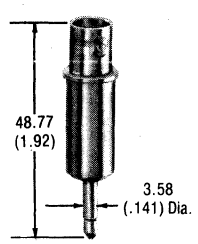


MODEL
4026

NET 13.25

BNC FEMALE TO TINI PLUG

Permits BNC males to be used with equipment having Tini Jacks. Readily adapts equipment to available BNC coaxial cables. All metal construction to insure proper shielding.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: 2 conductor Tini Plug.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.

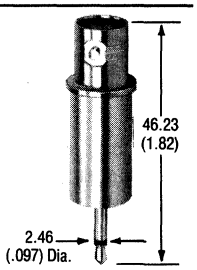


MODEL
3837

NET 8.60

BNC FEMALE TO MICRO PLUG

Permits BNC males to be used with equipment having micro jacks. Readily adapts equipment to available BNC coaxial cables. All metal construction to insure proper shielding.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: 2 conductor micro plug.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.

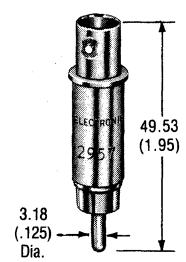


MODEL
4267

NET 9.50

BNC FEMALE TO PHONO PLUG

Permits BNC male to be used with equipment having phono jacks. Readily adapts equipment to available BNC coaxial cables. All metal construction to insure proper shielding. (See also model 5319).
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: Phono plug, brass, nickel plated.
RATING: Operating Voltage: 500 VRMS Max., +102°C. (+216°F.) Max.

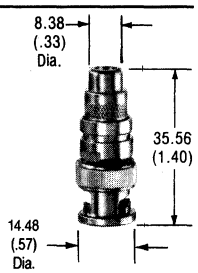


MODEL
2957

NET 6.95

PHONO JACK TO BNC MALE

Permits phono plug to be used with equipment having BNC females. Quickly converts a cable with a phono plug to a BNC male. All metal construction to insure proper shielding.
UPPER: Phono jack. Brass, nickel plated.
LOWER: BNC male. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max., +125°C. (+257°F.) Max.



MODEL
4054

NET 11.95

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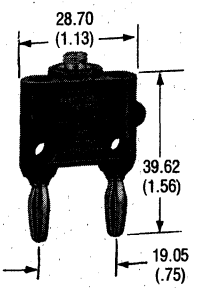
POMONA

MISCELLANEOUS ADAPTERS

MICRODOT RECEPTACLE TO DOUBLE BANANA PLUG

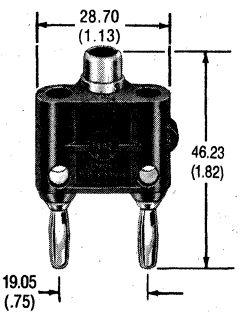


Permits Microdot miniature coaxial plug to be used with equipment having banana jacks. Cross holes in body provide side stackup connections.
UPPER: Microdot receptacle, 50 Ohms.
INSULATION: ABS.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks.
RATING: 750 VRMS, +50°C. (+122°F.) Max.

MODEL	Color	Receptacle Type
1275	Green	10-32 thread

NET 22.95

PHONO JACK TO DOUBLE BANANA PLUG



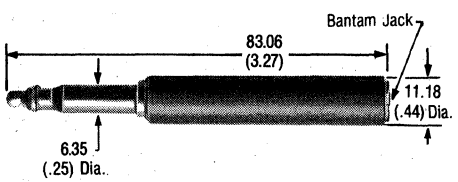
Permits phono plug to be used with equipment having banana jacks or binding posts. Cross holes 4.22 (.166) dia. in body provide side stackup connections.
UPPER: Phono jack.
INSULATION: Polystyrene, black.
LOWER: Double banana plug body, brass. Spring, one piece heat treated beryllium copper, nickel plated.
RATING: 500 WVDC, +50°C. (+122°F.) Max.

MODEL
1442

NET 7.95

MINIATURE (BANTAM) JACK TO PJ-051 (WE-310) PLUG

This adapter allows the use of miniature (Bantam) plug patch cords to be used in equipment fitted with PJ-051 jacks.
UPPER: Miniature (Bantam) 4.39 mm (.173) dia. phone jack.
INSULATION: Nylon.
LOWER: PJ-051 plug.
RATING: 500 V peak.

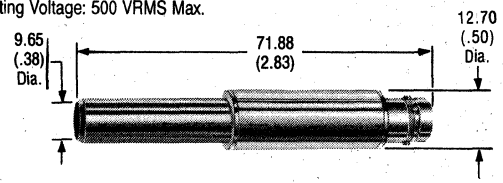


MODEL
4993

NET 27.95

BNC FEMALE TO 2.29 mm (.090) VIDEO PLUG

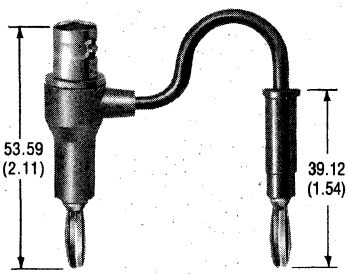
Permits BNC male to be used with equipment having Western Electric 2.29 mm (.090) video plugs.
UPPER: BNC female. Impedance: 50 Ohms.
LOWER: Video plug (equivalent to WE-090).
RATING: Operating Voltage: 500 VRMS Max.



MODEL
5008

NET 27.50

BNC FEMALE TO SINGLE BANANA PLUG WITH GROUND LEAD

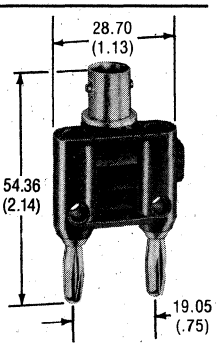


Permits BNC male to be used with equipment having standard banana jacks. Allows the ground jack to be located up to 63.50 mm (2.50) away from the output/input jack.
UPPER: BNC female. Impedance: 50 Ohms.
INSULATION: Polypropylene, red.
LOWER: Banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks. Ground, 18 AWG wire with single banana plug. Polypropylene insulation, black.
RATING: Operating Voltage: 500 VRMS Max., +55°C. (+131°F.) Max.

MODEL
4684

NET 8.50

TWINAX FEMALE TO DOUBLE BANANA PLUG



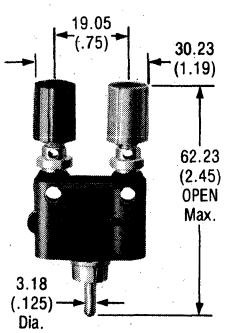
This adapter allows a twinax male to be used with equipment having 19.05 (.750) spaced banana jacks.
UPPER: Twinax female.
INSULATION: ABS, black.
LOWER: Double banana plug. Body, brass. Spring, one piece heat treated beryllium copper, nickel plated. Fits standard 4.22 mm (.166) dia. banana jacks.
RATING: Operating Voltage: 500 VRMS Max., +50°C. (+122°F.) Max.



MODEL
4930

NET 19.95

BINDING POSTS TO PHONO PLUG

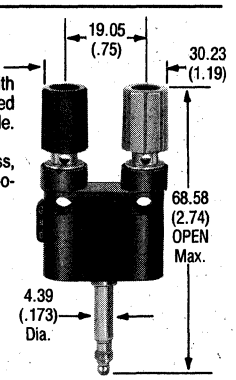


Permits single or double banana plugs to be used with equipment having a phono jack. Ideal for banana plug stackups or patch cords.
UPPER: Double binding post body with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: RCA phono plug.
RATING: 500 WVDC, +50°C. (+122°F.) Max.

MODEL
4729

NET 9.75

BINDING POSTS TO MINIATURE (BANTAM) PLUG



Permits single or double banana plug to be used with equipment having three-circuit phone jacks. Tip connected to hot side of adapter and ring connected to ground side. Sleeve, no connection.
UPPER: Double binding post with captive thumb nut. Brass, nickel plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
INSULATION: ABS, black.
LOWER: Miniature (bantam) phone plug.
RATING: 500 V Peak, +50°C. (+122°F.) Max.

MODEL
5001

NET 14.25

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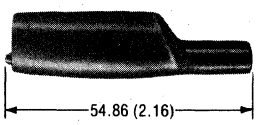
POMONA

MISCELLANEOUS ADAPTERS

INSULATED ALLIGATOR CLIP TO BANANA JACK

MATERIAL: Alligator clip, steel. Accepts standard banana plug.
FINISH: Nickel plated.
INSULATION: Vinyl.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

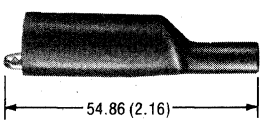


MODEL	
2240-*	(unassembled) 10 clips and 10 insulators per pkg.

NET .50 EA. (Pkg Ten Per Color)

GOLD PLATED INSULATED ALLIGATOR CLIP TO BANANA JACK

MATERIAL: Alligator clip, copper. Accepts standard banana plug.
FINISH: Gold plated.
INSULATION: Vinyl.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

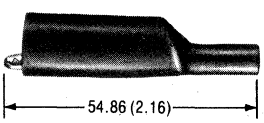


MODEL	
3289-*	(unassembled) 1 clip and 1 insulator per pkg.

NET 1.85

INSULATED ALLIGATOR CLIP TO PIN JACK

MATERIAL: Alligator clip, steel. Pin jack body, brass. Spring, beryllium copper. Accepts 2.03 mm (.080) dia. pin.
FINISH: Alligator clip, nickel plated. Pin jack, gold plated.
INSULATION: Vinyl.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

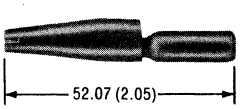


MODEL	
1437-*	(unassembled) 10 clips and 10 insulators per pkg.

NET 1.35 EA. (Pkg. Ten Per Color)

INSULATED MINIGATOR CLIP TO BANANA JACK

MATERIAL: Minigator clip, steel. Banana jack, brass. Accepts standard banana plug.
FINISH: Minigator clip, cadmium plated. Banana jack, tin plated.
INSULATION: Vinyl.
RATING: +50°C (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

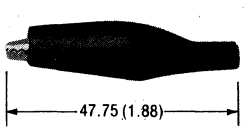


MODEL	
3448-*	(unassembled) 1 clip and 1 insulator per pkg.

NET 1.75

INSULATED MINIGATOR CLIP TO PIN JACK

MATERIAL: Minigator clip, steel. Pin jack body, brass. Spring, beryllium copper. Accepts 2.03 mm (.080) dia. pin.
FINISH: Minigator clip, cadmium plated. Pin jack, gold plated.
INSULATION: Vinyl.
RATING: +50°C (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

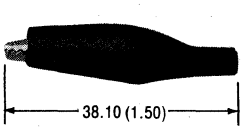


MODEL	
3491-*	(unassembled) 1 clip and 1 insulator per pkg.

NET 2.35

INSULATED MINIGATOR CLIP WITH 6-32 THREAD

This minigator can be used with oscilloscopes and leads equipped with 6-32 screw on tip.
MATERIAL: Minigator clip, steel. Bushing, brass. Accepts 6-32 screw.
FINISH: Cadmium plated.
INSULATION: Vinyl.
RATING: +50°C (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

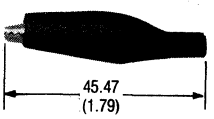


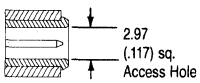
MODEL	
4517-*	(unassembled) 1 clip and 1 insulator per pkg.

NET 2.45

INSULATED MINIGATOR CLIP TO 0.64 mm (.025) SQUARE PIN

1ST END: Minigator clip, steel, cadmium plated.
INSULATION: Vinyl.
2ND END: 0.64 mm (.025) Square Pin, phosphor bronze, gold plated.
RATING: 1000 WVDC, 3 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



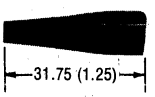


MODEL	
5363-*	

NET 2.50

INSULATED MINIGATOR TO MINIATURE BANANA JACK

MATERIAL: Minigator clip, steel. Accepts miniature banana plug.
FINISH: Cadmium plated.
INSULATION: Vinyl.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

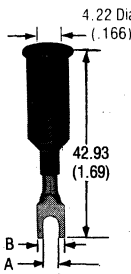


MODEL	
3217*	(unassembled) 10 clips and 10 insulators per pkg.

NET .60 EA (Pkg Ten Per Color)

INSULATED BARRIER STRIP SPADE LUG TO BANANA JACK

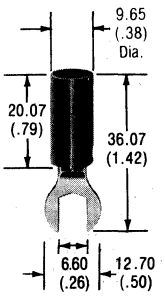
Permits single banana plug to be used with equipment having barrier strips. Lugs fit a No. 4, 5, 6, 8 or 10 screw (see listing).
UPPER: Banana jack, 4.22 (.166) dia., brass, nickel plated.
LOWER: 0.76 mm (.03) thick. Spade lug, (see listing). Copper electro-tin plated.
INSULATION: ABS.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL	Lug Size	Dim. A	Dim B	NET
3744-*	4, 5 & 6	3.81 (.15)	6.10 (.24)	1.95
3777-*	8 & 10	4.83 (.19)	7.62 (.30)	1.95

INSULATED SPADE LUG

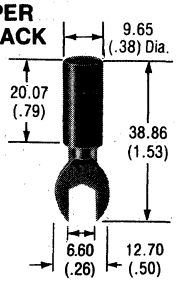
UPPER: Model 4769, pin jack. Spring, beryllium copper, gold plated. Model 1614, banana jack, brass, nickel plated.
INSULATION: ABS.
LOWER: 1.52 mm (.060) thick spade lug, brass, nickel plated.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL	Upper	NET
4769	Pin Jack	2.25
1614	Banana Jack	1.50

LOW THERMAL EMF TELLURIUM COPPER INSULATED SPADE LUG TO BANANA JACK

Provides precision measurement when attaching banana plug to equipment with binding posts.
UPPER: Banana jack, tellurium copper, gold plated. Accepts standard banana plug.
INSULATION: ABS, one black and one red.
LOWER: 2.03 mm (.080) thick spade lug, tellurium copper, gold plated.
RATING: 5000 WVDC, 15 Amps, +50°C. (+122°F.) Max.



MODEL	
2305	

NET 8.50 KIT
(Kit contains 1 Red & 1 Black)

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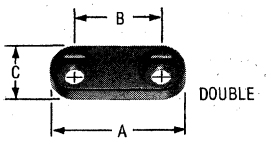
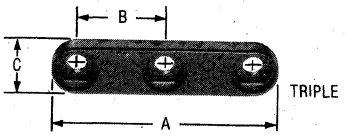
POMONA

MISCELLANEOUS ACCESSORIES

DOUBLE AND TRIPLE MOUNTING BASES

MATERIAL: Polycarbonate.
RATING: +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red.





MODEL	Type	A	B	C	Used With	NET
3862-*	Double	30.2(1.19)	19.1(.750)	11.2(.44)	3750, 3760, 3770, 4098, 4243	.40 EA
3863-*	Triple	49.3(1.94)	19.1(.750)	11.2(.44)	3750,3760, 3770, 4098	.95 EA
4619-*	Double	22.1(.87)	12.7(.500)	9.6(.38)	2142, 2143, 2382, 2383, 2439, 2440, 3542, 4022 4543, 4773	.35 EA
4614-*	Triple	35.1(1.38)	12.7(.500)	9.6(.38)	2142, 2382, 2439, 3542, 4022, 4618, 4773	.60 EA
4654-*	Double	35.1(1.38)	19.1(.750)	16.0(.63)	1581, 2269, 2854, 4005, 4069, 4967	.35 EA
4590-*	Triple	54.1(2.13)	19.1(.750)	16.0(.63)	1581, 2854, 4005, 4601, 5294	.80 EA

(Pkg. Ten Per Color)

REPLACEMENT SCREWS



4862
Flathead, Phillips
4-40 NC-2A x .250
carbon steel, zinc plated.



4864
Self-tapping, panhead, 2-32 x .250
carbon steel, zinc plated.



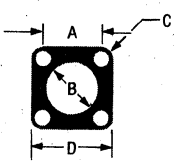
4914
Setscrew, 8-32 x .210
headless, slotted, steel,
zinc plated.

MODEL	Used on
4862	3301, 3302, 3303, 3306, 3307, 3311, 3312, 3316, 3742, 3743, 4720, 4739
4864	2390, 2391, 2392, 2393, 2395, 2397, 2398, 2399, 2400, 2401, 2411, 2413, 2417, 2420, 2428, 3230, 3231, 3232, 3233, 3234, 3239, 3751, 3752, 3753, 3754, 3850, 4050, 4057, 4384, 4655, 4656, 4902, 4903, 5166, 5203, 5255, 5404
4914	MDP, 1325, 1330, 1825, 1858, 2970, 4892, 4897, 4898, 4899, 4966, 5230, 5406

NET 10.00 PKG.
(100 Per Pkg.)

RFI/EMC CONNECTOR FLANGE GASKET

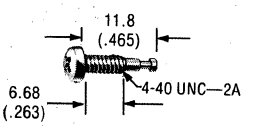
This RFI/EMC connector flange gasket has an adhesive back for simple installation. Monel metal fibers imbedded in this sillicone rubber gasket suppresses RFI/EMC radiation. Model 4780 fits standard BN/BNC flanges and Model 4795 fits standard type "N" and UHF flanges.



MODEL	A(Sq.)	B Dia.	C Dia.	D(Sq.)	Net
4780	12.70(.50)	11.10(.437)	2.77(.109)	17.53(.69)	4.75
4795	18.30(.72)	15.88(.625)	4.37(.172)	25.40(1.00)	3.50

SOLDER TURRET TERMINAL SCREW

Excellent for mounting of panel receptacles. Turret on end of screw for soldering. #4-40, Phillips head.
MATERIAL: Steel.
FINISH: Cadmium plated.

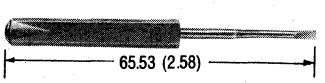


MODEL
2352

NET 40.00 PKG.
(100 Per Pkg.)

MINIATURE SCREWDRIVER FOR SETSCREWS

A specially designed screwdriver with slender tip for tightening of setscrews on miniature plugs.
MATERIAL: Steel.
INSULATION: Polycarbonate, orange.



MODEL
3736

NET 2.15

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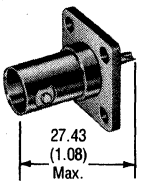
POMONA

PANEL/BULKHEAD RECEPTACLES

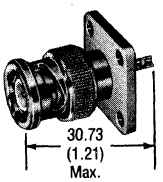
PANEL RECEPTACLES

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. (UHF, brass.) Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max. (Except as noted.), -65°C. (-85°F.) to +165°C. (+329°F.)
IMPEDANCE: 50 Ohms. (Except as noted.)

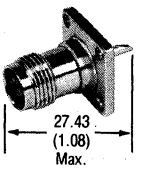
Flange Thickness 2.29 (.09)



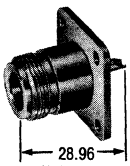
MODEL 2451
BNC (f)



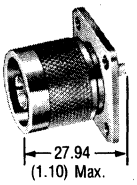
MODEL 2447
BNC (m)



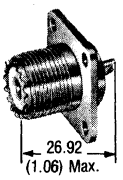
MODEL 4962
TNC (f)



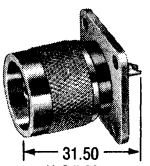
MODEL 2455
"N" (f)



MODEL 2454
"N" (m)



MODEL 2449
UHF (f)



MODEL 2450
UHF (m)

MODEL	Special Features	Panel Cutout	NET
2447		Fig. 1	6.95
2449	Nonconstant Impedance	Fig. 2	7.50
2450			12.95
2451		Fig. 1	3.85
2454	Operating Voltage 1000 VRMS Max.	Fig. 2	16.95
2455			6.30
4962		Fig. 3	7.75

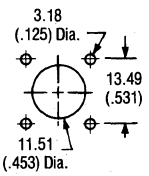


FIG. 1

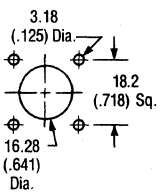


FIG. 2
PANEL CUTOUTS

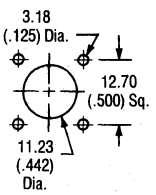
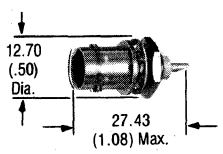


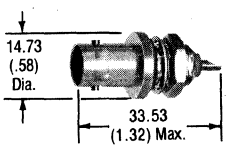
FIG. 3

BULKHEAD RECEPTACLES

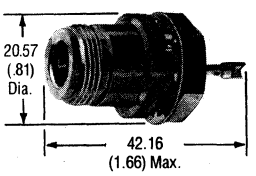
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. (UHF, phosphor bronze.) Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max. (Type N, 1000 VRMS Max.) -65°C. (-85°F.) to +165°C. (+329°F.)
IMPEDANCE: 50 Ohms (Except as noted.)



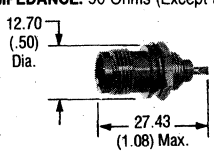
MODELS 4160 & 5081
BNC (f)



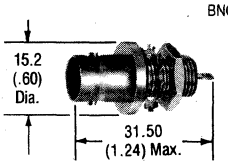
MODEL 4158
BNC (f)



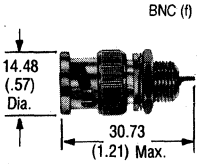
MODEL 4955
"N" (f)



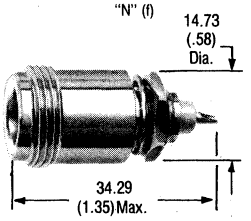
MODEL 4961
TNC (f)



MODEL 4159
BNC (f)



MODEL 4979
BNC (m)



MODEL 4889
"N" (f)

MODEL	Special Features	Panel Cutout	Max. Panel Thickness	a	b	NET
4158	Pressurized a)	Fig. 5	6.10 (.24)	9.53 (.375)	8.38 (.330)	7.40
4159	Hermetically Sealed b)	Fig. 4	9.40 (.37)		8.89 (.350)	8.95
4160			3.30 (.13)			2.95
4889			6.60 (.26)	11.51 (.453)	10.59 (.417)	12.95
4891	Nonconstant Impedance		4.83 (.19)	12.70 (.500)	11.94 (.470)	8.50
4955	Hermetically Sealed b)	Fig. 5		16.28 (.641)	13.72 (.540)	12.95
4961		Fig. 4	3.30 (.13)	11.51 (.453)	10.59 (.417)	5.95
4979			4.83 (.19)	9.53 (.375)	8.89 (.350)	8.95
5081	75 Ohms c)		3.30 (.13)			11.95

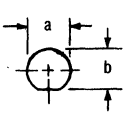


FIG. 4

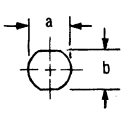
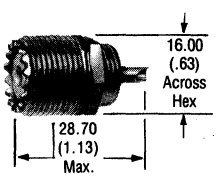


FIG. 5

PANEL CUTOUTS

a) Rated to 50 PSI
b) Leakage rate less than 10^{-7} cc/sec tracer gas at one atmosphere.
c) Standard BNC Interface.



MODEL 4891
UHF (f)

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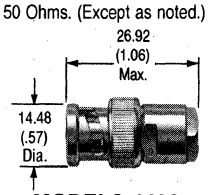
POMONA

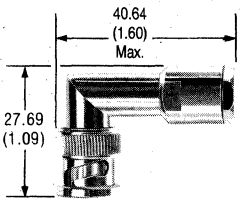
COAXIAL CABLE PLUGS/JACKS

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon. (UHF, phenolic.)
CENTER CONTACT: Male, brass. Female, beryllium copper. (UHF, brass.) Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max. (Except as noted.)
IMPEDANCE: 50 Ohms. (Except as noted.)

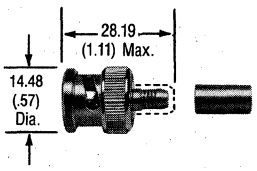
	CABLE GROUPS RG/U
1	8, 8A, 9, 9A, 9B, 11, 11A, 13A, 213, 214, 216
2	142, 142A, 142B, 223
3	58, 58A, 58C, 141, 141A
4	59, 59A, 59B, 62, 62A, 62B, 62C, 210
5	71, 71A, 71B
6	174, 179A, 179B, 187, 187A, 188, 188A, 316



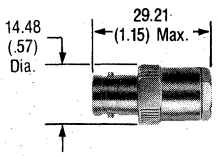
MODELS 4488, 4786, 5079, 5307
BNC (m)



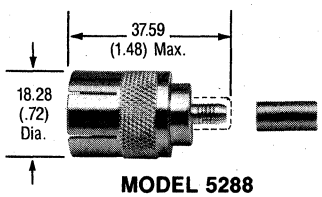
MODEL 4977
BNC (m)



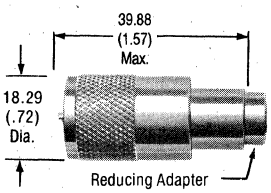
MODELS 5285, 5286
BNC (m)



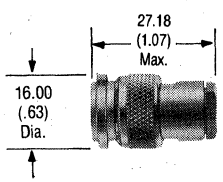
MODELS 4978, 5061
BNC (f)



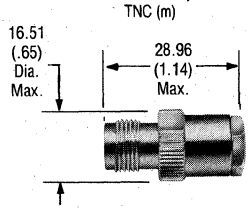
MODEL 5288
UHF Push-On (m)



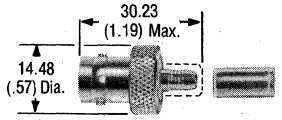
MODEL 4893
UHF (m)



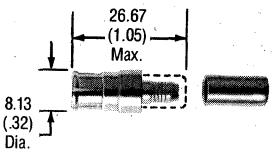
MODEL 4960, 5282
TNC (m)



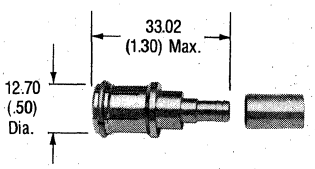
MODEL 5283, 5284
TNC (f)



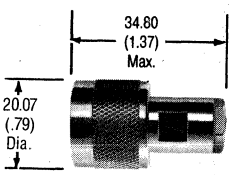
MODELS 5344, 5345
BNC (f)



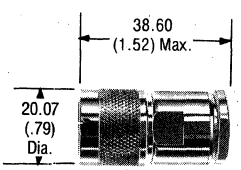
MODEL 5152
BNC Push-On (m)



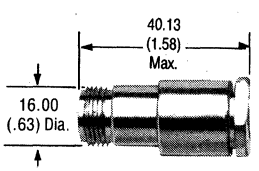
MODEL 5296
"F" Push-On (m)



MODEL 4787
"N" (m)



MODEL 4980
"N" (m)



MODEL 4981
"N" (f)

MODEL	Special Features	Cable Group	NET
4488		2, 3	3.50
4786		4, 5	3.95
4787		2, 3	5.95
4893	Non constant Impedance	1	5.95
4960		2, 3	7.75
4977		2, 3	13.95
4978		2, 3	3.50
4980	1000 VRMS Max. Operating Volt.	1	6.25
4981		1	5.95
5061		4, 5	5.50
5079	75 Ohm (a) Impedance	4, 5	11.95
5152		3	3.95
5282		4, 5	8.50
5283		4, 5	7.50
5284		2, 3	6.75
5285		3	2.95
5286		4	3.15
5288	Non constant Impedance	3	12.50
5296	75 Ohm (a) Impedance	4, 5	3.15
5307		6	7.50
5344		3	5.50
5345		4	7.50

a) Standard BNC interface

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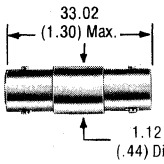
POMONA

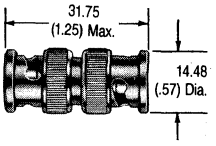
COAXIAL ADAPTERS

ADAPTERS WITHIN SERIES

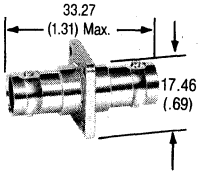
SHELL: Brass, tarnish resistant plating.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max. (Except as noted.) −65°C. (−85°F.) to +165°C. (+329°F.)
IMPEDANCE: 50 Ohms.



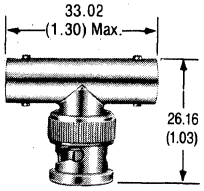
MODEL 3283
BNC (f/f)



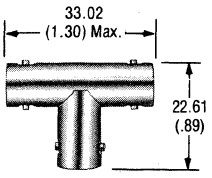
MODEL 3533
BNC (m/m)



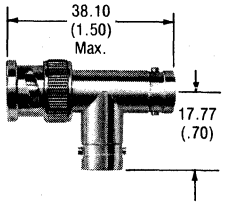
MODEL 4895
BNC (f/f)
SEE FIG. 1



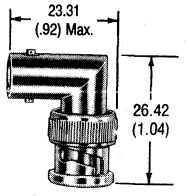
MODEL 3285
BNC (f/m/f)



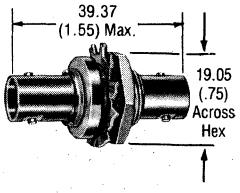
MODEL 3284
BNC (f/f/f)



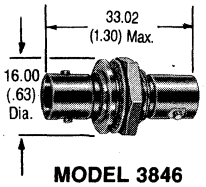
MODEL 4896
BNC (m/f/f)



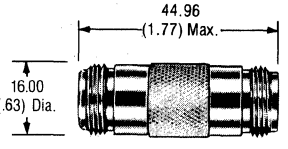
MODEL 3534
BNC (f/m)



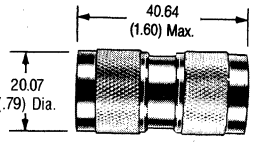
MODEL 3847
BNC (f/f)
SEE FIG. 2



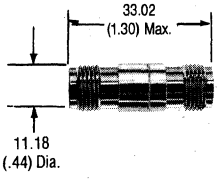
MODEL 3846
BNC (f/f)
SEE FIG 2



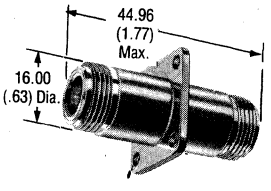
MODEL 3841
"N" (f/f)



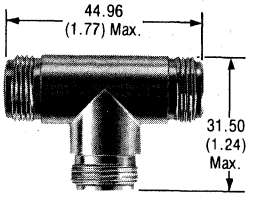
MODEL 3842
"N" (m/m)



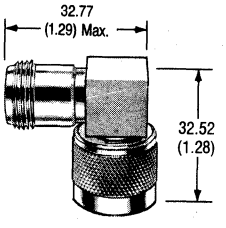
MODEL 4940
TNC (f/f)



MODEL 4956
"N" (f/f)
SEE FIG. 3



MODEL 5089
"N" (f/f/f)



MODEL 3843
"N" (f/m)

MODEL	Special Features	NET
3283		3.95
3284		11.50
3285		10.50
3533		7.25
3534		8.95
3841	Operating Voltage 1000 VRMS Max.	7.95
3842		8.95
3843		13.95
3846	Isolated Ground a)	12.75

MODEL	Special Features	Net
3847	Hermetically Sealed b)	9.95
4895		8.95
4896		15.95
4940		6.95
4956	Operating Voltage 1000 VRMS Max.	15.95
5089		15.95

a) Mounting hardware is isolated from outer conductor of BNC.
b) Leakage rate less than 10^{-7} cc/sec of tracer gas at one atmosphere.

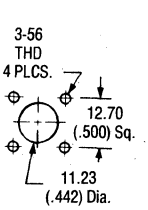


FIG. 1

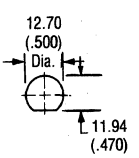


FIG. 2

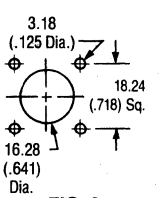


FIG. 3

PANEL CUTOUTS

Flange thickness 2.29 (.09)

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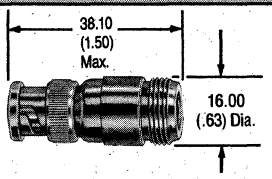
POMONA

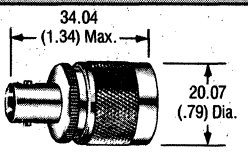
COAXIAL ACCESSORIES

ADAPTERS BETWEEN SERIES

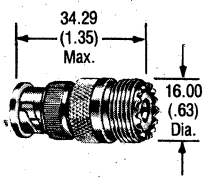
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon. (Models 3286 & 3287, rexolite.)
CENTER CONTACT: Male, brass. Female, beryllium copper. (Except as noted.) Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max., -65°C. (-85°F.) to +165°C. (+329°F.) (Except as noted.)
IMPEDANCE: 50 Ohms. (Except as noted.)



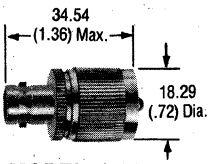
MODEL 3535
BNC (m)/"N" (f)



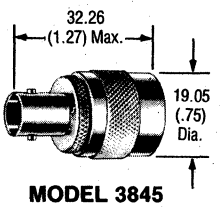
MODEL 3288
BNC (f)/"N" (m)



MODEL 3287
BNC (m)/UHF (f)

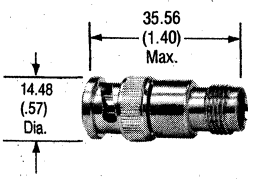


MODEL 3286
BNC (f)/UHF (m)

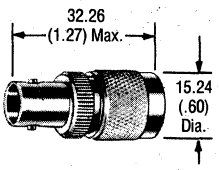


MODEL 3845
BNC (f)/"C" (m)

MODEL	Special Features	Temp. Range	NET
3286	Nonconstant Impedance	-55°C. (-67°F.) to +85°C. (+185°F.)	6.50
3287	Phos. Bronze Contact Nonconstant Impedance	-55°C. (-67°F.) to +85°C. (+185°F.)	9.95
3288	Beryllium Copper Male Contact		6.95
3535			9.75
3844			9.95
3845	Beryllium Copper Male Contact		12.95
5086			8.95



MODEL 5086
BNC (m)/TNC (f)



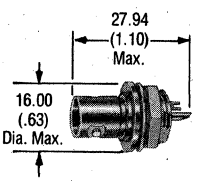
MODEL 3844
BNC (f)/TNC (m)

ISOLATED GROUND FEMALE BULKHEAD RECEPTACLES

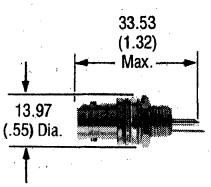
These connectors have the outer conductor isolated from the panel. Excellent for use with equipment requiring a floating ground. Mounts in panels up to 4.57 mm (.18) thick.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon. (Except as noted.)
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max., -65°C. (-85°F.) to +165°C. (+329°F.) (Except as noted.)
IMPEDANCE: 50 Ohms (Except as noted.)

MODEL	Special Features	NET
3778		7.50
5084		6.95
5148	Valox insulation	7.50
5348	75 Ohm a) Impedance	7.95

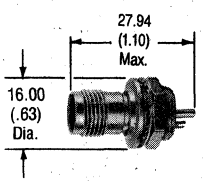
a) Standard BNC interface.



MODELS 3778 & 5348
BNC (f)
SEE FIG. 1



MODEL 5148
BNC (f)
SEE FIG. 2



MODEL 5084
TNC (f)
SEE FIG. 1

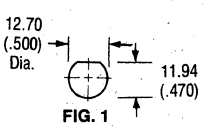


FIG. 1

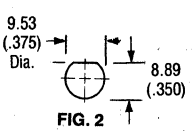


FIG. 2

BNC SHORTING PLUG

Use this BNC shorting plug to protect sensitive instrument inputs or to provide a necessary reference short.
SHELL: Brass, tarnish resistant plated.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max.

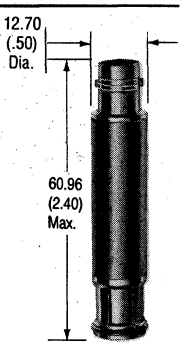


MODEL
5085

NET 5.50

BNC FEMALE TO TYPE "F" MALE PUSH-ON

This adapter allows equipment, such as TVs, computers, etc. using type "F" females to be used with equipment with BNC males.
UPPER: BNC Female. brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated.
LOWER: Push-on Type "F" Male. Brass, nickel plated.
RATING: Operating Voltage: 500 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



MODEL
4941

NET 10.50

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POMONA

COAXIAL ACCESSORIES

DUST CAPS FOR COAXIAL CONNECTORS

SHELL: Brass, tarnish resistant plated.

MODEL	Type	NET
3839	BNC	2.15
4157		2.95
4890	UHF or N	4.95



MODEL 3839



MODEL 4157

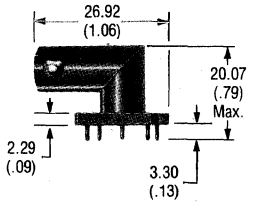


MODEL 4890

COAXIAL PC MOUNTS

BNC RIGHT ANGLE FEMALE PC MOUNT

Permits the installation of a right angle BNC female directly to a 1/16" thick printed circuit board.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
PC PINS: Brass, silver plated.
RATING: Operating Voltage: 500 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)

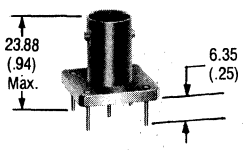


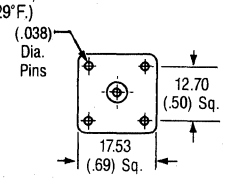
MODEL
4788

NET 13.05

BNC FEMALE PC MOUNT

Permits BNC male to use used with 1/8" thick printed circuit boards.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
PC PINS: Brass, silver plated.
RATING: Operating Voltage: 500 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



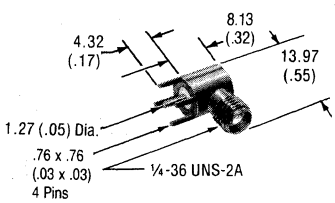


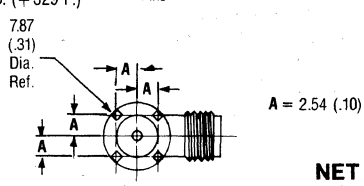
MODEL
4578

NET 8.25

SMA RIGHT ANGLE FEMALE PC MOUNT

Permits the installation of a right angle SMA female directly to a 1/8" printed circuit board.
SHELL: Beryllium copper, gold plated per requirements of MIL-C-39012.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



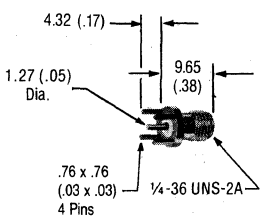


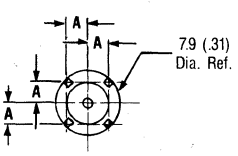
MODEL
4991

NET 29.95

SMA FEMALE PC MOUNT

Permits the SMA male to be used with 1/8" thick printed circuit boards.
SHELL: Beryllium copper, gold plated per requirements of MIL-C-39012.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



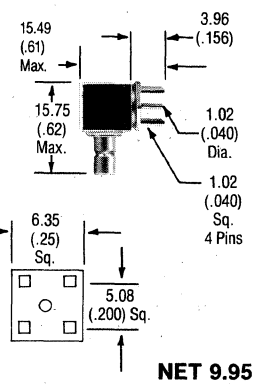


MODEL
4959

NET 27.95

SMB RIGHT ANGLE MALE (JACK) PC MOUNT

The SMB connectors feature a "snap-on" design for ease in making tight RF connections. Permits SMB male to be used with 1/8" printed circuit board.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)

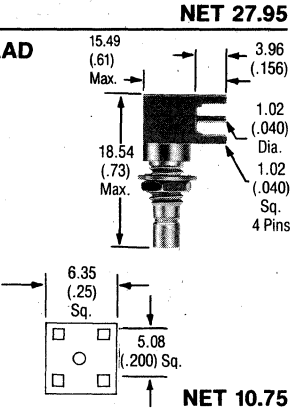


MODEL
5384

NET 9.95

SMB RIGHT ANGLE BULKHEAD MALE (JACK) PC MOUNT

The SMB "snap-on" also features a bulkhead fitting for attachment to black boxes and PC boards. Permits SMB male to be used with 1/8" printed circuit board.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



MODEL
5365

NET 10.75

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SMB/SMC CONNECTORS

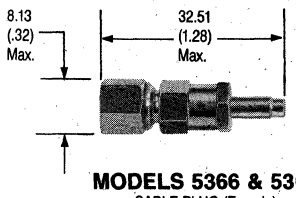
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms.

FREQUENCY RANGE: 0-4 GHz.
TEMPERATURE RANGE: -65°C. (-85°F.) to +165°C. (+329°F.)
THREAD: 10-32 UNF.

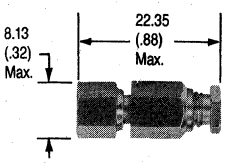
	CABLE GROUPS—RG/U
1	174, 179, 187, 188, 316
2	58, 142, 223

SMC CABLE PLUG/JACK

The SMC (Subminiature 'C') connectors feature a "screw-on" shell.

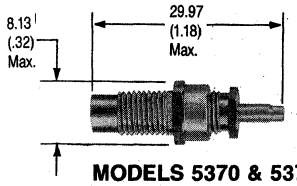


MODELS 5366 & 5368
CABLE PLUG (Female)
CRIMP TYPE

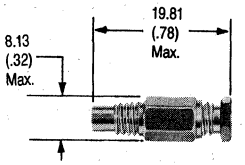


MODELS 5367 & 5369
CABLE PLUG (Female)
CLAMP TYPE

MODEL	Cable Group	NET
5366	1	7.95
5367		10.95
5368	2	7.95
5369		10.95
5370	1	8.75
5371		8.75
5372	2	8.75
5373		8.75



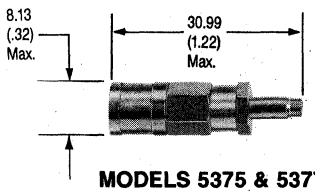
MODELS 5370 & 5372
CABLE JACK (Male)
CRIMP TYPE



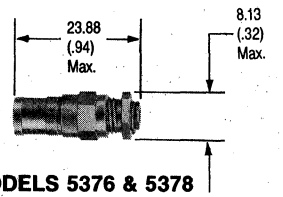
MODELS 5371 & 5373
CABLE JACK (Male)
CLAMP TYPE

SMB CABLE PLUGS/JACK

The SMB (Subminiature 'B') connectors snap together for quick assembly.

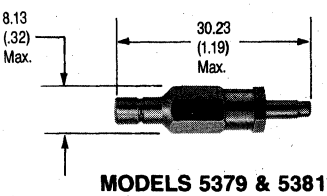


MODELS 5375 & 5377
CABLE PLUG (Female)
CRIMP TYPE

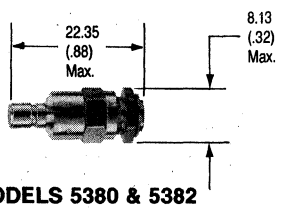


MODELS 5376 & 5378
CABLE PLUG (Female)
CLAMP TYPE

MODEL	Cable Group	NET
5375	1	9.95
5376		11.25
5377	2	9.95
5378		11.25
5379	1	7.95
5380		8.75
5381	2	7.95
5382		8.75

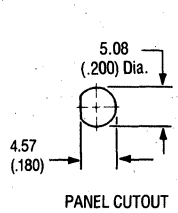


MODELS 5379 & 5381
CABLE JACK (Male)
CRIMP TYPE

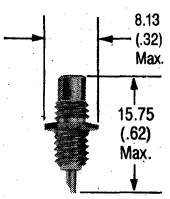


MODELS 5380 & 5382
CABLE JACK (Male)
CLAMP TYPE

SMC BULKHEAD, MALE (JACK)



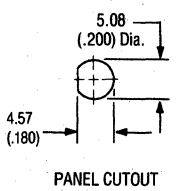
PANEL CUTOUT



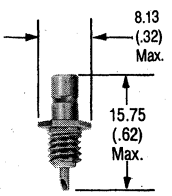
MODEL
5374

NET 4.50

SMB BULKHEAD, MALE (JACK)



PANEL CUTOUT



MODEL
5383

NET 4.75

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SMA ADPATERS

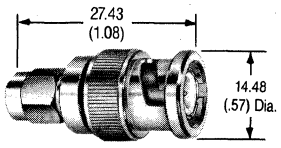
SHELL: SMA, beryllium copper.
All others, brass.
INSULATION: Teflon.
CENTER CONTACT: Male, brass.
Female, beryllium copper.
FINISH: Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms.

These SMA adapters meet the requirements of MIL-A-55339. The 50 Ohm subminiature series R.F. connectors are especially adaptable to microwave component applications such as couplers, dividers and mixers.

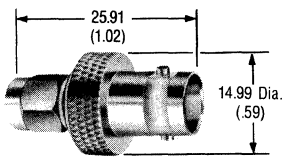
Thread SMA Male: ¼-36 UNS-2B, SMA Female: ¼-36 UNS-2A.

Frequency range: SMA to BNC: 0-4 GHz.
SMA to TNC and SMA to N: 0-11 GHz.
Within Series SMA: 0-12 GHz.

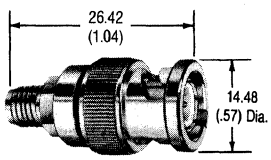
Temperature range: -65°C. (-85°F.) to +165°C. (+329°F.)



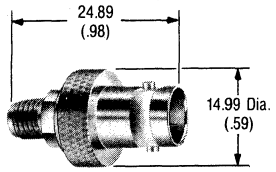
MODEL 4288
SMA(m)/BNC (m)



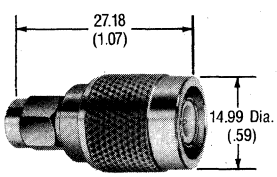
MODEL 4290
SMA (m)/BNC (f)



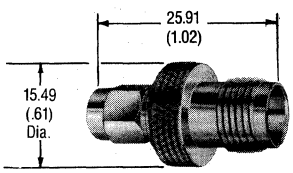
MODEL 4289
SMA (f)/BNC (m)



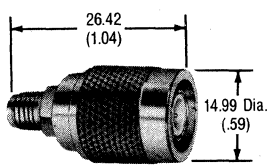
MODEL 4291
SMA (f)/BNC (f)



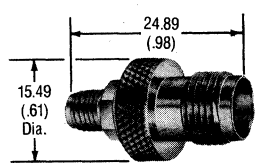
MODEL 4292
SMA (m)/TNC (m)



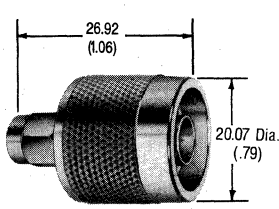
MODEL 4294
SMA (m)/TNC (f)



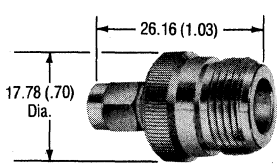
MODEL 4293
SMA (f)/TNC (m)



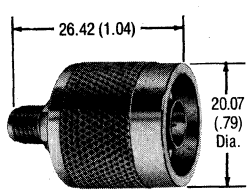
MODEL 4295
SMA (f)/TNC (f)



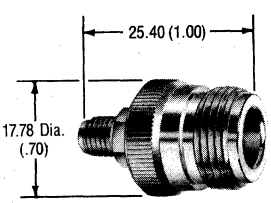
MODEL 4296
SMA (m)/"N" (m)



MODEL 4298
SMA (m)/"N" (f)

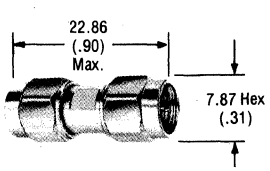


MODEL 4297
SMA (f)/"N" (m)

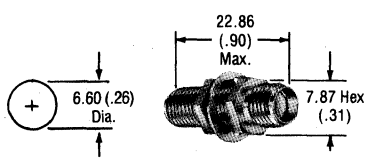


MODEL 4299
SMA (f)/"N" (f)

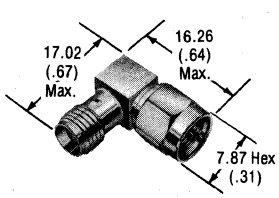
MODEL	NET
4282	37.85
4283	25.95
4284	25.95
4285	36.95
4288	23.95
4289	24.95
4290	18.95
4291	18.75
4292	30.75
4293	26.95
4294	23.75
4295	23.95
4296	29.95
4297	27.95
4298	24.95
4299	21.50



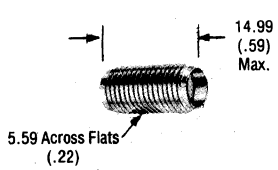
MODEL 4283
SMA (m/m)



MODEL 4285
SMA (f/f)



MODEL 4282
SMA (f/m)



MODEL 4284
SMA (f/f)

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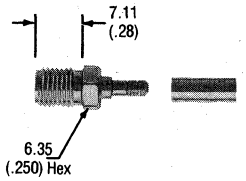
POMONA

SMA COAXIAL ACCESSORIES

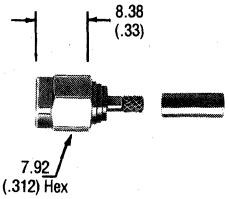
SMA CABLE PLUGS/JACKS

SHELL: Passivated Steel.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)

MODEL	Fits Cables RG	NET
4804	174, 179, 187, 188, 316	11.95
4805		15.25
4859	55,58,142,223	11.95
4860		15.25



MODELS 4805 & 4860
SMA (f)

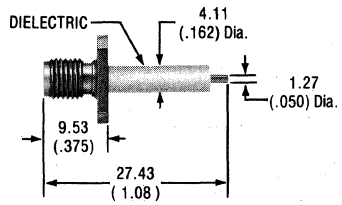


MODELS 4804 & 4859
SMA (m)

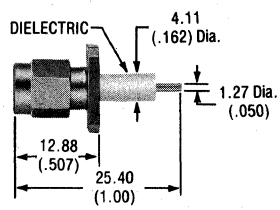
Note: Cabling instructions furnished on request.

SMA PANEL RECEPTACLES

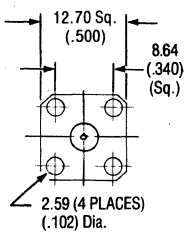
SHELL: Models 4809 & 4808, Passivated Steel. Models 4850 & 4849, Stainless steel, gold plated.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)



MODEL 4809
SMA (f)

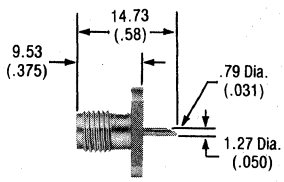


MODEL 4808
SMA (m)

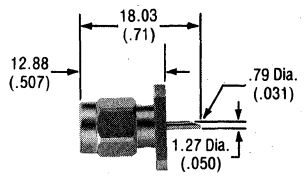


PANEL CUTOUT
Flange thickness 1.65 (.065)

MODEL	NET
4808	17.10
4809	9.75
4849	32.95
4850	14.75



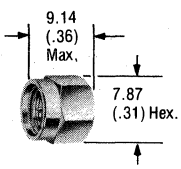
MODEL 4850
SMA (f)



MODEL 4849
SMA (m)

SMA SHORTING PLUG

Use this SMA shorting plug to protect sensitive instrument inputs or to provide a necessary reference short.
SHELL: Steel, gold plated.
INSULATION: Teflon.
CENTER CONTACT: Steel, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms.

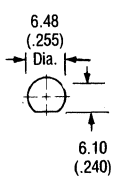


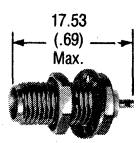
MODEL
5088

NET 14.95

SMA FEMALE BULKHEAD RECEPTACLE

SHELL: Beryllium copper, gold plated.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, -65°C. (-85°F.) to +165°C. (+329°F.)





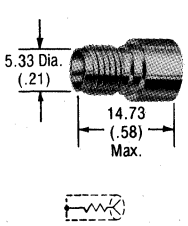
MODEL
4888

NET 14.95

SMA TERMINATIONS

FEMALE TERMINATION

SHELL: Beryllium copper.
INSULATION: Teflon.
CENTER CONTACT: Beryllium copper.
FINISH: Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, VSWR: 1.25 Max to 18 GHz; ½ Watt; Temperature: -65°C. (-85°F.) to +165°C. (+329°F.)

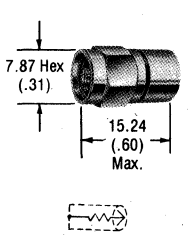


MODEL
4287

NET 73.95

MALE TERMINATION

SHELL: Beryllium copper.
INSULATION: Teflon.
CENTER CONTACT: Brass.
FINISH: Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 335 VRMS Max., Impedance: 50 Ohms, VSWR: 1.25 Max to 18 GHz; ½ Watt; Temperature: -65°C. (-85°F.) to +165°C. (+329°F.)



MODEL
4286

NET 66.50

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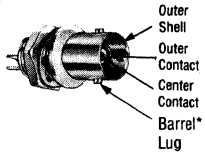
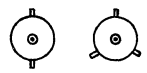
POMONA

TRIAXIAL CONNECTORS

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-49142.
RATING: Operating Voltage: 500 VRMS Max., Frequency range: DC to 500 MHz, -65°C. (-85°F.) to +165°C. (+329°F.)

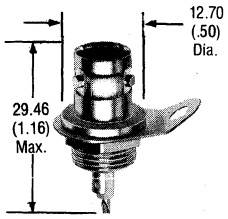




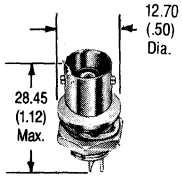
*Two lug model is shown. On units having three lugs, the spacing is 120°.

Triaxial connectors accommodate the need for low level signal patching and balanced line applications. Designed for use with double shielded single conductor or shielded twisted pair cable. These connectors feature a concentric design with center contact, outer contact and outer shell (see photo). This concentric design does not require matching of halves such as the polarized stepped insulator connectors.

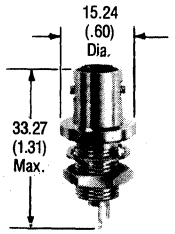
TRIAXIAL BULKHEAD RECEPTACLES, FEMALE



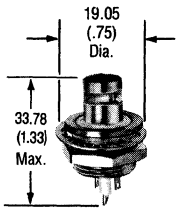
MODEL 5219
SEE FIG. 1



MODEL 3580
SEE FIG. 2



MODEL 4388
SEE FIG. 2



MODEL 5091
SEE FIG. 3

MODEL	Special Features		NET
3580	2 Lug		11.95
4388		Hermetically Sealed a)	56.95
5091		Isolated Ground b)	15.95
5219	3 Lug		11.95

a) Leakage less than 10^{-7} cc/sec tracer gas at one atmosphere.
b) Mounting hardware is isolated from outer conductor.

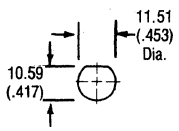


FIG. 1
Max. Panel Thickness
3.56 (.14)

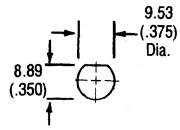


FIG. 2
Max. Panel Thickness
6.35 (.25)

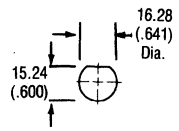
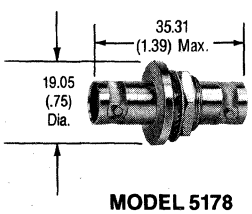
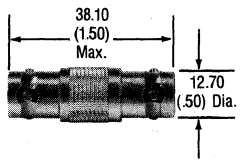


FIG. 3
Max. Panel Thickness
6.35 (.25)

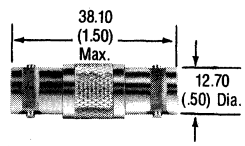
TRIAXIAL ADPATERS WITHIN SERIES, FEMALE



MODEL 5178
SEE FIG. 4



MODEL 5278



MODEL 5290

MODEL	Special Features	NET
5178	2 Lug	13.95
5278	3 Lug	13.15
5290	2 Lug	13.15

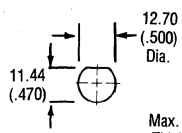
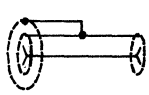
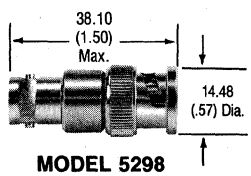


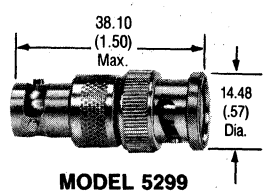
FIG. 4
Max. Panel Thickness
6.35 (.25)

TRIAXIAL ADAPTERS BETWEEN SERIES



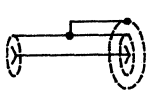


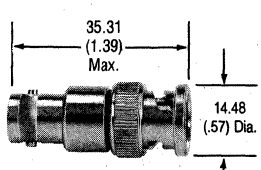
MODEL 5298
2 Lug Triax (f)/BNC (m)



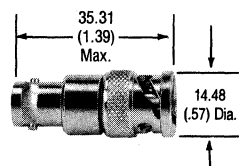
MODEL 5299
3 Lug Triax (f)/BNC (m)

MODEL	NET
5090	16.75
5298	15.65
5299	15.65
5300	16.50





MODEL 5090
BNC (f)/2 Lug Triax (m)



MODEL 5300
BNC (f)/3 Lug Triax (m)

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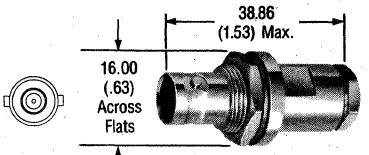
POMONA

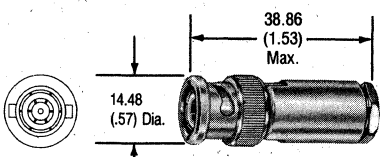
TRIAXIAL CONNECTORS

CABLE PLUGS/JACKS

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-49142.
RATING: Operating Voltage: 500 VRMS Max.; Frequency range: DC to 500 MHz, -65°C. (-85°F.) to +165°C. (+329°F.)
Cabling instructions furnished on request.

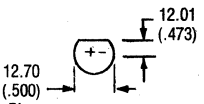


MODEL 4661
TRIAX (f)

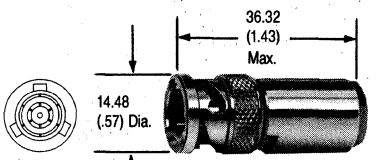


MODELS 3600 & 5056
TRIAX (m)

MODEL	Special Features		Fits Cable Types†	NET
3600	2 Lug	78 Ohms	Belden 9272 6.15 (.242) O.D.	13.50
4661			Microdot 293-3930 4.45 (.175) O.D.	30.95
5056		50 Ohms	Belden 9222 6.15 (.242) O.D.	16.50
5218	3 Lug			16.50



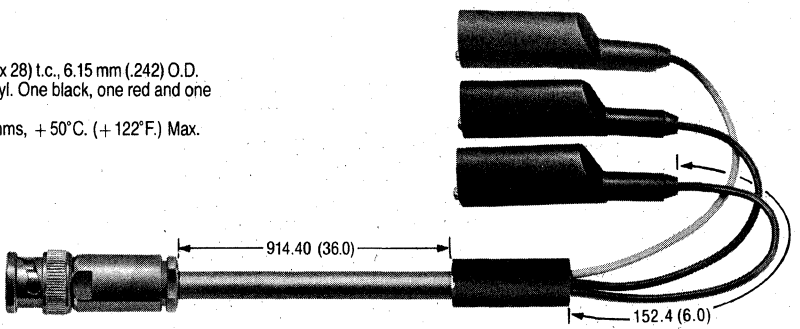
Max. Panel Thickness
3.05 (.12)
Panel Cutout
for Model 4661



MODEL 5218
TRIAX (m)

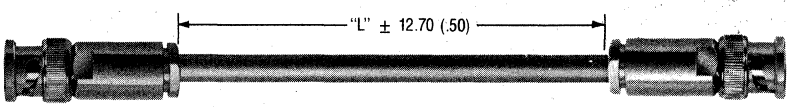
TRIAXIAL CABLE ASSEMBLIES

1ST END: Triaxial Male (See Special Features)
CABLE: Belden 9222, triaxial cable. Triaxial conductors 20 AWG (7 x 28) t.c., 6.15 mm (.242) O.D.
2ND END: Three alligator clips, steel, nickel plated. Insulation: Vinyl. One black, one red and one green.
RATING: Operating Voltage: 500 VRMS Max., Impedance: 50 Ohms, +50°C. (+122°F.) Max.



MODEL	Special Features	NET
4725	2 Lug Triax.	61.95
5342	3 Lug Traix.	62.95

TRIAXIAL CABLE ASSEMBLIES



MODEL 3581: 1ST END: Triaxial Male, 2 Lug. (Model 3600)
CABLE: Twinaxial, Belden 9272, 6.15 mm (.242) O.D., 78 Ohm impedance.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.

MODEL	Length "L"	NET
3581-CC-18	457.2(18.0)	44.50
3581-CC-24	609.6(24.0)	44.50
3581-CC-36	914.4(36.0)	44.50
3581-CC-48	1219.2(48.0)	45.10
3581-CC-60	1524.0(60.0)	45.70

MODEL 5223: 1ST END: Triaxial Male, 3 Lug. (Model 5218)
CABLE: Triaxial, Belden 9222, 6.15 mm (.242) O.D., 50 Ohm impedance.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.

MODEL	Length	NET
5223-36	914.4(36.0)	61.95
5223-60	1524.0(60.0)	66.95

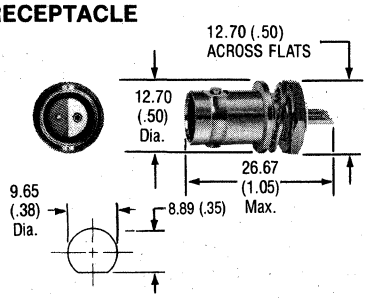
MODEL 5054: 1ST END: Triaxial Male, 2 Lug. (Model 5056)
CABLE: Triaxial, Belden 9222, 6.15 mm (.242) O.D., 50 Ohm impedance.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.

MODEL	Length	NET
5054-36	914.4(36.0)	61.95
5054-60	1524.0(60.0)	66.95

TWINAXIAL CONNECTORS

TWINAX BULKHEAD RECEPTACLE

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-3655.
RATING: Panel Thickness: 3.30 mm (.13). Operating Voltage: 500 VRMS Max., -65°C. (-85°F.) to +165°C. (+329°F.)

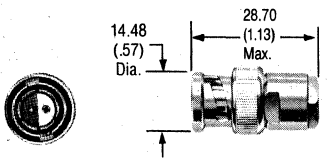


MODEL
4958

NET 16.95

TWINAX MALE CABLE PLUG

SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-3655.
RATING: Operating Voltage: 500 VRMS Max., -65°C. (-85°F.) to +165°C. (+329°F.)
CABLE TYPES: RG 108 and Belden 9272.



MODEL
4957

NET 28.25

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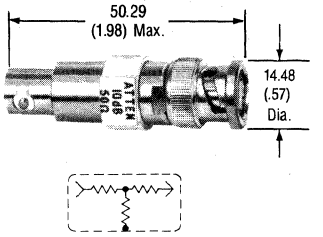
POMONA

COAXIAL ACCESSORIES/TERMINATIONS

BNC 50 OHM ATTENUATORS

For use with pulse, microwave, or UHF instruments.
50 Ohm, metal film resistor, deposited nichrome over ceramic core, 2 watt T-Pad network. White nylon anti-roll sleeve.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max.; +102°C. (+216°F.) Max.



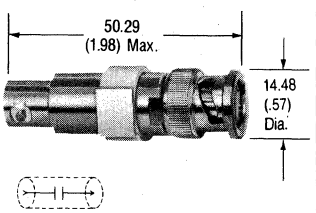
NET 53.75

MODEL	Attenuation
4108-3dB	3dB
4108-6dB	6dB
4108-10dB	10dB
4108-14dB	14dB
4108-20dB	20dB

VSWR	Attenuation Tolerance
1.1 to 1GHz	±0.4 dB to 1GHz
1.2 to 2GHz	±0.45dB to 2GHz
1.35 to 4GHz	±0.65dB to 4GHz
1.45 to 6GHz	±0.75dB to 6GHz
1.65 to 8GHz	±0.9 dB to 8GHz

BNC FEED THRU SERIES CAPACITOR

Provides a DC block for sensitive RF measurements.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: 1000 pF., 600 VDC; +102°C. (+216°F.) Max.

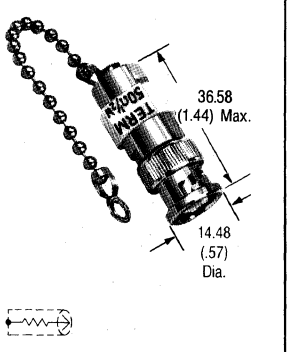


MODEL
5297

NET 18.25

BNC RESISTOR TERMINATED MALE PLUG

Ideal for terminating coaxial lines. 1%, ½ watt, deposited carbon resistor. 88.9 mm (3.5) bead chain with 3.56 mm (.14) dia. hole in lug. Resistance value marked on white nylon anti-roll sleeve.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max., Frequency range: DC to 500 MHz; +102°C. (+216°F.) Max.

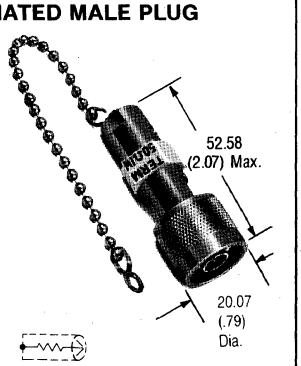


MODEL	Resist. in Ohms
3840-50	50
3840-75	75
3840-93	93
3840-100	100
3840-600	600

NET 8.50

TYPE "N" RESISTOR TERMINATED MALE PLUG

Ideal for terminating coaxial lines. 1%, 1 watt, deposited carbon resistor. 127 mm (5.0) bead chain with 3.56 mm (.14) dia. hole in lug. Resistance value marked on white nylon anti-roll sleeve.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 1000 VRMS Max., Frequency range: DC to 500 MHz; +102°C (+126°F.) Max.

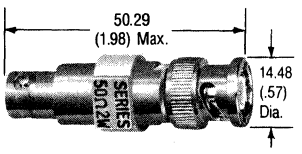


MODEL	Resist. in Ohms
4240-50	50
4240-75	75
4240-600	600

NET 16.95

BNC FEED-THRU SERIES RESISTOR

Ideal for adding in series resistance to coaxial lines with BNC connectors. 1%, 2 watt, non-inductive film resistor. Resistance value marked on white nylon anti-roll sleeve.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max., Frequency Range: DC to 500 MHz; +102°C. (+216°F.) Max.

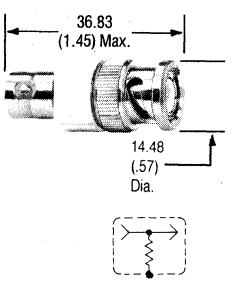


MODEL	Resist. in Ohms
4391-25	25
4391-50	50
4391-75	75
4391-93	93
4391-600	600

NET 24.95

BNC FEED-THRU TERMINATION

Ideal for terminating pulse, microwave or UHF instruments in their characteristic impedance. Termination metal film resistor, deposited nichrome over ceramic core, 2W. Resistance value marked on white nylon anti-roll sleeve.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Male, brass. Female, beryllium copper. Gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max.; Frequency Range: DC to 500 MHz; +102°C. (+216°F.) Max.

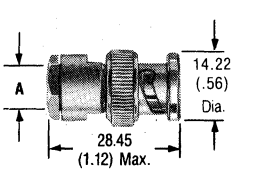


MODEL	Resist. in Ohms
4119-50	50
4119-75	75
4119-93	93
4119-600	600

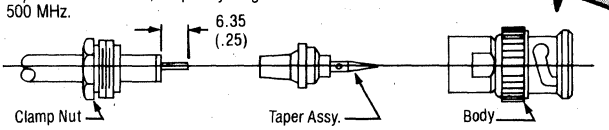
NET 39.95

BNC MALE CABLE PLUGS FIELD SERVICEABLE

These connectors make it a snap to change or install connectors in the field. Just strip the cable end as shown in the illustration. Push the taper assembly under the braid and solder. Then thread the clamp nut into the body and you've created a fine connection.
SHELL: Brass, tarnish resistant plated.
INSULATION: Teflon.
CENTER CONTACT: Brass, gold plated per requirements of MIL-C-39012.
RATING: Operating Voltage: 500 VRMS Max. Impedance: 50 Ohms,Frequency range: DC to 500 MHz.



NEW



MODEL	Fits Cable	Dim. 'A'	Net
4997	RG58	5.59 (.22)	5.95
4998	RG59	6.60 (.26)	6.50
4999	RG174	2.79 (.11)	10.75

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POMONA

AUDIO CONNECTORS GENERAL INFORMATION

ITT Pomona audio connectors are rugged, quick disconnect devices designed for use in audio systems and other applications where reliability and quiet operation are the password. Three different series are provided, each with a solid, metal latching mechanism to assure positive, yet quick connect/disconnect. Some of the salient features of the three series are as follows:

XLR TYPE

- Body, satin finish, nickel plated zinc or aluminum shell.
- Resilient socket insulator for excellent low noise/vibration performance.
- Contacts, silver plated, solid machined copper alloy.
- Nickel plated steel barrel.
- Nickel silver latch and stainless steel latch spring.
- UL recognized.

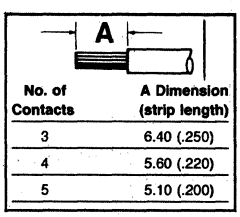
CONTACT ARRANGEMENT AND GENERAL PERFORMANCE

CONTACT ARRANGEMENT



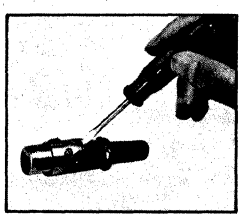
Number of Contacts	3	4	5
Current Rating	15 A	10 A	7.5 A
Test Voltage	1400 V	1400 V	1400 V
Operating Voltage	133 V	133 V	133 V
Contact Resistance	21 mV max. @ 25 ADC	25 mV max. @ 20 ADC	25 mV max. @ 10 ADC
Insulation Resistance	1 GΩ min. @ 500 VDC	1 GΩ min. @ 500 VDC	1 GΩ min. @ 500 VDC
Temperature Range	–55°C to +125°C (–67°F to +257°F)	–55°C to +125°C (–67°F to +257°F)	–55°C to +125°C (–67°F to +257°F)

ASSEMBLY

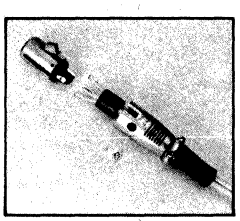


No. of Contacts	A Dimension (strip length)
3	6.40 (.250)
4	5.60 (.220)
5	5.10 (.200)

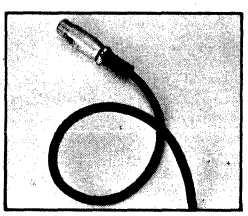
Strip Wire



Disassemble

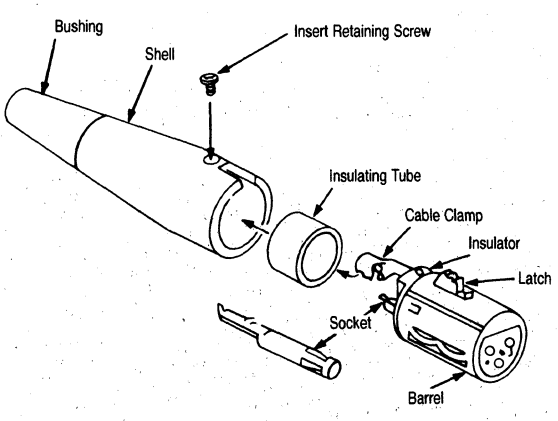


Insert Cable and Solder



Reassemble

General Construction



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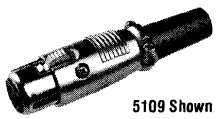
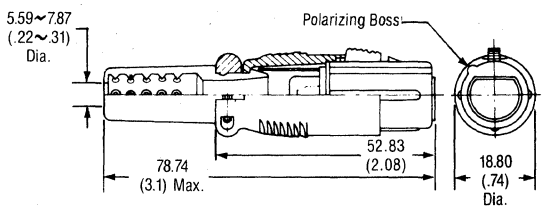
AUDIO CONNECTORS—XLR TYPE

STRAIGHT CORD PLUG — FEMALE

This cord plug accepts all male receptacles with the same pin count as well as the male cord plug. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



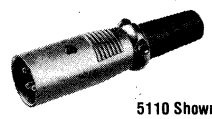
5109 Shown



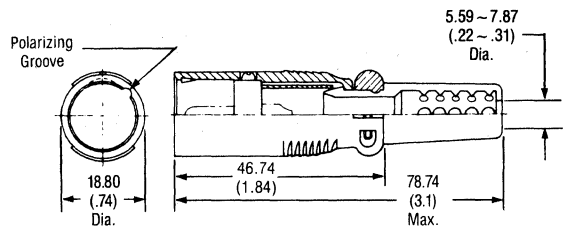
MODEL	Sockets	XLR Type	NET
5109	3	3-11	3.85
5118	4	4-11	5.95
5125	5	5-11	7.65

STRAIGHT CORD PLUG — MALE

This cord plug accepts all female receptacles with the same pin count as well as the female cord plug. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



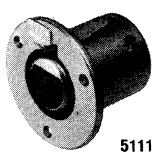
5110 Shown



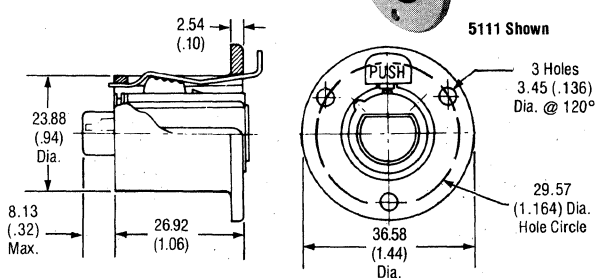
MODEL	Pins	XLR Type	NET
5110	3	3-12	2.85
5119	4	4-12	4.10
5126	5	5-12	4.25

WALL/FLOOR MOUNT RECEPTACLE—FEMALE

This receptacle accepts male cord plugs with the same pin count. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



5111 Shown

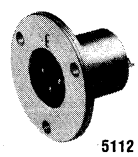


MODEL	Sockets	XLR Type	NET
5111	3	3-13	6.10
5121	4	4-13	7.60
5127	5	5-13	8.10

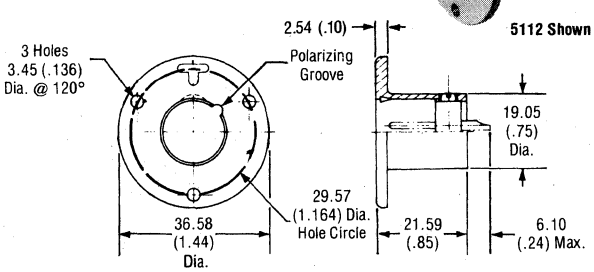
Note: Requires 24.31 mm (.957) dia. panel cutout.

WALL/FLOOR MOUNT RECEPTACLE — MALE

This receptacle accepts female cord plugs with the same pin count. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



5112 Shown

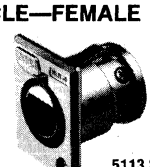


MODEL	Pins	XLR Type	NET
5112	3	3-14	3.10
5122	4	4-14	3.65
5128	5	5-14	3.85

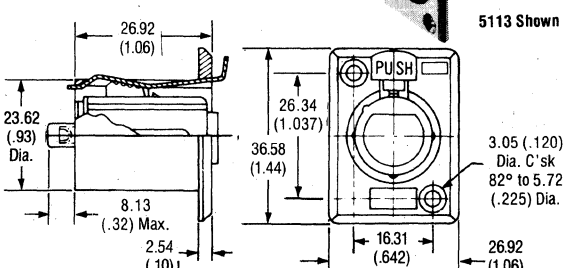
Note: Requires 19.8 mm (.780) dia. panel cutout.

WALL/FLOOR MOUNT RECEPTACLE—FEMALE

This receptacle accepts male cord plugs with the same pin count. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



5113 Shown

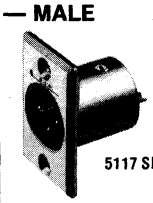


MODEL	Sockets	XLR Type	NET
5113	3	3-31	4.45
5123	4	4-31	6.85
5129	5	5-31	8.10

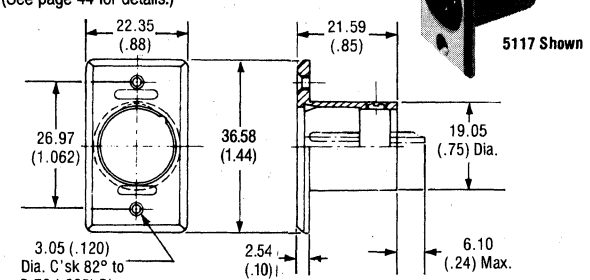
Note: Requires 24.6 mm (.969) dia. panel cutout.

WALL/FLOOR MOUNT RECEPTACLE — MALE

This receptacle accepts female cord plugs with the same pin count. Standard mating configuration will accommodate competitive units.
(See page 44 for details.)



5117 Shown



MODEL	Pins	XLR Type	NET
5117	3	3-32	2.65
5131	4	4-32	3.15
5130	5	5-32	3.30

Note: Requires 19.8 mm (.780) dia. panel cutout.

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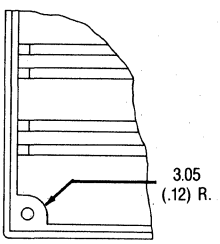
POMONA

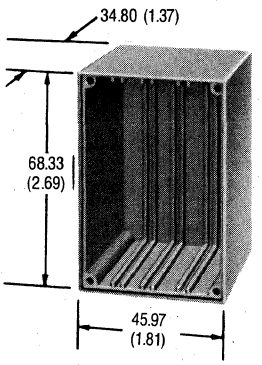
THERMOPLASTIC BOXES

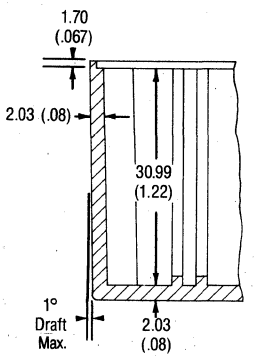
MOLDED THERMOPLASTIC BOX WITH CARD GUIDES

The box and cover are molded of glass filled nylon which is almost unbreakable under normal use. Box and cover are easily machined. Three slots are provided for 1.57 mm (.062) circuit boards (not included).
HOUSING: Glass filled nylon.
COVER: Glass filled nylon. Includes 4 self-tapping #2-32 cover screws.
RATING: + 102°C. (+216°F.) Max.
***STD. COLORS:** -0 Black, -6 Blue, -9 White.

Recommended circuit board size:
63.75 (2.51) × 30.99 (1.20) × 1.57 (.062) thick.







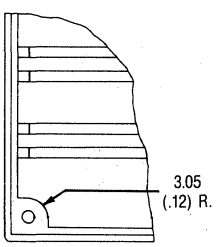
MODEL
3850-*

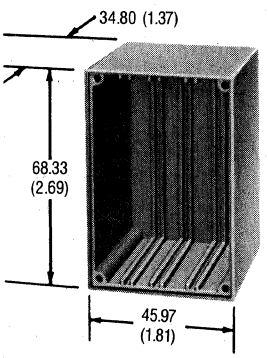
NET 3.30

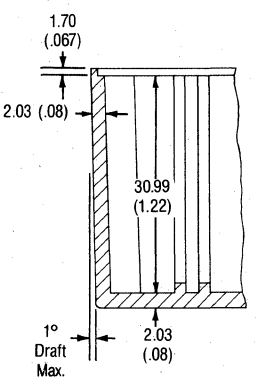
MOLDED ANTISTATIC THERMOPLASTIC BOX WITH CARD GUIDES

The box and cover are molded of STAT-KON† nylon which prevents electrostatic buildup. Three slots are provided for 1.57 mm (.062) circuit boards (not included).
HOUSING: STAT-KON†, black.
COVER: STAT-KON†, black. Includes 4 self-tapping #2-32 cover screws.
RATING: +104°C. (+219°F.) Max.; surface resistivity, 10^9 Ohm-cm^2.

Recommended circuit board size:
63.75 (2.51) × 30.99 (1.20) × 1.57 (.062) thick







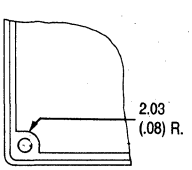
MODEL
4902

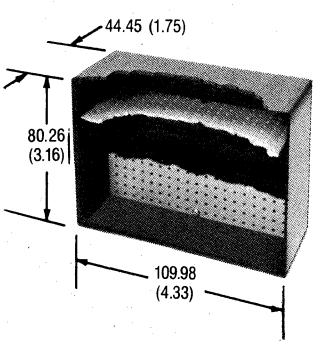
NET 4.05

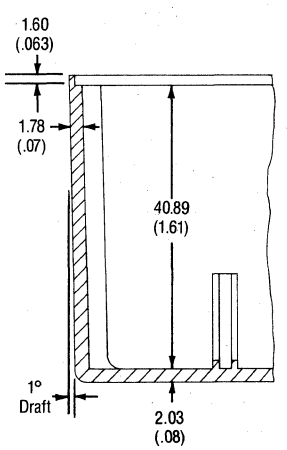
MOLDED THERMOPLASTIC BOX WITH CARD GUIDES

Box and cover are molded of glass filled nylon which is almost unbreakable under normal use. Three slots are provided to permit lengthwise mounting of 1.57 mm (.062) thick circuit boards (not included). Boards may also be mounted horizontally.
HOUSING: Glass filled nylon.
COVER: Glass filled nylon. Includes 4 self-tapping #2-32 cover screws.
RATING: +102°C. (+216°F.) Max.
***STD. COLORS:** -0 Black, -6 Blue.

Recommended circuit board sizes:
Vertical 99.82 (3.93) × 40.13 (1.58) × 1.57 (.062) thick
Horizontal 99.06 (3.90) × 75.69 (2.98) × 1.57 (.062) thick







MODEL
4384-*

NET 5.25

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† STAT-KON is a trademark of LNP Engineering.

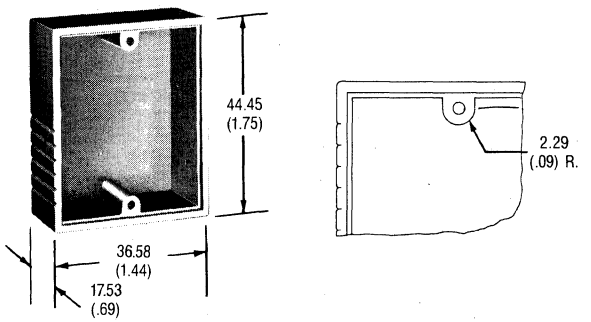
POMONA

PHENOLIC BOXES—JUNIOR SIZE

Create passive and active networks, voltage dividers, isolation networks or attenuators with these units. Solder turret terminals for permanent noise-free connection of components, etc. Entire unit may be potted or encapsulated.

PHENOLIC BOX, JUNIOR SIZE

HOUSING: Phenolic, black.
COVER: XP laminated paper base phenolic, black. Includes 2 #2-56 cover screws.
RATING: +150°C. (+302°F.) Max.

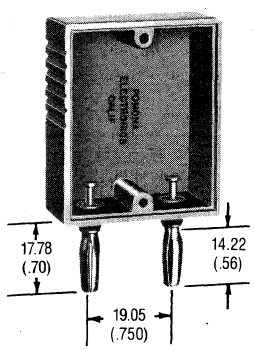


MODEL
2105

NET 2.10

COMPONENT MOUNTING BOX, DOUBLE BANANA PLUG

See Model 2105 (above) for housing dimensions.
1ST END: None.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 5000 WVDC; 15 Amps; +150 °C. (+302°F.) Max.

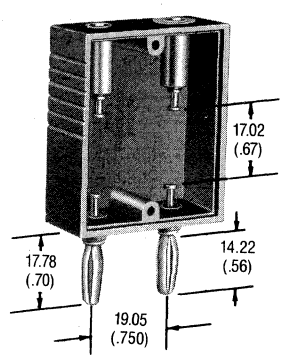


MODEL
2096

NET 5.15

COMPONENT MOUNTING BOX, DOUBLE BANANA JACK TO DOUBLE BANANA PLUG

See Model 2105 (above) for housing dimensions.
1ST END: Double Banana Jack. Brass, bright tin plated.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 5000 WVDC; 15 Amps; +150°C. (+302°F.) Max.

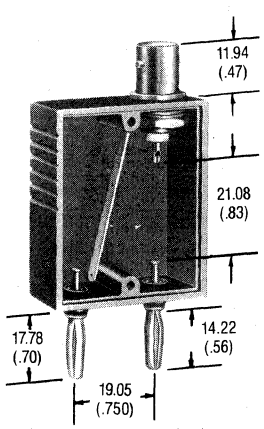


MODEL
2098

NET 8.95

COMPONENT MOUNTING BOX, BNC FEMALE TO DOUBLE BANANA PLUG

See Model 2105 (above) for housing dimensions.
1ST END: BNC Female with extra long solder tab for ground connection. Nominal Impedance: 50 Ohms.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

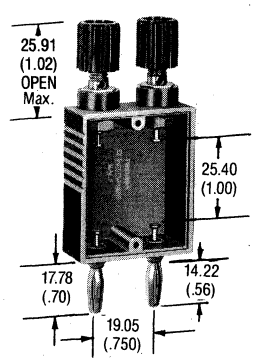


MODEL
2097

NET 12.95

COMPONENT MOUNTING BOX, BINDING POSTS TO DOUBLE BANANA PLUG

See Model 2105 (above) for housing dimensions.
1ST END: Double Binding Post. Brass, bright tin plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 2500 WVDC; 15 Amps; +115°C. (+239°F.) Max.



MODEL
2259

NET 11.95

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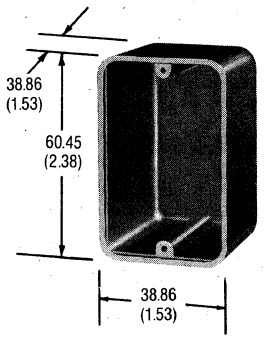
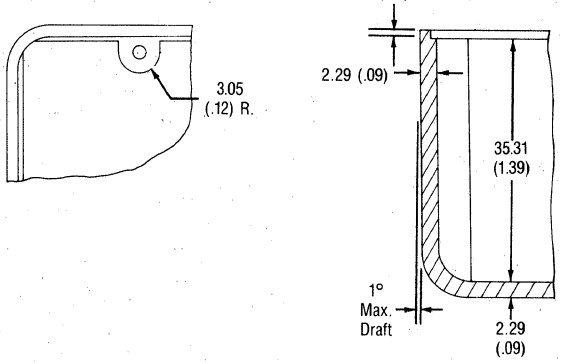
PHENOLIC BOXES — KING SIZE

Create passive and active networks, voltage dividers, isolation networks or attenuators with these units. Solder turret terminals for permanent noise-free connection of components, etc. Entire unit may be potted or encapsulated.

PHENOLIC BOX, KING SIZE

HOUSING: Phenolic, black.
COVER: XP laminated paper base phenolic. Includes 2 #2-56 cover screws.
RATING: +150°C. (+302°F.) Max.



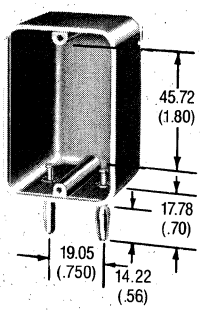


MODEL
2104

NET 1.90

COMPONENT MOUNTING BOX, DOUBLE BANANA PLUG

See Model 2104 for housing dimensions.
1ST END: None.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 5000 WVDC, 15 Amps; +150°C. (+302°F.) Max.

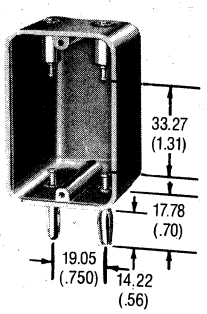


MODEL
1177

NET 4.95

COMPONENT MOUNTING BOX, DOUBLE BANANA JACK TO DOUBLE BANANA PLUG

See Model 2104 for housing dimensions.
1ST END: Double Banana Jack. Brass, bright tin plated.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 5000 WVDC; 15 Amps; +150°C. (+302°F.) Max.

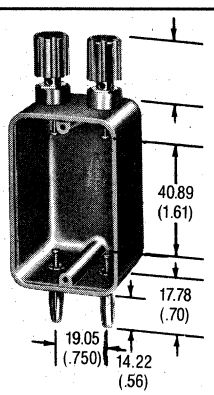


MODEL
2224

NET 8.50

COMPONENT MOUNTING BOX, BINDING POSTS TO DOUBLE BANANA PLUG

See Model 2104 (above) for housing dimensions.
1ST END: Double Binding Post. Accepts standard banana plugs. Brass, bright tin plated. Polycarbonate insulation. One black and one red.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 2500 WVDC; 15 Amps; +115°C. (+239°F.) Max.



MODEL
2262

NET 11.95

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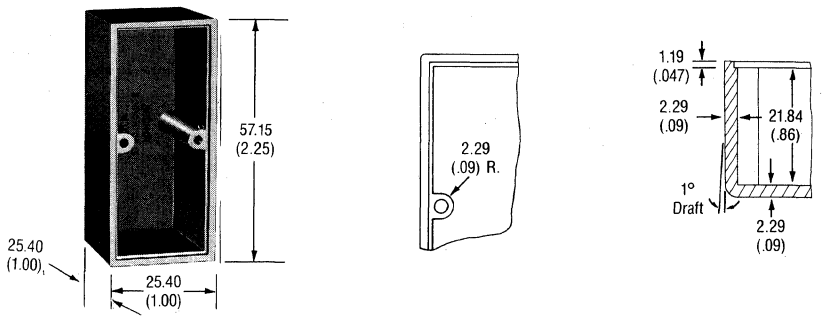
PHENOLIC BOXES — QUEEN SIZE

PHENOLIC BOX, QUEEN SIZE

HOUSING: Phenolic.
COVER: XP laminated paper base phenolic, black. Includes 2 #2-56 cover screws.
RATING: +150°C. (+302°F.) Max.

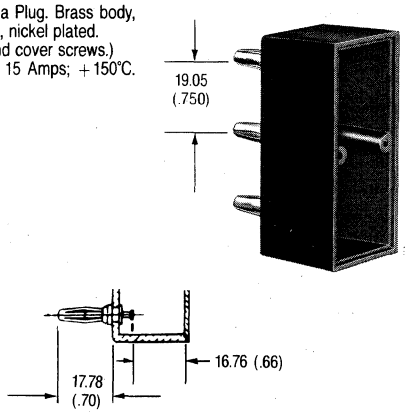


MODEL
2103

NET 1.95

COMPONENT MOUNTING BOX, THREE BANANA PLUGS

See Model 2103 (above) for housing dimensions.
CENTER: Triple Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: 5000 WVDC; 15 Amps; +150°C. (+302°F.) Max.

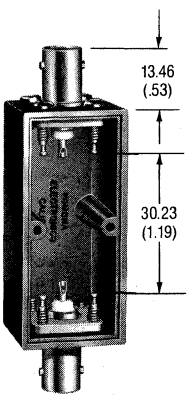


MODEL
2095

NET 7.50

COMPONENT MOUNTING BOX, BNC FEMALE BOTH ENDS

See Model 2103 (above) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

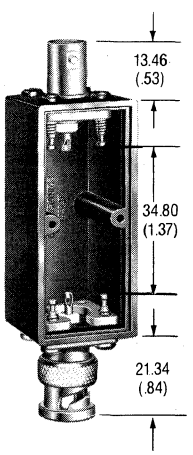


MODEL
2101

NET 17.95

COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE

See Model 2103 (above) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

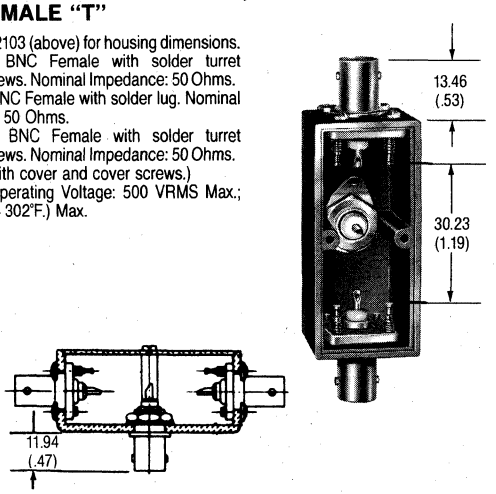


MODEL
2099

NET 23.95

COMPONENT MOUNTING BOX, BNC FEMALE "T"

See Model 2103 (above) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: BNC Female with solder lug. Nominal Impedance: 50 Ohms.
2ND END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.



MODEL
2102

NET 23.95

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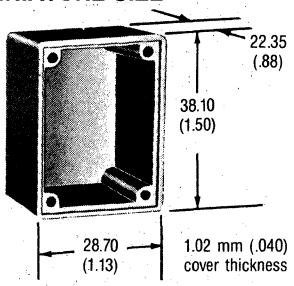
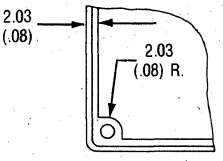
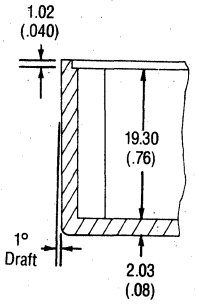
DIE CAST ALUMINUM BOXES

MINIATURE SIZE

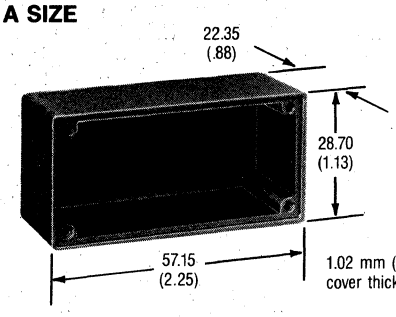


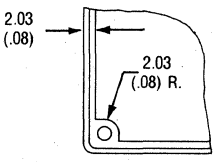


(Use Model 4742, page 59 as replacement cover.
Used Model 3729, page 59 as mounting cover.)

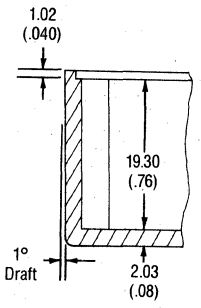


A SIZE

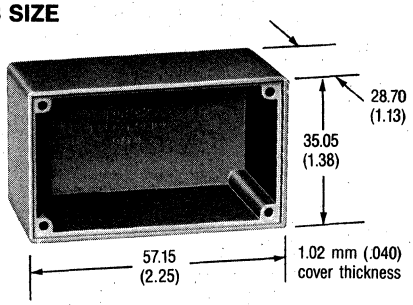


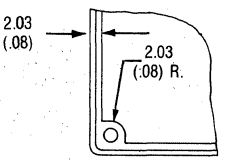


(Use Model 4245, page 59 as replacement cover.
Use Model 3728, page 59 as mounting cover.)

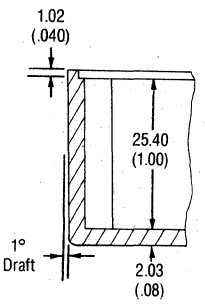


B SIZE

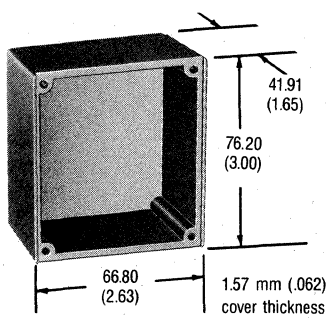


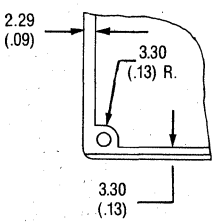


(Use Model 4246, page 59 as replacement cover.
Use Model 3719, page 59 as mounting cover.)

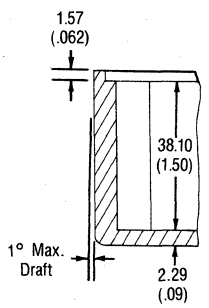


D SIZE





(Use Model 4726, page 59 as replacement cover.
Use Model 3958, page 59 as mounting cover.)



MODEL	Box Size	Finish	NET
3753	Miniature	Blue Baked Enamel	4.95
3754		None	4.55
2397	A	Blue Baked Enamel	4.95
2400		None	4.40
2417	B	Blue Baked Enamel	5.25
2428		None	4.95
3601	D	Blue Baked Enamel	9.25
3606		None	8.95

These boxes are available either with a blue baked enamel finish or with no finish at all. When used with the included cover, the boxes provide excellent RFI/EMI protection.
HOUSING: Die cast aluminum, alloy A380 or A384. Blue baked enamel per Federal Standard 595 #25109 over primer wash per DOD-P-15328 or no finish.
COVERS: Top and bottom 2.03 mm (.080) thick aluminum 1100-H14, with clear anodized finish per MIL-A-8625. Includes #4-40 x ¼" pan head screws.

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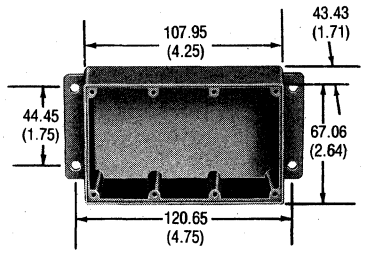
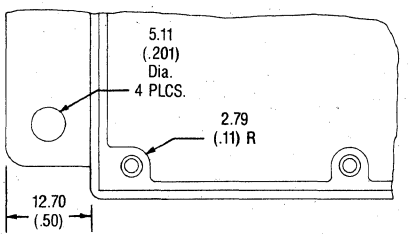
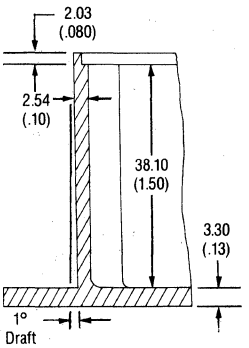
DIE CAST ALUMINUM BOXES

C SIZE



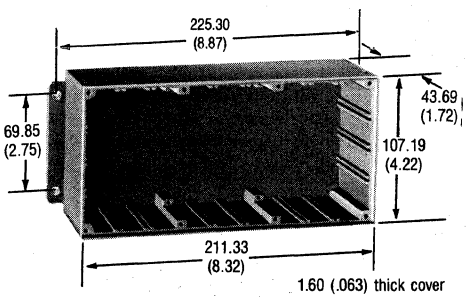
2.03 (.080) thick cover



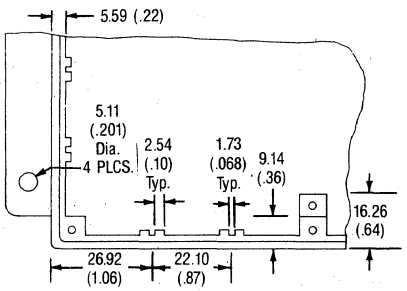


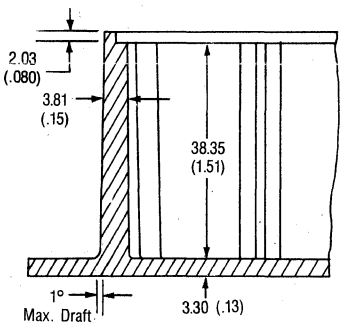
(Use Model 4248, page 59 as replacement cover.)

E SIZE



1.60 (.063) thick cover

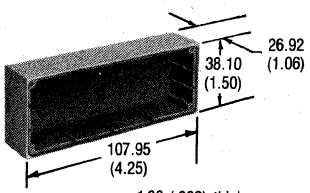




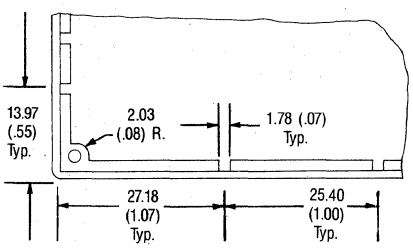
Recommended circuit board sizes:
Vertical: 203.20 (8.00) x 37.85 (1.49) x 1.57 (.062) thick
99.06 (3.90) x 37.85 (1.49) x 1.57 (.062) thick
Horizontal: 193.04 (7.60) x 96.52 (3.80) x 1.57 (.062) thick

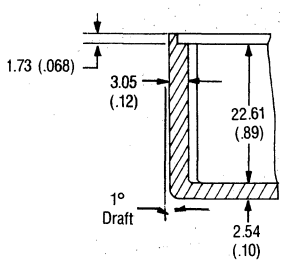
(Use Model 4416, page 59 as replacement cover.)

J SIZE



1.60 (.063) thick cover

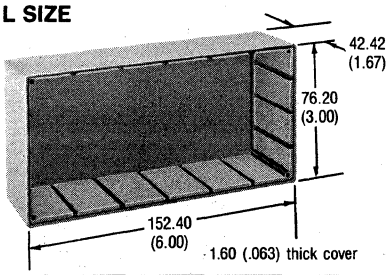




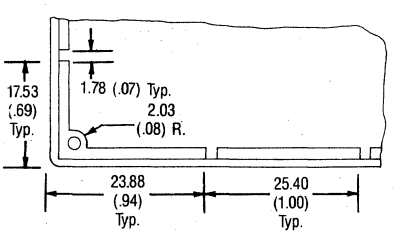
Recommended circuit board sizes:
104.90 (4.13) x 22.10 (.87) x 1.57 (.062) thick
35.05 (1.38) x 22.10 (.87) x 1.57 (.062) thick

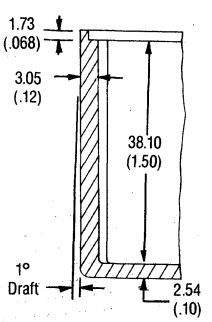
(Use Model 4658, page 59 as replacement cover.)

L SIZE



1.60 (.063) thick cover





(Use Model 5198, page 59 as replacement cover.)

MODEL	Box Size	Finish	NET
2901	C	Blue Enamel	12.95
2906		None	10.95
4226	E	Blue Enamel	32.95
5186		None	30.95
4655	J	Blue Enamel	14.95
5255		None	13.50
4903	L	Blue Enamel	18.95
5203		None	17.50

Recommended circuit board sizes:
149.35 (5.88) x 37.59 (1.48) x 1.57 (.062) thick
73.15 (2.88) x 37.59 (1.48) x 1.57 (.062) thick

These boxes are available either with a blue baked enamel finish or with no finish at all. When used with the included cover, the boxes provide excellent RFI/EMI protection.

HOUSING: Die cast aluminum, alloy A380 or A384. Blue baked enamel per Federal Standard 595 #25109 over primer wash per DOD-P-15328 or no finish. (See Table)
COVER: Aluminum 1100-H14, with clear anodized finish per MIL-A-8625. Includes cover screws.

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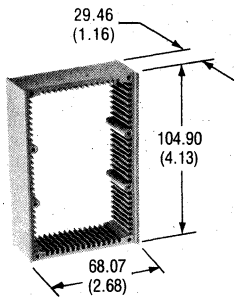
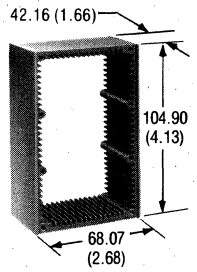
EXTRUDED ALUMINUM BOXES



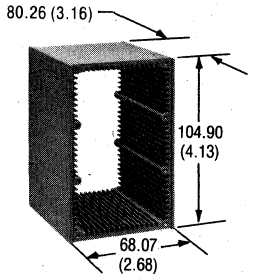
SIZE K

Recommended circuit board sizes:
99.06 (3.90) x 24.89 (.98) x 1.57 (.062) thick
60.96 (2.40) x 24.89 (.98) x 1.57 (.062) thick



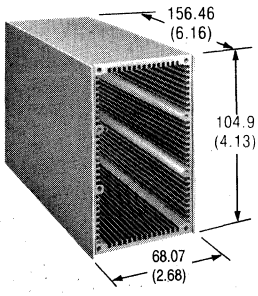
SIZE F

Recommended circuit board sizes:
99.06 (3.90) x 37.59 (1.48) x 1.57 (.062) thick
60.96 (2.40) x 37.59 (1.48) x 1.57 (.062) thick



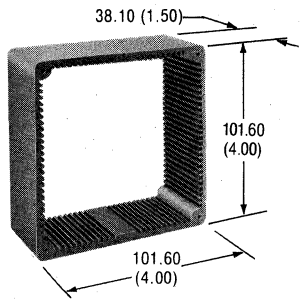
SIZE G

Recommended circuit board sizes:
99.06 (3.90) x 75.69 (2.98) x 1.57 (.062) thick
60.96 (2.40) x 75.69 (2.98) x 1.57 (.062) thick



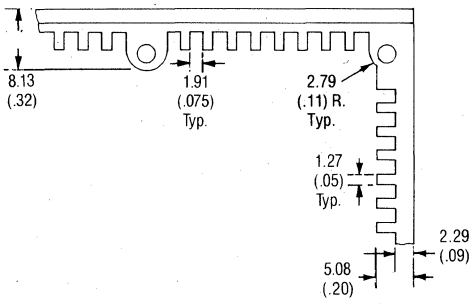
SIZE H

Recommended circuit board sizes:
99.06 (3.90) x 151.89 (5.98) x 1.57 (.062) thick
60.96 (2.40) x 151.89 (5.98) x 1.57 (.062) thick

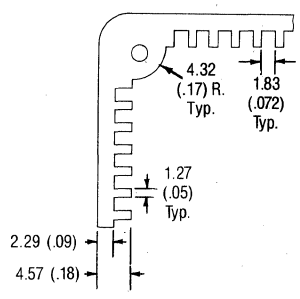


SIZE I

Recommended circuit board size:
95.50 (3.76) x 37.59 (1.48) x 1.52 (.062) thick



SIZES F, G, H & K



SIZE I

MODEL	Box Size	Finish	NET
4720	K	Blue Enamel	19.95
4739	K	None	17.95
3301	F	Blue Enamel	19.95
3306	F	None	17.95
3311	G	Blue Enamel	23.95
3316	G	None	21.25
3742	H	Blue Enamel	28.95
3743	H	None	25.50
4641	I	Blue Enamel	42.95

These boxes are slotted to accept 1.57mm (.062) circuit boards and shielding dividers. They are available with a blue baked enamel finish or with no finish at all. When used with included covers, these boxes provide excellent EMI/RFI protection.

(Use Model 4247, page 59 as replacement cover for sizes F, G, H & K. Use Model 4631, page 59 as replacement cover for Size I. Use Model 3328, page 59 as mounting cover for Sizes F, G, H & K. Use Model 4642, page 59 as mounting cover for Size I.

HOUSING: Extruded aluminum alloy 6063-T5 or equivalent. Blue baked enamel per Federal Standard 595 #25109 over primer wash per DOD-P-15328 or no finish. (See table).

COVERS: Top and bottom 2.03 mm (.080) thick aluminum 1100-H14, with clear anodized finish per MIL-A-8625. Includes #4-40 x ¼" flathead screws.

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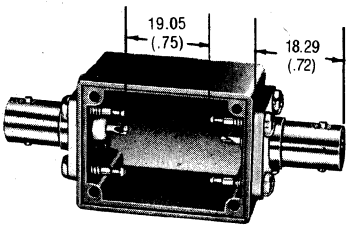
DIE CAST ALUMINUM BOXES—MINIATURE SIZE

COMPONENT MOUNTING BOX, BNC FEMALE EACH END

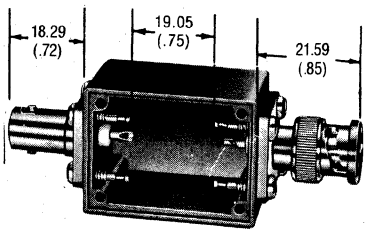
See Model 3753 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end. (Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



MODEL 3751 — **NET 18.50**

COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE

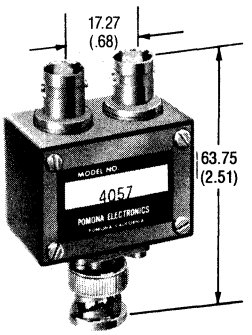
See Model 3753 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



MODEL 3752 — **NET 18.75**

COMPONENT MOUNTING BOX, TWO BNC FEMALES TO BNC MALE ("IN-LINE T")

See Model 3753 (page 50) for housing dimensions.
1ST END: BNC Females. Nominal Impedance: 50 Ohms.
2ND END: BNC Male. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.

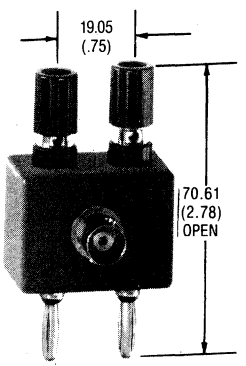


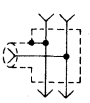


MODEL 4057 — **NET 27.95**

COMPONENT MOUNTING BOX, BINDING POSTS TO DOUBLE BANANA PLUG WITH BNC FEMALE

See Model 3753 (page 50) for housing dimensions.
1ST END: Double Binding Post. Brass, bright tin plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
CENTER: BNC Female. Nominal Impedance: 50 Ohms.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. (Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 115°C. (+239°F.) Max.



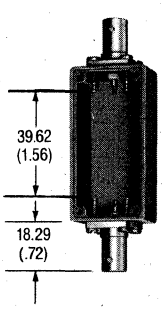


MODEL 4050 — **NET 33.95**

DIE CAST ALUMINUM BOXES — SIZE "A"

COMPONENT MOUNTING BOX, BNC FEMALE EACH END

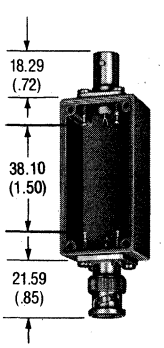
See Model 2397 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



MODEL 2390 — **NET 15.95**

COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE

See Model 2397 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Male with solder turret screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



MODEL 2391 — **NET 18.75**

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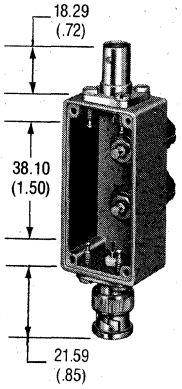
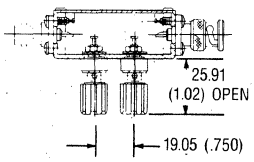
DIE CAST ALUMINUM BOXES—SIZE "A"

COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE WITH BINDING POSTS

See Model 2397 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: Double Binding Post with solder turret terminals. Brass, bright tin plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
2ND END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 115°C. (+239°F.) Max.



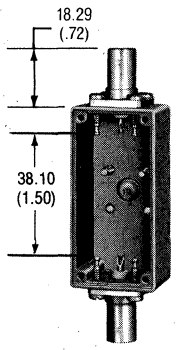


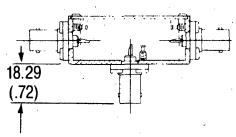
MODEL 2393

NET 29.75

COMPONENT MOUNTING BOX, BNC FEMALE "T"

See Model 2397 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: Same as first end.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



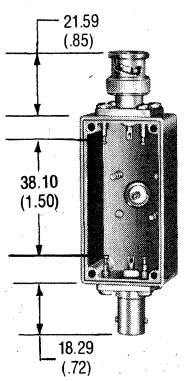


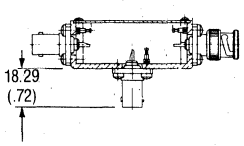
MODEL 2392

NET 22.95

COMPONENT MOUNTING BOX, "T" TWO BNC FEMALES TO BNC MALE

See Model 2397 (page 50) for housing dimensions.
1ST END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as center.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



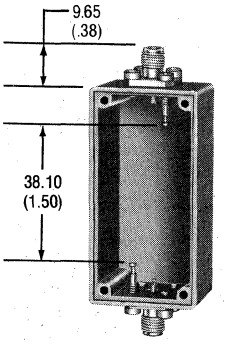


MODEL 2401

NET 24.95

COMPONENT MOUNTING BOX, SMA FEMALE EACH END

See Model 2397 (page 50) for housing dimensions.
1ST END: SMA Female with solder turret terminal screw. Gold plated per requirements of ML-C-39012. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 335 VRMS Max., + 150°C. (+302°F.) Max.

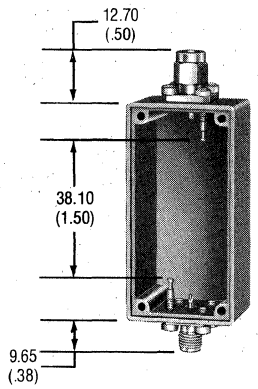


MODEL 2399

NET 36.95

COMPONENT MOUNTING BOX, SMA MALE TO SMA FEMALE

See Model 2397 (page 50) for housing dimensions.
1ST END: SMA Male with solder turret terminal screw. Gold plated per requirements of MIL-C-39012. Nominal Impedance: 50 Ohms.
2ND END: SMA Female with solder turret terminal screw. Gold plated per requirements of MIL-C-39012. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 335 VRMS Max., + 150°C. (+302°F.) Max.

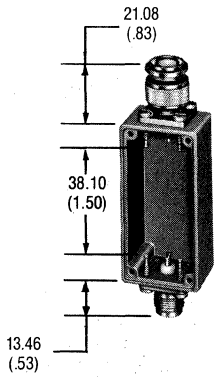


MODEL 2398

NET 59.95

COMPONENT MOUNTING BOX, TNC MALE TO TNC FEMALE

See Model 2397 (page 50) for housing dimensions.
1ST END: TNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: TNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



MODEL 2395

NET 36.50

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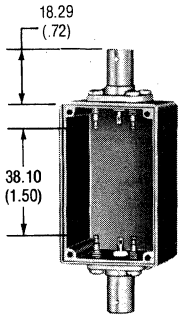
DIE CAST ALUMINUM BOXES—SIZE "B"

COMPONENT MOUNTING BOX, BNC FEMALE EACH END

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end. (Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.

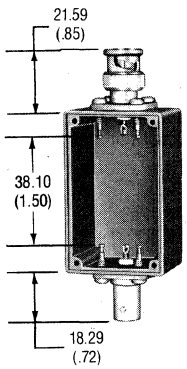


MODEL
3230

NET 15.95

COMPONENT MOUNTING BOX, BNC MALE TO BNC FEMALE

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.

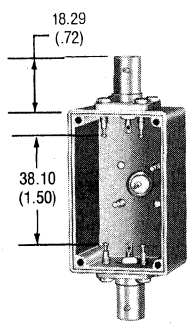


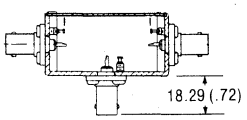
MODEL
3231

NET 19.25

COMPONENT MOUNTING BOX, BNC FEMALE "T"

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: Same as first end.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.



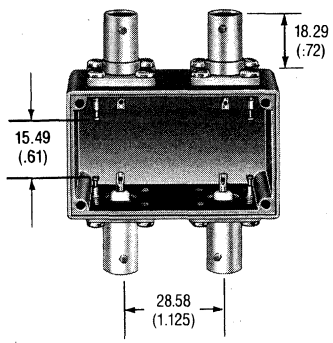


MODEL
3232

NET 23.95

COMPONENT MOUNTING BOX, CROSS CONNECTIONS

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Females with solder turret terminal screws.
2ND END: Same as first end.
Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.

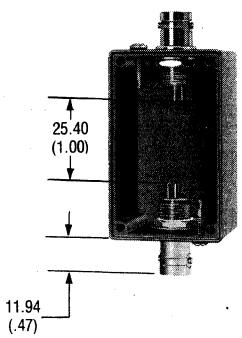


MODEL
3234

NET 26.95

COMPONENT MOUNTING BOX, TRIAXIAL FEMALE EACH END

See Model 2417 (page 50) for housing dimensions.
1ST END: Triaxial Female, two lug, with solder turret terminal screws.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 150°C. (+302°F.) Max.

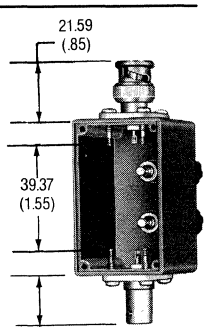


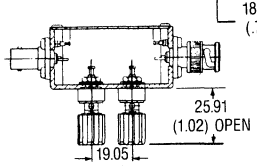
MODEL
5166

NET 31.95

COMPONENT MOUNTING BOX, BNC MALE TO BNC FEMALE WITH BINDING POSTS

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
CENTER: Double Binding Post with solder turret terminals. Brass, bright tin plated. Accepts standard banana plugs. Polycarbonate insulation. One black and one red.
2ND END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; + 115°C. (+239°F.) Max.





MODEL
3233

NET 27.50

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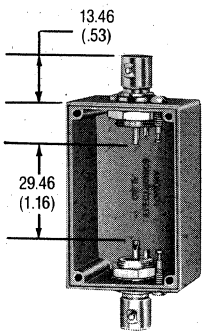
DIE CAST ALUMINUM BOXES—SIZE "B"

COMPONENT MOUNTING BOX, ISOLATED BNC FEMALE EACH END

See Model 2417 (page 50) for housing dimensions.
1ST END: Isolated BNC Female with solder turret terminal screw. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.



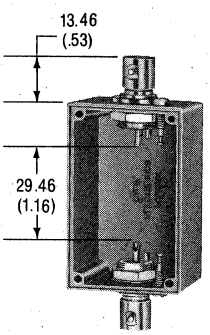
MODEL
3239

NET 24.95

COMPONENT MOUNTING BOX, ISOLATED 75 OHM BNC FEMALE EACH END

See Model 2417 (page 50) for housing dimensions.
1ST END: Isolated 75 Ohm BNC Female with solder turret terminal screw.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

NEW

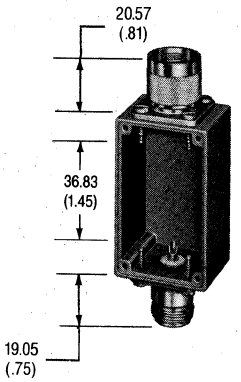


MODEL
5404

NET 24.95

COMPONENT MOUNTING BOX, TYPE "N" MALE TO TYPE "N" FEMALE

See Model 2417 (page 50) for housing dimensions.
1ST END: Type "N" Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Type "N" Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 1000 VRMS Max.; +150°C. (+302°F.) Max.

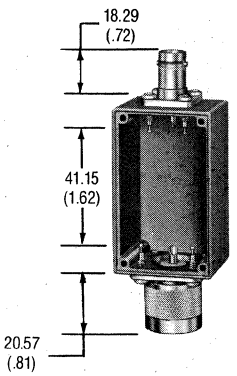


MODEL
2411

NET 29.95

COMPONENT MOUNTING BOX, BNC FEMALE TO TYPE "N" MALE

See Model 2417 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Type "N" Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +115°C. (+302°F.) Max.

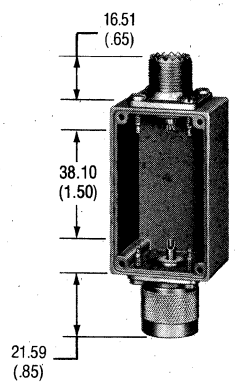


MODEL
2420

NET 29.95

COMPONENT MOUNTING BOX, UHF FEMALE TO UHF MALE

See Model 2417 (page 50) for housing dimensions.
1ST END: UHF Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: UHF Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.



MODEL
2413

NET 31.95

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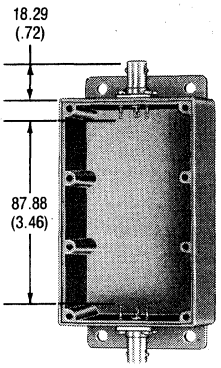
DIE CAST ALUMINUM BOXES—SIZE "C", "D", & "J"

SIZE "C"
COMPONENT MOUNTING BOX, BNC FEMALE EACH END

See Model 2901 (page 51) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

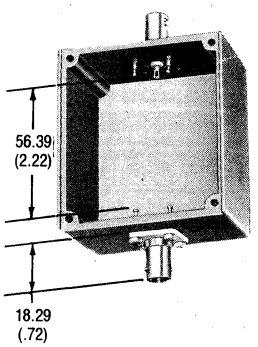


MODEL 2902

NET 23.95

SIZE "D"
COMPONENT MOUNTING BOX, BNC FEMALE EACH END

See Model 3601 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

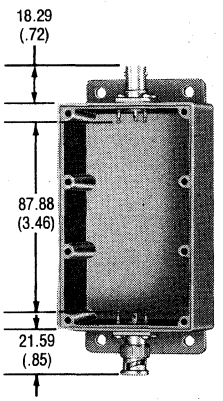


MODEL 3602

NET 19.95

SIZE "C"
COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE

See Model 2901 (page 51) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

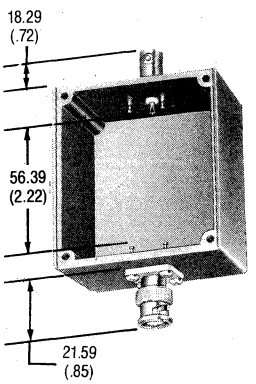


MODEL 2903

NET 26.25

SIZE "D"
COMPONENT MOUNTING BOX, BNC FEMALE TO BNC MALE

See Model 3601 (page 50) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

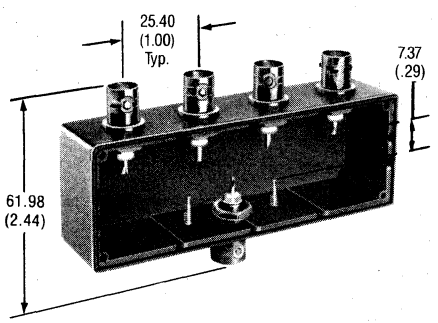


MODEL 3603

NET 22.95

SIZE "J"
COMPONENT MOUNTING BOX FIVE BNC FEMALES

See Model 4655 (page 51) for housing dimensions.
1ST END: BNC Females. Nominal Impedance: 50 Ohms.
2ND END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with cover and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.



MODEL 4656

NET 34.95

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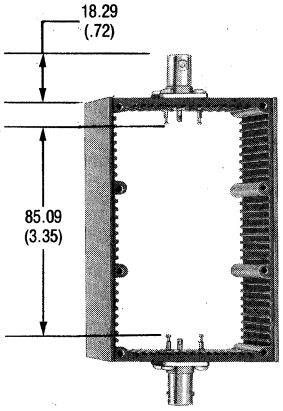
POMONA

EXTRUDED ALUMINUM BOXES—SIZES "F" & "G"

SIZE "F" COMPONENT MOUNTING BOX, BNC FEMALE EACH END

See Model 3301 (page 52) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end. (Supplied with covers and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

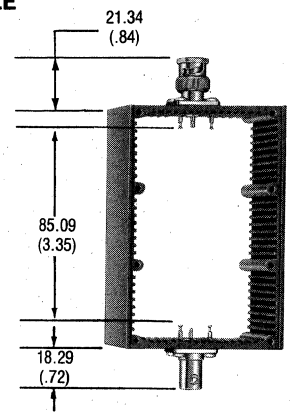


MODEL
3302

NET 31.95

SIZE "F" COMPONENT MOUNTING BOX, BNC MALE TO BNC FEMALE

See Model 3301 (page 52) for housing dimensions.
1ST END: BNC Male with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
(Supplied with covers and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

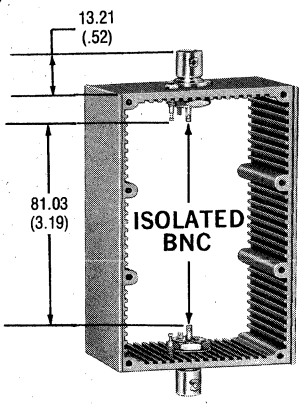


MODEL
3303

NET 33.95

SIZE "F" COMPONENT MOUNTING BOX, ISOLATED BNC FEMALES

See Model 3301 (page 52) for housing dimensions.
1ST END: Isolated BNC Female with solder turret terminal screw. Nominal Impedance: 50 Ohms.
2ND END: Same as first end. (Supplied with covers and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.

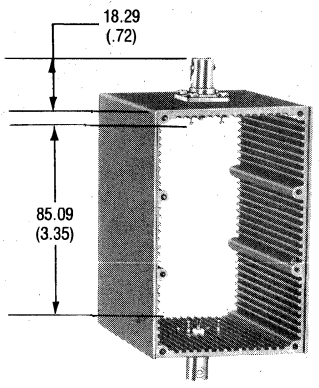


MODEL
3307

NET 39.95

SIZE "G" COMPONENT MOUNTING BOX, BNC FEMALE EACH END

See Model 3311 (page 52) for housing dimensions.
1ST END: BNC Female with solder turret terminal screws. Nominal Impedance: 50 Ohms.
2ND END: Same as first end. (Supplied with covers and cover screws.)
RATING: Operating Voltage: 500 VRMS Max.; +150°C. (+302°F.) Max.



MODEL
3312

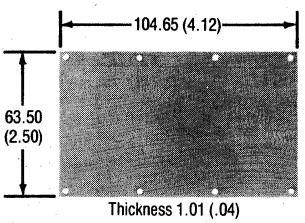
NET 34.25

RFI/EMC COVER GASKET FOR SIZE "F," "G," "H," & "K" BOXES

This cover gasket greatly improves electromagnet shielding effectiveness of POMONA boxes. Fine monel wires embedded in silicone provide an effective shield against radio frequency interference greatly improving electromagnetic compatibility. Adhesive back allows simple installation.

Gasket fits Models 3301, 3302, 3303, 3306, 3307, 3311, 3312, 3316, 3742, 3743, 4720 and 4739.

(Gasket attaches directly to cover.)



MODEL
4775

NET 14.95

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REPLACEMENT COVER/MOUNTING COVER

REPLACEMENT COVER

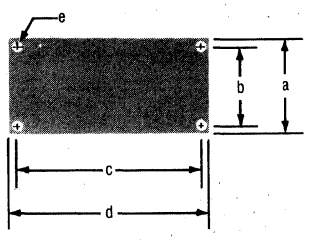

FIGURE 1

MOUNTING COVER

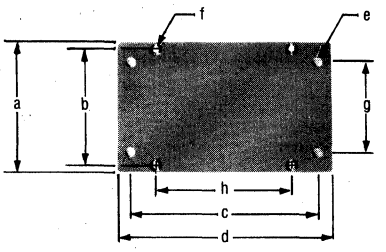

FIGURE 2

REPLACEMENT COVER

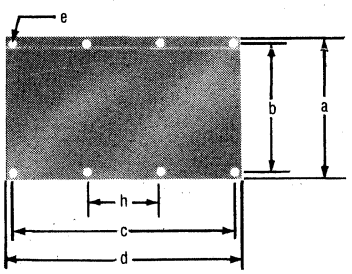

FIGURE 3

MOUNTING COVER

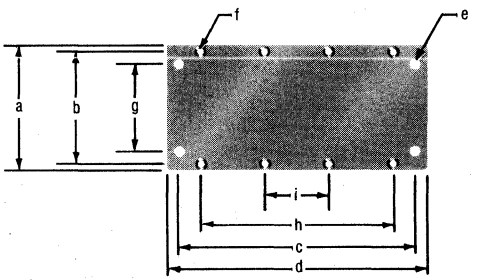

FIGURE 4

MODEL	Box Size	Fig.	Mat.*	Mat. Thickness	a	b	c	d	e See Note	f See Note	g	h	i	NET
4742	Miniature	1	1100-H14	1.02 (.040)	26.42 (1.04)	21.41 (.843)	30.94 (1.218)	35.81 (1.41)	1	—	—	—	—	.95
3729	Miniature	2	6061-T6	2.03 (.080)	29.21 (1.15)	21.41 (.843)	55.73 (2.194)	63.50 (2.50)	3	7	21.41 (.843)	30.94 (1.218)	—	2.50
4245	A	1	1100-H14	1.02 (.040)	26.16 (1.03)	21.41 (.843)	49.99 (1.968)	54.86 (2.16)	1	—	—	—	—	1.50
3728	A	2	6061-T6	2.03 (.080)	29.21 (1.15)	21.41 (.843)	74.78 (2.944)	82.55 (3.25)	3	7	21.41 (.843)	49.99 (1.968)	—	2.50
4246	B	1	1100-H14	1.02 (.040)	32.51 (1.28)	27.76 (1.093)	49.99 (1.968)	54.86 (2.16)	1	—	—	—	—	1.50
3719	B	2	6061-T6	2.03 (.080)	35.56 (.140)	27.76 (1.093)	74.78 (2.944)	82.55 (3.25)	3	7	27.76 (1.093)	49.99 (1.968)	—	2.75
4248	C	3	1100-H14	2.03 (.080)	63.50 (2.50)	57.15 (2.250)	98.43 (3.875)	104.65 (4.12)	2	—	—	32.92 (1.292)	—	3.10
4726	D	1	1100-H14	1.60 (.063)	62.99 (2.48)	57.15 (2.250)	66.68 (2.625)	75.95 (2.99)	4	—	—	—	—	2.75
3958	D	2	1100-H14	2.03 (.080)	63.50 (2.50)	57.15 (2.250)	91.90 (3.618)	104.65 (4.12)	6	8	44.45 (1.750)	66.67 (2.625)	—	6.95
4416	E	3	1100-H14	2.03 (.080)	102.11 (4.02)	96.52 (3.800)	200.66 (7.900)	206.25 (8.12)	2	—	—	68.88 (2.633)	—	6.50
4247	F, G, H, & K	3	1100-H14	2.03 (.080)	63.50 (2.50)	57.15 (2.250)	98.43 (3.875)	104.65 (4.12)	9	—	—	32.82 (1.292)	—	3.95
3328	F, G, H, & K	4	6061-T6	2.03 (.080)	63.50 (2.50)	57.15 (2.250)	120.65 (4.750)	133.35 (5.25)	6	9	44.45 (1.750)	98.43 (3.875)	32.79 (1.291)	6.50
4631	I	1	1100-H14	2.03 (.080)	101.60 (4.00)	94.44 (3.600)	91.44 (3.600)	101.60 (4.00)	5	—	—	—	—	4.95
4642	I	2	1100-H14	2.03 (.080)	101.60 (4.00)	91.44 (3.600)	114.30 (4.500)	127.00 (5.00)	6	5	66.68 (2.625)	91.44 (3.600)	—	4.85
4658	J	1	1100-H14	1.60 (.063)	34.80 (1.37)	30.48 (1.200)	100.33 (3.950)	104.65 (4.12)	1	—	—	—	—	3.75
5198	L	1	1100-H14	1.60 (.063)	72.90 (2.87)	68.58 (2.700)	144.78 (5.700)	149.10 (5.87)	1	—	—	—	—	4.95

NOTES:

1) 2.44 (.096) 4 MTG Holes
2) 3.56 (.140) 8 MTG Holes
3) 3.81 (.150) 4 MTG Holes
4) 3.18 (.125) 4 MTG Holes
5) 3.56 (.140) 4 MTG Holes
6) 5.11 (.201) 4 MTG Holes
7) 2.54 (.100) with 1.40 (.055) Deep x 4.22 (.166) counterbore
8) 3.18 (.125) with 5.94 (.234) Dia x 82° countersink.
9) 3.56 (.140) Dia with 5.94 (.234) Dia x 82° countersink.
*All covers clear anodized per MIL-A-8625

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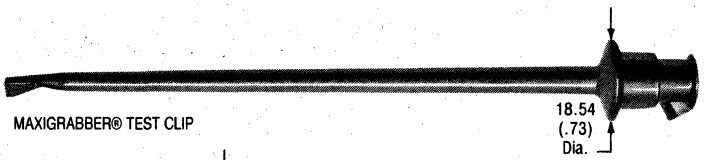
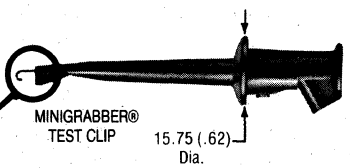
GRABBER TEST CLIPS

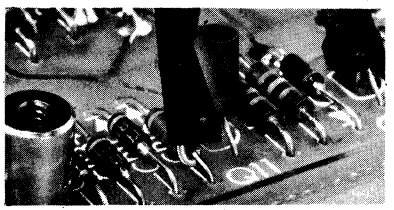
These plunger type action test clips are called Grabber test clips. The gold plated contact hook attaches rapidly to component leads and terminals. The specially designed tip (see illustration) slides easily on the 0.64 mm (.025) square wrapped wire terminals. The do-it-yourself Grabber test clips can be assembled quickly and easily by the user (see simplified instructions below). Grabber test clips can also be purchased as completed patch cords that are firmly molded together to provide a strong, reliable and integral unit.

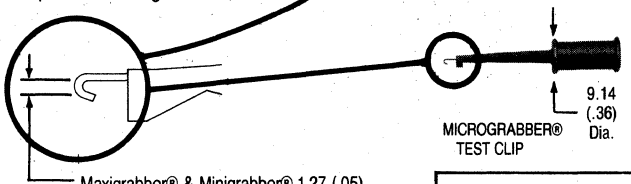
FEATURES:

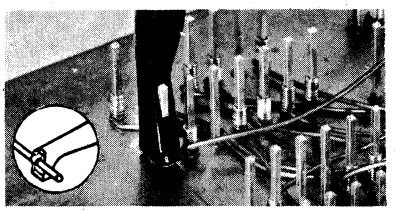
- Plunger type action between thumb and two fingers.
- Comfortable finger grip operation.
- Positive connection that won't pop off.
- No sharp teeth to damage or nick wires.

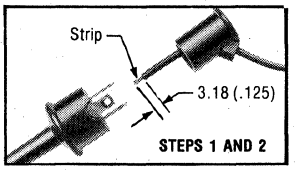






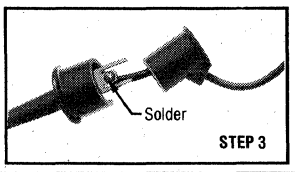


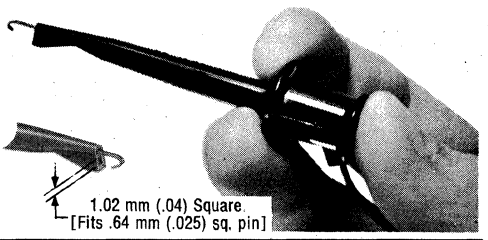




SIMPLIFIED ASSEMBLY PROCEDURE FOR DO-IT-YOURSELF GRABBER TEST CLIPS

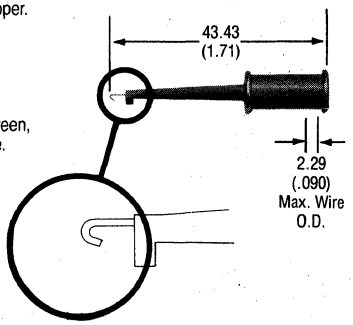
1. Pull off thumb cap to expose contact connection.
2. Thread wire through thumb cap and strip 2.18 mm (.125).
3. Insert stripped end through tapered hole on contact, and solder.
   NOTE: Stripped end should be placed into the large opening of the tapered hole.
4. Slide thumb cap back onto contact.





DO-IT-YOURSELF MICROGRABBER® TEST CLIP

MATERIAL: Contact, beryllium copper.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC; 3 Amps; + 102°C. (+216°.) Max.
***STD COLOR:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



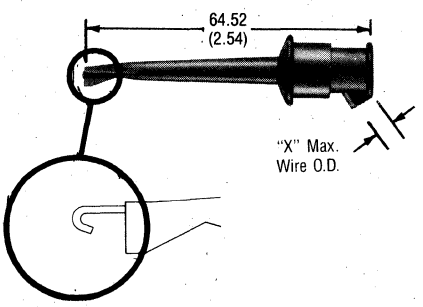
MODEL
4233-*

(See assembly details above.)

NET 1.20 EA.
(Pkg. Ten Per Color)

DO-IT-YOURSELF MINIGRABBER® TEST CLIP

MATERIAL: Contact, beryllium copper.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 3000 WVDC; 12 Amps. + 102°C. (+216°.) Max.
***STD COLOR:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



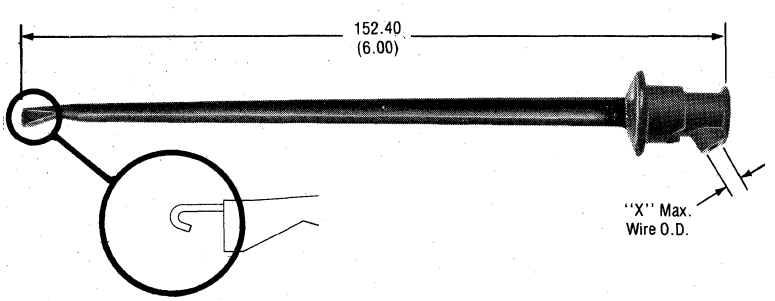
MODEL	"X" Dia.
3925-*	2.29 (.090)
4555-*	3.66 (.144)

(See assembly details above.)

NET 1.15 EA.
(Pkg. Ten Per Color)

DO-IT-YOURSELF MAXIGRABBER® TEST CLIP

The Maxigrabber® test clip is an extended do-it-yourself Grabber test clip designed specifically for high-rise packaging of electronic components where depth of testing point is a key factor. The Maxigrabber® test clip will fit entry holes as small as 6.35 mm (.250) dia. and the unit is completely field serviceable.
MATERIAL: Contact, beryllium copper.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 3000 WVDC; 12 Amps. + 102°C. (+216°.) Max.
***STD COLOR:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL	"X" Dia.
4225-*	2.29 (.090)
4565-*	3.66 (.144)

(See assembly details above.)

NET 2.95

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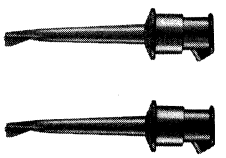
POMONA

GRABBER TEST CLIPS

DO-IT-YOURSELF MINIGRABBER® TEST CLIP KIT

Kit contains 2 pcs. of Model 3925.
MATERIAL: Contact, beryllium copper.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 3000 WVDC; 12 Amps; +102°C. (+216°F.) Max.
***KIT CONTAINS:** -02, one black and one red; -00, two black; -11, two brown; -22, two red; -33, two orange; -44, two yellow; -55, two green; -66, two blue; -77, two violet; -88, two gray; -99, two white.



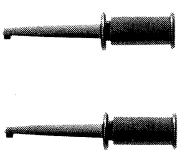
MODEL
4176-*

(See assembly details on page 60.)

NET 2.50 KIT

DO-IT-YOURSELF MICROGRABBER® TEST CLIP KIT

Kit contains 2 pcs. of Model 4233.
MATERIAL: Contact, beryllium copper.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC; 3 Amps; +102°C. (+216°F.) Max.
***KIT CONTAINS:** -02, one black and one red; -00, two black; -11, two brown; -22, two red; -33, two orange; -44, two yellow; -55, two green; -66, two blue; -77, two violet; -88, two gray; -99, two white.



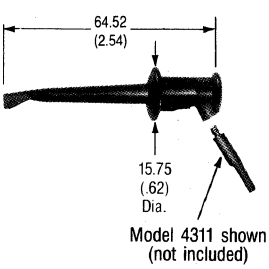
MODEL
4743-*

(See assembly details on page 60.)

NET 2.65 KIT

MINIGRABBER® TEST CLIP KIT WITH 6-32 THREAD

This Grabber test clip can be used with oscilloscope leads equipped with a 6-32 screw.
MATERIAL: Contact, beryllium copper. Threaded insert, brass.
FINISH: Contact, gold plated.
INSULATION: Glass filled nylon.
RATING: 3000 WVDC, 12 Amps, +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



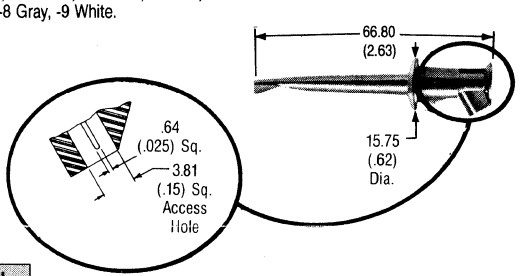
Model 4311 shown (not included)

MODEL
4011-*

NET 2.75

MINIGRABBER® TEST CLIP WITH 0.64 mm (.025) SQUARE PIN

MATERIAL: Contact, beryllium copper. Square pin, phosphor bronze.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 2500 WVDC; 3 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

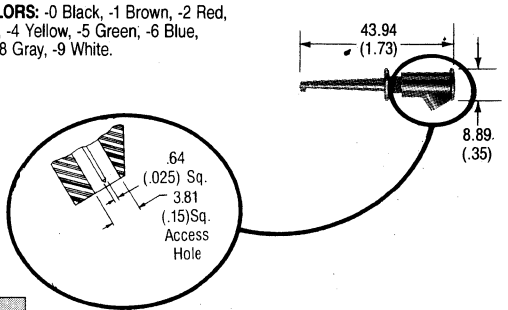


MODEL
4587-*

NET 3.15

MICROGRABBER® TEST CLIP WITH 0.64 mm (.025) SQUARE PIN

MATERIAL: Contact, beryllium copper. Square pin, phosphor bronze.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC; 3 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL
4521-*

NET 2.15

6-32 SCREW-ON TIP

Can be crimped or soldered to wire. Supplied with shrink sleeving. Mates with Model 4011.
MATERIAL: Brass.
FINISH: Nickel plated.
INSULATION: Shrink sleeving.



MODEL
4311

NET 1.95

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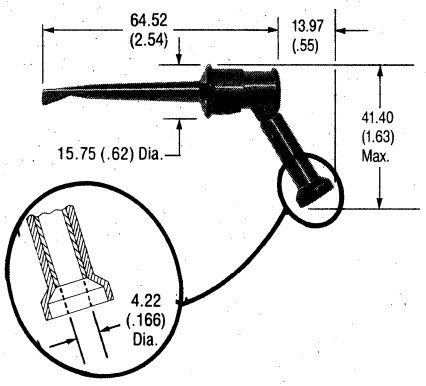
GRABBER TEST CLIPS

MINIGRABBER® TEST CLIP WITH BANANA JACK

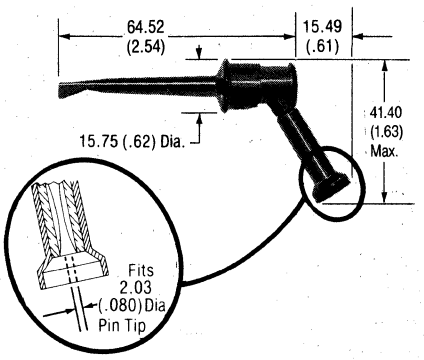


This Minigrabber® test clip has a standard banana jack built right into the plunger. Excellent for attaching the Grabber test clip directly to the end of a banana plug patch cord.
1ST END: Minigrabber®. Contact, beryllium copper, gold plated.
INSULATION: Glass filled nylon.
2ND END: Banana jack. Brass, nickel plated.
RATING: 3000 WVDC; 12 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MODEL
4723-*

NET 3.50

MINIGRABBER® TEST CLIP WITH PIN JACK

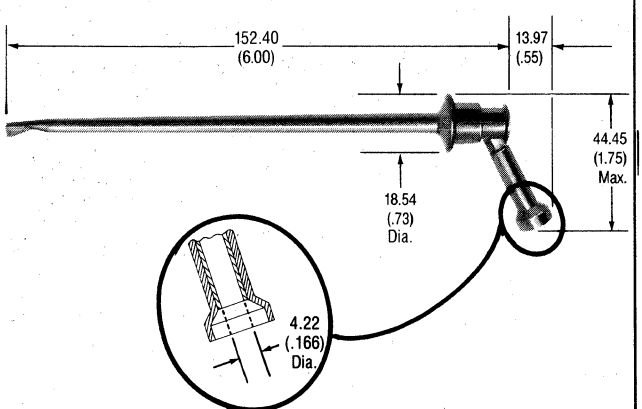


This Minigrabber® test clip has a pin jack built right into the plunger. Excellent for attaching the Grabber test clip directly to the end of a pin tip patch cord or it can be used as an adapter for miniature test probes with 2.03 mm (.080) tips.
1ST END: Minigrabber®. Contact, beryllium copper, gold plated.
INSULATION: Glass filled nylon.
2ND END: Pin Jack. Spring, beryllium copper, gold plated.
RATING: 2500 WVDC; 5 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red, -9 White.

MODEL
4826-*

NET 4.50

MAXIGRABBER® TEST CLIP WITH BANANA JACK

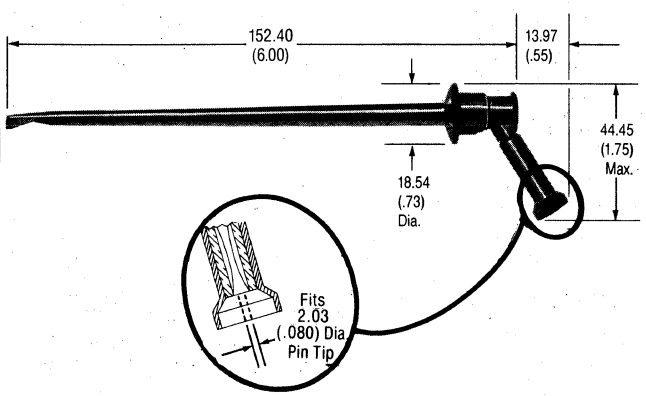


This Maxigrabber® test clip has a standard banana jack built right into the plunger. Excellent for attaching the Grabber test clip directly to the end of a banana plug patch cord.
1ST END: Maxigrabber®. Contact, beryllium copper, gold plated.
INSULATION: Glass filled nylon.
2ND END: Banana jack. Brass, nickel plated.
RATING: 3000 WVDC; 12 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MODEL
4724-*

NET 4.95

MAXIGRABBER® TEST CLIP WITH PIN JACK



This Maxigrabber® test clip has a pin jack built right into the plunger. Excellent for attaching the Grabber test clip directly to the end of a pin tip patch cord.
1ST END: Maxigrabber®. Contact, beryllium copper, gold plated.
INSULATION: Glass filled nylon.
2ND END: Pin Jack. Spring, beryllium copper, gold plated.
RATING: 2500 WVDC; 5 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
4827-*

NET 5.75

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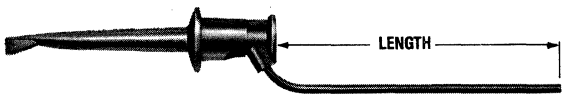
MINIGRABBER® PATCH CORDS

MINIGRABBER® TEST CLIP ONE END ONLY

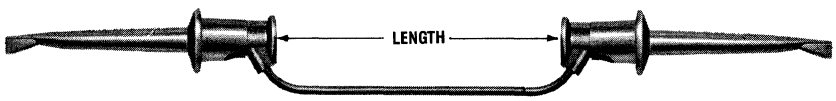


MODEL	Length	NET
3780-8-*	203.2 (8.0)	1.80
3780-12-*	304.8 (12.0)	1.80
3780-24-*	609.6 (24.0)	1.80
3780-36-*	914.4 (36.0)	1.80
3780-48-*	1219.2 (48.0)	2.00
3780-60-*	1524.0 (60.0)	2.20

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: None

RATING: 3000 WVDC; 12 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MINIGRABBER® TEST CLIP EACH END

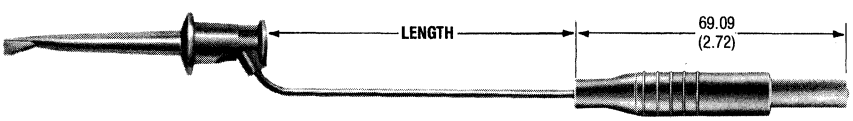


MODEL	Length	NET
3781-8-*	203.2 (8.0)	2.95
3781-12-*	304.8 (12.0)	2.95
3781-18-*	457.2 (18.0)	2.95
3781-24-*	609.6 (24.0)	2.95
3781-36-*	914.4 (36.0)	2.95
3781-48-*	1219.2 (48.0)	3.15
3781-60-*	1524.0 (60.0)	3.35

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Same as first end.

RATING: 3000 WVDC; 12 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MINIGRABBER® TEST CLIP TO RETRACTABLE SHEATH BANANA PLUG

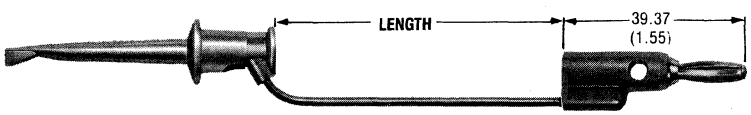


MODEL	Length	NET
5270-12-*	304.8 (12.0)	4.95
5270-24-*	609.6 (24.0)	4.95
5270-36-*	914.4 (36.0)	4.95
5270-48-*	1219.2 (48.0)	5.15
5270-60-*	1524.0 (60.0)	5.35

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, nylon.

RATING: 1200V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MINIGRABBER® TEST CLIP TO STACKING BANANA PLUG

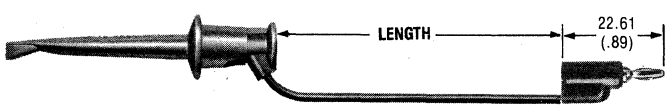


MODEL	Length	NET
3782-12-*	304.8 (12.0)	2.95
3782-24-*	609.6 (24.0)	2.95
3782-36-*	914.4 (36.0)	2.95
3782-48-*	1219.2 (48.0)	3.15
3782-60-*	1524.0 (60.0)	3.35

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.

RATING: 3000 WVDC; 12 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MINIGRABBER® TEST CLIP TO STACKING MINIATURE BANANA PLUG



MODEL	Length	NET
3784-12-*	304.8 (12.0)	3.45
3784-24-*	609.6 (24.0)	3.45
3784-36-*	914.4 (36.0)	3.45
3784-48-*	1219.2 (48.0)	3.65
3784-60-*	1524.0 (60.0)	3.85

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Polypropylene insulation.

RATING: 2500 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

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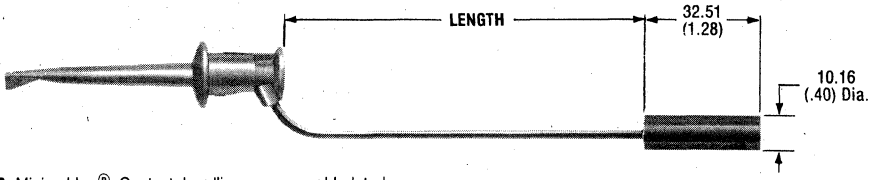
MINIGRABBER® PATCH CORDS

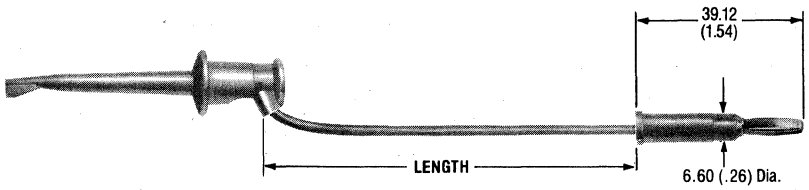
MINIGRABBER® TEST CLIP TO IN-LINE BANANA JACK



MODEL	Length	NET
4649-12-*	304.8 (12.0)	4.15
4649-24-*	609.6 (24.0)	4.15
4649-36-*	914.4 (36.0)	4.15
4649-48-*	1219.2 (48.0)	4.35
4649-60-*	1524.0 (60.0)	4.55

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.
2ND END: In-line Banana Jack. Brass, nickel plated. Polypropylene insulation.
RATING: 3000 WVDC; 12 Amps; + 55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

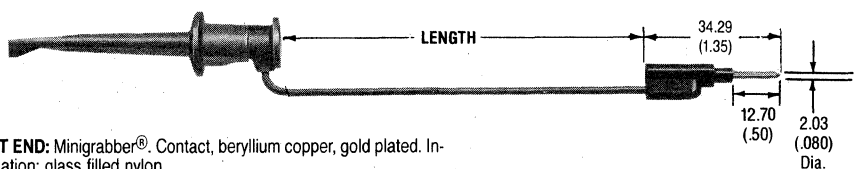
MINIGRABBER® TEST CLIP TO IN-LINE BANANA PLUG



MODEL	Length	NET
4650-12-*	304.8 (12.0)	3.65
4650-24-*	609.6 (24.0)	3.65
4650-36-*	914.4 (36.0)	3.65
4650-48-*	1219.2 (48.0)	3.85
4650-60-*	1524.0 (60.0)	4.05

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.
2ND END: In-line Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.
RATING: 3000 WVDC; 12 Amps; + 55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

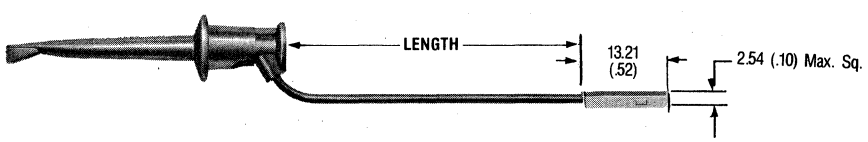
MINIGRABBER® TEST CLIP TO STACKING PIN TIP PLUG



MODEL	Length	NET
3785-12-*	304.8 (12.0)	3.75
3785-24-*	609.6 (24.0)	3.75
3785-36-*	914.4 (36.0)	3.75
3785-48-*	1219.2 (48.0)	3.95
3785-60-*	1524.0 (60.0)	4.15

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.
2ND END: Stacking Pin Tip Plug. Brass body, beryllium copper spring, gold plated. Polypropylene insulation.
RATING: 3000 WVDC; 5 Amps; + 55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

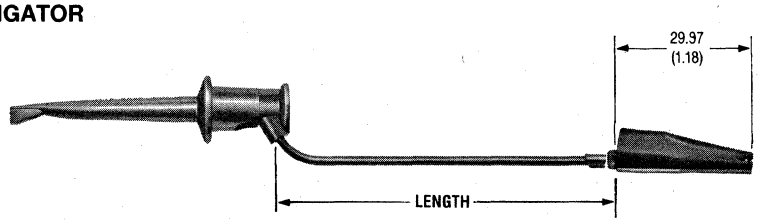
MINIGRABBER® TEST CLIP TO 0.64 mm (.025) SQUARE PIN RECEPTACLE



MODEL	Length	NET
3783-12-*	304.8 (12.0)	3.15
3783-24-*	609.6 (24.0)	3.15
3783-36-*	914.4 (36.0)	3.15

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 22 AWG, 26 × 36 t.c., PVC insulated. 1.63 mm (.064) O.D.
2ND END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation: ABS.
RATING: 1000 WVDC; 3 Amps; + 50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MINIGRABBER® TEST CLIP TO MINIGATOR



MODEL	Length	NET
4652-12-*	304.8 (12.0)	3.95
4652-24-*	609.6 (24.0)	3.95
4652-36-*	914.4 (36.0)	3.95
4652-48-*	1219.2 (48.0)	4.15
4652-60-*	1524.0 (60.0)	4.35

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Minigator. Steel, cadimium plated. Insulation; Vinyl.
RATING: 3000 WVDC; 5 Amps; + 50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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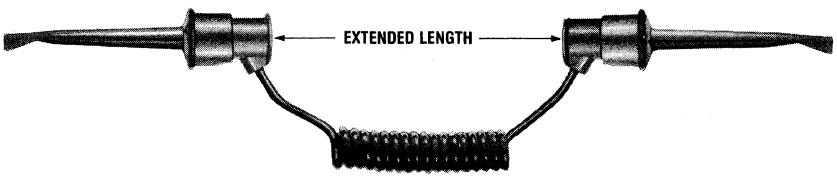
MINIGRABBER® PATCH CORDS

MINIGRABBER® EACH END WITH RETRACTILE (COILED) CORD

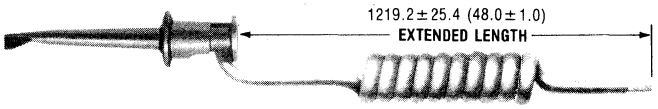


MODEL	Length	NET
5201-36-*	914.4 (36.0)	7.95
5201-48-*	1219.2 (48.0)	8.85
5201-60-*	1524.0 (60.0)	9.75

Permits the use of one size patch cord in place of many various lengths. (Replaces Model 5161)
1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, nylon.
WIRE: 26 AWG, 10 × 36 non-tinned copper, polyurethane insulated, 2.24 mm (.088) O.D.

2ND END: Same as first end.
RATING: 1000 WVDC; 3 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MINIGRABBER® ONE END ONLY WITH RETRACTILE (COILED) CORD

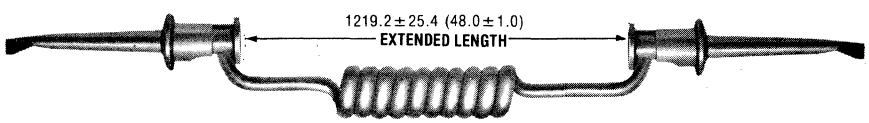


MODEL	Extended Length
4536-48-*	1219.2 (48.0)

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 42 × 36 t.c., polyurethane insulated, 3.63 mm (.143) O.D.

2ND END: None
RATING: 3000 VDC Int.; 270 VDC, 90 VAC cont. duty; 5 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red. **NET 6.95**

MINIGRABBER® EACH END WITH RETRACTILE (COILED) CORD

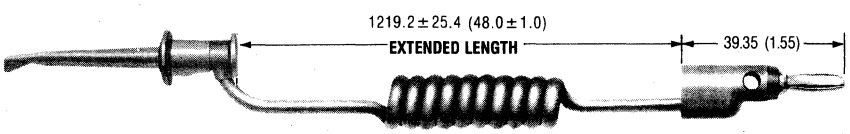


MODEL	Extended Length
4537-48-*	1219.2 (48.0)

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 42 × 36 t.c., polyurethane insulated, 3.63 mm (.143) O.D.

2ND END: Same as first end.
RATING: 3000 VDC Int.; 270 VDC, 90 VAC cont. duty; 5 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red. **NET 8.75**

MINIGRABBER® TO STACKING BANANA PLUG WITH RETRACTILE (COILED) CORD



MODEL	Extended Length
4538-48-*	1219.2 (48.0)

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 42 × 36 t.c., Polyurethane insulated, 3.63 mm (.143) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.
RATING: 3000 VDC Int.; 270 VDC, 90 VAC cont. duty; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red. **NET 8.25**

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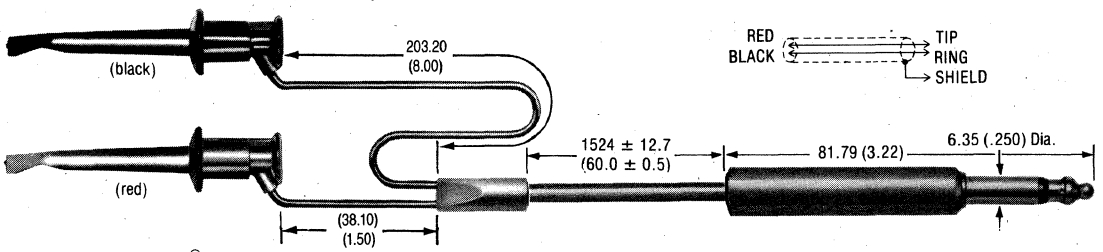
MINIGRABBER® PATCH CORDS

MINIGRABBER® TEST CLIPS TO PJ-051 (WE310) PHONE PLUG



MODEL
4812-J-60

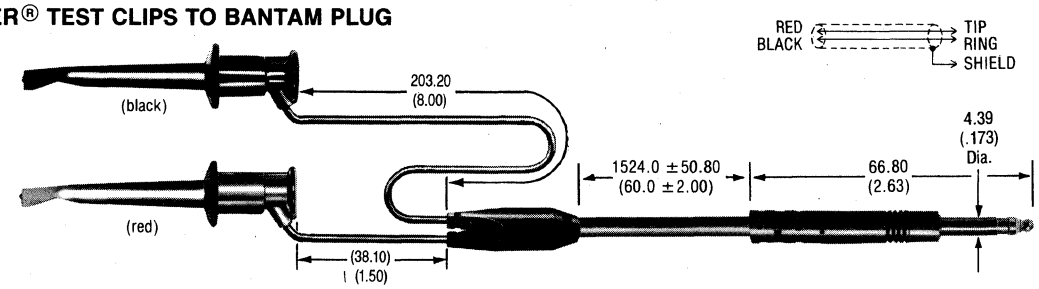
1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.

CABLE: Two conductor shielded microphone, 22 AWG, 5.87 mm (.231) O.D. Y-Mold insulation; PVC, gray.

2ND END: PJ-051 Phone Plug. Brass. Insulation; phenolic, red.
RATING: 500 V. Peak; +50°C. (+122°F.) Max.

NET 27.95

MINIGRABBER® TEST CLIPS TO BANTAM PLUG



MODEL
5019-60

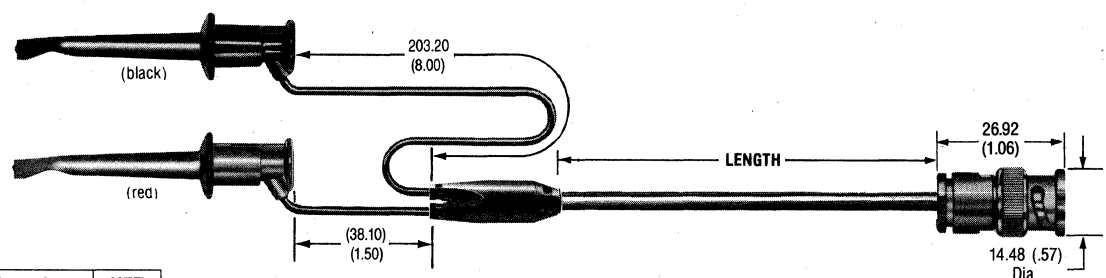
1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.

CABLE: Two conductor stranded copper, 26 AWG, 4.70 mm (.185) O.D. Y-Mold insulation; PVC, gray.

2ND END: Bantam Plug, three conductor. Brass. Insulation; PVC, black.
RATING: 500 V. Peak; +50°C. (+122°F.) Max.

NET 22.95

MINIGRABBER® TEST CLIPS TO BNC MALE

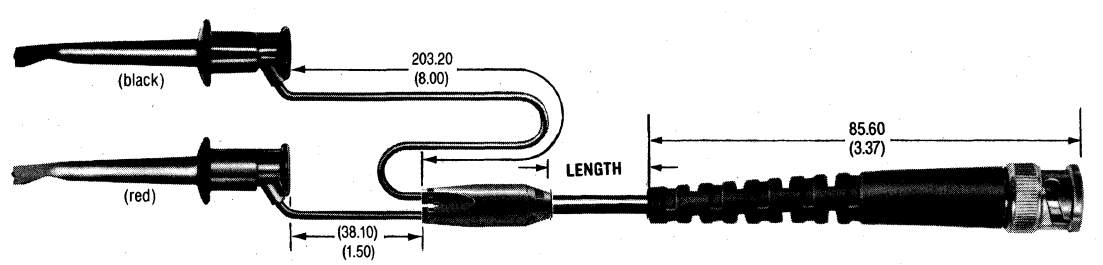


MODEL	Length	NET
3787-C-18	457.2 (18.0)	11.95
3787-C-24	609.6 (24.0)	11.95
3787-C-36	914.4 (36.0)	11.95
3787-C-48	1219.2 (48.0)	12.55
3787-C-60	1524.0 (60.0)	13.15

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Shielded coax., RG 58C/U, 4.95 mm (.195) O.D. Y-Mold insulation; PVC, black.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

MINIGRABBER® TEST CLIPS TO BNC MALE



RG58C/U	NET	RG174/U	Length	NET
5187-C-24	11.95	**5187-K-24**	609.6 (24.0)	16.95
5187-C-36	11.95	**5187-K-36**	914.4 (36.0)	16.95
5187-C-48	12.55	**5187-K-48**	1219.2 (48.0)	17.55
5187-C-60	13.15	**5187-K-60**	1524.0 (60.0)	18.15

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Type C, shielded coax., RG 58C/U, 4.95 mm (.195) O.D.; Type K, shielded coax., RG 174/U, 2.54 mm (.100) O.D. Y-Mold insulation; PVC, black.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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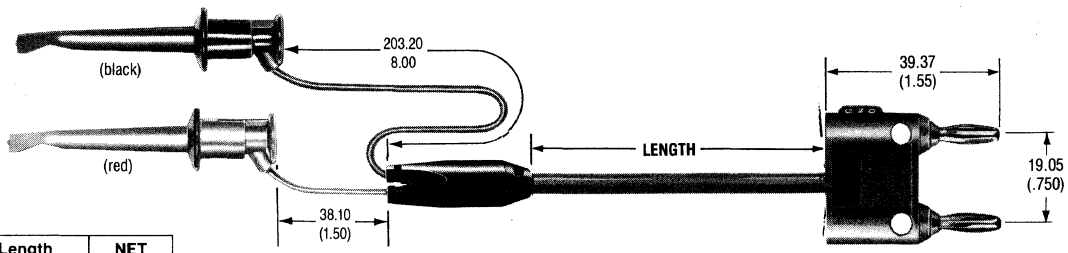
MINIGRABBER® /MICROGRABBER® PATCH CORDS

MINIGRABBER® TEST CLIPS TO DOUBLE BANANA PLUG



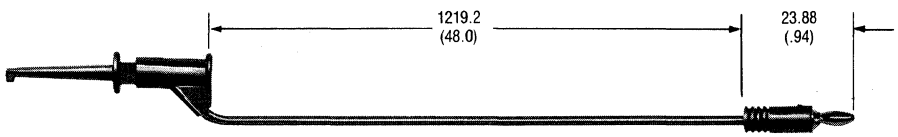
MODEL	Length	NET
3786-C-18	457.2 (18.0)	11.65
3786-C-24	609.6 (24.0)	11.65
3786-C-36	914.4 (36.0)	11.65
3786-C-48	1219.2 (48.0)	12.25
3786-C-60	1524.0 (60.0)	12.85

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.

CABLE: Shielded coax., RG 58C/U, 4.95 mm (.195) O.D., Y-Mold Insulation. PVC, Black.

2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
RATING: 1400 VRMS; +50°C. (+122°F.) Max.

MICROGRABBER® TO MINIATURE BANANA PLUG



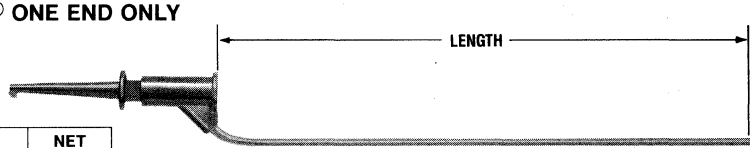
MODEL
4762-48-*

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Polypropylene insulation.

RATING: 1000 WVDC; 3 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 4.75

MICROGRABBER® ONE END ONLY

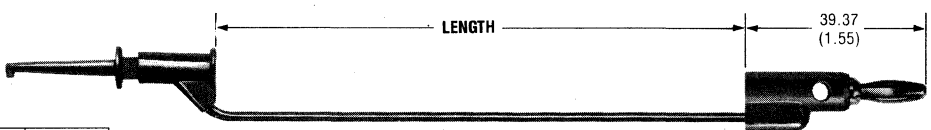


MODEL	Length	NET
5043-8-*	203.2 (8.0)	3.15
5043-12-*	304.8 (12.0)	3.15
5043-24-*	609.6 (24.0)	3.15
5043-36-*	914.4 (36.0)	3.15
5043-48-*	1219.2 (48.0)	3.35
5043-60-*	1524.0 (60.0)	3.55

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: None.
RATING: 1000 WVDC; 3 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MICROGRABBER® TO STACKING BANANA PLUG

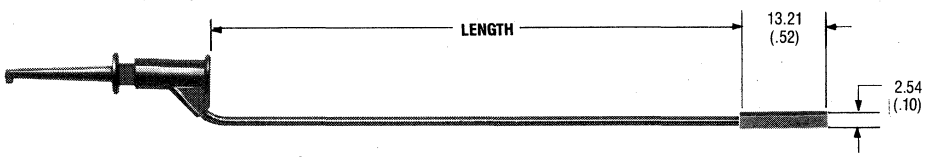


MODEL	Length	NET
5053-12-*	304.8 (12.0)	4.50
5053-24-*	609.6 (24.0)	4.50
5053-36-*	914.4 (36.0)	4.50
5053-48-*	1219.2 (48.0)	4.70
5053-60-*	1524.0 (60.0)	4.90

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.

RATING: 1000 WVDC; 3 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MICROGRABBER® TO 0.64 mm (.025) SQUARE PIN RECEPTACLE



MODEL	Length	NET
4919-12-*	304.8 (12.0)	3.75
4919-24-*	609.6 (24.0)	3.75
4919-36-*	914.4 (36.0)	3.75

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.

RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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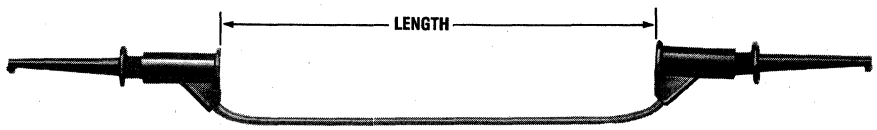
MICROGRABBER® PATCH CORDS

MICROGRABBER® EACH END

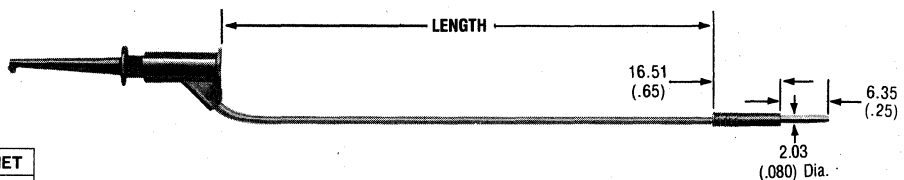


MODEL	Length	NET
4613-12*	304.8(12.0)	4.75
4613-24*	609.6(24.0)	4.75
4613-36*	914.4(36.0)	4.75
4613-48*	1219.2(48.0)	4.95
4613-60*	1524.0(60.0)	5.15

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 1000 WVDC, 3 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MICROGRABBER® TEST CLIP TO PIN TIP PLUG PATCH CORD

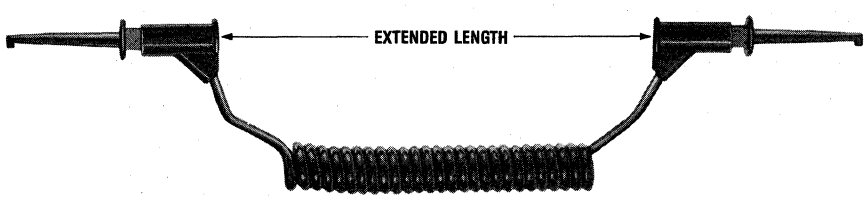


MODEL	Length	NET
4716-12*	304.8(12.0)	3.95
4716-24*	609.6(24.0)	3.95
4716-36*	914.4(36.0)	3.95
4716-48*	1219.2(48.0)	4.15
4716-60*	1524.0(60.0)	4.35

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Pin tip plug. Brass, gold plated. Insulation; polypropylene.
RATING: 1000 WVDC, 3 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MICROGRABBER® EACH END WITH RETRACTILE (COILED) CORD

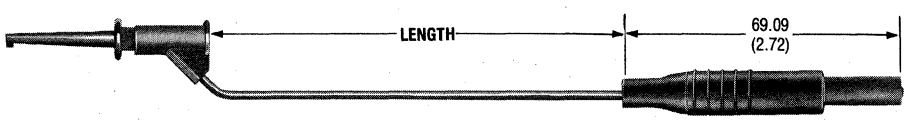


MODEL	Length	NET
5200-36*	914.4(36.0)	7.95
5200-48*	1219.2(48.0)	8.85
5200-60*	1524.0(60.0)	9.75

Permits the use of one size patch cord in place of many various lengths. (Replaces Model 5160)
1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation, nylon.
WIRE: 26 AWG, 10 x 36 non-tinned copper, polyurethane insulated, 2.24 mm (.088) O.D.

2ND END: Same as first end.
RATING: 1000 WVDC, 3 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MICROGRABBER® TEST CLIP TO RETRACTABLE SHEATH BANANA PLUG



MODEL	Length	NET
5339-8*	203.2(8.0)	5.95
5339-12*	304.8(12.0)	5.95
5339-24*	609.6(24.0)	5.95
5339-36*	914.4(36.0)	5.95
5339-48*	1219.2(48.0)	6.15
5339-60*	1524.0(60.0)	6.35

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, nylon.
RATING: 1000 WVDC, 3 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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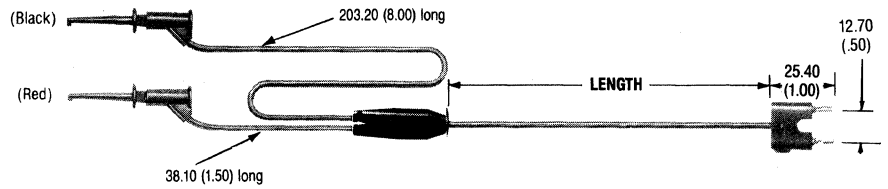
MICROGRABBER® PATCH CORDS

MICROGRABBER® TEST CLIPS TO MINIATURE DOUBLE BANANA PLUG

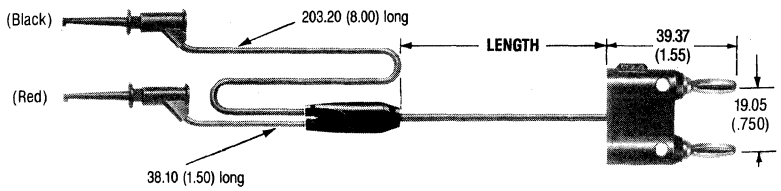


MODEL	Length	NET
4776-K-24	609.6 (24.0)	14.50
4776-K-36	914.4 (36.0)	14.50
4776-K-48	1219.2 (48.0)	15.10
4776-K-60	1524.0 (60.0)	15.70

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Shielded coax., RG 174/U 2.54 mm (.100) O.D. Y-Mold insulation; PVC, black.

2ND END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polyethylene, black.
RATING: 1000 WVDC; +50°C. (+122°F.) Max.

MICROGRABBER® TEST CLIPS TO DOUBLE BANANA PLUG

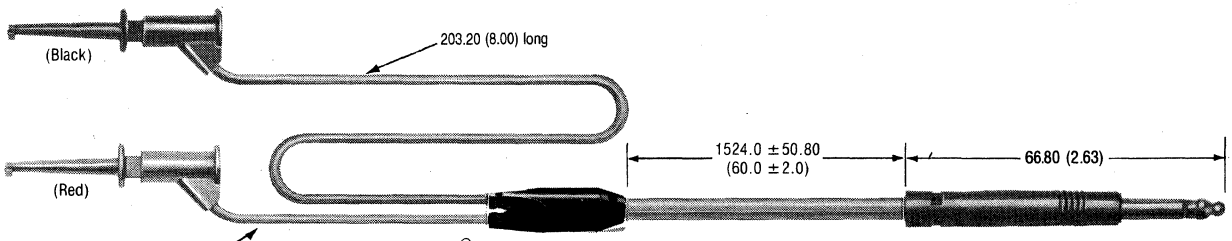


MODEL	Length	NET
4768-K-24	609.6 (24.0)	13.95
4768-K-36	914.4 (36.0)	13.95
4768-K-48	1219.2 (48.0)	14.55
4768-K-60	1524.0 (60.0)	15.15

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Shielded coax., RG 174/U 2.54 mm (.100) O.D. Y-Mold insulation; PVC, black.

2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
RATING: 1000 WVDC; +50°C. (+122°F.) Max.

MICROGRABBER® TEST CLIPS TO BANTAM PLUG



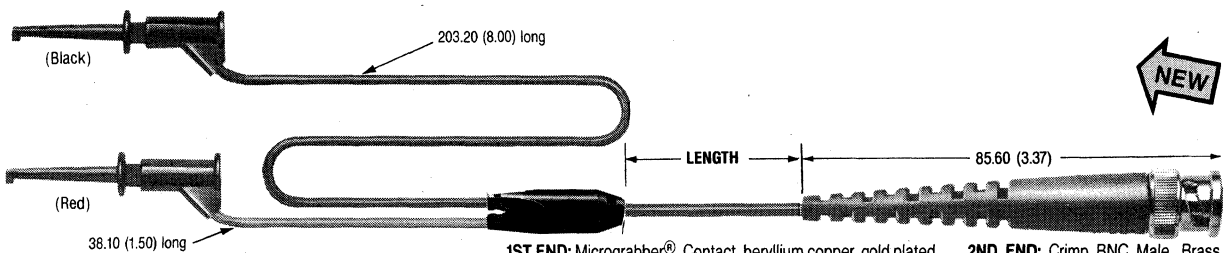
1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Two conductor stranded copper, 26 AWG, 4.57 mm (.180) O.D. Y-Mold insulation; PVC, gray.

2ND END: Bantam plug, three conductor. Brass. Insulation; PVC, black.
WIRING: Tip to red Micrograbber, ring to black, sleeve, no connection.
RATING: 500 V Peak; +50°C. (+122°F.) Max.

MODEL
4778-60

NET 29.75

MICROGRABBER® TEST CLIPS TO BNC MALE



NEW

RG 58C/U	NET	MODEL	Length	NET
4777-C-24	12.55	4777-K-24	609.6 (24.0)	18.75
4777-C-36	13.15	4777-K-36	914.4 (36.0)	18.75
4777-C-48	13.75	4777-K-48	1219.2 (48.0)	19.35
4777-C-60	14.35	4777-K-60	1524.0 (60.0)	19.95

1ST END: Micrograbber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One black and one red.
CABLE: Shielded coax., RG 58C/U 4.95 mm (.195) O.D. or RG 174/U 2.54 mm (.100) O.D. Y-Mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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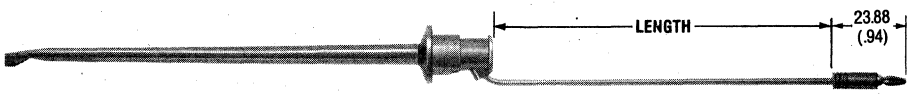
MAXIGRABBER® PATCH CORDS

MAXIGRABBER® TO MINIATURE BANANA PLUG

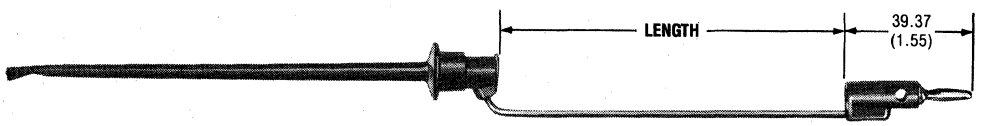


MODEL
4557-48-*

1ST END: Maxigrabber®. Contact, beryllium copper, gold plated. Insulation, glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Polypropylene insulation.
RATING: 2500 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 6.95

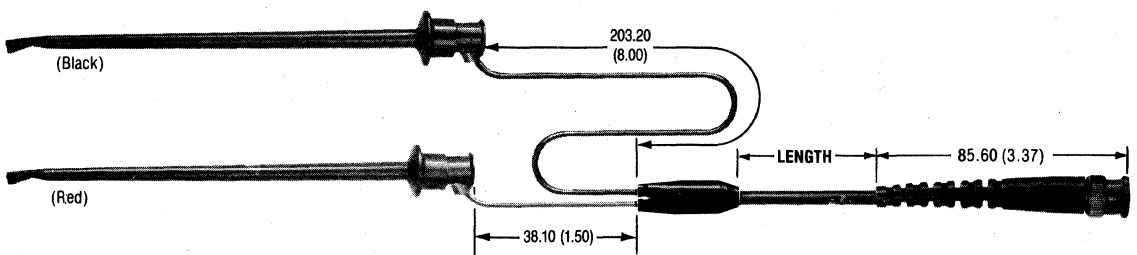
MAXIGRABBER® TO STACKING BANANA PLUG



MODEL	Length	NET
4996-12-*	304.8 (12.0)	6.75
4996-24-*	609.6 (24.0)	6.75
4996-36-*	914.4 (36.0)	6.75
4996-48-*	1219.2 (48.0)	6.95
4996-60-*	1524.0 (60.0)	7.15

1ST END: Maxigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.
RATING: 3000 WVDC; 12 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MAXIGRABBER® TEST CLIPS TO BNC MALE



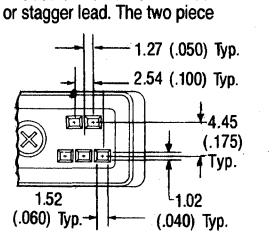
MODEL	Length	NET
4648-C-18	457.2 (18.0)	16.95
4648-C-24	609.6 (24.0)	16.95
4648-C-36	914.4 (36.0)	16.95
4648-C-48	1219.2 (48.0)	17.55
4648-C-60	1524.0 (60.0)	18.15

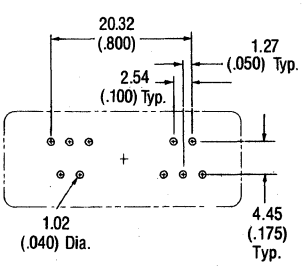
1ST END: Maxigrabber®. Contact, beryllium copper, gold plated. Insulation; glass filled nylon. One 203.20 mm (8.00) black and 38.10 mm (1.50) red.
CABLE: Shielded coax., RG 58C/U, 4.95 mm (.195) O.D. Y-Mold Insulation; PVC. Color; black.
2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Boot: PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

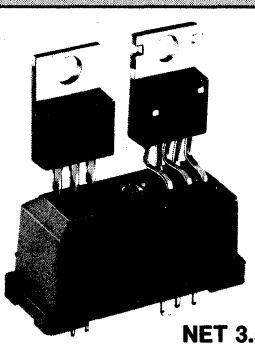
IC ACCESSORIES

TRANSISTOR "BURN-IN" SOCKET

This burn-in socket was specifically designed to test transistors and regulators where high currents and temperatures are encountered. The flat bladed contacts make it ideal for testing TO-92 or TO-220 configurations, both straight or stagger lead. The two piece design allows easy replacement of the contacts.
MATERIAL: Contacts, beryllium copper.
FINISH: Selectively gold plated 30 microinches, in contact area, remainder gold flashed.
INSULATION: Polyphenylene sulfide, UL 94V-O.
RATING: 100 WVDC, 10 Amps, +150°C. (+302°F.) Max.





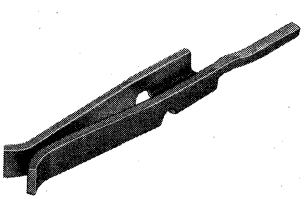


MODEL
5180

NET 3.50

REPLACEMENT CONTACTS FOR MODEL 5180

MATERIAL: Beryllium copper.
FINISH: Selectively gold plated 30 microinches in contact area, remainder gold flashed.
RATING: 10 Amps, +150°C. (+302°F.) Max.



MODEL
5239

NET 8.95 PKG.
(50 Per Pkg.)

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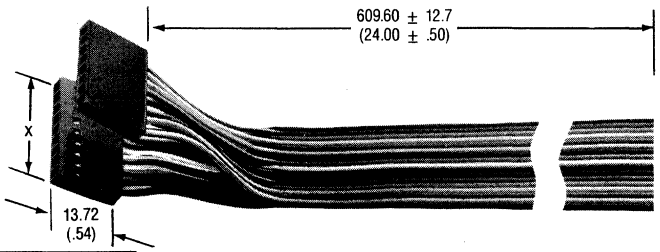
IC ACCESSORIES

IC JUMPER CABLE (CONNECTORS, ONE END ONLY)

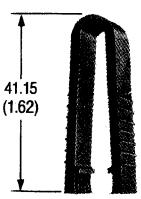
1ST END: Two IC Sockets, phosphor bronze, gold plated. Insulation: Noryl†, black.
WIRE: 26 AWG, 7 × 34, multi-conductor flat ribbon cable, color coded.
2ND END: None. Used on DIP CLIP™ (page 72), SOIC CLIP™ test clips (page 73) and Quad Clip™ test clips (page 73).
RATING: +93°C. (+200°F.) Max.



MODEL	Used On	No. of Sockets	"X" Dim.	NET
5335	5108, 5208, 5250	8 (4 + 4)	10.67 (.42)	11.75
5331	5014, 5114, 5214, 5251, 5314	14 (7 + 7)	18.29 (.72)	15.25
4185	4566, 3916A, 4236A, 5116, 5216, 5252	16 (8 + 8)	20.83 (.82)	18.95
5332	5401	17 (8 + 9)	23.37 (.92)	19.95
5336	5120, 5220, 5253	20 (10 + 10)	25.91 (1.02)	21.95
5333	4124A, 4324A, 5124, 5224, 5254	24 (12 + 12)	30.99 (1.22)	24.50
5334	4140A, 4340A, 5140, 5240	40 (20 + 20)	51.31 (2.02)	38.95

ANTISTATIC DIP REMOVER

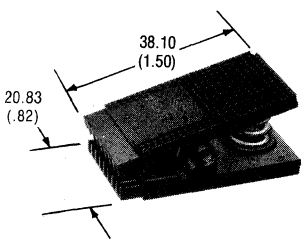
The dip remover is an excellent tool for the removal of dual in-line IC chips. With this tool, accidental bending of the contacts is at a minimum.
MATERIAL: Antistatic Noryl†, black.
RATING: Heat distortion temperature @ 265 psi, +93°C. (+200°F.) Max. For I.C. DIP's 7.62 mm (.300) wide.



MODEL 4904 — **NET 1.50**

14/16 PIN DUAL IN-LINE DIP REMOVER

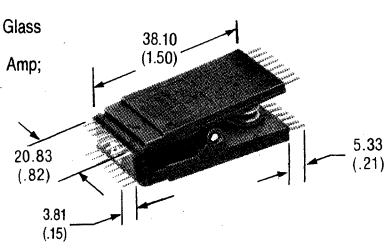
The DIP remover is an excellent tool for the removal of 14/16 pin dual in-line IC chips. With this tool, accidental bending of the contacts is at a minimum.
MATERIAL: Spring, stainless steel.
INSULATION: Glass filled nylon, red.
RATING: +102°C. (+216°F.) Max.



MODEL 4386 — **NET 4.75**

14/16 PIN DUAL IN-LINE TEST CLIP WITH ATTACHED HEADER

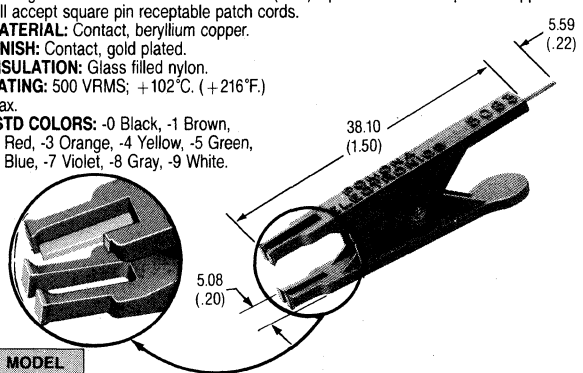
The DIP CLIP™ with attached header is an excellent tool for plugging into 14/16 pin IC sockets to test circuits. You can either solder wires directly to the top pins of the DIP CLIP,™ or more convenient, you can attach the Pomona Electronics IC Jumper Cable 4185.
MATERIAL: DIP CLIP™ contacts, nickel silver. Header contacts, brass.
FINISH: Header contact, gold plated.
INSULATION: DIP CLIP,™ Glass filled nylon, red.
RATING: 500 VRMS; 1 Amp; +102°C. (+216°F.) Max.



MODEL 4566 — **NET 15.25**

DIP GRIP® IC TEST CLIP

Pomona Electronics DIP GRIP® test clip is designed especially for testing single contacts on Dual-In-Line Package (DIP) Integrated Circuits on 2.54 mm (.100) spacing. The DIP GRIP® assures positive electrical contact on one leg of the DIP across its 7.62 mm (.300) width and provides hands free testing. Contact 1.02 mm (.040) wide on lower end is serrated for good electrical connection. 0.64 mm (.025) square serrated test point on upper end will accept square pin receptable patch cords.
MATERIAL: Contact, beryllium copper.
FINISH: Contact, gold plated.
INSULATION: Glass filled nylon.
RATING: 500 VRMS; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL 5083-* — **NET 3.40**

† Noryl is a trademark of General Electric.

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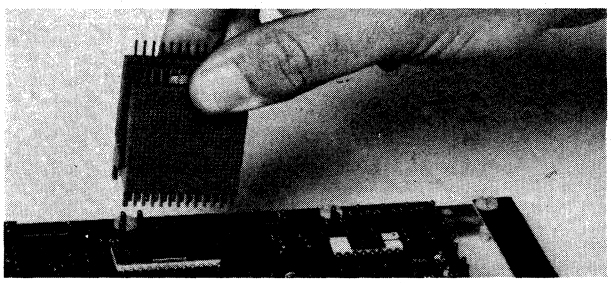
POMONA

DIP CLIP™ IC TEST CLIPS

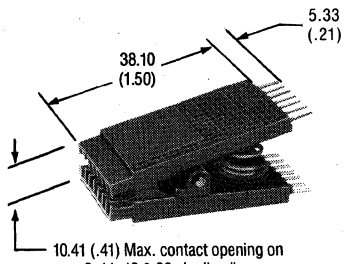
Pomona Electronics' DIP CLIP™ test clips are designed especially for testing dual-in-line IC packages on high-density P.C. boards. The DIP CLIP™ has many built-in features that assure a positive electrical connection and at the same time provide hands-free testing. The high density DIP CLIP™ test clips are used for ultra-dense packaged chips located adjacent to each other on 2.54 mm (.100) spacing.
MATERIAL: Contact. Tarnish resistant nickel silver or gold plated beryllium copper. Stainless steel hinge pin and spring.
INSULATION: Glass filled nylon, blue.
RATING: 500 VRMS; 1 Amp; +102°C. (+216°F.) Max.



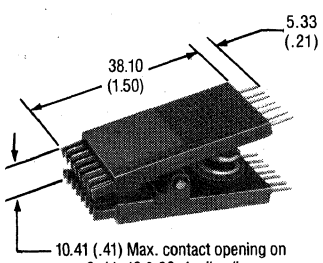
FEATURES

- Contacts 1.02 mm (.040) wide on lower end are serrated for good electrical connection.
- 0.64 mm (.025) square serrated test points on upper end will accept wire wraps or mini test clips.
- Molded barrier between each contact allows connections to be made on live boards without accidental shorting of adjacent contacts.
- Can be used as an insertion and removal tool for DIPS.
- Accepts IC Jumper Cables (page 71).

MODEL	No. of Pins	Contact Material	Type	NET
5108	8	Gold Plated Beryllium Copper	Standard	6.50
5208	8	Gold Plated Beryllium Copper	High Density	6.50
5014	14	Spring Tempered Nickel Silver	Standard	6.25
5114	14	Spring Tempered Nickel Silver	High Density	6.25
5214	14	Gold Plated Beryllium Copper	Standard	8.25
5314	14	Gold Plated Beryllium Copper	High Density	8.25
3916A	16	Spring Tempered Nickel Silver	Standard	5.95
4236A	16	Spring Tempered Nickel Silver	High Density	5.95
5116	16	Gold Plated Beryllium Copper	Standard	7.95
5216	16	Gold Plated Beryllium Copper	High Density	7.95
5120	20	Gold Plated Beryllium Copper	Standard	9.50
5220	20	Gold Plated Beryllium Copper	High Density	9.50
4124A	24	Spring Tempered Nickel Silver	Standard	12.85
4324A	24	Spring Tempered Nickel Silver	High Density	12.85
5124	24	Gold Plated Beryllium Copper	Standard	15.85
5224	24	Gold Plated Beryllium Copper	High Density	15.85
4140A	40	Spring Tempered Nickel Silver	Standard	18.85
4340A	40	Spring Tempered Nickel Silver	High Density	18.85
5140	40	Gold Plated Beryllium Copper	Standard	21.85
5240	40	Gold Plated Beryllium Copper	High Density	21.85



STANDARD
(5014 Shown)

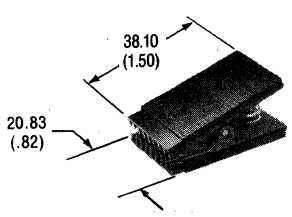


HIGH DENSITY
(5114 Shown)

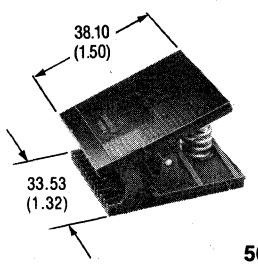
ANTISTATIC DIP REMOVERS

These DIP removers are built of special plastic that not only has the strength to pull the most stubborn DIP, but actually prevents electrostatic buildup. The surface resistivity controls surface charges and protects even the most sensitive of electronic circuits. This excellent design also minimizes accidental bending of contacts.

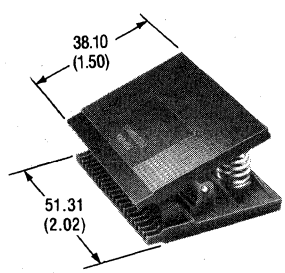
- **MATERIAL:** Antistatic Noryl.
- **TEMPERATURE:** Heat distortion temperature @ 265 psi greater than +93°C. (+200°F.)



5016



5024



5040

MODEL	Size		Removes Dips	Accepts Dips	NET
5016	16	8 Notches Per Side	8-20 Pins	To 8.89(.35)	4.75
5024	24	12 Notches Per Side	22-36 Pins	To 16.51 (.65)	5.30
5040	40	20 Notches Per Side	40-60 Pins	To 16.51 (.65)	6.50

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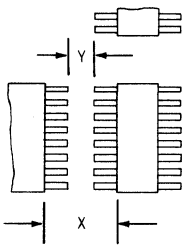
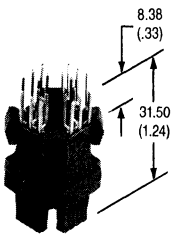
SMD PRODUCTS

QUAD CLIP™ TEST CLIP
PATENT PENDING

These test adapters are designed for Plastic Leaded Chip Carriers (PCC or PLCC) with "J" leads. A 'snap-ring' design allows the Quad Clip™ to fit directly onto IC providing hands-free testing.
UPPER: .635 mm (.025) Square Pins. Phosphor bronze, gold plated.
INSULATION: Glass filled nylon, gray.
LOWER: Contacts. Beryllium copper, gold plated.
RATING: 500 VRMS, 1 Amp. +102°C. (+216°F.) Max.





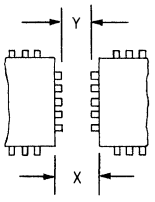
NEW

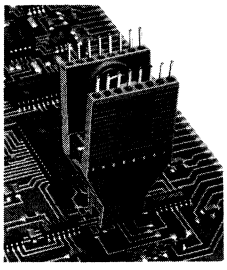
	X Min.	Y Min.
Single Chip Testing	3.05 (.120)	2.79 (.110)
Adjacent Testing	8.26 (.325)	7.24 (.285)

MODEL	No. of Pins	NET
5279	20	27.50
5280	28	28.95
5281	44	31.95
5312	52	33.95
5401	68	37.95

SOIC CLIP™TEST CLIP

These test clips are designed especially for testing Small Outline Integrated Circuits (SOIC and SOJ). The SOIC CLIP™ assures a positive connection and provides hands-free testing.
FEATURES
• 0.64 mm (.025) square access pins on upper end permit either individual pin testing or the use of 2.54 mm (.100) spaced connectors. (See page 72 for jumper cables)
• Molded barrier between each contact allows connections to be made on live boards without accidental shorting of adjacent contacts.

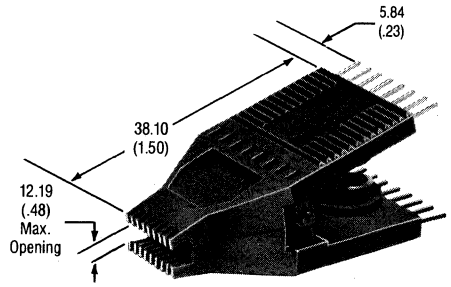




APPLICATION PHOTO

	X Min.	Y Min.
Single Chip Testing	4.06 (.160)	1.52 (.060)
Narrow Body (Adjacent)	15.24 (.600)	12.70 (.500)
Wide Body (Adjacent)	8.51 (.335)	5.97 (.235)

UPPER: 0.64 mm (.025) Square Pin. Gold plated phosphor bronze.
INSULATION: Glass filled nylon, blue.
LOWER: Contact. Gold plated beryllium copper.
RATING: 500 VRMS; 1 Amp; +102°C. (+216°F.) Max.



MODEL 5252 SHOWN

Z = .0025 X No. of Contacts

NEW

MODEL	No. of Pins	NET
5250	8	7.50
5251	14	8.25
5252	16	8.95
5253	20	9.75
5254	24	10.75
5437	28	11.75

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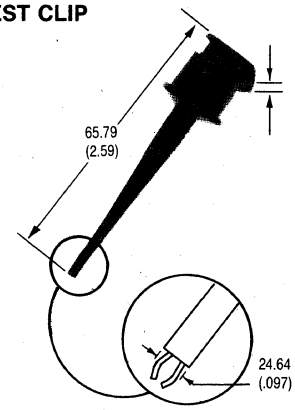
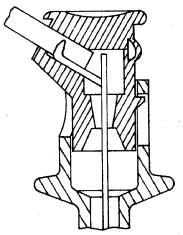
MINIPINCER™ TEST CLIPS

DO-IT-YOURSELF MINIPINCER™ TEST CLIP

This clip utlizes a snap-on cap and an IDC contact to provide a reliable, solderless connection. The lower contact has a pincer type action ideally suited for testing standard dip packages.
MATERIAL: Phosphor bronze contact.
FINISH: Gold plated.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC, 5 Amps, +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.





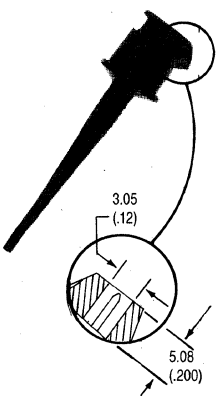
NEW

MODEL
5418-*

NET 1.50 EA.

MINIPINCER™ WITH 0.64 mm (.025) SQUARE PIN

This clip has similar pincer contact as Model 5418 (above) and includes recessed .64 mm (.025) square pin in cap.
1ST END: Contact, phosphor bronze, gold plated.
INSULATION: Glass filled nylon.
2ND END: Square pin.
RATING: 1000 WVDC, 3 Amps, +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



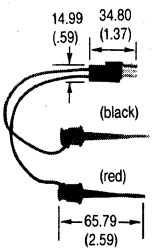
NEW

MODEL
5430

NET 3.50

BNC FEMALE TO MINIPINCER™ TEST CLIPS

1ST END: BNC Female. Tarnish resistant plated brass body. Gold plated beryllium copper center contact. Black polypropylene insulation.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Minipincer™ Test Clips. Gold plated phosphor bronze contact. Glass filled nylon insulation. One black and one red.
RATING: 500 VRMS, +55°C. (+131°F.) Max.



OVERALL LENGTH: 177.8 (7.0).

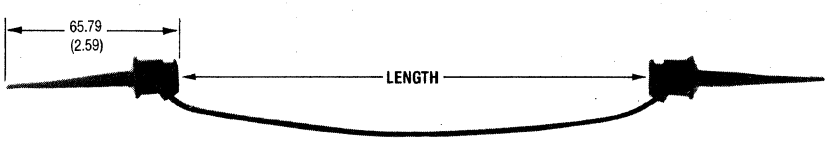
NEW

MODEL
5424

NET 8.75

MINIPINCER™ TEST CLIP, EACH END

NEW



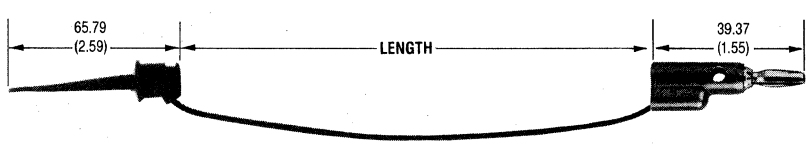
MODEL	Length	NET
5419-8-*	203.2(8.0)	3.70
5419-12-*	304.8(12.0)	3.75
5419-18-*	457.2(18.0)	3.85
5419-24-*	609.6(24.0)	3.95
5419-36-*	914.4(36.0)	4.15
5419-48-*	1219.2(48.0)	4.35
5419-60-*	1524.0(60.0)	4.55

1ST END: Minipincer™ Test Clip. Gold plated phosphor bronze contact. Glass filled nylon insulation.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Same as first end.

RATING: 1000 WVDC, 5 Amps, +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MINIPINCER™ TEST CLIP TO STACKING BANANA PLUG

NEW



MODEL	Length	NET
5421-12-*	304.8(12.0)	3.75
5421-24-*	609.6(24.0)	3.95
5421-36-*	914.4(36.0)	4.15
5421-48-*	1219.2(48.0)	4.35
5421-60-*	1524.0(60.0)	4.55

1ST END: Minipincer™ Test Clip. Gold plated phosphor bronze contact. Glass filled nylon insulation.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Stacking Banana Plug. Nickel plated brass body, beryllium copper spring. Polypropylene insulation.
RATING: 1000 WVDC, 5 Amps, +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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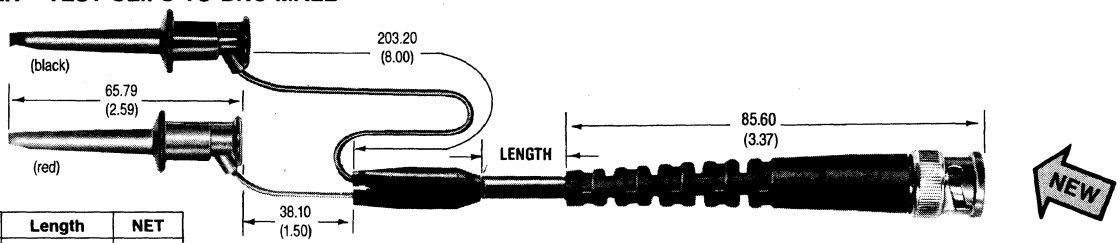
MINIPINCER™ TEST CLIPS

MINIPINCER™ TEST CLIPS TO BNC MALE

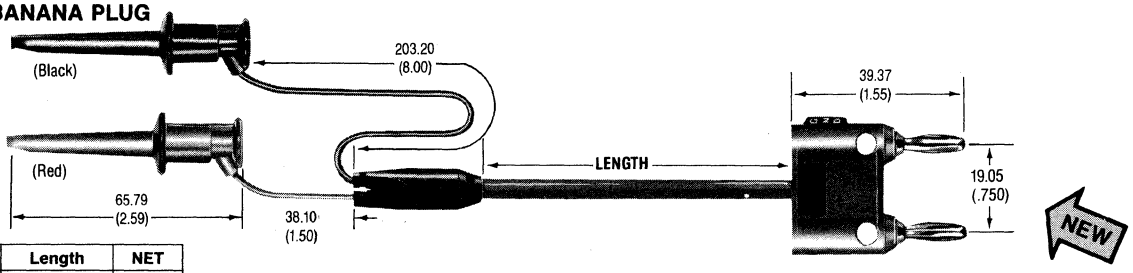


MODEL	Length	NET
5423-C-18	457.2 (18.0)	13.35
5423-C-24	609.6 (24.0)	13.65
5423-C-36	914.4 (36.0)	14.25
5423-C-48	1219.2 (48.0)	14.85
5423-C-60	1524.0 (60.0)	15.45

1ST END: Minipincer™ Test Clips. Gold plated phosphor bronze contact. Glass filled nylon insulation. One black and one red.
CABLE: Shielded coaxial, RG 58C/U, 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Boot; PVC, black.
RATING: 500 VRMS, +50°C. (+122°F.) Max.

MINIPINCER™ TEST CLIPS TO DOUBLE BANANA PLUG



MODEL	Length	NET
5422-C-18	457.2 (18.0)	13.05
5422-C-24	609.6 (24.0)	13.35
5422-C-36	914.4 (36.0)	13.95
5422-C-48	1219.2 (48.0)	14.55
5422-C-60	1524.0 (60.0)	15.15

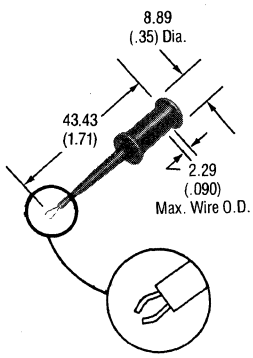
1ST END: Minipincer™ Test Clips. Gold plated phosphor bronze contact. Glass filled nylon insulation.One black and one red.
CABLE: Shielded coaxial, RG 58C/U, 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

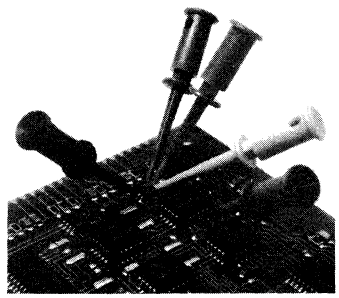
2ND END: Double Banana Plug. Nickel plated brass body, beryllium copper spring. Black polyethylene insulation.
RATING: 1000 WVDC, +50°C. (+122°F.) Max.

SMD GRABBER™ TEST CLIPS

DO-IT-YOURSELF SMD GRABBER™

This do-it-yourself test clip is especially suited for testing surface mounted packages on centers as small as 0.76 mm (.030). Pincer-like contact grasps individual legs of SMD's such as the SOIC, SOJ, PCC, etc. Its circular design and small size have been developed for easy use and handling.
MATERIAL: Contact, stainless steel.
FINISH: Selectively gold plated on tip.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC; 0.5 Amp; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.





APPLICATION PHOTO

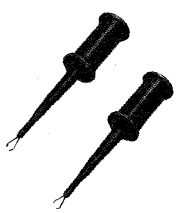
MODEL
5243-*

NET 1.50
(Pkg. 10 Per Color)

DO-IT-YOURSELF SMD GRABBER™ KIT

Kit contains 2 pcs. of Model 5243.

MATERIAL: Contact, stainless steel.
FINISH: Selectively gold plated on tip.
INSULATION: Glass filled nylon.
RATING: 1000 WVDC; 0.5 Amps; +102°C. (+216°F.) Max.
KIT CONTAINS: -02, one black and one red; -00, two black; -11, two brown; -22, two red; -33, two orange; -44, two yellow; -55, two green; -66, two blue; -77, two violet; -88, two gray; -99, two white.

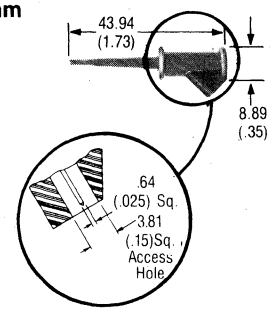


MODEL
5231-*

NET 3.10 KIT

SMD GRABBER™ WITH 0.64 mm (.025) SQUARE PIN

1ST END: Contact, stainless steel, selectively gold plated.
INSULATION: Glass filled nylon.
2ND END: Square pin, phosphor bronze, gold plated.
RATING: 1000 WVDC; 0.5 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL
5360

NET 1.75

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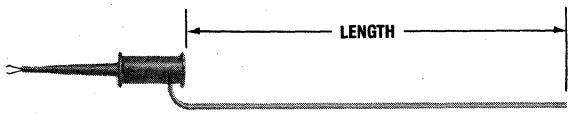
SMD GRABBER™ TEST CLIPS

SMD GRABBER™, ONE END ONLY

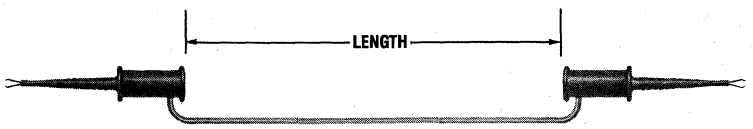


MODEL	Length	NET
5303-8-*	203.2 (8.0)	3.15
5303-12-*	304.8 (12.0)	3.15
5303-24-*	609.6 (24.0)	3.15
5303-36-*	914.4 (36.0)	3.15

1ST END: SMD GRABBER™. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: None.
RATING: 1000 WVDC; 0.5 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

SMD GRABBER™, EACH END



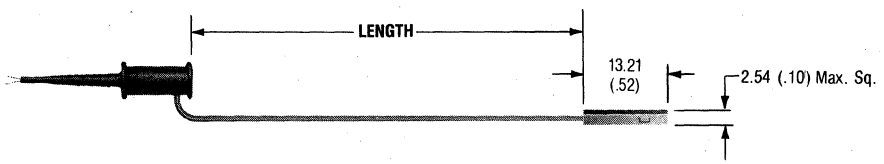
MODEL	Length	NET
5301-6-*	152.4 (6.0)	4.95
5301-12-*	304.8 (12.0)	4.95
5301-24-*	609.6 (24.0)	4.95
5301-36-*	914.4 (36.0)	4.95

1ST END: SMD GRABBER™. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: Same as first end.
RATING: 1000 WVDC; 0.5 Amps; +102°C. (+216°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

SMD GRABBER™ TO 0.64 MM (.025) SQ. PIN RECEPTACLE

NEW

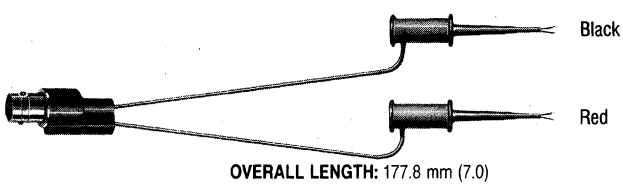


MODEL	Length	NET
5412-12-*	304.8 (12.0)	4.50
5412-24-*	609.6 (24.0)	4.50
5412-36-*	914.4 (36.0)	4.50

1ST END: SMD GRABBER™. Selectively gold plated stainless steel contact. Glass filled nylon insulation.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: 0.64 mm (.025) Square Pin Receptacle. Gold plated phosphor bronze. ABS insulation.
RATING: 1000 WVDC; 0.5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

SMD GRABBER™, TEST CLIPS TO BNC FEMALE



OVERALL LENGTH: 177.8 mm (7.0)

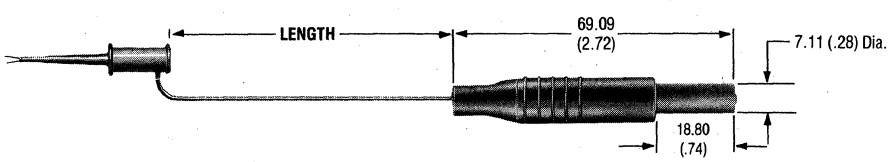
MODEL
5305

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation, polypropylene, black.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D. One black and one red.

2ND END: SMD GRABBER™ test clips. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.

NET 8.75

SMD GRABBER™ TO RETRACTABLE SHEATH BANANA PLUG



MODEL	Length	NET
5362-8*	203.2 (8.0)	6.95
5362-12*	304.8(12.0)	6.95
5362-24*	609.6(24.0)	6.95
5362-36*	914.4(36.0)	6.95
5362-48*	1219.2(48.0)	7.15
5362-60*	1524.0(60.0)	7.35

1ST END: SMD GRABBER™. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.
RATING: 1000 WVDC; 0.5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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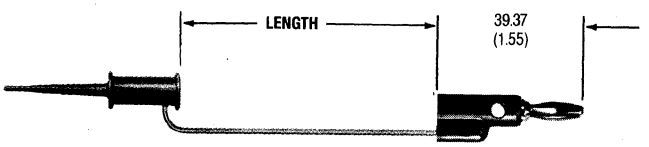
SMD GRABBER™ TEST CLIPS

SMD GRABBER™ TO STACKING BANANA PLUG

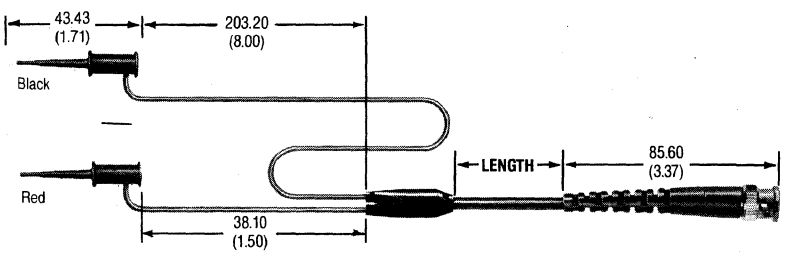


MODEL	Length	NET
5302-12-*	304.8 (12.0)	4.50
5302-24-*	609.6 (24.0)	4.50
5302-36-*	914.4 (36.0)	4.50

1ST END: SMD GRABBER™. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Polypropylene insulation.
RATING: 1000 WVDC; 0.5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

SMD GRABBER™ TEST CLIPS TO BNC MALE

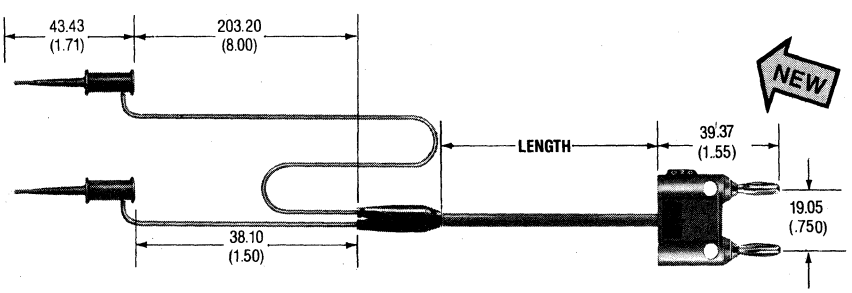


MODEL	Length	NET
5304-K-24	609.6 (24.0)	16.75
5304-K-36	914.4 (36.0)	16.75

1ST END: SMD GRABBER™ test clips. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon. One black and one red.
CABLE: Shielded coax., RG 174/U, 2.54 mm (.100) O.D. Y-Mold insulation, PVC, black.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Boot, PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

SMD GRABBER™ TEST CLIPS TO DOUBLE BANANA PLUG



MODEL	Length	NET
5411-C-24	609.6 (24.0)	14.65
5411-C-36	914.4 (36.0)	15.25
5411-C-48	1219.2 (48.0)	15.85
5411-C-60	1524.0 (60.0)	16.45

1ST END: SMD GRABBER™ test clips. Contact, selectively gold plated stainless steel. Insulation, glass filled nylon. One black and one red.
CABLE: Shielded coaxial, RG 58C/U, 4.95 mm (.195) O.D. Y-Mold insulation, PVC, black.

2ND END: Double Banana Plug. Nickel plated brass body, beryllium copper spring. Black polyethylene insulation.
RATING: 1000 WVDC; 0.5 Amps; +55°C. (+131°F.) Max.

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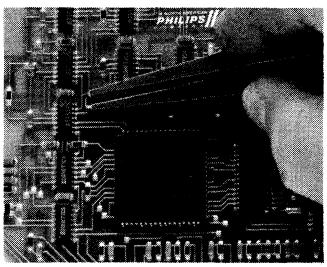
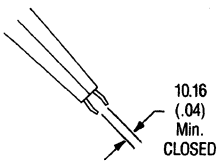
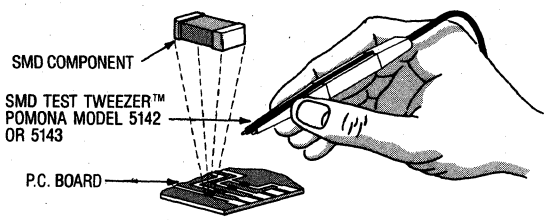
SMD PRODUCTS

The tweezer clip is specially designed for testing Surface Mounted Devices (SMD). The durable tips assure a positive electrical connection. The tweezer gives rapid and convenient testing.

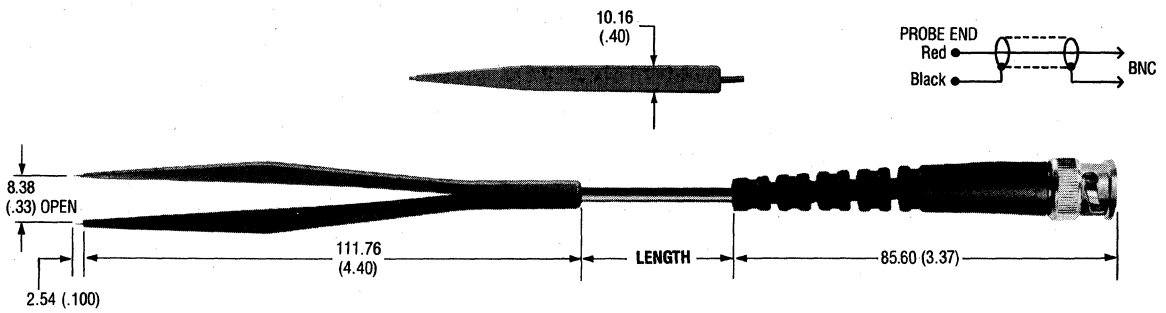


APPLICATION PHOTO





SMD TEST TWEEZER™ TO BNC MALE



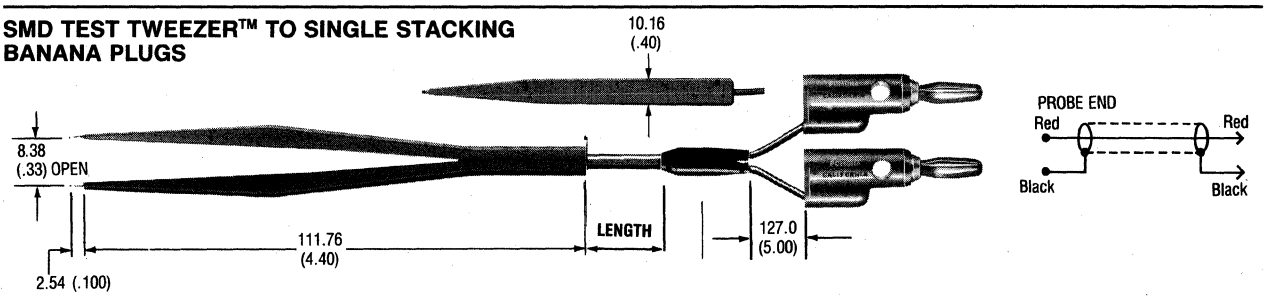
MODEL	Length
5142-K-48	1219.2 (48.0)

1ST END: SMD Test Tweezer™. Tips, beryllium copper, gold plated. Insulation; glass filled nylon, black and red.
CABLE: Shielded coaxial, RG174/U, 2.54 mm (.100) O.D.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Boot; PVC, black.
RATING: 400 VRMS; 3 Amps; +50°C. (+122°F.) Max.

NET 15.25

SMD TEST TWEEZER™ TO SINGLE STACKING BANANA PLUGS



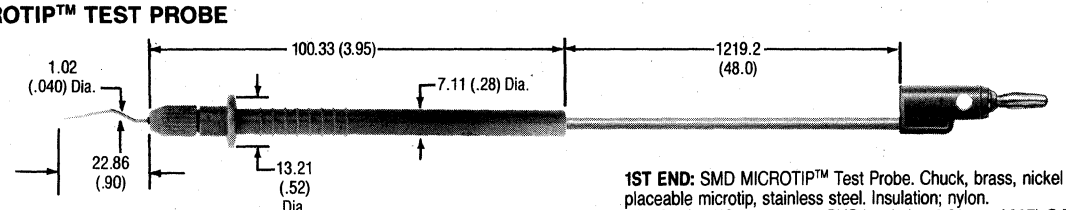
MODEL	Length
5143-K-48	1219.2 (48.0)

1ST END: SMD Test Tweezer™. Tips, beryllium copper, gold plated. Insulation; glass filled nylon, black and red.
CABLE: Shielded coaxial, RG174/U, 2.54 mm (.100) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, one black and one red.
RATING: 400 VRMS; 3 Amps; +50°C. (+122°F.) Max.

NET 15.25

SMD MICROTIP™ TEST PROBE



MODEL	Length
5144-48-*	1219.2 (48.0)

The microtip is specially designed to probe SMD contacts. It features a stainless steel needle point tip that is flexible to help prevent damage to the SMD lands. The microtip is curved to aid in probing of hard to reach areas.

1ST END: SMD MICROTIP™ Test Probe. Chuck, brass, nickel plated. Replaceable microtip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c. PVC insulation 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 1200 V AC/DC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.
(See page 80 for replacement tip.)

NET 7.50

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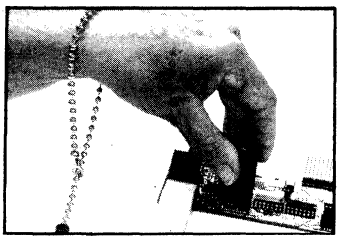
ANTISTATIC WRIST STRAPS

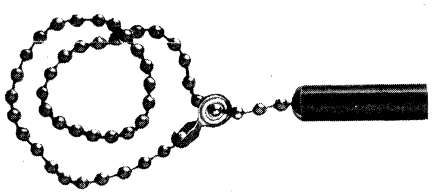
These personnel grounding wrist straps protect even the most sensitive IC from accidental damage due to static electricity. The self-adjusting wrist strap (see insert) allows freedom of movement, yet is attractive and comfortable to wear. All units feature a built-in 1 megohm resistor.



REPLACEMENT WRIST STRAP

Leave the antistatic cord permanently attached to the bench and give each of your assemblers their own wrist strap. You can also use this model to replace those straps that were lost, without purchasing an entire assembly. Fits Models 5027 and 5028.

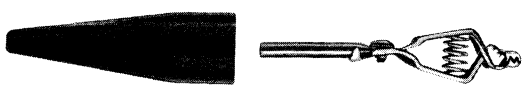
MATERIAL: Brass
FINISH: Nickel plated.
INSULATION: Polypropylene, black.
RATING: +55°c. (+131°F.) Max.



MODEL	
5074	NET 3.95

LARGE TEST CLIP TO BANANA JACK

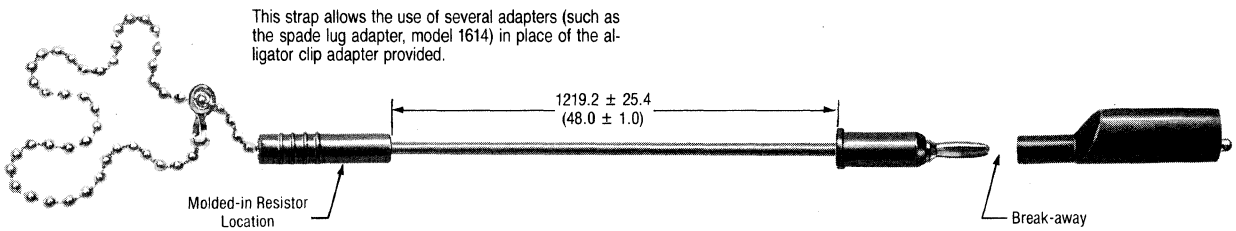
This large test clip accepts a standard banana plug.
MATERIAL: Clip, steel. Banana jack, brass.
FINISH: Clip, cadmium plated. Banana jack, nickel plated.
INSULATION: Vinyl, black.



MODEL		
5059	(unassembled)	NET 2.35

ANTISTATIC WRIST STRAP WITH ALLIGATOR CLIP

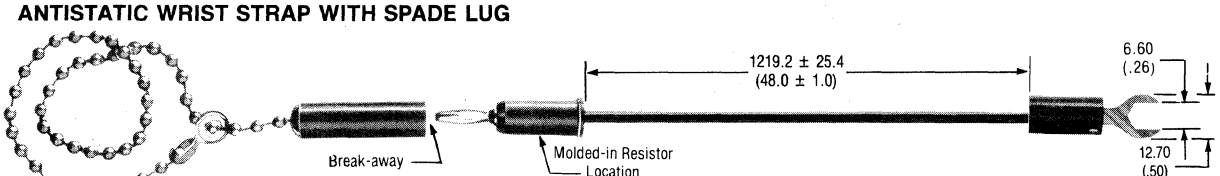
This strap allows the use of several adapters (such as the spade lug adapter, model 1614) in place of the alligator clip adapter provided.



MODEL	
4918-48	NET 7.50

1ST END: Bead Chain. Brass, nickel plated. Resistor, fixed carbon film, 1 megohm, 1/2 watt, 5%.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, black. Alligator clip, steel, nickel plated. Insulation; vinyl, black.
RATING: +50°C. (+122°F.) Max.

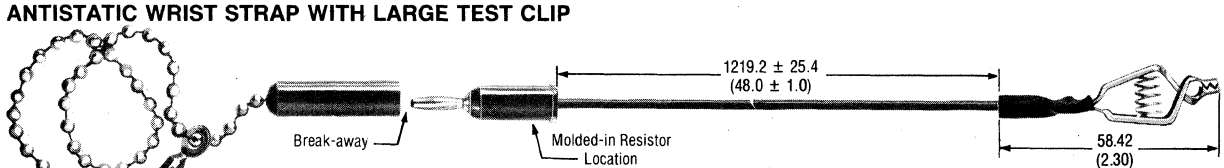
ANTISTATIC WRIST STRAP WITH SPADE LUG



MODEL	
5027-48	NET 9.50

1ST END: Bead Chain. Brass, nickel plated. Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, black. Resistor, fixed carbon film, 1 megohm, 1/2 watt, 5%.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Spade Lug. Brass, nickel plated. Insulation; polypropylene, black.
RATING: +55°C. (+133°F.) Max.

ANTISTATIC WRIST STRAP WITH LARGE TEST CLIP



MODEL	
5028-48	NET 9.15

1ST END: Bead Chain. Brass, nickel plated. Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation: polypropylene, black. Resistor, fixed carbon film, 1 megohm, 1/2 watt, 5%.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Large Test Clip. Steel, cadmium plated.
RATING: +55°C. (+133°F.) Max.

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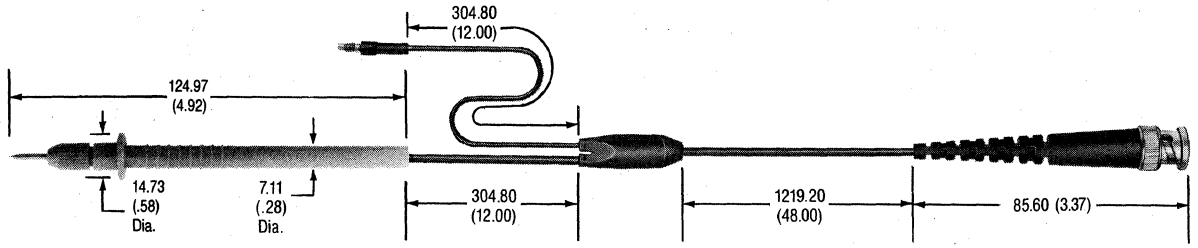
TEST PROBE KITS

TEST PROBE KIT—MINIATURE PROBE TO BNC MALE



KIT ALSO CONTAINS:

MODEL 4011, Minigrabber® W/6-32 Thread (See page 61 for description and replacement.)



MODEL 4517, Minigator W/6-32 Thread (See page 31 for description and replacement.)



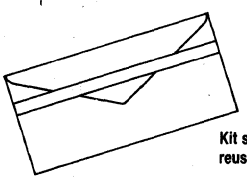
MODEL 5133, Micro Tip (See below for description and replacement.)



MODEL
5292-48

A shielded test probe with the shield extending to within 38.10mm (1.50) of the probe tip.

1ST END: Miniature Test Probe on RG 174/U Cable. Replaceable needle tip, stainless steel. Insulation; nylon. 6-32 Stud on 20 AWG Wire. Brass, nickel plated.
CABLE: Shielded coax, RG 174/U, 2.54 mm (.100) O.D. Molded Breakout, PVC, black.

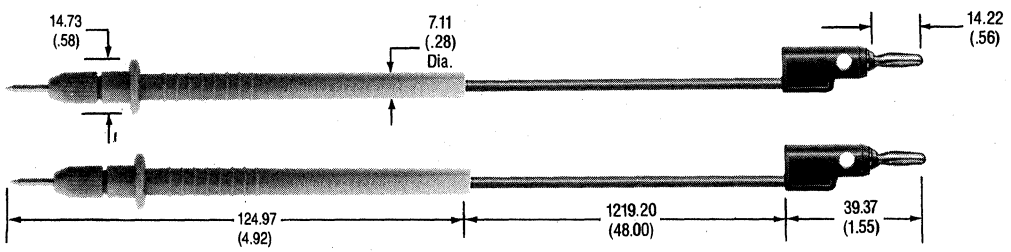


Kit supplied in a reusable plastic pouch

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Boot; PVC, black. Nominal Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.
OPTIONAL ACCESSORIES: Alligator Clip, model 1437 (page 31); Minigrabber® Test Clip, model 4826 (page 62); I.C. Test Tip Adapter, model 5246 (page 88).

NET 28.50 KIT

TEST PROBE KIT—MINIATURE PROBE TO STACKING BANANA PLUG



Kit contains one black and one red test probe assembly.

KIT ALSO CONTAINS:

2 ea. MODEL 5133, Micro Tip (See below for description and replacement.)

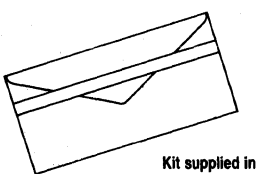


2 ea. MODEL 1437, Alligator Clip w/2.08 mm (.080) Pin Jack, one black and one red. (See page 31 for description and replacement.)



MODEL
5325-48

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.



Kit supplied in a reusable plastic pouch.

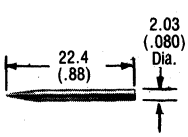
RATING: 1200V AC/DC Max; 5 Amps; +55°C. (+131°F.) Max.
OPTIONAL ACCESSORIES: Minigrabber® Test Clip, model 4826 (pg. 62) and IC Test Tip Adapter, model 5246 (pg. 88.)

NET 23.95 KIT

REPLACEMENT TIPS FOR TEST PROBES • Fits all models with replaceable tips

2.03 mm (.080) NEEDLE TIP

- Stainless steel.
- Sharp point to pierce varnish, conformal coatings for good contact.

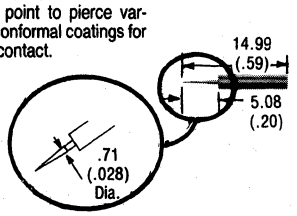


MODEL
4174

NET 2.95 PKG. (Ten Per Pkg.)

0.71 mm (.028) NEEDLE TIP

- Stainless steel.
- Sharp point to pierce varnish, conformal coatings for good contact.

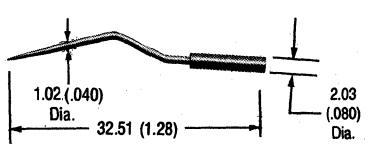


MODEL
4988

NET 10.50 PKG. (Ten Per Pkg.)

MICRO TIP

- Stainless steel.
- Sharp semi-flexible tip.



MODEL
5133

NET 1.95

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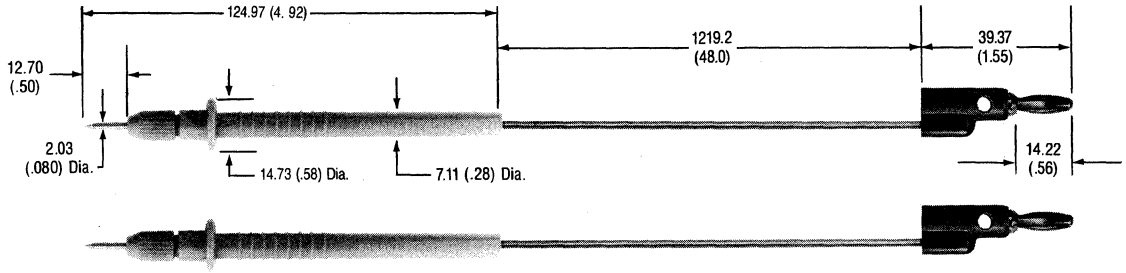
TEST PROBE KITS

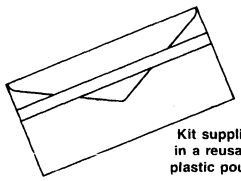
MINIATURE TEST PROBE TO STACKING BANANA PLUG KIT



Kit contains 2 pcs. of Model 4851-48, one red and one black.
1ST END: Miniature Test probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation, nylon. Chuck nut, nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

MODEL
5309-48

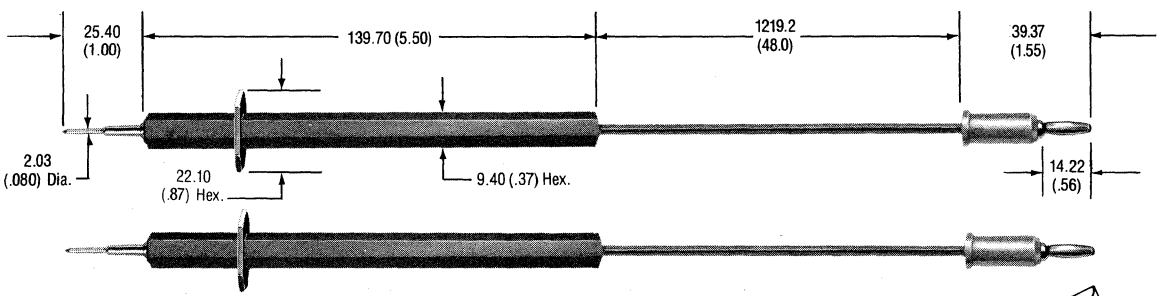
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 1200 V AC/DC Max.; 7 Amps, + 55°C. (+ 131°F.) Max.
OPTIONAL ACCESSORIES: Alligator Clip, model 1437 (page 31); Replacement Tips (page 80); Minigrabber® Test Clip, model 4826 (page 62); IC Test Tip Adapter, model 5246 (page 88.)



Kit supplied in a reusable plastic pouch.

NET 13.95 KIT

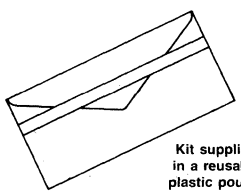
LARGE TEST PROBE TO BANANA PLUG KIT



Kit contains 2 pcs. of Model 4853-48, one red and one black.
1ST END: Test Probe. Body, brass, nickel plated. Insulation, nylon.

MODEL
5311-48

WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 3000 WVDC; 7 Amps, + 55°C. (+ 131°F.) Max.

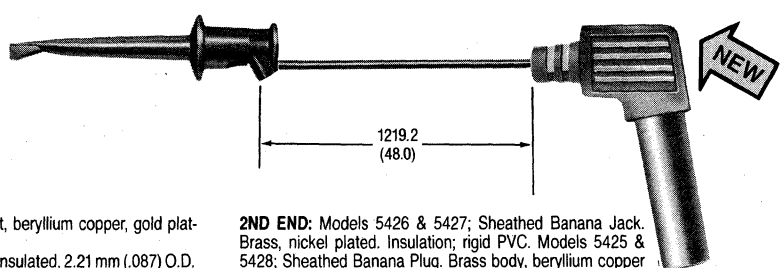


Kit supplied in a reusable plastic pouch.

NET 15.95 KIT

MULTIMETER REPLACEMENT TEST LEADS

MINIGRABBER® TO MULTIMETER REPLACEMENT TEST LEAD



MODEL	Meter Group
5425-48-*	A
5426-48-*	B
5427-48-*	C
5428-48-*	D

1ST END: Minigrabber®. Contact, beryllium copper, gold plated. Insulation, Glass filled nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

See page 82.

2ND END: Models 5426 & 5427; Sheathed Banana Jack. Brass, nickel plated. Insulation; rigid PVC. Models 5425 & 5428; Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; rigid PVC. Tip; polypropylene, orange.
RATING: 1200 V AC/DC Max., 7 Amps, + 50°C. (+ 122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 4.50

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MULTIMETER REPLACEMENT TEST LEADS

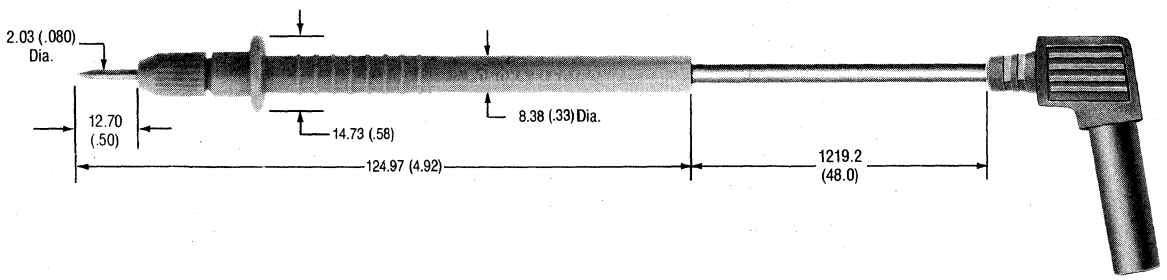
These test leads were designed specifically as replacements for lost or damaged multimeter leads. Sheathed banana plugs or jacks fit most multimeters made by Amprobe, B&K, Beckman, Fluke, Simpson and Triplett. (See below for specific models.)

NOTE: Model 5433 supersedes model 5387; model 5434 supersedes model 5388; model 5435 supersedes model 5389; model 5436 supersedes model 5390.

New multimeter test leads are sold individually, not as kits of two.

Meter Group	FIT THESE INSTRUMENTS
A	**Beckman Model Nos.:** 3000, 3010,3010UL, 3020, 3020B, 3030, Tech 300, Tech 310, Tech 310UL, Tech 320B, Tech 330 (shipped before August 1, 1983; Serial Numbers: 0XXXXXXX, 1XXXXXXX, 2XXXXXXX, 8XXXXXXX, 9XXXXXXX and 301XXXXX thru 307XXXXX). **Most Amprobe Models**
B	**Simpson Model Nos.:** 260 series 7, 270-5, 360-3, 460-5, 461, 461-2, 461-2R, 462, 463, 464-3, 467, 467E, 467dB, 470 and 474.
C	**Triplett Model Nos.:** 60 Type 2, 60-A, 60AC, 60NA Type 2, 64, 630 Type 4 and 630A Type 4.
D	**Beckman Model Nos.:** 3000, 3010, 3020, 3020B, 3030, Tech 300, Tech 310, Tech 320B, Tech 330 (shipped after August 1, 1983; Serial Numbers 308XXXXX thru 312XXXXX, 4XXXXXXX and 5XXXXXXX) 310B, 310T, 320, 350, 360, 4410, HD100, HD110, HD110T, HD130, HD140, DM40, DM45 and DM50. **Fluke Model Nos.:** 8025A, 25, 27, 73, 75, 77, 8020B, 8021B, 8022B, 8024B, 8026B, 8050A, 8060A, 8062A and 8840A. **Most B&K Models**

MULTIMETER REPLACEMENT TEST LEAD REPLACEABLE TIP PROBE



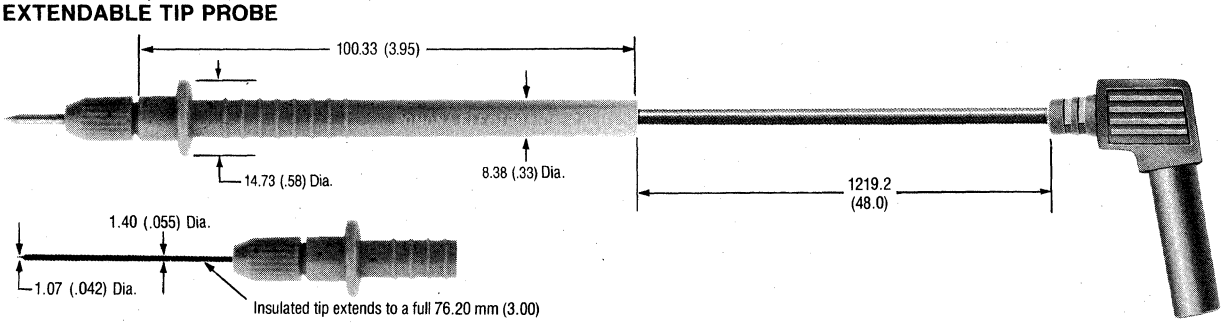
1ST END: Miniature Test Probe. Needle tip, brass, nickel plated. Insulation; nylon.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.

MODEL	Meter Group
5433-48*	A
5434-48*	B
5435-48*	C
5436-48*	D

2ND END: Models 5434 & 5435; Sheathed Banana Jack. Brass, nickel plated. Insulation; rigid PVC.
Models 5433 & 5436; Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; PVC. Tip; polypropylene, orange.
RATING: 1500 V AC/DC Max; 7 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.
OPTIONAL ACCESSORIES: Alligator Clip, model 1437 (page 31); Minigrabber™ Test Clip, model 4826 (page 62); IC Test Tip Adapter, model 5246 (page 88); Flexible Pin Tip Probe, model 4908 (page 88).

NET 5.50

MULTIMETER, REPLACEMENT TEST LEAD EXTENDABLE TIP PROBE



1ST END: Extension Probe. Insulation; nylon. Tip, stainless steel. Insulation; Kynar. Chuck nut, nylon.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

MODEL	Meter Group
5356-48*	A
5357-48*	B
5358-48*	C
5359-48*	D

2ND END: Models 5358 & 5357; Sheathed Banana Jack. Brass, nickel plated. Insulation; PVC.
Models 5356 & 5359; Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; PVC. Tip; polypropylene, orange.
RATING: 1200 V AC/DC Max; 7 Amps; +50°C (+122°F) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 9.75

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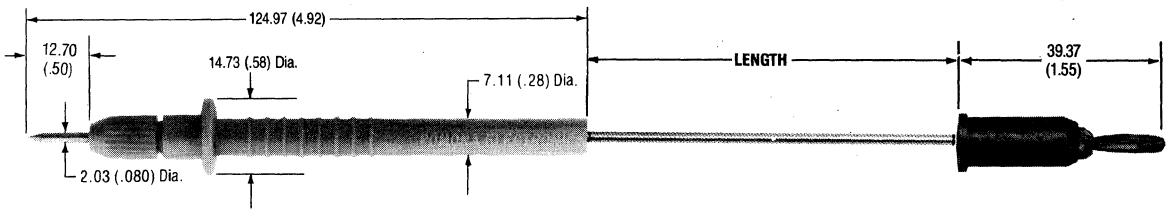
MINIATURE SIZE TEST PROBES

These slim miniature test probes feature a sharp replaceable needle tip. The tip easily pierces varnish or plating to give a good electrical reading.

OPTIONAL ACCESSORIES: Alligator Clip, model 1437 (page 31); Replacement Tips (page 80), Minigrabber™ Test Clip, model 4826 (pge 62); IC Test Tip Adapter, model 5246 (page 88).

MINIATURE TEST PROBE TO BANANA PLUG



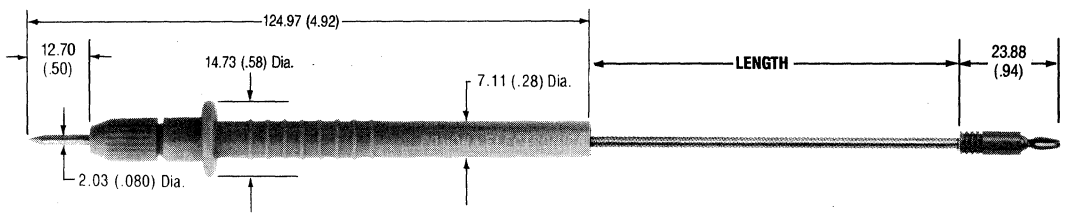
MODEL	Length
4410-48*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 6.50

MINIATURE TEST PROBE TO MINIATURE BANANA PLUG



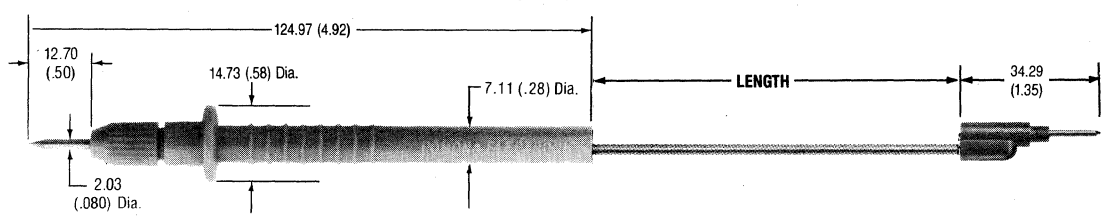
MODEL	Length
4847-48*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.

RATING: 1200 V AC/DC Max.; 5 Amps; +55°C. (+131°F.) Max.
NOTE: This model supersedes model 4071.
***STD COLORS:** -0 Black, -2 Red.

NET 6.75

MINIATURE TEST PROBE TO STACKING 2.03 mm (.080) PIN TIP PLUG



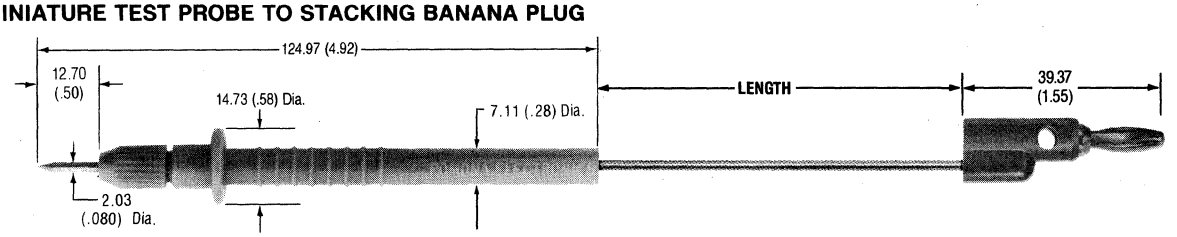
MODEL	Length
4848-48*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Pin Tip Plug. Brass body, beryllium copper pin jack spring, gold plated. Insulation; polypropylene.

RATING: 1200 V AC/DC Max.; 5 Amps; +55°C. (+131°F.) Max.
NOTE: This model supersedes model 3860 and 4731.
***STD COLORS:** -0 Black, -2 Red.

NET 6.75

MINIATURE TEST PROBE TO STACKING BANANA PLUG



MODEL	Length
4851-48*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
NOTE: This model supersedes model 3861.
***STD COLORS:** -0 Black, -2 Red.

NET 5.95

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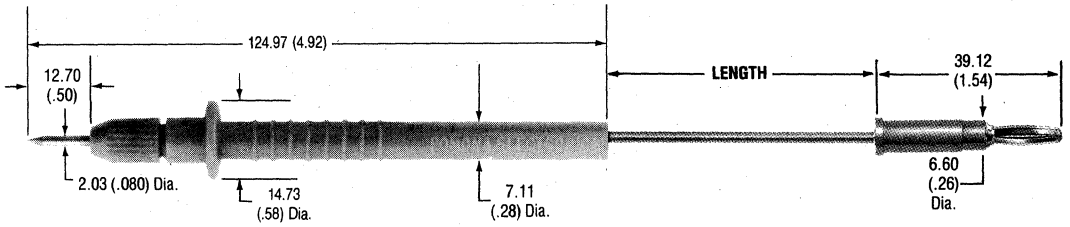
MINIATURE SIZE TEST PROBES

MINIATURE TEST PROBE TO IN-LINE BANANA PLUG



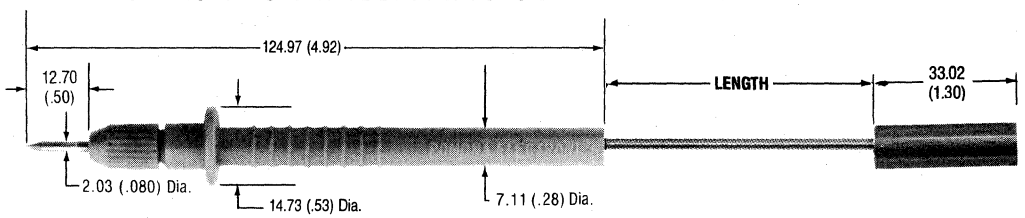
MODEL	Length
5386-48-*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: In-line Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

RATING: 1200 V AC/DC Max; 7 Amps; +55°C. (+131°F.) Max.
NOTE: This model supersedes model 4602.
***STD COLORS:** -0 Black, -2 Red.

NET 6.25

MINIATURE TEST PROBE TO IN-LINE BANANA JACK



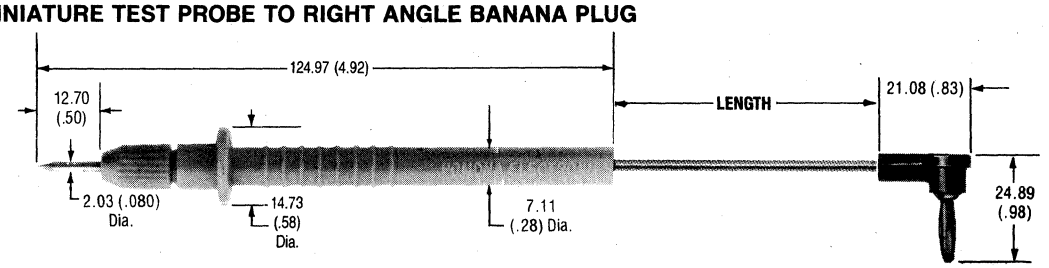
MODEL	Length
4852-48-*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: In-line Banana Jack. Brass, nickel plated. Insulation; polypropylene.

RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
NOTE: This model supersedes model 4540.
***STD COLORS:** -0 Black, -2 Red.

NET 6.75

MINIATURE TEST PROBE TO RIGHT ANGLE BANANA PLUG



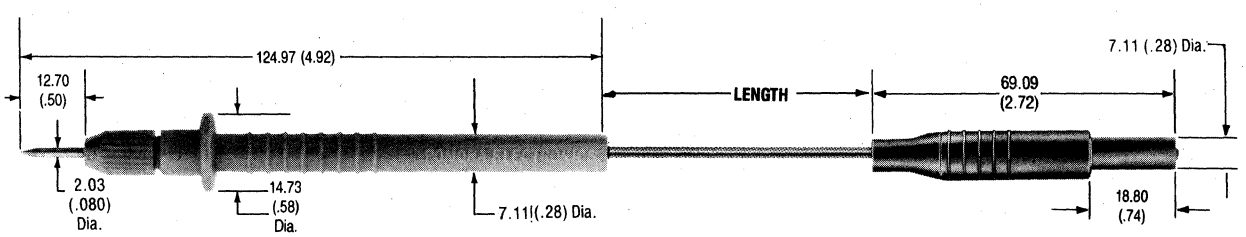
MODEL	Length
4800-48-*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 6.75

MINIATURE TEST PROBE TO RETRACTABLE SHEATH BANANA PLUG



MODEL	Length
5048-48-*	1219.2 (48.0)

1ST END: Miniature Test Probe. Chuck, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.

RATING: 1200 V AC/DC Max.; 7 Amps; +80°C. (+176°F.) Max.
NOTE: This model supersedes model 5049.
***STD COLORS:** -0 Black, -2 Red.

NET 8.15

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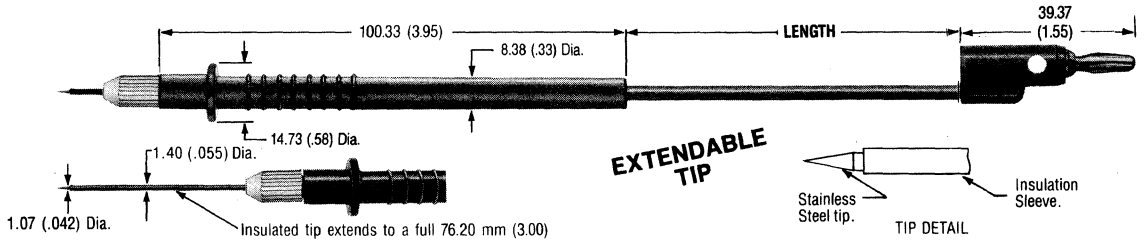
POMONA

MINIATURE SIZE TEST PROBES

EXTENDABLE TIP PROBE TO STACKING BANANA PLUG



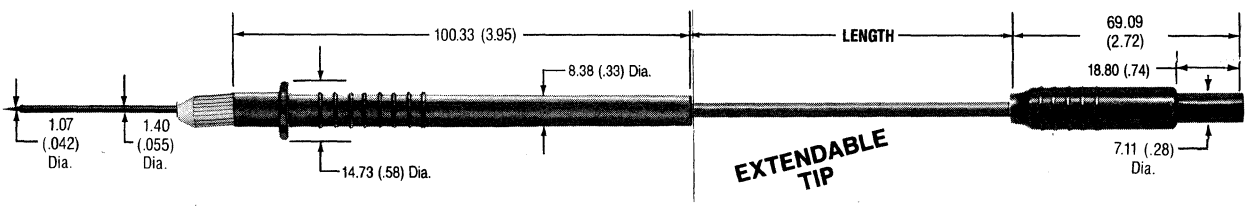
Now you can 'reach out' to get at those hard-to-reach test points with this miniature extendable test probe. The steel tip is very sharp, allowing penetration of contaminants or conformal coatings. The tip is insulated up to the point, providing protection from accidental shorting to adjacent components.

MODEL	Length
5044-48-*	1219.2(48.0)

1ST END: Extension Probe. Collet, Brass. Insulation; nylon. Tip, stainless steel. Insulation; Kynar. Chuck nut, nylon.
WIRE:18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation: polypropylene.
RATING: 1500 VAC/DC; 7 Amps; +55°C. (+131°F.) Max.
***COLORS AVAILABLE:** -0 Black, -2 Red.

NET 8.95

EXTENDABLE TIP PROBE TO RETRACTABLE SHEATH BANANA PLUG

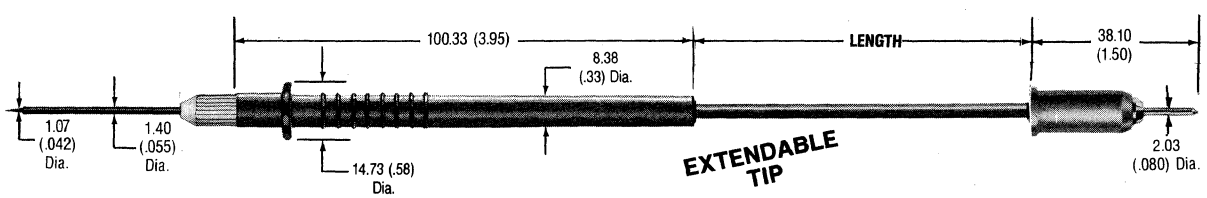


MODEL	Length
5271-48-*	1219.2(48.0)

1ST END: Extension Probe. Collet, Brass. Insulation; nylon. Tip, stainless steel. Insulation; Kynar. Chuck nut, nylon.
WIRE:18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation: nylon.
RATING: 1500 VAC/DC; 7 Amps; +80°C. (+176°F.) Max.
***COLORS AVAILABLE:** -0 Black, -2 Red.

NET 14.75

EXTENDABLE TIP PROBE 2.03mm (.080) DIA. TIP PLUG

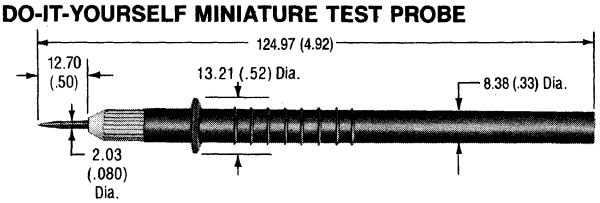


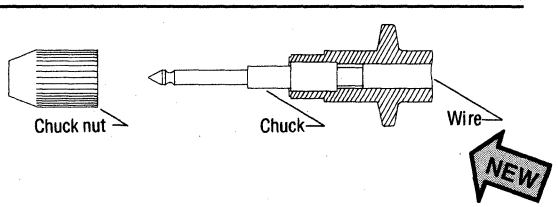
MODEL	Length
5272-48-*	1219.2(48.0)

1ST END: Extension Probe. Collet, Brass. Insulation; nylon. Tip, stainless steel. Insulation; Kynar. Chuck nut, nylon.
WIRE:18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Pin Tip Plug. Brass, nickel plated. Insulation, polypropylene.
RATING: 1500 VAC/DC; 5 Amps; +55°C. (+131°F.) Max.
***COLORS AVAILABLE:** -0 Black, -2 Red.

NET 13.95

DO-IT-YOURSELF MINIATURE TEST PROBE





Install this miniature probe on the end of any test lead having a maximum O.D. of 2.92 mm (.115) dia. and wire gauge of 22 to 18 AWG. Simply remove chuck nut, tip and chuck. Strip wire 3.18 mm (.125) and feed through test probe body. Solder to small end of chuck. Insert chuck into test probe by aligning slot with rib. Replace tip into chuck and tighten chuck nut.

MODEL
5432-*

MATERIAL: Chuck, brass. Replaceable needle tip, stainless steel.
FINISH: Chuck, nickel plated.
INSULATION: Nylon.
RATING: 1200 VAC/DC; 7 Amps; +80°C. (+176°F.) Max.
***COLORS AVAILABLE:** -0 Black, -2 Red.
NOTE: This model supersedes model 5065.

NET 2.15

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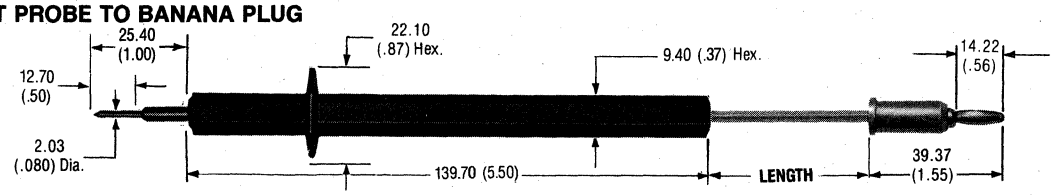
POMONA

LARGE SIZE TEST PROBES

LARGE TEST PROBE TO BANANA PLUG



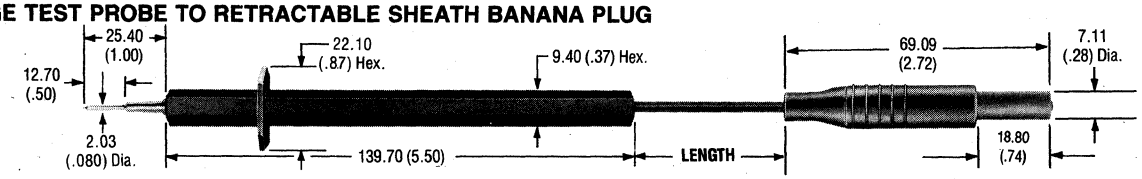
MODEL	Length
4853-36-*	914.4(36.0)
4853-48-*	1219.2(48.0)

1ST END: Large Test Probe. Brass, nickel plated. Insulation; nylon.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

RATING: 3000 WVDC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.
NOTE: This model supersedes Models 1986 and 4546.

NET 6.95

LARGE TEST PROBE TO RETRACTABLE SHEATH BANANA PLUG



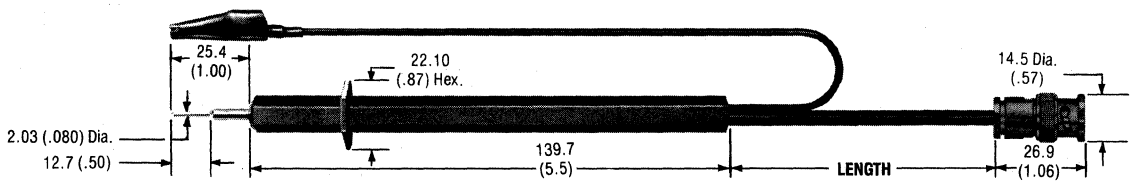
MODEL	Length
5017-48-*	1219.2(48.0)

1ST END: Large Test Probe. Brass, nickel plated. Insulation; nylon.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation: nylon.

RATING: 1200 VAC/DC; 7 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 7.95

SHIELDED TEST PROBE TO BNC MALE



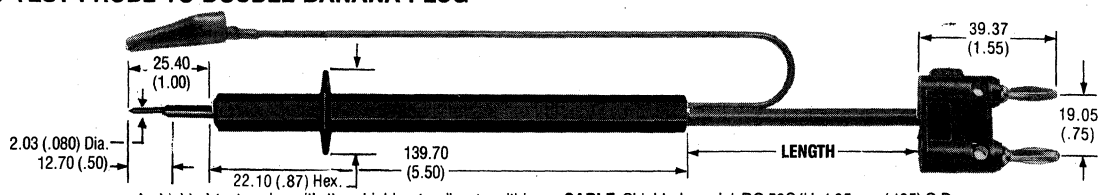
MODEL	Length
4857-C-48	1219.2(48.0)

A shielded test probe with the shield extending to within 38.10 mm (1.50) of the probe tip end. Insulated minigator clip connected to shield lead.
1ST END: Large Test Probe. Brass, nickel plated. Insulation; nylon, red. Lead Wire :20 AWG, 41 x 36 t.c., PVC insulated. 2.21 mm (.087) O.D. Minigator, steel, cadmium plated. Insulation, vinyl, black.

CABLE: Shielded coaxial, RG 58C/U, 4.95 mm (1.95) O.D.
2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated.
RATING: 500 VRMS; +50°C. (+122°F.) Max.
NOTE: This model supersedes Models 2739.

NET 16.50

SHIELDED TEST PROBE TO DOUBLE BANANA PLUG



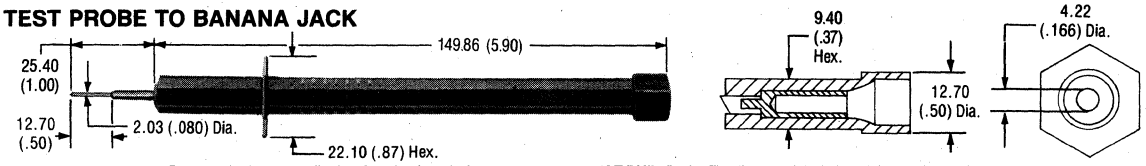
MODEL	Length
4858-C-48	1219.2(48.0)

A shielded test probe with the shield extending to within 38.10 mm (1.50) of the probe tip end. Insulated minigator clip connected to shield lead.
1ST END: Large Test Probe. Brass, nickel plated. Insulation; nylon, red. Lead Wire: 20 AWG, 41 x 36 t.c., PVC insulated. 2.21 mm (.087) O.D. Minigator, steel, cadmium plated. Insulation: Vinyl, black.

CABLE: Shielded coaxial, RG 58C/U, 4.95 mm (.195) O.D.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
RATING: 1400 VRMS; +50°C. (+122°F.) Max.
NOTE: This model supersedes Model 1569.

NET 16.50

LARGE TEST PROBE TO BANANA JACK



MODEL
5072-*

Banana jack in handle is sheathed to help prevent accidental shorting due to partial insertion. Allows the use of standard banana plug test leads. Finger guard molded to probe helps prevent fingers from slipping onto tip.

1ST END: Probe Tip, Brass, nickel plated. Insulation; nylon.
2ND END: Banana Jack. Brass, nickel plated.
RATING: 3000 VDC Max.; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 4.75

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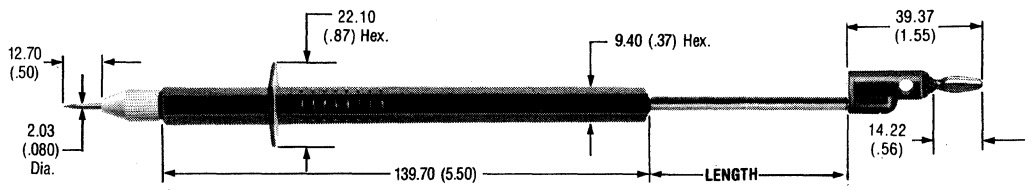
POMONA

LARGE SIZE TEST PROBES

LARGE TEST PROBE TO STACKING BANANA PLUG

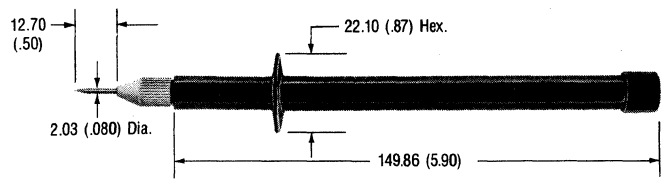


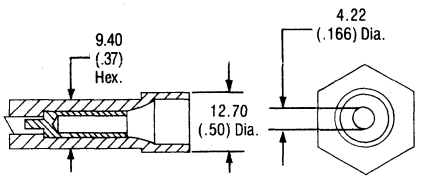
MODEL	Length	NET
4948-36-*	914.4(36.0)	7.25
4948-48-*	1219.2(48.0)	7.45

1ST END: Large Test Probe. Body, brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
WIRE:18 AWG, 65 x 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

RATING: 3000 VDC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.
OPTIONAL ACCESSORIES: Flexible Pin Tip Probe, model 4906 & IC Test Tip Adpater, model 5246 (page 88).

LARGE TEST PROBE (NEEDLE TIP) TO BANANA JACK





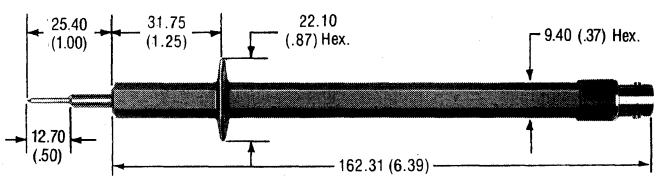
Sharp replaceable needle tip allows testing of encapsulated circuits. Banana jack in handle is sheathed to help prevent accidental shorting due to partial insertion. Finger guard molded to probe helps prevent fingers from slipping onto tip.
NOTE: This model supersedes Models 1705, 4545 and 4854.

MODEL
5075-*

1ST END: Large Test Probe. Brass, nickel plated. Replaceable needle tip, stainless steel. Insulation; nylon.
2ND END: Banana Jack. Brass, nickel plated.
RATING: 3000 VDC Max.; 7 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.
OTHER ACCESSORIES: Flexible Pin Tip Probe, model 4906 & IC Test Tip adapter, model 5246 (page 88)

NET 4.95

LARGE TEST PROBE TO BNC FEMALE

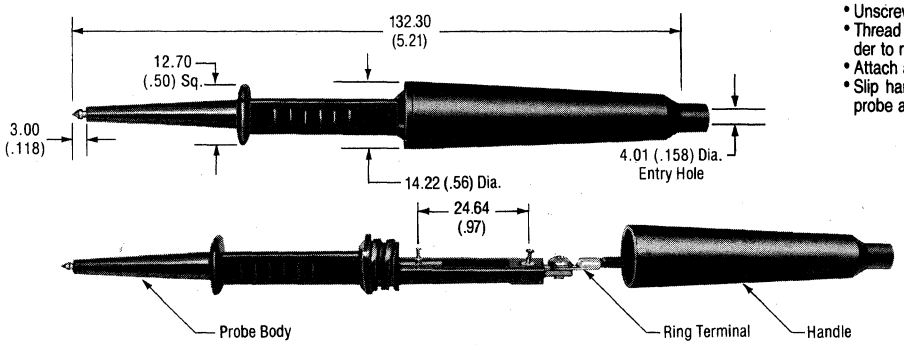


Center contact of BNC female in handle connected to tip. Shield extends to within 38.10 mm (1.50) of the probe tip end.
1ST END: Probe Tip. Brass, nickel plated. Insulation; nylon.
2ND END: BNC female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.
NOTE: This model supersedes Models 1748 and 4548.
***STD COLORS:** -0 Black, -2 Red.

MODEL
4856-*

NET 8.65

DO-IT-YOURSELF COMPONENT MOUNTING TEST PROBE



SIMPLIFIED COMPONENT INSTALLATION
- Unscrew handle from probe body.
- Thread wire through hole in handle and crimp or solder to ring terminal.
- Attach and solder component to turret terminals.
- Slip handle over component and thread handle to probe assembly.

This do-it-yourself component mounting test probe enables the user to create his own compensated probe. Discrete components, such as resistors, capacitors, filters, etc., can be soldered between the two solder turrets. The probe features a square shaped finger grip with molded finger guard and threaded handle.
MATERIAL: Test probe tip and solder lugs, brass.
FINISH: Test probe tip, nickel plated. Solder lugs, silver plated.
INSULATION: Nylon.

RATING: 1200 V AC/DC Max.; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
4971-*

NET 4.95

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POMONA

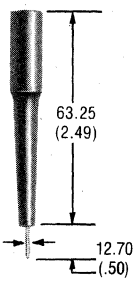
TEST PROBE ACCESSORIES

FLEXIBLE PIN TIP PROBE

This flexible tip easily attaches to the end of the Pomona line of test probes allowing access to those hard to get places that are "around the corner" or just too far to reach with regular probes.

MODEL	Fits Test Probe Model Nos.	NET
4906-*	4948, 5075	2.25
4908-*	All probes with 2.03 (.08) dia. tip, removable or fixed	2.50

Model 4906 threads onto test probe after removing chuck nut & tip. Model 4908 inserts directly onto tip of test probe.
UPPER: Brass, tin plated.
INSULATION: PVC.
LOWER: Pin Tip Plug. Brass, gold plated.
RATING: 2500 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



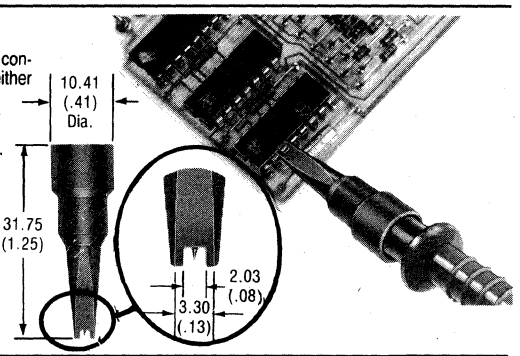


IC TEST TIP ADAPTER

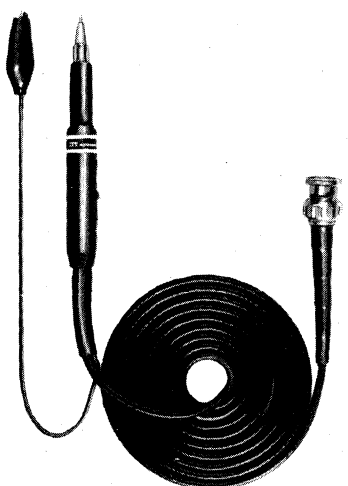
Miniature IC Test Tip fits on the Pomona line of test probes directly onto the tip. The small size and recessed contact allows the IC Adapter to probe one leg of a DIP without shorting an adjacent leg. Plastic projections on either side of the contact tip slide between the DIP legs to hold adapter in place and prevent slipping.

MODEL	Fits Test Probe Model Nos.	NET
5246	4410, 4602, 4731, 4800, 4847, 4848, 4851, 4852, 4948, 5005, 5048, 5049, 5065, 5075, 5227, 5238, 5241, 5244, 5292, 5309, 5325	2.55

Model 5246 inserts directly onto tip of test probe.
UPPER: Brass, nickel plated.
INSULATION: Nylon.
LOWER: Tip, stainless steel.
RATING: +80°C. (+176°F.) Max.



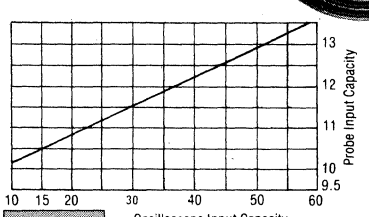
OSCILLOSCOPE PROBE KIT



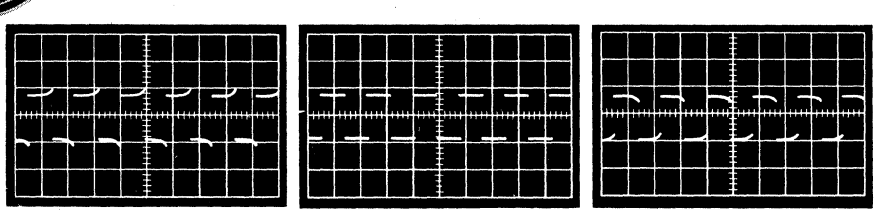
SPECIFICATIONS (3 POSITION):

Position x 1
Bandwidth: DC to 10MHz
Input Resistance: 1MΩ (oscilloscope input)
Input Capacity: 40pF. Plus oscilloscope capacity.
Working Voltage: 600 Volts DC (including Peak AC)
Cable Length: 1.5 meters (4.92 ft.)
Position Ref.
Probe tip grounded via 9MΩ resistor, oscilloscope input grounded
Position x 10
Bandwidth: DC to 100 MHz
Risetime: 3.5 nanoseconds
Input Resistance: 10MΩ when used with oscilloscopes which have 1MΩ input. (Probe resistance 9MΩ ± 1%)
Input Capacity: 11.5pF when used with oscilloscopes which have 30pF input capacity.
For other values see graph.
Compensation Range: 10-60pF
Working Voltage: 600 Volts DC (including Peak AC)

SEE BELOW FOR ACCESSORIES SUPPLIED WITH KIT



MODEL
4550



NET 49.50 KIT

REPLACEMENT ACCESSORIES FOR OSCILLOSCOPE PROBES (SUPPLIED WITH 4550 KIT)

MODEL	Description	NET
4560	Insulting Tip	1.15
4561	Sprung Hook	8.85
4562	Trimmer Tool	1.40
4563	BNC Adapter	2.55
4564	I.C. Tip	1.65



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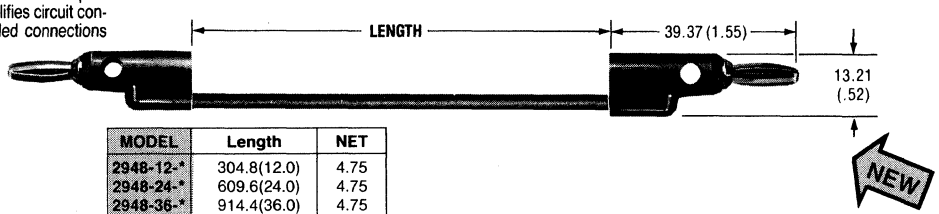
POMONA

STANDARD BANANA PLUG PATCH CORDS

STACKING STANDARD BANANA PLUG EACH END

Multiple stacking feature accommodates the most complex stacking; keeps circuitry neater. Greatly simplifies circuit connections and changes. Reliable solderbonded connections withstand pull test in excess of 50 lbs.



MODEL	Length	NET
B-4 *	101.6(4.0)	2.95
B-8 *	203.2(8.0)	2.95
B-12*	304.8(12.0)	2.95
B-18*	457.2(18.0)	2.95
B-24*	609.6(24.0)	2.95
B-36*	914.4(36.0)	2.95
B-48*	1219.2(48.0)	3.15
B-60*	1524.0(60.0)	3.35
B-72*	1829.0(72.0)	3.55

FINISH: Nickel plated.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

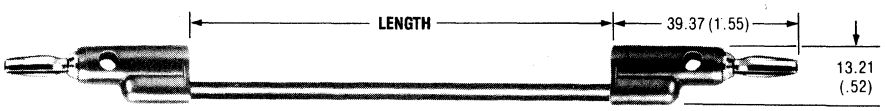
MODEL	Length	NET
2948-12-*	304.8(12.0)	4.75
2948-24-*	609.6(24.0)	4.75
2948-36-*	914.4(36.0)	4.75
2948-48-*	1219.2(48.0)	4.95
2948-60-*	1524.0(60.0)	5.15

FINISH: Gold plated.
***STD COLORS:** -0 Black, -2 Red.

1ST END: Stacking Banana Plug. Brass body; beryllium copper spring, Insulation; polypropylene.
WIRE :18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 5000 WVDC; 15 Amps; + 55°. (+ 131°F.) Max.

HIGH TEMPERATURE STACKING BANANA PLUG EACH END

For use in environmental chambers and medical application where high temperature and/or sterilization is required.



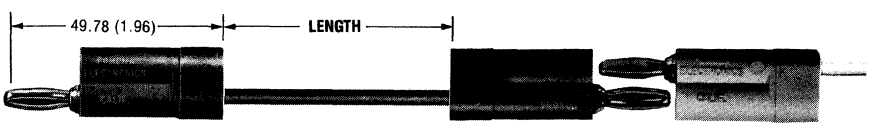
MODEL	Length	NET
5206-24-*	609.6(24.0)	5.95
5206-48-*	1219.2(48.0)	6.55
5206-60-*	1524.0(60.0)	7.15

1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyphenylene sulfide, UL 94V-0.
WIRE: 18 AWG, 16 x 30 t.c., silicone rubber insulated, 3.61 mm (.142) O.D. Color; white.

2ND END: Same as first end.
RATING: 600 V Peak, +150°C. (+302°F.) Max.
***STD COLORS:** (Plug insulation only); -0 Black, -6 Blue.

EXTENSION STACKING BANANA PLUG EACH END

Dual purpose. Insulates all hot leads when used as an extension cord. Endless extension couplings possible with any banana plug patch cord.



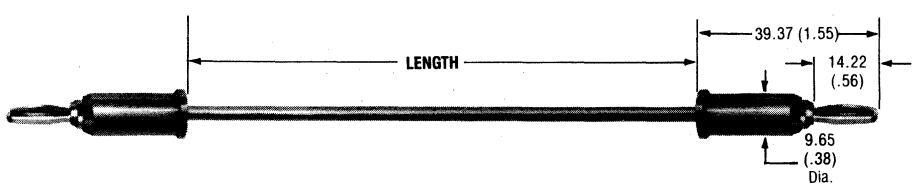
MODEL	Length	NET
HB-4*	101.6(4.0)	4.95
HB-8*	203.2(8.0)	4.95
HB-12*	304.8(12.0)	4.95
HB-18*	457.2(18.0)	4.95
HB-24*	609.6(24.0)	4.95
HB-36*	914.4(36.0)	4.95
HB-48*	1219.2(48.0)	5.15
HB-60*	1524.0(60.0)	5.35

1ST END: Extension Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 5000 WVDC, 15 Amps; + 55°C. (+ 131°F.) Max.

***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

BANANA PLUG EACH END

Excellent for general lab work. Permits interconnection between test instruments, etc.



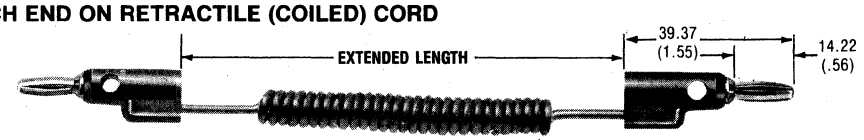
MODEL	Length	NET
1985-4 *	101.6(4.0)	3.95
1985-8 *	203.2(8.0)	3.95
1985-12*	304.8(12.0)	3.95
1985-18*	457.2(18.0)	3.95
1985-24*	609.6(24.0)	3.95
1985-36*	914.4(36.0)	3.95
1985-48*	1219.2(48.0)	4.15
1985-60*	1524.0(60.0)	4.35

1ST END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 5000 WVDC, 15 Amps; + 55°C. (+ 131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING BANANA PLUG EACH END ON RETRACTILE (COILED) CORD

Permits the use of one size patch cord in place of many various lengths.



MODEL	Length	NET
2484-36*	914.4(36.0)	7.35
2484-48*	1219.2(48.0)	8.25
2484-60*	1524.0(60.0)	9.15

1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 20 AWG, 42 x 36 t.c., polyurethane insulated, 3.63 mm (.143) O.D.

2ND END: Same as first end.
RATING: 3000 VDC int.; 270 VDC, 90 VAC cont. duty; 5 Amps; + 55°C. (+ 131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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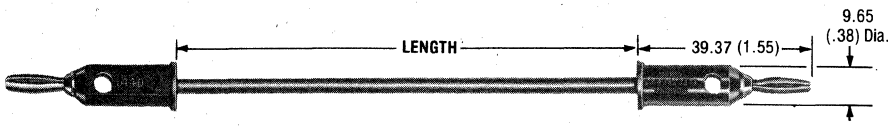
STANDARD BANANA PLUG/JACK PATCH CORDS

HORIZONTAL STACKING BANANA PLUG EACH END

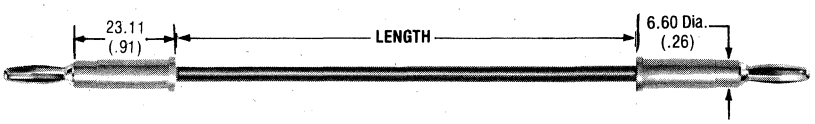


MODEL	LENGTH	NET
1440-8*	203.2(8.0)	4.25
1440-12*	304.8(12.0)	4.25
1440-18*	457.2(18.0)	4.25
1440-24*	609.6(24.0)	4.25
1440-36*	914.4(36.0)	4.25
1440-48*	1219.2(48.0)	4.45
1440-60*	1524.0(60.0)	4.65

Ideal as an interconnecting lead between power supplies, test equipment, etc. Horizontal stacking feature.
1ST END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

IN-LINE BANANA PLUG EACH END

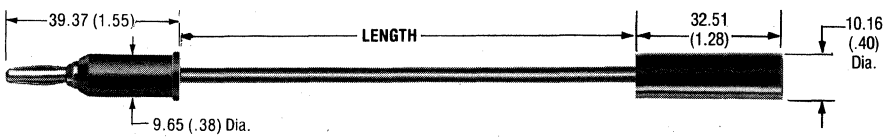


MODEL	LENGTH	NET
4585-12*	304.8(12.0)	4.25
4585-24*	609.6(24.0)	4.25
4585-36*	914.4(36.0)	4.25
4585-48*	1219.2(48.0)	4.45
4585-60*	1524.0(60.0)	4.65

Designed for recessed banana jacks with access hole 6.91 mm (.272) dia.
1ST END: In-line Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 ×36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

BANANA PLUG TO IN-LINE BANANA JACK



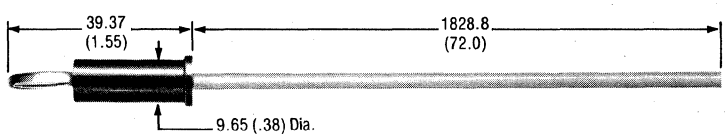
MODEL	LENGTH	NET
4702-12*	304.8(12.0)	4.25
4702-18*	457.2(18.0)	4.25
4702-24*	609.6(24.0)	4.25
4702-36*	914.4(36.0)	4.25
4702-48*	1219.2(48.0)	4.45
4702-60*	1524.0(60.0)	4.65

Dual purpose. Insulates all hot leads when used as an extension cord. Endless extension couplings possible with any banana plug patch cord.
1ST END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: In-line Banana Jack. Brass, nickel plated. Insulation; polypropylene.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MEDICAL APPLICATION BANANA PLUG, ONE END ONLY

For use in medical laboratories or other uses where high temperature and/or sterilization is required.



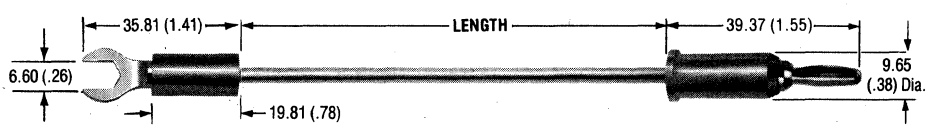
MODEL
4791-72

1ST END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polysulfone, red.
WIRE: 18 AWG, 16 × 30 t.c., silicone rubber insulated, 3.61 mm (.142) O.D. Color; white.

2ND END: None.
RATING: 600 V Peak; +150°C. (+302°F.) Max.

NET 4.95

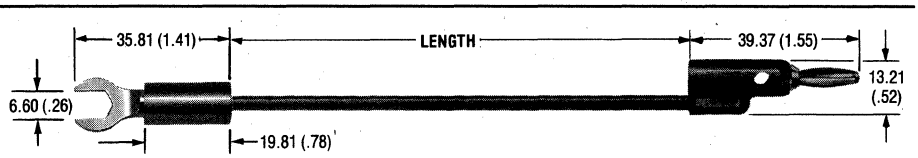
INSULATED SPADE LUG TO BANANA PLUG



MODEL	LENGTH	NET
1987-12*	304.8(12.0)	4.15
1987-24*	609.6(24.0)	4.15
1987-36*	914.4(36.0)	4.15
1987-48*	1219.2(48.0)	4.35
1987-60*	1524.0(60.0)	4.55

1ST END: Spade Lug. Brass, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED SPADE LUG TO STACKING BANANA PLUG



MODEL	LENGTH	NET
1370-12*	304.8(12.0)	4.15
1370-24*	609.6(24.0)	4.15
1370-36*	914.4(36.0)	4.15
1370-48*	1219.2(48.0)	4.35
1370-60*	1524.0(60.0)	4.55

1ST END: Spade Lug. Brass, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:**-0 Black, -2 Red.

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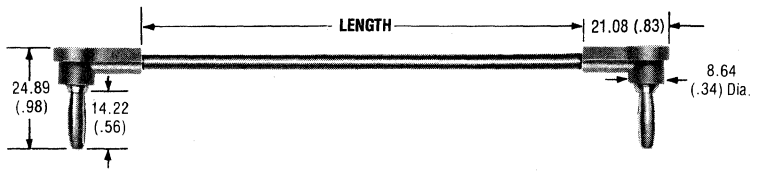
PATCH CORDS

RIGHT ANGLE BANANA PLUG EACH END

Designed for use where vertical space is limited. Right angle plug features concave ribbed top and oversized shoulder for ease of connect and disconnect in tight places.



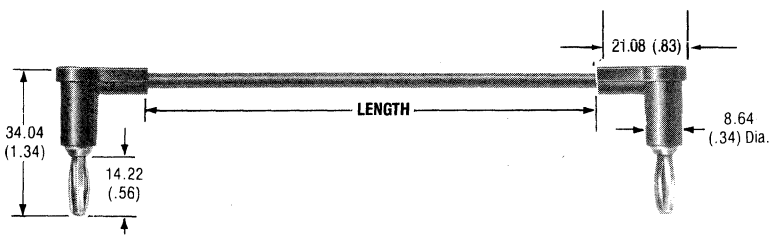
MODEL	Length	NET
4567-4*	101.6(4.0)	5.25
4567-8*	203.2(8.0)	5.25
4567-12*	304.8(12.0)	5.25
4567-18*	457.2(18.0)	5.25
4567-24*	609.6(24.0)	5.25

1ST END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING RIGHT ANGLE BANANA PLUG EACH END

Vertical stacking feature allows endless circuit connections and the right angle design keeps wires close to the chassis. An oversided shoulder allows easy connect and disconnect.

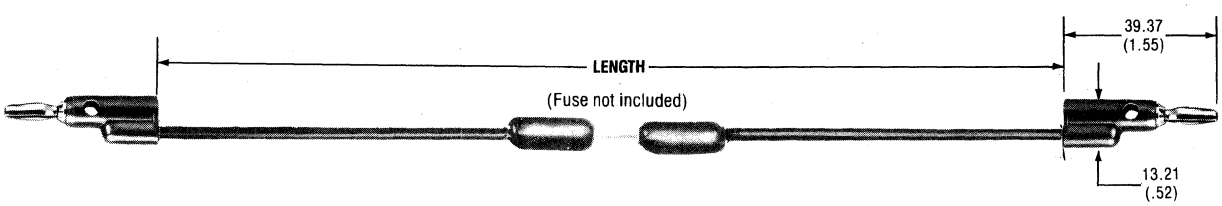


MODEL	Length	NET
2864-4*	101.6(4.0)	5.25
2864-8*	203.2(8.0)	5.25
2864-12*	304.8(12.0)	5.25
2864-18*	457.2(18.0)	5.25
2864-24*	609.6(24.0)	5.25
2864-36*	914.4(36.0)	5.25
2864-48*	1219.2(48.0)	5.45
2864-60*	1524.0(60.0)	5.65

1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING BANANA PLUG EACH END WITH IN-LINE FUSE HOLDER

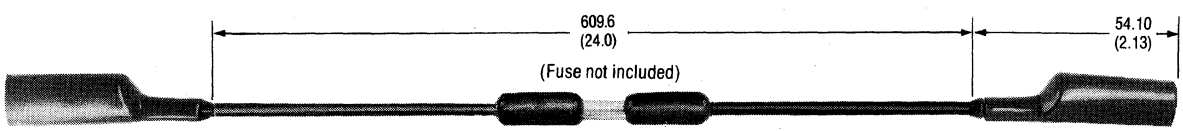


MODEL	Length	NET
4274-12*	304.8(12.0)	7.50
4274-24*	609.6(24.0)	7.50
4274-36*	914.4(36.0)	7.50
4274-60*	1524.0(60.0)	7.90

1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D. Fuse holder, brass, tin plated. Insulation; PVC. Accepts 6.35 mm (.25) dia. SFE and AGC fuses (not included.)

2ND END: Same as first end.
RATING: 5000 WVDC; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED ALLIGATOR CLIP EACH END WITH IN-LINE FUSE HOLDER



MODEL
4354-24*

1ST END: Alligator Clip. Steel, nickel plated: Insulation; vinyl.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D. Fuse holder, brass, tin plated. Insulation; PVC. Accepts 6.35 mm (.25) dia. SFE and AGC fuses (not included.)

2ND END: Same as first end.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

NET 8.95

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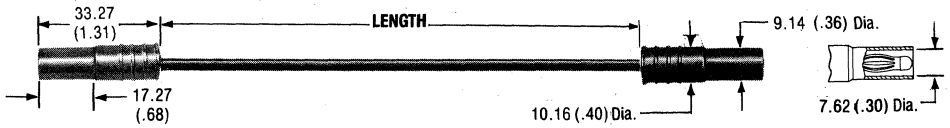
SHEATHED BANANA PLUGS/JACKS PATCH CORDS

FIXED SHEATHED BANANA PLUG, EACH END



MODEL	Length	NET
4913-4*	101.6(4.0)	3.85
4913-8*	203.2(8.0)	3.85
4913-12*	304.8(12.0)	3.85
4913-18*	457.2(18.0)	3.85
4913-24*	609.6(24.0)	3.85
4913-36*	914.4(36.0)	3.85
4913-48*	1219.2(48.0)	4.05
4913-60*	1524.0(60.0)	4.25

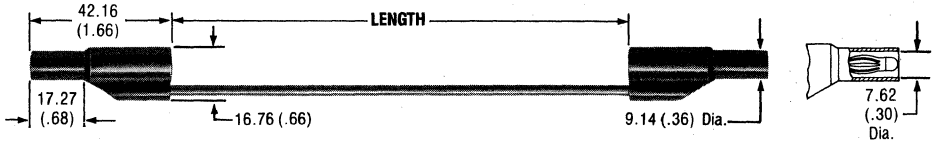
FEATURES
- No exposed metal.
- Fits models 4921, 4922, 4934 and 4987.
- Will not short out when dropped.

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene. Tip: polypropylene, orange.

WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

FIXED SHEATHED STACKING BANANA PLUG, EACH END

FEATURES
- No exposed metal.
- Fits models 4921, 4922, 4934 and 4987.
- Will not short out when dropped.



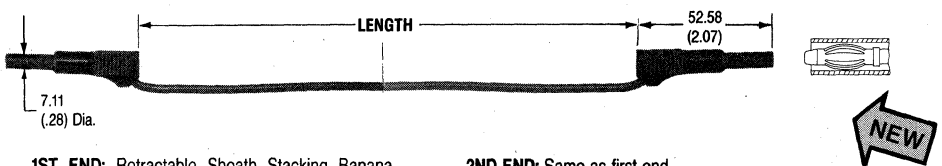
MODEL	Length	NET
4912-8*	203.2(8.0)	4.25
4912-12*	304.8(12.0)	4.25
4912-18*	457.2(18.0)	4.25
4912-24*	609.6(24.0)	4.25
4912-36*	914.4(36.0)	4.25

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene. Tip; polypropylene, orange.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

RETRACTABLE SHEATH STACKING BANANA PLUG, EACH END

This retractable sheath banana plug has a stacking feature allowing the insertion of standard or other retractable plugs.

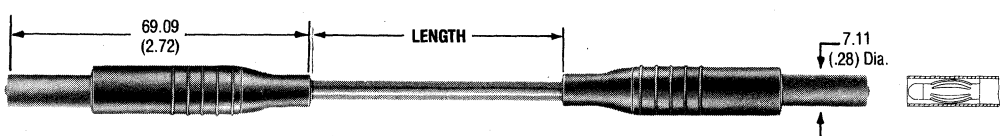


MODEL	Length	NET
5403-12*	304.8(12.0)	6.75
5403-24*	609.6(24.0)	6.75
5403-36*	914.4(36.0)	6.75
5403-48*	1219.2(48.0)	6.95
5403-60*	1524.0(60.0)	7.15

1ST END: Retractable Sheath Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, orange.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 1200 V AC/DC Max., 7 Amps, +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

RETRACTABLE SHEATH BANANA PLUG, EACH END

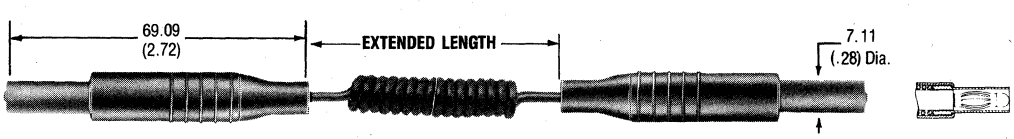


MODEL	Length	NET
4911-4*	101.6(4.0)	5.75
4911-8*	203.2(8.0)	5.75
4911-12*	304.8(12.0)	5.75
4911-18*	457.2(18.0)	5.75
4911-24*	609.6(24.0)	5.75
4911-36*	914.4(36.0)	5.75
4911-48*	1219.2(48.0)	5.95
4911-60*	1524.0(60.0)	6.15

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

RETRACTABLE SHEATH BANANA PLUG, EACH END



MODEL	Extended Length	Net
5036-36*	914.4(36.0)	9.50
5036-48*	1219.2(48.0)	10.40
5036-60*	1524.0(60.0)	11.30

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.
WIRE: 20 AWG, 42 × 36 t.c., polyurethane insulated, 3.71 mm (.146) O.D.

2ND END: Same as first end.
RATING: 270 VDC-90 VAC cont. duty; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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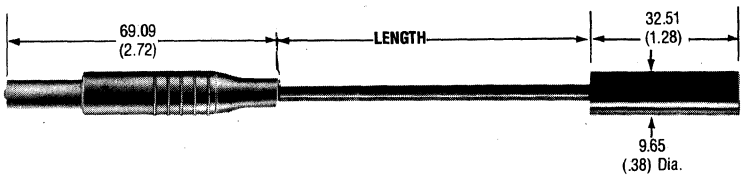
RETRACTABLE SHEATH BANANA PLUGS

RETRACTABLE SHEATH BANANA PLUG TO IN-LINE BANANA JACK

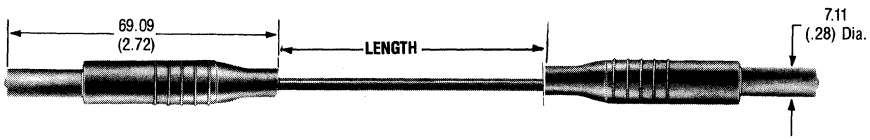


MODEL	Length	NET
5259-12*	304.8 (12.0)	5.25
5259-24*	609.6 (24.0)	5.25
5259-36*	914.4 (36.0)	5.25
5259-48*	1219.2 (48.0)	5.45
5259-60*	1524.0 (60.0)	5.65

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: In-line Banana Jack. Brass, nickel plated. Insulation, polypropylene.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

LOW THERMAL EMF RETRACTABLE SHEATH BANANA PLUG, EACH END

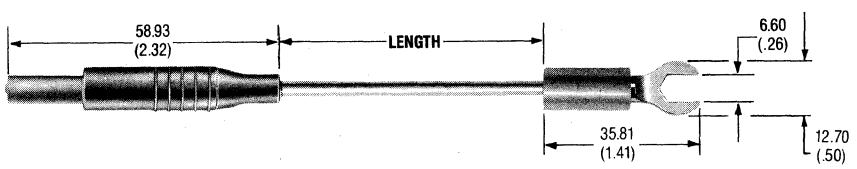


MODEL	Length	NET
5291-12*	304.8 (12.0)	10.50
5291-36*	914.4 (36.0)	10.50
5291-60*	1524.0 (60.0)	11.80

1ST END: Sheathed Banana Plug. Tellurium copper body, beryllium copper spring, gold plated. Insulation; nylon.
WIRE: 12 AWG, 7 × 38/36 bare copper, PVC jacket, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

LOW THERMAL EMF RETRACTABLE SHEATH BANANA PLUG TO SPADE LUG

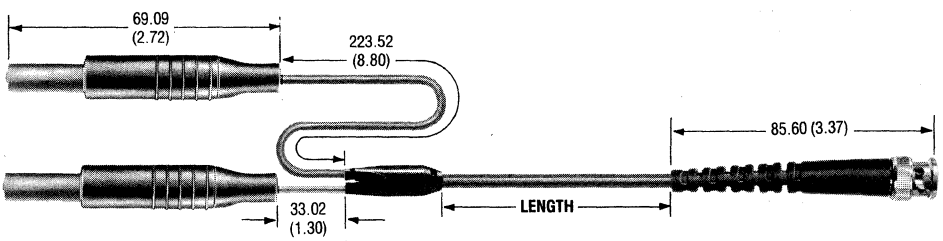


MODEL	Length	NET
5295-12*	304.8 (12.0)	10.95
5295-36*	914.4 (36.0)	10.95
5295-60*	1524.0 (60.0)	12.75

1ST END: Sheathed Banana Plug. Tellurium copper body, beryllium copper spring, gold plated. Insulation; nylon.
WIRE: 12 AWG, 7 × 38/36 bare copper, polyethylene insulated. PVC jacket, 3.66 mm (.144) O.D.

2ND END: Spade Lug. Copper, gold plated. Insulation, polypropylene.
RATING: 1200 V AC/DC Max.; 7 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

RETRACTABLE SHEATH BANANA PLUGS TO BNC MALE



MODEL	Length	NET
5343-C-12*	304.8 (12.0)	14.50
5343-C-24*	609.6 (24.0)	14.50
5343-C-36*	914.4 (36.0)	14.50
5343-C-48*	1219.2 (48.0)	15.10
5343-C-60*	1524.0 (60.0)	15.70

1ST END: Sheathed Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; nylon.

CABLE: Shielded coaxial RG58C/U 4.95 mm (.195) O.D. Y-mold insulation, PVC, black.
2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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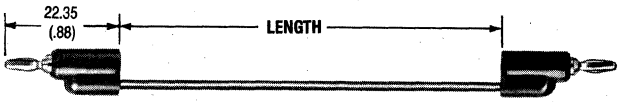
MINIATURE BANANA PLUG PATCH CORDS

MINIATURE STACKING BANANA PLUG EACH END

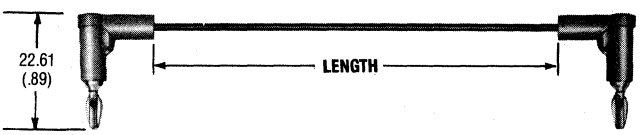


MODEL	Length	NET
1081-4*	101.6 (4.0)	3.95
1081-8*	203.2 (8.0)	3.95
1081-12*	304.8 (12.0)	3.95
1081-18*	457.2 (18.0)	3.95
1081-24*	609.6 (24.0)	3.95
1081-36*	914.4 (36.0)	3.95
1081-48*	1219.2 (48.0)	4.15
1081-60*	1524.0 (60.0)	4.35

1ST END: Stacking Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 X 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

MINIATURE STACKING RIGHT ANGLE BANANA PLUG EACH END

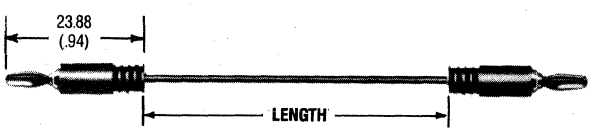


MODEL	Length	NET
2860-4*	101.6 (4.0)	3.25
2860-8*	203.2 (8.0)	3.25
2860-12*	304.8 (12.0)	3.25
2860-18*	457.2 (18.0)	3.25
2860-24*	609.6 (24.0)	3.25

1ST END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 X 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MINIATURE BANANA PLUG EACH END

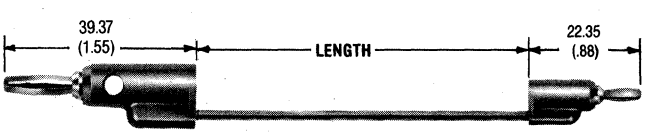


MODEL	Length	NET
2842-4*	101.6 (4.0)	4.25
2842-8*	203.2 (8.0)	4.25
2842-12*	304.8 (12.0)	4.25
2842-18*	457.2 (18.0)	4.25
2842-24*	609.6 (24.0)	4.25
2842-36*	914.4 (36.0)	4.25
2842-48*	1219.2 (48.0)	4.45
2842-60*	1524.0 (60.0)	4.65

1ST END: Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 X 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING BANANA PLUG TO MINIATURE STACKING BANANA PLUG



MODEL	Length	NET
3014-12*	304.8 (12.0)	3.50
3014-18*	457.2 (18.0)	3.50
3014-24*	609.6 (24.0)	3.50
3014-36*	914.4 (36.0)	3.50
3014-48*	1219.2 (48.0)	3.70
3014-60*	1524.0 (60.0)	3.90

1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 X 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Stacking Miniature Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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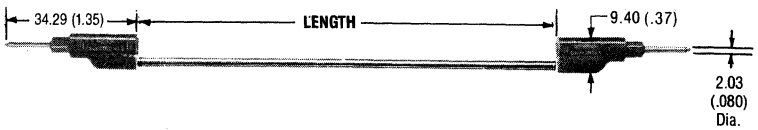
2.03 mm (.080) PIN TIP PATCH CORDS

STACKING PIN TIP PLUG, EACH END

A must in circuit designing and testing with instruments that utilize tip jacks.

MODEL	LENGTH	NET
P-4*	101.6(4.0)	3.75
P-8*	203.2(8.0)	3.75
P-12*	304.8(12.0)	3.75
P-18*	457.2(18.0)	3.75
P-24*	609.6(24.0)	3.75
P-36*	914.4(36.0)	3.75
P-48*	1219.2(48.0)	3.95
P-60*	1524.0(60.0)	4.15



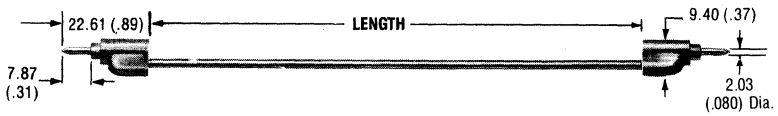
1ST END: Stacking Pin Tip Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG. 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

LOW PROFILE STACKING PIN TIP PLUG, EACH END

Excellent for low profile applications where space is at a premium.

MODEL	LENGTH	NET
4740-4*	101.6(4.0)	4.55
4740-8*	203.2(8.0)	4.55
4740-12*	304.8(12.0)	4.55
4740-18*	457.2(18.0)	4.55
4740-24*	609.6(24.0)	4.55
4740-36*	914.4(36.0)	4.55
4740-48*	1219.2(48.0)	4.75
4740-60*	1524.0(60.0)	4.95



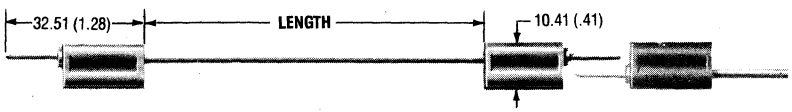
1ST END: Stacking Pin Tip Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING PIN TIP PLUG EXTENSION

Dual purpose, insulates exposed leads when used as an extension cord. Endless extension coupling possible. Also provides stacking from 2.03 mm (.080) jack.

MODEL	LENGTH	NET
1727-4*	101.6(4.0)	5.95
1727-8*	203.2(8.0)	5.95
1727-12*	304.8(12.0)	5.95
1727-18*	457.2(18.0)	5.95
1727-24*	609.6(24.0)	5.95
1727-36*	914.4(36.0)	5.95
1727-48*	1219.2(48.0)	6.15
1727-60*	1524.0(60.0)	6.35



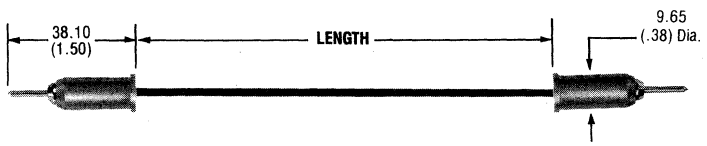
1ST END: Stacking Pin Tip Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

PIN TIP PLUG, EACH END

Heavy duty patch cord. Excellent for general lab work. Permits interconnection between test instruments that utilize tip jacks.

MODEL	LENGTH	NET
1990-8*	203.2(8.0)	3.95
1990-12*	304.8(12.0)	3.95
1990-18*	457.2(18.0)	3.95
1990-24*	609.6(24.0)	3.95
1990-36*	914.4(36.0)	3.95
1990-48*	1219.2(48.0)	4.15
1990-60*	1524.0(60.0)	4.35



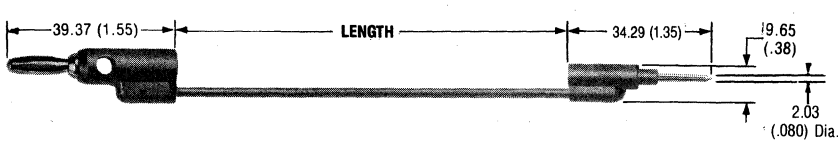
1ST END: Pin Tip Plug. Brass, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated. 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

STACKING BANANA PLUG TO STACKING PIN TIP PLUG

Adapts to equipment using banana jacks and pin jacks. Banana plug and pin tip allow vertical stackup.

MODEL	LENGTH	NET
1126-4*	101.6(4.0)	3.50
1126-8*	203.2(8.0)	3.50
1126-12*	304.8(12.0)	3.50
1126-18*	457.2(18.0)	3.50
1126-24*	609.6(24.0)	3.50
1126-36*	914.4(36.0)	3.50
1126-48*	1219.2(48.0)	3.70
1126-60*	1524.0(60.0)	3.90



1ST END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated. 2.21 mm (.087) O.D.

2ND END: Stacking Pin Tip Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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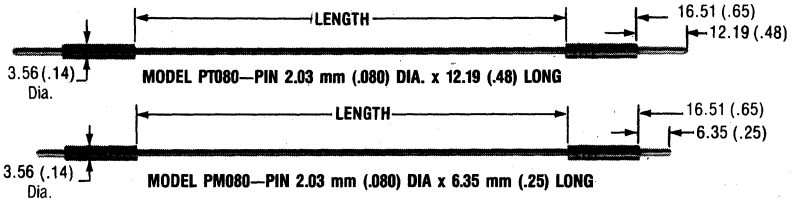
2.03 mm (.080) PIN TIP PATCH CORDS

HIGH DENSITY PIN TIP PLUG, EACH END

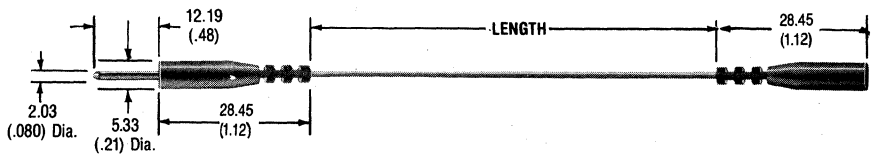
Small body style permits usage in equipment having receptacles spaced closely together.



MODEL	NET	MODEL	Length	NET
PT080-4*	2.95	PM080-4*	101.6 (4.0)	2.85
PT080-8*	2.95	PM080-8*	203.2 (8.0)	2.85
PT080-12*	2.95	PM080-12*	304.8 (12.0)	2.85
PT080-18*	2.95	PM080-18*	457.2 (18.0)	2.85
PT080-24*	2.95		609.6 (24.0)	
PT080-36*	2.95		914.4 (36.0)	
PT080-48*	3.15		1219.2 (48.0)	
PT080-60*	3.35		1524.0 (60.0)	

1ST END: Pin Tip Plug. Brass, gold plated. Insulation; polypropylene.
WIRE: 22 AWG, 26 + 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: Same as first end.
RATING: 1000 WVDC; 3 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

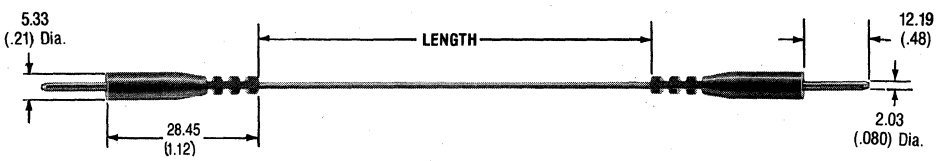
IN LINE PIN TIP PLUG TO PIN JACK



MODEL	Length	NET
5150-12*	304.8 (12.0)	3.50
5150-24*	609.6 (24.0)	3.50
5150-36*	914.4 (36.0)	3.50
5150-48*	1219.2 (48.0)	3.70
5150-60*	1524.0 (60.0)	3.90

1ST END: Pin Tip Plug. Brass, gold plated. Insulation; PVC.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: Pin Jack. Body, brass, nickel plated. Spring, beryllium copper, gold plated.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

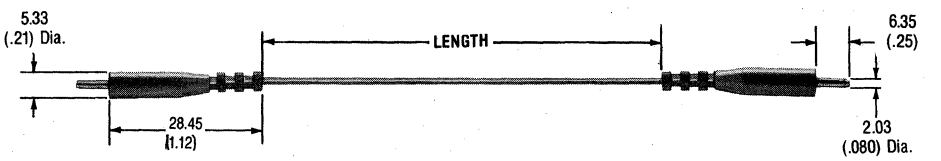
PIN TIP PLUG, EACH END



MODEL	Length	NET
5153-4*	101.6 (4.0)	3.25
5153-8*	203.2 (8.0)	3.25
5153-12*	304.8 (12.0)	3.25
5153-18*	457.2 (18.0)	3.25
5153-24*	609.6 (24.0)	3.25
5153-36*	914.4 (36.0)	3.25
5153-48*	1219.2 (48.0)	3.45
5153-60*	1524.0 (60.0)	3.65

1ST END: Pin Tip Plug. Brass, gold plated. Insulation; PVC.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: Same as first end.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

6.35 mm (.25) LONG PIN TIP PLUG, EACH END



MODEL	Length	NET
5154-4*	101.6 (4.0)	3.25
5154-8*	203.2 (8.0)	3.25
5154-12*	304.8 (12.0)	3.25
5154-18*	457.2 (18.0)	3.25
5154-24*	609.6 (24.0)	3.25
5154-36*	914.4 (36.0)	3.25
5154-48*	1219.2 (48.0)	3.45
5154-60*	1524.0 (60.0)	3.65

1ST END: Pin Tip Plug. Brass, gold plated. Insulation; PVC.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: Same as first end.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

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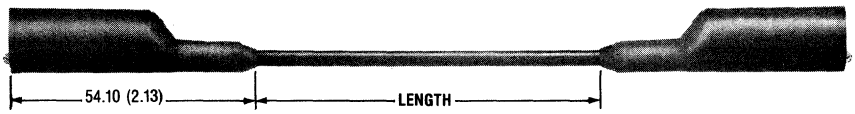
PATCH CORDS

ALLIGATOR CLIP EACH END

MODEL	Length	NET
AL-B-4*	101.6 (4.0)	3.50
AL-B-8*	203.2 (8.0)	3.50
AL-B-12*	304.8 (12.0)	3.50
AL-B-24*	609.6 (24.0)	3.50
AL-B-36*	914.4 (36.0)	3.50
AL-B-48*	1219.2 (48.0)	3.70
AL-B-60*	1524.0 (60.0)	3.90



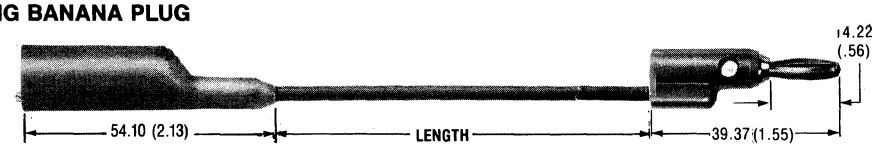
1ST END: Alligator Clip. Steel, nickel plated. Insulation; vinyl.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

ALLIGATOR CLIP TO STACKING BANANA PLUG

Adapts to equipment using standard banana jacks.

MODEL	Length	NET
1166-4*	101.6 (4.0)	3.50
1166-8*	203.2 (8.0)	3.50
1166-12*	304.8 (12.0)	3.50
1166-24*	609.6 (24.0)	3.50
1166-36*	914.4 (36.0)	3.50
1166-48*	1219.2 (48.0)	3.70
1166-60*	1524.0 (60.0)	3.90



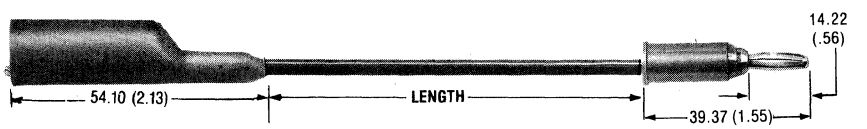
1ST END: Alligator Clip. Steel, nickel plated. Insulation; vinyl.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Stacking Banana Plug. Brass body, beryllium copper spring. Insulation; polypropylene.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

ALLIGATOR CLIP LEAD TO BANANA PLUG

Adapts to equipment using standard banana jacks.

MODEL	Length	NET
1959-4*	101.6 (4.0)	4.50
1959-8*	203.2 (8.0)	4.50
1959-12*	304.8 (12.0)	4.50
1959-24*	609.6 (24.0)	4.50
1959-36*	914.4 (36.0)	4.50
1959-48*	1219.2 (48.0)	4.70
1959-60*	1524.0 (60.0)	4.90

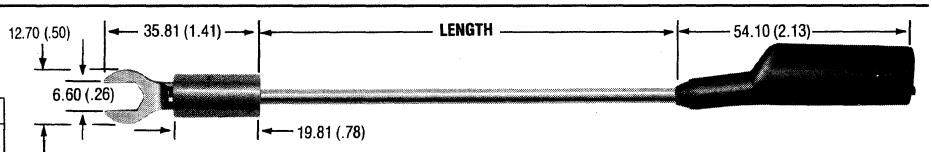


1ST END: Alligator Clip. Steel, nickel plated. Insulation; vinyl.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED SPADE LUG TO ALLIGATOR CLIP

MODEL	Length	NET
1960-12*	304.8 (12.0)	4.50
1960-24*	609.6 (24.0)	4.50
1960-36*	914.4 (36.0)	4.50
1960-48*	1219.2 (48.0)	4.70
1960-60*	1524.0 (60.0)	4.90

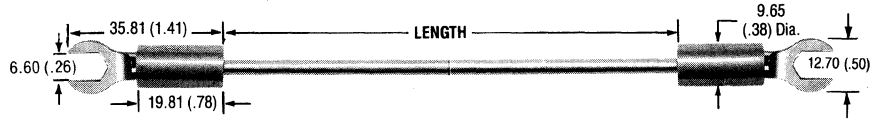


1ST END: Spade lug. Brass, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Alligator clip. Steel, nickel plated. Vinyl boot.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED SPADE LUG EACH END

MODEL	Length	NET
1743-12*	304.8 (12.0)	4.95
1743-24*	609.6 (24.0)	4.95
1743-36*	914.4 (36.0)	4.95
1743-48*	1219.2 (48.0)	5.15
1743-60*	1524.0 (60.0)	5.35

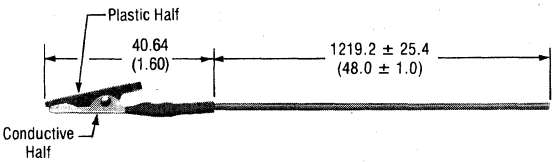


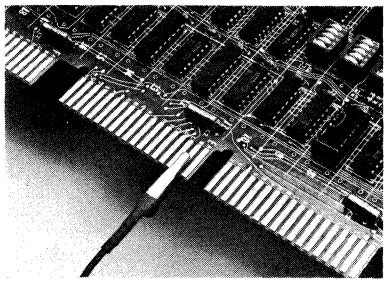
1ST END: Spade lug. Brass, nickel plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 5000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

P.C. BOARD TEST CLIP PATCH CORD

This patch cord is conductive only on the lower half of this minigator clip. The upper half is insulated to keep the clip from contacting circuitry on the opposite side of the board. The patch cord is supplied with 1219.2 mm (48.0) of 20 AWG wire which can be cut to the desired length or be terminated with the desired plug or jack.





1ST END: Test clip. Upper half, polycarbonate. Lower half, steel, cadmium plated.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: None.
RATING: +115°C. (+239°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

MODEL
4931-48-*

NET 4.95

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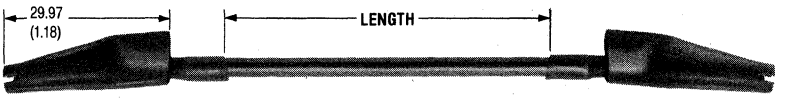
POMONA

PATCH CORDS

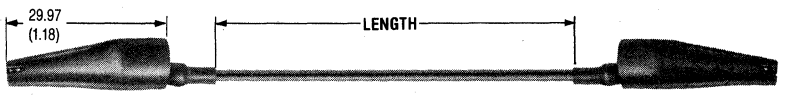
INSULATED MINIGATOR CLIP EACH END—18 AWG



MODEL	Length	NET
MG-B-4*	101.6(4.0)	3.50
MG-B-8*	203.2(8.0)	3.50
MG-B-12*	304.8(12.0)	3.50
MG-B-24*	609.6(24.0)	3.50
MG-B-36*	914.4(36.0)	3.50
MG-B-48*	1219.2(48.0)	3.70
MG-B-60*	1524.0(60.0)	3.90

1ST END: Minigator. Steel, cadmium plated. Vinyl boot.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 5000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

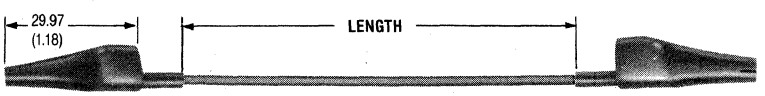
INSULATED MINIGATOR CLIP EACH END—20 AWG



MODEL	Length	NET
1236-4*	101.6(4.0)	3.15
1236-8*	203.2(8.0)	3.15
1236-12*	304.8(12.0)	3.15
1236-24*	609.6(24.0)	3.15
1236-36*	914.4(36.0)	3.15
1236-48*	1219.2(48.0)	3.35
1236-60*	1524.0(60.0)	3.55

1ST END: Minigator. Steel, cadmium plated. Vinyl boot.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED MICROGATOR† CLIP EACH END—20 AWG

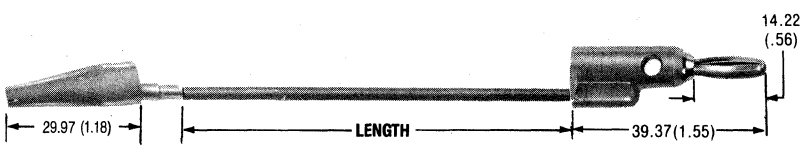


MODEL	Length	NET
1613-4*	101.6(4.0)	3.50
1613-8*	203.2(8.0)	3.50
1613-12*	304.8(12.0)	3.50
1613-24*	609.6(24.0)	3.50
1613-36*	914.4(36.0)	3.50
1613-48*	1219.2(48.0)	3.70
1613-60*	1524.0(60.0)	3.90

1ST END: Microgator. Copper. Vinyl boot.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Same as first end.
RATING: 3000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED MINIGATOR CLIP TO STACKING BANANA PLUG

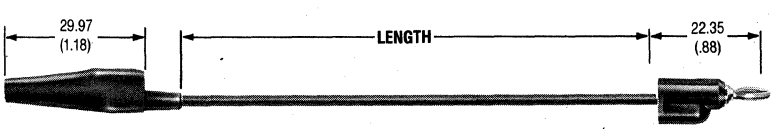
Adapts to equipment using standard banana jacks.



MODEL	Length	NET
3220-4*	101.6(4.0)	3.15
3220-8*	203.2(8.0)	3.15
3220-12*	304.8(12.0)	3.15
3220-24*	609.6(24.0)	3.15
3220-36*	914.4(36.0)	3.15
3220-48*	1219.2(48.0)	3.35
3220-60*	1524.0(60.0)	3.55

1ST END: Minigator. Steel, cadmium plated. Insulationl; vinyl.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 3000 WVDC; 5 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

INSULATED MINIGATOR CLIP TO MINIATURE STACKING BANANA PLUG



MODEL	Length	NET
3222-12*	304.8(12.0)	3.75
3222-24*	609.6(24.0)	3.75
3222-36*	914.4(36.0)	3.75
3222-48*	1219.2(48.0)	3.95
3222-60*	1524.0(60.0)	4.15

1ST END: Minigator. Steel, cadmium plated. Insulation: vinyl.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D.
2ND END: Stacking Miniature Bananna Plug. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.
RATING: 3000 WVDC; 5 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

† Microgator is a trademark of Mueller Electric Co.

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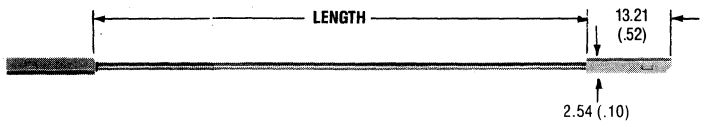
POMONA

0.64 MM (.025) SQ. PIN/RECEPTACLE ACCESSORIES

SQUARE PIN RECEPTACLE EACH END

This patch cord is excellent for use as a jumper circuit for P.C. boards with 0.64 mm (.025) sq. pins.



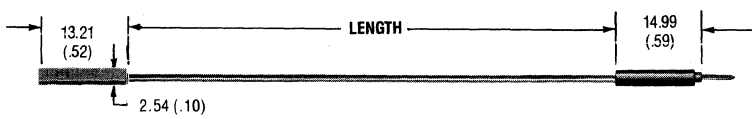
MODEL	Length	NET
4741-6*	152.4(6.0)	2.95
4741-12*	304.8(12.0)	2.95
4741-24*	609.6(24.0)	2.95
4741-36*	914.4(36.0)	2.95
4741-48*	1219.2(48.0)	3.15
4741-60*	1524.0(60.0)	3.35

1ST END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: Same as first end.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

SQUARE PIN RECEPTACLE TO SQUARE PIN

This patch cord is can be used as a jumper circuit or as an extension patch cord with any of the other models on this page having 0.64 mm (.025) sq. receptacles or pins.



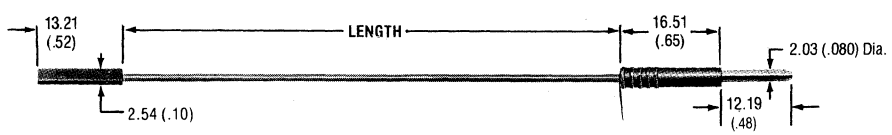
MODEL	Length	NET
4992-6*	152.4(6.0)	3.25
4992-12*	304.8(12.0)	3.25
4992-24*	609.6(24.0)	3.25
4992-36*	914.4(36.0)	3.25
4992-48*	1219.2(48.0)	3.45

1ST END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: 0.64 mm (.025) Square Pin. Copper, gold plated. Insulation; polypropylene.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red.

SQUARE PIN RECEPTACLE TO 2.03 mm (.080) PIN TIP PLUG

This patch cord is used as a jumper between 0.64 mm (.025) sq. pins and equipment with 2.03 mm (.080) dia. pin jacks.



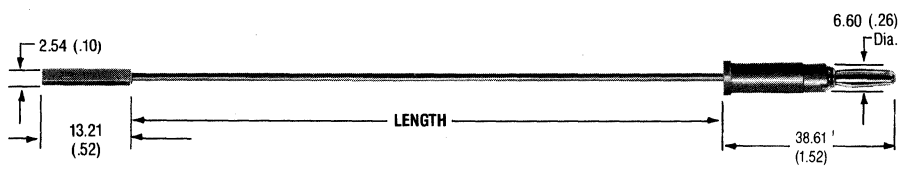
MODEL	Length	NET
4772-12*	304.8(12.0)	3.15
4772-24*	609.6(24.0)	3.15
4772-36*	914.4(36.0)	3.15
4772-48*	1219.2(48.0)	3.35
4772-60*	1524.0(60.0)	3.55

1ST END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.

2ND END: Pin Tip Plug. Brass, gold plated. Insulation; polypropylene.
RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red

SQUARE PIN RECEPTACLE TO BANANA PLUG

This patch cord is excellent for use as a jumper circuit cards with 0.64 mm (.025) squre pins and equipment with 4.22 mm (.166) dia. banana jacks.



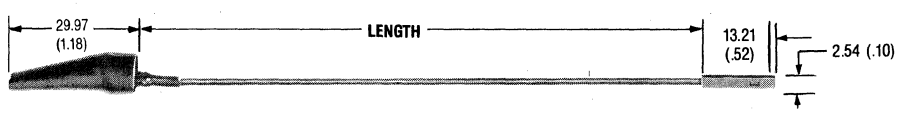
MODEL	Length	NET
4771-12*	304.8(12.0)	3.50
4771-24*	609.6(24.0)	3.50
4771-36*	914.4(36.0)	3.50
4771-48*	1219.2(48.0)	3.70
4771-60*	1524.0(60.0)	3.90

1ST END: 0.64 mm (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: In-line Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.

RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red

MINIGATOR PIN TO SQUARE PIN RECEPTACLE

This patch cord is used as a jumper for circuit cards with 0.64 mm (.025) square pins.



MODEL	Length	NET
4974-12*	304.8(12.0)	3.50
4974-24*	609.6(24.0)	3.50
4974-36*	914.4(36.0)	3.50

1ST END: Minigator. Steel, cadmium plated. Insulation; vinyl.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D.
2ND END: 0.64 (.025) Square Pin Receptacle. Phosphor bronze, gold plated. Insulation; ABS.

RATING: 1000 WVDC; 3 Amps; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -2 Red

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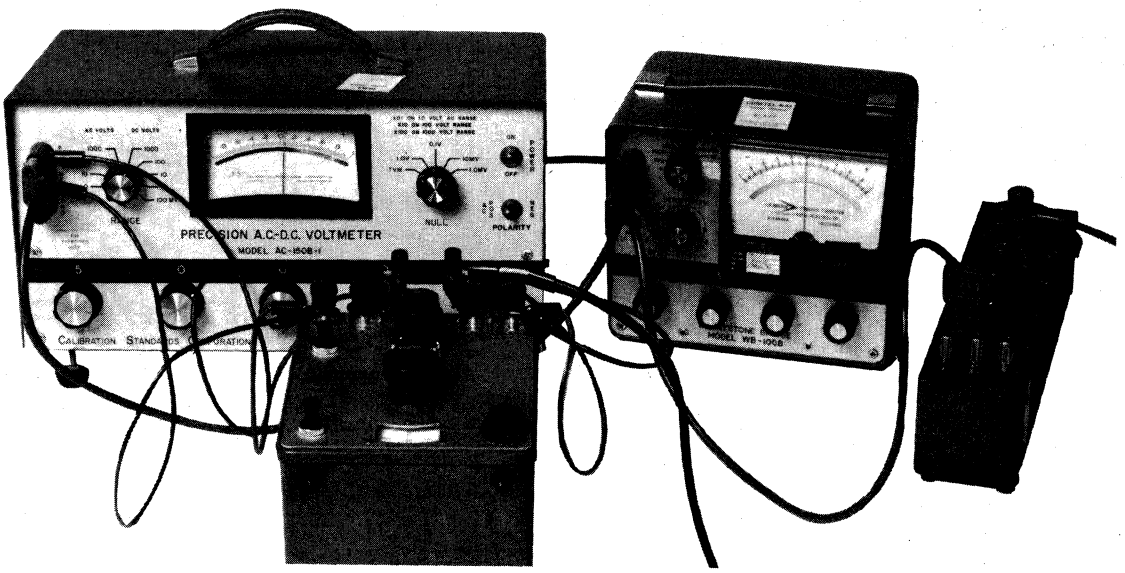
POMONA

LOW THERMAL E.M.F. SPADE LUG JUMPERS



HIGH CONDUCTIVITY ETP COPPER, ALLOW 110 LEADS FOR PRECISION MEASUREMENTS

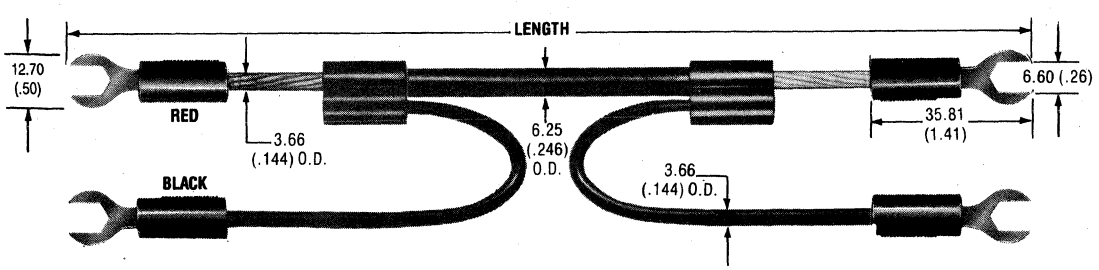
Pomona Electronics offers products for use in measurements when thermoelectric effects are significant sources of error. Comparators designed for use with the Kelvin-Varley voltage divider and microvolt leads were tested with primary standards laboratory equipment.

Thermoelectric voltages were not detected until the most sensitive galvanometer range was used.

Thermoelectric properties — High Conductivity ETP Copper, Alloy 110 gold plated spade lugs cold-staked to multi-stranded 12 gauge copper wire minimize thermoelectric effects — an absolute necessity for low voltage, high precision measurements.

Low resistance — 12 gauge multi-stranded copper wire results in extremely low cable resistance. Spade lugs plated with 15 micro inches gold for minimum contact resistance and minimum thermal EMF when using copper binding posts (less than 0.01 μV/°C).

HIGH CONDUCTIVITY ETP COPPER, ALLOY 110 SPADE LUGS, SHIELED LEAD

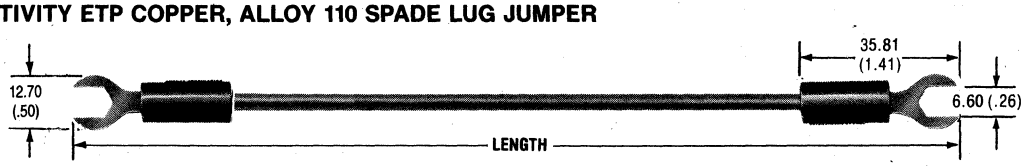


MODEL	Length	NET
1756-24	609.6(24.0)	28.95
1756-48	1219.2(48.0)	31.95

Designed for use with Kelvin-Varley voltage dividers where extreme precision is required for low voltage measurements. Features guard shield to effectively reduce shunt resistance.
1ST END: Spade Lug. High conductivity ETP copper, Alloy 110, gold plated. Insulation; polypropylene, one black and one red.

WIRE: 12 AWG, 7 x 38/36 bare copper, polyethylene insulation. Braid shield bare copper, PVC jacket. 6.25 mm (.246) O.D. per MIL-C-17/2A.
2ND END: Same as first end.
RATING: 5000 VDC Max; +55°C. (+131°F.) Max.

HIGH CONDUCTIVITY ETP COPPER, ALLOY 110 SPADE LUG JUMPER



MODEL	Length	NET
1693-12*	304.8(12.0)	9.95
1693-18*	457.2(18.0)	10.40
1693-24*	609.6(24.0)	10.85
1693-36*	914.4(36.0)	11.75
1693-48*	1219.2(48.0)	12.65
1693-60*	1524.0(60.0)	13.55

Single High Conductivity ETP Copper, spade lug jumper used in applications where guard shield is not required.
1ST END: Spade Lug. High conductivity ETP copper, Alloy 110, gold plated. Insulation; polypropylene.
WIRE: 12 AWG, 7 x 38/36 bare copper, PVC jacke,t 3.66 mm (.144) O.D.

2ND END: Same as first end.
RATING: 2000 WVDC; 20 Amps; +55°C. (+131°F.) Max.
***STD COLORS:** -0 Black, -2 Red

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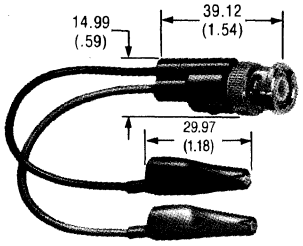
POMONA

MOLDED BREAKOUTS

BNC MALE TO TEST CLIPS

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG on alligator clips. 20 AWG on minigator clips. One black and one red.
2ND END: Alligator clips. Steel, nickel plated. Minigators. Steel, cadmium plated. Vinyl boots, one black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.



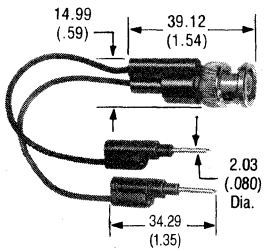
MODEL	
2885	(Alligator Clips)
2886	(Minigator Clips)

OVERALL LENGTH: 177.8 mm(7.0)

NET 8.95

BNC MALE TO STACKING PIN TIP PLUGS

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Stacking Pin Tip Plugs. Brass, gold plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



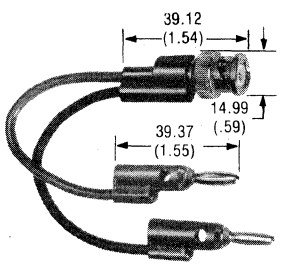
MODEL
3901

OVERALL LENGTH: 177.8 mm(7.0)

NET 9.95

BNC MALE TO STACKING BANANA PLUGS

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D. One black and one red.
2ND END: Stacking Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



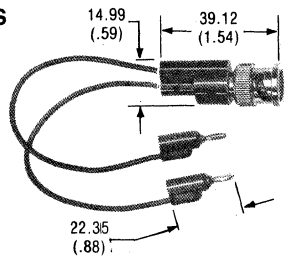
MODEL
3957

OVERALL LENGTH: 177.8 mm(7.0)

NET 8.95

BNC MALE TO MINIATURE STACKING BANANA PLUGS

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Stacking Miniature Banana Plugs. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



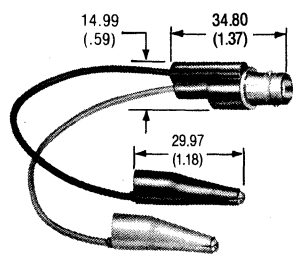
MODEL
4815

OVERALL LENGTH: 177.8 mm(7.0)

NET 9.50

BNC FEMALE TO TEST CLIPS

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG on alligator clips. 20 AWG on minigator clips. One black and one red.
2ND END: Alligator clips. Steel, nickel plated. Minigators. Steel, cadmium plated. Vinyl boots, one black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.



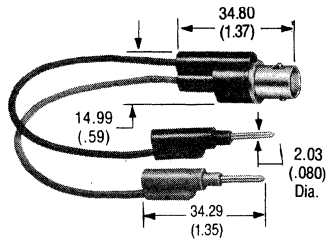
MODEL	
2630	(Alligator Clips)
2631	(Minigator Clips)

OVERALL LENGTH: 177.8 mm(7.0)

NET 6.95

BNC FEMALE TO STACKING PIN TIP PLUGS

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, berryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Stacking Pin Tip Plugs. Brass, gold plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



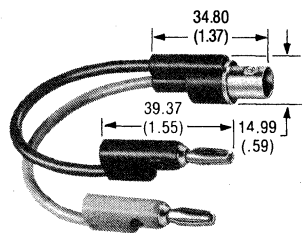
MODEL
3221

OVERALL LENGTH: 177.8 mm(7.0)

NET 7.50

BNC FEMALE TO STACKING BANANA PLUGS

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG, 65 × 36 t.c., PVC insulated, 3.66 mm (.144) O.D. One black and one red.
2ND END: Stacking Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



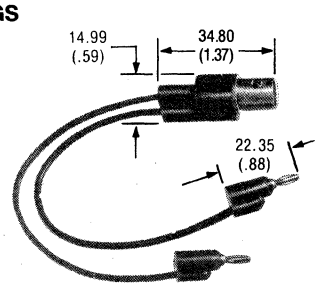
MODEL
3073

OVERALL LENGTH: 177.8 mm(7.0)

NET 6.50

BNC FEMALE TO MINIATURE STACKING BANANA PLUGS

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Stacking Miniature Banana Plugs. Brass body, beryllium copper spring, gold plated. Fits miniature 2.64 mm (.104) dia. banana jacks. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



MODEL
3966

OVERALL LENGTH: 177.8 mm(7.0)

NET 7.50

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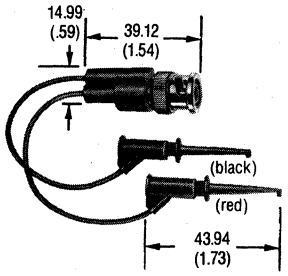
POMONA

MOLDED BREAKOUTS

BNC MALE TO MICROGRABBER® TEST CLIPS

This molded breakout converts a coaxial cable with a BNC female to a test cable with clips.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Micrograbber®. Contacts, beryllium copper, gold plated. Glass filled nylon insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



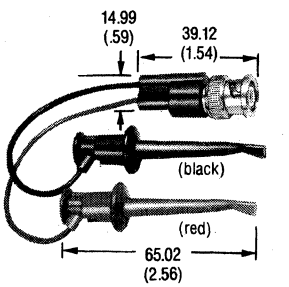
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5189

NET 10.95

BNC MALE TO MINIGRABBER® TEST CLIPS

This molded breakout converts a coaxial cable with a BNC female to a test cable with clips.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Minigrabber®. Contacts, beryllium copper, gold plated. Glass filled nylon insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



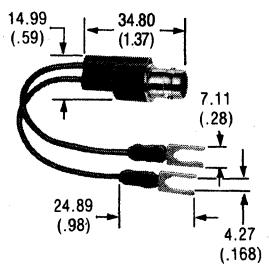
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 3789

NET 8.25

BNC FEMALE TO #8 SPADE LUGS

This molded breakout allows a BNC cable to be used with equipment having #8 screw terminals, such as fanning strips, etc.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: #8 Spade Lugs. Copper, tin plated. Insulation; vinyl. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.



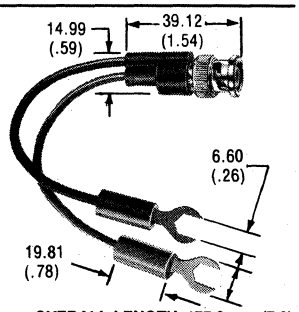
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5051

NET 5.50

BNC MALE TO SPADE LUGS

This breakout allows a BNC cable to be used with equipment having binding posts.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D. One black and one red.
2ND END: 1/4" Spade Lugs. Brass, nickel plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



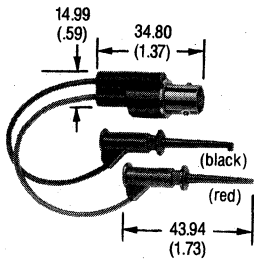
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5007

NET 9.75

BNC FEMALE TO MICROGRABBER® TEST CLIPS

This molded breakout converts a coaxial cable with a BNC male to a test cable with clips.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Micrograbber®. Contacts, beryllium copper, gold plated. Glass filled nylon insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



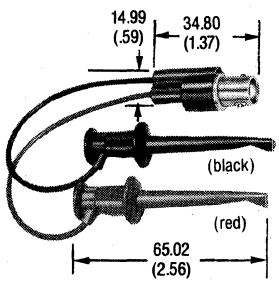
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5188

NET 8.50

BNC FEMALE TO MINIGRABBER® TEST CLIPS

This molded breakout converts a coaxial cable with a BNC male to a test cable with clips.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated, 2.21 mm (.087) O.D. One black and one red.
2ND END: Minigrabber®. Contacts, beryllium copper, gold plated. Glass filled nylon insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



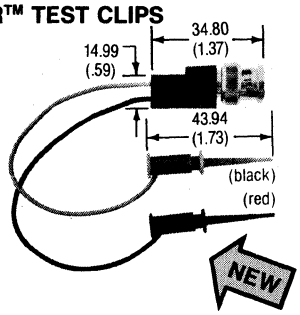
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 3788

NET 6.95

BNC MALE TO SMD GRABBER™ TEST CLIPS

The pincer type action on this grabber allows attachment to the smallest of leads.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 22 AWG, 26 x 36 t.c., PVC insulated, 1.63 mm (.064) O.D. One black and one red.
2ND END: SMD Grabber™ Test Clips. Selectively gold plated stainless steel contact. Glass filled nylon insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



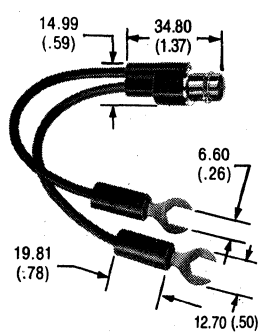
OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5410

NET 10.95

BNC FEMALE TO SPADE LUGS

This breakout allows a BNC cable to be used with equipment having binding posts.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D. One black and one red.
2ND END: 1/4" Spade Lugs. Brass, nickel plated. Insulation; polypropylene. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



OVERALL LENGTH: 177.8 mm (7.0).

MODEL 5009

NET 7.95

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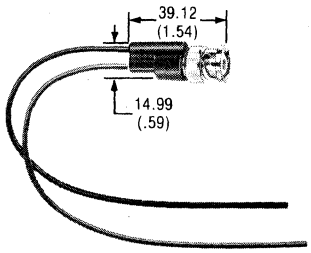
POMONA

MOLDED BREAKOUTS

BNC MALE TO 20 AWG LEADS

Attach your own breakout or wire directly to circuit board.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 x 36 t.c., PVC insulated 2.21 mm (.087) O.D. One black and one red.
2ND END: None.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



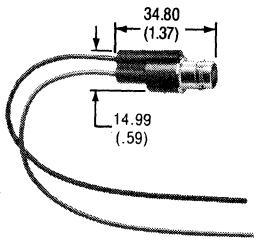
OVERALL LENGTH: 177.8 mm (7.0).

MODEL
4970

NET 5.95

BNC FEMALE TO 20 AWG LEADS

Attach your own breakout or wire directly to circuit board.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 20 AWG, 41 × 36 t.c., PVC insulated 2.21 mm (.087) O.D. One black and one red.
2ND END: None.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.



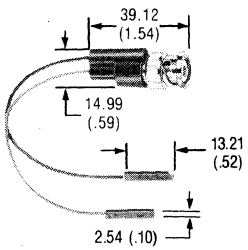
OVERALL LENGTH: 177.8 mm (7.0).

MODEL
4969

NET 4.35

BNC MALE TO 0.64 mm (.025) SQ. RECEPTACLES

This molded breakout can be attached directly to the 0.64 mm (.025) square pins on a circuit card.
1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 22 AWG, 26 × 36 t.c., PVC insulated 1.63 mm (.064) O.D. One black and one red.
2ND END: 0.64 mm (.025) Square Pin Receptacles. Phosphor bronze, gold plated, ABS insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.



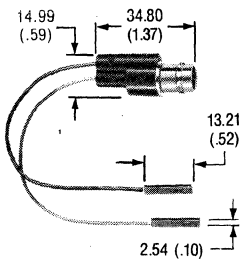
OVERALL LENGTH: 177.8 mm (7.0).

MODEL
5070

NET 7.50

BNC FEMALE TO 0.64 mm (.025) SQ. RECEPTACLES

This molded breakout can be attached directly to the 0.64 mm (.025) square pins on a circuit card.
1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Nominal Impedance: 50 Ohms. Insulation; polypropylene, black.
WIRE: 22 AWG, 26 × 36 t.c., PVC insulated 1.63 mm (.064) O.D. One black and one red.
2ND END: 0.64 mm (.025) Square Pin Receptacles. Phosphor bronze, gold plated, ABS insulation. One black and one red.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.



OVERALL LENGTH: 177.8 mm (7.0).

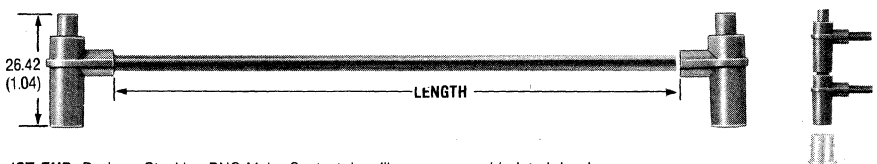
MODEL
5069

NET 6.50

"PUSH-ON" STACKING BNC

"PUSH ON" STACKING BNC MALE BOTH ENDS

This multiple stacking patch cord connects only the center conductor of BNC jacks. Excellent for use with instruments such as oscilloscopes. Stacking feature enables a multiple number of connections to the same point.



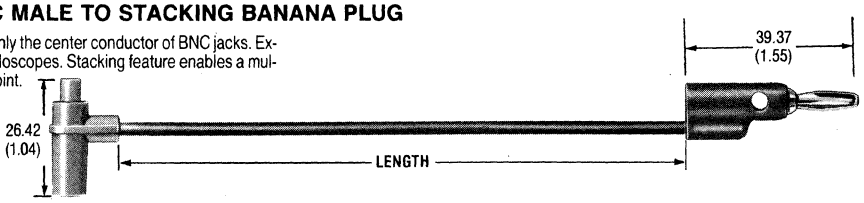
MODEL	Length	NET
3201-4*	101.6 (4.0)	7.20
3201-12*	304.8 (12.0)	7.35
3201-36*	914.4 (36.0)	7.50
3201-60*	1524.0 (60.0)	7.90

1ST END: Push-on Stacking BNC Male. Contact, beryllium copper, gold plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Same as first end.
RATING: 500 VRMS; +55°C. (+131°F.) Max.

***STD COLORS:** -0 Black, -2 Red.

"PUSH ON" STACKING BNC MALE TO STACKING BANANA PLUG

This multiple stacking patch cord connects only the center conductor of BNC jacks. Excellent for use with instruments such as oscilloscopes. Stacking feature enables a multiple number of connections to the same point.



MODEL	Length	NET
3202-18*	457.2 (18.0)	5.25
3202-36*	914.4 (36.0)	5.50
3202-60*	1524.0 (60.0)	5.90

1ST END: Push-on Stacking BNC Male. Contact, beryllium copper, gold plated. Insulation; polypropylene.
WIRE: 18 AWG, 65 x 36 t.c., PVC insulated, 3.66 mm (.144) O.D.
2ND END: Stacking Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene.
RATING: 500 VRMS; +55°C. (+131°F.) Max.

***STD COLORS:** -0 Black, -2 Red.

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POMONA

MICROWAVE COAXIAL CABLE ASSEMBLIES

These coaxial cables allow testing of frequencies up to 12.4 Gigahertz. Microwave coaxial cables can also be built to your specifications on special order. Just tell us the length you want, the cable you would prefer (it can even be your special cable) and what type off connectors. We will be happy to quote prices.

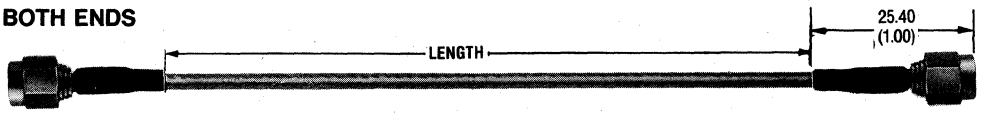
CABLE CHARACTERISITCS:

CABLE: RG 174/U coaxial cable
CHARACTERISTICS:
Impedance: 50 Ohm
Cable O.D.: 2.54 mm (.100)
Loss: .45 dB/ft. at 1.0 GHz Max.
Temperature: 85°C. (185°F.) Max.

CABLE: RG 316/U coaxial cable
CHARACTERISTICS:
Impedance: 50 Ohm
Cable O.D.: 2.49 mm (.098)
Loss: .56 dB/ft. at 3 GHz Max.
Temperature: 200°C. (392°F.) Max.

CABLE: RG 142 B/U coaxial cable
CHARACTERISTICS:
Impedance: 50 Ohm
Cable O.D.: 4.95 mm (.195)
Loss: .67 dB/ft. at 12.4 GHz Max.
Temperature: 200°C. (392°F.) Max.

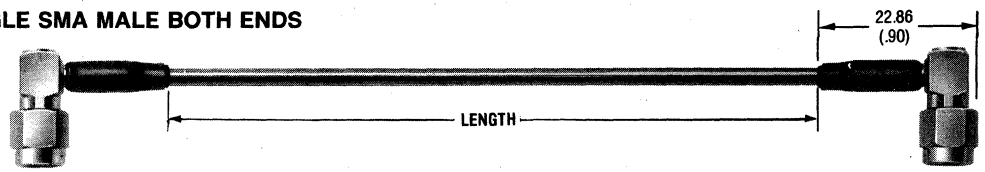
SMA MALE BOTH ENDS



MODEL RG174/U	NET	MODEL RG316/U	NET	MODEL RG142B/U	NET	Length
4846-K-24	28.95	4846-BB-24	30.95	4846-X-24	36.95	609.6 (24.0)
4846-K-48	30.15	4846-BB-48	34.95	4846-X-48	46.95	1219.2 (48.0)
4846-K-60	30.75	4846-BB-60	36.95	4846-X-60	51.95	1524.0 (60.0)

1ST END: Crimp SMA Male. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.
CABLE: (See top of page for characteristics)
2ND END: Same as first end.

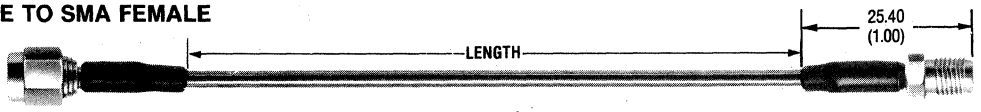
RIGHT ANGLE SMA MALE BOTH ENDS



MODEL RG174/U	NET	MODEL RG316/U	NET	MODEL RG142B/U	NET	Length
4813-K-24	41.25	4813-BB-24	45.15	4813-X-24	57.95	609.6 (24.0)
4813-K-48	42.45	4813-BB-48	49.15	4813-X-48	67.95	1219.2 (48.0)
4813-K-60	43.05	4813-BB-60	51.15	4813-X-60	72.95	1524.0 (60.0)

1ST END: Crimp SMA Male, right angle. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.
CABLE: (See top of page for characteristics)
2ND END: Same as first end.

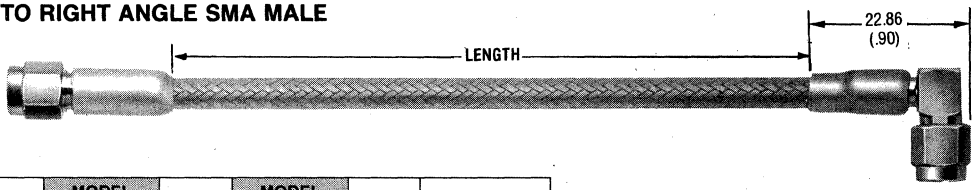
SMA MALE TO SMA FEMALE



MODEL RG174/U	NET	MODEL RG316/U	NET	MODEL RG142B/U	NET	Length
4528-K-24	29.95	4528-BB-24	31.95	4528-X-24	37.95	609.6 (24.0)
4528-K-48	31.15	4528-BB-48	35.95	4528-X-48	47.95	1219.2 (48.0)
4528-K-60	31.75	4528-BB-60	37.95	4528-X-60	52.95	1524.0 (60.0)

1ST END: Crimp SMA Male. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.
CABLE: (See top of page for characteristics)
2ND END: Crimp SMA Female. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.

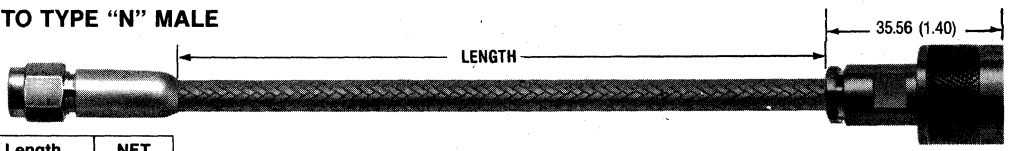
SMA MALE TO RIGHT ANGLE SMA MALE



MODEL RG174/U	NET	MODEL RG316/U	NET	MODEL RG142B/U	NET	Length
4814-K-24	36.25	4814-BB-24	40.15	4814-X-24	42.95	609.6 (24.0)
4814-K-48	37.45	4814-BB-48	44.15	4814-X-48	52.95	1219.2 (48.0)
4814-K-60	38.05	4814-BB-60	46.15	4814-X-60	57.95	1524.0 (60.0)

1ST END: Crimp SMA Male. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.
CABLE: (See top of page for characteristics)
2ND END: Crimp SMA Male, right angle. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.

SMA MALE TO TYPE "N" MALE



MODEL	Length	NET
5058-X-12	304.8(12.0)	28.95
5058-X-24	609.6(24.0)	33.95
5058-X-36	914.4(36.0)	38.95
5058-X-48	1219.2(48.0)	43.95
5058-X-60	1524.0(60.0)	48.95

1ST END: Crimp SMA Male. Passivated steel shell. Gold plated center contact. Meets conditions of MIL-C-39012. Impedance: 50 Ohms.

CABLE: RG 142B/U coaxial cable. (See top of page for characteristics)

2ND END: Type "N" Male. Brass body, tarnish resistant plated. Center contact brass, gold plated. Impedance: 50 Ohms.

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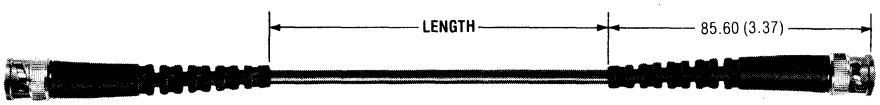
POMONA

CABLE ASSEMBLIES

STRESS-RELIEVED/WEATHERPROOF CABLE ASSEMBLIES

The following cable assemblies with molded boot feature extra-long, stress-relieved PVC molded directly onto cable jacket and connector body. The advantages are stress protection against failure from excess bending, flexing & twisting and a weatherproof seal between cable and connector.

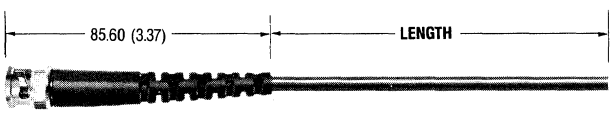
BNC MALE EACH END



RG58C/U 50 Ohm	NET	RG59B/U 75 Ohm	Net	RG174/U 50 Ohm	NET	RG62A/U 93 Ohm	Length	NET
2249-C-12	8.75	2249-E-12	10.05	2249-K-12	13.75	2249-M-12	304.8(12.0)	10.15
2249-C-24	9.35	2249-E-24	10.65	2249-K-24	14.35	2249-M-24	609.6(24.0)	10.75
2249-C-36	9.95	2249-E-36	11.25	2249-K-36	14.95	2249-M-36	914.4(36.0)	11.35
2249-C-48	10.55	2249-E-48	11.85	2249-K-48	15.55	2249-M-48	1219.2(48.0)	11.95
2249-C-60	11.15	2249-E-60	12.45	2249-K-60	16.15	2249-M-60	1524.0(60.0)	12.55
2249-C-72	11.75	2249-E-72	13.05				1828.8(72.0)	
2249-C-120	14.15						3048.0(120.0)	
2249-C-180	17.15						4572.0(180.0)	

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: RG58C/U 4.95 mm (.195) O.D.
RG58B/U 6.15 mm (.242) O.D.
RG62A/U 6.15 mm (.242) O.D.
RG174/U 2.54 mm (.100) O.D.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

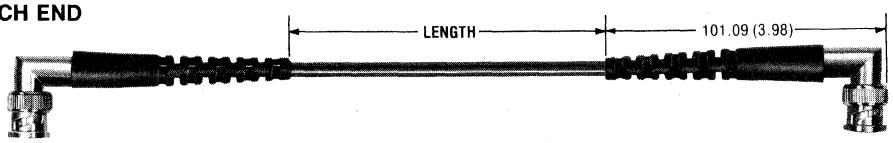
BNC MALE, ONE END ONLY



MODEL	Length	NET
5266-C-12	304.8(12.0)	5.05
5266-C-24	609.6 (24.0)	5.65
5266-C-36	914.4(36.0)	6.25
5266-C-48	1219.2(48.0)	6.85
5266-C-60	1524.0(60.0)	7.45

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: RG58C/U 4.95 mm (.195) O.D.
2ND END: None.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

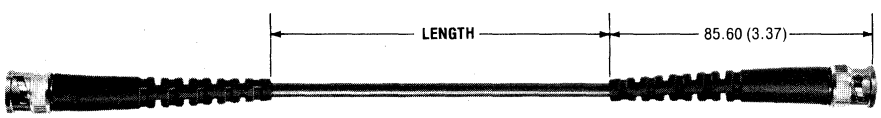
RIGHT ANGLE BNC MALE EACH END



MODEL	Length	NET
4276-C-12	304.8(12.0)	23.50
4276-C-24	609.6 (24.0)	24.10
4276-C-36	914.4(36.0)	24.70
4276-C-48	1219.2(48.0)	25.30
4276-C-60	1524.0(60.0)	25.90

1ST END: Crimp BNC Male, right angle. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: RG58C/U 4.95 mm (.195) O.D.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

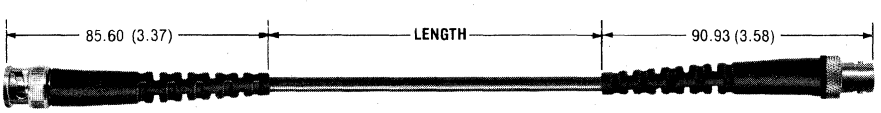
LOW-NOISE BNC MALE EACH END



MODEL	Length	NET
4964-SS-24	609.6 (24.0)	12.45
4964-SS-36	914.4(36.0)	13.95
4964-SS-48	1219.2(48.0)	15.45
4964-SS-60	1524.0(60.0)	16.95

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: Belden 9223 or equivalent, 50 Ohm, 4.95 mm (.195) O.D.
2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

BNC MALE TO BNC FEMALE



MODEL	Length	NET
4524-C-12	304.8(12.0)	11.55
4524-C-24	609.6 (24.0)	12.15
4524-C-36	914.4(36.0)	12.75
4524-C-48	1219.2(48.0)	13.35
4524-C-60	1524.0(60.0)	13.95

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: RG58C/U 4.95 mm (.195) O.D.
2ND END: Crimp BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium, copper, gold plated. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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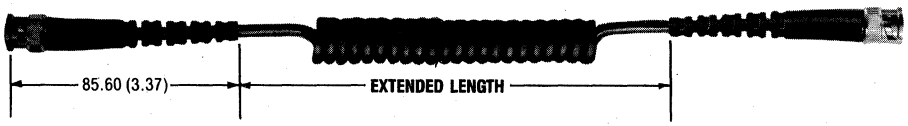
CABLE ASSEMBLIES

BNC MALE ON RETRACTILE (COILED) CORD



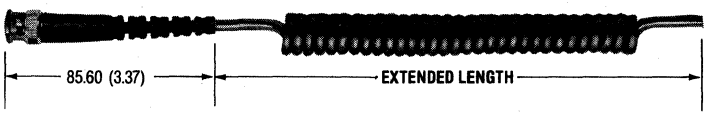
MODEL	Extended Length	NET
4487-48	1219.2(48.0)	32.95
4487-60	1524.0(60.0)	33.85
4487-72	1829.0(72.0)	34.75

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.

CABLE: Shielded microphone. Center conductor 24 AWG (45 x 40), polyurethane jacket 4.32 mm (.170) O.D.

2ND END: Same as first end.
RATING: 270 VDC-90 VAC cont. duty; +50°C. (+122°F.) Max.

BNC MALE ON RETRACTILE (COILED) CORD, ONE END ONLY



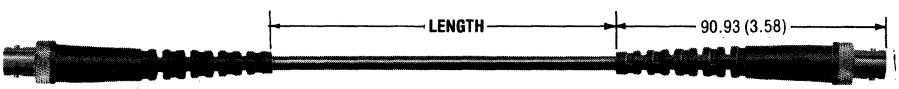
MODEL	Extended Length	NET
5260-48	1219.2(48.0)	18.95
5260-60	1524.0(60.0)	19.85
5260-72	1829.0(72.0)	20.75

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.

CABLE: Shielded microphone. Center conductor 24 AWG (45 x 40), polyurethane jacket 4.32 mm (.170) O.D.

2ND END: None.
RATING: 270 VDC-90 VAC cont. duty; +50°C. (+122°F.) Max.

BNC FEMALE BOTH ENDS



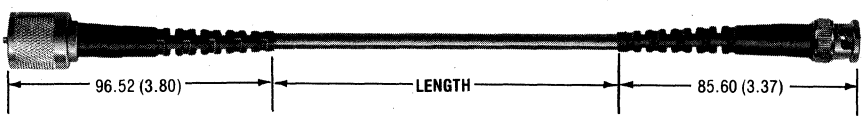
MODEL	Length	NET
4277-C-12	304.8(12.0)	13.95
4277-C-24	609.6(24.0)	14.55
4277-C-36	914.4(36.0)	15.15
4277-C-48	1219.2(48.0)	15.75
4277-C-60	1524.0(60.0)	16.35

1ST END: Crimp BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Impedance: 50 Ohms. Boot; PVC, black.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

UHF MALE TO BNC MALE



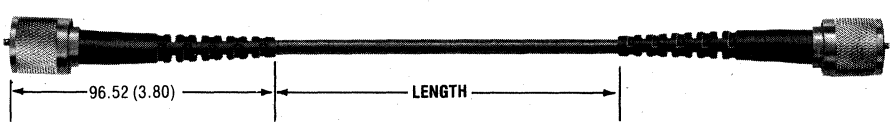
MODEL	Length	NET
1367-C-18	457.2(18.0)	12.35
1367-C-24	609.6(24.0)	12.65
1367-C-36	914.4(36.0)	13.25
1367-C-48	1219.2(48.0)	13.85
1367-C-60	1524.0(60.0)	14.45

1ST END: Crimp UHF Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: Nonconstant. Boot; PVC, black.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

UHF MALE BOTH ENDS



MODEL	Length	NET
UHF-C-18	457.2(18.0)	14.85
UHF-C-24	609.6(24.0)	15.15
UHF-C-36	914.4(36.0)	15.75
UHF-C-48	1219.2(48.0)	16.35
UHF-C-60	1524.0(60.0)	16.95

1ST END: Crimp UHF Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: Nonconstant. Boot; PVC, black.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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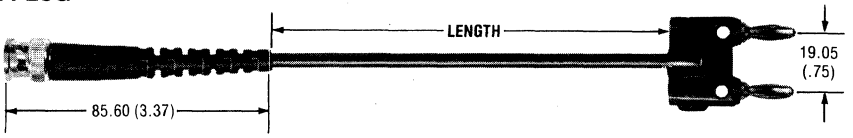
CABLE ASSEMBLIES

BNC MALE TO DOUBLE BANANA PLUG



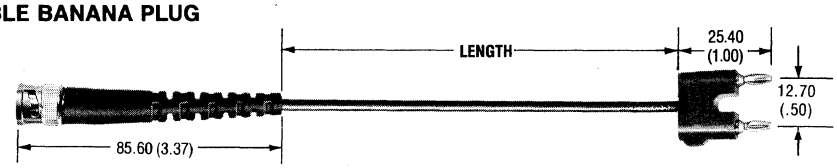
MODEL	Length	NET
4530-C-18	457.2(18.0	9.95
4530-C-24	609.6(24.0)	10.55
4530-C-36	914.4(36.0)	11.15
4530-C-48	1219.2(48.0	11.75
4530-C-60	1524.0(60.0)	12.35

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

BNC MALE TO MINIATURE DOUBLE BANANA PLUG



MODEL	Length	NET
2248-K-24	609.6(24.0)	12.75
2248-K-36	914.4(36.0)	13.35
2248-K-48	1219.2(48.0	13.95
2248-K-60	1524.0(60.0)	14.55

1ST END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
CABLE: RG174/U 2.54 mm (.100) O.D.

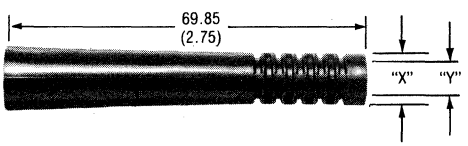
2ND END: Miniature Double Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polyethylene, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

STRESS RELIEF BOOTS

Pomona Electronics offers stress relief boots, molded in PVC to protect cables from wear, fatigue and weathering. Ten colors provide a convenient key for cable identification. These unique boots are available in three styles.

STRESS RELIEF BOOT

For use with crimp-on type connectors.
MATERIAL: PVC.
RATING: +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.

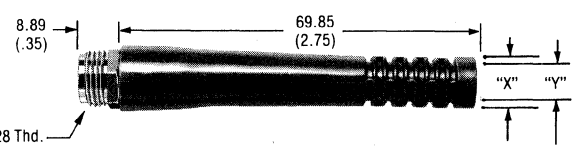


MODEL	Fits Cable Types	Cable O.D.	"X" Dim.	"Y" Dia.	NET
5155-*	RG 58, 141	4.70 (.185)-5.08 (.200)	9.91 (.39)	5.33 (.21)	.45 EA
5156-*	RG 59, 62, 210	6.02 (.237)-6.27 (.247)	9.91 (.39)	6.60 (.26)	.45 EA
5157-*	RG 174, 187, 188	2.29 (.090)-2.79 (.110)	6.60 (.26)	3.05 (.12)	.45 EA

(Pkg. Ten Per Color)

STRESS RELIEF BOOT WITH CLAMP NUT

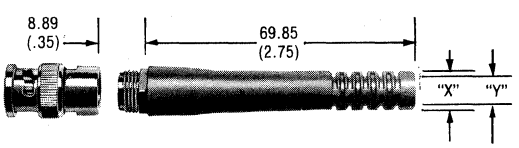
For use with connectors using a 7/16-28 clamp nut. Simply replace the supplied clamp nut with the one on the stress relief boot.
CLAMP NUT: Brass, nickel plated.
BOOT: PVC.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL	Fits Cable Types	Cable O.D.	"X" Dim.	"Y" Dia.	NET
5076-*	RG 58, 141	4.70 (.185)-5.08 (.200)	9.91 (.39)	5.33 (.21)	1.95
5077-*	RG 59, 62, 210	6.02 (.237)-6.27 (.247)	9.91 (.39)	6.60 (.26)	1.95
5078-*	RG 174, 187, 188	2.29 (.090)-2.79 (.110)	6.60 (.26)	3.05 (.12)	1.95

BNC MALE WITH STRESS RELIEF BOOT

Make your own stress relieved cable. This model attaches to the end of a cable in the same way as an ordinary BNC connector.
BOOT: PVC.
BNC MALE: Body, brass, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.
***STD COLORS:** -0 Black, -1 Brown, -2 Red, -3 Orange, -4 Yellow, -5 Green, -6 Blue, -7 Violet, -8 Gray, -9 White.



MODEL	Fits Cable Types	Cable O.D.	"X" Dim.	"Y" Dia.	NET
5066-*	RG 58, 141	4.70 (.185)-5.08 (.200)	9.91 (.39)	5.33 (.21)	4.95
5067-*	RG 59, 62, 210	6.02 .237)-6.27 (.247)	9.91 (.39)	6.60 (.26)	4.95
5068-*	RG 174, 187, 188	2.29 (.090)-2.79 (.110)	6.60 (.26)	3.05 (.12)	8.95

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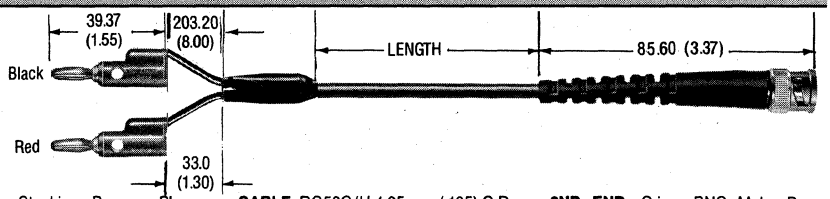
CABLE ASSEMBLIES

SINGLE STACKING BANANA PLUGS TO BNC MALE



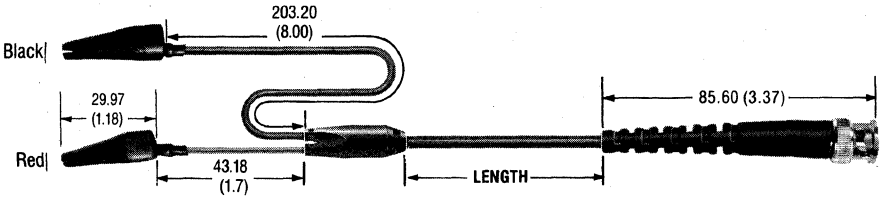
MODEL	Length	NET
5268-C-12	304.8(12.0)	11.75
5268-C-24	609.6 (24.0)	12.35
5268-C-36	914.4(36.0)	12.95
5268-C-48	1219.2(48.0)	13.55
5268-C-60	1524.0(60.0)	14.15

1ST END: Stacking Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene. One black and one red.

CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; + 50°C (122°F.) Max.

MINIGATOR CLIPS TO BNC MALE



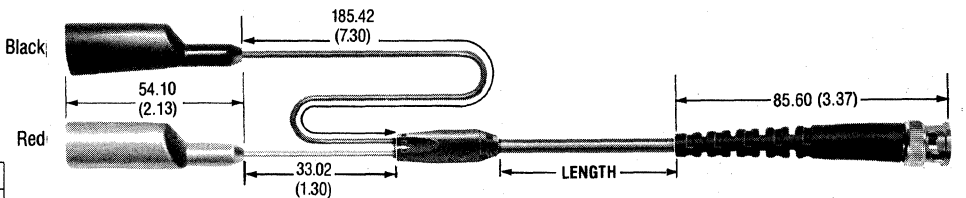
MODEL	Length	NET
4532-C-18	457.2(18.0)	10.85
4532-C-24	609.6(24.0)	11.15
4532-C-30	762.0(30.0)	11.45
4532-C-36	914.4(36.0)	11.75
4532-C-48	1219.2(48.0)	12.35
4532-C-60	1524.0(60.0)	12.95

1ST END: Minigator Clips. Steel, cadmium plated. Insulators; vinyl. One black and one red.

CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; + 50°C (122°F.) Max.

ALLIGATOR CLIPS TO BNC MALE



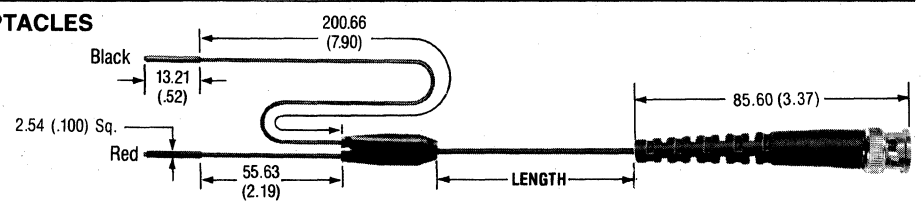
MODEL	Length	NET
4531-C-18	457.2(18.0)	10.60
4531-C-24	609.6(24.0)	10.90
4531-C-30	762.0(30.0)	11.20
4531-C-36	914.4(36.0)	11.50
4531-C-48	1219.2(48.0)	12.10
4531-C-60	1524.0(60.0)	12.70

1ST END: Alligator Clips. Steel, nickel plated. Insulators; vinyl. One black and one red.

CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; + 50°C (122°F.) Max.

0.64 mm (.025) SQUARE RECEPTACLES TO BNC MALE



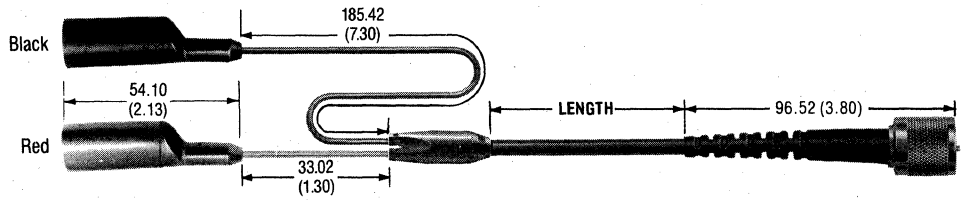
MODEL	Length	NET
4945-K-18	457.2(18.0)	12.60
4945-K-24	609.6(24.0)	12.90
4945-K-36	914.4(36.0)	13.50
4945-K-48	1219.2(48.0)	14.10
4945-K-60	1524.0(60.0)	14.70

1ST END: 0.64 mm (.025) Square Pin Receptacles. Brass, gold plated. Insulation; ABS. One black and one red.

CABLE: RG174/U 2.54 mm (.100) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; + 50°C (122°F.) Max.

ALLIGATOR CLIPS TO UHF MALE



MODEL	Length	NET
AL-C-UHF-36	914.4(36.0)	14.50
AL-C-UHF-60	1524.0(64.0)	15.70

1ST END: Alligator Clips. Steel, nickel plated. Insulators; vinyl. One black and one red.

CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Crimp UHF Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: Nonconstant. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; + 50°C (122°F.) Max.

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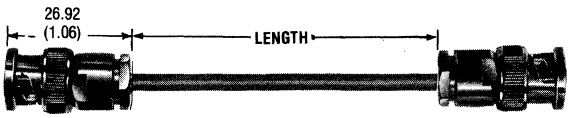
CABLE ASSEMBLIES

BNC MALE EACH END



Shielded Mic Cable 50 Ohms	RG58C/U 50 Ohms	NET	RG59B/U 75 Ohms	RG62A/U 93 Ohms	Length	NET
BNC-B-18	BNC-C-18	10.05	BNC-E-18	BNC-M-18	457.2(18.0)	11.05
BNC-B-24	BNC-C-24	10.35	BNC-E-24	BNC-M-24	609.6(24.0)	11.35
BNC-B-30	BNC-C-30	10.65	BNC-E-30	BNC-M-30	762.0(30.0)	11.65
BNC-B-36	BNC-C-36	10.95	BNC-E-36	BNC-M-36	914.4(36.0)	11.95
BNC-B-48	BNC-C-48	11.55	BNC-E-48	BNC-M-48	1219.2(48.0)	12.55
BNC-B-60	BNC-C-60	12.15	BNC-E-60	BNC-M-60	1524.0(60.0)	13.15

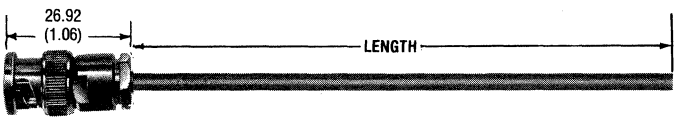
Shielded mic.

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: Shielded mic. 4.95 mm (.195) O.D.
RG58C/U 4.95 mm (.195) O.D.
RG59B/U 6.15 mm (.242) O.D.
RG62A/U 6.15 mm (.242) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE ONE END ONLY



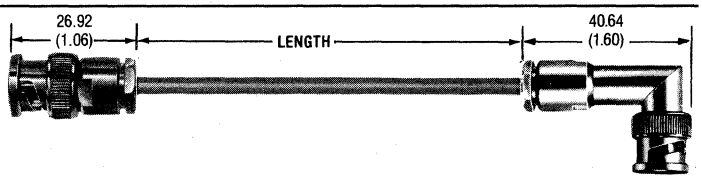
RG58C/U	NET	RG59B/U	Length	NET
1661-C-12	6.35	1661-E-12	304.8(12.0)	7.05
1661-C-24	6.95	1661-E-24	609.6(24.0)	7.65
1661-C-36	7.55	1661-E-36	914.4(36.0)	8.25
1661-C-48	8.15	1661-E-48	1219.2(48.0)	8.85
1661-C-60	8.75	1661-E-60	1524.0(60.0)	9.45

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.
RG59B/U 6.15 mm (.242) O.D.

2ND END: None.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE TO RIGHT ANGLE BNC MALE



MODEL	Length	NET
1383-C-18	457.2(18.0)	19.05
1383-C-24	609.6(24.0)	19.35
1383-C-36	914.4(36.0)	19.95
1383-C-48	1219.2(48.0)	20.55
1383-C-60	1524.0(60.0)	21.15

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

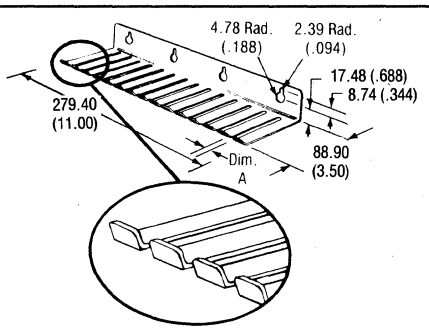
2ND END: BNC Male, Right Angle. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

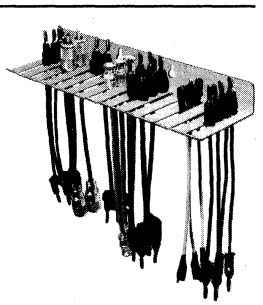
TEST LEAD HOLDER

TEST LEAD HOLDER

No need to spend time searching for a particular test lead. With these new racks, all of your patch cords and cable assemblies can be conveniently filed for instant selection – within easy reach. Holder mounts quickly on any vertical surface. Test leads are easy to store, easy to remove. Three models to choose from for different size cables.
MATERIALS: Cold rolled steel.
FINISH: Baked enamel.

MODEL	Color	Max. Cable Dia. (Dim. A)
1508	Orange	5.33(.210)
4408	Black	8.13(.320)
2708	Blue	11.43(.450)





NET 4.95

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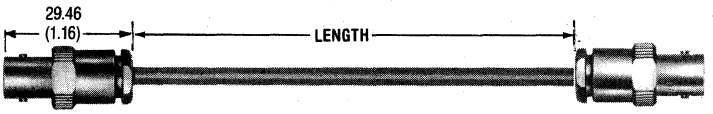
CABLE ASSEMBLIES

BNC FEMALE EACH END



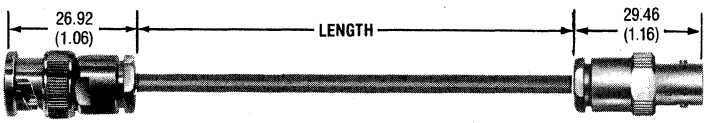
MODEL	Length	NET
1808-C-12	304.8(12.0)	11.30
1808-C-24	609.6(24.0)	11.90
1808-C-36	914.4(36.0)	12.50
1808-C-48	1219.2(48.0)	13.10
1808-C-60	1524.0(60.0)	13.70

1ST END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE TO BNC FEMALE



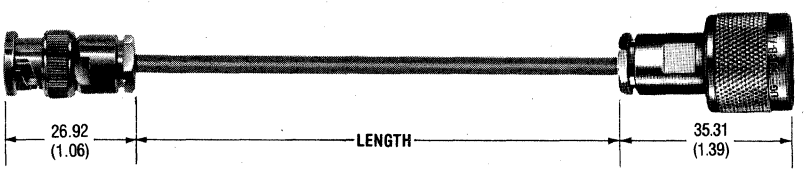
MODEL	Length	NET
2223-C-12	304.8(12.0)	10.55
2223-C-24	609.6(24.0)	11.15
2223-C-36	914.4(36.0)	11.75
2223-C-48	1219.2(48.0)	12.35
2223-C-60	1524.0(60.0)	12.95

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: BNC Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE TO TYPE "N" MALE



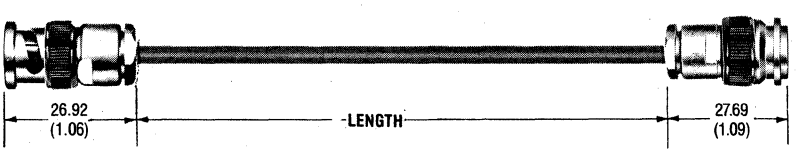
MODEL	Length	NET
1366-C-24	609.6(24.0)	12.90
1366-C-36	914.4(36.0)	13.50
1366-C-48	1219.2(48.0)	14.10

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Type "N" Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE TO TNC MALE



MODEL	Length	NET
1948-C-12	304.8(12.0)	13.65
1948-C-24	609.6(24.0)	14.25
1948-C-36	914.4(36.0)	14.85
1948-C-48	1219.2(48.0)	15.45
1948-C-60	1524.0(60.0)	16.05

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: TNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

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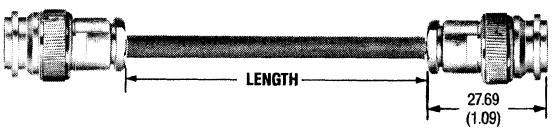
CABLE ASSEMBLIES

TNC MALE BOTH ENDS



RG58C/U	NET	Length	RG142B/U	NET
1944-C-12	16.75	304.8 (12.0)	1944-X-12	28.95
1944-C-18	17.05	457.2 (18.0)		
1944-C-24	17.35	609.6 (24.0)	1944-X-24	33.95
1944-C-36	17.95	914.4 (36.0)	1944-X-36	38.95
1944-C-48	18.55	1219.2 (48.0)	1944-X-48	43.95
1944-C-60	19.15	1524.0 (60.0)	1944-X-60	48.95

1ST END: TNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D. or RG142B/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

"PUSH ON" UHF MALE BOTH ENDS



MODEL	Length
3137-C-36	914.4 (36.0)

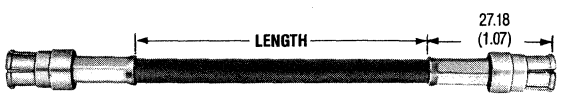
1ST END: Crimp push-on UHF Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: Nonconstant.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

NET 32.50

"PUSH-ON" BNC MALE BOTH ENDS



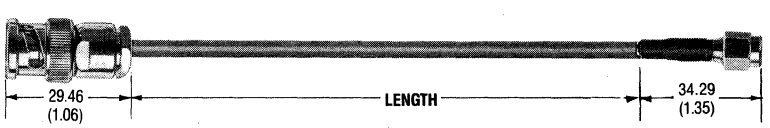
MODEL	Length	NET
3199-C-12	304.8 (12.0)	9.75
3199-C-24	609.6 (24.0)	10.35
3199-C-36	914.4 (36.0)	10.95
3199-C-48	1219.2 (48.0)	11.95
3199-C-60	1524.0 (60.0)	12.15

1ST END: Crimp Push-on BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 500 VRMS Max.; +80°C. (+176°F.) Max.

BNC MALE TO SMA MALE



MODEL	Length	NET
4935-BB-24	609.6 (24.0)	26.95
4935-BB-48	1219.2 (48.0)	30.95
4935-BB-60	1524.0 (60.0)	32.95

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG316/U 2.49 mm (.098) O.D.

2ND END: Crimp SMA Male. Passivated steel shell. Gold plated center contact.
RATING: Operating Voltage: 335 VRMS Max.; +165°C. (+329°F.) Max.

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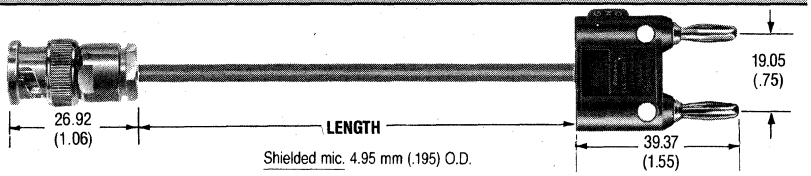
CABLE ASSEMBLIES

BNC MALE TO DOUBLE BANANA PLUG



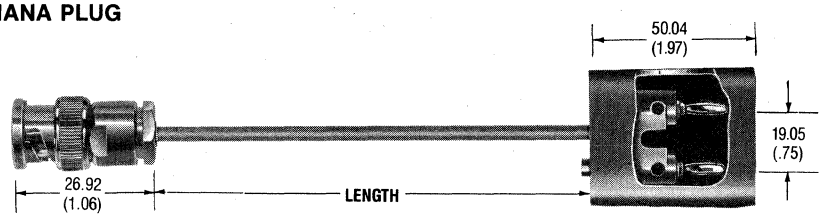
Shielded Mic. Cable	RG58C/U	Length	NET
2BB-BNC-18	2BC-BNC-18	457.2(18.0)	11.05
2BB-BNC-24	2BC-BNC-24	609.6(24.0)	11.35
2BB-BNC-30	2BC-BNC-30	762.0(30.0)	11.65
2BB-BNC-36	2BC-BNC-36	914.4(36.0)	11.95
2BB-BNC-48	2BC-BNC-48	1219.2(48.0)	12.55
2BB-BNC-60	2BC-BNC-60	1524.0(60.0)	13.15

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.

2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.

BNC MALE TO SHIELDED DOUBLE BANANA PLUG

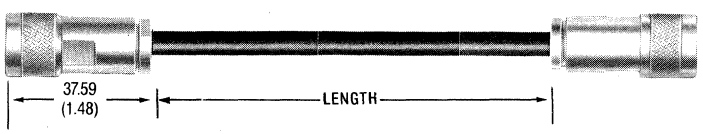


MODEL	Length	NET
1555-C-36	914.4(36.0)	21.95
1555-C-60	1524.0(60.0)	23.15

1ST END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58C/U 4.95 mm (.195) O.D.
2ND END: Shielded Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene. Die cast aluminum shell.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.

TYPE "N" MALE EACH END



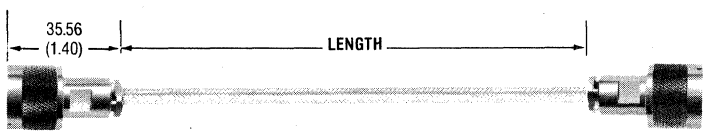
RG213/U	NET	Length	RG214/U	NET
1658-S-18	26.90	457.2(18.0)	1658-T-18	28.95
1658-S-24	27.25	609.6(24.0)	1658-T-24	32.45
1658-S-36	27.95	914.4(36.0)	1658-T-36	39.45
1658-S-48	28.65	1219.2(48.0)	1658-T-48	46.45
1658-S-60	29.35	1524.0(60.0)	1658-T-60	53.45

1ST END: Type "N" Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG213/U 10.29 mm (.405) O.D. or RG214/U 10.80 mm (.425) O.D.

2ND END: Same as first end.
RATING: Operating Voltage: 1000 VRMS Max.; +80°C. (+176°F.) Max.

TYPE "N" MALE EACH END



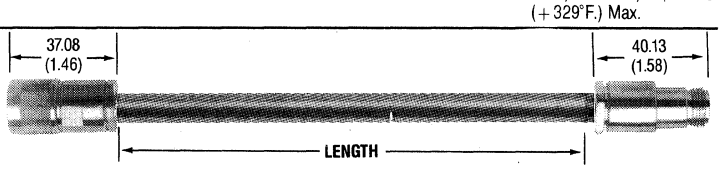
RG58C/U	NET	Length	RG142B/U	NET
2256-C-24	14.90	609.6(24.0)	2256-X-24	28.95
2256-C-36	15.50	914.4(36.0)	2256-X-36	33.95
2256-C-48	16.10	1219.2(48.0)	2256-X-48	38.95
2256-C-60	16.70	1524.0(60.0)	2256-X-60	43.95

1ST END: Type "N" Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG58CU 4.95 mm (.195) O.D. or RG142B/U 4.95 mm (.195) O.D. Impedance: 50 Ohms.

2ND END: Same as first end.
RATING: Operating Voltage: 1000 VRMS Max.; 2256-C, +80°C. (+176°F.) Max.; 2256-X, +165°C. (+329°F.) Max.

TYPE "N" MALE TO "N" FEMALE



MODEL	Length	NET
4496-T-18	457.2(18.0)	30.45
4496-T-24	609.6(24.0)	33.95
4496-T-36	914.4(36.0)	40.95
4496-T-48	1219.2(48.0)	47.95
4496-T-60	1524.0(60.0)	54.95

1ST END: Type "N" Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.

CABLE: RG214/U 10.80 mm (.425) O.D.

2ND END: Type "N" Female. Brass body, tarnish resistant plated. Center contact, beryllium copper, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 1000 VRMS Max.; +80°C. (+176°F.) Max.

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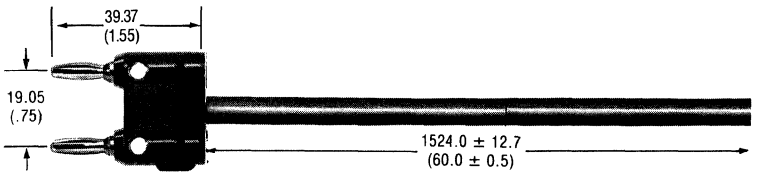
CABLE ASSEMBLIES

DOUBLE BANANA PLUG ONE END ONLY



Two Cond. Twisted Pr.	RG58C/U	Length
1326-A-60	1326-C-60	1524.0 (60.0)

1ST END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene.

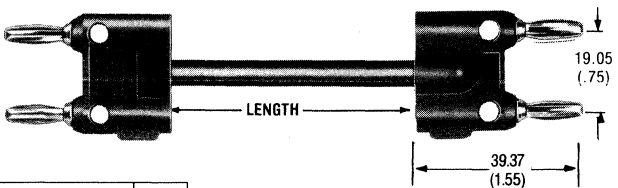
CABLE: Two cond. twisted pair, 6.35 mm (.250) O.D. rated at 300 VRMS; or RG58C/U 4.95 mm (.195) O.D. rated at 1400 VRMS.

2ND END: None.
RATING: +55°C. (+131°F.) Max.

NET 8.95

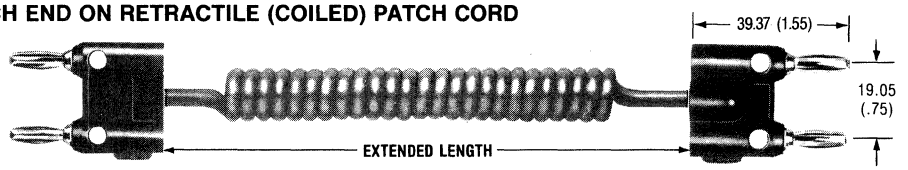
DOUBLE BANANA PLUG EACH END

1ST END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene.
CABLE: Two cond. twisted pair 6.35 mm (.250) O.D. rated at 300 VRMS.; Shielded mic. 4.95 mm (.195) O.D. rated at 1900 VRMS.; RG58C/U 4.95 mm (.195) O.D. rated at 1400 VRMS or RG59B/U 6.15 mm (.242) O.D. rated at 1700 VRMS.
2ND END: Same as first end.
RATING: +55°C. (+131°F.) Max.



Two Cond. Twisted Pr.	NET	Shielded Mic. Cable	NET	RG58C/U	NET	RG59B/U	Length	NET
2BA-18	11.05	2BB-18	9.35	2BC-18	10.25	2BE-18	457.2 (18.0)	9.35
2BA-24	11.35	2BB-24	9.65	2BC-24	10.55	2BE-24	609.6 (24.0)	9.65
2BA-36	11.95	2BB-36	10.25	2BC-36	11.15	2BE-36	914.4 (36.0)	10.25
2BA-48	12.55	2BB-48	10.85	2BC-48	11.75	2BE-48	1219.2 (48.0)	10.85
2BA-60	13.15	2BB-60	11.45	2BC-60	12.35	2BE-60	1524.0 (60.0)	11.45

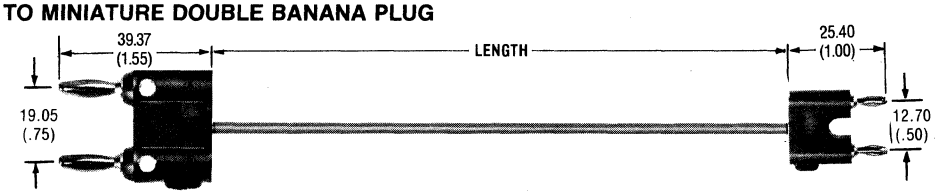
DOUBLE BANANA PLUG EACH END ON RETRACTILE (COILED) PATCH CORD



MODEL	Extended Length	NET
3864-48	1219.2 (48.0)	18.95
3864-60	1524.0 (60.0)	19.85
3864-72	1829.0 (72.0)	20.75

1ST END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polystyrene, black.
WIRE: 24 AWG, 45 × 40 t.c., polyurethane insulated, 4.32 mm (.170) O.D. Color, black.
2ND END: Same as first end.
RATING: 3000 VDC Int.; 270 VDC-90 VAC cont. duty; +50°C. (+122°F.) Max.

DOUBLE BANANA PLUG TO MINIATURE DOUBLE BANANA PLUG

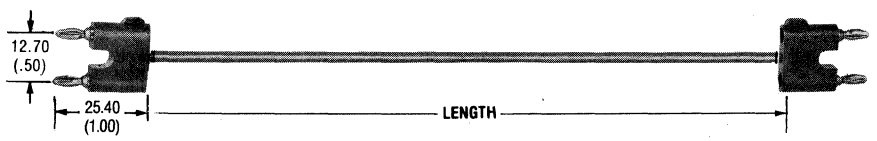


MODEL	Length	NET
2443-K-24	609.6 (24.0)	10.90
2443-K-36	914.4 (36.0)	11.50
2443-K-48	1219.2 (48.0)	12.10
2443-K-60	1524.0 (60.0)	12.70

1ST END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
CABLE: RG174/U, 2.54 mm (.100) O.D.

2ND END: Miniature Double Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation, polyethylene, black.
RATING: 1100 VRMS; +55°C. (+131°F.) Max.

MINIATURE DOUBLE BANANA PLUG EACH END



MODEL	Length	NET
2247-K-12	304.8 (12.0)	10.90
2247-K-24	609.6 (24.0)	11.50
2247-K-36	914.4 (36.0)	12.10
2247-K-60	1524.0 (60.0)	12.70

1ST END: Miniature Double Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polyethylene, black.

CABLE: RG174/U, 2.54 mm (.100) O.D.
2ND END: Same as first end.
RATING: 1100 VRMS; +55°C. (+131°F.) Max.

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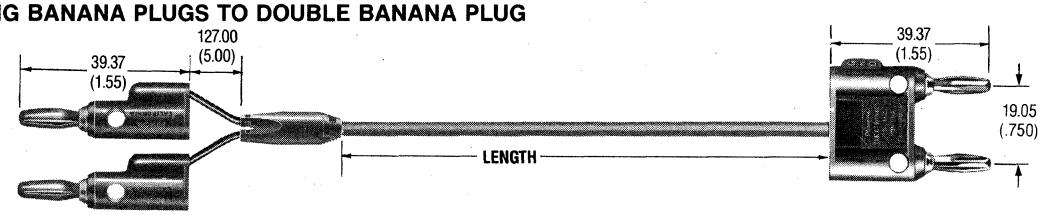
CABLE ASSEMBLIES

STACKING BANANA PLUGS TO DOUBLE BANANA PLUG



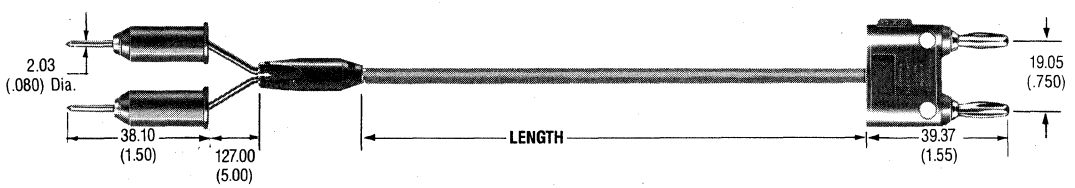
MODEL	Length	NET
1368-A-18	457.2 (18.0)	15.90
1368-A-24	609.6 (24.0)	16.20
1368-A-30	762.0 (30.0)	16.50
1368-A-36	914.4 (36.0)	16.80
1368-A-48	1219.2 (48.0)	17.40
1368-A-60	1524.0 (60.0)	18.00

1ST END: Single Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation, polypropylene. One black and one red.

CABLE: Two Cond., twisted pair, 6.35 mm (.250) O.D. Y-mold insulation; PVC, gray.

2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, gray.
RATING: 300 VRMS; +50°C. (+122°F.) Max.

SINGLE PIN TIP PLUGS TO DOUBLE BANANA PLUG



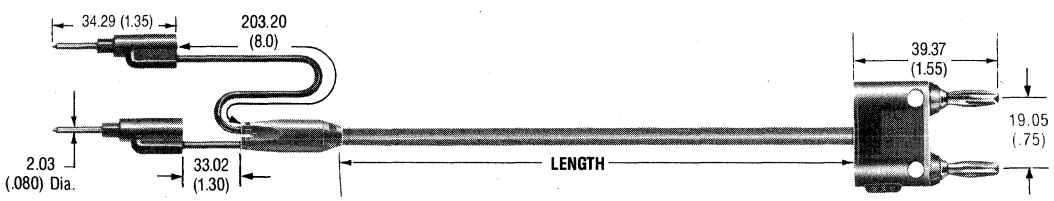
MODEL	Length	NET
2184-A-36	914.4 (36.0)	16.95
2184-A-48	1219.2 (48.0)	17.55
2184-A-60	1524.0 (60.0)	18.15

1ST END: Single Pin Tip Plugs. Brass, nickel plated. Insulation, polypropylene. One black and one red.

CABLE: Two conductor, twisted pair, 6.35 mm (.250) O.D. Y-mold insulation; PVC, gray.

2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, gray.
RATING: 300 VRMS; +50°C. (+122°F.) Max.

STACKING PIN TIP PLUGS TO DOUBLE BANANA PLUG



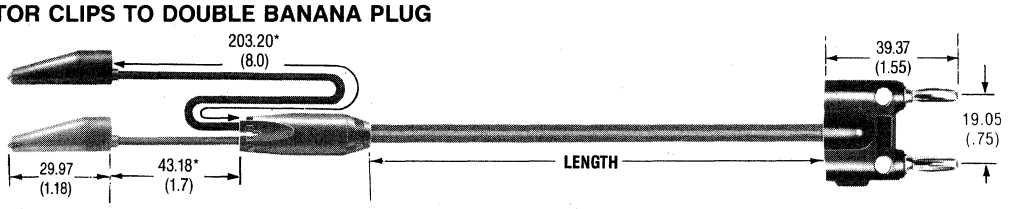
MODEL	Length	NET
2BC-PP-18	457.2 (18.0)	14.45
2BC-PP-24	609.6 (24.0)	14.75
2BC-PP-36	914.4 (36.0)	15.35
2BC-PP-48	1219.2 (48.0)	15.95
2BC-PP-60	1524.0 (60.0)	16.55

1ST END: Single Stacking Pin Tip Plugs. Brass, nickel plated. Insulation, polypropylene. One black and one red.

CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.

2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation; polyethylene, black.
RATING: 1400 VRMS; +50°C. (+122°F.) Max.

MINIGATOR CLIPS TO DOUBLE BANANA PLUG



Two Cond. Twisted Pair	NET	Shielded Mic. Cable	NET	RG58C/U	Length	NET
2BA-MG-18	15.95			2BC-MG-18	457.2 (18.0)	12.85
2BA-MG-24	16.15			2BC-MG-24	609.6 (24.0)	13.15
2BA-MG-30	16.45			2BC-MG-30	762.0 (30.0)	13.45
2BA-MG-36	16.75	2BB-MG-36	14.95	2BC-MG-36	914.4 (36.0)	13.75
2BA-MG-48	17.35			2BC-MG-48	1219.2 (48.0)	14.35
2BA-MG-60	17.95			2BC-MG-60	1524.0 (60.0)	14.75

1ST END: Minigator Clips. Steel, cadmium plated. Vinyl boots, one black and one red. *Breakout lengths on 2BA-MG are each 109.2 mm (4.3) long.
CABLE: Two cond., twisted pair 6.35 mm (.250) O.D. rated at 300 VRMS; shielded mic. 5.87 mm (.231) O.D. rated at 1900 VRMS or RG58C/U 4.95 mm (.195) O.D. rated at 1400 VRMS. Y-mold insulation, PVC.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene.
RATING: +50°C. (+122°F.) Max.

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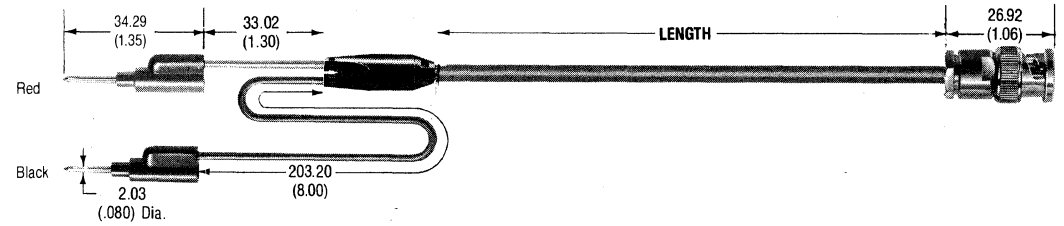
CABLE ASSEMBLIES

STACKING PIN TIP PLUGS TO BNC MALE



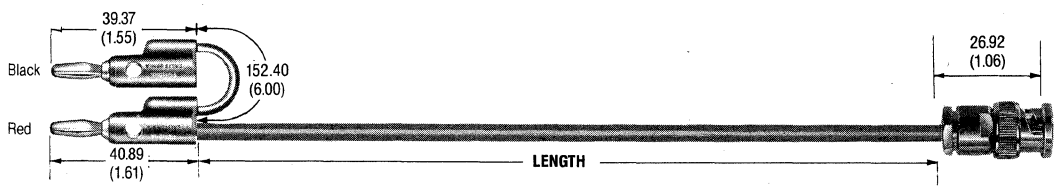
MODEL	Length	NET
2882-C-18	457.2 (18.0)	13.05
2882-C-24	609.6 (24.0)	13.35
2882-C-36	914.4 (36.0)	13.95
2882-C-48	1219.2 (48.0)	14.55
2882-C-60	1524.0 (60.0)	15.15

1ST END: Stacking Pin Tip Plugs. Brass body, beryllium copper spring, gold plated. Insulation; polypropylene.

CABLE: Shielded coaxial, RG58C/U, 4.95 mm (.195) O.D. Y-Mold insulation; PVC, black.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

SINGLE BANANA PLUGS TO BNC MALE



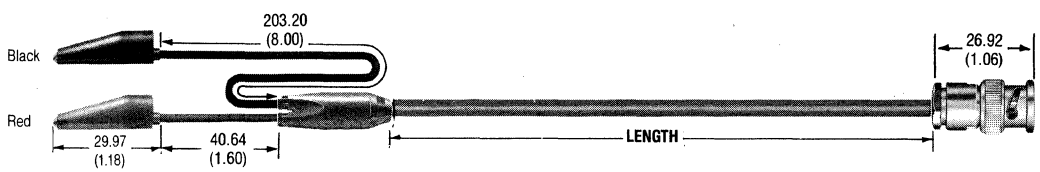
MODEL	Length	NET
2241-C-18	457.2 (18.0)	14.05
2241-C-24	609.6 (24.0)	14.35
2241-C-36	914.4 (36.0)	14.95
2241-C-48	1219.2 (48.0)	15.55

1ST END: Single Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, red. Ground plug insulation; polypropylene, black.

CABLE: Shielded coaxial, RG58C/U, 4.95 mm (.195) O.D.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +55°C. (+131°F.) Max.

MINIGATOR CLIPS TO BNC MALE



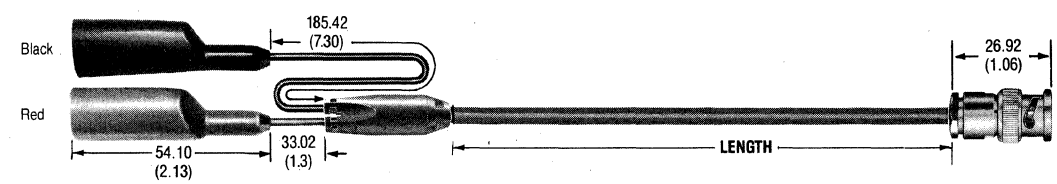
Shielded Mic. Cable	RG58C/U	Length	NET
MG-B-BNC-18	MG-C-BNC-18	457.2 (18.0)	12.90
MG-B-BNC-24	MG-C-BNC-24	609.6 (24.0)	13.20
MG-B-BNC-30	MG-C-BNC-30	762.0 (30.0)	13.50
MG-B-BNC-36	MG-C-BNC-36	914.4 (36.0)	13.80
MG-B-BNC-48	MG-C-BNC-48	1219.2 (48.0)	14.40
MG-B-BNC-60	MG-C-BNC-60	1524.0 (60.0)	15.00

1ST END: Minigator Clips. Steel, cadmium plated. Vinyl boots.

CABLE: Shielded mic. 5.87 mm (.231) O.D. or RG58C/U, 4.95 mm (.195) O.D. Y-mold insulation; PVC.

2ND END: BNC Male. Brass body, tarnish resistant plated. Brass contact, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

ALLIGATOR CLIPS TO BNC MALE



Shielded Mic. Cable	RG58C/U	Length	NET
AL-B-BNC-18	AL-C-BNC-18	457.2 (18.0)	12.05
AL-B-BNC-24	AL-C-BNC-24	609.6 (24.0)	12.35
AL-B-BNC-30	AL-C-BNC-30	762.0 (30.0)	12.65
AL-B-BNC-36	AL-C-BNC-36	914.4 (36.0)	12.95
AL-B-BNC-48	AL-C-BNC-48	1219.2 (48.0)	13.55
AL-B-BNC-60	AL-C-BNC-60	1524.0 (60.0)	14.15

1ST END: Alligator Clips. Steel, nickel plated. Vinyl boots.

CABLE: Shielded mic. 5.87 mm (.231) O.D. or RG58C/U, 4.95 mm (.195) O.D. Y-mold insulation; PVC.

2ND END: BNC Male. Brass body, tarnish resistant plated. Brass contact, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

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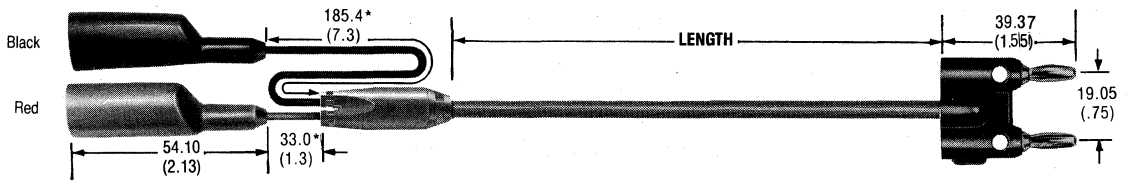
CABLE ASSEMBLIES

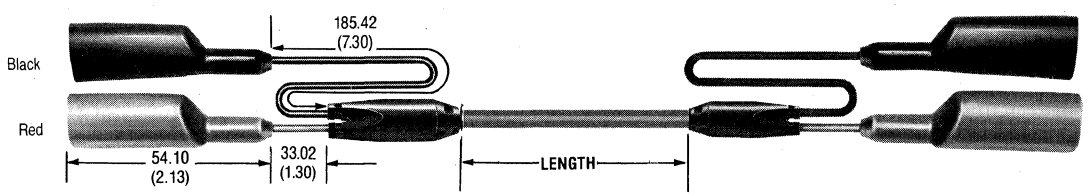
ALLIGATOR CLIPS TO DOUBLE BANANA PLUG



Two Cond. Twisted Pair	NET	Shielded Mic. Cable	RG58C/U	Length	NET
2BA-AL-18	16.05	2BB-AL-18	2BC-AL-18	457.2 (18.0)	13.05
2BA-AL-24	16.35	2BB-AL-24	2BC-AL-24	609.6 (24.0)	13.35
2BA-AL-30	16.65	2BB-AL-30	2BC-AL-30	762.0 (30.0)	13.65
2BA-AL-36	16.95	2BB-AL-36	2BC-AL-36	914.4 (36.0)	13.95
2BA-AL-48	17.55	2BB-AL-48	2BC-AL-48	1219.2 (48.0)	14.55
2BA-AL-60	18.15	2BB-AL-60	2BC-AL-60	1524.0 (60.0)	15.15

1ST END: Alligator Clips. Steel, nickel plated. Vinyl boots. *Breakout lengths on 2BA-AL are each 96.52 mm (3.8) long.
CABLE: Two cond., twisted pair 6.35 mm (.250) O.D. rated at 300 VRMS; shielded mic. 5.87 mm (.231) O.D. rated at 1900 VRMS or RG58C/U 4.95 mm (.195) O.D. rated at 1400 VRMS. Y-mold insulation, PVC.
2ND END: Double Banana Plug. Brass body, beryllium copper spring, nickel plated. Insulation, polyethylene.
RATING: +50°C. (+122°F.) Max.

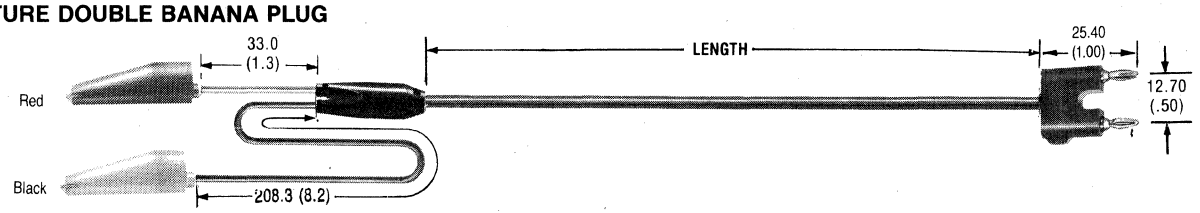
ALLIGATOR CLIPS BOTH ENDS



MODEL	Length	NET
1152-C-12	304.8 (12.0)	13.75
1152-C-24	609.6 (24.0)	14.35
1152-C-36	914.4 (36.0)	14.95
1152-C-48	1219.2 (48.0)	15.55
1152-C-60	1524.0 (60.0)	16.15

1ST END: Alligator Clips. Steel, nickel plated. Vinyl boots.
CABLE: RG58C/U 4.95 mm (.195) O.D. Y-mold insulation; PVC, black.
2ND END: Same as first end.
RATING: 1400 VRMS; +50°C. (+122°F.) Max.

MINIGATOR CLIPS TO MINIATURE DOUBLE BANANA PLUG

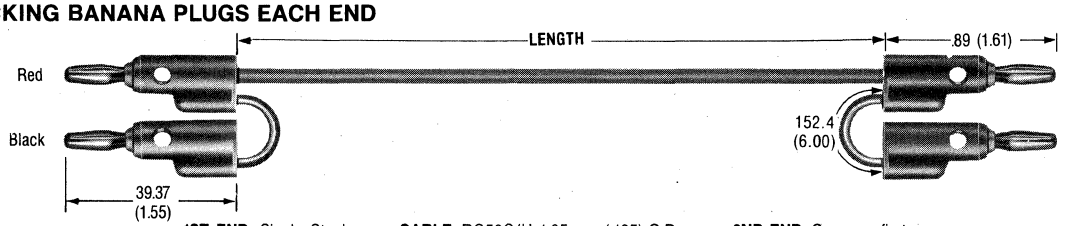


MODEL	Length
3027-K-24	609.6 (24.0)

1ST END: Minigator Clips. Steel, cadmium plated. Insulation; vinyl.
CABLE: RG 174/U, 2.54 mm (.100) O.D. Y-mold insulation; PVC, black.
2ND END: Miniature Double Banana Plug. Brass body, beryllium copper spring, gold plated. Insulation; polyethylene, black.
RATING: 1100 VRMS; +50°C. (+122°F.) Max.

NET 13.95

SINGLE STACKING BANANA PLUGS EACH END



MODEL	Length	NET
2239-C-24	609.6 (24.0)	18.35
2239-C-36	914.4 (36.0)	18.95
2239-C-48	1219.2 (48.0)	19.55
2239-C-60	1524.0 (60.0)	20.15

1ST END: Single Stacking Banana Plugs. Brass body, beryllium copper spring, nickel plated. Insulation; polypropylene, red. Ground plug insulation; polypropylene, black.
CABLE: RG58C/U 4.95 mm (.195) O.D.
2ND END: Same as first end.
RATING: 1400 VRMS; +55°C. (+131°F.) Max.

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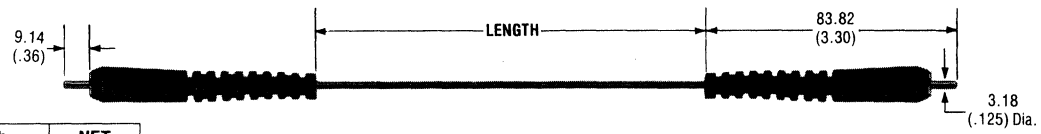
AUDIO/VIDEO CABLE ASSEMBLIES

PHONO PLUG BOTH ENDS

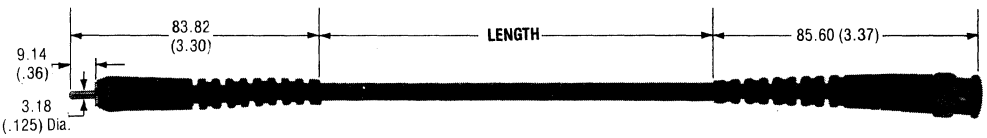


MODEL	Length	NET
5092-K-18	457.2 (18.0)	12.25
5092-K-24	609.6 (24.0)	12.55
5092-K-36	914.4 (36.0)	13.15
5092-K-48	1219.2 (48.0)	13.75

1ST END: Phono plug. Brass, nickel plated. Boot; PVC, black.
CABLE: RG174/U, 2.54 mm (.100) O.D.

2ND END: Same as first end.
RATING: 500 VRMS; +50°C. (+122°F.) Max.

PHONO PLUG TO BNC MALE

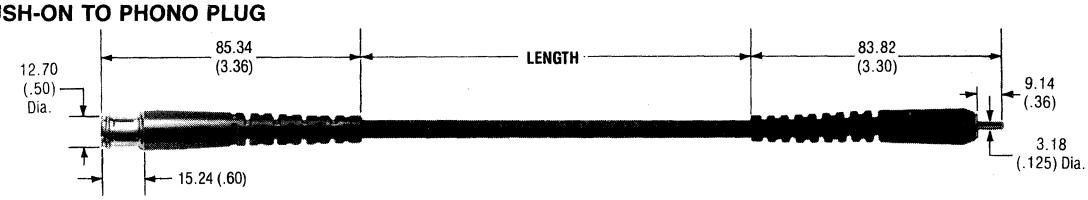


MODEL	Length	NET
4963-E-24	609.6 (24.0)	10.65
4963-E-36	914.4 (36.0)	11.25
4963-E-48	1219.2 (48.0)	11.85
4963-E-60	1524.0 (60.0)	12.45

1ST END: Phono plug. Brass, nickel plated. Boot; PVC, black.
CABLE: RG59B/U, 6.15 mm (.242) O.D., 75 OHM.

2ND END: BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

TYPE "F" PUSH-ON TO PHONO PLUG

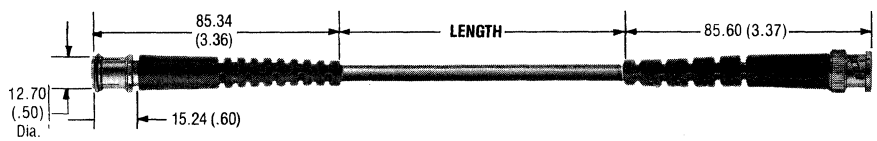


MODEL	Length	NET
5025-E-72	1829 (72.0)	12.95

1ST END: Push-on Type "F" Male. Brass, nickel plated. Boot; PVC, black.
CABLE: RG59B/U, 6.15 mm (.242) O.D., 75 OHM.

2ND END: Phono Plug. Brass, nickel plated. Boot; PVC, black.
RATING: 500 VRMS; +50°C. (+122°F.) Max.

TYPE "F" MALE PUSH-ON TO BNC MALE



MODEL	Length	NET
4939-PP-24	609.6 (24.0)	12.20
4939-PP-36	914.4 (36.0)	12.95
4939-PP-48	1219.2 (48.0)	13.70
4939-PP-60	1524.0 (60.0)	14.45

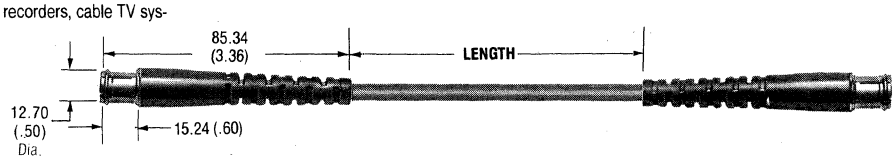
1ST END: Push-on Type "F" Male. Brass, nickel plated. Boot; PVC, black.

CABLE: RG59 type CATV cable 6.15 mm (.242) O.D.

2ND END: Crimp BNC Male. Brass body, tarnish resistant plated. Center contact, brass, gold plated. Impedance: 50 Ohms. Boot; PVC, black.
RATING: Operating Voltage: 500 VRMS Max.; +50°C. (+122°F.) Max.

TYPE "F" MALE PUSH-ON EACH END

This "F" type fits standard female "F" connectors. Positive connection is made by pushing the male onto the female connector. Excellent for television inputs, video recorders, cable TV systems, etc.



MODEL
4920-PP-48

1ST END: Push-on Type "F" Male. Brass, nickel plated. Boot; PVC, black.

CABLE: RG59 type CATV cable 6.15 mm (.242) O.D.

2ND END: Same as first end.
RATING: 500 VRMS; +50°C. (+122°F.) Max.

NET 9.95

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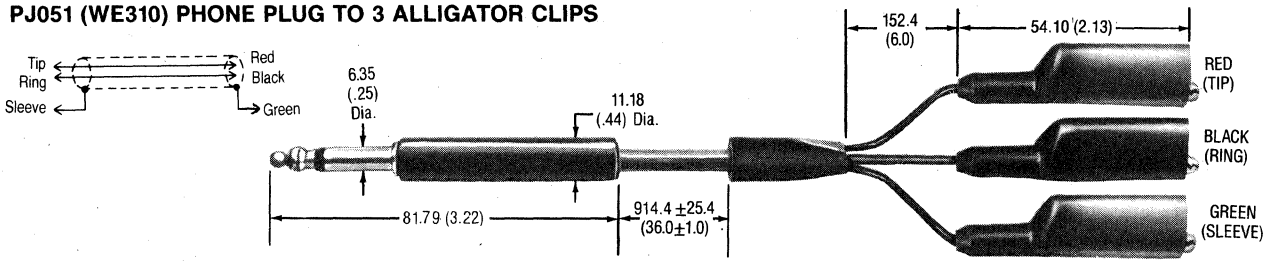
TELEPHONE CABLE ASSEMBLIES

PJ051 (WE310) PHONE PLUG TO 3 ALLIGATOR CLIPS

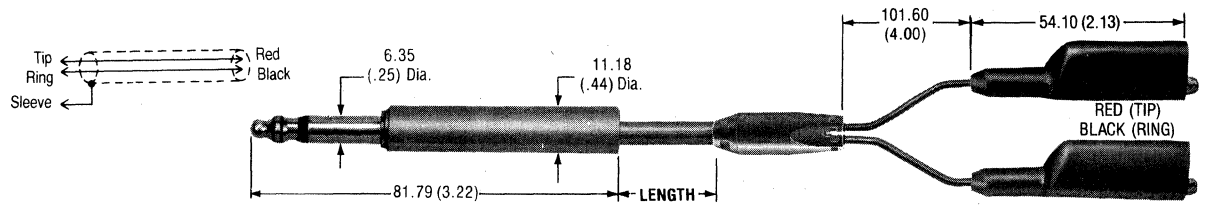


MODEL
5151-J-36

1ST END: Phone Plug PJ-051, with red phenolic handle. Body, brass.
CABLE: Two cond. shielded microphone. Polyethylene insulation. Vinyl jacket 5.87 (.231) O.D. nom. cap. between cond. 18 pf/ft. Nom. cap. between one cond. and remaining cond. connected to shield 32 pf/ft. Color: Gray. Y-mold insulation; PVC, gray.
2ND END: Alligator clips, steel, nickel plated. Vinyl boots; one red, one black, and one green.
RATING: 500 V Peak, +50°C. (+122°F.) Max.

NET 27.95

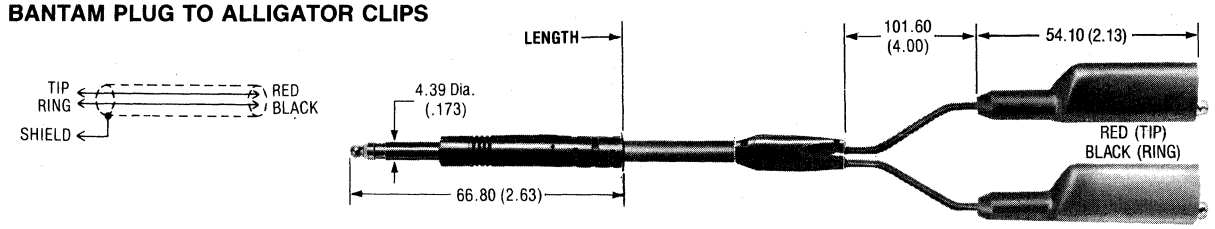
PJ-051 (WE 310) PHONE PLUG TO ALLIGATOR CLIPS



MODEL	Length	NET
3352-A-36	914.4(36.0)	23.95
3352-A-60	1524.0(60.0)	25.75
3352-A-84	2133.6(84.0)	27.55
3352-A-120	3048.0(120)	29.35

1ST END: PJ-051 Phone Plug, brass. insulation; Phenolic, red.
CABLE: Two cond. twisted pair, 65 x 36 t.c., 6.35 mm (.250) O.D. Y-Mold insulation; PVC, gray.
2ND END: Alligator clips, steel, nickel plated. Vinyl boots, one black and one red.
RATING: 300 VRMS, +50°C. (+122°F.) Max.

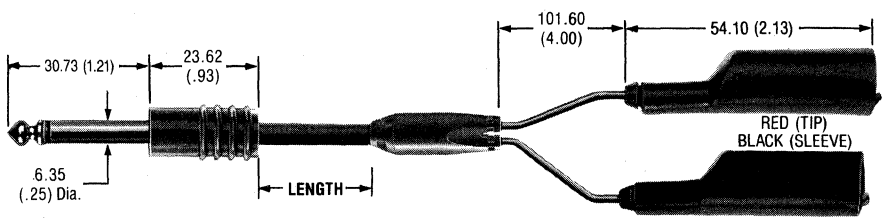
BANTAM PLUG TO ALLIGATOR CLIPS



MODEL	Length	NET
5026-36	914.4(36.0)	23.10
5026-60	1524.0(60.0)	24.30
5026-84	2133.6(84.0)	26.70

1ST END: Miniature 3 Cond. Phone Plug. Insulation; PVC, black. Sleeve, no connection.
CABLE: Two conductor, shielded stranded copper, 26 AWG, 4.57 mm (.180) O.D. Y-Mold insulation; PVC, gray.
2ND END: Alligator clips. Steel, nickel plated. Vinyl boots, one black and one red.
RATING: 500 V Peak, +50°C. (+122°F.) Max.

STANDARD PHONE PLUG TO ALLIGATOR CLIPS



MODEL	Length	NET
4990-B-36	914.4(36.0)	14.50
4990-B-60	1524.0(60.0)	15.70
4990-B-84	2133.6(84.0)	18.90
4990-B-120	3048.0(120)	20.70

1ST END: Standard 2 cond., Phone Plug. Brass, nickel plated. Insulation; polyethylene, gray.
CABLE: Shielded microphone coaxial, 4.95 mm (.195) O.D. Y-Mold insulation; PVC, gray.
2ND END: Alligator clips. Steel, nickel plated. Vinyl boots, one black and one red.
RATING: 500 V Peak, +50°C. (+122°F.) Max.

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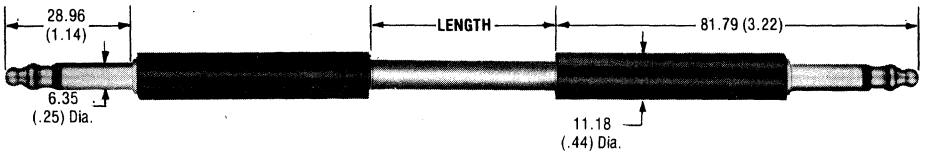
TELEPHONE CABLE ASSEMBLIES

PJ-051 (WE310) PHONE PLUG EACH END



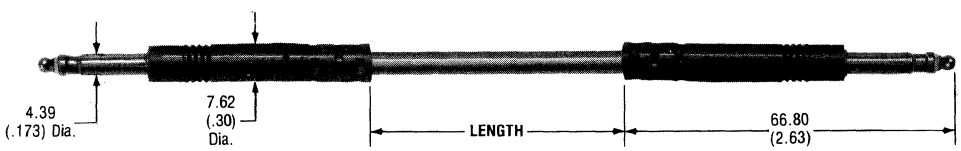
MODEL	Length	NET
2524-A-18	457.2(18.0)	25.05
2524-A-24	609.6(24.0)	25.35
2524-A-36	914.4(36.0)	25.95
2524-A-48	1219.2(48.0)	26.55
2524-A-60	1524.0(60.0)	27.15

WIRED TIP AND RING ONLY
1ST END: PJ-051 Phone Plug. Brass. Insulation; phenolic, red.
CABLE: Two conductor twisted pair. 6.35 mm (.250) O.D.
2ND END: Same as first end.
RATING: 500 V Peak.

MODEL	Length	NET
2524-J-18	457.2(18.0)	33.05
2524-J-24	609.6(24.0)	33.35
2524-J-36	914.4(36.0)	33.95
2524-J-48	1219.2(48.0)	34.55
2524-J-60	1524.0(60.0)	35.15

WIRED TIP, RING AND SLEEVE
1ST END: PJ-051 Phone Plug. Brass. Insulation; phenolic, red.
CABLE: Two conductor shielded microphone, 5.87 mm (.231) O.D.
2ND END: Same as first end.
RATING: 500 V Peak.

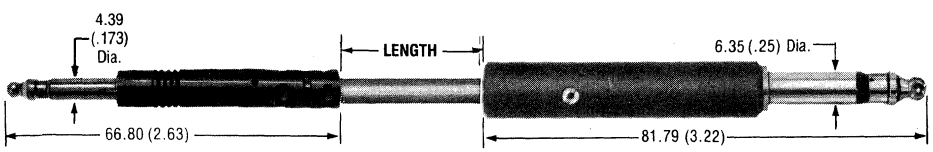
BANTAM PLUG EACH END



MODEL	Length	NET
4279-12	304.8(18.0)	22.75
4279-24	609.6(24.0)	23.35
4279-36	914.4(36.0)	23.95
4279-48	1219.2(48.0)	24.55
4279-60	1524.0(60.0)	25.15

WIRED TIP, RING AND SLEEVE
1ST END: Miniature 3 Cond. Phone Plug. Insulation; PVC, black.
CABLE: Two conductor, shielded, stranded copper, 26 AWG, PVC insulated, 4.57 mm (.180) O.D.
2ND END: Same as first end.
RATING: 500 V Peak. +50°C. (+122°F.) Max.

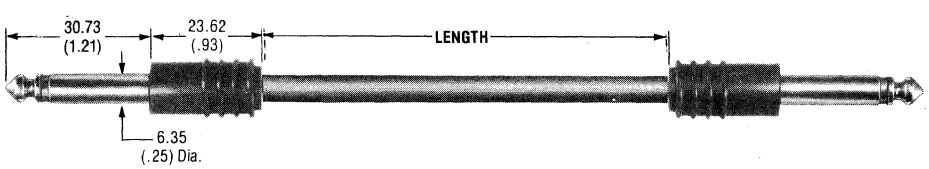
BANTAM PLUG TO PJ-051 (WE 310) PHONE PLUG



MODEL	Length	NET
4280-36	914.4(36.0)	49.95
4280-48	1219.2(48.0)	50.55
4280-60	1524.0(60.0)	51.15

WIRED TIP, RING AND SLEEVE
1ST END: Miniature 3 Cond. Phone Plug. Insulation; PVC, black.
CABLE: Two conductor, shielded, stranded copper, 26 AWG, PVC insulated 4.57 mm (.180) O.D.
2ND END: PJ-051 Phone Plug. Brass, Insulation; phenolic, red.
RATING: 500 V Peak; +50°C. (+122°F.) Max.

STANDARD PHONE PLUG EACH END



MODEL	Length	NET
4053-B-36	914.4(36.0)	14.95
4053-B-60	1524.0(60.0)	16.15

1ST END: Standard 2 Cond. Phone Plug. Brass, nickel plated. Insulation; polyethylene, gray.
CABLE: Shielded microphone, coaxial. Gray vinyl jacket, 4.95 mm (.195) O.D.
2ND END: Same as first end.
RATING: 500 V Peak; +55°C. (+131°F.) Max.

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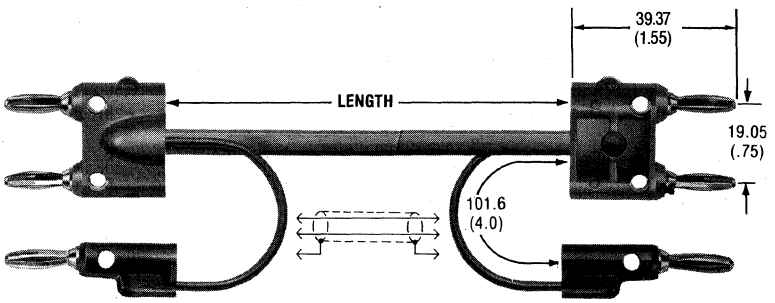
AUDIO/VIDEO CABLES ASSEMBLIES

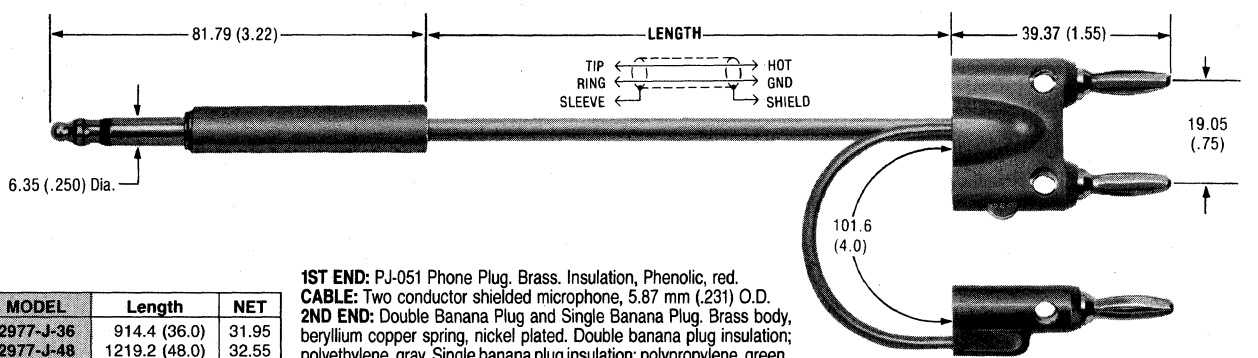
TWO COND. SHIELDED BALANCED LINE

1ST END: Double Banana Plug and Single Banana Plug. Brass body, beryllium copper spring, nickel plated. Double banana plug insulation; polyethylene, gray. Single banana plug insulation; polypropylene, green.
CABLE: Two conductor shielded microphone, 5.87 mm (.231) O.D.
2ND END: Same as first end.
RATING: 1000 VRMS, +55°C. (+131°F.) Max.



MODEL	Length	NET
1167-18	457.2 (18.0)	22.05
1167-24	609.6 (24.0)	22.35
1167-30	762.0 (30.0)	22.65
1167-36	914.4 (36.0)	22.95
1167-48	1219.2 (48.0)	23.55
1167-60	1524.0 (60.0)	24.15

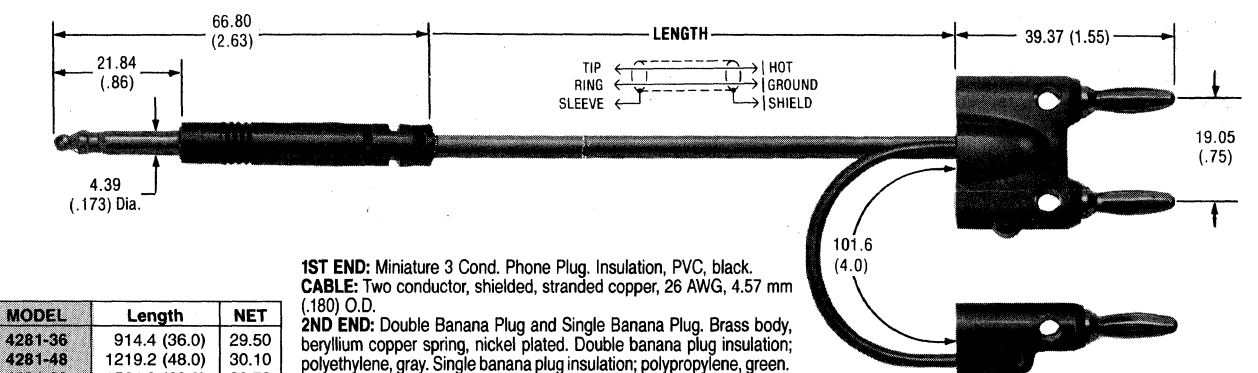
PJ-051 (WE310) TO DOUBLE PLUG BALANCED LINE



MODEL	Length	NET
2977-J-36	914.4 (36.0)	31.95
2977-J-48	1219.2 (48.0)	32.55
2977-J-60	1524.0 (60.0)	33.15

1ST END: PJ-051 Phone Plug. Brass. Insulation, Phenolic, red.
CABLE: Two conductor shielded microphone, 5.87 mm (.231) O.D.
2ND END: Double Banana Plug and Single Banana Plug. Brass body, beryllium copper spring, nickel plated. Double banana plug insulation; polyethylene, gray. Single banana plug insulation; polypropylene, green.
RATING: 500 V Peak, +55°C. (+131°F.) Max.

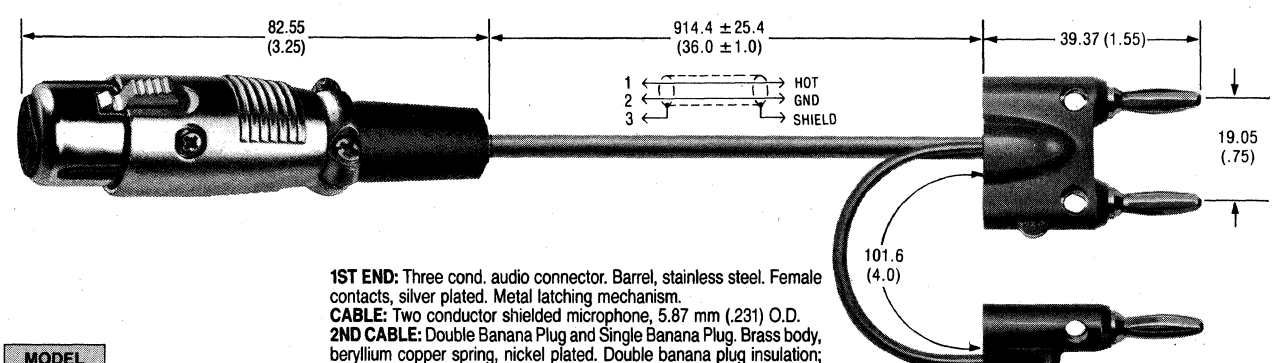
BANTAM PLUG TO DOUBLE PLUG BALANCED LINE



MODEL	Length	NET
4281-36	914.4 (36.0)	29.50
4281-48	1219.2 (48.0)	30.10
4281-60	1524.0 (60.0)	30.70

1ST END: Miniature 3 Cond. Phone Plug. Insulation, PVC, black.
CABLE: Two conductor, shielded, stranded copper, 26 AWG, 4.57 mm (.180) O.D.
2ND END: Double Banana Plug and Single Banana Plug. Brass body, beryllium copper spring, nickel plated. Double banana plug insulation; polyethylene, gray. Single banana plug insulation; polypropylene, green.
RATING: 500 V Peak; +55°C. (+131°F.) Max.

AUDIO CONNECTOR TO THREE BANANA PLUGS



MODEL
4953-J-36

1ST END: Three cond. audio connector. Barrel, stainless steel. Female contacts, silver plated. Metal latching mechanism.
CABLE: Two conductor shielded microphone, 5.87 mm (.231) O.D.
2ND CABLE: Double Banana Plug and Single Banana Plug. Brass body, beryllium copper spring, nickel plated. Double banana plug insulation; polyethylene, gray. Single banana plug insulation; polypropylene, green.
RATING: 133 WVDC, +55°C. (+131°F.) Max.

NET 34.95

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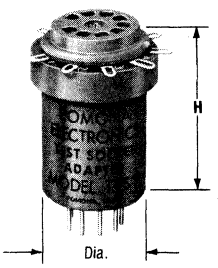
TUBE TEST SOCKET ADATPERS & SOCKET SAVER® ADAPTERS

TEST SOCKET TUBE ADAPTERS

Ideal for making measurements of voltage, resistance, audio and video without tracing complicated circuits from the bottom of the chassis. They feature: Extended test tabs for easy use with either alligator or test prods; low loss mica-filled molded phenolic construction per MIL-M-14, MFE. Power factor less than 0.010 at 10 MHz; high insulation resistance, the I.R. exceeds 500,000 megohms at 40% R.H., at 24°C; distributed capacity, inter-element approximately 1 pico farad; high voltage operation, voltage breakdown elements exceeds 1,700 VAC or DC. Model TVS-8 has 2.36 mm (.093) dia. pins. All other models have 1.02 mm (.040) dia. pins.

MODEL	Type	Size H x Dia.	Pin Circle Dia.	NET
TVS-7	7 Pin Miniature	36.07(1.42) x 19.05(.75)	9.53(.375)	13.75
TVS-8	8 Pin Octal	27.94(1.10) x 29.46(1.16)	17.45(.687)	17.50
TVS-9	9 Pin Miniature	35.56(1.40) x 22.10 (.87)	11.89(.468)	15.95



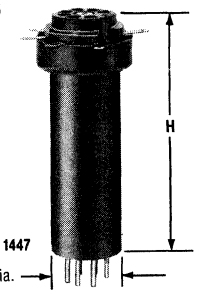
MODEL TVS-9

TALL TEST SOCKET TUBE ADAPTERS

(For sockets having captive or telescoping tube shields)

- Ready access to socket connections.
- Pins 1.02 mm (.040) dia.

These adapters rise above the shield and place testing in the open. Shields or tuner covers do not have have to be removed. Inter-element distributed capacity is approximately 1.5 pico farad. Voltage breakdown elements exceed 1800 VAC or DC.

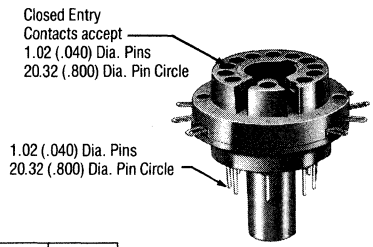


MODEL 1447

MODEL	Type	Size H x Dia.	Pin Circle Dia.	NET
1447	7 Pin Miniature	54.36(2.14) x 16.51(.65)	9.53(.375)	14.95
1449	9 Pin Miniature	54.36(2.14) x 19.05(.75)	11.89(.468)	16.95

90° COLOR CRT TEST SOCKET ADAPTER WITH SOLDER TABS

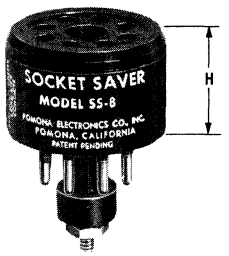
For 90° Color Television Picture Tubes
MINIATURE DIHEPTAL
UPPER: Contacts and tabs. Phosphor bronze, electro-tin plated.
INSULATION: Polycarbonate, red.
LOWER: Pins. Beryllium copper, bright tin plated.



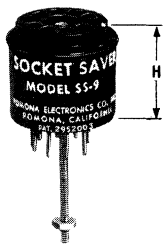
MODEL	Pin Circle Dia.	NET
2380	20.32(.800)	14.95

SOCKET SAVER® ADAPTERS

The Socket Saver® Adapter is designed to be installed on tube checkers and other electronic equipment to prevent wear and tear of sockets on original equipment. They are easy to install and remove. This eliminates the necessity of replacing and rewiring sockets on original equipment. Built of quality materials. Beryllium copper long life contacts to give maximum service.



MODEL SS-8

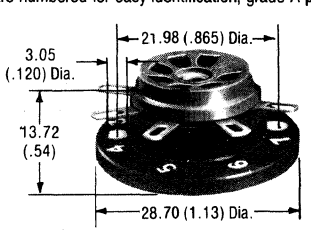


MODEL SS-9

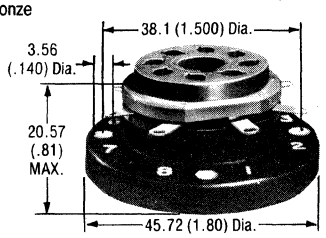
MODEL	Type	Size H x Dia.	Pin Circle Dia.	NET
SS-7	7 Pin Miniature	20.57 mm (.81)	9.53(.375)	9.75
SS-8	8 Pin Octal	20.57 mm (.81)	17.45(.687)	16.95
SS-9	9 Pin Miniature	20.57 mm (.81)	11.89(.468)	10.50
1751	9 Pin Novar	20.57 mm (.81)	17.45(.687)	11.95

SURFACE MOUNTED BREADBOARD SOCKETS

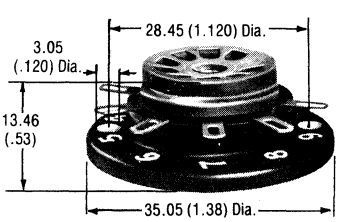
Surface mounted breadboard sockets are ideal for experimental circuit design, portable and enclosed units, plug-in and packaged assemblies. They feature: An insulated base to prevent connections from shorting to chassis; elimination of double chassis design; circuits may be wired in an enclosed unit; base connections are numbered for easy identification; grade A phosphor bronze spring contacts; standard center to center mounting holes. For ease of installation the 7 and 9 pin miniatures may be mounted either in the center or on the sides, the 8 pin octal is mounted on the sides; small mounting holes permits the reuse of experimental chassis.



MODEL XS-7



MODEL XS-8



MODEL XS-9

MODEL	Pin Circle Dia.	NET
XS-7	9.53(.375)	4.15
XS-8	17.45(.687)	5.35
XS-9	11.89(.468)	4.75

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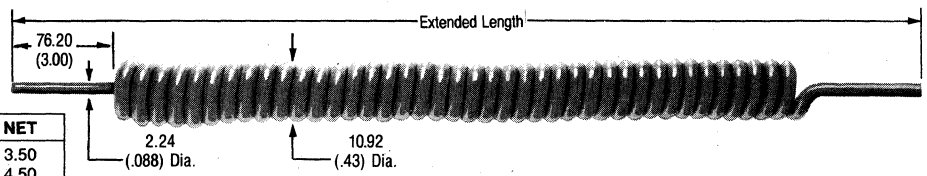
POMONA

WIRE/PATCH CORD

RETRACTILE (COILED) PATCH CORD 26 AWG

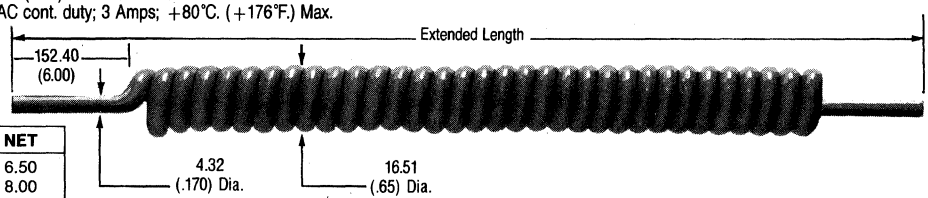
WIRE: Single conductor, 26 AWG, strand, 10 × 36 non-tinned copper, polyurethane insulation, 2.24 (.088) O.D.
RATING: 1000 VDC, 3 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL	Extended Length	NET
5205-36*	914.4 (36.0)	3.50
5205-48*	1219.2 (48.0)	4.50
5205-60*	1524.0 (60.0)	5.50

RETRACTILE (COILED) SHIELDED MICROPHONE CABLE

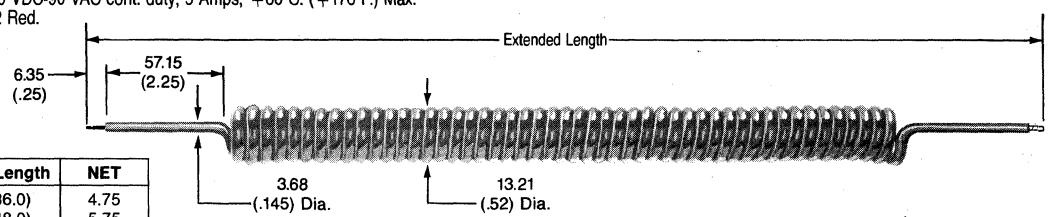
CABLE: Shielded microphone. Center conductor, 24 AWG, strand 45 × 40 tinned cadmium brozne, TPE insulation, spiral T.C. shielded with polyurethane jacket 4.32 mm (.170) O.D. Color: Black.
RATING: 3000 VDC Int.; 270 VDC-90 VAC cont. duty; 3 Amps; +80°C. (+176°F.) Max.



MODEL	Extended Length	NET
5204-48	1219.2 (48.0)	6.50
5204-60	1524.0 (60.0)	8.00
5204-72	1829.0 (72.0)	9.50

RETRACTILE (COILED) PATCH CORD 20 AWG

WIRE: Single conductor, 20 AWG, strand, 42 × 36 polyurethane insulation, 3.63 (.143) O.D.
RATING: 3000 VDC Int.; 270 VDC-90 VAC cont. duty; 5 Amps; +80°C. (+176°F.) Max.
***STD COLORS:** -0 Black, -2 Red.



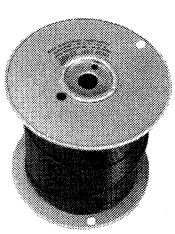
MODEL	Extended Length	NET
5202-36*	914.4 (36.0)	4.75
5202-48*	1219.2 (48.0)	5.75
5202-60*	1524.0 (60.0)	6.75

HOOKUP (PATCH CORD) WIRE

This is the same quality wire that Pomona uses on their patch cords throughout the catalog. It is available for purchase in 152.4 meter (500 foot) reels. This wire is ideal for do-it-yourself test leads or point-to-point electrical connections.

18 AWG WIRE

SPECIFICATIONS:
STRANDING: 65 × 36 tinned copper.
O.D.: 3.66 mm (.144).
JACKET: PVC
TEMP RANGE: −20°C. (−4°F.) to +105°C. (+221°F.)
RATING: 15 Amps Max, 5000 WVDC. Max.
***STD COLORS:** -0 Black, -2 Red.

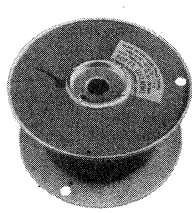


MODEL
4418-*

NET 140.00
(Std. Pkg. 500′ Reel)

20 AWG WIRE

SPECIFICATIONS:
STRANDING: 41 × 36 tinned copper.
O.D.: 2.21 mm (.087).
JACKET: PVC
TEMP RANGE: −20°C. (−4°F.) to +105°C. (+221°F.)
RATING: 12 Amps. Max, 3000 WVDC. Max.
***STD COLORS:** -0 Black, -2 Red.



MODEL
4420-*

NET 115.00
(Std. Pkg. 500′ Reel)

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MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

MAXIMUM CURRENT CAPACITY—CONDUCTORS

Size, AWG	MIL-W-5088				National Electrical Code	Underwriters Laboratory		American Insurance Association	500 c mils/A
	Copper		Aluminum			60°C	80°C		
	Single-wire	Wire-bundled	Single-wire	Wire-bundled					
30	...	...	...	...	...	0.2	0.4	...	0.20
28	...	...	...	...	...	0.4	0.6	...	0.32
26	...	...	...	...	...	0.6	1.0	...	0.51
24	...	...	...	...	...	1.0	1.6	...	0.81
22	9	5	...	...	...	1.6	2.5	...	1.28
20	11	7.5	...	...	...	2.5	4.0	3	2.04
18	16	10	...	...	6	4.0	6.0	5	3.24
16	22	13	...	...	10	6.0	10.0	7	5.16
14	32	17	...	...	20	10.0	16.0	15	8.22
12	41	23	...	...	30	16.0	26.0	20	13.05
10	55	33	...	...	35	...	...	25	20.8
8	73	46	58	36	50	...	...	35	33.0
6	101	60	86	51	70	...	...	50	52.6
4	135	80	108	64	90	...	...	70	83.4
2	181	100	149	82	125	...	...	90	132.8
1	211	125	177	105	150	...	...	100	167.5
0	245	150	204	125	200	...	...	125	212.0
00	283	175	237	146	225	...	...	150	266.0
000	328	200	...	...	275	...	...	175	336.0
0000	380	225	...	...	325	...	...	225	424.0

Power Dynamics, Inc.

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IEC POWER RECEPTACLES/CONNECTORS

UL — United States
CSA — Canada
DEMKO — Denmark
NEMKO — Norway
SEMKO — Sweden
SEV — Switzerland
VDE — Germany

MATERIALS
Housing Material: Polycarbonate Makrolon Type 60301
U/L-Pins: Nickel Plated Brass
Terminals: Electro Tin Plate over Copper Plate

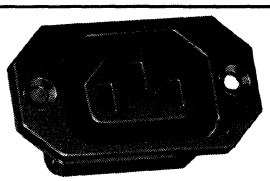
Power Dynamics IEC Connectors have been submitted, tested and approved by most recognized National Testing Agencies. These prior approvals eliminate the necessity of a retesting program when submitted in equipment being evaluated by these same testing agencies.

Our IEC Connectors which conform to CEE-22 are accepted throughout the world for use in electrical equipment. Designers and manufacturers are offered maximum flexibility as PDI Connectors mate with all universally accepted CEE-22 Power Cords. PDI offers a complete selection of Power Cords. Equipment which incorporates PDI Connectors also offers the further advantage of shipping finished units with correct cord set, permitting immediate use without time consuming modifications on the part of the end customer.



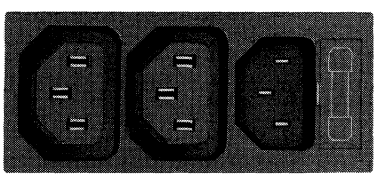
(42R01) (42R02) (42R03)
UL VDE CSA SEV
SEMKO NEMKO DEMKO

General purpose power cord connector. Screw, Quick Connect, or Solder Lug terminal configuration. Rated @ 10 amp., from 65°C to 155°C operating temperature. Designed for versatile mounting. Available in screw or snap-in panel mount and five mounting configurations.



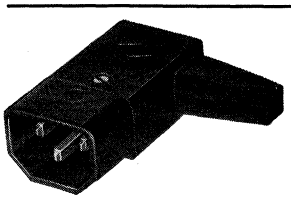
(43R02) (43R03) (43R04)
UL VDE CSA

General purpose female power cord connector. Three terminal configurations: Screw, Quick Connect & Solder Lug. Rated 10 amp. 250V @ 65°C & 10 amp. 250V @ 120°C. Designed for versatile mounting. Screw or snap-in panel mount. Three mounting configurations.



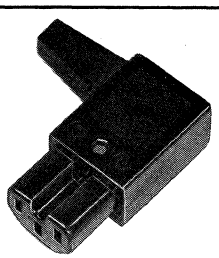
(COMBINATION) (44R01)
UL CSA

Exceptionally versatile combination Fuse Connector. Combining our single male fuse connector 42R31, 32 33 with our female connector 43R02, 03, 04, allowing for a selection of 1 male outlet with from 1 to 6 female outlets. Rated 10 amp. Simple snap-in mounting.



(42R04) VDE

Male power cord plug with 10 amp. ratings. Contains integral cable clamp strain relief & internal screw type connections. Three mounting angle configurations.



(43R01)
VDE SEV SEMKO NEMKO DEMKO

Female power cord plug with 10 amp. rating from 65°C to 155°C operating temperature. Integral cable clamp strain relief & internal screw type connection. Three mounting angle configurations.

Fuses are not included with unit

CONNECTORS AVAILABLE WITH QUICK CONNECT, SCREW & SOLDER TERMINALS

Mechanical Configurations Available in Combination with Any Electrical Configuration

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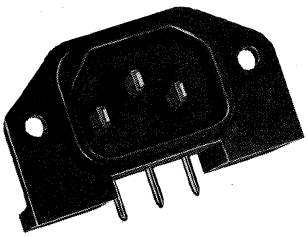
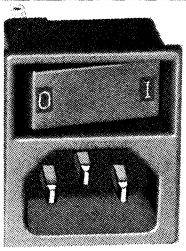
IEC POWER RECEPTACLES/CONNECTORS



(42R65)

UL
VDE
CSA
SEV
SEMKO
NEMKO
DEMKO

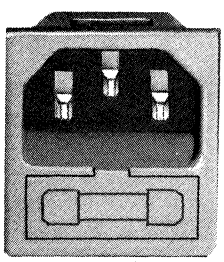
Combination Power Cord Connector with PRINTED CIRCUIT TERMINALS. Conforms with all international safety requirements. Rated 10 amp., 250V, 65°C to 120°C operating temperature. For automated assembly operations.



(42R36)

UL
VDE
CSA
SEV

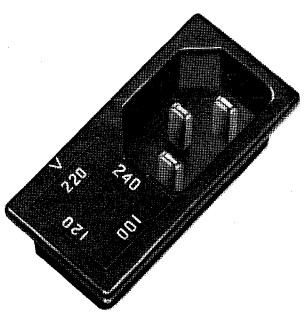
Combination power cord connector with single or double pole on/off snap action power switch. Conforms with all international product safety requirements. Designed to eliminate discrete purchase, inventory & assembly of connector & switch. Terminal connections are Solder or Quick Connect. Five terminal sizes. Rated 10 amp. single pole or double pole switch.



(42R35)

UL
VDE
CSA
SEV

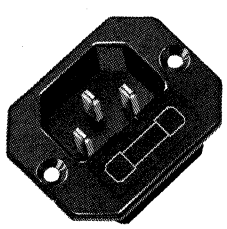
Combination single or double fuse holder power cord connector for domestic and international markets. Fuse holder is touch proof in accordance with international product safety requirements. Accepts either American or European fuse for maximum versatility in product applications. Fuse connections are externally accessible & isolated from power connections. Solder Lug & Quick Connect (terminal configurations) available in five terminal sizes. Rated 10 amp. with single or double fuse versions.



(42R34)
(42R38)

UL
VDE
CSA
SEV
SEMKO
NEMKO

Integral combination IEC power cord connector/ Fuse Holder/Voltage Selector. Meets all international safety requirements; may be used without modification at time of installation. Designed to switch voltages 100, 120, 240 by removing fuse cartridge & rotating to desired voltage, then snapping the cartridge back into connector housing. Fuse holder is touch proof in accordance with international product safety requirements. Series 42R34, page 20 accepts one international 5 x 20mm fuse. Series 42R38, accepts one standard 3 AG American type fuse. Rated @ 10 amp. from 65°C to 120°C operating temperature. Screw or Snap-in mount configurations.



(42R31)
(42R32)
(42R33)

UL
VDE
CSA
SEV
SEMKO
NEMKO

Combination single fuse holder/power cord connector of domestic & international markets. Fuse holder is touch proof in accordance with international product safety requirements. Accommodates one international 5 x 20mm fuse with space for a spare fuse. Terminal connections: Screw, Quick Connect or Solder Lug. Rated @ 10 amp., 65°C to 120°C operating temperature. Fuse connections are externally accessible and isolated from power connections. Screw or snap-in mount and five mounting configurations.

Fuses are not included with unit

CONNECTORS AVAILABLE WITH QUICK CONNECT, SCREW & SOLDER TERMINALS

Mechanical Configurations Available in Combination with Any Electrical Configuration

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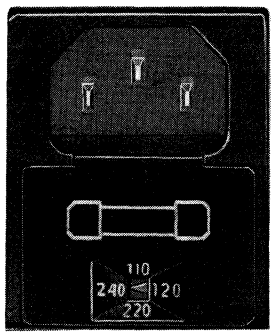
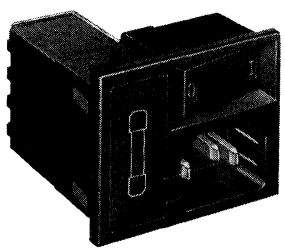
IEC POWER RECEPTACLES/CONNECTORS



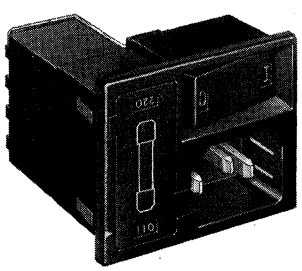
(42R40) UL CSA VDE

Integral combination IEC Connector, fuse holder & voltage selector. The voltage selector is designed to switch to four different voltages & provides a simple means to change transformer primary connections. Fuse Holder accepts either single or double IEC 5 x 20mm or U.S. ¼ x 1¼ fuses for maximum versatility in product applications. Fuse connections are externally accessible & isolated from power connections. Rated 10 amp. 250V @ 65°C & 10 amp. 250V @ 120°C. Connectors are available in Quick Connect or Solder terminals & three physical mounting configurations.



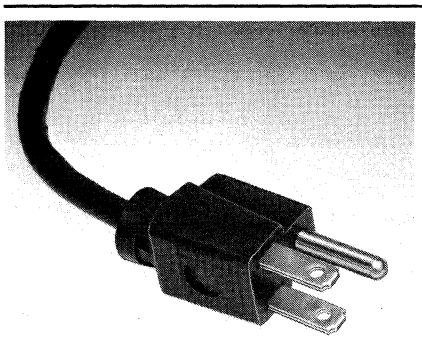
(42R37) UL VDE CSA SEV

Integral combination IEC power cord connector, fuse holder & on;off switch. Designed to eliminate, discrete purchase, inventory & assembly of individual components. Fuse holder accepts either single or double American or European fuses for maximum versatility (not interchangeable). Fuse connections are externally accessible & isolated from power connections. Rated 10 amp. 250V @ 65°C & 10 amp. 250V @ 120°C. Single or double pole snap action on/off switch. Terminal connections are Solder Lug or Quick Connect. Five terminal sizes. Meets all international safety requirements.



(42R39) UL VDE CSA SEV

Same features as 42R37 but with Voltage Selector. Changes voltages by rotating fuse cartridge. Meets all international safety requirements. Fuse Holder accepts American or 5 x 20mm European fuses.



POWER CORD SETS

UL	UTE	CEBEC
CSA	VDE	FEI
BSI	MQ	SEMKO
SECV	KEMA	SEV
OVE	NEMKO	

Approved by 14 international safety agencies. Compatible with all catalogued IEC Connectors.

See our complete line of American & International Power Cord Sets on page _____

Fuses are not included with unit

CONNECTORS AVAILABLE WITH QUICK CONNECT, SCREW & SOLDER TERMINALS

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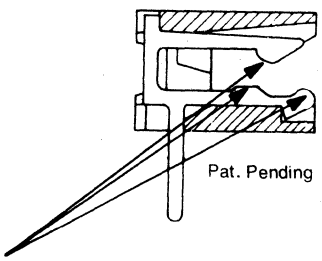
LCD CONNECTORS
.10 and .05 Pin Spacing Available

Positive contact over extended periods of time at higher operating temperatures. (Replaces "obsolete" plastic contacts that may be influenced by contact pressure.)

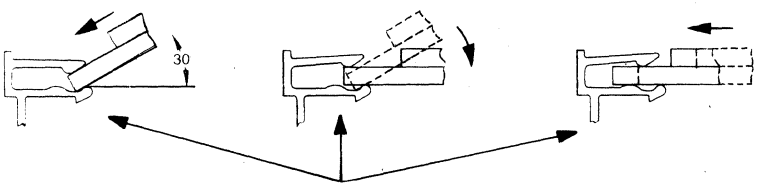
Unique Prong Type contacts provide pressure and reaction with single metal unit.

MATERIALS: Connector Body: Glass filled polycarbonate Contacts: Tin-plated Brass alloy

CROSS SECTION



Triple supports provide minimum plug-in pressure regardless of number of contacts. Spring mounted by rotary movement.

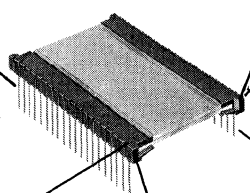


No injury can occur to contact surface or plating during plugging-in of display; the ultimate in contact reliability.

Up to 45 contacts available. Additional contacts available.

For LCD glass thickness of .04 through .05 ±.004. (Other thicknesses available).

LCD's do not require beveled edge on glass borders. Although LCD's are sharp, they cannot damage Power Dynamics' unique Connector Contacts.



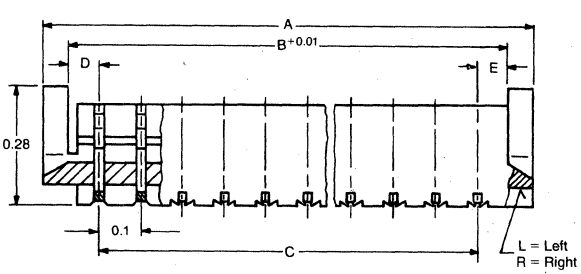
Wide range of standard soldering pin lengths (.12, .19, .29, .41).

Molded-in contacts insure long contact life and reliability under harsh environmental conditions (as opposed to conventional type exposed contacts).

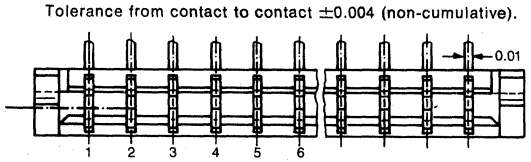
Molded shoulders insure against longitudinal movement under the most severe shock and vibration conditions. (No epoxy or bezel required for LCD retention.)

.10 pin spacing up to 45 contacts

.05 pin spacing from 30 to 100 contacts

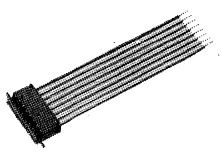


Tolerance from contact to contact ±0.004 (non-cumulative).



Patent Pending

LCD CONNECTORS ALSO AVAILABLE FOR FLAT CABLE CONNECTIONS



31R50
8 Pin
For Active Chip on Glass (C.O.G.) Usage

EXAMPLE & ORDERING CODE

31R30 - [2] [1] [1] [1] [001]

TERMINAL LENGTH Dimensions "L"
.12 = 1
.19 = 2
.29 = 3
.41 = 4

No. of Chambers	No. of Contacts	Empty Chambers*	Dimensions A	B	C	D	E	Versions
20	20		2.13	2.01	1.90	0.05	0.05	001
26	20	1, 2, 3 24, 25, 26	2.87	2.76	2.50	0.13	0.13	002
26	26		2.87	2.76	2.50	0.13	0.13	003
26	25	1	2.87	2.76	2.50	0.13	0.13	004
26	25	26	2.87	2.76	2.50	0.13	0.13	005
29	29		3.13	3.01	2.80	0.10	0.10	006
31	31		3.32	3.20	3.00	0.10	0.10	007
36L	34	1, 2	3.82	3.70	3.50	0.08	0.12	008
36R	34	35, 36	3.82	3.70	3.50	0.12	0.08	009
36L	36		3.82	3.70	3.50	0.08	0.12	010
36R	36		3.82	3.70	3.50	0.12	0.08	011
45	45		4.61	4.50	4.40	0.05	0.05	012
11	9	1, 11	1.22	1.11	1.00	0.05	0.05	013

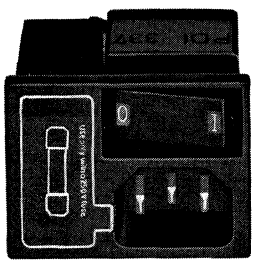
* Note: Other arrangements of empty chambers available.

Power Dynamics, Inc.

P.O. Box 539, 59 Lakeside Avenue, West Orange, NJ 07052 • (201) 736-5722 • FAX: (201) 736-8930 • Telex: 666173 (PDI)

RFI/EMI Filtered Power Entry Modules

HGN-337

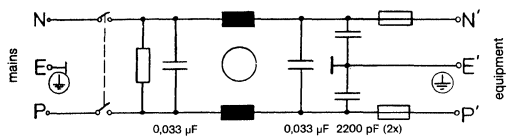


HGN-337 line filter modules feature a combination IEC Connector, two pole on/off switch and fuse holder that accepts both European 5 x 20mm or 3 AG fuses in-lin and neutral. The HGN-337 protects electronic equipment such as computers, terminals and typewriters from common mode and differential mode interferences.

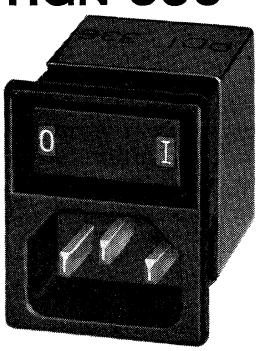
Technical data

Operatingvoltage	250 V / 50 Hz 110 V / 60 Hz	UL CSA VDE SEV
Rated current	1 A / 2 A / 3 A / 4 A / 6 A	
Leakage current	<0,5 mA / 250 VAC	
Temperature range	−25° C — +85° C	
Test voltage (VDE 0565)	1,8 kV / 50 Hz — 2 s	

Circuit



HGN-336

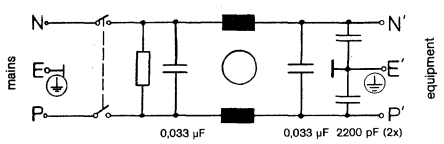


HGN-336 line filters feature an IEC Connector and a 2 pole on/off switch. The unit protects electronic equipment against malfunction due to fast common mode and differential mode interferences. Designed for labor saving snap-in mounting.

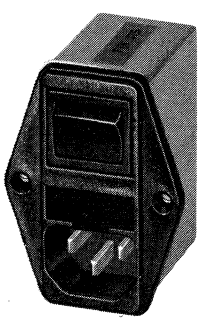
Technical data

Operatingvoltage	250 V / 50 Hz 110 V / 60 Hz	UL CSA VDE SEV
Rated current	1 A / 2 A / 3 A / 4 A / 6 A	
Leakage current	<0,5 mA / 250 VAC	
Temperature range	−25° C — +85° C	
Test voltage (VDE 0565)	1,8 kV / 50 Hz — 2 s	

Circuit



HGN-375

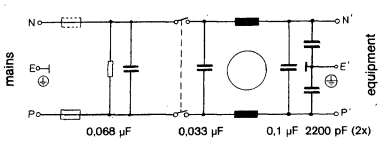


The comb-filter HGN-375 protects electronic equipment from common and differential mode line interference in the range of 10 KHz up to 30 MHz. The "combi-unit" is equipped with IEC Connector, fuse holder for one or two 5 x 20mm fuses, 2 pole on/off switch and fully enclosed metal housing.

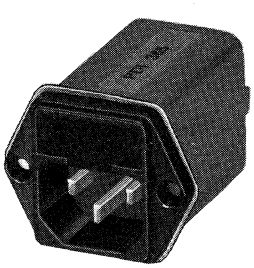
Technical data

Operatingvoltage	250 V / 50 Hz 110 V / 60 Hz	UL CSA VDE SEV
Rated current	1 A / 2 A / 4 A	
Leakage current	<0,5 mA / 250 VAC	
Temperature range	−25° C — +85° C	
Test voltage (VDE 0565)	1,8 kV / 50 Hz — 2 s	

Circuit



HGN-365

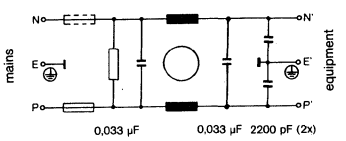


HGN-365 series line filters feature an IEC Connector with an integral fuse holder; available in versions with one or two 5 x 20mm fuses. (IEC601 prescribes fusing of both lines.)
Fully enclosed metal housing presents input of high frequency noise and protects ultra-sensitive equipment.

Technical data

Operatingvoltage	250 V / 50 Hz 110 V / 60 Hz	UL CSA VDE SEV
Rated current	1 A / 2 A / 4 A	
Leakage current	<0,5 mA / 250 VAC	
Temperature range	−25° C — +85° C	
Test voltage (VDE 0565)	1,8 kV / 50 Hz — 2 s	

Circuit



Refer to our page in the Filter Section for additional Power Dynamics Filter Entry Modules.

I.C. SOCKETS

Precicontact, inc. the "SOCKET-ABILITY" people

SERIES USO/UWW

OPEN FRAME LOW PROFILE DIP SOCKETS
SOLDER TAIL/WIRE WRAP TAIL



FEATURES:

Free-standing contacts provide excellent convection cooling.

High reliability and performance at a low cost.

Accommodates 6 thru 64 flat lead DIP IC's or 0,41/.016 to 0,51/.021 diameter round leads maintaining high retention.

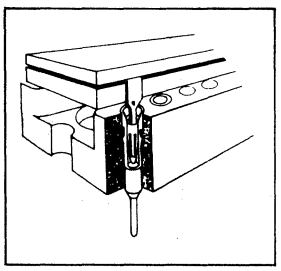
Continuous grid spacing for maximum use of PC board real estate.

Available in .018 diameter solder tail in a variety of lengths or in a .025 square tail in 3-level, 2-level or 1-level of wrap.

Operating temperature -54°C to 150°C

MATERIALS:

Insulator—See General Notes*
Machined socket terminals: See General Notes*



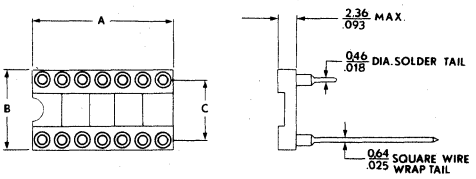


FIG. 1

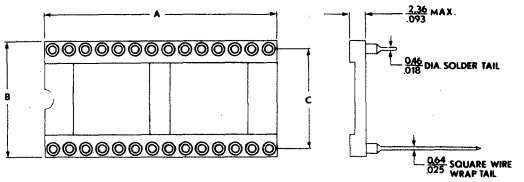


FIG. 2

FIG 3 NUMBER OF RIBS OPTIONAL

ORDERING INFORMATION

Style	Size	Suffix
XXX	XXX	X

OPEN FRAME
Solder Tail - **USO**
Wire Wrap Tail - **UWW**

SPACING BETWEEN ROWS
.300 — 3
.400 — 4
.600 — 6
.900 — 9

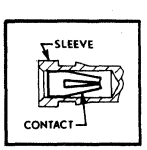
TOTAL NUMBER OF CONTACTS

OPEN FRAME

PART NOS. AVAILABLE		DESCRIPTION					
BASIC PART NUMBER	SUFFIX (See suffix options)	STYLE	NUMBER OF CONTACTS	DIMENSION A MAX.	DIMENSION B MAX.	DIMENSION C	FIGURE
USO-306	-G	Solder Tail	6	7,62	10,16	7,62	1
UWW-306	-3G	Wire Wrap Tail		.300	.400	.300	
USO-308	-G	Solder Tail	8	10,16			
UWW-308	-3G	Wire Wrap Tail		.400			
USO-314	-G	Solder Tail	14	17,78			
UWW-314	-3G	Wire Wrap Tail		.700			
USO-316	-G	Solder Tail	16	20,32			
UWW-316	-3G	Wire Wrap Tail		.800			
USO-318	-G	Solder Tail	18	22,86			
UWW-318	-3G	Wire Wrap Tail		.900			
USO-320	-G	Solder Tail	20	25,40			
UWW-320	-3G	Wire Wrap Tail		1.000			
USO-324	-G	Solder Tail	24	30,48			
UWW-324	-3G	Wire Wrap Tail		1.200			
USO-422	-G	Solder Tail	22	27,94	12,70	10,16	3
UWW-422	-3G	Wire Wrap Tail		1.100	.500	.400	
USO-624	-G	Solder Tail	24	30,48	17,78	15,24	2
UWW-624	-3G	Wire Wrap Tail		1.200	.700	.600	
USO-628	-G	Solder Tail	28	35,56			
UWW-628	-3G	Wire Wrap Tail		1.400			
USO-640	-G	Solder Tail	40	50,80			
UWW-640	-3G	Wire Wrap Tail		2.000			
USO-648	-G	Solder Tail	48	60,96	.700	.600	3
UWW-648	-3G	Wire Wrap Tail		2.400			
USO-964	-G	Solder Tail	64	81,28	25,40	22,86	
UWW-964	-3G	Wire Wrap Tail		3.200	1.000	.900	

SUFFIX OPTIONS

DESIGNATION	STYLE	TAIL LENGTH	LENGTH	PLATING SLEEVE	PLATING CONTACT
G	Solder	3,18	7,37	Gold	Gold
T	Tail	.125	.290	Tin	Gold
TC				Tin	Tin
G140		3,66	7,92	Gold	Gold
T 140		.144	.312	Tin	
G180		4,57	8,79	Gold	
T180		.180	.346	Tin	
3G	Wire	12,95	17,86	Gold	Gold
3T	Wrap	.510	.703	Tin	
2G	Tail	9,40	14,30	Gold	
2T		.370	.563	Tin	
1G		6,60	11,50	Gold	
1T		.260	.463	Tin	



GENERAL NOTES ABOUT PRECICONTACT SOCKETS

Low profile Precicontact sockets are designed to meet MIL-S-83734. All socket assemblies (except Series LSO) feature four-leaf inner contact springs assembled into closed-entry, machined sockets that accept short IC leads. Inner contacts are BeCu, gold over nickel per MIL-S-45204; outer sleeves are brass, gold-over-nickel, or tin-plated. Standard insulator material is thermoplastic polyester, UL-rated 94V-O, except where noted. Contact design eliminates solder or flux wicking problems.

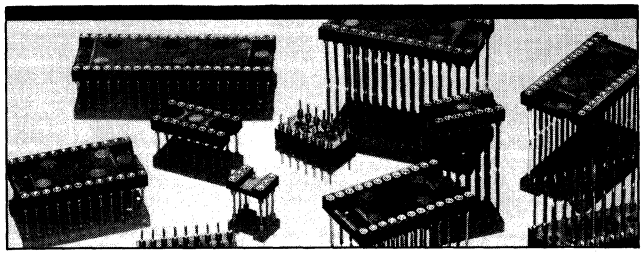
PRECICONTACT, INC., 835 WHEELER WAY, P.O. BOX 798, LANGHORNE, PA 19047. 215-757-1202. TELEX: 83-4253. FACS: 215-757-8025.

I.C. SOCKETS

Precicontact, inc. the "**SOCKET-ABILITY**" people

SERIES SO/WW

CLOSED FRAME LOW PROFILE DIP SOCKETS
SOLDER TAIL/WIRE WRAP TAIL



FEATURES:

High reliability and performance at a low cost.

Accommodates 6 thru 40 flat lead DIP IC's or 0,41/.016 to 0,51/.021 diameter round leads maintaining high retention.

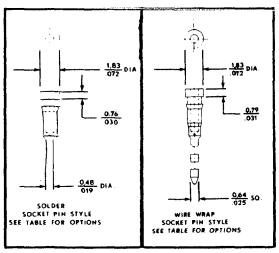
Continuous grid spacing for maximum use of PC board real estate.

Available in .018 diameter solder tail in a variety of lengths or in a .025 square tail in 3-level, 2-level or 1-level of wrap.

Operating temperature -54°C to 150°C

MATERIALS:

Insulator—See General Notes*
Machined socket terminals: See General Notes*



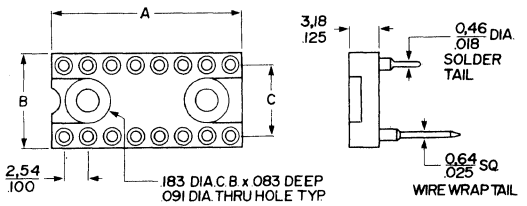


FIG. 1

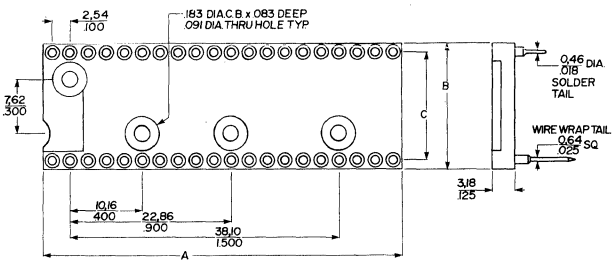


FIG.2

ORDERING INFORMATION

Style	Size	Suffix
XX	XXX	X

Solder Tail - **SO**
Wire Wrap Tail - **WW**

SPACING BETWEEN ROWS
.300 — 3
.400 — 4
.600 — 6

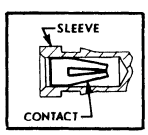
TOTAL NUMBER OF CONTACTS

SOLID FRAME

PART NOS. AVAILABLE		DESCRIPTION					
BASIC PART NUMBER	SUFFIX (See suffix options)	STYLE	NUMBER OF CONTACTS	DIMENSION A MAX.	DIMENSION B MAX.	DIMENSION C	FIGURE
SO-306	-G	Solder Tail	6	7,62	10,16	7,62	1
WW-306	-3G	Wire Wrap Tail		.300	.400	.300	
SO-308	-G	Solder Tail	8	10,16			
WW-308	-3G	Wire Wrap Tail		.400			
SO-314	-G	Solder Tail	14	17,78			
WW-314	-3G	Wire Wrap Tail		.700			
SO-316	-G	Solder Tail	16	20,32			
WW-316	-3G	Wire Wrap Tail		.800			
SO-318	-G	Solder Tail	18	22,86			
WW-318	-3G	Wire Wrap Tail		.900			
SO-320	-G	Solder Tail	20	25,40			
WW-320	-3G	Wire Wrap Tail		1.000			
SO-422	-G	Solder Tail	22	27,94	12,70	10,16	
WW-422	-3G	Wire Wrap Tail		1.100	.500	.400	
SO-624	-G	Solder Tail	24	30,48	17,78	15,24	2
WW-624	-3G	Wire Wrap Tail		1.200	.700	.600	
SO-628	-G	Solder Tail	28	35,56			
WW-628	-3G	Wire Wrap Tail		1.400			
SO-632	-G	Solder Tail	32	40,64			
WW-632	-3G	Wire Wrap Tail		1.600			
SO-636	-G	Solder Tail	36	45,72			
WW-636	-3G	Wire Wrap Tail		1.800			
SO-640	-G	Solder Tail	40	50.80			
WW-640	-3G	Wire Wrap Tail		2.000			

SUFFIX OPTIONS

DESIGNATION	STYLE	TAIL LENGTH	LENGTH	PLATING	
				SLEEVE	CONTACT
G	Solder	3,18	7,37	Gold	Gold
T	Tail	.125	.290	Tin	Gold
TC				Tin	Tin
G140		3,66	7,92	Gold	Gold
T140		.144	.312	Tin	
G180		4,57	8,79	Gold	
T180		.180	.346	Tin	
3G	Wire	12,95	17,86	Gold	Gold
3T	Wrap	.510	.703	Tin	
2G	Tail	9,40	14,30	Gold	
2T		.370	.563	Tin	
1G		6,60	11,50	Gold	
1T		.260	.453	Tin	



GENERAL NOTES ABOUT PRECICONTACT SOCKETS

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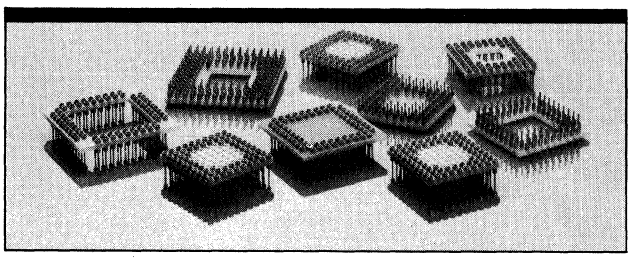
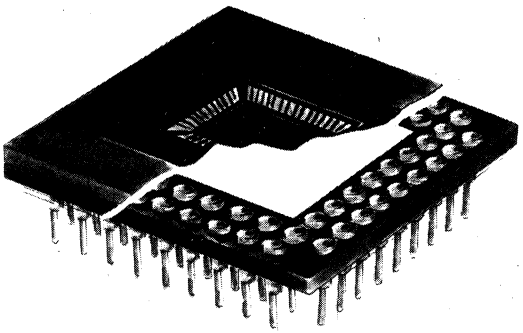
I.C. SOCKETS

Precicontact, inc. the "**SOCKET-ABILITY**" people

PIN GRID ARRAY SOCKETS





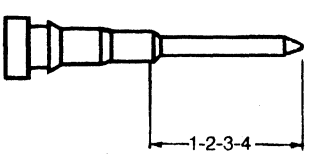
FEATURES:
Select from a large variety of configurations.
Solder or wire-wrap tail styles.
Tapered entry design of contact assembly insures low component insertion and withdrawal forces.
Open and closed frame designs.
Normal, low and very low insertion forces available.
Special grid designs upon request.
OVER 80 DESIGNS FROM 12 TO 400 PINS.

MATERIALS:
Insulator—Glass epoxy .062" thick. UL-Rated 94V-O.
Machined socket terminals—See General Notes*

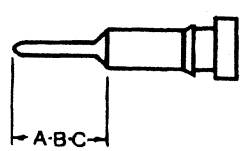
SIZES AVAILABLE

5x5	11x11	15x15
8x8	12x12	16x16
9x9	13x13	17x17
10x10	14x14	18x18

WIRE WRAP TERMINAL



SOLDER TERMINAL



ORDERING INFORMATION

PART NUMBER

XX-XX XX-XXX-XX-X XX

A) Series UX* or X*
B) Number of Columns (Vertical)
C) Number of Rows (Horizontal)
D) Number of Terminals
E) Inner Contact Designation
F) Solder or Wire wrap tail length
G) Plating of Sleeve

EXAMPLE UX — 1414-132-GH-A-33
X — 1414-132-GH-3-33

***SERIES:**
UX —open insulator
X —closed insulator

E—28—[BeCu, No Plating, LIF (Low Insertion Force)]
32—[BeCu, .000010 Gold Plated, LIF]
****33**—[BeCu, .000030 Gold Plated, LIF]
65—[BeCu, .000030 Gold Plated, VLIF]

****This is Standard Plating unless otherwise designated**
Consult the factory for other types or thicknesses of platings, and/or special design requirements.

F-SOLDER TAILS:
.125 - **A**
.140 - **B**
.180 - **C**

F-WIRE WRAP TAILS:
.260 - **1** — 1 level
.370 - **2** — 2 level
.510 - **3** — 3 level
.610 - **4** — 4 level

G-PLATING OF SLEEVE
GH —gold
TL —tin-lead

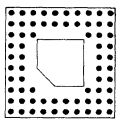
****GENERAL NOTES ABOUT PRECICONTACT SOCKETS***
Low profile Precicontact sockets are designed to meet MIL-S-83734. All socket assemblies (except Series LSO) feature four-leaf inner contact springs assembled into closed-entry, machined sockets that accept short IC leads. Inner contacts are BeCu, gold over nickel per MIL-S-45204; outer sleeves are brass, gold-over-nickel, or tin-plated. Standard insulator material is thermoplastic polyester, UL-rated 94V-O, except where noted. Contact design eliminates solder or flux wicking problems.

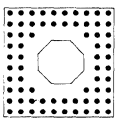
PRECICONTACT, INC., 835 WHEELER WAY, P.O. BOX 798, LANGHORNE, PA 19047. 215-757-1202. TELEX: 83-4253. FACS: 215-757-8025.

I.C. SOCKETS

Precicontact, inc. the "SOCKET-ABILITY" people

TYPICAL CONFIGURATIONS


UX-1010-068
68 PIN
1.100 SQ.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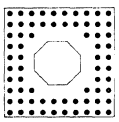
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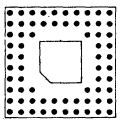
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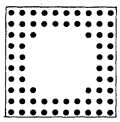
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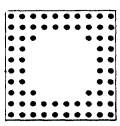
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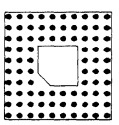
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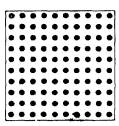
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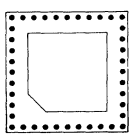
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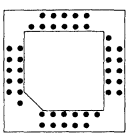
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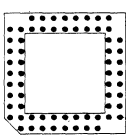
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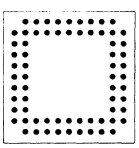
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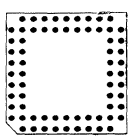
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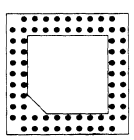
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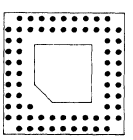
UX-1111-069
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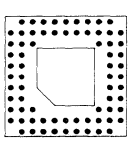
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72 PIN
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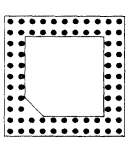
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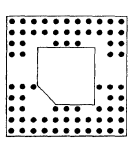
72 PIN
1.100 SQ.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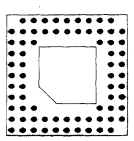
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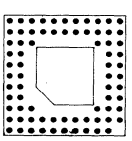
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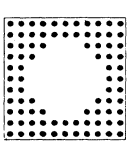
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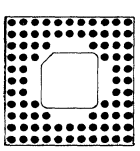
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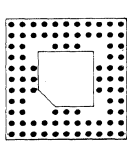
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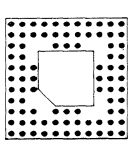
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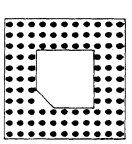
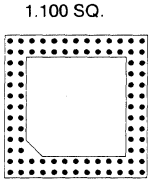

UX-1111-096
96 PIN
1.150 SQ.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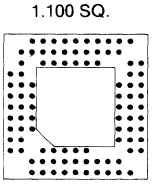
UX-1313-096
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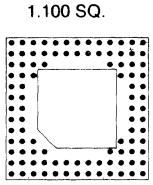
1.300 SQ.


UX-1313-100
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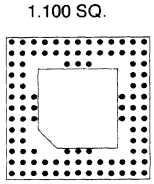
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101 PIN
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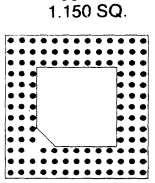
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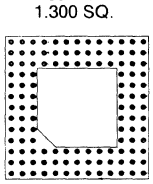
UX-1313-120
120 PIN
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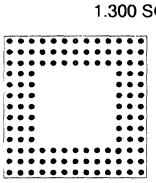
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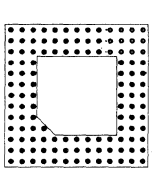
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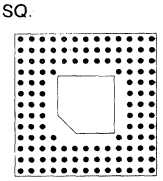
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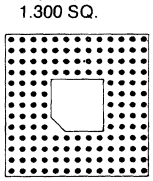
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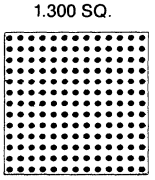

X-1313-169
169 PIN
1.300 SQ.

Contact Factory for Additional and Custom Designs

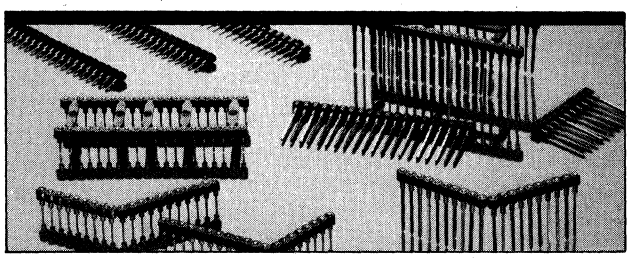
PRECICONTACT. INC.. 835 WHEELER WAY. P.O. BOX 798. LANGHORNE, PA 19047. 215-757-1202. TELEX: 83-4253. FACS: 215-757-8025.

I.C. SOCKETS

Precicontact, inc. the "SOCKET-ABILITY" people

SERIES DSO/DWW (Dual)
SERIES SSO/SWW (Single)

SOLDER TAIL / WIRE WRAP TAIL



FEATURES:

Dual 64 pins on .600" centers, .100" spacing (DSO & DWW Series).

Single-in-line 32 pins, .100" spacing (SSO & SWW Series).

Create your own part on any centers. Save P.C.B. real estate by installing end-to-end or side-by-side.

Make your own connector receptacles regardless of shape, lead spacing or number of leads.

Accepts probes of .016" thru .022".

I/O connectors for flex-circuit applications.

Board-to-board connectors and test-point applications.

MATERIALS:

Insulator—See General Notes*

Machined socket terminals—See General Notes*

snap a part*

*Trademark of Precicontact
Swiss Patent Number 4575/80
US Patent Number Pending

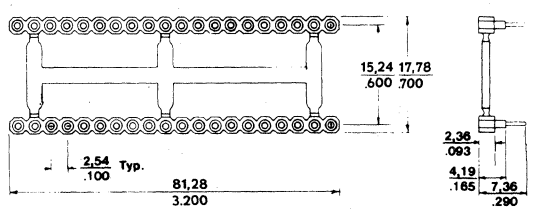


FIG. 1

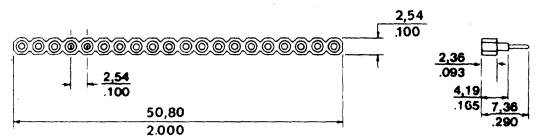
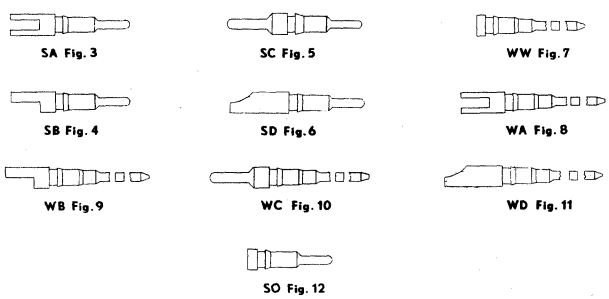


FIG. 2



ORDERING INFORMATION

Style	Size	Suffix
XXX	XXX	X

Single — S
Dual — D

Contact Style

Socket	- Solder Tail —	SO
	W/W Tail —	WW
Pin	- Solder Tail —	SA
Bifurcated	W/W Tail —	WA
Pin	- Solder Tail —	SB
Bifurcated (with Flat)	W/W Tail —	WB
Pin	- Solder Tail —	SC
Feed-Thru	W/W Tail —	WC
Pin	- Solder Tail —	SD
Solder-Cup	W/W Tail —	WD

SPACING BETWEEN ROWS
0 — 0
.600 — 6

TOTAL NUMBER OF CONTACTS

Suffix Options

DESIGNATION	STYLE	TAIL LENGTH	PLATING
G	Solder Tail	3,18	Gold
T		.125	Tin
3G	Wire Wrap Tail	12,95	Gold
3T		.510	Tin
2G		9,40	Gold
2T		.370	Tin
1G		6,60	Gold
1T		.260	Tin

PART NOS. AVAILABLE		DESCRIPTION		
BASIC PART NUMBER	SUFFIX (See suffix options)	FIGURE	STYLE	TERMINATION
SSO-032	-G	2	Socket	Solder Tail
SSA-032		2 & 3	Bifurcated	
SSB-032		2 & 4	Bifurcated (with Flat)	
SSC-032		2 & 5	Feed-Thru	
SSD-032		2 & 6	Solder Cup	
SWW-032	-3G	2 & 7	Socket W/W	Wire Wrap Tail
SWA-032		2 & 8	Bifurcated	
SWB-032		2 & 9	Bifurcated (with Flat)	
SWC-032		2 & 10	Feed-Thru	
SWD-032		2 & 11	Solder Cup	
DSO-664	-G	1	Socket	Solder Tail
DSA-664		1 & 3	Bifurcated	
DSB-664		1 & 4	Bifurcated (with Flat)	
DSC-664		1 & 5	Feed-Thru	
DSD-664		1 & 6	Solder Cup	
DWW-664	-3G	1 & 7	Socket W/W	Wire Wrap Tail
DWA-664		1 & 8	Bifurcated	
DWB-664		1 & 9	Bifurcated (with Flat)	
DWC-664		1 & 10	Feed-Thru	
DWD-664		1 & 11	Solder Cup	

GENERAL NOTES ABOUT PRECICONTACT SOCKETS

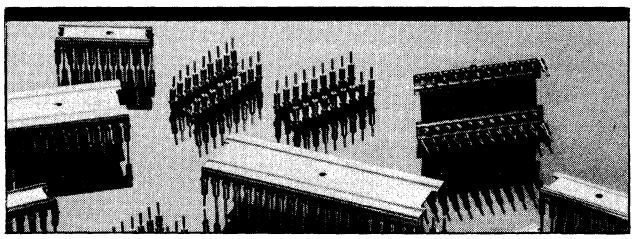
Low profile Precicontact sockets are designed to meet MIL-S-83734. All socket assemblies (except Series LSO) feature four-leaf inner contact springs assembled into closed-entry, machined sockets that accept short IC leads. Inner contacts are BeCu, gold over nickel per MIL-S-45204; outer sleeves are brass, gold-over-nickel, or tin-plated. Standard insulator material is thermoplastic polyester, UL-rated 94V-O, except where noted. Contact design eliminates solder or flux wicking problems.

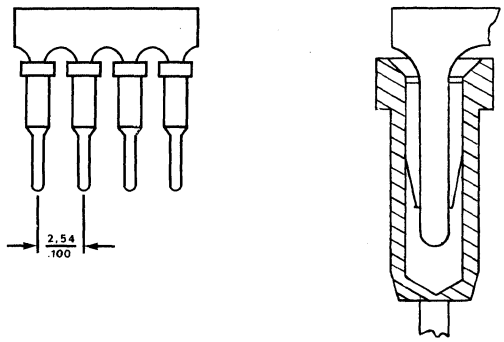
PRECICONTACT, INC., 835 WHEELER WAY, P.O. BOX 798, LANGHORNE, PA 19047. 215-757-1202. TELEX: 83-4253. FACS: 215-757-8025.

I.C. SOCKETS

Precicontact, inc. the "SOCKET-ABILITY" people

SERIES CSO
Socket Terminal Carrier Assemblies





FEATURES:
Large selection of socket carriers with variety of quality Swiss screw-machined terminals.

Faster loading of patterns.

Allows direct visibility for soldering, inspection and repair.

Permits maximum air circulation under IC's.

Also allows maximum density.

Easy group insertion into PC boards.

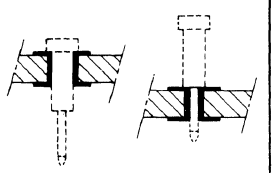
Eliminates time-consuming assembly of individual lead sockets.

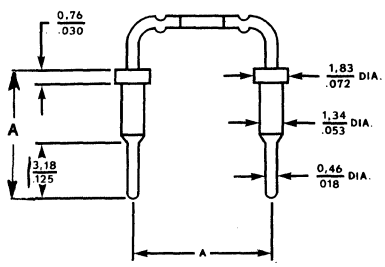
Disposable carrier can be easily removed after soldering.

Also available in 322, 324, 422, 424.

MATERIALS:
Carrier—Brass/Aluminum
Machined socket terminals:—
See General Notes*

OPTIONAL MOUNTING





CSO-308 SHOWN

ORDERING INFORMATION

Style	Size	Suffix
CSO	XXX	X

- Basic Series
- SPACING BETWEEN ROWS: .300 — 3; .400 — 4; .600 — 6
- TOTAL NUMBER OF CONTACTS

PART NOS. AVAILABLE		DESCRIPTION		
BASIC PART NUMBER	SUFFIX (See suffix options)	NUMBER OF CONTACTS	STYLE	DIMENSION A
CSO-306	-G	6	Solder Tail	7,62
CSO-306	-3G		Wire Wrap Tail	.300
CSO-306	-GNT		No Tail	
CSO-308	-G	8	Solder Tail	
CSO-308	-3G		Wire Wrap Tail	
CSO-308	-GNT		No Tail	
CSO-314	-G	14	Solder Tail	
CSO-314	-3G		Wire Wrap Tail	
CSO-314	-GNT		No Tail	
CSO-316	-G	16	Solder Tail	
CSO-316	-3G		Wire Wrap Tail	
CSO-316	-GNT		No Tail	
CSO-318	-G	18	Solder Tail	
CSO-318	-3G		Wire Wrap Tail	
CSO-318	-GNT		No Tail	
CSO-320	-G	20	Solder Tail	
CSO-320	-3G		Wire Wrap Tail	
CSO-320	-GNT		No Tail	
CSO-624	-G	24	Solder Tail	15,24
CSO-624	-3G		Wire Wrap Tail	.600
CSO-624	-GNT		No Tail	
CSO-628	-G	28	Solder Tail	
CSO-628	-3G		Wire Wrap Tail	
CSO-628	-GNT		No Tail	
CSO-640	-G	40	Solder Tail	
CSO-640	-3G		Wire Wrap Tail	
CSO-640	-GNT		No Tail	

SUFFIX OPTIONS

DESIGNATION	STYLE	DIMENSION A	PLATING	
			SLEEVE	CONTACT
G	Solder Tail	7,37	Gold	Gold
T		.290	Tin	
G140		7,92	Gold	
T140		.312	Tin	
G180		8,79	Gold	
T180		.346	Tin	
3G	Wire Wrap Tail	17,86	Gold	
3T		.703	Tin	
2G		14,30	Gold	
2T		.563	Tin	
1G		11,50	Gold	
1T		.453	Tin	
GNT	Socket No Tail	3,94	Gold	
TNT		.155	Tin	

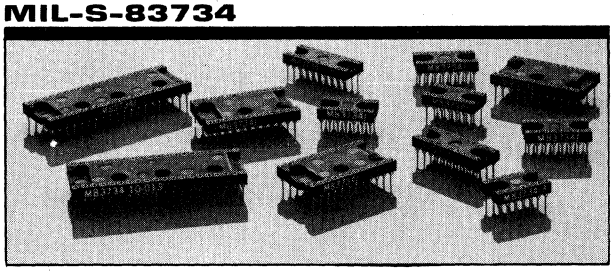
****GENERAL NOTES ABOUT PRECICONTACT SOCKETS***
Low profile Precicontact sockets are designed to meet MIL-S-83734. All socket assemblies (except Series LSO) feature four-leaf inner contact springs assembled into closed-entry, machined sockets that accept short IC leads. Inner contacts are BeCu, gold over nickel per MIL-S-45204; outer sleeves are brass, gold-over-nickel, or tin-plated. Standard insulator material is thermoplastic polyester, UL-rated 94V-O, except where noted. Contact design eliminates solder or flux wicking problems.

PRECICONTACT, INC., 835 WHEELER WAY, P.O. BOX 798, LANGHORNE, PA 19047. 215-757-1202. TELEX: 83-4253. FACS: 215-757-8025.

I.C. SOCKETS

Precicontact, inc. the "SOCKET-ABILITY" people

SERIES SO-M
Military Approved Socket Assemblies
MIL-S-83734



FEATURES:
High reliability and performance at a low cost. Accommodates 6 thru 40 flat lead DIP IC's or 0,41/.016 to 0,51/.021 diameter round leads maintaining high retention.

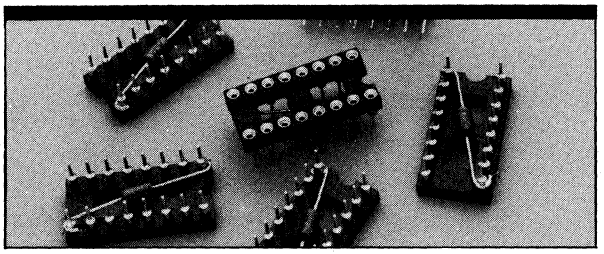
Continuous grid spacing for maximum use of PC board real estate.

MATERIALS:
Insulator—See General Notes*
Machined socket terminals: See General Notes*

Part Numbers Available

M83734/1-013	M83734/3-013	M83734/6-014	M83734/8-012
M83734/1-014	M83734/3-014	M83734/8-013	M83734/9-013
M83734/2-013	M83734/4-013	M83734/8-014	M83734/9-014
M83734/2-014	M83734/4-014	M83734/7-013	M83734/10-013
M83734/3-010	M83734/5-013	M83734/7-014	M83734/10-014
M83734/3-011	M83734/5-014	M83734/8-010	M83734/13-013
M83734/3-012	M83734/6-013	M83734/8-011	M83734/13-014

SERIES USCAC/UWCAC
Hush Socket™
OPEN FRAME LOW PROFILE SOCKET



FEATURES:
Free-standing spring contacts provide excellent convection cooling. Provides filtering capability in the same space as a conventional socket.

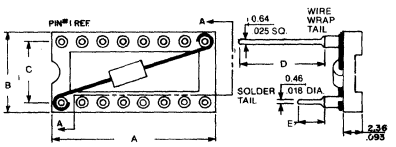
Reduces need for external capacitors and reduces PC board real estate.

High reliability and performance at a low installed cost.

Available in solder tail and wire-wrap configurations with various tail lengths.

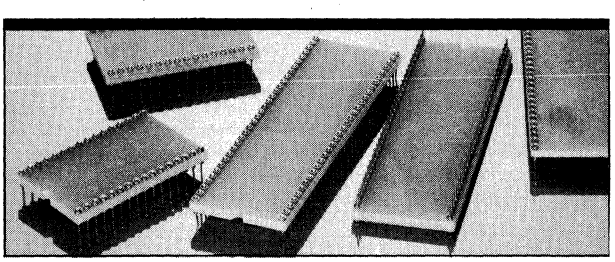
MATERIALS:
Insulator—See General Notes*
Machined socket terminals: See General Notes*
Capacitors—Monolythic ceramic capacitors, X7R formulation, well-suited for decoupling & filtering

SPECIFICATIONS:
Available capacitance in MFD.'s as follows: .01, .015, .022, .047, .1
Capacitor tolerance—±10%
Working voltage—50VDC
Temperature rating −55°C to +125°C (−67°F to +257°F)



Consult factory for special applications.

SERIES LSI
Adapter Sockets



FEATURES:
Designed for socketing the new sizes of LSI dual-in-line and quad-in-line circuits with up to 64 pins on .600" or .900" spacing.

Low profile.

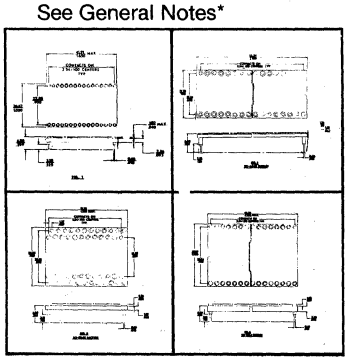
Designed to meet MIL-S-83734.

High reliability and performance at a low cost.

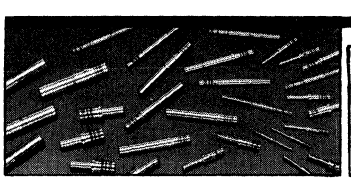
Numerous configurations available. Contact factory.

MATERIALS:
Insulator—.062" thick glass epoxy or .093" thick glass epoxy.

Machined socket terminals—See General Notes*



MIL-C 39029
Pin & Socket Contacts



PRECICONTACT MIL-C-39029/56 AND 63 SOCKETS AND MIL-C-39029/58 AND 64 PINS HAVE QPL APPROVAL

MIL-C-39029/56 SOCKET CONTACTS

MILITARY P/N	SUPERSEDES MIL P/N	PRECICONTACT P/N	ULTRA PRECISION P/N	MATING END SIZE	WIRE BARREL SIZE	CONTACT COLOR CODE FIRST	SECOND	THIRD
M39029/56-348	MS27490-22D MS27655-22D	PC-0200-0220D	B-2942/22	22	22D	Orange	Yellow	Gray
M39029/56-351	MS27490-20 MS27655-20	PC-0200-0200	B-2937/20	20	20	Orange	Green	Brown
M39029/56-352	MS27490-16 MS27655-16	PC-0200-0160	B-2593/16	16	16	Orange	Green	Red
M39029/56-353	MS27490-12 MS27655-12	PC-0200-0120	B-2941/12	12	12	Orange	Green	Orange

MIL-C-39029/58 PIN CONTACTS

MILITARY P/N	SUPERSEDES MIL P/N	PRECICONTACT P/N	ULTRA PRECISION P/N	MATING END SIZE	WIRE BARREL SIZE	CONTACT COLOR CODE FIRST	SECOND	THIRD
M39029/58-360	MS27493-22D MS27494-22D M24308/13-1	PC-0100-0220D	B-2933/22	22	22D	Orange	Blue	Black
M39029/58-363	MS27493-20 MS27494-20	PC-0100-0200	B-2934/20	20	20	Orange	Blue	Orange
M39029/58-364	MS27493-16 MS27494-16	PC-0100-0160	B-2935/16	16	16	Orange	Blue	Yellow
M39029/58-365	MS27493-12 MS27494-12	PC-0100-0120	B-2936/12	12	12	Orange	Blue	Green

MIL-C-39029/63 SOCKET CONTACTS — MIL-C-39029/64 PIN CONTACTS

MILITARY P/N	SUPERSEDES MIL P/N	PRECICONTACT P/N	ULTRA PRECISION P/N	MATING END SIZE	WIRE BARREL SIZE	CONTACT COLOR CODE FIRST	SECOND	THIRD
M39029/63-368	M24308/10-1	PC-0204-0200	B-2973/20	20	20	Orange	Blue	Gray
M39029/64-369	M24308/11-1	PC-0103-0200	B-1423/20	20	20	Orange	Blue	White

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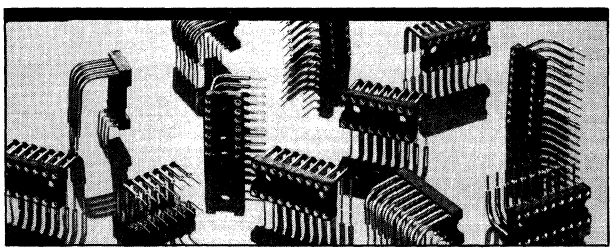
I.C. SOCKETS

Precontact, inc. the "SOCKET-ABILITY" people

L.E.D. SERIES
Display Sockets



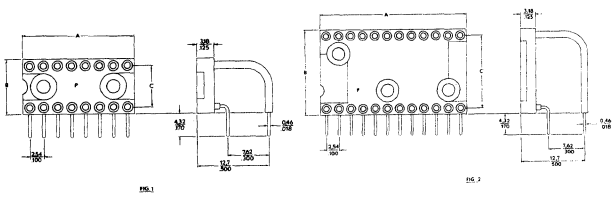
FEATURES:
Series consists of 6 thru 40 socket assemblies for mounting L.E.D. display units at right angles.

Designed to allow user to group units side-by-side with consistent alignment.

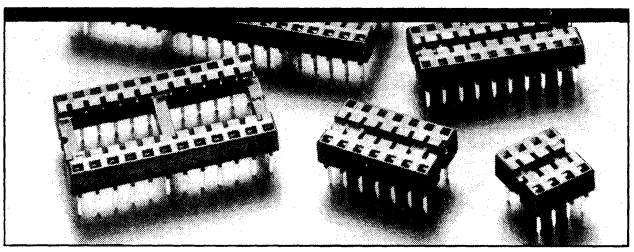
Available with spacing of .1", .3" or .6" between rows.

MATERIALS:
Insulator—See General Notes*

Machined socket terminals—See General Notes*



STAMPED AND FORMED CONTACTS
Single and Dual Wipe



FEATURES:
8 thru 40 positions.

Stackable end-to-end and side-to-side for high board density.

Tapered lead-in ramps.

Very low cost.

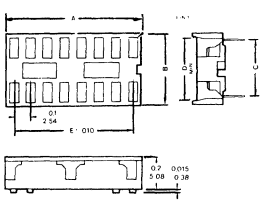
Housing standoffs help cooling, cleaning and soldering.

MATERIALS:
Insulator—See General Notes*

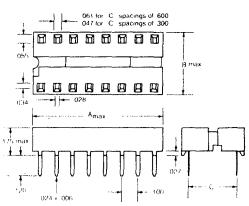
Contacts: (Single Beam.) Phos. bronze, or beryllium copper, tin-lead plating.

Contacts: (Dual Wipe.) Phos. bronze, tin-lead plating.

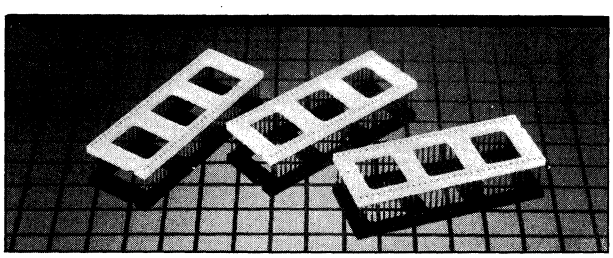
SERIES LTO
Dual Wipe Dip Sockets



SERIES FSWP/P
Single Beam Dip Sockets

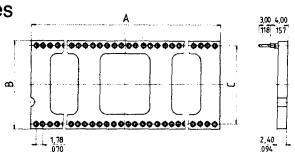


SERIES ISO
Shrink Dip Sockets

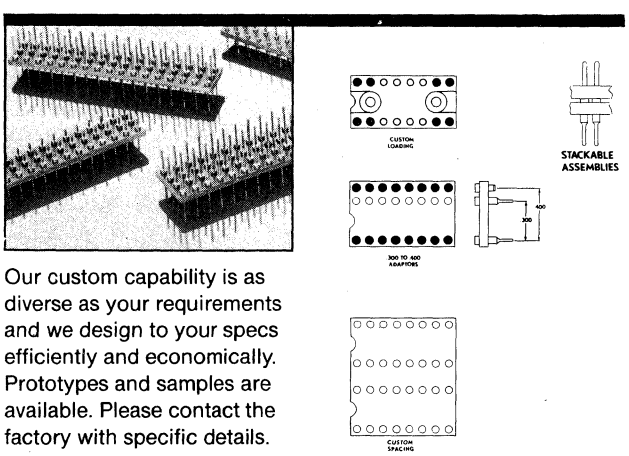


FEATURES:
- Accommodates IC packages with .070" lead spacing.
- Compatible with Hitachi, Fujitsu and NEC.
- Open frame design.
- Closed-entry contact eliminates wicking problems.

MATERIALS:
Insulator—Glass epoxy
Machined socket terminal:—See General Notes*



CUSTOM SOCKETS



Our custom capability is as diverse as your requirements and we design to your specs efficiently and economically. Prototypes and samples are available. Please contact the factory with specific details.

Standard parts

Part number	No. of pins	Dimension A	Dimension B	Dimension C
ISO-9440-028-TL-A-72	28	27.10/1.067	12.70/.500	10.16/.400
ISO-9460-042-TL-A-72	42	37.34/1.470	17.78/.700	15.24/.600
ISO-9475-064-TL-A-72	64	57.58/2.267	21.51/.847	19.05/.750

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WIRE GAUGES— DIAMETER, AREA AND COPPER WEIGHT

	Diameter at 20°C (68°F)		Area at 20°C (68°F)			Weight at 20°C (68°F), bare copper wire		
Size, AWG	mils	mm	mils	c mils	mm	lb/1,000 ft.	lb/mile	kg/km
4/0	460.0	11.68	166,200	211,600	107.2	640.5	3,382	953.2
3/0	409.6	10.40	131,800	167,800	85.01	507.8	2,681	755.7
2/0	364.8	9.266	104,500	133,100	67.43	402.8	2,127	599.5
1/0	324.9	8.252	82,891	105,600	53.49	319.5	1,687	477.6
1	289.3	7.348	85,730	83,690	42.41	253.3	1,338	337.0
2	257.6	6.543	52,120	66,360	33.62	200.9	1,061	298.9
3	229.4	5.827	41,330	52,620	26.67	159.3	841.1	237.1
4	204.3	5.189	32,780	41,740	21.15	126.3	667.1	188.0
5	181.9	4.620	25,990	33,090	16.77	100.2	528.8	149.0
6	162.0	4.115	20,610	26,240	13.30	79.44	419.4	118.2
7	144.3	3.665	16,350	20,820	10.55	63.03	332.8	93.80
8	128.5	3.264	12,970	16,510	8.367	49.98	263.9	74.38
9	114.4	2.906	10,280	13,090	6.631	39.61	209.2	58.95
10	101.9	2.588	8,155	10,380	5.261	31.43	166.0	46.77
11	90.7	2.304	6,460	8,230	4.17	24.90	131	37.1
12	80	2.05	5,130	6,530	3.310	19.8	104	29.4
13	72.0	1.83	4,070	5,180	2.63	15.7	82.9	23.4
14	64.1	1.63	3,230	4,110	2.08	12.4	65.7	18.5
15	57.1	1.45	2,560	3,260	1.650	9.87	52.1	14.7
16	50.8	1.29	2,030	2,580	1.31	7.81	41.2	11.6
17	45.3	1.150	1,610	2,050	1.040	6.21	32.8	9.24
18	40.3	1.02	1,280	1,620	0.823	4.92	26.0	7.32
19	35.9	0.912	1,010	1,290	0.653	3.90	20.6	5.81
20	32.0	0.813	804.0	1,020	0.519	3.10	16.4	4.61
21	28.5	0.724	638.0	812.0	0.412	2.46	13.0	3.66
22	25.3	0.643	503.0	640.0	0.324	1.94	10.2	2.88
23	22.6	0.574	401.0	511.0	0.259	1.55	8.16	2.30
24	20.1	0.511	317.0	404.0	0.205	1.22	6.46	1.82
25	17.9	0.455	252.0	320.0	0.162	0.970	5.12	1.44
26	15.9	0.404	199.0	253.0	0.128	0.765	4.04	1.14
27	14.2	0.361	158.0	202.0	0.102	0.610	3.22	0.908
28	12.6	0.320	125	159.0	0.0804	0.481	2.54	0.715
29	11.3	0.287	100.0	128.0	0.0647	0.387	2.04	0.575
30	10.0	0.254	78.50	100.0	0.0507	0.303	1.60	0.450
31	8.9	0.226	62.20	79.2	0.0401	0.240	1.27	0.357
32	8.0	0.203	50.30	64.0	0.0324	0.194	1.02	0.288
33	7.1	0.180	39.60	50.40	0.0255	0.153	0.806	0.227
34	6.3	0.160	31.20	39.7	0.0201	0.120	0.634	0.179
35	5.6	0.142	24.60	31.4	0.0159	0.0940	0.501	0.141
36	5.0	0.127	19.60	25.00	0.0127	0.0757	0.400	0.113
37	4.50	0.114	15.90	20.20	0.0103	0.0613	0.324	0.0912
38	4.0	0.102	12.60	16.0	0.00811	0.0484	0.256	0.0721
39	3.5	0.0889	9.62	12.2	0.00621	0.0371	0.196	0.0552
40	3.1	0.0787	7.55	9.61	0.00487	0.0291	0.154	0.0433
41	2.8	0.0711	6.16	7.84	0.00397	0.0237	0.125	0.0353
42	2.5	0.0635	4.91	6.25	0.00317	0.0189	0.0999	0.0282
43	2.2	0.0559	3.80	4.84	0.00245	0.0147	0.0774	0.0218
44	2.0	0.0508	3.14	4.00	0.00203	0.0121	0.0639	0.0180
45	1.8	0.0457	2.54	3.24	0.00164	0.00981	0.0519	0.0146
46	1.6	0.0406	2.01	2.56	0.00130	0.00775	0.0409	0.0115
47	1.4	0.0356	1.54	1.96	0.000993	0.00593	0.0313	0.00883
48	1.2	0.0305	1.13	1.44	0.000730	0.00436	0.0230	0.00649
49	1.1	0.0279	0.950	1.21	0.000613	0.00366	0.0193	0.00545
50	1.0	0.0254	0.785	1.00	0.000507	0.00303	0.0160	0.00450

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TEL. (312) 647-8338 / TELEX 297-112 PEI UR / FAX 312-647-8157

DIN CIRCULAR CONNECTORS

Preh circular DIN connectors are rugged, miniaturized connectors designed to provide reliable interconnections to peripheral equipment, test and measurement instrumentation, medical equipment, control devices, etc. Originally designed for audio applications they range from 3 to 8 contacts per connector at operating power up to 3A/34V. Preh connectors are available in nickel plated die cast Zinc alloy bodies for applications requiring durability and also in plastic bodies where durability is not a problem. Insert material is molded phenolic. Female "tuning fork" type contacts are silver plated while male pins are tinned. Connectors and contacts can be custom plated to customer specification.

PLUGS



CORD PLUG Extended Barrel Series 71408
For cable-to-cable or cable-to-panel applications not requiring "locking" type connection.



CORD PLUG Locking Series 71430
Cable-to-cable or cable-to-panel termination with 30° locking ring. Heavy duty cable clamp with flexible black cable sleeve.



CORD PLUG Cable & Sleeve Series 76597
Economical connector for applications not requiring the metal bodies. Standard color is gray with gray cable sleeve.



CORD PLUG Plastic Shell No Sleeve Series 71414
Useful in limited access applications. Standard color is gray with gray cable sleeve.

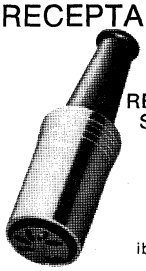


RIGHT ANGLE 8 Position Barrel Series 71432
Right angle configuration for limited space applications. Barrel can be set for 8 cable approach angles.



RIGHT ANGLE 8 Position Barrel Locking Series 71434
Right angle design 8 position barrel and locking ring. Polarized body and grounding contact insure proper connection.

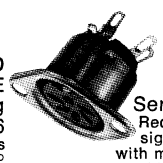
RECEPTACLES



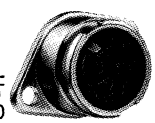
CORD RECEPTACLE Series 71502
For normal cable-to-cable or cable-panel applications. Nickel plated, die cast metal shell with flexible black cable sleeve.



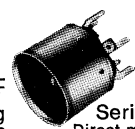
CORD RECEPTACLE Locking Series 71506
Mates with males equipped with 30° locking rings. Die cast body with nickel plated finish



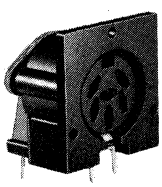
PANEL MOUNT Series 71200
Receptacle designed to mate with males having shielded or extended bodies. Drawn metal recessed shell includes grounding contact.



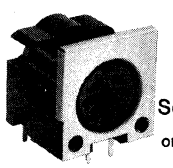
PANEL MOUNT Locking Series 71206
Extended die cast shell has locking flange for males with 30° locking rings. Automatic grounding protects equipment.



BOARD MOUNT Series 71204
Direct mounting to PC boards. Drawn metal shell automatically grounds to protect equipment.



BOARD MOUNT Series 71222
Mounts directly to PC board, mating plugs connect at 90° to board surface. Black plastic body with grounding contact.

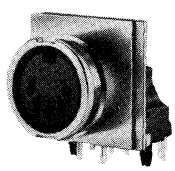


BOARD MOUNT EMI/RFI Shielded Series 71222
Metal flange on face is used as a common ground between mated connectors to board and chassis. Provides 360° shielding.

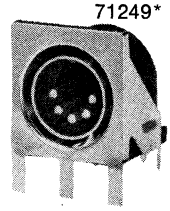


PANEL MOUNT Disconnect Contact Series 71210
Shell carries an insulated "disconnect" contact that is activated by the mating plug.

Series 71251*



Series 71249*



PIN AND CONTACT CONFIGURATIONS



PLUGS A B C D E F G RECEPTACLES

PIN ARRANGEMENT	Straight Cord Series 71408	Straight Cord Locking Series 71430	Straight Cord Plastic Shell Series 76597	Cord Plug Plastic Shell Series 71414	Right Angle Series 71432	Right Angle Locking Series 71434	Right Angle PC Mount Shielded	Right Angle PC Mount Locking
A - 3 Pins at 180°	71408-030	71430-030	76597-630	71414-030	71432-030	71434-030	71249-034	71251-030
B - 4 Pins at 210°	71408-040	71430-040	76597-640	71414-040	71432-040	71434-040	—	71251-040
C - 5 Pins at 240°	71408-250	71430-250	76597-652	71414-250	71432-250	71434-250	—	71251-250
D - 5 Pins at 180°	71408-050	71430-050	76597-650	71414-050	71432-050	71434-050	71249-054	71251-050
E - 6 Pins at 240°	71408-060	71430-060	76597-660	71414-060	71432-060	—	—	71251-060
F - 7 Pins at 270°	71408-070	71430-070	76597-670	—	71432-070	—	71249-074	71251-070
G - 8 Pins at 270°	71408-080	71430-080	76597-680	—	71432-080	—	—	71251-080

RECEPTACLES

PIN ARRANGEMENT	Straight Cord Series 71502	Straight Cord Locking Series 71506	Panel Mt. Recessed Series 71200	Panel Mt. Locking Series 71206	PC Mt. Series 71204	90° PC Mt. Series 71222	90° PC— Shielded Series 71222	Disconnect Series 71210
A - 3 Pins at 180°	71502-030	71506-030	71200-030	71206-030	71204-030	71222-030	71222-034	71210-030
B - 4 Pins at 210°	71502-040	71506-040	71200-040	71206-040	71204-040	71222-040	71222-041	71210-040
C - 5 Pins at 240°	71502-250	71506-250	71200-150	71206-050	71204-051	71222-059	71222-153	71210-050
D - 5 Pins at 180°	71502-050	71506-050	71200-050	71206-051	71204-050	71222-054	71222-152	—
E - 6 Pins at 240°	71502-060	—	71200-060	—	71204-060	71222-061	71222-064	—
F - 7 Pins at 270°	71502-070	71506-070	71200-070	71206-070	71204-070	71222-070	71222-071	71210-070
G - 8 Pins at 270°	71502-080	71506-080	71200-080	71206-080	71204-080	71222-081	71222-084	—

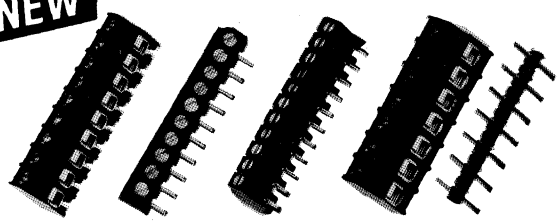
* NOTE: 030 & 034 are 3 Pin, 050 & 054 are 5 Pin, 070 & 074 are 7 Pin. PEI is a wholly owned subsidiary of Preh Elektrofeinmechanische Werke, Bad Neustadt a/d Saale, West Germany with offices and plants in Germany, Austria, Portugal, and Singapore.

***DETAILED CATALOG AVAILABLE UPON REQUEST**

AUGAT RDI

SUBMINIATURE TERMINAL BLOCKS - .2" CENTERS

NEW



2MV Series Vertical | 2MR Series Right Angle | 2MA Series 45° Angle | 2MDV Series Depluggable

AMERICAN DESIGNED AND MADE

Thermoplastic Polyester

- Maintains Center-to-Center Spacing
- Subminiature-only .5" (12,7) high
- 2-24 positions*
- Stand-offs for flux cleaning
- Captive 3-48 UNC American screws
- Wide entry for stranded/multiple wires, or up to #12 AWG
- Rating 20A, 300V; UL recognized

RDI Cat. No. (Partial)	RDI Cat. No. (Partial)	RDI Cat. No. (Partial)	RDI Cat. No. (Partial)	Center to Center Length	
				inches	mm
2MV-02	2MR-02	2MA-02	2MDV-02	0.2	5,1
2MV-04	2MR-04	2MA-04	2MDV-04	0.6	15,2
2MV-06	2MR-06	2MA-06	2MDV-06	1.0	25,4
2MV-10	2MR-10	2MA-10	2MDV-10	1.8	45,7
2MV-12	2MR-12	2MA-12	2MDV-12	2.2	55,9
2MV-16	2MR-16	2MA-16	2MDV-16*	3.0	76,2
2MV-24	2MR-24	2MA-24		4.6	116,8

*2MDV series not available over 16 positions

The Original Tri-Barrier Terminal Blocks



Available in 4 Series - both in Vertical & Rt. Angle Mount
3 PCV, 3 PCR - .250" C-C
4 PCV, 4 PCR - .325" C-C
6 PCV, 6 PCR - .375" C-C
8 PCV, 8 PCR - .4375" C-C

Resilient Thermoplastic

- Back barrier safeguards components, stops shorting of adjacent wires
- Wire-clamping plate screws secure 2 different ga. wires without wire lugs
- Stand-offs for flux cleaning
- Wire-ready raised screws
- UL-grade (94V-0) thermoplastic
- Wide choice of termination styles

VERTICAL MOUNT (VERTICAL MOUNT)

AMERICAN DESIGNED AND MADE

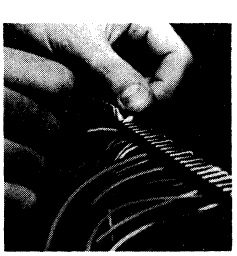
RDI Cat. No.	PC Ctr. Len. (in.)	RDI Cat. No.	PC Ctr. Len. (in.)	RDI Cat. No.	PC Ctr. Len. (in.)	RDI Cat. No.	PC Ctr. Len. (in.)
				6PCV-02	.83	8PCV-02	.95
				6PCV-03	1.21	8PCV-03	1.38
3PCV-04	1.07	4PCV-04	1.38	6PCV-04	1.58	8PCV-04	1.82
3PCV-05	1.32	4PCV-05	1.71	6PCV-05	1.96	8PCV-05	2.26
3PCV-06	1.57	4PCV-06	2.03	6PCV-06	2.33	8PCV-06	2.70
3PCV-07	1.82	4PCV-07	2.36	6PCV-07	2.71	8PCV-07	3.13
3PCV-08	2.07	4PCV-08	2.68	6PCV-08	3.08	8PCV-08	3.57
3PCV-09	2.32	4PCV-09	3.01	6PCV-09	3.46	8PCV-09	4.01
3PCV-10	2.57	4PCV-10	3.33	6PCV-10	3.83	8PCV-10	4.45
.250" C-C H .50" W .55" 5 Amps, 150V Avail. to 32 Positions		.325" C-C H .50" W .60" 20 Amps, 150V Avail. to 30 Positions		.375" C-C H .60" W .70" 25 Amps, 300V Avail. to 28 Positions		.4375" C-C H .70" W .80" 25 Amps, 300V Avail. to 26 Positions	

RIGHT ANGLE MOUNT (RIGHT ANGLE MOUNT)

RDI Cat. No.	Len. (in.)	RDI Cat. No.	Len. (in.)	RDI Cat. No.	Len. (in.)	RDI Cat. No.	Len. (in.)
3PCR-02	.57	4PCR-02	.73	6PCR-02	.83	8PCR-02	.95
3PCR-03	.82	4PCR-03	1.06	6PCR-03	1.21	8PCR-03	1.38
3PCR-04	1.07	4PCR-04	1.38	6PCR-04	1.58	8PCR-04	1.82
3PCR-05	1.32	4PCR-05	1.71	6PCR-05	1.96	8PCR-05	2.26
3PCR-06	1.57	4PCR-06	2.03	6PCR-06	2.33	8PCR-06	2.70
3PCR-07	1.82	4PCR-07	2.36	6PCR-07	2.71	8PCR-07	3.13
3PCR-08	2.07	4PCR-08	2.68	6PCR-08	3.08	8PCR-08	3.57
3PCR-09	2.32	4PCR-09	3.01	6PCR-09	3.46	8PCR-09	4.01
3PCR-10	2.57	4PCR-10	3.33	6PCR-10	3.83	8PCR-10	4.45
3PCR .250" C-C H .50" W .55" 5 Amps, 150V Avail. to 32 Positions		4PCR .325" C-C H .50" W .60" 20 Amps, 150V Avail. to 30 Positions		6PCR .575" C-C H .60" W .70" 25 Amps, 300V Avail. to 28 Positions		8PCR .4375" C-C H .70" W .80" 25 Amps, 300V Avail. to 26 Positions	

2S SERIES CAM ACTION

NEW



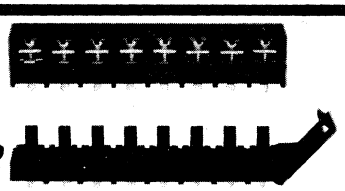
connects stripped wire with finger pressure only

- Solder-in (2SV) or depluggable (2SDV) versions
- 2-16 positions
- Handles 16 str., 18-24 AWG solid or stranded
- Rating 10A, 300V; UL recognized

AMERICAN DESIGNED AND MADE

RDI Cat. No. (Partial)	RDI Cat. No. (Partial)	Center to Center Length	
		inches	mm
2SV-02	2SDV-02	0.2	5,1
2SV-04	2SDV-04	0.6	15,2
2SV-06	2SDV-06	1.0	25,4
2SV-10	2SDV-10	1.8	45,7
2SV-12	2SDV-12	2.2	55,9
2SV-16	2SDV-16	3.0	76,2

NEW



AMERICAN DESIGNED AND MADE

TRI-BARRIER *DEPLUGGABLE*

Terminal Blocks in #4 & #6 Series

Features:

- Positive positioning and latching
- Fast, efficient P.C. board replacement
- Optional latching retainers for extra strain relief
- No special tools required
- Center spacing:
  #4 Series .325" (8.3)
  #6 Series .375" (9.5)

Rating:

#4 Series 20A, 150V
#6 Series 25A, 300V

These depluggables retain all the dependability and features of RDI's traditional No. 4 & 6 Series, yet provide P.C.B. changeout in a fraction of the time needed for rewiring. They take no more real estate, yet provide contact integrity & secure mounting for most applications.

AUGAT RDI / **Reed Devices Inc.**

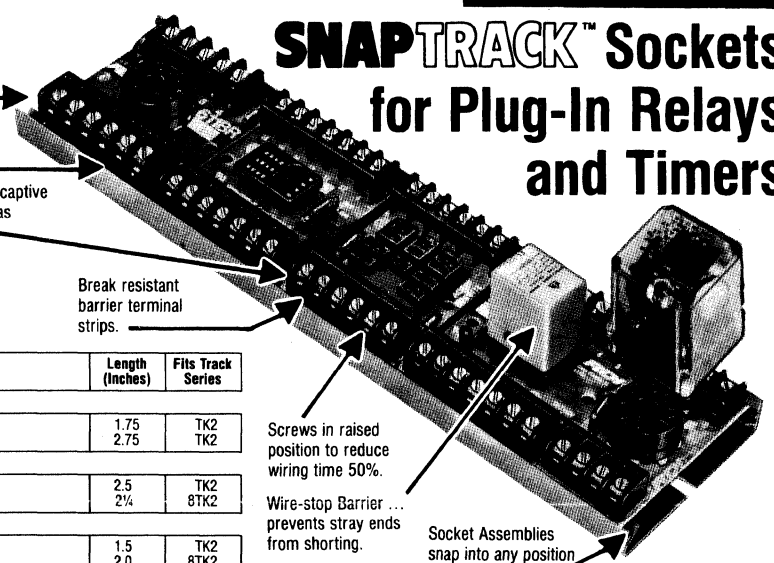
Quality and Innovation

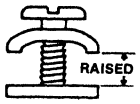
Manufacturers of
- SNAPTRACK™ Relay & Timer Socket Assemblies
- Barrier Terminal Blocks
- Proximity Switches
- Custom Circuits

525 Randy Road, Carol Stream, Illinois 60188 (312) 682-4100 TWX 910-252-2118

AUGAT RDI

SNAPTRACK™ Sockets for Plug-In Relays and Timers





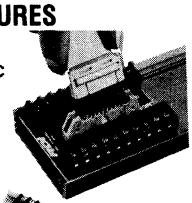
All SNAPTRACK assemblies are shipped with screws in raised position which reduces wiring time as much as 50%.

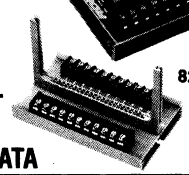
RDI Cat. No.	Description	Length (Inches)	Fits Track Series
10 AMP/250VAC RATED MINIATURE SOCKET ASSEMBLIES			
622BS	2PDT, #6 Screws	1.75	TK2
624BS	4PDT, #6 Screws	2.75	TK2
MINIATURE RELAY SOCKET ASSEMBLIES, 5A, 150VAC			
214BS	4PDT, #4 Screws	2.5	TK2
814BS	4PDT, #3 Screws, mini track	2¼	8TK2
SUB-MINIATURE RELAY SOCKET ASSEMBLIES, 5A, 150VAC			
202BS	2PDT, #4 Screws	1.5	TK2
802BS	2PDT, #3 Screws, mini track	2.0	8TK2
204BS	4PDT, #4 Screws	2.5	TK2
804BS	4PDT, #3 Screws, mini track	2.25	8TK2
206BS	6PDT, #4 Screws	3.75	TK2
806BS	6PDT, #3 Screws, mini track	3.0	8TK2
SPECIALTY SOCKET, FUSE AND TERMINAL BLOCK ASSEMBLIES			
220BR	20 Pin Round, #4 Screws, latch	3.5	TK2
BT6	Double Terminal Block, 6 #8 Screws	3.0	TK2
2BT8	Double Terminal Block, 8 #4 Screws	2.38	TK2
6BF-2	2 sets 3AG Fuse clips, #6 Screws	1.2	TK2
6BF-3	3 sets 3AG Fuse clips, #6 Screws	1.75	TK2
816DP	16 pin DIP socket, #3 Screws	2.25	8TK2
820FC	20 pin flat cable connector, w/o strain relief, #3 Screws	2.75	8TK2
820FCB	Same but with strain relief	2.75	8TK2

Order SNAPTRACK® mounting track separately. See below.

SNAPTRACK™ SUBMINIATURES


816DP


820FC

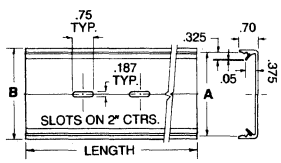

822PCB

SNAPTRACK™ EDGE CONNECTOR PANEL MOUNTING SYSTEMS

SNAPTRACK™ MOUNTING CHANNEL

Nominal P.C.B. Width Dim. A (Inches)	Overall Track Width Dim. B (Inches)	RDI Cat. No. (48" lg.)
2.187	2.30	8TK2-48
2.75	2.90	2TK2-48
3.00	3.16	TK2-48
3.25	3.40	3TK2-48
4.00	4.15	6TK2-48
Split-Apart		4TK2-48

To specify lengths of 6, 12, or 24 inches, substitute 6, 8, 12, or 24 in place of "48".



Example: TK2-24 is 24 inches long. Custom cutting available. Contact factory.

ORDERING AND DIMENSIONAL DATA

Number Pins Out	RDI Catalog Number	Dimensions (Inches) A P.C. Card Width	B Overall Length	C Overall Height	D Track Width	Fits SNAPTRACK Series
22	22PCB	4.5	5	39/16	3.16	TK
22	822PCB	4.5	5	39/16	2.30	8TK
22	822PC	3.58	4½	39/16	2.30	8TK
22	22PC	3.58	4½	39/16	3.16	TK
44	44PCA	4.5	7½	39/16	3.16	TK
44	44PCB	4.5	7½	39/16	3.16	TK

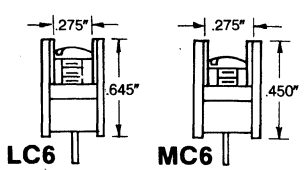
LC6, MC6 & FULL-CLEARANCE NC6 *LOW-PROFILE TERMINAL BLOCKS*

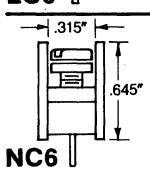


- Wire-ready raised screws
- .06" standoffs for flux removal
- .375" center-to-center
- 2-30 positions
- Handles 12-22 AWG wire

Ratings: LC6, NC6 20A/300V, U.L.
MC6 20A/250V, U.L.

Barrier Profiles





NC6 provides *full* clearance between barriers for auxiliary terminal arrangements

Catalog Number System
LC6, MC6-NC6 - XXOX—XX

P-P.C. Pin
S-Non-Feed-Thru

1-Terminals all Positions
2-End Mounting Holes Provided

02-2 Positions
30-30 Positions

2-Steel binding head, brass terminal
4-Steel clamp-plate, brass terminal
5-Brass binding head, brass terminal
6-Brass clamp-plate, brass terminal

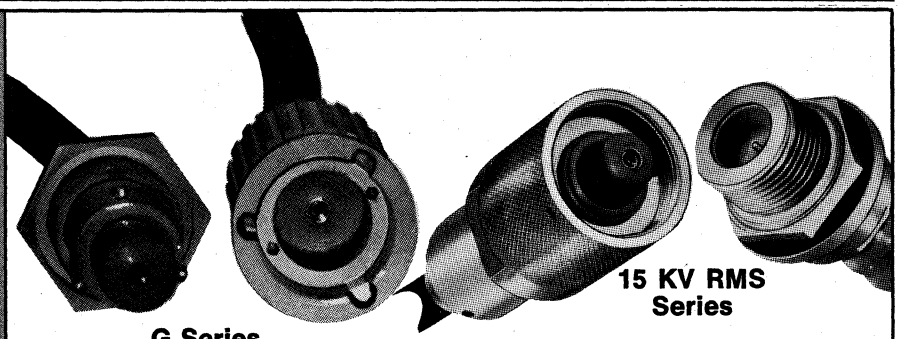
AUGAT RDI / Reed Devices Inc.
Quality and Innovation

Manufacturers of
- SNAPTRACK™ Relay & Timer Socket Assemblies
- Barrier Terminal Blocks
- Proximity Switches
- Custom Circuits

525 Randy Road, Carol Stream, Illinois 60188 (312) 682-4100 TWX 910-252-2118

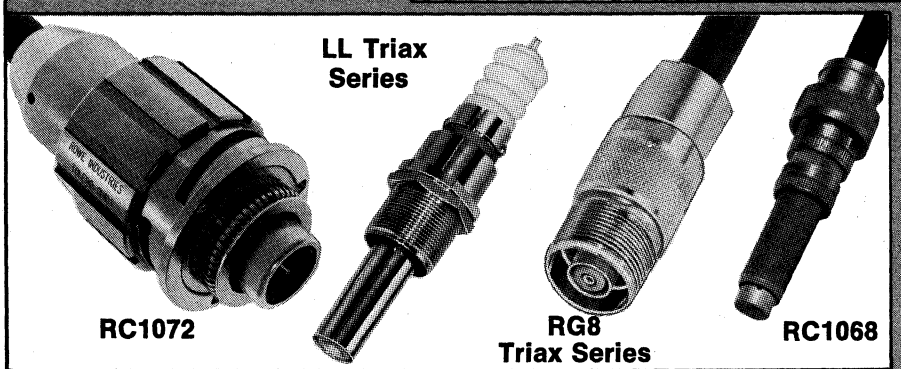
Rowe Coaxial Connectors and Cable Assemblies

Employ high-voltage, corona-free design techniques. They are ideal for use in pulse as well as DC voltage applications, through 150 KV. A wide variety of molded-on or field assembly types are offered. Available in quick disconnect or screw couplings.



G Series

15 KV RMS Series



LL Triax Series

RC1072

RG8 Triax Series

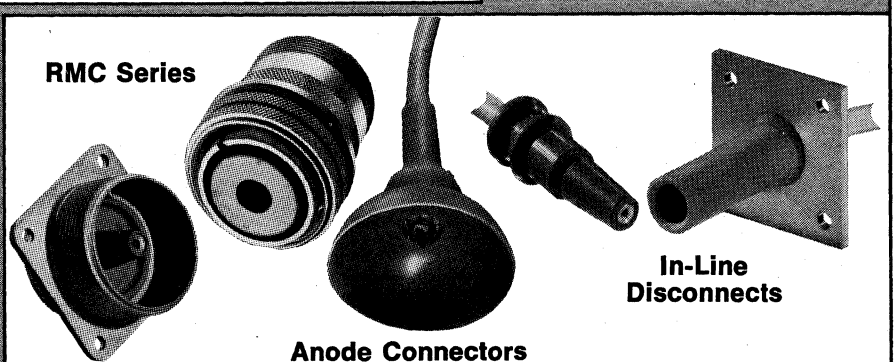
RC1068

Rowe Triaxial Connectors and Cable Assemblies

A full spectrum of both molded-on and field assembly types are available for a wide variety of cable types such as the triaxial version of RG-8, up through and including specialized construction for operation in excess of 100 KV.

Rowe Single Contact Connectors and Cable Assemblies

Offered is an extensive listing of single contact high-voltage assemblies, which include anode connectors, in-line disconnects and others which are used unshielded to solve your simple high-voltage interconnection problems.



RMC Series

Anode Connectors

In-Line Disconnects



RMC Series

4RC3147

RMC Series

RMC Series

2RC3146

Rack and Panel Connector

RMC Series

Lanyard Series

Rowe Multiple Contact Connectors and Cable Assemblies

Offer contact arrangements from one to thirty contacts, panel receptacles, cable plugs, rack and panel combinations, in-line types and many others. Both field assemblies and molded-on types are standard in this line.

Rowe Industries has designed and developed over 700 specialized interconnections for which tooling is available.

World's Leader in High-Voltage

(through 200 KV)

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CONNECTORS • CABLE ASSEMBLES • ELECTRONIC PRODUCTS
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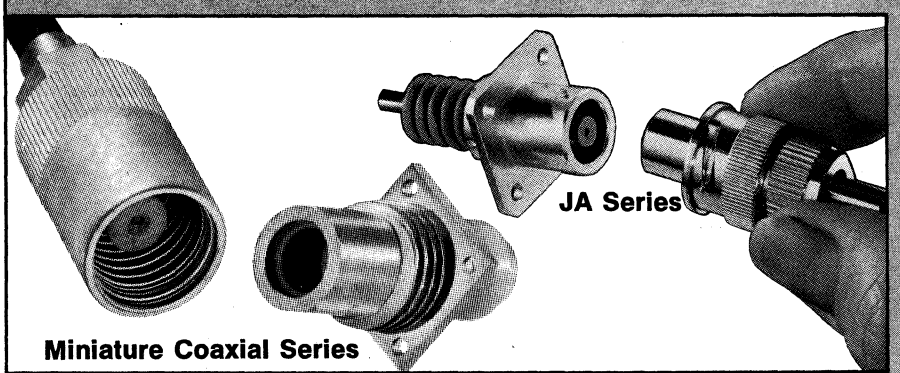
WEST COAST OFFICE: (415) 969-4831 OR (213) 235-2070
EAST COAST OFFICE: (617) 273-3888

DESIGN — DEVELOPMENT — MANUFACTURING

For reliable high voltage and all temperature wire and cable, see Rowe's ad in the Wire/Cable/Harnesses Section.

FOR YOUR COMMERCIAL, INDUSTRIAL OR MILITARY DESIGN NEEDS



Rowe Miniature Coaxial Connectors and Cable Assemblies

Employ the same high-voltage design techniques as the coaxial series, but are much smaller in size for use in restricted spaces. Available in quick disconnect and screw couplings (the JA Series can be adapted to such standard type cables as RG 58 and RG 59).

Rowe Subminiature Coaxial Connectors and Cable Assemblies

Are ideally suited for use where space is at a premium. Employing the traditional Rowe high capability features, the subminiature sizes offer unusually high voltage operating capabilities, through 20 KV.

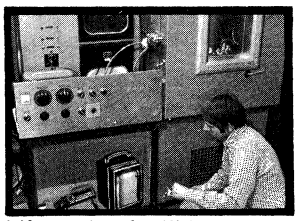




Rowe Low-Voltage, Molded-On Connectors and Cable Assemblies

For use in severe environments. We can mold your STD connectors to cable for an environmental seal and provide a molded strain relief. Our exclusive Insta-Change series was designed for factory, mining, nuclear and oil well use.

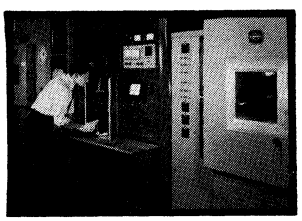
ROWE knows Specialized Interconnections

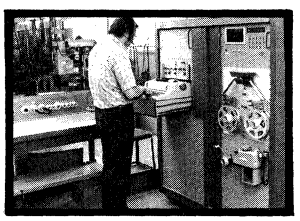

Life testing facilities.

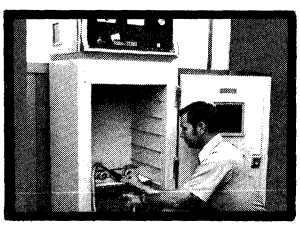

High altitude pressure chamber.

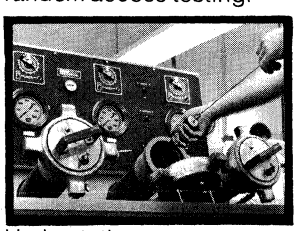

RFI-EMI-EMP test chamber.


High voltage, corona and dielectric test chamber.


Humidity chamber.


DIT-MCO computerized random access testing.


X-Ray equipment.


Hydrostatic pressure testing.

We're specialists in complete interconnection systems and, in particular, connectors and cable assemblies for extreme environments and unique applications. In fact, we've designed and manufactured hundreds of different connectors and cable assemblies for nuclear instrumentation and control, high voltage, corona-free thru 200 KV+, underwater instrumentation, geophysical, high and low temperatures, corrosive environments, high altitude and deep space, high and low pressures and other sophisticated military and industrial systems.

Rowe engineers design and specify custom products to meet exacting requirements and Rowe craftsmen produce them to the highest quality standards. In addition, we operate one of the most complete testing facilities in the industry. Our destructive and non-destructive testing capability includes:

Electrical Testing
Dielectric strength, corona measurement, RFI/EMI and DIT-MCO computer controlled circuit testing.

Mechanical and Physical Testing
Plating verification thru microscopic analysis, shock and vibration, hydrostatic pressure and helium leak, tensile strength,contact force measurement, optical comparitor equipment, complete x-ray lab.

Environmental Testing
Altitude thru 150,000 feet, temperature, humidity, corrosive atmospheres, accelerated life combining various conditions simultaneously.

Quality Control
Rowe's quality control and inspection systems meet or exceed MIL-Q-9858, ISR-1, NRC's 10CFR50 appendix B and standards of all aerospace and industrial firms.

With so many interconnections to choose from, chances are that we've already developed the one that meets your needs. If not, we'll custom design one for you.

Rowe Industries, Dept. 241/6100 Benore Rd, Toledo, OH 43612

Gentlemen: Please send technical literature I've checked. Thank you.

- ☐ Corona: simple techniques to eliminate it
- ☐ H.V. In-Line Disconnects and Anode Connectors thru 60 KV
- ☐ Rowe multi-contact H.V. connectors
- ☐ Sub-Miniature H.V. coax connectors thru 15 KV
- ☐ RG cable H.V. connectors (JA Series)
- ☐ Miniature Coax Connectors thru 30 KV
- ☐ Corona-free coax connectors thru 20 KV
- ☐ Corona-free high pulse coax connectors thru 40 KV
- ☐ 75 KV coax connectors (R75 Series)
- ☐ Lanyard/Umbilical Connectors
- ☐ Triaxial Connectors thru 30 KV
- ☐ Triaxial Connectors thru 55 KV
- ☐ Molded-On Interconnections
- ☐ Low-Voltage Multi-Pin Connectors (Insta-Change Series)
- ☐ High-Voltage Cable & Wire
- ☐ "All-Temp" High Temperature Wire and Cable
- ☐ SRML, SF-2, SFF-2, Aircraft & Locomotive

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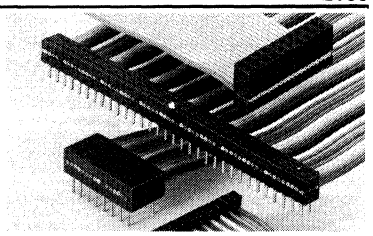
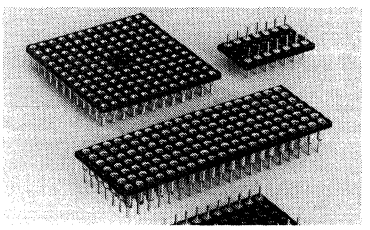
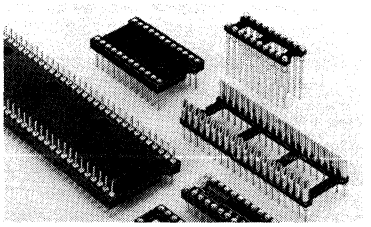
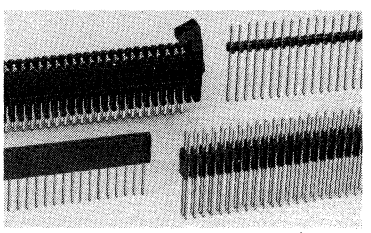
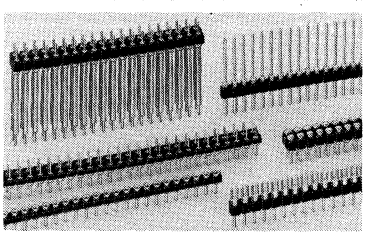
- Lead socket and terminal carriers.
- DIP sockets and adaptor plugs.
- .025" SQ terminal strips.
- Machined socket and terminal strips.
- Low profile and PGA sockets.
- Special products.

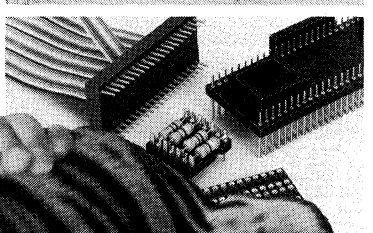












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Proprietor

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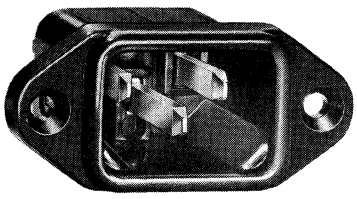
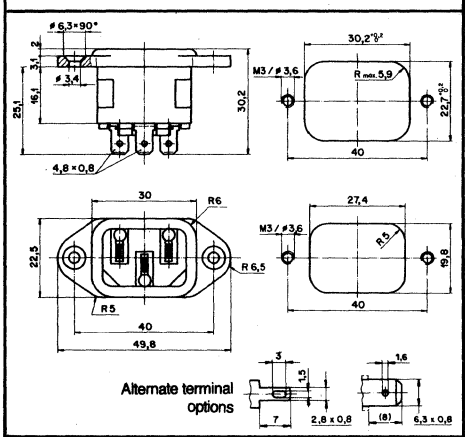
APPLIANCE CONNECTORS AND PLUGS

2P+G

4300.0062 (P 580)
4300.0063
4300.0064

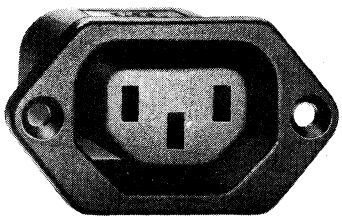


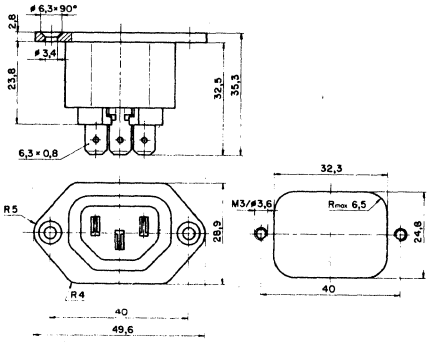


Order Numbers

4300.0062 w/.187″ x .032″ q.d. terminals
4300.0063 w/.250″ x .032″ q.d. terminals
4300.0064 w/.110″ x .032″ solder terminals

4300.0203 (P 675)

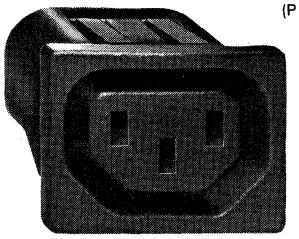


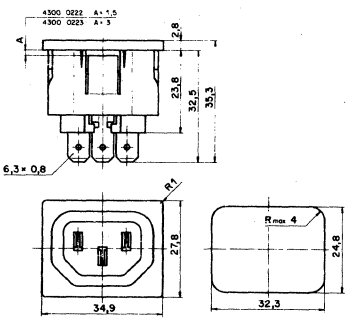


Order Numbers

4300.0203

4300.0222/
0223
(P 695)

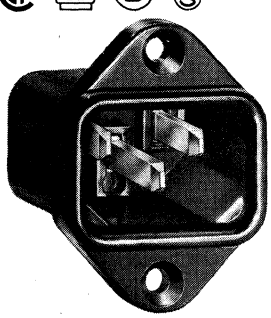


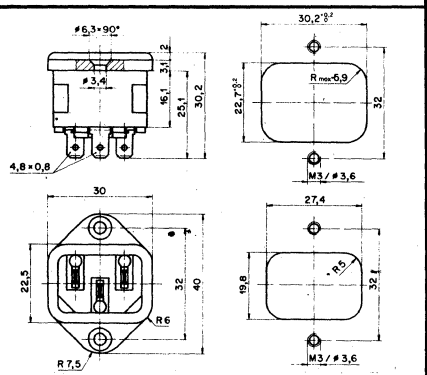


Order Numbers

4300.0222 for 1.5 mm panel thickness
4300.0223 for 3.0 mm panel thickness

4300.0052 (P 579)

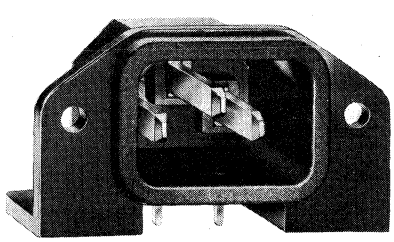


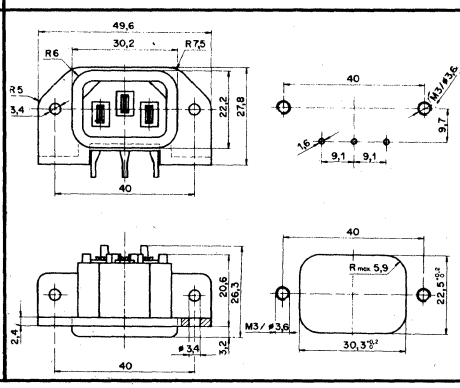


Order Numbers

4300.0052

4300.0071 (P 580 PC)

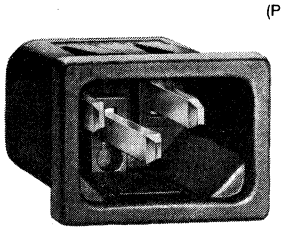


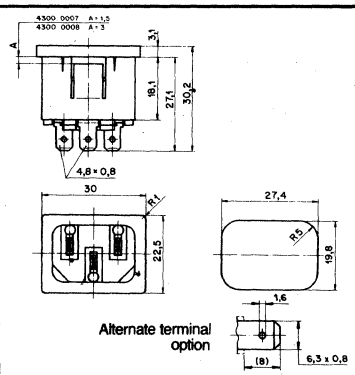


Order Numbers

4300.0071

4300.0007
4300.0008
4300.0012
4300.0013
(P 575)





Order Numbers

4300.0007 3/16″ q.d., 1.5 mm panel thickness
4300.0008 3/16″ q.d., 3.0 mm panel thickness
4300.0012 1/4″ q.d., 1.5 mm panel thickness
4300.0013 1/4″ q.d., 3.0 mm panel thickness

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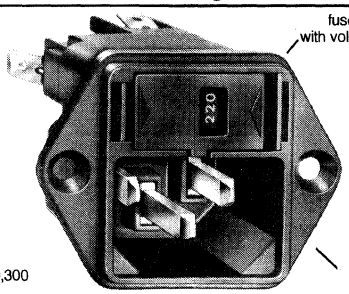
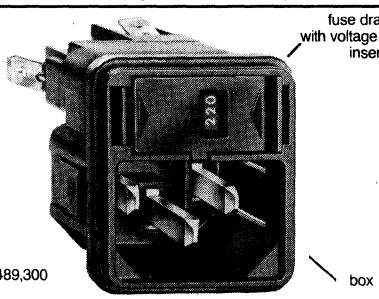
KEA

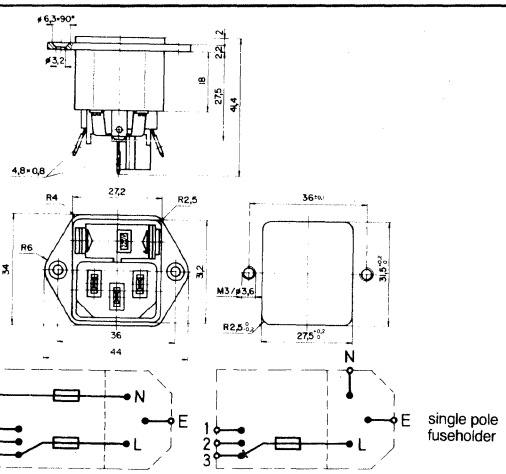
Power entry module with appliance inlet, single or double pole fuseholders and 3 or 4 (optional) position on line voltage selector; quick connect terminals 4.8mm x .8mm (.187" x .032")



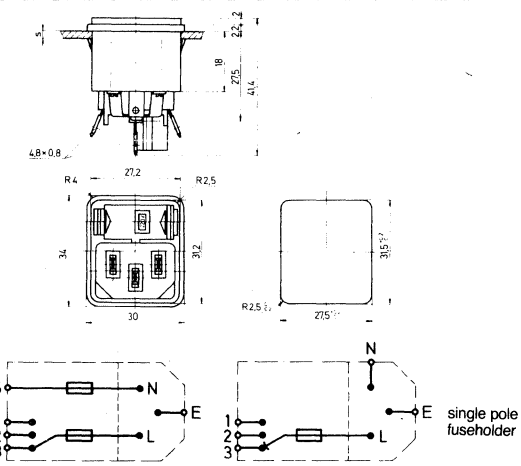
US patent # 4,489,300



US patent # 4,489,300



double pole fuseholder — single pole fuseholder



double pole fuseholder — single pole fuseholder

Order Numbers

for screw-on panel mount type

w/double pole fuseholder

KEA 4301.0001 box without fuse drawer (2P) + G for receptacle)

KEA 4301.0201 box without fuse drawer (2P, no ground for receptacle)

above order numbers do not include fuse drawer with voltage selector insert.

KEA 4301.1001 fuse drawer, 2-pole, with voltage selector insert 220V, 150V, 110V

w/single pole fuseholder

KEA 4301.0021 box without fuse drawer (2P) + G for receptacle)

KEA 4301.0221 box without fuse drawer (2P, no ground for receptacle)

above order numbers do not include fuse drawer with voltage selector insert.

KEA 4301.1201 fuse drawer, 1-pole, with voltage selector insert 220V, 150V, 110V

for snap-in type

w/double pole fuseholder

panel thickness:	receptacle configuration: 2P+G	2P, no ground
1.5 mm	KEA 4301.0002	KEA 4301.0202
2.0 mm	KEA 4301.0003	KEA 4301.0203
2.5 mm	KEA 4301.0004	KEA 4301.0204

above order numbers do not include fuse drawer with voltage selector insert.

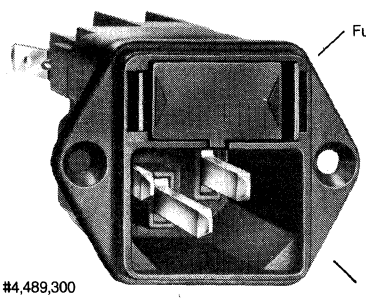
KEA 4301.1001 fuse drawer, 2-pole with voltage selector insert 220V, 150V, 110V

w/single pole fuseholder

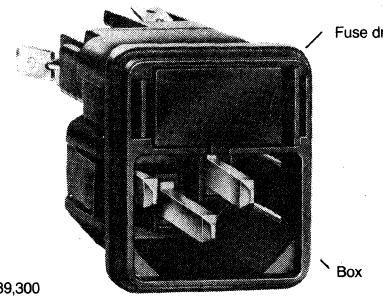
panel thickness:	receptacle configuration: 2P+G	2P, no ground
1.5 mm	KEA 4301.0022	KEA 4301.0222
2.0 mm	KEA 4301.0023	KEA 4301.0223
2.5 mm	KEA 4301.0024	KEA 4301.0224

above order numbers do not include fuse drawer with voltage selector insert.

KEA 4301.1201 fuse drawer, 1-pole with voltage selector insert 220V, 150V, 110V



U.S. patent #4,489,300



U.S. patent #4,489,300

Order Numbers

for screw-on panel mount type

w/double pole fuseholder

KEA 4301.0501 box without fuse drawer (2P) + G for receptacle)

KEA 4301.0701 box without fuse drawer (2P, no ground for receptacle)

above order numbers do not include fuse drawer.

KEA 4301.1401 fuse drawer, 2-pole

w/single pole fuseholder

KEA 4301.0521 box without fuse drawer (2P) + G for receptacle)

KEA 4301.0721 box without fuse drawer (2P, no ground for receptacle)

above order numbers do not include fuse drawer.

KEA 4301.1405 fuse drawer, 1-pole

for snap-in type

w/double pole fuseholder

panel thickness:	receptacle configuration: 2P+G	2P, no ground
1.5 mm	KEA 4301.0502	KEA 4301.0702
2.0 mm	KEA 4301.0503	KEA 4301.0703
2.5 mm	KEA 4301.0504	KEA 4301.0704

above order numbers do not include fuse drawer.

KEA 4301.1401 fuse drawer, 2-pole

w/single pole fuseholder

panel thickness:	receptacle configuration: 2P+G	2P, no ground
1.5 mm	KEA 4301.0522	KEA 4301.0722
2.0 mm	KEA 4301.0523	KEA 4301.0723
2.5 mm	KEA 4301.0524	KEA 4301.0724

above order numbers do not include fuse drawer.

KEA 4301.1405 fuse drawer, 1-pole

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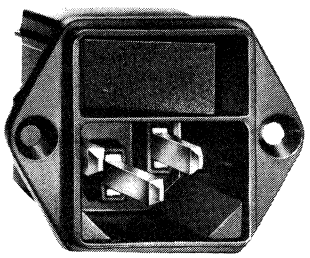
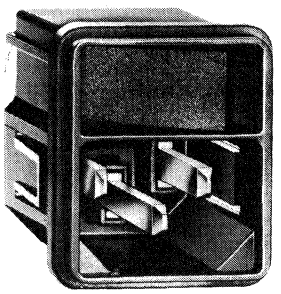
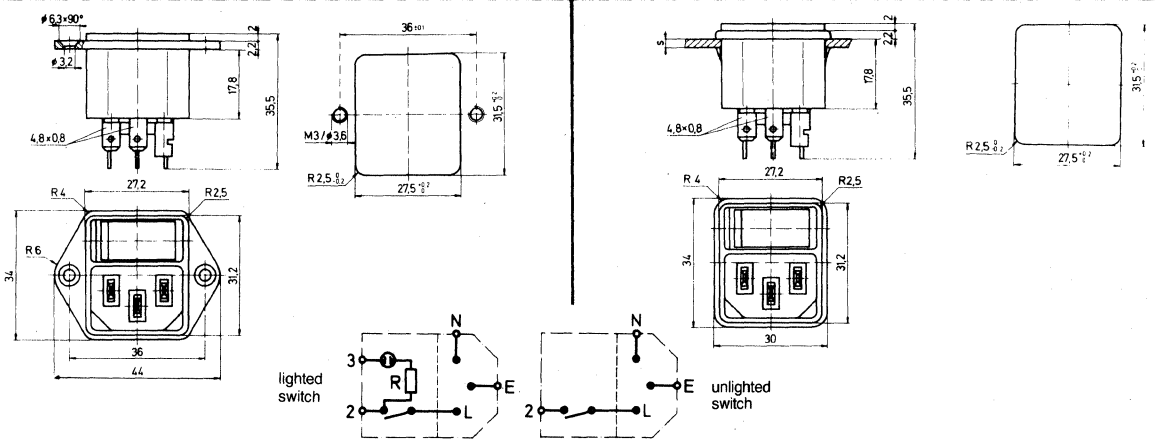
KEB

Power entry module with line switch (SPST) and appliance inlet, quick connect terminals 4.8 mm x 8 mm (.187" x .032")





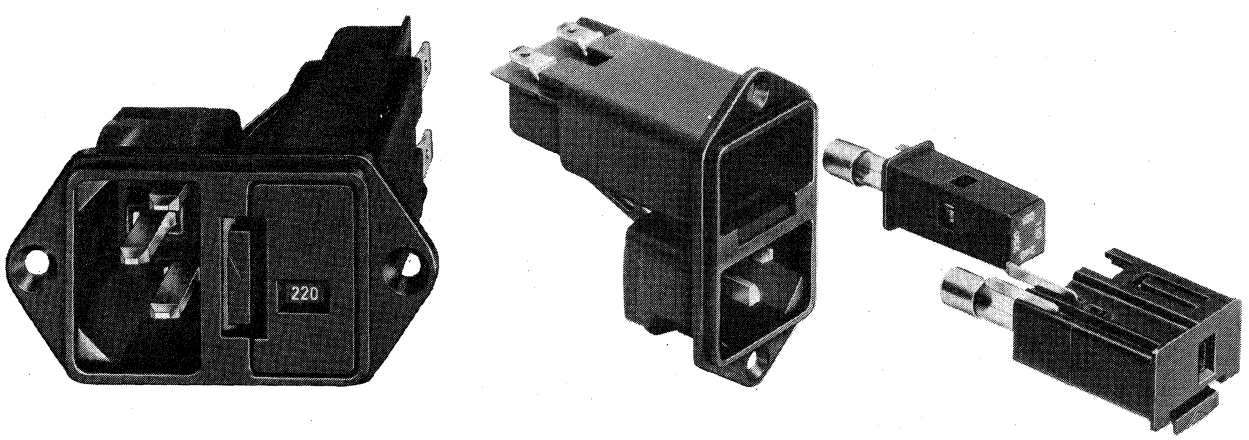


Order Numbers

for screw-on panel mount type				for snap-in type				
CONNECTOR CONFIGURATION	SWITCH UNLIGHTED	SWITCH LIGHTED 220 V	SWITCH LIGHTED 110 V	CONNECTOR CONFIGURATION	PANEL THICKNESS	SWITCH UNLIGHTED	SWITCH LIGHTED 220 V	SWITCH LIGHTED 110 V
CONNECTOR 2P + G	4302.0001	4302.0101	4302.0121	CONNECTOR 2P+G	1.5mm/.054" 2mm/.079" 2.5mm/.098"	4302.0002 4302.0003 4302.0004	4302.0102 4302.0103 4302.0104	4302.0122 4302.0123 4302.0124

KEC

Power entry module with fuseholder for ¼ x 1¼" or 5 x 20 mm fuses and appliance inlet, quick connect terminals 4.8 mm x .8 mm (.187" x .032")



UL, CSA, VDE, SEMKO, SEV

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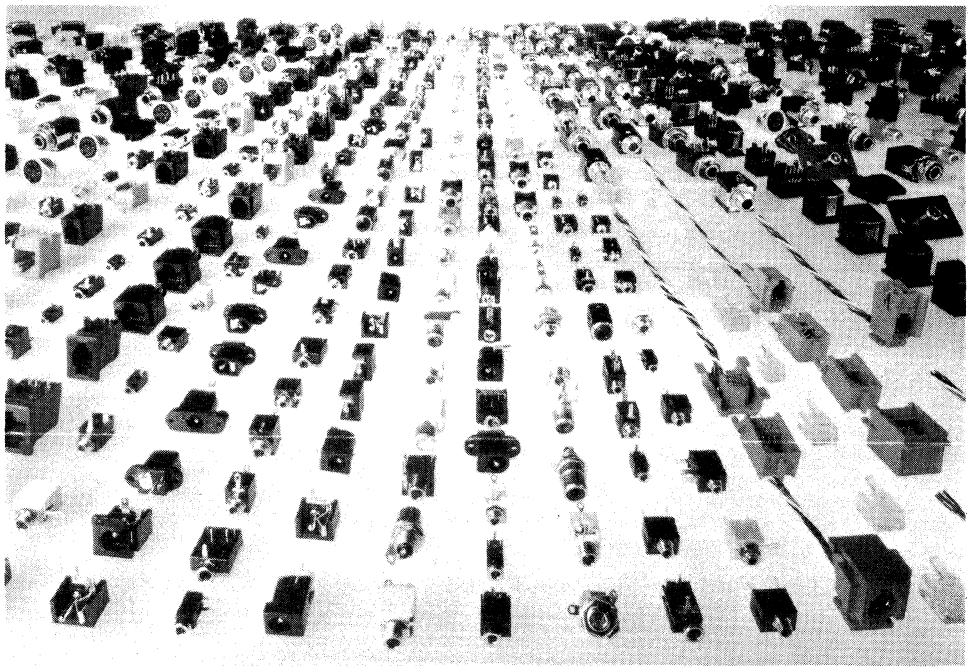

PLUGS, JACKS and CONNECTORS

PHONE PLUGS

Straight or right angle, with or without handle, 2.1mm, 2.5mm, 3.5mm or 6.3mm diameters. Produced for soldering, crimping or molding.

DC POWER PLUGS

Available straight or right angle in short or long barrel versions, 2.1mm or 2.5mm diameters. Designed for all types of power supplies.

PIN DIN TYPE PLUGS

Male or female, 2-8 pins in any array. Produced with or without handle, in any color. Also available premolded, crimped or soldered to cable in a variety of materials and lengths.

RCA PHONO PLUGS

With removable plastic or metal handles. Right angle or straight, male or female, either crimping, soldering or molding types may be specified.

BANANA PLUGS

Specifically for test lead sets. Produced in a variety of colors, sizes and shapes.

AUDIO JACKS and SOCKETS

A wide selection in any combination of 2 or 3 conductor, mono or stereo, open or closed circuits, open or closed frame. Produced in microminiature, subminiature and miniature sizes with extra low profile and minimum width. Mountings are panel, chassis or PC board.

AUTOMOTIVE PLUGS

Cigarette plugs and mating sockets, with or without fuses. Phenolic/bakelite or rubberized plastic with optional finger grips.

DC POWER JACKS

Mating with all types of power supplies, right angle or vertical, chassis or PC board mount. Pins are long or short in 2.1mm and 2.5mm diameters.

DIN SOCKETS

A full line for many applications available in 2-8 pins, shielded or unshielded for right angle, vertical or PC mounting. Standardized for use with all types of display terminals.

AC SOCKETS

UL/CSA and VDE approved for US and European use. Two or three pin configuration, panel and chassis mounting or in-line positioning.

COAXIAL

Plugs, jacks and adaptors, single or double type push-on, crimp or solder connections of BNC, UHF or "F" type to specified cable.

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With or without boots or molded handles in 5 to 30 amp ratings. All colors available.

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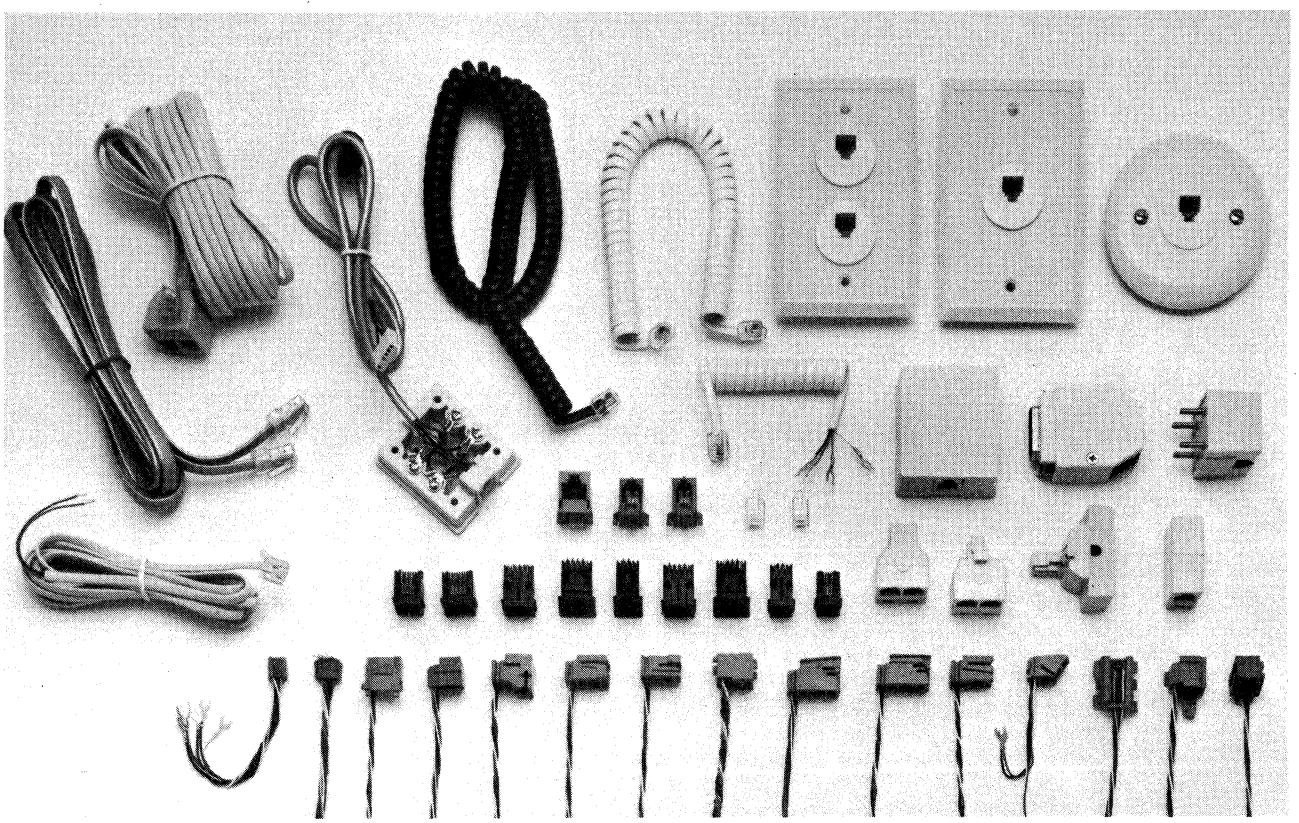

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MODULAR JACKS

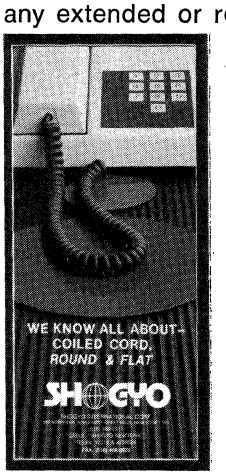
Ideal for any telecommunication application. Available with PC pins or lead wires, keyed or unkeyed with spade lugs or any specified termination. May be ordered with perpendicular, parallel flange or flangeless mounting and 4, 6 or 8 positions with any number of contacts. Manufactured to industry standards in flame retardant materials and offered with 15U, 30U or 50U hard gold plating. Can mate with handsets or line cords.

MODULAR CONNECTORS

An extensive line of modular adaptors, duplex and triplex adaptors, in-line couplers, retrofit plugs, wall-mount surface jacks, circular wall jacks. Manufactured in standard or special colors and all industry standards.

HANDSET and LINE CORDS

May be ordered to your specifications — any length, with or without shielding, tinsel or stranded/solid copper wire, color coding and with any termination including modular plugs, spade lugs or special connectors. Coiled cords can be produced to any extended or retracted length.



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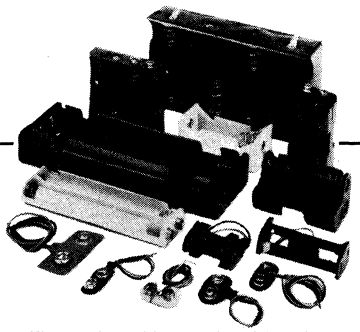

BATTERY HOLDERS, SNAPS & HANDSTRAPS

Standard lead length, 4". Also available with solder lugs. Dimensions shown are in millimeters.

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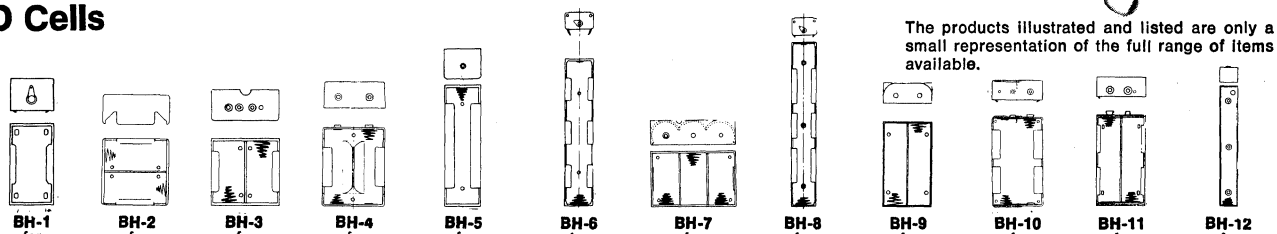
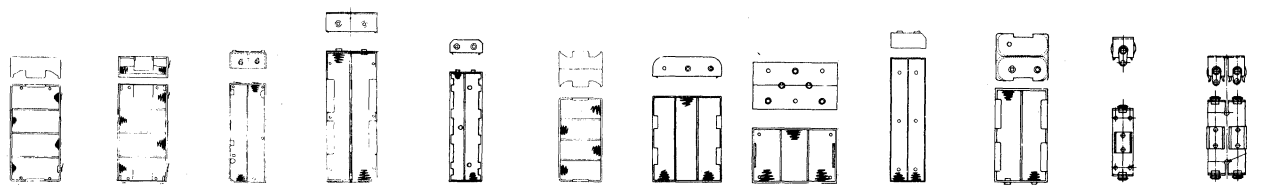
D Cells

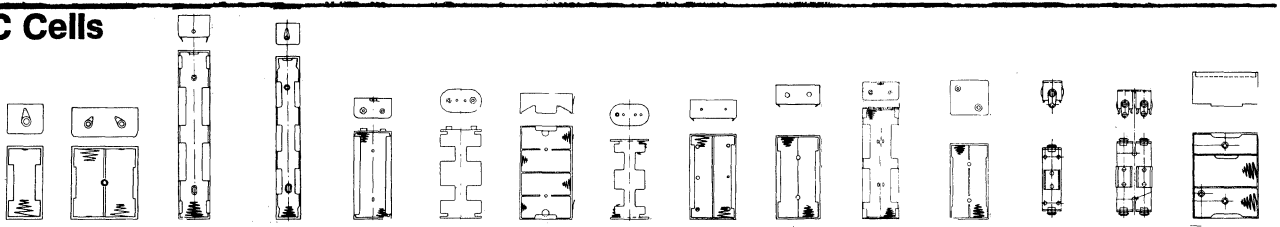


BH-1 for one cell
BH-2 for two cells
BH-3 for two cells
BH-4 for two cells
BH-5 for two cells
BH-6 for three cells
BH-7 for three cells
BH-8 for four cells
BH-9 for four cells
BH-10 for four cells
BH-11 for four cells
BH-12 for four cells



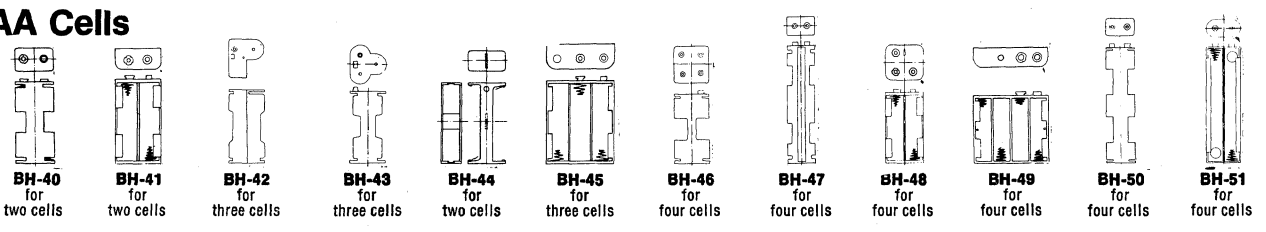
BH-13 for four cells
BH-14 for four cells
BH-15 for six cells
BH-16 for six cells
BH-17 for eight cells
BH-18 for eight cells
BH-19 for six cells
BH-20 for six cells
BH-21 for eight cells
BH-22 for eight cells
BH-23 for one cell
BH-24 for two cells

C Cells

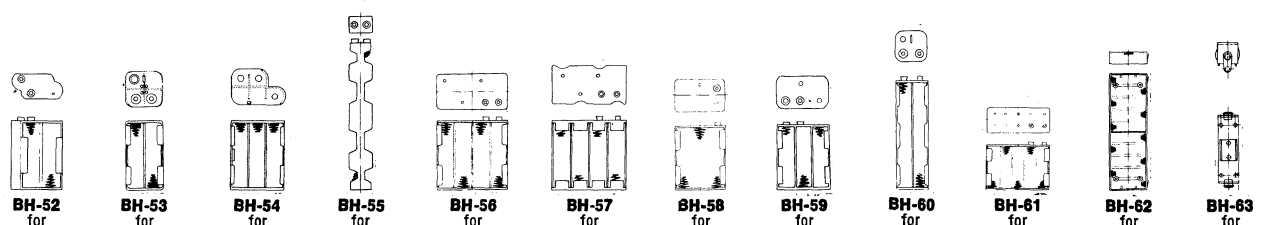


BH-25 for one cell
BH-26 for two cells
BH-27 for three cells
BH-28 for four cells
BH-29 for four cells
BH-30 for four cells
BH-31 for four cells
BH-32 for four cells
BH-33 for four cells
BH-34 for four cells
BH-35 for six cells
BH-36 for eight cells
BH-37 for one cell
BH-38 for two cells
BH-39 for two C cells and one 9V battery

AA Cells



BH-40 for two cells
BH-41 for two cells
BH-42 for three cells
BH-43 for three cells
BH-44 for two cells
BH-45 for three cells
BH-46 for four cells
BH-47 for four cells
BH-48 for four cells
BH-49 for four cells
BH-50 for four cells
BH-51 for four cells



BH-52 for four cells
BH-53 for four cells
BH-54 for five cells
BH-55 for six cells
BH-56 for eight cells
BH-57 for eight cells
BH-58 for six cells
BH-59 for six cells
BH-60 for eight cells
BH-61 for ten cells
BH-62 for ten cells
BH-63 for one cell

Battery Snaps

Standard head length, 4"

SN-1 for BH-14
SN-2 for BH-16
SN-3 for BH-24
SN-4 for BH-24
SN-5 for lantern battery
SN-6 for 9V battery
SN-7 for 9V battery
SN-8 for 9V battery
SN-9 for 9V battery
SN-10 unmounted snaps
SN-11 separate snaps for 9V battery
SN-12 separate snaps for lantern battery
SN-14A for 9V battery
SN-14B for lantern batteries

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Available in nylon, vinyl and cloth. Length and attachment devices to your specifications.

HS-1 HS-2 HS-3 HS-4 HS-5 HS-6 HS-7 HS-8 HS-9 HS-10

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All examples of truly precision engineering and craftmanship. The kind that makes itself evident in every Neutrik product, including AC connectors and receptacles, phone jacks, plugs, goosenecks and transformers.

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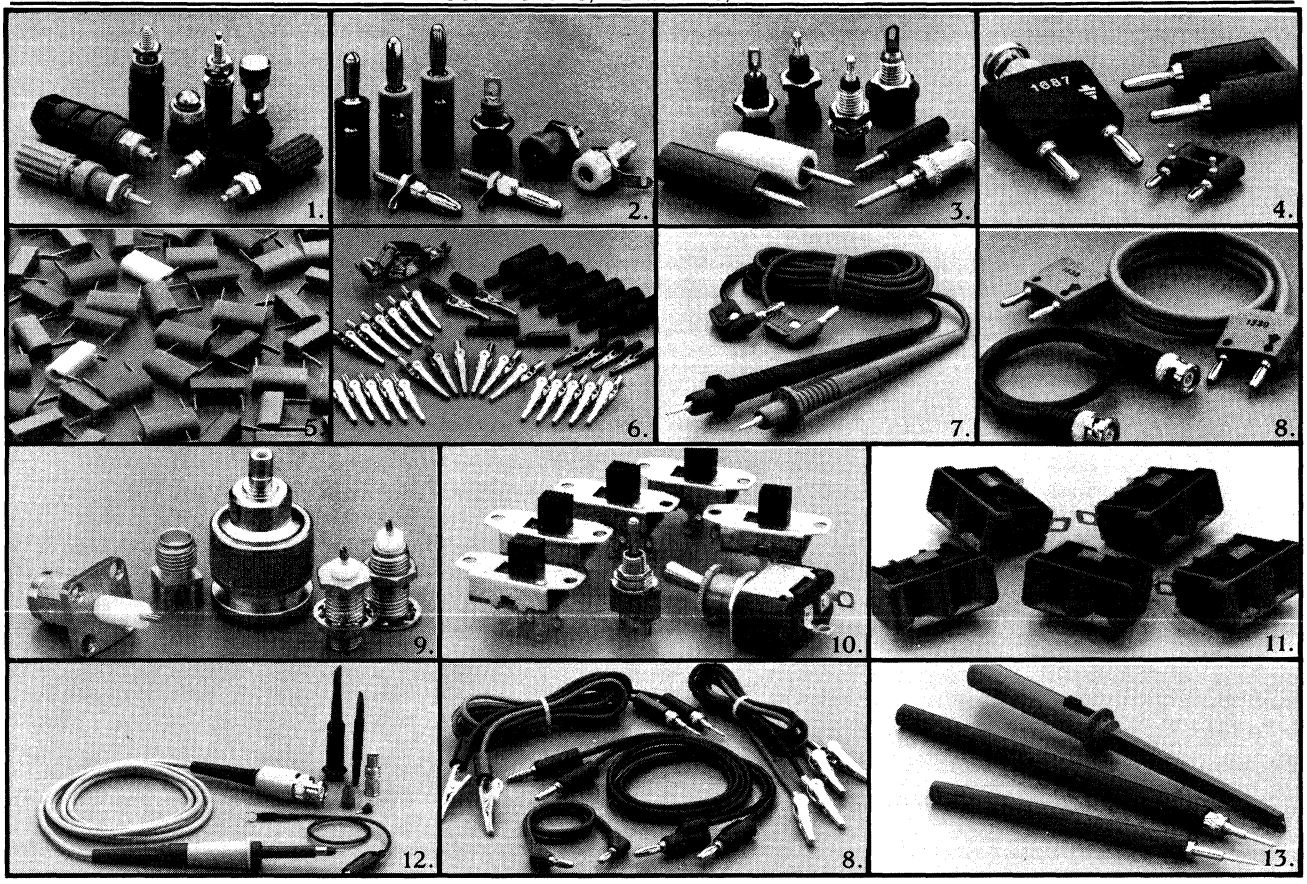

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Commercial and Military
Insulated and Non-Insulated styles
Gold or Tin Plated
Ratings—5 to 30 Amps AC
UL Recognized

2. Plugs
Banana or Phone Tip
Ratings: 2-25 Amps AC
Insulated and Non-Insulated styles
Material: Nylon (Body), Beryllium
Copper (Spring), Brass (Tip).

3. Jacks
Banana or Phone Tip
Ratings: 2-15 Amps AC
Insulated and Non-Insulated styles
Material: Nylon (Head);
Brass/Nickel Plated (Body).

4. Test Adapters
Material: ABS (Body), Beryllium
Copper (Spring)
Ratings: 15 Amps AC
Combinations of BNC Male/Female, Binding Posts, Banana Plugs, Turret Terminals, Standard (3/4" ctrs) or Miniature (1/2" ctrs) available.

5. Test Jacks
Military or Commercial,
P.C. Mountable, Gold/Silver Plated
Material: Nylon (Body); Beryllium
Copper (Spring).

6. Alligator Clips
Standard or Miniature
Materials: Steel, Copper, Brass
Adapters available for Tip or Banana Plugs

7. Test Leads
Safety Designed
Features: Slip Proof & Finger Guard Washer
Material: Handle—KJB;
Wire—PVC #18 gauge
Meter Ends: Banana or Tip Plug,
Clips, Lug, & Jack

8. Patch Cords & Jumpers
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Available: BNC Male/Female, Connectors
Wire: RG58/u, RG 174/u, 18 gauge
Twisters Pair, #18 PVC, #20 Rubber

9. Sub-miniature R.F. Connector
SMA, SMB, SMC type
Material: 303 Stainless or Brass
Plating: Gold or Passivated Finish.

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SPECTRUM CONTROL, INC.

Bulletin 27-0027-70 Rev.1

SPECTRUM EMI FILTERED D SUBMINIATURE CONNECTORS...

Spectrum's distributor stocked filtered connector product line is described in detail over the next few pages. All dimensions are shown in inches (metric equivalents in millimeters are in parenthesis). Decimal tolerances, unless otherwise specified, are ± .015. All electrical engagement areas (plug and receptacle) are gold plated copper alloy. All terminations (printed circuit board right angle, solderless wire wrap and solder cup) are solderable. Housing (shells) are a corrosion-resistant non-ferrous alloy. Insulators and right angle brackets are UL rated 94 V-O. Radio frequency ground contact from the connector housing (shell) to the mating connector is assured by a patented coaxial spring clip on the pin side of the plug, the socket side of the receptacle and both pin and socket sides of the adapter. EMI filter types specified are either Pi-Section (Pi) or Feed-through (FT).

EMI FILTER PERFORMANCE

The performance indicated in the table below is obtained when the connector is mounted with a suitable grounding gasket (page 6) and measurements are made in accordance with MIL-STD-220 (no load).

When mounted using the recommended panel cut-out (page 6) but without a grounding gasket the insertion loss versus frequency curves will level out between 50 and 60 dB.

Filter Designation	*Filter Circuits	Capacitance Value	Capacitance Tolerance	3 dB Max Cut-Off Frequency (MHz)	Dielectric W'Standing Voltage	Rate DC Current	Contact Resist.	Working Voltage DC −55°C to ±125°C	Minimum Insertion Loss – Decibels (dB) 5 MHz	10 MHz	20 MHz	50 MHz	100 MHz	200 MHz	500 MHz	1 GHz
A	Pi	310 pF	±20%	17	300V	5A	.010Ω Max.	100V	—	—	—	5	10	18	39	52
C	Pi	1000 pF	+100 −0%	3.2	300V	5A	.010Ω Max.	100V	—	5	9	15	25	43	65	70
E	Pi	4000 pF	+100 −0%	0.8	150V	5A	.010Ω Max.	50	8	13	18	31	46	60	75	75
F	FT**	830 pF	±20%	6.4	600V	5A	.010Ω Max.	200V	—	3	6	12	17	23	30	35
N	FT**	375 pF	±20%	14	600V	5A	.010Ω Max.	—	—	—	—	6	11	17	24	28

*Pi-Section Filters (Pi), Feed Through Capacitors (FT)

**For cost-effective applications; features the latest state-of-the-art ceramic technology and a unique feed-through design.

PULSE PERFORMANCE

As an application guide this table lists the 3dB max cut-off frequency for each of the filter types. The repetition rate for good and marginal signal pulse performance is also included.

The frequencies are derived for source and load resistance of 50 ohms. Actual cut-off frequencies (and therefore pulse performance) will depend on the impedances encountered in the particular circuitry.

$$F_c = \frac{R_S + R_L}{2\pi\ R_S R_L (C_F + C_C)}$$

Where R_S and R_L are the source and load resistances respectively, C_F is the filter capacitance and C_C is the associated circuit capacitance.

Type	Cut-off Frequency (MHz)	Signal Pulse Performance (MHz) Good	Marginal
A	17	3.4	8.5
F	6.4	1.7	3.2
C	3.2	0.64	1.6
E	0.8	0.16	0.4

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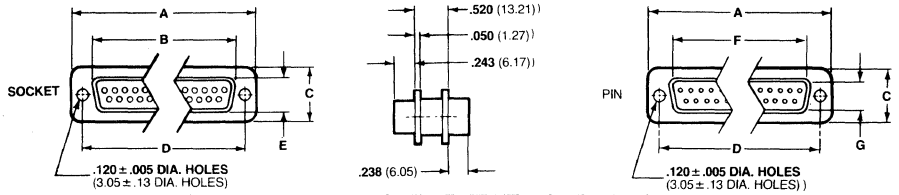
EMI FILTERED CONNECTOR ADAPTOR: PIN/SOCKET (PLUG/RECEPTACLE)



SHELL SIZE	PART NUMBER	FILTER TYPE	A	B	C	D	E	F	G
9	56-705-001 56-705-003 56-705-005 56-705-008	A C E F	1.213 (30.81)	.640 (16.26)	.494 (12.55)	.984 (24.99)	.308 (7.82)	.666 (16.92)	.329 (8.36)
15	56-715-001 56-715-003 56-715-005 56-715-007	A C E F	1.541 (39.14)	.968 (24.59)	.494 (12.55)	1.312 (33.32)	.308 (7.82)	.994 (25.25)	.329 (8.36)
25	56-725-001 56-725-003 56-725-005 56-725-019	A C E F	2.088 (53.04)	1.508 (38.30)	.494 (12.55)	1.852 (47.04)	.308 (7.82)	1.534 (38.96)	.329 (8.36)
37	56-735-001 56-735-003 56-735-005 56-735-008	A C E F	2.729 (69.32)	2.156 (54.76)	.494 (12.55)	2.500 (63.50)	.308 (7.82)	2.182 (55.42)	.329 (8.36)
50*	56-745-001 56-745-003 56-745-005 56-745-006	A C E F	2.635 (66.93)	2.062 (52.37)	.605 (15.37)	2.406 (61.11)	.420 (10.67)	2.079 (52.81)	.436 (11.07)

This versatile new idea fills a variety of needs. Several OEM's are using the product to avoid costly system redesign while some consumer's of personal computers are using the adaptor to eliminate troublesome field 'glitches'. The adaptor also features a patented coaxial grounding system to insure that proper filtering is achieved.

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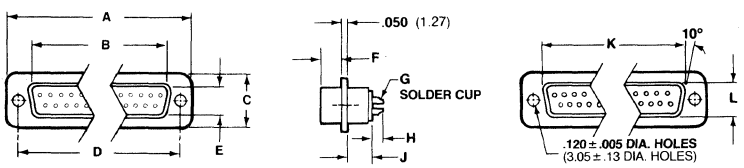
SOLDER CUP TERMINATION: PIN CONTACT (PLUG)



SHELL SIZE	PART NUMBER	FILTER STYLE		A	B	C	D	E	F	G	H	J	K	L
9	56-701-011 56-701-013 56-701-015 56-701-040	A C E F	PIN	1.213 (30.81)	.666 (16.92)	.494 (12.55)	.984 (24.99)	.329 (8.36)	.238 (6.05)	SOLDER CUP	.125 (3.18)	.358 (9.09)	.757 (19.23)	.420 (10.67)
15	56-711-011 56-711-013 56-711-015 56-711-040	A C E F	PIN	1.541 (39.14)	.994 (25.25)	.494 (12.55)	1.312 (33.32)	.329 (8.36)	.238 (6.05)	SOLDER CUP	.125 (3.18)	.358 (9.09)	1.085 (27.56)	.420 (10.67)
25	56-721-011 56-721-013 56-721-015 56-721-045	A C E F	PIN	2.088 (53.04)	1.534 (38.96)	.494 (12.55)	1.852 (47.04)	.329 (8.36)	.238 (6.05)	SOLDER CUP	.125 (3.18)	.358 (9.09)	1.625 (41.28)	.420 (10.67)
37	56-731-011 56-731-013 56-731-015 56-731-040	A C E F	PIN	2.729 (69.32)	2.182 (55.42)	.494 (12.55)	2.500 (63.50)	.329 (8.36)	.238 (6.05)	SOLDER CUP	.125 (3.18)	.358 (9.09)	2.273 (57.73)	.420 (10.67)
50*	56-741-011 56-741-013 56-741-015 56-741-039	A C E F	PIN	2.635 (66.93)	2.079 (52.81)	.605 (15.37)	2.406 (61.11)	.436 (11.07)	.238 (6.05)	SOLDER CUP	.125 (3.18)	.358 (9.09)	2.170 (55.12)	.527 (13.39)

See page 7 for performance characteristics of filter types.

*Shell size 50 has three rows of terminations, shell sizes 9 through 37 have two rows of terminations as depicted.

For Panel Cutouts see page 6 .

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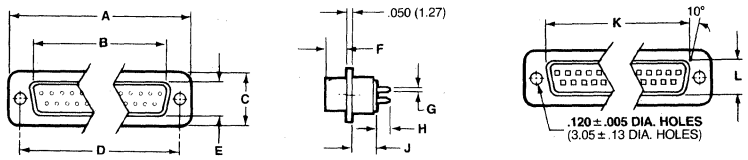

SHELL SIZE	PART NUMBER	FILTER TYPE		A	B	C	D	E	F	G	H	J	K	L
9	56-703-011 56-703-013 56-703-015 ‡56-703-025 ‡56-703-037	A C E F N	SOCKET	1.213 (30.81)	.640 (16.26) OUTSIDE	.494 (12.55)	.984 (24.99)	.308 (7.82) OUTSIDE	.243 (6.17)	.025 SQ (64 SQ)	.250 (6.35)	.375 (9.53)	.757 (19.23)	.420 (10.67)
	56-701-017 56-701-019 56-701-021 ‡56-701-031 ‡56-701-048	A C E F N	PIN	1.213 (30.81)	.666 (16.92) INSIDE	.494 (12.55)	.984 (24.99)	.329 (8.36) INSIDE	.238 (6.05)	.025 SQ (.64 SQ)	.225 (5.72)	.358 (9.09)	.757 (19.23)	.420 (10.67)
15	56-713-011 56-713-013 56-713-015 ‡56-713-024 ‡56-713-038	A C E F N	SOCKET	1.541 (39.14)	.968 (24.59) OUTSIDE	.494 (12.55)	1.312 (33.32)	.308 (7.82) OUTSIDE	.243 (6.17)	.025 SQ (.64 SQ)	.250 (6.35)	.375 (9.53)	1.085 (27.56)	.420 (10.67)
	56-711-018 56-711-020 56-711-022 ‡56-711-031 ‡56-711-049	A C E F N	PIN	1.541 (39.14)	.994 (25.25) INSIDE	.494 (12.55)	1.312 (33.32)	.329 (8.36) INSIDE	.238 (6.05)	.025 SQ (.64 SQ)	.225 (5.72)	.358 (9.09)	1.085 (27.56)	.420 (10.67)
25	56-723-012 56-723-014 56-723-016 ‡56-723-026 ‡56-723-046	A C E F N	SOCKET	2.088 (53.04)	1.508 (38.30) OUTSIDE	.494 (12.55)	1.852 (47.04)	.308 (7.82) OUTSIDE	.243 (6.17)	.025 SQ (.64 SQ)	.250 (6.35)	.375 (9.53)	1.625 (41.28)	.420 (10.67)
	56-721-024 56-721-026 56-721-027 ‡56-721-036 ‡56-721-064	A C E F N	PIN	2.088 (53.04)	1.534 (38.96) INSIDE	.494 (12.55)	1.852 (47.04)	.329 (8.36) INSIDE	.238 (6.05)	.025 SQ (.64 SQ)	.225 (5.72)	.358 (9.09)	1.625 (41.28)	.420 (10.67)
37	56-733-011 56-733-013 56-733-015 ‡56-723-024 ‡56-733-036	A C E F N	SOCKET	2.729 (69.32)	2.156 (54.76) OUTSIDE	.494 (12.55)	2.500 (63.50)	.308 (7.82) OUTSIDE	.243 (6.17)	.025 SQ (.64 SQ)	.250 (6.35)	.375 (9.53)	2.273 (57.73)	.420 (10.67)
	56-731-018 56-731-020 56-731-022 ‡56-731-031 ‡56-731-049	A C E F N	PIN	2.729 (69.32)	2.182 (55.42) INSIDE	.494 (12.55)	2.500 (63.50)	.329 (8.36) INSIDE	.238 (6.05)	.025 SQ (.64 SQ)	.225 (5.72)	.358 (9.09)	2.273 (57.73)	.420 (10.67)
50*	56-743-011 56-743-013 56-743-015 ‡56-743-024 ‡56-743-034	A C E F N	SOCKET	2.635 (66.93)	2.062 (52.37) OUTSIDE	.605 (15.37)	2.406 (61.11)	.420 (10.67) OUTSIDE	.243 (6.17)	.025 SQ (.64 SQ)	.250 (6.35)	.375 (9.53)	2.170 (55.12)	.527 (13.39)
	56-741-017 56-741-019 56-741-021 ‡56-741-030 ‡56-741-043	A C E F N	PIN	2.635 (69.93)	2.079 (52.81) INSIDE	.605 (15.37)	2.406 (61.11)	.436 (11.07) INSIDE	.238 (6.05)	.025 SQ (.64 SQ)	.225 (5.72)	.358 (9.09)	2.170 (55.12)	.527 (13.39)

The wrap post termination tail will accommodate #28 or #30 AWG rigid wire.

See page 7 for performance characteristics of filter types.

*Shell size 50 has three rows of terminations, shell sizes 9 through 37 have two rows of terminations as depicted.

For Panel Cutouts see page 6 .

‡For cost-effective applications; features the latest state-of-the-art ceramic technology and a unique feed-through design.

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SPECTRUM CONTROL, INC.

SPECTRUM'S QUALITY RESPONSE PROCESS

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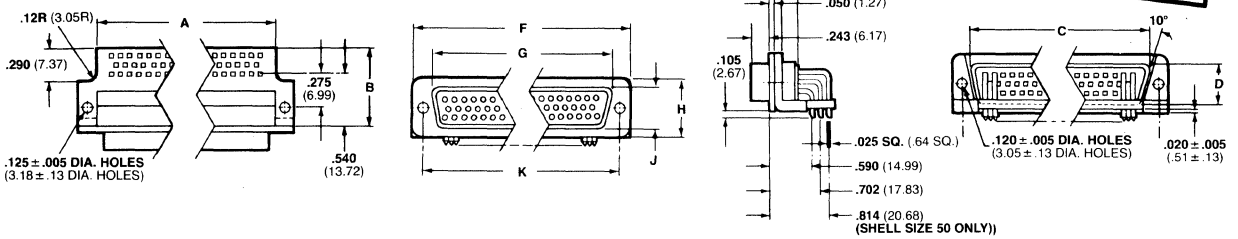
EMI FILTERED D SUBMINIATURE CONNECTORS

PRINTED CIRCUIT RIGHT ANGLE MOUNT:

SOCKET CONTACT (RECEPTACLE)

PIN CONTACT (PLUG)

IN STOCK



SHELL SIZE	PART NUMBER	FILTER TYPE		A	B	C	D	E	F	G	H	J	K
9	56-704-001 56-704-003 56-704-005 ‡56-704-007 ‡56-704-018	A C E F N	SOCKET	.618 (15.70)	.740 (18.80)	.757 (19.23)	.420 (10.67)	.375 (9.53)	1.213 (30.81)	.640 (16.26) OUTSIDE	.494 (12.55)	.308 (7.82) OUTSIDE	.984 (24.99)
	56-702-001 56-702-003 56-702-005 ‡56-702-007 ‡56-702-013	A C E F N	PIN	.618 (15.70)	.740 (18.80)	.757 (19.23)	.420 (10.67)	.358 (9.09)	1.213 (30.81)	.666 (16.92) INSIDE	.494 (12.55)	.329 (8.36) INSIDE	.984 (24.99)
15	56-714-001 56-714-003 56-714-005 ‡56-714-006 ‡56-714-017	A C E F N	SOCKET	.942 (23.93)	.740 (18.80)	1.085 (27.56)	.420 (10.67)	.375 (9.53)	1.541 (39.14)	.968 (24.59) OUTSIDE	.494 (12.55)	.308 (7.82) OUTSIDE	1.312 (33.32)
	56-712-001 56-712-003 56-712-005 ‡56-712-007 ‡56-712-017	A C E F N	PIN	.942 (23.93)	.740 (18.80)	1.085 (27.56)	.420 (10.67)	.358 (9.09)	1.541 (39.14)	.994 (25.25) INSIDE	.494 (12.55)	.329 (8.36) INSIDE	1.312 (33.32)
25	56-724-001 56-724-003 56-724-005 ‡56-724-008 ‡56-724-021	A C E F N	SOCKET	1.490 (37.85)	.740 (18.80)	1.625 (41.28)	.420 (10.67)	.375 (9.53)	2.088 (53.04)	1.508 (38.30) OUTSIDE	.494 (12.55)	.308 (7.82) OUTSIDE	1.852 (47.04)
	56-722-001 56-722-003 56-722-005 ‡56-722-008 ‡56-722-027	A C E F N	PIN	1.490 (37.85)	.740 (18.80)	1.625 (41.28)	.420 (10.67)	.358 (9.09)	2.088 (53.04)	1.534 (38.96) INSIDE	.494 (12.55)	.329 (8.36) INSIDE	1.852 (47.04)
37	56-734-001 56-734-003 56-734-005 ‡56-734-006 ‡56-734-012	A C E F N	SOCKET	2.142 (54.41)	.740 (18.80)	2.273 (57.73)	.420 (10.67)	.375 (9.53)	2.729 (69.32)	2.156 (54.76) OUTSIDE	.494 (12.55)	.308 (7.82) OUTSIDE	2.500 (63.50)
	56-732-001 56-732-003 56-732-005 ‡56-732-006 ‡56-732-009	A C E F N	PIN	2.142 (54.41)	.740 (18.80)	2.273 (57.73)	.420 (10.67)	.358 (9.09)	2.729 (69.32)	2.182 (55.42) INSIDE	.494 (12.55)	.329 (8.36) INSIDE	2.500 (63.50)
50*	56-744-001 56-744-003 56-744-005 ‡56-744-006 ‡56-744-009	A C E F N	SOCKET	2.038 (51.77)	.850 (21.84)	2.170 (55.12)	.527 (13.39)	.375 (9.53)	2.635 (66.93)	2.062 (52.37) OUTSIDE	.605 (15.37)	.420 (10.67) OUTSIDE	2.406 (61.11)
	56-742-001 56-742-003 56-742-005 ‡56-742-006 ‡56-742-009	A C E F N	PIN	2.038 (51.77)	.850 (21.84)	2.170 (55.12)	.527 (13.39)	.358 (9.09)	2.635 (66.93)	2.079 (52.81) INSIDE	.605 (15.37)	.436 (11.07) INSIDE	2.406 (61.11)

See page 7 for performance characteristics of filter types.

*Shell size 50 has three rows of terminations, shell sizes 9 through 37 have two rows of terminations.

For Panel Cutouts see page 6.

‡For cost-effective applications; features the latest state-of-the-art ceramic technology and a unique feed-through design.

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SPECTRUM CONTROL, INC.

Since 1968 . . . making technology compatible with technology

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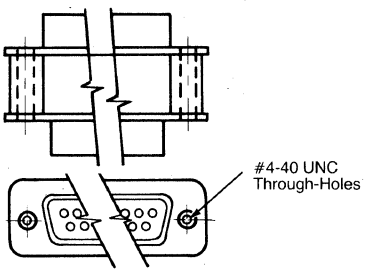
MOUNTING OPTIONS

Spectrum offers fastening options for ease in mounting which include an integrally designed spacer or a separate hexagonal spacer. Also available are threaded self-locking inserts and grounding brackets.

SPACERS

Integral Spacer

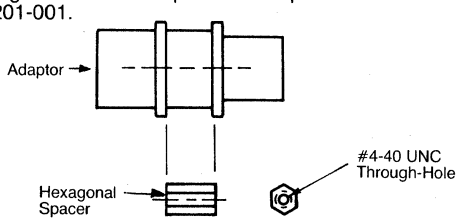
Incorporates drilled and tapped #4-40 UNC through-holes as an integral part of the adapter housing design. Fastens to mating connector from either direction. Eliminates need for threaded spacer mounts or inserts.



IN STOCK

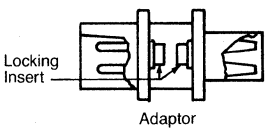
Hexagonal Spacer

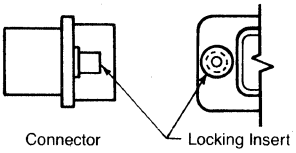
Tapped spacer easily inserts between flanges of standard Spectrum adaptors for ease in mounting. Available separately (two required per adaptor) order Part No. 56-201-001.



THREADED SELF-LOCKING INSERTS

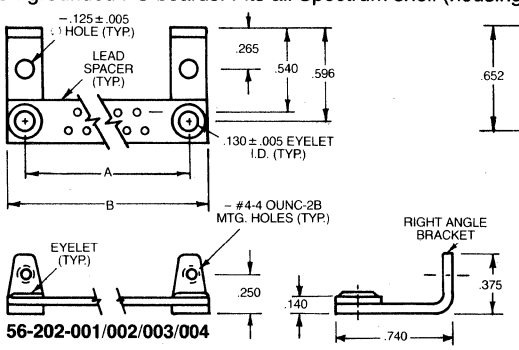
Self-locking, threaded and soldered #4-40 UNC inserts, available for all connectors and adaptors. Allows ease in fastening and mounting from pin or socket side. Must be ordered with connector. (Add "LI" to part number when ordering)

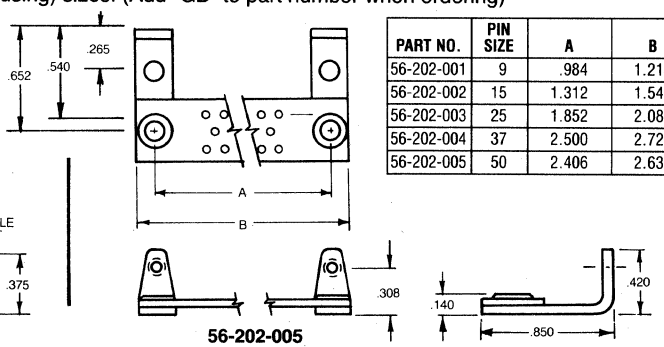




GROUNDING BRACKET

Provides grounding connection between connector mounting-flange and the printed circuit board. Also provides grounding for non-grounded PC boards. Fits all Spectrum shell (housing) sizes. (Add "GB" to part number when ordering)





PART NO.	PIN SIZE	A	B
56-202-001	9	.984	1.213
56-202-002	15	1.312	1.541
56-202-003	25	1.852	2.088
56-202-004	37	2.500	2.729
56-202-005	50	2.406	2.635

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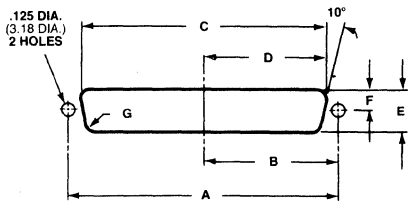
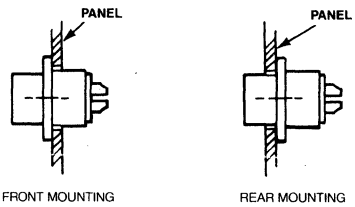
EMI FILTERED D SUBMINIATURE CONNECTORS

MOUNTING CONSIDERATIONS

PANEL CUTOUTS

Shell Size	Mounting Method	A ±.005(0,13)	B ±.005(0,13)	C ±.005(0,13)	D ±.005(0,13)	E ±.005(0,13)	F ±.005(0,13)	G ±.002(0,05)
9	Front or Rear	.984(24,99)	.492(12,49)	.777(19,74)	.388(9,87)	.440(11,18)	.220(5,59)	.150(3,81)
15	Front or Rear	1.312(33,32)	.656(16,66)	1.105(28,07)	.552(14,03)	.440(11,18)	.220(5,59)	.150(3,81)
25	Front or Rear	1.852(47,04)	.926(23,52)	1.645(41,78)	.822(20,89)	.440(11,18)	.220(5,59)	.150(3,81)
37	Front or Rear	2.500(63,50)	1.250(31,75)	2.293(58,24)	1.146(29,12)	.440(11,18)	.220(5,59)	.150(3,81)
50	Front or Rear	2.406(61,11)	1.203(30,55)	2.190(55,63)	1.095(27,81)	.550(13,97)	.275(6,98)	.150(3,81)



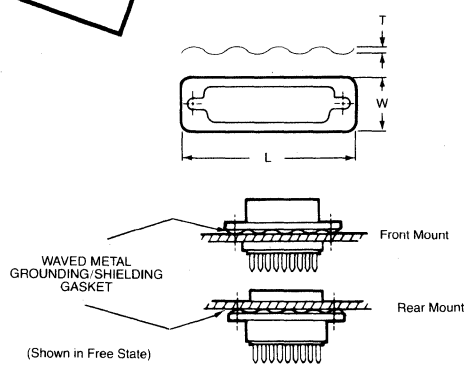


FRONT MOUNTING REAR MOUNTING

IN STOCK

WAVED METAL GASKETS . . . FOR COMPLETE EMI PROTECTION

Shell Size	Mounting Configuration	L	W	T Free State	T Compressed	Part Number
9	FRONT-PIN					
	FRONT-SOCKET	1.213(30.81)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00100-70
	REAR-PIN					
	REAR-SOCKET	1.213(30.81)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00105-70
15	FRONT-PIN					
	FRONT-SOCKET	1.541(38.46)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00101-70
	REAR-PIN					
	REAR-SOCKET	1.541(38.46)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00106-70
25	FRONT-PIN					
	FRONT-SOCKET	2.088(53.04)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00102-70
	REAR-PIN					
	REAR-SOCKET	2.088(53.04)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00107-70
37	FRONT-PIN					
	FRONT-SOCKET	2.729(69.32)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00103-70
	REAR-PIN					
	REAR-SOCKET	2.729(69.32)	.600(15.24)	.030(0.76)	.005(0.13)	572019-00108-70
50	FRONT-PIN					
	FRONT-SOCKET	2.635(66.93)	.710(18.03)	.030(0.76)	.005(0.13)	572019-00104-70
	REAR-PIN					
	REAR-SOCKET	2.635(66.93)	.710(18.03)	.030(0.76)	.005(0.13)	572019-00109-70



Proper mounting of any EMI filter — including the EMI filtered D Subminiature — is critical to the achievement of electromagnetic compatibility. The mounting surface for grounding the connector must be free from paint or any other insulating material. The sketches above indicate the use of one of Spectrum's EMI gaskets to fill any tolerance gaps and adjust for irregularities in the flatness of the mounting surface.

Spectrum Control fabricates a full line of gasket and shielding materials for EMI purposes, as well as environmental needs. Indicate front or rear mounting by part number described above.

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

ST Research — EMI FILTER CONNECTOR

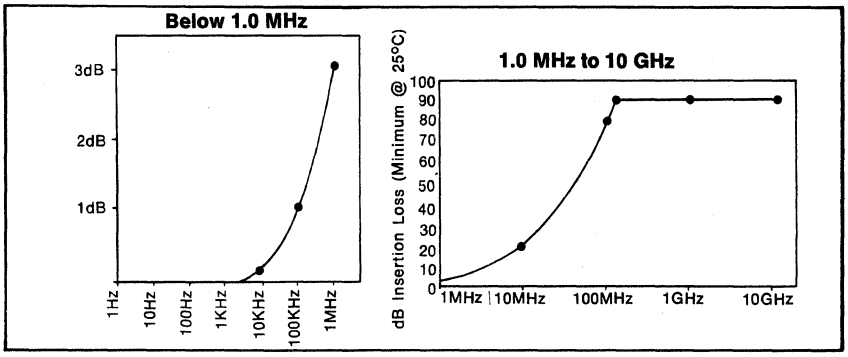
GENERAL INFORMATION

- 90 dB attenuation
- Simplifies chassis design
- Reduces prototype and production costs
- Symmetrical (bi-directional) filter characteristics
- Eliminates double wall EMI packaging
- Simplifies maintenance

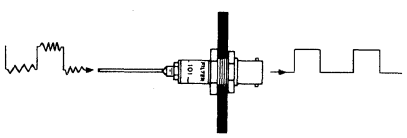
ELECTRICAL SPECIFICATIONS

Minimum Capacitance: 4000pf
Working Voltage:
80°C: 200 WVDC
125°C: 150 WVDC
Current: 10 Amps DC

INSERTION LOSS



SFC-101

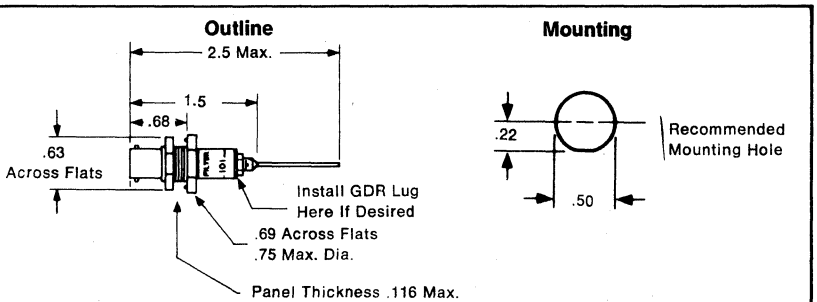


EMI Wall

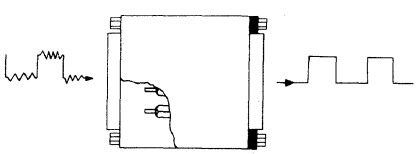
- TEMPEST integrity BNC connector
- Standard BNC mounting

MECHANICAL SPECIFICATIONS

• BNC female connector • EMI gasket and ground lug supplied • Tarnish resistant finish



SFC-2XX SERIES

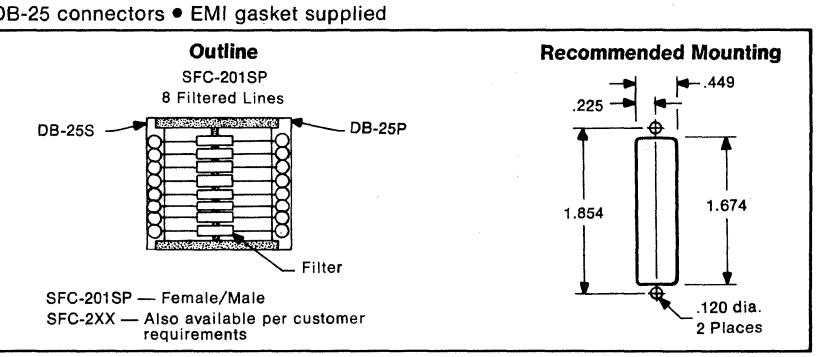


EMI Wall

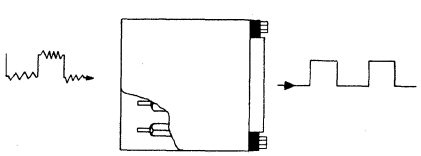
- TEMPEST integrity DB-25 connector
- Standard DB-25 connector mounting
- Choice of various connector configurations

MECHANICAL SPECIFICATIONS

• DB-25 connectors • EMI gasket supplied



SFC-3XX SERIES

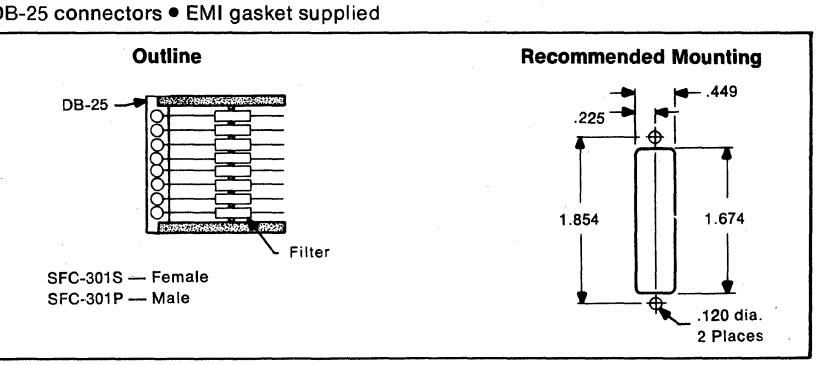


EMI Wall

- TEMPEST integrity DB-25 connector
- Standard DB-25 connector mounting
- Choice of various connector configurations

MECHANICAL SPECIFICATIONS

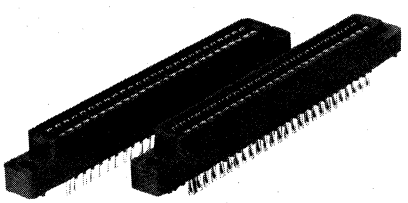
• DB-25 connectors • EMI gasket supplied



ST Research • 8419 Terminal Road, Newington, VA 22122 • (703) 550-7000 • Telex: 710-832-9818 • Fax: 703-550-7470

Sullins ELECTRONICS CORP. / PRINTED CIRCUIT CONNECTORS

EZ SERIES—LOW PROFILE DIP SOLDER/EYELET



FEATURES

- Insulation Resistance: 5,000 Megohms
- Solvent Resistance: Perchloroethylene Freon 113, Freon 11, Trichloroethylene
- Rated Voltage (At sea level): 600 VDC, 800 VDC, 1800 VDC, for contact centers of .100, .125, .156, respectively
- Current Rating: 3 amperes

MATERIALS

- Insulator: Glass filled thermoplastic polyester (Blue Valox*) or polyphenylene sulfide (green Ryton*)
- Contacts: Copper alloy contacts with gold over nickel plating on contact surface; tin/lead or gold over nickel on the tail

* (Trademarks: General Electric Valox, Philips 66 Ryton)

- Voltage Drop: 30 MV at rated current
- Contact Resistance: 10 milliohms maximum
- Operating Temperature: −65°C to +125°C For Standard Valox with Phosphor Bronze
- Board Insertion Force: 16 ozs maximum per contact pair using .062 steel test blade
- Board Withdrawal Force: 1 oz minimum per contact pair using .062 steel test blade
- Accommodates .062 PC board
- Bifurcated full bellows contacts

POLARIZATION KEYS

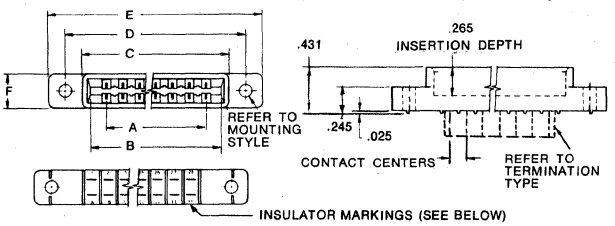
- P/N PLA-K1 for .100 centers between contact key
- P/N PLA-K1 for .125 centers between contact key
- P/N PLM-K1 for .156 centers between contact key
- P/N PLM-K2 for .156 centers in position key

DIMENSIONS

	Part Number†	No. of Contacts	Contact ID TYPE	A	B	C	D	E	F	G
.100 CONTACT CENTERS	EZC05D	5/10	1	0.400	0.600	0.775	1.075	1.375	.330	.100
	EZC06D _ _	6/12	1	0.500	0.700	0.875	1.175	1.475	.330	.100
	EZC08D _ _	8/16	1	0.700	0.900	1.075	1.375	1.675	.330	.100
	EZC10D _ _	10/20	1	0.900	1.100	1.275	1.575	1.875	.330	.100
	EZC12D _ _	12/24	1	1.100	1.300	1.475	1.775	2.075	.330	.100
	EZC13D _ _	13/26	1	1.200	1.400	1.575	1.875	2.175	.330	.100
	EZC15D _ _	15/30	1	1.400	1.600	1.775	2.075	2.375	.330	.100
	EZC18D _ _	18/36	1	1.700	1.900	2.075	2.375	2.675	.330	.100
	EZC19D _ _	19/38	1	1.800	2.000	2.175	2.475	2.775	.330	.100
	EZC20D _ _	20/40	1	1.900	2.100	2.275	2.575	2.875	.330	.100
	EZC22D _ _	22/44	1	2.100	2.300	2.475	2.775	3.075	.330	.100
	EZC25D _ _	25/50	1	2.400	2.600	2.775	3.075	3.375	.330	.100
	EZC26D _ _	26/52	1	2.500	2.700	2.875	3.175	3.475	.330	.100
	EZC28D _ _	28/56	1	2.700	2.900	3.075	3.375	3.675	.330	.100
	EZC30D _ _	30/60	1	2.900	3.100	3.275	3.575	3.875	.330	.100
	EZC31D _ _	31/62	1	3.000	3.200	3.375	3.675	3.975	.330	.100
	EZC35D _ _	35/70	1	3.400	3.600	3.775	4.075	4.375	.400	.100
	EZC36D _ _	36/72	1	3.500	3.700	3.875	4.175	4.475	.400	.100
	EZC40D _ _	40/80	1	3.900	4.100	4.275	4.575	4.875	.400	.100
	EZC43D _ _	43/86	1	4.200	4.400	4.575	4.875	5.175	.400	.100
	EZC44D _ _	44/88	1	4.300	4.500	4.675	4.975	5.275	.400	.100
	EZC49D _ _‡	49/98	1	4.800	5.000	5.175	5.475	5.775	.400	.100
	EZC50D _ _	50/100	1	4.900	5.100	5.275	5.575	5.875	.400	.100
	EZC60D _ _	60/120	1	5.900	6.100	6.275	6.575	6.875	.400	.100
.125 CONTACT CENTERS	EZA06D _ _	6/12	2	0.625	0.875	1.035	1.295	1.575	.330	.125
	EZA10D _ _	10/20	2	1.125	1.375	1.535	1.795	2.075	.330	.125
	EZA14D _ _‡	14/28	2	1.625	1.875	2.035	2.295	2.575	.330	.125
	EZA15D _ _	15/30	2	1.750	2.000	2.160	2.420	2.700	.330	.125
	EZA18D _ _	18/36	2	2.125	2.375	2.535	2.795	3.075	.330	.125
	EZA22D _ _	22/44	2	2.625	2.875	3.035	3.295	3.575	.330	.125
	EZA28D _ _	28/56	2	3.375	3.625	3.785	4.045	4.325	.330	.125
	EZA30D _ _	30/60	2	3.625	3.875	4.035	4.295	4.575	.330	.125
	EZA31D _ _	31/62	2	3.750	4.000	4.160	4.420	4.700	.330	.125
	EZA35D _ _	35/70	4	4.250	4.500	4.660	4.920	5.200	.330	.125
	EZA36D _ _	36/72	4	4.375	4.625	4.785	5.045	5.325	.330	.125
	EZA37D _ _‡	37/74	2	4.500	4.750	4.910	5.170	5.450	.330	.125
	EZA40D _ _	40/80	2	4.875	5.125	5.285	5.545	5.825	.370	.125
	EZA43D _ _	43/86	2	5.250	5.500	5.660	5.920	6.200	.370	.125
	EZA44D _ _	44/88	2	5.375	5.625	5.785	6.045	6.325	.370	.125
	EZA49D _ _‡	49/98	2	6.000	6.250	6.410	6.670	6.950	.370	.125
	EZA50D _ _	50/100	2	6.125	6.375	6.535	6.795	7.075	.370	.125
.156 CONTACT CENTERS	EZM06D _ _	6/12	3	0.780	1.100	1.220	1.533	1.783	.325	.156
	EZM08D _ _	8/16	3	1.092	1.412	1.532	1.845	2.095	.325	.156
	EZM10D _ _	10/20	3	1.404	1.724	1.844	2.157	2.407	.325	.156
	EZM11D _ _	11/22	3	1.560	1.880	2.000	2.313	2.563	.325	.156
	EZM12D _ _	12/24	3	1.716	2.036	2.156	2.469	2.719	.325	.156
	EZM15D _ _	15/30	3	2.184	2.504	2.624	2.937	3.187	.325	.156
	EZM18D _ _	18/36	3	2.652	2.972	3.092	3.405	3.655	.325	.156
	EZM22D _ _	22/44	3	3.276	3.596	3.716	4.029	4.280	.325	.156
	EZM24D _ _	24/48	3	3.588	3.908	4.028	4.341	4.591	.325	.156
	EZM25D _ _	25/50	3	3.744	4.064	4.184	4.497	4.747	.325	.156
	EZM28D _ _	28/56	4	4.212	4.532	4.652	4.964	5.215	.438	.156
	EZM36D _ _	36/72	4	5.460	5.780	5.906	6.219	6.463	.438	.156
	EZM43D _ _	43/86	4	6.552	6.872	7.000	7.302	7.555	.500	.156

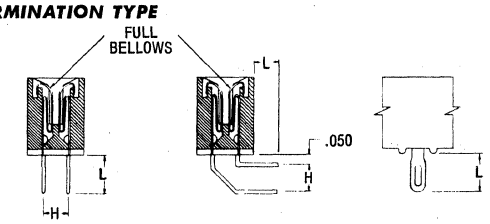
† For complete part number, add termination type and mounting style from PART NUMBER CODING (e.g.: EZC22DRTH).

‡ Consult Factory for availability.



CONTACT ID TYPE	INSULATOR MARKINGS LETTERS G, I, O & Q NOT USED
1	B 1 2 ..... 23 24 ..... 45 46 ..... B A 1 2 ..... 23 24 ..... 45 46 ..... A
2	1 2 ..... 23 24 ..... 45 46 ..... A B ..... a b ..... AA BB .....
3	1 2 ..... 23 24 ..... 45 46 ..... A B ..... AA BB ..... a b .....
4	1 2 ..... 23 24 ..... 45 46 ..... A B ..... A B ..... a b .....

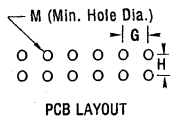
TERMINATION TYPE



DIP SOLDER (RT, RK, RY, RX, RU, RJ) — RIGHT ANGLE (RA) — EYELET (RE)

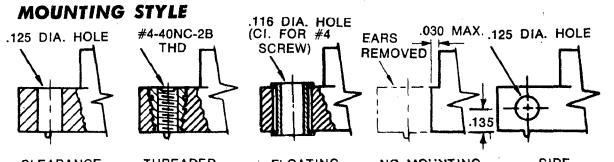
.100 & .125 Centers			
CODE	H	L	M
RT	.140	.200	.043
RY	.140	.440	.043
RX	.200	.185	.043
RJ	.250	.165	.043
RA	.156	.125	.043
RE	.140	.200	N/A

.156 Centers			
CODE	H	L	M
RT	.140	.137	.051
RK	.140	.225	.051
RY	.140	.422	.051
RX	.200	.137	.051
RU	.200	.225	.051
RA	.156	.125	.051
RE	.140	.225	N/A



PCB LAYOUT

MOUNTING STYLE



CLEARANCE HOLE (H) — THREADED INSERT (I) — FLOATING BOBBIN (F) — NO MOUNTING EARS (N) — SIDE MOUNTING (S)

PART NUMBER CODING

EXAMPLE: E Z C 22 D RT H

MATERIALS
E = Valox/Phosphor Bronze (Standard)
R = Ryton/Phosphor Bronze (Special)
H = Valox/Beryllium Copper (Special)
A = Ryton/Beryllium Copper (Special)

PLATING

Contact Surface	Termination
Z = .000010 Gold	.000100 Tin/Lead
X = .000030 Gold	.000100 Tin/Lead
G = .000010 Gold	.000005 Gold
Y = .000030 Gold	.000005 Gold

MOUNTING (SEE ABOVE) — H, I, F, N, or S

TERMINATION TYPE (SEE TABLE) RA, RE, RT, RK, RY, RX, RU, or RJ

READOUT — D = Dual

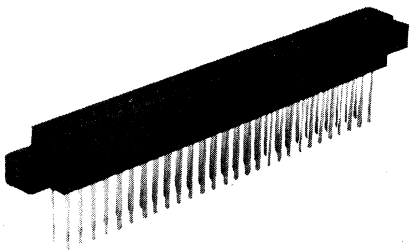
NUMBER OF POSITION — 06 thru 60

CONTACT CENTERS — C = .100, A = .125, M = .156

SULLINS ELECTRONICS CORPORATION / P.O. Box 189E. San Marcos, CA 92069 / (619) 744-0125 / TWX 910-322-1472 / FAX 619/744-6081

Sullins ELECTRONICS CORP. / PRINTED CIRCUIT CONNECTORS

EZ SERIES—HIGH PROFILE DIP SOLDER/WIRE WRAP*



FEATURES

- Insulation Resistance: 5,000 Megohms
- Solvent Resistance: Perchloroethylene Freon 113, Freon 11, Trichloroethylene
- Rated Voltage (At set level): 600 VDC, 800 VDC, 1800 VDC, for contact centers of .100, .125, .156, respectively
- Current Rating: 3 amperes

MATERIALS

- Insulator: Glass filled thermoplastic polyester (Blue Valox)
- Contacts: Phosphor Bronze contacts with gold or tin/lead over nickel plating

* Trademark of Gardner Denver

- Voltage Drop: 30 MV at rated current
- Contact Resistance: 10 milliohms maximum
- Operating Temperature: −65°C to +125°C
- Board Insertion Force: 16 ozs maximum per contact pair using .062 steel test blade
- Board Withdrawal Force: 1 oz minimum per contact pair using .062 steel test blade
- Accommodates .062 PC board
- Bifurcated bellows contacts

POLARIZATION KEYS

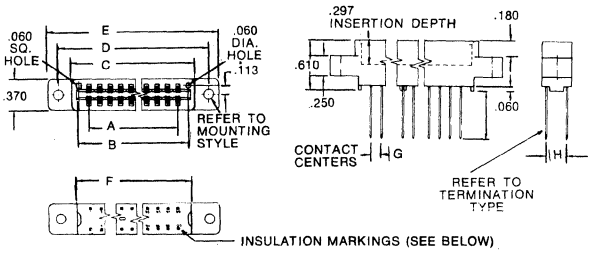
- P/N PLC-K1 (Order separately) for between contact polarization

DIMENSIONS

	Part Number*	No. of Contacts	Contact ID TYPE	A	B	C	D	E	F	G	H
.100 CONTACT CENTERS	EZC 06D _ _ |	6/12	5	.500	.700	.760	1.075	1.435	0.750	.100	.200
	EZC 08D _ _	8/16	5	0.700	0.900	0.960	1.275	1.635	0.950	.100	.200
	EZC 10D _ _	10/20	5	0.900	1.100	1.260	1.575	1.835	1.150	.100	.200
	EZC 12D _ _	12/24	5	1.100	1.300	1.460	1.775	2.035	1.350	.100	.200
	EZC 15D _ _	15/30	5	1.400	1.600	1.760	2.075	2.335	1.650	.100	.200
	EZC 17D	17/34	5	1.600	1.700	1.860	2.175	2.535	1.850	.100	.200
	EZC 18D _ _	18/36	5	1.700	1.900	2.060	2.375	2.635	1.950	.100	.200
	EZC 20D _ _	20/40	5	1.900	2.100	2.260	2.575	2.835	2.150	.100	.200
	EZC 22D _ _	22/44	5	2.100	2.300	2.460	2.775	3.035	2.350	.100	.200
	EZC 25D _ _	25/50	5	2.400	2.600	2.760	3.075	3.335	2.650	.100	.200
	EZC 28D _ _	28/56	5	2.700	2.900	3.060	3.375	3.635	2.950	.100	.200
	EZC 30D _ _	30/60	5	2.900	3.100	3.260	3.575	3.835	3.150	.100	.200
	EZC 31D _ _	31/62	5	3.000	3.200	3.360	3.675	3.935	3.250	.100	.200
	EZC 35D _ _	35/70	5	3.400	3.600	3.760	4.075	4.335	3.650	.100	.200
	EZC 36D _ _	36/72	5	3.500	3.700	3.860	4.175	4.435	3.750	.100	.200
	EZC 40D _ _	40/80	5	3.900	4.100	4.260	4.575	4.835	4.150	.100	.200
	EZC 43D _ _	43/86	5	4.200	4.400	4.560	4.875	5.135	4.450	.100	.200
	EZC 44D _ _	44/88	5	4.300	4.500	4.660	4.975	5.235	4.550	.100	.200
	EZC 49D _ _	49/98	5	4.800	5.000	5.160	5.475	5.735	5.050	.100	.200
	EZC 50D _ _	50/100	5	4.900	5.100	5.260	5.575	5.835	5.150	.100	.200
	EZC 55D _ _ **	55/110	5	5.400	5.600	5.760	6.075	6.335	5.650	.100	.200
	EZC 60D _ _	60/120	5	5.900	6.100	6.260	6.575	6.835	6.150	.100	.200
	EZC 61D _ _	61/122	5	6.000	6.200	6.360	6.675	6.935	6.250	.100	.200
	EZC 65D _ _	65/130	5	6.400	6.600	6.760	7.075	7.335	6.650	.100	.200
	EZC 70D _ _	70/140	5	6.900	7.100	7.260	7.575	7.835	7.150	.100	.200
.125 CONTACT CENTERS	EZA 06D _ _	6/12	5	0.625	0.875	1.035	1.295	1.555	0.875	.125	.250
	EZA 10D _ _	10/20	5	1.125	1.375	1.535	1.795	2.055	1.375	.125	.250
	EZA 14D _ _ **	14/28	5	1.625	1.875	2.035	2.295	2.555	1.875	.125	.250
	EZA 15D _ _	15/30	5	1.750	2.000	2.160	2.420	2.680	2.000	.125	.250
	EZA 18D _ _	18/36	5	2.125	2.375	2.535	2.795	3.055	2.375	.125	.250
	EZA 22D _ _	22/44	5	2.625	2.875	3.035	3.295	3.555	2.875	.125	.250
	EZA 24D _ _ **	24/48	5	2.875	3.125	3.285	3.545	3.805	3.125	.125	.250
	EZA 25D _ _	25/50	5	3.000	3.250	3.410	3.670	3.930	3.250	.125	.250
	EZA 28D _ _	28/56	5	3.375	3.625	3.785	4.045	4.305	3.625	.125	.250
	EZA 30D _ _	30/60	5	3.625	3.875	4.035	4.295	4.555	3.875	.125	.250
	EZA 31D _ _	31/62	5	3.750	4.000	4.160	4.420	4.680	4.000	.125	.250
	EZA 32D _ _	32/64	5	3.875	4.125	4.285	4.545	4.805	4.125	.125	.250
	EZA 35D _ _	35/70	5	4.250	4.500	4.660	4.920	5.180	4.500	.125	.250
	EZA 36D _ _	36/72	5	4.375	4.625	4.785	5.045	5.305	4.625	.125	.250
	EZA 40D _ _	40/80	5	4.875	5.125	5.285	5.545	5.805	5.125	.125	.250
	EZA 43D _ _	43/86	5	5.250	5.500	5.660	5.920	6.180	5.500	.125	.250
	EZA 44D _ _	44/88	5	5.375	5.625	5.785	6.045	6.305	5.625	.125	.250
	EZA 45D _ _	45/90	5	5.500	5.750	5.910	6.170	6.430	5.750	.125	.250
	EZA 49D _ _	49/98	5	6.000	6.250	6.410	6.670	6.930	6.250	.125	.250
	EZA 50D _ _	50/100	5	6.125	6.375	6.535	6.795	7.055	6.375	.125	.250
.156 CONTACT CENTERS	EZM 06D _ _	6/12	6	0.780	1.102	1.221	1.534	1.784	1.030	.156	.200
	EZM 08D _ _ **	8/16	6	1.092	1.414	1.533	1.846	2.096	1.342	.156	.200
	EZM 10D _ _	10/20	6	1.404	1.726	1.845	2.158	2.408	1.654	.156	.200
	EZM 12D _ _	12/24	6	1.716	2.038	2.157	2.470	2.720	1.966	.156	.200
	EZM 15D _ _	15/30	6	2.184	2.506	2.625	2.938	3.188	2.434	.156	.200
	EZM 18D _ _	18/36	6	2.652	2.974	3.093	3.406	3.656	2.902	.156	.200
	EZM 20D _ _ **	20/40	6	2.964	3.286	3.405	3.718	3.968	3.214	.156	.200
	EZM 22D _ _	22/44	6	3.276	3.598	3.717	4.030	4.330	3.526	.156	.200
	EZM 24D _ _	24/48	6	3.588	3.910	4.029	4.342	4.642	3.838	.156	.200
	EZM 25D _ _	25/50	6	3.744	4.066	4.185	4.498	4.748	3.994	.156	.200
	EZM 28D _ _	28/56	7	4.212	4.534	4.653	4.966	5.216	4.462	.156	.200
	EZM 30D _ _	30/60	6	4.524	4.846	4.965	5.278	5.528	4.774	.156	.200
	EZM 31D _ _	31/62	7	4.680	5.002	5.121	5.434	5.684	4.930	.156	.200
	EZM 36D _ _	36/72	8	5.460	5.782	5.901	6.214	6.464	5.710	.156	.200
	EZM 40D _ _	40/80	8	6.084	6.406	6.525	6.838	7.088	6.334	.156	.200
	EZM 43D _ _	43/86	8	6.552	6.874	6.993	7.306	7.556	6.802	.156	.200

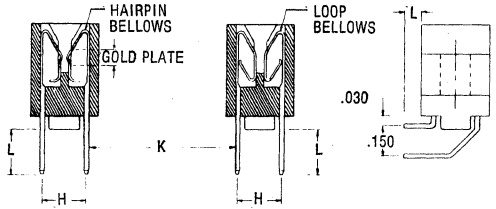
* For complete part number, add termination type and mounting style from PART NUMBER CODING (e.g.: EZA40DRMH).

** Consult factory for availability.

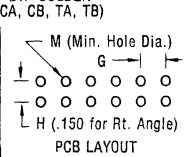


CONTACT ID TYPE	INSULATOR MARKINGS LETTERS G, I, O & Q NOT USED
5	1 3 ..... 45 47 ..... 89 91 ..... 2 4 ..... 46 48 ..... 90 92 .....
6	1 2 ..... 23 24 ..... 45 46 ..... A B ..... A B ..... a b .....
7	1 2 ..... 23 24 ..... 45 46 ..... A B ..... A B ..... a b .....
8	A B ..... A B ..... a b ..... 1 2 ..... 23 24 ..... 45 46 .....

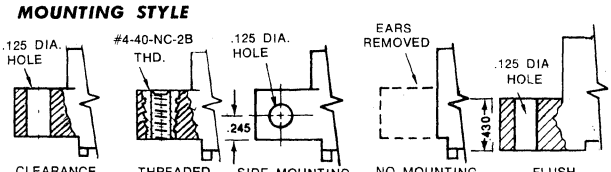
TERMINATION AND BELLOWS TYPE



HAIRPIN	LOOP	TERMINATION	K	L	M
CK	TK	Dip Solder	.026 Round	.190	.030
CS	RS	Dip Solder	.025 Square	.190	.040
CM	RM	Wire Wrap	.025 Square	.560	.040
CA	TA	Right Angle	.025 Square	.100	.043
CB	TB	Right Angle	.025 Square	.180	.043
CT		Dip Solder	.015 x .025	.165	.030



MOUNTING STYLE



PART NUMBER CODING

EXAMPLE: E Z C 22 D CS H

MATERIALS
E = Valox/Phosphor Bronze

PLATING

Contact Surface	Termination
Z = .000010 Gold	.000100 Tin/Lead
X = .000030 Gold	.000100 Tin/Lead
G = .000010 Gold	.000005 Gold
Y = .000030 Gold	.000005 Gold

CONTACT CENTERS
C = .100, A = .125, M = .156

MOUNTING (SEE ABOVE)—H, I, S, N, W or X

TERMINATION TYPE (SEE TABLE)

Hairpin Bellows	Loop Bellows
CS = .025 x .025 dip solder	RS = .025 x .025 dip solder
CK = .026 round dip solder	TK = .026 round dip solder
CM = .025 x .025 wire wrap	RM = .025 x .025 wire wrap
CA = right angle dip solder	TA = right angle dip solder
CB = right angle dip solder	TB = right angle dip solder
CT = .015 x .025 dip solder	

READOUT — D = Dual

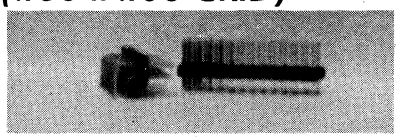
NUMBER OF POSITION — 06 thru 70

SULLINS ELECTRONICS CORPORATION / P.O. Box 189E. San Marcos, CA 92069 / (619) 744-0125 / TWX 910-322-1472 / FAX 619/744-6081

Sullins ELECTRONICS CORP. / PRINTED CIRCUIT CONNECTORS

PZ SERIES—.025 SQ. POST HEADERS

(.100 x .100 GRID)



FEATURES

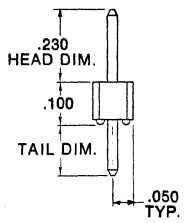
- **Temperature:** To 125 degrees C. Continuous
- **UL Flammability Rating:** 94V-0
- **Voltage Rating:** 600 VDC minimum at sea level
- **Current Rating:** 3 amperes
- **Insulation Resistance:** 100 megohms (min.)

MATERIALS

- **Insulator Material:** Black thermoplastic polyester
- **Contact Material** CA510, phosphor bronze grade A
- **Plating** = Gold or tin on head with gold or tin on tail. (See P/N code).
- **Temperature** To 125 degrees C. Continuous

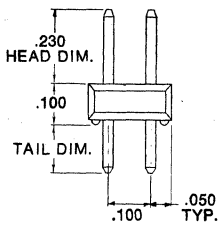
.230 HEAD LENGTHS

PZCS**N**
(See P/N Coding)



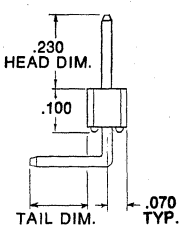
**TERM P/N CODE	TAIL DIM.
AA	.120 in.
AB	.210 in.
AC	.310 in.
AD	.410 in.
AE	.510 in.
AF	.610 in.
AG	.710 in.
AH	.810 in.

PZCD**N**
(See P/N Coding)



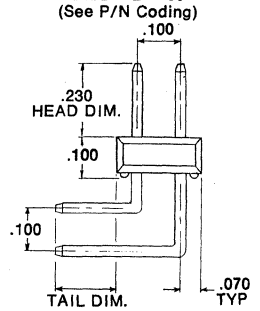
**TERM P/N CODE	TAIL DIM.
AA	.120 in.
AB	.210 in.
AC	.310 in.
AD	.410 in.
AE	.510 in.
AF	.610 in.
AG	.710 in.
AH	.810 in.

PZCS**N**
(See P/N Coding)



**TERM P/N CODE	TAIL DIM.
BA	.100 in.
BB	.200 in.
BC	.300 in.
BD	.400 in.
BE	.500 in.
BF	.600 in.
BG	.700 in.

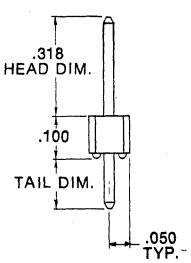
PZCD**N**
(See P/N Coding)



**TERM P/N CODE	TAIL DIM.
BA	.100 in.
BB	.200 in.
BC	.300 in.
BD	.400 in.
BE	.500 in.

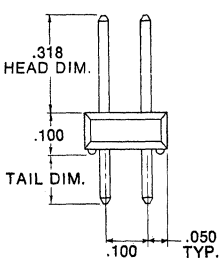
.318 HEAD LENGTHS

PZCS**N**
(See P/N Coding)



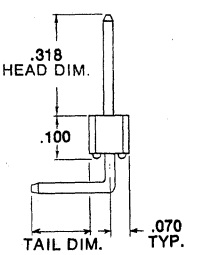
**TERM P/N CODE	TAIL DIM.
FA	.120 in.
FB	.210 in.
FC	.310 in.
FD	.410 in.
FE	.510 in.

PZCD**N**
(See P/N Coding)



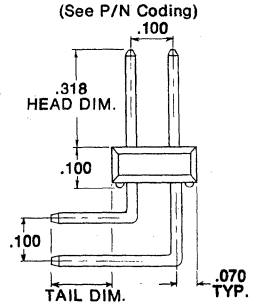
**TERM P/N CODE	TAIL DIM.
FA	.120 in.
FB	.210 in.
FC	.310 in.
FD	.410 in.
FE	.510 in.

PZCS**N**
(See P/N Coding)



**TERM P/N CODE	TAIL DIM.
GA	.100 in.
GB	.200 in.
GC	.300 in.
GD	.400 in.

PZCD**N**
(See P/N Coding)



**TERM P/N CODE	TAIL DIM.
GA	.100 in.
GB	.200 in.

PART NUMBER CODE

P Z C 31 D AA N – MXX

SERIES
P = .025 Sq. Post Header

CONTACT FINISH

Head Surface	Tail Surface
Z = .000010 Gold	.000100 Tin
X = .000030 Gold	.000100 Tin
G = .000010 Gold	.000005 Gold
Y = .000030 Gold	.000005 Gold
T = .000100 Tin	.000100 Tin

NUMBER OF POSITIONS
01 thru 36
(e.g. 31 Dual = 62 Contacts)

READOUT
D = Dual
S = Single

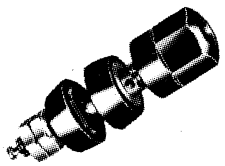
TERMINATION TYPE
AA, AB, AC, AD, AE, AF, AG, AH, BA, BB, BC, BD, BE, FA, FB, FC, FD, FE, GA, GB, GC, GD, Per Tables Above.

MODIFICATION
(Consult Factory)
Omit for Standard

SULLINS ELECTRONICS CORPORATION / P.O. Box 189E. San Marcos, CA 92069 / (619) 744-0125 / TWX 910-322-1472 / FAX 619/744-6081

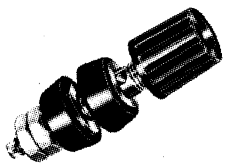
5-way® BINDING POSTS

5 WAYS TO CONNECT • GOLD-PLATED BRASS PARTS • RANGE OF COLORS



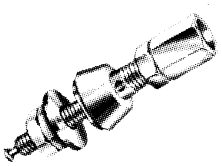
FLUTED NUT TYPES

Plastic parts of standard (not miniature) size types molded of Lexan polycarbonate resin; brass parts are gold-plated. Rated for 30 amperes, 1000 volts working. Available with #8-32 or #10-32 stud behind panel.



HEX NUT TYPES

Rated for 30 amperes, 1000 volts working. Brass parts gold-plated; plastic parts are of nylon compounded to meet military specifications MIL-P-20693A, Type IV. Available with #8-32 or #10-32 stud behind panel.



GROUNDING TYPE

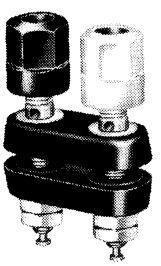
For making rapid connections to ground. Made of finely machined brass nickel-plated and polished. Panel grounding collar frozen to shaft has "D" type shoulder for locking in keyed panel hole. Has #10-32 stud behind panel.



MINIATURE TYPES

Fluted nut design. Rated for 15 amperes, 1000 volts working. Nylon parts meet military specification MIL-P-20693A, Type IV. Has #6-32 stud behind panel.

DOUBLE ASSEMBLY TYPES



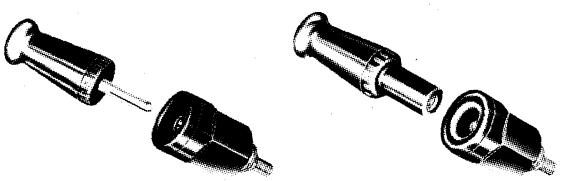
For instrument and equipment panels requiring binding posts mounted on 3/4" centers. Available in standard or miniature sizes. Construction and ratings same as for corresponding single types. Self-contained assembly makes mounting more accurate, faster and easier than two individual binding posts and gives maximum strength where connections are frequently made.

	STYLE	TYPE
Fluted Nut	#8-32 Stud	BP31*
Fluted Nut	#10-32 Stud	BP31-10*
Hex Nut	#8-32 Stud	BP30*
Hex Nut	#10-32 Stud	BP30-10*
Grounding	All Metal	BP30GP10
Fluted Nut	Miniature	BP21*
	DOUBLE ASSEMBLY TYPE	
Standard	#8-32 Stud	BP30-2BR
Standard	#10-32 Stud	BP30-2BR10
Miniature	#6-32 Stud	BP21-2BR

*Indicate color desired: red, white, blue, black, yellow or green.

Supercon®

ELECTRICAL CONNECTORS



Nylon plastic parts; gold-plated brass current-carrying parts. Wiring connections to the same plug can be either soldered or solderless. Plug cable-fastening screws permit a wide range of cable sizes. Plug grips are of a simple, two-piece threaded construction for quick assembly. All receptacle plastic parts are molded of the same color to permit more rapid and accurate circuit identification front and back of panel when installed. The 25, 50 and 100 ampere types are listed by Underwriters' Laboratories, Inc. In red, black, white, blue, green or yellow.

5-way™

TEST PROBES



For test connections to PC boards and other electronic components. Design allows connections by hooking onto component leads or by plugging into Superior Electric 207146-001-JB terminals or others having 0.080" diameter receptacles. For plug-in, conductor holds firmly to inside of receptacle under spring tension. When used for hook-on, probe clamps to component lead or wire wrapping pin with approximately 16 oz. force. Conductor beryllium copper tempered to spring hardness. Insulating parts durable nylon plastic capable of withstanding 250°F without deforming. Available in red, black, white, blue, green or yellow.

Superior Electric 383M Middle Street Bristol, Connecticut 06010 USA

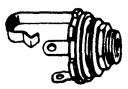
TEL: (203) 582-9561 TELEX: 96-2446 TWX: 710-454-0682 Cable Address: SUPELEC FAX: (203) 584-1483

Switchcraft®
A **Raytheon** Company

Littel-Jax PHONE JACKS

Quality phone jacks that mate with standard .25 in. (6.35 mm) or .21 in. (5.33 mm) phone plugs. Notched insulating washers mechanically interlock springs and solder lugs. "V" bend in tip spring firmly holds mating plug. Minimum space requirements. Mounts in single .375 in. (9.52 mm) hole, panels up to .156 in. (3.96 mm) thick, except L-11 and L-12A in panels up to .25 in. (6.35 mm) thick. PC-12A; std. .25 in. (6.35 mm) dia. bushing.

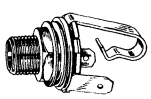
Littel-Jax PHONE JACKS with QUICK CONNECT TERMINALS. Littel-Jax jacks, Nos. FA-11 & FAL-11 with quick connect terminals accept AMP FASTON* 205 Series receptacles. Mounts in .375 in. (9.52 mm) dia. holes on 1.375 in. (34.92 mm) centers (min.) Locknut and washer supplied. *Trademark of AMP INC.



C-11



PC-12A



FA-11

TWO CONDUCTOR TYPES

Part No.	Schematic No.	Typical Mating Plug	MIL-Type	Description
11	I	250	—	Open circuit
C-11	I	440,445, 470[1]	MIL Type JJ-034, Part No. M641/6-1	With locating pin (non-turn device)
FA-11	I	250	—	AMP FASTON 205 Series. Quick connect terminals.
FAL-11	I	250	—	.375 in. (9.52 mm) lg. bushing. Quick connect terminals.
L-11	I	250	—	.375 in. (9.52 mm) lg. bushing
S-11	I	S-250	—	.210 in. (5.33 mm) I.D. bushing
12A	III	250	—	Tip shunt
C-12A	III	440, 445, 470[1]	MIL Type JJ-089, Part No. M641/12-1	—
L-12A	III	250	—	.375 in. (9.52 mm) lg. bushing
S-12A	III	S-250	—	.210 in. (5.33 mm) I.D. bushing
PC-12A	III	250	—	P.C. board mtg.
13	V	250	—	Isolated "make" circuit
13A	VI	250	—	Transfer circuit
13E	IX	250	—	Isolated "break" circuit

NOTE: [1] Mating Plugs — PJ-055B, M642/4-1; PJ-055R, M642/4-2; PJ-055M, 642/4-3.

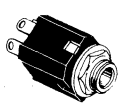
THREE CONDUCTOR TYPES

12B	IV	267	—	Double open circuit
C-12B	IV	480 (PJ-068, M642/5-1)	MIL Type JJ-033, Part No. M641/5-1	—
L-12B	IV	267	—	.375 in. (9.52 mm) lg. bushing
S-12B	IV	480 (PJ-068, M642/5-1)	—	.21 in. (5.33 mm) I.D. bushing
13B	VII	267	—	Tip shunt
S-13B	VII	480 (PJ-068, M642/5-1)	—	.21 in. (5.33 mm) I.D. bushing
14B	XII	267	—	Double closed circuit

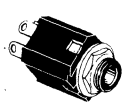
Hi-D Jax ENCLOSED PHONE JACKS

Series 110: Smaller, compact phone jacks mate with std. .25 in. (6.35 mm) phone plugs. Molded body protects integral silver-plated springs. Low contact resistance; low electrical leakage and low capacity between springs. Mounts on .625 in. (15.88 mm) center in single .375 in. (9.52 mm) hole in panels up to .156 in. (3.96 mm) thick, depth behind panel 1.094 in. (27.79 mm). All jacks with "M" prefix designed and adjusted to mate with telephone and MIL-std. plugs. Jacks with PC terms, mount to single, double-sided and multilayer boards up to .094 in. (2.39 mm) thick. Standoff shoulders; mounting hardware supplied.

Series RN-110: Right angle jack, saves mounting space on PC boards for commercial and telephone/MIL applications. Available in 2- and 3-cond. types with or without shunt circuits; all mate with .25 in. (6.35 mm) dia. COMMERCIAL or TELEPHONE/MIL plug finger configurations. Right angle jack permits tip of mating plug to be inserted parallel with PC board. Can be mtd. on PC boards, combined PC board and panel/chassis, or panel/chassis only. Jack bushing mounts through .375 in. (9.52 mm) dia. hole in panels or chassis up to .141 in. (3.58 mm) thick. Mtg. centers .625 in. (15.88 mm) min. Washer & locknut supplied.



SERIES 110

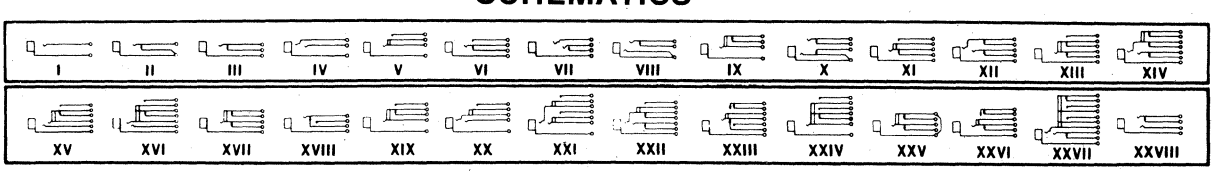


SERIES N-110



SERIES RN-110

SCHEMATICS



Switchcraft, Inc., 5555 N. Elston Ave., Chicago, IL 60630 Tel. (312) 792-2700 TWX 910-221-5199

Switchcraft®
A **Raytheon** Company

"Tini-D Jax" MINIATURE ENCLOSED PHONE JACKS



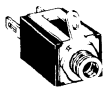
PC-142A

Small, completely enclosed 2-cond. molded phone jack. Phenolic housing protects bifurcated beryllium copper springs from bending during mounting. Mounts on .375 in. (9.52 mm) centers in .25 in. (6.35 mm) dia. hole in panels up to .125 in. (3.18 mm) thick. Depth behind panel .625 in. (15.88 mm).

Part No.	Description	Schematic No.	Typical Mating Plug
142A	Bushing mount	III	750
PC-142A	PC board mount[1]		

NOTE: [1] Threaded bushing for conventional mounting and special spring terminals that "snap-in" PC boards up to .125 in. (3.18 mm) thick.

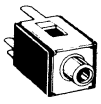
"Micro-D Jax" SUBMINIATURE ENCLOSED PHONE JACK



MDSL-2A



MDSL-2A-RA



MDPC-2A

"Super-small," shunted, fully enclosed jack — only .312 in. (7.92 mm) x .344 in. (8.74 mm) x .688 in. (17.48 mm). 1-piece molded body locks all internal parts in place. Mates with Switchcraft Micro-Plug phone plugs. PC terminals have standoff shoulders. Nos. MDSL-2A & MDSL-2A-RA have #10-48 threaded bushing, mounting washer & locknut supplied.

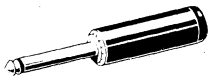


MDPC-2A-RA

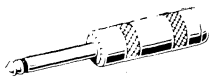
Part No.	Schematic No.	Typical Mating Plug	Cond.	Terminals	Mounting In. (mm)
MDSL-2A	III	850, 851	2	Solder lug	Mounts thru .203 (5.16) hole, in panels up to .063 (1.6) thick. Singly or in rows on .350 (8.89) min. centers. Adjacent sleeves touch when mtd. on .315 (8.00) centers.
MDPC-2A	III	850, 851	2	PC	Mounts singly or in rows on .315 (8.00) min. centers or .350 (8.89) min. centers
MDSL-2A-RA	III	850, 851	2	Solder lug	Same as Part No. MDSL-2A except right angle solder lug terms. for min. space. Behind panel clearance .382 (9.70)
MDPC-2A-RA	III	850, 851	2	PC	Same as Part No. MDPC-2A except right angle PC terms. Above PC board clearance .345 (8.76)

Littel-Plug PHONE PLUGS

Phone plugs fit std. .25 in. (6.35 mm) phone jacks. Solder terminal plugs have built-in cable clamp. Shielded metal handles are nickel-plated brass or durable molded plastic: 1.688 in. (42.88 mm) long x .5 in. (12.7 mm) dia. Max. cable dia.: 2.97 in. (7.54 mm).



No. 250



No. 280

THREE CONDUCTOR

260	Screw terminals, black handle.	12B
S-260	Screw terminals, black handle, .206 in. (5.23 mm) dia. sleeve & tip.	S-12B
267	Combination cable clamp & solder lugs, black handle.	12B
269	Same as 267 except red handle.	12B
290	Screw terminals, shielded handle.	12B
297	Same as 267 except shielded handle.	12B

TWO CONDUCTOR

Part No.	Description	Typical Mating Littel-Jax Jacks
240	Screw terminals, black handle.	11
C-240	Screw terminals with integral cord clamp, black handle.	11
245	Screw terminals, red handle.	11
C-245	Same as C-240 except red handle.	11
250	Solder lugs, black handle.	11
255	Solder lugs, red handle	11
270	Screw terminals, shielded handle.	11
C-270	Same as C-240 except shielded handle.	11
280	Solder lugs, shielded handle.	11
288	Special shielded type. Wide insulator between tip-sleeve; use in 3-cond. jack to perform a 2-cond. function without shorting.	11
S-250	Solder lugs, black handle, .206 in. (5.23 mm) dia. sleeve and tip.	S-11
S-280	Same as S-250 except shielded handle.	S-11



3501F



3501MC



3501FR



3502



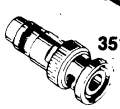
3503



3558



3511, 3511A
3512, 3512A



3513

PHONO JACKS AND PLUGS

Low cost 2-cond. jacks and plugs for record players, FM-AM tuners, tape recorders, test equipment, etc. 3501MC has .375 in. (9.52 mm) O.D. shell and cable clamp. 3501FP for front panel mount in .25 in. (6.35 mm) hole in panels up to .125 in. (3.18 mm) thick. 3501FR for rear panel mount in .375 in. (9.52 mm) hole in panels up to .203 in. (5.16 mm) thick. 3502 has unique cable clamp with .406 in. (10.31 mm) O.D. shielded removable handle. 3503 extension jack has shielded removable handle .406 in. (10.31 mm) O.D. with cable clamp.

Series 3558 are phono plugs with cable clamp and "snap-on" color-coded plastic handles in red, black and white.

Series 3511, 4 Leaf Clover Jax, molded phono Jack with dual contact surfaces for low shunt resistance. Open and closed circuit types. Mates with all Switchcraft phono plugs.

Part No.	Description
3501F	Phono jack
3501M	Plug, less cable clamp
3501MC	Plug with cable clamp
3501FP	—
3501FR	Phono jack
3502	Plug
3503	Extension Plug
3558-1	Plug, red handle
3558-2	Plug, black handle
3558-5	Plug, white handle
3511	Phono jack, open circuit
3511A	Phono jack, open circuit grounded
3512	Phono jack, closed circuit
3512A	Phono jack, closed circuit grounded
3513	Phono Jack-to-BNC Connector Adapter

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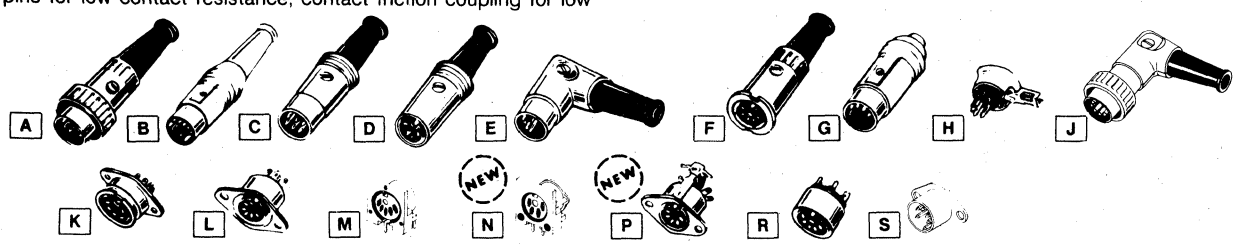
Switchcraft®
A **Raytheon** Company

CIRCULAR DIN CONNECTORS

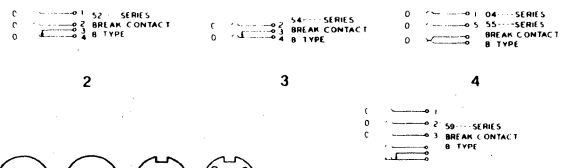
Designed for low level circuitry, for unlimited use in computer, commercial, industrial, consumer and military applications. Exact replacements for plugs and receptacles, used on most foreign built recorders, radios and dictation equipment. Also used extensively for computer keyboard, I/O and peripheral applications. "Switchcraft/DIN" 2 to 8 contact connectors include male and female plugs and receptacles with bright nickel-plated barrels & plastic snap-on shells. Lock-ring coupling, silver plated contact pins for low contact resistance, contact friction coupling for low mechanical interference noise, exclusive "automatic" grounding and polarization provisions. Full line of receptacles offer thru panel, PC board and surface mounting. Positioning "Ground Key-Rib" or "Ground Contact" — electrically integral with the connector shell — is provided in each plug and receptacle (except those with plastic housing or shells) to ground or shield the connector shell. Right angle PC board mount for common ground use also available.



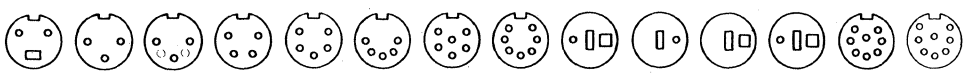
PIN ARRANGEMENTS



SCHEMATIC CIRCUITS



CONTACT ARRANGEMENTS



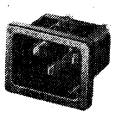
MOLDED CABLES WITH DIN PLUGS

Switchcraft's versatile system of molded cable assemblies and mating receptacles meets the increased demand for modern, miniature connectors for a wide range of electrical/electronic applications. Connectors are DIN circular type and are fully field-proven in electronic applications. Strict requirements of FCC 20780 docket are fully addressed in offering fully shielded links.

The system comprises male and female plugs, locking and non-locking, with from 3 to 8 pins/contacts. Units are fully molded and protected with a rugged handle and advanced design cable relief. A complete range of mating receptacles is also available.



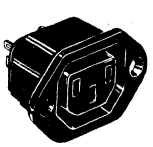
EAC-301, EAC-302
UL, CSA, VDE



No. EAC-409



EAC-303
UL, CSA, VDE



EAC-305,
EAC-306
UL, CSA, VDE
(CERTIFICATE OF COMPLANCE; EAC-305 only)

Receptacles mate with European power plugs. Choose from panel/chassis or PC mount types. U.L. and C.S.A. listed types. Rating 6 A, 250 V AC or 15 A, 250 V AC. No. EAC-301 is VDE approved; No. EAC-305 has VDE Certificate of Compliance.

Part No. EAC-301 — Grounding types, 3 pin male receptacle. 6 A, 250 V AC; U.L. C.S.A., VDE listed. Mates with Switchcraft power cords Nos. P-2392, P-2720, P-2721, P-2722, P-2725, P-2727, P-2728; Belden SPH-386; or equiv. Rear mounts in 1.201 in. (30.51 mm) x .875 in. (22.22 mm) hole or front mounts in 1.08 in. (27.43 mm) x .785 in. (19.94 mm) hole in chassis/panel with 2, #5 screws or .125 in. (3.18 mm) dia. rivets (not supplied). Longer grounding pin allows ground circuit to "make" before power circuit, and "break" after power circuit disconnects. Pins .045 in. (1.14 mm) x .157 in. (3.99 mm) and terminals: silver plated.

Part No. EAC-302 — Same as EAC-301, except 15 A, 250 V AC rating: U.L. & C.S.A. listed. Mates with Switchcraft power cords Nos. P-2723, P-2724; Belden SPH-386; or equiv.

Part No. EAC-303 — Grounding type 3-pin male receptacle with right-angle housing and pins for PC board mtg. Ground lug (solder type) also supplied. .136 in. (3.45 mm) dia. housing holes also permit panel/chassis mount. 6 A, 250 V AC rating: U.L. & C.S.A. listed. Same rear mount as No. EAC-301. Pin terminals silver-plated brass. Mates with same cords as Nos. EAC-301.

Part No. EAC-305 — Grounding type, 3-contact female receptacle Rated: 6 A, 250 V AC: U.L. & C.S.A. listed. Front panel/chassis mount in 1.275 in. (32.39 mm) x 1.56 in. (39.62 mm) hole with 2, #5 screws or .125 in. (3.18 mm) rivets (not supplied). Mates with Switchcraft power cords Parts Nos. P-2721, P-2725; Belden SPH-388: or equiv. Contacts/terminals: brass.

No. EAC-306 — Similar to EAC-305, except 15 A, 250 V AC rating U.L. & C.S.A. listed.

Part No. EAC-405 — Same as EAC-305, except "snap-in" mount.

Part No. EAC-409 — 3-pin male receptacle with solder lug terminals. Rated: 6 A, 250 V. "Snap-in" mount from front of panel.

Switchcraft®
A **Raytheon** Company

"Q-G" AUDIO CONNECTORS WITH COMPLETE GROUNDING PROVISIONS!

Switchcraft "Quick-Ground" connectors feature a separate "Ground-Terminal" electrically integral with connector shell. Ground continuity between mating plugs automatically accomplished through exclusive "Ground Contactors". Possible loss of insert screw is eliminated by new "Captive-Design" insert screw. Socket and pin assemblies utilize "wedge-action" to insure firm, reliable positioning in connector shell. Inserts are easily removable for wiring & soldering. High impact thermosetting plastic material insures long reliable insert assy. life. Female connectors have latch lock feature to hold connectors firmly together. Plugs and receptacle mechanically keyed for proper mating. "Q-G" (*) Series 3-, 4-, 5-, 6-, and 7-pin/contact connectors offer 4-, 5-, 6-, 7-, & 8-pin contact versatility when "Ground-Terminal" is used. Used interchangeably with Switchcraft QGP connectors (page 41): 3- and 4-contact (Amphenol 91-850 and Excellite 91-450 Series, and Cannon XLR-3, XLR-4): 5-contact (Cannon XLR-5 and Amphenol Excellite 91-450 Series).

Cord plug part no. suffix "L" indicates strain relief accepts cables from .25 in. (6.35 mm) to .328 in. (8.33 mm) dia.; other plugs accept cables up to .25 in. (6.35 mm) dia. (*) Number of insert contacts or pins must be specified to complete part number.

Part number with suffix "B" indicates cord plug with "Black-Velvet" black finish (minimizes glare and permits stable "through-connector" shielding). Suffix "D" indicates type with "FAS-DISCONNECT" detent feature. U.S. Patent 3,219,961; Canadian Patent No. 761,114 (June 13, 1967)

Specifications:

ELECTRICAL (QG Connectors Only)

Contact Resistance: 50 milliohm max., per pole
Current Rating: 3 pole-15A; 4 pole-10 A, 5 & 6 pole-7.5 A; 7 pole-5 A.
Insulation Resistance: 1,000 megohms, min.
Dielectric Withstanding Voltage: 1,000 V (rms)
Capacitance: 2 Pf between pins and 4 Pf between pins and shell, max. (A3M & A3F).

MECHANICAL (QG Connectors Only)

Insertion/Withdrawal Forces: 7 lb. max., 5 lb. nominal, insertion; 7 lb. max., 5 lb. nominal, withdrawal.

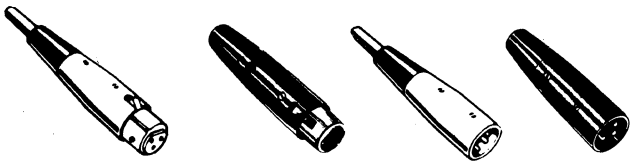
MATERIAL QG Connectors

Shell: Die-cast zinc. Satin nickel finish on all shells, except a black, electrically conductive, chrome plate finish on "Black-Velvet" shells.
Insert Insulation: High-impact, molded thermo-setting plastic.
Socket Contacts: Phosphor bronze, silver plated, chromate dipped; bifurcated on 3-contact type.
Pin Contacts: Brass, silver plated, chromate dipped, Resists tarnishing, and provides excellent electrical conductivity.
Latchlock: High-strength die-cast zinc.
Latch Release: Steel, nickel plated.
Latch Detent: Formed stainless steel.
Insert Screw: Stainless steel.
Cable Relief Bushing: Neoprene.
Mounting Nut and Washer: Brass, nickel plated. (Black, electrically conductive chrome plate finish for "Black Velvet" receptacles).
Mounting Wall Plates: Cold-rolled steel, with stainless steel finish.

QGP Connectors

Shell: Die-cast zinc, non-reflective Vel-Tone finish.
Insert Insulation: High strength, reinforced thermoset plastic.
Socket Contacts: Phosphor bronze, 50 microinch gold (over 50 microinch nickel) plated.
Pin Contact: Brass, 50 microinch gold (over 50 microinch nickel) plated.
Latchlock: Die-cast zinc, non-reflective nickel finish.
Latch Release: Steel, nickel plated.
Cable Relief Bushing: Flexible gray neoprene.
Barrel: (Female connectors only) Stainless steel.
Mounting Screws: Stainless steel, passivated, non-reflective finish.
Spanner Nut: (QGP-3-28) Die-cast zinc, nickel plated.
Nut: (QGP-3-29) Brass, nickel plated.
Washer: (QGP-3-29) Steel, nickel plated.

PLUGS

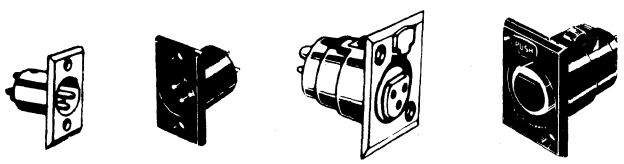


A(*)F A(*)FB A(*)M A(*)MB

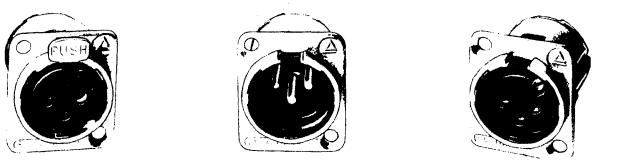
RECEPTACLES



Series B(*)M Series B(*)MB Series B(*)F Series B(*)FB



Series D(*)M Series D(*)MB Series D(*)F, D(*)FD Series D(*)FB

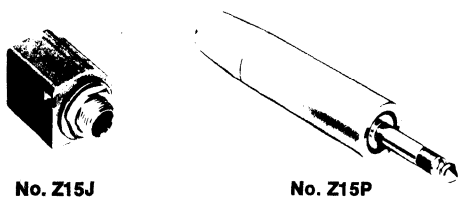


Series E (*) Fxx Series E (*) Mxx Series E (*) FDxx



Y3FD Y3FPC

HIGH POWER SPEAKER JACK AND PLUG



No. Z15J No. Z15P

FEATURES

- First .25 in. dia. plug to accept up to 10 AWG WIRE WITHOUT SOLDERED CONNECTION.
- 15 A continuous with 30°C heat rise.
- Collet strain relief provide positive cable retention.
- 10,000 insertion/withdrawal cycle (min.)
- Positive detent retains plug.
- RED jack housing & RED tip insulator indicates high power rating.
- Screwdriver or solder terminations.
- Plug accommodates cables up to .334 in. (8.7mm) dia. with cable clamp.

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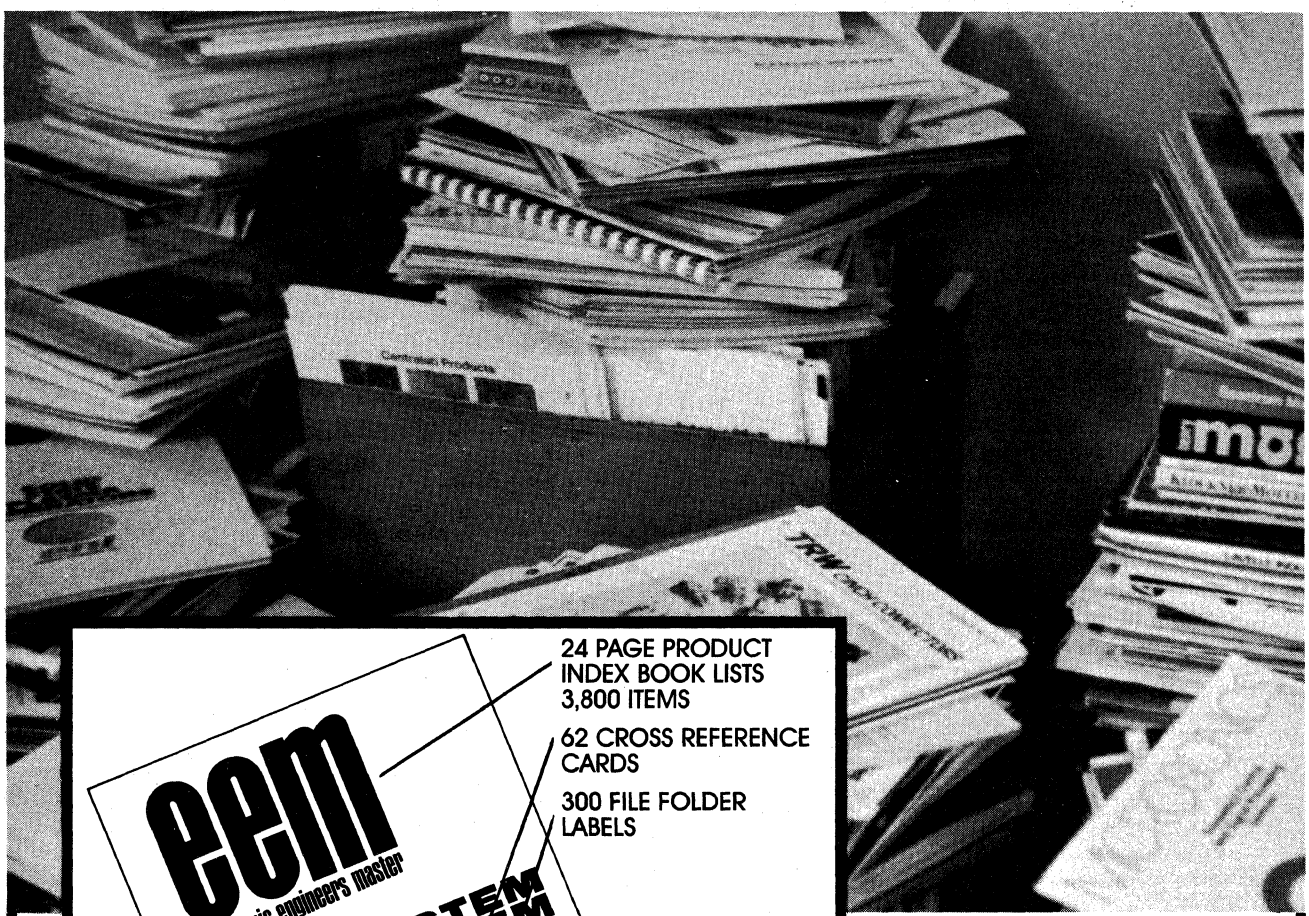

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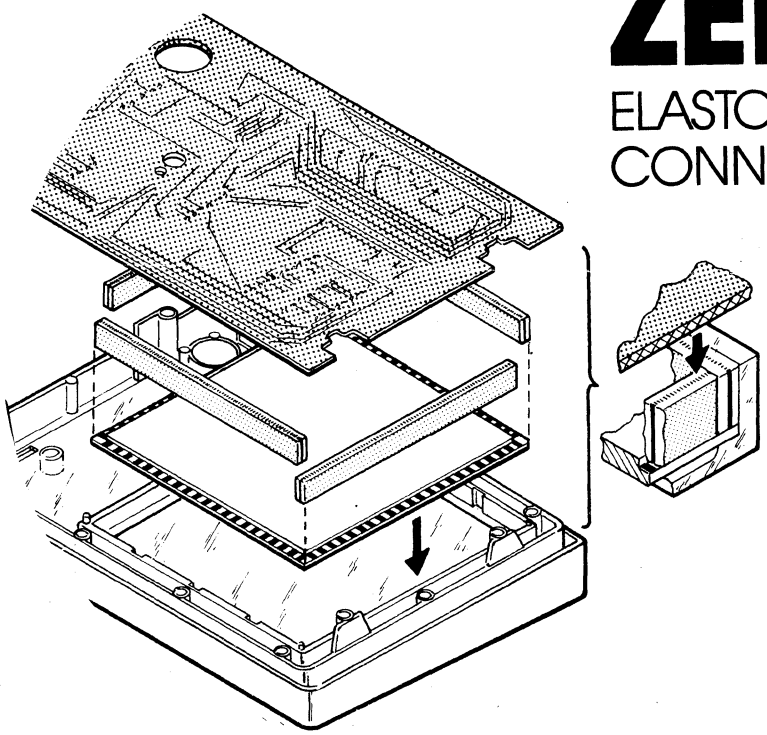

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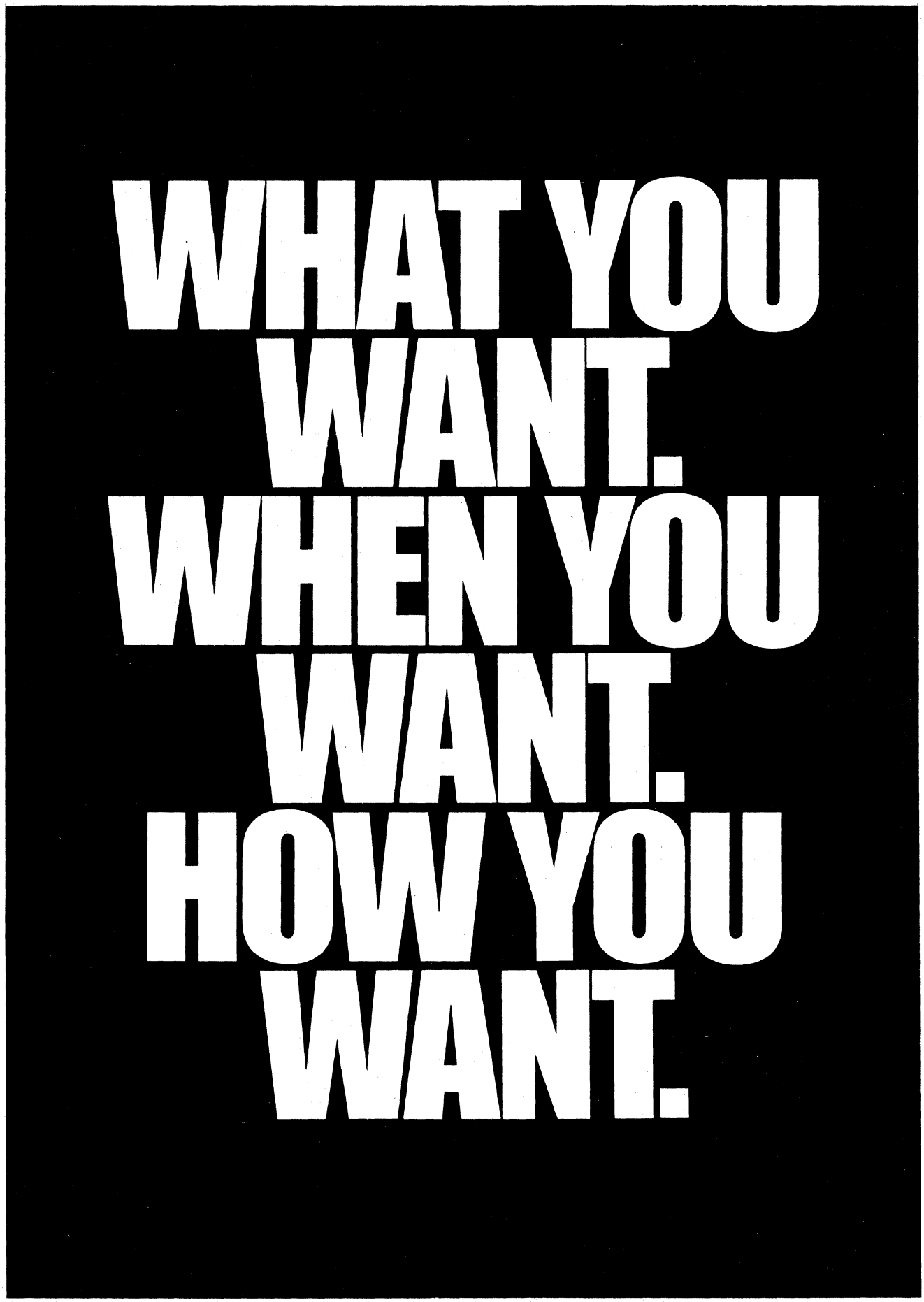
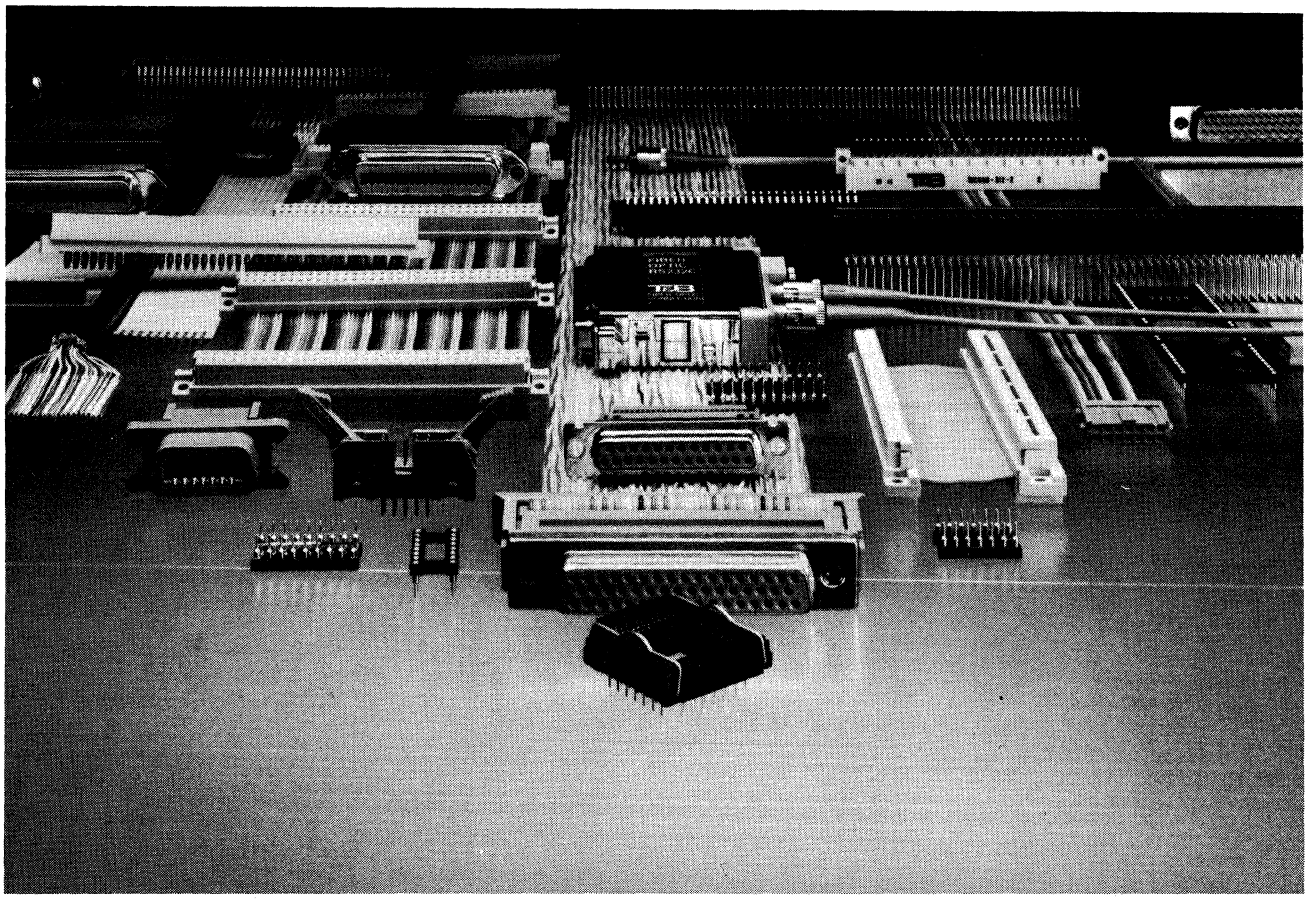

WHAT YOU
WANT.
WHEN YOU
WANT.
HOW YOU
WANT.



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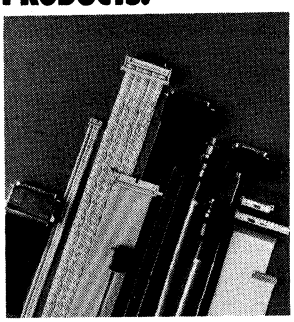

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Time Electronics/Sunnyvale
408-734-9888
Time Electronics/Torrance
213-320-0880

Colorado
Hall-Mark/Denver
303-790-1662
Marshall Industries/Denver
303-451-8383
Time Electronics/Denver
303-799-8851

Connecticut
Marshall Industries/Wallingford
203-265-3822
Time Electronics/Cheshire
203-271-3200

Florida
Hall-Mark/Ft. Lauderdale
305-971-9280
Hall-Mark/Orlando
305-855-4020
Hall-Mark/Tampa Bay
813-530-4543
Pioneer/Ft. Lauderdale
305-428-8877
Pioneer/Orlando
305-834-9090
Time Electronics/Ft. Lauderdale
305-974-4800
Time Electronics/Orlando
305-841-6565

Georgia
Hall-Mark/Atlanta
404-447-8000
Marshall Industries/Atlanta
404-923-5750
Time Electronics/Atlanta
404-448-4448

Illinois
Hall-Mark/Chicago
312-860-3800
Marshall Industries/Chicago
312-490-0155
Pioneer/Chicago
312-437-9680
Time Electronics/Chicago
312-350-0610

Indiana
Pioneer/Indianapolis
317-849-7300

Kansas
Hall-Mark/Kansas City
913-888-4747

Maryland
Hall-Mark/Baltimore
301-988-9800
Marshall Industries/Baltimore
301-840-9450
Pioneer/Washington
301-921-0660
Time Electronics/Columbia
301-964-3090

Massachusetts
Hall-Mark/Boston
617-935-9777
Marshall Industries/Boston
617-272-8200
Time Electronics/Peabody
617-532-6200

Michigan
Marshall Industries/Michigan
313-525-5850
Pioneer/Western Michigan
618-698-1800
Pioneer/Michigan
313-525-1800

Minnesota
Hall-Mark/Minneapolis
612-941-2600
Pioneer/Twin Cities
612-935-5444

Missouri
Hall-Mark/St. Louis
314-291-5350
Time Electronics/St. Louis
314-391-6444

New Jersey
Hall-Mark/Mt. Laurel
609-235-1900
Hall-Mark/Northern New Jersey
201-575-4415
QAR
201-866-3517

New Mexico
BFA/Albuquerque
505-292-1212

New York
Iris Electronics/Farmingdale
516-420-8400
Marshall Industries/Binghamton
607-798-1611
Marshall Industries/Rochester
716-235-7620
QAR Industrial Electronics/
Mt. Vernon
914-699-2224
Simcona Electronics/Rochester
716-328-3230
Time Electronics/Hauppauge
516-273-0100
Time Electronics/Syracuse
315-432-0355

North Carolina
Hall-Mark/Raleigh
919-872-0712
Pioneer/Charlotte
704-527-8188
Time Electronics/Charlotte
704-522-7600

Ohio
Hall-Mark/Cleveland
216-349-4632
Hall-Mark/Columbus
614-888-3313
Marshall Industries/Cleveland
216-248-1788
Marshall Industries/Dayton
513-236-8088
Pioneer/Cleveland
216-587-3600
Pioneer/Dayton
513-236-9900

Oregon
Almac Electronics/Beaverton
503-629-8090
Time Electronics/Portland
503-684-3780

Pennsylvania
Pioneer/Delaware Valley
215-674-4000
Pioneer/Pittsburgh
412-782-2300
Time Electronics/King of Prussia
215-337-0900

Texas
Hall-Mark/Austin
512-258-8848
Hall-Mark/Dallas
214-553-4300
Hall-Mark/Houston
713-781-6100
Marshall Industries/Dallas
214-233-5200
Pioneer/Austin
512-835-4000
Pioneer/Dallas
214-386-7300
Pioneer/Houston
713-988-5555
Southwest Electronics/Houston
713-240-4000

Utah
Hall-Mark/Salt Lake City
801-268-3779
Marshall Industries/Salt Lake City
801-261-0901
Time Electronics/Salt Lake City
801-973-8181

Washington
Almac Electronics/Bellevue
206-643-9992
Almac Electronics/Spokane
509-924-9500
Marshall Industries/Bellevue
206-747-9100

Wisconsin
Hall-Mark/Milwaukee
414-797-7844

MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination.* This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float.* Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof.* May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card.* The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement.*

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage.* Can be confused with the term used to describe how many times a connector may be mated and separated.

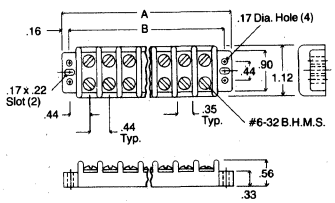
Withstanding voltage: Also called *test voltage.* The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

Double Row Terminal Blocks

Double row terminal blocks are among the most widely used and accepted devices for terminating wires because of their versatility and cost effectiveness—both in initial and installed cost. Simple installation requires only a screwdriver, so time-consuming splicing is eliminated.

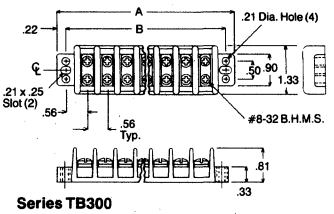
All USD Double Row Terminal Blocks are molded from 94 VO polyester material rated at 155°C, and are UL and CSA recognized. USD terminal blocks have a general industrial rating when used with screws or pressure plate connectors, and a commercial rating when used with insulated female Quick Connect terminals.

TB200-XX Series
7/16" Centers
300V, 20 Amps
6-32 Screw
2-30 Terminal positions available
Will accommodate up to 12 AWG wire
(XX corresponds to number of positions)



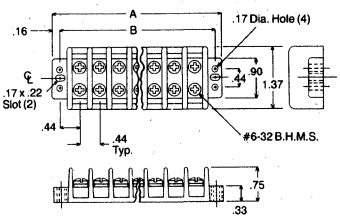
Series TB200

TB300-XX Series
9/16" Centers
600V, 30 Amps
8-32 Screw or pressure plate
2-24 Terminal positions available
Will accommodate up to 10 AWG wire



Series TB300

TB200 HB-XX Series
7/16" Centers
600V, 20 Amps
6-32 Screw or pressure plate
2-30 Terminal positions available
Will accommodate up to 12 AWG

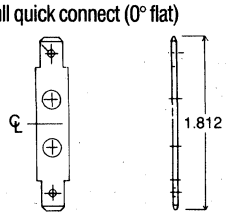


Series TB200HB

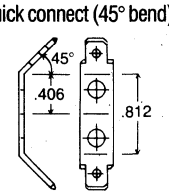
Optional configuration utilizes a 10-32 screw with 8 AWG wire and ring terminal. This option is rated at 600V, 45 Amps max.

Hardware Options

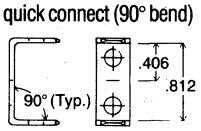
F1
Full quick connect (0° flat)



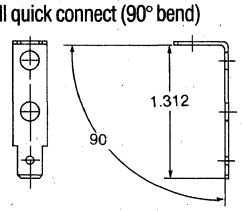
F2
Full quick connect (45° bend)



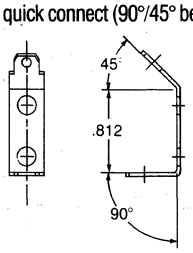
F3
Full quick connect (90° bend)



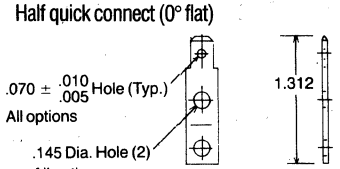
F4
Full quick connect (90° bend)



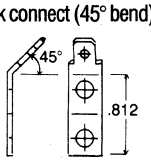
F5
Full quick connect (90°/45° bends)



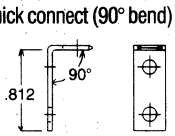
HF1
Half quick connect (0° flat)



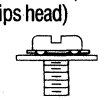
HF2
Half quick connect (45° bend)



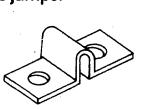
HF3
Half quick connect (90° bend)



P
Pressure plate screw (combination slotted/phillips head)



LL
Line-to-line jumper

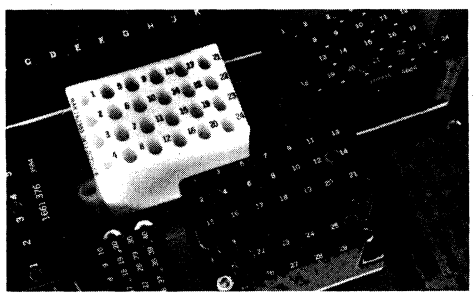


Note: Cover and marking strips are available. Consult factory for details.

USD

USD Quick Connect Terminal Blocks

Underwriters Safety Device offers a unique line of complete Quick Connect Terminal Blocks, providing you with infinite design possibilities. USD's large selection of blocks features any number of terminations, and configurations of all types, to meet virtually any design requirement.



Features

- All blocks are made of molded phenolic (except for 15610 and 14610 series, which are nylon) designed for electrical use.
- Special materials are available on request.
- Back plate is laminated phenolic (except on 15610 and 14610 series).
- Terminals are made of copper alloy.
- Terminals accept female .250, .187 or .110 series Quick Connect wire connectors.
- .250 terminals are rated at 25 Amps; .187 @ 13 A; and .110 @ 10 A.
- Blocks available with voltage ratings of 120 or 250 VAC.
- Production terminal blocks are supplied with back plate attached by two or more eyelets.
- Male Quick Connect terminals comply with standards NEMA DC2-1976 and UL310.
- All terminal blocks have a flammability rating of 94V-2 or better.
- UL temperature index of 130° C.

Benefits

USD Quick Connect Terminal Blocks offer:

- Centralized wiring assemblies.
- Complete insulation, eliminating the need for individually insulated terminals.
- Specific identification for fast production wiring.
- Complete assembly, with internal circuitry to suit your requirements.
- Kit availability to match your production models exactly.
- Easy assembly of laboratory or experimental kit-form models.

125 Volts

The most flexible unit for terminal arrangements. Terminals can be arranged in any combination if there are two or more common terminals per group of terminals.

250 Volts

Terminal arrangements in these units are more restrictive because of the clearances required. Specific requirements are either:

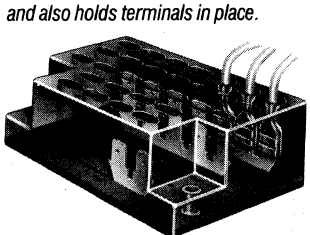
1. All terminals in the same row can be common.
2. A row can be split into two or more groups of common terminals, provided there are two or more common terminals per group. A blank terminal slot must separate any in-line terminal group.

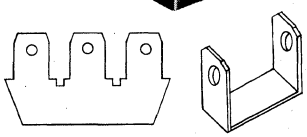
Note: A. The blank terminal slot between in-line groups of common terminals produces the clearance required for the 250 Volt rating.

B. A row is the column of terminal slots which form a straight line along the center-line that passes through the long dimension of the terminal slot.



Phantom view shows position of terminals when mounted in block with wire connectors fastened. Each terminal is insulated from all other surrounding terminals or connectors. The back plate insulates the male terminals from the surface on which the block is mounted and also holds terminals in place.





Spade Terminal *U Terminal*

For specifications on the full line of Double Row Terminal Blocks, send for a free copy of catalog #686; for information on Quick Connect Terminal Blocks, ask for catalog #QT-300. Call or write USD, and expand your design possibilities.

For your convenience, USD has three stocking ModCenters, where custom modifications can be provided in less than one week. See our Distributor Listing for locations.

Underwriters Safety Device
7300 West Wilson Avenue
Chicago, Illinois 60656
(312) 867-4600
TOLL FREE NO. 1-800-227-USDC

USD Distributors

Distributors listed in bold are licensed ModCenters for USD products

Alabama

Decatur
Wesco
(205) 350-3133

Huntsville
Wesco
(205) 837-9130

Montgomery
Southern Controls, Inc.
(205) 277-5030

Muscle Shoals
Lewis Electric Supply
(205) 383-0681

California

Anaheim
Control Design Supply, Inc.*
(714) 821-1516

Brea
Associated Terminals & Controls
(714) 529-9909

Burbank
West Coast Electric Sales
(818) 569-3700

Carson
Nunn Royal Electric Co.
(213) 979-9700

Chatsworth
Fuses Unlimited
(818) 882-1515

Hayward
Electro Components*
(415) 783-5800

Livermore
Fuses Unlimited*
(415) 449-1313

Long Beach
Electrical Power & Controls, Inc.
(213) 498-6699

Los Angeles
Masters Distributors
(213) 452-1229

Pico Rivera
Amfac Electrical Supply Co.
(213) 685-7250

San Carlos
Control Design Supply, Inc.*
(415) 592-4806

San Diego
Amfac Electrical Supply Co.
(619) 268-1020

San Francisco (South)
Steven Engineering*
(415) 588-9200

Santa Barbara
Amfac Electric Supply
(714) 232-7371

Colorado

Denver
Crum Electric Supply
(303) 744-0727

Connecticut

Milford
Electro Tech Sales Corp.
(203) 877-1241

Delaware

Wilmington
Tecot Electric Supply Co.
(302) 421-3900

District of Columbia

Eck Supply
(202) 526-9505

Florida

Altamonte Springs
Control Design Supply, Inc.*
(305) 788-3220

Fort Lauderdale
Bel Thermal Units, Inc.*
(305) 566-0043

Tampa
Bay Area Electric Co.
(813) 884-7860

Lakeland
A-A Electric*
(813) 665-6941

Georgia

Atlanta
General Electric Supply Co.
(404) 526-8260

Dalton
Henderson Industrial Supply
(404) 278-8307

Norcross
A-A Electric, Inc.*
(404) 449-8670

General Electric Supply Co.
(404) 448-1370

Stone Mt.
Control Design Supply, Inc.*
(404) 979-3500

Tucker
Controls Instrument Devices
(404) 491-3143

Idaho

Boise
Wesco
(208) 343-7961

Illinois

Alsip
Wesco
(312) 597-4340

Bridgeview
Crescent Electric Supply
(312) 450-3211

Midco Component Sales*
(312) 599-7777

Carol Stream
Lectro Components
(312) 690-0520

Chicago
Control Headquarters
(312) 745-1008

Excel Electric Service Co.
(312) 421-7220

J.P. Simon & Company
(312) 725-2125

Otto Frankenbush
(312) 647-0755

Revere Electric Supply Co.
(312) 738-3636

Wesco
(312) 568-7200

Des Plaines
Englewood Electrical Supply
(312) 299-3300

Elgin
Revere Electric Supply Co.
(312) 741-8900

Elk Grove Village
Steiner Electric Co.
(312) 228-0400

Elmhurst
General Electric Supply
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Wesco
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Genoa
Control Design Supply, Inc.*
(815) 784-6515

Markham
Englewood Electrical Supply
(312) 596-3440

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Chain-O-Lakes Electric Supply
(312) 566-1550

Oak Lawn
G&F Sales and Engineering
(312) 424-4170

Park Ridge
Condisco
(312) 692-2226

Peoria
Crescent Electric Supply Co.
(309) 673-8586

Rockford
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Connector Concepts*
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Indianapolis
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Graybar Electric. Co.
(317) 631-1411

Wabash
Wabash Electric Supply
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Van Meter Company
(319) 366-3501

Louisiana

New Orleans
Long Electrical Supply
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Maryland

Belair
Techni-Tronics, Inc.
(301) 879-1418

Cheverly
C.E.D.
(301) 388-2000

Gaithersburg
M-S Electronics, Inc.
(301) 921-0200

Hagerstown
Tristate Electrical Supply Co.
(301) 733-1212

Rockville
Fuse Indicator Corp.
(301) 881-0507

Massachusetts

Boston
Controller Service & Sales*
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Michigan

Ann Arbor
Madison Electric Supply
(313) 665-6131

Detroit
Madison Electric Co.
(313) 875-1560

Flint
Wesco
(313) 767-5060

Jackson
Englewood Electric Supply
(517) 782-7121

Livonia
LaSalle Electric Supply
(313) 425-6200

Mt. Clemens
Kuchenmeister Electric Supply
(313) 469-3000

Muskegon
All Phase Electric
(616) 733-3171

Troy
I/O Electric Supply Corp.*
(313) 583-9066

Minnesota

Minneapolis
Control Design Supply, Inc.*
(612) 721-1628

Northland Electric
(612) 341-6100

Sterling Electric
(612) 553-7777

Missouri

Kansas City
Western Extralite Co.
(816) 421-8404

St. Louis
Control Design Supply, Inc.*
(314) 426-3150

National Electric Co.
(314) 241-4600

New Hampshire

Manchester
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New Jersey

Dover
Kahant Electrical Supply Co.
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New York

Rochester
R. Baker Electronics*
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CED Baldwin-Hall Co., Inc.
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Whitestone
Power Electro Supply Co.
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North Carolina

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(704) 333-9928

Wesco
(704) 333-1201

Gastonia
JMT Electronics & Controls*
(704) 867-4401

Greensboro
Electric Supply & Equipment
(919) 272-4123

Jamestown
I/O Electric Supply Corp.*
(919) 884-4474

Matthews
Rigby Electric
(704) 847-6931

Pineville
Control Design Supply, Inc.*
(704) 588-4410

Raleigh
Wholesale Electric Supply
(919) 782-8500

Ohio

Alliance
Alliance Electric Co.
(216) 823-1950

Cincinnati
Richards Electric Supply*
(513) 242-8800

Cleveland
Hutco Electric, Inc./IO
(216) 432-2155

Columbus
Basic Distribution Corp.
(614) 481-8801

Dayton
Wesco
(513) 228-9668

Eastlake
Professional Electric Products
(216) 946-3790

Mansfield
Hoover Instrument Service
(419) 529-3226

Newark
Basic Distribution Corp.
(614) 344-2158

Toledo
Wesco
(419) 729-5481

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Gateway Megatech Corp.*
(216) 944-5801

Oklahoma

Tulsa
Altair*
(918) 252-5781

Oregon

Beaverton
Murphy Electronics
(503) 642-2001

Portland
Tek Electric Control, Inc.*
(503) 246-5451

Wesco
(503) 255-7611

Pennsylvania

Conshohocken
I/O Electrical Supply Corp.*
(215) 825-4610

Erie
Wesco
(814) 454-8191

Harrisburg
Dauphin Electrical Supplies
(717) 232-4201

Johnstown
Bird Electric Supply, Inc.
(814) 535-3574

Malvern
Control Design Supply, Inc.*
(215) 296-0150

Monroeville
Wesco
(412) 256-5621

Philadelphia
Esco Electric Supply Co.
(215) 923-6050

Royal Electric Supply*
(215) 221-1200

Rumsey Electric
(215) 456-2500

Pittsburgh
Wesco
(412) 323-4217

Scranton
All-Phase Electric Supply Co.
(717) 346-5731

Rhode Island

Providence
Controller Service & Sales*
(401) 781-7100

South Carolina

Greenville
Shealy Electric Wholesale
(803) 242-6880

Greenwood
Shealy Electrical Wholesale
(803) 223-4210

Tennessee

Chattanooga
Techni-Tronics
(615) 842-0514

Nashville
Steinhouse Supply Co.*
(615) 254-1613

Kingsport
All Phase Electric Co.
(615) 246-8151

Texas

Austin
Altair*
(512) 837-4970

Dallas
Control Design Supply, Inc.*
(214) 358-1441

Fuses, Inc.*
(214) 341-6407

Deer Park
Amfac
(713) 476-4805

Garland
Metroplex Electrical Supply Co.
(214) 272-4477

Georgetown
Fasteners Plus
(515) 863-0966

Houston
Altair*
(713) 462-3029

Muenster
Koch Engineering Sales Co.
(214) 434-1722 or
(817) 759-2297

Richardson
Altair
(214) 231-5166

Utah

Salt Lake City
Wesco
(801) 975-0600

Virginia

Alexandria
Alexandria Lighting Supply
(703) 548-2320

Lynchburg
Eck Electric
(804) 846-6555

Wesco
(804) 845-0948

Richmond
Electrical Equipment Co.
(804) 353-7841

Gesco
(804) 385-4941

Wesco
(804) 730-1122

Roanoke
Gesco
(703) 563-4991

Wesco
(703) 344-3271

Washington

Redmond
Fuses Unlimited*
(206) 881-2442

Murphy Electronics
(206) 881-1234

Seattle
H.D. Campbell
(206) 433-1900

Tek Electric Control, Inc.*
1-800-547-4401

West Virginia

Bluefield
Wesco
(304) 325-6151

Skelton
Wesco
(304) 252-8633

Wisconsin

Brookfield
I/O Electric Supply Corp.*
(414) 786-8487

Cedarburg
A-A Electric Supply*
(414) 377-8000

Green Bay
A-A Electric Supply*
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Milwaukee
Standard Electric Supply*
(414) 272-8100

New Berlin
Control Design Supply, Inc.*
(414) 784-1015

Wyoming

Casper
Crum Electric Co.
(307) 266-1278

Gillette
Crum Electric Supply
(307) 682-5974

Canada

Toronto, Ontario
GLE, Inc.*
(416) 252-5301

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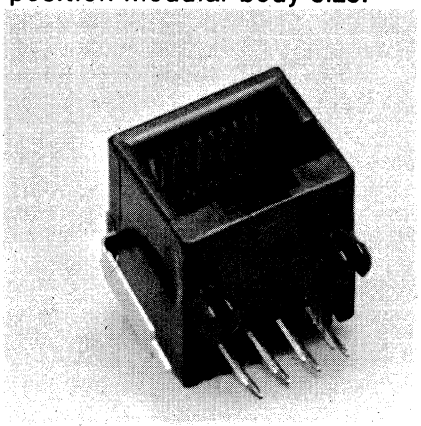
VIRGINIA PLASTICS

P.O. Box 4577
Roanoke, Virginia 24015-0577
Phone (703) 985-3811
TWX 710-870-0440

NEW V.P. PRODUCTS

•Low profile female PCB connectors with external ground strap. Ground positions can be 1, 2, 3. Available as a 8-10 or a 6-8 size.
•Ultra-flexible flat shielded cable because of unique shielding method.
•Low profile 6-8 female PCB connector designed to minimize PCB board spacing. PCB can be spaced as close as ½". Designed to handle 8 active lines with standard 6 position housing.
•6-8 male plug, standard 6 position modular plug body size which can have up to 8 active lines.
•Unique double shielded construction over the conductor bundle that provides very high levels of signal emissions of high speed transmission.
•8-10 male plug, standard 8 position modular plug body size which can have up to 10 active lines.
•Low profile 8-10 female PCB connector designed to minimize printed circuit board spacing.
•P.C.B. can be spaced as close as ½". Designed to handle 10 active lines with standard 8 position modular body size.



GROUND STRAP LOW PROFILE

An innovative concept for modular grounding systems is the Virginia Plastics' low profile PCB connector with internal contact/external ground strap. The ground strap uses a large surface area to efficiently drain emissions. Ground strap connections bypass PC traces by directly going to the ground plane, reducing EMI emissions.

FEATURES:

•Housing is made from high temperature thermoplastic with a flammability rating of 94V-O
•Fits printed circuit board grids of .050" located on .100" centers
•Designed for wave soldering
•Snap-lock feet provide positive locking to PCB
•Designed for printed circuit board of .062 inch thickness
•Meets FCC part 68 requirements

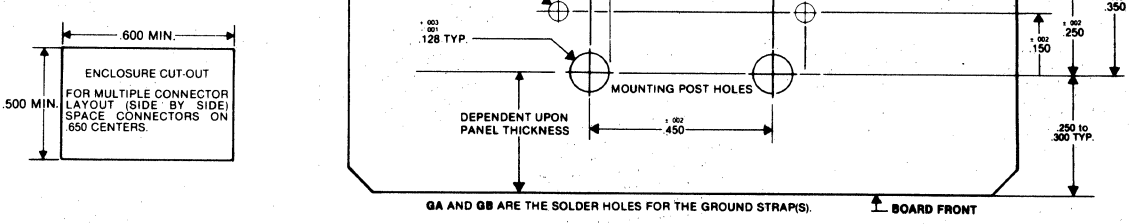
SPECIFICATIONS:

•Height of low profile connector on board is .500" max.

CONTACT MATERIAL AND PLATING THICKNESS:

•Spring contact beryllium copper
•50 u inch nickel plate overall
•100 u inch of tin/lead on solder post over nickel
•15 u inch gold alloy in contact area over nickel
•Each spring contact portion of each contact within the female connector shall have a typical contact normal force of 100 grams

UNIVERSAL PRINTED CIRCUIT BOARD LAYOUT FOR ALL LOW PROFILE MODULAR CONNECTORS



ACTIVE CONTACT POSITION CHART

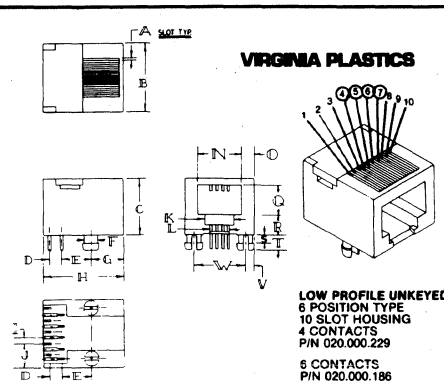
Connector Type	GA	C	D	E	F	G	H	I	J	K	L	GB
Handset 4 Position 4 Contacts					1	2	3	4				
Six Position 4 Contacts					1	2	3	4				
Six Position 6 Contacts				1	2	3	4	5	6			
Six Position 8 Contacts			1	2	3	4	5	6	7	8		
Eight Position 8 Contacts			1	2	3	4	5	6	7	8		
Eight Position 10 Contacts		1	2	3	4	5	6	7	8	9	10	
Eight Position Groundstrap + 9 Contacts	1		2	3	4	5	6	7	8	9	10	

Take the guesswork out of choosing which footprint pattern and enclosure cut-out to use for PCB connectors. With LOW PROFILE Female Connectors our footprint pattern and enclosure cut-out remains the same for all of our styles of connectors. The drawing above can be used for any of our connectors and the accompanying chart shows which solder post holes need to be drilled. Enclosure cut-out dimensions are also shown.

VIRGINIA PLASTICS

P.O. Box 4577
Roanoke, Virginia 24015 0577
Phone (703) 985 3811
TWX 710 870 0440

DIM.	TOLERANCE INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.
A	029 REF		7 REF	
B	580	600	14.7	15.2
C	480	500	12.2	12.7
D	092	108	2.3	2.7
E	242	258	6.1	6.6
F	120	130	3.0	3.3
G	280	310	7.1	7.8
H	670	690	17.0	17.5
I	045	055	1.1	1.4
J	162	178	4.1	4.5
K	250	270	6.4	6.9
L	155	165	3.9	4.2
M				
N	385	395	9.8	10.0
O	100 REF		2.54 REF	
P				
Q	265	275	6.7	7.0
R	130	150	3.3	3.8
S	065	075	1.7	1.9
T	111	131	2.8	3.3
U				
V	070 REF		1.8 REF	
W	441	459	11.2	11.7
X				
Y				
Z				

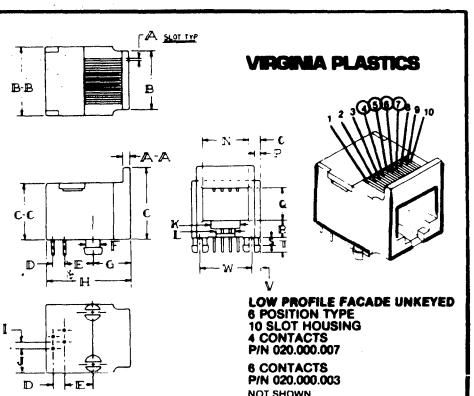


VIRGINIA PLASTICS

LOW PROFILE UNKEYED
6 POSITION TYPE
10 SLOT HOUSING
4 CONTACTS
P/N 020.000.229

6 CONTACTS
P/N 020.000.186
NOT SHOWN

DIM.	TOLERANCE INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.
A	029 REF		7 REF	
A-A	084 REF		1.5 REF.	
B	495	515	12.6	13.1
B-B	580	600	14.7	15.2
C	603	623	15.3	15.8
C-C	480	500	12.2	12.7
D	092	108	2.3	2.7
E	242	258	6.1	6.6
F	120	130	3.0	3.3
G	.334	.354	7.9	8.4
H	.736 REF		18.1 REF	
I	045	055	1.1	1.4
J	212	228	5.4	5.8
K	250	270	6.4	6.9
L	155	165	3.9	4.2
M				
N	385	395	9.8	10.0
O	100 REF		2.5 REF	
P	.042 REF		1.1 REF	
Q	265	275	6.7	7.0
R	130	150	3.3	3.8
S	065	075	1.7	1.9
T	111	131	2.8	3.3
U				
V	070 REF		1.8 REF	
W	441	459	11.2	11.7



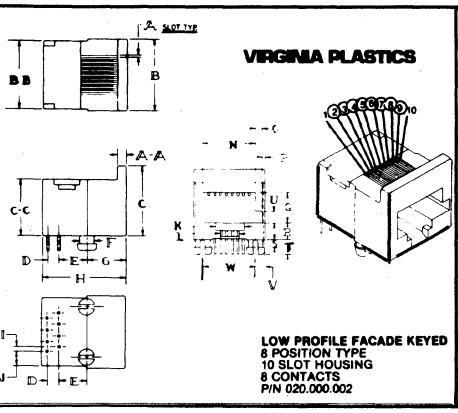
VIRGINIA PLASTICS

LOW PROFILE FACADE UNKEYED
6 POSITION TYPE
10 SLOT HOUSING
4 CONTACTS
P/N 020.000.007

6 CONTACTS
P/N 020.000.003
NOT SHOWN

For Universal PCB Layout call Virginia Plastics, (703) 985-3811

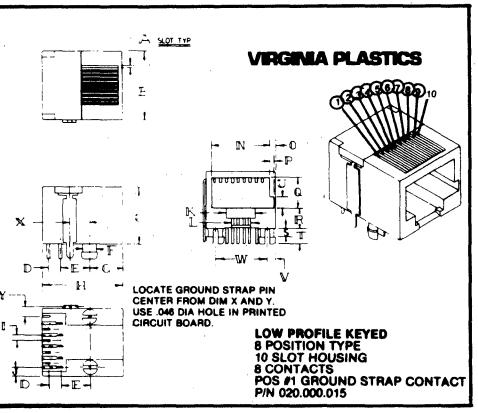
DIM.	TOLERANCE INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.
A	029 REF		7 REF	
A-A	084 REF		2.1 REF	
B	608	628	15.4	16.0
B-B	580	600	14.7	15.2
C	603	623	15.3	15.8
C-C	480	500	12.2	12.7
D	092	108	2.3	2.7
E	242	258	6.1	6.6
F	120	130	3.0	3.3
G	335	355	8.5	9.0
H	.730 REF		18.5 REF	
I	045	055	1.1	1.4
J	112	128	2.8	3.3
K	250	270	6.4	6.9
L	155	165	3.9	4.2
M				
N	465	475	11.8	12.1
O	050 REF		1.3 REF	
P	030 REF		8 REF	
Q	265	275	6.7	7.0
R	130	150	3.3	3.8
S	065	075	1.7	1.9
T	111	131	2.8	3.3
U	106 REF		2.7 REF	
V	070 REF		1.8 REF	
W	441	459	11.2	11.7



VIRGINIA PLASTICS

LOW PROFILE FACADE KEYED
8 POSITION TYPE
10 SLOT HOUSING
8 CONTACTS
P/N 020.000.002

DIM.	TOLERANCE INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.
A	029 REF		7.4 REF	
B	580	600	14.7	15.2
C	480	500	12.2	12.7
D	092	108	2.3	2.7
E	242	258	6.1	6.6
F	120	130	3.0	3.3
G	280	300	7.1	7.6
H	670	690	17.0	17.5
I	045	055	1.1	1.4
J	112	128	2.8	3.3
K	250	270	6.4	6.9
L	155	165	3.9	4.2
M				
N	465	475	11.8	12.1
O	060 REF		1.5 REF	
P	040	050	1.0	1.3
Q	265	275	6.7	7.0
R	130	150	3.3	3.8
S	067	077	1.7	2.0
T	111	131	2.8	3.3
U	101	111	2.6	2.8
V	070 REF		1.8 REF	
W	441	459	11.2	11.7
X	140	180	3.6	4.1
Y	065	085	1.7	2.2
Z				



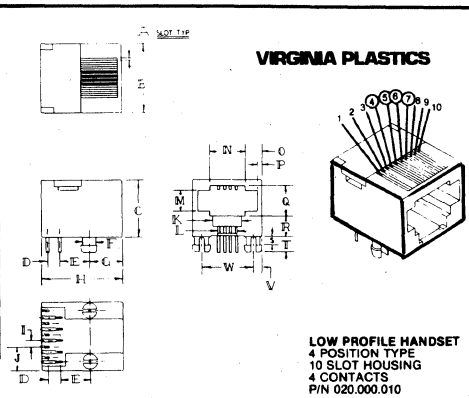
VIRGINIA PLASTICS

LOCATE GROUND STRAP PIN CENTER FROM DIM X AND Y. USE .048 DIA HOLE IN PRINTED CIRCUIT BOARD.

LOW PROFILE KEYED
8 POSITION TYPE
10 SLOT HOUSING
8 CONTACTS
POS #1 GROUND STRAP CONTACT
P/N 020.000.015

Numbers with circles are Contact Positions.

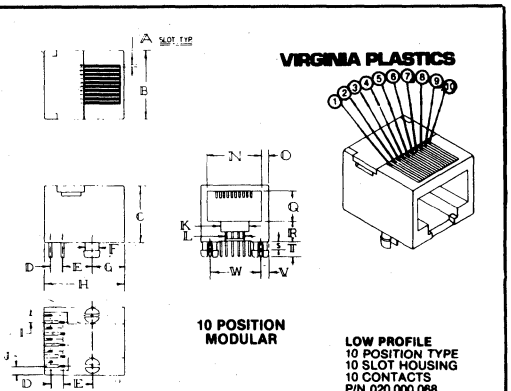
DIM.	TOLERANCE INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.
A	029 REF		7 REF	
B	580	600	14.7	15.2
C	480	500	12.2	12.7
D	092	108	2.3	2.7
E	242	258	6.1	6.6
F	120	130	3.0	3.3
G	280	300	7.1	7.6
H	670	690	17.0	17.5
I	045	055	1.1	1.4
J	212	228	5.4	5.8
K	250	270	6.4	6.9
L	155	165	3.9	4.2
M	170	190	4.3	4.8
N	303	313	7.7	8.0
O	100 REF		2.54 REF	
P	040 REF		1.0 REF	
Q	265	275	6.7	7.0
R	130	150	3.3	3.8
S	065	075	1.7	1.9
T	111	131	2.8	3.3
U				
V	070 REF		1.8 REF	
W	441	459	11.2	11.7
X				
Y				
Z				



VIRGINIA PLASTICS

LOW PROFILE HANDSET
4 POSITION TYPE
10 SLOT HOUSING
4 CONTACTS
P/N 020.000.010

DIM.	TOLERANCE MIN.	MAX.
A	.029 REF.	
B	.580	.600
C	.480	.500
D	.092	.108
E	.242	.258
F	.120	.130
G	.280	.310
H	.670	.690
I	.045	.055
J	.362	.378
K	.250	.270
L	.155	.165
M		
N	.465	.475
O	.060 REF.	
P		
Q	.265	.275
R	.130	.150
S	.065	.075
T	.111	.131
U		
V	.070 REF.	
W	.441	.459
X		
Y		
Z		



VIRGINIA PLASTICS

10 POSITION MODULAR

LOW PROFILE
10 POSITION TYPE
10 SLOT HOUSING
10 CONTACTS
P/N 020.000.068

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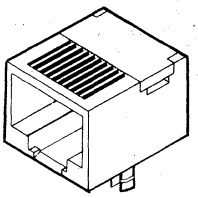
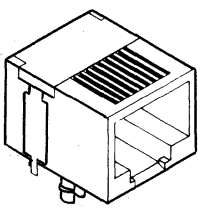
ADVANCED TECHNOLOGY IN A MODULAR CONNECTOR

DT SERIES



- Impedance matching contact configuration
- Minimizes standing wave reflections
- Capable of data transmission rates above 4 Mbps
- Large surface mating area for long contact life
- Multiple points of contact for connection integrity
- Mating life of 750 or 1,000 cycles minimum
- Highest reliability contact material -beryllium copper-
- Preloaded cantilever spring design with protected fulcrum area
- Contacts are not damaged when overstressed by smaller modular plugs

SP SERIES



- Recessed, protected contact mating portion
- Passes the UL (IEC) Accessibility "Safety" Probe inserted into the plug receiving opening
- Rectangular surface mating area for good contact life
- Multiple points of contact for connection integrity
- Mating life of 500 or 750 cycles minimum
- Highest reliability contact material -beryllium copper-
- Preloaded cantilever spring design with protected fulcrum area
- Contacts are not damaged when overstressed by smaller modular plugs

TYPES:

Low profile — Total height less than ½ (.50) inch • Occupies minimal PCB real estate • Connector depth less than .75 inch •Universal connector body size

Facade profile — Low profile body, height less than ½ (.50) inch • Front face approximately 5/8 inch height • Fits enclosure openings for standard height modular jacks • Occupies minimal PCB real estate • Connector depth less than .75 inch

Unshielded/Shielded Models:

UNSHIELDED: Model US

Female — No metal covering or metallic surface on housing • Uses either DT or SP series contacts • Any one standard contact can provide the ground path to the board for IDW male plugs

Compatible Males — Models US, IDW

INTERNAL GROUND STRAP SHIELDED: — Model IGS

Female — No metal covering or metallic surface on housing • Uses a solderable external strap adjacent to the housing and which is integral with one DT spring contact

Compatible Males: — Model IDW

OUTER METAL ENVELOPE SHIELDED: — Model OME

Female* — Metal covering or metallic surface on housing • Covering has elements to engage metallic covering on male plug

Compatible Males* — Model OME

Product Release Dates* — To be announced

MALE PLUG MODELS:

US—No metal covering or metallic surface on plug housing

IDW—No metal covering or metallic surface on plug housing

—A large AWG drain wire is installed in the plug, pierced and terminated by a male contact blade

OME—Metal covering or metallic surface on plug housing

Connector Retaining Caps:

Standard — Covers upper ⅓ of rear of connector • Normally used on all connectors

Apron — Covers more than ½ of rear of connector • Prevents access by UL "Safety" Probe into rear of connector • Optionally available on any connector

VIRGINIA PLASTICS
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Roanoke, Virginia 24015-0577
Phone (703) 985-3811
TWX 710-870-0440

CONNECTOR TECHNICAL SPECIFICATION

ELECTRICAL	—CONNECTOR SERIES— DT	SP
Contact Resistance (per contact) Initial After cycling**	10 milliohms max. 20 milliohms max.	10 milliohms max. 20 milliohms max.
Insulation resistance (adjacent contacts)	1000 megohms min.	1000 megohms min.
Dielectric withstanding voltage (adjacent contacts)	1000 VRMS @ 60 sec. duration	1000 VRMS @ 60 sec. duration
Current rating (per contact)	3.0 amps maximum	2.0 amps maximum
Contact Interruptibility (During rotation of a mated VPC cordset)	No interruption of duration ≥ 50 u sec.	No interruption of duration ≥ 50 u sec.
Durability (mating cycles) Plating type T1 Plating type T2	750 minimum 1000 minimum	500 minimum 750 minimum

**Cycling is in accordance with the Durability specified minimum mating cycles.

MATERIAL	—CONNECTOR SERIES— DT	SP
Female connector housing/cover	High Temperature polyamide and/or polyester	same
Housing/cover flammability	passes UL94V-O	same
Contact	Beryllium copper	same
Plating		
Barrier underplate	50 micro-inch minimum nickel	same
Mating spring contact area Type 1 or Type 2		
Type 1-Standard (comparable to 30 micro-inch hard gold	15 micro-inch minimum AUPD gold alloy	same
Type 2 - Optional (Comparable to 50 micro-inch hard gold)	30 micro-inch minimum AUPD gold alloy	same
Solder post	100 micro-inch minimum tin-lead	same

MECHANICAL	DT	SP
Insertion Force (to fully insert matching fully populated male into female) Female — Male Plug Size (max.) 8-10 position — 0.264"X0.464" 6 position — 0.264"X0.384" 4 position — 0.264"X0.304"	2 lbs maximum	4 lbs maximum
Plug Retention in Female (Plug mated into female shall not disengage and maintains electrical continuity. Load is applied parallel with plug axis and away from female.)	20 lb max. load	20 lb max. load
Female Retention on Printed Circuit Board (Female installed on PCB shall not disengage from PCB under load. Load is applied parallel with PCB axis and in the direction rear to front of female.)		
Prior to flow solder After flow solder	20 lb max. load 20 lb max. load	20 lb max. load 20 lb max. load
Spring Contact Life (Based on passing the contact interruptibility test after the specified mating cycles. Not based on plating durability.)	≥ 5,000 cycles nominal	≥ 3,000 cycles nominal
Contact Durability After Overstress (Based on passing the contact interruptibility test after mating of a hand-set 4 position plug into 6 or 8 or 10position female and/or mating of a 6 position plug into 8 or 10 position female.)	200 cycles max.	200 cycles max.

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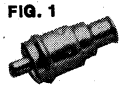
WALL-ABLE MANUFACTURING CORPORATION
ELECTRONIC COMPONENTS

SPRING LOCK PHONO PLUGS

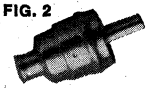
U.S. Patent Number 4,072,386

FIG. 1



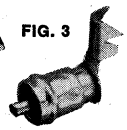
PSL 176F-6-15

FIG. 2



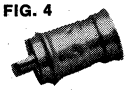
PSL 410-167-6

FIG. 3



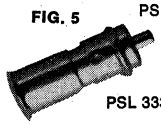
PSL 126-3-15L

FIG. 4



PSL 333-15

FIG. 5



PSL 333-15-2

Wall-Able's spring lock phono plugs offer a vast improvement in reliability, shielding, and retention over the older tulip style plugs. Construction materials include a cadmium plated steel shell and nickel plated .125 diameter seamless center pin. Insulators are UL recognized low-loss XXX-P phenolic. Alternate plating and insulating materials are available if desired.

WA Part No.	Fig.	Wire Entry Dia.	Pin Length	Overall Length	Neck Length
PSL 126F-3-12	1	.126	3/8	11/16	3/32
PSL 126F-3-15	1	.126	15/32	25/32	3/32
PSL 126F-3-16	1	.126	1/2	13/16	3/32
PSL 126F-3-18	1	.126	9/16	7/8	3/32
PSL 126F-3-20	1	.126	5/8	15/16	3/32
PSL 126F-3-22	1	.126	11/16	1"	3/32
PSL 156F-3-12	1	.156	3/8	11/16	3/32
PSL 156F-3-15	1	.156	15/32	25/32	3/32
PSL 156F-3-16	1	.156	1/2	13/16	3/32
PSL 156F-3-18	1	.156	9/16	7/8	3/32
PSL 156F-3-20	1	.156	5/8	15/16	3/32
PSL 156F-3-22	1	.156	11/16	1"	3/32
PSL 176F-3-12	1	.176	3/8	11/16	3/32
PSL 176F-3-15	1	.176	15/32	25/32	3/32
PSL 176F-3-16	1	.176	1/2	13/16	3/32
PSL 176F-3-18	1	.176	9/16	7/8	3/32
PSL 176F-3-20	1	.176	5/8	15/16	3/32
PSL 176F-3-22	1	.176	11/16	1"	3/32
PSL 126F-6-12	1	.126	3/8	25/32	3/16
PSL 126F-6-15	1	.126	15/32	7/8	3/16
PSL 126F-6-16	1	.126	1/2	29/32	3/16
PSL 126F-6-18	1	.126	9/16	31/32	3/16
PSL 126F-6-20	1	.126	5/8	1 1/32	3/16
PSL 126F-6-22	1	.126	11/16	1 3/32	3/16
PSL 146F-6-12	1	.146	3/8	25/32	3/16
PSL 146F-6-15	1	.146	15/32	7/8	3/16
PSL 146F-6-16	1	.146	1/2	29/32	3/16
PSL 146F-6-18	1	.146	9/16	31/32	3/16
PSL 146F-6-20	1	.146	5/8	1 1/32	3/16
PSL 146F-6-22	1	.146	11/16	1 3/32	3/16
PSL 156F-6-12	1	.156	3/8	25/32	3/16
PSL 156F-6-15	1	.156	15/32	7/8	3/16
PSL 156F-6-16	1	.156	1/2	29/32	3/16
PSL 156F-6-18	1	.156	9/16	31/32	3/16
PSL 156F-6-20	1	.156	5/8	1 1/32	3/16
PSL 156F-6-22	1	.156	11/16	1 3/32	3/16
PSL 176F-6-12	1	.176	3/8	25/32	3/16
PSL 176F-6-15	1	.176	15/32	7/8	3/16
PSL 176F-6-16	1	.176	1/2	29/32	3/16
PSL 176F-6-18	1	.176	9/16	31/32	3/16
PSL 176F-6-20	1	.176	5/8	1 1/32	3/16
PSL 176F-6-22	1	.176	11/16	1 3/32	3/16
PSL 225F-6-12	1	.225	3/8	25/32	3/16
PSL 225F-6-15	1	.225	15/32	7/8	3/16
PSL 225F-6-16	1	.225	1/2	29/32	3/16
PSL 225F-6-18	1	.225	9/16	31/32	3/16
PSL 225F-6-20	1	.225	5/8	1 1/32	3/16
PSL 225F-6-22	1	.225	11/16	1 3/32	3/16
PSL 410-167-6	2	.167	9/16	63/64	3/16
PSL 126-3-12L	3	.126	3/8	47/64	—
PSL 126-3-15L	3	.126	15/32	47/64	—
PSL 126-3-16L	3	.126	1/2	49/64	—
PSL 126-3-18L	3	.126	9/16	53/64	—
PSL 126-3-20L	3	.126	5/8	57/64	—
PSL 126-3-22L	3	.126	11/16	61/64	—
PSL 333-15	4	—	15/32	25/32	—
PSL 333-15-2	5	—	15/32	1 1/8	—

Where additional spacing is desired between conductors or special polarity is desired, these plugs are available with .093 diameter pins.

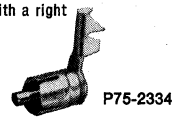
WA Part No.	Fig.	Wire Entry Dia.	Pin Length	Overall Length	Neck Length
PSL 126F-3-.093	—	.126	1/2	13/16	3/32
PSL 126F-6-.093	—	.126	1/2	29/32	3/16
PSL 156F-3-.093	—	.156	1/2	13/16	3/32
PSL 156F-6-.093	—	.156	1/2	29/32	3/16
PSL 176F-3-.093	—	.176	1/2	13/16	3/32
PSL 176F-6-.093	—	.176	1/2	29/32	3/16
PSL 225F-6-.093	—	.225	1/2	29/32	3/16

TULIP STYLE PHONO PLUGS

These plugs can also be supplied with a right angle or straight strain relief lug in any phono pin length desired.



P75-2290



P75-2334

Our tulip plugs are available for low cost connections. Standard parts are constructed with low loss, UL approved, XXX-P phenolic insulators. Shells are plated cadmium over copper for excellent solderability. Other insulating materials and plating are also available.

STEEL PHONO SHELLS

WA Part No.	Wire Entry Dia.	Pin Length	Overall Length
P75-2290	.126	3/8	5/8
P75-2290-1	.126	15/32	23/32
P75-2290-2	.126	1/2	3/4
P75-2290-3	.126	9/16	13/16
P75-2290-4	.126	5/8	7/8
P75-2290-5	.126	11/16	15/16
P75-2121	.176	3/8	5/8
P75-2121-1	.176	15/32	23/32
P75-2121-2	.176	1/2	3/4
P75-2121-3	.176	9/16	13/16
P75-2121-4	.176	5/8	7/8
P75-2121-5	.176	11/16	15/16

BRASS PHONO SHELLS

P75-1004	.126	3/8	5/8
P75-1004-1	.126	15/32	23/32
P75-1004-2	.126	1/2	3/4
P75-1004-3	.126	9/16	13/16
P75-1004-4	.126	5/8	7/8
P75-1004-5	.126	11/16	15/16
P75-2040	.176	3/8	5/8
P75-2040-1	.176	15/32	23/32
P75-2040-2	.176	1/2	3/4
P75-2040-3	.176	9/16	13/16
P75-2040-4	.176	5/8	7/8
P75-2040-5	.176	11/16	15/16
P75-2334	—	3/8	1/64

PHONO JACKS

Wall-Able's phono jacks are made with close tolerance steel shells, spring brass or phosphor bronze contacts, ceramic insulators and glass polyester washers, or molded insulators. Cadmium plating is standard, with other platings available.

SOLDER OR STAKE-IN MTG.



J75-1005

LONGER, CLOSE TOLERANCE SOLDER OR STAKE-IN MTG.



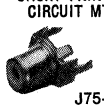
J75-2183

SHOULDERED SOLDER OR STAKE-IN MTG.



J75-1021

SHORT PRINTED CIRCUIT MTG.



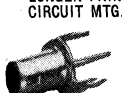
J75-2111S

FORCE FIT MTG.



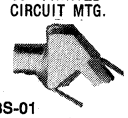
J75-1001

LONGER PRINTED CIRCUIT MTG.



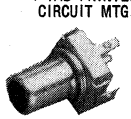
J75-2118

50° PRINTED CIRCUIT MTG.



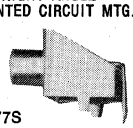
J75-2028S-01

4 TAB PRINTED CIRCUIT MTG.



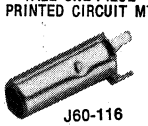
WA-549-1

RIGHT ANGLE PRINTED CIRCUIT MTG.



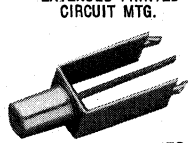
J75-1177S

TALL ONE-PIECE PRINTED CIRCUIT MTG.



J60-116

EXTENDED PRINTED CIRCUIT MTG.



J75-2347S

PHONO JACKS

DUAL PANEL MTG. STYLE



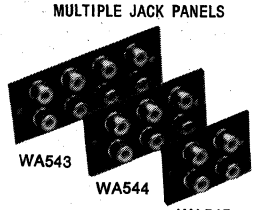
WA546-4

SINGLE PANEL MTG.



WA586

MULTIPLE JACK PANELS



WA543

WA544

WA545

MOLDED JACK PANELS

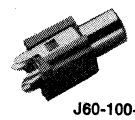


J60-114A



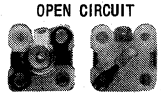
J60-115

SWITCHING OR OPEN STYLE AVAILABLE — P.C. MTG.



J60-100-010

PANEL MTG. OPEN CIRCUIT



J75-2266

PANEL MTG.



J60-113

SWITCHING CIRCUIT



J75-2266-02

SEALED JACK FOR MOLDING

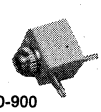


J75-2349

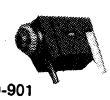
PHONE PLUGS AND JACKS

Miniature and subminiature phone plugs are made of nickel plated brass. Mating phone jacks are available in panel or printed circuit mount versions with precision contacts for extended reliability.

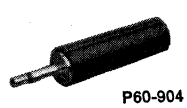
SUBMINIATURE — .097 DIA



P60-900

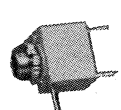


P60-901



P60-904

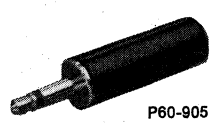
MINIATURE — .136 DIA.



P60-902



P60-903



P60-905

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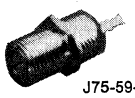
WALL-ABLE MANUFACTURING CORPORATION
ELECTRONIC COMPONENTS

F CONNECTOR

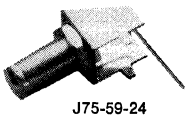
Designed for 75 Ohm nominal impedance Wall-Able's F connectors are manufactured of brass screw machine housings with brass or phosphor bronze contacts. Reliability is assured by utilizing insulators of molded thermoplastic or stamped phenolic materials.

FEMALE PANEL MTG.



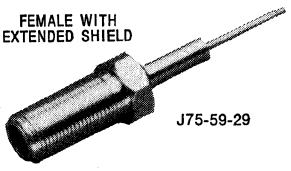
J75-59-0

FEMALE RT. ANGLE P.C. MTG.

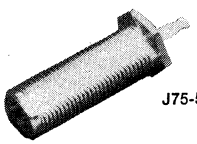


J75-59-24

FEMALE WITH EXTENDED SHIELD



J75-59-29



J75-59-37

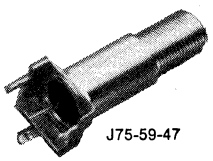
LONG VERSION FEMALE PANEL MTG.

PRINTED CIRCUIT MTG.

STAKABLE PANEL MTG.

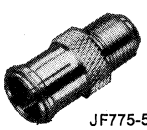


J75-59-44



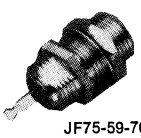
J75-59-47

MALE/FEMALE PANEL MTG.



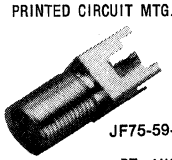
JF775-59-69

FEMALE PANEL MTG.



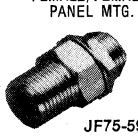
JF75-59-70

PRINTED CIRCUIT MTG.



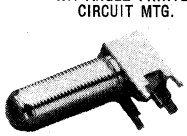
JF75-59-71

FEMALE/FEMALE PANEL MTG.



JF75-59-72

RT. ANGLE PRINTED CIRCUIT MTG.

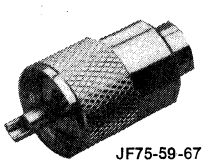


JF75-59-73

UHF CONNECTORS

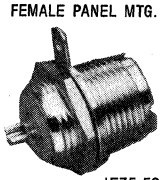
Popular nickel plated brass UHF connectors are available in panel mount and cable styles. All connecting threads are ⅝-24 NEF. These assemblies will withstand voltages of 1,000 Volts AC for 1 minute.

MALE CABLE MTG.



JF75-59-67

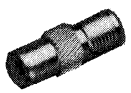
FEMALE PANEL MTG.



JF75-59-68

ADAPTERS

Wall-Able's extensive line of adapters allow easy mating of dissimilar connectors. They are manufactured of precision brass housings, UL recognized nylon molded insulators, and dependable contacts to assure firm mating specifications.



J75-59
"F" FEMALE TO PHONO JACK



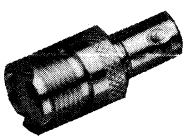
J75-59-4
"F" FEMALE TO PHONO JACK



J75-59-5G
"F" FEMALE TO PHONO JACK, DOUBLE ISOLATION



J75-59-28
"F" MALE TO PHONO JACK



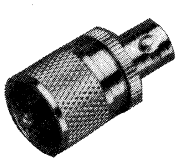
JF75-59-56
BNC FEMALE TO UHF MALE

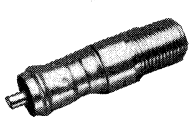


JF75-59-57
BNC JACK TO "F" MALE



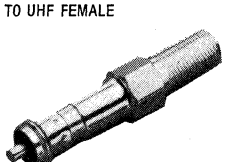
JF75-59-59
BNC FEMALE TO "F" FEMALE





PSL 333-7559
"F" FEMALE TO PHONO PLUG

JF75-59-60
BNC FEMALE TO UHF FEMALE

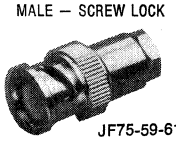


PSL 333-7559-3
"F" FEMALE TO PHONO PLUG

BNC CONNECTORS

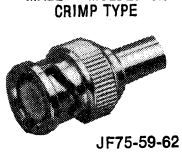
Nickel plated brass BNC connectors are designed for 50 Ohm nominal impedance and feature small size and extremely reliable bayonet locking. Contacts are nickel plated with insulators molded of UL approved polyacetal or equivalent.

MALE – SCREW LOCK



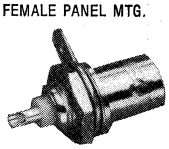
JF75-59-61

MALE – MOLDED OR CRIMP TYPE



JF75-59-62

FEMALE PANEL MTG.

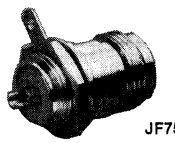


JF75-59-63

N CONNECTORS

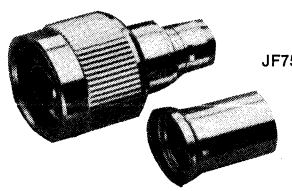
Designed for 50 Ohm impedance, Wall-Able's N connectors offer superior reliability. Their bodies are nickel plated brass with insulators of molded glass-filled nylon and nickel plated center contacts.

FEMALE PANEL MTG.



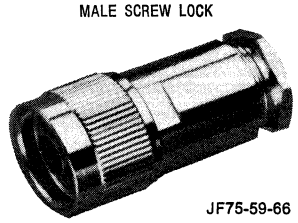
JF75-59-64

CABLE MTG. MALE – CRIMP OR MOLD



JF75-59-65

MALE SCREW LOCK

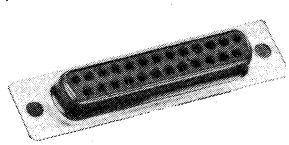


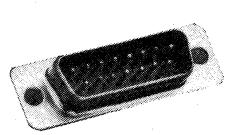
JF75-59-66

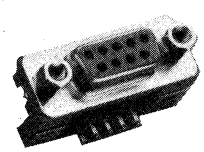
SUBMINIATURE D CONNECTORS

Standard spacing panel mount D connectors are constructed of gold plated brass contacts in 30% glass reinforced PBT molded housings. Contact styles include solder, printed circuit straight and printed circuit right angle. Both male and female connectors can be supplied with 9, 15, 25, 37 or 50 contacts.

Current Rating: 7.5 Amps maximum
Dielectric Strength: 1,000V
Insulator Resistance: 1,000 mΩ minimum at 500V DC
Contact Resistance: 4 mΩ maximum at 5A DC
Temperature: −55°C to 105°C







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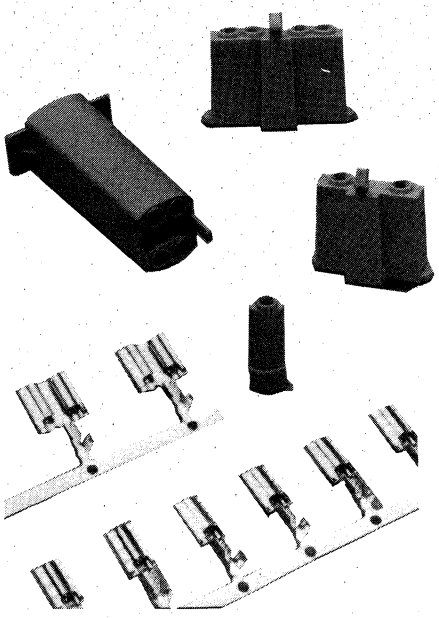
WALL-ABLE MANUFACTURING CORPORATION
ELECTRONIC COMPONENTS

CONTACTS AND CONTACT HOUSING



Wall-Able has designed contacts and housings to solve specific customer requirements. Single and multiple wire terminations for .093 dia. pin assemblies, locking female slip-on contacts for .205 quick disconnect tabs, and special P.C. Edgeboard connectors are only a few examples of Wall-Able's engineering expertise.

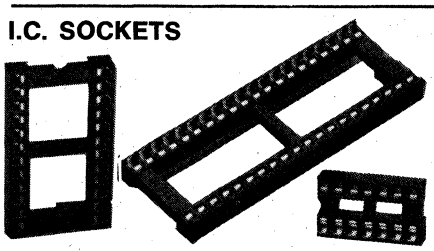
CHAIN TERMINALS

WA Part No.	Mating Part	Wire Size	Pcs./ Reel
WA339-1	.093 pin	22-24GA	8,000
WA339-2	.093 pin	22-24GA	8,000
WA339-3	.093 pin	22-24GA	8,000
WA382	Dual .093 pins	22-24GA	6,000
WA302-100	.187/.220 x .020 male tab	22-24GA	5,000
WA302-200	.187/.220 x .020 male tab	18-20GA	5,000
WA380-200	.205 x .235 male tab	18-20GA	4,000

CONTACT HOUSINGS

WA Part No.	Terminal Used	Number of Terminal	Standard Molding Compound	Terminal Spacing	Mates with	Comments
WA808-2	WA 339-1	1	Lexan 940	N/A	.093 dia. pin	—
WA812	WA 339-2	2	Noryl N190	.400	.093 dia. pin	—
WA813	WA 339-2	3	Noryl N190	.400	.093 dia. pin	—
WA814	WA 382	2	Noryl N190	.400	.093 dia. pin	Dual pin contact
WA815-1	WA 339-2	2	Noryl N190	.250	.093 dia. pin	PC locking tab
WA815-2	WA 339-2	2	Noryl N190	.250	.093 dia. pin	PC locking tab
WA815-3	WA 339-2	2	Noryl N190	.400	.093 dia. pin	PC locking tab
WA815-4	WA 339-2	2	Noryl N190	.400	.093 dia. pin	PC locking tab
WA815-5	WA 339-2	2	Noryl N190	.500	.093 dia. pin	—
WA815-6	WA 339-2	2	Noryl N190	.500	.093 dia. pin	PC locking tab
WA815-7	WA 339-2	2	Noryl N190	.500	.093 dia. pin	PC locking tab
WA815-8	WA 339-2	2	Noryl N190	.500	.093 dia. pin	PC locking tab
WA815-9	WA 339-2	2	Noryl N190	.400	.093 dia. pin	—
WA815-10	WA 339-2	2	Noryl N190	.600	.093 dia. pin	PC locking tab
WA815-11	WA 339-2	3	Noryl N190	.400	.093 dia. pin	—
WA815-12	WA 339-2	3	Noryl N190	.400	.093 dia. pin	PC locking tab
WA815-13	WA 339-2	3	Noryl N190	.400	.093 dia. pin	PC locking tab
WA815-14	WA 339-2	3	Noryl N190	.400	.093 dia. pin	PC locking tab
WA815-15	WA 339-2	3	Noryl N190	.250	.093 dia. pin	PC locking tab
WA816	WA 382	2	Noryl N190	.600	.093 dia. pin	Dual pin contact
WA952	WA 349	6	Noryl SE1-802	.150	PC board	Edgeboard connector

I.C. SOCKETS

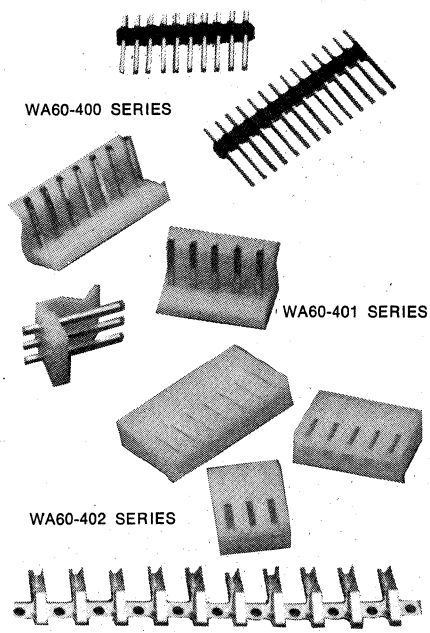


Wall-Able's closed-back I.C. sockets are molded of an extremely stable, glass filled polyester (UL 94V-0). Each socket has dual-face wiping phosphor bronze contacts that provide excellent mating forces and low contact resistance. Spacing is .100 typical. The standard plating on the contacts is tin, with gold available if desired.

WA Part No.	No. of Contacts	Length	Width	Contact Width
WA60-305	8	.400	.400	.300
WA60-301	14	.700	.400	.300
WA60-302	16	.800	.400	.300
WA60-309	20	1.000	.400	.300
WA60-306	24	1.200	.700	.600
WA60-307	28	1.400	.700	.600
WA60-308	40	2.000	.700	.600

HEADERS

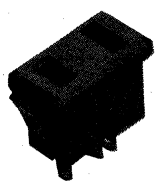
Printed circuit headers utilize .025 or .045 square, tin-plated brass pins in molded nylon housings (UL rated 94V-0). Both parts can be manufactured in straight or in right angle versions.
Note: Contact is supplied in chain form only.



AC CONVENIENCE RECEPTACLE

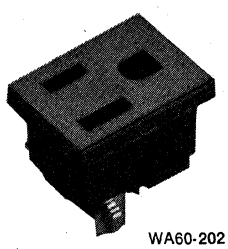
Polarized 2 and 3 pin AC receptacles are designed for snap-in ease of assembly. They are UL and CSA approved.

SNAP IN PANEL MTG.



WA60-201

SNAP IN PANEL MTG.



WA60-202

DIN CONNECTORS

Both snap-in panel mount and P.C. mounting Din Connectors are available in various pin configurations. The contacts are silver plated brass in UL recognized 94V-1 thermoplastic molded copies. The contact is designed to assure consistent insertion and retention force.



WA60-300

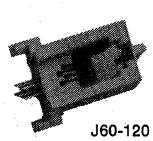


WA60-311

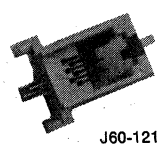
WA Part No.	Description
WA60-314	3 pin Din/panel mount
WA60-300	8 pin Din/panel mount
WA60-312	5 pin Din/printed circuit mount
WA60-313	7 pin Din/printed circuit mount
WA60-311	8 pin Din/printed circuit mount

MODULAR TELEPHONE JACKS

Wall-Able's telephone jacks offer the labor saving advantage of printed circuit assembly. Gold plated phosphor bronze contacts and molded ABS housings assure long-term reliability.



J60-120



J60-121

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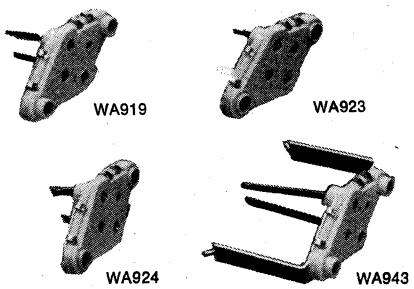
WALL-ABLE MANUFACTURING CORPORATION
ELECTRONIC COMPONENTS

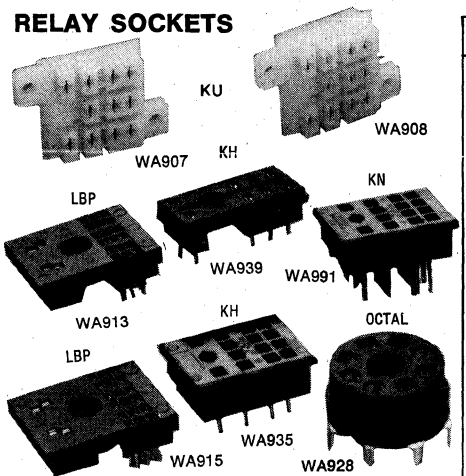
POWER TRANSISTOR SOCKETS



Heavy duty, fully insulated transistor sockets, TO-3 style, are molded of UL approved glass filled polyester and can be supplied with printed circuit or panel mount saddles. Spring brass or phosphor bronze contacts are available with cadmium, tin or gold plating. Molded bosses in casting eliminate the need for separate washers.

WA Part No.	Contact Type	Contact Plating	Mounting Hole	Molded Boss Height
WA917	PC	Gold	4-40 THD	.093
WA918	PC	Gold	4-40 THD	.040
WA919	PC	Cadmium	Through Hole	.093
WA920	PC	Cadmium	Through Hole	.040
WA923	PC	Cadmium	6-32 THD	.040
WA924	Solder	Cadmium	6-32 THD	.093
WA925	PC	Cadmium	Through Hole	.093
WA932	Solder	Electro-tin	6-32 THD	.040
WA933	Solder	Cadmium	6-32 THD	—
WA943	PC	Cadmium	6-32 THD	.093
WA962	PC	Cadmium	Through Hole	.040
WA964	Solder	Cadmium	6-32 THD	—
WA965	Solder	Cadmium	6-32 THD	—
WA973	PC	Cadmium	6-32 THD	.040
WA980	PC	Gold	6-32 THD	.093
WA987	PC	Gold	6-32 THD	.040

RELAY SOCKETS

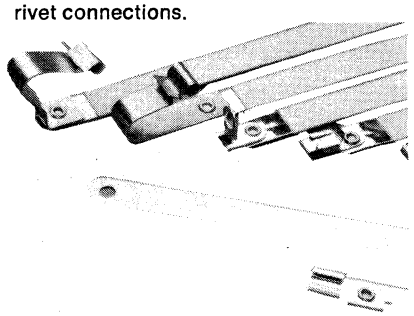


General purpose and telephone style relay sockets are molded of UL approved flame retardant compounds and designed with our own close tolerance spring brass or phosphor bronze contacts. Cadmium, tin or special platings can be supplied as desired.

WA Part No.	Casting Material	Mounting Ears Included	No. of Contacts	Type of Contacts	Contact Length	Socket Type	Included Ground Lug
WA905	Nat. Nylon 6, FR.	Yes	8	PC	9/64	KU	No
WA906	Nat. Nylon 6, FR.	No	11	PC	9/64	KU	No
WA907	Nat. Nylon 6, FR.	Yes	11	PC	9/64	KU	No
WA908	Nat. Nylon 6, FR.	Yes	11	QD*	—	KU	No
WA909	Nat. Nylon 6, FR.	Yes	11	Solder	—	KU	No
WA930	Nat. Nylon 6, FR.	Yes	9	PC	9/64	KU	No
WA936	Nat. Nylon 6, FR.	No	11	PC	11/64	KU	No
WA944	Nat. Nylon 6, FR.	Yes	11	PC	11/64	KU	No
WA945	Nat. Nylon 6, FR.	No	5	PC	11/64	KU	No
WA946	Nat. Nylon 6, FR.	Yes	11	Solder	—	KU	No
WA947	Nat. Nylon 6, FR.	No	8	PC	11/64	KU	No
WA948	Nat. Nylon 6, FR.	Yes	11	PC	11/64	KU	No
WA972	Nat. Nylon 6, FR.	Yes	11	PC	3/16	KU	No
WA983	Nat. Nylon 6, FR.	Yes	10	PC	9/64	KU	No
WA984	Nat. Nylon 6, FR.	Yes	5	PC	9/64	KU	No
WA985	Nat. Nylon 6, FR.	Yes	7	PC	9/64	KU	No
WA986	Nat. Nylon 6, FR.	No	11	PC	3/16	KU	No
WA988	Nat. Nylon 6, FR.	Yes	8	PC	11/64	KU	No
WA912	Valox 420 Black	No	22	Solder	13/64	LBP	No
WA913	Valox 420 Black	No	22	PC	13/64	LBP	No
WA915	Valox 420 Black	No	22	Solder	13/64	LBP	No
WA922	Valox 420 Black	No	11	PC	3/16	Circular	No
WA928	Valox 420 Black	No	8	PC	3/16	Octal	No
WA934	G. P. Phenolic Black	No	14	Solder	1/8	KH	Yes
WA935	G. P. Phenolic Black	No	14	PC	5/32	KH	No
WA937	G. P. Phenolic Black	No	14	PC	5/32	KH	Yes
WA938	G. P. Phenolic Black	No	14	PC	5/32	KH	Yes
WA939	G. P. Phenolic Black	No	14	Solder	5/16	KH	Yes
WA940	G. P. Phenolic Black	No	14	Solder	5/16	KH	No
WA941	G. P. Phenolic Black	No	10	PC	5/32	KH	No
WA942	G. P. Phenolic Black	No	8	PC	5/32	KH	No
WA950	G. P. Phenolic Black	No	8	PC	5/32	KH	No
WA961	Valox 420 Black	No	22	PC	13/64	LBP	No
WA963	G. P. Phenolic Black	No	8	PC	5/32	KH	No
WA967	G. P. Phenolic Black	No	8	PC	5/32	KH	Yes
WA991	Valox 420 Black	No	8	PC	5/32	RK	No

GROUND STRAPS

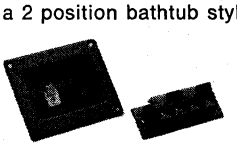
Wall-Able has designed and developed a variety of flat ground straps to efficiently provide static grounds. These straps are available with a number of different mounting clips for P.C., panel, screw or rivet connections.



WA301 Depress and lock to .187/.220 male quick disconnect tab.
WA325 Push on grip type clip — .015/.030 thick panel.
WA347 Anti-rotation screw or rivet mount.
WA500-01 Pull on grip type clip — .042/.052 thick panel.
WA502 Push on grip type clip — .020/.025 thick panel.
WA519 180° mount on printed circuit board.
WA598 Connect to .250 male quick disconnect tab.
WA5003 Pull on grip type clip — .015/.025 thick panel.

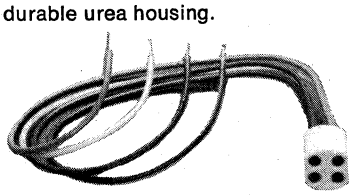
PUSH TERMINALS

Fully molded push lock panel assemblies for instaneous wire connection are available in a 2 and 4 position panel flush style or a 2 position bathtub style.



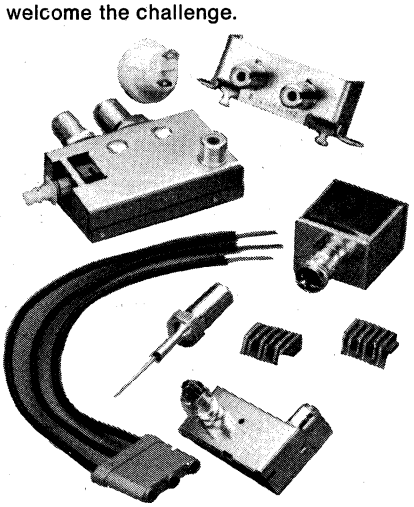
CIRCULINE LAMP SOCKET ASSEMBLIES

Wall-Able's lamp socket assemblies are UL and CSA approved for both indoor and outdoor applications. These assemblies are constructed with four custom designed contacts, 18 gauge wires, and a durable urea housing.



CUSTOM COMPONENTS

Wall-Able has built a reputation as an innovator in the design of custom electronic components that are specifically designed for precise applications. If you have a special requirement, call us. We welcome the challenge.



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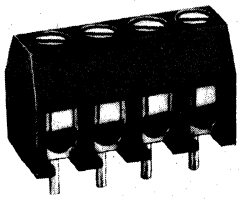
WECO® SCREW CONNECTORS FOR PRINTED CIRCUITS

Figure No. 1



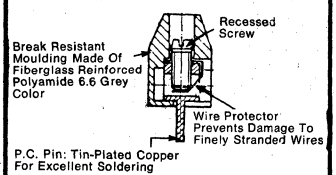
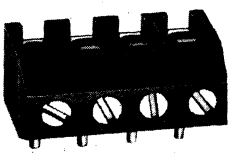


Figure No. 2



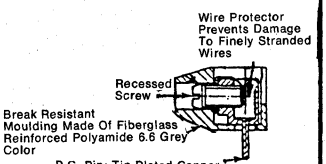
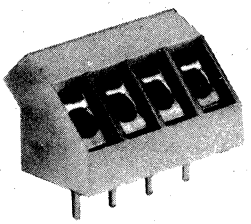


Figure No. 3



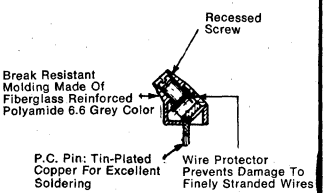
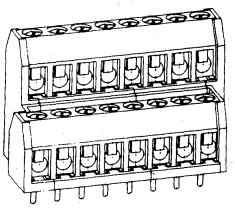
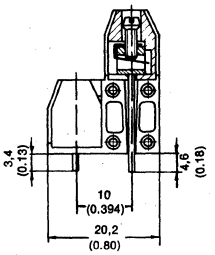


Figure No. 4





International Approvals: VDE rated 0110

Type	No. of Circuits	Block length = No. of circuits required x pitch mm	Block length = No. of circuits required x pitch in	Height mm	Height in	Width mm	Width in	Wire Entrance relative to PCB: horizontal	45° angled	vertical	UL recognized for: (File No.: E69841) Voltage	Amperage	AWG	CSA approved for: (File No.: LR24322) Voltage	Amperage	AWG	Design similar to figure No.:
940 DS	2-32*△	5.08	0.200	11.5	0.45	8	0.31	X			250	15	14-22	50/300	15/10	14-22	1
941 DS	2-32*△	5.08	0.200	8	0.31	11.5	0.45			X	250	15	14-22	50/300	15/10	14-22	2
942 DS	2-16	10.16	0.400	11.5	0.45	8	0.31	X			300	15	14-22	150/300	15/10	14-22	1
943 DS	2-16	10.16	0.400	8	0.31	11.5	0.45			X	300	15	14-22	150/300	15/10	14-22	2
950 DS	2-32*△	5	0.197	10	0.39	8	0.31	X			300	15	14-22	50/300	15/10	14-22	1
951 DS	2-32*△	5	0.197	8	0.31	10	0.39			X	300	15	14-22	50/300	15/10	14-22	2
952 DS	2-16*	10	0.394	10	0.39	8	0.31	X			300	15	14-22	150/300	15/10	14-22	1
953 DS	2-16	10	0.394	8	0.31	10	0.39			X	300	15	14-22	150/300	15/10	14-22	2
960 DS	2-32 △	5.08	0.200	13.5	0.53	9	0.35	X			250	15	14-22	50/300	15/10	14-22	1
961 DS	2-32 △	5.08	0.200	9	0.35	13.5	0.53			X	250	15	14-22	50/300	15/10	14-22	2
962 DS	2-16	10.16	0.400	13.5	0.53	9	0.35	X			300	15	14-22	150/300	15/10	14-22	1
963 DS	2-16	10.16	0.400	9	0.35	13.5	0.53			X	300	15	12-22	50/300	15/10	14-22	2
964 DS	2-3 △	5.08	0.200	12	0.47	12.5	0.49		X		300	15	14-22	50/300	15/10	14-22	3
968 DS	2-32△	5.08	0.200	13.5	0.53	9	0.35	X			300	15	12-20	50/300	15/10	10-22	1
969 DS	2-16	10.16	0.200	13.5	0.53	9	0.35	X			300	15	12-20	150/300	15/10	10-22	1
970 DS	2-32△	5	0.197	13	0.51	9	0.35	X			300	15	14-22	50/300	15/10	14-22	1
971 DS	2-32△	5	0.197	9	0.35	13	0.51			X	300	15	14-22	50/300	15/10	14-22	2
972 DS	2-16	10	0.394	13	0.51	9	0.35	X			300	15	14-22	150/300	15/10	14-22	1
973 DS	2-16	10	0.394	9	0.35	13	0.51			X	300	15	14-22	150/300	15/10	14-22	2
974 DS	2-26*△	5	0.197	12	0.47	12.5	0.49		X		300	15	14-22	50/300	15/10	14-22	3
975 DS	2-13*	10	0.394	12	0.47	12.5	0.49		X		300	15	14-22	150/300	15/10	14-22	3
976 DS	2-3	7.5	0.295	12	0.47	12.5	0.49		X		300	15	14-22	150/300	15/10	14-22	3
977 DS†	2-3	7.5	0.295	13	0.51	9.5	0.37	X			300	15	14-22	150/300	15/10	14-22	1
977 OPDS	2-19	7.5	0.295	13	0.51	9	0.35	X			300	15	14-22	150/300	15/10	14-22	1
977 SGDS	2-3	7.5	0.295	9.5	0.37	13	0.51			X	—	—	—	—	—	—	2
978 DS	2-32△	5.00	0.197	13.0	0.51	9	0.35	X			300	15	12-20	50/300	15/10	10-22	1
979 DS	2-16	10.00	0.394	13.0	0.51	9	0.35	X			300	15	12-20	150/300	15/10	10-22	1
910 DS	2-12	10	0.394	14	0.55	9	0.35	X			300	25	18-10	150/300	25/10	8-14	1
97 EDS	2-64	5	0.197	27	1.06	20.2	0.80	X			300	15	14-22	50/300	15/10	14-22	4

"Tiered Terminal": Two rows of the type 970 DS are offset by half of the pitch. Produces an effective pitch of 2.5 mm/0.096 in.

*: Terminal strips can be butted side by side to form any requested pole configuration without losing center-to-center spacing.

†: Each circuit is equipped with a test hole.

△: A2 and 3 pole version of the block is available featuring the Dovetail Interlocking System, enabling 2 or more blocks to be joined by the slot/key interlock. The advantages of this feature are flexibility and the stocking of only 2 and 3 pole blocks.

Terminal body accommodating 20-12 AWG: available for types: 97 EDS, 977 DS, 977 DPDS. It allows the connection of several conductors per pole.

Extra Features: Screen print marking, adhesive labeling strips. Blocks can be supplied without wire protector. Most types can be supplied with solder pins exceeding their standard length and up to 75mm/3 in. long.

Mil Spec: Various mil-specified insulating materials can be provided upon request.

Moulding: Glass fibre reinforced Polyamide 6.6, grey color
Upper temperature limit: short-time 200°C/392°F
continuous100-120°C/212-248°F
Cold resistant to: −50°C/−58°F

Terminal Body: Tin-plated Brass

Soldering Pin: Tin-plated copper, for excellent solderabiity

Wire Protector: Copper alloy

Screw: Zinc-plated steel, yellow chromated

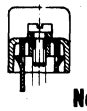
HOW TO ORDER: Indicate Type and No. of Circuits, e.g.: 950 DS-12 is type 950 DS with 12 circuits.

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
Kirkland, P.Q. H9H3L4
Telex: 05-821840 — Phone: (514) 694-9136 — (514) 694-0518 — FAX: (514) 694-0956

USA
WECO Electrical Connectors Inc.
Trimex Building, Rt. 11
Mooers, NY 12958
Phone: (518) 298-4810 — FAX: (518) 298-5938

WECO® SINGLE ROW SCREW BARRIER TERMINAL STRIPS FOR PRINTED CIRCUITS


No. 1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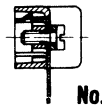
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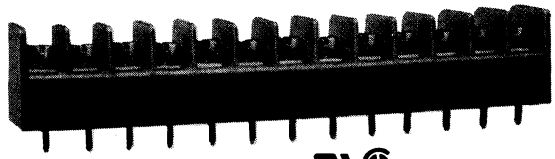


VDE rated 0110

Moulding: Polyamide 6.6, grey color
Permissible temperature loading:
short-time: 140-160°C/284-320°F
continuous: 80-100°C/176-212°F
Cold resistant down to: —40°C/—40°F
Terminal body: tin-plated brass, for excellent solderability.
Screw and wire clamp: zinc-plated steel, yellow chromated.
Extra features: Screen print marking. All PCB executions mentioned can be supplied for panel mounting. Protective covers.
*) **Available with Back Barrier to form tri-barriers.** Each connection is surrounded on all three sides, not just two. Stray wire ends are all contained . . . no chance of adjacent terminal wires shorting.
Our back barrier also acts as a wire-stop to tell the wireman he has wire in the correct position.

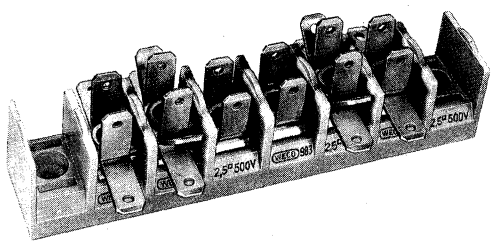
Type	No. of Circuits	Height mm	Height in	Width mm	Width in	Block length = No. of circuits x pitch mm	Block length = No. of circuits x pitch in	UL recognized for: (File No.: E69841) Voltage	UL Amperage	UL AWG	CSA approved for: (File No. LR24322) Voltage	CSA Amperage	CSA AWG	Design similar to figure No.:
980 S	2-32	15	0.59	14	0.55	6.35	¼	250	7	22-18	300	20	22-18	2
980 D	2-32	15	0.59	14	0.55	6.35	¼	250	7	22-18	300	20	22-18	1
980 W	2-32	14	0.55	15	0.59	6.35	¼	250	7	22-18	300	20	22-18	3
982 S	2-26	16.5	0.65	16	0.63	9.52	⅜	300	20	20-12	300	20	18-14	2
982 D	2-26	16.5	0.65	16	0.63	9.52	⅜	300	20	20-12	300	20	18-14	1
983 S*	2-26	16.5	0.65	16	0.63	10.00	0.394	300	20	20-12	300	20	18-14	2
983 D*	2-26	16.5	0.65	16	0.63	10.00	0.394	300	20	20-12	300	20	18-14	1

Quick Connect Terminal Blocks

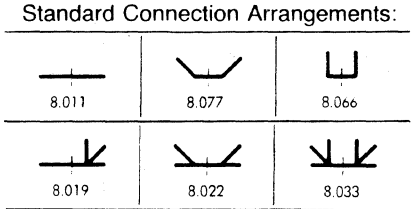
983F for Panel/Chassis Mounting — 2-24 circuits

983FS for printed circuit application — one PC-Pin — 2-26 circuits

983FD for printed circuit application — two PC-Pins — 2-26 circuits



Standard Connection Arrangements:



With Quick connects 4.8 x 0.8mm (.187 x 0.32″)
For Receptacles 4.8mm/.032″ DIN 46247
Each circuit may be equipped with maximum 6 quick connects. The quick connects are rivetted and therefore a low contact resistance is provided. On request the rivet can be replaced by a screw.
As type 983F is to be used in panel/chassis applications two mounting holes are provided as shown on the picture above, one on either side. One may request mounting holes at other locations. It is obligatory to use an insulating base type BST 983F for type 983F. All blocks will be shipped unmarked as standard. Numbering of blocks and/or insulating base BST 983F will be provided on request. Blocks can be installed end-to-end to form any required pole configuration while maintaining center-to-center spacing.

How to Order:

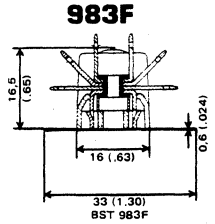
Please provide sketch of quick connect configuration requirements for type 983 F, FS and FD.
For all Screw Barrier Blocks: Indicate Type and No. of Circuits, e.g.: 980S-12 is type 980S with 12 circuits.

Technical Data:

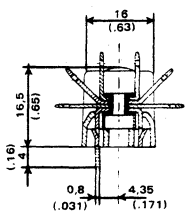
UL	CSA
250 V, 15 A	300 V, 20 A
Max. 20-12 AWG	18-14 AWG
File No.: E69841	**File No.:** LR24322

Pitch: 10mm/0.394″
Rated: 500 V
Nominal Cross-Section: 2.5mm²/22-14 AWG
Current Carrying Capacity: max. 16 A, see DIN 46249.983F must be mounted on insulating base BST 983F.
PC-Pin size of 983 FS and 983FD: 0.8 x 1.0mm/.031 x .039″
Recommended Hole Diameter in PC-Board for 983F and 983FD: 1.30mm/.051″

983F



983FS



Inch dimensions (in brackets) for reference only; use metric dimensions for design purposes.

Material:

Moulding: Polyamide 6.6, grey color
Upper Temperature Limit:
Short-time: 140-160°C/284-320°F
Continuous: 80-100°C/176-212°F
Cold-resistant to: —40°C/—40°F
Resistance to tracking: Non-tracking factor KB>600
Quick Connects: Nickel-plated brass
Rivet: Tin-plated copper
Terminal Body: Tin-plated brass suitable for soldering.
Screw and wire clamp: Zinc-plated steel, yellow chromated.
Insulating Base BST 983F: Rigid white PVC
Upper Temperature Limit: 80°C/175°F
Dimensional Data: Thickness: 0.6mm/.024″
Width: 33mm/1.30″
Length: No. of poles (=No. of circuits plus 2 Mounting Holes) x 10mm/.394″

Available Options:

Consecutive Numbering (Screen Print). Special Numbering to customer requirements (Screen Print). Please provide sketch.
Mil-Spec: Various mil-specified insulating materials can be provided on request.

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
Kirkland, P.Q. H9H3L4
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USA
WECO Electrical Connectors Inc.
Trimex Building, Rt. 11
Mooers, NY 12958
Phone: (518) 298-4810 — FAX: (518) 298-5938

WECO® PLUG-IN SCREW CONNECTORS FOR PRINTED CIRCUITS

The plug-in screw connectors consist of two parts, plug and header. Various models and combinations are available.

The header is soldered to the printed circuit board. The plug is then plugged onto the header and can easily be disconnected, when needed.

Once unplugged, the PC pins in the header can be used as test points.

Each screw contact of the plug is equipped with a wire protector to protect the conductor against the turning screw. All M3 screws are deeply recessed into the insulating moulding and do not work loose.

A stainless steel spring with an extra long spring-way provides the contact pressure to ensure a reliable connection.

All types are 5 mm/0.197" or if requested in 10 mm/0.394" center-to center spacing. They can be aligned to any requested pole configuration without losing center-to center spacing.

All plugs will be shipped unmarked, as standard. On request, they can be numbered consecutively or marked according to customer requirements.

MODELS AND COMBINATIONS AVAILABLE

Plug	Header	Description	Page
97 FBWDS	97 FBWP	Top access for screws and front access for wiring. Plug removal is from top (vertical direction).	C•1561
97 FBWDS	97SLW	This Pin Strip comes in 64 pole length. Simply snap off the size required. The Pin Strip fits perfectly underneath the plug and does not extend beyond the plug dimension.	C•1561
97 NFBWDS	97 FBWP	This combination differs from 97 FBWDS insofar as the plug interlocks securely with header. For deplugging, one has to bend back barrier of header slightly to open the interlocking. This combination is especially useful in vibration treated environment.	C•1561
97 RFBWDS	97 RFBWP	This combination is identical to 97 FBWP / 97 FBWDS, except that the plug features projecting barriers between each pole at the wire entrance side. Thus improved air gaps and creepage distances are provided.	Similar to description on page C•1561. For dimensional data and Order No's ask WECO
97 FBWDS	LST 1.3 x 6.5 Single PC Pins	This combination features individual PC pins instead of a header. They will be individually ordered, inserted into the PC board and then soldered. The plug connects then directly to the pins.	C•1561
97 FBSDS	97 FBSP	Screw access from the side, wiring access is from top. Plug removal is from the top (vertical direction). This version minimizes PC board space used.	C•1562
97 FBSDS	97 SLS	This Pin Strip comes in 64 pole length. Simply snap off the size required. The Pin Strip fits perfectly underneath the plug and does not extend beyond the plug dimension.	C•1562
97 RFBSDS	97 RFBSP	This Combination is identical to 97 FBSDS / 97 FBSP, except that the plug features projecting barriers between each pole at the wire entrance side. Thus improved air gaps and creepage distances are provided.	Similar to description on page C•1562. For dimensional data and Order No's ask WECO
97 FBSDS	LST 1.3 x 6.5 Single PC-Pins	This combination features individual PC pins instead of a header. They will be individually ordered, inserted into the PC Board and then soldered. The plug connects then directly to the pins.	C•1562

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
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USA
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Trimex Building, Rt. 11
Mooers, NY 12958
Phone: (518) 298-4810 — FAX: (518) 298-5938

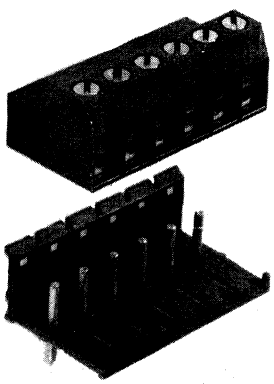
WECO® PLUG-IN SCREW CONNECTORS FOR PRINTED CIRCUITS

97 FBWDS Plug 2-24 poles 97 FBWP Header 2-12 poles or 97 SLW Pin Strip 64 poles

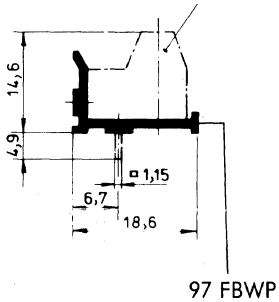
VDE rated 0110

300 V; 15 A;
22-14 AWG Cu
File No: E69841

300 V; 10 A
22-14 AWG Cu
File No: LR24322

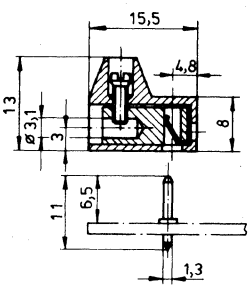


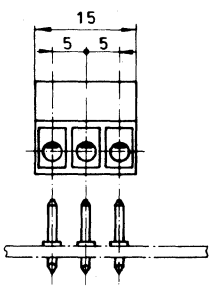
97 FBWDS respectively 97 NFBWDS



97 FBWP

97 FBWDS





LST 1,3 x 6,5
respectively 97SLW

Inch dimensions (in brackets) for reference only.
Use metric dimensions for design purposes.

Technical Data:

Pitch: 5 mm/0.197"
According to DIN 40801
Upon request also in 10 mm/0.394" available
Rated Voltage: 380 V
According to VDE 0110 Insulation Group A
Depending upon parts combination and usage 380 V, Insulation Group B is possible, too.
Breakdown Voltage: > 2000 V
Rated Current: 6 A
Nominal Cross Section: 2,5 mm² / 22-14 AWG Cu
Recommended Hole Diameter in P.C. Board: 1.5 mm / 0.059"
Wire Stripping Length: 6 mm/0.25"

Material:

97 FBWDS:
Moulding: Polyamide 6.6., grey color, glass fibre reinforced.
Upper Temperature Limit:
Short-Time: 200°C / 392°F
Continuous: 100-120°C / 212-248°F
Cold Resistant To: – 50°C / – 58°F
Resistance to Tracking:
Non-Tracking Factor: KB > 380
Terminal Body: Tin plated brass
Spring: stainless strip steel
Wire Protector: bright tin bronze
Screw: M3 x 5.5
Zinc-plated steel, yellow chromated

97 FBWP
Moulding: Polyamide 6.6, grey color
PC Pin: tin-plated brass

Poles	Plug 97 FBWDS	Length mm	Length in	Poles	Plug 97 FBWDS	Length mm	Length in	Poles	Plug 97 NFBWDS	Header 97 FBWP	Length mm	Length in
2	**40.873.102**	10	0.39	14	**40.873.114**	70	2.76	2	**40.873.142**	**32.893.412**	10	0.39
3	**40.873,103**	15	0.59	15	**40.873.115**	75	2.95	3	**40.873,143**	**33.893.412**	15	0.59
4	**40.873.104**	20	0.79	16	**40.873.116**	80	3.15	4	**40.873.144**	**34.893.412**	20	0.79
5	**40.873.105**	25	0.98	17	**40.873.117**	85	3.35	5	**40.873.145**	**35.893.412**	25	0.98
6	**40.873.106**	30	1.18	18	**40.873.118**	90	3.54	6	**40.873.146**	**36.893.412**	30	1.18
7	**40.873.107**	35	1.38	19	**40.873.119**	95	3.74	7	**40.873.147**	**37.893.412**	35	1.38
8	**40.873.108**	40	1.57	20	**40.873.120**	100	3.94	8	**40.873.148**	**38.893.412**	40	1.57
9	**40.873.109**	45	1.77	21	**40.873.121**	105	4.13	9	**40.873.149**	**39.893.412**	45	1.77
10	**40.873.110**	50	1.97	22	**40.873.122**	110	4.33	10	**40.873.150**	**40.893.412**	50	1.97
11	**40.873.111**	55	2.17	23	**40.873.123**	115	4.53	11	**40.873.151**	**41.893.412**	55	2.17
12	**40.873.112**	60	2.36	24	**40.873.124**	120	4.72	12	**40.873.152**	**42.893.412**	60	2.36
13	**40.873,113**	65	2.56									

Individual PC Pin: LST 1.3 x 6.5 Order No.: 12.477.513
Made of silver-plated brass

Pin Strip: 97 SLW-64 Order No: 74.893.603

Blocks can be installed end-to-end to form any required pole configuration while maintaining center-to-center spacing.

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
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WECO® PLUG-IN SCREW CONNECTORS FOR PRINTED CIRCUITS

97 FBSDS Plug 2-24 poles 97 FBSP Header 2-12 poles or 97 SLS Pin Strip 64 poles

VDE rated 0110

300 V, 10 A, 22-14 AWG Cu
File No: E69841

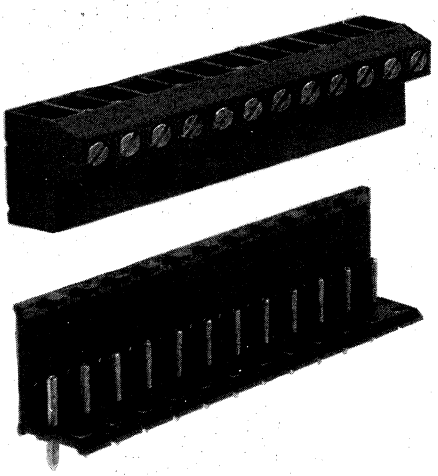
300 V, 10 A, 22-14 AWG Cu
File No. LR 24322

Technical Data:

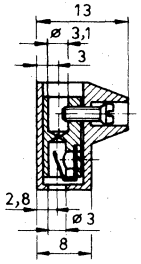
See page C•1561

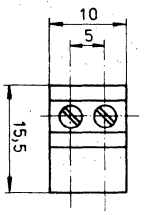
Material:

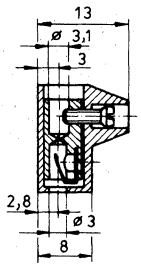
See page C•1561



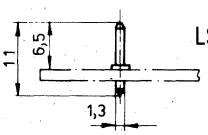
97 FBSDS





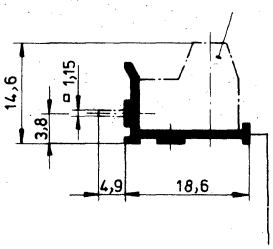


97 FBSDS



LST 1.3 x 6.5
respectively 97SLS

97 FBSDS



97 FBSP

Poles	Order No. Plug 97 FBSDS	Order No. Header 97 FBSP	Length mm	Length in
2	**20.873.102**	**12.893.412**	10	0.39
3	**20.873.103**	**13.893.412**	15	0.59
4	**20.873.104**	**14.893.412**	20	0.79
5	**20.873.105**	**15.893.412**	25	0.98
6	**20.873.106**	**16.893.412**	30	1.18
7	**20.873.107**	**17.893.412**	35	1.38
8	**20.873.108**	**18.893.412**	40	1.57
9	**20.873.109**	**19.893.412**	45	1.77
10	**20.873.110**	**20.893.412**	50	1.97
11	**20.873.111**	**21.893.412**	55	2.17
12	**20.873.112**	**22.893.412**	60	2.36
13	**20.873.113**		65	2.56
14	**20.873.114**		70	2.76
15	**20.873.115**		75	2.95
16	**20.873.116**		80	3.15
17	**20.873.117**		85	3.35
18	**20.873.118**		90	3.54
19	**20.873.119**		95	3.74
20	**20.873.120**		100	3.94
21	**20.873.121**		105	4.13
22	**20.873.122**		110	4.33
23	**20.873.123**		115	4.53
24	**20.873.124**		120	4.72

Individual PC Pin:
LST 1.3 x 6.5 Order No.: 12.477.513
Made of silver-plated brass

Pin Strip: 97 SLS-64
Order No: 74.893.602

Blocks can be installed end-to-end to form any required pole configuration while maintaining center-to-center spacing.

Inch dimensions (in brackets) for reference only.
Use metric dimensions for design purposes.

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WECO® PLUG-IN SCREW-CONNECTOR SYSTEMS FOR PRINTED CIRCUIT BOARDS

Figure No. 1

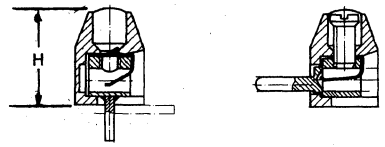


Figure No. 2
Vertical Version

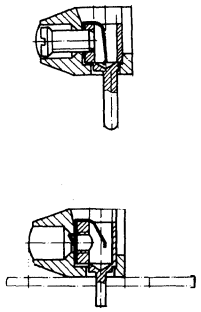
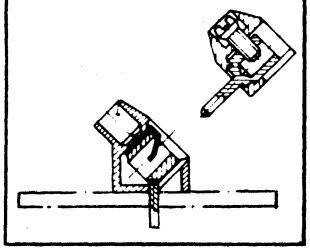
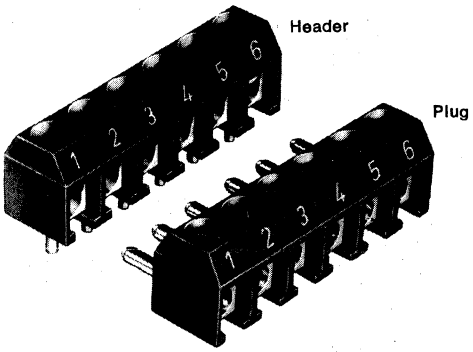


Figure No. 3
45° angled Version





International Approvals: VDE rated 0110

Types		No. of circuits	Block length = No. of circuits x pitch		Height (H)		Width (W)		Wire Entrance relative to PCB:			Plug-in direction relative to PCB:			UL recognized for: File No.: E69841			CSA approved for: File No.: LR24322			Design similar to Figure No.:
Plug	Header		mm	in	mm	in	mm	in	horizontal	vertical	45°	horizontal	vertical	45°	Voltage	Amperage	AWG	Voltage	Amperage	AWG	
941 SVDS with	940 FB°	2-32* 2-32*	5.08 5.08	0.200 0.200	11.5 11.5	0.45 0.45	8 8	0.31 0.31	X			X			250	6	14-22	300	10	14-22	1
951 SVDS with	950 FB°	2-32* 2-32*	5 5	0.197 0.197	10 10	0.39 0.39	8 8	0.31 0.31	X			X			250	6	14-22	300	10	14-22	1
961 SVDS with	960 FB°	2-32 2-32	5.08 5.08	0.200 0.200	13.5 13.5	0.53 0.53	9 9	0.35 0.35	X			X			300	6	14-22	300	10	14-22	1
971 SVDS with	970 FB°	2-32 2-32	5 5	0.197 0.197	13 13	0.51 0.51	9 9	0.35 0.35	X			X			300	6	14-22	300	10	14-22	1
941 SVDS with	941 FB°	2-32* 2-32*	5.08 5.08	0.200 0.200	Complete ensemble: 16	0.63	8	0.31		X			X		250	6	14-22	300	10	14-22	2
951 SVDS with	951 FB°	2-32* 2-32*	5 5	0.197 0.197	Complete ensemble: 16	0.63	8	0.31		X			X		250	6	14-22	300	10	14-22	2
961 SVDS with	961 FB°	2-32 2-32	5.08 5.08	0.200 0.200	Complete ensemble: 18	0.71	9	0.35		X			X		300	6	14-22	300	10	14-22	2
971 SVDS with	971 FB°	2-32 2-32	5 5	0.197 0.197	Complete ensemble: 18	0.71	9	0.35		X			X		300	6	14-22	300	10	14-22	2
951 SVDS with	974 FB°	2-32* 2-26*	5 5	0.197 0.197	Complete ensemble: 16.5	0.65	15.5	0.60			X			X	300	6	14-22	250	10	14-22	3

°: soldered onto PC-board, the counterpart is removable.
*: terminal block can be butted side by side to form any requested pole configuration without losing cente-to-center spacing.

Based on the standard program of screw-connectors for printed circuits an unmatched line of Plug-In Systems are available. A stainless steel spring provides the contact pressure to ensure a reliable connection not only to the plug, but also to other components. All systems offered provide for a quick connect and disconnect of wiring to PCB. There are many advantages and benefits to using these components:

- Subassemblies manufactured at different places are equipped with either the plug or header of the selected WECO plug-in screw-connector system. At the time the final assembly is to be finished one has only to insert the plug into the header. No more wiring is necessary.
- Peripheral appliances can be connected to the main PC-board avoiding risk of changing wires by mistake.
- For service purposes a PC-board can easily be disconnected. The plug may then be used for testing the PC-board.
- The plug also connects onto the PC-board, when direct wiring into a screw-connector is difficult because of limited space.
- Service-ability.

Moulding: Glassfibre reinforced Polyamide 6.6, grey color.
Upper temperature limit: short time: 200°C/392°F
continuous: 100-120°C/212-248°F
Cold resistant to: −50°C/−58°F

Terminal Body: Nickel-plated brass
Spring: Stainless steel strip
Plug: Tin-plated brass
Soldering Pin: Tin-plated copper, for excellent solderability
Wire Protector: Copper alloy
Screw: Zinc-plated steel, yellow chromated.

Extra Features: Screen print marking; Adhesive labelling strips; Blocks can be supplied without wire protector; Interlocking plates are available to additionally interlock each assembly, to increase creepage distance to panel and provide absolute sure connection in vibration treated environment.

Mil Spec: Various mil-specified insulating materials can be provided upon request.

How To Order: Please indicate type and no. of circuits, e.g.: 951 SVDS-05 and 950 FB-05. This is the pluggable arrangement of type 951 SVDS and 950 FB, with each 5 circuits per strip.

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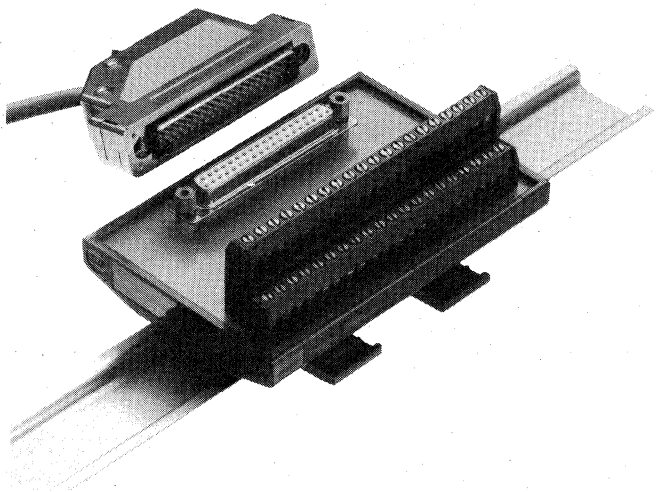
WECO® ELECTRONIC MODULES FOR MOUNTING RAILS TO DIN EN 50 022 AND DIN EN 50 035



System Description:

Connecting terminals for printed circuits have served for years as the transition element between external wiring and the circuit board, i.e. as a connection between the device being controlled and its control or between one printed circuit another one. In many cases, it is not sufficient, however, to use a single simple electrical connection, but it is necessary to provide a connection to various voltages, wiring systems or to provide a galvanic isolation of the components.

The modules are constructed from polyamide bases which are capable of being connected together to make longer bases. The bases are constructed of pieces of different widths plus the end pieces and locking feet which can be placed under the bases as required. They are especially designed for DIN EN 50022 and DIN EN 50035 mounting rails. The modules are connected and disconnected from the mounting rail by the simple operation of an unlocking lever.

The circuit boards are made of fiberglass reinforced epoxy resin. A layer of protective coating protects the circuit side from dust and moisture.

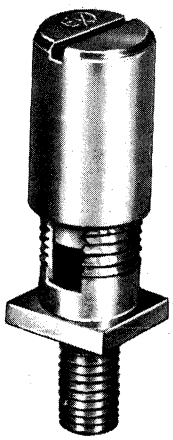
The connectors used are either screw connectors or tab type connectors.

Standard Modules Available: D Subminiature Interface, IDC Interface, Relay, Diode, Component, Power Supply, Lamp Test, Fuse, Varistor, Rectifier, Indicator, Semiconductor Switch, and I/O Carrier Modules.

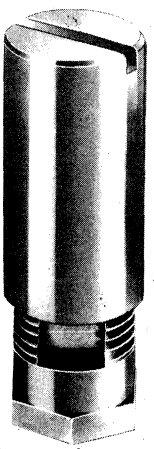
Specific custom modules can be provided. Contact WECO for more information.

Please request a complete catalog for additional information.

INTRINSICALLY SAFE TERMINALS



Typ DFG



Typ DFB

Application: Ground Terminals, especially where extremely safe connections are required. Examples are high vibration areas, machinery, corrosive atmospheres and hazardous locations.

Material: Nickel plated solid brass.

Sizes: A large variety are available and they can be mounted on ceramic bases.

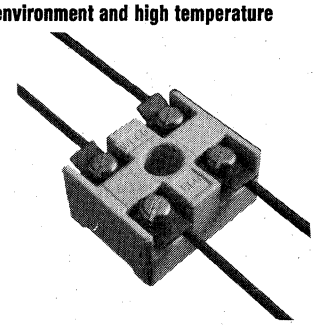
Clamping Wire Gauges: 14 AWG–5/0 AWG.

These terminals conform to VDE, Euro Norm Regulations and other rigid industrial standards.

Please request a complete catalog for additional information.

CERAMIC TERMINAL BLOCK TYPE 560 K4DFV2A

for extreme environment and high temperature



Block Size	Length	Width	Height
mm	40	32	20
in.	1.57	1.26	0.79

Mounting Hole Diameter: 4.5mm/.18″

Mounting Rail: Width: 16mm/.63″; Thickness: 3mm/.12″

Material: **Base:** Steatite, KER 220 DIN 40685
Terminal: Stainless Steel
Binding Screw–Binding Clips–Washer: Zinc Plated Steel

Withstands temperature of up to 500°C/940°F.

UL: 300V, 600V with insulating base, 20A, 20-12 AWG.

File: E 69841.

CSA: 300V, 25A, 20-12 AWG, 600V, 5A, 20-12 AWG.

File: LR 24322.

Please request a complete catalog for additional information.

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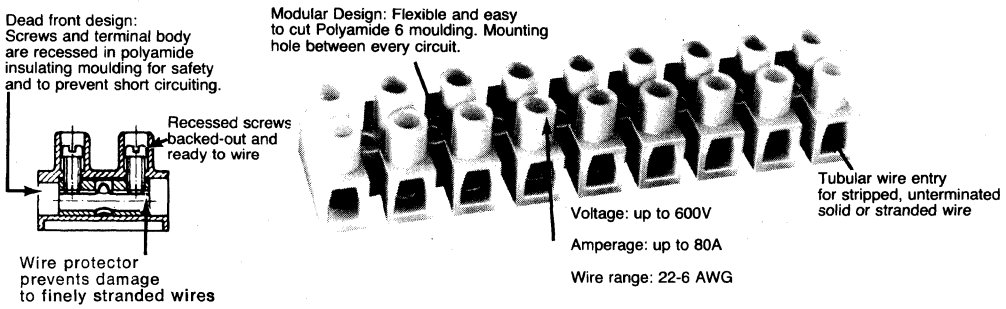
WECO® SOCKET TERMINAL STRIPS FOR PANEL/CHASSIS MOUNTING



High circuit density from 39-21 circuits per foot. Depending on product type selected.

International Approvals:

The terminal strips are used for connecting stripped, unterminated, stranded or solid copper wires; ranging from 22-6 AWG, depending on product type selected. Each strip has 12 circuits and can easily be field cut to the required number of poles. They can also be ordered factory-cut in any requested pole number.

A mounting hole is provided between each circuit. The terminal screws are backed-out and ready for wiring. The screws are protected against working loose and cannot fall out.

Each circuit has a wire protector to prevent damage to the wire from the turning screw. The wire protector is a thin steel plate placed between screw and wire. All metal parts of the terminal are completely recessed in the flexible polyamide 6 moulding. This dead-front design ensures safety and prevents short circuiting. Its flexible construction allows use on uneven surfaces. For proper circuit identification, we supply marker strips. They may either be factory numbered or individually marked with a felt pen. The terminal strips meet most world approvals, including UL, CSA & VDE.

Terminal strip types 302 HDS and 323 HDS can be supplied with screw/solder lug connections. Please contact WECO for complete catalog.

How To Order: Please indicate Type and No. of circuits requested, e.g.:

302 HDS-12 is terminal block 302 HDS with 12 circuits.

BST 302-12 is blank marker strip for twelve circuits. Shall marker strip be factory labelled, please provide sketch showing marking arrangement.

TECHNICAL DATA		TERMINAL STRIP TYPE									
		302NHDS	302HDS	323 HDS	323 FU16HDS	323 FU18.5HDS	324 HDS	324 FUHDS	326 HDS	327 HDS	327 FUHDS
Material:	Moulding:	Flexible natural polyamide, white color Upper temperature limit: Short-time 140-160°C/284-320°F Continuous 80-100°C/176-212°F Cold resistant to −40°C/−40°F									
	Terminal Body:	Nickel-plated brass									
	Wire Protector:	Stainless steel strip									
	Screw:	Zinc-plated steel, yellow chromated									
No. of Circuits		1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12
Length (with 12 circuits)	mm	94	94	117	117	117	135	135	171	171	171
	in	3.74	3.74	4.61	4.61	4.61	5.32	5.32	6.73	6.73	6.73
Height	mm	12	15	16	16	18.5	18.5	21.3	22.5	25	28.5
	in	0.472	0.59	0.63	0.63	0.73	0.73	0.84	0.89	0.98	1.12
Width	mm	16	16	21	21	21	22	22	30	30	30
	in	0.63	0.63	0.83	0.83	0.83	0.87	0.87	1.18	1.18	1.18
Center To Center Spacing	mm	8	8	10	10	10	11.5	11.5	14.5	14.5	14.5
	in	0.31	0.31	0.39	0.39	0.39	0.45	0.45	0.57	0.57	0.57
Screw Size		M2.6×5	M2.6×5	M3×5.5	M3×5.5	M3×5.5	M3.5×7	M3.5×7	M4×8	M5×10	M5×10
Mounting Hole Diameter	mm	2.8	2.8	3.5	3.5	3.5	3.5	3.5	4.3	4.3	4.3
	in	.11	.11	.14	.14	.14	.14	.14	.17	.17	.17
Spacing: Through Air	mm	4.2	5.8	6.1	6.3	8.5	6.1	9.2	7.9	7.5	11
	in	.17	.23	.24	.25	.33	.24	.36	.31	.30	.43
Spacing: Over Surface	mm	3.2	5.8	6.1	11.1	11.9	6.1	11.2	7.9	9.6	13.1
	in	.13	.23	.24	.44	.47	.24	.44	.31	.38	.52
Screw Tightening Torque: lb/in		3.5	3.5	4.5	4.5	4.5	7	7	10	16	16
Wire Stripping Length	mm	5	5	7	7	7	7.5	7.5	9	9	9
	in	0.20	0.20	0.28	0.28	0.28	0.30	0.30	0.35	0.35	0.35
UL recognized for (UL File No. E69841):											
Volt		300	250	250	250	250	250	300	300	300	600
Ampere		10	20	25	25	25	35	35	50	65	65
Wire Range (AWG)		20-12	20-12	20-10	20-10	20-10	14-8	14-8	14-8	14-6	14-6
CSA approved for (CSA File No. LR24322)											
Volt		300	300	300	300	600	150	600	150	300	600
Ampere		10	20	20	20	20	40	40	55	80	80
Wire Range (AWG)		20-14	20-14	18-12	18-12	18-12	18-10	18-10	14-6	14-6	14-6
Market Strip Designation		BST 302	BST 302	BST 333	BST 333	BST 333	BST 324	BST 324	BST 335	BST 335	BST 335

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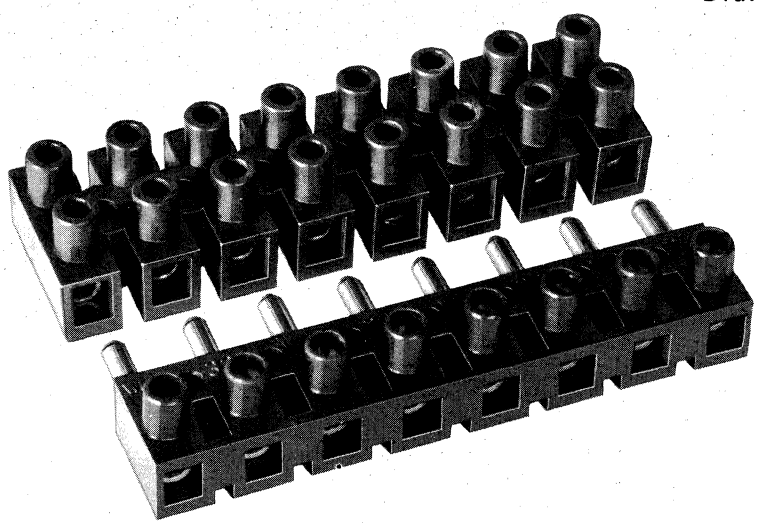
WECO® PLUG AND SOCKET SCREW-CONNECTOR SYSTEMS FOR PANEL/CHASSIS MOUNTING

Drawings see facing page.



International Approvals: VDE rated 0110

Plug and Socket Connectors are particularly suitable for installations where simple circuit closing and opening is required.
By pre-wiring various equipment sections, it is possible to use Plug and Socket Connectors to provide a quick and reliable connection at final assembly. Therefore wire confusion is avoided. Blocks can be coded (color coding, labelling, etc.) to ensure proper connection.

Some of these assemblies are available for printed circuit application. Standard strip has 12 circuits and can easily be field cut to required number of poles or ordered as required. A mounting hole is provided between each circuit. The terminal screws are backed out and ready for wiring. The dead front design is for safety and avoids short circuitry.

Each screw connection is equipped with a wire protector to prevent damage to the wire from the turning screw. The wire protector is a thin plate placed between screw and wire.

To obtain low contact resistances on connectors, a high contact pressure is required. This leads to relatively high withdrawal forces. To facilitate the assembly, we therefore recommend that from 7 poles onwards two male and one female plug and socket connector should be used.

For the protective conductor pole the connectors can be equipped with leading plugs or sockets on request. This means that the protective conductor connection is made first when plugging-in and disconnected last.

MATERIAL:

Moulding: Flexible natural Polyamide, white color
Terminal body: Nickel-plated brass
Spring: Stainless steel strip
Wire Protector: Copper alloy
Screw: Zinc-plated steel, yellow chromated
Upper temperature Limit:
short-time: 140-160°C / 284-320°F
continuous: 80-100°C / 176-212°F
cold-resistant to -40°C /-40°F

Connector Designation		No. of Circuits	Length (with 12 circuits)		Height		Width (without plug)		Contact pressure provided through:		UL recognized for (File #E69841)			CSA approved for (File #LR24322)			Screw Tightening Torque (lb/in) for		Wire stripping length		Marker Strip Designation	
Male	Female		mm	in	mm	in	mm	in	Steel spring	Slotted Plug and/or Socket	Voltage	Amperage	AWG	Voltage	Amperage	AWG	Male block	Female block	mm	in	For male block	For female block
302 SVDS	302 FBDS	2-12	94	3.74	15	0.59	16	0.63	X		250	6	20-14	300	10	20-14	3.5	3.5	5	0.20	BST 302	BST 302
302 STSDS	302 STBDS	2-12	94	3.74	15	0.59	16	0.63		X	250	6	20-14	300	10	20-14	3.5	3.5	5	0.20	BST 302	BST 302
322 SVDS	323 FBHDS	2-12	117	4.61	16	0.63	14/21	0.55/0.83	X		250	10	18-12	300/150	10/15	18-12	3.5	4.5	7	0.28	BST 322	BST 323
322 SVWDS	323 FBWDS	2-12	117	4.61	16	0.63	14/21	0.55/0.83	X		250	10	18-12	300/150	10/15	18-12	3.5	4.5	7	0.28	BST 322	BST 323
322 SDS	321 BDS	2-12	117	4.61	15.5/16.5	0.61/0.65	14/21.5	0.55/0.87		X	300	10	18-12	300/150	10/15	18-12	3.5	3.5	6	0.24	BST 322	BST 322
324 STFSDS	324 STFBDS	2-12	135	5.32	18.5	0.73	22	0.87		X	300*	25	18-10	300	10	18-10	7	7	7.5	0.30	BST 324	BST 324

*600V with insulating base

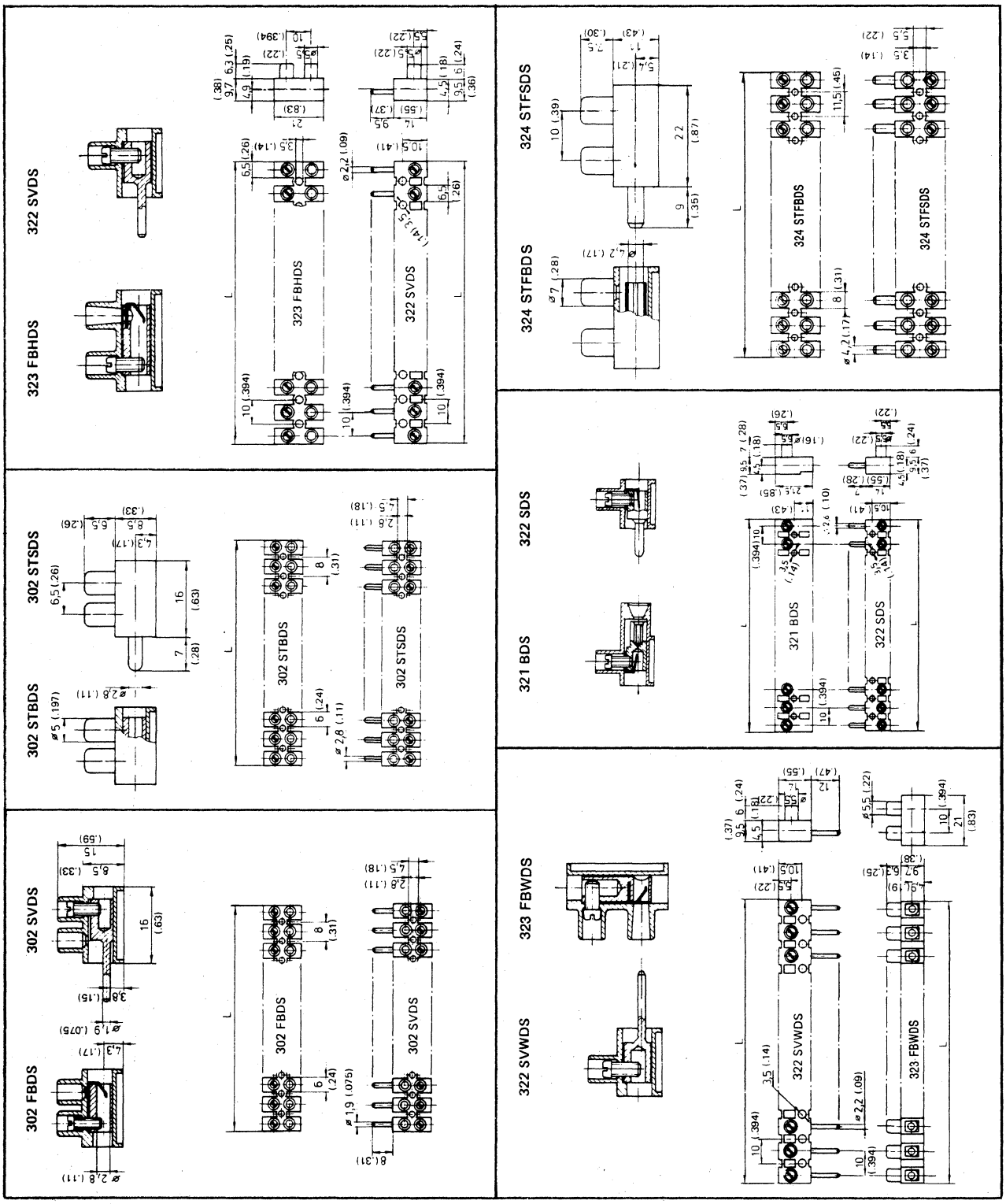
How To Order: Please indicate Connector Designation and No. of circuits requested. Complete assembly to be ordered would read as follows, e.g.: 302 SVDS-06: is male connector 302 SVDS with 6 circuits.
302 FBDS-06: is female connector 302 FBDS with 6 circuits
BST 302-06: is blank marker strip for six circuits. Shall marker strip be factory labelled, please provide sketch of marking arrangement.
Leading plug or socket for protective contact pole: Please provide sketch of required circuit configuration.

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
Kirkland, P.Q. H9H3L4
Telex: 05-821840 — Phone: (514) 694-9136 — (514) 694-0518 — FAX: (514) 694-0956

USA
WECO Electrical Connectors Inc.
Trimex Building, Rt. 11
Mooers, NY 12958
Phone: (518) 298-4810 — FAX: (518) 298-5938

PLUG AND SOCKET SCREW-CONNECTOR SYSTEMS FOR PANEL/CHASSIS MOUNTING

Continued from facing page.



Inch dimensions (in brackets) for reference only; use metric dimensions for design purpose.

CANADA
WECO Electrical Connectors Inc.
16805 Hymus Blvd.
Kirkland, P.Q. H9H3L4
Telex: 05-821840 — Phone: (514) 694-9136 — (514) 694-0518 — FAX: (514) 694-0956

USA
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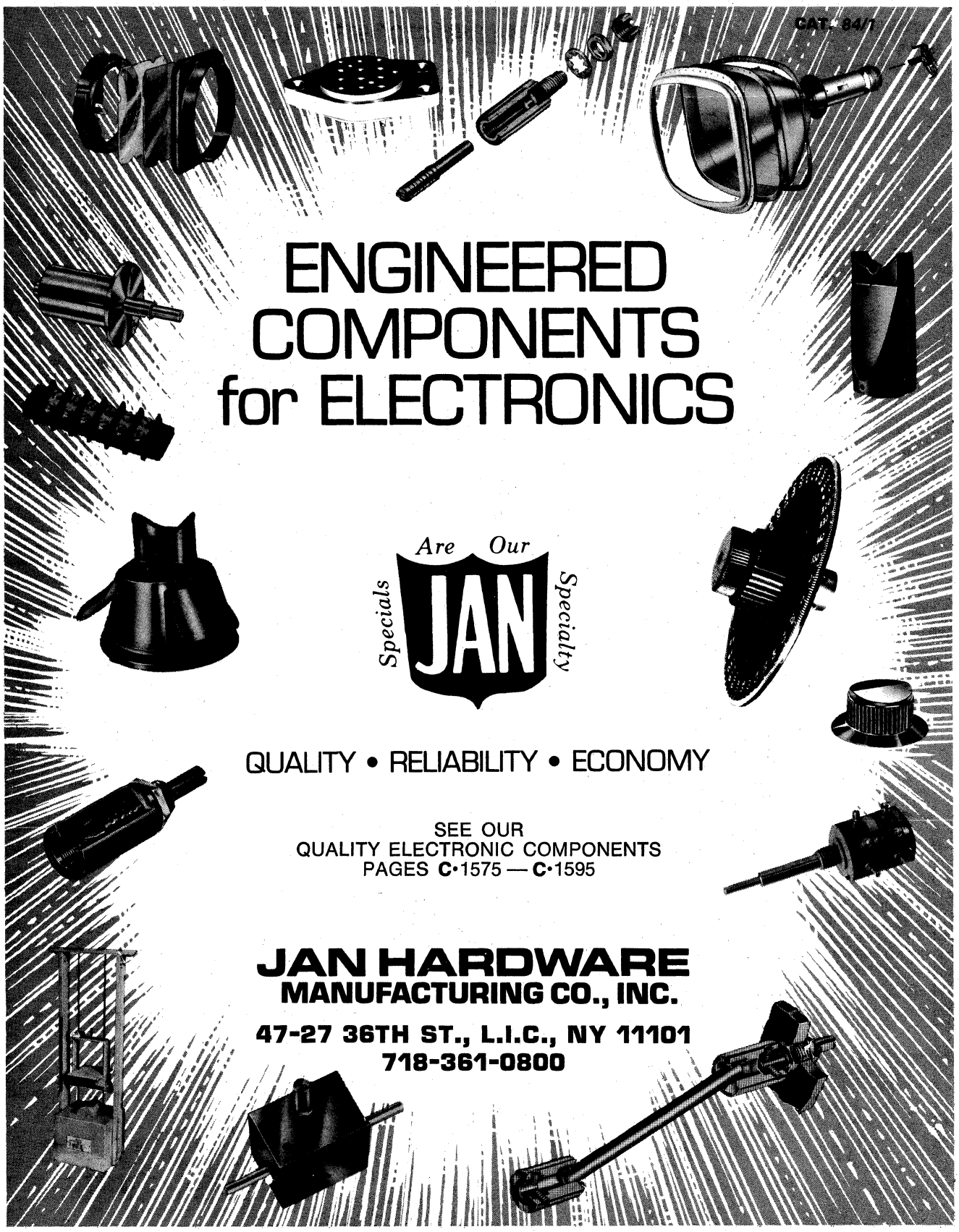
Mooers, NY 12958
Phone: (518) 298-4810 — FAX: (518) 298-5938



ENGINEERED COMPONENTS for ELECTRONICS

Are Our JAN *Specials Specialty*

QUALITY • RELIABILITY • ECONOMY

SEE OUR
QUALITY ELECTRONIC COMPONENTS
PAGES **C**•1575 — **C**•1595

JAN HARDWARE
MANUFACTURING CO., INC.
47-27 36TH ST., L.I.C., NY 11101
718-361-0800

PANEL HARDWARE

Manufacturer	Stasrting EEM Page No.	Bezels	Dials, Instrument	Pointers, Dial	Handles	Knobs	Knob Types				Panel Markings	Plates, Estucheon	Drives & Drive Mechanisms	Shaft Couplings	Shaft Locks	Speed Reducers
							Control-Shaft Locking	Limit Stop	Slip Clutch	Ratio Drive Torque						
Cosmo	C•1570		¤	¤	¤											
Datak	C•1572										¤					
Elma	C•1573					¤										
Jan Hardware	C•1575	¤	¤		¤	¤	¤	¤	¤	¤	¤	¤	¤	¤		
JMJ Technical	C•1596	¤														
Power Dynamics	C•1597					¤	¤									
RMF Products	C•1598	¤														

COSMO

COSMO Corporation, the world's largest manufacturer of bobbins and coil forms, is now offering a complete line of knobs. Over forty years of experience supplying the precise and demanding bobbin needs of the electronics industry enables us to provide high quality knobs for you.

Kurz-Kasch

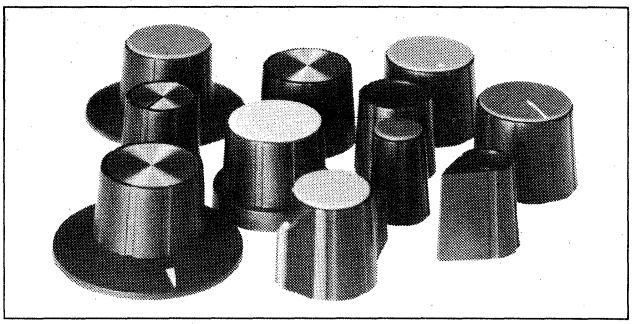
Our acquisition of the complete line of standard Kurz-Kasch knobs gives us the widest variety of sizes and styles. Many different shaft styles are available along with a choice of aluminum and plastic inlays and caps.

Custom Knobs

COSMO's track record of over 10,000 bobbin molds makes us your best choice for new custom knob designs. Our capabilities include thermoplastic and thermoset molding in a variety of materials. Our extensive finishing operations include drilling, tapping, machining, inlay and cap attachment, silk screening, hot stamping and painting.

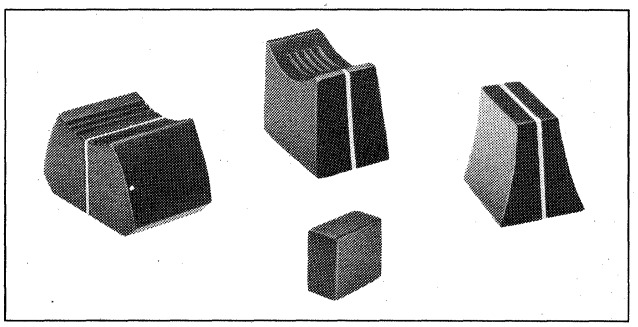
Grooved Style Knobs

These grooved side instrument knobs are molded of tough matte-finish ABS thermoplastic material. Round, box and taper skirt, pointer, and bar designs are available. Inlays and caps of spun aluminum and plastic caps in 6 colors are optional. These knobs may be stacked for concentric shaft functions.



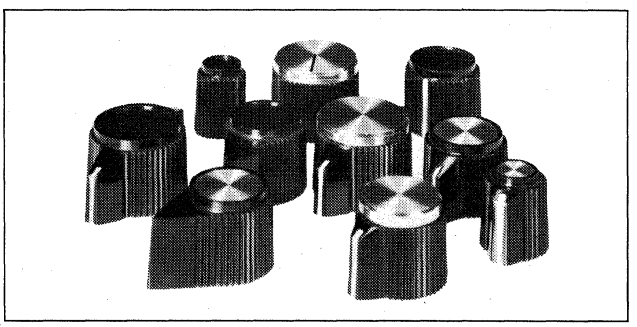
Linear Slide Knobs

Knobs for linear controls are molded of ABS thermoplastic material. They feature paint filled indicator lines and serrated tops for one finger actuation.



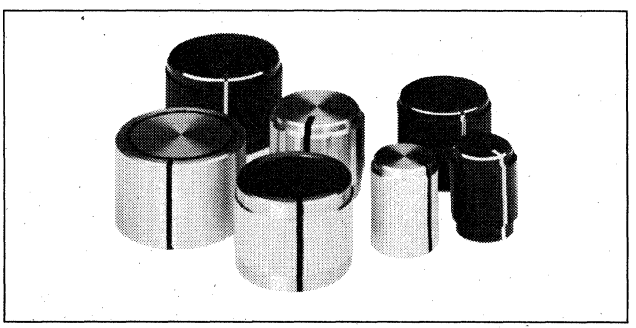
Serrated Style Knobs

This popular line of crisp, serrated style instrument knobs includes round, pointer, bar, tapered skirt, and spinner knobs molded of mirror-finish black thermoset phenolic material. These knobs may be topped with aluminum inlays and caps including the striking diamond bevel cap. Dual and triple control stacked knobs can be constructed.



Solid Aluminum Knobs

Aluminum alloy knobs are available in smooth body, wide and narrow fluted, and full and semi knurled designs in all black, all silver, or black and silver finishes. Contrasting indicator lines are standard.



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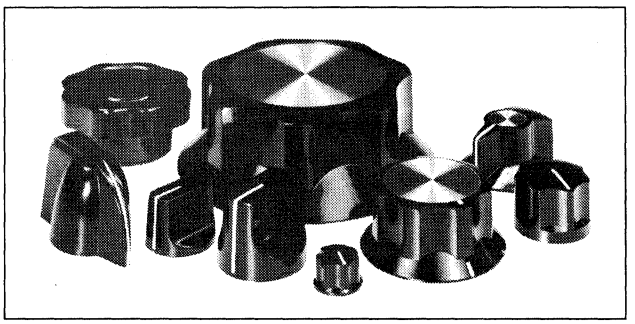
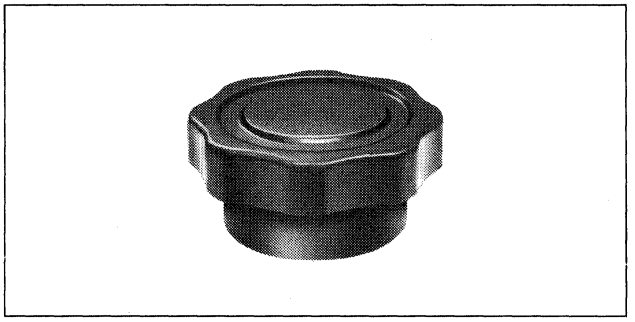
Fluted Style Knobs

These classic fluted side knobs feature solid construction, molded of gloss black thermoset phenolic resin. Paint filled indicator lines, vinyl and brass pointers, and glittering aluminum inlays add to their appeal.



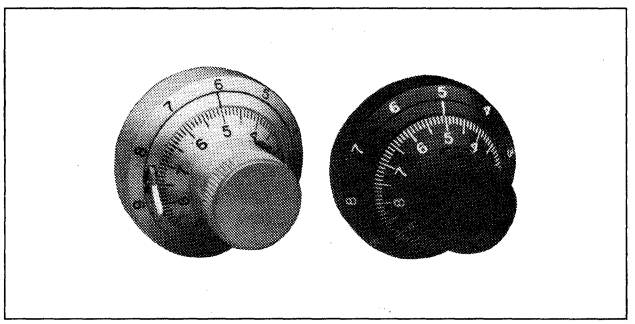
Control Knobs

These rugged control knobs, molded of heavy duty black thermoset phenolic material, feature a solid...not "cored out" design. Wide flutes and rounded edges provide a comfortable grip in high torque applications. These are also some of our largest knobs.



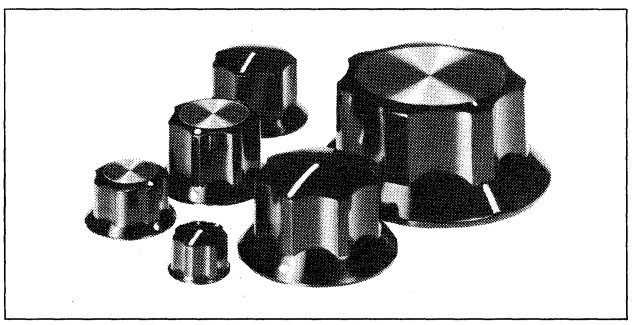
Multi-Turn Dial Knobs

These multi-turn calibrated dial knobs are designed specifically for multi-turn potentiometers up to 10 turns. They are available in machined aluminum or molded plastic, both with and without brakes.



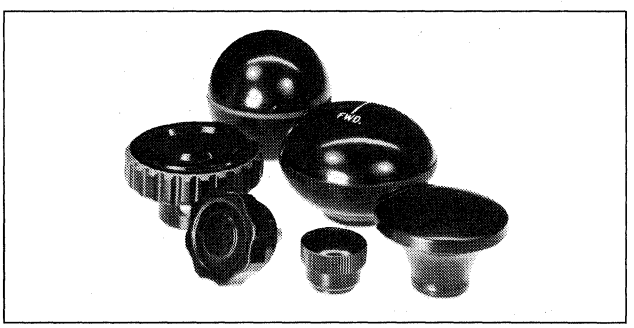
Bar and Pointer Knobs

Mirror-finish black thermoset phenolic material adds to the sleek lines of these pointer and bar knobs. All models are available with paint filled indicator lines. Spun aluminum inlays are also available.



Mechanical Knobs

Terminal nuts, gear balls, and stud knobs are available in a wide variety of sizes and threaded attachments. Brass inserts and studs of all sizes and lengths add to the variety. Normally molded of black thermoset phenolic resin, an optional heat resistant material is also available.



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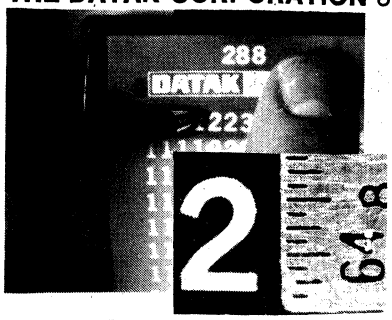
DATAK dry TRANSFERS and COATINGS

THE DATAK CORPORATION 3117M Paterson Plank Road, North Bergen, NJ 07047 (201) 863-7667



HOW THEY WORK . . . These amazing letters, words and art patterns transfer to any clean surface. Just rub down with a ballpoint pen! Heat-resistant adhesive is safe for diazo copies.

MASTER ART QUALITY . . . Razor sharp edge definition makes DATAK transfers superb for original artwork or prototypes.

TAILOR-MADE COATINGS . . . Any old protective spray won't work over dry transfers. Our formulas flow evenly over the transfer and protect it perfectly on all classes of surfaces: glass, paper, wood, metal, plastics or paint.

TITLES and COMPONENT DESIGNATION SETS for ELECTRONIC EQUIPMENT

Newest **professional titles** have thousands of 1/8"(12 pt.) and 0.105"(10 pt.) words for both standard and micro-sized equipment control panels. Sets have 24 sheets, 3½" x 5". 12 point sets use bold face type, have one letter and one number sheet; 10 point sets are bold face titles and include 4 each, light and bold number and letter sheets. Letter and number sets have 12 indentical sheets.

Component designation sets (TERMINAL and CHASSIS MARKING sets) include 24 sheets, 3½" x 5" of sequential numbers, letters and letter combinations conforming to ANSI Y32.16 and IEEE STD 200. This series is 1/8"size only. See JotDraft #JD192-JD251 for .085"through .250" designation numbers. Coat transfers for protection. See coatings section.



948 Black (949 White) 10 pt. Titles	**$11.95**
950 Black (951 White) 10 pt. Bold Letters	**6.95**
952 Black (953 White) 10 pt. Bold Numbers	**6.95**
954 Black (955 White) 10 pt Lt. Face Letters	**6.95**
956 Black (957 White) 10 pt. Lt. Face Numbers	**6.95**
9581 Black (9591 White) 12 pt. Titles	**11.95**
9601 Black (9611 White) 12 pt. Bold Letters	**6.95**
9621 Black (9631 White) 12 pt. Bold Numbers	**6.95**
9661 Black (9671 White) Terminal & Chassis set	**11.95**

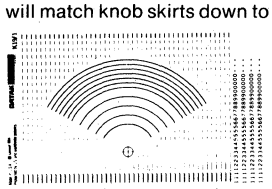
DATAMARK™ TITLES, PATTERNS, ALPHABETS and NUMBERS

These are smaller assortments for specialized electronic applications. Type matches professional 9581-9671 series. Switch patterns match some that are in #968 Meter Dial and Switch Marking set. All sets contain six 3½" x 5" sheets. Coat transfers for protection. See coatings section.

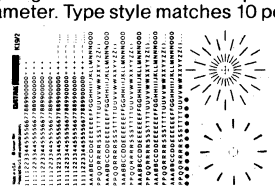
K58B Black (K58W White) Audio, TV, Hi-Fi	**$3.95**
K59B Black (K59W White) Amateur Radio, CB	**3.95**
K60B Black (K60W White) Experimenter, Home, Intercom	**3.95**
K61B Black (K61W White) Test Equipment, Industry	**3.95**
K62 Marks and Switch Patterns, black, white asst.	**$3.95**
K63 1/8" Letters and Numbers, black, white, gold, asst.	**3.95**
K64 ¼" Letters and Numbers, black, white, gold, asst.	**3.95**
K65 ½" Letters and Numbers, black, white, gold, asst.	**3.95**

METER DIAL and SWITCH MARKING SET

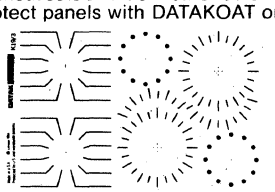
Crisp meter graduations let you modify dial scales fast. Saves time and money compared to a "mod center" job. Tap switch marks are preset to 7.5° and 15° detents but will transfer to any angle. The smallest switch pattern will match knob skirts down to 0.5"diameter. Type style matches 10 point professional title and letter sets described above. Complete set includes 12 sheets, 5"x 7"in black, white and red. Refill sheets available separately in uncut sets of 4 identical sheets. *K19/1 available in white as a refill only. Protect panels with DATAKOAT or HARDKOAT. Do not coat dialplates.



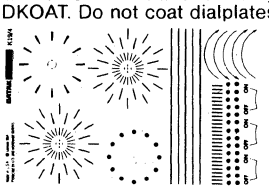
K19/1 BLK
K19/5 RED
K19/1* WHT



K19/2 BLK
K19/6 RED
K19/9 WHT



K19/3 BLK
K19/7 WHT
K19/12 RED



K19/4 BLK
K19/8, 10 WHT
K19/11 RED

968 Meter Dial and Switch Set **$11.95**

K19/(Specify #) Refill of 4 identical sheets **$5.95**

DATAKOAT™ PROTECTIVE COATINGS

DATAKOAT is a 100% acrylic high-solids water-clear coating for metals and plastics. It encapsulates dry transfers in a tough film. Its solvents will not attack most plastics, lacquers or cured enamels. The dry film has a high dielectric strength, is very flexible, moderately hard and extremely resistant to weathering and UV exposure. DATAKOAT is not recommended for transfers on paper.

04176 DATAKOAT Brushcoat and Thinner Kit (1 oz. ea.)	**$3.45**
04177 DATAKOAT Gloss Spray (12 oz. net wt.)	**4.95**
04178 DATAKOAT Matte Spray (12 oz. net wt.)	**4.95**

HARDKOAT™ PROTECTIVE COATINGS

HARDKOAT is a clear, very high-solids quality cellulosic resin for paper, wood and other porous surfaces. Its solvents fuse the dry transfer into the surface while its resins bond to the surface with an extremely hard, flexible film. HARDKOAT may be used on metals and many painted surfaces where it gives superior protection against abrasion and scratching. Its solvents temporarily soften many plastic materials, so it should be used with caution. Multiple heavy coats may have a very faint yellowish tint. Use DATAKOAT if an absolutely water-clear coating is essential.

04170 HARDKOAT Gloss Spray (12 oz. net wt.)	**$4.95**
04171 HARDKOAT Matte Spray (12 oz. net wt.)	**4.95**

SEE SECTIONS 4200 AND 6000 FOR DATAK PRINTED CIRCUIT KITS AND WIRE MARKERS

ELMA

ELMA Electronic Inc.

25 JAHRE ANNÉE YEARS ELMA Electronic

Collet Safety Knobs and Front Panel Hardware

A Member Of The Sulzer Group, 41440 Christy Street, Fremont, CA 94538 • (415) 656-3400

All ELMA products are available off-the-shelf and REASONABLY PRICED

Modular Design

The modular design and the wide assortment of **ELMA** collet safety knobs offer countless possible combinations. The standard and wing knobs are of contemporary design, available in 7 sizes and various colors. A broad selection of accessory components is also available, including knobs, caps and pointers in no less than 7 colors, various printed dials, stators, sockets and nut covers are available in gloss or matte finish.

Material

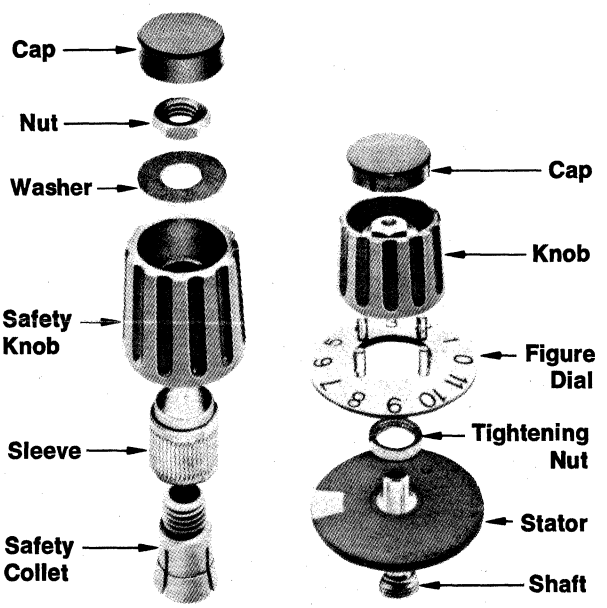
With the exception of the transparent figure dials all of the **ELMA** collet safety knobs and accessories are made of Polyamide.

Safety

With the knob installed and the cap in place there is no possibility of shock hazard as there are no exposed metal parts, thus satisfying both O.S.H.A. and U.L. requirements.

Colors

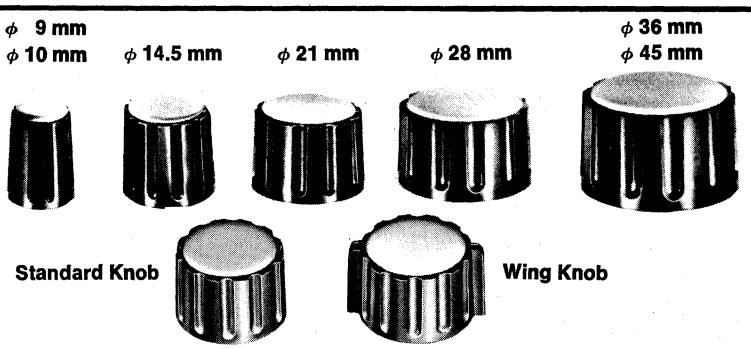
ELMA collet safety knobs offer a very wide choice of standard colors and color combinations in both glossy and matte finish. Collet knobs are available in light gray, black and red. Caps and pointers are available in light gray, black, red, blue, yellow, and green. In addition **ELMA** offers custom colors to meet your exacting requirements.



Collet Knob Sizes/Designs

ELMA collet safety knobs are available in diameters of 9 mm, 10 mm, 14.5 mm, 21 mm, 28 mm, 36 mm and 45 mm.

Every **ELMA** knob is available from stock in both conventional and wing versions, each with or without setting line.



LED Arrays, Test and Switch Socket Arrays

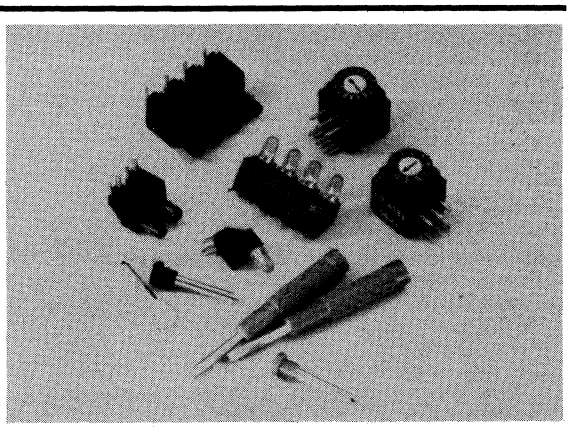
LED: High-quality diode in molded plastic holder, single or in blocks of 2, 4, 8, 16 for easy and quick right-angle mounting. Colors: red, green and yellow. Customized color sequence possible.

Test & switch sockets: Right-angle mounted sockets in blocks of 1, 2, 4, 8 and 16 elements. Colors: red, green, yellow, black, blue.

Test & shorting plugs: Nickel or gold plated brass pin. Colors: red, green, yellow, blue, black.

Coding switch for front panel: High-quality BCD and hexadecimal coded, shorting or non-shorting, with/without stop, sealed, for right-angle mounting.

All the above products have pins in the 0.1" (5.08 mm) spacing according to DIN 41494.



For complete information write or call for our catalog today!

See section 1400 (Cabinets, Enclosures, Racks & Chassis), section 2025 (Computers-Mini/Micro) and section 5100 (Switches) for additional ELMA products!

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

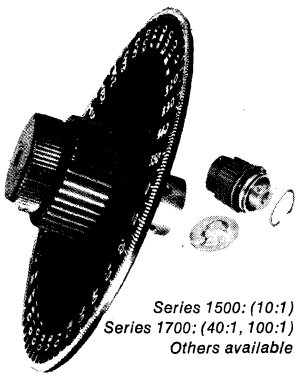
Are Our JAN Specialty Specials

MACROVERNIER

REDUCTION DRIVE

Precision Tuning Built Into Knob

- Integral assembly
- Zero Backlash
- Infinite resolution with absolute shaft registration
- Driving torque-10 oz. in.
- Saves space behind the panel
- Installation in seconds, without special tools
- Knobs and Component Shaft rotate in same direction



Series 1500: (10:1)
Series 1700: (40:1, 100:1)
Others available

Single Unit KRD15 - -
"A" = 10:1 Vernier Drive
"B" = 1:1 Direct Drive

Double Unit KRD17 - -
"C" = Max. Ratio 100:1 OR 40:1
"D" = Min. Ratio 10:1 4:1

MACROVERNIER CONTROL KNOBS — VISUAL INDEX

FRONT FLANGE — Panel Mounted. 2 Screws.

2 PINS ONLY. Component Mounted.

PANEL BUSHING—Separate Spacer. Secured by bushing. Panel Mounted.

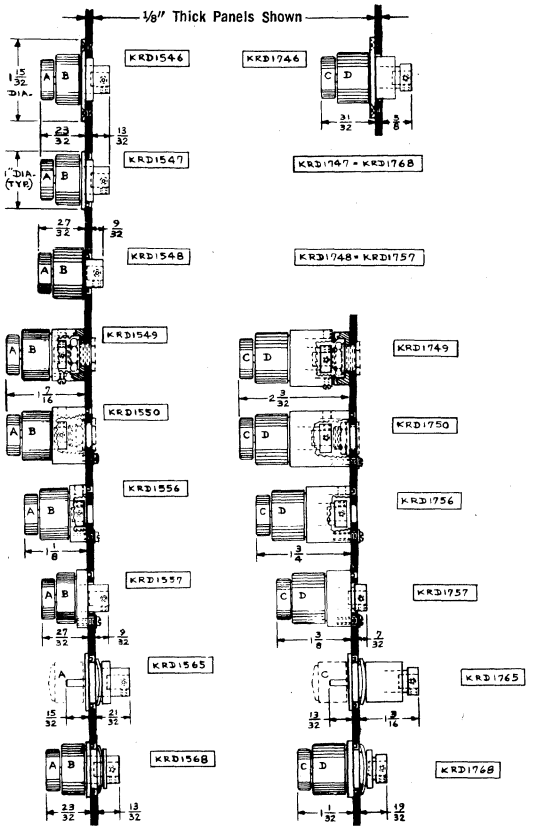
PANEL BUSHING—Integral Spacer.
-7 2 Pins Only. Component Mounted.
-8 2 Screws Only. Panel Mounted.

SCREWS AND/OR PINS THRU PANEL.
-7 2 Pins Only. Component Mounted.
-8 2 Screws Thru Panel.

SCREWS AND/OR PINS THRU PANEL.
-7 2 Pins Only. Component Mounted.
-8 2 Screws Thru Panel.

2 PINS AND BOWED RETAINING RING. Panel Mounted. Single Knob—Max. Ratio Only. (Various Size Knobs Available.)

2 PINS AND BOWED RETAINING RING. Panel Mounted.



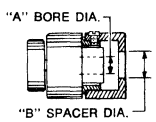
PANEL "HOLES" REQUIRED

KRD NUMBER	MIN. DIA. THRU PANEL	2 HOLES @ 180°	
		DIA.	B.C. DIA.
1546 1746	.790	4-40 TAP	1.188 ± .001
1550-8 1750-8	NOTE No. 1	.125	.851 ± .001
1556-8 1756-8	NOTE No. 2	.125	.851 ± .001
1557-8 1757-8	.562	.125	.851 ± .001
1549 1749	REQUIRES ONLY NOTE No. 1		

KRD NUMBER	MIN. DIA. THRU PANEL	2 SLOTS @ 180° .078 +.002 −.000 WIDE
		DIMEN. ACROSS OUTSIDE OF SLOTS
1547	.790	.995 +.003 −.000
1548	.530	.750 +.003 −.000
1550-7 1750-7	NOTE No. 1	.945 ± .005
1556-7 1756-7	NOTE No. 2	.945 ± .005
1557-7 1757-7	.562	.945 ± .005
1565 1765	.790	.995 +.003 −.000
1568 1768	.790	.995 +.003 −.000

NOTES:
1. CLEARANCE HOLE FOR 1/4" OR 3/8" PANEL BUSHING
2. CLEARANCE HOLE FOR COMPONENT SHAFT ONLY.

MACROVERNIER CONTROL KNOBS — COMPLETE PART NUMBERS

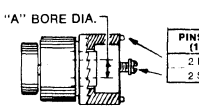


"A"

"A" +.002 −.000 BORE DIA.	FIRST DASH NO.
.127	-2
.190	-3
.252	-4

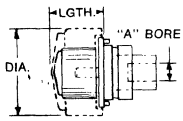
"B"

"B" DIA. THRU SPACER	SECOND DASH NO.
.252 +.002 −.000	-4
¼-32 THD.	-4T
.377 +.002 −.000	-6
⅜-32 THD.	-6T



"C"

PINS OR SCREWS (180° APART)	SECOND DASH NO.
2 Pins Only	-7
2 Screws Only	-8



"D"

KNOBS DIA.	LGTH.	SECOND DASH NO.
23/32	23/32	-07
1 5/16	29/32	-09
1 9/32	1 3/16	-12
1 23/32	31/32	-17

LOW RATIO SINGLE UNITS
(10/1 Ratio Only)

KRD1546-"A"
KRD1547-"A"
KRD1548-"A"
KRD1549-"A"-"B"
*KRD1550-"A"-"C"
KRD1556-"A"-"C"
KRD1557-"A"-"C"
KRD1565-"A"-"D"
KRD1568-"A"

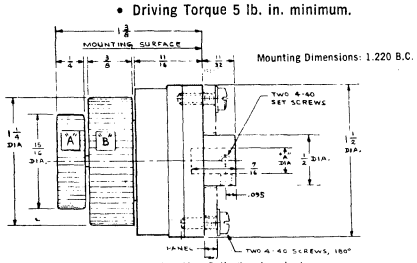
TYPICAL PART NUMBERS:
*KRD1550-4-8
*KRD1749-3-6-100/10

HIGH RATIO DOUBLE UNITS
Ratios (100/10) or (40/4)

KRD1746-"A"—
*KRD1749-"A"-"B"-
KRD1750-"A"-"C"-
KRD1756-"A"-"C"-
KRD1757-"A"-"C"-
KRD1765-"A"-"D"-
KRD1768-"A"—

KRD 1820

- Hybrid: Friction and gear reduction.
- Driving Torque 5 lb. in. minimum.



Notes:
1. Knob "A" = Max. Ratio (input : output)
2. Knob "B" = Min. Ratio (input : output)
3. Both knobs & component shaft will rotate in same direction.
4. **Typical Assembly No.: KRD1857-3-Max/Min (ratios)**

"A" +.002 −.000 BORE DIA.	FIRST DASH NO.
.127	-2
.190	-3
.252	-4

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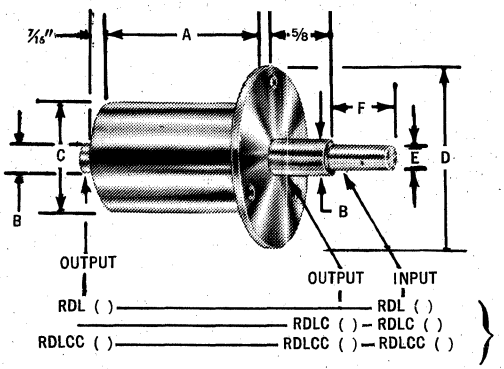
ECONOMY

REDUCTION DRIVES — BALL BEARING TYPE

FOR FINE INSTRUMENT AND MACHINE CONTROL



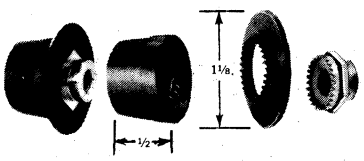
Cat. No.	Ratio	A	B O.D.	B I.D.	C	D	Input Shaft E	F	Bolt-Mtg. Dia.
RDL-1	2.6:1	1	3/8	1/4	1 1/8	1 13/16	1/4	3/4	1 15/32
RDL-2	7.0:1	1 13/32	3/8	1/4	1 1/8	1 13/16	1/4	3/4	1 15/32
RDL-3	17.0:1	1 13/16	3/8	1/4	1 1/8	1 13/16	1/4	3/4	1 15/32
RDLC-1	2.6:1	1	3/8	1/4	1 1/8	1 13/16	1/4	1 1/2	1 15/32
RDLC-2	7.0:1	1 13/32	3/8	1/4	1 1/8	1 13/16	1/4	1 5/4	1 15/32
RDLC-3	17.0:1	1 13/16	3/8	1/4	1 1/8	1 13/16	1/4	2 3/32	1 15/32
RDLCC-1	2.6:1	1 13/32	3/8	1/4	1 1/8	1 13/16	1/4	1 5/4	1 15/32
RDLCC-3	17.0:1	2 43/64	3/8	1/4	1 1/8	1 13/16	1/4	1 1/16	1 15/32
RDL-4	45.0:1	2 7/32	3/8	1/4	1 1/8	1 13/16	1/4	2 3/32	1 15/32
RDL-5	120.0:1	2 23/32	3/8	1/4	1 1/8	1 13/16	1/4	1 5/4	1 15/32
RDL-6	300.0:1	3 3/32	3/8	1/4	1 1/8	1 13/16	1/4	1 1/16	1 15/32

All Ratios are ±10%.

Employ precision ball bearings. For rotary control of components. Smooth motion. Ruggedly built, permanently sealed and lubricated.

Input and output shafts operate in SAME DIRECTION. Type "RDL" provides "in-line" input-output shafts. Type "RDLC" is supplied with **concentric** shafts whereby the output envelopes the input shaft. An added feature of Type "RDLCC" is the output shaft in the rear.

KNOB RATIO DRIVE



9 to 1 ratio (to dial skirt).
1:1 to potentiometer.

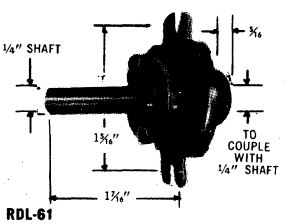
Cat. No. KRD-11 (Plain Gripping Surface)
Cat. No. KRD-12 (Knurled Gripping Surface)

Other ratios designed to specifications. Engineered miniature gear system, permits precise, fine tuning of controls.

Brass gears; black anodized aluminum knob and dial. Available with knurled or non-knurled outside knob. Available for 1/8" shafts. 1/4" on special order.

IN LINE RATIO DRIVE — 6.3:1

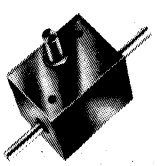
For smooth rotary control of components requiring Vernier adjustments. Suitable for use where panel space is at a premium. Durable, ruggedized ball bearing mechanism.



RDL-61

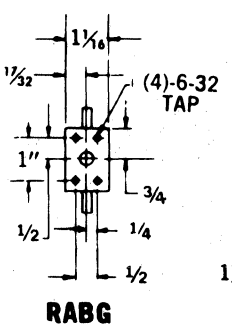
RIGHT ANGLE RATIO DRIVES — Versatile, Miniaturized, Right Angle Rotary Controls

RAWG ( )
RABG ( )

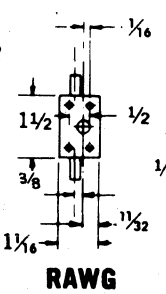


Dual output stainless steel shafts at right angles to input, provide ideal type instrument control. With matched bevel, worm gears cover wide range of ratios.

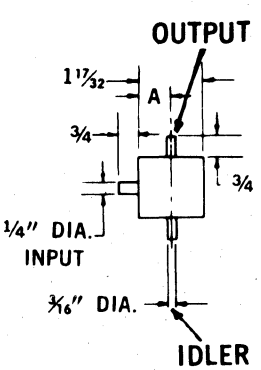
Especially useful for handling spring or gravity-loaded components. Output shaft automatically locks in any desired position yet remains free for smooth adjustment by input shaft. Assembled in dust-proof housings, gears are permanently pinned in place mounted in oilite bearings, and held under constant pressure.



RABG



RAWG





BEVEL GEAR RIGHT ANGLE DRIVES

Cat. No.	Ratio	"A"
RABG-1	1:1	7/8
RABG-2	2:1	7/8
RABG-3	3:1	7/8

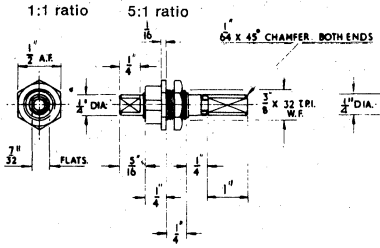


WORM GEAR RIGHT ANGLE DRIVES

Cat. No.	Ratio	"A"
RAWG-1	5:1	3/4
RAWG-2	10:1	3/4
RAWG-3	20:1	3/4

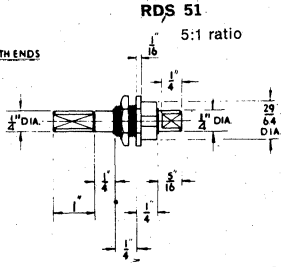
DIRECT DRIVE, REVERSE VERNIER RDS - R 51

1:1 ratio 5:1 ratio

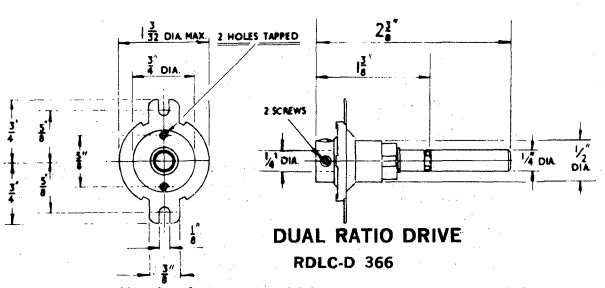


CONTINUOUS DRIVE RDS 51

5:1 ratio



*OTHER LENGTHS AVAILABLE



DUAL RATIO DRIVE
RDLC-D 366

Reverse Vernier Action with 36-1 ratio and Fast Drive of 6-1 ratio.
Also available with flange bushing P/N RDLC-D 366-F

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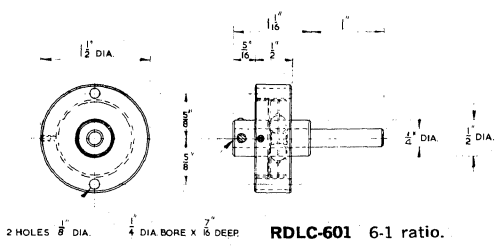
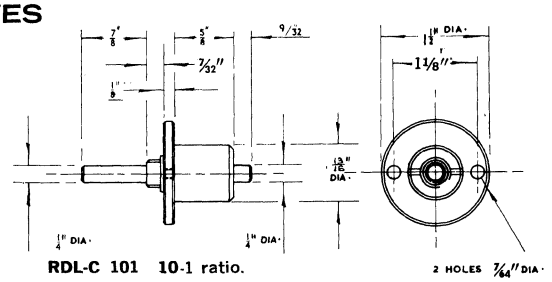
RATIO DRIVES



RDLC-601 6-1 ratio.

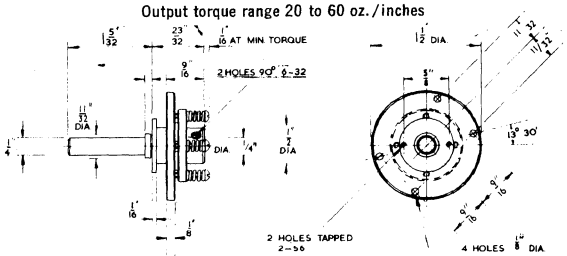


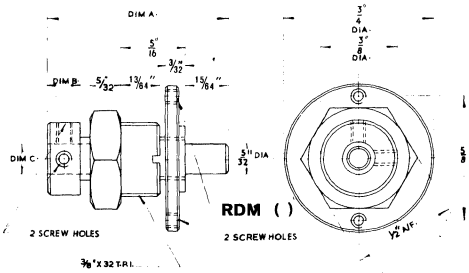
RDL-C 101 10-1 ratio.

ADJUSTABLE TORQUE BALL DRIVE

RDLA-601 6-1 ratio

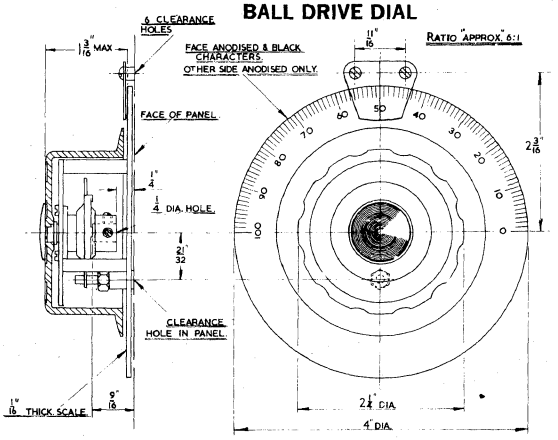
Output torque range 20 to 60 oz./inches



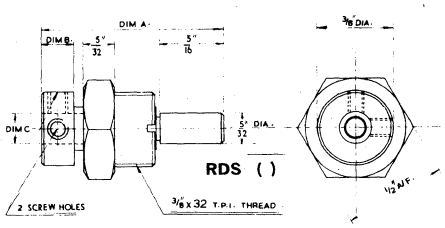


10-1 ratio.

BALL DRIVE DIAL



DAD 600 6-1 ratio.

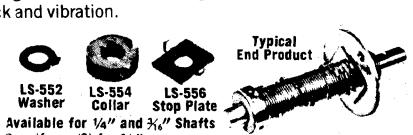


10-1 ratio.

PART NO.	PART NO.	DIM A	DIM B	DIM C
RDS 101-1	RDM 101-1	29/32"	5/32"	5/32"
RDS 101-2	RDM 101-2	15/16"	13/64"	15/64"
RDS 101-3	RDM 101-3	15/16"	13/64"	1/4"

LIMIT STOP COMPONENTS

Limit stop as a component to design with, potentiometers, capacitors, or other similar units. Added washers enables an increase in stop range (with precision). Dual locking screws maintain settings under all conditions of shock and vibration.

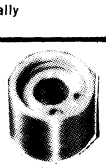


Available for 1/4" and 3/16" Shafts

Specify — (3) for 3/16"
— (4) for 1/4"

Can be designed internally into JANSET knobs.

MINIATURIZED SLIP CLUTCH



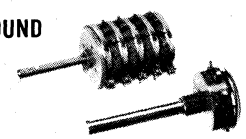
Couples 1/8", 3/16" or 1/4" input-output (2 set screws). Also 'D' shafts (with or without set screws). Torques: 2 to 50 oz./in. All metal components. 5/8" dia. x 5/8" long.

APS-1723

Shaft sizes (−2=1/8") (−3=3/16") (−4=1/4")
min. & max. torque in oz./inches

Example: Part #APS-1723-34-8-16
To fit 3/16" dia. shaft to 1/4" dia. shaft, and torque 8 to 16 oz./inches.

POTENTIOMETERS / PRECISION WIRE WOUND

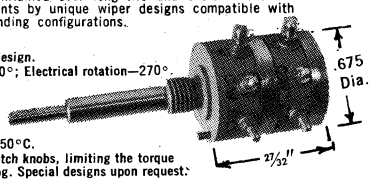


- **LINEAR AND NON-LINEAR • SINGLE AND MULTI-TURN**
- **PENDULUM OPERATED • SECTORS AND GYRO PICKOFFS • SWITCHES**

Reliable, competitively priced wire-wound potentiometers for commercial, industrial and military electronic equipment manufacturers.

- **EXCELLENT LINEARITY:** 0.03% available in single turn 5" diameter unit.
- **LONG LIFE:** Over two million revolutions with base metal windings.
- **WIDE TEMPERATURE RANGE:** Available for operation from −55°C to +125°C.
- **LOW NOISE** Platinum alloy winding also insures low noise level.
- **RELIABILITY:** Welded taps for better mechanical and electrical connections.
- **HIGH RESOLUTION:** Wire as fine as 0.0003" diameter can be used.
- **CUSTOM DESIGNS:** Fast prototype delivery on special linear or non-linear units.
- **PRECISION CONSTRUCTION:** Anodized aluminum housings and polished steel shafts.
- **ACCURATE FUNCTIONS:** Welded taps to a single turn of wire eliminates shorted sections of winding at intermediate taps.
- **RUGGEDNESS:** Meets all applicable MIL Specs.
- **MAXIMUM STORAGE LIFE:** Maintained over long life and extreme environments by unique wiper designs compatible with winding configurations.

RESISTOR, VARIABLE. Single and Dual gang.
Conforms to MIL-R-12934. Resistance values as required. Linear design.
Power: 1 watt continuously, up to 70°C.; Mechanical rotation—300°; Electrical rotation—270°.
Noise level less than 1% of total resistance.
Operating torque: 4.0 to 6.0 oz. in., detent where specified.
Detent torque: 5 oz. in. above operating torque, or 6.0 to 14.0 oz. in. including unit operating torque.
Min. rotational life: 25,000 cycles. Operating Temp.: −65°C to 150°C.
Clutch Knobs: These potentiometers must be adjusted solely by clutch knobs, limiting the torque exerted on shafts beyond their rotational limits. See Jan catalog. Special designs upon request.



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QUALITY
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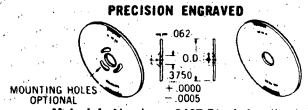
DIALS, DISC

Clockwise and Counter Clockwise
PRECISION ENGRAVED



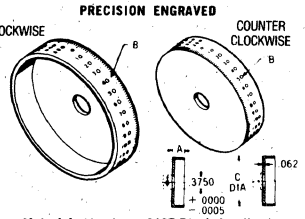
Material: Aluminum 24ST Black Anodized

Cat. No.	Range	0.+.000 D.−.003	Steps in Degrees	Graduations
DA-01	—		—	BLANK
DA-02	0-360		2°	180
DA-03	0-100		30-36′	100
DA-04	0-60	1.500	6°	60
DA-05	0-50		7°-12′	50
DA-06	0-25		14°-24′	25
DA-07	0-10		36°	10
DA-08	—		—	BLANK
DA-09	0-360		2°	180
DA-010	0-120		3°	120
DA-011	0-100		30-36′	100
DA-012	0-72	2.000	5°	72
DA-013	0-60		6°	60
DA-014	0-50		7°-12′	50
DA-015	0-25		14°-24′	25
DA-016	0-10		36°	10
DA-017	—		—	BLANK
DA-018*	0-360		1°	360
DA-019*	0-360		2°	180
DA-020	0-200		10-48′	200
DA-021	0-180	3.000	2°	180
DA-022	0-120		3°	120
DA-023*	0-100		30-36′	100
DA-024	0-72		5°	72
DA-025	0-50		7°-12′	50
DA-026	0-10		36°	10
DA-027	—		—	BLANK
DA-028*	0-360		1°	360
DA-029*	0-360		2°	180
DA-030	0-200	4.000	10-48′	200
DA-031	0-180		2°	180
DA-032	0-100		30-36′	100
DA-033	0-50		7°-12′	50
DA-034	0-10		36°	10

*Available counter clockwise. To order, use prefix DC in place of DA.

DIALS, DRUM

Clockwise and Counter Clockwise
PRECISION ENGRAVED

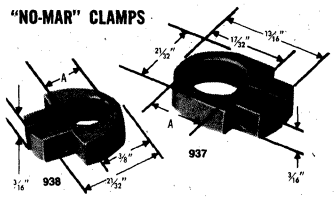


Material: Aluminum 24ST Black Anodized

Cat. No.	A	B	C	Range	Steps in Degrees
DB-1		—		BLANK	—
DB-2	3/8	100	.990	0-100	3°-36′
DB-3		180		0-360	2°
DB-4		—		BLANK	—
DB-5	3/8	60	1.490	0-60	6°
DB-6		100		0-100	3°-36′
DB-7		180		0-360	2°
DB-8		—		BLANK	—
DB-9		50		0-50	7°-12′
DB-10	3/8	25	1.990	0-25	14′-24°
DB-11		10		0-10	36°
DB-12		180		0-180	2°
DB-13		180		0-360	2°
DB-14		—		BLANK	—
DB-15		200		0-200	1°-48′
DB-16	1/2	180	2.490	0-180	2°
DB-17*		180		0-360	2°
DB-18*		360		0-360	1°
DB-19		100		0-100	3°-36′
DB-20		—		BLANK	—
DB-21		180		0-180	2°
DB-22	1/2	100	2.990	0-100	3°-36′
DB-23		10		0-10	36°
DB-24*		360		0-360	1°
DB-25*		180		0-360	2°

*Available counter clockwise. To order, use prefix DD in place of DB.

"NO-MAR" CLAMPS



Set screw does not touch shaft. Ideal for knob and gear applications. Variety of sizes available.

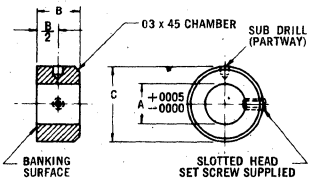
Cat. No.	A Dimensions in Inches -2	-3	-4	-5	-6	-7	-8
937	1/8	3/16	1/4	5/16	3/8	13/32	7/16
938	1/8	3/16	1/4	5/16	3/8	13/32	

PRECISION SET SCREW COLLARS

Material: 303 Stainless Steel
Finish: Clear Passivate
5/64 to 1/2 Bores

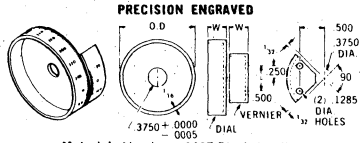
Shaft Size	A	B	C	Set Screw	Part No.
5/64	.0779	.12	1/32	#0-80	SC7-07
3/32	.0935	.12	1/4	#0-80	SC8-09
.12	.1200	.18	5/64	#2-56	SC10-120
1/8	.1248	.18	5/64	#2-56	SC10-124
5/32	.1560	.18	5/64	#2-56	SC10-15
3/16	.1873	.22	3/8	#4-40	SC12-18
.24	.2405	.25	1/2	#6-32	SC16-240
1/4	.2498	.25	1/2	#6-32	SC16-249
5/16	.3123	.28	5/16	#6-32	SC18-31
3/8	.3748	.37	3/4	#10-32	SC24-37
1/2	.4998	.50	1	1/4-20	SC32-49

Special Collars Available on Request.



DIAL, DRUM AND VERNIER SETS

PRECISION ENGRAVED

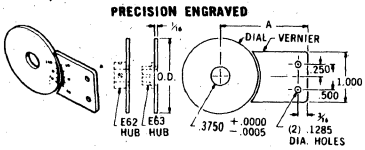


Material: Aluminum 24ST Black Anodized
Note: Special Sets Available on Request
For Additional Information See Technical Section

Cat. No.	0.+.005 D.−.005	W	Dial Graduations	Dial Range	Vernier Reading
DJ-1	1.490	.375	360° in	0°-360°	12′
DJ-2	1.990	.375	2° Steps		12′
DJ-3	2.490	.500	360° in		6′
DJ-4	2.990	.500	1° Steps		6′

DIAL, DISC AND VERNIER SETS

PRECISION ENGRAVED

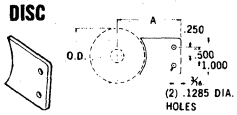


Material: Aluminum 24ST Black Anodized
Note: Special Sets Available on Request
For Additional Information See Technical Section

Cat. No.	0.+.000 D.−.005	A	Dial Graduations	Dial Range	Vernier Reading
DH-1	1.500	1.760	360° in	0°-360°	12′
DH-2	2.000	2.010	2° Steps		12′
DH-3	3.000	2.510	360° in		6′
DH-4	4.000	3.010	1° Steps		6′

We invite your inquiries for special dials and drums. Also available from stock — precision ground shafts.

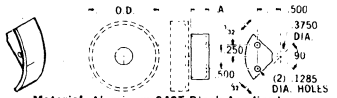
INDEX, DIAL DISC



Material: Aluminum 24ST Black Anodized
Note: Use with "DA" and "DC" Type Disc Dials

Cat. No.	A	O.D. of Dial
DG-1	1.760	1.500
DG-2	2.010	2.000
DG-3	2.510	3.000
DG-4	3.010	4.000

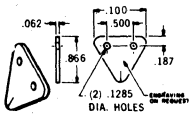
INDEX, DRUM DIAL



Material: Aluminum 24ST Black Anodized
Note: Use with "DB" and "DD" Type Drum Dials

Cat. No.	A	O.D. of Drum
DF-1	.375	1.490
DF-2	.375	1.990
DF-3	.500	2.490
DF-4	.500	2.999

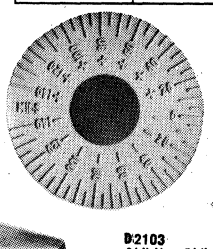
INDEX, DIAL



No. 1341 POINTER, DIAL
3/8"W. x 3/8"H. x 1/8"D. Pointer Section thickness .025.



Cat. No.	Material
DE-1	Clear Plexiglass
DE-2	Aluminum 24ST Black Anodized



D0008 DIAL
Cast Aluminum. 1/16" thick x 1 59/64" dia. x 43/64" center hole.



D2103
3/4" H. x 5/8" wide
No screws. .136 mounting holes. (Red pointer index)

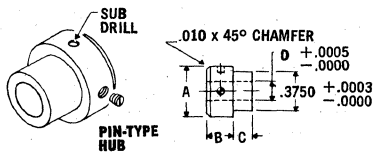


D0034-(3.7) POINTER
1/4" H. x 49/64" L.
.230 mtg. hole. Aluminum casting.



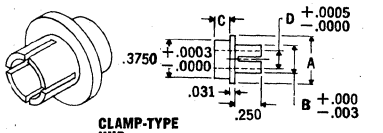
D0037-(2) POINTER
5/16" H. x 1 3/32" dia, x 1 13/64" L.
Brass with 1/8" mounting hole.

DIAL (AND GEAR) HUBS



#303 St. Steel-Passivated

Catalog No. Pin-Type	A	B	C	D	Set Screw	Spot Hole
HS62-1-2SS	7/16	.22	.062 .125	.1250	#2-56	.029
HS62-2-2SS						
HS62-3-3SS	7/16	.22	.062 .125	.1875	#4-40	.040
HS62-4-3SS						
HS62-5-4SS	1/2	.25	.062 .125	.2500	#6-32	.070
HS62-6-4SS						



#303 St. Steel-Passivated

Catalog No. Clamp-Type	A	B	C	D
HC63-1-2SS	7/16	.138	.062 .125	.1250
HC63-2-2SS				
HC63-3-3SS	7/16	.250	.062 .125	.1875
HC63-4-3SS				
HC63-5-4SS	1/2	.312	.062 .125	.2500
HC63-6-4SS				
HC63-8-2SS	7/16	.188	.125	.1200
HC63-13-3.88SS	1/2	.312	.125	.2405

LOCKS, DIAL

No. AP-1060



Supplied completely assembled. Securely locks dial in position. Nickel plated on brass. Knurled head. 1 3/8" overall length.

Are Our Specials JAN Specialty

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MANUFACTURING COMPANY INC.
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QUALITY
RELIABILITY
ECONOMY

HI-VOLTAGE INSULATED COUPLINGS U.S. PATENT NO. 2,681,387

MEETS MILITARY SPECIFICATIONS — TEMPERATURE - HUMIDITY - SHOCK - VIBRATION - FUNGUS

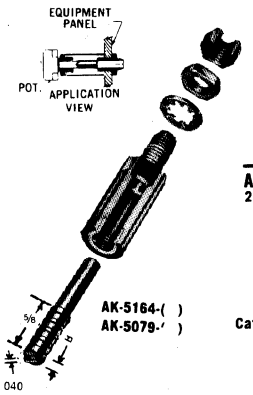
HI-VOLTAGE INSULATED COUPLINGS

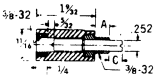
15 KV Breakdown—10 lb/in. torque
Series No. AK-5079 and No. AK-5164

Stainless steel shaft and screwdriver tip molded-integrally with Diallyl Phthalate per Mil Specs. Shock ,vibration and fungus proof, they operate with ease over an ambient temperature range of −75°C to +175°C. Supplied with mounting hardware.

Screwdriver tip fits standard slotted shafts (potentiometer, etc.) without further machining. Suited to adjust high voltage controls protecting operating personnel. Also used to reduce ground capacitance on other types of instrument controls.

For Commercial Instrument Applications . . .
Available in general purpose Bakelite.





STANDARD TYPE

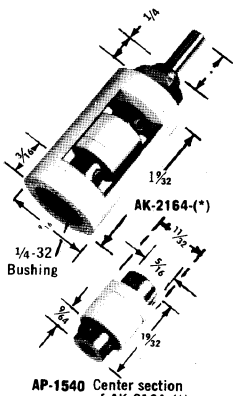
Cat. No.	Dimensions in Inches "A"	"B"	Shaft	"C"
AK-5164-X-1	3/8	3/16	Slotted	3/16
AK-5164-B-1	3/8	1/16	Slotted	3/16
AK-5164-X-2	3/8	3/16	Slotted	13/32
AK-5164-B-2	3/8	1/16	Slotted	13/32
AK-5164-X-3	3/8	3/16	No Slot	13/16
AK-5164-B-3	3/8	1/16	No Slot	13/16
AK-5164-X-4	3/8	3/16	No Slot	17/16
AK-5164-B-4	3/8	1/16	No Slot	17/16
AK-5164-X-5	3/8	3/16	Slotted	Minus 1/16
AK-5164-B-5	3/8	1/16	Slotted	Minus 1/16

WITH LOCKING TYPE BUSHING

AK-5079-X-1	3/16	3/16	Slotted	1/8
AK-5079-B-1	1/16	1/16	Slotted	1/8
AK-5079-X-2	3/16	3/16	Slotted	5/32
AK-5079-B-2	1/16	1/16	Slotted	5/32

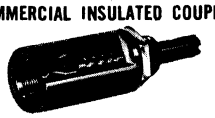
Note: (3/16″) to be used with 1/8″ long shaft.
(1/16″) to be used with 1/4″ long shaft.

VOLTAGE: 8000VDC INSULATED COUPLINGS FOR 1/8″ SHAFTS
Material: Cycalac, Brass, Nickel Plated.
*Insert letter "S" or "N" followed by first two numbers of decimal equivalent, for fractional length of shaft beyond bushing.
"S" = with slot. "N" = no slot.
Typical Part Number: AK-2164-N31 =
5/16″ long shaft beyond bushing (standard), no slot. If length is 1″ use "X".
AK-2164-SX =
1″ long shaft beyond bushing, slotted.
If length exceeds 1″, use "X" and decimal equivalent for balance of number.
AK-2164-NX31 =
1 5/16″ long shaft beyond bushing, no slot.

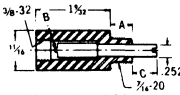


COMMERCIAL INSULATED COUPLINGS

30 KV Breakdown
10 lb-in. Torque.



AK-4160



STANDARD TYPE

Cat. No.	Dimensions in Inches "A"	"B"	Shaft	"C"
AK-4160-X-1	3/8	3/8	Slotted	1/8
AK-4160-B-1	3/8	3/16	Slotted	1/8
AK-4160-X-2	3/8	3/8	No Slot	1/2
AK-4160-B-2	3/8	3/16	No Slot	1/2

Series No. AK-4160
For TV and Industrial Applications

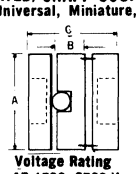
Withstands 30 KV, made of high grade Bakelite throughout except for stainless steel screwdriver tip molded in drive shaft. Mounting Hardware supplied.

AUTOLINEAR (INSULATED) SHAFT COUPLINGS

2.5-5 KV Breakdown Universal, Miniature, Self-aligning



Cat. No. AP-1530 and AP-1538



Voltage Rating
AP-1530, 2500 V
AP-1538, 5000 V

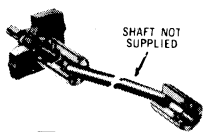
Part No.	Dia. Hole	Dimensions in Inches "A"	"B"	"C"
AP-1530-2	1/8	1/2	15/64	59/64±1/32
AP-1530-3	3/16	1/2	15/64	59/64±1/32
AP-1530-4	1/4	1/2	15/64	59/64±1/32
AP-1538-2	1/8	1/2	27/64	1 7/64±1/32
AP-1538-3	3/16	1/2	27/64	1 7/64±1/32
AP-1538-4	1/4	1/2	27/64	1 7/64±1/32

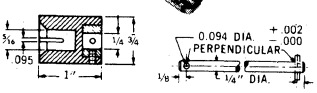
Accommodates either similar or dissimilar 1/8″, 3/16″ or 1/4″ shafts. Permits misalignment to 1/16″ and 5° angle. Operates free of backlash. Plastic insulator between cast aluminum hubs. Each hub has 2 set screws. Alodine finish. Also available with self-extinguishing low water absorption characteristic plastic insulator on special order.

Typical Part No.'s
AP-1530-34 accommodates a 3/16″ shaft one side, 1/4″ shaft on other.
AP-1538-22 accommodates two 1/8″ shafts.

OFFSET-SHAFT (INSULATED) COUPLINGS

10 KV Breakdown ±30° Offset AP-15299





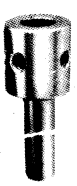
Single-unit, molded Nylon-to-metal insert. Application requires two couplings — permits smooth control for two parallel shafts offset up to 30° at separations greater than 3″. Secured to component and control shafts by 2 set screws.

Note: Coupling is accomplished with a 1/4″ shaft of any length (not furnished). Coupling shaft keyed to coupler by steel drive pins supplied. See P. 9 for shafting.

1/4″ SHAFT COUPLING EXTENDER

AP-1010
Nickel plated brass with 2 set screws. 1/2″ O.D.; 1 3/4″ overall length.

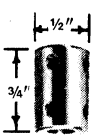
AP-1321
Same as above, except extends 1/4″ shaft to 1/8″, overall length 2 1/2″. Aluminum clear iridite.



SHAFT COUPLING

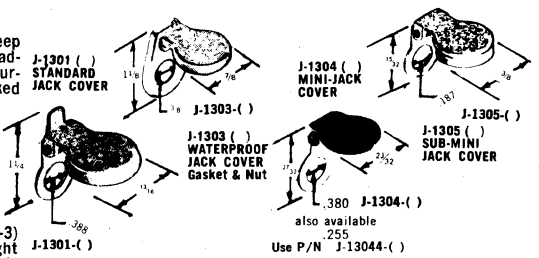
AP-15150
Nickel plated brass coupling for joining two 1/4″ shafts. 4 set screws.

Cat. No. AP-15151
Same as above, 2 set screws.



JACK COVERS (TRIMMER COVERS)

Fit jack or panel bushings used to keep out dust and moisture and prevent inadvertent disturbance of control. Outer surfaces finished in standard colors of baked enamel.



*Overall height in closed position when mounted on panel.

To Order Colors Specify:
(-1) Black Texture; (-2) Smooth Gray; (-3) Smooth Olive; (-4) Smooth Black; (-5) Bright Nickel Plate; (-6) Red (Top section only); (-7) White (Top section only).
Example: Jack cover, color black texture, order as **J-1301 (-1)**

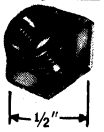
AK5610 INSULATED COUPLING



For 1/4″ shaft. 3/4″ dia. x 5/8″ long. Permits linear and angular misalignment up to .005″ and/or 10°. Breakdown voltage 3 KV.

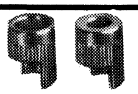
AK771 REDUCER INSERT BUSHING

1/2″ Hex — 1/4″ thick.
Overall length 5/32″



Adapter with high voltage insulated couplings to accommodate 1/8″ shaft potentiometers. 3/8 x 32 O.D., 1/4 x 32 I.D.

REDUCER INSERT



AK678
(1/4″ to 3/16″)

AK671
(1/4″ to 1/8″)

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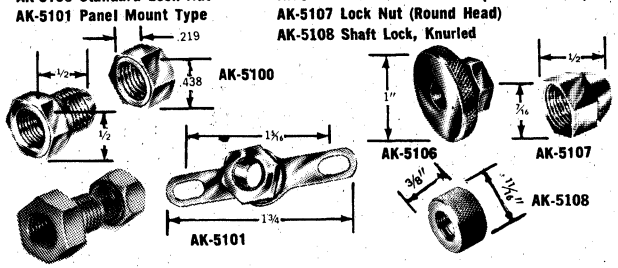
QUALITY
RELIABILITY
ECONOMY

SHAFT LOCKS Split-Bushing, Collet Type

Securely holds shaft in position. Brass, nickel plated body and lock nut.

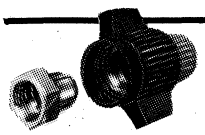
— For 1/4" Shafts 3/8-32 bushing

AK-5100 Standard Lock Nut
AK-5101 Panel Mount Type
AK-5106 Knurled Shaft Lock (1" O.D. Knurl)
AK-5107 Lock Nut (Round Head)
AK-5108 Shaft Lock, Knurled



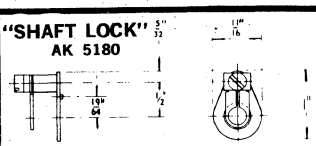
AK-103 — For 1/8" shaft — 1/4-32 bushing 3/8" Hex Dia., assembled length 1/2.

AK-5109 — For 1/8" shaft. 1/4-28 bushing (1/32" long x 5/16" dia.)



SHAFT LOCK KNOB
(with locking collet)

"SHAFT LOCK" 5/32
AK 5180



FITS 3/8" BUSHING, 1/4" SHAFT

SHAFT LOCKS One-piece; fits standard 1/4" and 3/8"-32 thread of shaft bushing. Friction grip holds shaft to prevent accidental or vibrational disturbance of control settings. Adjustment for semi-permanent locking, provided. Note: Part No's. 1047, 1048, 1049 maximum tightening torque — 5 lb.-in.

AK-1046 5/16" Hex OD. Metal w/plastic insert.

AK-1048 7/16" Hex OD. Metal w/plastic insert.



AK-1047 5/16" Hex OD. All Plastic

AK-1049 7/16" Hex OD. All Plastic

AK-1050 Plastic w/metal insert.





Ordering Data: -(1) Nominal Shaft Dia. 2 = 1/8" 4 = 1/4" -(2) Bushing Thd. Size 4 = 1/4-32 6 = 3/8-32

Typical P/N: **AK1049-2-4** = for 1/8" shaft, 1/4-32 bushing. **AK1048-4-6** = for 1/4" shaft, 3/8-32 bushing.

SHAFT KNOB LOCK



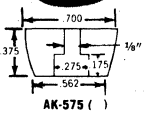
Cat. No.
AK-1057-2 (*) (1/8" shaft)
AK-1057-4 (*) (1/4" shaft)
(Used with 71 Series Knob)
AK-1059-4 (*) (1/4" shaft)
(Used with 91 Series Knob)
AK-1061-4 (*) (1/4" shaft)
(Used with 121 Series Knob)
*Specify "M" or "G" for matte or glossy finish.

Prevents movement of controls due to shock, vibration, or accidental contact. Available matte or glossy finish.

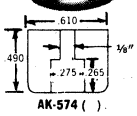
Typical Part Numbers: **AK-1057-2MA** = For 1/8" Shaft/matte finish/Black
AK-1059-4GA = For 1/4" Shaft/glossy finish/Black







AK-575 ( )



AK-574 ( )

CHASSIS AND CABINET BUMPERS
Low-friction polyethylene. Guards against scuffing. Supplied in either black or russet brown, with recessed hole for screw or bolt usage.

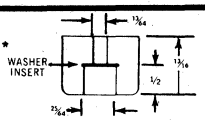
To Order Colors: Black, specify (4); Brown, specify (7). Other colors on request.

AK-574 also available in white nylon; thru hole .187 dia., C bore 3/8". Specify No. AK-577-8

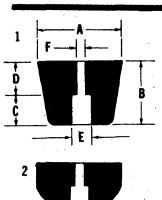
NO. AK-576-4 HEAVY DUTY CHASSIS AND CABINET BUMPER
(WITH STEEL WASHER INSERT)

Molded neoprene. 1" diameter, 13/16" high. Configuration similar to AK-574 above. Color: Black. Other colors on request.





* **No. AK-162610-4** New, improved non-marring, high tear strength, neoprene.



RECESSED BUMPERS

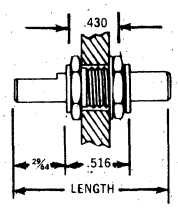
PART NO.	A MAX. DIAM.	B HGT.	C SCREW HEAD DEPTH	D SCREW SHAFT DEPTH	E SCREW BASE OPENING	F SCREW SHAFT WIDTH	NOMINAL DURO-METER	FIG. NO.
REC-2082S	5/8	1/2	1/4	1/4	5/16	5/32	75	1
REC-2084S	3/4	3/8	3/16	3/16	7/16	3/16	75	1
REC-2081S	5/8	5/16	3/16	1/8	1/4	3/16	75	2

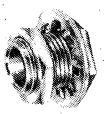
Suffix S — Steel Washer Insert.

PANEL BEARING AND SHAFT ASSEMBLIES

Cat. No. AP-15350 Series

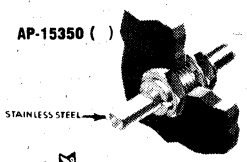
For rotary control of components. Stainless steel shaft 1/4" dia. one end flatted completely assembled with retaining rings, jam nut and lock washer. Nickel plated, brass panel bearing. Fits panels up to 3/16" thick; mounts in 13/32" dia. hole.





AP-15350

AP-15350 ( )

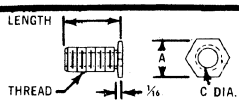


Cat. No.	Item	"L" Shaft Length
AP-15350	Panel Bearing	—
AP-15350-1	Panel Bearing &	1 5/16"
AP-15350-2	Shaft Assembly	3"
AP-15350-3		6"

Also available as Nylon Panel Bearing.



Cat. No. AK-5511 Panel Bearing Assembly
Shafts available on special order.



Typical Pt. No. PB 60814-B = 1/4-28 Thd., 1/2 Lg. Brass w/ .127 Hole.

Bushing can be supplied with Mtg. nut and int. tooth lockwasher. Available with special nylon bearings.

BUSHING, PANEL FOR 1/4 AND 1/8 SHAFT

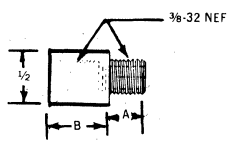
Lgth.	A=3/8 1/4-28 Thread	A=1/2 3/8-32 Thread
3/8	PB 60614	PB 80638
7/16	PB 60714	PB 80738
1/2	PB 60814	PB 80838
5/8	PB 61014	PB 81038
3/4	PB 61214	PB 81238
7/8	PB 61414	PB 81438

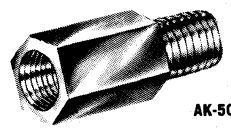
Thread	"C" Dia.
1/4-28	.127
3/8-32	.252

BUSHING EXTENDERS AK-5075-1 thru AK-5075-11

Permit staggered mounting of components having 1/4" shafts, behind a panel. Nickel plated brass.

Note: *AK-5075-9 is a locking (collet) type, supplied with lock nut.





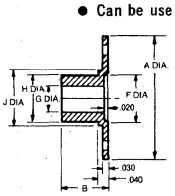
AK-5075 ( )

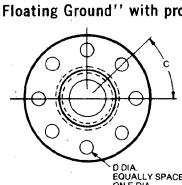
Dimensions in Inches

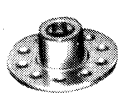
Cat. No.	"B"	"A"	Cat. No.	"B"	"A"
AK-5075-1	5/8	3/8	AK-5075-6	1 5/8	1/4
AK-5075-2	5/8	1/4	AK-5075-7	1 7/16	3/16
AK-5075-3	5/8	3/16	AK-5075-8	1 1/16	1/4
AK-5075-4	3/4	1/4	*AK-5075-9	11/16	1/2
AK-5075-5	2 1/4	1/4	AK-5075-10	1 21/64	7/16
			AK-5075-11	55/64	7/16

STUD, GROUND Multi-termination ground lugs.
Electrically Sound • Easily Installed • Space Saving

- Provides equipotential chassis termination for ground leads.
- Minimizes resistance between circuit contacts and ground point.
- Diminishes noise, pick-up and regenerative feedback.
- Eliminates the need for buss bars or stacks of lugs.
- Can be use as "Floating Ground" with proper insulation.







Material: Brass, Half Hard
Finish: Tin Plate

Part No.	A	B	C	D	E	F	G	H	J
G 1001	3/4"	5/16"	30°	1/16" Dia. 12 Holes	9/16"	21/64"	3/16"	5/16"	23/64"
G 5008	3/4"	1/4"	36°	5/64" Dia. 10 Holes	9/16"	21/64"	3/16"	5/16"	23/64"
G 7004	1/2"	9/32"	45°	1/16" Dia. 8 Holes	25/64"	17/64"	5/32"	7/32"	19/64"

Specials Are Our JAN Specialty

JAN HARDWARE
MANUFACTURING COMPANY INC.
47-27 36th STREET • LONG ISLAND CITY, NEW YORK 11101 • TEL: (718) 361-0800

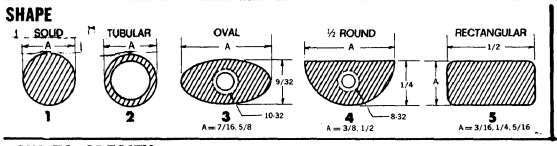
QUALITY
RELIABILITY
ECONOMY

EQUIPMENT HANDLES

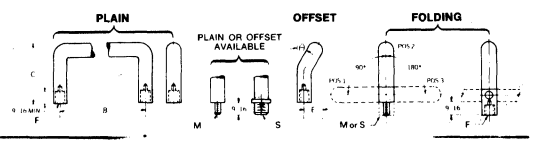
MATERIAL
A — ALUMINUM
B — BRASS
S — COLD ROLLED STEEL
SS — STAINLESS STEEL

FINISH
A — BLACK ANODIZE
B — OPTICAL BLACK
C — CLEAR ANODIZE
E — SATIN ETCH
N — NICKEL PLATE
X — BLACK OXIDE
P — PASSIVATE
0 — NO FINISH

SHAPE



TYPE



HOW TO SPECIFY

TYPE OF HANDLE

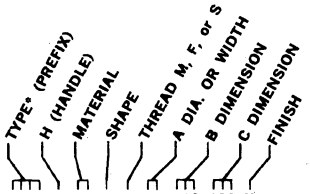
*TYPE	PREFIX	DESCRIPTION
PLAIN	NONE	———
OFFSET	ϕ, E	———
FOLDING	A	A = FREE 180°
	B	B = 2 POS., DETENT, 90°
	C	C = 3 POS., DETENT, 90°

A DIA.	3/16	1/4	5/16	3/8	7/16	1/2
M, F	4-40	8-32	10-32	10-32	10-32	10-32
S	10-32	1/4-28	5/16-24	3/8-24	3/8-24	3/8-24

RECOMMENDED CARRYING LOAD (lbs.) BASED ON HUMAN ENGINEERING FACTORS

A DIA.	1/4	3/8	1/2	5/8	3/4
JAN STD. (lbs.)	10-15	15-20	20-30	30-40	40-50
MIL STD. 1472 (lbs. max.)	15	—	20	—	40

NOTE: For special designs, identify differences from standard in ( ) after Part No.
Example: 3008 H0A 1 F 10 C09 B08 A (F = 6-32 x 3/4" deep).



DIMENSION:
ϕ Specify in Degrees
A, E Specify in 1/16 increments
C, B Specify with Letter + Fraction in 1/16 increments

LETTER VALUE:
A thru Z = 1 thru 26. When Specifying dimension in 1/16 increments, use numerator of fraction for Part No. See Examples.

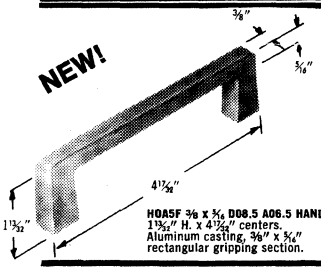
TYPICAL PART NUMBER

H 0B 1 M 04 D03 A02 X ... Plain Handle Brass, Shape 1, Male Thd., A = 1/4 O.D., B = 4 3/16, C = 1 1/8, Black Oxide Finish.

3008 H 0A 1 F 10 C09 B08 A ... 30°, Offset, E = 1/2, Aluminum, Shape 1. Female Thd,. A = 5/8 O.D., B = 3 3/16, C = 2 1/2, Blk. Anodized.

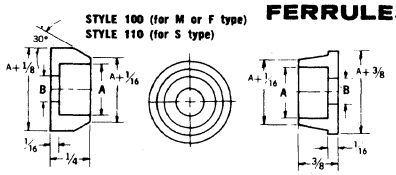
A H SS 2 S 08 D00 A08 P ... Folding Handle, 180°, Free. Stainless Steel, Shape 2. A = 1/2 Dia., B = 4", C = 1 1/2, Passivate, 3/8-24 thd.

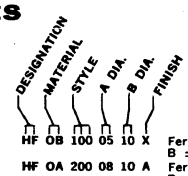
NEW!



H0A5F 3/8 x 5/16 D08.5 A06.5 HANDLE
1 13/32" H. x 4 17/32" centers.
Aluminum casting, 3/8" x 5/16" rectangular gripping section.

FERRULES





NOTES: "A" dimension is specified in 1/16 increments using numerator of fraction for part No.
"B" Dia. is clearance hole. For thd., see table. For material and finish, see above. See examples.

HF 0B 100 05 10 X — Ferrule Brass, Style 100, A = 3/16 Dia. B = clearance for 10-32, Black Oxide

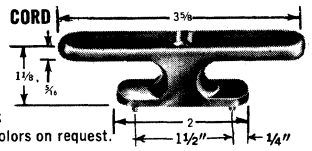
HF 0A 200 08 10 A — Ferrule Aluminum, Style 200, A = 1/2 Dia. B = clearance for 10-32, Black Anodized.

Thd. Size	4-40	6-32	8-32	10-32	1/4-24	3/8-24
B	04	06	08	10	25	38

Note: Dimensions and configurations shown are approximate.

HANDLE, CORD

Cat. No. H-692-1



Colors:
(-1) Grey
(-2) Black
Special colors on request.

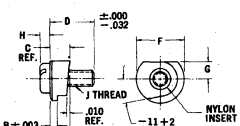
Die-cast aluminum handle designed for use on small instrument panels. Single integral hole accepts No. 10 screw. Dia. of pins 3/16" x .078H.

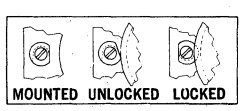
MOTOR MOUNT CLEATS

Quick release, self locking, instant nulling, meets shock & vibration requirements.

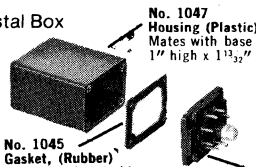
Type Mount	A	B	C	D	E	F	G	H	J	Part No.
Flush & Recess	.031	.040	.071	.312						SMFR3-1
Flush	.062	.040	.102	.312						SMF3-2
Flush	.062	.050	.112	.375						SMS3-3
Flush	.062	.063	.125	.375						SMS3-4
Flush	.078	.063	.141	.375						SMS3-5
Flush	.093	.040	.133	.375	.135	.390 .385	.125	.068 Max.	#4-40	SMS3-6
Flush	.093	.050	.143	.375						SMS3-7
Flush	.093	.063	.156	.375						SMF3-8
Step	.125	.050	.175	.375						SMS3-9
Step	.156	.040	.196	.375						SMS3-10
Step	.225	.063	.288	.437						SMS3-11
Flush	.250	.063	.312	.625						SMF3-12
Flush & Recess	.031	.040	.071	.250						SMFR3-20
Flush	.047	.040	.087	.250	.096	.265 .260	.091	.053 Max.	#2-56	SMF3-21
Flush	.062	.040	.102	.250						SMF3-22
Flush	.093	.040	.133	.312						SMF3-23
Step	.125	.040	.165	.312						SMS3-24
Reverse	.062	.063	.125	*	.135	.390 .385	.125	* *	#4-40	SMRV3-30
Reverse	.093	.063	.156	*						SMRV3-31

* Reverse type cleat supplied less screw.





Crystal Box



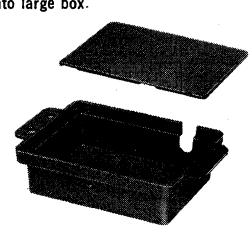
No. 1047
Housing (Plastic)
Mates with base & gasket.
1" high x 1 13/32" wide x 1 43/64" long.

No. 1045
Gasket, (Rubber)
1" high x 1 3/8" wide.

No. 1046
Base, (Plastic)
1" high x 1 13/32" wide.
Mtg. holes 1.156 x .750.

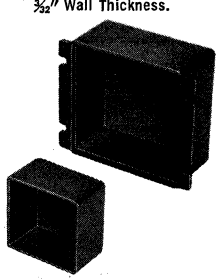
MOLDED PLASTIC BOXES

No. 2134
3 3/8" x 2 1/2" x 5/64" thick. Note: Fits into large box.



No. 2136
3 3/32" x 2 3/32" x 25/32 depth.
5/64" Wall Thickness.

No. 2135
2 1/64 x 2 1/64 x 1 11/64" depth
3/32" Wall Thickness.



No. 2133
1 3/8" L. x 1 3/8" W. x 27/32" depth
1/16" Wall Thickness.

JOLTA SHOCK TEST MACHINES

For Reproducible Impact-Shock Test Pulses

Engineered to reproduce the entire spectrum of all significant impact shock waves.

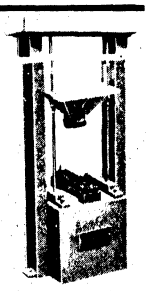
Designed for laboratory and production testing of light to medium weight components. Produced to meet practically all requirements of common Mil. Spec. qualification tests (JAN-S-44, Mil-Std. 202A, Mil-T-12679A). Each JOLTA is electronically calibrated to certify compliance with test specifications.

JOLTA — Floor Model Nos. F-3003-C1, C2, C3 — Precision-machined magnesium casting utilized for higher shock amplitudes. Typical tests with these units 50 to 5000 G at .2 to 11.0 millisecs. For high impact testing, accessory springs and twin anvil combinations yield impulses of 0.2 millisecs to 5000 G.

SPECIFICATIONS — JOLTA SHOCK TESTERS

Model No.	Carriage Volume	Test Weight	"G" Ranges
F-3003-C-1	5" cube	0-12 lbs.	50-1500
F-3003-C-2	5" cube	0-4.0 lbs.	350-5000

FEATURES
- Economical
- Rugged
- Simple to Operate
- Uniformly Accurate



For Production Testing, Can Be Automated for Continuous Operation

Note:
New design allows for quick changecvers of accessories

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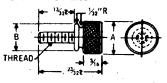
QUALITY
RELIABILITY
ECONOMY

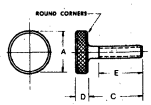
THUMB SCREW



EXAMPLE (TO ORDER)

Pt. No. TS 6058-B = 8-32 x 13/32 Lg. Thread, Thumb Screw- Brass.

Thread	A Dia.	B Dia.	Pt. No.
6-32	3/8	5/16	TS 6056
	7/16	3/8	TS 7066
	1/2	7/16	TS 8076
8-32	3/8	5/16	TS 6058
	7/16	3/8	TS 7068
	1/2	7/16	TS 8078
10-32	3/8	5/16	TS 60510
	7/16	3/8	TS 70610
	1/2	7/16	TS 80710



KNURLED THUMB SCREWS

Material: 303 Stainless Steel

Thread	A	C	D	E	Part No.
#4-40	1/4	3/8	1/8	3/16	ST4010
	1/4	1/2	1/2	1/16	ST4011
	1/4	3/4	1/2	5/16	ST4012
	3/8	3/8	1/8	5/16	ST4013
	3/8	1/2	1/8	1/16	ST4014
#6-32	1/4	1/2	1/2	1/16	ST6015
	1/4	3/4	1/2	5/8	ST6016
	1/4	1	1/2	1 1/16	ST6017
	3/8	3/8	1/8	3/16	ST6018
	3/8	1/2	1/8	3/8	ST6019
#8-32	1/4	1/2	1/2	1/16	ST8020
	1/4	3/4	1/2	5/8	ST8021
	1/4	1	1/2	1 3/16	ST8022
	3/8	3/8	1/8	3/16	ST8023
	3/8	1/2	1/8	3/8	ST8024
#10-24	3/8	1/2	3/16	1/16	ST11025
	3/8	3/4	3/16	5/8	ST11026
	3/8	1	3/16	1 3/16	ST11027
	3/8	1 1/4	3/16	1	ST11028
	1/2	3/4	3/16	5/8	ST11029
	1/2	1	3/16	1 3/16	ST11030
	1/2	1 1/4	3/16	1	ST11031
	1/2	1 1/2	3/16	1 1/4	ST11032
	3/4	3/4	3/16	5/8	ST11033
	3/4	1	3/16	1 3/16	ST11034
#10-24	3/4	1 1/4	3/16	1	ST11035
	3/4	1 1/2	3/16	1 1/4	ST11036
#10-32	3/8	1/2	3/16	1/16	ST10037
	3/8	3/4	3/16	5/8	ST10038
	3/8	1	3/16	1 3/16	ST10039
	3/8	1 1/4	3/16	1	ST10040
	1/2	3/4	3/16	5/8	ST10041
	1/2	1	3/16	1 3/16	ST10042
	1/2	1 1/4	3/16	1	ST10043
	1/2	1 1/2	3/16	1 1/4	ST10044
	3/4	3/4	3/16	5/8	ST10045
	3/8	1	3/16	1 3/16	ST10046
	3/8	1 1/4	3/16	1	ST10047
	3/4	1 1/2	3/16	1 1/4	ST10048
1/4-20	3/4	3/4	3/16	5/8	ST14049
	3/4	1	3/16	1 3/16	ST14050
	3/4	1 1/4	3/16	1	ST14051
	3/4	1 1/2	3/16	1 1/4	ST14052
	3/4	2	3/16	1 5/8	ST14053
	1	3/4	3/16	5/8	ST14054
	1	1	3/16	1 3/16	ST14055
	1	1 1/4	3/16	1	ST14056
	1	1 1/2	3/16	1 1/4	ST14057
	1	2	3/16	1 5/8	ST14058

SET SCREWS

SOCKET HEAD — Class 3A Thread — Stainless Steel

Screw Size	L	Part No.
#0-80	1/8	SS-T-1
	3/16	SS-T-2
#2-56	1/8	SS-T-3
	3/16	SS-T-4
	1/4	SS-T-5
#4-40	1/8	SS-T-6
	3/16	SS-T-7
	1/4	SS-T-8
#6-32	1/8	SS-T-9
	1/4	SS-T-10
	3/8	SS-T-11
	1/2	SS-T-12
#8-32	1/4	SS-T-13
	3/8	SS-T-14
	1/2	SS-T-15
	5/8	SS-T-16
#10-32	1/4	SS-T-17
	1/2	SS-T-18
	3/4	SS-T-19
	1	SS-T-20
1/4-20	1/4	SS-T-21
	1/2	SS-T-22
	3/4	SS-T-23
	1	SS-T-24
	1 1/4	SS-T-25

CUP POINT STAINLESS

SLOTTED HEAD — Class 2A Thread

Screw Size	L	Part No.
#0-08	1/8	SS-D-15
#0-80	3/16	SS-D-16
#2-56	1/8	SS-D-1-A
#4-40	1/8	SS-D-2-A
#6-32	1/8	SS-D-3-A

SOCKET HEAD KEYS & SETS

Material: Steel (Nickel Plated)



Set of Hex Socket Head Keys Containing 8 Keys from .050 to 5/32 Key Size — in case. Order SS-K-50

Screw Size	Key Size	Part No.
#2	.035	SS-K-40
#4	.050	SS-K-41
#6	1/16	SS-K-42
#8	5/64	SS-K-43
#10	3/32	SS-K-44
1/4	1/8	SS-K-45
5/16	5/32	SS-K-46
3/8	3/16	SS-K-47
1/2	1/4	SS-K-48

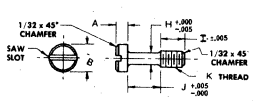
THREADED ROD

— 1/4-20 THREAD — 2" EACH END



Lgth.		Lgth.		Lgth.		Lgth.		Lgth.		Lgth.	
4½	TR 1445	7	TR 1470	9½	TR 1495	12	TR 14120	14½	TR 14145	17½	TR 14175
5	TR 1450	7½	TR 1475	10	TR 14100	12½	TR 14125	15	TR 14150	18	TR 14180
5½	TR 1455	8	TR 1480	10½	TR 14105	13	TR 14130	15½	TR 14155	18½	TR 14185
6	TR 1460	8½	TR 1485	11	TR 14110	13½	TR 14135	16	TR 14160	19	TR 14190
6½	TR 1465	9	TR 1490	11½	TR 14115	14	TR 14140	16½	TR 14165	19½	TR 14195
								17	TR 14170	20	TR 14200

MATERIALS "B = Brass A = Aluminum SS = Stainless Steel



CAPTIVE SCREWS

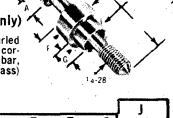
Material: 303 Stainless Steel

Thickness For Panel	A	B	H	I	J	K Thread	Part No.
1/16	1/8	1/4	.072	.187	.281	#4-40	CS4-1
1/8	1/8	1/4	.072	.187	.343		CS4-2
1/16	1/8	5/32	.086	.218	.312	#6-32	CS6-1
1/8	1/8	5/32	.086	.218	.375		CS6-2
3/16	1/8	5/32	.086	.218	.437		CS6-3
1/8	5/32	5/16	.114	.250	.406	#8-32	CS8-2
3/16	5/32	5/16	.114	.250	.468		CS8-3
1/4	5/32	5/16	.114	.250	.531		CS8-4
3/16	3/16	3/8	.136	.312	.531	#10-32	CS10-3
1/4	3/16	3/8	.136	.312	.593		CS10-4

CAPTIVE SCREW AND NUT ASSEMBLY

No. CS-711-(1)
No. CS-711-(2) (screw only)

Consists of slotted, knurled thumb screws made of corrosion resistant steel bar, and nickel-plated (on brass) panel inserts.



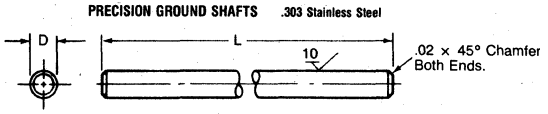


Cat. No. AP-1040
Screw, Captive
Cat. No. AP-1039
Insert, Captive

	A	B	C	D	E	F	G	J Thd.
—1	1/4	3/8	15/16	5/16	13/32	5/16	3/8	1/4-28
—2	1/4	29/64	1 1/16	5/16	13/32	5/16	3/8	8-32

Cat. No. AP-1197
Screw, Captive
1/4" slotted knurled head (5/8" O.D.) 1 1/4" overall length; 8-32 thread.

PRECISION GROUND SHAFTS .303 Stainless Steel



Tolerance

Shaft Dia. (D) PGS1 = +.0000 -.0001

PGS2 = +.0000 -.0002

PGS3 = +.0000 -.0003

Standard Diameters — 1/16" Increments

2 = .1247
3 = .1872
4 = .2497
5 = .3125
6 = .3747

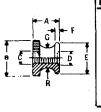
To specify: add (D) dia. x (L) length to prefix above.

IE. PGS1 — 2 x 6.375 = .1247 +.0000 -.0001 Dia. x 6.375 Long.

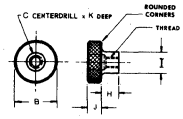
PGS2 — 3 x 3.250 = .1872 +.0000 -.0002 Dia. x 3.250 Long.

PGS3 — 4 x 8.625 = .2497 +.0000 -.0003 Dia. x 8.625 Long.

THUMB NUT KNURLED



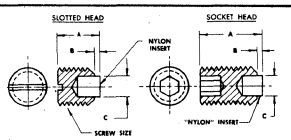
Thread	A	B Dia.	C Dia.	D Dia.	E Dia.	F	G	R Rad.	Part No.
4-36	1/4	3/8	1/8	.147	5/16	3/64	1/32	3/64	KN 436
4-40	1/4	3/8	1/8	.147	5/16	3/64	1/32	3/64	KN 440
6-32	1/4	3/8	3/64	.169	5/16	3/64	1/32	3/64	KN 632
6-32	5/16	13/32	3/64	13/64	13/32	3/64	1/32	1/16	KN 6321
8-32	5/16	7/16	13/64	13/64	3/8	3/16	1/4	1/16	KN 832
10-24	21/64	1/2	13/64	13/64	3/8	1/8	5/32	.070	KN 124
10-32	21/64	1/2	13/64	13/64	7/16	5/64	5/32	.070	KN 132
12-24	11/32	9/16	7/32	13/64	3/8	1/16	21/64	.070	KN 224
1/4-20	3/8	5/8	17/64	21/64	7/16	1/16	23/64	3/64	KN 420



KNURLED THUMB NUTS

Material: 303 Stainless Steel

Thread	B Dia.	C	H	I	J	K	Part No.
#4-40	1/2	1/8	1/4	1/4	1/8	1/8	NK4070
	1/2	1/8	1/2	1/4	1/8	3/8	NK4071
	3/4	1/8	1/4	1/4	1/8	1/8	NK4072
	3/4	1/8	1/2	1/4	1/8	3/8	NK4073
#6-32	1/2	#26	1/4	1/4	1/8	3/32	NK4074
	1/2	#26	1/2	1/4	1/8	11/32	NK4075
	3/4	#26	1/4	1/4	1/8	3/32	NK4076
	3/4	#26	1/2	1/4	1/8	11/32	NK4077
#8-32	1/2	—	1/4	5/16	1/8	—	NK4078
	1/2	#15	1/2	5/16	1/8	1/4	NK4079
	3/4	—	1/4	5/16	1/8	—	NK4080
	3/4	#15	1/2	5/16	1/8	1/4	NK4081
#10-24	1/2	—	1/4	3/8	3/16	—	NK4082
	1/2	15/64	1/2	3/8	3/16	1/4	NK4083
	1	—	1/4	3/8	3/16	—	NK4084
	1	13/64	1/2	3/8	3/16	1/4	NK4085
#10-32	1/2	—	1/4	3/8	3/16	—	NK4086
	1/2	15/64	1/2	3/8	3/16	1/4	NK4087
	1	—	1/4	3/8	3/16	—	NK4088
	1	13/64	1/2	3/8	3/16	1/4	NK4089
1/4-20	3/4	—	1/4	1/2	1/4	—	NK4090
	3/4	17/64	1/2	1/2	1/4	1/4	NK4091
	1	—	1/4	1/2	1/4	—	NK4092
	1	17/64	1/2	1/2	1/4	1/4	NK4093
	1	17/64	3/4	1/2	1/4	1/2	NK4094



SET SCREWS

Material: Screw — Stainless Steel; Insert — Nylon Protective Tip

SLOTTED HEAD

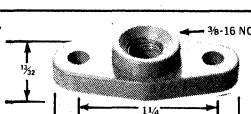
Screw Size	A	B	C	Part No.	Screw Size	A	B	C	Part No.
#2-56	3/32	1/32	1/32	SSN-D-1	#10-24	15/64	3/64	3/32	SSN-D-5
#4-40	3/32	1/32	1/16	SSN-D-2	#10-32	15/64	3/64	3/32	SSN-D-6
#6-32	3/32	1/32	1/16	SSN-D-3	1/4-20	5/16	1/16	1/8	SSN-D-7
#8-32	1/8	3/64	1/16	SSN-D-4					

SOCKET HEAD

Screw Size	A	B	C	Part No.	Screw Size	A	B	C	Part No.
#2-56	3/32	1/32	1/32	SSN-T-8	#10-32	47/64	3/64	3/32	SSN-T-29
	3/32	1/32	1/32	SSN-T-24					
#4-40	3/32	1/32	1/16	SSN-T-9	1/4-20	5/16	1/16	1/8	SSN-T-14
	3/32	1/32	1/16	SSN-T-25		5/16	1/16	1/8	SSN-T-19
	13/32	1/32	1/16	SSN-T-26		11/16	1/16	1/8	SSN-T-30
#6-32	3/32	1/32	1/16	SSN-T-10	1/4-28	7/16	1/16	1/8	SSN-T-20
	3/32	1/32	1/16	SSN-T-15					
	13/32	1/32	1/16	SSN-T-27	5/16-18	15/32	3/32	3/16	SSN-T-21
#8-32	13/64	3/64	3/32	SSN-T-11		27/32	3/32	3/16	SSN-T-32
	29/64	3/64	3/32	SSN-T-16		13/32	3/32	3/16	SSN-T-33
	45/64	3/64	3/32	SSN-T-28	3/8-16	15/32	3/32	3/16	SSN-T-22
#10-24	15/64	3/64	3/32	SSN-T-12		27/32	3/32	3/16	SSN-T-34
	29/64	3/64	3/32	SSN-T-17		1 7/32	3/32	3/16	SSN-T-35
#10-32	15/64	3/64	3/32	SSN-T-13	1/2-13	3/4	1/8	1/4	SSN-T-23
	29/64	3/64	3/32	SSN-T-18		1 1/8	1/8	1/4	SSN-T-36

RETAINER NUT

Cat. No. R-1030



Used in conjunction with captive screw and nut assemblies. Die casting. Can be painted. Other thread sizes available upon special order.

Are Our JAN Specials

JAN HARDWARE MANUFACTURING COMPANY INC.

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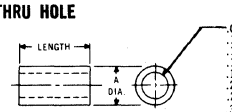
QUALITY RELIABILITY ECONOMY

STANDOFFS

SPACER-THRU HOLE



Clearance Hole	Code
.091 Dia. (No. 2 Screw)	1
.116 Dia. (No. 4 Screw)	2
.141 Dia. (No. 6 Screw)	3
.171 Dia. (No. 8 Screw)	4
.194 Dia. (No. 10 Screw)	5
.219 Dia. (No. 12 Screw)	6
.257 Dia. (No. ¼ Screw	7
.312 Dia.	8

Length	A=⅛	A=3/16	A=¼	Length	A=5/16	A=⅜	A=½
1/16	SP 021	SP 031		13/16	SP 0311	SP 0411	
⅛	SP 022	SP 032	SP 042	¾	SP 0312	SP 0412	
3/16	SP 023	SP 033	SP 043	⅞	SP 0314	SP 0414	
¼	SP 024	SP 034	SP 044	15/16	SP 0315	SP 0415	
5/16	SP 025	SP 035	SP 045	1	SP 0316	SP 0416	
⅜	SP 026	SP 036	SP 046	1⅛		SP 0418	
7/16	SP 027	SP 037	SP 047	1¼		SP 0420	
½	SP 028	SP 038	SP 048	1⅜		SP 0422	
9/16	SP 029	SP 039	SP 049	1½		SP 0424	
⅝		SP 0310	SP 0410				

EXAMPLE (TO ORDER) Pt. No. SP 035-2-B = 3/16 Dia. x 3/16 Lg. Spacer-Brass w/.116 Clearance Hole for #4 Screw.

Length	A=5/16	A=⅜	A=½	Length	A=5/16	A=⅜	A=½
⅛	SP 052	SP 062	SP 082	⅞	SP 0514	SP 0614	SP 0814
3/16	SP 053	SP 063	SP 083	15/16	SP 0515	SP 0615	SP 0815
¼	SP 054	SP 064	SP 084	1	SP 0516	SP 0616	SP 0816
5/16	SP 055	SP 065	SP 085	1⅛	SP 0518	SP 0618	SP 0818
⅜	SP 056	SP 066	SP 086	1¼	SP 0520	SP 0620	SP 0820
7/16	SP 057	SP 067	SP 087	1⅜	SP 0522	SP 0622	SP 0822
½	SP 058	SP 068	SP 088	1½	SP 0524	SP 0624	SP 0824
9/16	SP 059	SP 069	SP 089	1⅝		SP 0626	SP 0826
⅝	SP 0510	SP 0610	SP 0810	1¾		SP 0628	SP 0828
11/16	SP 0511	SP 0611	SP 0811	1⅞		SP 0630	SP 0830
¾	SP 0512	SP 0612	SP 0812	2		SP 0632	SP 0832

EXAMPLE (TO ORDER) Pt. No. SP 064-3-PH = ⅜ Dia. x 1/4 Lg. Spacer-Phenolic w/ 141 Clearance Hole for #6 Screw.

FINISH

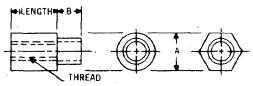
CA = Clear Anodize
P = Passivate
A = Black Anodize
I = Iridite #14 (Golden Yellow)
C = Cadmium Plate
CCC = Cadmium Plate and Clear Chromate
N = Nickel Plate
X = Black Oxide

MATERIALS

B = Brass
A = Aluminum
SS = Stainless Steel
S = Steel
N = Nylon
PH = Phenolic
T = Teflon

STANDOFF — RIVET

— HEX AND ROUND



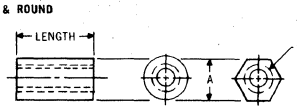
Code	Board Thickness	Shank B
1	1/32	.075
2	1/16	.105
3	3/32	.135
4	⅛	.165
5	5/16	.230
6	¼	.290

Length	A=⅛ Dia. 0-80 Thread		A=¼ Dia. 2-56 Thread		A=5/16 Dia. 4-40 Thread		A=⅜ Dia. 6-32 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
⅛	RR 202	RH 202	RR 4022	RH 4022	RR 5024	RH 5024	RR 6026	RH 6026
3/16	RR 203	RH 203	RR 4032	RH 4032	RR 5034	RH 5034	RR 6036	RH 6036
¼	RR 204	RH 204	RR 4042	RH 4042	RR 5044	RH 5044	RR 6046	RH 6046
5/16	RR 205	RH 205	RR 4052	RH 4052	RR 5054	RH 5054	RR 6056	RH 6056
⅜	RR 206	RH 206	RR 4062	RH 4062	RR 5064	RH 5064	RR 6066	RH 6066
7/16	RR 207	RH 207	RR 4072	RH 4072	RR 5074	RH 5074	RR 6076	RH 6076
½	RR 208	RH 208	RR 4082	RH 4082	RR 5084	RH 5084	RR 6086	RH 6086
9/16	RR 209	RH 209	RR 4092	RH 4092	RR 5094	RH 5094	RR 6096	RH 6096
⅝	RR 210	RH 210	RR 4102	RH 4102	RR 5104	RH 5104	RR 6106	RH 6106
11/16	RR 211	RH 211	RR 4112	RH 4112	RR 5114	RH 5114	RR 6116	RH 6116
¾	RR 212	RH 212	RR 4122	RH 4122	RR 5124	RH 5124	RR 6126	RH 6126
⅞	RR 214	RH 214	RR 4142	RH 4142	RR 5144	RH 5144	RR 6146	RH 6146
1	RR 216	RH 216	RR 4162	RH 4162	RR 5164	RH 5164	RR 6166	RH 6166

EXAMPLE (TO ORDER) Pt. No. RR 4052-2-B = ¼ Dia. x 5/16 Lg. Round, Rivet Stand-off-Brass w/2-56 Thread Shank = .105 for 1/16 Board.

STANDOFF — THREADED

— HEX & ROUND



MATERIALS B = Brass A = Aluminum SS = Stainless Steel PH = Phenolic

SPECIAL SIZES AND MATERIALS/MANUFACTURED TO ORDER

Lgth.	A=⅛ Dia. 0-80 Thread		A=3/16 Dia. 2-56 Thread		A=5/16 Dia. 4-40 Thread	
	Round	Hex	Round	Hex	Round	Hex
1/16	SR 201	SH 201	SR 3012	SH 3012	SR 3014	SH 3014
⅛	SR 202	SH 202	SR 3022	SH 3022	SR 3024	SH 3024
3/16	SR 203	SH 203	SR 3032	SH 3032	SR 3034	SH 3034
¼	SR 204	SH 204	SR 3042	SH 3042	SR 3044	SH 3044
5/16	SR 205	SH 205	SR 3052	SH 3052	SR 3054	SH 3054
⅜	SR 206	SH 206	SR 3062	SH 3062	SR 3064	SH 3064
7/16	SR 207	SH 207	SR 3072	SH 3072	SR 3074	SH 3074
½	SR 208	SH 208	SR 3082	SH 3082	SR 3084	SH 3084
9/16	SR 209	SH 209	SR 3092	SH 3092	SR 3094	SH 3094
⅝	SR 210	SH 210	SR 3102	SH 3102	SR 3104	SH 3104
¾	SR 212	SH 212	SR 3122	SH 3122	SR 3124	SH 3124
1			SR 3162	SH 3162	SR 3164	SH 3164

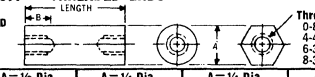
EXAMPLE (TO ORDER) Pt. No. SR 3032-A = 3/16 Dia. x 3/16 Lg. Round Standoff-Aluminum w/2-56 Threaded Hole.

Lgth.	4-40 Thread		A=¼ Dia. 6-32 Thread		8-32 Thread		10-32 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
1/16	SR 4024	SH 4024	SR 4026	SH 4026	SR 4028	SH 4028	SR 40210	SH 40210
3/16	SR 4034	SH 4034	SR 4036	SH 4036	SR 4038	SH 4038	SR 40310	SH 40310
¼	SR 4044	SH 4044	SR 4046	SH 4046	SR 4048	SH 4048	SR 40410	SH 40410
5/16	SR 4054	SH 4054	SR 4056	SH 4056	SR 4058	SH 4058	SR 40510	SH 40510
⅜	SR 4064	SH 4064	SR 4066	SH 4066	SR 4068	SH 4068	SR 40610	SH 40610
7/16	SR 4074	SH 4074	SR 4076	SH 4076	SR 4078	SH 4078	SR 40710	SH 40710
½	SR 4084	SH 4084	SR 4086	SH 4086	SR 4088	SH 4088	SR 40810	SH 40810
9/16	SR 4094	SH 4094	SR 4096	SH 4096	SR 4098	SH 4098	SR 40910	SH 40910
⅝	SR 4104	SH 4104	SR 4106	SH 4106	SR 4108	SH 4108	SR 41010	SH 41010
¾	SR 4124	SH 4124	SR 4126	SH 4126	SR 4128	SH 4128	SR 41210	SH 41210
⅞	SR 4144	SH 4144	SR 4146	SH 4146	SR 4148	SH 4148	SR 41410	SH 41410
1	SR 4164	SH 4164	SR 4166	SH 4166	SR 4168	SH 4168	SR 41610	SH 41610

EXAMPLE (TO ORDER) Pt. No. SH 4086-B = ¼ Dia. x ½ Lg. Hex Standoff-Brass w/6-32 Threaded Hole.

STANDOFF — THREADED ENDS

— HEX & ROUND



Thread	Depth B
0-80	3/16
4-40	¼
6-32	⅜
8-32	5/16

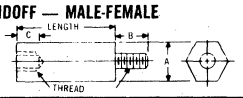
Length	A=⅛ Dia. 0-80 Thread		A=¼ Dia. 4-40 Thread		A=¼ Dia. 6-32 Thread		A=¼ Dia. 8-32 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
1 1/16	DR 217	DH 217	DR 4174	DH 4174	DR 4176	DH 4176	DR 4178	DH 4178
1⅛	DR 218	DH 218	DR 4184	DH 4184	DR 4186	DH 4186	DR 4188	DH 4188
1 3/16	DR 219	DH 219	DR 4194	DH 4194	DR 4196	DH 4196	DR 4198	DH 4198
1¼	DR 220	DH 220	DR 4204	DH 4204	DR 4206	DH 4206	DR 4208	DH 4208
1 5/16	DR 221	DH 221	DR 4214	DH 4214	DR 4216	DH 4216	DR 4218	DH 4218
1⅜	DR 222	DH 222	DR 4224	DH 4224	DR 4226	DH 4226	DR 4228	DH 4228
1 7/16	DR 223	DH 223	DR 4234	DH 4234	DR 4236	DH 4236	DR 4238	DH 4238
1½	DR 224	DH 224	DR 4244	DH 4244	DR 4246	DH 4246	DR 4248	DH 4248
2			DR 4324	DH 4324	DR 4326	DH 4326	DR 4328	DH 4328
2⅛			DR 4344	DH 4344	DR 4346	DH 4346	DR 4348	DH 4348
2¾			DR 4444	DH 4444	DR 4446	DH 4446	DR 4448	DH 4448
3			DR 4484	DH 4484	DR 4486	DH 4486	DR 4488	DH 4488

EXAMPLE (TO ORDER) Pt. No. DH 219-B = ⅛ Dia. x 1 3/16 Lg. Hex Standoff-Tapped Both Ends Brass w/0-80 x 3/16 Hole.

Lgth.	A=3/16 Dia. 6-32 Thread		A=⅜ Dia. 6-32 Thread		A=⅜ Dia. 8-32 Thread		A=½ Dia. 8-32 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
1 1/16	DR 5176	DH 5176	DR 6176	DH 6176	DR 6178	DH 6178	DR 8178	DH 8178
1⅛	DR 5186	DH 5186	DR 6186	DH 6186	DR 6188	DH 6188	DR 8188	DH 8188
1 3/16	DR 5196	DH 5196	DR 6196	DH 6196	DR 6198	DH 6198	DR 8198	DH 8198
1¼	DR 5206	DH 5206	DR 6206	DH 6206	DR 6208	DH 6208	DR 8208	DH 8208
1 5/16	DR 5216	DH 5216	DR 6216	DH 6216	DR 6218	DH 6218	DR 8218	DH 8218
1⅜	DR 5226	DH 5226	DR 6226	DH 6226	DR 6228	DH 6228	DR 8228	DH 8228
1 7/16	DR 5236	DH 5236	DR 6236	DH 6236	DR 6238	DH 6238	DR 8238	DH 8238
1½	DR 5246	DH 5246	DR 6246	DH 6246	DR 6248	DH 6248	DR 8248	DH 8248
1⅝	DR 5286	DH 5286	DR 6286	DH 6286	DR 6288	DH 6288	DR 8288	DH 8288
2	DR 5326	DH 5326	DR 6326	DH 6326	DR 6328	DH 6328	DR 8328	DH 8328
2¼	DR 5366	DH 5366	DR 6366	DH 5366	DR 6368	DH 6368	DR 8368	DH 8368
2½	DR 5406	DH 5406	DR 6406	DH 6406	DR 6408	DH 6408	DR 8408	DH 8408
3	DR 5486	DH 5486	DR 6486	DH 6486	DR 6488	DH 6488	DR 8488	DH 8488
3½	DR 5566	DH 5566	DR 6566	DH 6566	DR 6568	DH 6568	DR 8568	DH 8568
4	DR 5646	DH 5646	DR 6646	DH 6646	DR 6648	DH 6648	DR 8648	DH 8648

EXAMPLE (TO ORDER) Pt. No. DR 6186-A = ⅜ Dia. x 1 1/16 Lg. Round Standoff-Aluminum-Tapped Both Ends w/6-32 x ⅜ Thread.

STANDOFF — MALE-FEMALE



Thread	B	C
4-40	3/16	¼
6-32	¼	3/16
8-32	⅜	5/16
10-32	⅜	½

Lgth.	A=¼ AC. Flts. 4-40	6-32	8-32	10-32	A=⅜ AC. Flts. 4-40	6-32	8-32	10-32
¼	MF 4044	MF 4046	MF 4048	MF 40410	MF 6044	MF 6046	MF 6048	MF 60410
⅜	MF 4064	MF 4066	MF 4068	MF 40610	MF 6064	MF 6066	MF 6068	MF 60610
½	MF 4084	MF 4086	MF 4088	MF 40810	MF 6084	MF 6086	MF 6088	MF 60810
5/8	MF 4104	MF 4106	MF 4108	MF 41010	MF 6104	MF 6106	MF 6108	MF 61010
¾	MF 4124	MF 4126	MF 4128	MF 41210	MF 6124	MF 6126	MF 6128	MF 61210
7/8	MF 4144	MF 4146	MF 4148	MF 41410	MF 6144	MF 6146	MF 6148	MF 61410
1	MF 4164	MF 4166	MF 4168	MF 41610	MF 6164	MF 6166	MF 6168	MF 61610
1⅛	MF 4184	MF 4186	MF 4188	MF 41810	MF 6184	MF 6186	MF 6188	MF 61810
1¼	MF 4204	MF 4206	MF 4208	MF 42010	MF 6204	MF 6206	MF 6208	MF 62010
1⅜	MF 4224	MF 4226	MF 4228	MF 42210	MF 6224	MF 6226	MF 6228	MF 62210
1½	MF 4244	MF 4246	MF 4248	MF 42410	MF 6244	MF 6246	MF 6248	MF 62410
1⅝	MF 4264	MF 4266	MF 4268	MF 42610	MF 6264	MF 6266	MF 6268	MF 62610
1¾	MF 4284	MF 4286	MF 4288	MF 42810	MF 6284	MF 6286	MF 6288	MF 62810
2	MF 4324	MF 4326	MF 4328	MF 43210	MF 6324	MF 6326	MF 6328	MF 63210
2½	MF 4404	MF 4406	MF 4408	MF 44010	MF 6404	MF 6406	MF 6408	MF 64010
3	MF 4484	MF 4486	MF 4488	MF 44810	MF 6484	MF 6486	MF 6488	MF 64810

EXAMPLE (TO ORDER) Pt. No. MF 4146-B = ¼ AC. Flts. Standoff-Brass 6-32 Male-Female Threads.

STANDOFF — THREADED

Lgth.	4-40 Thread		6-32 Thread		A=5/16 Dia. 8-32 Thread		10-32 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
⅛	SR 5024	SH 5024	SR 5026	SH 5026	SR 5028	SH 5028	SR 50210	SH 50210
3/16	SR 5034	SH 5034	SR 5036	SH 5036	SR 5038	SH 5038	SR 50310	SH 50310
¼	SR 5044	SH 5044	SR 5046	SH 5046	SR 5048	SH 5048	SR 50410	SH 50410
5/16	SR 5054	SH 5054	SR 5056	SH 5056	SR 5058	SH 5058	SR 50510	SH 50510
⅜	SR 5064	SH 5064	SR 5066	SH 5066	SR 5068	SH 5068	SR 50610	SH 50610
7/16	SR 5074	SH 5074	SR 5076	SH 5076	SR 5078	SH 5078	SR 50710	SH 50710
½	SR 5084	SH 5084	SR 5086	SH 5086	SR 5088	SH 5088	SR 50810	SH 50810
9/16	SR 5094	SH 5094	SR 5096	SH 5096	SR 5098	SH 5098	SR 50910	SH 50910
⅝	SR 5104	SH 5104	SR 5106	SH 5106	SR 5108	SH 5108	SR 51010	SH 51010
¾	SR 5124	SH 5124	SR 5126	SH 5126	SR 5128	SH 5128	SR 51210	SH 51210
⅞	SR 5144	SH 5144	SR 5146	SH 5146	SR 5148	SH 5148	SR 51410	SH 51410
1	SR 5164	SH 5164	SR 5166	SH 5166	SR 5168	SH 5168	SR 51610	SH 51610

EXAMPLE (TO ORDER) Pt. No. SR 5146-PH = 5/16 Dia. x ⅞ Lg. Round Standoff-Phenolic w/6-32 Threaded Hole.

Lgth.	6-32 Thread		3/8 Dia. 8-32 Thread		10-32 Thread	
	Round	Hex	Round	Hex	Round	Hex
⅛	SR 6026	SH 6026	SR 6028	SH 6028	SR 60210	SH 60210
3/16	SR 6036	SH 6036	SR 6038	SH 6038	SR 60310	SH 60310
¼	SR 6046	SH 6046	SR 6048	SH 6048	SR 60410	SH 60410
5/16	SR 6056	SH 6056	SR 6058	SH 6058	SR 60510	SH 60510
⅜	SR 6066	SH 6066	SR 6068	SH 6068	SR 60610	SH 60610
7/16	SR 6076	SH 6076	SR 6078	SH 6078	SR 60710	SH 60710
½	SR 6086	SH 6086	SR 6088	SH 6088	SR 60810	SH 60810
9/16	SR 6096	SH 6096	SR 6098	SH 6098	SR 60910	SH 60910
⅝	SR 6106	SH 6106	SR 6108	SH 6108	SR 61010	SH 61010
¾	SR 6126	SH 6126	SR 6128	SH 6128	SR 61210	SH 61210
⅞	SR 6146	SH 6146	SR 6148	SH 6148	SR 61410	SH 61410
1	SR 6166	SH 6166	SR 6168	SH 6168	SR 61610	SH 61610

EXAMPLE (TO ORDER) Pt. No. SH 6068-B = ⅜ Dia. x ⅜ Lg. Hex Standoff-Brass w/8-32 Threaded Hole.

Lgth.	8-32 Thread		A=½ Dia. 10-32 Thread		12-24 Thread		¼-20 Thread	
	Round	Hex	Round	Hex	Round	Hex	Round	Hex
⅛	SR 8028	SH 8028	SR 80210	SH 80210	SR 80212	SH 80212	SR 80214	SH 80214
3/16	SR 8038	SH 8038	SR 80310	SH 80310	SR 80312	SH 80312	SR 80314	SH 80314
¼	SR 8048	SH 8048	SR 80410	SH 80410	SR 80412	SH 80412	SR 80414	SH 80414
5/16	SR 8058	SH 8058	SR 80510	SH 80510	SR 80512	SH 80512	SR 80514	SH 80514
⅜	SR 8068	SH 8068	SR 80610	SH 80610	SR 80612	SH 80612	SR 80614	SH 80614
7/16	SR 8078	SH 8078	SR 80710	SH 80710	SR 80712	SH 80712	SR 80714	SH 80714
½	SR 8088	SH 8088	SR 80810	SH 80810	SR 80812	SH 80812	SR 80814	SH 80814
9/16	SR 8098	SH 8098	SR 80910	SH 80910	SR 80912	SH 80912	SR 80914	SH 80914
⅝	SR 8108	SH 8108	SR 81010	SH 81010	SR 81012	SH 81012	SR 81014	SH 81014
¾	SR 8128	SH 8128	SR 81210	SH 81210	SR 81212	SH 81212	SR 81214	SH 81214
⅞	SR 8148	SH 8148	SR 81410	SH 81410	SR 81412	SH 81412	SR 81414	SH 81414
1	SR 8168	SH 8168	SR 81610	SH 81610	SR 81612	SH 81612	SR 81614	SH 81614

EXAMPLE (TO ORDER) Pt. No. SR 80910-A = ½ Dia. x 9/16 Lg. Round Standoff-Aluminum w/10-32 Threaded Hole.

SPECIAL SIZES AND MATERIALS MANUFACTURED TO ORDER *NOTE: Ceramic and Steatite spacers and standoffs also available.*

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QUALITY
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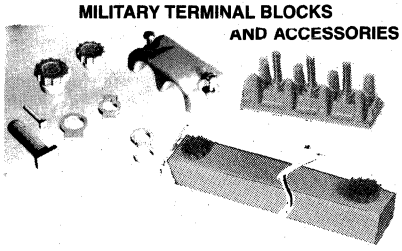
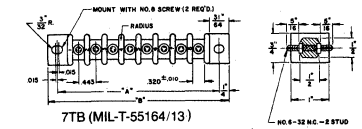
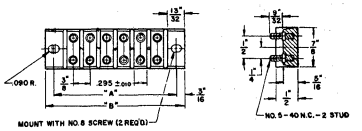
MILITARY TERMINAL BLOCKS AND ACCESSORIES



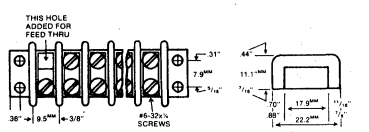
A complete line of Terminal Blocks and accessories, per MS18029, MS25046, MS25123, MS27212, NAS191, and MIL-T-55164/13;/14;/23;/24 and Style 7TB, 8TB, 25TB, 26TB, 37TB, 38TB, 40TB, 41TB.



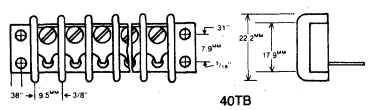
7TB (MIL-T-55164/13)



8TB (MIL-T-55164/14)



37TB

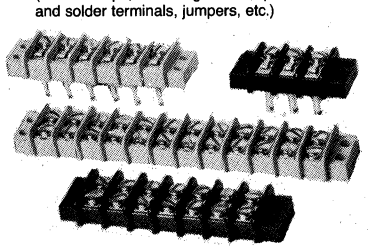


40TB

Also available:

COMMERCIAL TERMINAL BLOCKS

in single or double row styles with accessories (marker strips, insulating covers, quick connect and solder terminals, jumpers, etc.)



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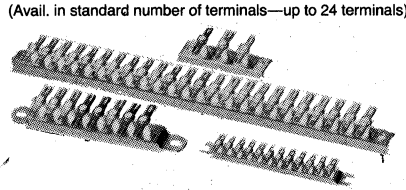
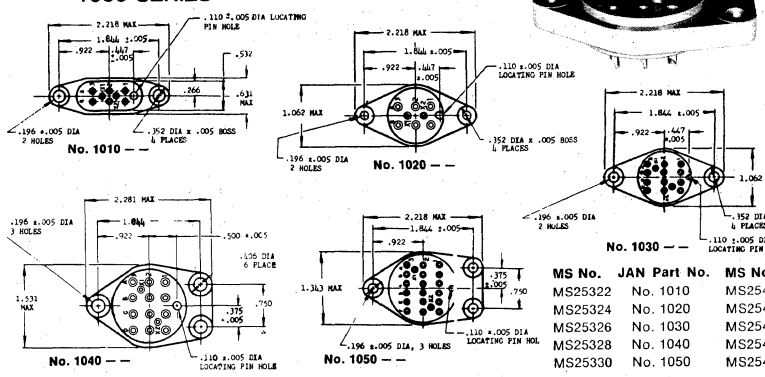
(Avail. in standard number of terminals—up to 24 terminals).



RELAY SOCKETS with Fixed or Removable Contacts!

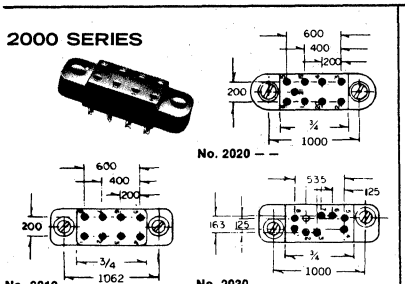
Jan's relay sockets are specifically designed for use with plug-in relays . . . in electronic circuit applications which demand quick and easy assembly and maintenance.
Available with dip-solder pin terminals for printed circuit assembly, or solder cup and turret terminals for direct wiring. For applications requiring removable contacts, solderless wire crimp terminations are available for #16, 20, 22, or 24 AWG wire sizes.
A variety of mounting styles are offered including . . . tapped inserts with studs for top chassis mounting; thru hole; or tapped inserts with removable standoffs and screws for mounting on either side of chassis or panel. Unexpected disconnect because of vibration is eliminated by fastening the relay to the socket. Polarization dots and/or index holes (optional) aid in plugging in relay correctly. Socket contact material is spring tempered phosphor bronze gold plate over silver plate. Body material is Diallyl Phthalate, fiberglass filled per MIL-M-19833.

1000 SERIES

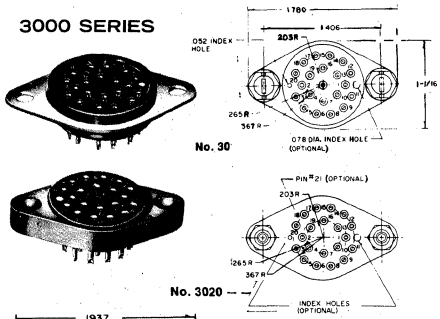


MS No.	JAN Part No.	MS No.	JAN Part No.
MS25322	No. 1010	MS25456	No. 1060
MS25324	No. 1020	MS25458	No. 1070
MS25326	No. 1030	MS25460	No. 1080
MS25328	No. 1040	MS25462	No. 1090
MS25330	No. 1050	MS25464	No. 1100

2000 SERIES



3000 SERIES



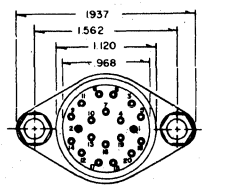
JAN Part No.			Relay Type
No. 3010	No. 3020	No. 3030	6PDT
No. 3011	No. 3021	No. 3031	6PDTL
No. 3012	No. 3022	No. 3032	4PDT
No. 3013	No. 3023	No. 3033	4PDTL
No. 3014	No. 3024	No. 3034	3PDT
No. 3015	No. 3025	No. 3035	3PDTL

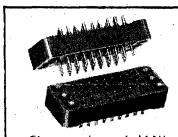
Numbering System

Typical Part No 3010

A = Closed Entry
B = Slotted

1 = Solder Cup
2 = Eyelet
3 = Turret
4 = Dip Solder
5 = Taper



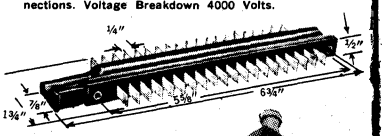


The service of JAN's design engineers is available to assist you in the design and manufacture of special sockets and connectors.

"FEED THROUGH" TERMINAL BOARDS

Cat. No. T-746
Molded of wood-filled melamine per MIL-M-14E.

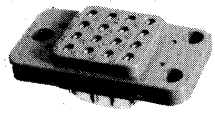
Avoid expensive tooling. Design around this integrally-molded 20 feed-through terminal board. Equally-spaced terminals can be used for wrap around and/or solder connections. Voltage Breakdown 4000 Volts.



Cat. No. X-3
INSULATED TERMINALS — plastic
For wire termination in metal and plastic cases (glue to case).
Contacts can be brass or brass plated.

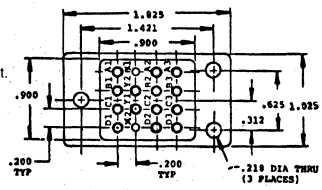


4000 SERIES



JAN Part No.	Relay Type MS27400
No. 4010	-2
No. 4020	-4
No. 4030	-6
No. 4040	-8

Layout of contacts per MS27400 print. Other layouts can be accomodated.



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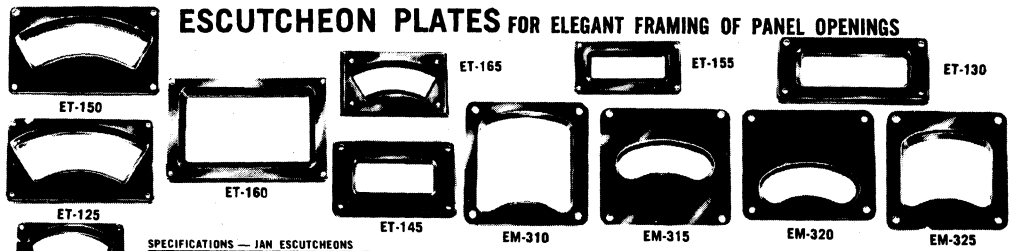
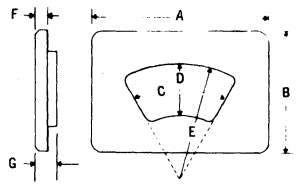
QUALITY
RELIABILITY
ECONOMY

ESCUTCHEON PLATES FOR ELEGANT FRAMING OF PANEL OPENINGS





SPECIFICATIONS — JAN ESCUTCHEONS

Escutcheon Cat. No.	A Overall Width	B Overall Height	C Window Width	D Window Height	E Effective Outer Dial Radius	Thickness F = Face Only	Thickness G = Incl. Flange	Panel Opening Width	Panel Opening Height	Mounting Holes Width	Mounting Holes Height	Type of Dial	Material
ET-120*	2 27/32	1 7/8	1 3/4	1	1 27/32	3/16	3/16	2 11/32	1 3/8	2 5/16 top 2 1/16 bottom	1 5/16		Injection Molded Tenite II, Black Matte Finish
ET-125*	3 7/8	2 1/16	2 7/8	1	3 1/4	3/16	3/16	3 1/32	1 1/32	3 1/32	1 13/16		
ET-135*	2 3/4	1 7/8	1 1/2	7/8	1 7/8	3/16	1/4	1 11/32	1 3/32	2 1/4	1 3/8	Circular	
ET-150*	3 7/8	2 5/8	2 7/8	3/4	3 1/8	3/16	3/16	3 1/32	1 3/32	3 1/32	1 13/16		
ET-165*	2 5/8	1 5/8	1 45/64	3/16	2 25/32	1/8	1/4	2 1/4	1 1/32	2 1/4	1 1/16		
ET-130*	4	1 13/16	2 3/4	13/16	—	3/16	1/4	2 13/32	1 11/32	3 1/32	1 3/16	Flexible Tape, Digital Counter, Cylinder or Drum	Injection Molded Tenite II, Black Matte Finish
ET-140*	2 1/2	1 1/2	1 1/4	5/8	—	1/8	3/16	1 11/32	1 1/32	2	1		
ET-145*	3 1/16	2 1/16	1 15/16	3/4	—	5/32	5/32	2 13/32	1 5/32	2 3/4	1 3/16		
ET-155*	2 1/2	1 3/16	1 11/16	1/2	—	5/32		2 1/32	1 5/32	2 1/4	1 1/16		
ET-160*	3 7/8	2 1/2	2 15/16	1 5/8	—	1/8	1/8	3	2 5/32	3 5/16	2 1/16		
EM-310	3	3	2 1/16	1 15/16	2 3/16	1/32	1/4	3 11/32	2 1/32	2 1/32	2 1/2	Helical	Soft Aluminum with Black Matte Enamel Finish
EM-315	3 1/16	3	2 1/16	5/8	2 1/16	1/32	1/8	2 13/32	1 3/4	2 3/4	2 5/8	Circular	
EM-320	3 1/16	2 3/4	2 1/16	5/8	2 1/16	1/32	1/8	2 25/64	1 3/4	2 3/4	2 1/16	Circular	
EM-325	3	3	2 1/16	1 1/2	2 3/16	1/32	1/4	2 13/32	1 45/64	2 1/2	2 1/2	Helical	

*To Order Specify: (1) frame only; (2) frame with clear window; (3) frame with clear window scribed with a center line.

JAN's molded, black, shock-resistant plastic escutcheons are available in an exceptionally wide variety of different types and sizes. They provide a pleasing window to frame dial plates mounted behind the panel.

Plastic escutcheons are available in the following ways: frame only; frame with clear windows; frame with clear window scribed with a center line.

For especially large working areas, stamped aluminum escutcheons, finished in dull black are available to meet the needs for space economy. Withstands temp. shock −65°C to +80°C. NON INFLAMMABLE.

BEZELS

JAN's Bezels enhance the appearance of the instruments on which they are used. These units are functionally designed to provide OPTIMUM UTILIZATION OF THE C.R.T. SCREEN, as well as safety against tube breakage and danger to operating personnel.

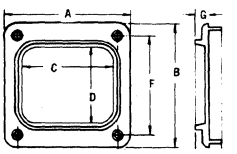
JAN Bezel Assemblies are supplied with a **bezel, calibrated graticule,** (where applicable) **light filter** and **C.R.T. cushion.** Bezels are finished in a smooth dull black non-reflecting surface. These units fit JAN Mu-Metal Shields.

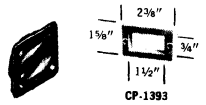
Edge-lit Bezels (E.L.B.A.)**
These Bezels are designed to provide edge lighting of the engraved scale-calibrated graticule by means of pilot lights.

Camera Mount Bezel
These units provide an integral cast mounting flange that fits all standard 3", 5" and 7" C.R.T. cameras.

Cat. No.	C.R.T. Face	Material	Type	Dimensions in Inches: Panel Opening	A Overall Width	B Overall Ht.	C Visible Area (Bezel) Width	D Visible Area (Bezel) Ht.	E Mtg. Holes Width	F Mtg. Holes Ht.	G Thickness (Face Only)	H Thickness (Incl. Flange)	Visible Area (Cushion) Ht.	Visible Area (Cushion) Width
BEZELS FOR 2" C.R.T.														
CP-1110-P-2	Flat	Plastic*	Standard	2 3/16	2 5/8	2 5/8	1 3/4	1 3/4	2	2	3/16	3/16	1 3/4	1 3/4
BEZELS FOR 3" C.R.T.														
CP-1220-P‡	Curved or Flat	Plastic*	Camera Mount	—	4 7/8	3 1/4	2 3/4	2 1/4	4	2 1/2	3/16	1 1/16"	—	
CP-1328-P-1 CP-1328-P-2	Curved Flat	Plastic*	Standard	3 39/64	3 3/4	3 3/4	2 5/8	2 5/16	3	3	3/8	45/64	2 1/2	2 1/16
CP-1427-1 CP-1427-2	Curved Flat	Aluminum	Camera Mount	3 17/64	4	4	2 3/4 Dia.		3	3	5/16	27/32	2 25/32 Dia.	
CP-1428-1** CP-1428-2**	Curved Flat	Aluminum	Camera Mount E.L.B.A.**	3 17/64	4	4	2 3/4 Dia.		3	3	5/16	27/32	2 25/32 Dia.	
CP-1429-1 CP-1429-2	Curved Flat	Aluminum	Camera Mount	3 17/64	4	4	2 3/4 Dia.		3	3	5/16	27/32	2 25/32 Dia.	
CP-3430-1 CP-3430-2	Curved Flat	Steel	Standard	—	4 5/16 Dia.		3 3/8 Dia.		3 3/4	3 3/4	1 41/64	1 41/64	2 25/32 Dia.	
BEZELS FOR 4" C.R.T.														
CP-1533-P‡	—	Plastic*	Camera Mount	3 5/32	4 3/64	3 41/64	3	3	4	—	1 3/32	1 3/32	No Cushion	
BEZELS FOR 5" C.R.T.														
CP-13549-1 CP-13549-2	Curved Flat	Aluminum	Standard	6.0	6 1/4	6 1/4	4 7/8	3 3/4	4 13/16	4 15/16	17/32	1 3/32	4 1/4	3 5/16
CP-13584-1 CP-13584-2	Curved Flat	Aluminum	Camera Mount	6.0	6 1/4	6 1/4	4 7/8	3 3/4	4 15/16	4 15/16	1 3/32	1 23/32	4 1/4	3 5/16
CP-13595-1** CP-13595-2**	Curved Flat	Aluminum	Standard E.L.B.A.**	5 7/16	6 1/4	6 1/4	4 7/8	3 3/4	4 13/16	4 15/16	17/32	—	4 3/4 Dia.	
CP-1465 CP-1465-2	Curved or Flat	Steel	Camera Mount	5 5/16 5 17/32	6 3/16 Dia.		5 35/64 Dia.		6	6	7/8	7/8	No Cushion 4 1/2 Dia.	
CP-19495-1** CP-19495-2**	Curved Flat	Aluminum	Camera Mount E.L.B.A.**	5 7/16	6 1/4	6 1/4	5 1/4 Dia.		4 13/16	4 15/16	1 3/32	—	4 3/4 Dia.	
CP-19636-2**	Flat	Aluminum	Camera Mount E.L.B.A.**	5 5/16	5 7/16	5 7/16	4 1/2 Dia.	3	4 7/16	4 7/16	1 1/4	—	4 1/2 Dia.	
CP-446-11 CP-446-22	Flat	Steel	Camera Mount	—	6 5/16 Dia.		5 5/16 Dia.		6 5/32 6 1/8	6 5/32 6 1/8	1	1 13/64 1 1/16	4 1/2 Dia.	
CP-545	Curved or Flat	Aluminum	Camera Mount	5	5 27/32	5 27/32	4 25/32 Dia.		5	5	25/32	—	—	
BEZELS FOR 7" C.R.T.														
CP-7330-1 CP-7331-2**	Curved Flat	Plastic*	Standard E.L.B.A.**	7 13/32	7 13/16	7 13/16	6 5/16 Dia.		6 5/16	6 5/16	3/4	3/4	6 3/8 Dia.	
CP-7375-1** CP-7375-2**	Curved Flat	Aluminum	E.L.B.A.**	7 13/32	8	8	4 1/2	4 1/2	6 5/16	6 5/16	1 17/32	2 25/32	1 1/2	4 1/2
CP-7420-1** CP-7420-2**	Curved or Flat	Plastic*	Camera Mount	7 13/32	7 13/16	7 13/16	6 15/16 Dia.		6 5/16	6 5/16	3/4	13/8	6 3/8 Dia.	
CP-7550	Curved or Flat	Aluminum	Camera Mount	4 25/32	7 3/8	6 1/4	4 3/4	4 3/4	6 1/4	5 1/8	1 3/16	1 3/16	No Cushion	
BEZEL FOR 10" C.R.T.														
CP-10860	Curved or Flat	Aluminum	Standard	11 1/32	12 1/4 Dia.		8 1/16	6 1/4	11 1/2 B.O.		1 1/16	1 3/16	No Cushion	

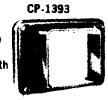
*All Plastic Bezels are furnished in shock resistant plastic, per MIL-P-3414. **Edge Lit Bezel Assemblies. ‡Rectangular C.R.T.





CP-1393

CP-1110P2 (with 4 mounting holes)
CP-1120P2 (same as above, but with 2 mounting holes, in diagonal corners)



CP-1220-P



CP-725

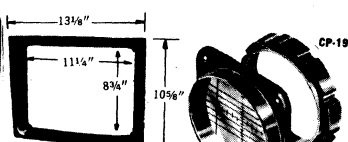
CP-1328-P-( )

CP-1428-( )

CP-1427, CP-1429: Same as 1428, except for mounting holes

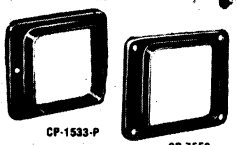


CP13549-( )



CP-1396

CP-19495-( )



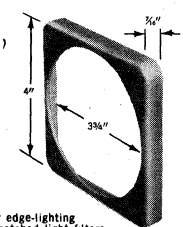
CP-1533-P

CP-7550



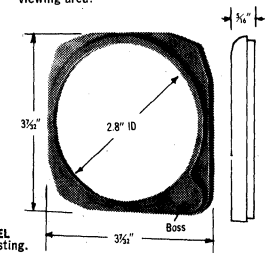
CP-1465

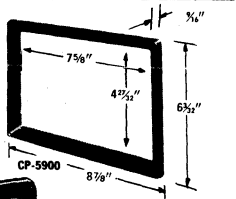
DISTINCTIVE FEATURES
- Engineered for 2", 3", 4", 5", 7", 8", 10" C.R.T.
- Maximum display area
- Precision engraved, scale-calibrated graticules; standard or to customer's specifications
- Materials and finish to "Mil Spec"
- Heavy buna-S shock cushion
- Models for edge-lighting
- Phosphor-matched light filters
- Non-reflecting matte surfaces
- Rugged camera mounts
- Models for curved and flat-faced C.R.T.



CP2106 BEZEL
Aluminum casting.

CP6033
Aluminum. 4 13/64" x 4 13/64" x 7/16" Deep. 3 3/4" Dia. viewing area.





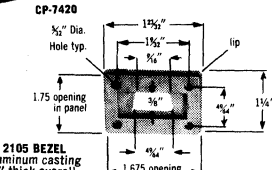
CP-5900

CP-13595-( )

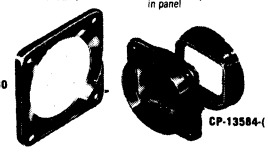


CP-545-( )

CP-7420



CP 2105 BEZEL
Aluminum casting 3/4" thick overall.



CP-7330

CP-13584-( )

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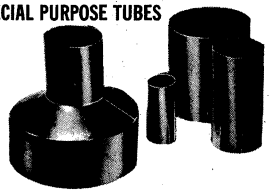
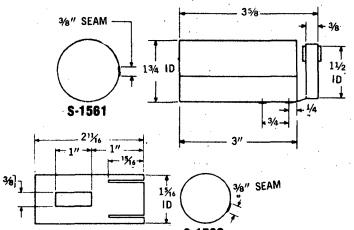
JAN'S MAGNETIC SHIELDS are made of MU-Metal or equal and are hydrogen annealed by a special process to assure optimum orientation of the molecular structure of the alloy for best magnetic shielding. JAN'S MAGNETIC SHIELDS prevent distortion and intensity modulation of the electron beam due to stray magnetic fields.

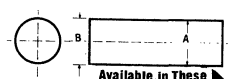
In addition, the use of these shields protect personnel against the dangers of accidental tube breakage. Mounting holes are tapped for No. 6-32 screws as shown. These shields are designed to fit JAN'S standard bezels as listed below. See preceding pages for specifications on JAN'S BEZEL ASSEMBLIES.

MAGNETIC SHIELDS FOR PHOTO-MULTIPLIER AND SPECIAL PURPOSE TUBES



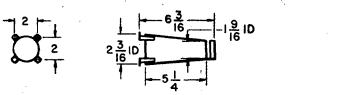
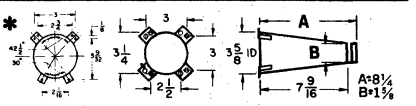
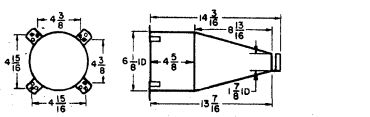
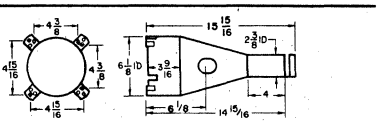
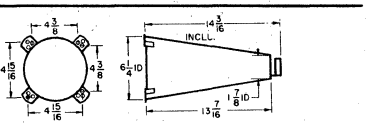
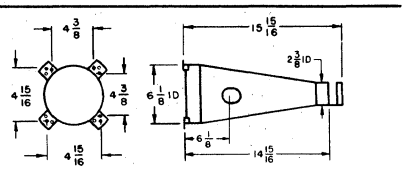
Shield	Tube
S-1091	ICP1
	929
	930
S-1181	5581
	5653
	IP39
	IP40
S-1500	6291
	4440
S-1561	6199
	7102
	931
	4471
	4472
S-1562	4473
	6323
	6328
	7117
	IP21
S-1562	IP22
	IP28
S-1563	1EP1
	2002
	6810
S-2002	7264
	7265
	7326
S-2003	6903
	2020
	4463
	5819
	6292
S-2004	6342
	6571
	6655
	7746
	8053
S-2005	6372
S-2007	7850
S-2008	4459
	6217
S-3015	1197
	6363
S-5013	1112
S-5018	1198
	6364
S-7009	1238
	1287





Available in These Seamless Tubing Dimensions
Can be supplied cut to your length, with holes and/or cut-outs to your specifications.

A	B
1.010	1.050
.948	.998
.740	.783
.632	.663

SHIELD CAT. NO.	FOR USE WITH C.R.T. NO.	MATCHING JAN BEZEL	
S2001 S2001-1	902 2AP 2BP	CP1110P2 CP1120P2	
S3001 adaptable for edge-lighting graticule using S3010 with Bezel CP1428✱	3RP 3RPA	CP1328-P-1 CP1427-1 CP1429-1 CP1328-P2 CP1427-2 CP1429-2 CP3430-1 CP3430-2	
S3003 S3003-1	3KP 908A 3AP	CP1328-P1 CP1427-1 CP1429-1	Same type as S-3001, except A=10⅛ B=2
S3004—12 (less anode hole) —22 (with anode hole) adaptable for edge-lighting graticule using S3012 with Bezel CP1428✱	3BP 3JP 3ACP	Same as S3003 Same as S3005	Same type as S-3001, except A=8¾ B=2⅜
S3005 adaptable for edge-lighting graticule using S3008 with Bezel CP1428✱	3WP	CP1328-P2 CP1427-2 CP1429-2	Same type as S-3001, except A=10⅝ B=1⅞
S3016	3ASP		
S3019	3XP	CP-725	
S3031	3BFP		Contact factory for specifications of these shields
S3027	4KP 4ER	CP1533P	
S4001	SC3511 4MP	CP-1533P	
S5001	5UP	CP1465 CP13584-1 CP13549-1 CP13595-1 CP19495-1 CP446-11 CP446-22	
S5002 adaptable for edge-lighting	5BP 5CP 5ABP 5ADP	Same as S5001 Same as S5006	
S5003	5UP	CP1465 CP13584-1 CP13549-1 CP13595-1 CP19495-1	
S5005 adaptable for edge-lighting	5AQP 5ABP 5ADP	CP1465-2 CP13549-2 CP13584-2 CP13595-2 CP19495-2 CP446-11 CP446-22	
S5006 adaptable for edge-lighting	5RPA 5AWP	CP1465-2 CP13549-2 CP13584-2 CP13595-2 CP19495-2	Contact factory for specifications of these shields

Shielding for EMC, RFI, and EMI now available, as bezels, shields, cushions, gaskets . . . in strip, sheet, formed and molded.

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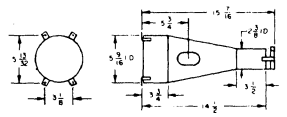
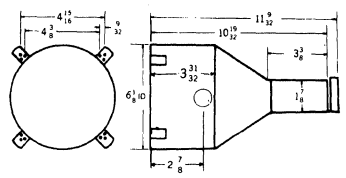
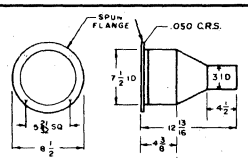
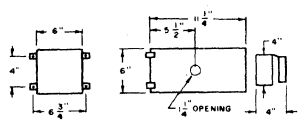
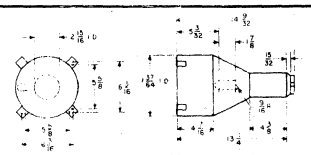
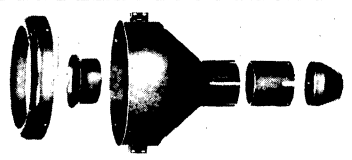
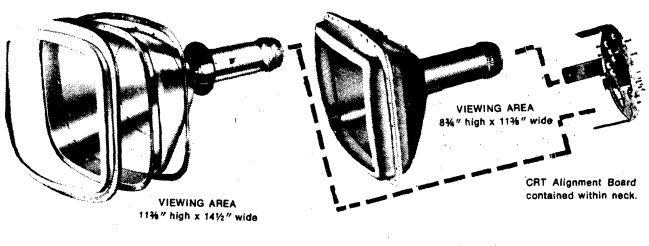
Shielding for EMC, RFI, and EMI now available, as bezels, shields, cushions, gaskets . . . in strip, sheet, formed and molded.

SHIELD CAT. NO.	FOR USE WITH C.R.T. NO.	MATCHING JAN BEZEL	
S5008 adaptable for edge-lighting	5AMP	CP1465-2 CP13549-2 CP13584-2 CP13595-2 CP19495-2	Contact factory for specifications of these shields
S5017 adaptable for edge-lighting	5ABP 5ADP	CP1465-2 CP19636-2	
S5027	5BTP	CP19495-2	
S5032	5CEP	CP19495-2	Contact factory for specifications of these shields
S5500	5BXP		
S6600	6E17P		
S7001	7GP 7JP 7VP	CP7330 CP7445 CP7331 CP7550 CP7420	
S7003 (Shield supplied as two separate sections)	7YP3	CP-7550	
S7006	7ALP	CP7330 CP7445 CP7331 CP7550 CP7420	
S10002	10KP 10WP		

When ordering, be sure to specify CRT type number. Anode openings provided, where required.

We will design and manufacture SPECIAL Shields & Bezels,

to customers specifications. Complete facilities for prototype work.





VIEWING HOODS Black neoprene rubber, contour-molded, fits the shape of face. Keeps out ambient light when viewing scope.



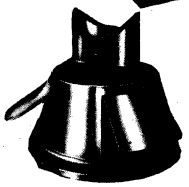
Cat. No. H-465
Can be used as viewing hood, on 2¾" dia. bezels. (#1427; 1428; 1429). Also serves as adapter to permit use of face fitting neoprene rubber viewing hoods. All aluminum. Dull black enamel finish.

Cat. No. H-689-1 (5⅝" I.D.)
Used with following Jan Bezels; 19636; 19495; 13584; 1465.
No. H-689-2 (4⅞" I.D.)
Used with JAN Bezel #545

Cat. No. H-1008 TO FIT RECTANGULAR BEZELS
Can be adapted for smaller I.D.'s. Can be used with JAN Bezel CP-1328P. Can be adapted for #1533-P.



Cat. No. H-1713

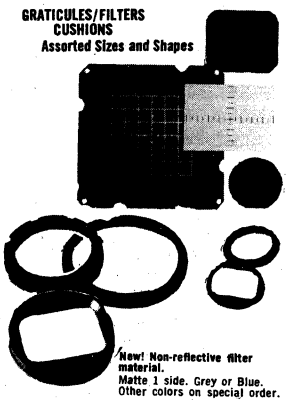


Cat. No. H-1063 (12" I.D.)
Flanges provided for hand access to PPI settings.



Cat. No. H-1361 (5²⁵⁄₃₂" I.D.)

GRATICULES/FILTERS CUSHIONS
Assorted Sizes and Shapes



New! Non-reflective filter material.
Matte 1 side. Grey or Blue. Other colors on special order.

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WE CATALOGUE & MANUFACTURE MORE THAN 10,000 DIFFERENT KNOBS FOR COMMERCIAL, INDUSTRIAL, MILITARY AND OTHER GOV'T AGENCIES. (FSN, MS, SM, SC, ON, NAS, AN, etc.) WE INVITE YOUR INQUIRIES.

Standard Shaft Holes - 1/16" Increments.

-(2)—⅛"	-(B)—⅛" D Flatted	-(BB)—⅛" Double Flatted
-(2.5)-5/32"	-(B.5)-5/32" D Flatted	-(BB.5)—5/32" Double Flatted
-(4)—¼"	-(C)—¼" D Flatted	-(CC)—¼" Double Flatted
	-(D)—¼" D Flatted	-(DD)—¼" Double Flatted
Nominal shaft dimensions: ⅛"=.128 ¼"=.253	-(D1)—¼" D Flatted	-(DD1.3)—21/64" Double Flatted

Finish: M-Matte; G-Glossy; /WD-White Dot, /WL-White Line
Colors: A-Black; B-Red; C-Grey. (See pages C•1594, 1595 for other information.)
Typical Part No. K1697-(4)MA
(¼" shaft, Matte Finish, Black)

SLIP-CLUTCH KNOB with Spinners

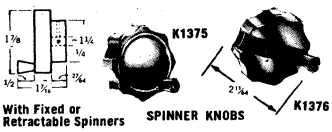
KS-1375-(4) & KS-1376-(4)

For driving devices such as variable capacitors, inductors, potentiometers, etc., the "slip-clutch"* automatically disengages and slips when pre-determined torque has been exceeded. Knobs are fluted, and equipped with either fixed or retractable spinner for fast turning. Backlash-free units safeguard against cranking beyond normal stops.

*Normally set for 3-6" lbs./in. Can be modified for other requirements.

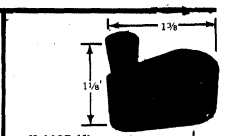
Model K-1376-(4) is identical with K-1375 with additional feature retractable spinner. Spring loading provides positive, toggle-type action to lock spinner in open or closed position. K-1376 for use where economy of space is essential.

Cat. Nos. K-1275-(4) & 1276-(4)
In appearance, these knobs are identical with K-1375 and K-1376 but without Slip-Clutch. Molded Bakelite-to-metal-insert construction, two set screws for attachment to shafts.



With Fixed or Retractable Spinners — SPINNER KNOBS

Standard: Glossy finish. (Matte finish avail. on special order)



K-1125-(4) SPINNER KNOB
SK-1125 SLIP CLUTCH KNOB

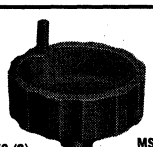


K1357-(4) SLIP CLUTCH KNOB

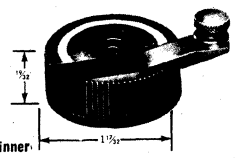
Knurl aluminum. Twin set screws. 1⅜" dia. skirt, tapers to 1" at top. Height, 1" Std. Torque 1 to 3 lbs./in. Avail. from ½ oz./in. to 48 oz./in.
For additional slip clutch knobs see JANSET KNOBS



K2131-(4)
1.3" H. x 15/8" dia. Hub dia. 1⅛" (2 set screws).

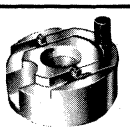


K2170-(6)
27/32" H. x 2⅞" Dia. (For ⅜" shaft) Mounts by screw through top of knob into threaded end of shaft.



MS-91522-1-(4) Retractable Spinner CRANK KNOB
Aluminum Olive Drab. Other colors and shaft dia. on request. 2⅝" min. clearance required with handle in open position.

K1622
Retractable Spinner CRANK KNOB
Modified version to replace MS91522. Incorporates brake mechanism to lock control in position.



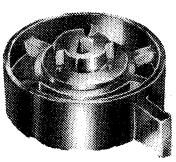


K1358-(2) MINIATURE SPINNER KNOB
Nylon. 19/32" H. x ¾" W. Spinner section dia. ⅜". Accepts ⅛" shaft or smaller.

MOLDED PLASTIC KNOBS W/O METAL INSERTS

2 Set Screws (unless otherwise specified).

K1440
K1445
K1575
K1794
K1942
K2108
K2127
AN3220





AN3220-1-(4)
⅞" H. 27/32" dia. 1½" L.

AN3220-3-(D)
⅞" H. x 27/32" dia. 1½" L. 1 set screw.



K1445-(4)
1" H. x ⅞" dia. One set screw.



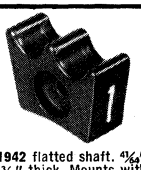
K2108-DDGA
31/64" H. x 1⅜" OD. (Double flatted shaft hole). .258 x .209
No screws, mounts to end of female threaded shaft.



K2127-(3.4)
1⅜" H. x 1 13/32" dia. For ¼ dia. shaft. (Mounts from top into end of shaft).



K1440 ⅞" H. x 1¾" dia. Special mounting. Adaptable for other mounting.



K1942 flatted shaft. 4¼" W. x ¾" thick. Mounts with clearance hole 17/64" dia. thru 3/64" thickness. 3/64" Thick; 1 3/64" L. x 17/64" H. Note: Add dash & number required to be at end of knob.

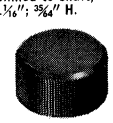


K1575-(4)
½" H. x ¾" OD. Single set screw. No insert.

K1257
K1335
K1407
K1791
K1939
K1940
K1954
K2004
K2006
K2034
K2132



K1939 .260 dia. shaft. no screws, must be pinned to shaft; 1 1/16"; 35/64" H.





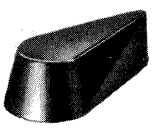
K1335-(B.5)
1 13/32" H. x 2 1/32" dia. No screw holes.



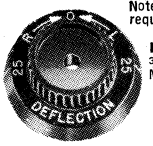
K2132
¾" H. x 1 5/16" dia. mode. For .380 x .80 flat shaft. (Supplied in 2 halves).



K1954-(1.5)
43/64" OD.; 1¼" H. Allows turning with one finger or conventional.



K2004-(4)
⅜" H. x 1⅛" L. x 5/16" body dia. (Avail. in Cast Alum. See K2002.)

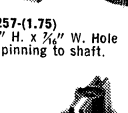


K1791 (3.5)
¾" H. x 1 23/32" dia. Mounts from top.



K2006-(B)
½" H. x 11/32" dia. with 3/64" indicator tip. No screws. Screwdriver slot on top.

K1257-(1.75)
15/16" H. x 7/16" W. Hole for pinning to shaft.



K1940-(3.25)
no screws—must be pinned to shaft; 1¼" OD.; ⅝" H.



K2104-(4)
⅞" H. x 1¾" dia.



K1717 15/32" H. ½" O.D.; ID .140 can be 8-32 thread.



K2034 Push Button. For ¾" x 3/16" flat shaft, ⅜" L. 15/32" H. x 29/64" dia. Mounts by pushing onto shaft with flat spring in shaft hole. No screws.



K1407-1(B)
5/16" H. x 23/64" O.D. shaft hole dia. .083 with .048 flat. Screwdriver slot on top.
K1407-2(B) ½" H.
With or w/o white dot.

K1717
K1795
K1948
K2005
K2093
K2094
K2104
K2129
SMC447976
SMC447306



K1795-(DD)
1 7/16" L. x 15/32" H.
7/8" skirt dia. Black w/ white fill.
Mounts from top



K2129-(4)
3/8" H. x 2 3/32" L. 1 3/16" dia. (Body dia 1").



K2005-(8)
17/32" H. x ¾" dia. (Two 3/32" dia. holes on top thru to ½" dia.)



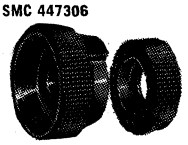
K2094-(D)
¾" H. x 1¼" dia.
No screw - push on type with flat spring.



K2093-(DD)
7/16" H. x 1⅛" L. Mounts from top.

K1948-(4)
1¼" dia.; 1 1/16" L. with .109 slot in one wall.

SMC 447306



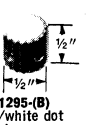
SMC4479761(1)-(2)

MINIATURE KNOBS

PLASTIC

K101294
K101295
K101297

K-101294( )
-1 1/16" skirt dia.
-2 ¾" skirt dia.



K-101295-(B)
-1 w/white dot
-2 plain
Also avail. with ⅛" round shafts.



K-101297

NAS120
NAS121
NAS123
NAS124
NAS125



NAS120-(2)(1.5)
For flat shafts.
¾" spherical dia.
1 screw.



NAS121-(3)(2)(1.5)
For flat shafts.
1" sperical dia.
1 screw.

NAS123-(2)(1.5)
For flat shafts.
1" dia. ⅝" oval.
1 screw.

NAS124-(3)(2)(1.5)
For flat shafts.
13/16" H. x 1¼" dia.
1 screw.

NAS125-(3)(2)(1.5)
For flat shafts.
1⅛" x 1 3/16" semi-round.
1 screw.

NAS168-(3)(2)(1.5)
For flat shafts.
13/16" H. x 1" dia.
1 screw.

K2187-(3) or (4)
21/64" H. x ½" Dia.
Mounts with screw into threaded end of shaft or set screw holes can be accomplished.

K2191-(11/64-11/64)
5/8" Long x 5/16" x 5/16" Square Dia.—2 holes for pinning to shaft. Frosted finish.

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TRANSILLUMINATED (BACK-LIT) MOLDED PLASTIC KNOBS WITH METAL INSERTS

2 Set Screws (unless otherwise specified).

Precision molded of JAN's transparent plastic material to military specs, with dull finish. Transilluminated pointers permit easy reading under subdued lighting conditions. For use on instrument panels, switchboards, electrical and electronic apparatus.

Can be supplied without transillumination, for other size shafts, and in other colors.

OTHER SPECIAL VARIATIONS AVAILABLE

Standard Shaft Holes - 1/16" Increments.

-(2)—⅛" -(B)—⅛" D Flatted -(BB)—⅛" Double Flatted
-(2.5)-5/32" -(B.5)-5/32" D Flatted -(BB.5)—5/32" Double Flatted
-(4)—¼" -(C)—5/16" D Flatted -(CC)—5/16" Double Flatted
-(D)—¼" D Flatted -(DD)—¼" Double Flatted
Nominal shaft dimensions: ⅛"=.128 ¼"=.253 -(01)—3/16" D Flatted -(DD1.3)—2¾" Double Flatted

Finish: M-Matte; G-Glossy; /WD-White Dot, /WL-White Line
Colors: A-Black; B-Red; C-Grey. (See pages C•1594, 1595 for other information.)

Typical Part No. K1697-(4)MA
(¼" shaft, Matte Finish, Black)

K977, K1103, K1724-(2), K1199, K1788, K1999, MS24229-P1, MS25165-1, MS25166-1

LM-K 1199 **USED ON LUNAR MODULES!** Precision aluminum casting. Adaptable for back lighting. With slip clutch features similar to K1375.

K1999-(D) ⅞" H. x 1 3/4" dia

K1103-(D) 1 3/16" H. x 1 5/8" dia. One set screw.

K1724-(2) 49/64" H. x 43/64" dia.

MS25165-1-(D) 23/32" H. x 1¼" dia.

MS25166-1-(D) 27/32" H., 1½" dia. skirt. One set screw.

MS24229-P1-(D) 27/32" H. x 1½" OD. One set screw.

K1788-(D) ⅞" H. x 1 13/32" L. Skirt dia. 1⅜". One set screw.

USAF 61D 404 74 K-977-(D) 1⅛" H. x 1¼" dia. Single set screw.

NAS 539, K1338, K1339, K1501, K1502, K1503, K1504, K1800, K2041, K2182-(D)

K1338-(D) 25/32" H. x 1½" dia. One set screw.

K1339-(4) ¾" H. x 1½" dia.

K2041-(4.4)(D) ⅞" H. x 1 3/32" dia. Transilluminated (No insert)

K2182-(D) ⅞" H. x 1½" dia. x 2 5/32" wide body x 1 13/64" long.

NAS 539-1B-(D) 1 set screw.
NAS 539-1C-(4) 2 set screws. 3/64" H. x 1¼" dia.

K1501-(B) 5/16" H. x ⅞" dia.

K1504-(B) ⅝" H. x 1" OD.

K1800-(D) 59/64" H. x 1½" dia. One set screw.

K1502-(B) 23/32" H. x 1 13/32" L.

K1503-(B) 1" dia, ¾" H. x 1⅛" L.

K1428, K1430, K1435, K1500, K1951, K1992, K2031, K2128, MS25169, MS25170, MS251701

K1428-(2)(4) ⅝" H. x ¾" dia. Avail. w/backlit indicator line or dot.

K2031-(2) ¾" H. x 5/16" OD.

K1992-(4) ¾" H. x 1 1/16" dia.

K1500-(2)(B) ⅝" H. x ¾" dia.

K2128-(4) ⅞" H. x ⅞" dia.

K1430-(2)(4) ⅝" H. x ¾" dia. One set screw.

K1435-(4) ⅞" H. x 1½" dia. One set screw.

K1951-(5.25) 5/64" H. x 1" dia. 3 set screws. Metal insert extends above plastic body.

MS25169-P1B 11/64" H. knob body .875" dia. One set screw. Also avail. w/skirt.

MS25170-P1B 25/32" H. x ⅞" dia. One set screw.

MS25170-P2A 27/32" H. Skirt dia. 1½"; knob body .875 dia. One set screw.

K1710, K1711, K1712, K1797, K1943, K2028, K2101, K2102, MS21382, MS21384, K21385

K1710-(D) One set screw. 51/64" dia. x 29/32" H. 1½" L. x 45/64" wide bar.
K1711 1" dia. x 45/64" H. 1" L. x 13/32" wide bar.
K1712 1" dia. x 29/32" H. 1" L. x 13/32" wide bar.

1797-(4) 13/16" H. x 1 3/16" L. Skirt dia. 1⅛".

K1943-(4) 1⅛" skirt OD. 3/16" H. x 1 17/32" L.

K2028-(2) ⅞" H. x 1" dia.

K21385-4MC/5/BLWL ¾" H. x ⅞" dia.

MS21382-(2)(B) 7/16" H. x ½" OD.

K2101-(4) ⅞" H. x ⅞" dia.

MS21384 Type 1 ⅝" H. x 1" OD.

K2102-(D) 1⅝" H. x 2 1/4" dia. Single set screw.

MS21384 Type 2 ⅝" H. x 1" dia.

MS21384 Type 3 1 1/4" H. 1" Skirt dia.

MS21384 Type 4 1⅛" L. ¾" H. x 1" OD.

MS21385, MS21386

MS21385 Type 1 ¾" H. x ⅞" OD.

MS21385 Type 2 ¾" H. x ⅞" dia.

MS21385 Type 3 ¾" H x ⅞" OD.

MS21385 Type 4 ¾" H. x ⅞" dia.

MS21385 Type 5 ¾" H. x ⅞" dia.

MS21385 Type 6 ¾" H. x ⅞" dia.

MS21385 Type 7 ¾" H x ⅞" OD.

MS21385 Type 8 ¾" H. x ⅞" dia.

MS21385 Type 9 ¾" H. x ⅞" dia.

MS21385 Type 10 ¾"H. x 1⅛" dia.

MS21386 Type 1 (B) 1 1/32" H. x ¾" dia.

MS21386 Type 2 (D) 1 1/32" H. x 1" dia. Shaft hole is for concentric mounting.

K1456, K1486, K2003, K2013, K2038, K2039, K2171-(2), (B), K2175-(4), MS21387, MS91528

MS21387 ⅝" H. x ¾" OD.

K2039-(B) 5/16" H. x ⅝" dia.

K2038-(B) ¼" H. x ½" dia.

K1582-(2) 3/16" H. x 3/64" dia.

K2013-(4) 1 5/32" H. x 2 1/16" dia.

K2171-(2) or (B) ¼" H. x ½" dia. Note: 2 screws with round hole, 1 screw with flatted hole—unless 2 are requested.

K2175-(4) 1¾" H. x 1⅛" dia. x 1¾" overall length. One set screw.

MS91528 See page 20 for specifications.

K1486-(4) Alum. w/backlit skirt. Knob 53/64" x H. x ¾" x 7/16". 1¼" dia. skirt. Also avail. w/o skirt.

K2003-(4) 13/16" H. x 1⅛" dia. One set screw.

K1456-(0.5) ½" H. x 1 13/64" dia. Backlit numbers.

K1577, K1786, K1787, K2008, K2013, MS25167, MS25168

K1577-(D) One set screw. ⅞" H. x ¾" dia. Skirt dia. 1¼". Avail. with other markings and/or less skirt.

MS25167-P1B 23/64" H. x 5/16" dia. One set screw.

MS25168-P1B 27/64" H. x 1" dia. One set screw.

MS25167-P2B 23/64" H. x 5/16" dia. Skirt dia. 1¼". One set screw. Also avail. w/o skirt.

MS25168-P2B 27/64" H. x 1" dia. Skirt dia. 1½". One set screw.

K2008-(4) ¾" H. x 1 3/4" dia.

K1786-(B) 55/64" H. x 3/4" body dia., 1" skirt dia. One set screw.
K1787 Same as 1786 except 41/64" H.

K2013-(4) 3/4" H. x 2" dia. Back lit marking as required.

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QUALITY
RELIABILITY
ECONOMY

MOLDED PLASTIC KNOBS WITH METAL INSERTS

2 Set Screws (unless otherwise specified).

Standard Shaft Holes - 1/16" Increments.

-(2)—⅛" -(B)—⅛" D Flatted -(BB)—⅛" Double Flatted
-(2.5)-5/32" -(B.5)-5/32" D Flatted -(BB.5)—5/32" Double Flatted
-(4)—¼" -(C)—¾" D Flatted -(CC)—5/16" Double Flatted
-(D)—¼" D Flatted -(DD)—¼" Double Flatted
Nominal -(D1)—9/64" D Flatted -(DD1.3)—21/64" Double Flatted
shaft dimensions: ⅛"=.128 ¼"=.253

Finish: M-Matte; G-Glossy; /WD-White Dot, /WL-White Line
Colors: A-Black; B-Red; C-Grey. (See pages C•1594, 1595 for other information.)

Typical Part No. K1697-(4)MA
(¼" shaft, Matte Finish, Black)

K2024-(6) 1¼" H. x 1 11/32" dia. 2¼" overall length.

M3926/1 1 13/16" H. x 1½" dia. with 1¼" Hub dia. For 3/8-24 threaded shaft. Also available for 8-32; 10-32; 1/4-28.

M-3926/3 1" H. x 1" OD. with ¾" dia. hub. Also avail. to accommodate 8-32 and ¼-28 threaded shafts.

K783 K1332 K1333 K1494 K1706 K1707 K1708 K1709 K1803 K1804 K2000 K2024 M-3926

K1332-(3) 25/64" H. x 1⅛" dia. Notch: ⅛" W. x 3/16" D.

K1333-(3) 5/8" H. x ¾" dia.

K2000-(2) 1¼" H. x 1" dia.

K1706-(D) 1½" O.D. x 7/8" H. Single set screw.
K1707 2" O.D. x 7/8" H.

K1708-(D) ¾" H. x ¾" wide bar. 1½" O.D. skirt.

K1709-(D) 7/8" H. x ¾" wide bar. 2" dia. skirt.

K1803-(4) 3/8" H. x 1 3/32" dia. Skirt can have white line or notch.

K1494-(4) 1¼" H. x 1⅛" dia. x 1¼" length.

K1804-(D) 5/8" H. x ¾" dia. 1¾" long. Can be supplied with skirt.

BAR KNOB K-783 Set screw at back, for shaft attachment. Finished to specifications.

K1471 K1472 K1573 K1629 K1785 K1953 K2037 K2040 K3219

K1471-(4) 3/4" H. x 25/64" L. x ⅜" W. Center of shaft hole to pointer end, 49/64".

K1472-(4) 3/4" H. x 1 3/32" L. x ¾" W Center of shaft hole to pointed end, 37/64".

AN3219-1-(4) 5/8" O.D. x ¾" dia. x 1¼" L. 1 set screw.

K2037-(D) ¾" H. x 27/32" dia. 1½" L.

K1573-(D) ¾" H. x 1 13/32" L. x 1 3/16" body dia.

K2040-(D) ¾" H. x 7/8" dia. x 2¼" L.

K1629-(4) 2¼" overall length x 7/8" overall width. Shaft hole centered.

K1785-(2)(4) 1/2" H., 1½" W., x ½" dia.

K1953-(4) 2 set screws, or for female or male threaded stud 23/64" H. x 1⅛" OD.

Black or Grey. Can be supplied for other round and "D" flat shafts

K706 K772 K1468 K1481 K1492 K2011 K2014 K2015 K2035 K2088 K2100

K706-(DD) (mounts from top of knob). No insert. 1" H. x 5/8" W. x 1⅜" L.

K2035-(4) 1 11/16" H. x 7/8" D. x 1¼" L.

K1492-(4) 1 11/16" H. x 1⅛" L. Single set screw

K772-(4) 1⅜" OD.; ¾" H. (not including non-rotation pin). Avail. in black, red, yellow, green, & blue. To order add color to part no.

K2011-(4) ¾" H. x 1⅜" dia. Overall length 1 5/8".

K1481-(2)(4) "Pull" Knob 39/64" H. x 25/32" dia. x 27/32". Note: Basic configuration of knob is MS91528-1GG.

K2014-(4) 1" H. x 45/64" OD. Overall length 25/32".

K2015-(4) 1 1/16" H. x 53/64" OD. Overall length 1⅛".

K1468-(4) 27/64" H. x 1 1/16" dia. Single set screw.

K2088-(4) ¾" H. x 1 1/16" dia Single set screw.

K2100-(2) ¾" H. x 5/8" dia.

K1280 K1345 K1351 K1353 K1355 K1494 K1700 K1718 K1772 K1793

K1718-(B) 25/64" H. x 3/8" O.D. Can supply for ¼" shaft on special order.

K1772-(2) 5/16" H. x 1 1/16" L.

K1355-(3) 5/8" H. Base size 17/32" x 13/32".

K1351-(2) .096 across flat. 5/8" H. x 5/8" dia.

K1345-(3) ¾" W. x 7/16" dia. (Shaft mounts in side hole, screw at bottom). Single set screw

K1280-(3.25) 5/16" H. x 7/8" L. x 1 1/16" W.

K1353 5/16-32 threaded shaft. 9/64" H. x 1/2" dia.

K1494 Plastic with 8/32 threaded stud—7/32" long 21/32" H. x 1⅛" dia. No screw.

K1793-(D) 2 1/16" L. x 1 1/16" dia. No set screw.

K1700-(4) 1 13/32" H. x 1 7/16" body O.D. Plastic body, metal cap, skirt and insert. 2 25/64" skirt O.D.

K929 K936 K1334 K1344 K1349 K1350 K1359 K1792 K1945 K1946 K1993 K1997

K1349-(B.5) 1 1/16" H. x ¾" dia.

K1350-(B) 7/8" H. x 7/8" dia.

K1344-(B.5) with .130 across flat. 7/8" H. x 7/8" dia.

K1359-(B) 9/16" H. x 7/16" OD. "P" on top filled. "Day-glo Saturn Yellow" or "White".

K1792 1/4-20 threaded shaft. ¾" H. x 7/8" dia. Color Gray.

K1945 6-32 threaded shaft. 17/32" H. x 5/8" OD

K1993-(4) 5/8" H. x 9/64" dia.

K1946 6-32 threaded shaft. ¾" OD.; ¾" H. with ½" dia. hub. For 8-32 threaded shaft, **K1946-832.**

K936-(5) Knob dia. 1½"; Skirt dia. 1½"; overall height 1 3/32". Beveled aluminum skirt, black anodized finish. Deeply etched and filled contrasting markings. Accurately centered brass insert.

K936-(4) KNOB ONLY
K929-(5) same as above
K929-(4) less skirt.

Variations on shaft sizes and markings available in production quantities. Single set screw.

K1334-(2) 5/8" H. x ¾" dia. Notch: 3/32"

K1997-(4.25) ¾" H. x 1⅜" dia.

K1388 K1398 K1462 K1714 K1798 K1938 K1952 K2012 K2126

K1398/WD-(6) 1 1/16" H. x 2 3/16" dia.

K2126-(4) 15/16" H. x 1 5/16" dia. with 1 3/16" Hub dia.

K1798-(2) ½" H. x 1½" dia.

K1952-(4) 2 set screws, or for female or male threaded stud. 21/64" H. x 1⅛" OD.

K1938-(3.5) 33/64" H. x 1½" OD. Single set screw.

K1714-(4) 2 3/64" O.D. x 3/8" H.

K2012-(4) 3/4" H. x 2" dia.

K1462-(4.25) 5/16" H. x 1" OD.

K1368-(D) 1 1/16" H. x 1 1/16 dia.

K1331 K1347 K1348 K1464 K1579 K1771 K1783 K1789 K2089 K2099 K2124

K1331-(3) ¾" H. x 1 1/64" dia.

K1579-(2)(4) ½" H. x 7/8" dia.

K1771-(4) 1 35/64" H. x 1 19/32" dia. Appearance same as JAN deluxe instrument knobs.

K1789-(B) 21/64" H. x ½" dia. Note: Same as deluxe inst. knobs, except w/flat cap.

K1347-(2.5) ½" H. x ¾" dia.

K1348-(2.5)(B.5) ½" H. x ¾" dia.

K1464-(B) 1 1/16" H. x ½" OD.

K2124-(4) ¾" H. x 2¾" dia.

K1783-(4) 1" H. x 1¼" dia. Top recess can be color coded.

K2089-(3) 13/32" H. x 55/64" dia.

K2099-(4) 15/32" H. x 7/8" dia.

K1343 K1346 K1354 K1493 K1806 K1925 K1950 K1995 K1998 K2098

K1493-(3) 5/8" H. x 3/16" dia. With or w/o white dot.

K1343-(D.5) 21/32" H. x 7/8" dia.

K1346-(D) 1 1/16" H. x 1 1/16" dia..

K1354-(D.5) 45/64" H. x ¾" dia.

K1925-(2) 13/32" H. x 1 1/4" OD. If white line is required add /WL to part no.

K1995-(5) ¾" H. x 25/32" dia. Color — Brown.

K2098-(4) 1 1/16" H. x 1¾" dia.

K1806-(4) 1¼" H. x 2 1/8" OD.
K2016 7/8" H. x 1½" OD.

K1950-(4) 1 7/8" dia. skirt, 1¼" knob. 25/64" H. overall. Note: Knob less skirt is standard deluxe instrument P/N 121A4MA, color black. Skirt is gray w/clear tip & white line.

K1998-(D) ¾" H. x 1" dia. Overall length 1⅛". One set screw.

K2172 K2178 K2179 K2185 K2188 K2192 K2193

K2172-(1/2-13) 2" spherical dia. (For 1/2-13 threaded shaft). No screws.

K2178-(2) 5/8" H. x 5/8" dia.

K2179-(2) 5/8" H. x 5/8" dia.

K2185-(3/8-16) 1" H. x 1 7/64" dia. x 1" hub dia. No set screws. Mounts to a 3/8-16 threaded shaft.

K2188-(3) 15/32" H. x 35/64" dia.

K2193-(B) 1/2" H. x 1 1/16" dia. Can be supplied with White Index Line.

K2192-(D) 13/16" H. x 1" dia. x 1 1/16" long.

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QUALITY
RELIABILITY
ECONOMY

MACHINED METAL KNOBS— ALUMINUM (Unless Otherwise Specified)

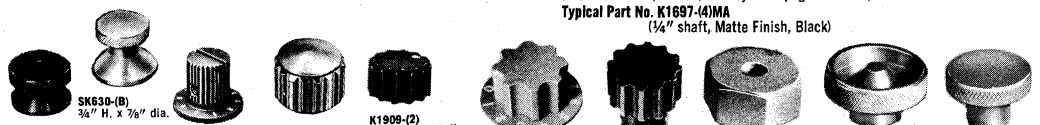
2 Set Screws (unless otherwise specified).

Standard Shaft Holes - 1/16" Increments.

-(2)—⅛" -(B)—⅛" D Flatted -(BB)—⅛" Double Flatted
-(2.5)—5/32" -(B.5)—5/32" D Flatted -(BB.5)—5/32" Double Flatted
-(4)—¼" -(C)—3/16" D Flatted -(CC)—5/16" Double Flatted
-(D)—¼" D Flatted -(DD)—¼" Double Flatted
Nominal shaft dimensions: ⅛"=.128 ¼"=.253 -(D1.3)—21/64" Double Flatted

Finish: M- Matte; G- Glossy; /WD- White Dot; /WL- White Line
Colors: A- Black; B- Red; C- Grey. (See pages C•1594, 1595 for other information.)
Typical Part No. K1697-(4)MA
(¼" shaft, Matte Finish, Black)

SK630
K1007
K1105
K1330
NAS1553
K1702
K1909
K1944
K2007
K2009
K2092



K1702-(B) ½" H. x 23/32" dia.

SK630-(B) ¾" H. x ⅞" dia.

K1330-(2) ½" H. x 5/8" dia. Can be used for printed circuit boards. Gives both finger and screwdriver adjustment.

K2092-(4) 1" H. x 1⅛" dia. Single set screw.

K1909-(2) 13/32" H. x ¾" dia.
K2009 Same as K1909 except 5/16" H.

K1105-(4) ⅝" H. x 1.4" OD.

K-1007-(2)(4) ¾" H. x ¾" OD.

K2007-(4) 1⅝2" H. x ⅞" dia.

K1944 To fit ¼-20 threaded stud. ½" H. x 1¾" OD.

NAS1553 Style C Avail. ¾" to 2" dia. Alum. or steel.

K1130
AK1326
K1329
K1336
K1409
K1434
K1801
K2010
K2125



AK-1326-(4) 11/32" H. x 3/4" O.D. Also avail. w/plain top

K1336 8-32 threaded shaft. Aluminum locking knob. 35/64" H., ½" knurled OD.

K1329-(4) 23/32" h. x 5/8" dia. Knurled edge for easy turning.

K2010-(4) 1⅛" H. x ½" dia. No screws. Mounts from top of knob.

K2125-(4) 5/8" H. x 1⅛" dia. 13/16" Body dia.

K1434-(4) 5/8" H. x ¾" dia. One set screw.

K1409-(3) 1 set screw and 1 spot drill hole for pinning. 1⅛" H. x ¾" head dia., 7/16" shank dia. Avail. w/o marking. Brass.

K1801 Stainless Steel, 10-32 threaded shaft. 1⅛" OD. x 13/32" L.

K1130 6-32 thd'd. shaft. 3/8" L. x ½" H. x ½" OD. Brass, nickel plated (screw-on type).

K1572
K1574
K1584
K1696
K1701
K1814
K1819
K2033
K2096B
K2130
K2190



K1814-(4) ½" H. x ¾" dia.

K1696-(CC) Mounts from top. 5/16" H. x 13/16" OD.

K1701-(2) 25/32" H. x 5/8" OD. One set screw.

K1572-(2) ⅞" H. x ¾" dia. Black anodized, with or w/o white filled line.

K1574-(2) ½" H. x ½" dia. Painted black with or w/o markings.

K2190-(2) 3/8" H. x 5/8" dia. x ½" hub dia. One set screw. Clear anodized.

K1584-(2) ½" H. x ⅜" OD.

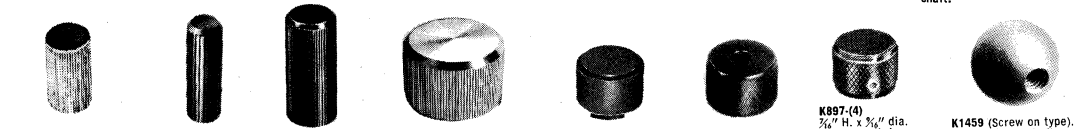
K2033-(2) 23/64" H. x 25/64" dia. **Steel.**

K1819-2MA/WD 17/32" H. x 3/8" dia.
K1819-2MA Same as above, without white dot.

K2130-(10-32) ⅞" H. x 1" dia. (Hub dia. 3/4") No screws. Mounts to a 10-32 threaded shaft.

K2096-(B) 43/64" H. x 5/8" dia.

K897
K1006
K1433
K1436
K1459
K1485
K1571
K1628
K2001



K-1006-(2)(3) ¾" H. x ⅜" dia.

K1485-(2) 13/16" H. x ¼" OD.

K2001-(3) 1⅛ H. x ½" dia.

K1436-(4) ¾" H. x 1 3/16" dia.

K1571-(4) ¾" H. x 1" dia. Painted black. ⅜" hub dia. x 1/16" H.

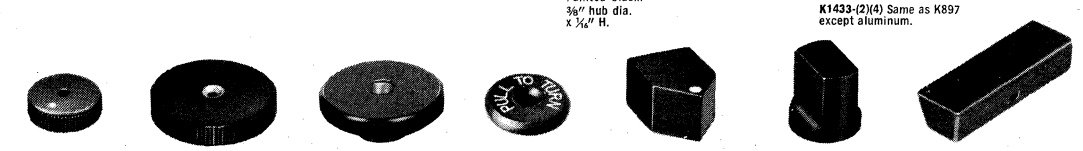
K1628-(3) 5/8" H. x ⅞" OD.

K897-(4) 7/16" H. x 5/16" dia. Brass. Avail. in other finishes. One set screw.

K1433-(2)(4) Same as K897 except aluminum.

K1459 (Screw on type). 5/16"-18 thd'd. shaft. ½" L. x 1" dia. (Red anodize)

K1278
K1446
K1488
K1570
K1703
K1716



K1446-(2)(4) ¼" H. x ⅜" dia. Brass. With or w/o white dot.

K1716-(4) ¼" H. x 1¼" OD.

K1703-(6) Can be pinned or set screws. 1¾" dia. 13/16" H. x ¾" hub dia.

K1488-(2.25) 11/64" H. x ⅝" dia. Mounts from top.

K1697-(4) 1" L. x ¾" W. x 5/16" H. With or w/o white dot.

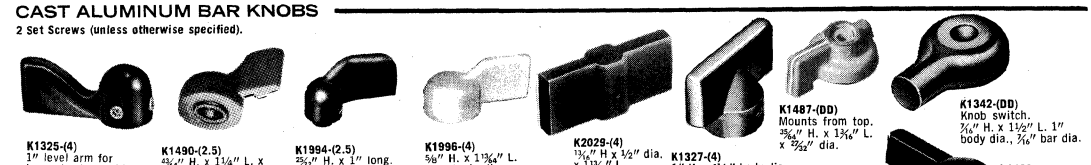
K1278-(4) ¾" H. x 1 1/16" dia. One set screw.

K1570-(5) 25/64" H. x 23/32" L. x 5/8" W. Black anodized.

CAST ALUMINUM BAR KNOBS

2 Set Screws (unless otherwise specified).

K1325
K1327
K1342
K1487
K1490
K1994
K1996
K2029
K2123



K1325-(4) 1" level arm for heavy load switching. 5/8" H. x 1 17/32" L. x 5/16" body dia.

K1490-(2.5) 43/64" H. x 1¼" L. x ¼" hub. Can supply for mounting skirt.

K1994-(2.5) 25/32" H. x 1" long. 13/32" body dia.

K1996-(4) 5/8" H. x 1 3/64" L. 21/32" body dia. Single set screw.

K2029-(4) 1¼" H x ½" dia. x 1 13/32" L. One set screw. Hole for pinning.

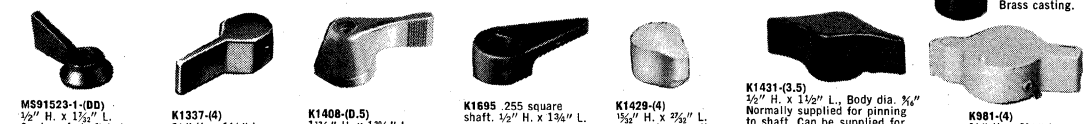
K1327-(4) 1" H. x 1 1/16" body dia.

K1487-(DD) Mounts from top. 35/64" H. x 1 3/16" L. x 27/32" dia.

K1342-(DD) Knob switch. 7/16" H. x 1½" L. 1" body dia., 7/16" bar dia.

K2123-(4) 5/8" H. x 1¾" L. 1 5/16" body dia. Brass casting.

K981
K1337
K1408
K1429
K1431
K1695
MS91523-1



MS91523-1-(DD) ½" H. x 1 7/32" L. Center of shaft hole to end of handle - 29/32".

K1337-(4) 3/8" H. x 1⅛" L. x ½" body dia.

K1408-(D.5) 1 13/16" H. x 1 29/32" L.

K1695 .255 square shaft. ½" H. x 1¾" L. Center of shaft hole to end of handle — 1⅜".

K1429-(4) 15/32" H. x 27/32" L. Magnesium Casting. 1 set screw and pinning hole.

K1431-(3.5) ½" H. x 1½" L., Body dia. 9/16" Normally supplied for pinning to shaft. Can be supplied for screw attachment. Can also be supplied in brass.

K981-(4) 3/4" H. x 2 1/32" L. 1 1/16" body dia.

K680
SMC91018
MS91524
SM91525
SMB134094
SMB134171
SMB134884
SMB179515
SMB144319
SMC414401
SMC447226
SMD415160
SMD415161
SMD415223
SMC503203

MS & SIGNAL CORPS ALUMINUM & PLASTIC CONTROL KNOBS

Manufactured in Accordance with Applicable Military Specifications



SMB 134094

SMC 414401

K 680-(3)

MS 91525-(1)

SMC 91018

-(3) -(4) Longer

SMD 415160

SMB 144319

SMB 134171

SMD 415223

SMB 134884

SMB 179515 15/64" H. x 1 7/64" L. 7/8" dia. skirt—plastic (for D shaft).

MS 91524-(B)(BB) w/closed top.

SMD 415161

SMC 447226

SMC 503203

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QUALITY
RELIABILITY
ECONOMY

CAST ALUMINUM KNOBS, 2 SET SCREWS

(Unless otherwise specified).

Standard Shaft Holes - 1/16" Increments.

-(2)—⅛"	-(B)—⅛" D Flatted	-(BB)—⅛" Double Flatted
-(2.5)-5/32"	-(B.5)-5/32" D Flatted	-(BB.5)—5/32" Double Flatted
-(4)—¼"	-(C)—¾" D Flatted	-(CC)—5/16" Double Flatted
	-(D)—¼" D Flatted	-(DD)—¼" Double Flatted
Nominal shaft dimensions: ⅛"=.128	¼"=.253	-(DD1.3)—21/64" Double Flatted

Finish: M-Matte; G-Glossy; /WD-White Dot, /WL-White Line
Colors: A-Black; B-Red; C-Grey. (See pages C•1594, 1595 for other information.)

Typical Part No. K1697-(4)MA
(¼" shaft, Matte Finish, Black)

K1005
K1022
K1023
K1024
K1389
K1461
K1773
K1775
K1802



K-1005-(4)
⅞" H. x 1" skirt dia.
Overall length 15/16".
Available with or without skirt.



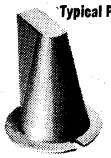
K1773-(DD)
11/16 H. x 1⅛" dia.
Mounts from top.



K1802-(2)
15/32" H. x 13/16" L.
⅞" dia. skirt.



K1775-(4)
21/64" H. x 1" dia.
x 15/32" L.



No. K-1022-(4)
1 1/32" H. x 15/16" base dia.
Full Round Skirt

No. K-1023-(4)
Flat Back Round Skirt
1 3/16" H x 15/16" base dia.
(25/32" to flat back).

No. K-1024-(4)
With cam shape cut out in bottom of knob.
1 1/32" H. x 15/16" base dia.



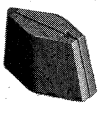
K1389-(4)
27/32" H. x 15/16" dia.



K1020
K1021
K1328
K1390
K1392
K1799
K1947
K2002



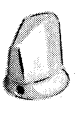
K2002-(4)
3/8" H. x 1 1/8" L. x 5/8" body dia. (Available in plastic w/o metal insert. See K2004.)



K1947-(4)
¾" H. x 1¼" L. x 5/8" W.



K1390-(3)
11/16" H. x 5/16" dia.
One set screw.



K1392-(3)
25/32" H. x 1 1/16" dia.
(Bar is 13/16" long).



K1328-(4)
1¼" H. x 1 1/16" dia.



K1020-(4)
1 3/16" H. x 9/16" base dia.



SMC 414680-1 thru 10
3/8" x 3/32" flatted shaft
Push on mounting.
21/32" H. x 9/16" dia.

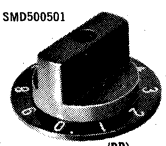
Other shaft diameters on request.



K1799-(D)
5/8" H. x 1 1/2" dia.
One set screw.
For transilluminated knob see K-1800.

K1124
K1447
K1448
K1449
K1453
SMD500501
SMD500502

SMD500501

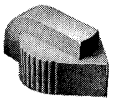


SMD500502

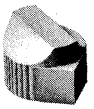
-(DD)
¼" double flatted shaft.
29/32" H. x 1 13/16" dia.



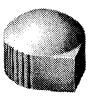
K1124-(2)
5/8" H. x 1¼" dia.
One set screw.



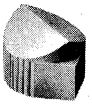
K1453-(4)
1¾" H. x 1½" L.
x 15/16" dia.
Tactile Top.



K1447-(4)
1¼" H. x 15/16" dia.
x 3/32" L. Tactile
"Bar" Top.

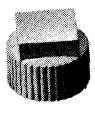


K1448-(4)
1 3/16" H. x 15/16" dia.
x 3/32" L. Tactile
"Sphere" Top.



K1449-(4)
1 3/16" H. x 15/16" dia.
x 3/32" L. Tactile
"Edge" Top.

K1450
K1451
K1484
K1698
K1699
K1956
K1957



K1450-(4)
1 1/16" H. x 1¾" dia.
Tactile "Square" Top.



K1451-(4)
1 1/16 H. x 1¾" skirt dia.
Tactile "Triangle" Top.



K1484 5/16-24 threaded shaft. 5/8" H. x 15/16. OD. Partial pin holes supplied for pinning to shaft.



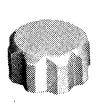
K1698-(4)
¾" H. x 2" O.D.
One set screw.



K1699-(DD5)
½" H. x 1" dia.
Mounts from top.

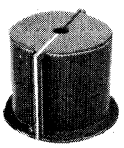


K1956-(4)
59/64" H. x 15/8" OD.



K1957-(4)
½" H. x 1" OD.

K1047
K1126
K1127
K1391
K1394
K1452
K1774
SCB41848



K1047-(B)
(Double D). ⅞" H. x 1⅛" dia.



K1394-(2)
⅞" H. x ½" dia.



K1126-(DD)
15/32" H. x 23/32" dia.
Mounts from top.



K1127-(2)
15/32" H. x 23/32" dia.



K1391-(2)
49/64" H. x 5/8" dia.
White-filled line.



K1452-(4)
1 1/16" H. x 13/16" dia.
Tactile "Round Ribbed" Top.



SCB-41848-(4)
5/8" H. x 1 13/16" dia.



K1774-(5.25)
1⅛" H. x 2 1/8" dia.
Mounts from top.

BK1080
K1387
K1460
K1770
K1790
MS21360



MS21360-1BID-(2)
½" H. x 27/64" OD.



K1790-(4)
27/32" H. x 45/64" dia.



K1460-(4)
15/32" H. x ⅞" OD.



K1387-(2.5)
¼" H. x 23/32" dia.

K1770-(2)(4)
½" knob dia.
17/32" H. x 1" skirt dia.

BK-1080-(B)
5/16" H x ½" OD.

K242
K984
SCB35862-1
SMC414393
SMC414399
SMC414680

SIGNAL CORPS DIE CAST KNOBS

ZINC ALLOY

No. K-242-1 & K-242-2

No. K-242-3

Cat. No.	B	E	F	Marking
K-242-1	3/4"	15/16"	5/16"	White
K-242-2	7/8"	1 1/8"	3/8"	White
K-242-3	3/4"	15/16"	5/16"	None

SCB35862-1

For ¼" double flatted shaft. Mounts from top of knob.

No. K-984
Dimensions as per 242-3
No markings.
.25/ tear drop shaft hole.

100446

K243
K1432
K1991
K2036

K1991-(6)
1" H. x 1½" dia.
No screws. 2 holes for pinning to shaft.

K2036
¾" H. x 5/16" dia.
x 15/32" L. For 1/4" shaft.
.062 cross drilled
Stainless Steel.
Can be supplied with screws.

K1432-(5)
1¼" H. x 1⅞" across wing. Body dia. ¾". Must be pinned to shaft.

TUNING KNOB K243-(5.5)
1¼" H. x 2¾" dia.
Use no-mar clamp (Cat. No. 937-8) for mounting. (Not supplied).

SMC 414393-(2)
½" H. x 1 1/16" O.D.
Mounts with screw (not supplied) from top.

K2030
K2032
NAS1553

NAS1553
Style A
Avail. ¾" to 2½" dia.
Cast alum. or steel.

NAS1553
Style B
Avail. 1½" to 3" dia.
Cast alum. or steel.

K2030-(6)
⅜" H. x 3½" dia.
Can be supplied for screw or pinning.
Steel.

K2032
1 13/32" H. x 3½" dia.
Hub dia. 15/8".
Threaded 5/16" - 20

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CAST ALUMINUM KNOBS, 2 SET SCREWS

(Unless otherwise specified).

Standard Shaft Holes - 1/16″ Increments.

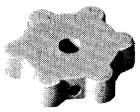
-(2)—⅛″ -(B)—⅛″ D Flatted -(BB)—⅛″ Double Flatted
-(2.5)-5/32″ -(B.5)-5/32″ D Flatted -(BB.5)—5/32″ Double Flatted
-(4)—¼″ -(C)—3/16″ D Flatted -(CC)—3/16″ Double Flatted
-(D)—¼″ D Flatted -(DD)—¼″ Double Flatted
-(D1)—3/16″ D Flatted -(DD1.3)—21/64″ Double Flatted

Nominal shaft dimensions: ⅛″=.128 ¼″=.253

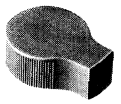
Finish: M-Matte; G-Glossy; /WD-White Dot, /WL-White Line
Colors: A-Black; B-Red; C-Grey. (See pages C•1594, 1595 for other information.)

Typical Part No. K1697-(4)MA
(¼″ shaft, Matte Finish, Black)

K0002
K0003
K0004
K0005
K0006
K0007



K0002-(4.7)
½″ H. x 1 19/32″ dia.
No screws - pin to shaft.



K0003
15/32″ H. x 1 1/16″ dia.
x 1 3/8″ L. Single set screw.



K0004-(4.5)
½″ H. x 1 13/32″ dia. x 1 5/64″ L.
No screws - pin to shaft.



K0005-(4)
7/64″ H. x 1 29/64″ dia.
No screws - mounts from top.



K0006-(5.5)
½″ H. x 1 7/16″ dia.
Steel.



K0007
5/16″ H. x 1 29/64″ dia.
x 2 15/32″ L. Steel casting.

K0009
K0010
K0011
K0012
K0013
K0014



K0009-(8)
15/64″ H. x 1 3/64″ dia.
x 1 3/4″ L. Brass.



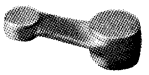
K0010-(8)
½″ H. x 5/8″ dia. x 1 47/64″ L.
Steel. No screws - pin to shaft.



K0011
5/8″ H. x ¾″ wide x
1 7/16″ L. Single set screw.



K0012-(3.5)
45/64″ H. x 1¼″ dia.



K0013-(4)
21/64″ H. x 21/32″ dia.
x 1 3/4″ L.



K0014-(2)
53/64″ H. x 1 17/32″ L.
Steel.

K0015
K0016
K0018
K0019
K0020
K0021
K0041



K0015-(2)
7/16″ H. x 19/64″ dia.
x 25/32″ L. Brass.



K0016-(D1.3)
11/32″ H. x 53/64″ dia.
(For 23/64″ dia. x 17/64″ double flatted shaft hole)
No screws - pin to shaft.



K0018-(4)
53/64″ H. x 27/32″ dia.
(Hub 13/32″ dia.)
Brass.



K0019-(2.5)
½″ H. x 2″ dia.
(Hub dia. 1″)



K0020-(D1)
1 5/64″ H. x 41/64″ dia.
(Shaft Hole 3/8″ Round - ¼″ Flat)
Brass casting.

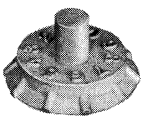


K0021-(2)
25/32″ H. x ½″ dia.
x ¾″ L. (Hub dia. 3/8″)



K0041-(4)
43/64″ H. x
1 1/4″ dia. x
1 5/8″ overall
length. No screws
—mounts from
top. Brass.

K0023
K0024
K0025
K0026
K0027
K0028
K0029



K0023-(4)
¾″ H. x 1 7/32″ dia.



K0024
35/64″ H. x 25/32″ dia.
(for 5/8″ x 5/16″ rectangular shaft).



K0025-(4)
1″ H. x 13/16″ dia.



K0026-(2)
¾″ H. x 21/64″ dia.



K0027-(D)
1 1/4″ H. x 21/32″ dia.
x 1 3/32″ L.



K0028-(2)
½″ H. x 27/64″ dia.
x 53/64″ L. Steel.



K0029-(4)
1 1/16″ H. x 1″ L. x ½″ dia.

K0030
K0031
K0032
K0033
K0035
K0036



K0030
41/64″ H. x 1 1/4″ L.
(has shaft for ⅜ x 11/32″
rectangular shaft hole)
Steel. No screws.



K0031-(3)
¼″ H. x ½″ dia. x
1 15/32″ L. Brass.



K0032-(2)
13/16″ H. x 5/8″ L.
Steel.



K0033-(4)
3/4″ H. x 39/64″ dia. x 1 1/2″ L.
Brass or steel.



K0035-(2)
59/64″ H. x 1 17/32″ L.
Brass.



K0036-(3)
¼″ H. x 7/8″ L.
Steel. 1 set screw.

K0038
K0039
K0040
K2087
K2090
K2091



K0038-(2)
3/4″ H. x 3/4″ L. x 25/64″ dia.
Body Brass.



K0039-(6)
1 3/32″ H. x 13/32″ dia.
x 1 35/64″ L. Brass.



K0040-(2)
15/64″ H. x 51/64″ dia.
Brass.



K2087-(DD)
17/64″ H. x 45/64″ dia.
x 1 3/32″ L.
Single screw hole on top.



K2090-(4)
13/32″ H. x 37/8″ dia.



K2091-(3)
¾″ H. x 1″ dia.
No set screw and
1 hole for pinning.

K0022
K2173
K2174
K2176
K2177
K2180
K2181



K0022-(4)
1 3/8″ H. x 25/8″ L.
(Hub dia. ½″)



K2173-(3)
49/64″H. x 1 1/2″
dia. x 1 23/64″ long.

K2174-(4)
1 1/16″ H. x 2 1/8″ dia.

K2176-(4)
7/8″ H. x 1 1/4″
overall length x
1/2″ body dia. x
1 1/32″ hub dia.

K2177-(2.5)
49/64″ H. x 1 1/4″
overall length x
3/4″ body dia. x
1 1/2″ hub dia. (For
5/32″ shaft dia.)

K2180-(2)
21 3/64″ H.
x 3″ wide.
One set
screw.

K2181-(4)
7/16″ H. x 1 1/2″ dia.
No set screws.
Mounts by pinning
to shaft. Material
—Bronze (Olive
Drab).

K0042
K0043
K1306
K2183
K2184
K2186

K2183-(2) or (4)
1 1/2″ H. x 1″
dia. x 3/64″
hub dia.

K1306-(DD)
½″ H. x 31/32″ dia. Mounts
with screw from top
of knob into threaded
end of a shaft. (Olive Drab).

K2184-(10-32)
1 1/4″ H. x 1 1/8″
wide x 11/32″ hub dia.
(For 10-32 threaded
shaft). Material—
Bronze (Olive Drab).

K2186-(.370″)
1 13/32″ H. x 2 1/4″ dia.
One set screw plus
one hole for pinning.
(Olive Drab).

K0043-(3)
15/32″ H. x 1 13/16″ dia. x
51/64″ hub dia. No screws
—mounts from top.

K0042-(6)
15/16″ H. x 29/16″ long x
5/16″ hub dia. Brass.

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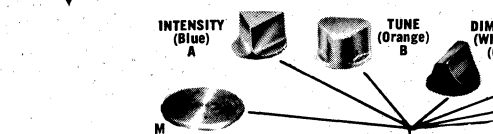
KNOBS, DELUXE INSTRUMENT

ROUND, ROUND FUNCTIONAL, TACTILE SHAPES

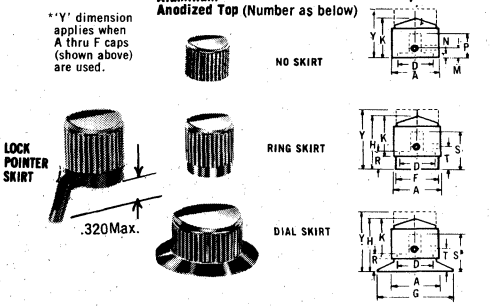
Visual and tactile funtion identifications. Tactile Knobs are in standard color & Configuration for its intended function. Available in other colors (special order).

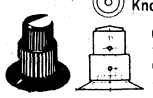
Configuration meets performance **MS91528**, MIL-K-3926 and MIL STD. 242D (ships). Knobs meet environmental conditions MIL-E-16400. **QPL #3926 — T.R. #J101.** Patents: **4,012,966** and **4,077,503.** Others pending.



SUPER DELUXE Aluminum Anodized Top (Number as below)

*'Y' dimension applies when A thru F caps (shown above) are used.





WR For Slip Clutch Knobs Only

Concentric Controls "Piggy-back" knobs for concentric shaft pots or similar applications.

PART NO. 1	2	3	4	5	6	7	8	DIMENSIONS A	D	F	G	H	K	M	N	P	R	S	T	TT	Y
		5	1	A				.505	.435				.509	.158	.026	.408					
		7	1	A				.708	.486				.626	.187	.026	.406					.915
		9	1	A				.911	.645				.798	.255	.114	.521					1.171
		12	1	A				1.255	.974				.703	.260	.115	.458					1.220
		15	1	A				1.580	1.350					.300	.040	.640					
		17	1	A				1.755	1.465				.854	.255	.114	.521					
		22	1	A				2.255	1.870				.885	.255	.114	.521					
		5	1	B				.505	.435	.450			.660	.509			.181	.563	.324	.355	
		7	1	B				.708	.486	.670			.805	.626			.188	.568	.340	.406	1.100
		9	1	B				.911	.645	.826			1.027	.798			.323	.730	.484	.410	1.399
		12	1	B				1.255	.974	1.155			.870	.703			.262	.605	.427	.406	1.399
		15	1	B				1.580	1.350	1.500			1.100	.850			.280	.840	.540	.480	
		17	1	B				1.755	1.465	1.666			1.088	.854			.338	.740	.489	.480	
		22	1	B				2.255	1.870	2.153			1.114	.885			.333	.740	.489	.480	
		5	1	C				.505	.435		.885	.660	.509				.181	.563	.324	.355	
		7	1	C				.708	.486		1.135	.805	.626				.183	.568	.340	.406	1.100
		9	1	C				.911	.645		1.510	1.027	.798				.323	.730	.484	.410	1.399
		12	1	C				1.255	.974		1.822	.870	.703				.262	.605	.427	.406	1.399
		17	1	C				1.755	1.465		2.543	1.088	.854				.338	.740	.489	.480	
		22	1	C				2.255	1.870		3.005	1.114	.885				.333	.740	.489	.480	

SPECIFY AS REQUIRED

TYPICAL PART NUMBERS — SEE BELOW TT For Janset® Series

1 CAP STYLE (Color of Tactile)
0 = NO TOP — Shaft Hole Drilled Thru
A = (INTENSITY - Blue)
B = (TUNE - Orange)
C = (DIMMER - White)
D = (GAIN - Red)
E = (FOCUS - Violet)
F = (RANGE - Yellow)
M = (ALUM ANODIZED TOP
T = STANDARD TOP
(PREFIX NOT REQUIRED) Use only when color of standard shape top differs from body color. Precede T by color code from Column 7 (BT = RED top standard shape.)

2 BODY DIA.
5 = .51
7 = .71
9 = .91
12 = 1.25
17 = 1.75
22 = 2.25

3 BODY STYLE
1 = ROUND
2 = POINTER
8 = HEX SHAPE

4 SKIRT
A = NO SKIRT
B = RING
C = DIAL W/POINTER
D = DIAL W/O POINTER
H = DIAL W/SLOT
J = RING SKIRT W/POINTER

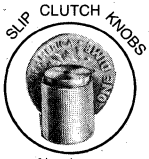
5 — SHAFT HOLE DIA. ± .001
2 = .128
3 = .190
4 = .253
4.25 = .268
5 = .315
6 = .378
7 = .441
"D" FLAT SHAFT HOLES
B = .107 (⅛")
D = .222 (¼")

6 FINISH
M = MATTE
G = GLOSSY

7 COLOR
A = BLACK
B = RED
C = GREY
D = GREEN
E = YELLOW
F = PURPLE
G = BLUE
H = WHITE
J = ORANGE
K = BROWN

8 MARKING For no marking, omit
/WD = WHITE DOT
/FD = FLUORESCENT DOT
/PD = PHOSPHORESCENT DOT
/FA = FLUORESCENT ARROW
/PA = PHOSPHORESCENT ARROW
/BL = BACKLIGHTED
/WL = WHITE LINE
/BD = BLACK DOT
/WB = WHITE BULLSEYE ON TOP OF KNOB
*/WR = WHITE RING (for concentric)

SLIP CLUTCH KNOBS



Aluminum. ⅜" dia. × ½" high.

JANSET® FUNCTIONAL KNOBS

"PUSH-TO-SET" OR "PUSH-TO-TURN"

DISTINCTIVE FEATURES:

- **Dimensions (see chart above).**
- **Installation: Same as a standard knob.**
- **Locks shaft automatically, upon release.**
- **Release/Brake when depressed: settings can be altered.**
- **Resolution: Infinite, with zero backlash.**
- **Shaft Registration: to indicators, ie.: arrows, dots, cut-outs, etc.**
- **Shock or vibration settings are guarded against accidental change.**
- **Integral Assembly: Mechanism completely enclosed in knob body.**
- **Old designs: Janset® Knobs require no modification to existing panels.**
- **Shaft sizes: ⅛ thru ¼ dia. (except ½ dia. knob, ⅓" shaft dia. max.).**
- **Panel Bushings: Fits with all ¼ and ⅜ standard.**
- **Space: No space required behind panel; all functions within knob body.**

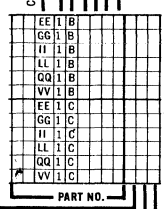
PREFIX

S (Slip Clutch)	**SLIP CLUTCH:** Prevents over torquing delicate mechanisms. Functions as standard knob between limit stops. When limit is reached and knob rotation continues, clutch overrides the stop without applying torque in excess of specifications. Driving torque in detented position .5-6 LB./IN. (depending on knob diameter).
PT (Push-To-Turn)	**BRAKE KNOB:** Prevents control setting from movement due to shock or vibration.
PSC (Push-To-Set)	**Brake Knob W/ OVERRIDING CLUTCH:** Same as "PT" with added feature of "S" (slip clutch) combined. Knob can be rotated without changing setting (if not pushed in).
PSCE (Push-To-Set /w Limit Stop)	**Brake Knob W/ Overriding Clutch & LIMIT STOP:** Same as "PT" & "PSC" with added feature of limit stop (320° MAX) built in.
LSC*** (Pull-To-Turn)	**Brake Knob W/ Overriding Clutch — PULL-TO-TURN:** Same as "PSC" except pull-to-turn. For use in extremely hostile environment, i.e.: Life Support Equipment.
PTN (Spin Free Push-To-Turn)	**SPIN FREE PUSH-TO-ENGAGE:** Prevents shaft from inadvertent turning — Knob spins free unless depressed and rotated until full internal engagement is accomplished for use where SHAFT TORQUE EXCEEDS 4 oz. in.
PTCN (Spin Free Push-To-Turn)	**Spin Free PUSH-TO-ENGAGE:** Same as "PTN" except for use where SHAFT TORQUE is LESS THAN 4 oz. in.
PTNN (Spin Free Press-To-Turn)	**Spin Free PRESS-TO-TURN:** (Friction) Prevents inadvertent change of setting. Use only where intent to turn is required. Must be pressed in while turning, for low torque applications.
LTN (Spin Free Lift-To-Turn)	**Spin Free LIFT-TO-TURN:** Same at "PTN" except pull-to-turn. For use where SHAFT TORQUE EXCEEDS 4 oz. in.
TC (Torque)	**TORQUE KNOB:** (Friction) For use where positive feel is desired and/or where minor excursions of shock and vibration are anticipated.
LEPR (Limit Stop & Release)	**LIMIT STOP W/ QUICK RELEASE:** For use where limited travel (0-? degrees) is required. Push-To-Release stop and continue to the next function.
LELR (Limit Stop & Release)	**Same as LEPR except PULL-TO-RELEASE:** For use in extremely hostile environment, i.e.: Life Support Equipment.



INCREMENTAL KNOBS

Repositions to the exact point, with zero backlash. Easily provides precise setting to pre-determined positions. Can be repeated with finite exactness to as many as 32 or as few as a single position.



(9) NO. OF INCREMENTAL POSITIONS
SPECIFY 1 THRU 32.

(10) INCREMENTAL ANGLES
E = Equal Angles
N = Unequal Angles*
* Supply table of angular increments in degrees and minutes. See Table.
* SAMPLE OF TYPICAL TABLE (to be supplied)

Position	Increment Angle	Total Angle
1	0	0
2	5	5
3	4	9
4	25	34
5	266	300

(11) TOTAL ANGULAR ROTATION IN DEGREES AND MINUTES
SPECIFY 0° to 360°

SPECIAL KNOBS TO YOUR SPECIFICATIONS (Give full description and/or sketch)

TYPICAL PART NUMBERS

S71C4MC = Slip Clutch Knob/.708 Dia./Dial Skirt/.253 Shaft Hole/Matte/Gray
PT71B4GA = Brake Knob marked Push-To-Turn/.708 Dia./Ring Skirt/.253 Shaft Hole/Glossy/Black
PSC91B4MA = Brake Knob marked Push-To-Set w/Overriding Clutch/.911 Dia./Ring Skirt/.253 Shaft Hole/Matte/Black
PS91C4GA — Push-To-Turn Brake Knob with cap marked Push-To-Set/.90 Dia./Round/Dial/½"/Glossy/Black

TYPICAL PART NUMBERS

IIB4MA/WD (17E 180°) = Standard Top/.90 Dia./Round/Plain/.253 Dia. Shaft Hole/Matte/Black/White Dot/17 Incremental Positions/Equally Spaced, in 180° Rotation.
MLL1C4GB (5N 300°) = Aluminum Anodized Top/1.25 Dia./Round/Dial with Pointer/.253 Dia. Shaft Hole/Glossy/Red/5 Incremental Positions/Unequally Spaced, in 300° Rotation (See Table).

Are Our JAN Specials Specialty

JAN HARDWARE MANUFACTURING COMPANY INC.

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QUALITY RELIABILITY ECONOMY

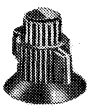
Are Our JAN Specialty Specials

KNOBS, DELUXE INSTRUMENT

POINTER (2); DOUBLE BAR (3); BAR POINTER (5), (6); BAR (7) HEX (8); CRANK (4); ROUND (DEEP FLUTED)

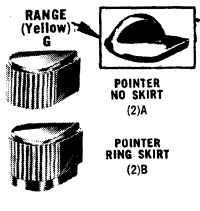
Visual and tactile funtion identifications. Tactile Knobs are in standard color & Configuration for its intended function. Available in other colors (special order).

Configuration meets performance **MS91528**, MIL-K-3926 and MIL STD. 24I2D (ships). Knobs meet environmental conditions MIL-E-16400. **QPL #3926 — T.R. #J101.** Patents: **4,012,966** and **4,077,503.** Others pending.



Concentric Controls
"Piggy-back" knobs for concentric shaft pots or similar applications.

51A & 73 Series



POINTER KNOBS

PART NO. 1	2	3	4	5	6	7	8	A	D	E	F	H	K	M	N	P	R	S	T	Y
	5	2	A					.750	.406	.510			.505	.158	.026	.402				
	7	2	A					1.038	.486	.690			.619	.187	.026	.406				.918
	9	2	A					1.344	.645	.895			.796	.255	.114	.555				1.171
	5	2	B	SPECIFY AS REQUIRED				.750	.406	.510	.669	.655	.505			.402	.177	.563	.324	
	7	2	B					1.038	.486	.690	.940	.791	.619			.406	.193	.573	.364	1.100
	9	2	B					1.344	.645	.895	1.251	1.051	.796			.555	.328	.796	.479	1.400



			SPECIFY AS REQUIRED	A	D	F	G	H	K	M	N	P	R	S	T
7	3	A		1.150	.486				.610	.187	.026	.406			
7	3	B		1.150	.486	.680		.782					.183	.568	.364
7	3	D		1.150	.486		1.135	.782					.183	.568	.364



			SPECIFY AS REQUIRED	A	D	E	G	H	K	M	N	P	R	S	T
7	5	A		1.515	.515	.575			.645	.250	.110	.445			
7	5	C		1.720	.515	.780	1.520	.815					.266	.590	.435



PART NO.			SPECIFY AS REQUIRED	A	D	E	G	H	K	M	N	P	R	S	T
7	6	A		1.855	.595	.900			.645	.250	.110	.445			
7	6	D		1.870	.470	.915			.815	.435	.266	.590			



			SPECIFY AS REQUIRED	A	D	E	G	H	K	M	N	P	R	S	T
7	7	A		2.552	.562	1.290			.869	.348	.177	.739			



HEX KNOBS

			SPECIFY AS REQUIRED	A Flats	D	F	G	H	K	M	N	P	R	S	T	Y
7	8	A		.880	.645				.798	.255	.114	.521				1.171
7	8	B		.880	.654	.826		1.027	.798				.323	.730	.484	1.399
7	8	C		.880	.645		1.510	1.027	.798				.323	.730	.484	1.399



CRANK KNOBS

			SPECIFY AS REQUIRED	A	D	F	H	J	L	R	S	T	Y
12	4	B		1.290	.685	1.185	.850	1.350	1.275	.250	.605	.427	1.475
17	4	B		1.750	.685	1.666	1.070	1.758	1.735	.320	.740	.489	1.940
22	4	B		2.250	.685	2.185	1.095	1.782	1.970	.320	.740	.489	1.970



INSTRUMENT KNOBS — DEEP FLUTED (ALSO SUPPLIED WITH SLIP CLUTCH MECHANISM)

1	2	3	4	5	6	7	8	A	D	G	H	R	S	T
	6	1	B					5/8	9/16		7/16	1/16	3/8	7/32
	8	1	B					13/16	11/16		19/32	3/32	1/2	9/32
	10	1	B					1	15/16		21/32	3/32	1/2	9/32
	13	1	B	SPECIFY AS REQUIRED				1 1/4	31/32		3/4	5/32	5/8	11/32
	16	1	B					1 5/8	1 13/16		7/8	3/32	21/32	13/32

				A	D	G	H	R	S	T
	6	1	C	5/8	9/16	3/4	7/16	1/16	3/8	7/32
	8	1	C	13/16	11/16	1	19/32	3/32	1/2	9/32
	10	1	C	1	15/16	1 1/4	21/32	3/32	1/2	9/32
	13	1	C	1 1/4	31/32	1 1/2	3/4	5/32	5/8	11/32
	16	1	C	1 5/8	1 13/16	2	7/8	3/32	21/32	13/32

1 — CAP STYLE
(Color of Tactile)
O = NO TOP — Shaft Hole Drilled Thru
A = (INTENSITY - Blue)
B = (TUNE - Orange)
C = (DIMMER - White)
D = (GAIN - Red)
E = (FOCUS - Violet)
F = (RANGE - Yellow)
M = ALUM ANODIZED TOP
H = (MARKER - Green)†
J = (BEARING - Grey)†
T = STANDARD TOP (PREFIX NOT REQUIRED) Use only when color of standard shape top differs from body color. Precede T by color code from Column 7 (BT = RED top standard shape).

2 — BODY DIA.
5 = .51
6 = .62
7 = .71
8 = .80
9 = .91
10 = 1.00
12 = 1.25
13 = 1.25
16 = 1.62
17 = 1.75
22 = 2.25

3 — BODY STYLE
1 = ROUND
2 = POINTER
3 = BAR, ROUND
4 = SPINNER
5 = BAR, SHORT
6 = BAR, LONG
7 = BAR—HIGH TORQUE
8 = HEX SHAPE

4 — SKIRT
A = No Skirt
B = Ring (see F dim.)
C = Skirt with Marker
D = Skirt w/o Marker
H = Dial w/slot
J = Ring Skirt w/Pointer

5 — SHAFT HOLE DIA. ±.001
2 = .128
3 = .190
4 = .253
4.25 = .268
5 = .315
6 = .378
7 = .441
"D" FLAT SHAFT HOLES
B = .107 (⅛")
D = .222 (¼")
(Standard—with metal insert. "0" preceding these numbers means w/o metal insert)

6 — FINISH
M = MATTE
G = GLOSSY

7 — COLOR
A = BLACK
B = RED
C = GREY
D = GREEN
E = YELLOW
F = PURPLE
G = BLUE
H = WHITE
J = ORANGE
K = BROWN

8 — MARKING
/WD = WHITE DOT
/WL = WHITE LINE ON TOP
/FL = FLUORESCENT LINE
/PL = PHOSPHORESCENT LINE
/FD = FLUORESCENT DOT
/PD = PHOSPHORESCENT DOT
/FA = FLUORESCENT ARROW
/PA = PHOSPHORESCENT ARROW
/BL = BACKLIGHTED
/BD = BLACK DOT
For no marking, omit

TYPICAL PART NUMBERS
91C4GA = .90 Dia./Round/Dial/¼"/Glossy/Black
A71B4MA = Triangle Top Blue/.72/Round/Plain/¼"/Matte Black
124B4MA = 1.25 dia./Crank (Spinner)/Plain/¼"/Matte/Black
B71B4MA = Standard Top Red/.72/Round/Plain/¼"/Matte/Black
****071B4MA** = No Top. Shaft hole drilled thru/.72/Round/Plain/¼"/Matte/Black.

TYPICAL PART NUMBERS
81D4GA = 13/16" Dia./Round/Skirt w/o indicator marker ¼" Shaft Hole Dia /w/o line on top/Glossy Black
101C4MA/WL = 1" Dia./Round/Skirt w/indicator marker/White Line on top ¼" Shaft Hole Dia./Matte Black
M61B2GA = 5/8" Dia./Round/Plain Skirt/no marking/metal top 1/8" Shaft Hole Dia./Glossy Black
61B2GA/WL = 5/8" Dia./Round/Plain Skirt/White Line on top/ no marking on skirt/1/8" Shaft Hole Dia./Glossy Black

SPECIAL KNOBS TO YOUR SPECIFICATIONS (Give full description and/or sketch)

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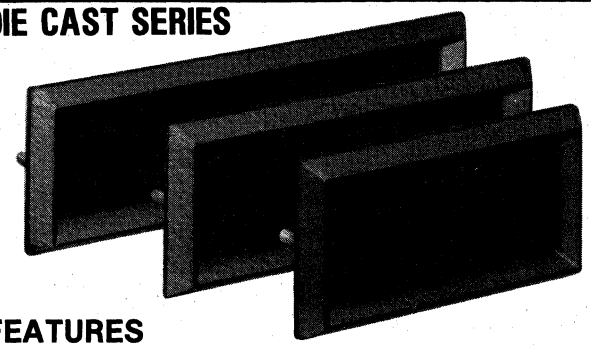
STANDARD AND CUSTOM DIGITAL DISPLAY BEZELS

DIE CAST SERIES



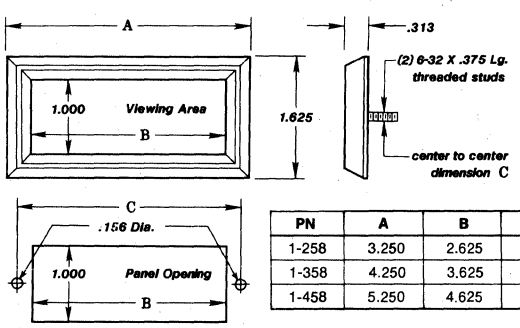
FEATURES

DIE CAST METAL FRAME

- Nonreflective black finish
- Durable — heat resistant
- Integral 6-32 mounting studs
- No exposed hardware
- Mounts in panels up to 3/16" thick
- Includes mounting hardware
- Available in three sizes
- Filters available in 10 colors and clear

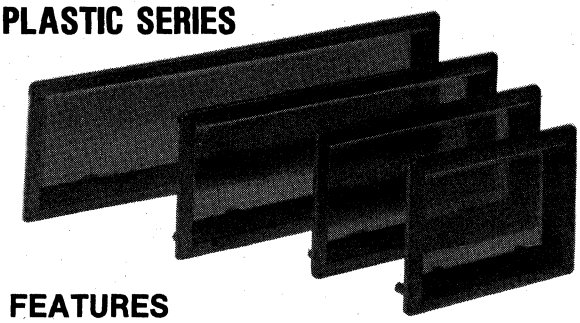
DESCRIPTION

The DIE CAST SERIES of bezels consist of a special plastic screen and a die cast metal frame. Mounting is accomplished by two 6-32 studs which can also be used to mount PC boards or other components behind the panel. The high quality of the screen and frame, combined with the universal sizes and mounting flexibility, make the bezels usable for a wide range of applications.



PN	A	B	C
1-258	3.250	2.625	3.000
1-358	4.250	3.625	4.000
1-458	5.250	4.625	5.000

PLASTIC SERIES



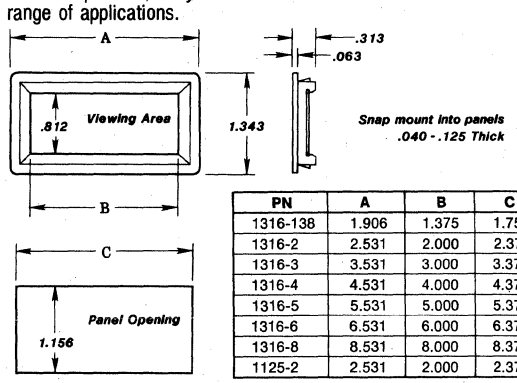
FEATURES

INJECTION MOLDED PLASTIC FRAME

- Nonreflective black finish
- Impact resistant ABS
- Snaps into front panels
- No exposed hardware
- Mounts in panels up to .125" thick
- Available in four sizes
- Filters available in 10 colors and clear

DESCRIPTION

The PLASTIC SERIES of bezels consist of a special plastic screen and an injection molded ABS frame. Mounting is accomplished by a snap-fit into rectangular cut-outs from the outside. The combination of a high quality filter and an inexpensive, easy to mount bezel make this series ideal for a wide range of applications.



PN	A	B	C
1316-138	1.906	1.375	1.750
1316-2	2.531	2.000	2.375
1316-3	3.531	3.000	3.375
1316-4	4.531	4.000	4.375
1316-5	5.531	5.000	5.375
1316-6	6.531	6.000	6.375
1316-8	8.531	8.000	8.375
1125-2	2.531	2.000	2.375

LOW COST CUSTOM BEZELS

Our new fabricating facility is totally dedicated to the production of non-standard bezels. Using specially designed machines, we can now offer made-to-order sizes in proto-type or production quantities, without costly tooling or extended lead times.

TYPICAL BEZEL MATERIALS

- Aluminum
- Stainless Steel
- Plastic

DESIGN FLEXIBILITY

- Panel Seals
- Welded Studs
- Any Size Viewing Area
- Multi-Opening Bezels

VARIETY OF FILTER MATERIALS

- Anti-Reflective Coatings
- Polycarbonate
- EMI Shielding
- Large Selection of Colors
- High Scratch Resistance

VARIETY OF FINISHING PROCESSES

- Anodizing
- Painting
- Screening
- Plating

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VISE-GRIP COLLET KNOBS

INDUSTRY'S BEST "OFF-THE-SHELF" DELIVERY

Knobs available in 10mm (0.40), 15mm (0.59), 21mm (0.82), 28mm (1.10) and 36mm (1.42) dia.

COLLET KNOBS

Our exclusive "VISE-GRIP" collet knobs offer distinguished styling, beauty and ease of mounting, as well as long life in the field.

We can also provide special types of knobs and accessories and custom color matching at lowest prices with prompt delivery. Contact Power Dynamics, Inc.

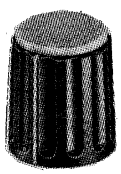
MATERIAL
All moldings of the collet knob are produced from polyamide. Transparent dials are made of luran. Brass 58 is used for the collets, sleeves and nuts. Steel is used for the screws and washers.

TEMPERATURE STABILITY
With normal mechanical stresses. −20°C to +70°C

KNURLED KNOB



STANDARD KNOB



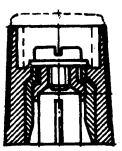
WING KNOB



ARROW KNOB



TYPICAL CROSS SECTION



STANDARD



WITH LINE



NO FLATS
NO SET SCREW
NO SLIPPAGE



1. REMOVE CAP
2. TIGHTEN COLLET SCREW WITH SCREW-DRIVER
3. REPLACE CAP

Our exclusive "VISE-GRIP" collet works much the same way as a drill chuck. Once tightened, it will not work loose. Knobs are mounted with free-drive screws which can be tightened using a Phillips or an ordinary screwdriver.

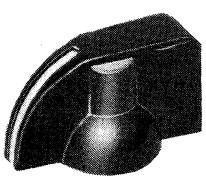
SET SCREWS

Standard Set-Screw constructions provides one cup-point, slotted head, set-screw. Set-screws and inserts are of brass.

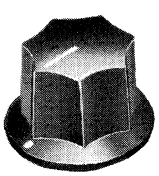
All knobs are for ¼" shaft dia. ⅛" shaft dia. available. (Contact factory). Standard color inventoried is Black. Special colors & shaft dias. available on special order over 5000 pieces.

PN Series includes a spun aluminum inlay on top with one slotted head set-screw.

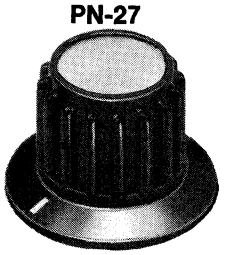
PN-1



PN-21D



PN-27



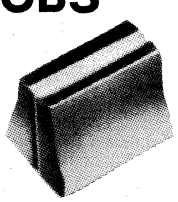
RN-99C



SLIDE KNOBS

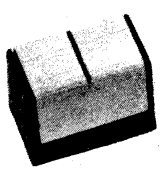
OTHER CONFIGURATIONS AVAILABLE

SN-9



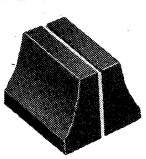
Chrome Finish

SN-13



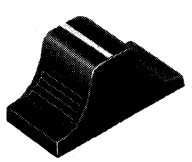
Chrome Finish

2145



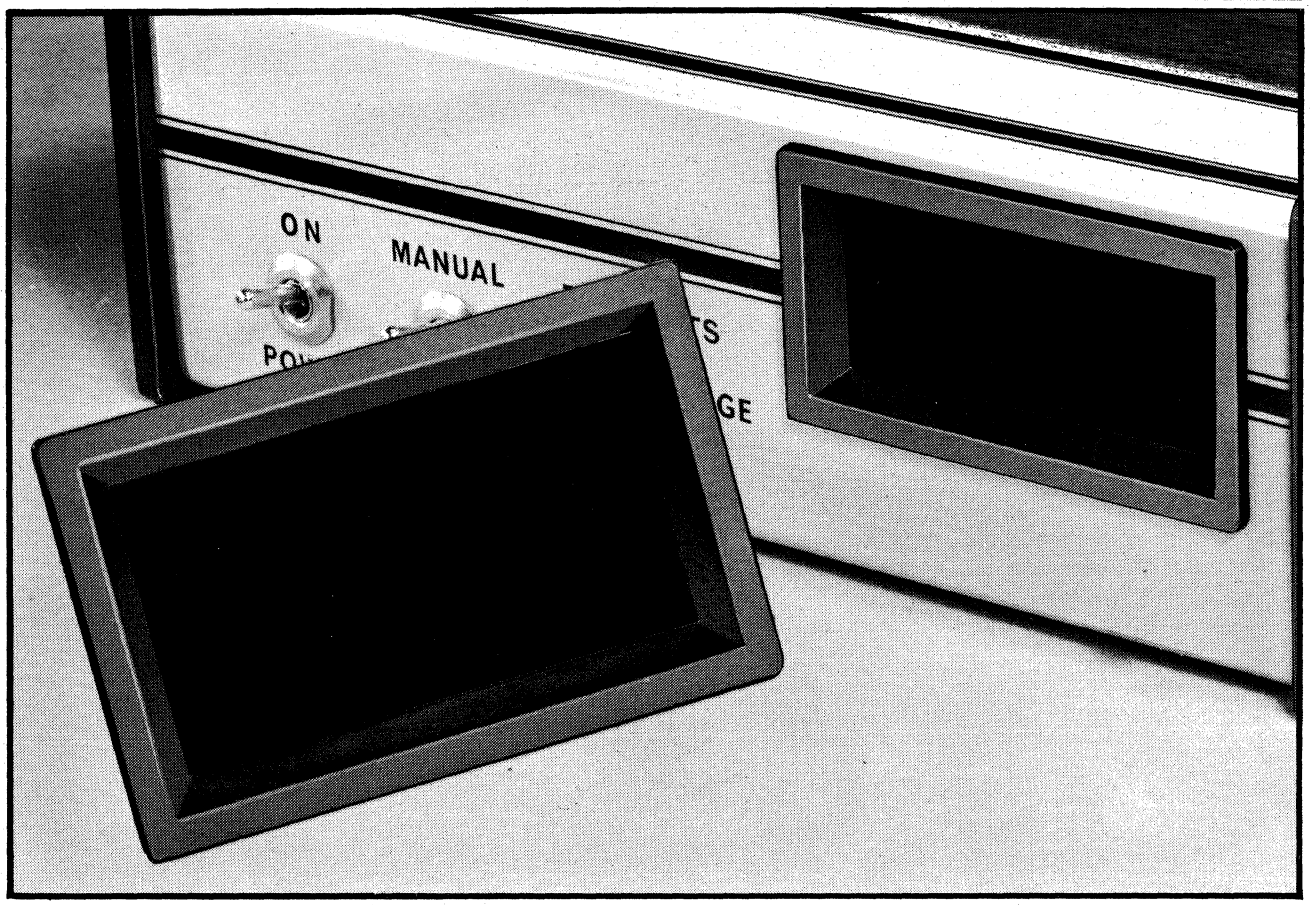
Available in Black, Chrome and Satin Finish.
Please specify color

2187

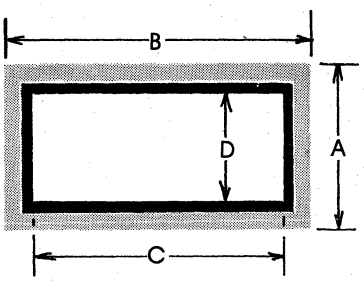


Available in Black, Chrome and Satin Finish.
Please specify color

CALL OR WRITE POWER DYNAMICS, INC. FOR COMPLETE ENGINEERING CATALOG • FSC60046



RMF MODEL 140 SERIES BEZEL & FILTER ASSEMBLY



Whatever your application may be, these low-cost bezel and filter assemblies will improve the front panel appearance and make the display itself more readable.

Attractive ABS plastic bezels are available in many sizes to match the most popular types of displays.

The colored acrylic filters have a special non-glare surface to make viewing easier. Standard colors are red and clear for LED and LCD displays although any color is available on special order.

INSTALLATION is fast and simple . . . merely insert the filter into the slots on the rear of the bezel, then push the entire assembly into the panel cutout. A quick and easy operation without the use of any tools, adhesive or hardware. Recommended panel thickness is from .040 to .125 in.

	DIMENSIONS				PANEL OPENING		FILTER*	
MODEL	A	B	C	D	HEIGHT	WIDTH	HEIGHT	WIDTH
140-1	1.343	1.906	1.375	.812	1.156	1.750	.875	1.437
140-2	1.343	2.531	2.0	.812	1.156	2.375	.875	2.087
140-3	1.343	3.531	3.0	.812	1.156	3.375	.875	3.040
140-4	1.343	4.531	4.0	.812	1.156	4.375	.875	4.078
140-5	1.343	5.531	5.0	.812	1.156	5.375	.875	5.078
140-6	1.343	6.531	6.0	.812	1.156	6.375	.875	6.078
140-8	1.343	8.531	8.0	.812	1.156	8.375	.875	8.078
141-2	1.656	2.531	2.0	1.125	1.469	2.375	1.187	2.087

*Filter Material is .030 thick
New sizes are being added continually.
Please check with us if your requirements are not listed.

RMF PRODUCTS, INC.
P.O. Box 520, 1275 Paramount Parkway, Batavia, IL 60510 312 879-0020

selco
Selco Products Co.
7580 Stage Road • Buena Park, CA 90621
Tel. (213) 921-0681 • (714) 521-8673 • TELEX 655457 • 1-800-25-SELCO • FAX 714-739-1507

COLLET KNOBS

Function, styling, handling and simplicity of assembly were the designers' main criteria in the development of the Selco range of collet knobs. The various accessories (caps, pointers, figure dials and nut covers) push-fit into the basic knob to give added versatility. Caps are available in over 10 different colors.

MATERIALS

All knobs, caps, pointers and nut covers are made from Nylon and have a matte finish. The transparent figure dials are made from polycarbonate and the colored dials are of Nylon.

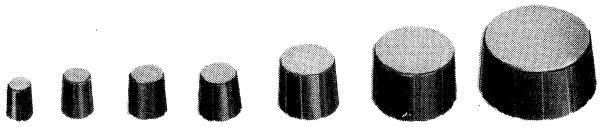
Collets, sleeves and nuts, installed into the knobs during manufacture, are of brass. They will accommodate a wide range of shaft lengths and bush lengths. All molded parts are stable in the temperature range −20°C to +70°C.

TURNING TORQUE

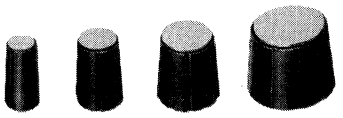
The torque that can be transmitted by knobs without slipping, assuming the knob has been adequately tightened on the shaft, is as follows:

Knob Type	Shafts 2mm, 3mm, 4mm 3/16 in and 1/8 in	Shafts 6mm and 1/4 in
S10 S11, SP11, K11 S13	cm kg 2.5	cm kg —
S15, SP15, SB15, SW15	4	8
K15, W15 S21, SP21, SB21, SW21, K21, W21 S29, SP29, SB29, SW29, K29, W29 S38, SC38	6	12

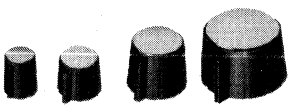
TYPE S



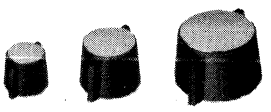
TYPE K



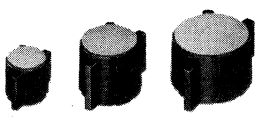
TYPE SP



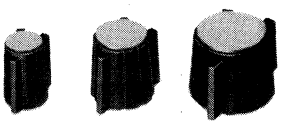
TYPE SB



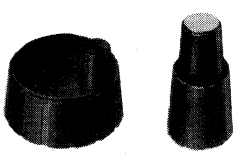
TYPE SW



TYPE W



TYPE SC — CRANKED KNOB

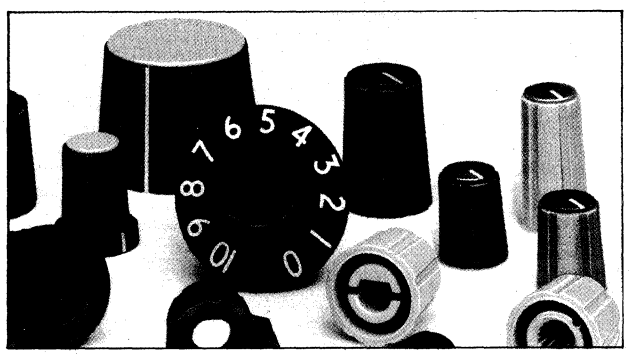


DUAL CONCENTRIC ASSEMBLIES

This table shows the knob combinations suitable for dual-concentric assemblies. Please contact sales office for details of special through-hole collets, if required.

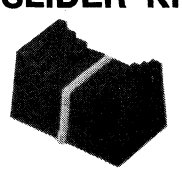
TOP	10mm	11mm	15mm	21mm
BASE	13mm	15mm	21mm	29mm

PUSH-ON KNOBS

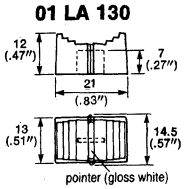


Selco push-on knobs provide a fast, secure method of shaft attachment. The internal molding is designed to grip the shaft securely with the option of a built-in metal compression ring. The knobs, molded from Nylon, are available in black, red, and gray and have a matte finish. Colored caps are available in plain, with-line and with-spot versions in over 10 different colors.

SLIDER KNOBS

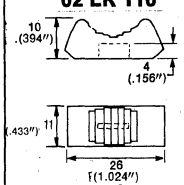


01 LA 130





02 LK 110



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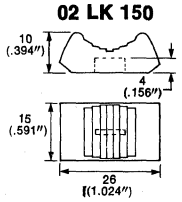

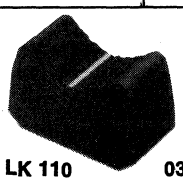

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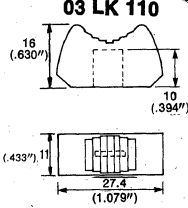

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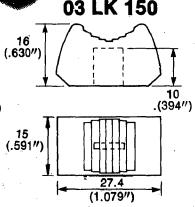
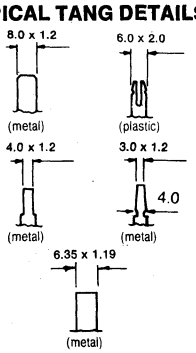


TYPICAL TANG DETAILS



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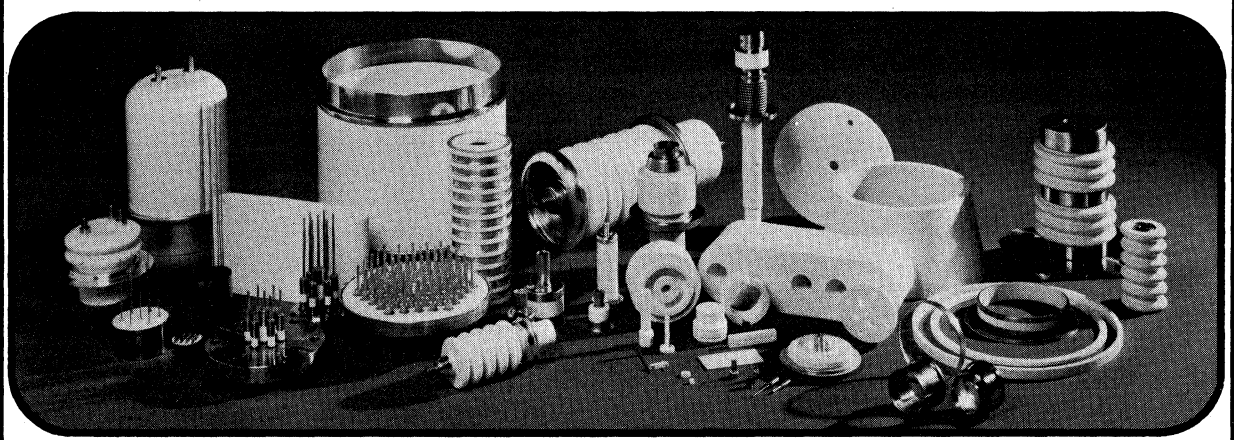
We're SPECIALISTS in brazing METAL parts to high alumina CERAMICS for demanding HIGH TEMPERATURE, HERMETIC applications.

CUSTOM HERMETIC CONNECTORS Multipin hermetic connectors for demanding vacuum and space applications requiring 400°C. bakeout — conditions where glass connectors won't stand up — are being produced in a variety of configurations. To save cost, Alberox can also provide connector sub-assemblies such as pin decks to be brazed or welded into shells or flanges by the customer.

MINIATURE TUBE AND PIN SEALS Many high temperature applications require insulated pin or tube feedthrus. These are available with weldable or brazeable metal parts, and can be added to covers or flanges, etc. All Alberox feedthrus are suitable for cryogenic environments.



Since 1961, we have designed and produced a wide variety of seals for custom applications in diverse components such as . . .

VACUUM FEEDTHRU TERMINALS
CERAMIC ELECTRON TUBE AND VACUUM SWITCH ENVELOPES
NUCLEAR REACTOR PENETRATOR FEEDTHRU TERMINALS and INSULATORS
SQUIBB and DETONATOR CONNECTORS
SPACE FLIGHT HERMETIC CONNECTORS
JET ENGINE THERMOCOUPLE COMPONENTS
HIGH PRESSURE OIL WELL LOGGING FEEDTHRUS
CAPACITORS and TRANSFORMER TERMINALS

In addition to the above, Alberox has designed and produced state-of-the-art components for critical nuclear devices.

The Alberox plant was designed and built specifically for the efficient production of ceramic-to-metal seals. We manufacture our own A-950 high alumina ceramic, which enables us to optimize on the best metalizing process for this ceramic; thus we can provide superior seals. By making our own ceramic, our customers benefit by fast delivery on custom designs.

Another important feature of Alberox is that all of the plating requirements are met "in-house", including nickel, gold, copper, silver, bright tin and solder plating!

We have several types of BRAZING FURNACES for brazing ceramic-to-metal and metal-to-metal parts in HIGH VACUUM, or HYDROGEN, ARGON or any other specified atmosphere! The standard operating procedure is to custom program the brazing cycle, taking into account the ceramic, the types of metals, braze materials and the atmosphere.

Alberox exercises complete control, from the design stage right through all manufacturing operations — to meet or exceed the highest quality standards and maintain the fastest delivery in the industry. Products made by Alberox are assured to outperform all design parameters set for them!

HIGH PRESSURE FEEDTHRUS *Alberox A-950 Alumina* has extraordinarily high compressive strength (350,000 psi). By using this strength to its best advantage, ceramic-to-metal seals can be produced to withstand high static or dynamic pressures. Thousands of these seals have been manufactured by Alberox.

MULTITERMINAL FEEDTHRUS Multiterminal feedthrus differ from multipin connectors in that individual feedthru terminals are brazed or welded into a metal deck or flange. These feedthrus are generally used for higher voltage applications than can be accommodated by a regular ceramic pin deck or connector. Alberox has an extensive line of catalog tubular terminal bushings which are often used for the individual feedthrus. In this way, custom multiterminal feedthrus can be delivered quickly.

POWER FEEDTHRUS Copper, or just about any other type of metal, from ⅛ inch to over 1 inch in diameter can be provided in power feedthrus. Modifications of our standard catalog tubular and fluted terminal bushings are often perfectly suited, and custom ceramic-to-metal seal designs can be easily accommodated. Weldable or brazeable flanges also can be added to the feedthrus to allow easy installation on existing flanges or bulkheads.

INSULATORS AND STANDOFFS Insulators and standoffs can be supplied in tubular or fluted shapes, bare or glazed, with or without metal adapters or studs. Alberox manufactures plain ceramic parts for use as spacers, insulators, supports, isolators, decks, or washers. Metalized and glazed cylinders are also available for envelopes of high power electron tubes such as Thyratrons or for vacuum switches.

CATALOG HIGH VOLTAGE BUSHINGS Alberox stocks the largest variety of high voltage tubular and fluted high alumina terminal bushings in the industry. Modifications to these catalog items are easily made. Typical modifications are: special studs, brazed-in-center conductors, different metal parts, finishes and ceramic dimensional changes. Fast delivery at reasonable prices can still be maintained. Ask for Catalog #775 which illustrates details of these parts.

Alberox is ready to assist you with your ceramic-to-metal seal design requirements. When you need FAST DELIVERY of SUPERB ceramic-to-metal seals, at realistic prices — contact ALBEROX.

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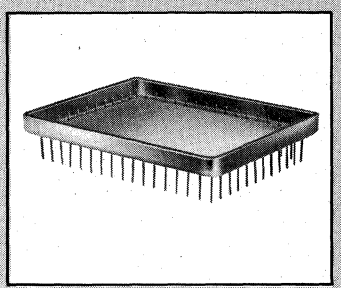
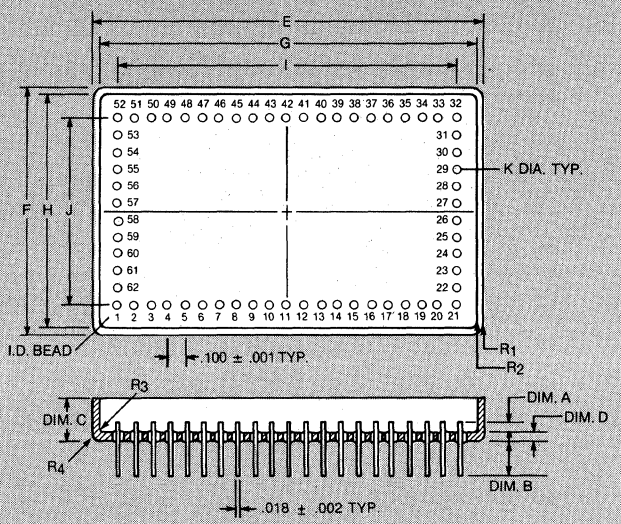
HERMETIC SEALS

DRAWN TUB PLUG-INS
KOVAR OR CRS MATERIAL





R-H PART NUMBER	NO. PINS[a]	PIN LOCATION	A[b]	B[b]	C[b]	D	E	F	G	H	I	J	K	R_1	R_2	R_3	R_4
04-19526-000	18	(7+7)I / (2+2)J	.050	.250	.140	.040	.795	.470	.715	.390	.600	.300	.047	.060	.020	.010	.050
04-21124-000	18	(7+7)I / (2+2)J	.050	.250	.200	.040	.820	.490	.740	.410	.600	.300	.047	.060	.020	.010	.050
04-20517-000	20	(8+8)I / (2+2)J	.050	.250	.200	.040	.895	.495	.815	.415	.700	.300	.047	.060	.020	.010	.050
41-21081-000	10	(5+5)I	.050	.250	.200	.040	.625	.625	.545	.545	.400	.400	.047	.060	.020	.020	.050
04-19758-000	22	(9+9)I / (2+2)J	.050	.250	.200	.040	.998	.490	.918	.410	.800	.300	.047	.060	.020	.010	.050
04-20929-000	24	(7+7)I / (5+5)J	.050	.250	.200	.040	.750	.750	.670	.670	.600	.600	.047	.060	.020	.010	.050
04-19544-000	32	(9+9)I / (7+7)J	.050	.250	.200	.040	.995	.995	.915	.915	.800	.800	.047	.060	.020	.010	.050
04-19549-000	34	(12+12)I / (5+5)J	.050	.250	.385	.040	1.270	.770	1.190	.690	1.100	.600	.047	.060	.020	.020	.060
04-19550-000	46	(18+18)I / (5+5)J	.050	.250	.200	.040	1.895	.775	1.815	.695	1.700	.600	.047	.060	.020	.020	.050
04-19536-000	30	(10+10)I / (5+5)J	.050	.250	.170	.040	1.140	.936	1.060	.856	.900	.600	.047	.155	.115	.010	.050
04-19760-000	38	(12+12)I / (7+7)J	.050	.250	.185	.040	1.270	.970	1.190	.890	1.100	.800	.047	.060	.020	.020	.050
04-21235-000	42	(16+16)I / (5+5)J	.050	.250	.210	.040	1.695	.775	1.615	.695	1.500	.600	.047	.060	.020	.010	.050
04-19566-000	52	(19+19)I / (7+7)J	.050	.250	.220	.040	1.990	.990	1.910	.910	1.800	.800	.047	.080	.040	.020	.080
04-21076-000	52	(19+19)I / (7+7)J	.050	.250	.200	.040	1.990	.990	1.910	.910	1.800	.800	.056	.060	.020	.020	.080
04-19651-000	44	(12+12)I / (10+10)J	.050	.250	.200	.040	1.250	1.250	1.170	1.170	1.100	1.100	.047	.060	.020	.010	.050
04-20745-000	50	(18+18)I / (7+7)J	.050	.250	.230	.040	1.925	1.036	1.845	.956	1.700	.800	.047	.060	.020	.020	.060
04-19515-000	48	(16+16)I / (8+8)J	.050	.250	.260	.040	1.740	1.140	1.660	1.060	1.500	.900	.056	.060	.020	.010	.050
04-20833-000	64	(16+16+16+16)I	.050	.250	.225	.040/.045	1.760	1.245	1.680	1.162	note c	1.050	.050	.055	.020	.010	.050
04-19574-000	54	(17+17)I / (10+10)J	.050	.250	.170	.040	1.830	1.330	1.750	1.250	1.600	1.100	.056	.086	.046	.020	.050
04-21216-000	56	(15+15)I / (13+13)J	.050	.250	.200	.040	1.600	1.600	1.520	1.520	1.400	1.400	.047	.060	.020	.020	.060
04-19761-000	56	(20+20)I / (8+8)J	.050	.250	.385	.040	2.140	1.140	2.060	1.060	1.900	.900	.056	.060	.020	.010	.050
04-19537-000	62	(21+21)I / (10+10)J	.050	.250	.215	.050	2.300	1.400	2.200	1.300	2.000	1.100	.056	.090	.040	.010	.060
04-20850-000	62	(21+21)I / (10+10)J	.050	.250	.200	.040	2.300	1.400	2.220	1.320	2.000	1.100	.056	.060	.020	.010	.050

NOTES:

a. Packages available with any quantity of leads less than maximum listed.
b. Consult factory for other dimensions.
c. Special lead configuration—consult factory.

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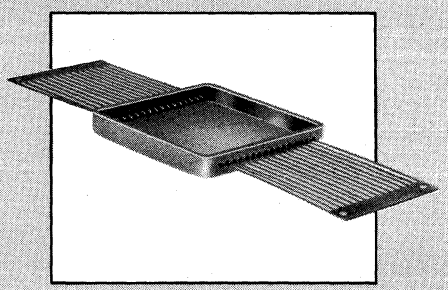
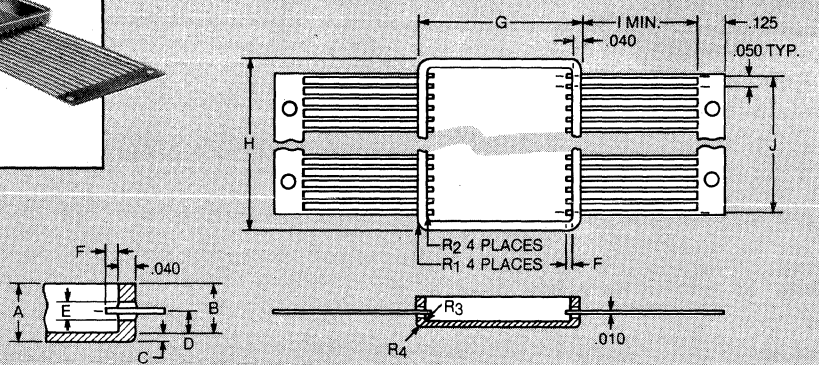
REEVES-HOFFMAN

DIVISION DYNAMICS CORPORATION OF AMERICA

HERMETIC SEALS

FLATPACKS[d]
KOVAR MATERIAL





R-H PART NUMBER	NO. LEAD[e]	A[f]	B[f]	C[f]	D[f]	E	F[f]	G	H	Imin.	Jmax.	R_1	R_2	R_3	R_4
04-20921-000[g]	14	.105	.085	.020	.030	.033	.035	.250	.380	.750	.300	.020	.020	.010	.040
04-20877-000[g]	14	.105	.085	.020	.030	.033	.035	.380	.384	.750	.300	.020	.020	.010	.050
04-21061-000[g]	14	.200	.180	.020	.040	.033	.035	.275	.410	.750	.300	.020	.020	.010	.050
04-20932-000[g]	16	.200	.180	.020	.032/.045	.033	.035	.375	.500	.750	.350	.020	.020	.010	.050
04-20990-000[g]	22	.200	.180	.020	.030	.033	.035	.375	.625	.750	.500	.020	.020	.010	.050
04-20812-000[g]	22	.225	.205	.020	.030	.033	.035	.375	.625	.750	.500	.020	.020	.010	.050
04-20969-000	32	.200	.180	.020	.050	.033	.035	.500	.500	.750	.350	.020	.020	.010	.050
04-20897-000[g]	32	.200	.180	.020	.047	.033	.035	.500	.500	.750	.350	.020	.020	.010	.050
04-20972-000	40	.200	.180	.020	.045	.040	.035	.625	.625	.750	.450	.020	.020	.010	.040
04-19501-000	22	.200	.180	.020	.050/.095	.040	.035	.625	.625	.750	.500	.060	.020	.010	.050
04-20892-000	52	.200	.180	.020	.045/.062	.040	.035	.750	.750	.750	.600	.020	.020	.010	.050
04-21256-000	30	.145	.125	.020	.040	.040	.035	.580	.850	.750	.700	.055	.020	.010	.050
04-21257-000	32	.135	.115	.020	.062	.040	.035	1.000	.750	.750	.750	.020	.020	.010	.050
04-20931-000	68	.200	.180	.020	.052	.040	.035	1.000	1.000	.750	.800	.020	.020	.010	.050
04-20039-000	64	.200	.180	.020	.052	.040	.035	1.000	1.000	.750	.750	.060	.020	.010	.050
04-19691-000	80	.220	.200	.020	.037	.040	.035	1.180	1.180	.750	.950	.060	.020	.010	.050
04-20381-000	92	.200	.180	.020	.052	.040	.035	1.250	1.250	.750	1.100	.060	.020	.010	.050
04-21258-000	64	.260	.240	.020	.050	.040	.035	1.215	1.715	.750	1.550	.020	.020	.010	.050
04-20040-000	64	.215	.195	.020	.037/.065	.040	.035	1.215	1.715	.750	1.550	.060	.020	.010	.050
04-20920-000	64	.260	.240	.020	.055	.040	.035	1.215	1.715	.750	1.550	.020	.020	.010	.050
04-20380-000	74	.200	.180	.020	.062	.040	.035	1.000	2.000	.750	1.800	.020	.020	.010	.050
04-20894-000	34	.200	.180	.020	.052	.040	.035	1.330	1.830	.750	1.600	.086	.046	.020	.050

NOTES:
d. All Flatpacks available as 1-piece drawn tub style. Certain sizes also available as 2-piece brazed style construction. Consult factory.
e. Packages available with any quantity of leads less than maximum listed.
f. Consult factory for other dimensions.
g. This package has non-standard wall thickness. Consult factory for other details.

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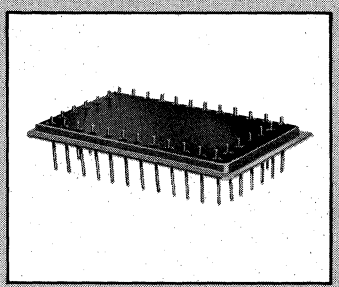
REEVES-HOFFMAN

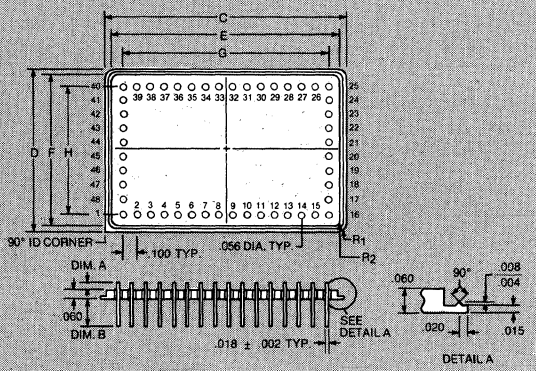
DIVISION DYNAMICS CORPORATION OF AMERICA

HERMETIC SEALS

Platforms—Kovar or CRS Material

RESISTANCE WELD OR SOLDER SEAL





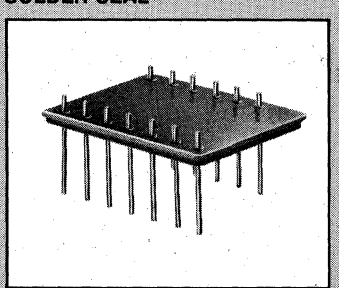
R-H PART NUMBER	NO. PINS[h]	PIN LOCATION	A[i]	B[i]	C	D	E	F	G	H	R_1	R_2	90°ID
04-20001-000	14	(7+7)G	.050	.250	.798	.497	.698	.397	.600	.300	.080	.030	YES
04-19538-000	14	(7+7)G	.050	.250	.870	.498	.770	.398	.600	.300	.080	.030	YES
04-19650-000	16	(8+8)G	.050	.250	.970	.498	.870	.398	.700	.300	.080	.030	YES
04-19759-000	22	(9+9)G / (2+2)H	.050	.250	1.070	.498	.970	.398	.800	.300	.080	.030	YES
04-19540-000	26	(8+8)G / (5+5)H	.050	.250	.970	.795	.870	.695	.700	.600	.080	.030	YES
04-19571-000	34	(12+12)G / (5+5)H	.050	.250	1.370	.795	1.270	.695	1.100	.600	.080	.030	YES
04-19529-000	32	(14+14)G / (2+2)H	.050	.250	1.560	.525	1.470	.435	1.300	.300	.080	.035	YES
04-19872-000	42	(14+14)G / (7+7)H	.050	.250	1.500	1.000	1.400	.900	1.300	.800	.085	.035	YES
04-19873-000	48	(16+16)G / (8+8)H	.050	.250	1.740	1.140	1.640	1.040	1.500	.900	.155	.105	NO

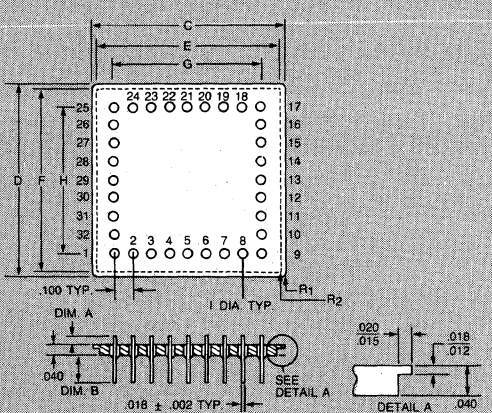
NOTES:

h. Packages available with any quantity of leads less than maximum listed.

i. Consult factory for other dimensions.

REVERSE FLANGE SOLDER SEAL





R-H PART NUMBER	NO. PINS	PIN LOCATION	A[k]	B[k]	C	D	E	F	G	H	I	R_1	R_2	90°ID
04-19522-000	14	(7+7)G	.050	.250	.740	.540	.700	.500	.800	.400	.047	.045	.045	NO
04-20884-000	32	(9+9)G / (7+7)H	.050	.250	1.040	1.040	1.000	1.000	.800	.800	.060	.045	.043	NO

NOTES:

j. Packages available with any quantity of leads less than maximum listed.

k. Consult factory for other dimensions.

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
μF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

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FANS & BLOWERS

Manufacturer	EEM Page No.	Model/ Series	AC	DC	Type		Noise db	Capacity (CFM)				Variable Speed Control
					Fan	Blower		1-49	49-99	100-499	500 & up	
AMCO	C•1616	BTA3	¤		T		25	27				
Engineering		BTA4-LF	¤		T		24		60			
		BTA4-HF	¤		T					100		
		BDS10	¤								600-700	¤
		BTA6	¤		T		47			260		
		BDS5HF	¤		T					220-300		¤
		BTA10	¤		T		41.3-47.6			475	540	¤
		BRDS	¤			SC				325-400		¤
		BDS5	¤			SC	51.7-55.8			150-200		¤
		BDSRF8	¤			SC	51-55			360		
		BRDSPM	¤			SC				325-425		¤
Comair	C•1618	Major	¤	¤	T					100-260		
Rotron		Flight	¤		T			8	95			
		Muffin	¤	¤	T				50	120		
		Patriot	¤	¤	T					100-260		
		Feather	¤		T					245		
		Sprite	¤		T			20-34				
		Biscuit		¤	T			20-28				
		Spinnaker		¤	T	SC		29	72			
		Whisper	¤		T				50-83			
		Skeleton	¤		T				57	105		
		Tarzan	¤		T					340		
		Caravel	¤		T						550	
		MB1000	¤		T					300	600-900	
		MB5100	¤		T					320		
		MB9100	¤		T					235		
		MB9200			T					370		
		MB9300			T					350		
ebm	C•1621	W2G 075		¤	T		42	34				
Industries		W2S 086	¤		T		33	46				
		W2S 107	¤		T		15-34		71	106		
		W2S 115	¤		T		30-34			106-145		
		W2S 130	¤		T		52			233		
		W2G143		¤	T		50			195		
		W2S 143	¤		T		50			195		
		W2G 086		¤	T		45	46				
		W2G 107		¤	T		46			100		
		W2G 115		¤	T		43			110		
		W2G 130		¤	T		51			218		
ETRI	C•1630	98		¤	T		39		81			
		125		¤	T		41,33,21	49	72	105		¤
		126		¤	T		30,23	32,22				
		146		¤	T		25	23				
		159		¤	T		23	29				
		162		¤	T		31	45				
		98	¤		T		21,37	45	79			
		'99	¤		T		19,26,33	21,32,40				
		113	¤		T		35		53			
		125	¤		T		29,36,40		57,83	112		
		126	¤		T		9,19,26	15,23,32				
		141	¤		T		23,33,41		55,75	105		
		146	¤		T		23,247	21,25				
		148	¤		T		33,39,45			123,149		
							51,50.5			172,255		
Frederick	C•1635	119	¤	¤	T			44	53, 75	105		
Components		092	¤		T			25, 33				
		080	¤	¤	T			24, 25, 26,30				
		880	¤		T			16				
Hi-Tech, Inc.	C•1636	All	¤		T	T, C					to 2000	
IMC	C•1639	Boxer	¤		V				50	113		
Components		Fulmar	¤		V					230		
		Peewee	¤		V			15-34				

FANS & BLOWERS (cont'd)

Manufacturer	EEM Page No.	Model/ Series	AC	DC	Type: Fan	Type: Blower	Noise db	Capacity (CFM): 1-49	Capacity (CFM): 49-99	Capacity (CFM): 100-499	Capacity (CFM): 500 & up	Variable Speed Control
Indek	C•1640	FDC40		¤	T		29	4-8				
(Elina)		FDC60		¤	T		25	8-15				
		FDC80		¤	T		29	20-30				
		HDF60		¤	T		27	12,18				
		HDF80		¤	T		28	22-38				
		DAP120		¤			37	32				
		DC147		¤			49		96			
		EP1238		¤			38			105		
Interfan	C•1644	All		¤	T			9		250		
		Blower		¤		R		19-27				
		All	¤		T			18		235		
		Blower	¤			R		24				
Kooltronic	C•1649	KBB25-50	¤			C			60	425	1300	¤
		KBB38-63	¤			C				160-390		¤
		KBR60-125	¤			R			55	265		
		KBB430-451	¤			R				320	950	¤
		KBB25-43	¤			C				155-450		¤
		KBB346-80	¤			C				300	1200	¤
		K°3501051	¤		C				130	800	¤	
		KPL528-1051			C				130	800	¤	
		KPC529-1051			C				270	800	¤	
		KPC-2528				C				300		¤
		KPC2701				C					630	¤
		KPC21051				C					1625	¤
		KDP26-885				C				435	840	¤
		KPT351				C				195		¤
		Twin/Triple	¤			¤				250		
		Box Fan				¤				250		
LZR	C•1669	11C AC	¤		T		23-50	18		105		
		11C DC		¤	T		38-45	30		100		
McLean	C•1672	2EB	¤			C				130, 290,	500, 700,	
Engrg.*										300, 350,	800	
		4EB	¤			C				250, 450		
		IDB	¤			C			75			
		IEB	¤			C				140, 185		
		Sidewinder		¤		C				180, 350	550	
		IRB			P					450	725, 1200	
		Wheel	¤			R				to 300		
		Panel	¤		P					265		
Mechatronics	C•1676	All	¤		T			12		220		
		All		¤	T			9		105		
Micronel	C•1680	F57-62		¤	V		22/38	9.1-14				
		F70-80		¤	V		32/42	14-31.5				
Nidec-Torin	C•1682	TA3004505	¤		T		26/38	21		106		
		TA5001000S	¤		T		40/59			106	545	
		Beta SL		¤	T		3.7/4.3	8.2	78			
		Beta II	¤		T		-3.4	11				
		TA300600		¤	T		4/6.4	22.5		225		
Papst Mechatronic	C•1686		¤					27		250		
		RL9018	¤		R			25				
		8124148X		¤				11-29	90	125		
		612481448		¤				20		250		
		Multifan		¤				6-16-		110		
U.S. Toyo	C•1694	TF	¤		T		from 32	27		104		Fan
		TFD		¤	T							
		SMF/SL		¤	T							

T Tangential, Blowers; T Tubeaxial, Fans; V Vaneaxial; P Propeller; R Radial; SC Scroll; C Centrifugal. *Mil. Spec.

AIR CONDITIONERS, COOLERS, HEAT PUMPS

Manufacturer	Starting EEM Page No.	Type of System	Model/Series	Capacity Cooling (BTU/ hr.)	Features/Applications
Aavid Engineering	C•1610	Heat Sinks, Thermal Platforms			Semiconductors, Surface Mount
Cambridge Aeroflo	C•1617	Airflow switches, Controllers	300, Whisper-Cool AF Controllers		Cooling management; Environmental Control
ebm	C•1625	Air Conditioners	Seifert	1,400-10,000	Cabinet cooling
EG&G Wakefield	C•1627	Heat Sinks, Heat Exchangers			Plastics & metal cased semi-conductors, PCBs, chassis
Electro-Impulse	C•1628	Heat Exchangers	RU50-1000 CU 500-100,000	1.5-10GPM .5-20GPM	Closed loop; Industrial/Military
IERC	C•1637	Heat Sinks			Semiconductors
Kooltronic	C•1663	Air Conditioners	Mini/Super	800-2,000	Electronic enclosure cooling
	C•1662	Heat Exchangers	KPHE		Water-to-Air
	C•1661	Heat Exchangers	KTHE		Air-to-Air
	C•1659	Closed loop: AC, HE			Air & water cooled
	C•1660	Heat Exchangers			Air-to-air, Water-to-air
	C•1664	Air Conditioners	Rack Mount	1,500-6,000	Enclosure cooling
	C•1665	Air Conditioners	Panel Mount	1,000-6,000	Enclosure cooling
	C•1666	Air Conditoners	Panel Mount	4,000-16,000	Enclosure cooling
	C•1667	Air Conditioners	Top Mount	7,000-16,000	Enclosure cooling
	C•1668	Air Conditioners	Water Cooled	4,000-12,000	Enclosure cooling
Marlow Industries	C•1670	Thermoelectric Coolers (solid state heat pumps)	MI		Modular devices
McLean Midwest	C•1674	Heat Exchangers	HE, HX		Operating Range: 0°F to 125°F
	C•1675	Air Conditioners	Slimboy	1200-12000	Enclosure mounting
			Hiboy	2000-6000	
			Loboy	2000-7000	
Melcor	C•1678	Thermoelectric Heat Pumps	CP/FC		Operating Range:-150°C to +110°C
TECA	C•1690	Air Conditioners	AHP/LHP	110-1500	Cool Mode:-39.9°C to +50°C
Thermacore	C•1692	Heat Exchangers Cold Plates			Cooling Circuitry, Cabinets /enclosures
Thermalloy	C•1693	Heat Sinks			Over 250 shapes

HEAT SINKS for TO-3 and TO-66

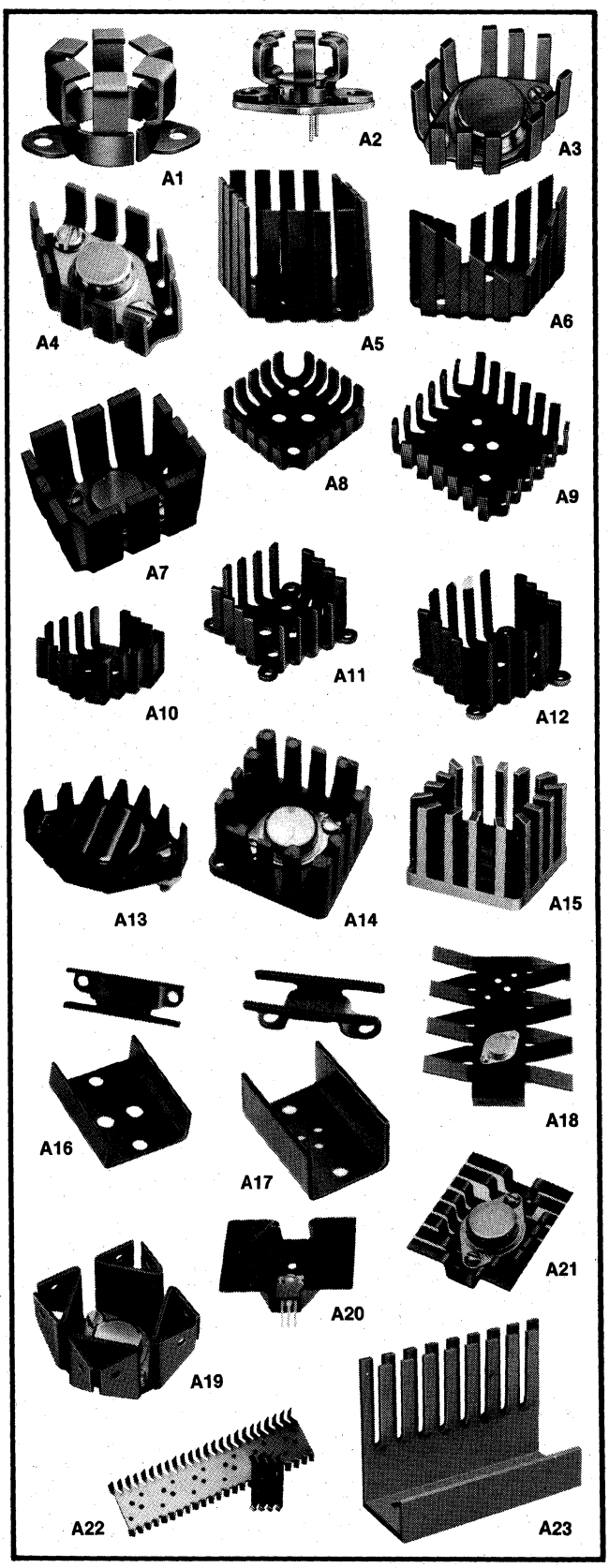

Fig. No.	Description	Model No.†	Height Inches	Thermal Resist. @ Typical Load
A1	Collar expands to slip over TO-3. Minimum footprint.*	5791	.850	@ 3 W = 14.6°C/W
A2	Collar expands to slip over TO-66. Minimum footprint.**	5792	.715	@2 W = 22.5°C/W
A3	Low-cost space saver. Unique slanted fins increase air turbulence.	5756 5757 5758 5759	.500 .750 1.00 1.25	@ 3 W = 17.0°C/W @ 4 W = 14.0°C/W @ 5 W = 11.0°C/W @ 6 W = 9.33°C/W
A4	Diamond-shape cooler. Very small footprint.**	5017 5018 5019 5020	.500 .750 1.00 1.25	@4 W = 13.0°C/W @ 5 W = 10.4°C/W @ 6 W = 8.50°C/W @ 7 W = 7.00°C/W
A5	Diamond-shape cooler. Space saving, low cost.*	5013 5014 5015 5016	.500 .750 1.00 1.25	@ 4 W = 12.5°C/W @ 5 W = 10.0°C/W @ 6 W = 8.00°C/W @ 7 W = 7.00°C/W
A6	Cost saving, uses 1/3 less metal than series 5013-16.*	5039 5040	1.00 1.25	@ 5 W = 11.0°C/W @ 6 W = 8.50°C/W
A7	Heavy-duty space savers. 1/8″ thick alum. Cost saving over castings. Mounted with device using same hardware.	5197 5198 5199 5201	1.50 1.75 2.00 1.225	@ 10 W = 4.80°C/W @ 12.5 W = 4.40°C/W @ 15 W = 4.10°C/W @ 9 W = 5.70°C/W
A8	Low cost, high performance. Normally supplied in .093″ thick metal. Can furnish in .062″ at lower cost. Other hole patterns available.	5251 5252 5253 5254	.500 .750 1.00 1.25	@ 5 W = 10.0°C/W @ 7 W = 7.40°C/W @ 8 W = 6.50°C/W @ 10 W = 5.10°C/W
A9	Holds up to four devices. Efficient slanted vane fins.	5005 5006	.900 1.00	@ 14 W = 3.80°C/W @ 18 W = 2.70°C/W
A10	Maximum performance. Slanted vane fins for efficient heat dissipation, as much as more costly extrusions, castings.	5761 5762 5763 5764	.500 .750 1.00 1.25	@ 6 W = 8.30°C/W @ 8 W = 6.50°C/W @ 9 W = 5.70°C/W @ 10 W = 5.00°C/W
A11 A12	Dissipates as much as heavier castings, extrusions. Air movement diverted to center to create turbulence.	5001 5002 5003 5004	.500 .750 1.00 1.25	@ 6 W = 8.30°C/W @ 8 W = 6.50°C/W @ 9 W = 5.70°C/W @ 10 W = 5.00°C/W
A13	Space saving. Clamps over device using virtually no additional board space.*	5423 5426 5427	.500 .750 1.00	@ 3 W = 16.0°C/W @ 4 W = 13.0°C/W @ 5 W = 11.0°C/W
A14	Heavy duty. Ideal if space is limited. Provides free circulation of air from all sides. 4 heights.*** With Ther-O-Coat dielectric finish.	5000	.500 .750 1.00 1.25	@ 5 W = 10.0°C/W @ 7.5 W = 6.90°C/W @ 10 W = 5.60°C/W @ 12.5 W = 4.60°C/W
A15	Maximum natural convection cooling per unit volume. 1.50″ between centers of corner holes. 5 heights.*** Base size of 1.81″ x 1.81″.*	5680	.500 .750 1.00 1.25 1.50	@ 5 W = 10.0°C/W @ 7 W = 8.00°C/W @ 8 W = 6.50°C/W @ 9 W = 5.70°C/W @ 10 W = 4.90°C/W
A16	Two-piece heat sink. 5202 is base only. 5203, 5204 and 5205 have base and top.*	5202 5203 5204 5205	.375 .515 .515 .515	@ 4 W = 13.2°C/W @ 5 W = 11.4°C/W @ 5 W = 11.4°C/W @ 5 W = 11.4°C/W
A17	Two-piece heat sink.**	5166	.609	@ 3 W = 16.6°C/W
A18	Vertical mount. High density. Custom hole patterns.	5029	5.00	@ 20 W = 2.50°C/W
A19	High power dissipation per unit cost.	5690 5790	1.31 1.00	@ 10 W = 5.40°C/W @ 8 W = 6.25°C/W
A20	Low profile. Ideal for PC board applications.	5671 5672	1.40 2.00	@ 3 W = 16.6°C/W @ 5 W = 10.1°C/W
A21	Economy low profile for high density PC boards.	5060 5061	.375 .375	@ 6 W = 8.00°C/W @ 8 W = 6.25°C/W
A22	"Ditto" strips in 1 to 39 unit lengths. Single unit, 1.495″ L. Add 1.5″ each extra unit.*	5701 single	.935	@ 7 W = 7.10°C/W
A23	Nearly 1/8″ thick for heavy cooling in small space.*	5030 5031	2.81 3.00	@ 17 W = 2.94°C/W @ 20 W = 2.75°C/W

* Does not accept TO-66. ** Does not accept TO-3.
*** Specify height when ordering.

† Finishes: black, blue, bronze, red anodize, and gold chromate. Suffix required to specify finish. Example: 5501B for black.

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HEAT SINKS for TO-220

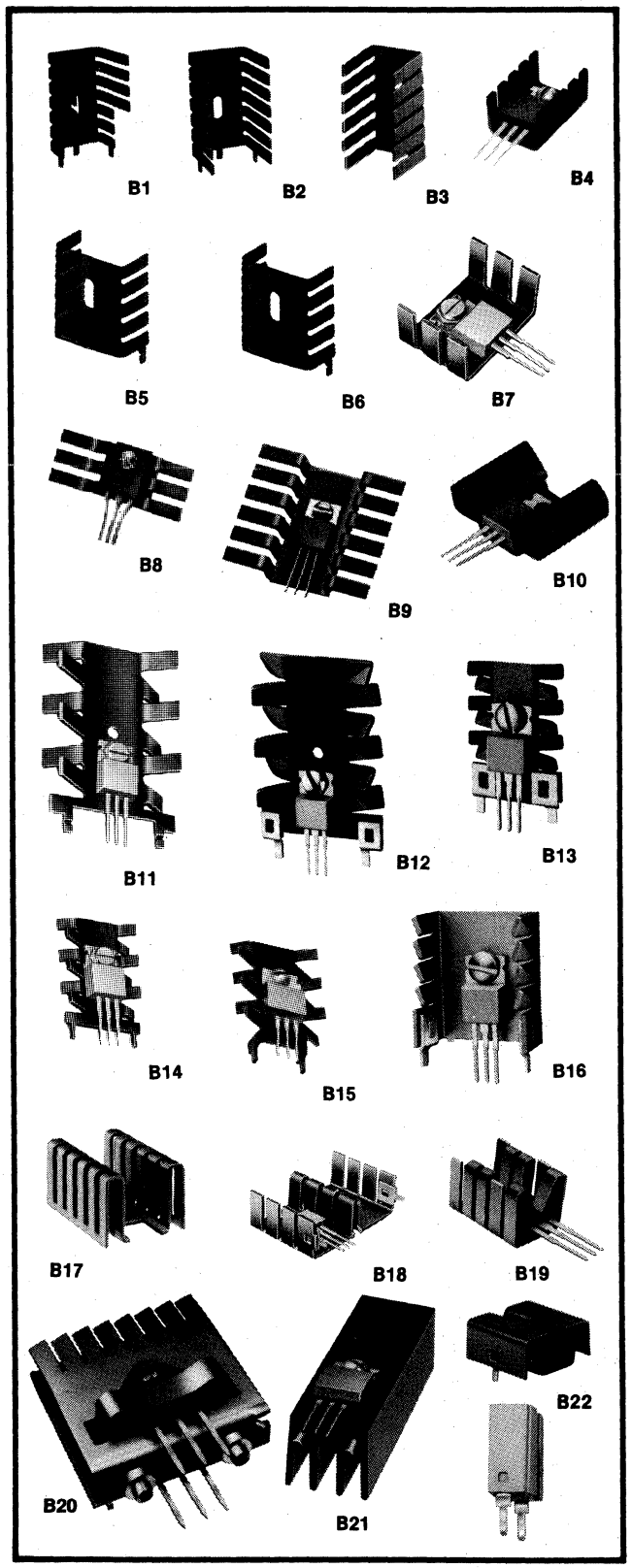

Fig. No.	Description	Model No.†	Height Inches	Thermal Resist. @ Typical Load
B1	Low Cost. With bottom fins recessed for close component mounting. Tinned or twist tabs.	5501 5502 5901	1.675 1.675 1.675	@ 4 W = 11.5°C/W @ 4 W = 11.5°C/W @ 4 W = 11.5°C/W
B2	Economical, high performance. Tinned or twist tabs. Vertically mounted.	5503 5504 5903	1.675 1.675 1.675	@ 5 W = 9.20°C/W @ 5 W = 9.20°C/W @ 5 W = 9.20°C/W
B3	Low-cost, narrow profile. Minimum footprint.*	5041 5042	.700 1.45	@ 3 W = 18.6°C/W @ 6 W = 8.83°C/W
B4	Slim, low-cost. With or without tinned tabs for soldering. Horizontal mount.	5770 5771 5772	.250 .375 .500	@ 1.5 W = 34.6°C/W @ 2 W = 27.5°C/W @ 2 W = 25.0°C/W
B5	Low-cost, vertical mount. Tinned or twist tabs.	5750	1.18	@ 4 W = 14.5°C/W
B6	Low-cost, vertical mount. Tinned or twist tabs.	5630 5766	1.18 .950	@ 4 W = 14.5°C/W @ 3 W = 18.3°C/W
B7	Lightweight. Horizontal mount. 5306 accommodates 2 devices. 3 lengths.*	5306 5307 5760	.500 .500 .375	@ 3 W = 18.3°C/W @ 2 W = 24.0°C/W @ 2 W = 24.0°C/W
B8	Economy, low profile. For PCBs with 0.50″ separation. Horizontal mount. 2 widths (1.25″ and 1.75″).	5069 5070	.375 .375	@ 2 W = 22.5°C/W @ 3 W = 18.6°C/W
B9	Economy, low profile. For PCBs with 0.50″ separation. Horizontal mount.*	5072	.375	@ 5 W = 9.60°C/W
B10	Low-cost, snap-down. Vertical or horizontal mount. If used horizontally, height is .435″.	5751	.750	@ 3 W = 16.6°C/W
B11	Low-cost, vertical mount. Tinned or twist tabs.	5632	2.00	@ 5 W = 11.0°C/W
B12	Low-cost, twisted fins improve cooling. Vertical mount. Wave solderable.	5932	2.00	@ 5 W = 10.4°C/W
B13	Low-cost, twisted fins improve cooling. Wave solderable. Vertical mount.	5925	1.25	@ 2 W = 24.0°C/W
B14	Low-cost, space saver. Vertical mount. Tinned or twist tabs.	5425	1.25	2 2 W = 25.0°C/W
B15	Extra stable, vertical mount. Tinned or twist tabs. Minimum footprint.	5755	1.25	@ 2 W = 25.0°C/W
B16	Wave solderable tin tabs. Vertical mount.	5930	1.18	@ 4 W = 14.0°C/W
B17	Low-cost, high performance. Horizontal mount.	5510	.787	@ 5 W = 11.0°C/W
B18	High performance for 2 devices. Vertical or horizontal. Tinned or twist tabs.	5779 5786	1.03 1.03	@ 5 W = 10.4°C/W @ 5 W = 10.4°C/W
B19	Slimmest plug-in, 1/2″ wide. Vertical or horizontal. With or without tinned tabs.	5768 5968 5910	.750 .750 .500	@ 3 W = 18.0°C/W @ 3 W = 18.0°C/W @ 3 W = 18.0°C/W
B20	Holds 1 device on each side. Spring clip for fast device mounting. Staggered or twisted fins. Small footprint. Wave solderable.*	E5301 E5304	1.75 1.75	@ 8 W = 6.88°C/W @ 8 W = 6.75°C/W
B21	Heavy duty, vertical mount. Solder pin, or screw mount to eliminate stress on leads. Small footprint.	5810 5811 5812	1.00 1.50 2.00	@ 2.5 W = 19.2°C/W @ 3 W = 16.0°C/W @ 4 W = 12.0°C/W
B22	Plug-in for fast mounting without hardware. Horizontal or vertical. Available with short, long and stepped tin tabs, or no tabs.	5744 5789 5933 5936 5939	.395 .395 .750 .690 1.375	@ 3 W = 20.0°C/W @ 3 W = 21.0°C/W @ 3 W = 20.0°C/W @ 3 W = 21.0°C/W @ 4 W = 14.5°C/W

* Also accepts TO-218.

† Finishes: black, blue, bronze, red anodize, and gold chromate. Suffix required to specify finish. Example: 5501B for black.

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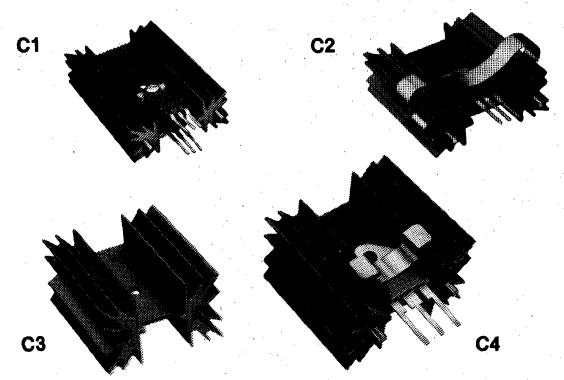
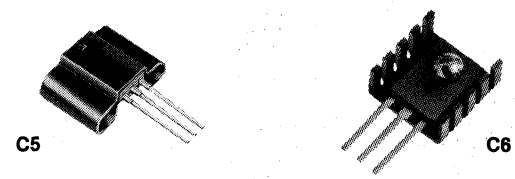
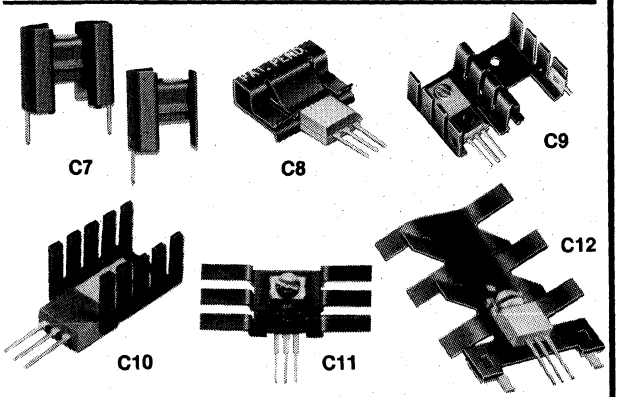
HEAT SINKS for TO-220 and TO-218



for TO-126 and TO-127



for TO-202



Factory Applied Options

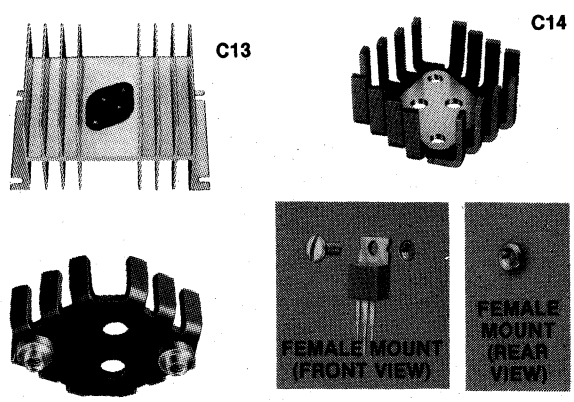


Fig. No.	Description	Model No.†	Height Inches	Thermal Resist. @ Typical Load
C1	Vertical mount with solder pins, shoulder pins or less pins for screw mounting. Also accepts TO-126 and TO-127.	6130 6131 6132 6133	1.00 1.50 2.00 2.50	@ 4 W = 13.5°C/W @ 5 W = 11.0°C/W @ 6 W = 9.00°C/W @ 7 W = 7.57°C/W
C2	Fast device mounting with spring clip. Vertical mount with solder pins, shoulder pins or less pins for screw mounting. Small footprint.	5330 5331 5332 5333	1.00 1.50 2.00 2.50	@ 4 W = 13.5°C/W @ 5 W = 11.0°C/W @ 6 W = 9.00°C/W @ 7 W = 7.57°C/W
C3	Heavy duty. Vertical mount with solder pins, shoulder pins or less pins for screw mounting. Small footprint.	5298 5299 5300	1.50 2.00 2.50	@ 10 W = 5.00°C/W @ 12 W = 4.16°C/W @ 16 W = 3.12°C/W
C4	Heavy duty. Fast device mounting with low-profile spring clip. Vertical mount with solder pins, shoulder pins or less pins for screw mounting. Small footprint.	5334 5335 5336	1.50 2.00 2.50	@ 10 W = 5.00°C/W @ 12 W = 4.16°C/W @ 16 W = 3.12°C/W
C5	Low-cost slip-in. 5775 for TO-126, 5776 for TO-127.	5775 5776	.520 .750	@ 2 W = 27.0°C/W @ 2 W = 27.0°C/W
C6	Economy, low-profile. Horizontal mount. For PCBs with 0.50″ separation. Also accepts TO-220.	5073	.375	@ 2 W = 2.00°C/W
C7	Economy clip-on for fast mounting without hardware. Fins on one or both sides. With or without tin tabs.	5767 5942 5996 5997	.900 .900 .900 .900	@ 3 W = 16.6°C/W @ 3 W = 16.6°C/W @ 2 W = 25.0°C/W @ 2 W = 25.0°C/W
C8	Economy slip-on, locking tab. Requires no hardware to mount.	5740	.570	@ 2 W = 29.0°C/W
C9	High performance for 2 devices. Vertical or horizontal. Tinned or twist tabs.	5780 5787	1.03 1.03	@ 5 W = 10.6°C/W @ 5 W = 10.6°C/W
C10	Trim, low-profile. Horizontal or vertical. Minimal PCB space.	5769 5773 5774	.250 .375 .500	@ 1.5 W = 34.6°C/W @ 2 W = 27.5°C/W @ 2 W = 25.0°C/W
C11	Economy, low-profile. For PCBs with 0.50″ separation. Horizontal mount.	5063	.375	@ 3 W = 18.6°C/W
C12	Low-cost. Vertical mount. Tinned or twist tabs.	5634	2.00	@ 5 W = 11.0°C/W

C13 **RUBBER-DUC™**

Grease-free interface between heat sinks and semiconductors. Improves thermal conductivity and provides 4000 V electrical isolation.

C14 **KON-DUX™**

Grease-free interface between heat sinks and semiconductors. Excellent thermal and electrical conductivity.

C15 **WAVE-ON™ MOUNTS**

For wave soldering to PC boards. With threaded mounts for mounting device to heat sink. Built-in standoffs.

C16 **CAPTIVE HARDWARE**

For fastening semiconductors to heat sinks with machine screws or nuts. Built-in female and male mounts available.

† Finishes: black, blue, bronze, red anodize, and gold chromate. Suffix required to specify finish. Example: 5501B for black.

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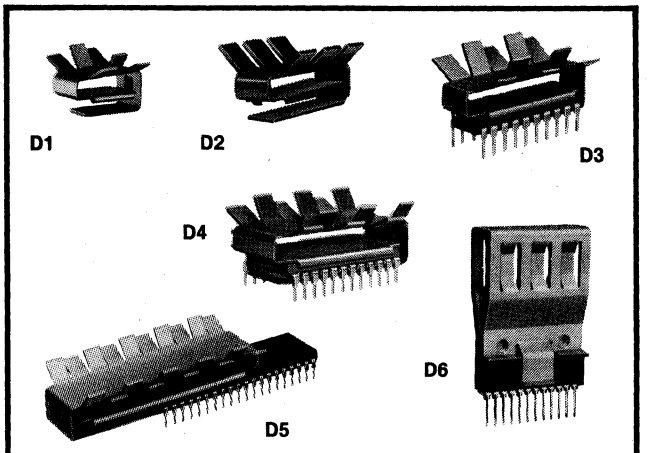
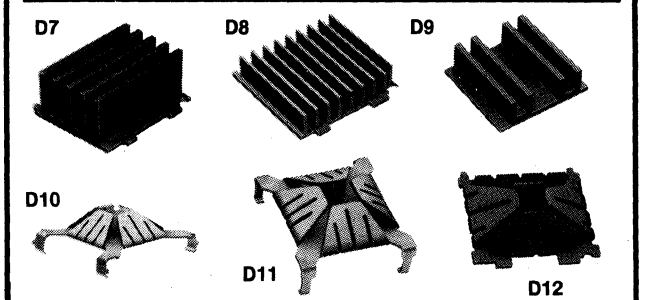
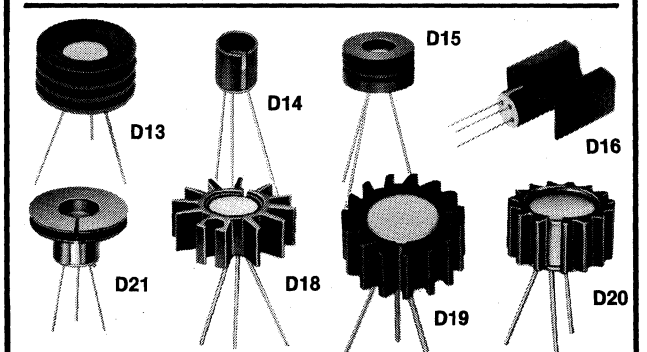
HEAT SINKS for DIP's and SIP's



For 68-Lead Socket



For TO-5



For TO-92



Fig. No.	Description	Model No.†	Height Inches	Thermal Resist. @ Typical Load
D1	Slides quickly on 8-pin DIP. No gluing. Top and bottom conduction paths.	5801	.450	@ 0.5 W = 42.0°C/W
D2	Slides quickly on 14 or 16-pin DIP. No gluing. Top and bottom conduction paths.	5802 5602	.410 .410	@ 0.8 W = 38.0°C/W @ 0.8 W = 38.0°C/W
D3	Slides quickly on 18 or 20-pin DIP. No gluing. Top and bottom conduction paths.	5803 5804	.556 .556	@ 1.0 W = 36.0°C/W @ 1.5 W = 35.0°C/W
D4	Slides quickly on 24 or 28-pin DIP. No gluing. Top and bottom conduction paths.	5805 5806	.580 .580	@ 1.8 W = 30.0°C/W @ 2 W = 28.0°C/W
D5	Slides quickly on 40-pin DIP. No gluing. Top and bottom conduction paths.	5807	.590	@ 2.5 W = 20.0°C/W
D6	Low-cost clip-on for 12-pin SIP. Large cooling surface. With, without tinned tabs.	5840	1.70	@ 5 W = 11.0°C/W
D7 D8	Perfect match for Textool chip carrier sockets. Heat sink acts as lid, speeds assembly.	5826 5827 5830 5831 5832 5833	.300 .530 .260 .560 .280 .280	@ 5 W = 9.60°C/W @ 6 W = 8.00°C/W @ 5 W = 9.60°C/W @ 7 W = 7.40°C/W @ 5 W = 10.4°C/W @ 4 W = 12.5°C/W
D9	Perfect match for Robinson-Nugent sockets. Acts as lid, speeds assembly.	5828	.312	@ 4 W = 13.7°C/W
D10	Bidirectional cooling, for AMP sockets. Acts as lid, speeds assembly.	5101	.500	@ 5 W = 13.5°C/W
D11	Bidirectional cooling, for Robinson-Nugent sockets. Acts as lid, speeds assembly.	5102	.592	@ 4 W = 13.5°C/W
D12	Bidirectional cooling, for Textool sockets. Acts as lid, speeds assembly.	5103	.300	@ 4 W = 13.5°C/W
D13	2-piece for maximum thermal transfer.	2211	.350	@ 1 W = 54.0°C/W
D14	Economy press-on cooler. No extra board space needed.	2114 2115	1.25 .400	@ 1 W = 50.0°C/W @ 0.6 W = 83.3°C/W
D15	2-piece convection cooler.	3215	.330	@ 1 W = 44.0°C/W
D16	Snap-on cooler, easy to install. May be installed after wave soldering. Minimal PCB space required.	5781 5782 5783 5784 5785	.406 .500 .750 1.00 1.25	@ 1.2 W = 39.2°C/W @ 1.4 W = 35.7°C/W @ 1.6 W = 30.0°C/W @ 1.8 W = 26.6°C/W @ 2.0 W = 23.0°C/W
D17	Low-cost, easily installed before or after assembly. Minimal PCB space required.	3225 3226	.400 .250	@ 1 W = 50.0°C/W @ .75 W = 64.0°C/W
D18	Extra surface for better cooling.	3230	.250	@ 1 W = 56.0°C/W
D19	Extra surface for better cooling. For component card applications.	3201	.250	@ 0.8 W = 65.0°C/W
D20	Low-cost, press-on cooler. Excellent heat conduction.	3257 3260	.250 .375	@ 0.8 W = 65.0°C/W @ 1 W = 57.0°C/W
D21	Low-cost, slip-on. Easy to install. No PCB space required.	5752 5753 5754	.720 .970 1.22	@ 1 W = 52.0°C/W @ 1 W = 43.0°C/W @ 1 W = 38.0°C/W
D22	Low-cost, press-on. Also for TO-18.	3224	.235	@ 0.5 W = 100°C/W

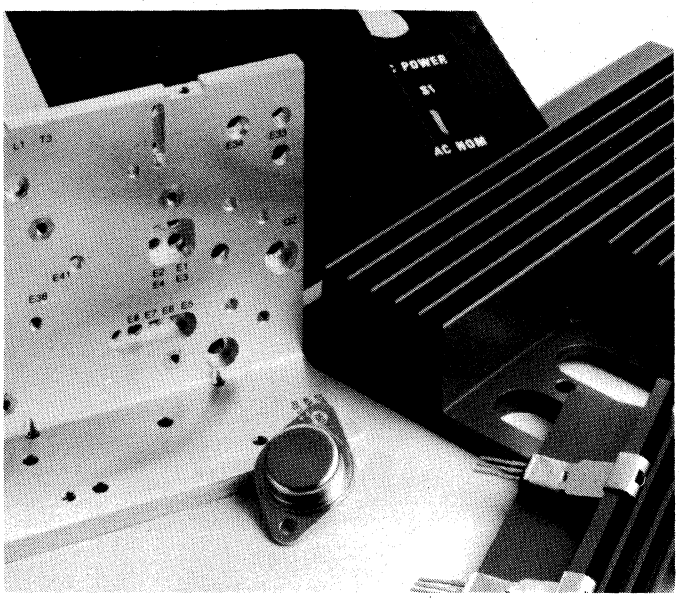
† Finishes: black, blue, bronze, red anodize, and gold chromate. Suffix to specify finish. Example: 5501B for black.

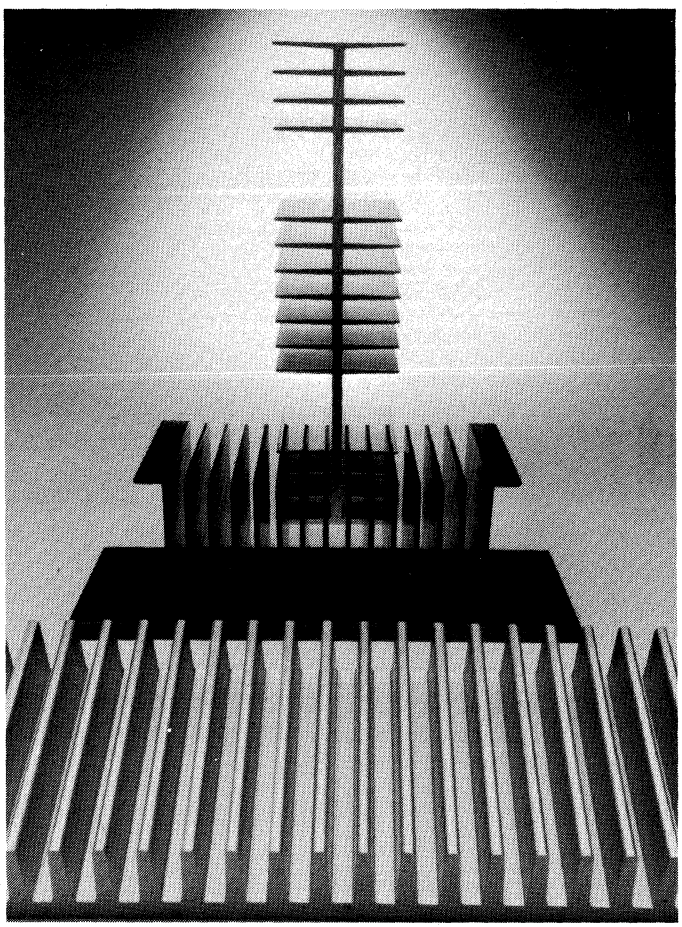
Accessories

- Ther-O-Bond 2000 no-mix 2-part thermally-conductive adhesive system.
- Ther-O-Bond 1500 & 1600 thermally-conductive epoxy adhesives.
- Ther-O-Link 1000 silicone-free thermally-conductive compound.
- Capacitor clamps and brackets.
- Mounting insulators, washers and standoffs.

AAVID™
AAVID ENGINEERING, INC.
One Kool Path, Box 400, Laconia, NH 03247
Tel. (603) 528-3400 TWX 510-298-1128
FAX (603) 528-1478

HEAT SINKS EXTRUSIONS





COST-EFFECTIVE SOLUTIONS FOR COMPLEX THERMAL REQUIREMENTS

Some of the most unusual and complex extruded heat sinks are being designed and manufactured regularly by Aavid. We have a reputation for devising cost-effective solutions for your thermal problems.

THE MOST COMPLETE SELECTION

Aavid offers the industry's best selection of extruded heat sinks. They are designed to cool all kinds of semiconductors—from power transistors to high-current SCRs, rectifiers, solid state relays and power modules. We also offer total fabricating skills for even the most unusual secondary operations, and full finishing capability. Our extensive range of over 2000 cross-sectional designs will meet nearly any application requirements.

FABRICATED TO MEET YOUR SPECIFICATIONS

Our engineers will help you select one of our standard extrusions, fabricated to satisfy your performance, cost and production requirements. Or we will assist you in designing custom extruded shapes to meet your special engineering needs.

DOZENS OF SECONDARY OPERATIONS

Aavid is equipped for virtually any secondary operation from routine cut, deburr and wash to complex milling and stamping. Typical secondary operations are:

- Broaching
- Chamfering
- Counterboring
- Cutting
- Deburring
- Drilling
- Fly cutting
- Milling
- Punching
- Reaming
- Sanding
- Slotting
- Stamping
- Tapping
- Tumbling
- Washing

FINISHING OPTIONS

Aavid offers a complete range of finishing operations including:

- Anodizing—regular and hard
- Caustic etching
- Chromating
- Irriditing
- Painting
- Silk screening
- Tin plating

OTHER OPTIONS

- **Threaded inserts:** For fastening semiconductors to heat sinks with machine screws or nuts.
- **Spring Clips:** For holding semiconductor devices.
- **Wave-On Mounts™:** For wave-soldering heat sinks to PC boards.
- **Bushings and Insulators:** Non-metallic bushing inserts and mounting insulators.

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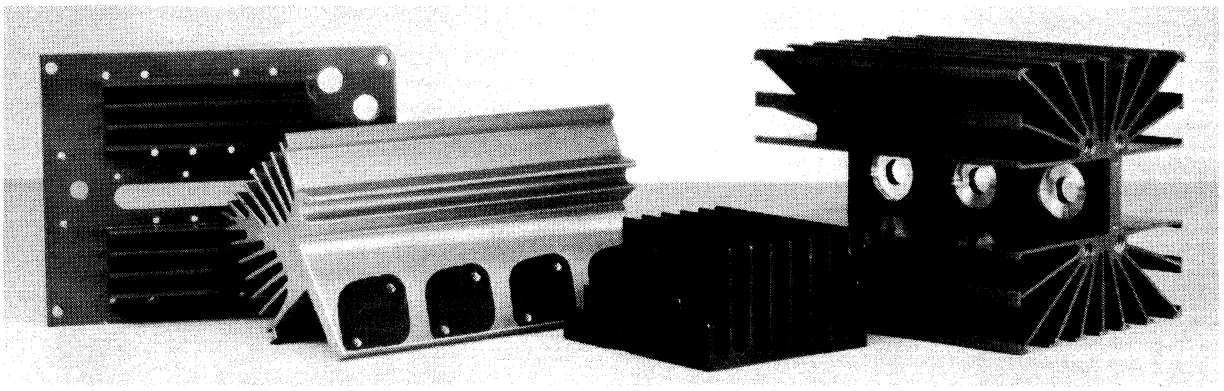
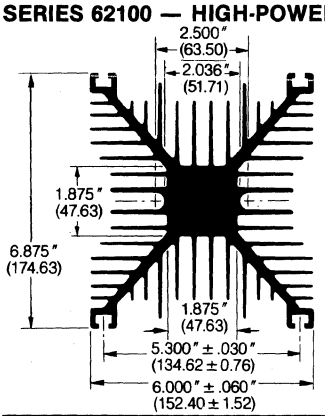
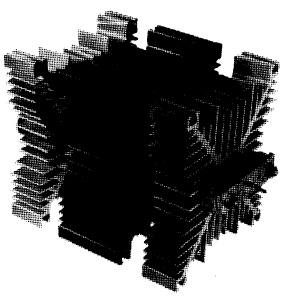
HEAT SINKS EXTRUSIONS

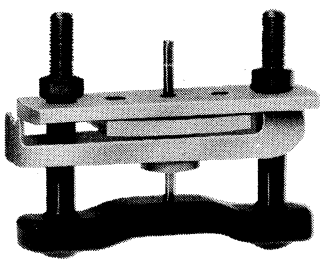


SERIES 62100 — HIGH-POWER HEAT SINK



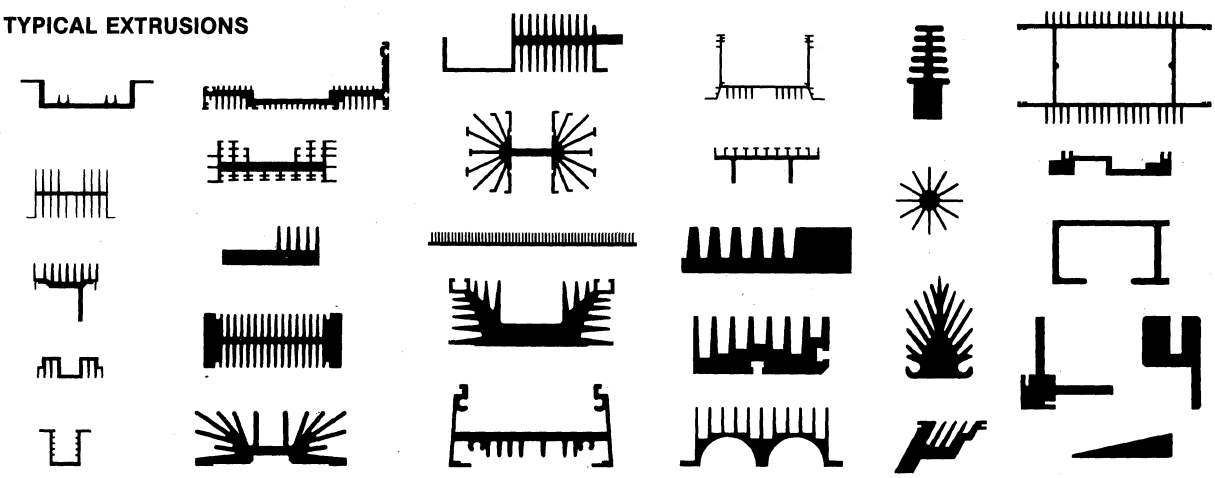


SERIES 4130 — HOCKEY PUCK CLAMP



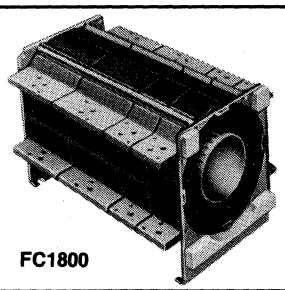
The clamps are rated at 2,000 lbs. maximum working load and are ideally matched to our series 62100 and other high power heat sinks. Clamp capacity ranges from .66″ to 12.63″.

TYPICAL EXTRUSIONS



FORCED CONVECTION COOLERS

Forced convection cooling packages offer optimum thermal performance and low airflow resistance. With a unique fin design and fin spacing, they offer maximum heat transfer per ounce at minimum cost. The coolers offer easy component accessibility in a lightweight, compact construction.



FC1800

The information and data contained within this catalog are believed to be accurate and reliable; however, it is the user's responsibility to determine suitability of use. Since Aavid cannot know all of the uses to which its products may be put or the conditions of use, it makes no warranties concerning the fitness or suitability of its products for a praticular use or purpose.

You should thoroughly test any proposed use of our products and independently conclude satisfactory performance in your application.

Suggestions of uses should not be taken as inducements to infringe any patents.

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amco®

"QUALITY IS NO ACCIDENT"

• FANS • BLOWERS

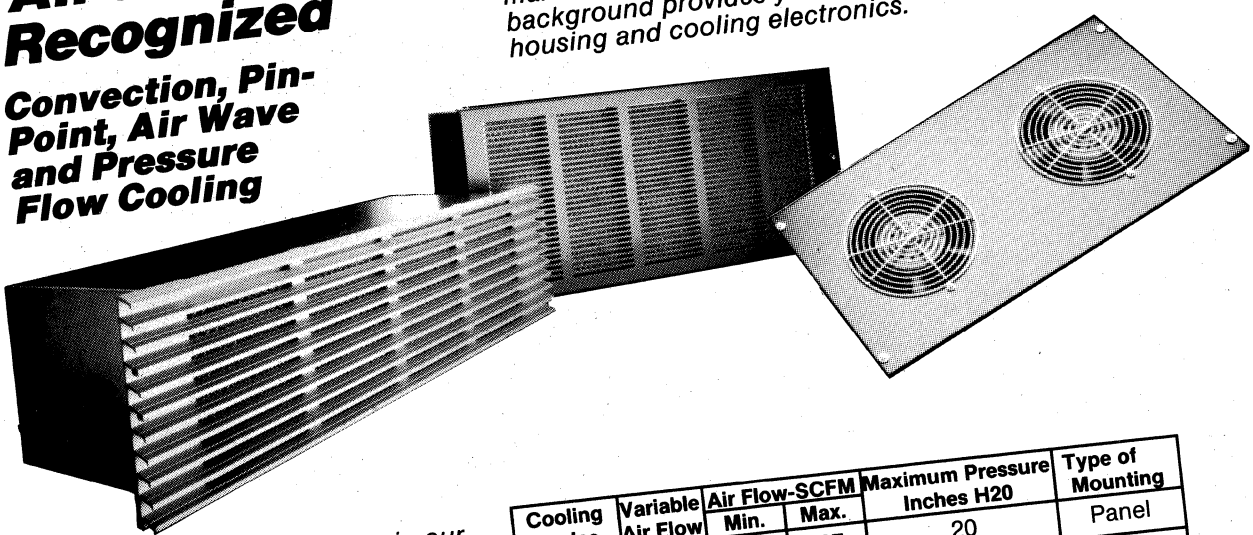
AMCO COOLING DEVICES... All UL Recognized

Convection, Pin-Point, Air Wave and Pressure Flow Cooling

All our standard designs evolve from detailed testing of all critical performance factors in our own Cooling Devices Laboratory.

In other words, you benefit directly from our on-going SCFM rating, noise level monitoring, vibration studies and endurance evaluation.

And there's one added advantage which cannot be compromised: Amco's four decades of experience in manufacturing enclosures and cooling devices. This background provides you with the integrated experience of housing and cooling electronics.



Tested and proven performance in our own Cooling Devices Laboratory, backed by independent testing and evaluation.

Individual Fans (Tube Axial) • Blowers (Centrifical and Impeller) • Axial and Coaxial Impellers • Panel and Specialized Mounting • Single and Variable Speeds • Standard and Deluxe Grilles • Filters • Mounting Hardware • Comprehensive Design Services

Call for Amco's FREE catalog #803 and FREE INITIAL CONSULTATION

Cooling Device	Variable Air Flow	Air Flow-SCFM Min.	Air Flow-SCFM Max.	Maximum Pressure Inches H20	Type of Mounting
BTA3	No	—	27	.20	Panel
BTA4LF	No	—	60	.09	Panel
BTA4HF	No	—	100	.30	Panel
BTA6	No	—	260	.80	Panel
BTA10	Yes	475	540	.45	Top Panel
BDS5	Yes	150	200	.55	Panel
BDS5HF	Yes	220	300	.75	Panel
BDSRF8	No	—	360	.60	Panel
BRDS	Yes	325	400	.60	Recessed
BDS8 BRDSPM	Yes	325	425	.60	Panel Recessed
BDS10	Yes	600	700	.90	Panel

If you have requirements not covered in these performance values, call us, we'll do our best to satisfy your needs.

CALL TOLL FREE 1-800-833-3156 In Illinois Call (312) 671-6670

AMCO Engineering Co.
3801 North Rose St. • Schiller Park, IL 60176-2190
TWX: 910-227-3152
FAX: 312-671-9496

CAMBRIDGE AEROFLO, INC.

SOLID STATE•AIR FLOW SWITCHES•LOW PRESSURE SWITCHES•MASS FLOW SWITCHES•DC FAN/BLOWER NOISE CONTROL

CAMBRIDGE

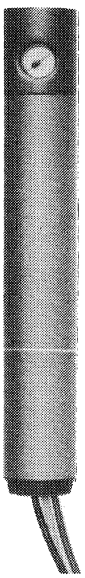
Series 300 Airflow Switches

The Cambridge Airflow Switch is an all Solid-State device designed to sense cooling airflows and protect valuable and sensitive equipment from damage in the event of a cooling system degradation or failure.

The Cambridge Bi-Directional Switch will equally sense airflows from either of two opposite directions. The Uni-Directional Switch allows more directional selectivity by sensing airflows from one unique direction only. (See Figure 1.)

With a normal airflow sensing range from under 250 FPM to over 1300 FPM, depending on setting, the Series 300 offers compact size, high reliability, and resistance to mechanical shock and vibration.

The output of the Series 300 Airflow Switch is logic compatible, or can switch alarms, relays, or other circuits. Normally-open (N.O.) and Normally-closed (N.C.) versions are available.



SOLID STATE AIRFLOW SWITCHES, CONTROLLERS, & COOLING MANAGEMENT SYSTEMS

WhisperCool-AF Airflow Controllers

The Cambridge WhisperCool airflow controller (WAF) combines the features of the 300A airflow switch with a closed loop controller for fans and blowers.

The WAF fault signal may be set to any of the standard calibration. The control line automatically provides a signal, (pulse width modulated) to the airmover, that will maintain the airflow velocity higher than fault levels.

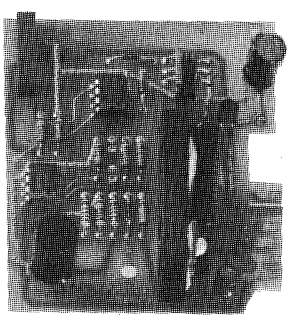
The WhisperCool-AF may be connected directly to the DC motor of an airmover that is provided with a logic level enable/disable feature. If this feature is not available, the WhisperCool-AF may be used in conjunction with a driver module (DRM30 or DRM60) to control the fans/blower.

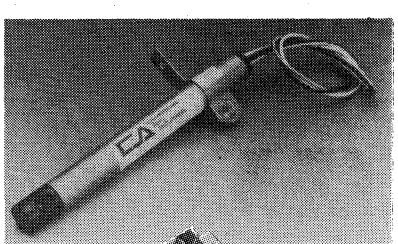
COOLING MANAGEMENT SYSTEM CONTROLS, FANS AND BLOWERS

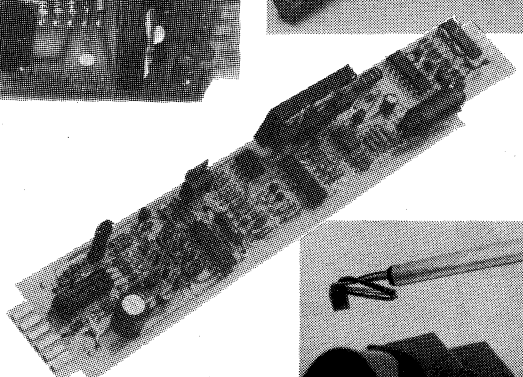
Custom engineered cooling management and environmental control systems for remote or office based telecommunications equipment, computers and other sensitive electronic devices are being introduced by Cambridge Aeroflo, Inc.

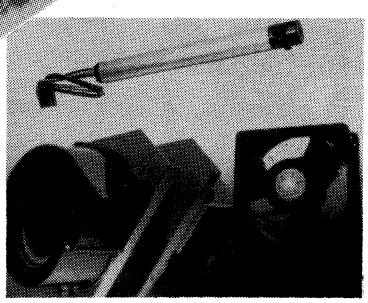
The Cambridge Cooling Management System features variable speed or two-speed controls for fans or blowers and includes built-in dc-to-dc conversion, failure indicators, temperature controls, and fault reporting. Customized to user space and electrical requirements, power is provided in accordance with environmental factors and can incorporate fail-safe designs if necessary.

Supplied as a single board controller or complete with sensing devices and airflow switches, the Cambridge Cooling Management System optimizes the performance of an entire fan or blower network. The sensing devices and airflow switches respond to all environmental factors including ambient temperature, air speed, altitude, relative humidity, and can detect reversal in air flow.









Call for information, and to discuss your specific requirements.

CAMBRIDGE AEROFLO, INC.

Cambridge Aeroflo, Inc.
900 Mt. Laurel Circle, Shirley, MA 01464 USA **Tel. (617) 425-2346**
Telex 948503 CAI BLRC

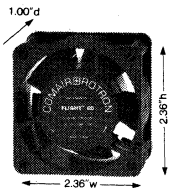
SOLID STATE • AIR FLOW SWITCHES • *LOW PRESSURE SWITCHES* • MASS FLOW SWITCHES • DC FAN/BLOWER NOISE CONTROL

COMAIR ROTRON

FAN SELECTION GUIDE

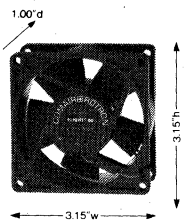
DC FANS AND BLOWERS

FLIGHT™ 60



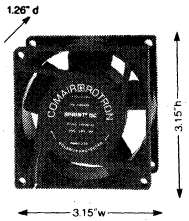
- 8 to 21 CFM (3.7 to 9.9 L/Sec.)
- Size - 2.36" square x 1.00" deep (60.0 mm x 25.4 mm)
- 12 and 24 VDC (nominal)
- Low noise level
- Venturi-PBT with glass, black, meeting UL94V-0
- Polarity protected
- Electronic locked. rotor protection
- Weight - 3.5 oz. (.10 Kg)
- UL File E 31293
- CSA File LR 52898
- Operating temperature range: −10°C to +60°C
- Meets FCC and VDE EMI requirements

FLIGHT™ 80



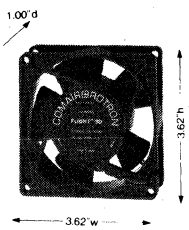
- 20 to 40 CFM (9 to 19 L/Sec.)
- Size - 3.15" square x 1.00" deep (80.0 mm x 25.4 mm)
- 12 and 24 VDC (nominal)
- Low noise level
- Venturi - PBT with glass, black, meeting UL94V-0
- Electronic locked rotor protection
- Polarity protected
- Weight - 4.3 oz. (.12 Kg)
- Operating temperature range: −10°C to +60°C
- UL File E 31293
- CSA File LR 52898
- Meets FCC and VDE EMI requirements

SPRINT® DC FAN



- 12 to 45 CFM (8.0 to 21 L/Sec.)
- Size - 3.15" square x 1.26" deep (80.0 mm x 32.0 mm)
- 2.812" mounting hole centers
- 12 or 24 VDC (nominal)
- Low noise level
- Black, plastic, UL94V-0 housing
- Electronic locked rotor protection or impedance protected
- Polarity protected
- Weight - 6.3 oz. (.18 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- Various speed models
- Third wire (tachometer) Output sensor option
- Meets FCC and VDE EMI requirements
- Available with ThermaPro-V Technology

FLIGHT™ 90



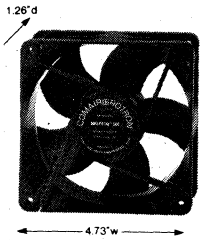
- 20 to 50 CFM (9 to 24 L/Sec.)
- Size - 3.62" square x 1.00" deep (92 mm x 25.4 mm)
- 12 and 24 VDC (nominal)
- Low noise level
- Venturi - PBT with glass, black, meeting UL94V-0
- Electronic locked rotor protection
- Polarity protected
- Weight - 4.9 oz. (.14 Kg)
- Operating temperature range: −10°C to +60°C
- UL File E 31293
- CSA File LR 52898
- Meets FCC and VDE EMI requirements

FLIGHT™ 120



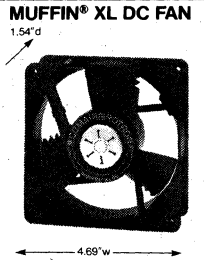
- 45 to 95 CFM (21.2 to 44.8 L/Sec.)
- Size - 4.73" square x 1.00" deep (120.0 mm x 25.4 mm)
- 12 and 24 VDC (nominal)
- Low noise level
- Venturi - PBT with glass, black, meeting UL94V-0
- Electronic locked rotor protection
- Polarity protected
- Weight - 7.1 oz. (.20 Kg)
- UL File E 31293
- CSA File LR 52898
- Operating temperature range: −10°C to +60°C
- Meets FCC and VDE EMI requirements

MUFFIN® DC FAN



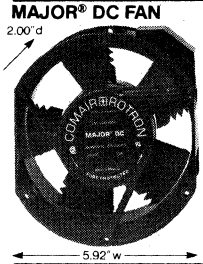
- 50 to 112 CFM (24 to 48.1 L/Sec.)
- Size - 4.73" square x 1.26" deep (120 mm x 32.0 mm)
- 4.125" mounting hole centers
- 12, 24 or 48 VDC (nominal)
- Low noise level
- Black, plastic, UL94V-0 housing
- Electronic locked rotor protection
- Polarity protected
- Weight - 8.5 oz. (.24 Kg)
- For ambients of −10°C to +60°C
- UL File E 31293
- CSA File LR 52898
- Various speed models
- Third wire (tachometer) Output sensor option
- Meets FCC and VDE EMI requirements
- Sleeve bearings
- Available with ThermaPro-V Technology

MUFFIN® XL DC FAN



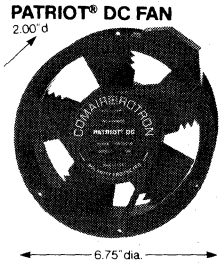
- 40 to 120 CFM (18.9 to 56.6 L/Sec.)
- Size - 4.69" square x 1.54" deep (119.1 mm x 39.1 mm)
- 4.125" mounting hole centers
- 12, 24 or 48 VDC (nominal)
- Feathered Edge™ blade design for lower noise
- Rugged die-cast zinc housing
- Electronic locked rotor protection
- Polarity protected
- Weight - 21.5 oz. (.61 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- Ball bearing models
- Meets FCC and VDE EMI requirements

MAJOR® DC FAN



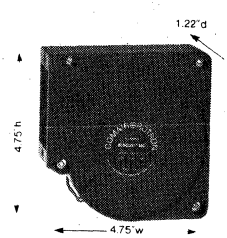
- 100 to 260 CFM (47.2 to 123 L/Sec.)
- Size - 6.75" x 5.92" x 2.00" deep (171.5 mm x 150.4 mm x 50.8 mm)
- 6.375" mounting hole centers
- 12, 24 or 48 VDC (nominal)
- Feathered Edge™ blade design for lower noise
- Rugged die-cast aluminum housing
- Ball bearings
- Electronic locked rotor protection
- Polarity protected
- Weight - 1.84 lbs. (.84 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- Fan Performance Sensor (FPS) available
- Meets FCC and VDE EMI requirements
- Available with ThermaPro-V Technology

PATRIOT® DC FAN



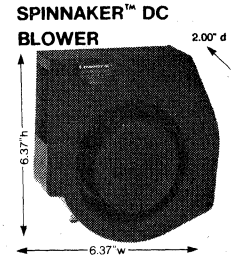
- 100 to 260 CFM (47.2 to 123 L/Sec.)
- Size - 6.75" diameter x 2.00" deep (171.5 mm x 50.8 mm)
- 6.375" mounting hole centers
- 12, 24 or 48 VDC (nominal)
- Feathered Edge™ blade for lower noise
- Rugged die-cast aluminum housing
- Ball bearings
- Electronic locked rotor protection
- Polarity protected
- Weight - 1.84 lbs. (.84 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- Fan Performance Sensor (FPS) available
- Meets FCC and VDE EMI requirements
- Available with ThermaPro-V Technology

BISCUIT® DC BLOWER



- 20 to 28 CFM (9.4 to 13.2 L/Sec.)
- High pressure capability
- Size - 4.75" square x 1.22" deep (120.7 mm x 31.0 mm)
- 12 or 24 VDC (nominal)
- Low noise level
- Black, plastic, UL94V-0 housing
- Electronic locked rotor protection
- Polarity protected
- Sleeve bearings
- Weight - 10 oz. (.28 Kg)
- For ambients of −10°C to +50°C
- Third wire (tachometer) Output sensor option
- Meets FCC and VDE EMI requirements
- Available with ThermaPro-V Technology

SPINNAKER™ DC BLOWER



- 29 to 72 CFM (14 to 34 L/Sec.)
- High pressure capability
- Size - 6.37" square x 2.00" deep (161.8 mm x 50.8mm)
- 24 or 48 VDC (nominal)
- Low noise level
- Black, plastic, UL94V-0 housing
- Rugged die-cast zinc baseplate
- Electronic locked rotor protection
- Polarity protected
- Weight - 2.1 lbs. (.953 Kg)
- For ambients of −10°C to +70°C
- Third wire (tachometer) Output sensor option
- Fan Performance Sensor (FPS) available
- Thermal speed control
- Meets FCC and VDE EMI requirements
- Available with ThermaPro-V Technology

Comair Rotron, The First Name in Forced Convection Cooling Technology

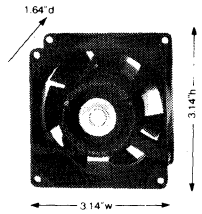
12 North Street Sawyer Industrial Park, Saugerties, N.Y. 12477-1096 Telephone: (914) 246-3615
TWX 910-333-7572 Telex: 551496

COMAIR ROTRON

FAN SELECTION GUIDE

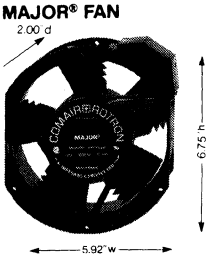
AC FANS AND BLOWERS

SPRITE® FAN



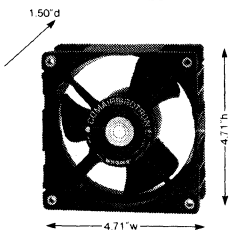
- 20 to 34 CFM (9.5 to 16.0 L/Sec.)
- Size - 3.14" square x 1.64" deep (79.8 mm x 41.8 mm)
- 115 or 220/230 VAC, 50/60 Hz
- Low noise level
- Rugged die-cast zinc housing
- Weight - 18 oz. (.51 Kg)
- Temp. range −28°C to +70°C
- Sleeve or ball bearings
- UL File E31293
- CSA File LR52898
- VDE License No. 1126
- Leadwire or terminal models
- Reverse flow models
- Impedence protected

MAJOR® FAN



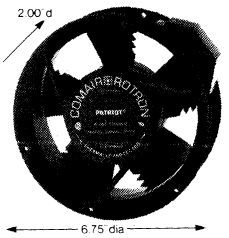
- 114 or 240 CFM (53.8 or 113 L/Sec.)
- Size - 6.75" x 5.92" x 2.00" deep (171.5 mm x 150.4" mm x 50.8 mm)
- 6.375" mounting hole centers
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Feathered Edge™ blade design for lower noise
- Rugged die-cast aluminum housing
- Automatic reset thermal protector or impedance protected
- Weight - 1.84 lbs. (.84 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- VDE License Pending
- Fan Performance Sensor (FPS) available

WHISPER® FAN



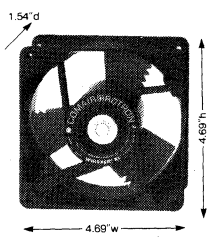
- 57 to 80 CFM (26.9 to 37.8 L/Sec.)
- Size - 4.71" square x 1.50" deep (119.6 mm x 38.1 mm)
- 115 or 220/230 VAC, 50/60 Hz
- Low noise level
- Flame retardant, black phenolic venturi
- Zinc alloy spider
- Weight - 17 oz. (.49 Kg)
- Temp. range −28°C to +70°C
- Sleeve or ball bearings
- UL File E31293
- CSA File LR52898
- Impedence protected

PATRIOT® FAN



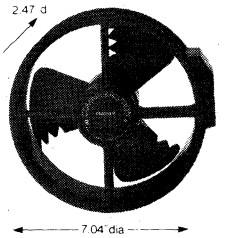
- 114 or 240 CFM (53.8 or 113 L/Sec.)
- Size - 6.75" diameter x 2.00" deep (171.5 mm x 50.8 mm)
- 6.375" mounting hole centers
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Feathered Edge™ blade design for lower noise
- Rugged die-cast aluminum housing
- Automatic reset thermal protector or impedance protected
- Weight - 1.84 lbs. (.84 Kg)
- For ambients of −10°C to +70°C
- UL File E 31293
- CSA File LR 52898
- VDE License Pending
- Fan Performance Sensor (FPS) available

WHISPER® XL FAN



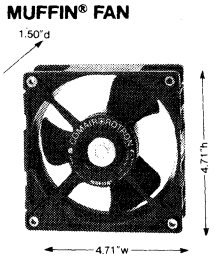
- 50 to 83 CFM (23.5 to 40.0 L/Sec.)
- Size - 4.69" square x 1.54" deep (119.1 mm x 39.1 mm)
- 115 o. 220/230 VAC, 50/60 Hz
- Feathered Edge™ blade for lower noise
- Zinc alloy venturi and spiders
- Weight - 21 oz. (.61 Kg)
- Temp. range −28°C to +70°C
- Quiet sleeve bearings
- UL File E31293
- CSA File LR52898
- VDE License No. 1126 on "Y" suffix models
- VDE approval in early 1987 on all Whisper XL fans. "Y" suffix will be phased out.
- Impedence protected

FEATHER® FAN



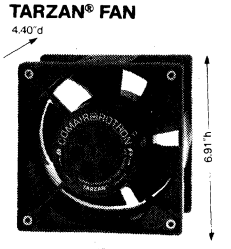
- 245 CFM (116 L/Sec.)
- Size - 7.04" diameter x 2.47" deep (178.9 mm x 62.7 mm)
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Feathered Edge™ blade design for lower noise
- Flame retardant, black, phenolic housing
- Automatic reset thermal protector
- Weight - 1.5 lbs. (.68 Kg)
- For ambients of −54°C to +65°C
- UL Yellow Card Recognized and CSA Certified

MUFFIN® FAN



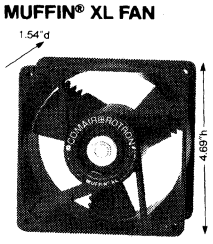
- 105 CFM (49.6 L/Sec.)
- Size - 4.71" square x 1.50" deep (119.6 mm x 38.1 mm)
- 115 or 220/230 VAC, 50/60 Hz
- Low noise level
- Phenolic venturi
- Zinc alloy spiders
- Weight - 17.2 oz. (.49 Kg)
- Temp. range −28°C to +70°C
- UL File E31293
- CSA File LR52898
- Impedence protected

TARZAN® FAN



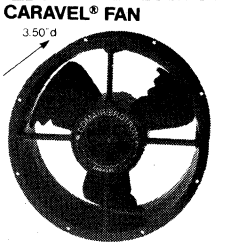
- 340 CFM (160 L/Sec.)
- Size - 6.91" square x 4.40" deep (175.5 mm x 111.8 mm)
- 6.00" mounting hole centers
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Low noise level
- Flame retardant, black, phenolic housing
- Automatic reset thermal protector
- Weight - 5 lbs. (2.27 Kg)
- For ambients of −18°C to +60°C
- UL Yellow Card Recognized and CSA Certified
- Leadwire and terminal models

MUFFIN® XL FAN



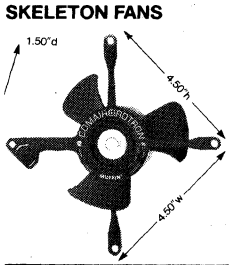
- 108 to 115 CFM (51.0 to 54.3 L/Sec.)
- Size - 4.69" square x 1.54" deep (119.1 mm x 39.1 mm)
- 115 or 220/230 VAC, 50/60 Hz
- Feathered Edge™ blade for lower noise
- Zinc alloy venturi and spider
- Weight - 21 oz. (.61 Kg)
- Temp. range −28°C to +70°C
- Reverse flow models available
- UL File E31293
- CSA File LR52898
- VDE License No. 1126 on "Y" suffix models
- VDE approval in early 1987 on all Muffin XL fans. "Y" suffix will be phased out.
- Impedence protected

CARAVEL® FAN



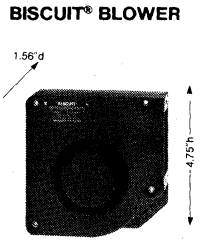
- 550 CFM (260 L/Sec.)
- Size - 10.00" diameter x 3.50" deep (254.0 mm x 88.9 mm)
- 9.688" mounting hole centers
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Feathered Edge™ blade design for lower noise
- Rugged die-cast aluminum housing
- Automatic reset thermal protector
- Weight - 4.4 lbs (2.0 Kg)
- For ambients of −30°C to +60°C
- UL Yellow Card Recognized and CSA Certified
- Leadwire and terminal models

SKELETON FANS



- 57 to 105 CFM (26.9 to 49.6 L/Sec.)
- Size - 4.50" square x 1.50" deep (114.3 mm x 38.1 mm)
- 115 or 220/230 VAC, 50/60 Hz
- Low noise level
- Zinc alloy spider legs
- Weight - 12.8 oz. (.36 Kg)
- Temp. range −28°C to +70°C
- Sleeve or ball bearing models
- UL File E31293
- CSA File LR52898
- Impedence protected

BISCUIT® BLOWER



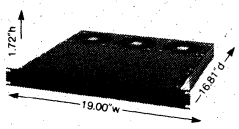
- 22 CFM (10 L/Sec.)
- High pressure capability
- Size - 4.75" square x 1.56" deep (120.6 mm x 39.6 mm)
- 115 VAC or 220/230 VAC, 1 phase, 50/60 Hz
- Low noise level
- Black, plastic, UL94V-0 housing
- Impedance protected
- Weight - 18 oz. (.51 Kg)
- For ambients of −18°C to +60°C
- UL Yellow Card Recognized and CSA Certified

12 North Street Sawyer Industrial Park, Saugerties, N.Y. 12477-1096 Telephone: (914) 246-3615
TWX 910-333-7572 Telex: 551496

FAN SELECTION GUIDE

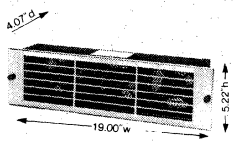
MODULAIR

MB1000



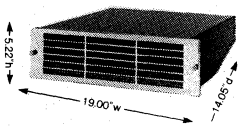
- 300, 600 or 900 CFM (142, 283 or 425 L/Sec.)
- Size - 1.72" high x 16.81" deep x 19.00" wide
- Designed for use in EIA 19" racks
- Utilizes the performance of three, six or nine Muffin® fans
- Each three fan strip may be mounted in any of three locations

MB9100



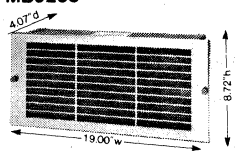
- 235 CFM (110 L/Sec.)
- Size - 5.22" high x 4.07" deep x 19.00" wide (133 mm x 103 mm x 483 mm)
- Designed for use in EIA 19" racks
- Features the performance of three Muffin® fans
- Includes grille, cleanable airfilter and finger guards
- 10 years continuous duty at 25°C

MB5100



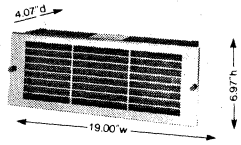
- 320 CFM (151 L/Sec.)
- Size - 5.22" high x 14.05" deep x 19.00" wide (133 mm x 357 mm x 483 mm)
- Designed for use in EIA 19" racks
- Features the performance of two powerful ball bearing Feather® fans
- Unique right angle airflow direction
- Includes grille, cleanable airfilter and finger guards
- Six years continuous duty at 25°C

MB9200



- 370 CFM (175 L/Sec.)
- Size - 8.72" high x 4.07" deep x 1900" wide (221 mm x 103 mm x 483 mm)
- Designed for use in EIA 19" racks
- Features the performance at two powerful ball bearing Feather® fans
- Includes grille, cleanable airfilter and finger guards
- Six years continuous duty at 25°C

MB9300



- 350 CFM (165 L/Sec.)
- Size - 6.97" high x 4.07" deep x 19.00" wide (177 mm x 103 mm x 483 mm)
- Designed for use in EIA racks
- Powered by two rugged Major® fans
- Includes grille, cleanable airfilter and finger guards
- Five years continuous duty at 25°C

COMAIR ROTRON

12 North Street
Sawyer Industrial Park, Saugerties, N.Y. 12477-1096
Telephone: (914) 246-3615
TWX 910-333-7572 Telex: 551496

Comair Rotron,

The First Name in Forced Convection Cooling Technology

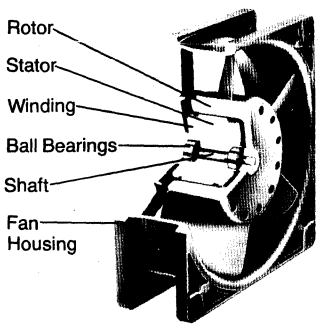
ACCESSORY GUIDE

FILTERS	PART NO.	FLIGHT 60	FLIGHT 80	SPRINT DC	FLIGHT 90	FLIGHT 120	MUFFIN DC	MUFFIN XL DC	MAJOR DC	PATRIOT DC	BISCUIT DC	SPRITE	WHISPER	WHISPER XL	MUFFIN	MUFFIN XL	SKELETON	MAJOR	PATRIOT	FEATHER	CARAVEL	TARZAN	BISCUIT	MB1000	MB5100	MB9100	MB9200	MB9300
Filter Frame and Grille	026807																							●			●	
Filter Frame and Grille	026821																							●				●
Filter Frame and Grille	027499																							●	●	●		
Filter Mounting Clips	271016													●		●												
Filter Element	271018													●		●												
Filter Frame	476000													●		●												
Filter Assembly	477712													●		●												
Filter Assembly	551590								●					●	●	●	●											
Replacement Filter Element (30 PPI)	554139		●	●									●															
Replacement Filter Element (45 PPI)	554140		●	●									●															
Filter Guard Assembly (30 PPI)	554141		●	●									●															
Filter Guard Assembly (45 PPI)	554142		●	●									●															
Replacement Filter Element (30 PPI)	554146					●	●	●						●	●	●	●											
Replacement Filter Element (45 PPI)	554147					●	●	●						●	●	●	●											
Filter Guard Assembly (30 PPI)	554148					●	●	●						●	●	●	●											
Filter Guard Assembly (45 PPI)	554149					●	●	●						●	●	●	●											
GRILLES																												
Grille (Spiral)	476015													●		●												
Grille (Expanded Metal)	477727													●		●												
Grille Kit	478031													●		●												
Screen Guard	550214					●	●	●						●	●	●	●	●										
FINGER GUARDS																												
Finger Guard (Metal)	476042					●	●	●						●	●	●	●	●										
Finger Guard (Metal)	476136																						●					
Finger Guard (Metal)	476143		●	●									●															
Finger Guard (Metal)	476323																					●						
Finger Guard (Metal) Rim Mount	476646																				●							
Mounting Clips for Guard #476651	476649																				●							
Finger Guard (Metal) Panel Mount	476651																				●							
Finger Guard (Metal)	477626										●												●					
Finger Guard (Metal)	550272									●									●									
Finger Guard (Plastic)	550481					●	●	●						●	●	●	●	●										
Finger Guard (Plastic)	550648		●	●									●															
Finger Guard (Plastic)	551147					●	●	●						●	●	●	●	●										
Finger Guard (Metal)	551199										●									●								
Finger Guard (Metal)	552934					●	●	●						●	●	●	●	●										
Finger Guard (Metal)	554172				●																							
Finger Guard (Metal)	572621	●																										
MOUNTING CLIPS																												
Mounting Clips (Bag of 3)	476154																				●							
#6-32 Flush Mounting Clip	477663									●	●			●		●			●	●								
#6-32 Standoff Mounting Clip	477670									●	●			●		●			●	●								
#6-32 Mounting Clip	550113								●						●		●											
PLUG & CORD SETS																												
Straight On Plug and Cord	428023																				●							
Right Angle Plug and Cord	428056												●	●	●	●	●	●	●	●		●	●	●				
Straight On Plug and Cord	550440												●		●		●	●	●	●		●	●	●				
Polarized Right Angle Plug and Cord	571064								●																			

Tubeaxial Fans ACCESSORIES

One simple, reliable design for every electronic application

The building block for all ebm Tubeaxial Fans is the external rotor motor. With this design, the external rotor rotates around the internal stator. The impellers are attached directly to the external rotor which allows excellent heat dissipation and long life.



Safety

All fans are designed to meet UL, CSA and VDE standards. Approved products are listed in UL yellow card E54522; CSA file LR3145 and several VDE files. It is the responsibility of the user to be sure fans are installed and operated in accordance with all safety codes.

Construction

All-metal construction provides excellent heat dissipation, long life and structural stability. The fan itself functions as heat sink by effectively transferring heat from the motor to the air stream via the metal impeller blades. The impeller blades are sheet steel, precision machined and welded to the metal rotor. The housing is die-cast aluminum or zinc.

The rotor and impeller blades are dynamically balanced in two planes to Quality Grade 2.5. In addition, the fans are finished with an electrostatically applied black finish to protect against severe environmental conditions.

Availability

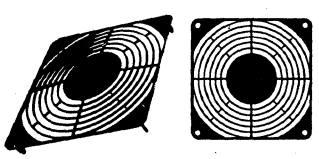
Products listed are available from stock. ebm distributors maintain stock which is backed by ebm Industries' own inventory, the largest available in the U.S.

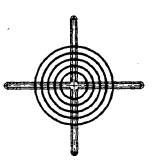
Other Sizes and Types

ebm offers one of the broadest fan product lines in the industry. If the size you need is not listed, contact your ebm distributor, representative or ebm directly. Typical options are Hall Effect monitor, dual voltage, flying leads and fans without housings.

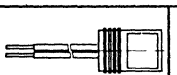
Technical Assistance

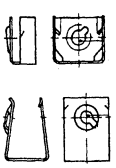
A large staff of experienced application engineers is ready to discuss your specific heat transfer and air movement requirements. Let them help you select and specify the products needed for your application.











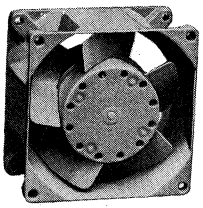
Fan Model	Quik-Guard™ Plastic Finger Guard w/Barbed Insert	Quik-Guard™ Plastic Finger Guard w/Thru-Holes	Metal Finger Guard*	Plastic Filter with Foam Pad	Plug & Cord Set Available	Mounting Clips
W2S075	92162-2-2929	92163-2-2929	9480-2-4039	10020-1-5170	Not required	
W2G075	92162-2-2929	92163-2-2929	9480-2-4039	10020-1-5170	Not required	
W2S076	92162-2-2929	92163-2-2929	9480-2-4039	10020-1-5170	Yes	92194-4-5174
W2S086			9483-2-4039	10023-1-5170	Not required	
W2G086			9483-2-4039	10023-1-5170	Not required	
W2S107	92164-2-2929	92165-2-2929	9497-2-4039	10021-1-5170	Yes	92067-4-5174
W2G107	92164-2-2929	92165-2-2929	9497-2-4039	10021-1-5170	Yes	92067-4-5174
W2S110	92164-2-2929	92165-2-2929	9497-2-4039	10021-1-5170	Yes	92194-4-5174
W2G110	92164-2-2929	92165-2-2929	9497-2-4039	10021-1-5170	Yes	92194-4-5174
W2S115			9496-2-4039	10024-1-5170	Yes	92067-4-5174
W2G115			9496-2-4039	10024-1-5170	Yes	92067-4-5174
W2S130			9498-2-4039		Yes	
W2G130			9498-2-4039		Yes	
W2E142/3			9498-2-4039		Yes	92194-4-5174

* UL Style add -1 to Part #

ebm Industries, Inc. – 525 New Britain Avenue, Unionville, CT 06085
phone 203-674-1515, TWX: 710-423-8723, FAX: 203-674-8536

Tubeaxial Fans

W2S 076
3 1/8" x 1 1/2"



Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S076-AA03-03	W2S076-AA03-01	115	50/60	10	36	37	31	11.5" AWG 22 Leads
W2S076-AA03-39	W2S076-AA03-13	115	50/60	10	36	37	31	Terminals
W2S076-AA01-03	W2S076-AA01-01	230	50/60	10	36	37	31	11.5" AWG 22 Leads
W2S076-AA01-39	W2S076-AA01-13	230	50/60	10	36	37	31	Terminals
W2S076-AA01-67		115/230	50/60	10	36	37	31	Leads, Dual Voltage
W2S076-AD03-03	W2S076-AD03-01	115	50/60	9	26	29	25	11.5" AWG 22 Leads
W2S076-AD03-39	W2S076-AD03-13	115	50/60	9	26	29	25	Terminals
W2S076-AD01-03	W2S076-AD01-01	230	50/60	9	26	29	25	11.5" AWG 22 Leads
W2S076-AD01-39	W2S076-AD01-13	230	50/60	9	26	29	25	Terminals
W2S076-AF07-03	W2S076-AF07-01	115	50/60	7.5	22	24	14	11.5" AWG 22 Leads
W2S076-AF07-39	W2S076-AF07-13	115	50/60	7.5	22	24	14	Terminals
W2S076-AF05-03	W2S076-AF05-01	230	50/60	7.5	22	24	14	11.5" AWG 22 Leads
W2S076-AF05-39	W2S076-AF05-13	230	50/60	7.5	22	24	14	Terminals

W2G 075
Brushless DC
3 1/8" x 1 1/2"

Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 72°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G075-AB22-02	W2G075-AB22-01	12	3.6	34	42	35	11.5" AWG 22 Leads
W2G075-AB24-02	W2G075-AB24-01	24	3.6	34	42	35	11.5" AWG 22 Leads
W2G075-AB26-02	W2G075-AB26-01	48	3.6	34	42	35	11.5" AWG 22 Leads

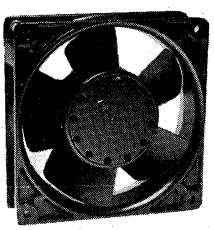
W2S 086
3 5/8" x 1 1/2"

Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S086-AA07-02	W2S086-AA07-01	115	50/60	14	46	45	40	11" AWG 22 Leads
W2S086-AA05-02	W2S086-AA05-01	230	50/60	14	46	45	40	11" AWG 22 Leads
W2S086-AC07-02	W2S086-AC07-01	115	50/60	13	35	38	33	11" AWG 22 Leads
W2S086-AC05-02	W2S086-AC05-01	230	50/60	13	35	38	33	11" AWG 22 Leads
W2S086-AB07-02	W2S086-AB07-01	115	50/60	11	25	31	25	11" AWG 22 Leads
W2S086-AB05-02	W2S086-AB05-01	230	50/60	11	25	31	25	11" AWG 22 Leads

W2G 086
Brushless DC

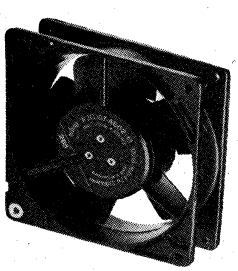
Ball Bearing Max.Temp. 72°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G086-AB36-01	12	3.8	42	42	37	11" AWG 22 Leads
W2G086-AB04-01	24	3.8	42	42	37	11" AWG 22 Leads
W2G086-AB06-01	48	3.8	42	42	37	11" AWG 22 Leads

W2S 107
4 11/16" x 1 1/2"



Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S107-AA15-03	W2S107-AA15-01	115	50/60	18	106	47	41	10.5" AWG 22 Leads
W2S107-AA15-39	W2S107-AA15-13	115	50/60	18	106	47	41	Terminals
W2S107-AA15-88		115	50/60	18	106	47	41	Terminal, Hall Effect
W2S107-AA01-03		230	50/60	18	106	47	41	10.5" AWG 22 Leads
W2S107-AA01-39	W2S107-AA01-13	230	50/60	18	106	47	41	Terminals
W2S107-AA01-67	W2S107-AA01-A2	115/230	50/60	18	106	47	41	Leads, Dual Voltage
W2S107-AA17-39	W2S107-AA17-13	24	50/60	18	106	47	41	Terminals
W2S107-AA53-39	W2S107-AA53-13	48	50/60	18	106	47	41	Terminals
W2S107-AD21-39	W2S107-AD21-13	115	50/60	14	71	33	28	Terminals
W2S107-AD31-39	W2S107-AD31-13	230	50/60	14	71	33	28	Terminals
W2S107-AD31-67	W2S107-AD31-71	115/230	50/60	14	71	33	28	Leads, Dual Voltage
W2S107-AB07-03		115	50/60	11	51	28	22	10.5" AWG 22 Leads
W2S107-AB07-39	W2S107-AB07-13	115	50/60	11	51	28	22	Terminals
W2S107-AB07-88		115	50/60	11	51	28	22	Terminals
W2S107-AB05-03		230	50/60	11	51	28	22	10.5" AWG 22 Leads
W2S107-AB05-39	W2S107-AB05-13	230	50/60	11	51	28	22	Terminals
W2S107-AB05-67	W2S107-AB05-71	115/230	50/60	11	51	28	22	Leads, Dual Voltage
W2S107-AB11-39	W2S107-AB11-13	115	50/60	8	45	23	11	Terminal
A2S107-BA15-02		115	50/60	18	106	47	41	Leads, No Housing
A2S107-BB07-02		115	50/60	11	51	28	22	Leads, No Housing

W2G 107
Brushless DC
4 11/16" x 1 1/2"



Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 72°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G107-AB02-39	W2G107-AB02-13	12	4.7	100	46	39	Terminals
	W2G107-AB02-01	12	4.7	100	46	39	10.5" AWG 22 Leads
	W2G107-AB02-85	12	4.7	100	46	39	Hall Effect, Leads
	W2G107-AB02-87	12	4.7	100	46	39	Hall Effect, Terminals
W2G107-AB04-39	W2G107-AB04-13	24	4.7	100	46	39	Terminals
	W2G107-AB04-01	24	4.7	100	46	39	10.5" AWG 22 Leads
	W2G107-AB04-85	24	4.7	100	46	39	Hall Effect, Leads
	W2G107-AB04-87	24	4.7	100	46	39	Hall Effect, Terminals
W2G107-AB06-39	W2G107-AB06-13	48	4.7	100	46	39	Terminals
	W2G107-AB06-01	48	4.7	100	46	39	10.5" AWG 22 Leads
	W2G107-AB06-85	48	4.7	100	46	39	Hall Effect, Leads
	W2G107-AB06-87	48	4.7	100	46	39	Hall Effect, Terminals
	W2G107-AB44-01	12	2.3	70	33	28	10.5" AWG 22 Leads
	W2G107-AB44-13	12	2.3	70	33	28	Terminals
	W2G107-AB46-01	24	2.3	70	33	28	10.5"AWG 22 Leads

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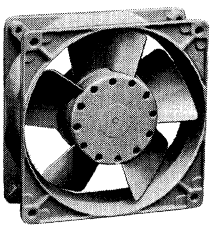
W2S 110
4 11/16" x 1 1/2"

Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S110-AO15-32	W2S110-AO15-31	115	50/60	18	110	53	47	Terminals
W2S110-AO01-32	W2S110-AO01-31	230	50/60	18	110	53	47	Terminals
W2S110-AT07-32	W2S110-AT07-31	115	50/60	14	75	42	37	Terminals
W2S110-AT05-32	W2S110-AT05-31	230	50/60	14	75	42	37	Terminals
W2S110-AP07-32	W2S110-AP07-31	115	50/60	11	51	37	28	Terminals
W2S110-AP05-32	W2S110-AP05-31	230	50/60	11	51	37	28	Terminals

W2G 110
Brushless DC
4 11/16" x 1 1/2"

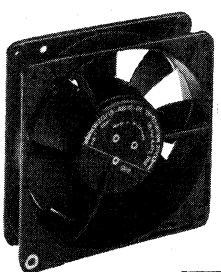


Ball Bearing Max.Temp. 72°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G110-AO16-31	12	5.8	110	54	49	Terminals
W2G110-AO16-01	12	5.8	110	54	49	10.5" AWG 22 Leads
W2G110-AO16-92	12	5.8	110	54	49	Hall Effect, Leads
W2G110-AO04-13	24	4.7	100	51	46	Terminals
W2G110-AO48-31	24	5.8	110	54	49	Terminals
W2G110-AO48-01	24	5.8	110	54	49	10.5" AWG 22 Leads
W2G110-AO48-92	24	5.8	110	54	49	Hall Effect, Leads
W2G110-AO40-31	48	5.8	110	54	49	Terminals
W2G110-AO40-01	48	5.8	110	54	49	10.5" AWG 22 Leads
W2G110-AO40-92	48	5.8	110	54	49	Hall Effect, Leads

W2S 115
5" x 1 1/2"

Sleeve Bearing Max.Temp. 60°C	Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
	W2S115-AG03-13	115	50/60	24	145	49	43	Terminals
W2S115-AA03-39	W2S115-AA03-13	115	50/60	21	127	46	40	Terminals
W2S115-AA03-88		115	50/60	21	127	46	40	Terminals, Hall Effect
W2S115-AA01-39	W2S115-AA01-13	230	50/60	21	127	46	40	Terminals
W2S115-AB11-39	W2S115-AB11-13	115	50/60	16	106	41	36	Terminals
W2S115-AB07-39	W2S115-AB07-13	230	50/60	16	106	41	36	Terminals

W2G 115
Brushless DC



Ball Bearing Max.Temp. 72°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G115-AB42-12	12	6	130	47	41	Terminals
W2G115-AB42-13	12	6	125	46	40	Terminals
W2G115-AB42-01	12	6	125	46	40	10.5" AWG 22 Leads
W2G115-AB38-13	24	6	125	46	40	Terminals
W2G115-AB38-01	24	6	125	46	40	10.5" AWG 22 Leads
W2G115-AB16-13	12	6	110	43	36	Terminals
W2G115-AB16-01	12	6	110	43	36	10.5" AWG 22 Leads
W2G115-AB18-13	24	6	110	43	36	Terminals
W2G115-AB18-01	24	6	110	43	36	10.5" AWG 22 Leads
W2G115-AB20-13	48	6	110	43	36	Terminals
W2G115-AB20-01	48	6	110	43	36	10.5" AWG 22 Leads

W2S 130
6" x 2"

Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S130-AA25-01	115	50/60	42	233	52	49	13" AWG 20 Leads
W2S130-AA25-44	115	50/60	42	233	52	49	Terminals
W2S130-AA03-01	230	50/60	42	233	52	49	13" AWG 20 Leads
W2S130-AA03-44	230	50/60	42	233	52	49	Terminals
W2S130-AA03-49	115/230	50/60	42	233	52	49	Leads, Dual Voltage

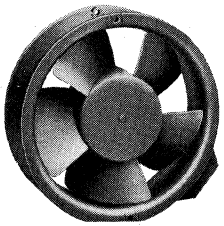
W2G 130
Brushless DC

Ball Bearing Max.Temp. 60°C	DC Volts	Watts	CFM	dBA	PSIL dB	Features
W2G130-AA01-01	12	16	218	51	45	13" AWG 20 Leads
W2G130-AA03-01	24	16	218	51	45	13" AWG 20 Leads
W2G130-AA05-01	48	16	218	51	45	13" AWG 20 Leads

W2E142
6" x 1 1/2"

Ball Bearing Max.Temp. 75°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2E142-BB05-16	115	50/60	26	236	62	56	.110" Terminals
W2E142-BB05-17	115	50/60	26	236	62	56	.187" Terminals
W2E142-BB05-87	115	50/60	26	236	62	56	.110" Term., Hall Effect
W2E142-BB01-16	230	50/60	26	236	62	56	.110" Terminals
W2E142-BB01-87	230	50/60	26	236	62	56	.110" Term., Hall Effect
W2E142-CC13-16	115	50/60	16	175	54	48	.110 "Terminals
W2E142-CC15-16	230	50/60	16	175	54	48	.110" Terminals

W2S 143 - Shaded Pole AC Motor
W2E 143 - PSC AC Motor
W2G 143 - Brushless DC



Ball Bearing	Max. Temp.°C	AC Volts	Hertz	Watts	CFM	dBA	PSIL dB	Features
W2S143-AA08-01	50	115	50/60	40	195	50	44	.110" Terminals
W2S143-AA08-09	50	115	50/60	40	195	50	44	10" AWG 22 Leads
W2S143-AA04-01	50	230	50/60	40	195	50	44	.110" Terminals
W2S143-AA04-09	50	230	50/60	40	195	50	44	10" AWG 22 Leads
W2E143-AA15-01	70	115	50/60	32	265	57	53	PSC, .110" Terminals
W2E143-AA09-01	70	230	50/60	32	265	57	53	PSC, .110" Terminals

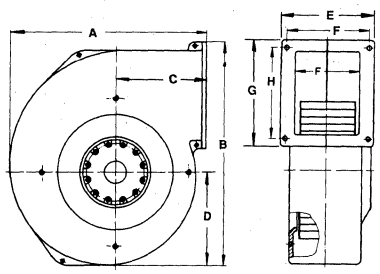
Ball Bearing Max.Temp. 60°C	Volts	Watts	CFM	dBA	PSIL dB	Features
W2G143-AA01-01	12	16	235	53	49	.110" Terminals
W2G143-AA01-09	12	16	235	53	49	10" AWG 20 Leads
W2G143-AA03-01	24	16	235	53	49	.110" Terminals
W2G143-AA03-09	24	16	235	53	49	10" AWG 20 Leads
W2G143-AA09-01	48	16	235	53	49	.110" Terminals
W2G143-AA09-09	48	16	235	53	49	10" AWG 20 Leads

Centrifugal Blowers
Crossflow Blowers

In stock and ready for shipment; Brushless DC with integral electronics also available.

Single Inlet Blowers

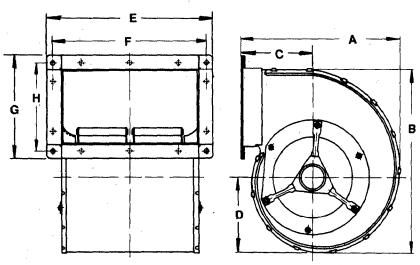
All ebm centrifugal blowers feature a external rotor motor and heavy-duty housing for long, trouble free life. This compact design provides a smaller form factor, excellent heat dissipation and lower operating costs.



CFM @ 0"	CFM @ .5"	Watts	Cap. (μf) 115V	Cap. (μf) 230V	Type	Dimensions (inches) A	B	C	D	E	F	G	H
38	—	28	3	1	G2E076-AA	4.60	5.00	2.37	2.13	3.00	2.60	2.68	2.28
50	28	30	4	1	G2E085-AA	4.60	5.00	2.37	2.13	3.00	2.60	2.68	2.28
40	20	32	—	—	G2S085-AA	4.60	5.00	2.37	2.13	3.00	2.60	2.68	2.28
70	63	55	—	—	G2S097-AA	5.08	5.47	2.36		N/A	N/A	N/A	N/A
30	25	42	—	—	*G2S097-DB	5.63	5.39	2.95	2.44	N/A	N/A	N/A	N/A
86	78	42	4	1.5	G2E108-AA	6.26	7.21	3.11	2.80	4.53	3.82	2.60	2.60
152	125	74	6	2	G2E120-AR	6.85	7.48	3.23	3.23	4.53	3.94	2.68	2.68
251	235	200	16	4	**G2E140-AC	8.90	10.28	4.05	4.21	5.12	4.53	4.13	4.13
200	186	185	8	2	**G2E140-AL	8.90	10.28	4.05	4.21	5.12	4.53	4.13	4.13
318	310	300	10	6	**G2E146-AF	8.90	10.28	4.05	4.21	5.12	4.53	4.13	4.13
225	170	135	7	2	G4E160-AB	8.90	10.28	4.05	4.21	5.12	4.53	4.13	4.13
300	262	150	10	2	G43180-AB	10.24	11.54	4.72	4.80	4.92	4.33	5.51	4.72
130	123	80	8	2	*G2E120-CA	6.71	7.09	3.43	3.11	4.33	3.7	3.86	3.23

Dual Inlet Blowers

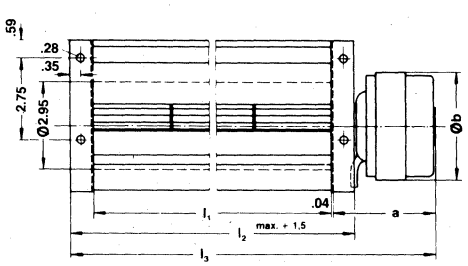
Unlike other dual centrifugal blowers, the external rotor motor mounted in the center of the impeller saves space and improves efficiency.



CFM @ 0"	CFM @ .5"	Watts	Cap. (μf) 115V	Cap. (μf) 230V	Type	Dimensions (inches) A	B	C	D	E	F	G	H
150	120	45	8	2	D2E097-BE	6.38	7.15	3.39	2.68	7.09	6.61	3.94	3.47
100	80	40	6	1.5	D2E097-CB	5.67	6.02	2.99	2.44	5.51	5.04	3.07	2.60
340	320	210	16	4	D2E133-AB	6.75	7.84	3.47	3.11	10.00	9.37	4.25	3.62
225	200	150	8	2	D2E133-BE	6.75	7.84	3.47	3.11	7.65	7.00	4.25	3.62
275	105	80	8	2	D4E133-AA	6.75	7.84	3.47	3.11	10.00	9.37	4.25	3.62
400	240	120	7	2	D43133-DB	8.03	9.13	3.80	3.68	10.63	10.00	5.59	4.96
400	320	120	8	2	D4E146-AA	8.11	9.37	3.81	3.86	10.63	10.00	5.59	4.96
410	350	140	10	3	*D4E160-AA	8.90	10.28	4.21	4.06	8.43	7.72	5.71	5.08
480	400	140	10	3	*D4E180-GF	10.39	11.46	4.72	4.84	9.65	9.06	5.51	4.72
650	640	220	30	5	*D4E180-GG	10.39	11.46	4.72	4.84	9.65	9.06	5.51	4.72
1100	1060	375	30	10	D4E180-CA	11.26	13.07	5.24	5.35	12.17	11.37	10.95	10.16
1100	1000	450	30	10	D4E200-CA	12.52	14.57	5.75	5.95	13.43	12.64	11.97	11.18

Crossflow Blowers

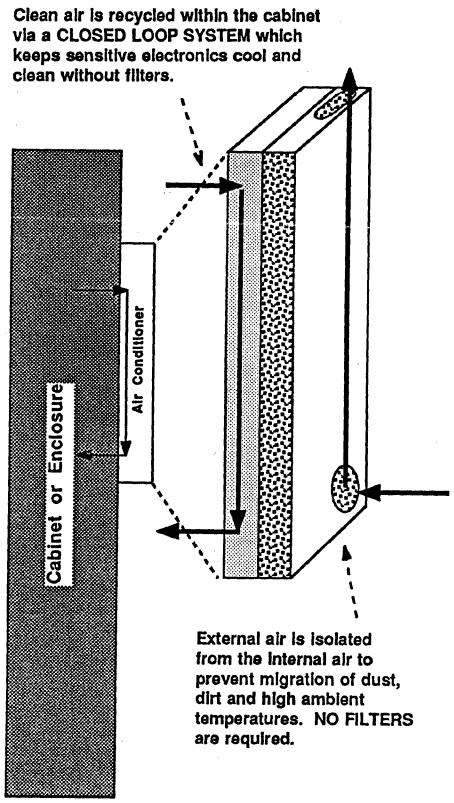
These blowers provide wide even distribution of the cooling air over surfaces to be cooled.

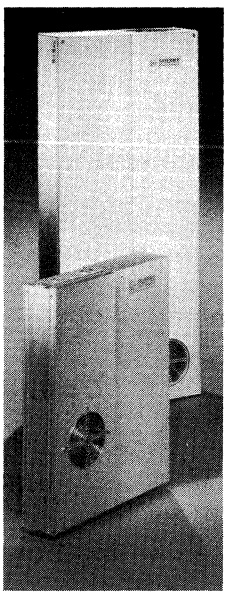


CFM @0"	CFM @.125"	Watts	Cap. (μf)	Model Number Series	Volt	Dimensions (inches) a	b	l-1	l2	l3	Wt. lbs.
190	120	43	4	EQR6-38-2-	115	2.97		15.02	18.13		6
190	120	43	1	EQR6-38-2-	230	2.97		15.02	18.13		6
190	120	43	4	EQR6-42-2-	115	1.44		16.55	18.13		6.5
190	120	43	1	EQR6-42-2-	230	1.44		16.55	18.13		6.5
515	515	195	4	QR08A-2EM38CF-	230	3.85	3.61	14.94	17.69	20.21	11
750	745	270	6	QR08A-2EM50CH-	230	4.13	3.61	19.66	22.41	25.20	13.2
445	210	75	2	QR08A-4EM38CD-	230	3.85	3.61	14.94	17.69	19.74	9.9
850	450	97	2	QR08A-4EM72CH-	230	4.13	3.61	28.31	31.06	33.85	15.4
250	160	64	2	QK08A-4EM35CB-	230	2.99	3.61	13.76	15.33	17.58	6.6
350	225	64	2	QK08A-4EM50CB-	230	2.99	3.61	19.66	21.23	23.47	7.7
475	320	67	2	QK08A-4EM70CD-	230	3.38	3.61	27.52	29.10	31.73	9.9
400	390	178	4	QK08A-2EM35CF-	230	3.85	3.61	13.76	15.33	18.44	9.9
670	590	271	6	QK08A-2EM50CH-	230	4.13	3.61	19.66	21.23	24.61	10.6
380	280	72	2	QK10A-4EM38CD-	230	3.38	3.61	14.94	16.51	19.19	10
460	320	93	3	QK10A-4EM48CF-	230	3.85	3.61	18.87	20.45	23.59	12
670	500	115	3	QK10A-4EM68CF-	230	3.85	3.61	26.74	28.31	31.49	14
900	720	131	4	QK10A-4EM98CH-	230	4.13	3.61	38.53	40.11	43.25	21
950	900	487	8	QK10A-2EM48FK-	230	5.66	5.42	18.87	20.45	25.40	22

ebm Industries, Inc. – 525 New Britain Avenue
Unionville, CT 06085, phone (203) 674-1515
TWX: 710-423-8723, FAX: 203-674-8536

Filterless Air Conditioners are perfect for keeping electronics cool & clean in hot & hostile environments





Availability
Seifert air conditioners are in stock and ready for immediate shipment. In addition, ebm application engineers are available to help you select and specify the unit best suited to your application requirements.

No-filter Air Conditioning
By using a unique, extruded aluminum condenser (Seifert Electronic U.S. Patent #4475358, W. German Patent #DBP3136226), the narrow aerodynamic profile guides the air-flow through the heat dissipation cycle without collecting contaminants.

Cabinet Protection
Seifert air conditioners are of closed-loop design which means that two entirely separate air circulation systems flow through the air conditioner. One system circulates clean air in the internal atmosphere of the sealed enclosure. The second circulation system is for outside ambient air which is isolated from the inside of the cabinet.

Humidity Control
A thermo-sensor is available to monitor the ambient temperature and to maintain cabinet temperature avoiding condensation on the electronics when the panel doors are open. Build up of static electicity in areas of extreme dehumidification is also prevented.

Special Features
- No filter needed
- Very narrow, 6 1/8", profile
- Energy efficient low power consumption
- Maintenance-free, long life expectancy
- Fully operational at ambient temperatures up to 60°C (140°F)
- Cabinet temperatures adjustable from 20°C to 50°C (68°F to 122°F)
- Operating condition noted by two LED indicators.

Model No.	BTU	Volts	Hz.	Amps.	Dimensions (in.) H	W	D	Wt. (lbs.)
4186100	1,400	115	60	3.6	20-1/2	10–5/8	4–3/8	28
4186000	1,400	230	60	1.8	20-1/2	10–5/8	4–3/8	28
4183100	3,000	115	60	3.7	32	18	6–1/8	80
4183300	3,000	230	60	1.8	32	18	6–1/8	80
4180100	6,000	115	60	8	43-1/8	18	6–1/8	97
4180300	6,000	230	60	4	43-1/8	18	6–1/8	97
4550100*	6,000	115	60	7.7	23-5/8	15-3/4	15-3/4	88
4550300*	6,000	230	60	3.8	23-5/8	15-3/4	15-3/4	88
4182300	10,000	230	60	6	61	18	6–1/8	152

* mounts on top of cabinet

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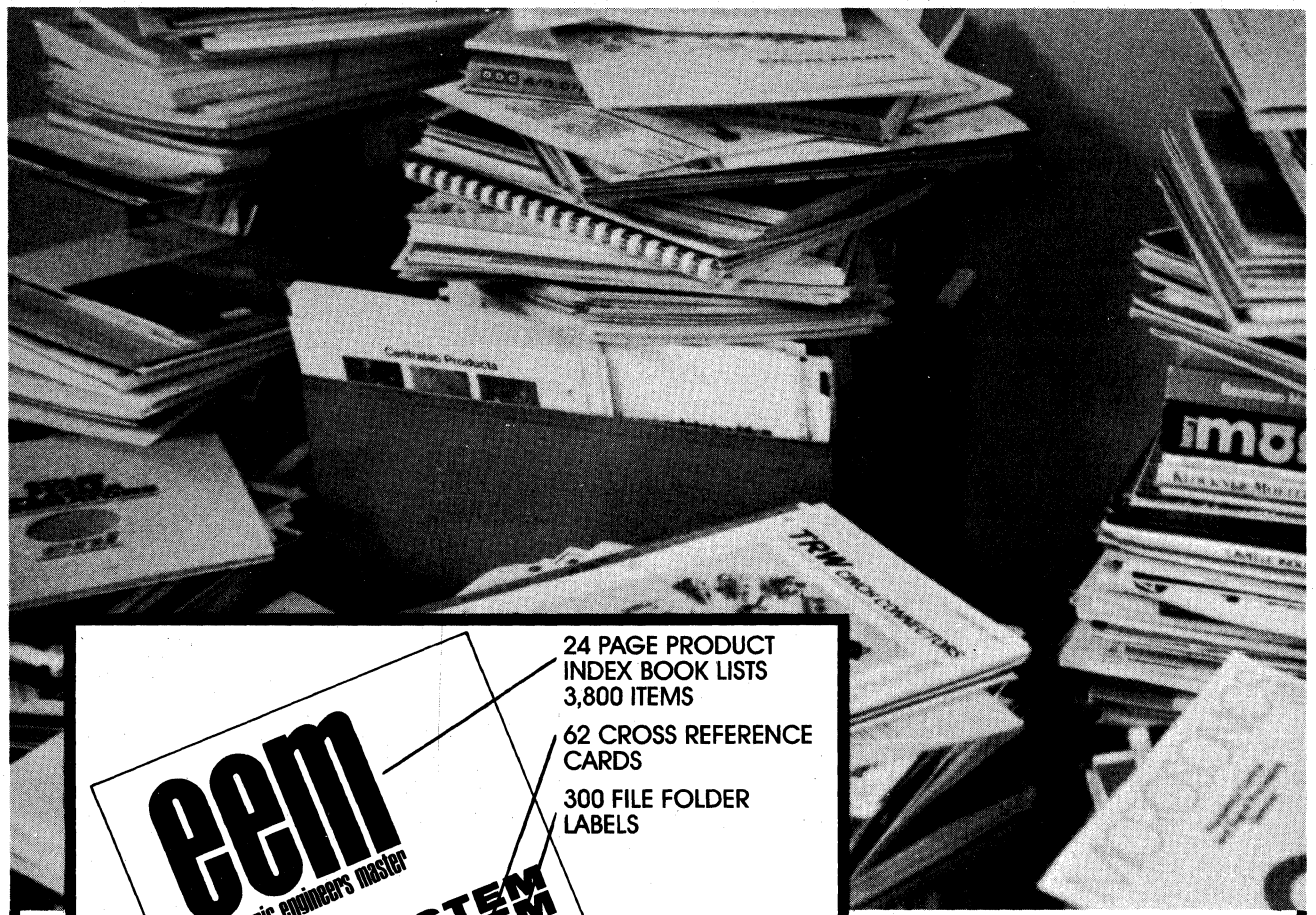
phone 203-674-1515, TWX: 710-423-8723, FAX: 203-674-8536



24 PAGE PRODUCT INDEX BOOK LISTS 3,800 ITEMS

62 CROSS REFERENCE CARDS

300 FILE FOLDER LABELS

ALL NEW with this edition of EEM

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Are your catalog files organized? Can you find any given catalog in a matter of seconds? If your answer is "Yes," you probably already have the EEM File System. But, if you said "No," you really ought to look into this simple system. It will save hours of time and tons of aggravation.

The EEM File System was invented over twenty-five years ago to help people who specify, buy, or work with electronic products and equipment. It is upgraded on a constant basis to reflect the current state of the art. It's easy to use and easy to customize to your particular needs.

You say you want to file catalogs by type of product? That's easy to do with The System. But, what are you going to do when there are multiple products in one catalog? Take Mallory for example. There are all kinds of products in the Mallory Short Form Catalog. With the EEM File System all you do is file the catalog under "M" for Mallory and refer to it on all of the cross reference cards that apply.

There are thousands of EEM File Systems in everyday use in engineering and procurement offices all over the world. Shouldn't you be using this proven system?

The EEM File System is shipped in one neat package. The package contains everything you need to set up your very own filing system. Best of all, it's easy to get and very affordable. Send a check or money order for $25.00 and EEM will pay the postage and sales tax. If you must use a purchase order, please add $5.00 for postage and handling. An invoice will accompany your System.

Don't waste any more time. Get organized now!

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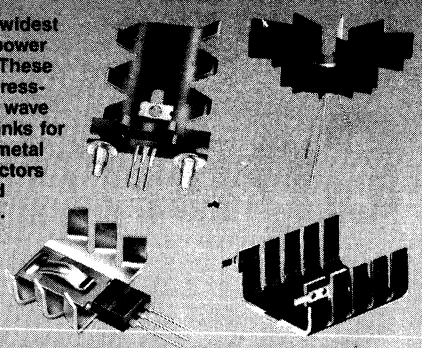
645 stewart ave., garden city, ny 11530

YOUR SINGLE SOURCE

FOR ALL YOUR STANDARD AND CUSTOM COOLING NEEDS

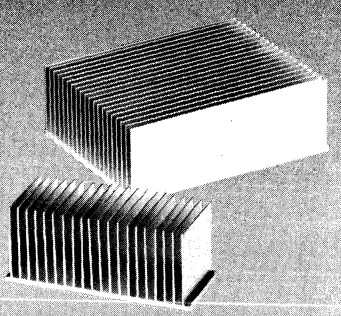
Low Power Heat Sinks

Choose from the widest selection of low power heat dissipators. These include clip-on, press-on, snap-on, and wave solderable heat sinks for both plastic and metal cased semiconductors for PC boards and chassis mounting.



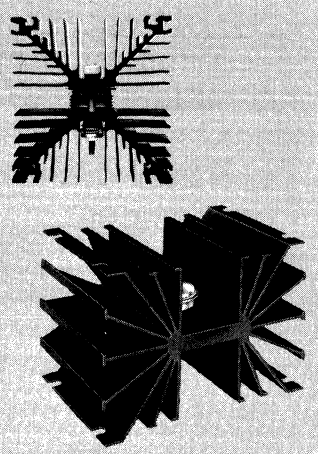
High Fin Density Extruded Heat Sinks

Choose from a variety of unique high fin density extrusions to provide maximum cooling efficiency per unit volume. These heat sinks give the same cooling performance as other heat sinks using nearly twice as much space. High fin density heat sinks provide maximum surface area and performance with relatively low weight.



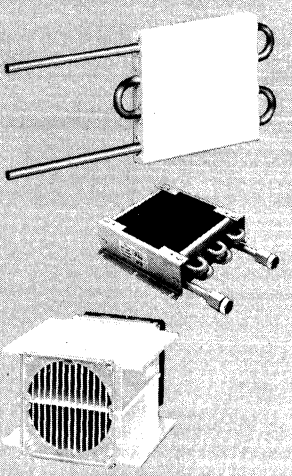
Extruded Heat Sinks and Extrusions

Choose from hundreds of existing shapes and sizes. Or, let us design that unique shape you need to optimize performance and cost. From design to finished heat sinks, and from small prototype quantities to large production quantities, our capabilities can meet all your requirements.



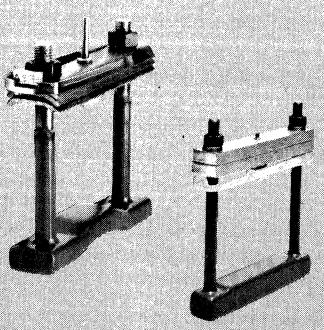
Active Cooling Heat Exchangers

Choose from a variety of liquid cooling and forced convection devices to provide safe temperature levels of densely packed semiconductors. We offer high pressure tube and fin type units (150 psi) made of copper tubes and fins mounted into an aluminum frame. Low pressure (15 psi) cellular type units provide excellent thermal performance while exhibiting very low pressure losses on both the air and water circuits. We offer custom design and manufacturing capability of compact high performance units to meet your requirements.



Mounting Clamps

Choose from clamps with compression ratings from 800 to 16,000 psi. These mounting clamps are for industry-standard compression rectifiers and SCR's. Unique force indicators provide direct reading of clamping force. All clamps are accurately centered giving uniform pressure. A variety of standard heat sinks are available for use with these mounting clamps.



Accessories

Choose from a wide selection of accessories to facilitate the installation and improve the thermal performance of both standard and custom heat sinks. We offer thermally conductive insulators, thermal joint compound, mounting hardware, Sync-Nut™ (insulated and non-insulated) wave-solderable locknuts, epoxy systems, and installation tools.



Call our Application Engineering Department Today at (617) 245-5900 for all Your Standard and Custom Cooling Products, Clamps, and Accessories.

EG&G WAKEFIELD ENGINEERING

Components Division

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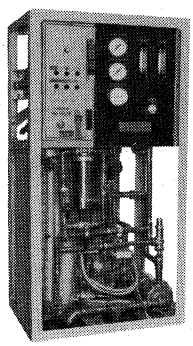
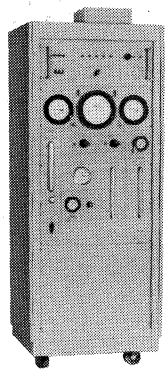
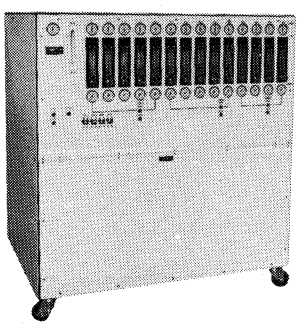
EXCELLENCE IN ENGINEERING SINCE 1949



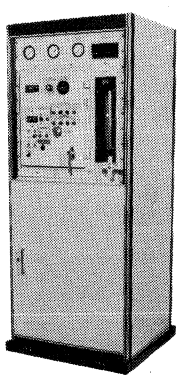
Shipboard Seawater to ETH/Water. H/E cools advanced radar system.



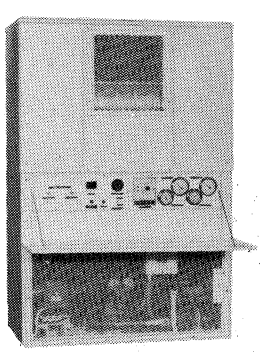
Coolanol to Air Military Heat Exchanger.



14 Path Cooling Unit with full instrumentation.



Burn in of travelling wave tubes is automatic using solid state systems in this Heat Exchanger.



Outdoor Mobile Heat Exchanger.

Closed Loop Cooling Systems

Self contained cooling packages for a wide variety of applications which allow user to

- **ELIMINATE TAP WATER**
- **CONTROL COOLANT QUALITY**
- **CONTROL COOLANT TEMPERATURES**
- **REDUCE COSTS**
- **IMPROVE PERFORMANCE OF EQUIPMENT**

HIGHEST QUALITY Industrial/Military Packages designed for long life/minimum maintenance.

UNITS AVAILABLE to circulate/cool air, water, coolanols, flourocarbons, hydraulic fluids, or any exotic coolants.

SEALED COOLANT SYSTEMS allow for high degree of purity: Filters, De-Ionizer Systems available.

HIGHLY EFFICIENT HEAT EXCHANGERS keep operating power to a minimum. Hot air exhausts can be used for space heating.

EXCELLENT TEMPERATURE CONTROL utilizing state of the art technology.

WIDE VARIETY OF OPTIONS available for monitoring, interlocking, controls, logic interfaces — customize a unit as you want it.

WRITE FOR COMPLETE INFORMATION

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ELECTRO IMPULSE LABORATORY, INC.

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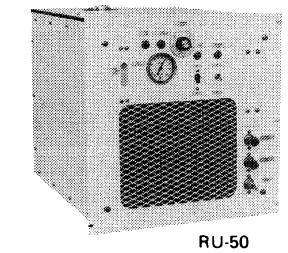
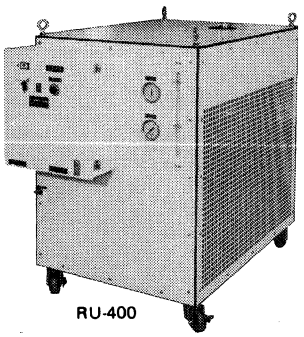
SEE OUR OTHER PRODUCTS ON PAGE D•1211

RU Series Refrigerated Liquid Cooling System



RU-50



RU-400

with Built-In Circulating System Air or Water Cooled Condenser

General Purpose Refrigerated Package for

- Water or Special Coolants.
- Sealed Refrigeration System features high efficiency liquid to freon heat exchanger and hot gas bypass system for close temperature control and freeze protection.
- Wide variety of options available.
- Easy Installation – connect inlet and discharge lines to heat load, connect line power and interlock (if desired), and fill system with coolant.

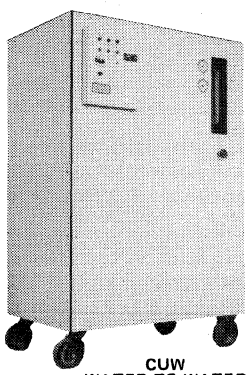
TYPICAL SPECIFICATIONS OF STANDARD UNITS

Model	Amb. 70°F Capacity Watts Water @ 65°F	GPM Flow at 50 PSIG	Std. Op. Voltage	Size L x W x H	Wt. Lbs.
RU-50	1600	1.5	115/1/60	23x17x16	160
RU-75	2400	1.5	208/230-1-60	25x25x37	175
RU-100	3200	1.5	208/230-1-60	25x25x37	200
RU-200	8000	4	208/230-1-60	36x26x35	460
RU-300	12,600	4	208/230-3-60	36x26x35	465
RU-400	16,000	4	208/230-3-60	36x26x35	485
RU-500	20,000	8	208/230-3-60	36x26x35	510
RU-750	30,000	8	208/230-3-60	36x26x70	650
RU-1000	40,000	10	208/230-3-60	36x26x70	750

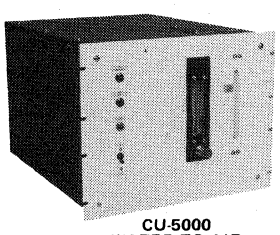
Capacities/Ratings are for water – consult factory for other coolants.
Table above represents typical values only – consult factory for different flow rates, voltage, capacity, etc.
Specifications subject to change without notice.

Electro IMPULSE, INC

CU Series Liquid to Air or CUW Series Liquid to Liquid



CUW
WATER TO WATER



CU-5000
WATER TO AIR

Non Refrigerated Heat Exchangers

- Use where coolant temperatures are not critical and may be slightly above ambient (or tap water).
- Tap water cooled units allow circulation of controlled, high purity water or other coolant in a closed loop with high efficiency.

TYPICAL SPECIFICATIONS OF STANDARD UNITS

Model	Water Temp. Rise °F/KW Over Ambient	GPM Flow at 50 PSIG	Std. Op. Voltage	Size L x W x H	Wt. Lbs.
CU-500	20	.5	115/1/60	10x19x20	60
CU-5000	5	1.5	115/1/60	23x17x14*	75
CU-10,000	3.5	4.0	115/1/60	28x20x20	150
CU-20,000	1.75	4.0	208/230-1-60	25x24x35	250
CU-30,000	1.0	4.0	208/230-1-60	23x29x47	210
CU-50,000	0.5	12	208/230-1-60	29x44x71	500
CU-80,000	0.4	15	208/230-3-60	29x53x71	600
CU-100,000	0.3	20	208/230-3-60	29x84x71	900

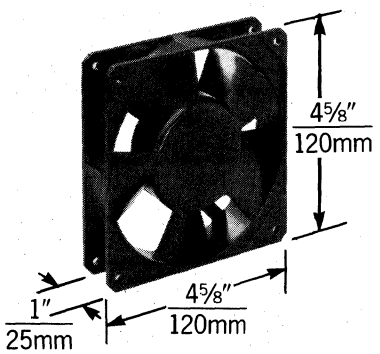
Capacities/Ratings are for water – consult factory for other coolants.
Table above represents typical values only – consult factory for different flow rates, voltage, capacity, etc.
Specifications subject to change without notice.
*19" Rack Mount

Electro IMPULSE, INC.
116 Chestnut St., P.O. Box 870, Red Bank, N.J. 07701
Telephone: 201-741-0404 TWX No. 7107225717
FAX 201-747-7153

ETRI® tube

ETRI has long been a leader in the design of air-moving devices, from large mine ventilators to miniature flat axial fans. Today, ETRI® air movers are cooling and protecting the most sophisticated of electronic packages. Throughout this time, our basic commitment to uncompromising quality and high performance standards has not changed. Our history of innovative designs and materials, coupled with precise manufacturing techniques provide you with an efficient, quality product for long maintenance-free operation.

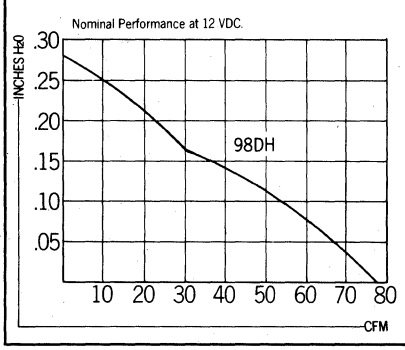
Model 98 BDC



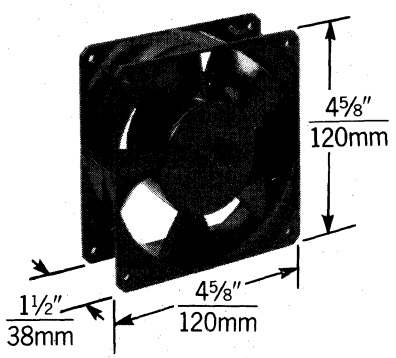
- Polarity and locked rotor protected
- Wide operational voltage/speed range 8-16 volts
- Complies with UL, CSA, VDE and FCC requirements
- Wire leads or terminals
- 12 or 24 volt, ball or sleeve bearing versions
- Operational monitor option
- 94V-O rated plastics

MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/l/s)
98DH 1LM 31000	12	4.5	.38	3,000	39	81/38

All fans described above are 12 volt sleeve bearing standard models.



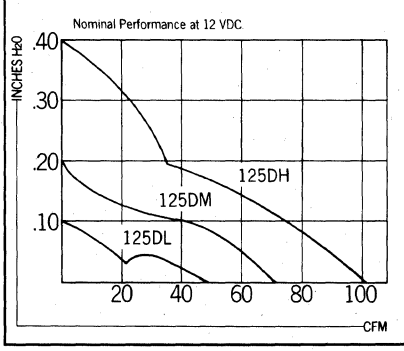
Model 125 BDC



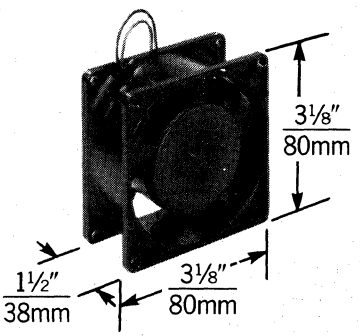
- High volume/pressure or low volume/low noise
- Three speed versions available in 12, 24 or 48 VDC
- Metal or 94V-O plastic housing
- Polarity and locked rotor protected
- Wire leads or standard terminals
- Wide operational voltage/speed range 8-16 volts
- Operational monitor option

MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/l/s)
125DL 1TM 21000	12	6.5	.54	3100	41	105/49
125DM 1TM 21000	12	2.6	.22	2200	33	72/34
125DH 1TM 21000	12	1.5	.125	1500	21	49/23

All fans described above are 12 volt, sleeve bearing, standard models.



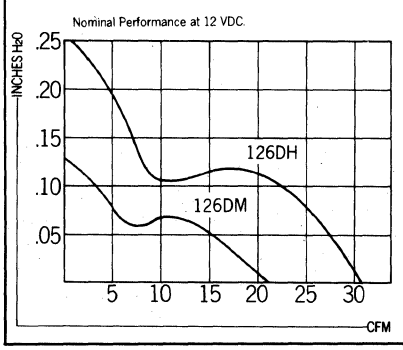
Model 126 BDC



- High performance and low noise
- Polarity and locked rotor protected
- Two speed versions available in 12 and 24 VDC
- 94V-O plastic housing, total weight 7.75 oz.
- Wire leads or terminals
- Wide operational voltage/speed range 8-16 volts
- Operational monitor option
- Complies with UL, CSA, VDE and FCC requirements

MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/l/s)
126DH 1LP 31000	12	3.1	.260	3600	30	32/15
126DM 1LP 31000	12	1.5	.125	2500	23	22/10

All fans described above are 12 volt, sleeve bearing standard models.



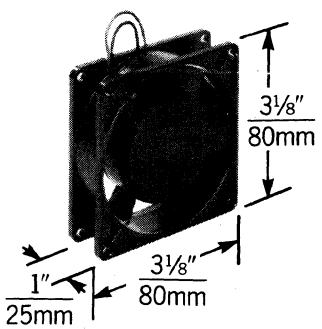
ETRI®

ETRI / PO Box 5006 / 608 Broome St. / Monroe, NC 28110 / TWX 810-649-1352 (704) 289-5423

axial fans.

ETRI's new line of Brushless DC fans offers the design engineer a wide range of product. Options in various voltages, speeds, bearing systems and termination configurations allows the engineer to precisely select the performance for his particular application. All ETRI BDC units are designed and manufactured to comply with UL, CSA, VDE and FCC requirements. Whether you select our Brushless DC or AC products (following pages) your assurance of dependable air moving performance is backed up by our 40 years of air moving experience.

Model 146 BDC

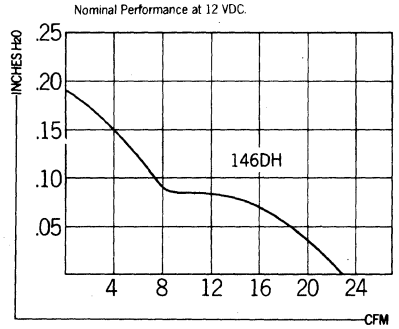


- High performance, low noise
- 94V-O plastic housing, total weight 4.5 oz.
- Sleeve or ball bearing 12 or 24 VDC
- Wire leads or terminals
- Polarity and locked rotor protected
- Complies with UL, CSA, VDE and FCC requirements
- Wide operational voltage/speed range 8-16 volts.

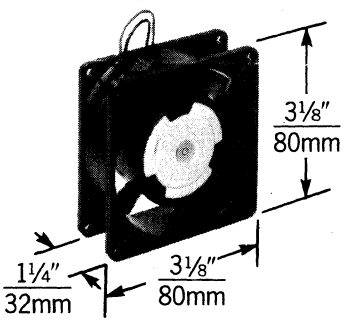
MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/ls)
146DH 1LP 31000	12	1.8	.15	3250	25	23/10.6

All fans described above are 12 volt, sleeve bearing standard models.

Nominal Performance at 12 VDC.



Model 159 BDC

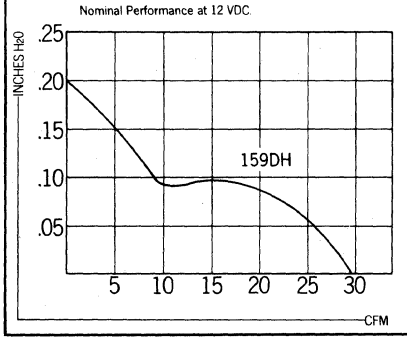


- Unprecedented low noise levels in 80 x 80 x 32mm fan
- Complies with UL, CSA, VDE and FCC requirements
- 94V-O plastic housing total weight 7 oz.
- Wire leads or terminals
- 12 and 24 VDC versions, sleeve or ball bearing
- Wide operational voltage/speed range 8-16 volts

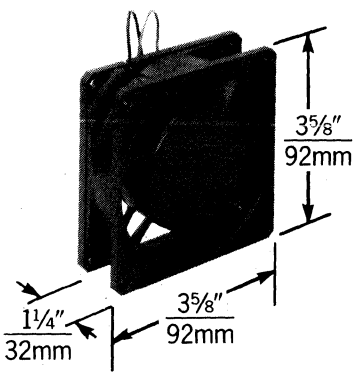
MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/ls)
159DH 1LP 31000	12	2.2	.18	3600	23	29/14

All fans described above are 12 volt, sleeve bearing standard models.

Nominal Performance at 12 VDC.



Model 162 BDC

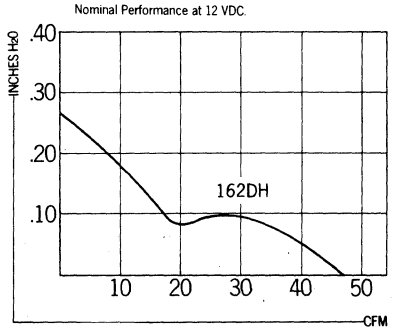


- 92 x 92 x 32mm, 45 CFM, 31dB
- 94V-O plastic housing total weight 7.75 oz.
- Wire leads or terminals
- Polarity and locked rotor protected
- Sleeve or ball bearings
- High performance low noise
- Wide operational voltage/speed range
- Complies with UL, CSA, VDE and FCC requirements

MODEL NUMBER	VDC	INPUT POWER (W)	LINE CURRENT (A)	RPM	NOISE dBSIL	AIR FLOW (CFM/ls)
162DH 1LP 31000	12	3.4	.28	3200	31	45/21

All fans described above are 12 volt, sleeve bearing standard models.

Nominal Performance at 12 VDC.



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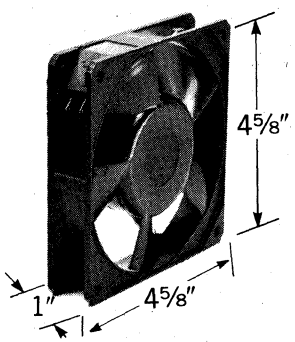
ETRI® tube

ETRI's popular-sized AC fans utilize rugged die cast housings for strength and durability. Glass-filled thermoplastic impellers (94V-O rated) are heat-stable and resistant to breakage. Rotors are lightweight and precision balanced for vibration-free operation. Bearings (either sleeve or ball) are

MODEL 98

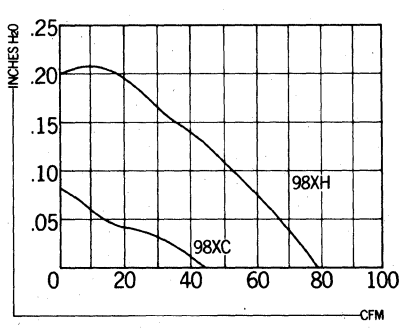


High volume/pressure performance where space is at a premium.

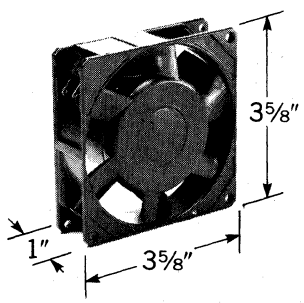
- Unique 1" thin profile on 4⅝" fan.
- Two RPM versions available.
- Available in either sleeve or ball bearing construction.
- Precision engineered blade-to-venturi fit.
- Low input power—as low as 10 watts.
- UL recognized/CSA certified.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
98XC-2182	115	60	10	110	1700	21	45
98XC-2181	220	60	12	70	1700	21	45
98XH-2182	115	60	11	110	3000	37	79
98XH-2181	220	60	13	65	3000	37	79

Model numbers shown are for sleeve bearing versions. To order ball bearing fans, omit the first "2" from the last group of digits.



MODEL 99

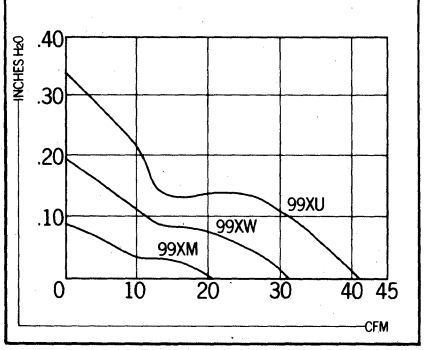


Slim 1" profile takes up less behind-the-panel space.

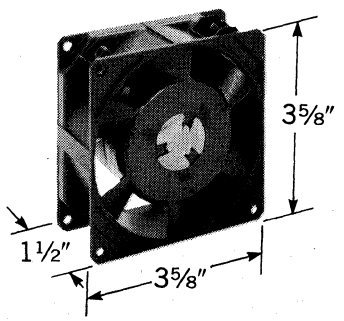
- Three different speed models in two voltage versions.
- Noise levels as low as 23 db (sil).
- True airfoil impeller blades move more air.
- Convenient standard terminals.
- Precision balanced lightweight rotor for longer vibration-free work life.
- UL recognized/CSA approved/VDE listed.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
99XM-2182	115	60	6	65	1700	19	21
99XM-2181	220	60	7	35	1700	19	21
99XW-2182	115	60	6	70	2500	26	32
99XW-2181	220	60	7	40	2500	26	32
99XU-2182	115	60	9	105	3200	33	40
99XU-2181	220	60	11	60	3200	33	40

Model numbers shown are for sleeve bearing versions. To order ball bearing fans, omit the first "2" from the last group of digits.



MODEL 113

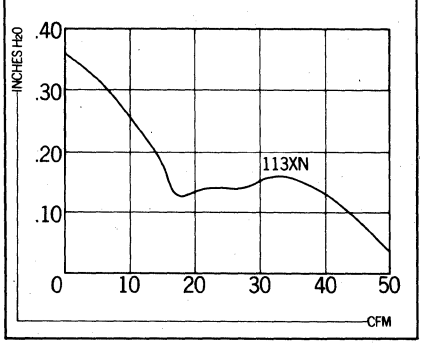


An intermediate size fan. Ideal for power supply applications.

- 3.25" mounting centers.
- Quiet, efficient operation with maximum volume/pressure delivery.
- 94V-O rated glass-filled impeller is heat-stable with high resistance to breakage.
- Available in either sleeve or ball bearing construction.
- UL recognized/CSA approved.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
113XN-2182	115	60	11	135	3300	35	53
113XN-2181	220	60	12	80	3300	35	53

Model numbers shown are for sleeve bearing versions. To order ball bearing fans, omit the first "2" from the last group of digits.



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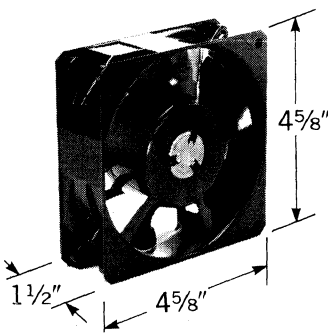
axial fans.

lifetime lubricated. All models operate efficiently at 50Hz or 60Hz and most are available in either 115VAC or 220VAC. Every model is UL Recognized (file E64887) and CSA Certified (file 43861). Many models are VDE approved. For more information call ETRI at 704/289-5423.

MODEL 125

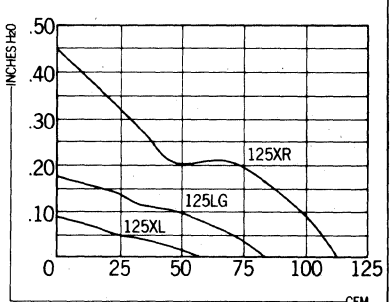


Extremely effective in high density applications where high pressure performance is required.

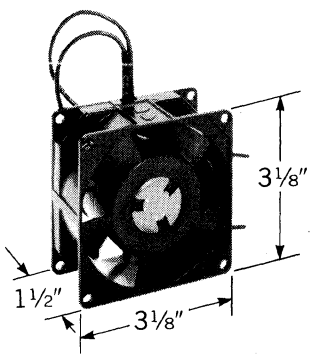
- Develops 90 CFM at .15" H O and 75 CFM at .2" H O.
- Can replace two conventional fans in demanding applications.
- Produces highest volume of air per watt of power of any fan of its type.
- Available in either sleeve or ball bearing construction.
- UL recognized CSA certified.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
125XL-2282	115	60	10	115	1650	29	57
125XL-2281	220	60	10	65	1650	29	57
125LG-2282	115	60	13	160	2400	36	83
125LG-2281	220	60	15	90	2400	36	83
125XR-2282	115	60	15	180	3250	40	112
125XR-2281	220	60	15	105	3250	40	112

Model numbers shown are for sleeve bearing versions. To order full bearing fans, omit the first "2" from the last group of digits



MODEL 126

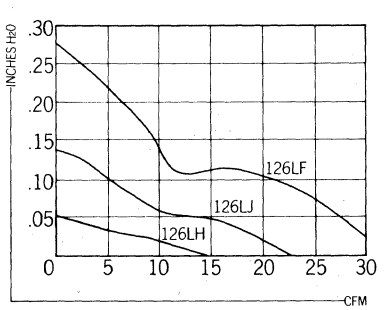


Low input power, low noise, high performance in this fan package.

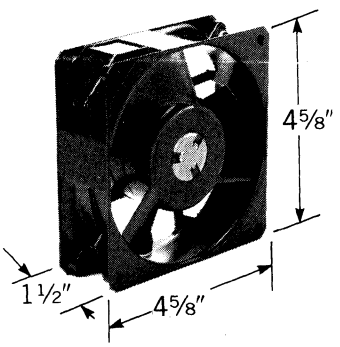
- 2.81" mounting centers.
- Very quiet operation—only 8 db (sil) on Model 126LH.
- Wire leads or terminal version.
- Three different RPM models.
- Available in either sleeve or ball bearing construction.
- UL recognized/CSA certified/VDE listed.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
126LH-2182	115	60	3	40	1550	9	15
126LJ-2182	115	60	5	60	2400	19	23
126LF-2182	115	60	8	100	3200	26	32
126LF-2181	220	60	8	60	3200	26	32

Model numbers shown are for sleeve bearing versions. To order full bearing fans, omit the first "2" from the last group of digits.



MODEL 141

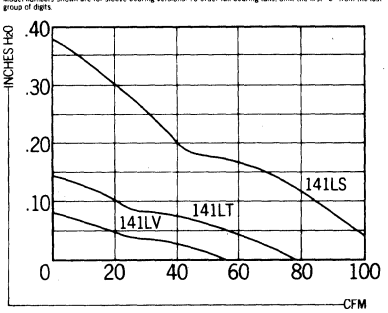


105, 75, and 55 CFM versions are available in this most popular size fan.

- 4.125" mounting centers and standard terminal configuration.
- Low power consumption—only 8 watts on 141LV model.
- Tight blade-to-venturi fit assures optimum performance.
- Available in either sleeve or ball bearing construction.
- UL recognized/CSA certified/VDE listed.
- Reverse flow models available.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
141LV-2282	115	60	8	100	1700	23	55
141LV-2281	220	60	9	55	1700	23	55
141LT-2282	115	60	9	110	2300	33	75
141LT-2281	220	60	10	65	2400	33	75
141LS-2282	115	60	12	140	3200	41	105
141LS-2281	220	60	12	80	3200	41	105

Model numbers shown are for sleeve bearing versions. To order full bearing fans, omit the first "2" from the last group of digits.



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SEE FOLLOWING PAGES

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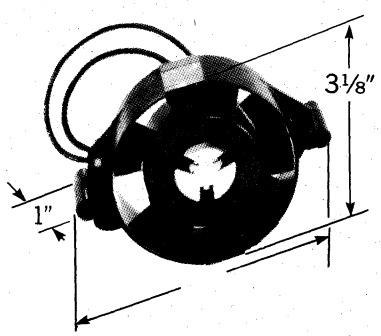
ETRI® fans

ETRI's flat tubeaxial fans are quiet, efficient, cost effective components that are ideal for most electronic cooling applications. For complete technical specifications and delivery information call the ETRI factory at (704) 289-5423.

and accessories.

Accessory items assure correct fit on ETRI fans. Finger Guards will retro fit most existing fans.

MODEL 146

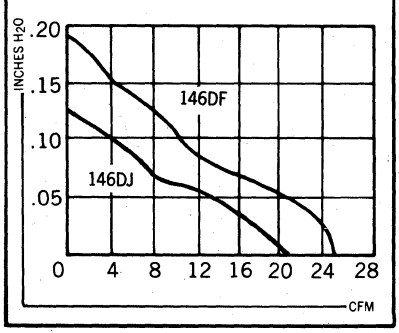


3" x 1" fan specially designed for desk-top electronic applications

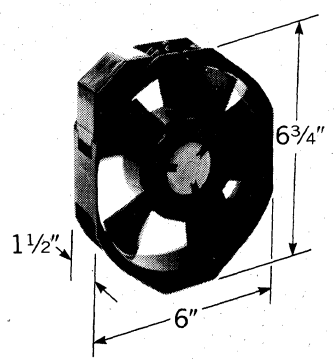
- Low acoustical levels.
- 25 CFM at free air delivery.
- Simplified time saving mounting with bosses and speed nuts provides real economy for high volume installation.
- 115 or 220 volt.
- UL recognized/CSA certified/VDE approved.
- Will fit 3⅛" designs in a 1" profile.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
146DJ-2182	115	60	5	60	2600	23	21
146DF-2182	115	60	5	60	3100	24.7	25
146DF-2181	220	60	9	50	3100	24.7	25

Model numbers shown are for sleeve bearing versions. To order ball bearing fans, omit the first "2" from the last group of digits.



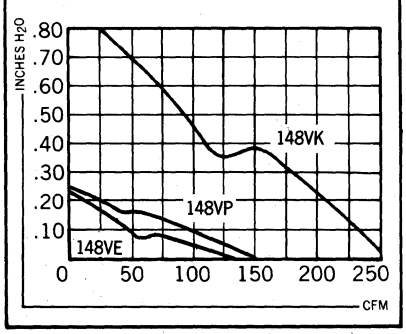
MODEL 148



Ideal for high pressure/high flow applications. Develops 180 CFM at .3" H_2O.

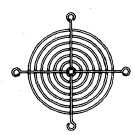
- 1½" thick—less than most 6" fans.
- Efficient, permanent split-capacitor motor, thermally protected.
- Pre-loaded ABEC-3, double-shielded, ball bearing system runs quietly in any position.
- UL recognized/CSA certified.
- Reduced speed versions available.
- Provides wide range cooling with low acoustical disturbances.

PART NUMBER	VOLT (V)	FREQ (Hz)	POWER INPUT (W)	CURRENT INPUT (ma)	SPEED (RPM)	NOISE LEVEL SIL/dB	FREE AIR DELIVERY (CFM)
148VE282	115	60	11	90	1650	33	123
148VE281	220	60	14	80	1650	33	123
148VP282	115	60	18	160	2100	39	149
148VP281	220	60	22	100	2350	45	172
148VK282	115	60	32	270	3300	51	255
148VK281	220	60	33	170	3200	50.5	255



FINGER GUARDS

Ensures safe operation in situations that require guarding.

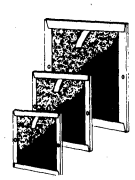


- Standard mounting centers for versatile installation.
- Meets UL Spacing requirements.
- Sturdy .062" steel wire rings welded to .080" ribs.
- Bright zinc-plated finish.



FILTERS

Provides maximum air flow while permitting effective filtering.

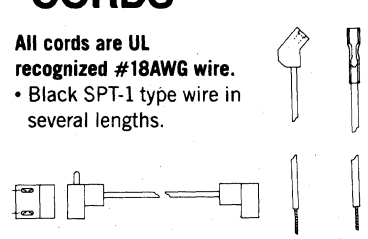


- Expanded/slit aluminum foil traps dust particles.
- Minimum pressure loss.
- Complies with UL requirements.

CORDS

All cords are UL recognized #18AWG wire.

- Black SPT-1 type wire in several lengths.



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QUALITY FANS FOR ELECTRONICS.

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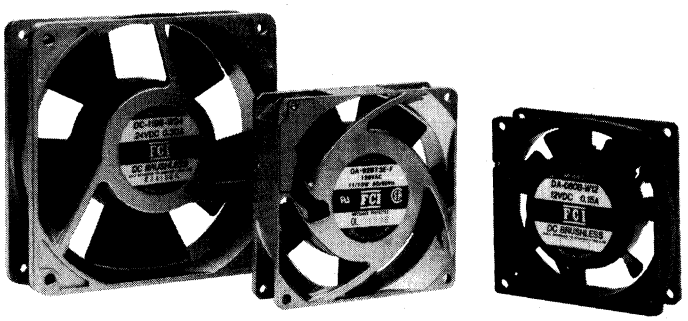

Selection Guide

AC TUBE AXIAL FANS (UL and CSA approved)

MODEL NO.	BEARINGS	VOLTS	CFM	SIZE	WIDTH
OA-119S-T3E-F*	Sleeve	115	105	4.69″	1.50″
OA-119B-T3E-F*	Ball	115	105	4.69″	1.50″
OA-119B-T3LE-F	Ball	115	53	4.69″	1.50″
OA-092S-T3E-F*	Sleeve	115	33	3.62″	.984″
OA-092B-T3E-F*	Ball	115	33	3.62″	.984″
OA-092B-T3LE-F	Ball	115	25	3.62″	.984″
FC-080S-W3	Sleeve	115	30	3.14″	1.50″
FA-080B-W3	Ball	115	25	3.14″	.984″
FA-880B-W3	Ball	115	16	3.14″	.984″
FC-119B-T3	Ball	115	105	4.69″	1.50″

Note: Above available in 230V—change "3" to "6"

*119 and 092 are VDE approved

DC BRUSHLESS MOTOR FANS*

MODEL NO.	BEARINGS	VOLTS	CFM	SIZE	WIDTH
DC-119B-W12-F	Ball	12	105	4.69″	1.50″
DA-119B-W12-F	Ball	12	75	4.69″	.984″
DA-119B-W12L-F	Ball	12	55	4.69″	.984″
DA-092B-W12-F	Ball	12	38	3.62″	.984″
DA-092-W12-L	Ball	12	30	3.62″	.984″
DF-080B-W12-F	Ball	12	25	3.14″	1.25″
DA-080B-W12L-F	Ball	12	20	3.14″	.984″
DA-080B-W12-F	Ball	12	24	3.14″	.984″
DA-060B-W12	Ball	12	15	2.36″	.984″
DA-060B-W12L	Ball	12	8	2.36″	.984″

Note: Above models available in 24 and 48 volts.

*Sensor on DC fan is optional.

AC and DC FANS

FCI

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Outside California
(800) 354-0660

FCI
Frederick Components International
A Corton Group Member

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Chatsworth, California 91311
(818) 882-0868

the reliable alternative for fans, blowers and cooling devices

hi-tech



MODULAR CABINET BLOWERS
Applications include heat exchangers, slot blowers, coolers, filter boxes. As a solid state temperature control, unit maintains optimum temperature range.

PACKAGE BLOWERS
Fully assembled high performance blowers feature standard double inlet wheels and automatic reset thermal protection. Housings are heavy-weight steel with a durable flat black finish.

BLOWER HOUSINGS/PARTS
Housings, inlet flanges, cover plates and outlet collars in sizes from 2" to 13" are available for prompt delivery. All parts can be furnished either unpainted or with a hard wearing flat black finish.

AXIAL FLOW FANS
Hi-Tech's axial flow fans are the economical solution for high volume, low static pressure applications; for limited space, spot cooling installations; and where extremely low sound levels are required.

TANGENTIAL BLOWERS
LAMINA-FLO tangential blowers are designed for low profile, wide outlet installations and feature high CFM, even air flow patterns and extremely quiet operation.

SINGLE/DUAL CENTRIFUGAL BLOWERS
Smooth, vibration-free performance assured with balanced wheels and motors. Single and three phase UL approved motors. Static pressures from 0" to 3.0"; outputs to 2000 CFM; wheel diameters from 3" to 12".

When you need a backup source you need them now! When you need assistance with a custom fan or blower you need it now! Hi-Tech will provide that bend-over-backwards service plus first line quality and uncompromising product reliability.

Hi-Tech designs and builds all kinds of cooling components, from axial fans to solid state temperature controllers. Send us your needs. Hi-Tech — The reliable alternative.

SPC Quality Assurance

hi-tech, inc. *fluid handling specialists*

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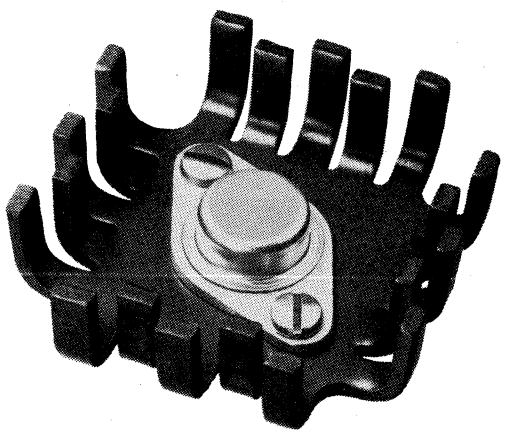
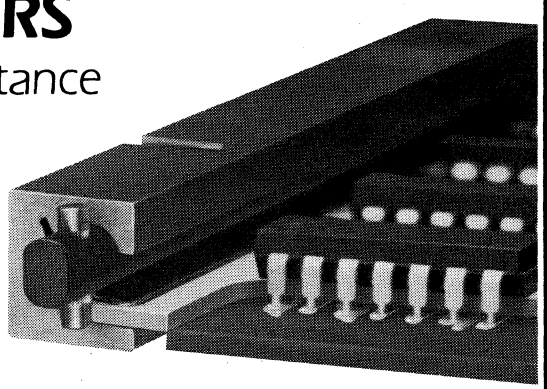
HEAT SINKS



- Stamped
- Extruded
- Custom
- Standard
- Labor Saving Hardware
- Solderable Studs & Tabs
- Pin Grid Array (PGA) Heat Sinks
- JIT Compliance

ZIF™ BOARD RETAINERS



- Low 2°C/W/In Thermal Resistance
- 70-100 PSI Retention Force
- ¼ Turn Positive Locking
- No Special Tools Required
- DESC Spec

MILITARY ENCLOSURES

- Functionally Tested
- Serialized for Traceability

LINE REPLACEABLE MODULES (LRM'S)

- SEM Format E

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Fax (818) 848-8872 Telex II: 910-498-2206

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
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Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
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Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
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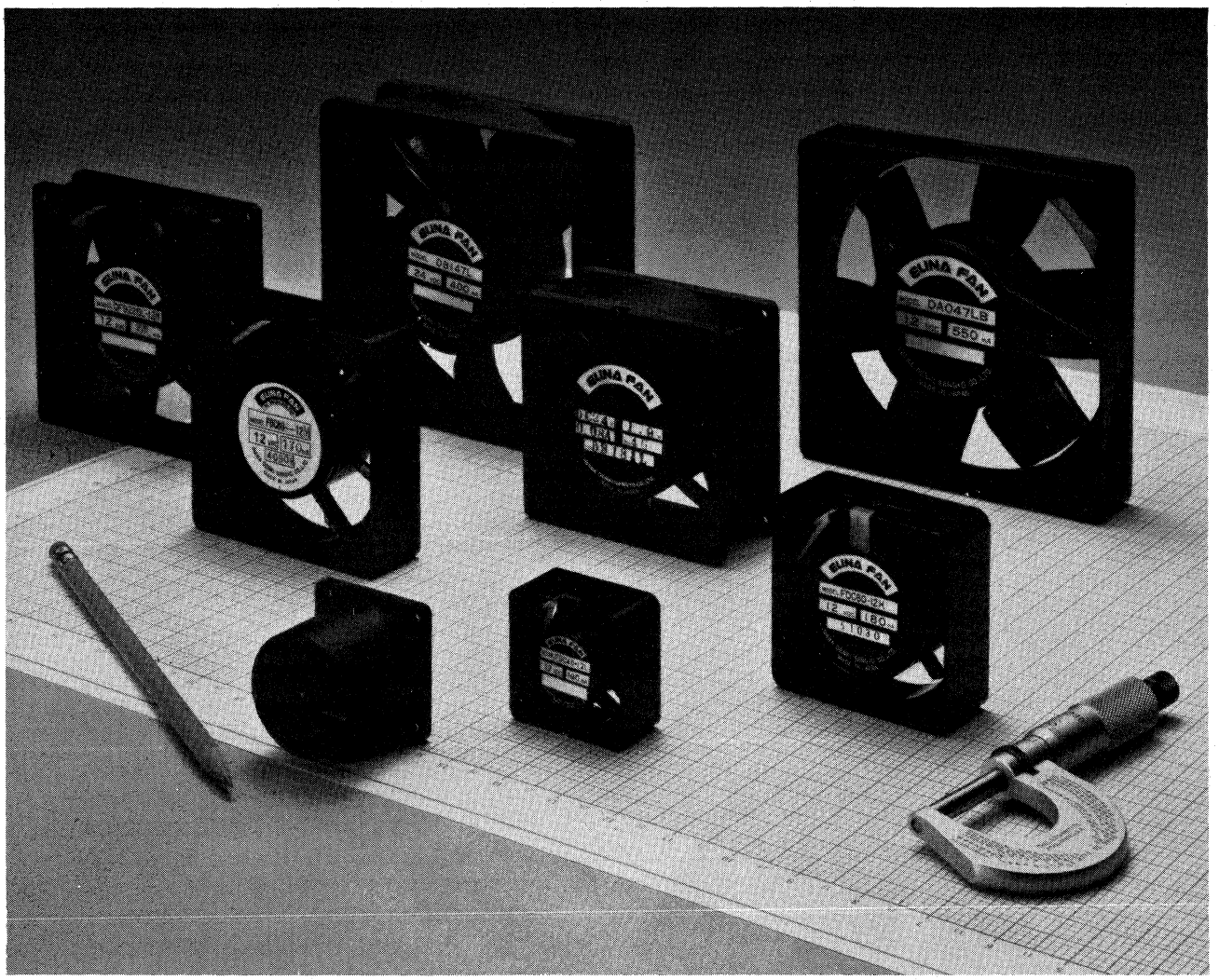

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Our DC fans feature superior performance characteristics and power efficiency. Square sizes of 30 mm, 40 mm, 60 mm, 80 mm, 92 mm and 120 mm are standard. Your choice of ball bearing or sintered iron sleeve bearings provide for outstanding reliability and long life expectancy. Elina fans work extremely well at all rated voltages, and are extremely quiet. By altering the voltage within certain voltage ranges the performance and noise level can be adjusted. Locked rotor and polarity protection is standard on all Elina fans.

Elina's popular sized AC fans utilize rugged die cast housings for strength and durability. Glass filled thermoplastic umpellers are heat stable and resistant to breakage. Rotors are lightweight and precision balanced for vibration-free operation. Bearings (either sleeve or ball) are lifetime lubricated. All Elina fans operate efficiently at 50 Hz or 60 Hz and most are available at either 115 VAC or 22 VAC. Every model is UL recognized and CSA certified. For more information please call us at 408-432-1199.

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ELINA AC/DC FANS

AC FANS

EP SERIES

- ☐ Durable die cast aluminum venturi
- ☐ PBT plastic impeller of 94V-O material
- ☐ Choice of 115V AC or 230V AC
- ☐ Shaded pole motor, with sleeve bearings
- ☐ Impedance protected
- ☐ Choice of three speeds to satisfy various applications
- ☐ UL recognized/CSA certified
- ☐ Life expectancy 100,000 hrs. at 25°C (Shaft horizontal use)
- ☐ Operating temperature = −10°~ + 70°C

AU SERIES

- ☐ Durable die cast aluminum venturi
- ☐ Polybutylene telephthalate (UL94V-O) or polycarbonate (UL94V-O) impeller
- ☐ Choice of 115V AC or 230V AC
- ☐ Shaded pole motor, with ball bearing
- ☐ Locked rotor and impedance protected
- ☐ Choice of three speeds to satisfy various applications
- ☐ Choice of terminal or lead wire type
- ☐ UL recognized/CSA pending
- ☐ Life expectancy 100,000 hrs. at 25°C
- ☐ Operation temperature = −10°C~ + 70°C
- ☐ Weight 18.0 oz (530g)

DC FANS

FDC SERIES

- ☐ Housing = Aluminum
- ☐ Polybutylene telephthalate (UL94V-O) or polycarbonate (UL94V-O) impeller
- ☐ Locked rotor and polarity protected DC motor with ball bearing (sleeve bearing type is available upon request)
- ☐ Operating temperature = −10°C~ + 70°C
- ☐ Choice of 5V, 12V or 24V DC
- ☐ Choice of three speeds to satisfy various applications
- ☐ Life expectancy 60,000 hrs. at 25°C
- ☐ 13″ UL1007, CSA TR64, AWG24 lead wires (340mm)

SPECIFICATIONS

MODEL NO.	PART NO.	AIR FLOW (CFM)	VOLT/ FREQ. (V/HZ)	CUR-RENT (A)	LOCKED ROTOR (A)	INPUT (W)	SPEED (RPM)	NOISE (dBA)	BEAR-ING	SIZE INCH / mm	WEIGHT
EP082515	HSL	21	115/60	0.11	0.13	12	2800	33	SLEEVE	3.1 × 1 / 80 × 25	8.7 oz.
EP082515	LSL	15	115/60	0.10	0.12	11	2300	29	SLEEVE		
EP082530	HSL	21	230/60	0.06	0.09	12	2800	33	SLEEVE		
EP082530	LSL	15	230/60	0.05	0.07	11	2300	29	SLEEVE		
EP083815	HSL	30	115/60	0.12	0.14	14	2800	35	SLEEVE	3.1 × 1.5 / 80 × 38	12.5 oz.
EP083815	LSL	23	115/60	0.11	0.12	12	2500	32	SLEEVE		
EP083830	HSL	30	230/60	0.07	0.10	15	2800	35	SLEEVE		
EP083830	LSL	23	230/60	0.06	0.08	13	2500	32	SLEEVE		
EP092515	HST	36	115/60	0.11	0.13	12	2700	39	SLEEVE	3.6 × 1 / 92 × 25	9.6 oz.
EP092515	LST	26	115/60	0.09	0.11	10	2200	35	SLEEVE		
EP092530	HST	36	230/60	0.06	0.09	12	2700	39	SLEEVE		
EP092530	LST	26	230/60	0.05	0.07	11	2200	35	SLEEVE		
EP123815H	HST	105	115/60	0.18	0.21	21	3000	49	SLEEVE	4.7 × 1.5 / 120 × 38	17.7 oz.
EP123815M	MST	75	115/60	0.14	0.16	15	2500	42	SLEEVE		
EP123815L	LST	60	115/60	0.10	0.11	12	2150	38	SLEEVE		
EP123830H	HST	105	230/60	0.11	0.12	24	3000	49	SLEEVE		
EP123830M	MST	75	230/60	0.08	0.10	18	2500	42	SLEEVE		
EP123830L	LST	60	230/60	0.06	0.08	14	2150	38	SLEEVE		

AU9225T	115H	35	115/60	0.10	0.13	9	3100	39	BALL	3.6 × 1 / 92 × 25	17.7 oz.
AU9225T	230H	35	230/60	0.05	0.06	9	3100	39	BALL		
AU1225T	115H	78	115/60	0.13	0.17	11	2900	46	BALL	4.7 × 1 / 120 × 25	
AU1225T	115L	35	115/60	0.07	0.07	6	1600	35	BALL		
AU1225T	230H	78	230/60	0.06	0.07	11	2900	46	BALL		
AU1225T	230L	35	230/60	0.04	0.04	6	1600	35	BALL		
AU1238T	115H	100	115/60	0.18	0.24	13	3100	50	BALL	4.7 × 1.5 / 120 × 38	
AU1238T	115M	80	115/60	0.13	0.15	10	2600	46	BALL		
AU1238T	115L	60	115/60	0.10	0.11	8	2000	38	BALL		
AU1238T	230H	100	230/60	0.09	0.11	13	3100	50	BALL		
AU1238T	230M	80	230/60	0.07	0.08	10	2600	46	BALL		
AU1238T	230L	60	230/60	0.06	0.06	8	2000	38	BALL		

MODEL NO.	AIR FLOW (CFM)	RATED VOLTAGE (VDC)	RATED CURRENT (A)	INPUT (W)	STATIC PRESSURE (INCH H20)	SPEED (RPM)	NOISE (dBA)	BEAR-ING	SIZE INCH / mm	WEIGHT
FDC40-05L	4	5	0.19	1.0	0.09	5000	29	SLEEVE	1.6 × 0.8 / 40 × 20	1.6 oz.
FDC40-05M	6	5	0.37	1.9	0.19	7000	37	SLEEVE		
FDC40-05H	8	5	0.60	3.0	0.30	9000	45	SLEEVE		
FDC40-12L	4	12	0.075	0.9	0.09	5000	29	SLEEVE		
FDC40-12M	6	12	0.145	1.7	0.19	7000	37	SLEEVE		
FDC40-12H	8	12	0.25	3.0	0.30	9000	45	SLEEVE		
FDC40-24M	6	24	0.095	2.3	0.19	7000	37	SLEEVE		
FDC40-24H	8	24	0.145	3.5	0.30	9000	45	SLEEVE		
FDC60-12LL	8	12	0.08	0.96	0.04	2500	25	BALL	2.4 × 1 / 60 × 25	
FDC60-05L	10	5	0.22	1.1	0.09	3000	30	BALL		
FDC60-05M	13	5	0.38	1.9	0.15	3800	36	BALL		
FDC60-12L	10	12	0.095	1.14	0.09	3000	30	BALL		
FDC60-12M	13	12	0.14	1.68	0.15	3800	36	BALL		
FDC60-12H	15	12	0.18	2.16	0.19	4400	41	BALL		
FDC60-12HH	19	12	0.37	4.4	0.28	5700	45	BALL		
FDC60-24L	10	24	0.055	1.32	0.09	3000	30	BALL		
FDC60-24M	13	24	0.08	1.92	0.15	3800	36	BALL		
FDC60-24H	15	24	0.10	2.4	0.19	4400	41	BALL		4.6 oz.
FDC80-05L	20	5	0.24	1.2	0.09	2200	29	BALL	3.1 × 1 / 80 × 25	
FDC80-05M	26	5	0.44	2.2	0.14	2750	36	BALL		
FDC80-12L	20	12	0.10	1.2	0.09	2200	29	BALL		
FDC80-12M	26	12	0.17	2.04	0.14	2750	36	BALL		
FDC80-12H	30	12	0.22	2.64	0.17	3200	40	BALL		
FDC80-24L	20	24	0.06	1.44	0.09	2200	29	BALL		
FDC80-24M	26	24	0.09	2.16	0.14	2750	36	BALL		
FDC80-24H	30	24	0.12	2.88	0.17	3200	40	BALL		

Frame size: Inches (millimeters) 3.1″ square × 1″ deep (60 × 25). Refer to attached page for mm sizes.

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ELINA AC/DC FANS

DC FANS

HDF SERIES

- ☐ Durable PET 94-O venturi
- ☐ PBT 94V-O plastic impeller
- ☐ Locked rotor and polarity protected DC motor with ball bearings
- ☐ Operating temperature at −10°C~+60°C
- ☐ Choice of 12V DC or 24V DC
- ☐ Choice of two speeds to satisfy various applications
- ☐ Life expectancy 60,000 hrs. at 25°C
- ☐ 11.8 in. UL1007, CSA TR64, AWG24 lead wires
- ☐ Weight 4.5 oz (140g)

DA/DB SERIES

- ☐ Durable die cast aluminum venturi
- ☐ PBT plastic impeller of 94V-O material
- ☐ Brushless, electronically commulated DC motor with sleeve bearings
- ☐ Choice of 12V DC or 24V DC
- ☐ Choice of three speeds to satisfy various applications
- ☐ Life expectancy 60,000 hrs. at 25°C (Shaft horizontal use)
- ☐ Operating temperature = −10°C~+65°C
- ☐ Weight 10.9 oz (338g)

DAP/DBP SERIES

- ☐ Plastic Venturi & impeller of 94HB material
- ☐ UL NO. E49895C1
- ☐ Brushless, electronically commulated DC motor with sleeve bearings
- ☐ Choice of 12V DC or 24V DC
- ☐ Choice of three speeds to satisfy various applications
- ☐ Life expectancy 60,000 hrs. at 25°C (Shaft horizontal use)
- ☐ Operating temperature = −10°C~+65°C
- ☐ Weight 3.4 oz (105g)

SPECIFICATIONS

MODEL NO.	AIR FLOW (CFM)	RATED VOLTAGE (VDC)	RATED CURRENT (A)	INPUT (W)	STATIC PRESSURE (INCH H20)	SPEED (RPM)	NOISE (dBA)	BEARING	SIZE INCH / mm	WEIGHT
HDF6025L-12HB	18	12	0.20	2.40	0.20	4500	34	BALL	2.4 × 1 / 60 × 25	2.7 oz.
HDF6025L-12MB	12	12	0.16	1.90	0.08	3000	27	BALL		
HDF6025L-24HB	18	24	0.10	2.40	0.20	4500	34	BALL		
HDF6025L-24MB	12	24	0.08	1.90	0.08	3000	27	BALL		
HDF8025L-12HB	38	12	0.22	2.60	0.16	3150	34	BALL	3.1 × 1 / 80 × 25	3.2 oz.
HDF8025L-12MB	30	12	0.16	1.90	0.09	2450	31	BALL		
HDF8025L-12LB	22	12	0.14	1.70	0.05	1850	28	BALL		
HDF8025L-24HB	38	24	0.11	2.60	0.16	3150	34	BALL		
HDF8025L-24MB	30	24	0.09	1.90	0.09	2450	31	BALL		
HDF9225L-12HB	50	12	0.36	4.30	0.24	3300	40	BALL	3.6 × 1 / 92 × 25	4.5 oz.
HDF9225L-12MB	44	12	0.22	2.60	0.18	2850	35	BALL		
HDF9225L-12LB	35	12	0.20	2.40	0.12	2300	30	BALL		
HDF9225L-24HB	50	24	0.18	4.30	0.24	3300	40	BALL		
HDF9225L-24MB	44	24	0.11	2.60	0.18	2850	35	BALL		
HDF9225L-24LB	35	24	0.10	2.40	0.12	2300	30	BALL		
HDF1225L-12HB	86	12	0.42	5.00	0.19	2500	42	BALL	4.7 × 1 / 120 × 25	5.8 oz.
HDF1225L-12MB	60	12	0.18	2.20	0.09	1750	34	BALL		
HDF1225L-24HB	86	24	0.21	5.00	0.19	2500	42	BALL		
HDF1225L-24MB	60	24	0.09	2.20	0.09	1750	34	BALL		
DA120625H	15	12	0.21	2.5	0.25	4500	35	SLEEVE		
DA120625M	11	12	0.17	2.0	0.15	3900	33	SLEEVE		
DA120625L	8	12	0.14	1.6	0.10	3300	29	SLEEVE		
DB240625H	15	24	0.14	3.3	0.25	4500	35	SLEEVE		
DB240625M	11	24	0.12	2.8	0.15	3900	33	SLEEVE	2.4 × 1 / 60 × 25	3.5 oz.
DB240625L	8	24	0.09	2.1	0.10	3300	29	SLEEVE		
DA120825H	32	12	0.21	2.5	0.25	3400	37	SLEEVE		
DA120825M	25	12	0.17	2.0	0.17	2800	33	SLEEVE		
DA120825L	21	12	0.15	1.8	0.13	2500	31	SLEEVE		
DB240825H	32	24	0.14	3.3	0.25	3400	37	SLEEVE		4.5 oz.
DB240825M	25	24	0.11	2.4	0.17	2800	33	SLEEVE	3.1 × 1 / 80 × 25	
DB240825L	21	24	0.09	2.1	0.13	2500	31	SLEEVE		
DA120832H	30	12	0.19	2.3	0.23	3400	35	SLEEVE		
DA120832M	23	12	0.17	2.0	0.17	2900	32	SLEEVE		
DA120832L	19	12	0.15	2.1	0.12	2500	31	SLEEVE		
DB240832H	30	24	0.15	2.3	0.23	3400	35	SLEEVE		4.5 oz.
DB240832M	23	24	0.11	2.6	0.17	2900	32	SLEEVE	3.1 × 1.3 / 80 × 32	
DB240832L	19	24	0.09	2.1	0.12	2500	31	SLEEVE		
DA120838H	30	12	0.19	2.3	0.23	3400	35	SLEEVE		
DA120838M	23	12	0.17	2.0	0.16	2900	32	SLEEVE		
DA120838L	19	12	0.15	1.8	0.12	2500	31	SLEEVE		
DB240838H	30	24	0.15	3.6	0.23	3400	35	SLEEVE		4.5 oz.
DB240838M	23	24	0.11	2.6	0.16	2900	32	SLEEVE	3.1 × 1.5 / 80 × 38	
DB240838L	19	24	0.09	2.1	0.12	2500	31	SLEEVE		
DA120925H	39	12	0.21	2.5	0.23	2900	39	SLEEVE		
DA120925M	30	12	0.17	2.0	0.16	2400	37	SLEEVE		
DA120925L	23	12	0.14	1.6	0.10	2000	32	SLEEVE		
DB240925H	39	24	0.15	3.6	0.23	2900	39	SLEEVE	3.6 × 1 / 92 × 25	4.5 oz.
DB240925M	30	24	0.11	2.6	0.16	2400	37	SLEEVE		
DB240925L	23	24	0.09	2.1	0.10	2000	32	SLEEVE		
DA121225H	80	12	0.45	5.4	0.30	3100	45	SLEEVE		
DA121225M	65	12	0.34	4.1	0.24	2750	41	SLEEVE		
DA121225L	55	12	0.28	3.4	0.19	2400	38	SLEEVE		
DB241225H	80	24	0.30	7.2	0.30	3100	45	SLEEVE	4.7 × 1 / 120 × 25	7.7 oz.
DB241225M	65	24	0.23	5.5	0.24	2750	41	SLEEVE		
DB241225L	55	24	0.18	4.3	0.19	2400	38	SLEEVE		
DA121238H	105	12	0.65	7.8	0.34	3000	48	SLEEVE		
DA121238M	75	12	0.53	6.4	0.27	2700	41	SLEEVE		
DA121238L	60	12	0.42	5.0	0.21	2300	38	SLEEVE	4.7 × 1.5 / 120 × 38	10.9 oz.
DB241238H	105	24	0.35	8.4	0.34	3000	48	SLEEVE		
DB241238M	75	24	0.28	6.7	0.27	2700	41	SLEEVE		
DB241238L	60	24	0.28	5.3	0.21	2300	38	SLEEVE		
DA131L	32	12	0.25	3.0	0.31	3400	39	BALL	3.1 × 1.5 / 80 × 38	4.5 oz.
DB131L	32	24	0.125	3.0	0.31	2400	39	BALL		
DA047LB	70	12	0.50	6.0	0.20	3100	45	BALL	4.7 × 1 / 120 × 25	7.7 oz.
DB047LB	70	24	0.25	6.0	0.20	3100	45	BALL		
DA147LB	96	12	0.80	9.6	0.31	3100	49	BALL		
DB147LB	96	24	0.40	9.6	0.31	3100	49	BALL	4.7 × 1.5 / 120 × 38	10.9 oz.
DC147LB	96	48	0.20	9.6	0.31	3100	49	BALL		
DAP120825H	32	12	0.25	3.0	0.25	3400	37	SLEEVE		
DAP120825M	25	12	0.21	2.5	0.17	2800	33	SLEEVE		
DAP120825L	21	12	0.19	2.3	0.13	2500	31	SLEEVE	3.1 × 1 / 80 × 25	3.4 oz.
DBP240825H	32	24	0.17	4.1	0.25	3400	37	SLEEVE		
DBP240825M	25	24	0.15	3.6	0.17	2800	33	SLEEVE		
DBP240825L	21	24	0.12	2.9	0.13	2500	31	SLEEVE		
DAP120832H	30	12	0.25	3.0	0.23	3400	35	SLEEVE		
DAP120832M	23	12	0.21	2.5	0.17	2900	32	SLEEVE	3.1 × 1.3 / 80 × 32	
DAP120832L	19	12	0.19	2.3	0.12	2500	31	SLEEVE		5.5 oz.
DBP240832H	30	24	0.18	4.3	0.23	3400	35	SLEEVE		
DBP240832M	23	24	0.15	3.6	0.17	2900	32	SLEEVE		
DBP240832L	19	24	0.12	2.9	0.12	2500	31	SLEEVE		

Frame size: Inches (millimeters) 3.1" square × 1" deep (80 × 25). Refer to attached page for mm sizes.

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INDEK
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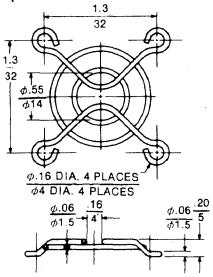
2360 Qume Drive, Suite A, San Jose, CA 95131
408/432-1199 • Fax: 408/433-9330 • Telex: 176476 Elina

ELINA AC/DC FANS

FAN ACCESSORIES

0015
(For 1½" sq.)



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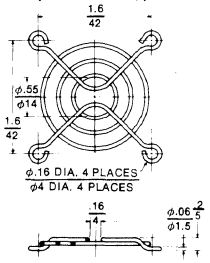
(For 2" sq.)



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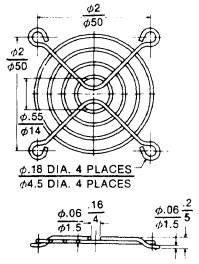

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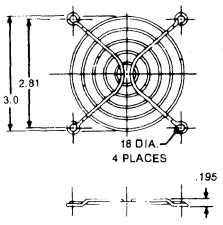

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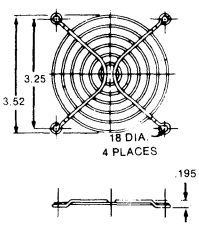

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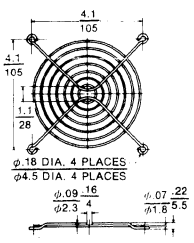

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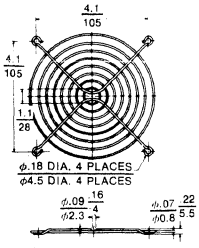
(For 4½" sq.)



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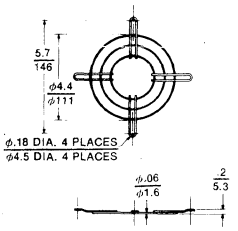
(For 4½" sq.)



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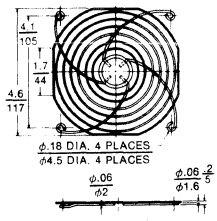

0045E
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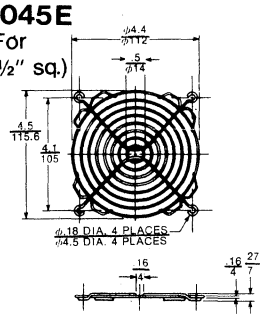
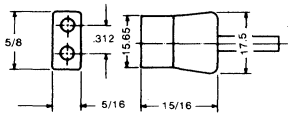


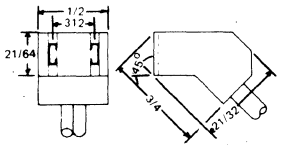
FAN CORDS

CD180 - STRAIGHT TYPE



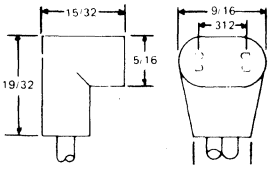
PART NO.	DESCRIPTION
CD180-12	Straight 12" cord
CD180-24	Straight 24" cord
CD180-36	Straight 36" cord

CD045 - 45° TYPE



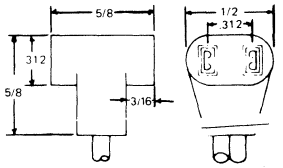
PART NO.	DESCRIPTION
CD045-12	45° 12" cord
CD045-24	45° 24" cord
CD045-36	45° 36" cord

CD090 - 90° TYPE



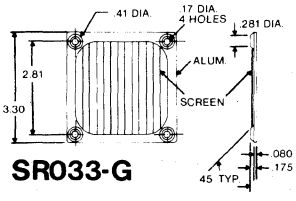
PART NO.	DESCRIPTION
CD090-12	90° 12" cord
CD090-24	90° 24" cord
CD090-36	90° 36" cord

CD090 - T TYPE

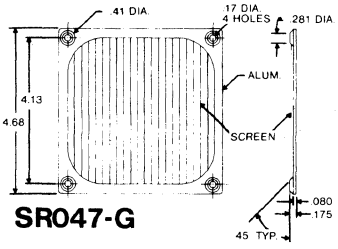


PART NO.	DESCRIPTION
CD090T-12	T 12" cord
CD090T-24	T 24" cord
CD090T-36	T 36" cord

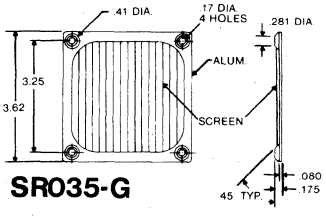
FAN FILTER SCREENS



SR033-G



SR047-G

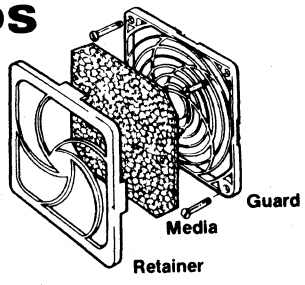


SR035-G

SPECIFICATIONS

- Fan Size: Fits any standard 3-1/8", 3-5/8"and 4-1/2" tube axial fans.
- Finish: Irridite (Gold)
- Frame Material: Aluminum
- Screen Material: 30 x 30 aluminum mesh convoluted approx. 1/8" deep with approx. 3/16" pitch
- Tolerance: xx = ± .03 xxx = ± .015

FAN GUARDS & FILTERS



FAN SIZE	PART NO.	DESCRIPTION	H (in.)	W (in.)	T (in.)	M/C (in.)
3⅛"	03145	Guard, Media Retainer	3.25	3.25	0.40	2.81
3⅝"	04545	Guard, Media Retainer	3.73	3.73	0.40	3.21
4½"	03645	Guard, Media Retainer	4.78	4.78	0.42	4.13

Elina Products Manufactured Exclusively for INDEK

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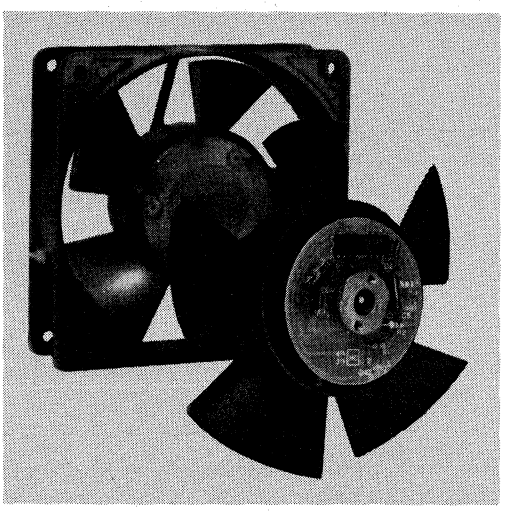
INTERFAN
ONE OF THE PURDY GROUP OF COMPANIES

DC Fans and Blowers

770 AIRPORT BLVD., BURLINGAME, CA 94010 • TEL (415) 347-1203 • FAX (415) 340-1670 • MCI/TLX 677-1439 (PURDY UW)

DC Fans and Blowers

INTERFAN OFFERS YOU A FULL FAMILY OF SOLID STATE, BRUSHLESS DC FANS IN POPULAR FRAME SIZES AND VOLTAGES, AND AT POPULAR PRICES. ALL DC FANS AND BLOWERS FEATURE HIGH PRECISION BALL BEARING SYSTEMS.



INTERFAN has a full line of self-contained, solid state, brushless DC fans for you to choose from. These fans have been engineered to tackle those specialized applications which require highly reliable DC performance.

These fans are efficient and will outperform similar sized fans at normal operating back pressure. Typically, they offer greater air volume (cfm), reduced noise levels and reduced power drain. These fans are low in magnetic radiation and RF noise, thereby assuring the pure signals necessary for critical airborne or shipboard use.

They work well at all rated voltages, are are extremely quiet. They can be adjusted for performance and noise level by altering the voltage within the voltage range for your particular application. They feature a brushless motor with electronics mounted on a PC card within the motor frame.

The brushless DC motor is polarity protected to avoid accidental damage and costly down time. In addition, all DC fans and blowers have locked rotor protection.

These fans do not require an external voltage inverter. This means that you save valuable mounting space and weight because the only consideration in mounting is the fan itself. This concept has eliminated many of the inherent reliability and RF noise problems generally associated with using AC motors in a DC environment.

WORLDWIDE USAGE

By operating a brushless DC fan on the internal DC power supply, no provision need be made to change the fan's electrical connections when the unit is switched from 115 VAC to 230 VAC. Also, no change in fan performance will occur if the unit is operated at various frequencies (50 Hz, 60 Hz, 400 Hz, etc.). Since one DC fan model can perform in so many different electrical environments, a very limited number of fan models can satisfy the cooling requirements of a broad product line. All fans conform to UL, CSA, IEC and VDE safety standards.

TYPICAL APPLICATIONS

INTERFAN DC fans are exceptionally well-suited for use in:

- Mobile Radio Equipment
- Medical Electronics
- EDP Equipment and Peripherals
- Shipboard Computers
- Airborne Applications
- Communications Systems
- Automotive Applications
- Marine Use
- Telecommunications

whenever DC voltage is normally available. They also find wide acceptance for use in power stand-by modes as a safety feature.

PART NUMBER SYSTEM

Consisting of ten digits, each part number describes the materials used for the impeller and housing, airflow, voltage, size and bearing system. Examples: PM106-12D-4B = plastic impeller, metal housing, 106 CFM, 12 volts DC, 4" size with ball bearings; MM036-24D-3B = metal impeller, metal housing, 36 CFM, 24 volts DC, 3" size with ball bearings.

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DC Fans and Blowers

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DC Fans Quick Selection Guide

Model	Voltage Range DC	Airflow Range (0 static pressure) cfm	Nominal Input Power (0 static pressure) watts	Frame Size Inches (Millimeters)
PO012-12D-2B	8 - 15	9 - 15	1.1	2-1/2" square x 1" deep (60 x 25)
PO012-24D-2B	16 - 30	9 - 15	1.9	2-1/2" square x 1" deep (60 x 25)
PO020-12D-3B	8 - 15	13 - 28	1.1	3-1/8" square x 1-1/4" deep (80 x 32)
PO020-24D-3B	16 - 30	13 - 28	2.0	3-1/8" square x 1-1/4" deep (80 x 32)
PO025-12D-3B	8 - 15	17 - 30	1.9	3-1/8" square x 1" deep (80 x 25)
PO025-24D-3B	16 - 30	17 - 30	2.3	3-1/8" square x 1" deep (80 x 25)
PO035-12D-3B	8 - 15	23 - 38	3.5	3-1/8" square x 1-1/4" deep (80 x 32)
PO035-24D-3B	16 - 30	23 - 38	3.3	3-1/8" square x 1-1/4" deep (80 x 32)
MM036-12D-3B	9.5 - 14	28 - 41	2.9	3-1/8" square x 1-1/2" deep (80 x 38)
MM036-24D-3B	19 - 28	28 - 41	3.0	3-1/8" square x 1-1/2" deep (80 x 38)
PO040-12D-3B	8 - 15	27 - 49	2.2	3-5/8" square x 1" deep (92 x 25)
PO040-24D-3B	16 - 30	27 - 49	2.9	3-5/8" square x 1" deep (92 x 25)
PM082-12D-4B	8 - 15	60 - 90	6.7	4-11/16" square x 1" deep (119.5 x 25)
PM082-24D-4B	16 - 30	60 - 90	7.5	4-11/16" square x 1" deep (119.5 x 25)
MM094-12D-4B	9.5 - 14	76 - 110	4.0	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM094-24D-4B	19 - 28	76 - 110	4.1	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM094-48D-4B	38 - 56	76 - 110	4.1	4-11/16" square x 1-1/2" deep (119.5 x 38)
PM106-12D-4B	8 - 15	80 - 122	8.5	4-11/16" square x 1-1/2" deep (119.5 x 38)
PM106-24D-4B	16 - 30	80 - 122	8.6	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM206-24D-6B	16 - 32	150 - 250	11.0	6-3/4" diameter x 2" deep (172 x 55)
MM206-48D-6B	32 - 60	150 - 250	10.5	6-3/4" diameter x 2" deep (172 x 55)
Radial Blower				
PMB23-24D-4B	19 - 28	19 - 27	5.2	4-3/4" square x 1-1/2" deep (120.4 x 36.3)

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AC Fans and Blowers

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QUALITY PRODUCTS
YOU CAN RELY UPON
FOR ALL OF YOUR COOLING
REQUIREMENTS. ALL AC FANS
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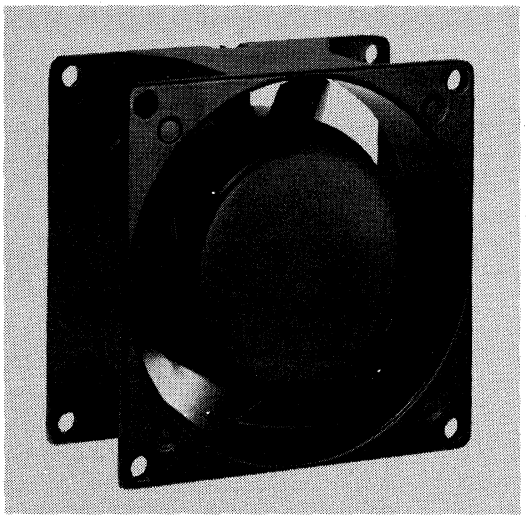

INTERFAN offers a wide variety of AC fans for your selection. Each model combines the features of extended life with high airflow delivery at low noise levels.

Materials used in the fabrication of the fans are the finest available, from their die-cast housings and space age plastics, to their precision ball bearing systems. These fans are built to give you many years of maintenance-free service. All are impedance protected and conform to UL, CSA, IEC and VDE safety standards.

INTERFAN products cover all standard frame sizes and voltages. In addition, we have a series of cooling devices for the less than usual application. The one, for example, which requires a thinner frame due to space limitation, or perhaps you need a model with sensor option. We have them all – and we are here to serve you.

Housing and venturies of all INTERFAN fans are aerodynamically designed for maximum airflow with minimum air turbulence, resulting in more efficient airstream characteristics and reduced noise levels.

Acoustical noise is measured in accordance with J1S B 8330.

PART NUMBER SYSTEM

Consisting of ten digits, each part number describes the materials used for the impeller and housing, airflow, voltage, size and bearing system. Examples: MM106-115-4B = metal impeller, metal housing, 106 CFM, 115 volts AC, 4" size with ball bearings; PM032-230-3B = plastic impeller, metal housing, 32 CFM, 230 volts AC, 3" size with ball bearings.

DIELECTRIC STRENGTH

AC (50 Hz) 2000 volts applied for one minute.

TYPICAL APPLICATIONS

INTERFAN AC fans are ideal for:

- EDP Systems and Peripheral Equipment
- Electronic Test Equipment
- Medical Equipment
- Broadcast Equipment
- High-Power Lamps
- Color Processing Equipment
- Emergency Generators
- Color TV/Hi-Fi Amplifiers
- Electrical Controls
- Telephone Equipment
- Vending Machines
- Airborne Equipment
- Communications Systems

EXTENDED WARRANTY

INTERFAN also offers a super premium grade fan; the PENTAFLOW™ series (5 year warranty). PENTAFLOW model numbers are Model MM032-115-3B-5 and Model MM106-115-4B-5.

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AC Fans and Blowers

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AC Fans Quick Selection Guide

Model	Operating Voltage AC	Frequency Hz	Airflow (0 static pressure) cfm	Frame Size Inches (Millimeters)
Shaded Pole Fans				
PM018-115-3B	115	50/60	18	3-1/8" square x 3/4" deep (80 x 20)
PM024-115-3B	115	50/60	24	3-1/8" square x 1" deep (80 x 25)
PM024-230-3B	230	50/60	24	3-1/8" square x 1" deep (80 x 25)
MM032-115-3B	115	50/60	32	3-1/8" square x 1-1/2" deep (80 x 38)
MM032-115-3B-5	115	50/60	32	3-1/8" square x 1-1/2" deep (80 x 38)
MM032-230-3B	230	50/60	32	3-1/8" square x 1-1/2" deep (80 x 38)
PM032-115-3B	115	50/60	32	3-1/8" square x 1-1/2" deep (80 x 38)
PM032-230-3B	230	50/60	32	3-1/8" square x 1-1/2" deep (80 x 38)
PM040-115-3B	115	50/60	40	3-5/8" square x 1" deep (92 x 25)
PM040-230-3B	230	50/60	40	3-5/8" square x 1" deep (92 x 25)
PM058-115-4B	115	50/60	58	4-11/16" square x 3/4" deep (119.5 x 20.3)
PM058-230-4B	230	50/60	58	4-11/16" square x 3/4" deep (119.5 x 20.3)
MM060-115-4B	115	50/60	60	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM060-230-4B	230	50/60	60	4-11/16" square x 1-1/2" deep (119.5 x 38)
PM074-115-4B	115	50/60	74	4-11/16" square x 1" deep (119.5 x 25)
PM074-230-4B	230	50/60	74	4-11/16" square x 1" deep (119.5 x 25)
MM106-115-4B	115	50/60	106	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM106-115-4B-5	115	50/60	106	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM106-230-4B	230	50/60	106	4-11/16" square x 1-1/2" deep (119.5 x 38)
PM106-115-4B	115	50/60	106	4-11/16" square x 1-1/2" deep (119.5 x 38)
PM106-230-4B	230	50/60	106	4-11/16" square x 1-1/2" deep (119.5 x 38)
MM235-115-6B	115	50/60	235	6" diameter x 2" deep (172 x 55)
MM235-230-6B	230	50/60	235	6" diameter x 2" deep (172 x 55)
Radial Blowers				
PMB24-115-4B	115	50/60	24	4-3/4" square x 1-1/2" deep (120.4 x 36.3)
PMB24-230-4B	230	50/60	24	4-3/4" square x 1-1/2" deep (120.4 x 36.3)

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

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DESIGN GUIDE

Electronic equipment often generates a great deal of heat during operation. Frequently located in hostile environments, the equipment may also encounter the additional problem of not having safe, clean air available to dissipate unwanted heat. Such adverse conditions affect the performance and the life expectancy of electronic system components.

KOOLTRONIC cooling devices are precisely designed to solve the problems of internal heat buildup, excessive ambient temperatures, moisture- and contaminant-laden atmospheres and corrosive environments, which can affect sensitive electronic equipment. Before determining which KOOLTRONIC product is most appropriate, a careful study must be made to determine the most adverse operating conditions anticipated, and the requirements of the system itself. Then you can choose the KOOLTRONIC product best suited to creating the proper environment for your specific needs.

CABINET COOLING TIPS

THINK ABOUT COOLING . . . EARLY! Nearly all systems require some degree of forced cooling. Early estimates of the location of components, the heat to be dissipated, and the amount of space for the cooling device will save time, trouble and expense.

AMBIENT AIR VS. CLOSED-LOOP COOLING. Keep it simple. If ambient air is cool and clean enough, use it. It's free. If the ambient is too hot, dirty or corrosive, a closed-loop system is need. A heat exchanger is usually a lower-cost choice than an air conditioner. Don't over-cool or oversize the cooling equipment.

PRESSURIZE, DON'T VACUUMIZE! Pressurization of the cabinet is better than drawing the air out. Pump filtered air INTO the cabinet, to use cracks or other small openings as part of the exhaust area, rather than as sources for the intake of dust and dirt.

If pressurization is impossible and a fan or blower must be used to exhaust the enclosure, a filter at the air inlet is recommended.

FAN OR BLOWER? Propeller fans are designed to move large volumes of air at low static pressure. Blowers are used in higher static pressure applications.

KEEP IT CLEAN Nothing is more important than CLEAN filters. Clogged filters restrict airflow and cause motors, compressors, etc. to work harder and fail prematurely. Timely filter servicing is vital to your system.

FORCED CONVECTION AIR COOLING If the installation will be in a clean, non-hazardous environment with an acceptable ambient temperature range, a simple forced-air cooling system utilizing ambient air is usually adequate. Combined with a low-cost air filter, such devices generally meet the heat removal needs of typical electronic equipment. Examples are fans, centrifugal blowers, and packaged fans and blowers of various types.

Fans, Packaged Fans and Centrifugal Blowers can be used to pressurize or exhaust cabinet air. The ambient air should be filtered before it enters the cabinet.

Packaged Blowers mount to the internal cabinet mounting rails. They are used to pressurize the cabinet and provide filtered ambient air.

CLOSED-LOOP COOLING. See Page **C**•1659.

KEEP INLET AND EXHAUST AIR FAR APART Be sure that all of the exhaust area is located as far as possible from the air inlet and beyond all heat-producing components. A properly planned air path will avoid all "short circuits" to achieve maximum cooling efficiency through use of all input air.

LET NATURE HELP Cooling air should enter the enclosure from as low as possible and leave the enclosure from above the highest hot component. Thus, the forced air flows upward through the heat-producing components and adds to the natural buoyancy of the heated air.

ENTERING AIR MUST HAVE EXIT ROOM The cross-section area of the airstream throughout the flow path in the cabinet should be at least equal to the effective area of the air intake, on the basis of the typical grille material being 65% open. If this ratio is less, "choking" of the air may result.

USE DUCTS FOR EVEN COOLING If the maintenance of an even temperature from top to bottom of the electronics cabinet is important, ducts along the sides of the cabinet offer an ideal solution. Multiple duct outlets allow precise control of location and quantity of air delivered.

BAFFLES SOMETIMES WORK WONDERS At times, an excessively hot component or an isolated area in the cabinet presents a problem in an otherwise well-cooled system. A baffle to channel air across the location is often the best solution.

GENERAL SPECIFICATIONS FOR ALL FANS AND BLOWERS

CONSTRUCTION: Rugged heavy-gauge steel construction.

BAKED EPOXY FINISH: Durable, baked-on gray epoxy finish is standard. Other finishes are available.

PRECISION BALL-BEARING MOTORS: All motors are UL/CSA recognized, include automatic-reset thermal overload protection and are cooled by the blowers' intake air, for maximum motor life. All motors meet Federal Specification CC-M-1807A, and include double-sealed or double-shielded precision ball bearings which meet Federal Specification FF-B-171A. Special permanent lubricants perform over a broad temperature range: −20F (−129C) to 250F (121C).

POWER: 115 VAC or 230 VAC, 50/60 Hz is standard. For multiphase power, other voltages and frequencies or brushless DC applications, consult KOOLTRONIC.

PACKAGED UNITS

GRILLE: All units include attractive 19-inch-wide stainless steel grilles with knurled captive fasteners for easy removal. Grille area is 65% open. (Exception: KPC2 Series, units without EIA flanges.)

PERMANENT FILTERS: Designed to last the life of the unit, the filters consist of a multi-layer grid of adhesive-coated corrugated aluminum in a one-piece aluminum frame.

POWER CORD: High performance and S and B fans have 12" grounded leads. All other 115 VAC, 50/60 Hz units are supplied with a minimum of 36-inch type SJ three-wire cord with molded plug included, internally grounded and securely locked to case by strain relief brushing. 230 VAC, 50/60 Hz units are supplied without plug.

EXHAUST GUARDS: Included on all packaged units.

ACCESSORIES AND OPTIONS

1. Airflow Switch
2. Low Airflow Detector
3. Other voltages and frequenices
4. Special external paint finishes
5. Special line cord or connectors
6. Variable Speed Control
7. Adapters
8. EMI Shielding
9. Filters for replacement
10. Filter Recoating Adhesive
11. Grille Assemblies for replacement
12. Space Age Grilles
13. Recessed front

CALL KOOLTRONIC FOR HELP

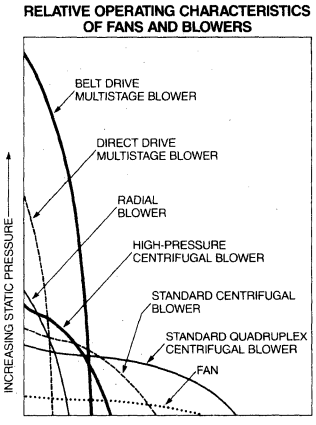
For help with your design problems or to resolve questions, give us a call. We'll gladly help.

Complete Design Guide/ Catalog available on request
CALL EXTENSION 44

ADDITIONAL (Fans Only)

14. Filters
15. Filter Grille Assembly
16. Filter Holder
17. Guard
18. Grille
19. Mounting Sleeve

RELATIVE OPERATING CHARACTERISTICS OF FANS AND BLOWERS



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HIGH PERFORMANCE AND THIN FANS

DESCRIPTION—HIGH PERFORMANCE FANS

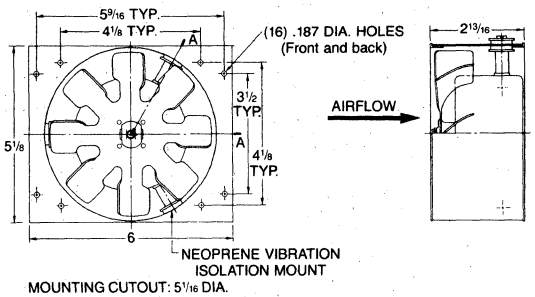
For applications where space limitations and/or higher static pressures prevent the use of conventional fans.
The durability of their shock-mounted all-metal design and their excellence in pressurizing or exhausting an enclosure make these fans an ideal choice in their size range.

TECHNICAL DATA

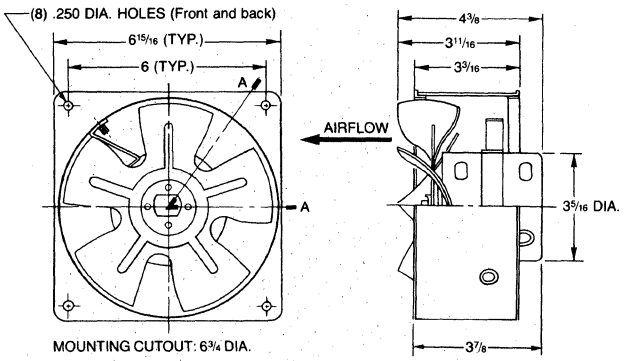
Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KJ200	200	3100	.8	1.1	55
KB653	385	3200	1.8	2.5	120
KB654	380	3300	1.6	2.2	116

DIMENSIONS—HIGH PERFORMANCE FANS

KJ200



KB653 & KB654



Dimensions (inches) are for reference only and subject to change.

DESCRIPTION—THIN FANS

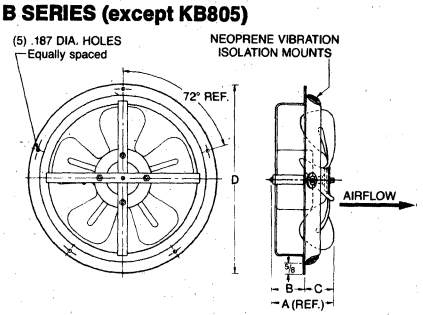
These compact, powerful fans deliver from 210 to 840 CFM, to provide a large volume of air for low static pressure cooling applications.
KOOLTRONIC Thin Fans can be mounted in virtually any position, internally or externally. With or without accessories, these fans usually can be mounted directly to a panel, the door or in the base or top of the enclosure.
Each fan can be used to either pressurize or exhaust the enclosure by simply reversing its orientation.

TECHNICAL DATA

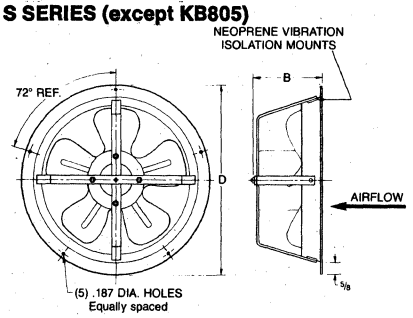
Model (B&S)	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KB650	210	1600	.35	.4	30
KB651	350	3100	1.0	1.2	74
KB800	400	1500	0.7	2.3	55
KB802	840	3100	1.9	3.1	225
KB805	800	3350	1.6	3.1	180
KB900	560	1600	1.6	2.3	100
KB1000	750	1550	1.5	2.3	105

DIMENSIONS—THIN FANS

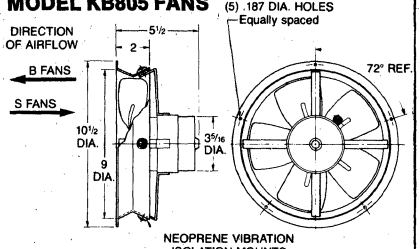
B SERIES (except KB805)



S SERIES (except KB805)



MODEL KB805 FANS



KB802 and KB805 fans: Capacitor boot and bracket are shipped loose, for user mounting.

KB802 and KB1000 fans: Motor mounting configuration is different, but falls within dimensional envelope.

Dimensions (inches) are for reference only and subject to change.

(Inches)

Model (B & S)	A	B		C	D	Mounting		Blade Dia.
		B fans	S fans			Cutout	B.C.	
KB650	3⅝	2	3½	1⅝	8½	7⅜	8	6½
KB651	3⅞	2⅜	4⅛	1½	8½	7⅜	8	6½
KB800	3⅜	1¾	3⅜	1⅝	10½	9⅜	10	8
KB802	5⅜	3⅛	5⅜	2¼	10½	9⅜	10	8
KB805	See above					9⅜	10	8
KB900	4½	2¼	4¼	2¼	11½	10⅜	11	9
KB1000	4¾	2½	4⅝	2¼	12½	11⅜	12	10

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PACKAGED AND FILTER BOX FANS

DESCRIPTION

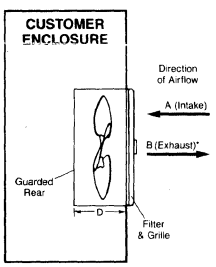
TWIN AND TRIPLE FANS. These fans provide high airflow in a very thin low-vibration package. An exclusive KOOLTRONIC design provides exceptionally quiet operation in both intake and exhaust applications. EIA flanges extend 17″ width to 19″.
FILTER BOX FANS. High airflow with low noise makes this versatile, minimal depth, packaged fan, very popular.
Reversible mounting brackets allow push or pull air flow. These fans can be installed internally or externally, vertically or horizontally, with or without a filter on either side. The KOOLTRONIC isolation motor-mount provides virtually vibration-free operation. Front and rear grilles adjust to accommodate or omit filter. Filter slides in and out easily for cleaning and replacement.

FEATURES

- Twin, triple and filter box models
- Exceptionally quiet
- Capacities from 250 to 1310 CFM
- Versatile mounting and adaptability
- Heavy-gauge steel construction
- UL/CSA ball-bearing motors
- Attractive stainless steel grilles
- All models can pressurize or exhaust
- Accessories and options

DIMENSIONS (inches) PACKAGED FANS

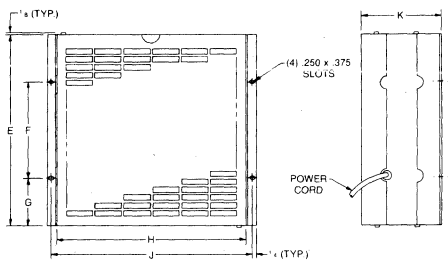
KP500 & KP875 Mounting Orientation



*For exhaust applications, filter may be removed and used at air intake.

Model	Discharge Available		Panel Height	Depth (D)
KP500	A	B	5¼	3½
KP875	A	B	8¾	4¼

DIMENSIONS (inches) — FILTER BOX FANS



Dimensions (inches) are for reference only and subject to change.

Model	Configurations**	E	F	G	H	J	K A&B	K C&D
KP1010	A B C D	12⅛	6⅛	3	12⅜	12⅞	5 1/16	4½
KP1212	A B C D	15⅛	9	3 1/16	15 3/16	15⅞	6 1/16	6⅛

TECHNICAL DATA

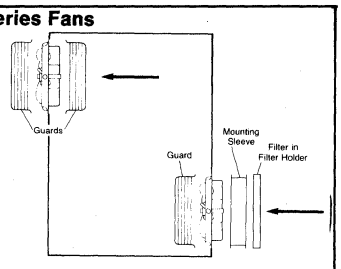
Model	CFM @ 0-inches	RPM Nominal	Amps Run	Amps L.R.	Watts
KP500	250	3100	.6	.9	55
KP875	440	1500	1.2	1.5	98

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KP1010	700	1525	1.4	1.6	110
KP1212	1310	1700	1.4	2.9	130

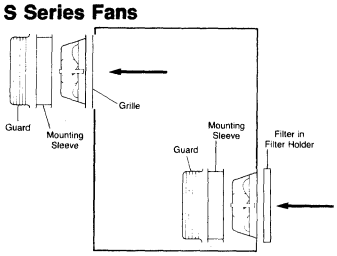
TYPICAL THIN FAN ACCESSORY COMBINATIONS AND MOUNTING ORIENTATIONS

B Series Fans

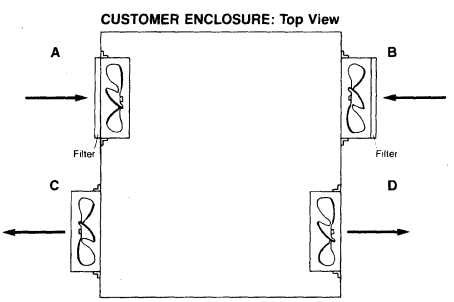


Arrows indicate direction of airflow.
Lower fans pressurize cabinet. (Note that intake air is filtered.)
Upper fans exhaust cabinet.

S Series Fans



FILTER BOX FANS: CONFIGURATIONS



Arrows show direction of airflow.
A and B—used to pressurize the enclosure.
C and D—used to exhaust the enclosure.

MODEL NUMBER AND DIMENSIONS FOR THIN FAN ACCESSORIES

Accessory	KB650/651*	KB800/802/805*	KB900*	KB1000*
Permanent Filter Size (½″ thick)	**650F** 8⅜ x 8⅜	**800F** 10⅜ x 10⅜	**900F** 11⅜ x 11⅜	**1000F** 12⅜ x 12⅜
External Filter Holder	**650H**	**800H**	**900H**	**1000H**
Internal Filter Holder	**650HF**	**800HF**	**900HF**	**1000HF**
Grille Diameter	**650X** 8½	**800X** 10½	**900X** 11½	**1000X** 12½
Guard Diameter x Depth	**655G** 7 1/16 x 2⅝	**805G** 9⅝ x 2 5/16	**905G** 10 1/16 x 2⅝	**1005G** 11⅝ x 2⅞
Mounting Sleeve	**650M**	**800M**	**900M**	**1000M**

* Fan Model (B&S). All B Series fans, except KB805, using the filter holder, filter and grille combination must use mounting sleeve.

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SINGLE CENTRIFUGAL BLOWERS

DESCRIPTION

Kooltronic Centrifugal Blowers, the workhorses of electronics cooling, are designed for performance against low to moderate static pressures. These low cost popular blowers are easily installed in any orientation for maximum cooling efficiency.

FEATURES

- Capacities: 60 to 425 CFM
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch power and ground leads
- Accessories and options 1-6, page C•1649

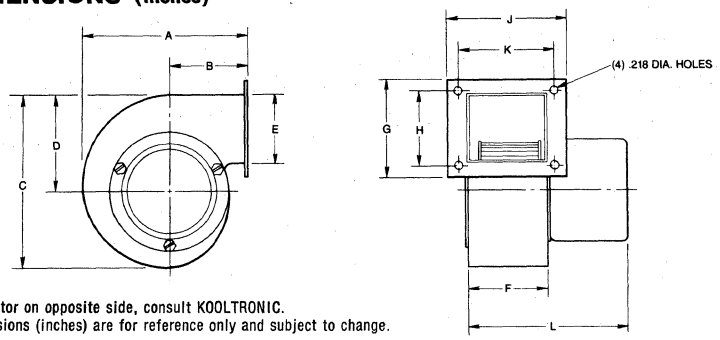
HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2BB43.

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

DIMENSIONS (inches)



For motor on opposite side, consult KOOLTRONIC.
Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H	J	K	L
KBB25	4 5/16	2 1/4	4 15/16	2 13/16	1 7/8	2	2 11/16	2 1/4	3 1/16	2 5/8	4 3/4
KBB30	5 5/16	2 5/16	5 1/2	3 1/8	2 1/16	2 1/2	3 1/8	2 7/16	3 3/4	3 1/8	5 1/4
KBB35	6 1/16	3	6 13/16	3 7/8	2 5/16	2 1/2	3 3/4	3	3 3/4	3 1/8	6
KBB36	6 1/16	3 1/16	6 13/16	3 13/16	2 5/16	3 3/8	3 1/4	2	4 5/8	4 1/16	8 3/16
KBB43	7 5/16	3 7/16	7 5/8	4 3/8	3 3/8	4	4 1/2	3 3/4	5 1/8	4 5/8	7 13/16
KBB49	7 5/16	3 7/16	7 5/8	4 3/8	3 3/8	4 3/16	4 1/2	3 3/4	5 5/8	5	9 1/2
KBB50	8 1/4	4 1/16	8 11/16	5	3 1/4	4 1/4	4 3/8	3 3/4	5 1/2	4 7/8	8 3/16

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KBB25	60	3300	0.5	0 8	35
KBB30	95	3150	0.6	0.8	41
KBB35	140	3200	1.3	2.1	90
KBB36	235	3275	1.3	2.1	140
KBB43	320	3300	1.6	3.1	180
KBB49	425	3450	3.3	13.6	335
KBB50	300	1550	0.9	1.3	95

HIGH PRESSURE CENTRIFUGAL BLOWERS

DESCRIPTION

High Pressure Centrifugal Blowers were specifically engineered to fill the performance range between Single Centrifugal and High Pressure Radial Blowers. They are for applications needing higher airflow against lower static pressures than radial blowers. A variety of sizes and capacities satisfy many requirements.

FEATURES

- Capacities: 160 to 390 CFM
- Designed for mid-range static pressures
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch (minimum) power and ground leads
- Accessories and options 1-6, page C•1649

HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2BB51.

CALL EXTENSION 44

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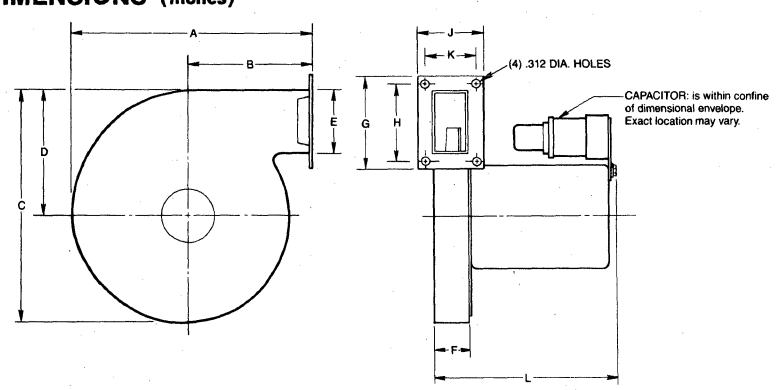
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

DIMENSIONS (inches)



Model	A	B	C	D	E	F	G	H	J	K	L	M
KBB38	6 3/8	3	6 13/16	3 7/8	2	2 1/2	3 1/4	2 5/8	3 1/2	2 7/8	7 3/8	*
KBB47	7 5/16	3 1/2	7 7/16	4 3/8	2 3/8	2 1/4	3 5/8	3	3 1/2	2 7/8	6 7/8	*
KBB51	8 1/8	4	8 5/8	5	2 3/8	2 1/2	3 5/8	3	3 3/4	3 1/8	7 13/16	5 3/8
KBB58	8 9/16	4	9 3/16	5 5/16	2 11/16	2 1/2	4	3 3/8	3 3/4	3 1/8	7 13/16	5 3/4
KBB63	9 5/8	4 3/16	10 1/2	5 15/16	2 11/16	2 1/2	4	3 3/8	3 3/4	3 1/8	7 1/8	5 3/4

*Does not have extended flange.

TECHNICAL DATA

Model	CFM @ 0-inches	Max. S.P.	RPM Nominal	Amps		Watts
				Run.	L.R.	
KBB38	160	1.9	3425	0.9	2.1	100
KBB47	200	2.4	3000	1.8	2.1	200
KBB51	260	2.6	3500	2.4	13.6	230
KBB58	300	3.6	3475	2.9	13.6	290
KBB63	390	4.7	3375	4.2	15.9	450

Note: Power input is substantially reduced at higher static pressures.

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HIGH PRESSURE RADIAL BLOWERS

DESCRIPTION

Specifically designed for maximum efficiency in moving moderate air volume against substantial static pressures, the performance of Kooltronic High Pressure Radial Blowers ranges from 40 to 240 CFM at 1″ static pressure and up to 150 CFM at 5″ static pressure.

FEATURES

- Capacities: 55 to 265 CFM
- Designed for substantial static pressures
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch (minimum) power and ground leads
- Accessories and options 1-6, page **C**•1649

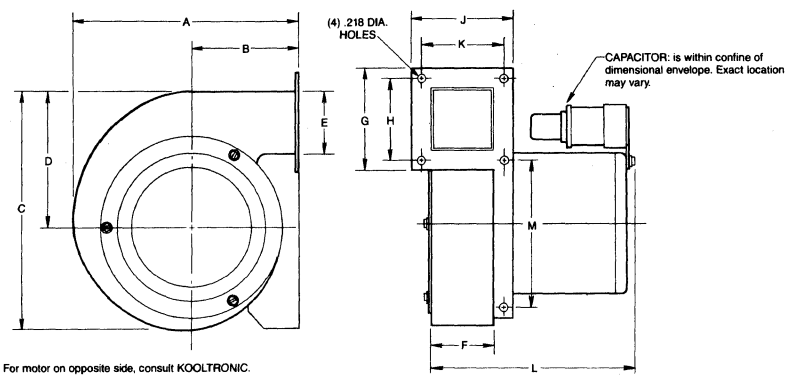
HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2BR75.

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

DIMENSIONS (inches)



For motor on opposite side, consult KOOLTRONIC.
Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H	J	K	L
KBR60	7 13/16	3 13/16	8 5/8	4 13/16	2 1/16	1 5/16	3 1/4	2 5/8	2 1/2	1 7/8	5 3/16
KBR75	9 11/16	4 1/2	10 5/16	5 1/2	2 1/2	1 1/2	3 7/8	3 1/4	2 7/8	2 1/4	6 5/16
KBR90	11 1/4	5 1/16	11 5/8	6 1/4	3 1/16	1 5/8	4 1/2	3 7/8	2 7/8	2 1/4	6 3/8
KBR100	13 3/4	7 7/16	13 1/8	7 1/16	3 15/16	1 1/2	5 1/4	4 5/8	2 7/8	2 1/8	6 7/8
KBR125	13 3/4	7 7/16	13 1/8	7 1/16	3 15/16	1 1/2	5 1/4	4 5/8	2 7/8	2 1/8	6 1/8

TECHNICAL DATA

Model	CFM @ 0-inches	Max. S.P.	RPM Nominal	Amps		Watts
				Run.	L.R.	
KBR60	55	2.3	3150	0.4	0.7	45
KBR75	110	3.6	3400	1.0	2.1	106
KBR90	160	5.6	2900	2.2	3.1	235
KBR100	215	6.0	3450	3.1	8.1	315
KBR125	265	8.0	3400	3.8	15.9	440

Note: Power input is substantially reduced at higher static pressures.

QUADRUPLEX CENTRIFUGAL BLOWERS

DESCRIPTION

These blowers move more air with less noise and greater efficiency than double blowers. The specially designed housings and optimum impeller width-to-diameter ratio assure even, wide-band air distribution. The unique design isolates moving components from the blower structure for virtually vibration-free operation.

FEATURES

- Capacities: 320 to 920 CFM
- Extremely quiet, efficient operation
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch (minimum) power and ground leads
- Accessories and options 1-6, page **C**•1649

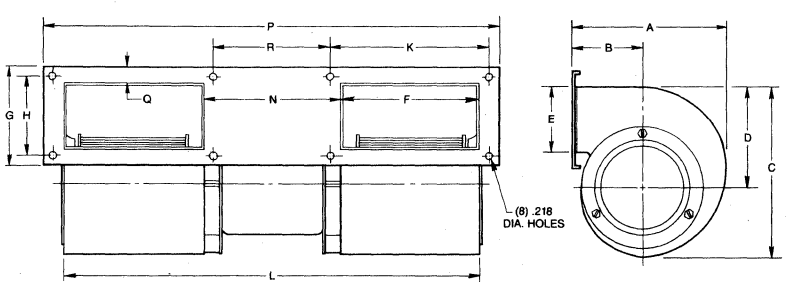
HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2BB451.

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

DIMENSIONS (inches)



The type of motor isolation mounts shown above are supplied in the KBB430 and KBB435. Those in the KBB443 and KBB451 are different, but functionally identical.
Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H	K	L	N	P	Q	R
KBB430	5	2 3/16	5 1/2	3 1/8	2 1/16	4 1/2	3 1/2	2 3/4	5 1/4	13 7/16	4 7/16	14 15/16	3/4	3 13/16
KBB435	6 1/2	3 1/8	6 13/16	3 7/8	2 5/16	4 3/4	3 7/8	3 1/8	5 1/2	14 1/8	4 5/8	16	1 1/16	4 3/8
KBB443*	7 3/8	3 1/2	7 5/8	4 3/8	3 3/8	4 3/4	6 3/4	6	5 3/8	15 13/16	6 1/4	17	3/8	5 5/8
KBB451	8 5/16	4 3/16	8 5/8	5	3 1/4	3 1/4	4 5/8	3 7/8	3 1/4	13 1/2	7	14 7/8	1 1/16	6 1/4

*Diagram does not depict oversized mounting plate on this model.

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KBB430	320	2900	1.8	2.5	140
KBB435	550	3150	2.0	3.1	220
KBB443	920	3350	5.6	18.1	630
KBB451	800	3350	5.2	18.1	600

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DOUBLE CENTRIFUGAL BLOWERS

DESCRIPTION

KOOLTRONIC Double Centrifugal Blowers are designed to provide greater airflow than the related single blower series, in the same types of low to moderate static pressure applications. Similarly, they are easily installed and operate with equal effectiveness in any mounting orientation.

Eleven mdoels comprise the series, offering a choice of sizes and capacities to satisfy a wide variety of cooling requirements. Together, single and double centrifugal blowers are the backbone of forced convection air cooling.

These Double Blowers and the Quadruplex Centrifugal Blowers are the exclusive air movement components in virtually all KOOLTRONIC Packaged Blowers, Heat Exchangers and Air Conditioners.

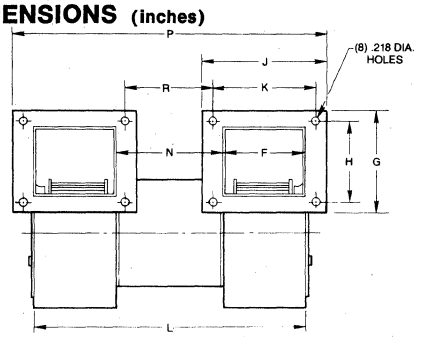
FEATURES

- Capacities: 155 to 1200 CFM
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch (minimum) power and ground leads
- Accessories and options 1-6, page **C**•1649

HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2BB64-64.

DIMENSIONS (inches)



Model	A	B	C	D	E	F	G	H	J	K	L	N	P	R
KBB25-25	4 5/8	2 5/16	4 13/16	2 7/8	1 7/8	2 1/2	2 11/16	2 1/4	3 3/4	3 1/8	8 1/4	3 1/4	9 1/2	2 5/8
KBB30-30	5 3/8	2 5/16	5 1/2	3 1/8	2 1/8	2 1/2	3 1/8	2 7/16	3 3/4	3 1/8	8 1/4	3 1/4	9 1/2	2 5/8
KBB36-36	6 7/16	3 5/16	6 13/16	3 13/16	2 5/16	3 3/8	3 1/4	2	4 5/8	4 1/16	10 13/16	4 1/16	12 1/16	3 3/8
KBB37-37	6 7/16	3 5/16	6 13/16	3 13/16	2 5/16	4 1/8	3 1/4	2 1/2	5 1/2	5	12 1/8	3 7/8	13 1/2	3
KBB43-43	7 1/4	3 3/8	7 5/8	4 5/16	3 3/8	3 3/8	4 5/8	4	4 3/8	3 7/8	10 11/16	3 13/16	11 5/8	3 3/8
KBB46-46	7 5/16	3 5/8	7 5/8	4 5/16	3 5/16	3 3/16	4 7/16	3 15/16	4 7/16	3 11/16	9 5/16	2 15/16	10 5/16	2 7/16
KBB50-50	8 1/4	4 1/16	8 11/16	5	3 1/4	4 1/4	4 3/8	3 3/4	5 1/2	4 7/8	12 1/4	3 3/4	13 11/16	3 1/4
KBB57-57	8 7/16	3 3/4	9 1/4	5 3/8	3 11/16	4 1/2	4 5/8	4 1/8	5 1/2	5	12 13/16	3 7/8	13 7/8	3 3/8
KBB60-60	9 1/4	3 13/16	10 1/2	6	4 3/8	3 5/8	5 3/8	4 7/8	4 5/8	4 1/8	11	3 3/4	12	3 1/4
KBB64-64	10 5/8	5 1/16	10 15/16	6 3/16	4 1/4	3 7/8	5 1/16	4 5/16	5	4 1/4	12 7/8	5 1/8	14	4 1/2
KBB80-80	12 1/8	5 7/16	13 5/16	7 5/8	5 1/8	3 7/8	5 13/16	5 7/16	5	4 1/2	12 7/8	5 1/8	14	4 1/2

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KBB25-25	155	3300	1.3	2.1	85
KBB30-30	185	3250	1.4	2.1	90
KBB36-36	390	3250	2.3	5.4	240
KBB37-37	465	3160	2.7.	5.4	280
KBB43-43	450	3200	2.5	5.4	260
KBB46-46	300	1700	1.0	1.9	85
KBB50-50	500	1700	1.5	4.7	150
KBB57-57	560	1675	1.6	4.7	160
KBB60-60	665	1575	2.3	4.7	235
KBB64-64	890	1700	4.6	17.5	430
KBB80-80	1200	1650	6.6	17.5	650

TANGENTIAL BLOWERS

DESCRIPTION

For low static pressure applications requiring a broad band of air. Suitable for small areas or corners, they feature all-ball-bearing support and rubber isolation systems and can be mounted in any position for horizontal or vertical air delivery in any direction.

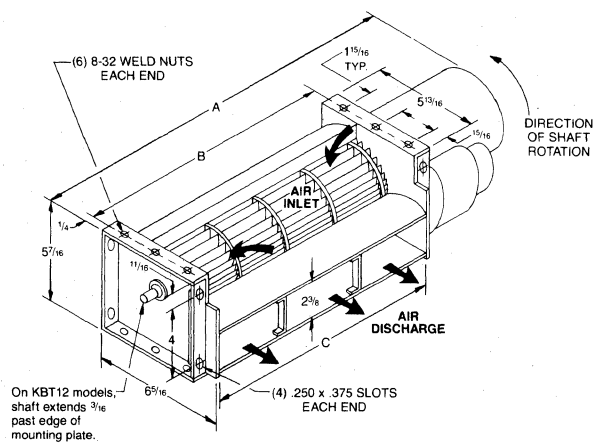
FEATURES

- Capacities: 490 to 950 CFM
- Quiet, end-to-end airflow
- Full performance in any mounting position
- Rugged construction with baked epoxy finish
- UL/CSA ball-bearing motors
- 12-inch (minimum) power and ground leads
- Accessories and options 1-6, page **C**•1649

HOW TO ORDER

Specify model number, adding motor position suffix RM or LM. Example: KBT24RM. For 230 VAC operation, add a 2 after the K. Example: K2BT24RM.

DIMENSIONS (inches)



KBT12RM is shown. Motor on opposite end is KBT12LM; direction of shaft rotation remains constant. KBT24 models employ two wheels with a center bearing support.

Dimensions (inches) are for reference only and subject to change.

Model (RM & LM)	A	B	C
KBT12	19 5/16	13 5/16	12 3/8
KBT24	32 13/16	26 13/16	26

TECHNICAL DATA

Model (RM & LM)	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KBT12	490	3450	2.0	8.0	218
KBT24	950	3230	3.7	8.0	410

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PACKAGED TWIN BLOWERS

DESCRIPTION

These blowers achieve exceptional performance by using the largest possible blower housings and wheels. Each quadruplex centrifugal blower, powered by a precision ball-bearing motor, delivers air from over 50% of the 17″ width. Internal isolation mounts reduce transmission of vibration and AC hum. Dual inlet quadruplex design uses intake air to cool the motor.

FEATURES

- Capacities: 130 to 800 CFM
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Dual inlet design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number, adding discharge suffix A, B, C, or D. Example: KP701A. For 230 VAC operation, add a 2 after the K. Example: K2P701A.

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
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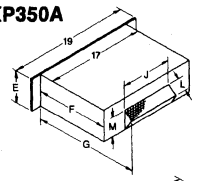
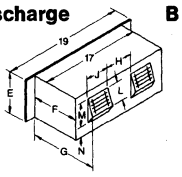
DIMENSIONS (inches)

Dimensions and Discharge Locations All Other Models

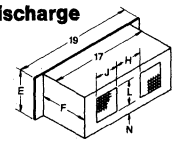
KP350A



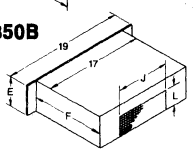
A Discharge



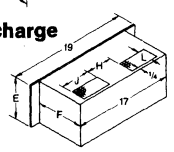
B Discharge



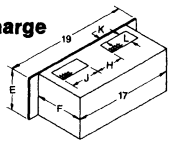
KP350B



C Discharge



D Discharge



Model	Discharge Available	Max. Panel Height E	F	G	H	J	K	L A Disch.	L B Disch.	L C&D Disch.	M A Disch.	N
KP350	A B	3½	8¾	10½	—	7½	—	2¼	2¼	—	2¼	—
KP528	A B C D	5¼	6¼	7 1/16	3¼	2½	5/8	1⅞	3	1 15/16	3	1 3/16
KP529	A B C D	5¼	6¼	7 1/16	4½	4½	5/8	1⅞	3	1 15/16	3	1 3/16
KP701	A B C D	7	8¼	10 1/16	3¼	4¾	5/8	3½	5½	3 5/16	5½	1 3/16
KP729	A B C D	7	8¼	10¼	4⅝	4¾	1	2½	4	2½	4	1 7/16
KP877	A B C D	8¾	10	11 3/16	2	5 5/16	1 1/16	4⅜	6⅛	3⅝	6⅛	1⅛
KP1051	A B C D	10½	11½	13⅛	4	4 9/16	1	5⅝	7 7/16	4¾	7 7/16	1 13/16

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KP350	160	1500	1.2	1.6	90
KP528	130	3150	0.8	1.3	65
KP529	300	3000	1.4	1.9	95
KP701	330	1600	1.1	1.6	85
KP729	470	3250	1.7	3.1	185
KP877	525	1500	1.3	1.9	140
KP1051	800	1500	2.5	5.1	260

RECESSED PACKAGED BLOWERS

DESCRIPTION

The Recessed Packaged Blowers utilize the same powerful blowers featured in Packaged Twin Blowers. They save critical panel space by extending into the space in the cabinet base and save a full 1¾ inches of panel height. There is no loss of airflow because the size of the open grille design still provides sufficient area to meet air delivery requirements.

FEATURES

- Capacities: 130 to 800 CFM
- Full air delivery, minimum panel height
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Dual inlet design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number, adding dsicharge suffix A, B, C or D. Example: KPL529B. For 230 VAC operation, add a 2 after the K. Example: K2PL529B.

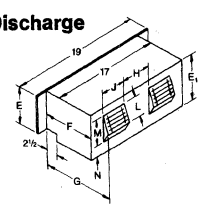
CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

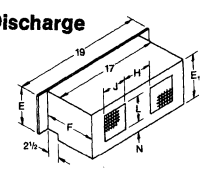
DIMENSIONS (inches)

Dimensions and Discharge Locations

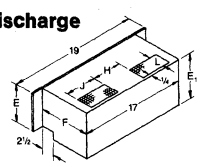
A Discharge



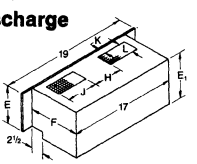
B Discharge



C Discharge



D Discharge



Model	Discharge Available	Max. Height Panel E	Max. Height Encl. E_1	F	G	H	J	K	L A Disch.	L B Disch.	L C&D Disch.	M A Disch.	N
KPL528	A B C D	3½	5¼	8½	9 15/16	3¼	2½	2⅜	1⅞	3	1 15/16	3	1 3/16
KPL529	A B C D	3½	5¼	8½	9 15/16	4½	4½	2⅜	1⅞	3	1 15/16	3	1 3/16
KPL701	A B C D	5¼	7	10½	12 5/16	3¼	4¾	1 15/16	3½	5½	3 5/16	5½	1 3/16
KPL729	A B C D	5¼	7	10½	12½	4⅝	4¾	1 15/16	2½	4	2½	4	1 7/16
KPL877	A B C D	7	8¾	12½	14 1/16	2	5 5/16	1¾	4⅜	6⅛	3⅝	6⅛	1⅛
KPL1051	A B C D	8¾	10½	12¾	14⅜	4	4 9/16	1½	5⅝	7 7/16	4¾	7 7/16	1 13/16

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KPL528	130	3150	0.8	1.3	65
KPL529	300	3000	1.4	1.9	95
KPL701	330	1600	1.1	1.6	85
KPL729	470	3250	1.7	3.1	185
KPL877	525	1500	1.3	1.9	140
KPL1051	800	1500	2.5	5.1	260

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EMI-SHIELDED PACKAGED BLOWERS

DESCRIPTION

The KOOLTRONIC EMI shield conforms to the latest technology in attenuation of electromagnetic interference. The KPR Series combines this shield with Packaged Twin Blowers. This same shielded front end can also be used as an enclosure accessory, or incorporated into the entire line of KOOLTRONIC Packaged Blowers, as an option, with a few dimensional changes.

FEATURES

- Capacities: 130 to 800 CFM
- Shielding conforms to latest technology
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Dual inlet design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number, adding discharge suffix A, B, C or D. Example: KPR877C. For 230 VAC operation, add a 2 after the K. Example: K2PR877C.

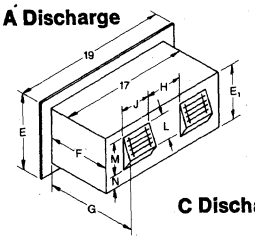
CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

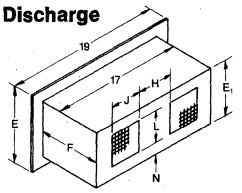
DIMENSIONS (inches)

DIMENSIONS AND DISCHARGE LOCATIONS

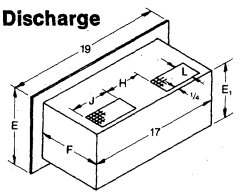
A Discharge



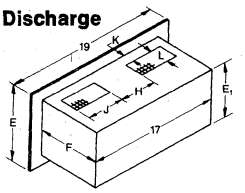
B Discharge



C Discharge



D Discharge



Model	Discharge Available	Max. Height Panel E	Max. Height Encl. E1	F	G	H	J	K	L A Disch.	L B Disch.	L C&D Disch.	M A Disch.	N
KPR528	A B C D	7	5¼	7	8 7/16	3¼	2½	1⅜	1⅞	3	1 15/16	3	1 3/16
KPR529	A B C D	7	5¼	7	8 7/16	4½	4½	1⅜	1⅞	3	1 15/16	3	1 3/16
KPR701	A B C D	8¾	7	9½	11 5/16	3¼	4¾	1⅞	3½	5½	3 5/16	5½	1 3/16
KPR729	A B C D	8¾	7	9½	11½	4⅝	4¾	2¼	2½	4	2½	4	1 3/16
KPR877	A B C D	10½	8¾	11	12 5/16	2⅛	5 15/16	1 11/16	4⅜	6⅛	3⅝	6⅛	1⅛
KPR1051	A B C D	12¼	10½	12⅜	14	4	4 5/16	1⅞	5⅝	7 7/16	4 3/16	7 7/16	1 13/16

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KPR528	130	3150	0.8	1.3	65
KPR529	300	3000	1.4	1.9	95
KPR701	330	1600	1.1	1.6	85
KPR729	470	3250	1.7	3.1	185
KPR877	525	1500	1.3	1.9	140
KPR1051	800	1500	2.5	5.1	260

BROAD DISCHARGE PACKAGED BLOWERS

DESCRIPTION

KOOLTRONIC Broad Discharge Blowers combine a dual centrifugal blower with an internal plenum chamber to provide an even distribution of air, delivered across the entire width of the cabinet. This permits installation directly beneath the electronics for overall cooling of rows of printed circuit cards or similar electronic components, without need for a space-consuming external plenum chamber.

FEATURES

- Capacities: 270 to 800 CFM
- Internal plenum distributes airflow
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Dual inlet design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number, adding discharge suffix C or D. Example: KPC729D. For 230 VAC operation, add a 2 after the K. Example K2PC729D.

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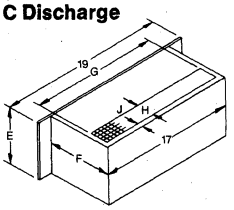
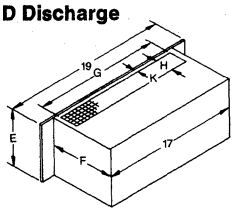
DIMENSIONS (inches)

DIMENSIONS AND DISCHARGE LOCATIONS

C Discharge



D Discharge



Model	Discharge Available	E	F	G	H	J	K
KPC529	C D	5¼	6¼	15⅛	1 15/16	3/16	1 1/16
KPC701	C D	7	9½	16	2½	¾	¾
KPC729	C D	7	8¼	16	2½	¾	¾
KPC877	C D	8¾	10	16	3 3/16	¼	¾
KPC1051	C D	10½	11½	16	4 3/16	5/16	⅞

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KPC529	270	3050	1.6	1.9	105
KPC701	320	1600	1.2	1.6	90
KPC729	435	3250	1.5	3.1	170
KPC877	500	1500	1.3	1.9	150
KPC1051	800	1500	2.4	5.1	240

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HIGH CAPACITY BROAD DISCHARGE PACKAGED BLOWERS

DESCRIPTION

The KOOLTRONIC High Capacity Broad Discharge Packaged Blowers offer a unique design that ensures a uniform, broad discharge for more efficient heat removal across a larger area than previously attainable. A single unit delivers nearly double the airflow of Broad Discharge Packaged Blowers. These powerful blowers are available in sizes ranging from 17″ x 18″ to 17″ x 29¼″.

Designed for internal or external installation, either horizontally or vertically, including inverted top-mounted. Mountings include EIA-notched flanges, and side or end rails, all of which are bolted on for flexibility and ease of installation. Filtered air intake is through either the bottom or ends.

State-of-the-art technology makes this series of blowers ideal in applications where other approaches may not succeed. They are engineered and built for applications which require a large volume column of air in a wall-to-wall configuration.

FEATURES

- Capacities: 300 to 1250 CFM
- Wall-to-wall air distribution
- Versatile mounting configurations
- Heavy-gauge steel enclosures
- EC configuration includes EIA-notched flanges and 19-inch stainless steel grille at each end
- UL/CSA ball-bearing motors
- Dual inlet design for maximum airflow
- Inlet air cools motor for longer life
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-12, page **C•1649**

HOW TO ORDER

Specify model number, adding configuration suffix. Example: KPC2729EC. For 230 VAC operation, add a 2 after the K. Example: K2PC2729EC.

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CONFIGURATIONS

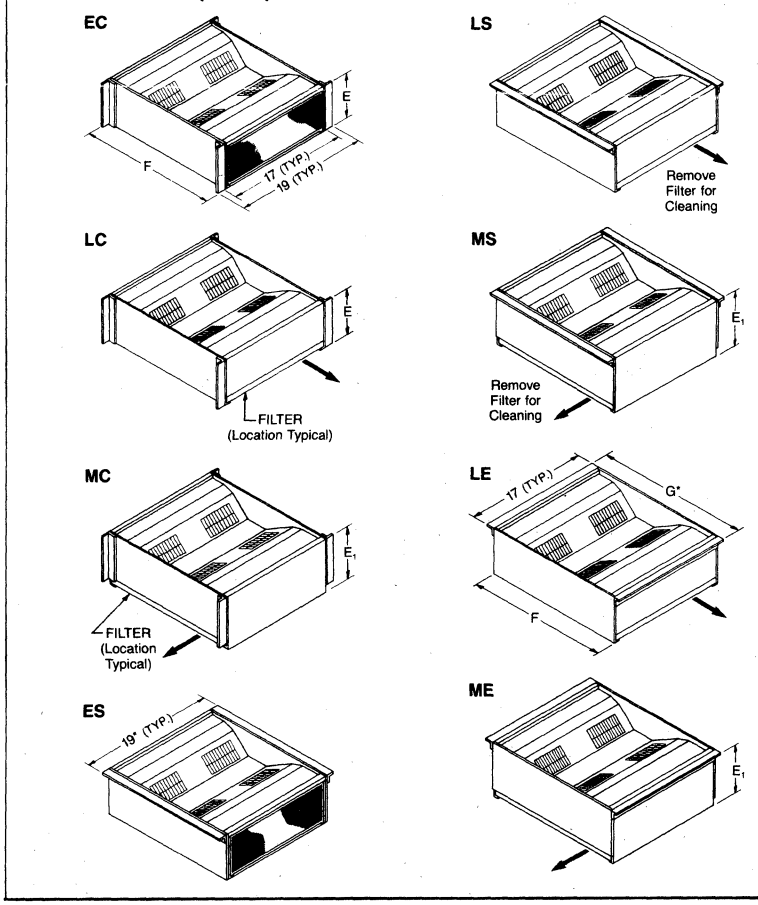
Filter Positions (Ambient Air Inlet)	Mounting Hardware: EIA-Notched Corner Flanges (C)	Side Rails (S)	End Rails (E)
Both Ends (E)	EC	ES	—
Bottom (L) End filter removal	LC	LS	LE
Bottom (M) Side filter removal	MC	MS	ME

The above chart, used in conjunction with the diagram below, will help you determine which filter location and method of mounting best suits your needs. These units can be mounted in virtually any orientation, internally or externally.

The configuration of your choice is determined by combining the filter position (E, L, M) and the mounting hardware (C, S, E) designations. The diagrams below show the location of the mounting hardware and the location of the filter, as well as the direction in which bottom filters are removed for cleaning.

EC model includes standard grille at each end. All dimensions are typical, except as noted.

DIMENSIONS (inches)



DIMENSIONS (inches)

Model	E	E1	F	G
KPC2528	7	7⅝	18	20
KPC2529	7	7⅝	18	20
KPC2701	8¾	9⅜	24	26
KPC2729	8¾	9⅜	21	23
KPC2877	10½	11⅛	26	28
KPC21051	12¼	12⅞	29¼	31¼

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps Run.	Amps L.R.	Watts
KPC2528	300	3000	1.8	2.6	135
KPC2529	480	3100	3.0	3.8	210
KPC2701	630	1540	2.3	3.2	185
KPC2729	880	3225	3.3	6.2	350
KPC2877	1000	1375	3.2	3.8	320
KPC21051	1250	1625	4.1	9.4	430

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DUCT SUPPLY PACKAGED BLOWERS

DESCRIPTION

KOOLTRONIC Duct Supply Blowers generate large volumes of cooling air in limited spaces. They deliver filtered air from either one or two side discharge ports to cool every component in an electronics system by means of a single centrifugal blower wheel. The large, narrow wheel, driven at a quiet, life extending low speed, delivers cooling air to side ducts at higher pressure than conventional blowers often used to supply duct systems.

FEATURES

- Capacities: 435 to 840 CFM
- Single or dual discharge ports
- Supplies air directly to cabinet duct
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2DP875.

CALL EXTENSION 44

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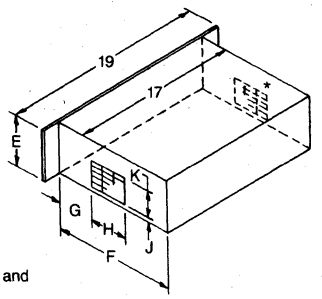
DIMENSIONS (inches)



*Discharge location for single port models, KDP726 and KDP728.
Dimensions (inches) are for reference only and subject to change.

Model	E	F	G	H	J	K
One Discharge Port						
KDP726**	7	17½	9¾	7	5/16	3 3/16
KDP728**	7	17½	9¾	7	5/16	3 3/16
Two Discharge Ports						
KDP700	7	15¾	5¼	5½	5/16	3 3/16
KDP730	7	15¾	5¼	5½	5/16	3 3/16
KDP875	8¾	15¾	5¼	5½	¼	4½
KDP885	8¾	15¾	5¼	5½	¼	4½

**Facing grille, discharge port is on left side.

TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KDP726	435	1140	2.5	5.5	215
KDP728	610	1600	5.8	17.5	560
KDP700	485	1140	2.6	5.5	235
KDP730	680	1600	5.9	17.5	630
KDP875	590	1140	2.9	6.0	280
KDP885	840	1500	7.8	17.5	820

TANGENTIAL PACKAGED BLOWERS

DESCRIPTION

For panel-mounted applications requiring a quiet, filtered air supply, evenly distributed over the full outlet width. Easy to install, these blowers feature all-ball-bearing support and rubber isolation systems and are ideal where a moderate volume of air is required and static pressure is low.

FEATURES

- Capacities: 160 to 195 CFM
- Broad, quiet air supply
- Compact, easy to install
- Steel cases with EIA-notched flanges
- 19-inch stainless steel grilles
- UL/CSA ball-bearing motors
- Permanent filters
- Exhaust guards included
- Three foot SJ 3-wire power cord
- Accessories and options 1-13, page **C**•1649

HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2PT350.

CALL EXTENSION 44

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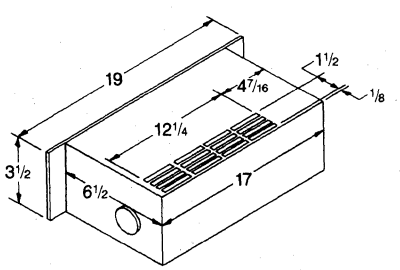
DIMENSIONS (inches)

KPT350 & KPT351



TECHNICAL DATA

Model	CFM @ 0-inches	RPM Nominal	Amps		Watts
			Run.	L.R.	
KPT350	160	3350	1.1	1.9	80
KPT351	195	3200	1.2	1.9	95

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CLOSED-LOOP COOLING

Many applications using sophisticated electronics require a closed-loop cooling system to dissipate heat buildup without introducing outside contaminated air. Closed-loop systems are required when electronic systems operate in hostile environments containing dirt, humidity or corrosives, which adversely affect the performance or ultimate survival of the electronics. Moreover, the presence of airborne particulate matter compounds the difficulty of controlling the temperature of electronic equipment.

Closed-loop cooling seals the electronics enclosure from hostile elements in the environment. Two separate circulation systems are employed. The internal system cools (and, in air conditioners, dehumidifies) the air inside the cabinet, totally isolating the sensitive electronics from the ambient. The external system uses circulating ambient air or water to discharge the heat removed from the electronics. Examples of closed-loop cooling equipment employed with electronics and process controls are air-cooled and water-cooled heat exchangers and air conditioners.

HEAT EXCHANGERS For installations that can operate at above-ambient temperatures, heat exchangers provide moderate-cost closed loop cooling. Air-to-air and water-to-air models cover a broad range of cabinet sizes and performance capacities, so that near-ambient to moderately-above-ambient temperatures can be achieved.

Advanced air-to-air heat exchangers include two heat transfer methods. One design uses a heat pipe core containing a liquid refrigerant, mounted between the ambient air path and the enclosure to be cooled. Another design employs a high-efficiency heat transfer element consisting of convoluted lightweight aluminum, fabricated into two totally separate air paths. With either method, the heated air leaving the electronics is directed through one side of the exchanger, where the heat passes through the exchanger element into the ambient-side airstream and is dissipated.

Water-to-air heat exchangers work by transferring heat of internal air to circulating cold water, resulting in chilled air which is recirculated throughout the electronics cabinet.

AIR CONDITIONERS are required where the equipment operating temperature must be kept lower than the ambient room temperature, and the cabinet must be sealed from dust, fumes and other contaminants. Hermetic air conditioners for electronics are available in air-cooled and water-cooled models.

AIR-COOLED AIR CONDITIONERS Heat removed from the electronics cabinet is discharged by circulating ambient air through the condenser coil and returning the heated air to the ambient. There are vertical and horizontal types for exterior mounting to side panels or the top of the enclosures, and for various internal positions.

WATER-COOLED AIR CONDITIONERS Intended primarily for extreme operating conditions of high-ambient temperatures or severe contaminants, these units utilize water as the medium for heat dissipation. The heat is absorbed by cool water circulating through a coaxial condenser coil, following which the heat-laden water is discharged or recirculated after cooling.

GENERAL SPECIFICATIONS FOR HEAT EXCHANGERS AND AIR CONDITIONERS

RUGGED CONSTRUCTION: heavy-gauge steel construction.

BAKED EPOXY FINISH: Durable, baked-on gray epoxy finish is standard. Other finishes are available.

PRECISION BALL-BEARING MOTORS: All blower motors are UL/CSA recognized, include automatic-reset thermal overload protection and are also cooled by the blowers' intake air, for maximum motor life. All motors meet Federal Specification CC-M-01807A, and include double-sealed or double-shielded precision ball bearings, which meet Federal Specification FF-B-171A. Special permanent lubricants perform over a broad temperature range: −20F (−29C) to 250F (121C).

PERMANENT FILTERS: Designed to last the life of the unit, the filters consist of a multi-layer grid of sturdy, adhesive coated corrugated aluminum in a one-piece aluminum frame. Filters are not required on water-cooled models.

POWER: Available in 115 or 230 VAC, 50 or 60 Hz. For other voltages and frequencies or other special requirements, consult KOOLTRONIC.

POWER CORD: All models are supplied with type SJ three-wire cord, for direct wiring to power source. Special lengths and/or plugs available.

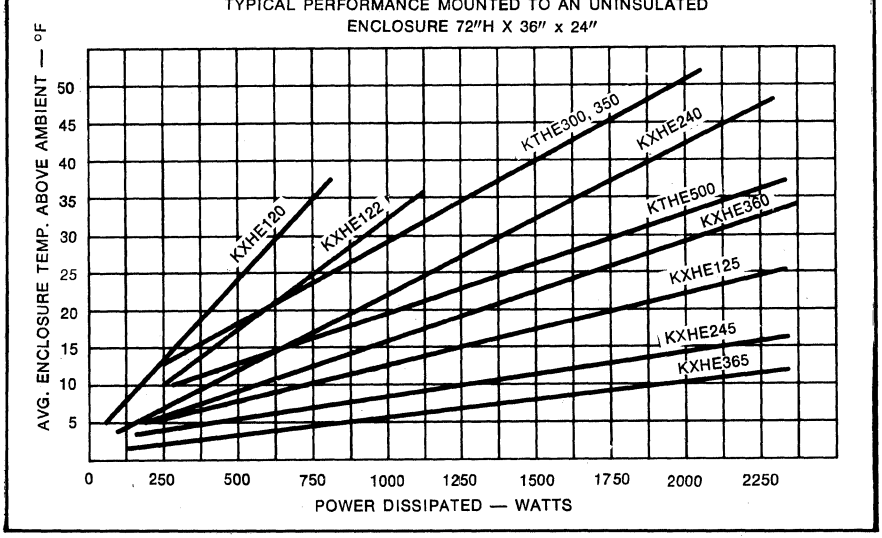
CONDENSATE DISPOSAL (A/C): Condensate drain fitting and hose are included.

ACCESSORIES AND OPTIONS

- Adapter Plate for Rack Mounting
- Air Deflectors
- Airflow Switch
- Automatic Water Regulating Valve
- Condenser Access Panel
- Cooling Effect Detector
- Deep Drain Pan Kit
- Excess Heat Detector Package
- Excess Pressure Detector
- Filter Recoating Adhesive
- Filters for replacement
- Height Extension
- High Water Level Detector
- Internal corrosion resistant coatings
- Lifting Eyes
- Low Airflow Detector
- Low Ambient Kit
- Low Temperature Control
- Mounting Hinge
- Parallel Water Connections
- Rear Condenser Air Inlet Panel
- Refrigerant Charging Kit
- Short Cycle Protector
- Special external paint finish
- Special line cord or connectors
- Variable Speed Control
- Water Hookup—Opposite Side
- Weather Protection Kit

Not all Accessories and Options are applicable or available for all heat exchangers and air conditioners. For details and full descriptions, contact Kooltronic or see complete Design Guide/ Catalog, available on request. **CALL EXTENSION 44**

PERFORMANCE GRAPH FOR AIR-TO-AIR HEAT EXCHANGERS



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KXHE AIR-TO-AIR HEAT EXCHANGERS

DESCRIPTION

One of the newest additions to the KOOLTRONIC heat exchanger line, the KXHE Series of air-to-air heat exchangers combines a state of the art, high-efficiency convoluted aluminum heat transfer element with powerful blowers. (The narrow KXHE 120 and KXHE 122 use high performance fans.) This combination utilizes counterflowing air streams, the best method for achieving maximum heat transfer efficiency, while retaining the closed-loop system to provide cooling within sealed electronics cabinets. This exclusive KOOLTRONIC design is highly effective under a broad range of heat loads.

The KXHE Series is an ideal choice for applications in dusty, dirty or oil-laden environments. Under such conditions, despite filtration, particulate matter accumulates on heat transfer surfaces and reduces initial performance efficiency. **The KOOLTRONIC exclusive design assures good-as-new cooling performance because the sealed heat transfer element is quickly and easily removed for cleaning.**

These unique heat exchangers operate effectively when mounted vertically or horizontally, internally or externally, and are available in numerous sizes and capacities. The versatility of the KXHE Series heat exchangers makes them suitable in a wide range of design applications.

KXHE air-to-air heat exchangers are an excellent choice for all applications requiring a closed-loop system which can tolerate cabinet temperatures slightly above ambient. Where internal temperatures must be kept below ambient, the KPHE Series water-to-air heat exchangers (page **C**•1662) or one of our air conditioners (pages **C**•1663-1668) should be considered.

For operation outdoors, weather protection and external protective coatings are required.

FEATURES

- Lightweight design
- Closed-loop near-ambient cooling
- Unique heat transfer element; easily removed for cleaning
- Heavy-duty steel construction with baked epoxy finish
- UL/CSA ball-bearing motors
- Five foot (minimum) SJ 3-wire power cord
- Complete line of accessories

HOW TO ORDER

Specify model number, adding A for external or B for internal. Example: KXHE360A. For 230 VAC operation, add a 2 after the K. Example: K2XHE360A.

CALL EXTENSION 44

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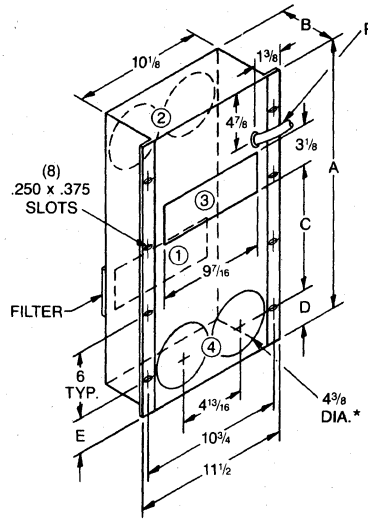
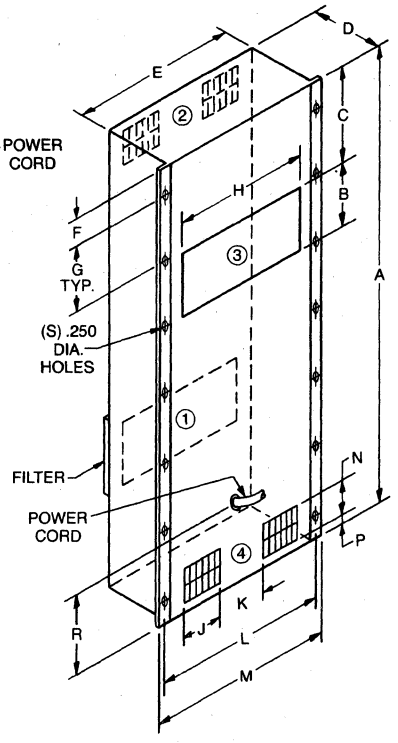
DIMENSIONS (inches)

KXHE120A & KXHE122A **KXHE125A—KXHE365A**

EXTERNAL MOUNTING, ALL MODELS

① Ambient Air Inlet
② Warm Ambient Air Outlets
③ Warm Air Return From Electronics
④ Cool Air Outlets To Electronics





KXHE120B & KXHE122B INTERNAL MOUNTING
(Requires 180° rotation)

① Warm Air Return From Electronics
② Cool Air Outlets To Electronics
③ Filtered Ambient Air Inlet
④ Warm Ambient Air Outlets

KXHE125B–KXHE365B For internal mounting, flanges are on opposite corners. Airflow unchanged.

Dimensions (inches) are for both external (A) and internal (B) models; for reference only and subject to change. For complete installation information on the internal (B) models, call KOOLTRONIC.

*KXHE122A & B are built with a single 5/8 DIA. centered cutout on each side replacing the double cutouts at outlets ② and ④. The center of these cutouts is 3 9/16" (D dimension) from respective ends of unit.

Model (A & B)	A	B	C	D	E	F	G	H
KXHE120	24	4 3/16	11 1/4	3	3	—	—	—
KXHE122	25 1/2	8 5/16	11 3/8	3 5/16	3 3/4	—	—	—
KXHE240	41	5 1/2	9	6 15/16	13 1/16	2 1/2	6	12
KXHE360	53	5 1/2	9	6 15/16	13 1/16	2 1/2	6	12
KXHE125	28 1/2	3 7/16	8 13/16	8 1/4	17	3 3/4	7	15 1/2
KXHE245	47 1/4	5 5/16	12 1/2	8 1/4	17	2 5/8	3 1/2	15 1/2
KXHE365	59 1/2	8 1/16	12 5/8	8 1/4	17	1 3/4	3 1/2	15 1/2

Model (A & B)	J	K	L	M	N	P	R	S
KXHE120	—	—	—	—	—	—	—	—
KXHE122	—	—	—	—	—	—	—	—
KXHE240	2 3/4	3 5/8	14 1/8	14 7/8	2 1/2	3/4	6 1/2	14
KXHE360	2 3/4	3 5/8	14 1/8	14 7/8	2 1/2	3/4	6 1/2	18
KXHE125	4 1/16	3 5/8	18 3/8	19	2 5/16	5/8	5 3/4	8
KXHE245	4 1/16	3 5/8	18 3/8	19	2 5/16	5/8	8 3/4	26
KXHE365	3 1/2	4 7/8	18 3/8	19	3 1/4	1	8 3/4	34

TECHNICAL DATA

Model (A & B)	Power		Max. Ambient Temp. F	Approx. Weight (lbs.)
	Amps	Watts		
KXHE120	0.8	75	125	20
KXHE122	1.1	90	125	30
KXHE240	2.0	190	125	60
KXHE360	2.2	220	125	80
KXHE125	3.2	300	125	55
KXHE245	3.2	300	125	80
KXHE365	3.7	400	125	105

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KTHE AIR-TO-AIR HEAT EXCHANGERS

DESCRIPTION

The KTHE Series of air-to-air heat exchangers use refrigerants to provide closed-loop cooling in applications where slightly above ambient temperatures are acceptable. Where internal temperatures must be kept below ambient, the KPHE Series water-to-air heat exchangers (page **C**•1662) or one of our many air conditioners (pages **C**•1663-1668) should be considered.

These units operate efficiently in a variety of mounting orientations (vertical, horizontal, external, internal) and are available in a range of sizes and capacities.

KTHE heat exchangers utilize a refrigerant-charged coil, in a system that includes two sets of powerful double blowers. They remove substantial heat loads from sealed cabinets, while maintaining low temperature differential above ambient. For example, model KTHE500 will remove 1,000 watts with only a 20F temperature rise, or 1,400 watts with only a 25F temperature rise. (See performance graphs on page **C**•1659 for details.)

For operation outdoors, weather protection and external protective coatings are required.

FEATURES

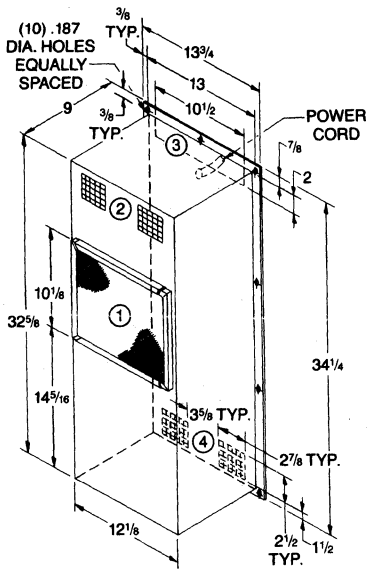
- Closed-loop near-ambient cooling
- Refrigerant-charged heat pipe core
- Heavy-duty steel construction with baked epoxy finish
- UL/CSA ball-bearing motors
- Three foot SJ 3-wire power cord
- Complete line of accessories

HOW TO ORDER

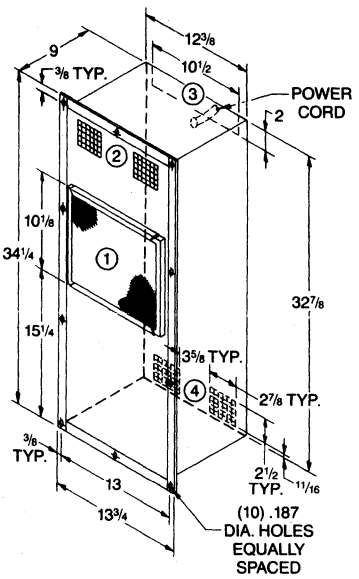
Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2THE500.

DIMENSIONS (inches)

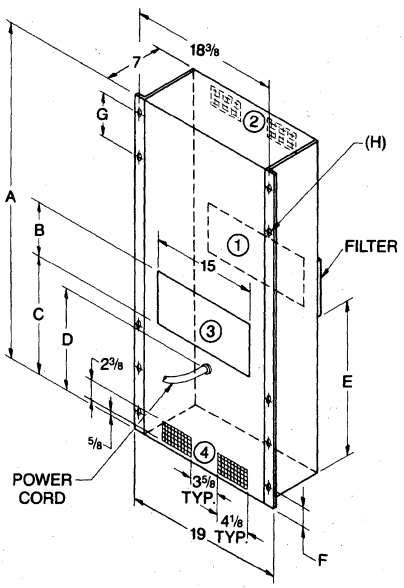
KTHE350A
EXTERNALLY MOUNTED



KTHE350B
INTERNALLY MOUNTED



KTHE300 & KTHE500



① FILTERED AMBIENT AIR INLET
② WARM AMBIENT AIR OUTLETS
③ WARM AIR RETURN FROM ELECTRONICS
④ COOL AIR OUTLETS TO ELECTRONICS

Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H
KTHE300	28½	5⅝	9½	6⅞	13¼	3¾	7	(8) .250 x .375 Slots
KTHE500	47¼	9½	16½	14	21	2⅝	3½	(26) .250 Dia. Holes

TECHNICAL DATA

Model	Power		Max. Ambient Temp. F	Approx. Weight (lbs.)
	Amps	Watts		
KTHE300	3.0	275	125	60
KTHE350 A&B	2.5	180	125	65
KTHE500	3.0	275	125	70

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

KOOLTRONIC
COOLING EXCELLENCE FOR ELECTRONICS

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1700 MORSE AVENUE, VENTURA, CALIFORNIA 93003
(805) 642-8521 • TELEX 659224 • FAX 805-658-2901

WATER-TO-AIR HEAT EXCHANGERS

DESCRIPTION

KOOLTRONIC water-to-air heat exchangers provide uniform cooling in a closed-loop system where a reliable source of clean, cool water is available. The KPHE Series is designed primarily for use in harsh environments with cooling requirements in excess of the capabilities of air-to-air heat exchangers. They are particularly useful in highly contaminated environments that would require very frequent cleaning or changing of ambient air filters, or require frequent cleaning of the heat exchanger core. KOOLTRONIC water-to-air heat exchangers can furnish greater cooling capacities than air-to-air models, depending on water temperature and rate of flow. Ambient air is sealed out; heat-transfer surfaces remain clean. The higher cooling ability of the KPHE Series depends on the temperature of the cooling water. Thus, if the water is cold enough, the temperature of the air delivered to the electronics cabinet can actually be lower than that provided by air conditioners, at less cost.

KPHE Series heat exchangers are available in two sizes and capacities. Model KPHE40 includes the Excess Heat Detector and High Water Level Detector Packages and the Automatic Water Flow Regulating Valve as standard features. A complete range of accessories and options are available for both units, adding to their versatility.

For operation outdoors or in corrosive atmospheres, weather protection and/or special internal and external protective coatings are required.

FEATURES

- Ideal for extremely hot, harsh environments
- Closed-loop cooling
- Capable of below-ambient cooling
- Heavy-duty steel construction with baked epoxy finish
- UL/CSA ball-bearing motors
- Three foot SJ 3-wire power cord
- Complete line of accessories

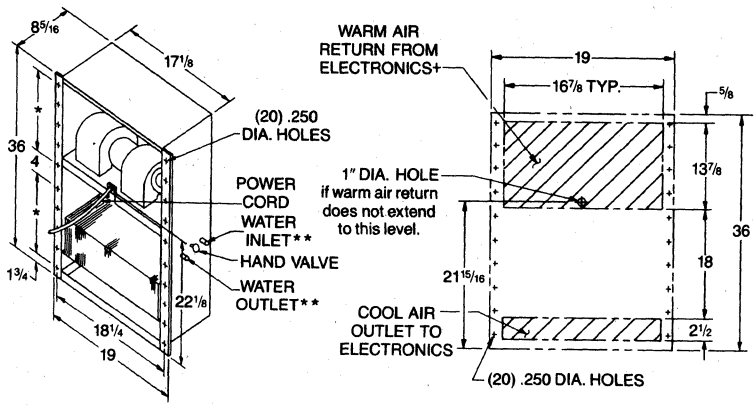
HOW TO ORDER

Specify model number. For 230 VAC operation, add a 2 after the K. Example: K2PHE39.

For personal assistance or a printed guide for selection of KOOLTRONIC Water-to-Air Heat Exchangers, contact Kooltronic at 609-466-3400.

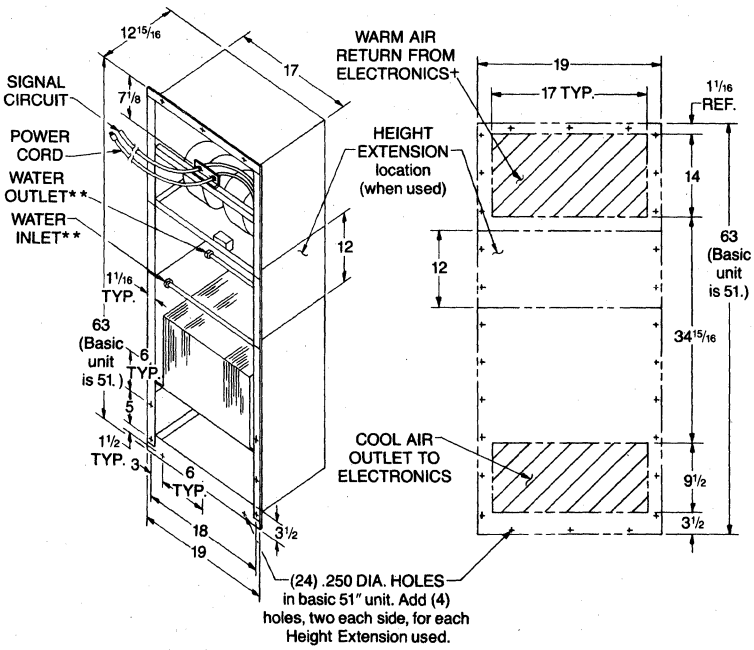
DIMENSIONS (inches)

KPHE39



KPHE40

Shows use of single Height Extension



*4 Equal Spaces @ 3½" = 14"
**½" Copper tubing hook-ups
+Enclosure opening should be located as high as possible within this area, and equal or exceed size of cool air outlet.

Dimensions (inches) are for reference only and subject to change.

CALL EXTENSION 44

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

TECHNICAL DATA

Model	Power		Max. Inlet Water Temp. F	Approx. Weight (lbs.)
	Amps	Watts		
KPHE39	2.0	235	85	50
KPHE40	2.1	240	85	105

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MINI PANEL-MOUNTED AIR CONDITIONERS

DESCRIPTION

KOOLTRONIC Mini Air Conditioners are ideal for low-capacity applications with space limitations. Mounted on any vertical panel of electronic equipment enclosures, they occupy minimal floor space and no cabinet space. Hostile ambient air is sealed out by the closed-loop design and gasketed mountings.

Micro-Mini air conditioners are suitable for applications that have low static pressures, where fans can provide adequate airflow.

The Super-Mini models are recommended where densely packed components cause higher static pressures that are beyond the capability of a fan-driven air system. Superior performance is obtained through use of a centrifugal blower recirculating the clean, cool dehumidified air throughout the cabinet at high flow rates.

Where rack mounting is required, special adapter plates are available.

For operation outdoors or in corrosive atmospheres, weather protection and/or special internal and external protective coatings are required.

For assistance in model selection, call KOOLTRONIC or request the KOOLTRONIC Air Conditioner Selection Guide.

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

CALL EXTENSION 44

FEATURES

- Centrifugal blower-driven air system in Super-Mini series
- Powerful fans in Micro-Mini series
- Compact design
- Capacities: Super-Mini from 1,000 to 2,000 BTU/Hr. Micro-Mini from 800 to 1,400 BTU/Hr.
- Heavy-duty steel enclosures with baked epoxy finish
- UL/CSA ball-bearing motors
- Five foot SJ 3-wire power cord
- Complete line of accessories

APPROXIMATE WEIGHT

Micro-Mini Series—40 lbs.
Super-Mini Series—58 lbs.

ACCESSORIES/OPTIONS

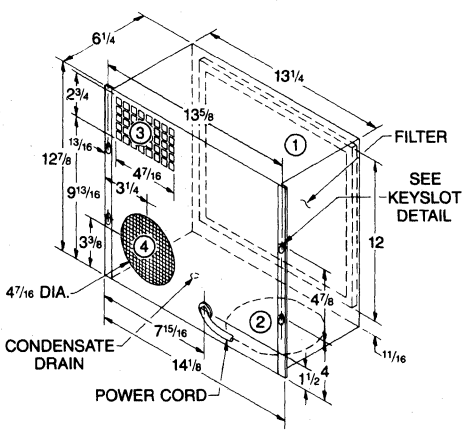
- Adapter plate for rack mounting
- Air Deflectors
- Airflow Switch
- Cooling Effect Detector
- Excess Pressure Detector
- Filter Recoating Adhesive
- Filters for replacement
- Low Temperature Control
- Internal corrosion resistant coatings
- Mounting Hinge
- Low Airflow Detector
- Refrigerant Charging Kit
- Short Cycle Protector
- Special external paint finish
- Special line cord or connectors
- Weather Protection Kit

HOW TO ORDER

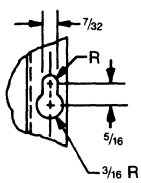
Specify model number.

DIMENSIONS (Inches)

MICRO-MINI



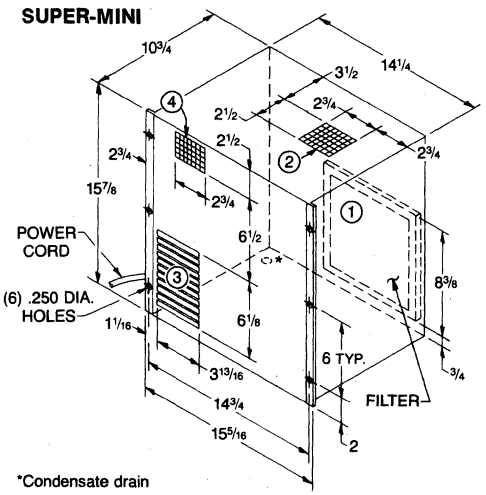
KEYSLOT DETAIL



① CONDENSER INLET (Ambient Air In)
② CONDENSER OUTLET (Warm Ambient Air Out)
③ WARM AIR RETURN FROM ELECTRONICS
④ COOL AIR OUTLET TO ELECTRONICS

Dimensions (inches) are for reference only and subject to change.

SUPER-MINI



*Condensate drain

TECHNICAL DATA

Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
MICRO-MINI SERIES					
KAC.8MM/50	800	235	125/50	100/50*	2.8
KAC.8MM	800	235	125/50	115/60	2.8
K2AC.8MM/50	800	235	125/50	230/50	1.4
K2AC.8MM	800	235	125/50	230/60	1.4
KAC1.1MM/50	1100	325	125/50	100/50*	3.2
KAC1.1MM	1100	325	125/50	115/60	3.2
K2AC1.1MM/50	1100	325	125/50	230/50	1.7
K2AC1.1MM	1100	325	125/50	230/60	1.7
KAC1.4MM	1400	410	125/50	115/60	3.5
K2AC1.4MM	1400	410	125/50	230/60	2.0

*The transformer required to reduce 115 supply voltage to 100 volts for 50Hz compressor operation is externally mounted. Consult KOOLTRONIC for resulting dimensional changes.

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- **We invite inquiries about custom-designed units for unique applications**

CALL EXTENSION 44

Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
SUPER-MINI SERIES					
KAC1.0SM/50	1000	290	125/50	100/50*	5.0
KAC1.0SM	1000	290	125/50	115/60	5.0
K2AC1.0SM/50	1000	290	125/50	230/50	3.0
K2AC1.0SM	1000	290	125/50	230/60	3.0
KAC1.2SM/50	1200	350	125/50	100/50*	5.0
KAC1.2SM	1200	350	125/50	115/60	5.5
K2AC1.2SM/50	1200	350	125/50	230/50	3.0
K2AC1.2SM	1200	350	125/50	230/60	3.0
K2AC1.4SM	1400	410	120/50	230/60	3.0
KAC1.5SM/50	1500	440	120/50	100/50*	5.5
KAC1.5SM	1500	440	120/50	115/60	5.5
K2AC1.5SM/50	1500	440	120/50	230/50	3.0
KAC1.8SM/50	1800	525	115/50	100/50*	5.5
KAC1.8SM	1800	525	115/50	115/60	5.5
K2AC1.8SM/50	1800	525	115/50	230/50	3.5
KAC2.0SM	2000	585	105/50	115/60	5.5

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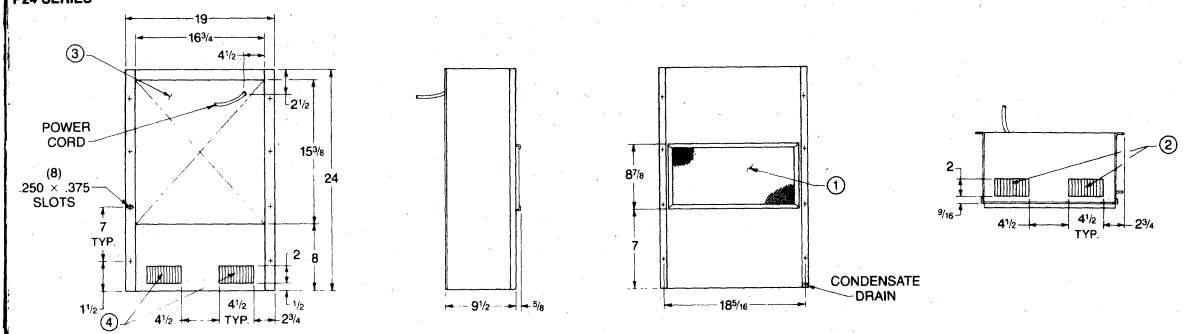
AIR-COOLED PANEL-MOUNTED AIR CONDITIONERS

DESCRIPTION

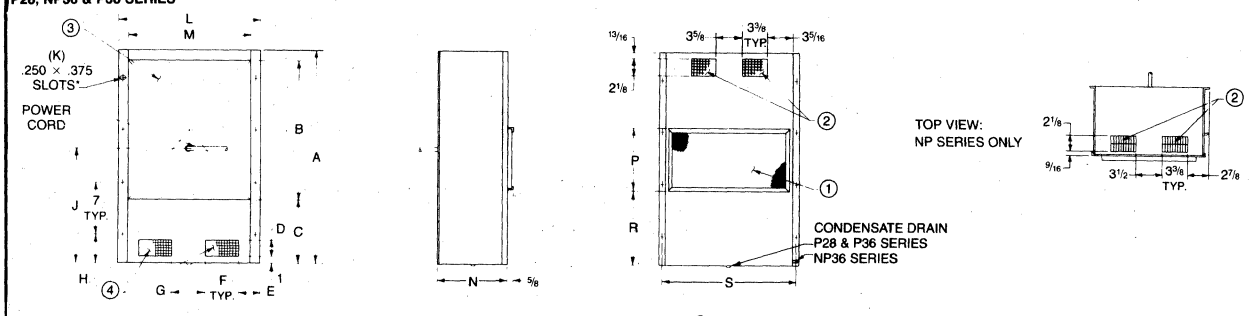
These series offer the greatest choice, with fourteen cooling capacities ranging from 1,000 to 16,000 BTU/Hr.
There are six heights ranging from 24 to 59 inches, for maximum flexibility to obtain optimal cooling efficiency.
THE KOOLTRONIC design forces the cooling air through all the heat-producing components by allowing the warm-air return to be as far as possible from the cool air outlets.
Extremely compact, these units require about one square foot of floor space and no cabinet space. They can be installed either fixed or hinged, directly to any vertical cabinet panel or door. Gasketed mountings and the closed-loop design seal out moisture and contaminant-laden ambient air. Powerful centrifugal blowers circulate clean, cool air through the electronics. Unique side-panel condenser air inlets on the P47, P52 and P59 Series models allow positioning close to obstructions, without impeding condenser airflow. An optional rear condenser air inlet is available.
For operation outdoors or in corrosive atmospheres, weather protection and/or special internal and external protective coatings are required.

DIMENSIONS/MID-SIZE MODELS (inches)

P24 SERIES



P28, NP36 & P36 SERIES



① FILTERED CONDENSER AIR INLET (Ambient Air In)
② CONDENSER OUTLETS (Warm Ambient Air Out)
③ WARM AIR RETURN FROM ELECTRONICS (Enclosure opening should be located as high as possible within this area, and equal or exceed size of cool air outlets.)
④ COOL AIR OUTLETS TO ELECTRONICS

*NP36 Series: Open end slots
Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
P28 Series	28½	18⅝	8½	2	2¾	4½	4½	3¾	15½	8	19	16¾	9½	8⅞	9¼	18⁵⁄₁₆
NP36 Series	36¾	23⅛	13	2⅛	2⅞	3⅜	3½	⅞	20	12	16	14⅞	9¼	13	13¹⁵⁄₁₆	15½
P36 Series	36¾	26⅞	8½	2	2¾	4½	4½	⅞	23¼	12	19	16¾	9½	8⅞	17⅝	18⁵⁄₁₆

TECHNICAL DATA

Height Series 24	28	36	Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
•			KAC1P___/50	1000	290	125/50	100/50*	6.0
•			KAC1P___	1000	290	125/50	115/60	6.0
•			K2AC1P___/50	1000	290	125/50	230/50	4.0
•			K2AC1P___	1000	290	125/50	230/60	4.5
		•	KAC2NP___/50	2000	585	125/50	100/50*	6.0
•			KAC2P___/50	2000	585	125/50	100/50*	6.3
	•	•	KAC2P___/50	2000	585	125/50	100/50*	6.0
		•	KAC2NP___	2000	585	125/50	115/60	6.0
•			KAC2P___	2000	585	125/50	115/60	6.3
	•	•	KAC2P___	2000	585	125/50	115/60	6.0
		•	K2AC2NP___/50	2000	585	125/50	230/50	3.0
•			K2AC2P___/50	2000	585	125/50	230/50	4.3
	•	•	K2AC2P___/50	2000	585	125/50	230/50	3.0
		•	K2AC2NP___	2000	585	125/50	230/60	4.0
•			K2AC2P___	2000	585	125/50	230/60	4.5
	•	•	K2AC2P___	2000	585	125/50	230/60	4.0
		•	KAC3NP___/50	3000	880	125/50	100/50*	6.5
•	•	•	KAC3P___/50	3000	880	125/50	100/50*	6.5
		•	KAC3NP___	3000	880	125/50	115/60	6.5
•	•	•	KAC3P___	3000	880	125/50	115/60	6.5
		•	K2AC3NP___/50	3000	880	125/50	230/50	3.5
•			K2AC3P___/50	3000	880	125/50	230/50	4.3
	•	•	K2AC3P___/50	3000	880	125/50	230/50	3.5
		•	K2AC3NP___	3000	880	125/50	230/60	4.5
•			K2AC3P___	3000	880	125/50	230/60	4.8
	•	•	K2AC3P___	3000	880	125/50	230/60	4.5

Height Series 24	28	36	Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
•			KAC3.5P___/50	3500	1025	125/50	100/50*	6.7
•			KAC3.5P___	3500	1025	125/50	115/60	6.7
•			K2AC3.5P___/50	3500	1025	125/50	230/50	4.3
•			K2AC3.5P___	3500	1025	125/50	230/60	4.8
		•	KAC4NP___/50	4000	1140	125/50	100/50*	7.0
	•	•	KAC4P___/50	4000	1140	125/50	100/50*	7.0
		•	KAC4NP___	4000	1170	125/50	115/60	7.0
	•	•	KAC4P___	4000	1170	125/50	115/60	7.0
		•	K2AC4NP___/50	4000	1170	125/50	230/50	4.0
	•	•	K2AC4P___/50	4000	1170	125/50	230/50	4.0
		•	K2AC4NP___	4000	1170	125/50	230/60	5.0
	•	•	K2AC4P___	4000	1170	125/50	230/60	5.0
		•	KAC5NP___/50	5000	1440	125/50	100/50*	8.5
	•	•	KAC5P___/50	5000	1440	125/50	100/50*	8.5
		•	KAC5NP___	5000	1465	125/50	115/60	8.5
	•	•	KAC5P___	5000	1465	125/50	115/60	8.5
		•	K2AC5NP___/50	5000	1465	125/50	230/50	4.5
	•	•	K2AC5P___/50	5000	1465	125/50	230/50	4.5
		•	K2AC5NP___	5000	1465	125/50	230/60	5.0
	•	•	K2AC5P___	5000	1465	125/50	230/60	5.0
		•	KAC6NP___	6000	1760	125/50	115/60	9.0
	•	•	KAC6P___	6000	1760	125/50	115/60	9.0
		•	K2AC6NP___/50	6000	1760	125/50	230/50	5.5
	•	•	K2AC6P___/50	6000	1760	125/50	230/50	5.5
		•	K2AC6NP___	6000	1760	125/50	230/60	6.0
	•	•	K2AC6P___	6000	1760	125/50	230/60	6.0

*The transformer required to reduce 115 supply voltage to 100 volts for 50Hz compressor operation is externally mounted. Consult KOOLTRONIC for resulting dimensional changes.

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AIR-COOLED PANEL-MOUNTED AIR CONDITIONERS

FEATURES

- Capacities from 1,000 to 16,000 BTU/Hr.
- Six heights available
- Compact design requires only 1 square foot of floor space
- Versatile mounting locations
- Heavy-duty steel enclosures with baked epoxy finish
- UL/CSA ball-bearing motors
- Ten foot SJ 3-wire power cord
- Complete line of accessories

For assistance in model selection, call KOOLTRONIC or request the KOOLTRONIC Air Conditioner Selection Guide.

APPROXIMATE WEIGHT

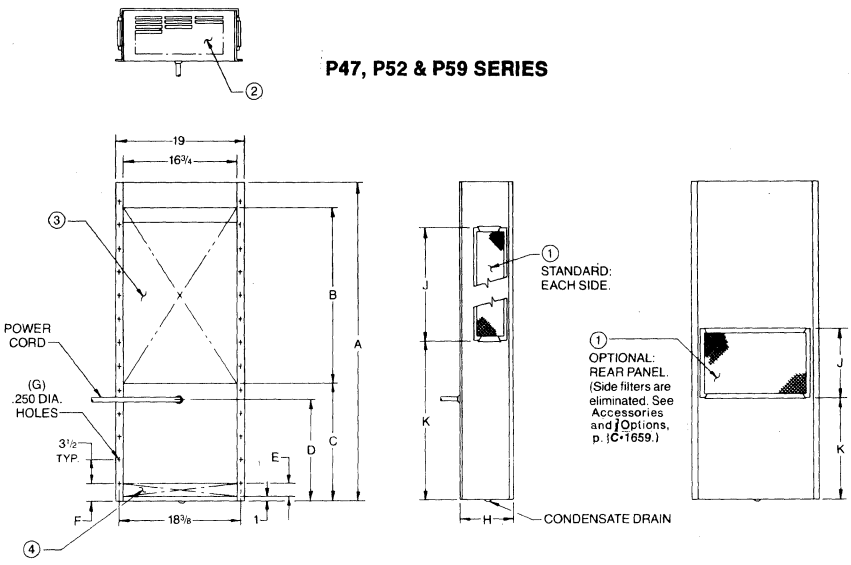
P24 & P28 Series	90 lbs.		
NP36 Series	100 lbs.	P47 Series	125 lbs.
P36 Series	105-110 lbs.	P52 Series	130-135 lbs.
P59 Series—KAC/K2AC4-12			135-140 lbs.
K2AC14 & 16			195 lbs.

HOW TO ORDER Specify model number by adding height after the P. Example: KAC6P47/50.

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

CALL EXTENSION 44

DIMENSIONS/FULL-SIZE MODELS (inches)



① FILTERED CONDENSER AIR INLET AREA (Ambient Air In)

② CONDENSER OUTLET (Warm Ambient Air Out)

③ WARM AIR RETURN FROM ELECTRONICS (Enclosure opening should be located as high as possible within this area, and equal or exceed size of cool air outlets.)

④ COOL AIR OUTLET TO ELECTRONICS

Dimensions (inches) are for reference only and subject to change.

Model	A	B	C	D	E	F	G	H	J	K	Optional J	Optional K
P47 Series All models	47¼	24¹⁵⁄₁₆	18¼	15	2	2⅝	26	7¹⁵⁄₁₆	16¾	24½	10⁹⁄₁₆	17¹⁄₁₆
P52 Series KAC/K2AC4, 5, 6 & 7S	52⁷⁄₁₆	24¹⁵⁄₁₆	23⁷⁄₁₆	15	2	1¾	30	7¹⁵⁄₁₆	16¾	29½	10⁹⁄₁₆	22¼
KAC/K2AC7D, 8, 9, 10 & 12	52⁷⁄₁₆	27¹⁵⁄₁₆	19¼	16	3	1¾	30	8¾	17	25½	10⁹⁄₁₆	20¹³⁄₁₆
P59 Series KAC/K2AC4, 5,6 & 7S	59½	24¹⁵⁄₁₆	30½	15	2	1¾	34	7¹⁵⁄₁₆	16¾	36½	10⁹⁄₁₆	29⁵⁄₁₆
KAC/K2AC7D, 8, 9, 10 & 12	59½	27¹⁵⁄₁₆	26⁵⁄₁₆	16	3	1¾	34	8¾	17	32½	10⁹⁄₁₆	27⅞
K2AC14 & 16	59½	34¹¹⁄₁₆	19⅞	16⅝	3⅝	1¾	34	12½	34⁵⁄₁₆	17¹³⁄₁₆	13	20

TECHNICAL DATA

Height Series 47	52	59	Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
•	•	•	KAC4P___/50	4000	1170	125/50	115/50	11.0
•	•	•	KAC4P___	4000	1170	125/50	115/60	12.0
•	•	•	K2AC4P___/50	4000	1170	125/50	115/50	4.5
•	•	•	K2AC4P___	4000	1170	125/50	230/60	5.0
•	•	•	KAC5P___/50	5000	1465	125/50	115/50	11.5
•	•	•	KAC5P___	5000	1465	125/50	115/60	12.0
•	•	•	K2AC5P___/50	5000	1465	125/50	230/50	5.0
•	•	•	K2AC5P___	5000	1465	125/50	230/60	5.5
•	•	•	KAC6P___/50	6000	1760	125/50	115/50	12.0
•	•	•	KAC6P___	6000	1760	125/50	115/60	12.0
•	•	•	K2AC6P___/50	6000	1760	125/50	230/50	5.5
•	•	•	K2AC6P___	6000	1760	125/50	230/60	6.0
•	•	•	KAC7SP___/50	7000	2050	115/50	115/50	12.0
•	•	•	KAC7SP___	7000	2050	115/50	115/60	12.0
•	•	•	K2AC7SP___/50	7000	2050	115/50	230/50	5.5
•	•	•	K2AC7SP___	7000	2050	115/50	230/60	6.0
	•	•	KAC7DP___/50	7000	2050	125/50	115/50	15.0
	•	•	KAC7DP___	7000	2050	125/50	115/60	15.0
	•	•	K2AC7DP___/50	7000	2050	125/50	230/50	8.0
	•	•	K2AC7DP___	7000	2050	125/50	230/60	8.0

Height Series 47	52	59	Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
	•	•	KAC8P___/50	8000	2345	125/50	115/50	15.0
	•	•	KAC8P___	8000	2345	125/50	115/60	15.0
	•	•	K2AC8P___/50	8000	2345	125/50	230/50	8.5
	•	•	K2AC8P___	8000	2345	125/50	230/60	8.5
	•	•	KAC9P___/50	9000	2635	110/50	115/50	15.5
	•	•	KAC9P___	9000	2635	125/50	115/60	15.5
	•	•	K2AC9P___/50	9000	2635	125/50	230/50	8.5
	•	•	K2AC9P___	9000	2635	125/50	230/60	8.5
	•	•	KAC10P___/50	10000	2930	110/50	115/50	16.0
	•	•	KAC10P___	10000	2930	125/50	115/60	16.0
	•	•	K2AC10P___/50	10000	2930	110/50	230/50	9.0
	•	•	K2AC10P___	10000	2930	125/50	230/60	9.0
	•	•	KAC12P___	12000	3515	110/50	115/60	17.0
	•	•	K2AC12P___/50	12000	3515	125/50	230/50	9.0
	•	•	K2AC12P___	12000	3515	125/50	230/60	9.0
		•	K2AC14P___/50	14000	4100	125/50	230/50	11.5
		•	K2AC14P___	14000	4100	125/50	230/60	13.5
		•	K2AC16P___/50	16000	4690	110/50	230/50	14.5
		•	K2AC16P___	16000	4690	125/50	230/60	14.5

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RACK-MOUNTED AIR CONDITIONERS

DESCRIPTION

Available in both horizontal and vertical configurations, KOOLTRONIC Rack-Mounted Air Conditioners are particularly suited for applications where internal or cabinet-top mounting is preferred over external panel mounting.
Horizontal models are mounted externally on top of the cabinet, or internally at either the top or bottom of the cabinet. Vertical models are designed for interior or exterior mounting to any vertical cabinet surface.
For operation outdoors or in corrosive atmospheres, weather protection and/or special internal and external protective coatings are required.
Higher capacity versions of the externally top-mounted units in this series (H5 and H6), are the Horizontal Top-Mounted Air

Rack-mounted units with flanges include attractive 19-inch wide stainless steel grilles with knurled captive fasteners for easy removal. Grille area is 65% open.

For assistance in model selection, call KOOLTRONIC or request the KOOLTRONIC Air Conditioner Selection Guide.

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

CALL EXTENSION 44

FEATURES

- Capacities from 1,500 to 6,000 BTU/Hr.
- Horizontal and vertical mountings
- Ideal for internal or cabinet-top mounting
- Heavy-duty steel enclosures with baked epoxy finish
- Models available with EIA-notched flanges and stainless steel grilles
- UL/CSA ball-bearing motors
- Three foot SJ 3-wire power cord
- Complete line of accessories

APPROXIMATE WEIGHT

95 lbs.

ACCESSORIES/OPTIONS

- Airflow Deflectors
- Airflow Switch
- Cooling Effect Detector
- Excess Pressure Detector
- Filter Recoating Adhesive
- Filters for replacement
- Internal corrosion resistant coatings
- Lifting Eyes
- Low Airflow Detector
- Low Temperature Control
- Refrigerant Charging Kit
- Short Cycle Protector
- Special external paint finish
- Weather Protection Kit
- Special line cord or connectors

HOW TO ORDER

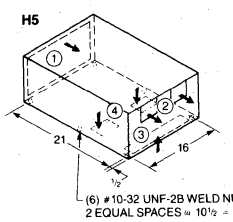
Specify model number, adding installation location suffix after capacity designation. Example: KAC4.2H7/50

DIMENSIONS (inches)

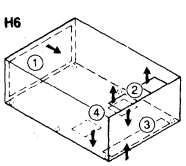
INSTALLATION LOCATIONS

EXTERNAL TOP-MOUNTED

H5

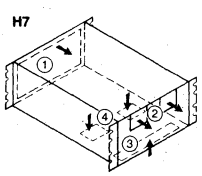


H6

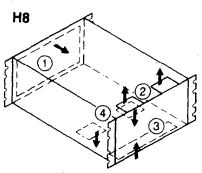


INTERNAL TOP-MOUNTED

H7

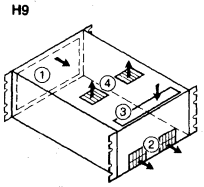


H8

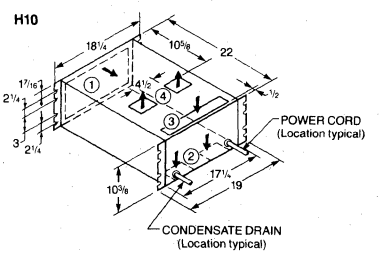


INTERNAL BOTTOM-MOUNTED

H9

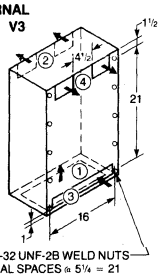


H10

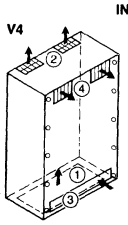


EXTERNAL

V3

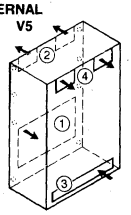


V4

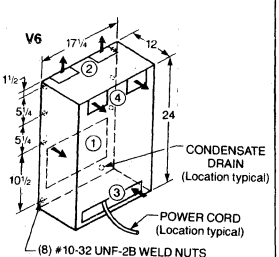


INTERNAL

V5



V6



① FILTERED CONDENSER AIR INLET (Ambient Air In)

② CONDENSER OUTLETS (Warm Ambient Air Out) 2 1/4 × 3 3/8 each

③ WARM AIR RETURN FROM ELECTRONICS 2 × 15 (H5 & H6: 1 3/4 × 15)

④ COOL AIR OUTLETS TO ELECTRONICS 2 1/8 x 4 1/2 each

TECHNICAL DATA

Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
KAC1.5___/50	1500	440	125/50	100/50*	8.0
KAC1.5___	1500	440	125/50	115/60	8.0
K2AC1.5___/50	1500	440	125/50	230/50	4.0
K2AC1.5___	1500	440	125/50	230/60	4.0
KAC1.8___/50	1800	525	125/50	100/50*	8.0
KAC1.8___	1800	525	125/50	115/60	8.0
K2AC1.8___/50	1800	525	125/50	230/50	4.0
K2AC1.8___	1800	525	125/50	230/60	4.0
KAC2.6___/50	2600	760	125/50	100/50*	8.5
KAC2.6___	2600	760	125/50	115/60	8.5
K2AC2.6___/50	2600	760	125/50	230/50	4.5
K2AC2.6___	2600	760	125/50	230/60	4.5
KAC3.1___/50	3100	910	125/50	100/50*	8.5
KAC3.1___	3100	910	125/50	115/60	8.5
K2AC3.1___/50	3100	910	125/50	230/50	4.5
K2AC3.1___	3100	910	125/50	230/60	4.5

Model	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
KAC4.2___/50	4200	1230	125/50	100/50*	8.5
KAC4.2___	4200	1230	125/50	115/60	8.5
K2AC4.2___/50	4200	1230	115/50	230/50	4.5
K2AC4.2___	4200	1230	125/50	230/60	4.5
KAC5.0___/50	5000	1465	125/50	100/50*	8.5
KAC5.0___	5000	1465	125/50	115/60	8.5
K2AC5.0___/50	5000	1465	115/50	230/50	4.5
K2AC5.0___	5000	1465	125/50	230/60	4.5
KAC6.0___/50	6000	1760	115/50	100/50*	9.0
KAC6.0___	6000	1760	125/50	115/60	9.0
K2AC6.0___/50	5600	1635	115/50	230/50	5.0
K2AC6.0___	6000	1760	115/50	230/60	5.0

*The transformer required to reduce 115 supply voltage to 100 volts for 50Hz compressor operation is externally mounted. Consult KOOLTRONIC for resulting dimensional changes.

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HORIZONTAL TOP-MOUNTED AIR CONDITIONERS

DESCRIPTION

KOOLTRONIC Horizontal Top-Mounted Air Conditioners provide compact, low-silhouette, medium- to high-capacity cooling where space or other limitations prevent panel or internal rack mounting.

This versatile line of top-mounted air conditioners offers a broad range of capacities in two sizes. They feature specially designed, heavy-duty centrifugal blowers to force the cooling air throughout the electronics cabinet.

For operation outdoors or in corrosive atmospheres, weather protection and/or special internal and external protective coatings are required.

For lower-capacity versions, see Rack-Mounted Air Conditioners (H5 and H6) on page **C•1666**.

For assistance in model selection, call KOOLTRONIC or request the KOOLTRONIC Air Conditioner Selection Guide.

FEATURES

- Capacities from 7,000 to 16,000 BTU/Hr.
- Heavy-duty steel enclosures with baked epoxy finish
- UL/CSA ball-bearing motors
- Five foot SJ 3-wire power cord
- Complete line of accessories

APPROXIMATE WEIGHT

KAC/K2AC7-12 150-155 lbs.
K2AC 14 & 16 195 lbs.

HOW TO ORDER

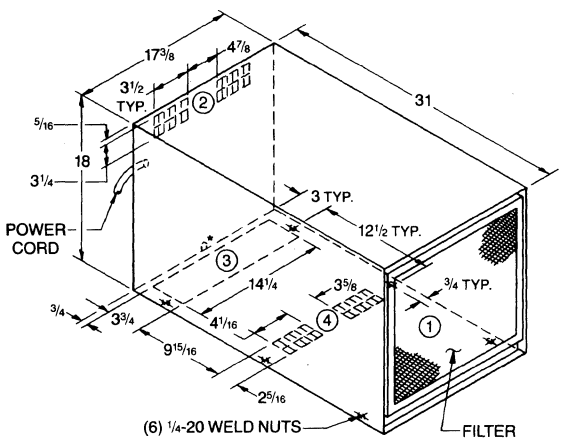
Specify model number.

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

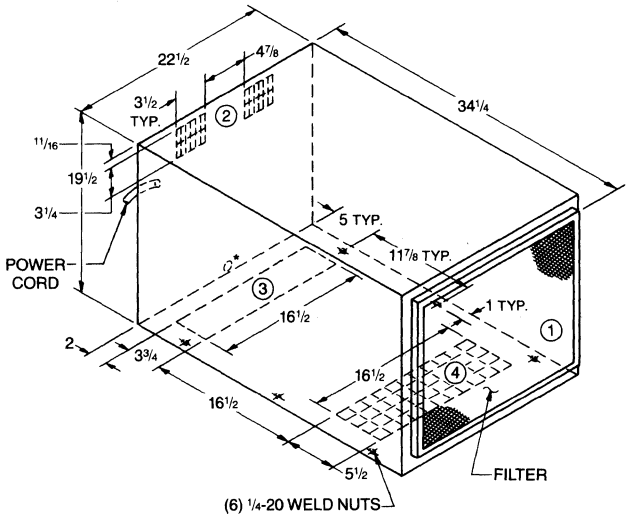
CALL EXTENSION 44

DIMENSIONS (inches)

KAC/K2AC7HT—12HT



K2AC14HT & K2AC16HT



① CONDENSER AIR INLET (Ambient Air In)
② CONDENSER OUTLETS (Warm Ambient Air Out)
③ WARM AIR RETURN FROM ELECTRONICS
④ COOL AIR OUTLETS TO ELECTRONICS

Dimensions (inches) are for reference only and subject to change.

*Condensate drain

TECHNICAL DATA

Model Number	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
KAC7HT/50	7000	2050	125/50	100/50*	15.0
KAC7HT	7000	2050	125/50	115/60	15.0
K2AC7HT/50	7000	2050	125/50	230/50	8.0
K2AC7HT	7000	2050	125/50	230/60	8.0
KAC8HT/50	8000	2345	125/50	100/50*	15.0
KAC8HT	8000	2345	125/50	115/60	15.0
K2AC8HT/50	8000	2345	125/50	230/50	8.5
K2AC8HT	8000	2345	125/50	230/60	8.5
KAC9HT/50	9000	2635	125/50	100/50*	15.5
KAC9HT	9000	2635	125/50	115/60	15.5
K2AC9HT/50	9000	2635	125/50	230/50	8.5
K2AC9HT	9000	2635	125/50	230/60	8.5

Model Number	BTU/Hr. Rating	Watts Dissipation	Ambient Temp. F Max./Min.	Voltage/ Frequency	Running Amps
KAC10HT/50	10000	2930	125/50	100/50*	16.0
KAC10HT	10000	2930	125/50	115/60	16.0
K2AC10HT/50	10000	2930	110/50	230/50	9.0
K2AC10HT	10000	2930	125/50	230/60	9.0
KAC12HT	12000	3515	110/50	115/60	17.0
K2AC12HT/50	12000	3515	125/50	230/50	9.0
K2AC12HT	12000	3515	125/50	230/60	9.0
K2AC14HT/50	14000	4100	125/50	230/50	11.5
K2AC14HT	14000	4100	125/50	230/60	13.5
K2AC16HT/50	16000	4600	110/50	230/50	14.5
K2AC16HT	16000	4600	120/50	230/60	14.5

*The transformer required to reduce 115 supply voltage to 100 volts for 50 Hz compressor operation is externally mounted. Consult KOOLTRONIC for resulting dimensional changes.

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WATER-COOLED PANEL MOUNTED AIR CONDITIONERS

DESCRIPTION

For extreme ambient temperatures and/or severely contaminated environments, KOOLTRONIC Water-Cooled Air Conditioners are recommended. Cool circulating water has greater heat-removal capacity than hot ambient air. Since ambient air is sealed out, there are no filters to clean and no contaminant can reach the heat exchange element.

These units contain an automatic regulating valve, high pressure shut-off control and other safeguards.

Sized similarly to the Air-Cooled Panel-Mounted Series, these units occupy minimal floor space and no cabinet space. Installed either fixed or hinged to any vertical cabinet panel or door, they retain the closed-loop design and gasketed mounting features, to seal out contaminants and protect the electronics.

For assistance in model selection, call KOOLTRONIC or request the KOOLTRONIC Air Conditioner Selection Guide.

APPROXIMATE WEIGHT

WP28 & WP36 Series	100 lbs.	WP52 Series	130-135 lbs.
WP47 Series	125 lbs.	WP59 Series	135-140 lbs.

FEATURES

- Capacities from 4,000 to 12,000 BTU/Hr.
- Suitable for extreme environments
- Protective water flow controls
- Versatile mounting locations
- Heavy-duty steel enclosures with baked epoxy finish
- UL/CSA ball-bearing motors
- Ten foot SJ 3-wire power cord
- Complete line of accessories

HOW TO ORDER

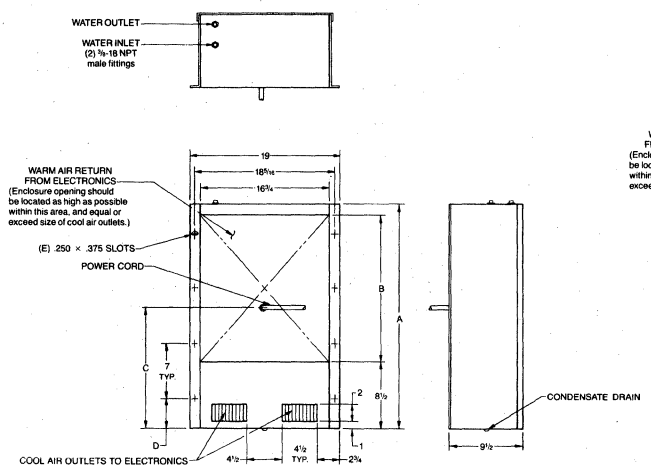
Specify model number by adding height after the P. Example: KAC8WP/59.

- **Popular models in stock, ready to ship**
- **Call for Complete Design Guide/Catalog**
- **We invite inquiries about custom-designed units for unique applications**

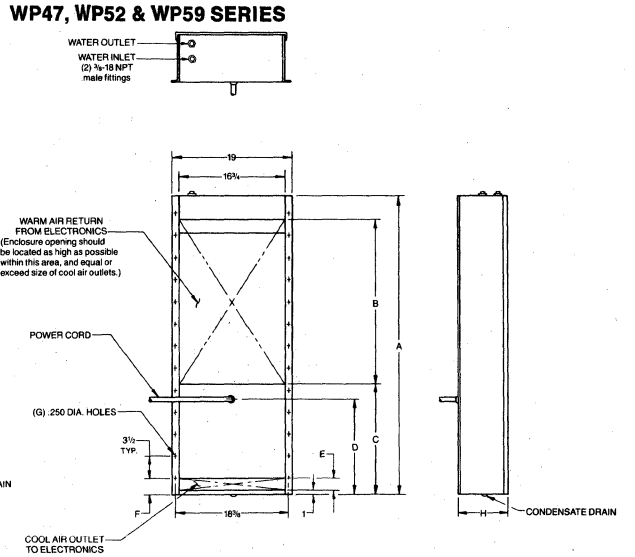
CALL EXTENSION 44

DIMENSIONS (inches)

WP28 & P36 SERIES



WP47, WP52 & WP59 SERIES



Model	A	B	C	D	E	F	G	H
WP28 Series	28½	18⅝	15½	3¾	8	—	—	—
WP36 Series	36¾	26⅞	23¾	⅞	12	—	—	—
WP47 Series: All models	47¼	24 15/16	18¼	15	2	2⅝	26	7 15/16
WP52 Series: KAC/K2AC4, 5, 6 & 7	52 7/16	24 15/16	23 7/16	15	2	1¾	30	7 15/16
KAC/K2AC8, 9, 10 & 12	52 7/16	27 15/16	19¼	16	3	1¾	30	8¾
WP59 Series: KAC/K2AC4, 5, 6 & 7	59½	24 15/16	30½	15	2	1¾	34	7 15/16
KAC/K2AC8, 9, 10 & 12	59½	27 15/16	26 5/16	16	3	1¾	34	8¾

TECHNICAL DATA

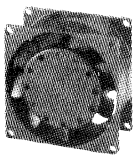
Height Series 28	36	47	52	59	Model	BTU/ Hr. Rating	Watts Dissi-pation	Water Flow (GPM) Water Inlet Temp. (F) 65	75	85*	Voltage/ Frequency	Run-ning Amps
•	•				KAC4WP___/50	4000	1170	0.2	0.4	0.8	100/50**	6.5
		•	•	•	KAC4WP___/50	4000	1170	0.2	0.4	0.8	115/50	11.0
•	•				KAC4WP___	4000	1170	0.2	0.4	0.8	115/60	6.5
		•	•	•	KAC4WP___	4000	1170	0.2	0.4	0.8	115/60	11.0
•	•	•	•	•	K2AC4WP___/50	4000	1170	0.2	0.4	0.8	230/50	4.5
•	•	•	•	•	K2AC4WP___	4000	1170	0.2	0.4	0.8	230/60	5.0
•	•				KAC5WP___/50	5000	1465	0.3	0.5	1.0	100/50**	7.0
		•	•	•	KAC5WP___/50	5000	1465	0.3	0.5	1.0	115/50	11.5
•	•				KAC5WP___	5000	1465	0.3	0.5	1.0	115/60	7.0
		•	•	•	KAC5WP___	5000	1465	0.3	0.5	1.0	115/60	11.5
•	•	•	•	•	K2AC5WP___/50	5000	1465	0.3	0.5	1.0	230/50	5.0
•	•	•	•	•	K2AC5WP___	5000	1465	0.3	0.5	1.0	230/60	5.5
•	•				KAC6WP___/50	6000	1760	0.6	0.8	1.2	100/50**	7.5
		•	•	•	KAC6WP___/50	6000	1760	0.6	0.8	1.2	115/50	12.0
•	•				KAC6WP___	6000	1760	0.6	0.8	1.2	115/60	7.5
		•	•	•	KAC6WP___	6000	1760	0.6	0.8	1.2	115/60	12.0
•	•	•	•	•	K2AC6WP___/50	6000	1760	0.6	0.8	1.2	230/50	5.5
•	•	•	•	•	K2AC6WP___	6000	1760	0.6	0.8	1.2	230/60	6.0

Height Series 28	36	47	52	59	Model	BTU/ Hr. Rating	Watts Dissi-pation	Water Flow (GPM) Water Inlet Temp. (F) 65	75	85*	Voltage/ Frequency	Run-ning Amps
		•	•	•	KAC7WP___/50	7000	2050	0.8	1.0	1.5	115/50	12.0
		•	•	•	KAC7WP___	7000	2050	0.8	1.0	1.5	115/60	12.0
		•	•	•	K2AC7WP___/50	7000	2050	0.8	1.0	1.5	230/50	5.5
		•	•	•	K2AC7WP___	7000	2050	0.8	1.0	1.5	230/60	6.0
		•	•	•	KAC8WP___/50	8000	2345	1.0	1.2	1.7	115/50	15.0
		•	•	•	KAC8WP___	8000	2345	1.0	1.2	1.7	115/60	15.0
		•	•	•	K2AC8WP___/50	8000	2345	1.0	1.2	1.7	230/50	8.0
		•	•	•	K2AC8WP___	8000	2345	1.0	1.2	1.7	230/60	8.0
		•	•	•	KAC9WP___/50	9000	2635	1.2	1.4	2.0	115/50	15.5
		•	•	•	KAC9WP___	9000	2635	1.2	1.4	2.0	115/60	15.5
		•	•	•	K2AC9WP___/50	9000	2635	1.2	1.4	2.0	230/50	8.5
		•	•	•	K2AC9WP___	9000	2635	1.2	1.4	2.0	230/60	8.5
		•	•	•	KAC10WP___/50	10000	2930	1.4	1.8	2.4	115/50	16.0
		•	•	•	KAC10WP___	10000	2930	1.4	1.8	2.4	115/60	16.0
		•	•	•	K2AC10WP___/50	10000	2930	1.4	1.8	2.4	230/50	9.0
		•	•	•	K2AC10WP___	10000	2930	1.4	1.8	2.4	230/60	9.0
		•	•	•	KAC12WP___	12000	3515	2.0	2.5	3.0	115/60	18.0
		•	•	•	K2AC12WP___/50	12000	3515	2.0	2.5	3.0	230/50	9.0
		•	•	•	K2AC12WP___	12000	3515	2.0	2.5	3.0	230/60	10.0

*Maximum condenser inlet water temperature is 85F. **The transformer required to reduce 115 supply voltage to 100 volts for 50 Hz compressor operation is externally mounted. Consult KOOLTRONIC for resulting dimensional changes.

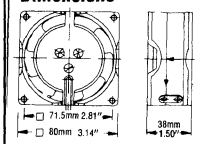
AC-DC TUBEAXIAL FANS

UL/CSA Approved, VDE Pending

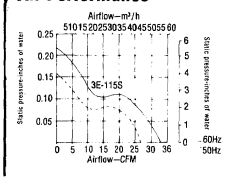


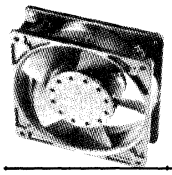
IC–3E–115S (110/220VAC)
80x80x38MM

Dimensions



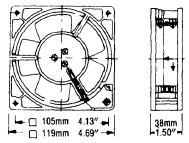
Air Performance



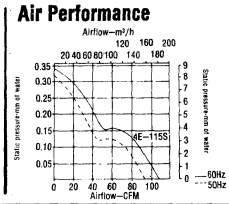


IC–4E–115S (110/220VAC)
119x119x38MM

Dimensions



Air Performance



I. ACCESSORIES

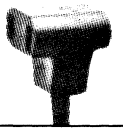
FINGER GUARD





1C–6G–3E
for 80MM
1C–6G–4E
for 120MM

T-TYPE CORD
1C–9T–4E
for 120MM



TECHNICAL DATA

1. MOTOR DEVICES

The building block for tubeaxial fans is the shade-pole external rotor motor with class B insulation system. This kind of external rotor rotates around the internal stator. The steel impellers are attached directly to the external rotor which allows the excellent heat dissipation and the low life-cycle cost. These elements result in a compact design with the high air performance.

2. CONSTRUCTION

All-metal construction provides the excellent heat dissipation, long life, and structural stability. The fan itself functions as a heat sink by effectively transferring heat from the motor to the air stream via the steel impeller blades, which are welded directly to the rotor hub. The housing is die-cast aluminum. The surfaces of fans are finished with an electrostatically black varnish to protect against severe environmental conditions.

3. BEARING SYSTEM

a. Sleeve Bearing: A sintered bronze bearing impregnated with high-quality oil. Hydri-dynamic pumping and pressure at the front end of an air-tight system causes oil to move along the shaft to provide a constant film of lubricant.
The recommended temperature range for the sleeve bearing unit is −10°C to +60°C without any worries.

b. Ball Bearing: Ball bearing is double-shielded electric motor quality bearing, pressed fitting into the rotor bor.
The recommended temperature range for the ball bearing unit is −30°C to +75°C without any worries.

4. MOUNTING METHOD

80 x 80 x 38MM: Tubeaxial fans can be mounted from either face using four 0.169″ (4.3MM) holes with #8 screws and nuts.

119 x 119 x 38MM: Tubeaxial fans can be mounted from either face using four 0.177″ (4.5MM) holes with #8 screws and nuts. Ground connections are located on the housing.

5. NOISE LEVEL

The sound pressure level heard depends upon the sound power of the source and listening conditions. The average sound pressure shown is at distance of one meter and with the fan next to one reflecting surface.
The low noise levels of tubeaxial fans are achieved by the computer-assisted-design of impeller blades and by precision manufacturing and balancing at both sides of planes.

6. SAFETY CODES

Because of the use of high-quality insulating material, low winding temperature, high output torque and highest-grade bearings, tubeaxial fans increase safety to meet UL requirements fully; besides, our motors are impedance protection, so the wiring will not burn out even if the rotating parts are restricted.
It is the responsibility of the users to be sure that tubeaxial fans are installed and operated in accordance with all safety codes. Be aware that the connecting screws for ground leads do not extend into the housing opening and impede operation of the impeller blades.

7. LIFE EXPECTANCY

The actual life of tubeaxial fans will depend upon operating conditions, such as ambient temperature, duty cycle, vibration, mounting position, and environmental conditions.
A typical operation life for 40°C ambient conditions would be between 20,000 to 40,000 hours.

IIC AC AXIAL FANS TECHNICAL DATA

Model No.	Voltages VAC	HZ	Current (mA) Running	Current (mA) Lock	Power (W)	Noise db(A)	Air Flow CFM	Speed RPM
* 3E-115S • 3E-115B	115	50/60	140/130	190/180	11/10	33/38	28/32	2700/3100
* 3E-115S-28 • 3E-115B-28	115	50/60	100/90	120/110	9/8	30/37	25/29	2400/2800
* 3E-115S-25 • 3E-115B-25	115	50/60	130/120	140/130	10/9	27/31	22/26	2150/2500
* 3E-115S-20 • 3E-115B-20	115	50/60	90/80	100/90	8/7	23/26	18/21	1750/2000
* 3E-230S • 3E-230B	220/230	50/60	85/75	105/95	13/12	33/38	28/32	2700/3100
* 3E-230S-28 • 3E-230B-28	220/230	50/60	60/50	70/60	9/8	30/37	25/29	2400/2800
* 3E-230S-25 • 3E-230B-25	220/230	50/60	85/75	90/80	13/12	27/31	22/26	2150/2500
* 3E-230S-20 • 3E-230B-20	220/230	50/60	60/50	70/60	9/8	23/26	18/21	1750/2000
* 4E-115S • 4E-115B	115	50/60	230/220	300/290	24/22	45/50	80/105	2650/3000
* 4E-115S-25 • 4E-115B-25	115	50/60	160/150	190/180	14/13	38/42	70/78	2250/2500
* 4E-115S-21 • 4E-115B-21	115	50/60	230/220	240/230	22/20	36/38	60/65	1800/2100
* 4E-115S-17 • 4E-115B-17	115	50/60	140/130	160/150	12/11	32/35	50/55	1600/1700
* 4E-230S • 4E-230B	220/230	50/60	140/130	180/170	22/21	45/50	80/105	2650/3000
* 4E-230S-25 • 4E-230B-25	220/230	50/60	100/90	120/110	16/15	38/42	70/78	2250/2500
* 4E-230S-21 • 4E-230B-21	220/230	50/60	130/120	140/130	20/19	36/38	60/65	1800/2100
* 4E-230S-17 • 4E-230B-17	220/230	50/60	90/80	100/90	15/14	32/35	50/55	1600/1700
* 3E-DVS • 3E-DVB	115/230	50/60	150/80	190/95	13/13	33/38	28/32	2700/3000
* 4E-DVS • 4E-DVB	115/230	50/60	250/130	300/150	22/21	45/50	80/105	2650/3000
3E-D12S	12 VDC (8-16V)		350	—	4	38	30	3000
3E-D24S	24 VDC (18-30V)		160	—	4	38	30	3000
4E-D12S	12 VDC (8-16V)		500	—	6	45	100	2850
4E-D24S	24 VDC (18-30V)		250	—	6	45	100	2850

REMARK: The ball bearing and sleeve bearing are available for all AC models. • Ball bearing * Sleeve bearing

LZR ELECTRONICS, INC.
8174 Beechcraft Ave., Gaithersburg, MD 20879
Tel: (301) 921-9440
Telex: 71-3746453 (LZR INC USA) Telefax: (301) 6700436

MARLOW INDUSTRIES

SOLID STATE RELIABILITY

THERMOELECTRIC COOLERS are solid-state, vibration-free, noise-free heat pumps. They are modular devices, so are simple to install and operate. Since they consist primarily of thermoelectric material sandwiched between ceramic plates and have no moving parts, they are inherently reliable.

The standard coolers listed below are grouped according to the number of stages indicated by the first digit following the "MI". Within each group they are sorted according to "Qmax", the net heat load to completely suppress ΔT at the maximum applied power (Imax @ Vmax). For example, the MI3026T is a 3-stage cooler which produces 109° C ΔT in a vacuum at 1.4 amps @ 3.6 volts. It will take 0.72 watts to completely suppress that ΔT to zero. This suppression is linear so that, 10% of Qmax (0.072 watts) applied to the cold plate would suppress ΔT 10% thereby producing 98.1°C ΔT for that heat load condition.

Performance below Imax and Vmax is obtainable using the adjacent performance chart. It can be used to define any achievable condition for each cooler by simply substituting the chosen cooler's "max" values listed in the table. It can also be used, starting with the desired cooling requirement, to select or evaluate the best cooler from the table for your requirement.

STANDARD THERMOELECTRIC COOLERS

COOLER MODEL	ΔT max (°C) vacuum	ΔT max (°C) dry N_2	Q max (watts)	I max (amps)	V max (volts)	Base Ceramic Width (inches)	Base Ceramic Length (inches)	Top Ceramic Width (inches)	Top Ceramic Length (inches)	Cooler Height (inches)
MI1010T	67	61	0.52	1.0	0.8	0.156	0.156	0.156	0.156	0.095
MI1020T	68	64	1.01	2.0	0.8	0.156	0.156	0.156	0.156	0.085
MI1011T	67	61	1.26	1.0	2.0	0.260	0.260	0.260	0.260	0.095
MI1012T	67	61	2.29	1.0	3.7	0.346	0.346	0.346	0.346	0.095
MI1021T	68	64	2.45	2.0	2.0	0.260	0.260	0.260	0.260	0.085
MI1015T	67	61	2.88	1.0	4.7	0.346	0.432	0.346	0.432	0.095
MI1060	68	64	3.05	6.0	0.8	0.380	0.380	0.380	0.380	0.172
MI1022T	68	64	4.47	2.0	3.7	0.346	0.346	0.346	0.346	0.085
MI1013T	67	61	5.25	1.0	8.5	0.518	0.518	0.518	0.518	0.095
MI1025T	68	64	5.62	2.0	4.7	0.346	0.432	0.346	0.432	0.085
MI1061	68	64	7.41	6.0	2.0	0.511	0.511	0.511	0.511	0.172
MI1023T	68	64	10.20	2.0	8.5	0.518	0.518	0.518	0.518	0.085
MI1062	68	64	15.30	6.0	4.2	0.570	1.167	0.570	1.167	0.172
MI1064	68	64	15.30	6.0	4.2	0.770	0.770	0.770	0.770	0.172
MI1120	68	64	27.40	12.1	3.7	1.167	1.167	1.167	1.167	0.195
MI1063	68	64	31.00	6.0	8.5	1.167	1.167	1.167	1.167	0.172
MI1069	68	64	55.40	6.0	15.2	1.500	1.500	1.500	1.500	0.172
MI2020T	95	88	0.35	1.7	0.9	0.156	0.156	0.100	0.100	0.149
MI2021T	90	84	1.04	1.5	2.1	0.260	0.260	0.156	0.156	0.149
MI2060	95	87	1.22	5.8	0.9	0.380	0.380	0.205	0.205	0.293
MI2012T	86	81	2.62	1.2	5.4	0.389	0.432	0.260	0.346	0.149
MI2064	98	91	9.50	5.2	8.6	1.167	1.167	0.500	0.500	0.293
MI2063	90	83	13.50	4.5	8.7	1.167	1.167	0.750	0.750	0.293
MI3021T	110	101	0.38	1.4	2.1	0.260	0.260	0.100	0.100	0.212
MI3026T	109	101	0.72	1.4	3.6	0.346	0.346	0.160	0.174	0.234
MI3040	107	98	6.29	4.7	7.4	0.855	1.113	0.339	0.511	0.430
MI4000T	106	—	0.46	0.6	6.9	0.520	0.678	0.160	0.314	0.345
MI4012T	111	—	0.85	1.1	6.9	0.520	0.678	0.160	0.314	0.345
MI4040	118	—	3.01	4.3	7.1	0.855	1.113	0.253	0.425	0.561
MI6020	132	—	0.33	1.9	6.5	0.855	1.113	0.205	0.205	1.012
MI6030	132	—	0.66	3.8	6.5	0.855	1.113	0.205	0.205	0.802

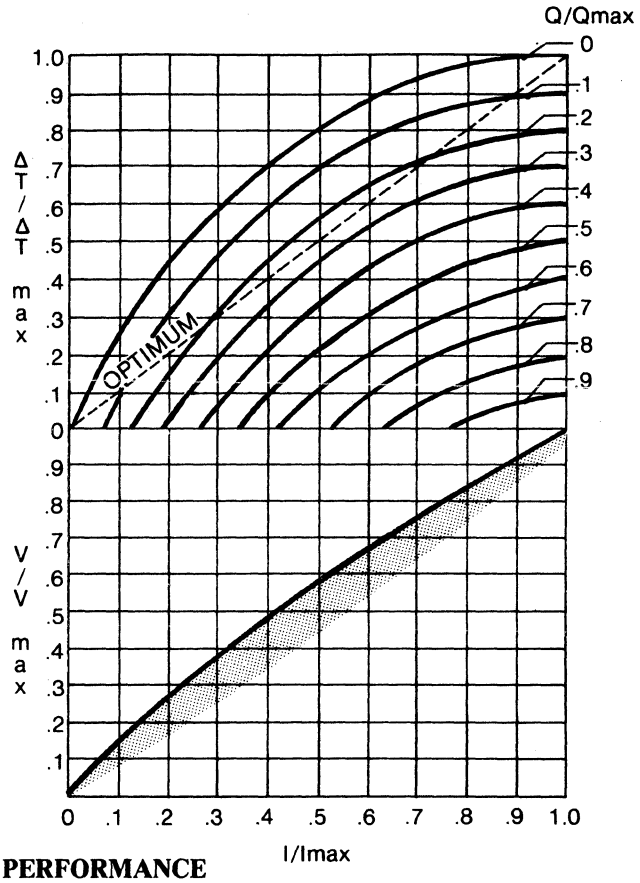
NOTE: The above chart is based on a hot side temperature of 27 °C. It can be used as-is for hot side temperatures of T_h = 15 °C to 40 °C with less than 10% errors. To improve accuracy, convert the respective maximum values per the following formulas:

$\Delta Tmax @ T_h = \Delta Tmax * [1 + .0056 * (T_h - 27\ °C)]$ $\quad$ $Vmax @ T_h = Vmax * [1 + .0047 * (T_h - 27\ °C)]$

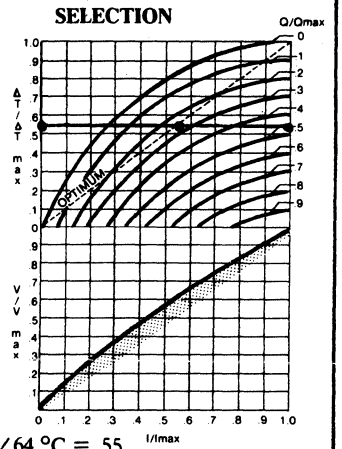
$Qmax @ T_h = Qmax * [1 + .0042 * (T_h - 27\ °C)]$ $\quad$ $Imax @ T_h = Imax\ Constant$

HIGH PERFORMANCE COOLERS

HOW TO USE CHART



EXAMPLE Select a cooler to pump 9 watts at a cold side temperature of -8°C from a hot side of 27 °C. Ambient is dry nitrogen.

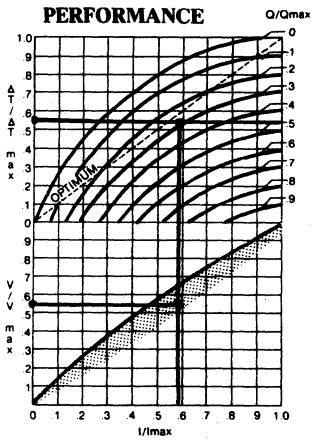


SELECTION

1. **Select number of stages and calculate ΔT/ ΔTmax.** The example ΔT is 35 °C and, by observing the table, can be achieved with a single stage cooler:
   ΔT/ΔTmax = 35 °C / 64 °C = .55
2. **Draw the corresponding horizontal line on the upper graph.**
3. **Read Q/Qmax for the optimum and maximum cooling cases.**
   Optimum Q/Qmax = .25
   Maximum Q/Qmax = .45
4. **Calculate Qmax:**
   Optimum Qmax = 9 watts / .25 = 36 watts
   Maximum Qmax = 9 watts / .45 = 20 watts
5. **Select a cooler from the table** whose Qmax is greater than 20 watts but less than 36 watts, favoring the optimum Qmax for maximum efficiency or maximum Qmax for potentially lower cost:
   Select MI 1063 with Qmax = 31 watts

PERFORMANCE

1. **Record the maximum values for the selected cooler:** MI 1063
   Qmax = 31 watts
   Imax = 6.0 Amps
   Vmax = 8.5 Volts
2. **Calculate Q/Qmax and plot corresponding vertical line** from the intersection of this Q/Qmax and the original horizontal line:
   Q/Qmax = 9 watts / 31 watts = .29
3. **Read I/Imax and calculate I:**
   I/Imax = .59
   I = 6 amps * .59 = 3.5 amps
4. **Plot horizontal line** in the lower graph from the intersection of the vertical line and the curve. Note: Use the solid curve for Q/Qmax = 0 and shaded area for higher values of Q/Qmax
5. **Read V/Vmax and calculate V:**
   V/Vmax = .56
   V = 8.5 volts * .56 = 4.8 volts



SUMMARY

The **MI 1063** was selected and can produce the thermal performance given in the example with an applied power of **3.5 amps @ 4.8 volts.**

The chart presented above is good for 1 and 2-stage coolers. It should only be considered as a rough guide for multi-stage coolers. Consult factory for engineering assistance if precision is required.

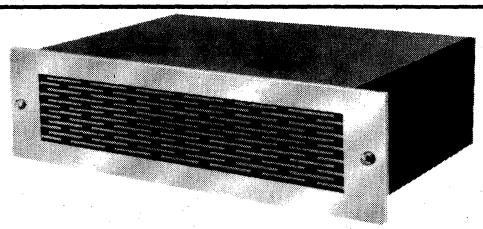
In addition to our line of standard coolers, Marlow Industries sells a complete line of special coolers temperature controller/power supplies, heat sinks, thermal compounds and other accessories plus complete cooling assemblies. See back page.

Please call or write today for further information or technical assistance.

McLEAN PACKAGED COOLING EQUIPMENT

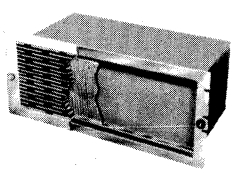
RACK—MOUNTED BLOWERS

Over 100 models available in any panel width. Heights from 3½" to 12¼". Airflows to 1000 CFM. Pressurize systems with cool, filtered air. Prevent dust from entering systems. Standard EIA notching. Quick, easy mounting. No cutting. No filing. Also Packaged Fans for pressurizing or evacuating. Four sizes. Airflows from 275 to 1200 CFM. All units available to Commercial, Military or EMI Shielded Specifications.



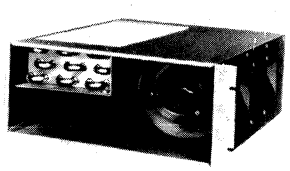
MODEL	CAT. PAGE	CFM	PANEL* HEIGHTS	MOTOR** RPM	MOTOR** AMPS OR WATTS	REMARKS
2EB300	10	130	3½ & 5¼	2900	80W	FOR LIMITED SPACE
†2EB3500	10	290	3½ & 5¼	3000	125W	HIGH PRESSURE-LIMITED SPACE
2EB410	10	300	5¼ & 7	1500	95W	QUIET OPERATION
2EB412	10	350	5¼ & 7	3000	200W	HIGH PRESSURE & VELOCITY
2EB512	10	500	7 & 8¾	1700	130W	LARGE VOL. HIGH VELOCITY
2EB612	10	800	8¾ & 10½	1500	260W	HIGH VOLUME-HIGH VELOCITY
2EB412	16	350 & 700	5¼-7	3000	200W	SIDE DISCHARGE DUCT BLOWER
1EB800G	—	1000	10½	1100	240W	LOW NOISE-HIGH CFM
1EB920	17	200/350	3½-5¼	1135	412W	SIDEWINDER
1EB980	17	345/550	5¼-7	1350	580W	SIDEWINDER
4EB300	14	250	5¼ x 14⅝D	Two 3100	140W	MULTI-EXHAUST BLOWER
4EB424	14	450	7 x 19½D	Two 1700	130W	MULTI-EXHAUST BLOWER
IDB300	15	75	5¼	3000	40W	HALF PANEL WIDTH
IE220C	15	150	3½	3100	80W	SLOT BLOWER
IEB710	17	140/185	1¾-3½	1400	136W	SIDEWINDER

* ALL MODELS ARE 19" WIDTH EXCEPT IDB300 (HALF PANEL) ** ALL MOTORS ARE 115V 50/60 HZ
UL RECOGNIZED AND CSA CERTIFIED † MODELS AVAILABLE IN 24-48VDC
UNITS ALSO AVAILABLE TO OTHER RACK WIDTHS AND FOR RECESSED INSTALLATION



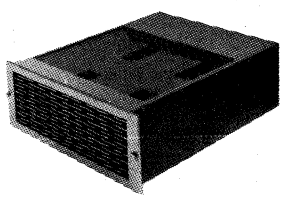
EMI—SHIELDED UNITS

All packaged blowers available with an EMI shield and wave guide media built into the airstream. Cuts signal leakage inward or outward.



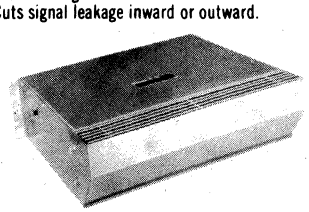
HEAT EXCHANGERS

Maintain cabinet temperature at 80°F maximum with 1 KW heat dissipation. Air recirculates in rack and is cooled by exchanger in blower case.



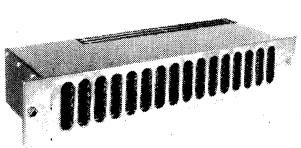
CARD COOLER

Replaces bulky fan trays. High volume, high pressure filtered air. Low noise, compact, wide cooling discharge. Requires little panel space.



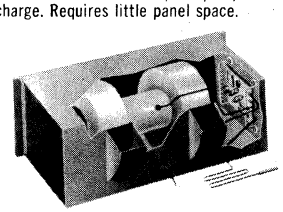
SIDEWINDER BLOWERS

More air. More pressure. Less space. Delivers 180, 350 or 550CFM in a 17" wide airstream.



SLOT BLOWERS

Ideal for jam-packed circuitry. Delivers 150 CFM from a 3½" panel. Quiet.



SOLID STATE TEMPERATURE CONTROLLERS

Cuts noise level. Modulates blower speed. Keeps operating between 80-90°F. Costs less than air conditioning.

Also a broad line of accessory equipment including grilles, controls, etc.

ASK ABOUT OUR

72 HOUR

SHIPMENT PROGRAM

OVER 50 MODELS ALWAYS IN STOCK!!

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McLEAN ENGINEERING

DIVISION OF ZERO CORPORATION

70 H Washington Rd., Princeton Junction, NJ 08550 • (609) 799-0100 • TWX 510-685-2543

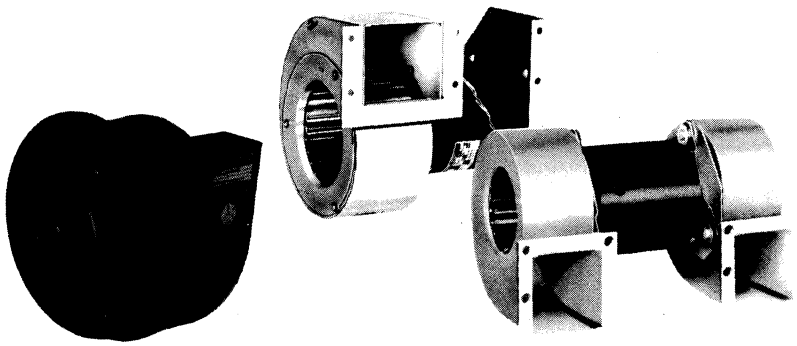
553 H Constitution Avenue, Camarillo, CA 93010 • (805) 987-5046 • TELEX 18-2223

McLEAN SINGLE & DUAL CENTRIFUGAL BLOWERS

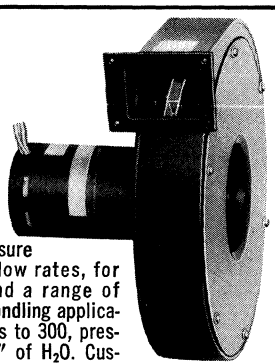
Fans—Orifice, Panel, Reversible, Filter Grille Panels

SINGLE & DUAL CENTRIFUGALS

Wide choice of static pressures — 0" to 3.0". Outputs range up to 2000 CFM. Wheel diameters range from 3" to 12". Motors supplied to any AC frequency or power, single or three-phase. Bearings properly loaded, double-shielded, permanently lubricated. Motors and wheels precision balanced for vibration-free performance. Motors, UL recognized and CSA certified. Units are also available in 24-48VDC.

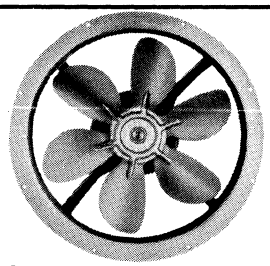


RADIAL WHEEL BLOWERS



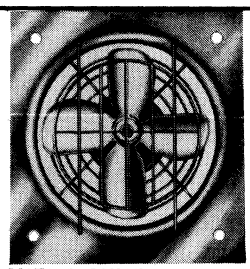
Higher pressure at lower flow rates, for cooling and a range of other air-handling applications. CFM's to 300, pressures to 8" of H_2O. Custom design capability for specific requirements.

ORIFICE MOUNTED FANS



Push or pull airflow. CFMs 275, 300 or 395. Dim. 4" x 8½" or 4¾" x 10¼". Quiet, vibrationless 115V/50/60 Hz, 1600 RPM, or 3000 RPM.

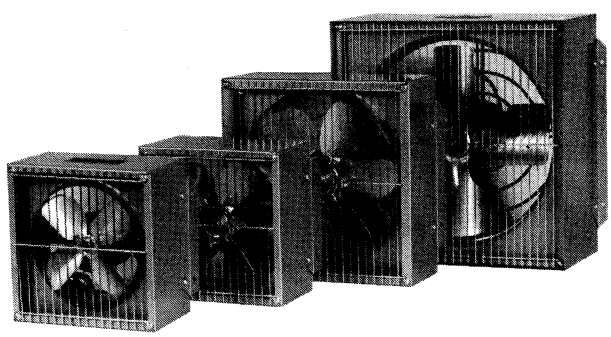
PANEL MOUNTED FANS

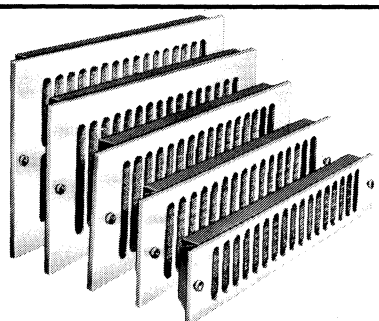


Low cost, long life, ready to mount, shaft in any position. 265 CFM, 3100 RPM, 115V/50/60 Hz. Dim. 9" square panel on 7" centers, 4 23/32" deep.

REVERSIBLE FILTER BOX PROPELLER FANS

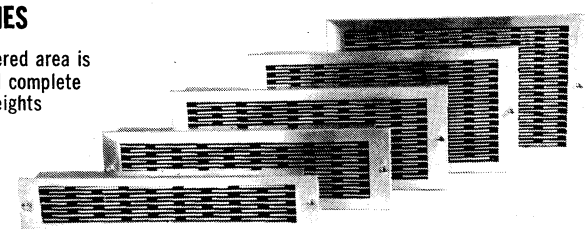
MODEL 1RB65 delivers 275 cfm, 3100 rpm 4½" deep x 8⅞" square. MODEL 1RB80 delivers 450 cfm, 1650 rpm 4½" deep x 8⅞" square. MODEL 1RB100 delivers 725 cfm, 1600 rpm 4½" deep x 12⅛" square. MODEL 1RB120 delivers 1200 cfm, 1450 rpm 7⅜" deep x 15⅛" square. MODEL LA120 Back Draft Damper is used in conjunction with Model 1RB120. Louvers automatically open when power is applied and close when power is off. May be used in horizontal or vertical positions.





FILTER GRILLE ASSEMBLIES

For use in cabinets where louvered area is needed for ventilation. Supplied complete with dust filters and in panel heights of 3½" to 10½" and widths 9½", 19", 24" and 30".



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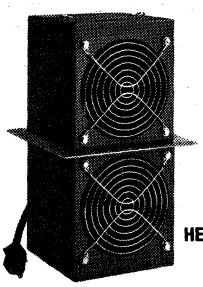
553 H Constitution Avenue, Camarillo, CA 93010 • (805) 987-5046 • TELEX 18-2223

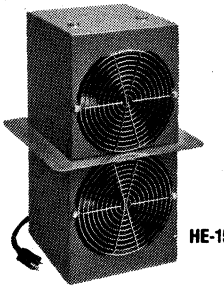
McLEAN MIDWEST

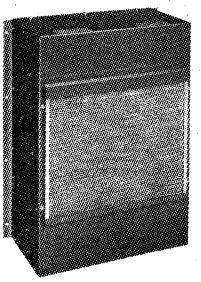
Air-to-Air Heat Exchangers

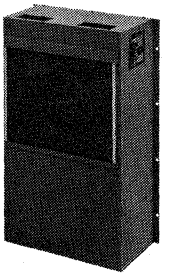
These high performance heat exchangers remove heat load from uninsulated sealed enclosures with a minimal temperature rise above the ambient. Fans and blowers are limited to a maximum air temperature of 155 F.

All the models feature the McLean closed-loop design. Only clean enclosure air is used to cool the electronic components. Hostile ambient air is sealed out. All units are available in 115V and 230V versions, and most are also available for DC power.


HE-11


HE-15


HE-24


HE-28

HE-11
High CFM ball-bearing fans. Mounts on any surface of enclosure, including top. Low power consumption.

Package is 11 5/16" high (protrudes 5⅝" outside enclosure), 5¼" deep, 5⅛" wide. Mounting flange is 6¾" square. Net wt. 9½ lbs.

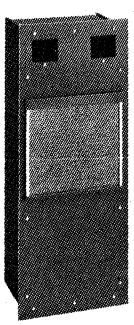
HE-15
High CFM ball-bearing fans. Mounts on any surface of enclosure, including top. Low power consumption.

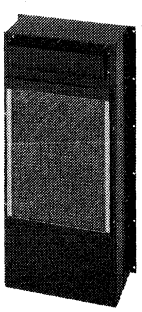
Package is 15" high (protrudes 7½" outside enclosure), 7⅞" deep, 7⅛" wide. Mounting flange is 10" square. Net wt. 20 lbs.

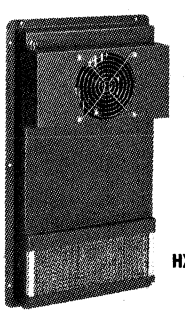
HE-24 SERIES
Powerful centrifugal blowers provide high CFM against high static pressure. Mounts on door, side, back, top or rack of enclosure.

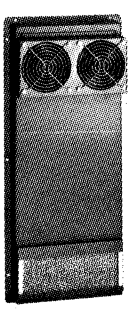
Dimensions: 24" high, 9⅛" deep, 19" wide.

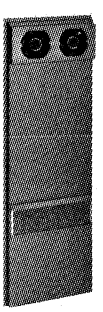
HE-28 SERIES
Centrifugal blowers provide high CFM against high static pressure. Mounts on door, side, back, top or rack of enclosure.
Dimensions: 28½" high, 8 1/16" deep, 19" wide.


Narrow HE-33


HE-36


HX-20


HX-26


HX-60

NARROW HE-33 SERIES
Centrifugal blowers provide high CFM against high static pressure. Mounts fully recessed on door, side, back or top of enclosure and also available for external mounting.

Dimensions: 34¼" high, 9" deep, 13¾" wide.

HE-36 SERIES
Centrifugal blowers provide high CFM against high static pressure. Mounts on door, side, back, top or rack of enclosure.

Dimensions: 36 1/16" high, 8 1/16" deep, 19" wide.

HX-20
Convoluted aluminum core with counter-flow air cooling design. High CFM ball-bearing fans. Mounts on any surface, including top, outside or inside the enclosure. Mounts horizontally or vertically. Low power consumption.

Package is 20 3/16" high, 2" deep, 11 3/16" wide (fan housings extend out an additional 2⅛"). Net wt. 13 lbs.

HX-26
Convoluted aluminum core with counter-flow air cooling design. High CFM ball-bearing fans. Mounts on any surface, including top, outside or inside the enclosure. Mounts horizontally or vertically. Low power consumption.

Package is 26 3/16" high, 2" deep, 11 3/16" wide (fan housings extend out an additional 1¾"). Net wt. 21 lbs.

HX-60
Convoluted aluminum core with counter-flow air cooling design. High CFM ball-bearing fans. Mounts on any surface, including top, outside or inside the enclosure. Mounts horizontally or vertically. Low power consumption.

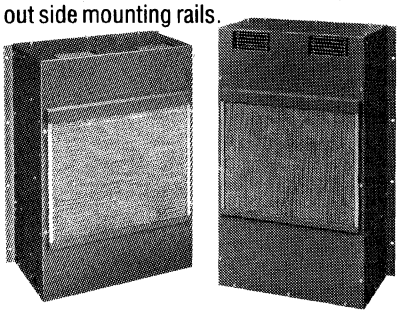
Package is 59⅞" high, 2" deep, 19⅞" wide (fan housings extend out an additional 1 9/16"). Net wt. 58 lbs.

Contact us for our new complete Catalog/Cooling Guide. It's a "must" for anyone concerned with providing climate control for electronic enclosures.

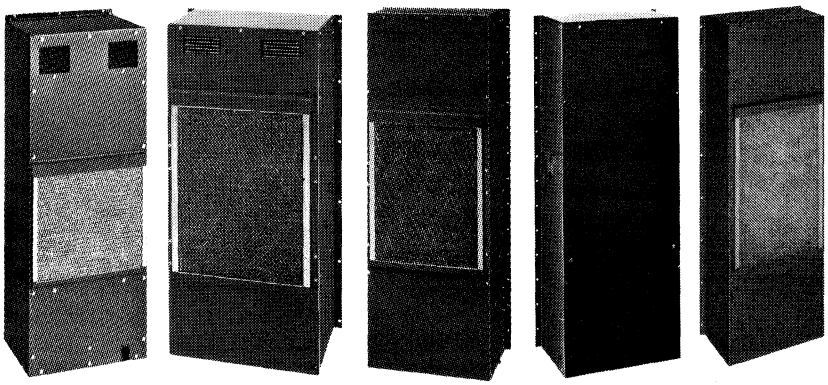
Air Conditioners

SLIMBOY® SERIES

For mounting on door, side or rack of cabinet. Most Slimboy models available in narrow versions, without side mounting rails.



SLIMBOY 24 SLIMBOY 28



NARROW SLIMBOY 33 STANDARD SLIMBOY 36 STANDARD SLIMBOY 47 WATER-COOLED SLIMBOY 47 SLIMBOY 52

SLIMBOY 24 SERIES
Capacity: 1400-2000-3000 BTU/HR @ 125°F.
Dimensions: 24" high, 9⅛" deep, 19" wide.

SLIMBOY 28 SERIES
Capacity: 2000-3000-4000 BTU/HR @ 125°F.
Dimensions: 28½" high, 9⅛" deep, 19" wide.

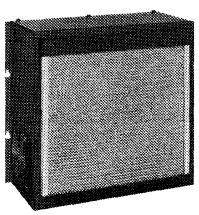
NARROW SLIMBOY 33 SERIES
High capacity cooling in a very narrow package, only 12⅜" wide.
Capacity: 2000-4000 BTU/HR @ 125°F.
Dimensions: 34⅛" high, 8 13/16" deep, 12⅜" wide; top and bottom mounting flanges only.
Note: Slimboy 33 also available for fully recessed mounting.

STANDARD SLIMBOY 36 SERIES and **NARROW SLIMBOY 36 SERIES** (only 15" wide)
Capacity: Standard 36—4000-5000-6000-8000 BTU/HR @ 125°F.
Narrow 36—4000-5000-6000 BTU/HR @ 125°F.
Dimensions: Standard 36—36 1/16" high, 10" deep, 19" wide.
Narrow 36—38 1/16" high, 10" deep, 15" wide; top and bottom mounting flanges only.

STANDARD SLIMBOY 47 SERIES and **NARROW SLIMBOY 47 SERIES** (only 15" wide).
Extremely versatile unit. Narrow model offers big capacity up to 10,000 BTU/HR.
Capacity: Standard 47—4000-5000-6000 BTU/HR @ 125°F.
Narrow 47—4000-5000-6000-10,000 BTU/HR @ 125°F.
Dimensions: Standard 47—47¼" high, 10" deep, 19" wide.
Narrow 47—49⅛" high, 10" deep, 15" wide; top and botton mounting flanges only.

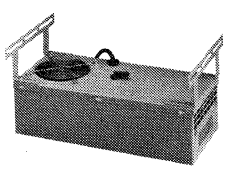
WATER-COOLED SLIMBOY 47 SERIES
Ideal for extremely hostile environments. Big cooling capacity. Interchangeable with Standard 47 Series air conditioner.
Capacity: Models ranging from 4000 to 12,000 BTU/HR @ 125°F.
Dimensions: 47¼" high, 10" deep, 19" wide.

SLIMBOY 52 SERIES
Capacity: Models ranging from 5000 to 12,000 BTU/HR @ 125°F.
Dimensions: 52⅝" high, 9½" deep, 19" wide.



MICRO-MINI SLIMBOY

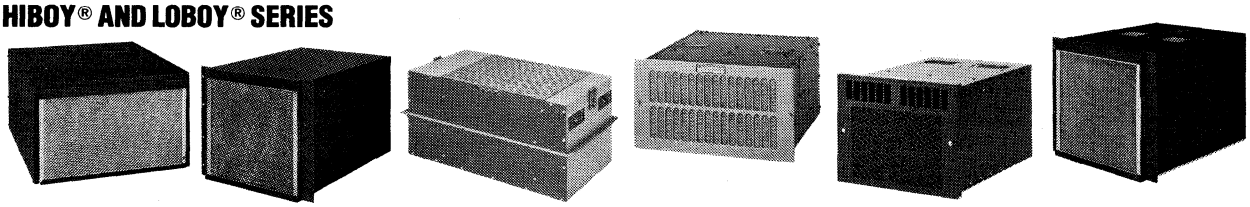
Standard 13 Series and High-capacity 13 Series
Capacity: Standard 13—1200 BTU/HR @ 110°F.
High-capacity 13—1400 BTU/HR @ 125°F.
Dimensions: Ultra-small at 12⅞" high, 6¼" deep, 14⅛" wide.



CONDENSATE EVAPORATOR

Evaporates the condensate from air conditioners vertically mounted to sealed enclosures, where a conventional drain system is not feasible. Models available for all McLean Slimboy and Micro-Mini Slimboy units.

HIBOY® AND LOBOY® SERIES



HIBOY 11 HIBOY 16 HIBOY 30 LOBOY 11 LOBOY 14 LOBOY 16

HIBOY 11 SERIES
Mounted on the top surface of the enclosure.
Built-in condensate evaporation.
Capacity: 2000-3000-4000 BTU/HR @ 125°F.
Dimensions: 10¼" high, 20" deep, 17" wide.
Note: Hiboy 11 model also available for rack mounting inside enclosure.

HIBOY 16 SERIES
Rack mounted inside enclosure at the top, or outside on top surface.
Capacity: 5000-6000-7000 BTU/HR @ 125°F.
Dimensions: 15¾" high, 24" deep, 19" wide.

HIBOY 30 SERIES
Capacity: 4000-5000-6000 BTU/HR @ 125°F.
Dimensions: 14" high, 31⅜" long, 16⅜" wide.
Note: Standard model mounts partially recessed on top; special model available to mount on top surface of enclosure.

LOBOY 11 SERIES
Rack mounted inside the enclosure near the bottom.
Capacity: 2000-3000-4000 BTU/HR @ 125°F.
Dimensions: 10 15/32" high, 19⅝" deep, 19" wide.

LOBOY 14 SERIES
Requires no rear ducting; air intake and exhaust both on face of unit. Rack mounts at bottom or near bottom of enclosure.
Capacity: 4000-5000-6000-7000 BTU/HR @ 125°F.
Dimensions: 14¾" high, 24 11/16" deep, 19" wide.

LOBOY 16 SERIES
Rack mounts inside the enclosure near the bottom. Built-in condensate evaporation.
Capacity: 5000-6000-7000-10,000 BTU/HR @ 125°F.
Dimensions: 15¾" high, 24" deep, 19" wide.

McLEAN MIDWEST
SUBSIDIARY OF ZERO CORPORATION
4000-83RD AVENUE NORTH, BROOKLYN PARK, MN 55443
PHONE (612) 561-9400 • FAX 612-569-0533 • TELEX 29-0883 • TWX 910-576-2951

MECHATRONICS
FOR AXIAL COOLING FANS

MECHATRONICS

Mechatronics is staffed with highly trained and motivated sales and technical personnel. As a national distributor with well established offices in Los Angeles, San Francisco, Chicago, New England, Atlanta, Dallas and Seattle, customers can be serviced quickly and efficiently. Quotations and evaluation samples can be handled, in most cases, on an overnight basis.

We sincerely believe the benefits of Mechatronics' "Right Buy" program assure our customers of making the right buy for air cooling fan requirements. Please give us strong consideration and let Mechatronics prove how the "Right Buy" can solve your present and future air cooling fan requirements.

Mechatronics is a rapidly expanding company specializing in the marketing and distribution of air cooling fans throughout the U.S.A. Mechatronics offers several features not readily available from any other air cooling fan source: • Highest Quality • Proven Performance • Volume Production • Competive Pricing • Fast Delivery.

PART NUMBER SYSTEM

EXAMPLE: 4715P S — 12 T — B 30

MANUFACTURER'S FRAME SIZE

MOTOR TYPE
S = SHADED POLE AC
C = CAPACITANCE AC
L = BRUSHLESS DC

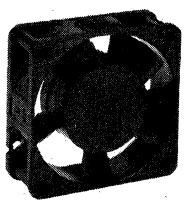
VOLTAGE
-04 = 12V (DC)
-05 = 24V (DC)
-12 = 115V (AC)
-22 = 220V (AC)
-23 = 230V (AC)

SPEED (RPM)
-10 = 1000-2000 RPM
-20 = 2000-3000 RPM
-30 = 3000-4000 RPM
-40 = 4000-5000 RPM

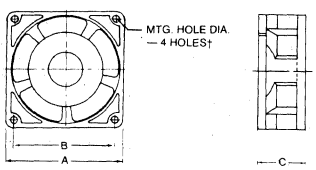
BEARING TYPE
B = BALL BEARING
S = SLEEVE BEARING

CONNECTOR
T = TERMINAL
W = LEAD WIRE

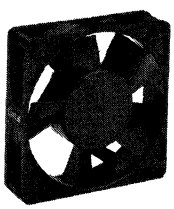
DC SERIES FANS



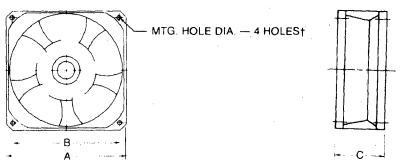
60 mm x 60 mm



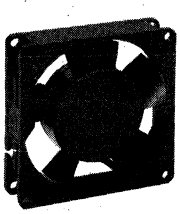
	A	B	C
2410PL	60 mm	49.25 mm	25 mm
2412PL	60 mm	49.25 mm	30 mm



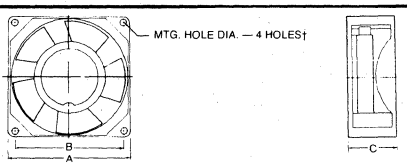
92 mm x 92 mm



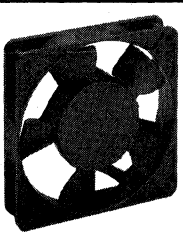
	A	B	C
3610PL	92 mm	82.5 mm	25.4 mm



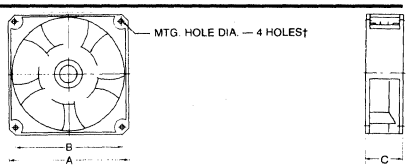
80 mm x 80 mm



	A	B	C
3110PL	80 mm	71.5 mm	25.4 mm
3113PL	80 mm	71.5 mm	32 mm



119 mm x 119 mm



	A	B	C
4710PL	119 mm	104.8 mm	25.4 mm
4715PL	119 mm	104.8 mm	38 mm

DC FAN SELECTION GUIDE

PART NUMBER	VOLTS	RPM	AMPS	WATTS	SIZE O.D.	SIZE I.D.	APPROVALS	CFM
2408PL-04W-B30	12/24	3150	0.11	1.4	2.36″ (60 mm)	.79″ (20 mm)	U.L.	9
2408PL-04W-B40	12/24	4400	0.17	2.0	2.36″ (60 mm)	.79″ (20 mm)	U.L.	13
2410PL-04W-B30	12/24	3200	0.11	1.1	2.36″ (60 mm)	1.00″ (25.4 mm)	U.L.	15
2410PL-04W-B40	12/24	4000	0.17	1.8	2.36″ (60 mm)	1.00″ (25.4 mm)	U.L.	19
3110PL-04W-B20	12/24	2450	0.08	1.0	3.15″ (80 mm)	1.00″ (25.4 mm)	U.L.	23
3110PL-04W-B30	12/24	3150	0.13	1.8	3.15″ (80 mm)	1.00″ (25.4 mm)	U.L.	32
3610PL-04W-B20	12/24	2350	0.09	1.9	3.625″ (92 mm)	1.00″ (25.4 mm)	U.L.	27
3610PL-04W-B30	12/24	3000	0.24	2.9	3.625″ (92 mm)	1.00″ (25.4 mm)	U.L.	37
4710PL-04W-B20	12/24	2200	0.17	2.0	4.68″ (119 mm)	1.00″ (25.4 mm)	U.L.	55
4710PL-04W-B30	12/24	3000	0.33	4.0	4.68″ (119 mm)	1.00″ (25.4 mm)	U.L.	73
4715PL-04W-B20	12/24	2400	0.31	3.8	4.68″ (119 mm)	1.50″ (38 mm)	U.L.	81
4715PL-04W-B30	12/24	3000	0.66	8.0	4.68″ (119 mm)	1.50″ (38 mm)	U.L.	105

Notes: Other voltages and speeds available. Please contact Mechatronics with your requirements.

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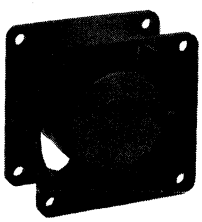
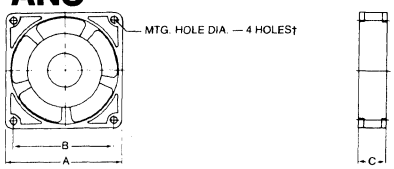
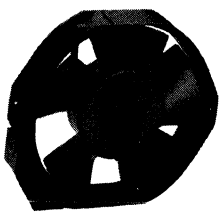
AC SERIES FANS



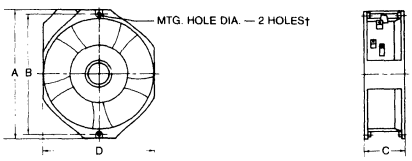
60 mm x 60 mm



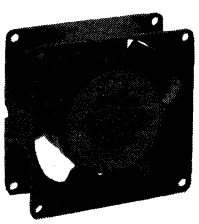
	A	B	C
2412PS	60 mm	49.25 mm	30 mm
2415PS	60 mm	49.25 mm	38 mm



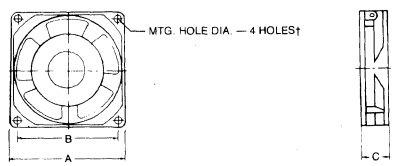
172 mm x 150 mm



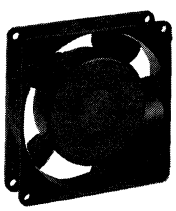
	A	B	C	D
5915PC	172 mm	162 mm	38 mm	150 mm



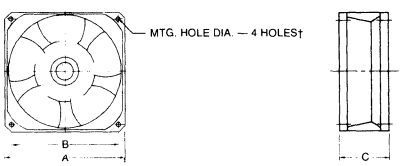
80 mm x 80 mm



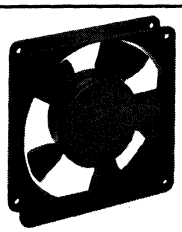
	A	B	C
3108PS	80 mm	71.4 mm	20 mm
3110PS	80 mm	71.4 mm	25 mm
3115PS	80 mm	71.4 mm	38 mm



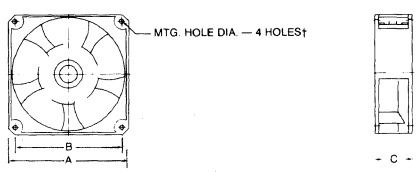
92 mm x 92 mm



	A	B	C
3610PS	92 mm	82.5	25.4 mm



120 mm x 120 mm



	A	B	C
4710PS	119 mm	104.8 mm	25.4 mm
4715PS	119 mm	104.8 mm	38 mm

AC FAN SELECTION GUIDE

PART NUMBER	VOLTS	FREQ.	RPM	AMPS	WATTS	SIZE O.D.	SIZE I.D.	APPROVALS	CFM
2412PS-12W-B30	115	50/60	2800	0.04	3	2.36″ (60 mm)	1.18″ (30 mm)	U.L./C.S.A.*	12
2415PS-12W-B30	115	50/60	3150	0.04	3.7	2.36″ (60 mm)	1.5″ (38 mm)	U.L./C.S.A.	13
3108PS-12W-B30	115	50/60	2900	0.05	5	3.15″ (80 mm)	.79″ (20 mm)	U.L./C.S.A.	18
3110PS-12W-B30	115	50/60	3200	0.13	10	3.15″ (80 mm)	.98″ (25 mm)	U.L./C.S.A.	21
3115PS-12W-B10	115/230	50/60	2100	0.031	5	3.15″ (80 mm)	1.50″ (38 mm)	U.L./C.S.A.	20
3115PS-12W-B20	115/230	50/60	2550	0.055	4	3.15″ (80 mm)	1.50″ (38 mm)	U.L./C.S.A.	24
3115PS-12W-B30	115/230	50/60	3200	0.12	6	3.15″ (80 mm)	1.50″ (38 mm)	U.L./C.S.A.	33
3610PS-12T-B10	115/230	50/60	2000	0.033	8	3.625″ (92 mm)	1.00″ (25.4 mm)	U.L./C.S.A.	25
3610PS-12T-B20	115/230	50/60	2650	0.08	7	3.625″ (92 mm)	1.00″ (25.4 mm)	U.L./C.S.A.	34
3610PS-12T-B30	115/230	50/60	3150	0.16	13	3.625″ (92 mm)	1.00″ (25.4 mm)	U.L./C.S.A.	36
4710PS-12T-B20	115/230	50/60	2250	0.075	7	4.68″ (119 mm)	1.00″ (25.4 mm)	U.L./C.S.A.	52
4710PC-12T-B30	115/230	50/60	2850	0.18	13	4.68″ (119 mm)	1.00″ (25.4 mm)	U.L./C.S.A.	75
4715PS-12T-B10	115/230	50/60	1500	0.04	6	4.68″ (119 mm)	1.50″ (38 mm)	U.L./C.S.A.	55
4715PS-12T-B20	115/230	50/60	2900	0.11	10	4.68″ (119 mm)	1.50″ (38 mm)	U.L./C.S.A.	90
4715PS-12T-B30	115/230	50/60	3100	0.20	13	4.68″ (119 mm)	1.50″ (38 mm)	U.L./C.S.A.	108
5915PC-12T-B10	115/230	50/60	1300	0.13	13	6.75″ (172 mm)	5.90″ (150 mm)	U.L./C.S.A.	105
5915PC-12T-B20	115/230	50/60	2350	0.21	22	6.75″ (172 mm)	5.90″ (150 mm)	U.L./C.S.A.	170
5915PC-12T-B30	115/230	50/60	3100	0.37	35	6.75″ (172 mm)	5.90″ (150 mm)	U.L./C.S.A.	220

Notes: Other voltages and speeds available. Please contact Mechatronics with your requirements.
* Most AC units have VDE approval.

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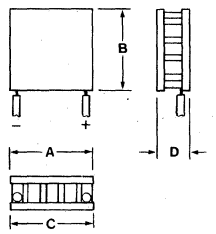
Thermoelectric (Peltier) Heat Pump Module Specifications

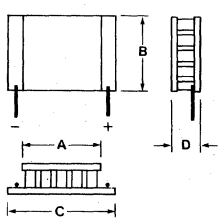
Thermocouples constructed of N & P elements of highest grade bismuth telluride in form of oriented polycrystalline ingots. Ingot ends soldered to copper bus bars interfaced with ceramic plates, affording good mechanical integrity, high dielectric strength and thermal conduction. Temperature range, −150°C to +80°C. Solid state construction. Both hot and cold faces lapped flat, TYPE L. Both faces metallized and tinned, TYPE TT. Hybrid, hot face tinned, cold face lapped, TYPE TL.

	Catalog Number	I Max Amps	Hot Face Th = 25°C Q Max Watts	V Max Volts	ΔT Max °C	Universal Multipliers N No. of Couples	G Geometry Factor	G x N	Dimensions, mm A	B	C	D(5)
CP SERIES	CP 1.0- 7-06L	3.0	1.4	0.85	67	7	0.060	0.42	8	8		3.6
	CP 1.0- 17-06L	3.0	3.4	2.06	67	17	0.060	1.02	12	12		3.6
	CP 1.0- 31-06L	3.0	6.3	3.75	67	31	0.060	1.86	15	15		3.6
	CP 1.0- 63-06L	3.0	12.7	7.62	67	63	0.060	3.78	15	30		3.6
	CP 1.0- 71-06L	3.0	14.4	8.60	67	71	0.060	4.26	23	23		3.6
	CP 1.0-127-06L	3.0	25.7	15.4	67	127	0.060	7.62	30	30		3.6
	CP 1.0- 7-05L	3.9	1.8	0.85	67	7	0.078	0.55	8	8		3.2
	CP 1.0- 17-05L	3.9	4.5	2.06	67	17	0.078	1.33	12	12		3.2
	CP 1.0- 31-05L	3.9	8.2	3.75	67	31	0.078	2.42	15	15		3.2
	CP 1.0- 63-05L	3.9	16.6	7.62	67	63	0.078	4.91	15	30		3.2
	CP 1.0- 71-05L	3.9	18.7	8.60	67	71	0.078	5.54	23	23		3.2
	CP 1.0-127-05L	3.9	33.4	15.4	67	127	0.078	9.90	30	30		3.2
	CP 1.4-127-10L(1)	3.9	33.4	15.4	70	127	0.078	9.90	40	40		4.7
	CP 1.4- 3-06L	6.0	1.2	0.36	67	3	0.12	0.36	5	10		3.8
	CP 1.4- 7-06L	6.0	2.8	0.85	67	7	0.12	0.84	10	10		3.8
	CP 1.4- 11-06L	6.0	4.4	1.33	67	11	0.12	1.32	10	15		3.8
	CP 1.4- 17-06L	6.0	6.9	2.06	67	17	0.12	2.04	15	15		3.8
	CP 1.4- 31-06L	6.0	12.5	3.75	67	31	0.12	3.72	20	20		3.8
	CP 1.4- 35-06L	6.0	14.2	4.24	67	35	0.12	4.20	15	30		3.8
	CP 1.4- 71-06L	6.0	28.7	8.60	67	71	0.12	8.52	30	30		3.8
	CP 1.4-127-06L	6.0	51.4	15.4	67	127	0.12	15.24	40	40		3.8
	CP 1.4- 3-045L	8.5	1.6	0.36	65	3	0.17	0.51	5	10		3.3
	CP 1.4- 7-045L	8.5	3.8	0.85	65	7	0.17	1.19	10	10		3.3
	CP 1.4- 11-045L	8.5	5.6	1.33	65	11	0.17	1.87	10	15		3.3
	CP 1.4- 17-045L	8.5	9.2	2.06	65	17	0.17	2.89	15	15		3.3
	CP 1.4- 31-045L	8.5	16.8	3.75	65	31	0.17	5.27	20	20		3.3
	CP 1.4- 35-045L	8.5	19.0	4.24	65	35	0.17	5.95	15	30		3.3
	CP 1.4- 71-045L	8.5	38.5	8.60	65	71	0.17	12.07	30	30		3.3
	CP 1.4-127-045L	8.5	68.8	15.4	65	127	0.17	21.60	40	40		3.3
	CP 2 - 71-10L(1)	9.0	43.1	8.60	70	71	0.18	12.78	44	44		5.6
	CP 2 - 3-06L	14.0	2.8	0.36	67	3	0.28	0.84	8	15		4.6
	CP 2 - 7-06L	14.0	6.6	0.85	67	7	0.28	1.96	15	15		4.6
	CP 2 - 15-06L	14.0	14.2	1.82	67	15	0.28	4.20	15	30		4.6
	CP 2 - 17-06L	14.0	16.0	2.06	67	17	0.28	4.76	22	22		4.6
	CP 2 - 31-06L	14.0	29.3	3.75	67	31	0.28	6.86	30	30		4.6
	CP 2 - 49-06L	14.0	46.2	5.93	67	49	0.28	13.72	36	36		4.6
	CP 2 - 71-06L	14.0	67.0	8.60	67	71	0.28	19.88	44	44		4.6
	CP 2.8- 32-06L	24.0	51.8	3.87	67	32	0.48	15.36	40	40		5.0
	CP 5 - 31-10L	39.0	81.5	3.75	70	31	0.78	24.18	55	55		5.8
	CP 5 - 31-06L	60.0	125.	3.75	67	31	1.20	37.20	55	55		4.9
FC SERIES	FC 0.45- 4-05L	0.8	0.22	0.48	67	4	0.016	0.06	1.8	3.4	3.4	2.4
	FC 0.45- 8-05L	0.8	0.43	0.97	67	8	0.016	0.13	3.4	3.4	5.0	2.4
	FC 0.45-12-05L	0.8	0.65	1.45	67	12	0.016	0.19	3.4	5.0	5.0	2.4
	FC 0.45-18-05L	0.8	0.97	2.18	67	18	0.016	0.29	5.0	5.0	6.6	2.4
	FC 0.45-32-05L	0.8	1.72	3.87	67	32	0.016	0.51	6.6	6.6	8.3	2.4
	FC 0.45-66-05L	0.8	3.56	7.98	67	66	0.016	1.06	9.9	9.1	11.5	2.4
	FC 0.6- 4-06L	1.2	0.32	0.48	67	4	0.024	0.10	2.2	4.2	4.2	2.7
	FC 0.6- 8-06L	1.2	0.65	0.97	67	8	0.024	0.19	4.2	4.2	6.2	2.7
	FC 0.6- 12-06L	1.2	0.97	1.45	67	12	0.024	0.29	4.2	6.2	6.2	2.7
	FC 0.6- 18-06L	1.2	1.46	2.18	67	18	0.024	0.43	6.2	6.2	8.3	2.7
	FC 0.6- 32-06L	1.2	2.59	3.87	67	32	0.024	0.77	8.3	8.3	10.3	2.7
	FC 0.6- 66-06L	1.2	5.34	7.98	67	66	0.024	1.58	12.3	11.3	14.4	2.7
	FC 0.6- 4-05L	1.5	0.40	0.48	67	4	0.030	0.12	2.2	4.2	4.2	2.4
	FC 0.6- 8-05L	1.5	0.81	0.97	67	8	0.030	0.24	4.2	4.2	6.2	2.4
	FC 0.6- 12-05L	1.5	1.21	1.45	67	12	0.030	0.36	4.2	6.2	6.2	2.4
	FC 0.6- 18-05L	1.5	1.82	2.18	67	18	0.030	0.54	6.2	6.2	8.3	2.4
	FC 0.6- 32-05L	1.5	3.23	3.87	67	32	0.030	0.96	8.3	8.3	10.3	2.4
	FC 0.6- 66-05L	1.5	6.67	7.98	67	66	0.030	1.98	12.3	11.3	14.4	2.4
	FC 0.7- 4-05L	2.0	0.54	0.48	67	4	0.040	0.16	2.4	4.7	4.7	2.4
	FC 0.7- 8-05L	2.0	1.08	0.97	67	8	0.040	0.32	4.7	4.7	7.0	2.4
	FC 0.7- 12-05L	2.0	1.62	1.45	67	12	0.040	0.48	4.7	7.0	7.0	2.4
	FC 0.7- 18-05L	2.0	2.43	2.18	67	18	0.040	0.72	7.0	7.0	9.3	2.4
	FC 0.7- 32-05L	2.0	4.31	3.87	67	32	0.040	1.28	9.3	9.3	11.6	2.4

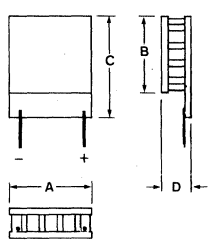
DIMENSIONS



CP Series
FC Series — Option One (2) (4)



FC Series — Standard



FC Series — Option Two (3)

Notes:

(1) Shown in largest size. Also available in all smaller sizes listed in group that follows.

(2) Option 1: Disregard Dim.C from table. Use Dim.C = Dim.A

(3) Option 2: Dim.C = Dim.B + 1.7 mm (FC 0.45); + 2.1 mm (FC 0.6); + 2.3 mm (FC 0.7)

(4) Option 1: Each size listed contains one less thermocouple, "N." Decrease N, GXN, Q and V accordingly.

(5) Thickness (D,mm) for Type L only.

WIRE STANDARDS

Module Type	Wire Gauge (AWG)	Length (mm/in.)	Insulation
FC 0.45-ALL	32 (SOLID)	50/2.0	None
FC 0.6-ALL	30 (SOLID)	50/2.0	None
FC 0.7-ALL	30 (SOLID)	50/2.0	None
CP 1.0-ALL	24 (STRANDED)	114/4.5	PVC
CP 1.4-ALL	22 (STRANDED)	114/4.5	PVC

Module Type	Wire Gauge (AWG)	Length (mm/in.)	Insulation
CP 2-ALL	18 (STRANDED)	114/4.5	PVC
CP 2.8-ALL	16 (STRANDED)	114/4.5	PVC
CP 5-XX-10	14 (STRANDED)	114/4.5	PVC
CP 5-XX-06	12 (STRANDED)	114/4.5	PVC

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How To Use Universal Performance Graphs:

APPROACH #1: Convert universal scale values to those of specific module selected:

1. Convert Q_c/GxN (scale values) to Q_c (watts heat pumped): Multiply Q_c/GxN values by module GxN (from table in module specifications chart).

2. Convert V/N values to V (volts input): Multiply V/N values by module N from table.

3. Convert 50 G, 40 G, etc. to I (amps input) values: Multiply 50 by module G, etc.

APPROACH #2: From application, knowing required Q_c, T_c and T_h, select appropriate module:

1. Calculate $\triangle T = T_h - T_c$; select operating current I (I max = 50 G).

2. From universals, obtain Q_c/GxN. Calculate GxN.

3. Select appropriate module from GxN table in module specifications chart.

EXAMPLE: Required Q_c = 31 Watts, T_c = +5°C, T_h = +35°C

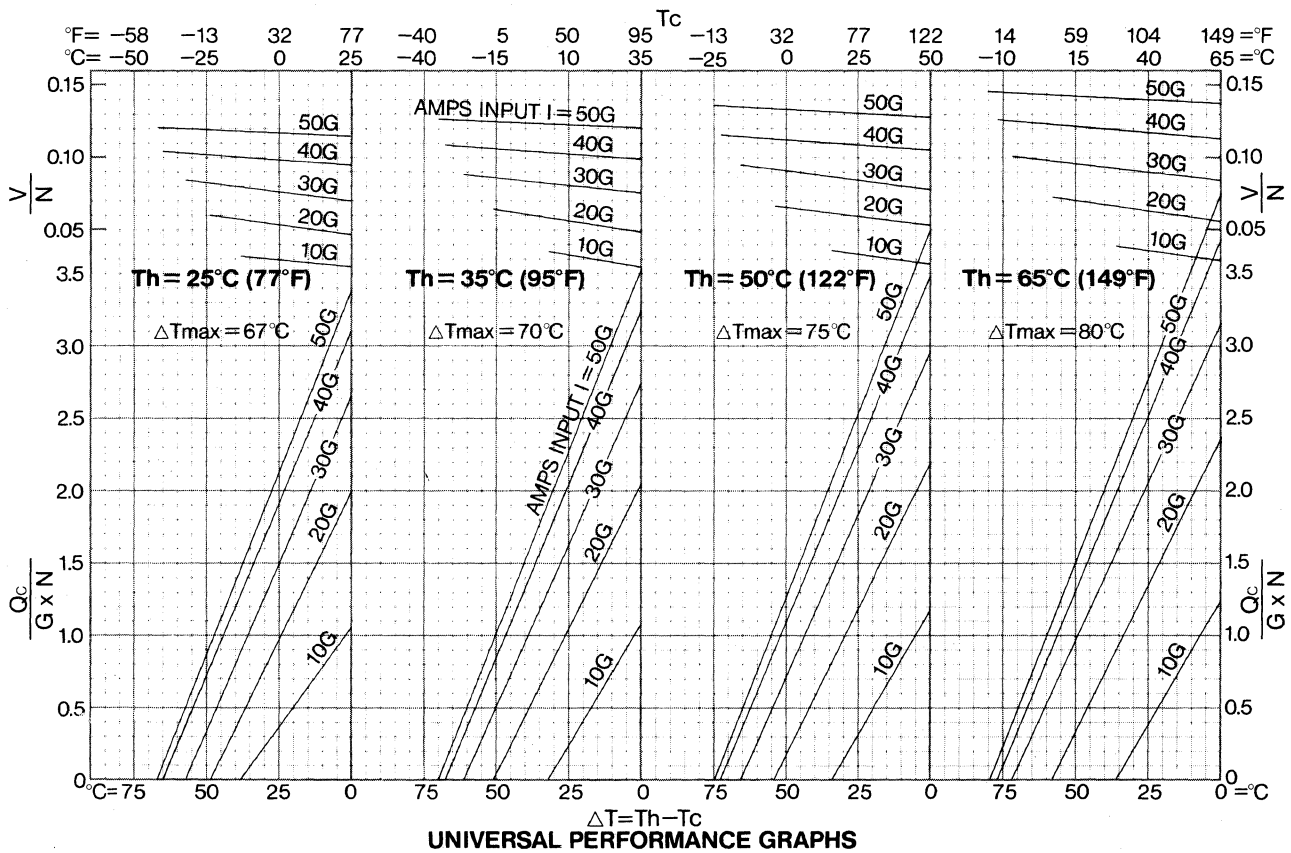
1. $\triangle T$ = 35° − 5° = 30°C. Choose operating current (typically from 30 G to 40 G) at 35 G (equals 35/50 = 70% of I max.)

2. From T_h = 35°C graph ($\triangle T$ = 30°, I = 35 G), obtain Q_c/GxN = 1.65; Then GxN = Q_c/1.65 = 31/1.65 = 18.8.

3. Choose module with GxN ≥ 18.8; choose CP1.4-127-045 (GxN = 21.6) or CP2-71-06 (GxN = 19.9).

If desired, approach #1 may now be followed for module selected.

Model CP1.4 – 127 – 06L
CP Series, Type L
1.4 x 1.4mm Thermoelement Cross Section
127 Thermocouples
.06″ Thermoelement Height

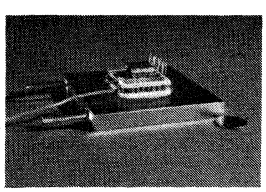


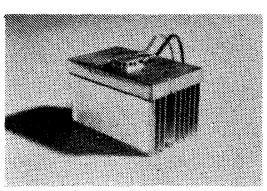
UNIVERSAL PERFORMANCE GRAPHS

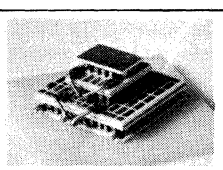
Tc = Cold Face Temperature; Th = Hot Face Temperature; I = Module Current, Amps; V = Module Voltage, Volts; Qc = Watts Heat Pumped; N = Number of Thermocouples; G = Thermoelement Geometry Factor

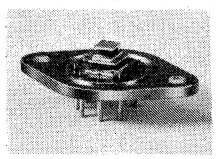
Special Heat Pump Assemblies

Special assemblies are available in O.E.M. quantities, designed to customer requirements using heat exchangers furnished by customer or by Melcor. Multistage cascades also available in standard and custom configuration, with temperatures to −95°C (6 stage). Ceramic construction with solder interfacing between stages.





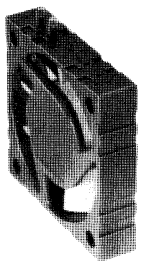




brushless DC ultra-slim fans

micronel®
2142F INDUSTRIAL COURT
VISTA, CA 92083
(619) 727-7400

F57



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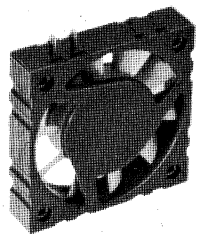


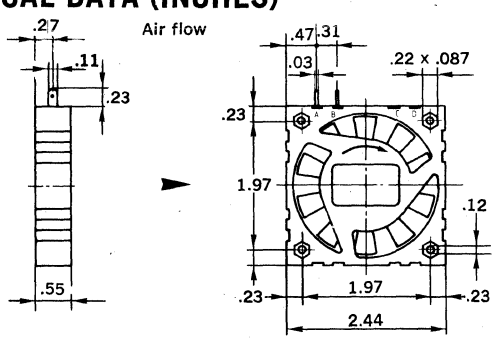
F57AB

- ☐ Housing of black polyphenylene oxide, UL 94 V-1 20% glass fiber
- ☐ Impeller of black polyphenylene oxide, UL 94 V-1 20% glass fiber
- ☐ Mounting with M3 screws
- ☐ Mounting possible in any orientation
- ☐ Electrical connection by two flat tabs .11 × .03 inches

TECHNICAL DATA

Voltage		5 volts	12 volts			24 volts			
Types		F57	F52	F57	F62	F52	F57	F62	
Nominal voltage	U_N	5	12	12	12	24	24	24	V
Voltage range	U	4.5-5.5	10.8-13.2			21.6-26.4			V
Nominal current max.	I_N	250	85	110	200	35	45	105	mA
Nominal power	P_N	1.3	1.02	1.3	2.4	0.84	1.1	2.52	W
Stall current	I_H	250	85	110	200	35	45	105	mA
Speed typically	n	3100	2550	3400	4250	2550	3400	4250	R.P.M.
Flow rate	V	10.5	9.1	11.2	14	9.1	11.2	14	C.F.M
Static pressure difference	Δp	0.16	0.12	0.18	0.32	0.12	0.18	0.32	mbar
Expected life	t	20000	20000	20000	20000	20000	20000	20000	h
Acoustic emission level	LpA	32	22	32	38	22	32	38	dB(A)
Ambient temperature range	T	−20 . . . +60							°C
Weight	m	1.6							oz.
Bearings		Sleeve bearings (spherical)/Ball bearings (on request)							

MECHANICAL DATA (INCHES)



WIRING DATA

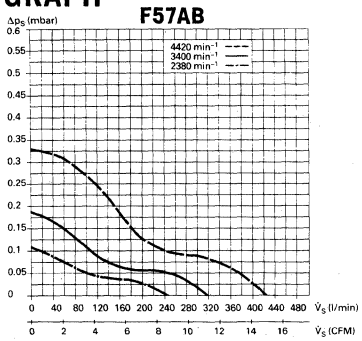
CONNECTIONS



Diameter of air inlet/outlet ϕ 2.32 in.

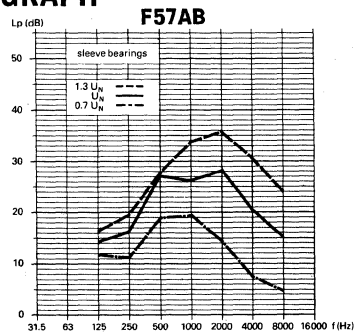
AIRFLOW PERFORMANCE GRAPH

F57AB

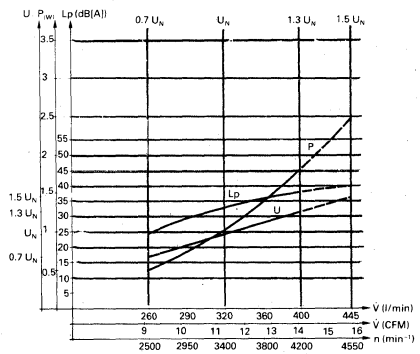


ACOUSTIC EMISSION GRAPH

F57AB



RANGE OF OPERATION



brushless DC ultra-slim fans

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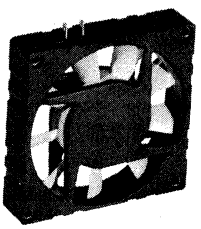
F75



F75EB



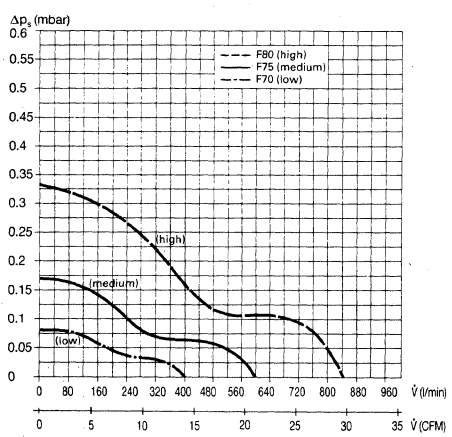
F75EB

- ☐ Housing of black polyphenylene oxide, UL 94 V-1 20% glass fiber
- ☐ Impeller of black polyphenylene oxide, UL 94 V-1 20% glass fiber
- ☐ Mounting with M3 screws
- ☐ Mounting possible in any orientation
- ☐ Electrical connection by two flat tabs .11 × .03 inches

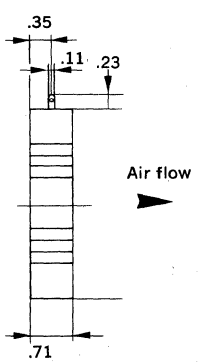
TECHNICAL DATA

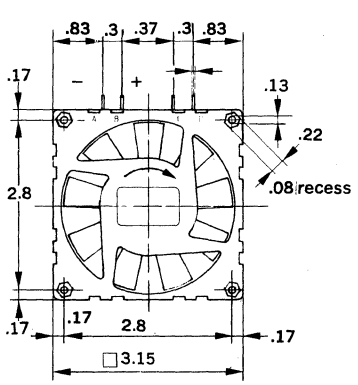
Voltage		12 volts			24 volts			
Types		F70	F75	F80	F70	F75	F80	
Nominal voltage	U_N	12	12	12	24	24	24	V
Voltage range	U	10.8-13.2			21.6-26.4			V
Nominal current max. (after 1 minute)	I_N	85	125	300	40	55	165	mA
Nominal power	P_N	1.02	1.5	3.6	0.96	1.30	4.0	W
Stall current	I_H	130	180	540	60	80	250	mA
Speed typically	n	1700	2700	3600	1700	2700	3600	R.P.M.
Flow rate	V	14	21	28	14	21	28	C.F.M.
Static pressure difference	Δp	0.07	0.17	0.32	0.07	0.17	0.32	mbar
Expected life	t	20000	20000	20000	20000	20000	20000	h
Acoustic emission level	LpA	23	32	42	23	32	42	dB(A)
Ambient temperature range	T	−20 . . . +60						°C
Weight	m	2.7						oz.
Bearings		Sleeve bearings (spherical)/Ball bearings (on request)						

AIRFLOW PERFORMANCE GRAPH



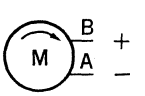
MECHANICAL DATA (INCHES)





WIRING DATA

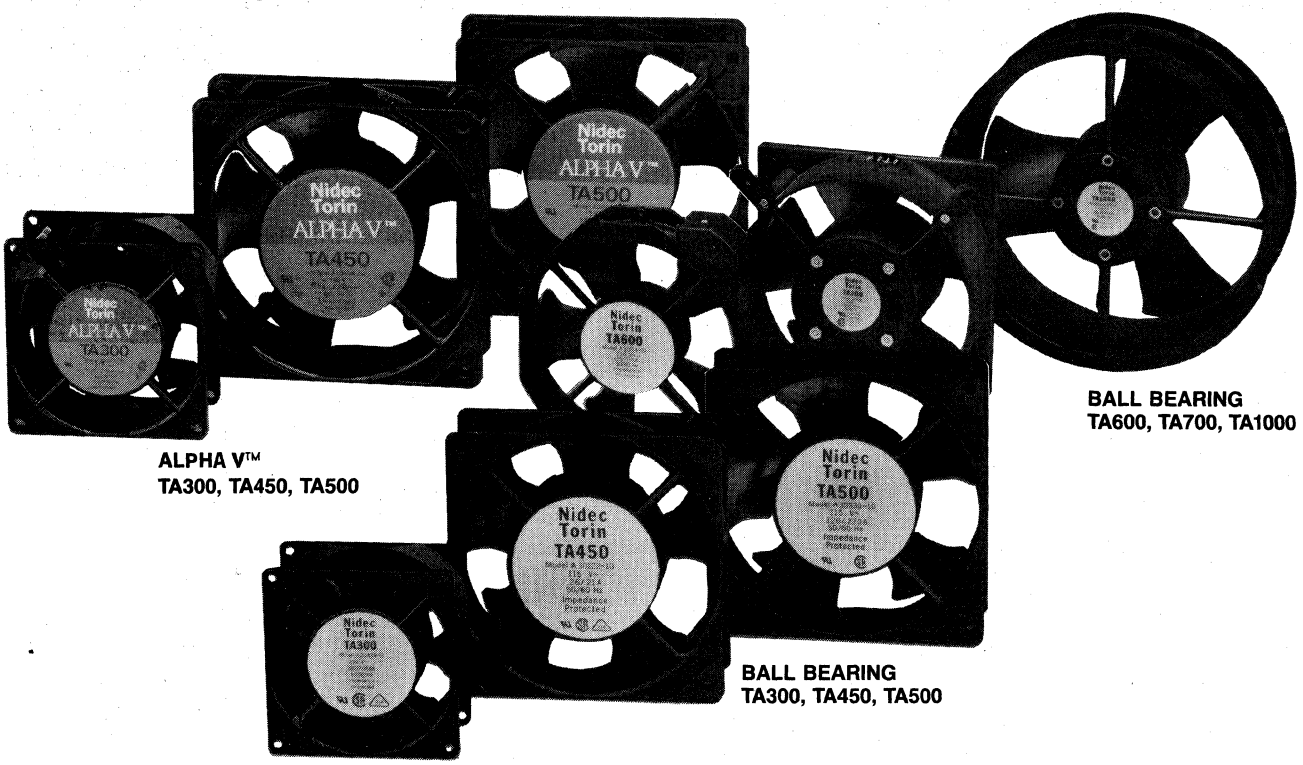
CONNECTIONS



(connection CD for special functions)

AC TUBE AXIAL FANS

Nidec-Torin Corporation 100 Franklin Drive • Torrington, Connecticut 06790 • (203) 482-4422 • Telex 643963



ALPHA V™
TA300, TA450, TA500

BALL BEARING
TA600, TA700, TA1000

BALL BEARING
TA300, TA450, TA500

Nidec-Torin proudly introduces ALPHA V™ tube axial fans with performance reliability so unprecedented they are available with a 5-year guarantee.† The ALPHA V fans have an HRSB (High Reliability Sleeve Bearing) System* that incorporates a larger oil reservoir; assures hydrodynamic lubrication; prevents oil leakage; aids oil recirculation and reabsorption; and minimizes oil oxidation due to heat.

Proper fan selection is mainly dependent upon the amount of heat to be dissipated, acceptable noise level, size, weight, and any applicable safety agency requirements.

TA300:
3.14″ (79.8mm) square by 1.51″ (38.3mm) deep.

TA450:
4.69″ (119.1mm) square by 1.50″ (38.1mm) deep.

TA500:
5″ (127mm) square by 1.50″ (38.1mm) deep.

Options:
Available with HRSB (sleeve bearing) system or ball bearings. Optional "S" series for quiet, lower RPM operation.

Housings:
One-piece, zinc die casting for strength. Acts as heat sink to dissipate motor heat.

Impellers:
Patented, computer designed, one-piece, molded 94V-O (UL) rated thermoplastic.

Motors:
High-efficiency, impedance protected, shaded pole type. Insulation options include U.L. Class A or B, CSA Class B, and VDE Class E or B. TA500 also available with permanent split capacitor motor.

Terminals:
Two 110″ (2.79mm) spade terminals on 5/16″ (7.9mm) centers standard; 12″ (30.5mm) flying lead wires also available.

Ball Bearing Design
In addition to our ALPHA V HRSB (sleeve bearing) design, Nidec-Torin tube axial fans are available with Ball Bearings. This design incorporates double-shielded electric motor quality bearings precision fitted into the rotor bore for time-proven performance.

TA600:
Highest performace rating for its size. Has zinc die cast housing, permanent split capacitor motor with thermal protection, UL94V-O thermoplastic polyester impeller, and spade pins or flying lead terminals. 6.75″(172mm) high, 5.91″ (150mm) wide, 1.50″ (38mm) deep.

TA700:
Two sizes available in frame thickness. Housing and impeller made of UL94V-O polycarbonate. Shaded pole motor thermally protected. Spade pins or flying lead terminals. Models A30335 and A30340 have 3.16″ thick frames. 6.91″ (176mm) square by 4″ (102mm) deep.

TA1000:
Extremely low power usage for high air volume. Impeller made of UL94V-O polycarbonate. Shaded pole motor thermally protected. Aluminum die cast housing. Spade pins or flying lead terminals. 10″ (254mm) diameter by 3.50″ (88.9mm) deep.

†5-year guarantee applies only to ALPHA V fans with HRSB (sleeve bearing) System.
*Patent pending.

AC TUBE AXIAL FANS

Nidec-Torin Corporation 100 Franklin Drive • Torrington, Connecticut 06790 • (203) 482-4422 • Telex 643963

Performance: Fans can be operated within a temperature range of −40°C to +60°C. Typical performance is at rated voltage and 60Hz. Models available (S) for mid-speed and low-speed use.

Approvals: Most Nidec-Torin fans are UL recognized components (File No. E45427 or E76527), and CSA certified (File No. LR27767, LR43354, LR45041, LR49202). Many models have VDE "Mark Approval" (File No. 10452318, 10452319, 104521610).

NOTE: 318 Contact factory for specific models with VDE Mark Approval.

Specifications

Type	Model	Bearing	Volts	Hz	Watts[1]	CFM[1]	NPEL[1]	PSIL (dB)[1]
TA300[4]	A30473-10	Sleeve (A)	115	50/60	9.0	35	5.1	38
	A30475-10	Sleeve (A)	230	50/60	9.0	35	5.1	38
	A30477-10	Ball	115	50/60	9.0	35	5.1	38
	A30479-10	Ball	230	50/60	9.0	35	5.1	38
TA300S[4]	A31022-10	Sleeve (A)	115	50/60	11	30	4.8	34
	A31137-10	Sleeve (A)	230	50/60	11	30	4.8	34
	A31136-10	Ball	115	50/60	11	30	4.8	34
	A31138-10	Ball	230	50/60	11	30	4.8	34
	A30716-10	Sleeve (A)	115	50/60	5.0	21	4.4	28
	A30717-10	Ball	115	50/60	5.0	21	4.4	28
TA450	A30180-10	Sleeve (A)	115	50/60	17	106	5.8	43
	A28678-10	Sleeve (A)	230	50/60	17	106	5.8	43
	A30122-10	Ball	115	50/60	17	106	5.8	43
	A30135-10	Ball	230	50/60	17	106	5.8	43
	A30440-10	Sleeve (A)	28	50/60	17	106	5.8	43
TA450S	A30390-10	Sleeve (A)	115	50/60	11	68	4.3	32
	A30426-10	Sleeve (A)	230	50/60	11	68	4.3	32
	A30443-10	Ball	115	50/60	11	68	4.3	32
	A30444-10	Ball	230	50/60	11	68	4.3	32
	A30769-10	Sleeve (A)	115	50/60	10	50	4.0	26
	A30925-10	Sleeve (A)	230	50/60	10	50	4.0	26
	A30926-10	Ball	115	50/60	10	50	4.0	26
	A30927-10	Ball	230	50/60	10	50	4.0	26
	A30767-10	Sleeve (A)	28	50/60	11	68	4.3	32
TA500	A30200-10	Sleeve (A)	115	50/60	21	130	5.8	44
	A30324-10	Sleeve (A)	230	50/60	21	131	5.8	44
	A30330-10	Ball	115	50/60	21	130	5.8	44
	A30332-10	Ball	230	50/60	21	131	5.8	44
TA500S	A30700-10	Sleeve (A)	115	50/60	19	106	5.3	40
	A30704-10	Sleeve (A)	230	50/60	19	106	5.3	40
	A30702-10	Ball	115	50/60	19	106	5.3	40
	A30706-10	Ball	230	50/60	19	106	5.3	40
TA500PSC	A30579-10	Ball	115	50/60	20	150	6.1	47
	A30581-10	Ball	230	50/60	19	150	6.1	47
TA600	A30318-10	Ball	115	50/60	32	260	6.6	53
	A30322-10	Ball	230	50/60	32	260	6.6	53
TA700	A30050	Ball	115	50/60	77	380	7.3	59
	A30056	Ball	230	50/60	77	380	7.3	59
	A30335	Ball	115	50/60	77	380	7.3	59
	A30340	Ball	230	50/60	77	380	7.3	59
TA1000	A30205-10	Ball	115	50/60	51	545	6.1	49
	A30230-10	Ball	230	50/60	52	530	6.1	49
TA1000S	A30426-10	Ball	115	50/60	38	470	5.8	44

The total sound output is designated by the Noise Power Emission Level (NPEL)[2]

The Preferred Octave Speech Interference Level (PSIL) heard depends upon the sound power of the source and listening conditions, such as distance from source. The average PSIL shown is at a distance of one meter and with the fan next to one reflecting surface[3]. PSIL stated with no reflecting surface present is 3dB lower, but such data is unrealistic since the fan requires at least one mounting surface.

[1]Watts, CFM, NPEL and PSIL at nominal voltage. 60 Hz. wide open.
[2]In accordance with American National Standard S1 23-1976.
[3]Conditions as specified in American National Standard S3 17-1975.
[4]Other lead versions available—20 (12" leads)
(A) ALPHA V HRSB System

Note: Most models available through distributors.

Nidec

Nidec-Torin Corporation

100 Franklin Drive • Torrington, Connecticut 06790 • (203) 482-4422 • Telex 643963

BRUSHLESS DC TUBE AXIAL FANS



Nidec-Torin's advanced series of BETA SL® (Slimline) Brushless DC tube axial fans are thinner, smaller, lighter, and quiet, while delivering the same performance as similar one inch thick AC fans.

BETA SL® fans are ideal for cooling small computers, terminals, peripherals, copiers, communications systems, portable instruments, medical electronics, and other electronic products and systems where limited space is a factor.

BETA II™, Nidec-Torin's latest series of Brushless DC slimline fans feature a lightweight, one-piece injection molded UL94V-0 thermoplastic housing, providing a significant reduction in unit weight.

Designed for electronics cooling applications where limited space is a factor, BETA II™ fans include permanently lubricated ball bearings as standard, as well as the option of a Hall effect signal to monitor performance.

Nidec-Torin Brushless DC fans can be adapted to most computer or electronic business machines where DC power is available, including computer peripherals, communication systems, portable instruments, and other electronic devices.

Delivering the same performance as similar AC fans, our brushless DC fan reduces the need for agency approvals, consumes considerably less power, and reduces EMI and RFI emissions found in AC products.

CONSTRUCTION:

- One-piece, die cast aluminum housing, which acts as a heat sink to dissipate heat from the motor.†
- One-piece, injection molded UL94V-0 thermoplastic housing.††*
- One-piece, die cast metal housing for larger models.*
- Injection molded, black thermoplastic impeller.
- Permanently lubricated ball bearings.
- Dependable, solid-state brushless DC motor with permanent magnet rotor.
- Electronically commutated stator with Hall effect sensors to adjust performance to varying thermal needs.
- Available with color-coded 12″ (305mm) leads or spade-pin terminals.

FEATURES:

- Power-saving, 12 and 24 volt models available, with air flow ranging from 8.2 to 78 CFM.†
- Power-saving, 12 and 24 volt models available, with air flow ranging from 11 to 43 CFM.††
- Cost-effective, lightweight construction available with smaller models.††*
- Fans can be operated within a temperature range of −10°C to +70°C.† ††
- Available in 12, 24, and 48 volt models, with air flow ranging from 22.5 to 225 CFM.*
- Polarity protected.
- Adjustable air delivery by varying input voltage.
- Minimizes EMI and RFI emissions.

NOTE: †For BETA SL Models ††For BETA II Models *For Brushless DC Models

BETA SL®

TA225DC 2.36″ (60mm) square by .792″ (20mm) deep. **Mounting Dimensions:** 2.784″ (70.71mm) diagonal distance. **Mounting Hole Diameter:** .169″(4.30mm) 2 places each flange. **Weight:** .25 lbs. (.115kg)

TA300DC 3.15″ (80mm) square by .792″ (20mm) deep. **Mounting Dimensions:** 2.812″ (71.42mm) square. **Mounting Hole Diameter:** .169″ (4.30mm) 3 places each flange. **Weight:** .32 lbs. (.145kg)

TA350DC 3.62″ (92mm) square by .984″ (25mm) deep. **Mounting Dimensions:** 3.245″ (82.44mm) square. **Mounting Hole Diameter:** .169″ (4.30mm) 3 places each flange. **Weight:** .48 lbs. (.220kg)

TA450DC 4.69″ (119mm) square by .984″ (25mm) deep. **Mounting Dimensions:** 4.125″ (104.78mm) square. **Mounting Hole Diameter:** .177″ (4.50mm) 4 places each flange. **Weight:** .56 lbs. (.255kg)

BETA II™

TA225DC 2.36″ (60mm) square by .984″ (25mm) deep. **Mounting Dimensions:** 1.986″ (50mm) square. **Mounting Hole Diameter:** .169″ (4.30mm) 8 places. **Weight:** .22 lbs. (.1kg)

TA300DC 3.15″ (80mm) square by .984″ (25mm) deep. **Mounting Dimensions:** 2.81″ (71.5mm) square. **Mounting Hole Diameter:** .169″ (4.30mm) 8 places. **Weight:** .31 lbs. (.142kg)

BRUSHLESS DC

TA350DC 3.62″ (92mm) square by .984″ (25mm) deep. **Mounting Dimensions:** 3.25″ (82.5mm) square. **Mounting Hole Diameter:** .169″ (4.30mm) 8 places. **Weight:** .28 lbs. (.130kg)

TA300DC 3.15″ (80mm) square by 1.26″ (32mm) deep. **Mounting Dimensions:** 2.81″ (71.4mm) square. **Mounting Hole Diameter:** .177″ (4.5mm) 8 places. **Weight:** .36 lbs. (.163kg)

TA450DC 4.69″ (119.1mm) square by 1.50″ (38.1mm) deep. **Mounting Dimensions:** 4.13″ (104.9mm) square. **Mounting Hole Diameter:** .152″ (3.86mm) 8 places. **Weight:** 1.2 lbs. (.54kg)

TA500DC 5.00″ (127mm) square by 1.50″ (38.1mm) deep. **Mounting Dimensions:** 4.460″ (113mm) square. **Mounting Hole Diameter:** .180″ (4.60mm) 8 places. **Weight:** 1.6 lbs. (.73kg)

TA600DC 6.75″ (172mm) by 5.91″ (150mm) by 1.50″ (38.1mm) deep. **Mounting Dimensions:** 6.375″ (161.9mm) diagonal. **Mounting Hole Dia**: .172″ (4.37mm) 2 places each flange. **Wt;** 2.2 lbs. (1kg)

Nidec

Nidec-Torin Corporation 100 Franklin Drive • Torrington, Connecticut 06790 • (203) 482-4422 • Telex 643963

BRUSHLESS DC TUBE AXIAL FANS

Specifications

Type	Model	Bearing	Volts	Watts	CFM	RPM	Running Amps	Locked Rotor Amps	L/S	NPEL[1]
BETA SL®										
TA225DC	A31390-10	Ball	12	1.0	8.2	3250	.08	.20	3.9	3.7
	A31390-16	Ball	12	1.0	8.2	3250	.08	.20	3.9	3.7
	A31391-10	Ball	24	.80	8.2	3250	.03	.17	3.9	3.7
	A31391-16	Ball	24	.80	8.2	3250	.03	.17	3.9	3.7
TA300DC	A31436-10	Ball	24	1.5	24	3200	.065	.10	11.3	4.1
	A31436-16	Ball	24	1.5	24	3200	.065	.10	11.3	4.1
	A31437-10	Ball	12	1.5	24	3200	.12	.35	11.3	4.1
	A31437-16	Ball	12	1.5	24	3200	.12	.35	11.3	4.1
TA350DC	A31393-10	Ball	12	3.4	37	3100	.28	.62	17	5.3
	A31393-16	Ball	12	3.4	37	3100	.28	.62	17	5.3
	A31394-10	Ball	24	3.4	37	3100	.14	.37	17	5.3
	A31394-16	Ball	24	3.4	37	3100	.14	.37	17	5.3
	A31735-10	Ball	12	1.8	28	2450	.15	.40	13	4.8
	A31735-16	Ball	12	1.8	28	2450	.15	.40	13	4.8
	A31953-10	Ball	16	2.1	30	2600	.13	.35	14	4.9
	A31953-16	Ball	16	2.1	30	2600	.13	.35	14	4.9
TA450DC	A31396-10	Ball	12	4.0	78	3160	.33	.81	37	5.9
	A31396-16	Ball	12	4.0	78	3160	.33	.81	37	5.9
	A31397-10	Ball	24	4.3	78	3160	.18	.40	37	5.9
	A31397-16	Ball	24	4.3	78	3160	.18	.40	37	5.9
BETA II™										
TA225DC	A32313-16*	Ball	12	.84	11	3100	.07	.10	5.2	3.4
	A32316-16*	Ball	24	.96	11	3100	.04	.10	5.2	3.4
TA300DC	A32213-16*	Ball	12	1.2	26.5	3100	.10	.10	12.5	4.4
	A32213-23*	Ball	12	1.2	26.5	3100	.10	.10	12.5	4.4
	A32228-16*	Ball	24	1.44	26.5	3100	.06	.10	12.5	4.4
	A32228-23*	Ball	24	1.44	26.5	3100	.06	.10	12.5	4.4
	A32244-16*	Ball	12	1.9	30	3500	.16	.10	14	4.7
	A32244-23*	Ball	12	1.9	30	3500	.16	.10	14	4.7
	A32263-16*	Ball	24	2.0	30	3500	.08	.10	14	4.7
	A32263-23*	Ball	24	2.0	30	3500	.08	.10	14	4.7
TA350DC	A32314-16*	Ball	12	1.44	38	3100	.12	.12	18	4.2
	A32317-16*	Ball	24	1.44	38	3100	.06	.10	18	4.2
BRUSHLESS DC										
TA300DC	A32140-16*	Ball	12	2.34	33.5	3700	.19	.40	15.8	5.1
TA300SDC	A32100-16*	Ball	12	1.0	22.5	2600	.08	.25	10.6	4.0
TA450DC	A31256-10	Ball	12	6.1	112	3200	.51	.30	53	5.7
	A31256-10R	Ball	12	6.1	112	3200	.51	.30	53	5.7
	A31256-16	Ball	12	6.1	112	3200	.51	.30	53	5.7
	A31256-22	Ball	12	6.1	112	3200	.51	.30	53	5.7
	A31256-23	Ball	12	6.1	112	3200	.51	.30	53	5.7
	A31257-10	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31257-10R	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31257-16	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31257-22	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31257-23	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31277-80	Ball	24	5.0	112	3200	.21	.13	53	5.7
	A31664-10	Ball	48	6.7	112	3200	.14	.08	53	5.7
	A31664-10R	Ball	48	6.7	112	3200	.14	.08	53	5.7
	A31664-16	Ball	48	6.7	112	3200	.14	.08	53	5.7
	A31873-10	Ball	12	2.6	83	2500	.22	.20	39	5.2
	A31873-16	Ball	12	2.6	83	2500	.22	.20	39	5.2
TA450SDC	A31668-10	Ball	12	1.1	52.0	1560	.09	.35	25	4.2
	A31668-16	Ball	12	1.1	52.0	1560	.09	.35	25	4.2
	A31787-10	Ball	24	1.4	52.0	1560	.06	.35	25	4.2
	A31787-16	Ball	24	1.4	52.0	1560	.06	.35	25	4.2
TA500DC	A31360-10	Ball	12	10.8	131	3100	.90	.40	62	6.2
	A31365-10	Ball	24	9.1	131	3100	.38	.30	62	6.2
TA600DC	A31692-10	Ball	12	16.8	225	2900	1.40	.50	106	6.4
	A31693-10	Ball	24	18.7	225	2900	.78	.40	106	6.4
	A31694-10	Ball	48	19.2	225	2900	.40	.30	106	6.4

*plastic housing

- number designates type of termination, consult factory for details.

[1]The total sound output is designated by the Noise Power Emission Level (NPEL), in accordance with American National Standard S1 23-1976.

Note: Most models available through distributors.

Fans & Blowers

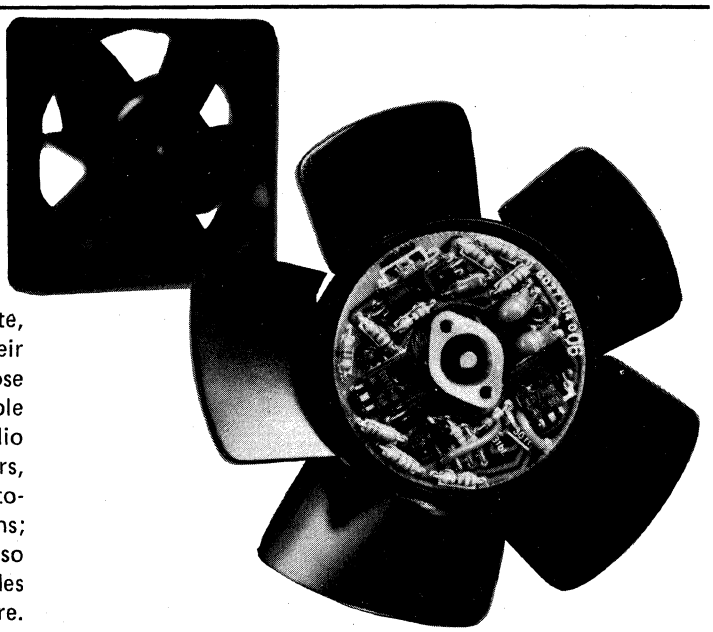
PAMOTOR

PAPST MECHATRONIC CORPORATION

PAPST MECHATRONIC CORPORATION, Aquidneck Industrial Park, Newport, Rhode Island 02840 • Tel. (401) 849-8810 • Telefax 401/849-4640 • Telex 95 20 92

PAMOTOR SOLID STATE BRUSHLESS DC FANS

THE ONLY COMPANY OFFERING YOU A FULL FAMILY OF SOLID STATE, BRUSHLESS DC FANS IN POPULAR FRAME SIZES & VOLTAGES, & AT POPULAR PRICES.



PAMOTOR has a full line of self-contained, solid state, brushless DC fans for you to choose from. Through their design, these fans have been engineered to tackle those specialized applications which require highly reliable DC performance. Common uses include mobile radio equipment, medical electronics, shipboard computers, airborne applications, communications systems, automotive applications, marine use and telecommunications; wherever DC voltage is normally available. They are also finding wide acceptance for use in power stand-by modes to prevent memory loss in the event of AC power failure.

These fans are especially efficient and will outperform similar sized fans at normal operating back pressure. Typically, they offer greater air volume (cfm), reduced noise levels and reduced power drain. For example, the power drain at maximum back pressure is approximately 25% of that required in conventional AC units. These fans also achieve a new low in magnetic radiation and RF noise, thereby assuring the pure signals necessary for critical airborne or shipboard use.

These fans work well at all rated voltages, and are extremely quiet. They can be adjusted for performance and noise level by altering the voltage within the voltage range for your particular application. They feature a brushless motor with all electronics mounted on a PC card within the motor frame. Drive amplifiers for the motor are controlled by a patented Hall-effect generator circuit which is coupled by small pole pieces to the motor's field magnet (Patent No. 3-873-897). Available voltages include 5 VDC nominal, 12 VDC nominal, 24 VDC nominal and 48 VDC nominal.

The brushless DC motor is polarity protected* to avoid accidental damage and costly down time. If the input polarity is accidentally reversed, integral diodes block all circuits and the motor simply stops. Even in a locked rotor condition,* the motor goes into a neutral state to avoid damage. Precision bearings and lubricants help to achieve a life expectancy of 35,000 hours (sleeve bearing) and 60,000 hours (ball bearing) at maximum permissible ambient temperature. Note: If the ambient temperature in which the fan operates is at 20° C below the above levels the life expectancy increases by 10,000 hours.

*Except for 5 Volt models.

These fans do not require an external voltage inverter. This means that you save valuable mounting space and weight because the only consideration in mounting is the fan itself. This new concept has eliminated many of the inherent reliability and RF noise problems generally associated with using AC motors in a DC environment.

DC Fans Quick Selection Guide

Model	Voltage Range	Airflow Range	Nominal Input Power (zero static pressure)	Frame Size
	VDC	cfm	Watts	inches
812	6-15	11-29	3.0	2-1/2 sq. x 1 D
814	12-30	11-29	3.0	
3124F	18-30	33-57	2.5	3-5/8 sq. x 1 D
4105GX	4.5-5.5	82-100	4.0	4-11/16 sq. x 1-1/2 D
4112X	9.5-14	82-122	4.0	
4112GX	8-16	60-120	4.3	
4112KX	8-14.5	75-125	6.0	
4124X	19-28	82-122	4.1	
4124GX	18-30	70-120	4.3	
4124KX	18-29	90-125	6.0	
4124F	18-30	80-120	6.0	4-11/16 sq. x 1 D
4148X	38-56	82-122	4.1	4-11/16 sq. x 1-1/2 D
6124	16-32	150-250	11.0	6-3/4 dia. x 2-3/16 D
6148	32-60	150-250	10.5	
8105G	4.5-5.5	31-40	2.5	3-1/8 sq. x 1-1/2 D
8112	9.5-14	28-41	2.9	
8112G	8-16	21-49	2.6	
8112K	8-16	20-48	3.0	
8124	19-28	28-41	3.0	
8124G	18-30	26-44	2.6	
8124K	18-30	27-44	3.0	
8148	38-56	30-41	3.1	
RL90-18/24	19-28	19-31	5.2	4-3/4 sq. x 1-1/2 D

Fans & Blowers

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PAMOTOR AC FANS

Field proven, quality products you can rely upon for all of your cooling requirements.

PAMOTOR offers a wide variety of fans for your selection. Each model combines the features of extended life with high airflow delivery at low noise levels.

Lightweight all-metal construction is typical of PAMOTOR AC fans. This all-metal construction eliminates breakage and warping often found in conventional plastic fans. This all-metal feature also permits the entire fan to function as a natural heat sink, assuring cooler operation by effectively transferring heat from the rotor into the air stream via the impeller blades. Potential injurious heat is also transferred from the stator to the die-cast venturi by way of the metal struts. Life expectancy: (1) AC fans with sleeve bearings - 20,000 hours at maximum permissible ambient temperatures. (2) AC fans with ball bearings - 20,000 hours at 72° C or at the maximum permissible temperature if this is less than 72° C. Note: If the ambient temperature in which the fan operates is at 20° C below the above levels the life expectancy increases by 10,000 hours.

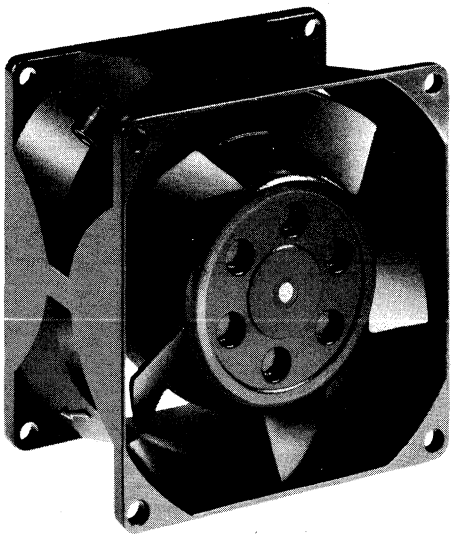
The PAMOTOR exclusive bearing lubrication system incorporates hand-fitted broached sintered iron sleeve bearings on most fans, with precision high-temperature ball bearing versions also available. The dual sleeve bearings are separated by a large oil felt reservoir, which provides continuous fault free circulation of a special lubricant to the shaft and bearing surface.

An efficient, powerful inside-out motor, housed entirely within the impeller hub to conserve axial depth, has higher torque capabilities and a lower internal heat rise than the contemporary fixed shaft designs.

The impeller blades are computer designed and impulse welded to the precision hub and dynamically balanced to within .0001 inches in each end plane to minimize acoustical and mechanical vibrations.

PAMOTOR also offers a super premium grade fan; (5 year warranty).

Perhaps the two most important fields of application for premium grade fans are: (1) in limited-production deluxe equipment, in professional-grade instrumentation, in few-of-a-kind, custom-designed and permanently-installed systems requiring optimum performance and absolute dependability for many years; and (2) as field replacements for retrofit units for original-equipment fans that have proven to be unreliable, are too noisy, or do not produce sufficient cooling airflow.



PAMOTOR fans are Underwriters' Laboratories, Inc. recognized and have their Yellow Card Component Recognition Number E41168. Many are CSA certified and VDE approved.

AC Fans Quick Selection Guide

Model	Operating Voltage VAC	Frequency Hz	Airflow cfm	Frame Size inches
Shaded Pole Fans				
2500S	115	50/60	115	4-1/2 sq. x 2 D
2550S	230	50/60	115	
4600X	115	50/60	120	4-11/16 sq. x 1-1/2 D
4600XP	115	50/60	120	
4606X*	115	50/60	120	
4650X	230	50/60	120	
4656X*	230	50/60	120	
4800X	115	50/60	70	
4850X	230	50/60	70	
7600S	115	50/60	240	6 dia. x 2-3/16 D
7606*	115	50/60	240	
7650S	230	50/60	240	
7656*	230	50/60	240	
8500D	115	50/60	40	3-1/8 sq. x 1-1/2 D
8500DP	115	50/60	40	
8506D*	115	50/60	40	
8550D	230	50/60	40	
8556D*	230	50/60	40	
8800D	115	50/60	27	
8850D	230	50/60	27	
Induction Type Fans				
900†	24-42	50/60	20-27	3-1/8 dia. x 1-1/2 D
950†	24	50/60	40	3 dia. x 1-1/2 D
6008S*	115	50/60	250	6-3/4 dia. x 2 D
6058S*	230	50/60	250	6-3/4 dia. x 2 D
Radial Blower				
RL90-18/00	115	50/60	25	4-3/4 sq. x 1-1/2 D

*High temperature ball bearing models.
†Models 900 & 950 require an additional capacitor.

Fans & Blowers

MULTIFAN

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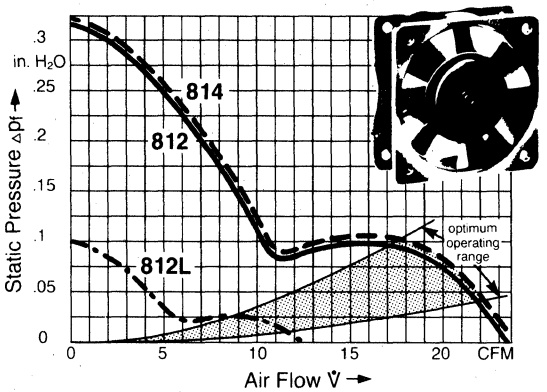
- Latest State Of The Art
- DC Fans with outstanding performance/ price relationship
- Low noise
- May be operated within a range of 50% to 125% of the Rated Power Voltage
- Fiberglass-reinforced housing
- Brushless electronically commutated motor
- Long operating life without maintenance
- Available in four series

Multifan Quick Selection Guide

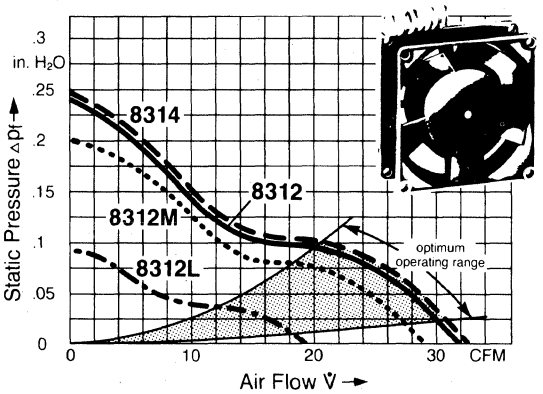
Model	Voltage Range	Airflow Range	Nominal Input Power (zero static pressure)	Frame Size
	VDC	CFM	Watts	inches
812L	6-15	6-16	.66	2-7/16 sq. x 1 D
812	6-15	6-29	3	2-7/16 sq. x 1 D
814	12-30	6-29	3	2-7/16 sq. x 1 D
8312L	6-15	6-24	1	3-1/8 sq. x 1-1/4 D
8312M	6-15	6-34	1.8	3-1/8 sq. x 1-1/4 D
8312	6-15	6-38	2.2	3-1/8 sq. x 1-1/4 D
8314	12-28	6-36	2.2	3-1/8 sq. x 1-1/4 D

Model	Voltage Range	Airflow Range	Nominal Input Power (zero static pressure)	Frame Size
	VDC	CFM	Watts	inches
3312L	6-15	6-40	1.4	3-5/8 sq. x 1-1/4 D
3312	6-15	6-58	2.4	3-5/8 sq. x 1-1/4 D
3314	12-28	6-54	2.4	3-5/8 sq. x 1-1/4 D
4312L	6-15	6-70	1.2	4-11/16 sq. x 1-1/4 D
4312M	6-15	6-100	2.6	4-11/16 sq. x 1-1/4 D
4312	6-15	6-120	5	4-11/16 sq. x 1-1/4 D
4314	12-28	6-110	5	4-11/16 sq. x 1-1/4 D

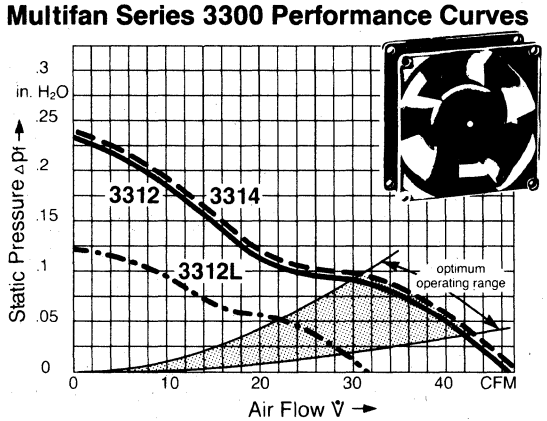
Multifan Series 800 Performance Curves



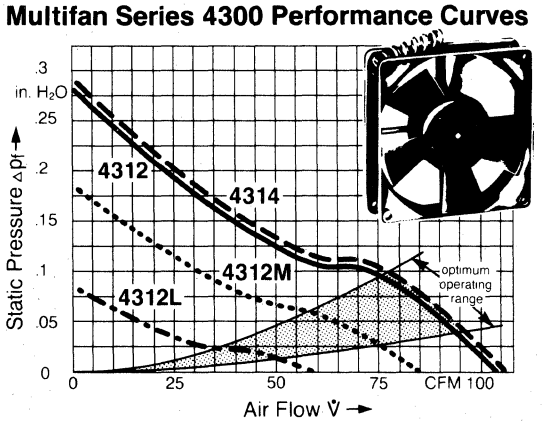
Multifan Series 8300 Performance Curves

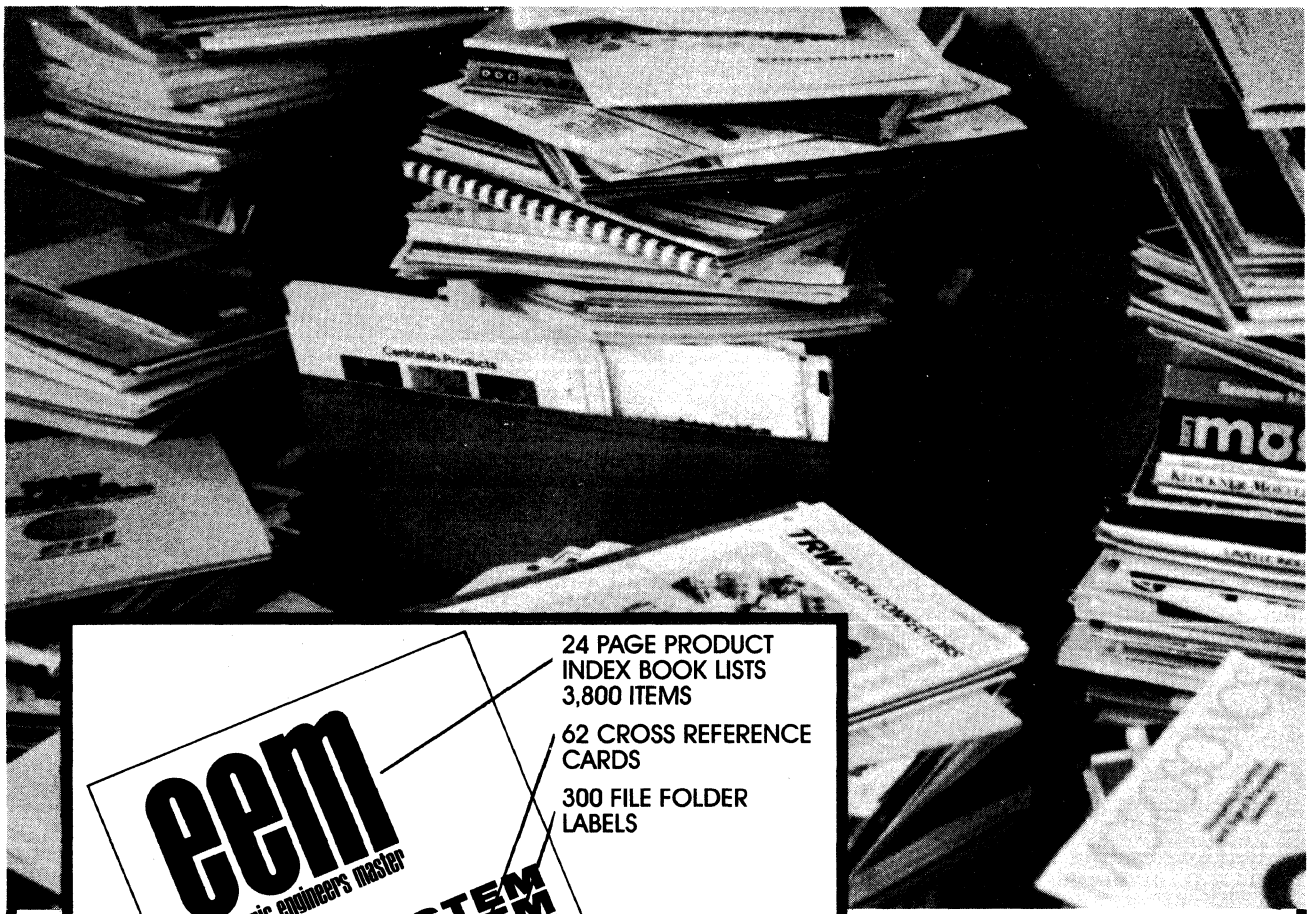


Multifan Series 3300 Performance Curves



Multifan Series 4300 Performance Curves





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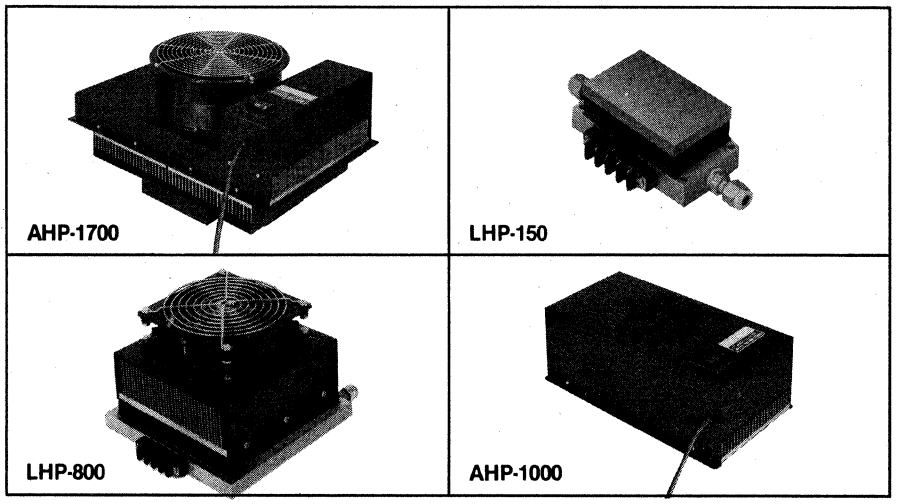
AIR CONDITIONERS

Temperature Control...

Solid State Cooling & Heating From One Product.

Thermoelectric Air Conditioners are a solid state method of refrigeration, which eliminates the need for a compressor, refrigerant fluids or piping. The only moving parts are highly reliable fans used to dissipate output heat to the ambient air. These air conditioners can be applied in computers, machine tool controls, instrumentation & electronics for hostile environment protection. They offer design flexibility in a wide range of industrial and consumer applications where compactness and reliability are key.



Features:

- *No load cooling to −5°F (−20°C) at room temperature*
- *Lightweight, compact designs*
- *No compressor, no fluids, no coils*
- *Closed system protection from dust, chips, & moisture*
- *No moving parts except fans, means high reliability*
- *Low vibration, noise & maintenance*
- *Metal finishes resist corrosion*
- *Operates in any orientation - horizontal, vertical, etc.*
- *All models available from stock*

Other Products:

- Liquid cooled air conditioners rated to 1500 BTU/HR
- Thermoelectric cooling modules
- Temperature controllers
- Standard DC power supplies

Products

AIR CONDITIONERS (AIR COOLED)

AHP-150CP, with Cold Plate
Rating: 110 BTU/hr.
Overall Dimensions: 5.0W x 7.0L x 4.25T

AHP-300CP, with Cold Plate
Rating: 240 BTU/hr.
Overall Dimensions: 6.9W x 10.0L x 4.5T

AHP-300FF, with Cold Side Fin and Fan
Rating: 240 BTU/hr.
Overall Dimensions: 6.9W x 10.0L x 7.5T

AHP-800CP, with Cold Plate
Rating: 500 BTU/hr.
Overall Dimensions: 8.86W x 15.0L x 5.1T

AHP-800FF, with Cold Side Fin and Fan
Rating: 500 BTU/hr.
Overall Dimensions: 8.86W x 15.0L x 8.1T

AHP-1000CP, with Cold Plate
Rating: 560 BTU/hr.
Overall Dimensions: 8.45W x 15.0L x 6.2T

AHP-1000FF, with Cold Side Fin and Fan
Rating: 560 BTU/hr.
Overall Dimensions: 8.45W x 15.0L x 9.1T

AHP-1700FF, with Cold Side Fin and Fan
Rating: 1100 BTU/hr.
Overall Dimensions: 12.25W x 19.0L x 10.4T

AIR CONDITIONERS (LIQUID COOLED)

LHP-150CP, with Cold Plate
Rating: 135 BTU/hr.
Overall Dimensions: 2.56W x 5.74L x 1.65T

LHP-300CP, with Cold Plate
Rating: 305 BTU/hr.
Overall Dimensions: 4.0W x 5.43L x 1.65T

AIR CONDITIONERS (LIQUID COOLED) *(Continued)*

LHP-300FF, with Cold Sink and Fan
Rating: 305 BTU/hr.
Overall Dimensions: 4.0W x 5.43L x 4.5T

LHP-800CP, with Cold Plate
Rating: 740 BTU/hr.
Overall Dimensions: 6.62W x 8.06L x 1.75T

LHP-800FF, with Cold Sink and Fan
Rating: 740 BTU/hr.
Overall Dimensions: 6.62W x 8.06L x 5.5T

LHP-1700FF, with Cold Side Fin and Fan
Rating: 1500 BTU/hr.
Overall Dimensions: 8.75W x 19.0L x 8.19T

LHP-1700CP, with Cold Plate
Rating: 1500 BTU/hr.
Overall Dimensions: 8.75W x 19.0L x 4.8T

TEMPERATURE CONTROLLERS

TC-2A Cooling only; One set point. Adjustable range 25°F to 125°F ±5°F control. Factory installed, with remote I.C. sensor.

TC-3A Cooling & Heating; Two set points. Adjustable range 25°F to 125°F ±5°F control. Factory installed, with remote I.C. sensor.

TC-4500 Cooling and/or Heating; Two set points. Adjustable range 0°F to 150°F ±2°F control. With digital display, programmable, with remote thermocouple sensor.
Overall Dimensions: 7.0W x 9.0L x 3.50T

the experts in solid state cooling.

(312) 666-1600

teca™

ThermoElectric Cooling America Corporation
448 North Halsted Street • Chicago, Illinois 60622 • 312/666-1600

AS EASY AS 1,2,3...

AIR CONDITIONERS

Specified To Your Applications

It's as easy as 1,2,3. Just a telephone call, and you're in direct contact with one of our application engineers who can answer and solve your enclosure cooling requirements.

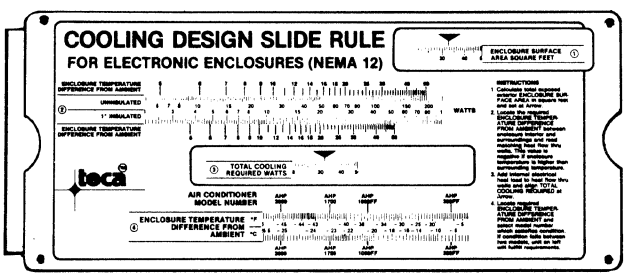
1



Just provide the necessary information below, and we will determine the correct air conditioner.

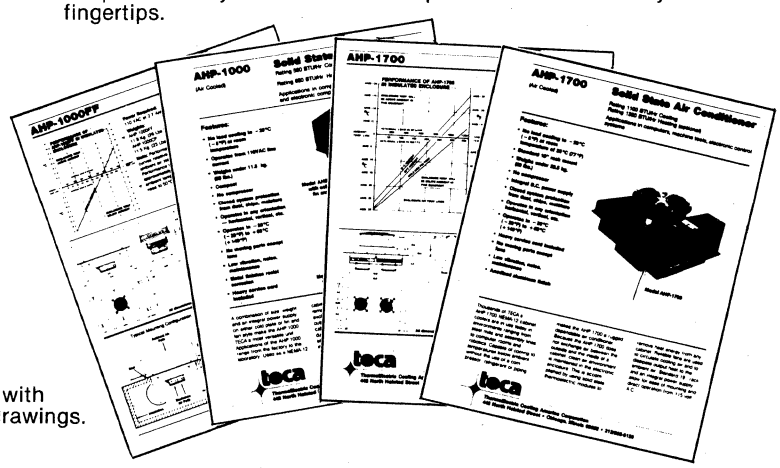
- **Total exposed exterior enclosure surface area of cabinet.**
- **Electrical heat load inside the cabinet.**
- **The outside ambient temperature and desired inside temperature (maximum and minimum).**

2



An additional aid that TECA provides to assist in choosing the correct air conditioner is their Cooling Design Slide Rule. A unique and easy to slide chart that places the answers at your fingertips.

3



Specification sheets with charts and detailed drawings.

No matter what the enclosure conditions are, our application engineers will match your specifications to the TECA air conditioners that will satisfy the cooling requirements.

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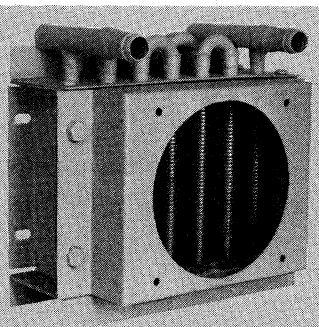
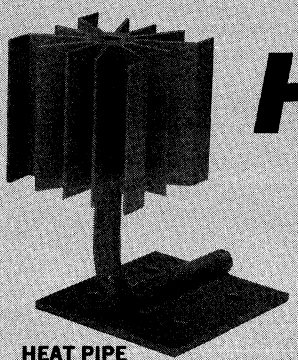


HEAT EXCHANGER

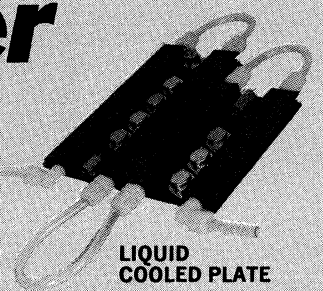
ELECTRONIC CABINET COOLERS



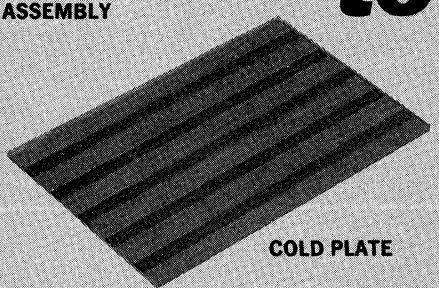
Put the Heat Transfer Specialists to work for you.



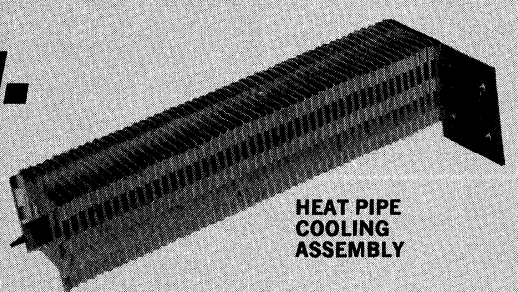
HEAT PIPE ASSEMBLY



LIQUID COOLED PLATE



COLD PLATE



HEAT PIPE COOLING ASSEMBLY

HEAT EXCHANGERS

Thermacore's standard liquid to air heat exchangers have heat rejection capabilities from 1.5 to 15 kilowatts. All six standard models are available for immediate delivery. Custom exchangers for special requirements are available at competitive prices.

LIQUID COOLED PLATES

Available in lengths up to 6 ft., the 6" plate has a thermal resistance of 0.08°c/watts and a pressure drop of less than 0.5 psi. Water passages are an integral part of the plate's extrusion, thereby eliminating the interface resistance that decreases heat transfer. Tongue and grooved sides permit easy assembly of several plates.

ELECTRONIC CABINET COOLERS

These air coolers provide indirect cooling of high voltage or dirt-sensitive electronic circuitry using air-to-air heat exchangers. Available with cooling capacities of 100 to 1,000 watts, all models can be mounted in any position.

COLD PLATES

Thermacore's high performance heat pipe Cold Plates are recommended for use with high power electronic packages requiring minimum component temperature rise. Standard sizes are available in power levels up to 200 watts. With a thickness of 0.125", the HA-4 is designed for cooling single sided printed circuit cards. It can operate in any orientation with respect to gravity.

HEAT PIPES

Thermacore's Heat Pipes have been proven effective whether used for heat dissipation or temperature uniformity. They are available in lengths up to 50' and in diameters of ⅛" and larger. They can be ordered round, flat or in a bent configuration and in a variety of materials, thermal power and operating temperatures.

CUSTOM DESIGNING

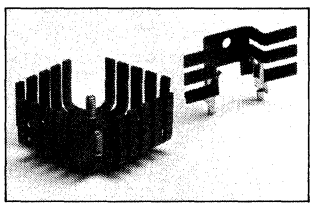
Designing heat pipes since 1963, Thermacore's Engineers are recognized experts in the Heat Transfer Industry. Their expertise, coupled with Thermacore's specialized manufacturing equipment, assures that the custom designing of prototypes or OEM production runs will be provided both on time and at a competitive cost. Phone Thermacore to put the Heat Transfer Specialists to work on your project.

THERMACORE, INC.

780 Eden Rd. Lancaster, PA 17601
PH: 717-569-6551

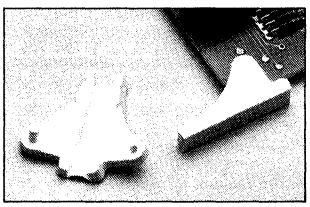
Thermalloy Inc.

The Innovator in semiconductor accessories.



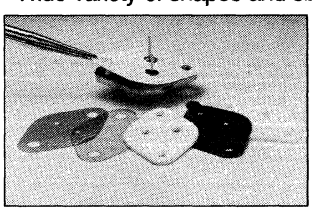
Heat Sinks

- Labor saving.
- Wave solderable using solderable studs, solderable nuts or solderable mounting tabs.
- Vertical and horizontal mount.
- Wide variety of shapes and sizes.



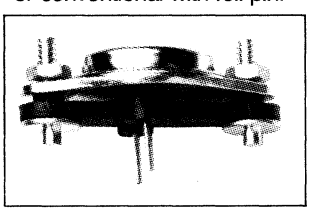
Card Guides, Ejectors and Pullers

- Variety of sizes and shapes.
- A choice of labor saving press-fit card guides or hardware mounted for secure mounting.
- Ejectors and pullers available in one piece snap-on or conventional with roll pin.



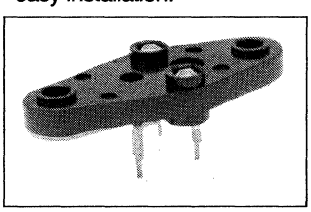
Insulators

- Mica
- Thermalfilm™ (polyimide plastic film)
- Thermalsil™ (silicone rubber)
- Hard Anodized Aluminum
- Aluminum Oxide
- Beryllium Oxide
- Insul-Cote™ — packaged, pre-coated insulators for easy installation.



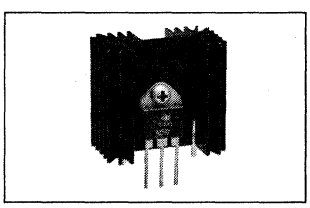
Solderable Transistor Mounts

- Cuts assembly steps by 50%.
- Eliminates hand soldering.
- Tin plated posts offer excellent solderability for mechanical and electrical integrity.
- All work is done from one side of board.
- Reduces hardware requirements.
- Elevates device for cleaning.



Power Sockets

- Tin plated.
- For TO-3 case styles.
- Inexpensive laminated power sockets also available.
- Metric and English mounting plate threads.
- Available with complete mounting kits.



Extruded Heat Sinks

- Over 250 standard, tooled shapes immediately available.
- Custom design — call on our engineers for your custom design needs.

Offering the widest variety of semiconductor accessories in the industry. For a free catalog, contact your nearest Thermalloy representative or distributor.

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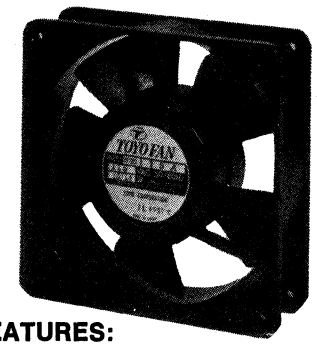
U.S. TOYO FAN CORPORATION

4915 Walnut Grove Avenue
San Gabriel, California 91776
(818) 287-5297
TWX (910) 589-1540

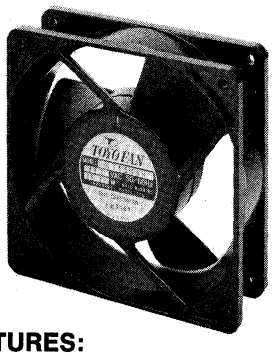
TF120 Series



FEATURES:

- 4.70″ sq. x 1.50″ deep (119.5mm x 38mm)
- 109 to 76 CFM free air delivery
- Choice of three speeds for various applications
- Noise rating as low as 38 dB(A) at 1.5m
- Precision ball bearings for long life — sleeve bearings for economy
- Rugged die cast aluminum frame
- Choice of 115VAC or 230VAC
- Choice of terminals or wire leads
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371
- Also available in dual voltage fan Model TF120345 Series

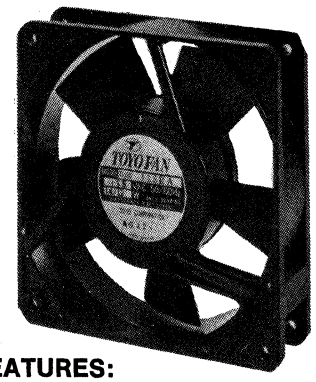
QUIET FAN
TF120U Series



FEATURES:

- Designed for low noise level applications
- Precision ball bearings for long life — sleeve bearings for economy
- Durable die cast aluminum frame
- Choice of 115VAC or 230VAC
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

THE THIN FAN
TF120R Series

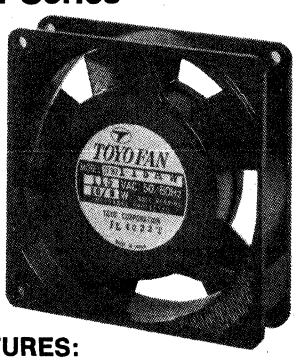


FEATURES:

- Less than 1 inch deep
- 4.70″ x .98″ deep (119.5mm x 25mm)
- 92 to 76 CFM free air delivery
- Choice of two speeds for various applications
- Noise rating as low as 34 dB(A) at 1.5m
- Precision ball bearings provide long service life
- Rugged die cast aluminum frame.
- Choice of 115VAC or 230VAC
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

***NEW* DC BRUSHLESS TFDD120RA Series**

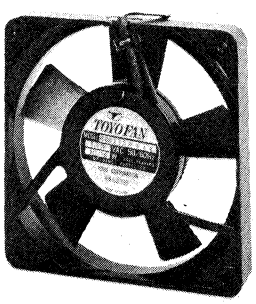
TF92 Series



FEATURES:

- Less than 1 inch deep
- 3.62″ sq. x .98″ deep (92mm x 25mm)
- 34 to 27 CFM free air delivery
- Choice of three speeds for various applications
- Noise rating as low as 32 dB(A) at 1.5m
- Precision ball bearings for long life — sleeve bearings for economy
- Rugged die cast aluminum frame
- Choice of 115VAC or 230VAC
- Choice of terminals or wire leads
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371
- Also available in dual voltage fan Model TF92345 Series

ULTRA THIN FAN
TF120RX Series



FEATURES:

- The thinnest axial fan available — .787″ (20mm) thick
- High performance
- Low noise level
- Precision ball bearings provide long service life
- Durable die cast aluminum frame
- Choice of 115VAC or 230VAC
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

ULTRA THIN FAN
TF92RX Series



FEATURES:

- The thinnest axial fan available — .787″ (20mm) thick
- High performance
- Low noise level
- Precision ball bearings provide long service life
- Durable die cast aluminum frame
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

U.S. TOYO FAN CORPORATION

4915 Walnut Grove Avenue
San Gabriel, California 91776
(818) 287-5297
TWX (910) 589-1540

TF80 Series



FEATURES:

- Low profile design — 3.15″ sq. x 1.50″ (80mm x 38mm)
- High performance airflow
- Low noise level
- Precision ball bearings for long life — sleeve bearings for economy
- Rugged die cast aluminum frame
- Choice of 115VAC or 230VAC
- Choice of terminals or lead wires
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371
- Also available in dual voltage fan Model TF80345 Series

***NEW* DC BRUSHLESS TFDD80BA Series 1.26″ thick**

SMALL-THIN FAN
TF80R Series



FEATURES:

- Low profile design — 3 1/8″ square
- Less than 1 inch thick — .984″ (25mm)
- Precision ball bearings for long life — sleeve bearings for economy
- Durable die cast aluminum frame
- Choice of 115VAC or 230VAC
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

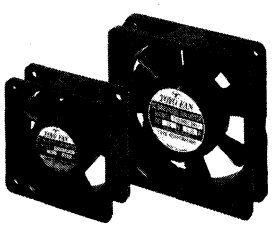
SMALL-ULTRA THIN FAN
TF80RX Series



FEATURES:

- The thinnest axial fan available — .787″ (20mm thick)
- Low profile design — 3 1/8″ square
- High performance
- Low noise level
- Precision ball bearings provide long service life
- Durable die cast aluminum frame
- Choice of 115VAC or 230VAC
- Impedance protected
- U.L. recognized — File No. E75082
- CSA certified — File No. LR48371

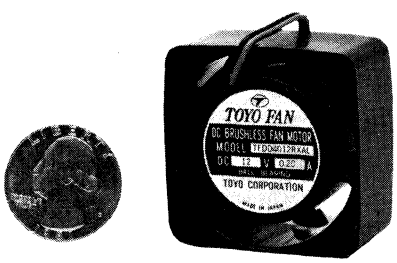
DC BRUSHLESS
TFDD60RX TFDD80RX & TFDD92RX Series



FEATURES:

- Minimum EMI/RFI emission
- High efficiency solid state design
- High performance airflow
- Precision ball bearings provide long service life
- 2.36″ square x .90″ thick—TFDD60RX
- 3.15″ square x .90″ thick—TFDD80RX
- 3.62″ square x .90″ thick—TFDD92RX
- Low acoustical noise
- Available in 12 and 24 Volts
- Polarity protected
- Impedance protected

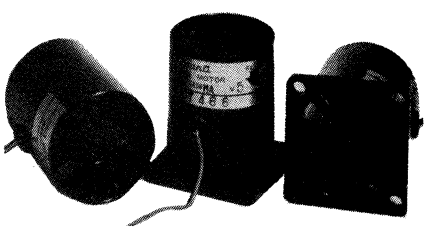
DC BRUSHLESS
TFDD40RX Series



FEATURES:

- Provides cooling in extremely confined areas
- Compact miniature size — 1.57″ square x .79″ thick
- Minimum EMI/RFI emission
- High efficiency solid state design
- Precision ball bearings provide long service life
- Low acoustical noise
- Available in 12 and 24 Volts
- Polarity protected
- Impedance protected

DC MICRO FAN
SMF1836 Series



FEATURES:

- Provides cooling in extremely confined areas
- Compact-miniature size — 1.42″ diameter x 1.77″ long
- High performance
- Choice of 5, 10, 12, and 24VDC
- Choice of optional mounting flanges

WARRANTY — All U.S. Toyo fans are warranted to be free of defects in materials and workmanship for a period of one year from date of delivery.

AIRFLOW PERFORMANCE DATA — Performance data obtained with test chamber and methods in accordance with AMCA Standard 210-74.

ACOUSTICAL NOISE DATA — Acoustical measurements made at distances of 1.0 and 1.5 meters from fan intake. All measurements made on dB (A) scale. Fans operating at 60Hz line frequency.

OPERATING TEMPERATURE — Recommended ambient operating temperature is −30°C to +70°C.

IMPEDANCE PROTECTION — All fans are designed and manufactured to prevent "burn-out" failure caused by restriction of rotating parts.

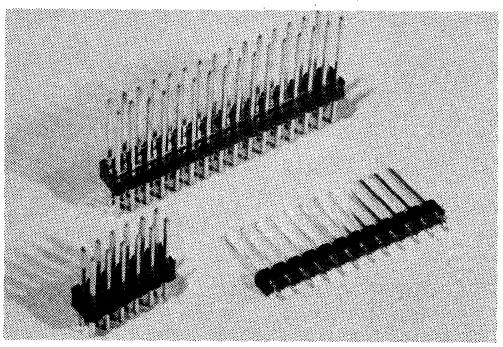
LIFE EXPECTANCY — Life test data available on request.

SAFETY — All fans are designed and manufactured to meet UL and CSA standards. Approved fans are listed as follows: UL File No. E75082 and CSA File No. 48371M2.

Bead Electronics

100 Mountain Grove St. • P.O. Box K • Bridgeport, CT 06605 • Tel. (203) 334-4124

STANDARD STRIP HEADERS

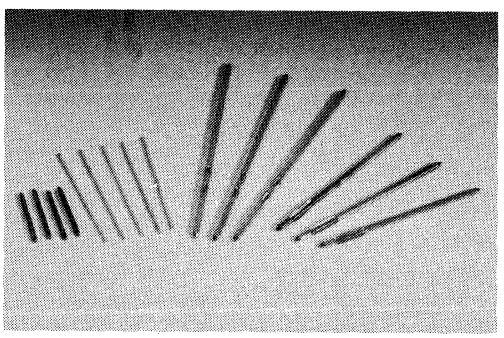


Low cost straight thru standard headers are available in single and double-row configurations. These quality headers feature Bead's unique convex, conical tip to reduce insertion force and wear to preplated PCB holes. Pins are available in a variety of sizes and lengths and are burr-free.

FEATURES

- High reliability
- Low cost
- Low mating forces
- Variety of pin lengths
- Burr-free
- Variety of plating options

MICROMINIATURE PINS

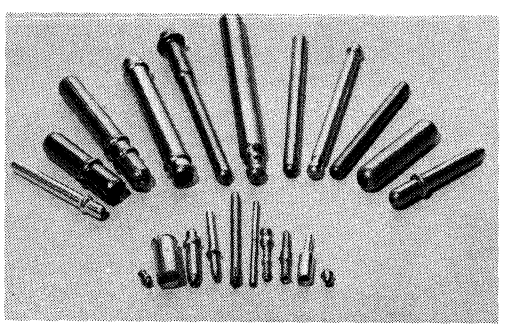


Bead introduces a new line of round and square wire contact pins for use on high density headers and interconnect systems. The .016″, .018″ and .020″ round wire contacts are ideal for application having center spacing less than 0.100″. The 0.012″ square wire contact pins have been approved for use with wire wrapping equipment using 34 gauge wire. All pins feature parabolically revolved ends produced by Bead's swaging process resulting in lower pin insertion forces, reduced intra contact abrasion and wear providing the ultimate in product reliability.

FEATURES

- Low Cost
- Burr-Free
- Conical Ends
- Low Insertion Force
- High interconnect reliability
- Variable Pin Length
- .050 pin spacing

TUBULAR PINS

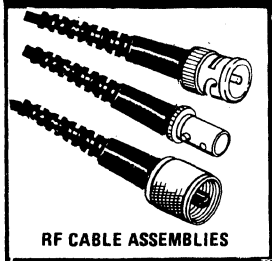


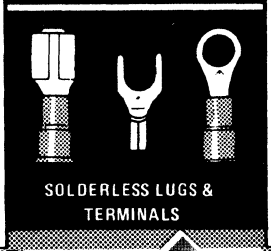
Bead's multi-swaged pins are widely used as electrical and electronic contacts and as hinge pins, fasteners and spacers. The method allows both round and non-round cross-sections of varying sizes to be incorporated into the same part, and is used to manufacture both hollow and solid pins. The process is fast, accurate and produces parts of high finish quality.

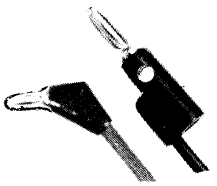
FEATURES

- Low cost
- High accuracy
- Shape flexibility
- High quality finish
- Variety of materials
- Mating parts
- Spherical or tapered ends

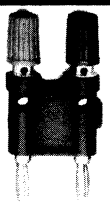
THE WORLD'S GREATEST COLLECTION


RF CABLE ASSEMBLIES


SOLDERLESS LUGS & TERMINALS


JUMPERS & PATCH CORDS

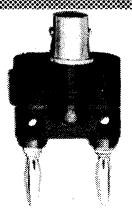

RF CONNECTORS

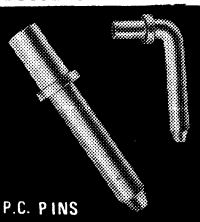

BINDING POST TO DOUBLE BANANA PLUG

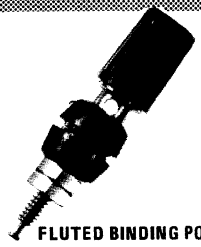

KNOBS


TEST POINT JACKS


PANEL JACKS

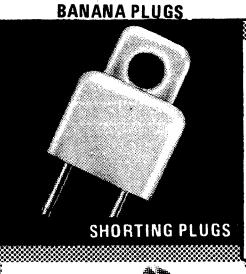

BNC FEMALE TO BANANA PLUGS


P.C. PINS

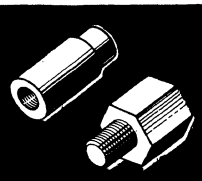

FLUTED BINDING POSTS

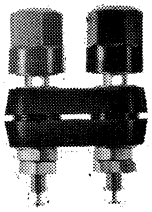

BREAKOUTS BNC AND ALLIGATOR CLIP

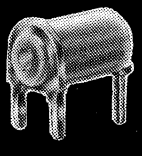
TEST ACCESSORIES


SHORTING PLUGS

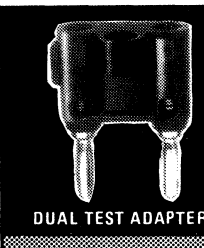

OSCILLOSCOPE PROBES

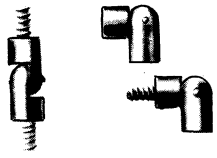

SPACERS & STANDOFFS


DUAL BINDING POSTS


90° NYLON P.C. JACK


MIL-C-39024 JACKS

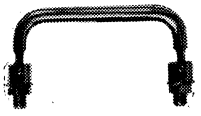

DUAL TEST ADAPTERS


HINGED STANDOFFS


TEFLON* PANEL JACKS


SAFETY HOOK TEST CLIPS


SAFETY TEST PROBE TO SHROUDED BANANA PLUG


HANDLES

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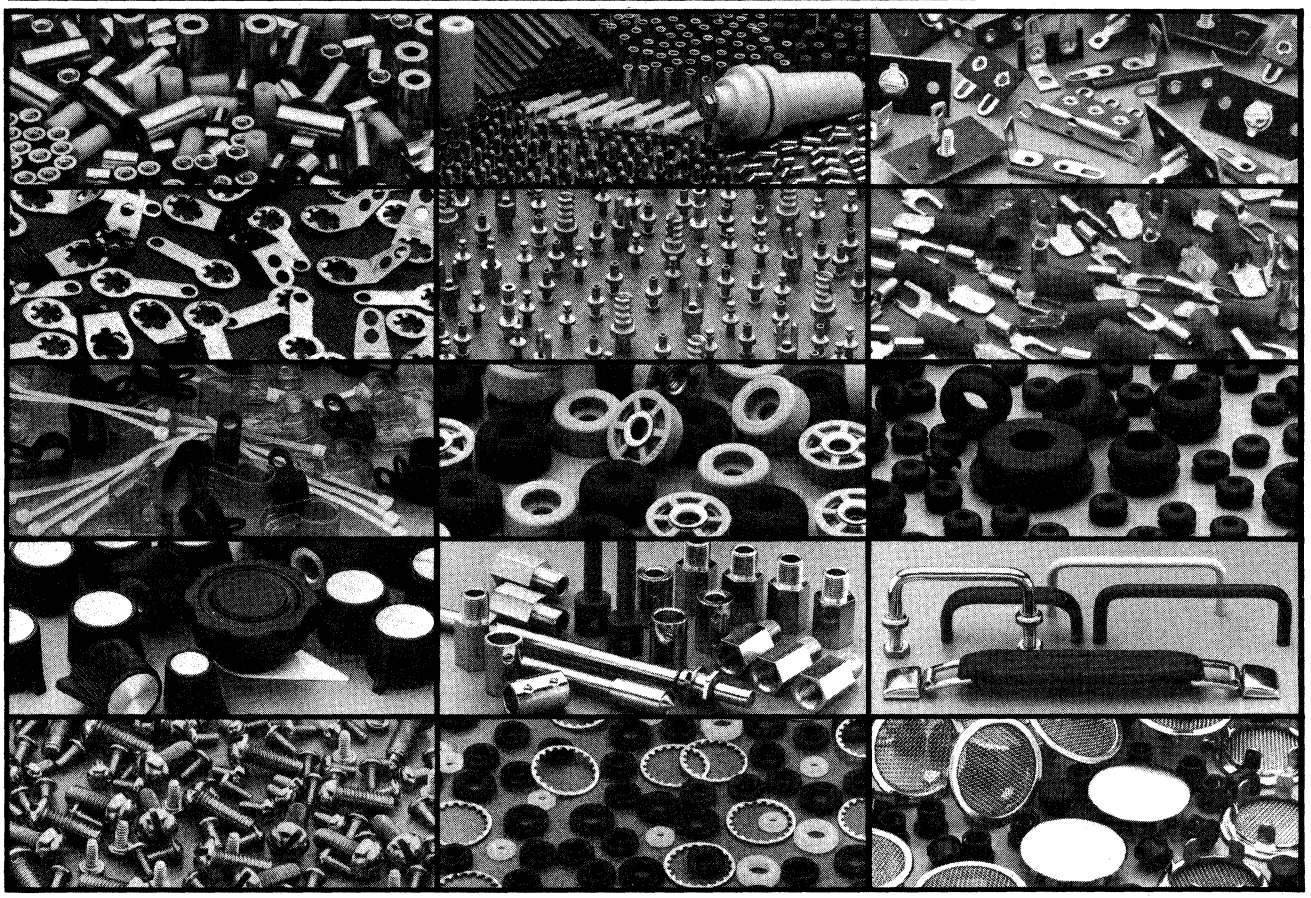

HHSmith Electronic Hardware.

1. Spacers
Material: Brass, Aluminum, Phenolic, Ceramic, Stainless Steel, Nylon.
#2 to #10 Clearance Hole.
Lengths: 1/8" to 4" Standard.
OD: 1/8" to 3/8"
Available in Straight or Bent Style.

2. Solder Lugs
Material: Brass
Available in Brass or Bent Style.

3. Cable Ties/Clamps
Material: 6/6 Nylon, PVC, Propinate, Polypropylene, Steel.
Tie Lengths: 3" to 15"
Clamp Diameter: 1/8" to 1"

4. Knobs
Commercial or Military Style.
Round, Concentric, Skirted, Pointer, Bar Configurations.
Material: Phenolic, ABS, and Polycarbonate.
Inserts: Aluminum

5. Screws
Round, Binding Head, Captive, Flat, Oval.
Material: Steel, Brass, Nylon.

6. Standoff
Material: Brass, Aluminum, Phenolic, Ceramic, Stainless Steel, Nylon.
#2 to #10 Thread Sizes
Length: 1/8" to 4" Standard.
OD: 1/8" to 3/8"
Male/Female, Male/Male, Swivel Styles are Std.

7. Turret Terminals
Commercial or Military.
Swage Style
Board Thickness: 1/64" to 1/4"
Material: Brass/Electro-Solder Plate

8. Bumpers
Colors: Grey, Black, Brown, Clear.
Mechanical or Adhesive Style.
Material: Rubber or Vinyl.

9. Shaft Accessories
Couplers, Extenders, Locks.
Material: Brass or Phenolic.

10. Washers
Flat, Countersunk, Ext. Tooth, Int. Tooth, Shoulder, Flanged
Material: Nylon, Fiber, Steel, Brass.

11. Terminal Strips
Material: XXXP Phenolic
Flame retardant.
Positions: 2 to 13
Solder or Screw Type Available.

12. Crimp Terminals
Ring, Fork, Slide-on, Butt Style Available.
Wire Range: #10 to #26.
Insulated or Non-Insulated.

13. Grommets
Material: Rubber—60 Durometer and Vinyl—PVC.
Chassis Thickness: 1/16" to 9/64".
Color: Black or Grey.

14. Handles
Options: Internal or Threaded Stud.
Folding or Adjustable.
Round and Oval Style.
Material: Brass or Aluminum.
Plating: Black Zinc, Chrome, Satin Finish.

15. Hole Plugs
Material: Steel and Nylon—
Fits Hole Diameter 1/4" to 1½".

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PERMA POWER® Sockets Plus T.M. MULTIPLE OUTLET STRIPS

Safe and convenient power distribution for

auxiliary work stations
assembly line
maintenance and repair
machine shop
test station
drafting bench
quality control center
exhibit booths

Convenient. Perma Power Sockets-Plus™ multiple outlet strips are the quickest, most convenient way to provide electric power when and where it's needed, with convenient control and complete safety. Conventional cube taps and extension cords can result in overloaded circuits and chaotic stacking of plugs into existing wall outlets. Sockets-Plus multiple outlet strips provide orderly power distribution, as well as control and safety.

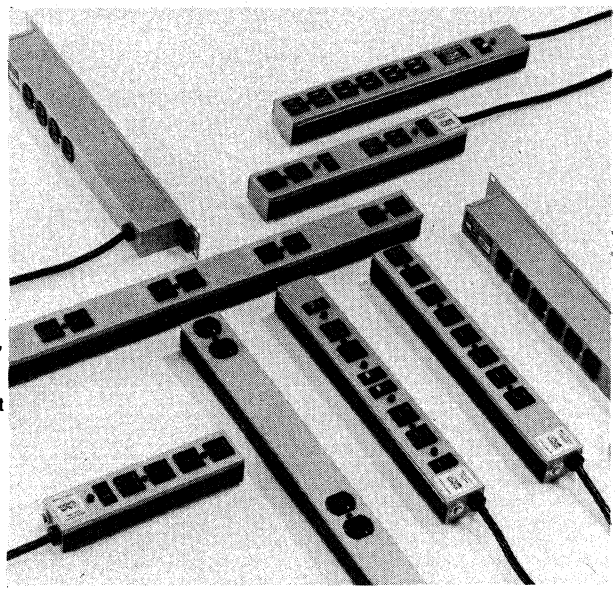
A wide choice of models. Perma Power makes it easy to find the exact strip that's needed. Variables include the number of receptacles, the number of switches and indicator lights, and the length of the cords.

Extra features. On-off switches and indicator lights are extra features that put the user in complete control of his local power use! See at a glance what's on, what's off. Save steps; easily control power to any machine, computer, or lamp with handy on-off switch options.

Safe. All Sockets-Plus multiple outlet strips come with 3-wire U-ground outlets, and are housed in electrically-grounded steel cases. Because they have built-in circuit breakers, there's no danger of overloading one of the main circuits. If the power drain is too great, they shut off the power *here*, not in a fuse box somewhere down the line. The line is guarded, so users can relax!

Custom designs. Perma Power will provide custom designs, with your choice of colors, finishes, configurations and available features. Just tell us what you need and we'll get back to you promptly with a quote, minimums and delivery schedule.

MULTIPLE OUTLET STRIPS FOR INDUSTRIAL/LABORATORY



GENERAL SPECIFICATIONS
Rugged steel construction, tough silver and black industrial finish—Top is electrostatically painted silver enamel over a zinc phosphate undercoating, resulting in a hard, corrosion-resistant surface. Sides of conventional-length strip models (K case) are zinc chromated and then covered with thick (14 mil) black vinyl panels, providing added protection, plus handsome appearance! Sides of "J" unit long strips are painted black. Rack-mount strips have black or silver front, and silver back.

Easy mounting—All strips are provided with two screws and cross-slots on the bottom for rapid mounting.

Rated 1875 watts at 15 amperes, 125 Volts, 60 Hz continuous duty.

UL LISTED

HIGH ABUSE OUTLET STRIPS WITH HOSPITAL GRADE COMPONENTS

These outlet strips are designed for applications with special safety requirements, or where equipment is exposed to fumes from corrosive chemicals or liquids. Their plugs and receptacles are "Hospital Grade"—verified by Underwriters Laboratories to have passed a series of tortuous tests assuring the user of continuous, safe operation, even in the face of human negligence and corrosive environments.

Plugs and receptacles meet or exceed these "Hospital Grade" UL tests:

Abrupt removal of plug
Ground pin retention
Terminal strength
Assembly security
Face impact
Ground contact
Temperature
Ground contact resistance
Fault current test
Mold stress relief

SPECIFICATIONS FOR PLUGS AND RECEPTACLES
Designated by a green dot—your assurance the components are U.L. Hospital Grade
UL Hospital Grade Standards #498 and #544
Federal Specification WC 596E (8200, 8210, 8300, 8310)
NEMA Standard WD1
NEMA 5-15R and 5-20R
CSA Certified (8200-8210 series only)
Corrosion-resistant per ASTM B-117-73
UL LISTED

SURGE SUPPRESSOR OUTLET STRIPS

Protect your data and equipment from errors and damage caused by power line voltage surges. These surge protected outlet strips guard against both *normal mode* surges (line to neutral) and *common mode* surges (line to ground and neutral to ground). Each comes with a master on-off switch, indicator light, 15 amp circuit breaker, and 6 ft. power cord.

These Perma Power Surge Suppressors feature a unique failsafe Automatic Shutdown mechanism* to insure that your valuable electronic equipment is always protected. All power is stopped if the surge suppression circuitry wears or burns out. A visual indication of shutdown is provided by the pilot lamp.

There are two model groups: The single-stage models feature filtering provided by three metal oxide varistors. These models provide protection on all three conductors in a typical 120VAC circuit. The Extended Life group features four-element two-stage filtering, provided by a uniquely-engineered combination of metal oxide varistors and silicon avalanche diodes. These models assure you of protection against both powerful surges and repeated surges, and provide lower let-through voltage and longer operating life.

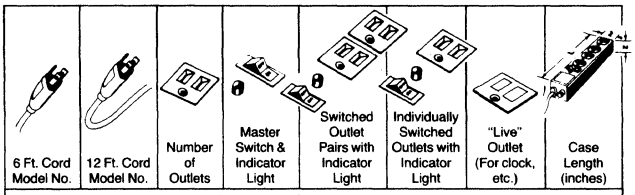
*(Patent No. 4,578,579)

UL LISTED

	Perma Power Surge Suppressors	Extended Life Surge Suppressors
Clamping Threshold (Nominal)	250 Volts	225 Volts
Let-Through Voltage	600 Volts	400 Volts
Response Time	5 nanoseconds	5 picoseconds

Manufactured in U.S.A. by PERMA POWER® Electronics inc. **5601 West Howard Avenue • Chicago, Illinois 60648 • 312/647-9414**

MULTIPLE OUTLET STRIPS



6 Ft. Cord Model No.	12 Ft. Cord Model No.	Number of Outlets	Master Switch & Indicator Light	Switched Outlet Pairs with Indicator Light	Individually Switched Outlets with Indicator Light	"Live" Outlet (For clock, etc.)	Case Length (inches)
INDUSTRIAL MODEL SELECTOR CHART							
K400	K402	4	—	—	—	—	9
K410	K412	4	1	—	—	—	9
K420	K422	4	—	2	—	—	12
K440	K442	4	—	—	4	—	15
K510	K512	5	1	—	—	1	12
K520	K522	5	—	2	—	1	12
K540	K542	5	—	—	4	1	15
K600	K602	6	—	—	—	—	12
K610	K612	6	1	—	—	—	12
K630	K632	6	—	3	—	—	15
K710	K712	7	1	—	—	1	15
K800	K802	8	—	—	—	—	15
K810	K812	8	1	—	—	—	15
2, 4 & 6 FOOT INDUSTRIAL STRIPS							
				Outlet spacing			
J082A011	J082A211	8	1	3 inches between pairs			24
J084A011	J084A211	8	1	9 inches between pairs			48
J164A011	J164A211	16	1	3 inches between pairs			48
J126A011	J126A211	12	1	9 inches between pairs			72
J246A011	J246A211	24	1	3 inches between pairs			72

RACK MOUNT OUTLET STRIPS

SPECIFICATIONS FOR RACK MOUNT UNITS

All models have 6 outlets; all on front, or all on back, or 2 front and 4 back.

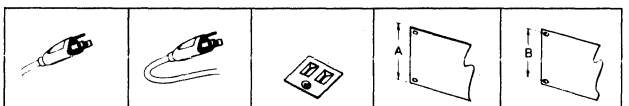
Mount in standard 19″ cabinet racks. Available in standard width (3½″), and compact width for tight spaces (1¾″).

All units have master switch, indicator light, and 15 amp circuit breaker.

Heavy duty, 22 gauge metal construction. Black or silver painted front, silver back. U-ground outlets with electrically-wired ground; phosphor bronze, dual wiping contacts.

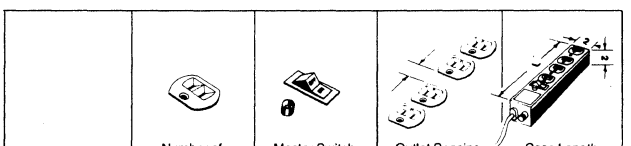
Recognized under the component program of Underwriters Laboratories.

RECOGNIZED

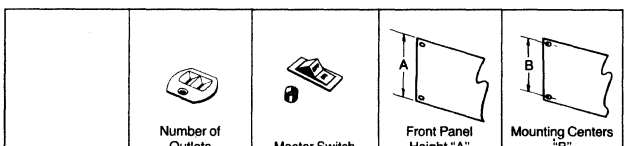


6 ft. cord Model No. Silver	Black	12 ft. cord Model No. Silver	Black	Outlets Front	Back	Front Panel Height 'A'	Mounting Centers 'B'
RACK MOUNT STRIPS							
J06AOS	J06AOB	J06A2S	J06A2B	0	6	3½″	3″
J06BOS	J06BOB	J06B2S	J06B2B	0	6	1¾″	1¼″
J24AOS	J24AOB	J24A2S	J24A2B	2	4	3½″	3″
J24BOS	J24BOB	J24B2S	J24B2B	2	4	1¾″	1¼″
J60AOS	J60AOB	J60A2S	J60A2B	6	0	3½″	3″
J60BOS	J60BOB	J60B2S	J60B2B	6	0	1¾″	1¼″

FOR INDUSTRIAL/SCIENTIFIC/MEDICAL APPLICATIONS

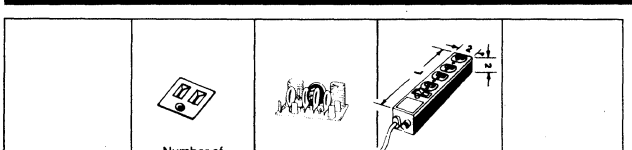


Model No.	Number of Outlets	Master Switch & Indicator Light	Outlet Spacing (Inches)	Case Length (Inches)
HIGH ABUSE STRIPS				
K410H	4	1	—	9
K610H	6	1	—	12
J084A011H	8	1	9	48
J126A011H	12	1	9	72

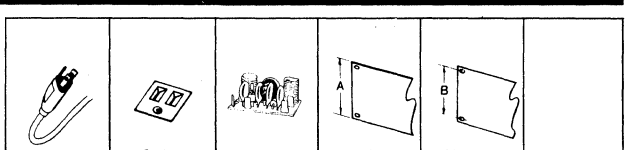


Model No.	Number of Outlets Front	Back	Master Switch & Indicator Light	Front Panel Height "A" (Inches)	Mounting Centers "B" (Inches)
HIGH ABUSE RACK MOUNT STRIPS					
J24AOS	2	4	1	3½	3
J24BOSH	2	4	1	1¾	1¼
J06AOSH	0	6	1	3½	3
J06BOSH	0	6	1	1¾	1¼

SURGE SUPPRESSOR OUTLET STRIPS



Model No.	Number of Outlets	Protection	Case Length	Warranty
PERMA POWER SURGE SUPPRESSORS				
KT410	4	Single Stage	12″	1 yr
KT610	6	Single Stage	15″	1 yr
KS410	4	Extended Life	12″	5 yrs
KS610	6	Extended Life	15″	5 yrs



Model No.	Outlets Front	Back	Protection	Front Panel Height 'A'	Mounting Centers 'B'	Warranty
RACK MOUNT SURGE SUPPRESOR						
JT06B0B	0	6	Single Stage	1¾″	1¼″	1 year
JT06B2B*	0	6	Single Stage	1¾″	1¼″	1 year
JS06B0B	0	6	Extended Life	1¾″	1¼″	5 years
JS06B2B*	0	6	Extended Life	1¾″	1¼″	5 years

*12 ft. power cord

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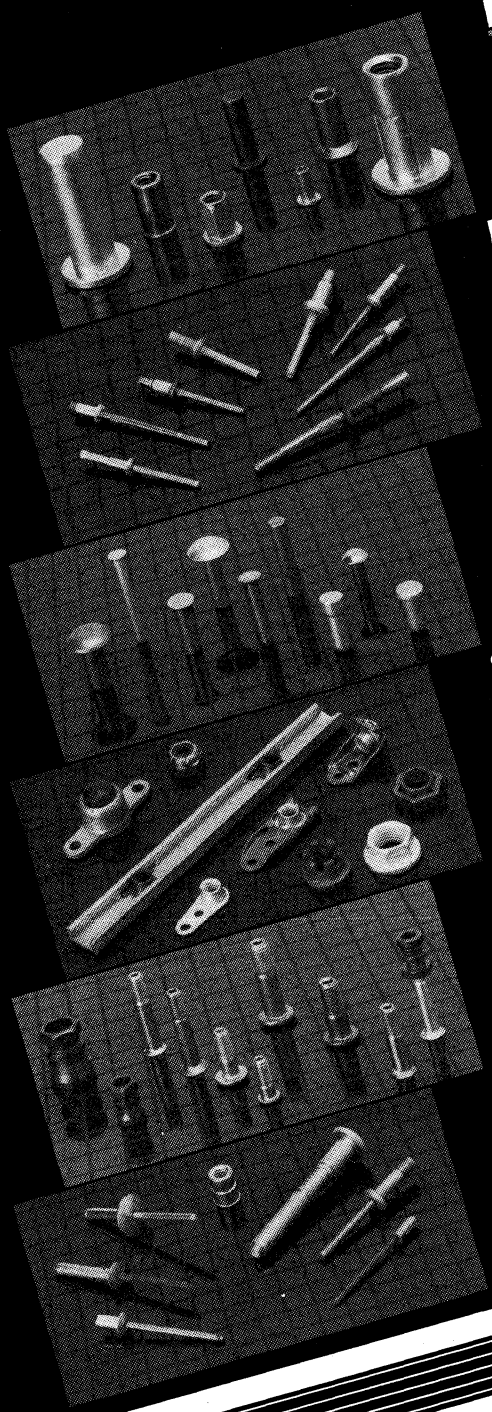

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NAS577, 578, 679 thru 698; NAS1021 thru 1068; NAS1291, 1473, 1474;
NAS1726 thru 1789, 1870

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Standoffs and Spacers

Threaded and Unthreaded

Shapes: Round, Square, Hex
Diameters: 1/8″ through 5/8″
Materials: Brass, Aluminum, Stainless Steel, Cold Rolled Steel, Nylon, Teflon, Linen Base Phenolic, 10% Glass Filled Lexan®

Standoffs—

Male to Female

Shapes: Round, Square, Hex
Diameters: 1/8″ through 1/2″
Materials: Brass, Aluminum, Stainless Steel, Carbon Steel, Nylon

Captive Panel Hardware

Screws and Retainers

Head Configurations: Knurled and Slotted, Knurled and Unslotted, Slotted Hex, Unslotted Hex
Materials: Brass, Aluminum, Stainless Steel, Carbon Steel
Retainers: Standard and Spring-Loaded

Standoffs—

Swage and Rivet Type Threaded & Unthreaded

Shapes: Round, Hex
Diameters: 1/8″ through 3/8″
Materials: Brass, Aluminum, Stainless Steel, Cold Rolled Steel

Handles—

Panel and Rack

Shapes: Round,Oval, Rectangular, Half-Round
Styles: Internal Thread, External Thread, Straight, Offset, Hinged, Extruded
Materials: Brass, Aluminum, Stainless Steel, Carbon Steel

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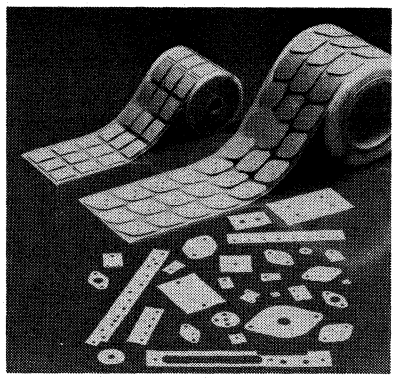


WHAT ARE SIL-PAD INSULATORS?

Sil-Pad brand thermally conductive insulators are greaseless, silicone-based insulators typically mounted between a transistor and a heat sink. Sil-Pads offer low resistance to heat transfer while providing electrical isolation between the parts of an assembly.

Sil-Pads are constructed of soft silicone rubber compounded with compatible, thermally conductive fillers which provide thermal transfer capabilities. These compounds are combined with woven fiber or film substrates to provide a tough insulator able to withstand the mechanical rigors of assembly. Sil-Pads are thermally stable and compounded to eliminate flammability.

WHY USE SIL-PADS?

Bergquist is the leader in the development of thermally conductive insulating products. Sil-Pads eliminate the use of messy grease and brittle mica or ceramics in the assembly area. They save significant labor expense compared to grease and mica while providing excellent thermal resistance. Sil-Pads are also more dependable than brittle ceramics and mica which can crack or fracture. Another advantage of Sil-Pads is the variety of shapes they can be produced in from standard punched parts to sheets or specially designed shapes. Regardless of your thermal or dielectric requirements there is a Sil-Pad to fit your application.

SIL-PAD 400

Sil-Pad 400 is a composite of alumina oxide loaded silicone rubber and fiberglass. It is an ideal replacement for mica and grease. Sil-Pad 400 can range in thickness from .007 inches to .045 inches. The dielectric strength is 550 volts per mil. Thermal resistance for a TO-3 transistor is .5°C/watt for .009 inch material and .4°C/watt for .007 inch material.

SIL-PAD 1000

Sil-Pad 1000 is made of boron nitride filled silicone rubber and fiberglass. It is ideal for applications requiring higher levels of heat transfer than Sil-Pad 400. It has lower thermal resistance and is used in applications where surface irregularities require a thicker pad with higher levels of heat transfer. Thickness of Sil-Pad 1000 is .009 inches. The dielectric strength is 550 volts per mil. Thermal resistance for a TO-3 style transistor is .3°C/watt.

SIL-PAD K-4

Sil-Pad K-4 is one of the new thermally conductive Kapton® XT based Sil-Pads designed to provide more physical strength and better thermal performance. Kapton polyimide film is a high dielectric, thin, durable material which is less susceptible to burr cut-through or crushing. K-4 is also an ideal replacement for mica and grease, with the added advantages of Kapton. K-4 has enhanced dielectric properties over the Sil-Pad 400. Dielectric strength is 5000 volts. Thermal resistance for a TO-3 style transistor is .4° C/watt. Thickness is .006 ± .001 inches.

SIL-PAD K-10

Sil-Pad K-10 is the new high performance insulator developed in conjunction with DuPont for critical heat applications. K-10 is made of boron nitride filled silicone rubber and Kapton XT polyimide film. K-10 is the ideal replacement for expensive ceramic materials such as beryllium oxide and alumina. Sil-Pad K-10 has the lowest thermal resistance of any insulation material available on the market.

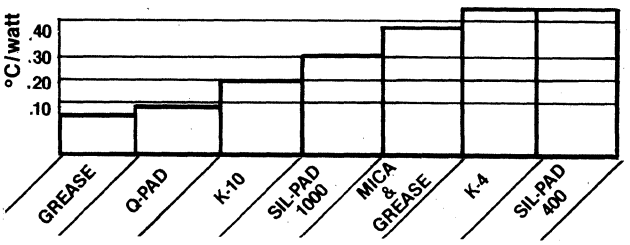
K-10 has a thickness of .006 ± .001 inches. The dielectric strength is 5000 volts. Thermal resistance for a TO-3 style transistor is .2° C/watt.

Q-PAD

Q-Pad is constructed of thin aluminum foil coated both sides with thermally conductive Sil-Pad rubber. It is designed for those applications where maximum heat transfer is needed and electrical insulation is *not* required. Q-Pad is the ideal thermal interface material to replace messy thermal grease compounds. Thickness is .006 inches. Thermal resistance for a TO-3 style insulator is .08-.1°C/watt.

THERMAL RESISTANCE (TO-3 Configuration)

cost/thousand



SIL-PAD SHIELD

Bergquist Sil-Pad shield is a bonded laminate of thermally conductive, electrically isolating Sil-Pad 400 or Sil-Pad 1000 pads with a copper shield between the layers. Sil-Pad shield is typically used under switching power transistors. It is designed to reduce heat sink "noise" and to lower capacitance and EMI, RFI problems at the component level. Special configurations can also be produced. Total thickness is .019 ± .002 inches. Approximate thermal resistance for a TO-3 style is .85 to 1.0°C/W. Shielding effectiveness, 50db or higher.

SPECIAL SHAPES: We produce thousands of specials. Tooling charges are about $100 to $150 for simple parts. Increased complexity or tighter tolerances increase tooling charges.

ADHESIVE: Most materials are available with adhesive on one or both sides.

TOLERANCES: .015 inches are held on width, length and hole location. Contact the factory if tighter tolerances are required.

CUSTOM MATERIALS: Other special materials such as laminates, coatings, etc. are also available.

SHEETS: 6" x 6", 6" x 12", 8" x 8", 10" x 10", or 12" x 12" sheets are available from stock, with or without adhesive.

ROLLS: All Sil-Pad materials are available in roll form, with or without adhesive. Contact the factory.

Mil spec. Mil-M-38527/8A,
Mil-M-38527C
Mil-I-49456

U.L. FILE NUMBER E59150
FSCM NUMBER 55285

For a free copy of the Sil-Pad Design Guide, Contact: Bergquist Company.

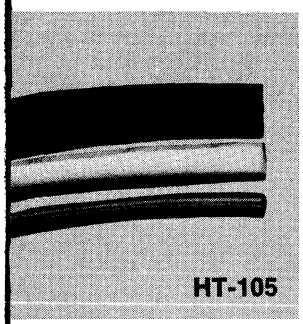
CALL TOLL FREE 1-800-328-3882

BERGQUIST

When Performance Counts
5300 Edina Industrial Blvd.
Minneapolis, MN 55435
Phone: 612-835-2322
TWX: 910-576-2423
FAX: 612-835-4156

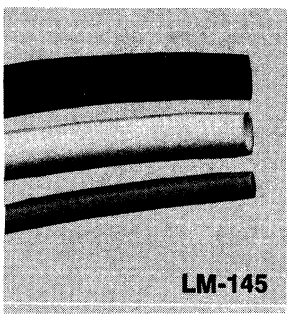
Markel CORPORATION

FLEXITE SHRINKDOWN



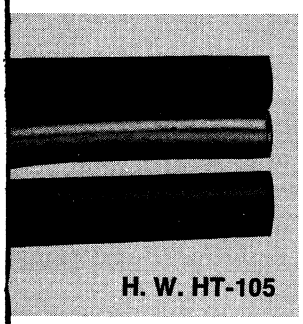
FLEXIBLE PVC SHRINK TUBING

- Outstanding dielectric and mechanical properties.
- Oil and chemical resistant.
- Shrink temperature 150°C.
- Covering and insulating cables, components and terminals.
- Standard colors—black, white and clear.



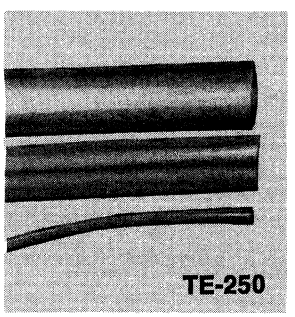
VERY FLEXIBLE POLYOLEFIN SHRINK TUBING

- Maximum flexibility and high dielectric strength.
- Shrink temperature 150°C.
- Available in both flame retardant and non flame retardant classes.
- Standard colors—black, white and clear.



HEAVY WALL PVC SHRINK TUBING

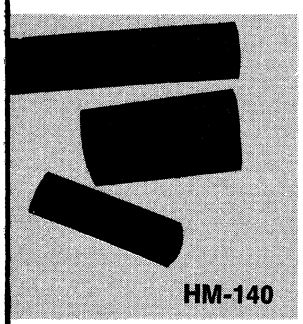
- Maximum abrasion resistance and high dielectric strength.
- Shrink temperature 150°C.
- Standard colors—black, and clear.



TEFLON™* (POLYTETRA-FLUOROETHYLENE) SHRINK TUBING

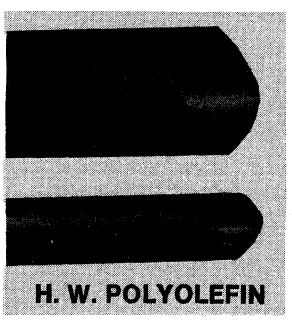
- Used in extreme electrical, thermal and chemical environments.
- Shrink temperature 350°C.
- Available in thin, standard and extra thin walls.
- Standard color natural.

*** DUPONT REG. TRADEMARK**



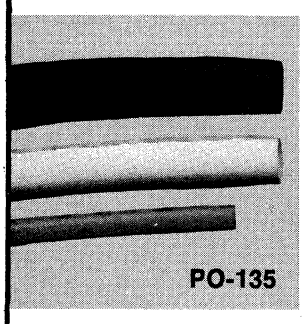
SEMI-RIGID POLYOLEFIN SHRINK TUBING

- Excellent mechanical strength/abrasion resistance.
- Shrink temperature 200°C.
- Resistant to flexing, acids, alkalis and hydraulic fluids.
- Available on spools or cut pieces for use on automatic termination machines.
- Standard colors—black, and clear.



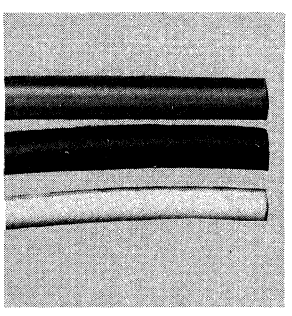
HEAVY WALL POLY-OLEFIN SHRINK TUBING WITH AN ADHESIVE LINER

- Insulates and encapsulates to form a weather-proof seal.
- Shrink temperature 200°C.
- Used on connections exposed to the elements.
- Standard color—black.



FLEXIBLE POLYOLEFIN SHRINK TUBING

- Tough, smooth, oil and chemical resistant.
- Available in a variety of flame retardant grades.
- Shrink temperature 200°C.
- Excellent for use over irregular shapes.
- Standard colors—black, white and clear.



Markel also manufactures a variety of other flexible and semi-rigid heat shrink tubings to be used in various abrasion resistant and strain relief applications. These and all of our shrink tubings can be made in various shrink ratios and colors. Contact us the next time you have a special requirement or difficult application.

Markel

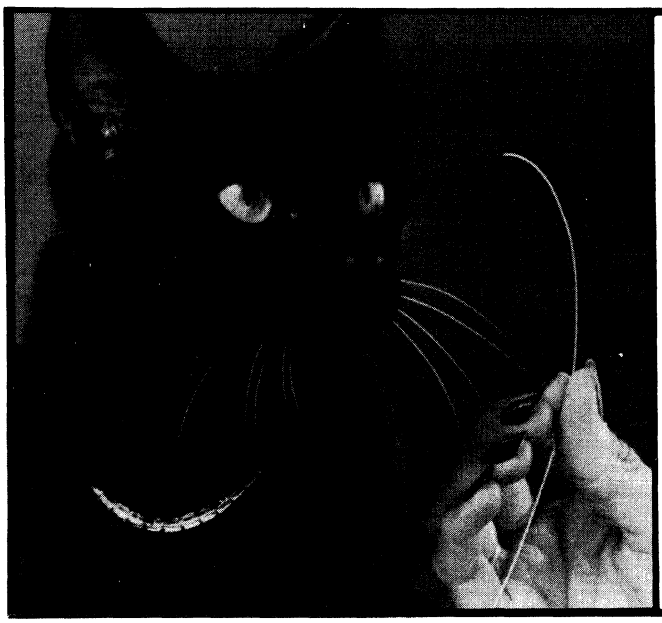
P.O. BOX 752
NORRISTOWN, PA 19404
TEL. (215) 272-8960
TWX: 510-660-0929

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide ..... C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide ..... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766



ZEUS
TUBING OF TEFLON*

TFE • FEP • PFA • TEFZEL*

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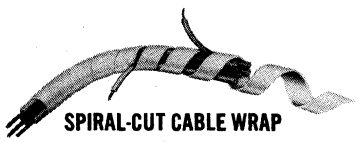
Withstands heat extremes to 500°F. Absolutely uniform. Superior lubricity. Zero water absorption. Inert to virtually all corrosives. High dielectric strength. Flexing unlimited. Shock, high pressure, and abrasion resistant. Non-toxic. Non-contaminating. Easily sterilized. Compatible with human tissues and fluids.



SPIRAL-CUT CABLE WRAP



SPLINES

SUB-LITE-WALL™ — World's smallest tubing! Walls as thin as 0.0015" in I.D.s of 0.022" + . Also walls of 0.007" with I.D.s less than 0.002". (Note: The average human hair is 0.003".)

HEAT-SHRINK — Provided in expanded state with shrink ratios up to 4 to 1. A brief application of heat produces a skin tight jacket that overpowers hell, high water, and the acid test.

DUAL-SHRINK — Outer tubing of TFE and an inner tubing of FEP. Outer tubing shrinks for tight fit when heat is applied. FEP melts and flows to form a fit so tight it can withstand severe stresses and resists moisture, acids, etc.

HEAVY CONSTRUCTION — For extra strength and durability. Ideal for automotive, chemical, electrical, and mechanical applications.

SPAGHETTI — Unmatched concentricity and tolerances. Wide range of AWG sizes, fractional inch and industrial grades.

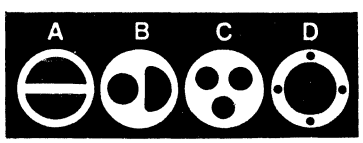
SNAPTUBE® — For the restoration and reutilization of conductors with damaged cables. Snaps into place quickly. Available in long lengths and sizes to accommodate wire bundles.

FEP TUBING — Chemically inert, excellent dielectric properties. Continuous use at 400°F. Non-aging, anti-stick. Great tensile strength.

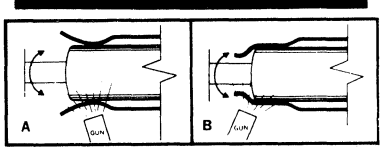
PFA TUBING — Tough, flexible. Continuous use near 500°F. Features clarity, chemical inertness, excellent flexlife, and chemical flow. Exceptional stress/crack resistance and great dielectric properties.

"C" SHAPE GUIDE RAIL COVERS — Slick surface increases conveyor-line speed. Doubles system life for beer, soda and food packagers and manufacturers of cans and containers.

MULTI-LUMEN SUBMINIATURE TUBING — Features two or more constant diameter continuous length passages. Total uniformity.



ROLL COVERS — Reduces roller buildup, roller picking, mark-off, offset cleanup time



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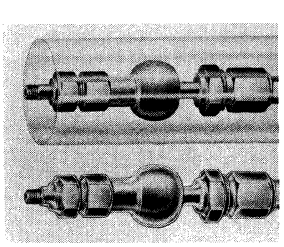
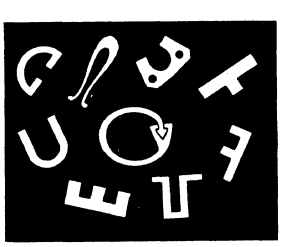
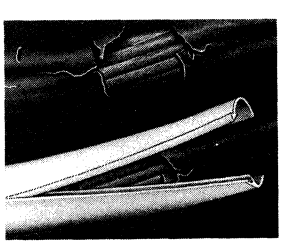
*DuPont's registered trademark.



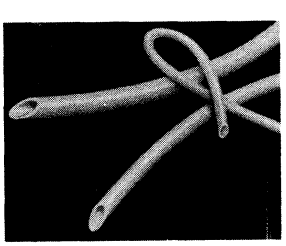
HEAT SHRINK TUBING



SHAPES



SNAPTUBE®



HEAVY CONSTRUCTION TUBING

A PANEL OF EXPERTS



EMC PANEL OF EXPERTS:
High-quality boards meet
military and UL specifications.

EMC STAMPED AND FORMED 4-FINGER CONTACTS

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- **Avoid Panel Damage:** Nurl-loc® ribs allow material displacement without tearing the board.
- **Avoid Panel Warp:** Nurl-loc® ribs have up to 500% more bearing surface to distribute pressure evenly.
- **Avoid Pin Straightening:** Nurl-loc® guiding action during insertion into panel promotes accurate positioning.
- **Avoid Terminal Twisting:** Nurl-loc® ribs prevent terminals from spinning during wire-wrapping.

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The Leader
in Nurl-Loc® Technology

BACKPANELS

Manufacturer	Starting EEM Page No.	Model/ Series	Plug-in	Interface Computer/ Peripheral	Spacing in Inches	Power BUS	Pattern
AEG	C•1710	Intermas VME, Multibus II	¤	¤			
AMP	C•1712			Engineering/Production Services			
Augat	C•1718	J1, J2, VME	¤	¤		¤	Hi-Pak, Fastpak w/PGA
		R	¤	¤	.3, .6, .9, .13		Universal
		8136 Multibus	¤	¤	.3, .6, .9	¤	Universal, Fastpak. Hi-Pak, w/PGA
		8136 Multibus II	¤	¤	.3, .4, .6, .9		Fastpak, Hi-Pak, w/PGA
		8136 IBM PC, XT, AT	¤	¤	.3, .4, .6, .9		Fastpak, Hi-Pak, w/PGA
Electronic Molding	C•1724	R, W, M, VME	¤	¤			Universal,
		Multibus I	¤	¤	Services, Wirewrapping		others
EMS	C•1729		¤	¤	.8, 1.2	¤	DIN/Eurocard
Mupac	C•1732	J1, J2, VME	¤	¤		¤	
		Multibus	¤	¤			
		Multibus II	¤	¤			
Production Technology	C•1735	VME, Multibus, IBM PC, XT, AT; S-100		Engineering/Wiring/Production Services			DIN/Eurocard

BOARDS, PLUG-IN

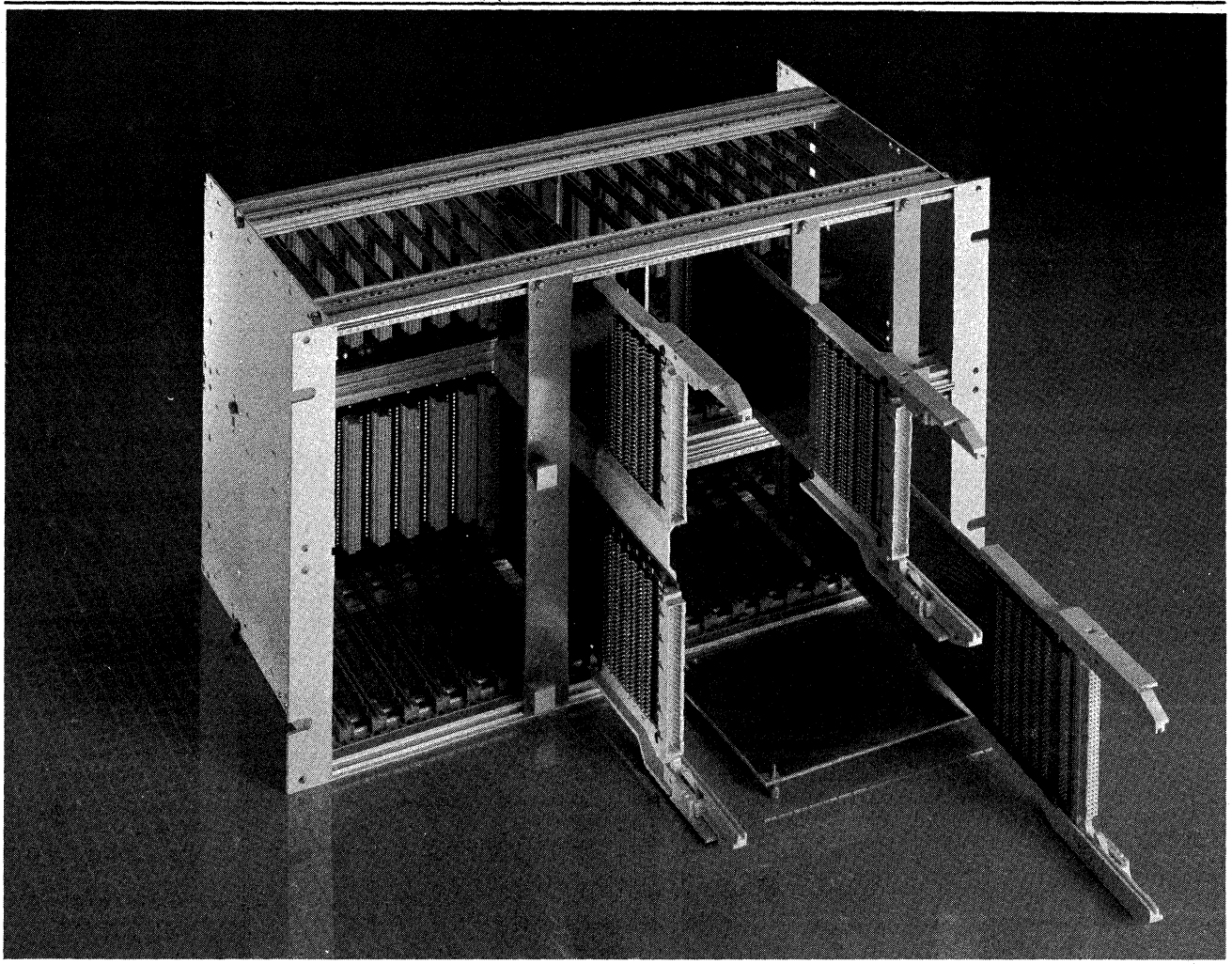
Manufacturer	EEM Page No.	Extender	Interface	Memory	Processor	Prototype
AEG	C•1710		¤			
AT & T	C•1713	Multilayer Boards, Engineering/Production Services				
Augat	C•1718	¤	¤	¤	¤	
Calex	C•1723		¤			¤
Electronic Molding	C•1724	¤	¤	¤	¤	¤
EMS	C•1729	¤	¤		¤	¤
Mupac	C•1732	¤	¤		¤	¤
Product Technology	C•1735	¤	¤		¤	¤
Vector	C•1736		¤			¤

PROGRAMMING BOARDS/SYSTEMS/SWITCHING MATRICES

Manufacturer	EEM Page No.	Model/ Series	Type of Connections	No. of Connections	Fixed	Contact Spacing
Mac Panel	C•1730	96	Plugboard	1200-7200		
		140	Plugboard	240-5120		
		157	Plugboard	200-5120	¤	
		157	Plugboard	200-1280		
Mupac	C•1764	All	Wirewrap	96,108 Pin		

BUS BARS & SYSTEMS

Manufacturer	EEM Page No.
Atlee	C•1716



INTERMAS® from AEG... the design system for VME and Multibus II*

AEG provides a flexible and complete design system for VME and Multibus II applications called INTERMAS. The hardware system includes enclosures, card cages, subracks, VME and Multibus II backplanes, power supplies, connectors and other accessories.

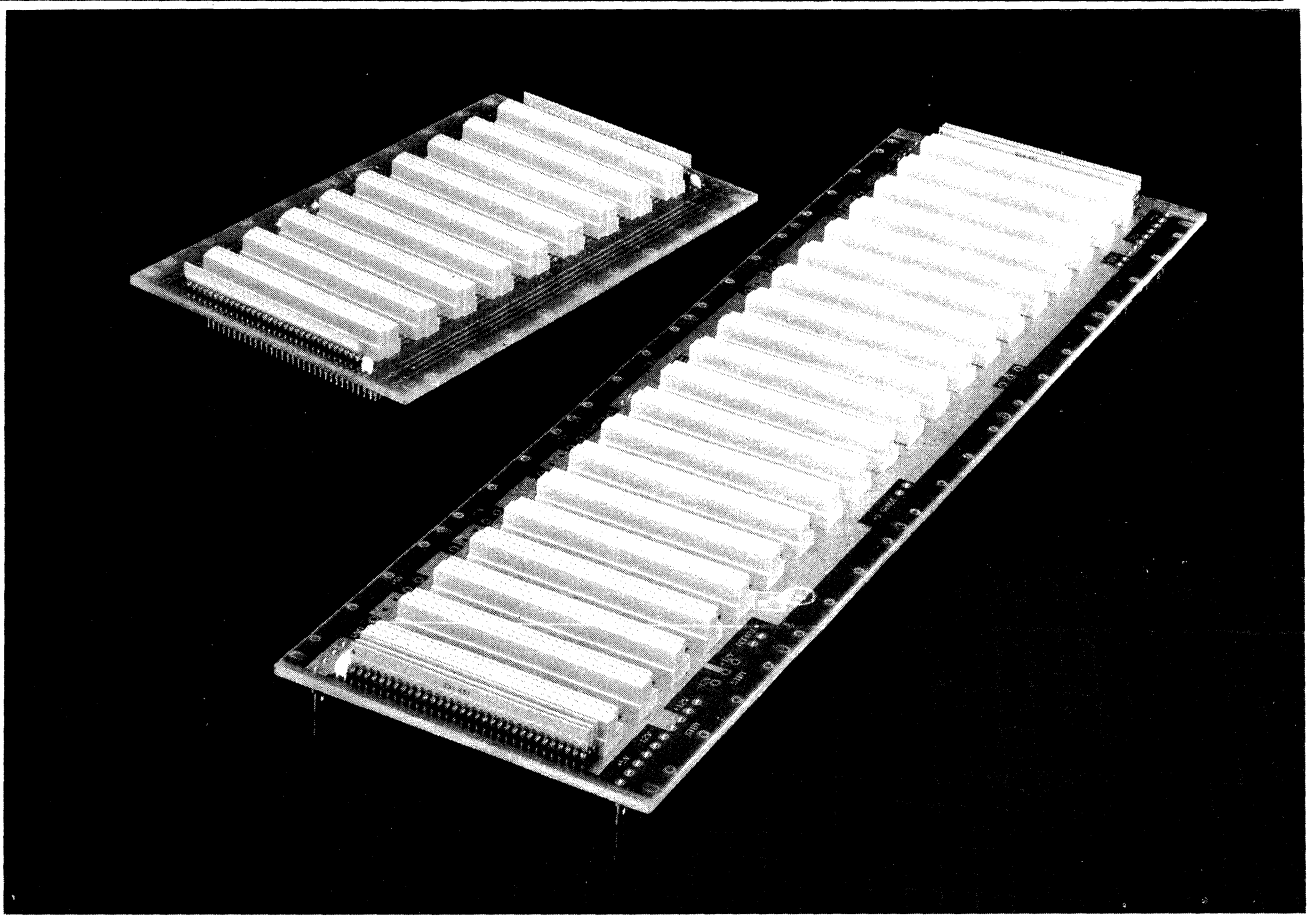
INTERMAS accessory products customize your card cage designs — Call our application engineers for immediate solutions to your VME and Multibus II card cage and backplane problems. Telefax your design sketches for an even faster response.

AEG is a worldwide source of technological innovation; a position we've maintained for over 100 years. We supply high technology products which include not only electronic packaging but liquid crystal displays, solar power, technical tubes, robotics and optical character recognition systems, to name a few. For more information contact:

AEG Corporation
Route 22-Orr Drive
PO Box 3800
Somerville, NJ 08876-1269
or call: (201) 722-9800.
Telefax: (201) 722-4905.

AEG

*Multibus II is a registered trademark of Intel Corp.



Intermas VMEbus Backplanes... AEG can supply all your electronic packaging needs.

Our VME compatible backpanels can provide multiple connections for even power distribution and low resistance losses with off-the-shelf items.

A Series
on board terminators, with up to 20 slot capacity

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off board terminators, with up to 21 slot capacity

All our backplanes feature high current capacity and both low noise characteristics and crosstalk levels.

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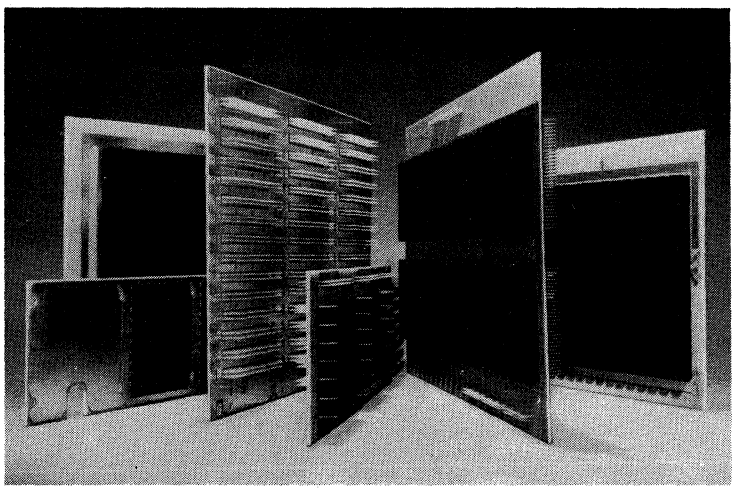
AEG

AMP Packaging Systems is the total system solution.

APS is a full service backplane business, with high technology capabilities and focus. We are ready to address your needs for high speed, high performance, controlled-impedance signal transmission and power distribution systems.

Design, engineering, hardware and complete systems, all from a single qualified source.



Interactive Design

Early involvement of our extensive technology base can assist you in development of a cost-effective design solution to meet your cost, performance and scheduling objectives. Interaction between your design staff and our technologists assures application of the most appropriate strategies to meeting your project needs.

High Tech Design and Engineering

Your needs for more than a panel assembly house will bring you to APS. Our high technology focus yields controlled-impedance multi-layer backplanes to meet today's high speed and power management requirements. Computer modeling helps our experts determine such criteria as signal/ground relationships, power budgets, selection of hardware, etc.

New connector development

Providing the most appropriate hardware to complete the interconnection of a new system demands a knowledge of the state of the art. No one is more knowledgeable in the interconnect field than AMP. APS can direct your attention to suitable products. In addition, APS can create a design team to develop new products when necessary, to fulfill such needs as:

short signal paths;
hybrid connectors—mixing signal, power, coax, fiber optic within one housing;
connectors with contacts on 100, 75, 50 or 25 mil spacing; surface—mount devices;
shielding, etc.

Prototyping through Production

Carrying design ideas through to functional models, then into full high-volume production requires a company with the facilities, capabilities and energy to make it happen. APS has the expertise to produce early prototypes and to work with you to provide systems integration to the highest level required.

Testing

Complete testing is at the heart of modern production that meets today's quality requirements. APS provides capabilities for testing at bare board, to assembled panel and through to any level of systems integration required. The latest test methods and equipment provide the degree of sophistication demanded.

Responsiveness

While APS brings unmatched expertise, technology, hardware and production capabilities to the backpanel market, it is our ability to work in close partnership with our customers that makes APS special. Working with you, from earliest stages of design, modeling, engineering, etc., gives you the greatest benefit of our expertise. We offer fast turnaround on quotations and prototyping; production supported by program management tracking, including all stages of system integration; and follow-up provided by readily accessible field service specialists.

Need more details? Call (512) 244-5100,
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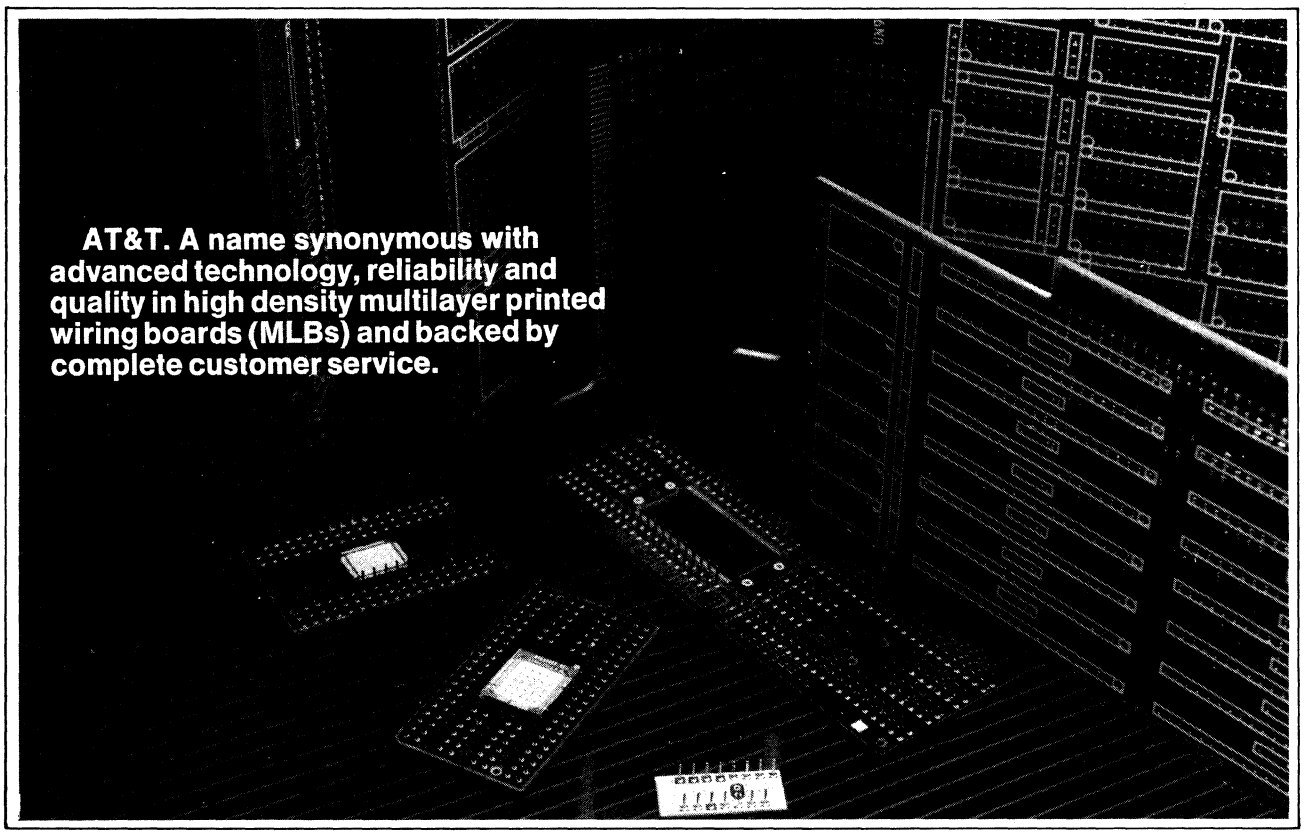
AT&T

MULTILAYER PRINTED WIRING BOARDS



MULTILAYER BOARDS

The foundation of AT&T's customer support for your MLBs is our team of applications engineers. Working closely with you from prototype through manufacture, they ensure a trouble-free introduction of your product into our automated facility. Extra effort and attention to every detail is our norm.

If you have special application requirements, AT&T supplies the resources to accommodate these needs. A separate prototype facility is available, offering fast turn-around of an MLB design by using leading-edge equipment and manufacturing techniques.

In whatever form your design information comes to us; be it digital data received over our computer network Gerber formatted magnetic tape, or single image artwork; we can produce an MLB to fit your requirements.

Our extensive computer-integrated manufacturing system allows quick response to your requests for information on pricing, delivery, or job status. Owing to our highly automated production capabilities, we can also provide customized manufacturing intervals tailored to meet your turnaround requirements.

This same computer system schedules customer orders, tracks them through manufacture and ships your product as promised. We strive to ensure efficient delivery and reorder so that you receive your MLB on time to meet your marketing requirements.

For additional information, contact your AT&T Account Manager, or call:
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AT&T reserves the right to make changes to the product(s) or circuit(s) described herein to improve reliability. function or design. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product or
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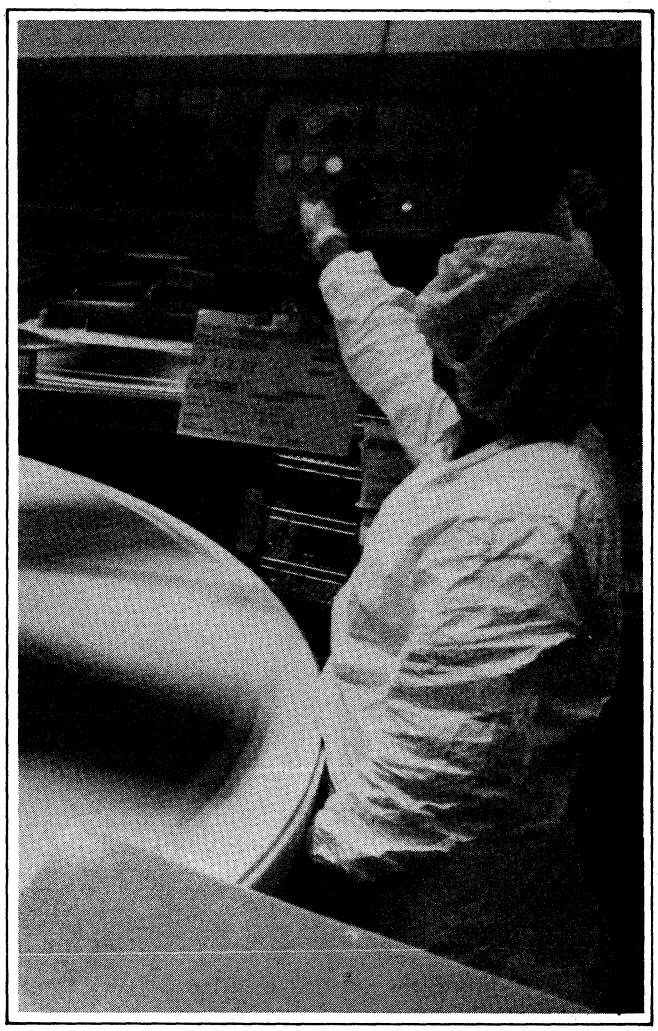
MULTILAYER PRINTED WIRING BOARDS



TECHNOLOGY

. . . to produce high density multilayer boards. AT&T can accommodate your requirements with the following capabilities even on board sizes to 16½″ x 23″.

- Line widths and spaces to 6 mils on surface and innerlayers
- Plated-through hole sizes drilled to 13 mils
- Buried microvias drilled to 8 mils
- High aspect ratio drilling/plating (7:1)

If your design requirements are more complex, merely consult our applications engineers with your specifications.

AT&T's multilayer boards are UL approved. Available substrate materials include:

- FR4 (MIL-P-55110D)
- BT (Bismaleimide Triazine)
- Polyimide
- CIC (Copper Invar Copper)

Various surface finishes are also available:

- Reflowed Solder
- SMOBC (Solder Mask Over Bare Copper) with Hot Air Solder Leveling
- Bare Copper (with solderability protection)
- Gold
- Gold Over Nickel

Contact edge finishes include:

- Gold Plating
- Gold Plating Over Nickel
- Gold Flashed-Palladium Plating Over Nickel

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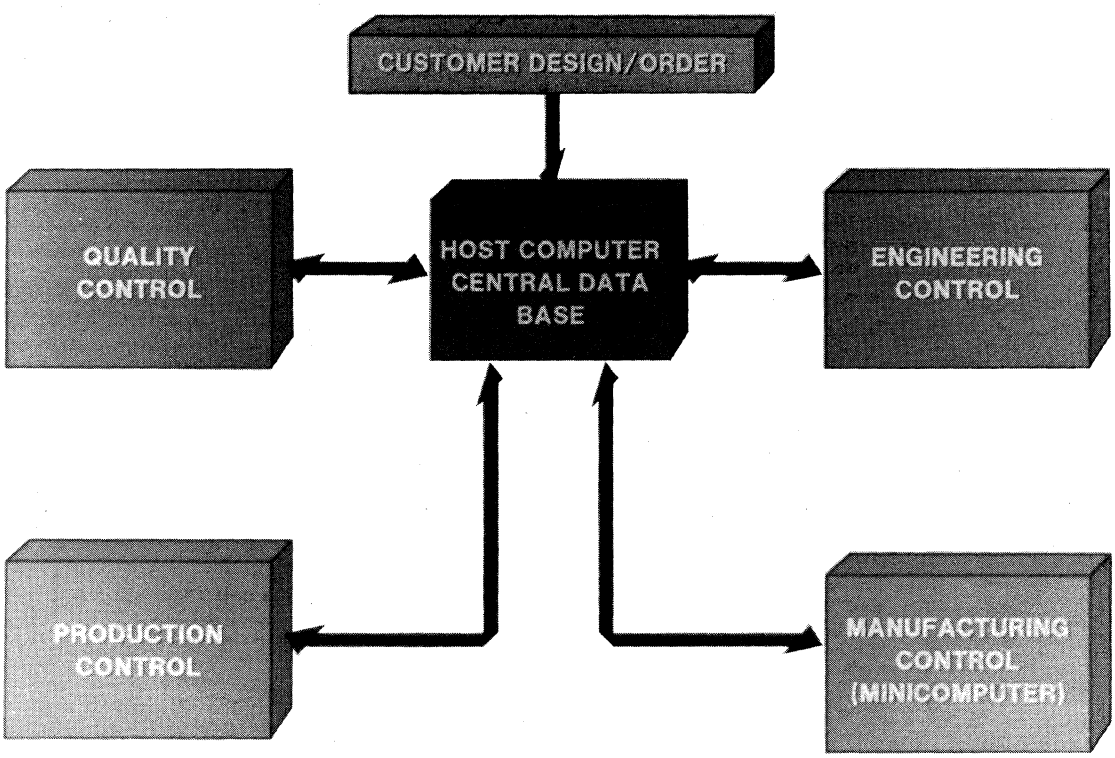
MULTILAYER PRINTED WIRING BOARDS

LEADERSHIP

. . . through automation. AT&T's Richmond plant offers high volume manufacturing capabilities that have been recognized industry-wide. Our efficient use of CAD/CAM allows downloading of computer files directly to manufacturing. This allows us to quickly update any MLB design while continuing high volume manufacture. For example, we can convert new design data directly to accurate laser generated artwork. This process is remarkably fast, yet still creates highly precise artwork for production.

The benefit to you of our highly automated, computer-controlled design and manufacturing processes is a higher quality MLB—one more way of providing total customer support.

COMPUTER INTEGRATED MANUFACTURE



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ATLEE BUS BARS



Atlee is a full line manufacturer of bus bars, serving the computer industry, avionics, military contractors and various high tech manufacturers. We have available design and engineering services as well as prototype department. In addition, Atlee has sales representatives nationwide to service our customers. Please contact Atlee to service your bus bar requirements.

TO SPECIFY AN ATLEE BUS BAR

Please contact the factory for a bus bar catalog and any questions you may have.

TO SPECIFY A CUSTOM BUS BAR

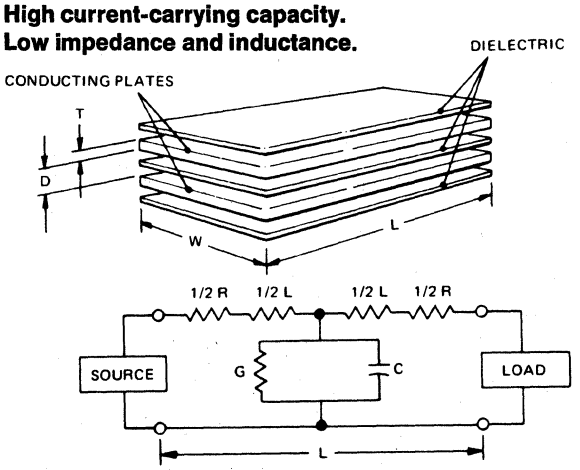
If your requirements do not permit the use of an Atlee Standard Bus Bar, send a drawing print or even a rough sketch of the Bus Bar that would meet your specifications and let Atlee's Engineering & Sales Department work out the details and give you a quotation. Atlee will manufacture any type bus bar to your specifications. In general the information required includes:

1. Application
2. Space available
3. Current paths required
4. Type of terminations
5. Number and location of terminations
6. Current requirements
7. Voltage drop requirements
8. Tab to tab spacing on each conductor
9. Type of mounting
10. Dielectric strength
11. Environmental requirements
12. Type finish on conductors
13. Marking

DESIGNER'S NOTES

Atlee laminated bus bars consist of flat conductor layers stacked on one another and separated by appropriate dielectrics. Typically such an assembly is laminated and edge-sealed or encapsulated so that the final product becomes a rigid unit with high reliability and stable electrical and mechanical properties. These properties provide uniform capacity, low impedance, and high-speed transmissions of signal and current. Atlee bus bars are an economical alternative to multi-layer printed circuit boards and wire harnesses. They offer:

- **Lowered production costs,** because assembly is simple and fast.
- **Reduced volume** which permits higher density packaging than possible with wire harnesses.
- **Reduced noise** with ideally distributed capacitance and isolation of conductors.
- **High current-carrying capacity.**
- **Low impedance and inductance.**



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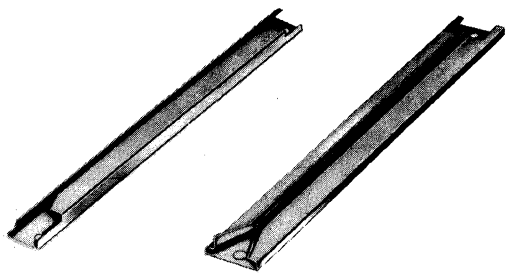
ATLEE CARD GUIDES

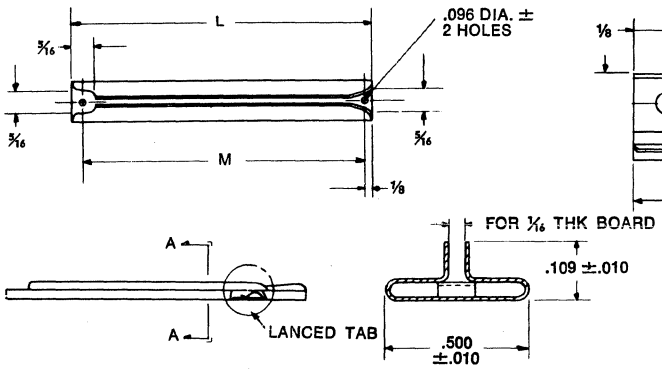


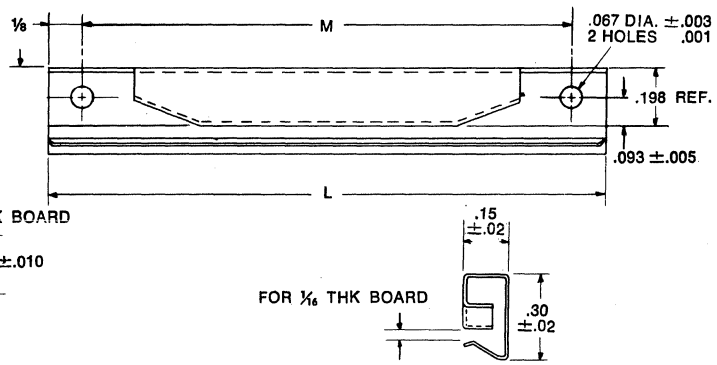
FEATURES

- High retention of printed circuit board under severe shock and vibration.
- Easily installed by welding or riveting.
- Quick and simple board insertion and withdrawal.
- Rigidly mounted printed-circuit board in racks and other types of assemblies.

MATERIAL: *beryllium copper, .010 thick, alloy 25, per QQ-C-533a, condition ¼ hard.

PLATING: .0003 thick cadmium per QQ-P-416a, type II, class 2.





*** 11903-300**

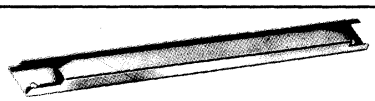
	L ±.02	M ±.005		L ±.02	M ±.005
2	2½	2.250	7	5	4.750
3	3	2.750	8	5½	5.250
4	3½	3.250	9	6	5.750
5	4	3.750	10	6½	6.250
6	4½	4.250	11	7	6.750

* Standard in beryllium copper and stainless steel.

*** 11909-300**

	L ±.02	M ±.005		L ±.02	M ±.005
1	2	1.750	6	4½	4.250
2	2½	2.250	7	5	4.750
3	3	2.750	8	5½	5.250
4	3½	3.250	9	6	5.750
5	4	3.750			

* Standard in beryllium copper and stainless steel.



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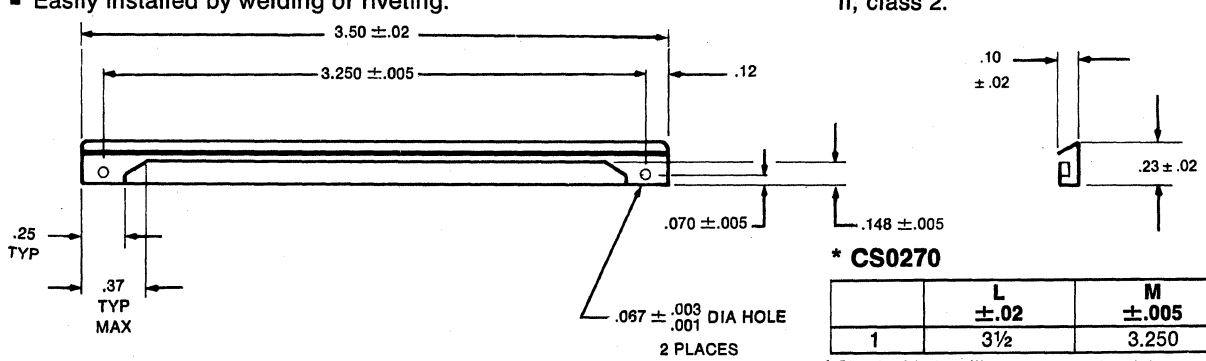

*** CS0270**

	L ±.02	M ±.005
1	3½	3.250

* Standard in beryllium copper and stainless steel.

- Card guides available for 1/32 and 3/32 thick printed circuit boards.
- Flared card guides also available.
- Refer to Atlee Cross Reference for additional card guides we manufacture.
- Card guides designed and manufactured to your specifications.

Please consult factory for additional card guide requirements.

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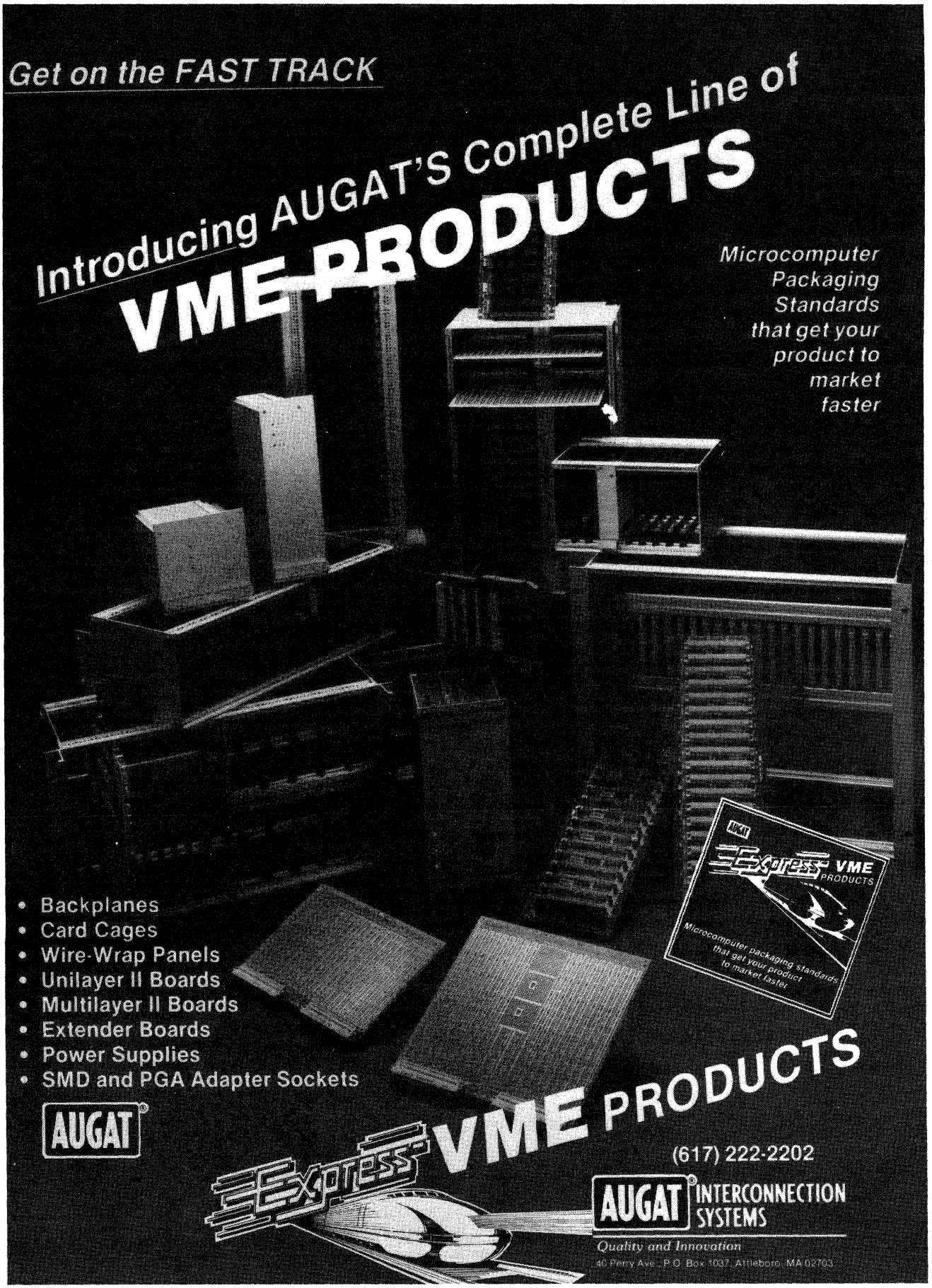
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• Wire-Wrap Panels
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AUGAT® INTERCONNECTION SYSTEMS
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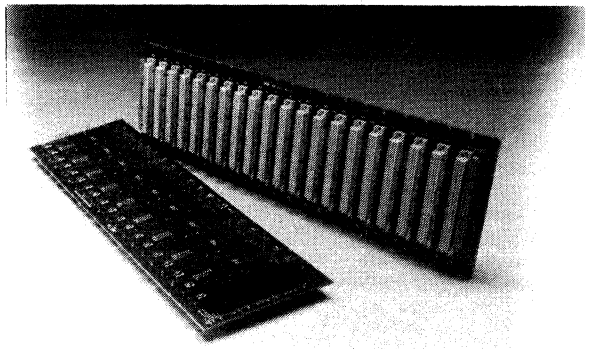
J1 VME Backplanes

J1/H Series - For high speed performance
A 4-layer multilayer construction controls impedance and minimizes crosstalk. All J1 backplanes fully conform to the VMEbus specification.

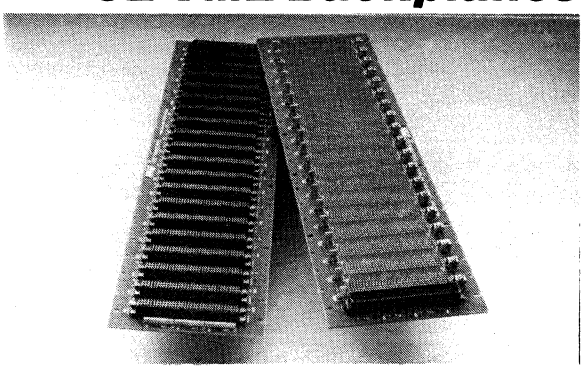
J1/VH Series - For very high speed performance
A 6-layer multilayer construction provides better isolation of signal lines to further reduce crosstalk.



J1	VH Series Part Number	H Series Part Number
20 slot	8160-VME120VH	8160-VME120H
12 slot	8160-VME112VH	8160-VME112H
9 slot	8160-VME109VH	8160-VME109H
5 slot	8160-VME105VH	8160-VME105H

J2 VME Backplanes

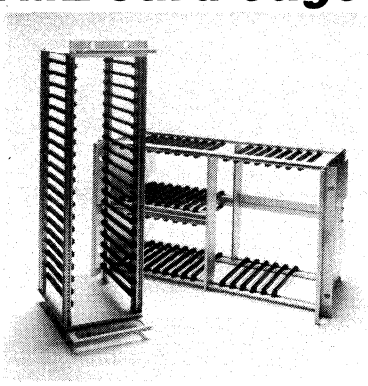
All J2 backplanes fully conform to the VMEbus specification, with Row B of each connector bused and terminated to enable 32-bit expansion. A 4-layer multilayer construction controls impedance and provides 5 auxiliary power buses.



J2	Part Number
20 slot	8160-VME220
12 slot	8160-VME212
9 slot	8160-VME209
5 slot	8160-VME205

VME Card Cages

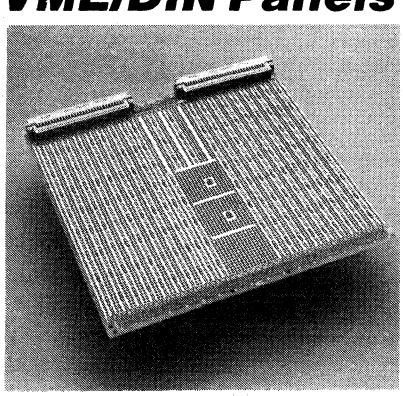
VME/DIN card cages are available in 18 different sizes. For each model listed below, there exists a full size (20 slots) and half size (9 slots).



Model Number	Height	Depth	Opt. Backplane Slots/Case	Number Of Backplanes
8170-VME316	3U	160mm	20, 12, 9, 5	1
8170-VME322	3U	220mm	20, 12, 9, 5	1
8170-VME328	3U	280mm	20, 12, 9, 5	1
8170-VME616	6U	160mm	20, 12, 9, 5	2
8170-VME622	6U	220mm	20, 12, 9, 5	2
8170-VME628	6U	280mm	20, 12, 9, 5	2
8170-VME916	9U	160mm	20, 12, 9, 5	3
8170-VME922	9U	220mm	20, 12, 9, 5	3
8170-VME928	9U	280mm	20, 12, 9, 5	3

VME/DIN Panels

VME/DIN Wire-Wrap panels are available in 8 geometries. Each geometry has Hi-Pak®, FASTPAK®, FASTPAK with PGA patterns, and extender panels. The characteristics of the FASTPAK geometries are summarized below:

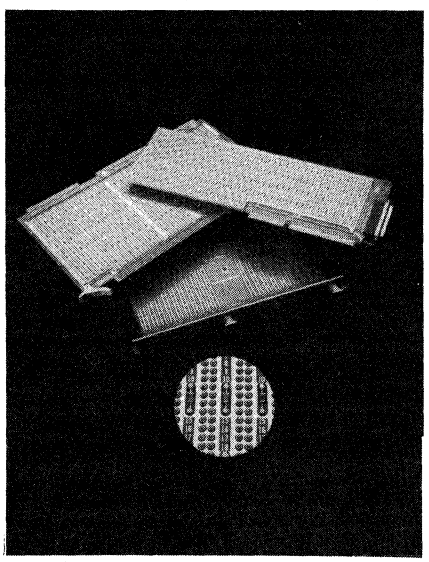


Model Number	Dimensions	# of IC's	I/O
8136-VME316	3U x 160mm	48	User supplied header
8136-VME322	3U x 220mm	72	User supplied header
8136-VME328	3U x 280mm	96	User supplied header
8136-VME616	6U x 160mm	126	User supplied header
8136-VME622	6U x 220mm	189	User supplied header
8136-VME628	6U x 280mm	252	User supplied header
8136-VME922	9U x 220mm	264	User supplied header
8136-VME928	9U x 280mm	363	User supplied header

AUGAT® INTERCONNECTION SYSTEMS

Electronic Packaging Solutions

FASTPAK® Panels

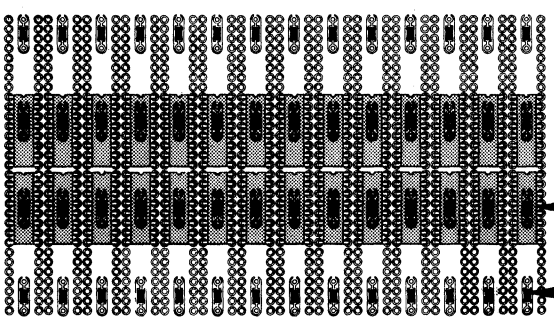


NEW! FASTPAK *NEW!*

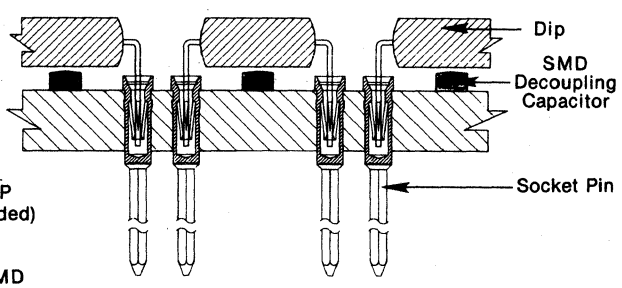
- Highest component density of any wire-wrap panel
- SMD decoupling capacitors mounted under DIPs ensure better operating performance for high power and high speed IC's
- Solder washers eliminate wire wrapping from the power and ground sources
- Continuous power and ground planes surround each pin

Multibus I & II, VME, IBM PC/AT

Bus Style	Height × Depth	FASTPAK Without PGA Footprints	FASTPAK With PGA Footprints	# of IC's (–02 Series)
VMEbus	3U × 160	8136-VME316-02	NA	48
VMEbus	3U × 220	8136-VME322-02	NA	72
VMEbus	3U × 280	8136-VME328-02	NA	96
VMEbus	6U × 160	8136-VME616-02	8136-VME616-03	126
VMEbus	6U × 220	8136-VME622-02	8136-VME622-03	189
VMEbus	6U × 280	8136-VME628-02	8136-VME628-03	252
VMEbus	9U × 220	8136-VME922-02	8136-VME922-03	264
VMEbus	9U × 280	8136-VME928-02	8136-VME928-03	363
Multibus II	6U × 220	8136-MB622-02	8136-MB622-03	189
Multibus I	12.0″ × 6.75″	8136-MB1-02	8136-MB1-03	182
IBM PC/AT	13.1″ × 4.7″	8136-IAT3-37-02	8136-IAT3-37-03	128

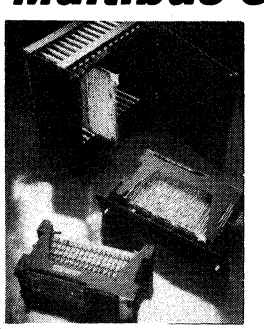


FASTPAK Pattern Sample
(Top View)



FASTPAK
(Edge View)

Multibus Card Cage



Multibus card cages/backplanes are available in a wide variety of card spacing, card slots, and P2 backplane options. The parallel priority option is field installable in all chassis with 8 or more slots.

Connector Spacing	Range Of Slots	Options	P2 Backplane	
			With Power	W/O Power
.6″	4-26	Parallel Priority, –5V Reg.	Yes	Yes
.75″	5-21	Parallel Priority, –5V Reg.	Yes	Yes

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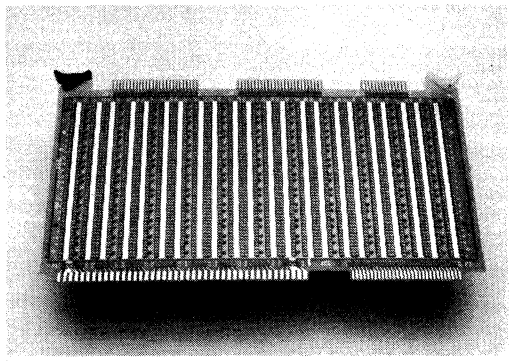
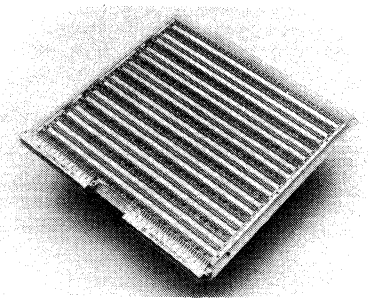
Multibus Panels

Model Number	IC Pattern	# of IC's	I/O
8136-MB1-02	FASTPAK	182	User supplied header
8136-MB1-03	FASTPAK/PGA	162/4	User supplied header
8136-HPG10	Hi-Pak	132	3 Ribbon Cable Headers
8136-HPG20	Hi-Pak	132	126 Card Edge Fingers
8136-SHPG56	Hi-Pak/PGA	90/6	User supplied header
8136-HPG41	Hi-Pak/PGA	106/4	User supplied header
8136-LG1311	Hi-Pak/PGA	254/8	User supplied header
8136-MLT6	Hi-Pak/PGA	106/4	User supplied header
8136-UG159	Universal	108	3 Ribbon Cable Headers
8136-LG912	Universal	108	126 Card Edge Fingers
8136-LG918	Universal	108	100 Card Edge Fingers
8136-SCH203	Universal	108	126 Card Edge Fingers
8136-ISBX36(44)	Adapter for 36 or (44) pin iSBX boards		
8136-EXT17	Extender Card		



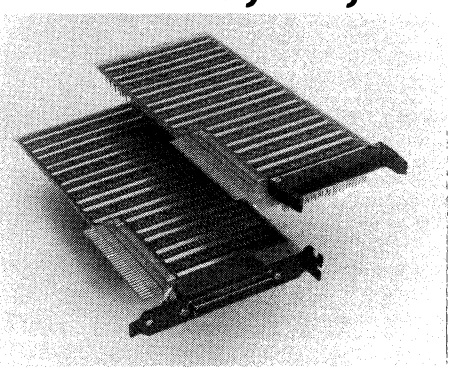
Multibus II Panels

Model Number	IC Pattern	# of IC's	I/O
8136-MBG22-02	FASTPAK	189	User supplied header
8136-MBG22-03	FASTPAK/PGA	186/3	User supplied header
8136-MB2-10	Hi-Pak	35	2 96-pin DIN
8136-MB2-30	Hi-Pak	135	2 96-pin DIN



IBM PC, XT, AT

Model Number	IC Pattern	Length Of Panel	# of IC's	I/O
8136-IAT3-37-02	FASTPAK	13.1″	128	37 pin D-Sub
8136-IAT3-37-03	FASTPAK/PGA	13.1″	108/2	37 pin D-Sub
8136-HPG8	Hi-Pak	5.2″	25	50 pin Ribbon Cable
8136-HPG18	Hi-Pak	9.2″	57	50 pin Ribbon Cable
8136-HPG28	Hi-Pak	13.2″	89	50 pin Ribbon Cable
8136-IPC1-25	Hi-Pak	5.2″	25	25 pin D-Sub
8136-IPC2-25	Hi-Pak	9.2″	54	25 pin D-Sub
8136-IPC3-25	Hi-Pak	13.2″	86	25 pin D-Sub
8136-IPC1-37	Hi-Pak	5.2″	25	37 pin D-Sub
8136-IPC2-37	Hi-Pak	9.2″	54	37 pin D-Sub
8136-IPC3-37	Hi-Pak	13.2″	86	37 pin D-Sub
8136-IAT3-37	Hi-Pak	13.1″	82	37 pin D-Sub



R Series

Wire-Wrap Panel IC Patterns

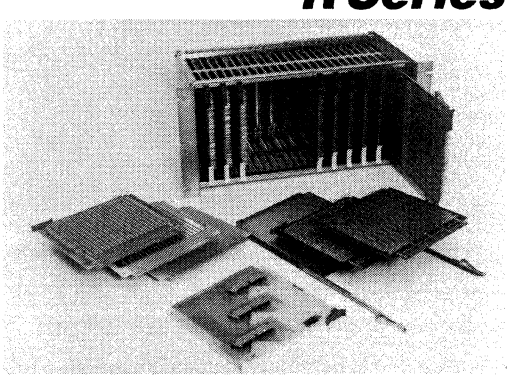
- TTL Universal
- 16 and 20 pin committed TTL
- TTL Hi-Pak
- Schottky
- ECL (10K, translators)

Accessory Cards

- Extender Cards (TTL and ECL)
- TO-3 and DIP
- Blank Cards
- Pre-Drilled only

Card Cages and Backplanes

- 1.2″ centers with 3, 6, 9 or 13 slots
- TTL or ECL (controlled impedance backplanes



MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

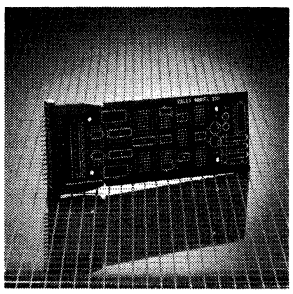
WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

CALEX MFG. CO., INC., 3355 Vincent Road, Pleasant Hill, CA 94523-4389
Telephone: (415) 932-3911 Telex: 269-888 Telefax: (415) 932-6017

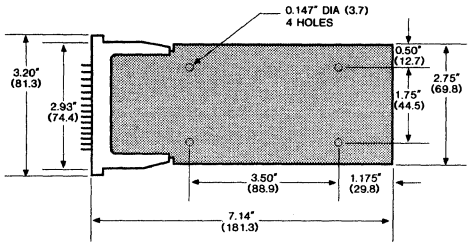
PACKAGING & PROTOTYPE HARDWARE

CALEX manufactures a line of hardware for the building of small instrumentation systems and prototyping of analog and digital circuits. A complete 64 page catalog of CALEX instrumentation modules and packaging hardware can be obtained from the factory. Call 415-932-3911 for your copy. Also call for quantity prices.

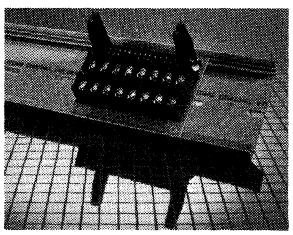


MODEL 100 PROTOCARD

The **MODEL 100 PROTOTYPE P.C. CARD** includes hole patterns for 16 and 8 pin DIPs, potentiometers, resistors, caps., transistors, and barrier strips. 72 components in all. It comes complete with a 15 pin edge connector. Can be used with Model 2005 Interface. Price $29.50

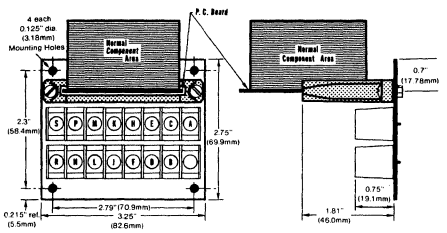


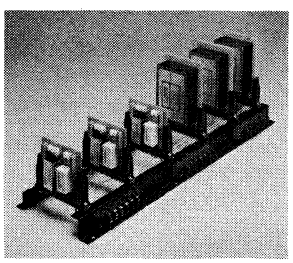
MODEL 100 DIMENSIONS
(mm)



MODEL 2005 INTERFACE

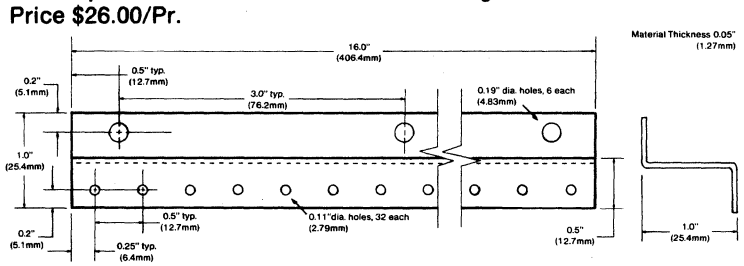
The **MODEL 2005 INTERFACE MOUNTING KIT** provides a convenient interface between 1/16" P.C. cards with 15 pin edge connections and barrier strips allowing wiring of systems using a screw driver. Price $30.00

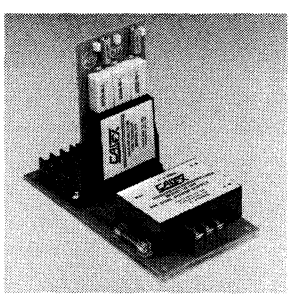




MODEL 8100 MOUNTING RAILS

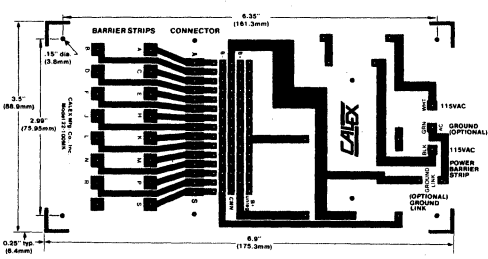
The **MODEL 8100 MOUNTING RAILS** shown with a small system mounted consists of a pair of 16" long aluminum rails with connector mounting holes on 1/2" centers. Rails provide 1" clearance from mounting surface and can be cut to length. Price $26.00/Pr.





MODEL 22-100MK

The **MODEL 22-100MK POWER SUPPLY** shown with an amplifier board installed consists of a fused line powered +/-15 VDC@+/-100 mA modular power supply and a vertically mounted 15 pin connector with built-in card guides. Single card Model 100 prototypes or systems can be wired using a screw driver. Price $143.00



TOP VIEW MODEL 22-100MK

For your small system or prototype AC/DC or DC/DC power source needs see the CALEX listing in EEM section 4000. For instrumentation amplifiers, strain gage signal conditioning, or AC line voltage monitors see our listing in EEM section 1100. A complete 64 page Power Conversion Design Guide & Catalog is available from the factory. Call 415-932-3911.

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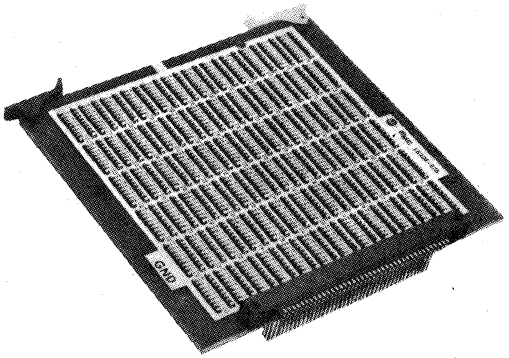
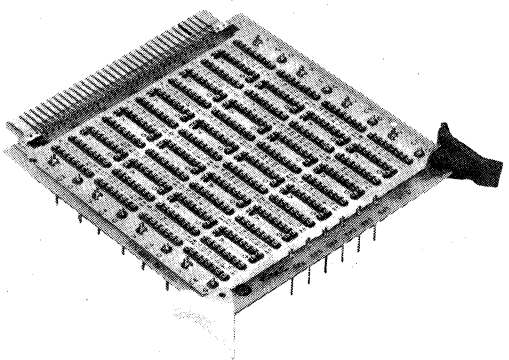
Interconnection Specialists

INTERCONNECTION SPECIALIST



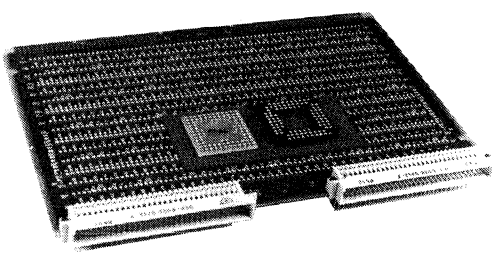
120 Contact Right-Angle Connector Panel

EMC'S "W" Series 120 Contact Right-Angle Connector panels feature 14-pin, 16-pin and universal pattern boards. Each pattern style is supplied with a 120-pin male right-angle connector.



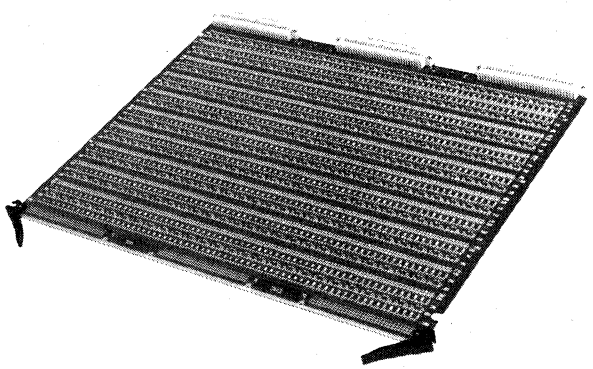
Mini-Socket Panel With 72-Contact Edge-Connector

EMC'S "M" Series Mini-Socket Panels with a 72-Contact Edge Connector feature wire-wrap® socket pins in 14-pin, 16-pin and universal patterns.



3U And 6U With PGA Pattern

EMC'S VME Series Panels with a universal pin grid array pattern with surface mounted decoupling capacitors are designed to accommodate any size pin grid array device up to an 18 x 18 grid on .100 (2,54mm) spacings. This PGA pattern incorporates solder pads on the wire-wrap® side allowing for the easy installation of EMC, PGA, wire-wrap® sockets. Costly pin grid array adaptors won't be needed, thereby saving both money and time. This savings is especially helpful in early prototype stages!



9U Triple Size

EMC'S VME30 Series Panels incorporate 2 dedicated I/O connectors to standard VME specification and one completely uncommitted DIN 41612 connector. The 280mm deep card can accommodate up to 270, 16-pin IC devices which yields great design flexibility. Many accessory style choices are available to enable the user to optimize his design decisions.

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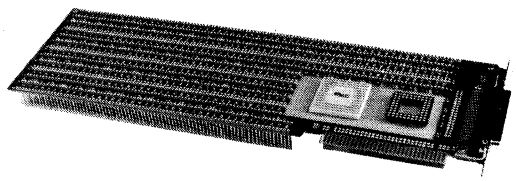
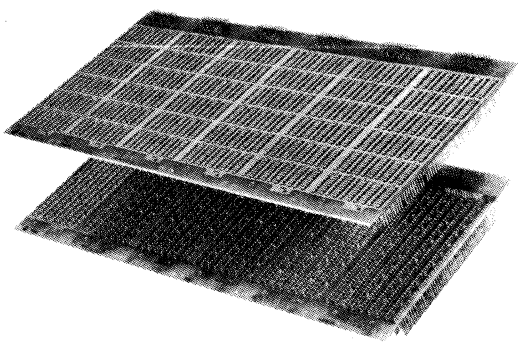
Interconnection Specialists

SCHOTTKY, MULTIBUS, RACK & BACKPANELS, IBM PANELS AND MORE



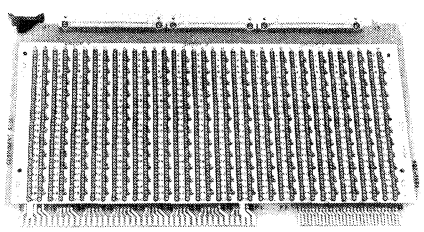
IBM PC XT/AT Panels

EMC'S IBM PC XT/AT compatible series bus panels feature hi-density universal patterns with or without PGA patterns with surface mounted decoupling capacitors. These panels are designed for hi-reliability prototyping for the IBM PC XT/AT series computers. These panels utilize committed I/O sections, and overall dimension to PC XT/AT specifications to ensure compatibility within the PC XT/AT system.



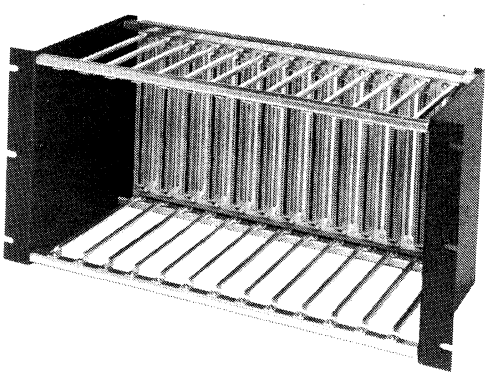
Sectional Schottky Panels

EMC'S "SL" Series Sectional Schottky Panels feature a three-layer multilayer panel with two GND planes which effectively increases board capacitance. True multilayer design allows for low impedance GND distribution and the reduction of high frequency noise.



Multibus 1 System

EMC'S "MB1" Series Panels are designed for use with Intel's Multibus System. Standard universal, high-density universal and Schottky high-density universal versions are available. Up to 150, 16-pin IC's can be packaged on the high-density version. Ground webbing between pins on the wire-wrap® side helps to decrease noise.



Racks And Backpanels

EMC's racks and backpanel systems are available to compliment EMC's R Series, W Series, M Series, and all VME Series wire-wrap® cards. Separate connectors, extender cards, and blank cards are also available to fulfill your total system requirements.

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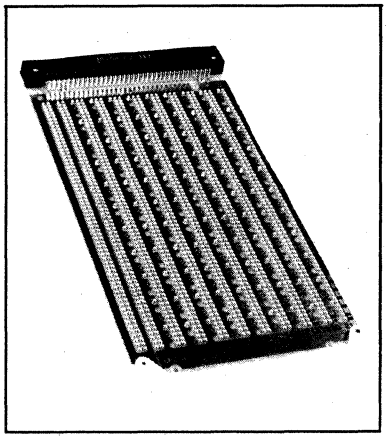
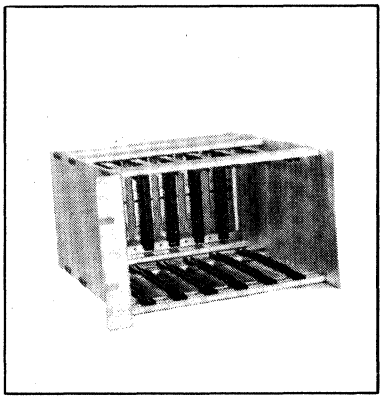
EMC®

108-PIN CONNECTOR PACKAGING SYSTEM



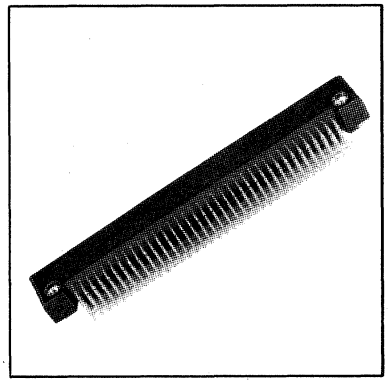
HIGH-DENSITY UNIVERSAL WIRE-WRAP® PANELS

- MULTIPLE VOLTAGE PLANES
  - V1, V2, and GND panels and backplanes
- WIRE-WRAP® TO WIRE-WRAP® TWO PIECE CONNECTOR PIN AND SOCKET CONTACTS ENSURE HIGH-RELIABILITY
  - solder joints on input-output signals eliminated
  - positive interfacing alignment
- MAXIMUM INPUT-OUTPUT CAPABILITY
  - up to 108 I/O terminals per connector — 540 terminals per panel
  - high ratio of I/O terminals to IC locations
- DOUBLE SIDED AND MULTI-LAYER VERSIONS
  - available with 1, 2, and 3 connector versions with two height sizes



RACKS AND BACKPANELS

- 1.2 INCH SPACING FOR 13 POSITION AND 6
- 0.6 INCH SPACING FOR 26 POSITION AND 11
- END PLATES FLUSH OR RETMA
- CONNECTOR BACKPLANES REMOVABLE FOR MACHINE WIRE-WRAPPING
- BACKPLANE OPTIONS
  - uncommitted V1-V2 and GND
  - uncommitted V1 and GND
  - committed V1-V2 and GND



108 WIRE-WRAP® CONNECTORS

- CONTACT SPACING ON .100 GRID
- POSITIVE INTERFACING ALIGNMENT
- HI-RELIABILITY PIN/SOCKET TYPE I/O CONNECTOR
- NEED FOR SOLDER JOINTS ON WIRE-WRAP® FEED-THROUGH PINS ELIMINATED
- COLD SOLDER JOINTS, BRIDGED PINS, AND LIFTED COPPER PADS ELIMINATED
- HIGH-DENSITY I/O-LOW INSERTION FORCES

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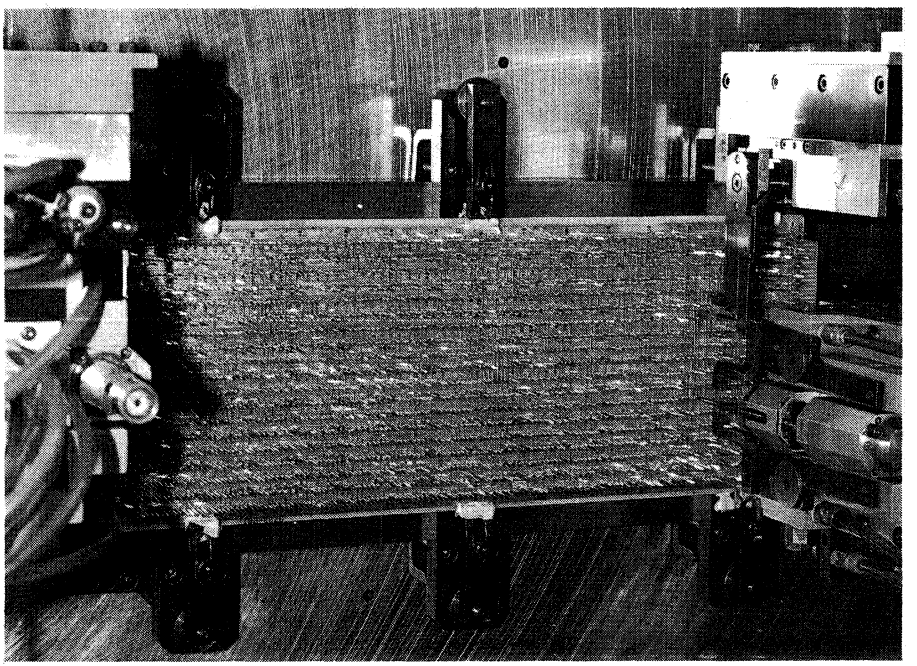
SPECIALIST IN WIRE-WRAPPING



Wrapex Corporation is a full-service wire-wrap® facility offering complete and prompt delivery on prototype, production, and pre-production orders. Wrapex maintains a stock of standard industry off-the-shelf boards completely tested on our Trace Instruments #948 electrical tester. Wrapex will also wrap your custom panels and backpanels and those supplied by other manufacturers.

- Gardner-Denver automatic and semi-automatic wire-wrap® machines
- Trace Instruments #948 Electrical Tester
- Assembly capabilities
- Quality Assurance capabilities
- Programming capabilities

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
µF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

Y
YIG yttrium iron garnet

Z
ZIF zero insertion force

Total project control off-the-shelf with

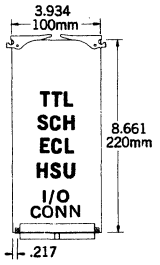
THE METRIC SERIES®

World Class Packaging System

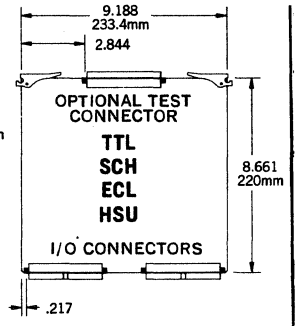
High-Speed Circuit Performance in DIN/Eurocard standard format.

24 Socket Pin PC Boards

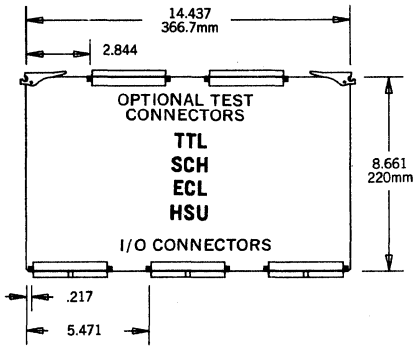
Model 11



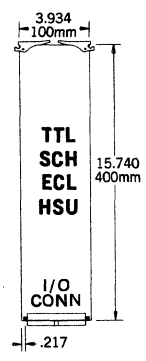
Model 21



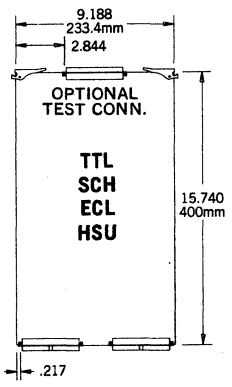
Model 31



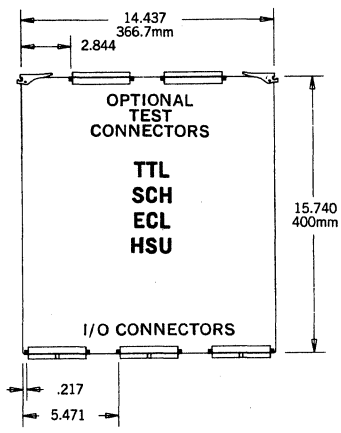
Model 12



Model 22



Model 32



All Metric Series boards contain high density 96 pin inverse DIN connectors.

24 Extender Cards

Ruggedly framed and supported extender card with 96 pin Reverse DIN connectors, 5-layers, 96 patched test points for each board size and logic option.

12 Backplanes

For .800" or 1.200" card centers, 96 pin Reverse DIN connectors, press-fit V&G wrap-pins. Massive power and ground planes. Wire wrap interconnections. TTL, Schottky, ECL and High-Speed Universal.

16 Card Racks

6 free standing and 6 Retma mount vertical racks for each size board .800" and 1.200" card spacing. 2 horizontal (free standing or Retma mount) racks for Model 32 boards, and mixer racks for different board sizes.

Three Pin Technologies

Stitch-Wire

MIL-approved wiring technique providing optimum performance for ECL and fast Schottky devices. Fast, easy and low cost changeability with the highest reliability of difussion bonding.

Wire-Wrap

Tin or gold plated 1 to 3 level wrap pins. Suitable for TTL and some Schottky applications.

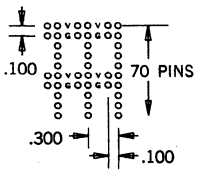
Insulation Displacement. Fast, convenient breadboarding for a test circuit. Available only in TTL boards in the Metric Series. Easy conversion to Stitch-Wire.

Design, Wiring Services and Equipment.

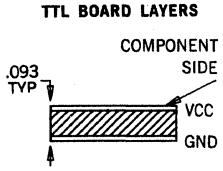
Logic conversion, Stitch-wiring, Insulation Displacement wiring. Numerically controlled and manually operated Stitch-Wire machine. Custom Board Design.

All EMS Metric Series Boards are available in four configurations:

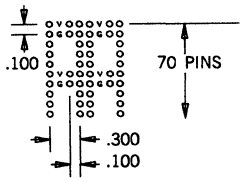
TTL 2-Layer Board
Typical TTL Pin Pattern



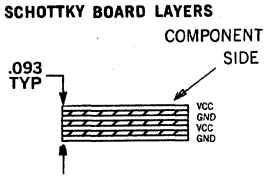
TTL BOARD LAYERS



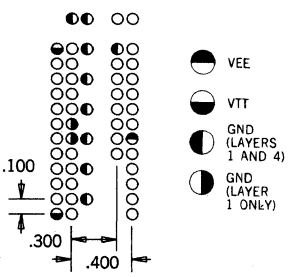
Schottky 4-Layer Board
Typical Schottky Pin Pattern



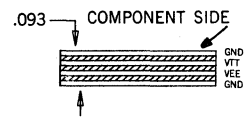
SCHOTTKY BOARD LAYERS



ECL 4-Layer Board
Typical ECL Pin Pattern

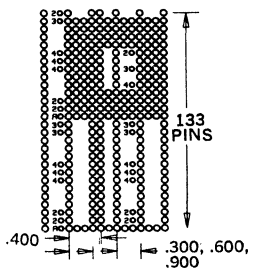


ECL BOARD LAYERS

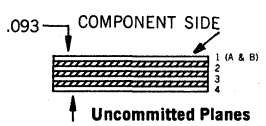


High-Speed Universal
HSU 4-Layer Board

TYPICAL HSU PIN PATTERN



HSU BOARD LAYERS



Uncommitted Planes

Allows mixing of TTL & ECL

EMS 1851 REYNOLDS AVENUE, IRVINE, CALIFORNIA 92714
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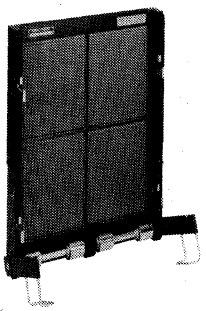
MAC PANEL

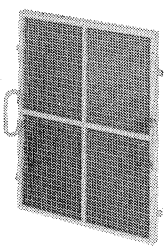
1958-1987 Our 29th Year
PLUGBOARD PROGRAMMING SYSTEMS

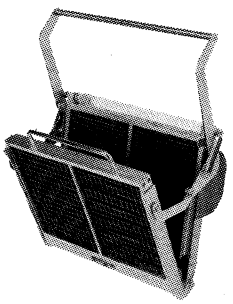
SERIES 157 PLUGBOARD SYSTEMS

Reliable economical program control with Spring-Lock, Lever-Arm or Cam-Arm mechanism. Removable plugboard, patched with Series 157 Plugwires.



Model 927
(3264 Positions)



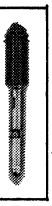


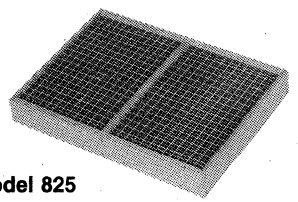
Model 921
(1600 Positions)

SERIES 157 FIXED SYSTEMS

Used where program change requirements do not dictate the use of removable plugboards. Patched with Series 157 Plugwires.

Series 157 Plugwire Tip





Model 825
(1632 Positions)

IN-STOCK CONNECTORS & TOOLS

We maintain shelf stock on connectors, and crimping, insertion and extracting hand tools. Used for interconnecting the plugboard system to external equipment.

SERIES 157

REMOVABLE PLUGBOARD SYSTEMS

(Accepts Series 157 Plugwire Tips)

CONTACT POSITIONS	MODEL NUMBER	HOLE PATTERN HOR. - VERT.	LOCKING MECHANISM	RECEIVER DIMENSIONS W	H	D
200	902	10 x 20	SPRING	4.1	10.4	3.0
320	903	16 x 20	SPRING	5.6	10.4	3.0
440	904	22 x 20	SPRING	7.1	10.4	3.0
440	905	20 x 22	SPRING	6.6	11.0	3.0
680	901	20 x 34	LEVER-ARM	8.6	14.1	6.0
748	906	22 x 34	LEVER-ARM	8.6	14.1	6.0
816	907	24 x 34	LEVER-ARM	9.2	14.1	6.0
1280	922	40 x 32	LEVER-ARM	13.4	13.6	6.0
1600	921	50 x 32	LEVER-ARM	16.3	13.6	6.0
680	918	20 x 34	CAM-ARM	8.0	12.1	2.5
748	920	22 x 34	CAM-ARM	8.0	12.1	2.5
816	919	24 x 34	CAM-ARM	8.6	12.2	2.5
1088	988	32 x 34	CAM-ARM	11.0	12.1	2.5
1280	924	40 x 32	CAM-ARM	12.5	11.6	2.5
1496	923	44 x 34	CAM-ARM	16.0	12.5	4.0
1632	925	48 x 34	CAM-ARM	17.0	12.5	4.0
2560	926	40 x 64	CAM-ARM	13.0	23.0	4.0
3264	927	48 x 68	CAM-ARM	17.5	24.0	4.0
4896	928	48 x 102	CAM-ARM	17.5	35.0	4.0
5120	929	80 x 64	CAM-ARM	24.5	23.0	4.0

FIXED PLUGBOARD SYSTEMS

(Accepts Series 157 Plugwire Tips)

CONTACT POSITIONS	MODEL NUMBER	HOLE PATTERN HOR. - VERT.	DIMENSIONS W	H	D
200	802	10 x 20	3.4	6.9	2.0
320	803	16 x 20	4.9	6.9	2.0
440	804	22 x 20	6.4	6.9	2.0
680	801	20 x 34	6.4	10.8	2.0
748	811	22 x 34	6.4	10.8	2.0
816	809	24 x 34	7.6	10.6	2.0
1280	822	40 x 32	10.9	10.3	2.0
1496	823	44 x 34	12.3	11.2	2.0
1632	825	48 x 34	14.7	10.8	2.0
2560	826	40 x 64	10.9	19.6	2.0
3264	827	48 x 68	14.7	21.6	2.0
4896	828	48 x 102	14.8	32.5	2.0
5120	829	80 x 64	21.4	20.5	2.0

Series 157 Systems: Reliable Economical Programmable Control. Taper pin or wire wrap termination to external equipment. Removable and fixed systems standard sizes 200 to 5120 positions special designs up to 9600 positions can be made to order.

SERIES 140

REMOVABLE PLUGBOARD SYSTEMS

(Accepts Series 140 Plugwire Tips)

CONTACT POSITIONS	MODEL NUMBER	HOLE PATTERN HOR. - VERT.	LOCKING MECHANISM	RECEIVER DIMENSIONS W	H	D
240	930	10 x 24	CAM-ARM	5.2	8.9	2.0
480	931	20 x 24	CAM-ARM	7.7	8.9	2.0
640	932	20 x 32	CAM-ARM	7.7	10.9	2.0
816	933	24 x 34	CAM-ARM	8.7	11.4	2.0
1280	934	40 x 32	CAM-ARM	13.1	10.9	2.0
1632	935	48 x 34	CAM-ARM	15.1	11.4	2.0
2560	939	40 x 64	CAM-ARM	13.5	22.0	2.5
3264	937	48 x 68	CAM-ARM	15.9	23.0	2.5
5120	938	64 x 80	CAM-ARM	20.1	26.0	2.5

Series 140 Systems: Feature cam closing mechanism. Choice of taper pin of wire wrap termination to external equipment, on .250 x .250 center line.

SERIES 96

REMOVABLE DOUBLE DENSITY PLUGBOARD SYSTEM

(Accepts Series 96 Plugwire Tips)

CONTACT POSITIONS	MODEL NUMBER	HOLE PATTERN HOR. - VERT.	LOCKING MECHANISM	DIMENSIONS W	H	D
1200	943	40 x 30	CAM-ARM	10.5	8.8	4.0
2400	946	40 x 60	CAM-ARM	10.5	15.0	4.0
3600	949	40 x 90	CAM-ARM	16.9	20.5	4.0
2400	983	80 x 30	CAM-ARM	16.9	8.8	4.0
4800	986	80 x 60	CAM-ARM	16.9	15.0	4.0
7200	989	80 x 90	CAM-ARM	16.9	20.5	4.0

Series 96 Systems: Feature twice the contact density of our series 140 and 157 systems. Also available in Hybrid version having combination signal, power and coax capabilities.

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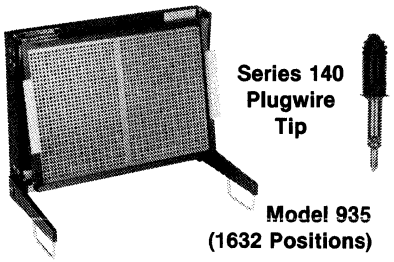
WESTERN SALES & DISTRIBUTION FACILITY • 2640 Walnut Ave., Ste. M, P.O. Box 1027 • Tustin, CA 92680 U.S.A. • (714) 669-1400 FAX. (714) 669-9657

1958-1987 Our 29th Year
PLUGBOARD PROGRAMMING SYSTEMS

MAC PANEL

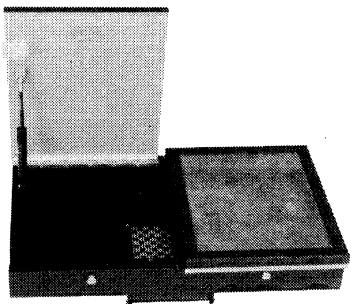
SERIES 140 PLUGBOARD SYSTEMS
Extremely strong and compact systems with removable plugboards. Features cam-closing mechanism. Choice of taper pin or wrap terminations for connecting to external equipment. A complete line of SERIES 140 plugwires is offered.



Series 140 Plugwire Tip

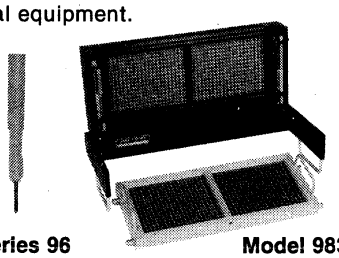
Model 935 (1632 Positions)

VACUUM FIXTURE KITS
Single and Duel Fixture Kits for use with HEWLETT PACKARD (3060/61/62 & 65) and DIGALOG SYSTEMS printed circuit board testers.



Dual Fixture Kit

SERIES 96 DOUBLE DENSITY SYSTEM
Introduced in 1983, offers twice the contacts per total space required when compared with SERIES 157 & 140 Removable Plugboard SYSTEMS. A choice of Modular Plug or wrap termination for connecting to external equipment.



Series 96 Plugwire Tip

Model 983 (2400 Positions)

APPLICATIONS OF REMOVABLE PLUGBOARD SYSTEMS

MAC PANEL Plugboard Programming Systems are used whenever there is a need for frequent or fast changes in the functions performed by electrical equipment and circuits or in the interconnection of two or more machines and/or circuits. Removable Plugboards are prewired with plugwire assemblies to provide a given pattern of interconnection. Changes can be made either by changing the program wired in the removable Plugboard or by simply replacing the Plugboard in the Receiver with another pre-programmed Plugboard in a matter of seconds. **MAC PANEL** Plugboard Programming Systems are used as large connectors with up to 7200 contact positions on standard models. Thousands of **MAC PANEL** systems have been installed in the United States and in over forty foreign countries since 1958.

GENERAL PRODUCT DESCRIPTION

Each system consists of a Receiver and one or more removable Plugboards. The Receiver is the frame and the engaging mechanism that accepts the removable Plugboard. Depending on the system there are from one to six molded black phenolic or blue diallyl phthalate panels in the Receiver and Plugboard frames. A molded panel will contain up to 1280 holes or contact positions. These panels are silk screened with a grid pattern that provides a unique alphanumeric address for each contact position in the system. Special customized printing in any number of colors can be provided on either the Plugboard or Receiver.

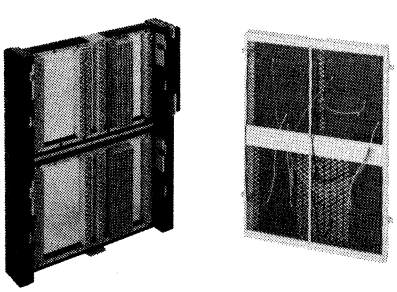
A contact spring is factory installed in each Receiver contact position. The front portion of these nickel or gold plated contact springs mates with nickel or gold plated plugwire tips inserted in the appropriate contact position of the Plugboard when the Plugboard is inserted in the Receiver. All Receivers are equipped with a mechanical interlock that assures proper mating of contact springs and plugwire tips. Each contact position can also be directly connected to the equipment from the rear of the Receiver by soldering, insertion of taper pins, or wire-wrapping. The desired method of connection must be determined prior to ordering so that the appropriate type of contact springs will be provided in the Receiver.

SERIES 96
The more sophisticated mechanism of the SERIES 96 allows for precise alignment of a more dense array of mating contacts. The system consists of up to 6 precisely drilled sections. The removable plugboard has alphanumeric silk screening of each of the nylatron sections. Systems are in multiples of 1200 contact points ranging from 1200 to 7200 points. The receiver sections made of G-10, hold 1200 female sockets with gold plated BE-CU contacts. Termination for wiring to external equipment can be done through wire-wrap, ribbon cable or using single conductor wire. Each cable assembly may contain up to 60 conductors for mass termination through a 2 x 30 modular connector.

The SERIES 96 is also designed for hybrid applications incorporating Signal, Power and Coax capabilities in one compact mechanism.

MAC PANEL maintains shelf stock on over 500 types of plugwire assemblies. These include single conductor and multi-conductor unshielded and shielded plugwires as well as crimpable and wire-wrappable plugwire tips.

MAC PANEL customer service personnel and design engineers invite your inquiries. We can promptly and economically design, build, and install a special custom system or plugwire if our standard product will not meet your requirements.



MODULAR AUTOMATIC TEST EQUIPMENT (MATE) INTERFACE SYSTEMS: Please see our ad in Volume D Section 3475.

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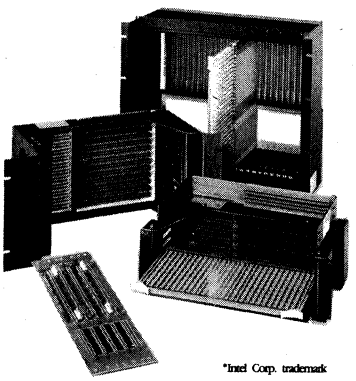
MUPAC®
IC PACKAGING SYSTEMS

Build The System You Need

Make Mupac Your Choice for Multibus* and VME Packaging Hardware...

Multibus I



*Intel Corp. trademark

Yes! Mupac has everything you need for Multibus compatible packaging!

This flexible, compact and reliable packaging system can handle from 2 to 26 boards in easy-to-use modular increments. The strong, black anodized aluminum rack is U.L. recognized and features guides on .60 and .75 inch centers, an open rack design for ease of access to installed boards and hold-down bars to facilitate shipping.

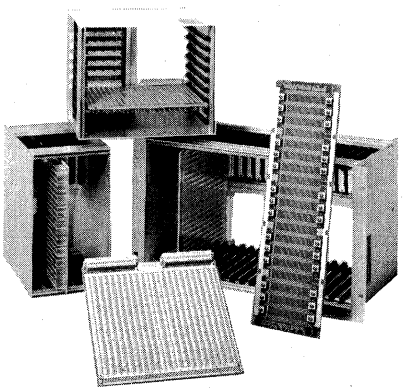
Mupac's GND/SIG-GND/GND backplane is designed to eliminate or drastically reduce crosstalk and noise. Features include shielded signal lines, power connectors and terminated bus lines. Provisions for parallel priority, -5 volt regulator and reset switch printed circuitry are designed into the backplane as well.

Mupac's 2-sided and 4-layer patented Schottky wire wrap boards are ideal for prototype and preproduction. The Schottky boards are designed to handle the fast rise and fall times associated with today's high speed devices. The board construction and layout minimizes the effects of system noise, crosstalk, ringing and propagational delay. The high density pin layout maximizes packaging density and keeps signal lines short.

Call or write today!

Make The Right Choice...Choose Mupac

Multibus II



Mupac...First with Multibus II packaging hardware.

See for yourself why Intel chose Mupac to design and manufacture the FIRST approved packaging system for Multibus II.

This flexible, compact and reliable packaging system can handle from 5 to 20 positions in easy-to-use modular increments. Standard built-in features like .090 thick aluminum side plates and extra wide support extrusions work together for strength and durability.

The iPSB™ and iLBX-II™ backplanes are of a 6-layer design and feature press-fit 96-pin DIN connectors, built-in power blocks for easy installation of power cables, terminated bus lines, controlled characteristic impedance for noise immunity and multiple voltage and ground planes.

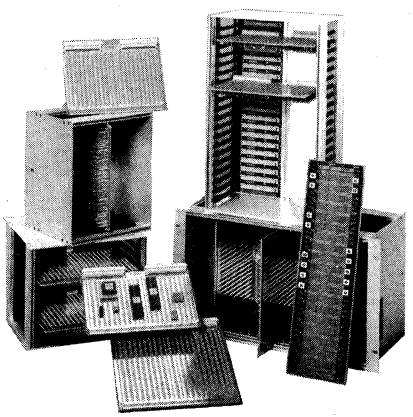
Mupac extender board allows maximum distribution of current from the connector through the extender.

Mupac's 4-layer Schottky wire wrap boards are ideal for prototype or preproduction.

Call or write today!

Make The Right Choice...Choose Mupac

VME packaging hardware



When only the BEST performance is needed, turn to Mupac for VME packaging hardware.

Mupac's VME series sub-rack and backplane assemblies are designed as part of a flexible, compact and reliable packaging system that offers the BEST solution to VME compatible packaging.

Mupac's VME packaging system can handle from 5 to 21 positions in easy-to-use modular increments. Standard built-in features like .090 thick aluminum side plates and extra wide support extrusions work together for strength and durability.

The J-1 backplane is a 6-layer design for high power capacity and maximum conductivity. The J-2 backplane is a 2-layer design. 96-pin press-fit DIN connectors are featured on both backplanes along with terminated bus lines to minimize ringing and power blocks for easy installation of power cables.

Mupac's extender boards allow maximum distribution of current from the connector through the extender.

Mupac's 4-layer Schottky wire wrap boards are ideal for prototype or preproduction.

Call or write today!

Make The Right Choice...Choose Mupac

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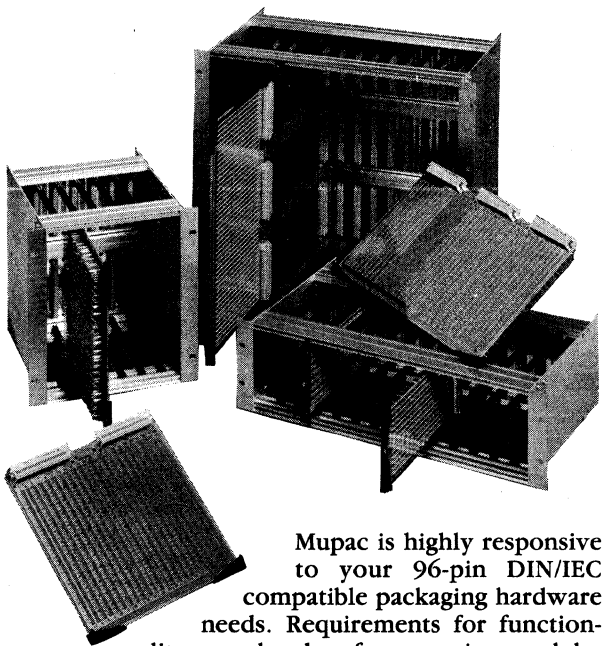
Just the Way You Want It!

MUPAC®
IC PACKAGING SYSTEMS

BUILD IT YOUR WAY WITH MUPAC'S 96-PIN DIN/IEC COMPATIBLE PACKAGING SYSTEM!

The most advanced 96-Pin Standard packaging hardware on the market, today!



Mupac is highly responsive to your 96-pin DIN/IEC compatible packaging hardware needs. Requirements for functionality, speed and performance in a modular packaging system are combined with Mupac's advanced manufacturing procedures to produce Mupac Metric; the 96-pin DIN/IEC compatible standard packaging hardware that works together as one integrated solution to your IC packaging requirements.

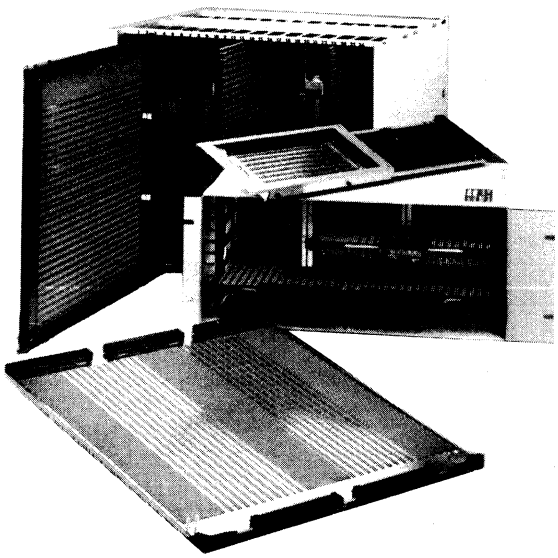
Mupac's comprehensive family of standard packaging hardware includes sub-racks and power backplanes that can handle up to 26 boards in depths that go from 160mm to 400mm and range in height from 3U to 12U in easy-to-use modular increments.

And...only Mupac offers you the ideal combination of high density packaging, high speed operaton and flexible power distribution, plus the convenience of wire wrap interconnections.

Our Metric wire wrap boards feature Mupac's patented 4-layer Schottky construction. This design maximizes the conductivity and capacitance characteristics of the board, which are the power source and ground reference of the high speed ICs, while minimizing the effects of system noise, ringing and propagational delay.

Call or write today!

MUPAC SOLVES YOUR HIGH SPEED WIRE WRAP NEEDS WITH STANDARD 108-PIN PACKAGING HARDWARE!



Mupac offers a versatile range of standard packaging building blocks that enable you to translate your designs into full prototypes and complete systems faster and with fewer restrictions than any other product on the market today. It's Mupac's system approach to packaging your system and it's complete down to the smallest detail.

Mupac's comprehensive family of high speed packaging hardware includes horizontal and vertical racks, 4-layer Schottky wire wrap boards, power backplanes, mounting hardware, cable assemblies, connectors and other accessories.

Our system allows you to package as little as one, single 108-pin connector size Schottky wire wrap board that measures 4.5″ X 8.125″, to as many as thirteen, 347 series, high density wire wrap boards that measure 14.9″ X 16.125″ and hold as many as 480 IC's each, based on 16-pin devices.

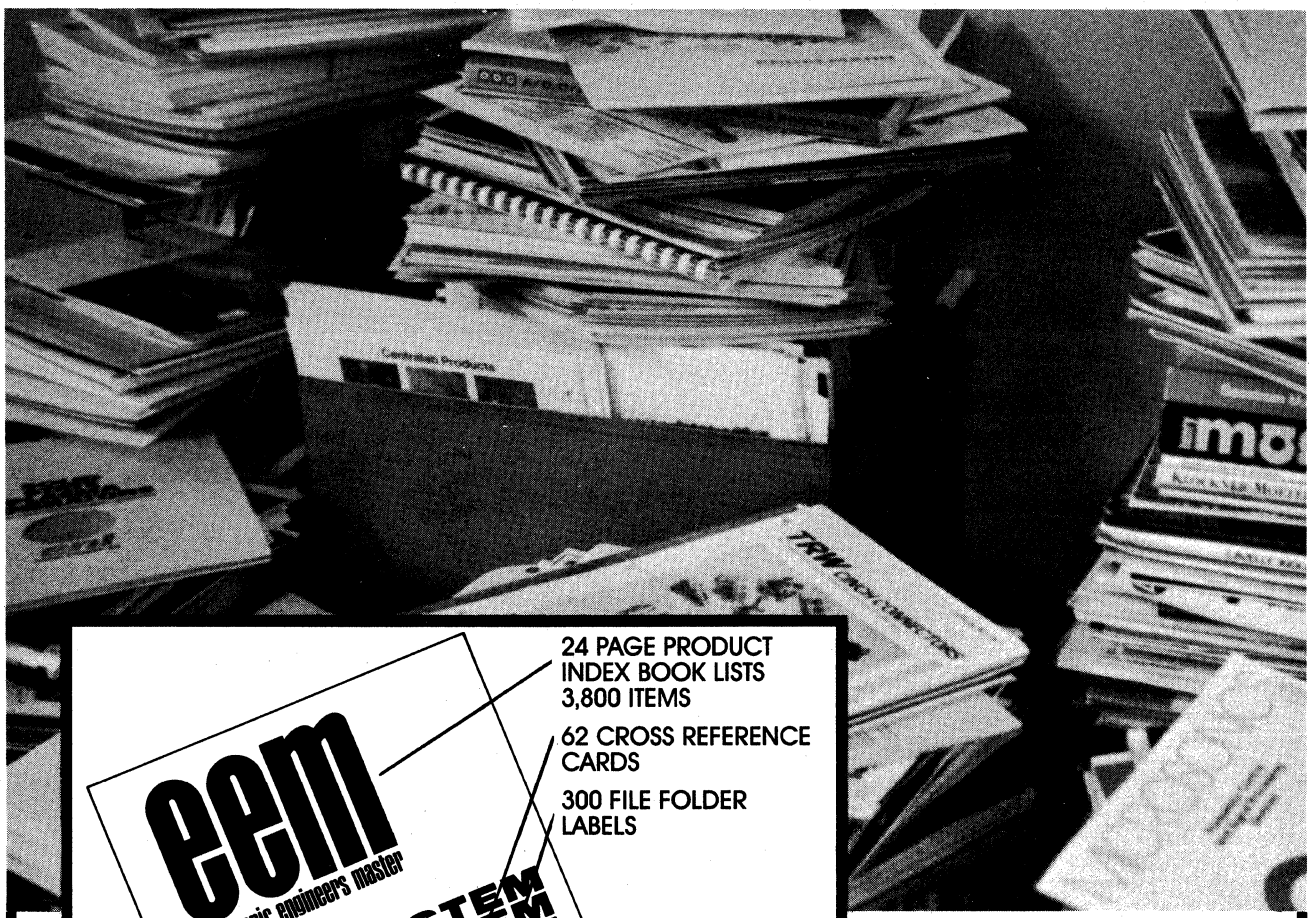
Mupac's Patented Schottky compatible boards are designed to maximize the conductivity and capacitance characteristics of the board, minimize system noise, ringing and propagational delay and enhance the rise and fall times of the signal.

And...only Mupac offers you the ideal combination of high density packaging, high speed operation and flexible power distribution, plus the convenience of wire wrap interconnection.

Call or write today!

Make The Right Choice...Choose Mupac **Make The Right Choice...Choose Mupac** **Make The Right Choice...Choose Mupac**

10 Mupac Drive, Brockton, MA 02401 TEL (617) 588-6110 • OUTSIDE MA (800) 225-0398 • TWX (710) 345-8458



24 PAGE PRODUCT INDEX BOOK LISTS 3,800 ITEMS

62 CROSS REFERENCE CARDS

300 FILE FOLDER LABELS

ALL NEW with this edition of EEM

GET ORGANIZED!

Are your catalog files organized? Can you find any given catalog in a matter of seconds? If your answer is "Yes," you probably already have the EEM File System. But, if you said "No," you really ought to look into this simple system. It will save hours of time and tons of aggravation.

The EEM File System was invented over twenty-five years ago to help people who specify, buy, or work with electronic products and equipment. It is upgraded on a constant basis to reflect the current state of the art. It's easy to use and easy to customize to your particular needs.

You say you want to file catalogs by type of product? That's easy to do with The System. But, what are you going to do when there are multiple products in one catalog? Take Mallory for example. There are all kinds of products in the Mallory Short Form Catalog. With the EEM File System all you do is file the catalog under "M" for Mallory and refer to it on all of the cross reference cards that apply.

There are thousands of EEM File Systems in everyday use in engineering and procurement offices all over the world. Shouldn't you be using this proven system?

The EEM File System is shipped in one neat package. The package contains everything you need to set up your very own filing system. Best of all, it's easy to get and very affordable. Send a check or money order for $25.00 and EEM will pay the postage and sales tax. If you must use a purchase order, please add $5.00 for postage and handling. An invoice will accompany your System.

Don't waste any more time. Get organized now!

EEM FILE SYSTEM,

645 stewart ave., garden city, ny 11530

PT PRODUCT TECHNOLOGY INC.
2201 "E" S. STANDARD AVE., SANTA ANA, CA 92707
PHONE: (714) 549-8998
FAX: 714/549-2238

"SERVICE IS OUR SPECIALTY"

Product Technology supplies the highest quality products consistent with our customers' workmanship standards and cost requirements.

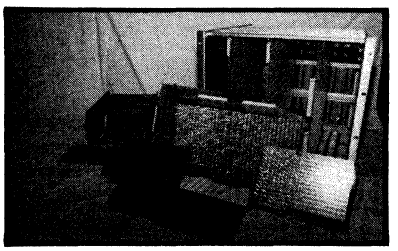
DISCRETE WIRING SERVICES

Automatic and semiautomatic wire wrapping and stitch-wiring — point-to-point, XY and special routing.



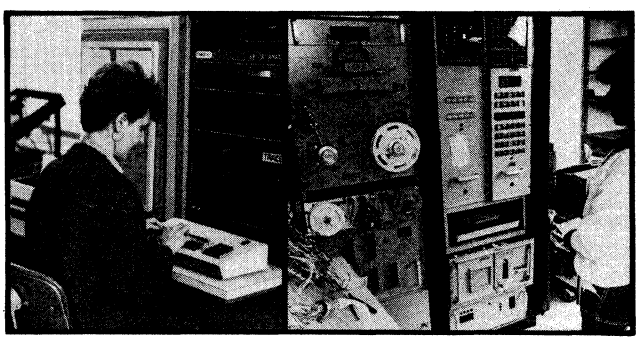
ELECTRONIC PACKAGING PRODUCTS

Logic cards, backplanes, extender cards, racks — DIN/EUROCARD, VME, multibus, IBM PC-XT and AT, S-100 and standard bus; custom PC boards, hardware and wire (cut and stripped).



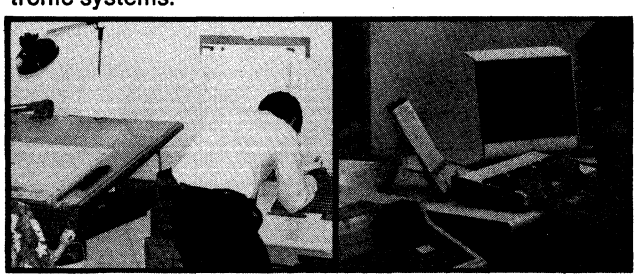
TESTING SERVICES

Bare board and in-circuit and fixtures.

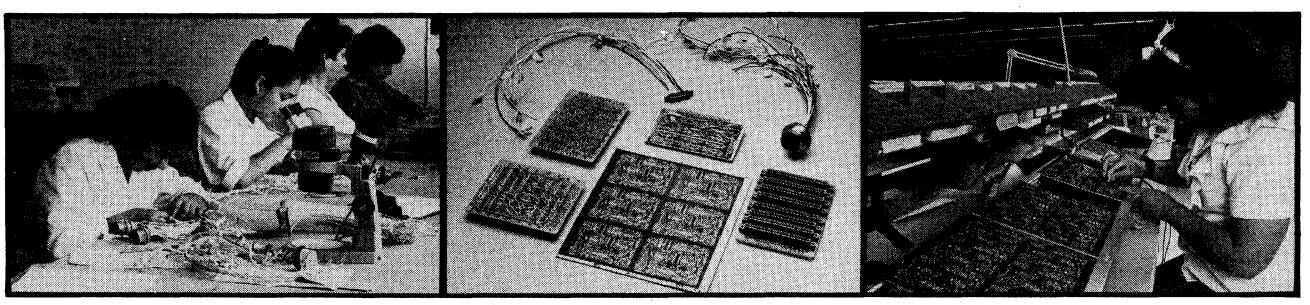


ENGINEERING SERVICES

PC board design (CAD), digitizing, photoplotting, data conversion, design analysis and documentation packages. PC boards, cables, harnesses and complete electronic systems.



ASSEMBLY SERVICES



QUALIFICATIONS

MIL-I-45208	QUALITY
MIL-S-45743	SOLDER
WS 6536	SOLDER
WS 14783	STITCH WIRE
MIL-STD-1130B	WIRE WRAP
DOD-HDBK-263	ELECTRO STATIC DISCHARGE CONTROL
MIL-STD-454	ELECTRONIC ASSEMBLY

SERVICES AVAILABLE

- AUTOMATED WIREWRAPPING AND STITCH-WIRE SERVICES
- ELECTRO/MECHANICAL ASSEMBLY SERVICES CHASSIS-POWER SUPPLIES, PRINTED CIRCUIT BOARDS, CABLES, HARNESSES
- TESTING SERVICES IN-CIRCUIT ANALOG, CONTINUITY AND DISCONTINUITY

Product Technology would welcome the opportunity to conduct you on a tour of our facilities to demonstrate that our equipment, controls and capabilities are second to none.

MAJOR EQUIPMENT INCLUDES

- GARDNER DENVER FULLY AUTOMATIC WIRE WRAP MACHINES
- GARDNER DENVER, STANDARD LOGIC SEMIAUTOMATIC WIRE WRAP MACHINES
- CNC 85 SEMIAUTOMATIC STITCHWIRE MACHINES
- GARDNER DENVER 144 CUT AND STRIP MACHINES
- TRACE TA-5 TEST SYSTEM
- ATS 300 IN-CIRCUIT BOARD TESTER
- HUGHES FACT TESTER
- 18″ HOLLIS WAVE SOLDER MACHINES
- TRIEBER AQUEOUS "IN LINE" CLEANING SYSTEM
- AUTOMATIC LEAD CUTTERS 12″ AND 18″
- MARK V AUTOMATIC LEAD PREPPERS
- MARK II WIRE CUTTERS

VECTORBORD plus™ High Speed Circuit Development System

VECTOR ELECTRONIC COMPANY

HIGH SPEED CONSTRUCTION
- Designed for high speed devices such as ECL, ALS and FAST™ (Fairchild), and CMOS
- High density grid allows minimum wire lengths for maximum speed performance
- Massive inter-pin copper planes provide minimum length current return path and reduce ringing and crosstalk.

SURFACE MOUNTED DECOUPLING CAPACITORS
- Superior for noise reduction
- Increases packaging density.
- Eliminates wiring tool interference
- Alternating values prevent resonance

HIGH DENSITY PGA MOUNTING
- Large area accepts any size PGA or PLCC socket
- Selectively loaded for easy DIP installation
- Optional low insertion force socket pins
- Full or partial pin loading

TWO TYPES OF MULTILAYER CONSTRUCTION (4 layers)
- Schottky (SCH) version with redundant power and ground layers
- High speed universal (HSU) with four independant layers for multiple power planes
- SCH & HSU versions available for each board size
- Boards are .125" thick with .062" milled edges

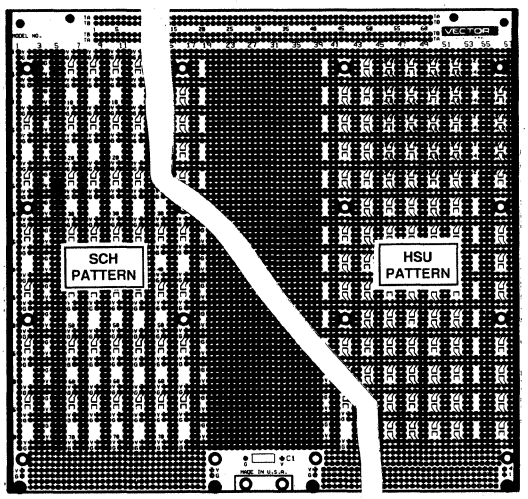
HIGH DENSITY SOCKET PIN PATTERN
- Accepts DIP devices with .300", .400", .500", .600", .900" and 1.2" lead spacing without using adapters
- On-grid pinfield for easy wiring geometry definition and test fixturing

96 PIN HIGH DENSITY CONNECTORS
- Compatible with DIN and IEC international standards
- Reliable pin and socket configuration
- Optional connector commitment available for VMEbus, MultibusII®, Futurebus®, or Nubus®

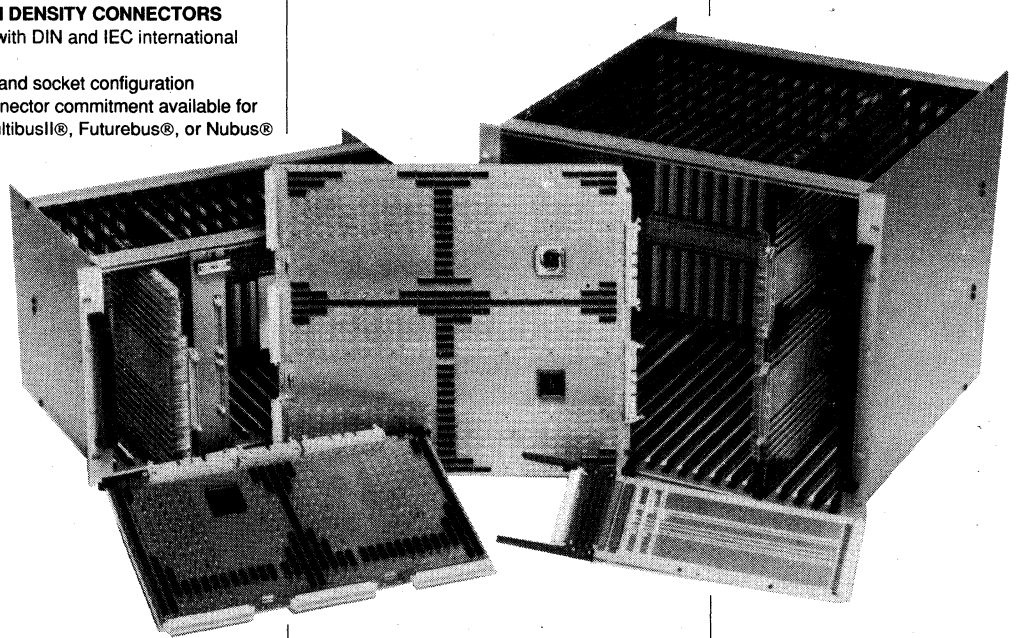
UNCOMMITTED BACKPLANES ALLOW USER DEFINED BUS ASSIGNMENTS

Vector's high performance uncommitted backplanes are 0.125" thick FR4 epoxy glass with 4 heavy two-ounce copper planes for most effective power, ground, and signal distribution. Installed 96-pin DIN connectors with wire wrap tails and spaced on 0.8" or 1.2" centers. Power pickup pins are installed for +5V and auxiliary. Available in 3U, 6U, and 9U configurations with or without power connectors, and with 13, 21, or other numbers of connectors installed in P1, P2, or P3 position. **Send for complete data.**

EUROPACKAGING PRODUCT LINE SUPPORT
- Flexible and rugged aluminum subracks
- Test extenders for high speed circuits
- Systems enclosures for rack or table top mounting



Note: Vector Apple Macintosh II™, SE™, and IBM Cards Available in Vectorbord plus™ Design



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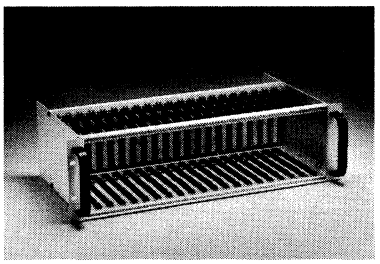
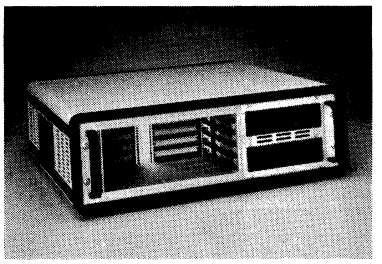
Call Toll Free in CA 800-426-4652, Outside CA 800-423-5659 (For custom configurations contact factory directly).

VME Backplanes, Extenders, Assembled Subracks with Installed Backplanes, and System Enclosures

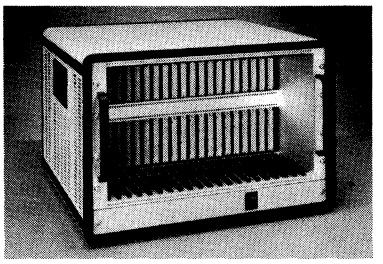
VECTOR ELECTRONIC COMPANY



21 Slot 34 VME Subrack C316 BAA42



5 Slot 6U VME System SE2322A-01



21 Slot 6U VME System SE2772A-01

ASSEMBLED SUBRACKS WITH VME BACKPLANES FOR 19-INCH RACK MOUNTING

A Vector assembled subrack with backplane is ready to plug in cards when you receive it. No more wasted time in trying to figure out what hardware you need to order to assemble your rack mounted system. Vector's subracks and backplanes meet or exceed all of the mechanical and electrical requirements of the VME specification. A multilayer shielding technique assures low noise performance. Power distribution to the backplane is accomplished with multiple polarized connectors.

C316 BAA42 Includes fully assembled rack with 21 pairs of plastic card guides, 21-slot J1 backplane. Measures 19"w x 5.21" h x 9.44" deep. Accepts 21 cards 100 x 160mm.
C316 EAA28 Includes fully assembled rack with 14 pairs of plastic card guides, 12-slot J1 backplane. Measures 19"w x 5.21"h x 9.44" deep. Accepts 12 cards 100 x 160mm.
C616 PAA42 Includes fully assembled rack with 21 pairs of plastic card guides, 21 slot monolithic backplane (combined J1 and J2 on one panel) measures 19" wide by 10.46" h x 9.44" deep. Accepts 21 cards 233.4 x 160mm.
C616 EAA28 Includes fully assembled rack with 14 pairs of card guides, 12-slot J1 backplane. Measures 19" wide by 10.46" h x 9.44" deep. Accepts 12 cards 233.4 x 160mm.
C616 EEA28 Includes fully assembled rack with 14 pairs of card guides, 12 slot J1 and 12 slot J2 backplane. Measures 19" wide by 10.46"h. x 9.44" deep. Accepts 12 cards 233.4 x 160mm.
C916 PAA42 Includes fully assembled rack with 21 pairs of guides, 21 slot monolithic backplane (combined J1 and J2 on one panel). Measures 19" wide by 15 3/4"h. x 8.9" deep. Accepts 21 cards 366.7 x 160mm.
Dress panels and handles ordered separately.

VME BACKPLANES

High speed, low noise, six layer construction, and controlled impedance design are a few of the features of Vector's VMEbus backplanes. Our "off board termination" allows the addition of another backplane slot, and the connection of one or more backplanes with our 2 slot interconnect board.
Over 20 models available.

VME MONOLITHIC BACKPLANES

Vector's monolithic backplanes are designed for high performance systems. Utilizing 8-layer construction with massive power and ground layers, they facilitate fast data transfer (up to 40 Mbytes per second) with extremely low crosstalk, minimal delay and overshoot, as required in 32-bit based systems. Connectors are DIN 41612 Class II press-fit mounted at 0.8" spacing on the 0.125" thick substrate. Power is delivered at multiple points on the backplane utilizing polarized Mate-N-Lock connectors. As an option, laminated bus bars with "power-bug" barrier terminals may be ordered. Power ratings per board slot are: +5 volts 9.0 amps; +12 volts 1.5 amps; -12 volts 1.5 amps: +5 volts standby 1.5 amps. Boards have full on board termination

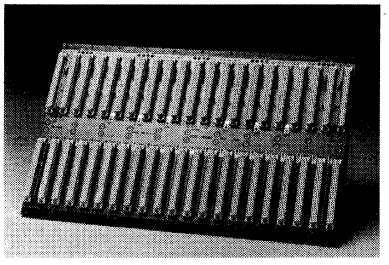
EXTENDERS

Monolithic Extender VMEE-M utilizes the same 8-layer construction design as in the monolithic backplanes described above.

Part Number	Description	Height	Lengh
VMEBP21-M	combined 21-slot, 21-slot,J1 and J2 on one substrate	10.37"	16.74"
VMEBP10-M	combined 10-slot, J1 and J2 on one substrate	10.37"	7.94"
VMEBP7-M	combined 7-slot, J1& J2 on one substrate	10.37"	6.34"

Additional models available. Contact factory

Monolithic Backplane



SYSTEMS ENCLOSURES

Vector's system enclosures are supplied fully assembled with installed backplane(s), power supply, subrack and fans, ready to plug in boards. At the heart of the systems are Vector's low-noise, high-performance design backplanes. Select from our 8-layer monolithic design with on-board termination which combines J1 and J2 one circuit board, or our 6-layer J1 and 4-layer J2 models with off-board termination. Ruggedly handsome and sturdily built, Vector system enclosures are equally appropriate in an engineering, office, or production environment. Custom modifications by the factory are welcome, and include alternate power supplies, special holes, cutouts, marking, and painting.

Design features:

Subrack and backplane are removable from enclosure for serviceability. Peripheral equipment mounts readily in space provided from front of rack. Thermally efficient design provides good air flow and cooling with filtered air for mounted components. Power supplies matched to system size. All aluminum construction with painted grey/grey or burgundy/grey finish.

VME SYSTEMS ENCLOSURES

Note: All units are 19.1" deep

Part Number	Description	Height	Length
SE2322A-01 (burgundy/grey)	5 slot 6U enclosure with 5 slot J1 and 5 slot J2 backplanes Holds 5-6U x 160mm cards horizontally mounted 175 watt switching Power supply	6.4"	20.2"
SE2323B-01 (grey/grey)	Same as above	6.4"	20.2"
SE2772A-01 (Burgundy/grey)	21 slot 6U enclosure with 21 slot monolithic combined J1 and J2 backplane. Holds 21-6U x160mm cards vertically mounted 450 watt switching power supply	13.4"	20.2"
SE2722B-01 (grey/grey)	Same as above	13.4"	20.2"

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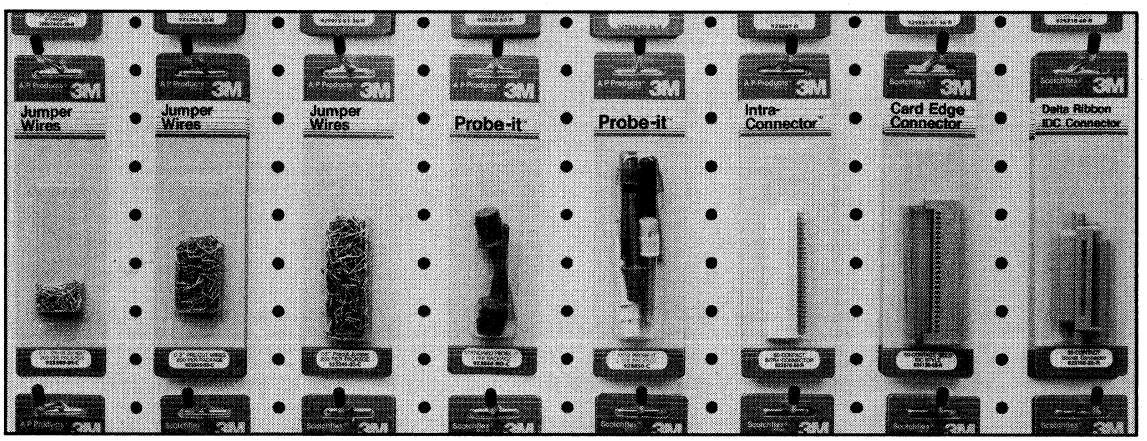
Call Toll Free in CA 800-426-4652, Outside CA 800-423-5659 (For custom configurations contact factory directly).

We've Packaged Our Solutions.





3M's broad line of bulk and rack packaged products makes a wide array of solutions available to you when you need them, and in the quantity you need.

3M's broader line of packaged products now includes many of the products that have been providing you with solutions for years. Choose from test clips and breadboards, connectors and cables, electrical and telecommunications products, static control devices, IC sockets and much more. Your partners at 3M heard you when you said, "Somebody ought to package those solutions."

3M packaged solutions make it easy to find the products you need, in the quantity you need, when you need them. See our complete line and pick up a package of solutions today from your local authorized Electronic Specialty Products distributor.

A P Products®brand DIP IC Test Clips, PLCC Test Clips, SOIC Test Clips, Solderless Breadboards and accessories.

Scotchflex® IDC Connectors, Headers, Wire and Cable.

Electrical Products 33+® Electrical Tape, Scotchlok® Solderless Electrical Terminals and Connectors, Scotchcode™ Identifying Systems, Cable Ties and Insulating Materials.

TelComm Products Scotchlok® Communications Connectors, Scotchflex® Communications Cable and Accessories.

Static Control Charge-Guard™ Static Control Wrist Straps, Static Shielding Bags, Boxes, Foam, Pads and Mats.

Textool Products ZIP™ Sockets.

Industrial Specialties Products Bumpon® Protective Products.

3M bulk and rack packaged solutions are available from your local authorized Electronic Specialty Products distributor. For further information contact your local authorized Electronic Specialty Products distributor. Or telephone 800-321-9668 or (216) 354-2101 in Ohio to find the name of the distributor nearest you.

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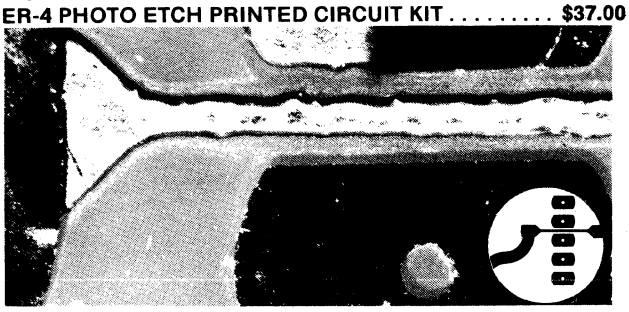
DATAK-PRINTED CIRCUIT KITS

THE DATAK CORPORATION 3117M Paterson Plank Road, North Bergen, NJ 07047 (201) 863-7667

PHOTO ETCH™ Printed Circuit Kit

Photograph original 1:1 master art or PC patterns directly from a magazine page using remarkable POS-NEG™ system (patented). No darkroom or camera needed. Set has all materials to make original artwork masters, film negatives and positives. Use the 5"x6" print frame, copper clad boards, negative photoresist and chemicals to sensitize, expose, develop and etch printed circuit boards. 12 page instruction book covers the theory and practical instructions. Photoflood bulb must be purchased separately at any camera store.

ER-4 PHOTO ETCH PRINTED CIRCUIT KIT $37.00



Dry Transfer DIRECT ETCH™ Resist in Action

OTHER PRINTED CIRCUIT PRODUCTS

TINNIT™ Electroless Bright Tin Plate

TINNIT is supplied as a dry powder. Dissolved in a pint of water, it will plate about 700 sq. ins. of clean copper with a bright tin plating. No electricity is needed. Use to enhance solderability and conductivity on edge card connector patterns.

ER-18 TINNIT™ BRIGHT TIN PLATE $4.60

Etch Resist Pen

Felt pen has lacquer ink that is impervious to PC etchants.

ER-15 ETCH RESIST PEN $1.80

Dry Concentrated Etchant

¼ pound anhydrous ferric chloride in vapor tight pack makes 1 pint etchant, enough for 200 sq. in. of copper board. Cost less than liquids.

ER-3 DRY CONCENTRATED ETCHANT $2.95

Power Etch Pump Kit

Circulates etchant with air to speed etch rate. Kit has pump, coupling hose, perforated distributor tube.

ER-12 POWER ETCH PUMP $7.50

POS-NEG™ Photocopy Film and Accessories

Makes negatives or positives from opaque or translucent original art in one step without a camera. No darkroom needed but use subdued light. Use with yellow filter (ER—17) and EAL photoflood lamp. Read ER-16 Photo Etch Manual before opening this film.

ER-5 SIX SHEETS 5" x 6" POS—NEG FILM $7.00
ER-9 TWO SHEETS 8" x 11" POS-NEG FILM 7.00
ER-16 PHOTO ETCH MANUAL 1.50
ER-17 8½" x 11½" YELLOW FILTER 3.00

Contact Printing Frame

A solidly made plated steel and glass exposure frame. Spring back adjusts for film or circuit board exposure. Kit includes ER-17 yellow filter and ER-16 Photo Etch Manual. 9"x 12" size.

ER-10 CONTACT PRINTING FRAME, 9" x 12" $13.95

Film Process Chemicals

Three packets make 1 pint lithographic film developer and 1 pint acid fixer. Handles 15 sheets 5" x 6" Pos-Neg film.

ER-6 FILM PROCESS CHEMICALS $3.75

Negative Photo Resist Liquid and Developer

Spray on PC board and expose through negative. Unexposed areas are dissolved by developer. Exposed areas harden and are etch resistant. Four ounce bottle with pump spray coats over 1700 sq. in. Develop ONLY with ER-8 or Kodak KPR developer.

ER-71 PHOTO RESIST LIQUID, 4 ounce $7.25
ER-8 NEGATIVE RESIST DEVELOPER, 16 ounce 4.50

DIRECT ETCH™ Printed Circuit Kit

This one step kit uses a unique dry transfer resist that makes razor-sharp patterns on copper clad boards. Lay out circuits right on the copper with these etch resistant dry transfers. Connect with dry transfer lines or the special tape, then etch in ferric chloride or in any commercial PC etchant. Results are equal to or better than commercial boards. Kit includes PC boards, dry transfer resist patterns, resist tapes, ferric chloride etchant, etch tray and instructions.

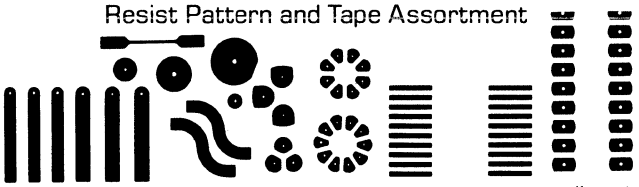
ER-1 DIRECT ETCH PRINTED CIRCUIT KIT $10.50

DRY TRANSFER ETCH RESIST PATTERNS

DATAK prints a broad range of dry transfer resist patterns with an ink that is impervious to all commercial etchants. This ink is identical to that used in printing the JotDraft and Microseries range of donuts and connector patterns. See our full line catalog for additional etch resist patterns.

17.6X BLOWUP shows .015" line between .100" spaced DIP pads. Resist pattern is from DATAK ER-2 set. Circuit board is 2 ounce copper etched in a still bath of ferric chloride for 30 minutes at 125°F. Measured undercut is less than .0015".

Resist Pattern and Tape Assortment



Our best selling set includes 8 sheets of donuts, .125" and .156" connector fingers, transistors, round IC's, DIPs of any size, dry transfer traces and 2 rolls of resist tape. This set is in the ER-1 and ER-4 kits.

ER-2 DRY TRANSFER ETCH RESIST ASSORTMENT .. $6.40

Resist Donut Pad Assortment

Set contains 4 sheets of donuts 1/16" through ¼" dia. with .025" center holes.

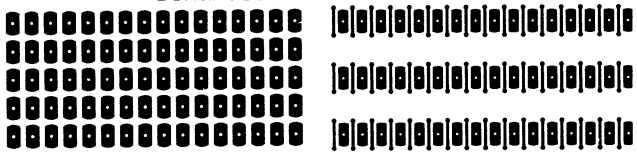
ER-13 DONUT PAD ASSORTMENT $3.50

Resist DIP Pattern Assortment

Set has 4 sheets of continuous .100" x .300" DIP patterns and .050" spaced flatpack fingers. Rub down the length you need. See also JD-171, JD-174.

ER-14 DIP PATTERN ASSORTMENT $3.50

Continuous Resist DIP Pads



From JD-171 **From JD-174**

JD-171 set contains 24 sheets of continuous .125"D x .070" cut pads spaced on .100" x .150" centers. Transfer pads on any multiple of .150" or .100". Do any size DIP pattern accurately and fast.

JD-171 RESIST DIP PADS $12.50

JD-174 has 24 sheets of continuous .125"D x .053" cut pads spaced on .100" x .150" centers with a trace between adjacent pads. Pads transfer alone or with traces on any multiple of .100" or .150". Do a large ROM or a ½ DIP with equal ease.

JD-174 RESIST DIP PADS WITH TRACES $12.50

Edge Card Connector Fingers



.156 Spacing **.125 Spacing** **.100 Spacing**

Sets contain 24 strips of spaced connector fingers. Each strip of fingers is 8" long. Butt strips for any connector length.

JD—122R ASST. CONNECTOR FINGERS: .156" & .125" $12.50
JD-168 CONNECTOR FINGERS: .100" 12.50

SEE SECTIONS 2400 AND 6000 FOR DATAK PANEL MARKING SETS AND WIRE MARKERS

QUALITY PRODUCTS FOR PROFESSIONAL RESULTS

INJECTORALL

DRAFTING AIDS

LAYOUT STRIPS AND CIRCLES
Pressure sensitive etch resist tapes and donuts.
Tapes—.031, .062, .125—60″ lengths Donuts—.062, .093, .125—16 pcs. ea. No. PC20

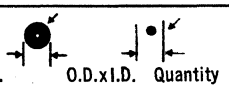
DRAFTING AIDS KIT
Pressure sensitive tapes, donuts and assorted drafting aids. Also includes Mylar base and precision grid on .1 centers. Finished product can be used as a positive for positively sensitized boards or reversed using kit #551 for negatively sensitized boards.
PC21

DRAFTING TAPE
720″ rolls of etch resist tape.

cat. no.	width	cat. no.	width
PC22-015	.015	PC22-093	.093
PC22-031	.031	PC22-125	.125
PC22-040	.040	PC22-156	.156
PC22-062	.062	PC22-200	.200
PC22-080	.080	PC22-250	.250



DONUT TERMINAL PADS
Pressure sensitive-etch resist.



Cat. No.	O.D.xI.D.	Quantity	Cat. No.	O.D.xI.D.	Quantity
PC23-062	.062x.031	40	PC23-150	.150x.040	40
PC23-062-1	.062x.031	1000	PC23-150-1	.150x.040	1000
PC23-075	.075x.031	40	PC23-187	.187x.062	40
PC23-075-1	.075x.031	1000	PC23-187-1	.187x.062	1000
PC23-093	.093x.031	40	PC23-200	.200x.062	40
PC23-093-1	.093x.031	1000	PC23-200-1	.200x.062	1000
PC23-100	.100x.031	40	PC23-375	.375x.062	40
PC23-100-1	.100x.031	1000	PC23-375-1	.375x.062	250
PC23-125	.125x.040	40	PC23-500	.500x.062	40
PC23-125-1	.125x.040	1000	PC23-500-1	.500x.062	250

ELBOWS, T's and CORNERS
Combination pack, scale 1:1, 1/16″ diameter. Pressure sensitive.
No. PC24E 250 elbows
No. PC24T 250 T's
No. PC24C 250 corners
No. PC24 assortment of 8 each



TRANSISTOR TO 5—3 LEAD
Pressure sensitive. Accurate to ±.002 or better. Scale 1:1 symbols.
No. PC25 package of 8
No. PC25-1 roll of 250



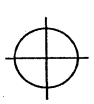
TRANSISTOR TO 5—8 LEAD
Pressure sensitive. Accurate to ±.002 or better. Scale 1:1 symbols.
No. PC26 package of 8
No. PC26-1 roll of 250



TRANSISTOR TO 5—10 LEAD
Pressure sensitive. Accurate to ±.002 or better. Scale 1:1 symbols.
No. PC27 package of 8
No. PC27-1 roll of 250



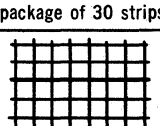
TARGETS
Pressure sensitive symbols. Scale 1:1. For registration or photo reduction.
No. PC31 package of 8
No. PC31-1 roll of 250



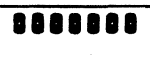
DOUBLE TEAR DROP
Outside diameter .187. Inside diameter .062. 17 contacts per strip.
No. PC32 package of 2 strips No. PC32-1 package of 30 strips



LAYOUT FILM (PRECISION GRID)
Precision grids are printed in non-reproducible blue. Matte finish "Mylar." Accurate to ±.002″. Grids are 1:10, .100 spacing, accent every tenth line.
No. PC33 4x6″ No. PC33A 6x9″ No. PC33B 12x18″



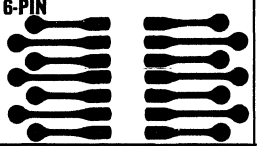
DUAL IN-LINES
Pressure sensitive. Accurate to ±.002 or better. Scale 1:1 symbols. *2:1 available.



pkg. of 8	pkg. of 100	# of pins	pkg. of 8	pkg. of 100	# of pins
PC28-8	PC28-8-1	8*	PC28-22	PC28-22-1	22
PC28-14	PC28-14-1	14*	PC28-24	PC28-24-1	24
PC28-16	PC28-16-1	16*	PC28-28	PC28-28-1	28
PC28-18	PC28-18-1	18	PC28-40	PC28-40-1	40
PC28-20	PC28-20-1	20			

PRESPACED SYMBOLS ON .1 CENTER
PC29 75 Pins PC29-1 750 Pins

DUAL IN-LINES WITH LEADS 14-PIN and 16-PIN
Pressure sensitive. Accurate to ±.002 or better. Scale 1:1 symbols.



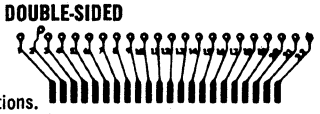
pkg. of 8	pkg. of 100	# of pins
PC28-14L	PC28-14L-1	14
PC28-16L	PC28-16L-1	16

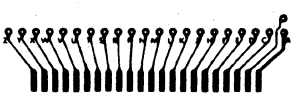
FINGER CONNECTOR .100, .125, .156 center to center
Pressure sensitive symbols. Scale 1:1.

Cat. No.	centers	contacts per strip	# of strips
PC30-100	.100	50	2
PC30-100-1	.100	50	30
PC30-125	.125	50	2
PC30-125-1	.125	50	30
PC30-156	.156	22	2
PC30-156-1	.156	22	30

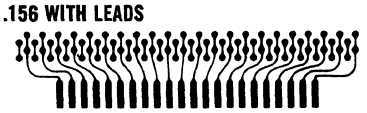


FINGER CONNECTOR STRIPS FOR DOUBLE-SIDED BOARDS .156 WITH LEADS
Pressure sensitive symbols.
Scale 1:1, 22 contacts per strip.
22 leads but allows for 44 connections.
Numbered 1 to 22 on 1 side.
Lettered A to Z on the other side.
No. PC30D package of 2 strips
No. PC30D-1 package of 30 strips
(companion board is PC40A, PC40B)





FINGER CONNECTOR STRIPS .156 WITH LEADS
Pressure sensitive symbols.
Scale 1:1, 22 contacts per strip, 22 leads but allows for 44 connections.
No. PC30L package of 2 strips
No. PC30L-1 package of 30 strips
(companion board is PC5A, 5B)



STRIPPABLE FILM
Red adhesive-back plastic film laminated on clear plastic. For making negatives by cut and peel method.
No. PC34 4″x6″ No. PC34A 6″x9″ No. PC34B 12″x18″

LAYOUT FILM—CLEAR MYLAR .005″ GAUGE
A clear polyester layout base sheet. Will not age or turn brittle, is not affected by heat, humidity, moisture.
No. PC36 2 sheets 4″x6″ No. PC38 2 sheets 12″x18″
No. PC37 2 sheets 6″x9″

OTHER INJECTORALL QUALITY PRODUCTS
- P/C Chemicals and Supplies
- IC Sockets
- "D" Sub-min Connectors
- Breadboards and Terminals
- Conformal Coatings: Anti-fungus Varnish Polyurethane Resin Acrylic
- Freezer Sprays
- Cleaners and Lubricants
- Drafting Aids
- Flat Ribbon Cable
- P.C. Wick
- Printed Circuit Kits



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Woman Owned Small Business



YOUR MAGNETIC SHIELDING PROBLEMS END HERE!

Request AD-VANCE Magnetics' new 84-Page Procurement Catalog/Engineering Manual; offers magnetic shielding users the major technical guideline data needed to design or choose the optimum magnetic shielding solution for a given application.

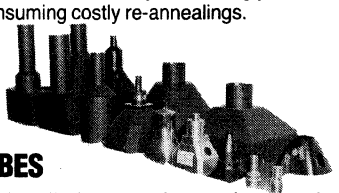
CUSTOM FABRICATED SHIELDS FOR COMPONENTS AND SYSTEMS

Any Specified Configuration or Shielding Requirement

From the simplest component to the most complex system, Ad-Vance Magnetics can design and fabricate an AD-MU shield incorporating your magnetic shielding performance requirements.

These include magnetic isolation chambers, shields for low field research, magnetic shielding components required in systems (such as CRT's), transformers, motors, tachometers, reed relays and computers, dewars for cryogenic research, various test chambers, video cameras, scan converter tubes, photomultiplier tubes, storage tubes, aircraft weather radar display tubes, etc.

Lasting shielding protection is provided because AD-MU alloys do not saturate when properly used, will not suffer excessive permeability loss from shock, and display minimum retentivity. Accordingly, there is no need for repeated time consuming costly re-annealings.



AD-MU CUSTOM FABRICATED SHIELDS FOR CATHODE RAY TUBES

Enhance CRT performance by eliminating effects of external magnetic fields on the electron beam.

Ad-Vance already owns tooling for many types of magnetic shields used during the past quarter century, making tooling savings possible. Or, our Engineering Dept. will gladly help design and produce the optimum shield for your application.

AD-MU TAPE DATA PROTECTORS ASSURE FIDELITY OF VALUABLE TAPES

1 Assure fidelity of vital recorded information by keeping data on magnetic tapes free from distortions caused by unforeseen external magnetic fields.
2 Minimize erasure accidents during safekeeping or transport.
3 Discourage and deter the covert saboteur or vandal.
4 Excellent insurance against possible expensive, or irreplaceable losses.

8 ROUND SIZES

Part No.	A Inches	A Centimeters	B Inches	B Centimeters
TDP 72R07	7-1/4	18.42	3/4	1.91
TDP 72R15	7-1/4	18.42	1-1/2	3.81
TDP 86R07	8-5/8/	21.91	3/4	1.91
TDP 96R13	9-5/8	24.45	1-3/8	3.49
TDP 106R08	10-5/8	26.99	7/8	2.22
TDP 106R15	10-5/8	26.99	1-1/2	3.81
TDP 116R15	11-5/8	29.53	1-1/2	3.81
TDP 116R15P				

Made of AD-MU-00 .031" thick with protective .125" polyurethane foam liner in both top and bottom.

10 SQUARE/RECTANGULAR SIZES

Part No.	A Inches	A Centimeters	B Inches	B Centimeters	C Inches	C Centimeters
CTDP 25S40 (Cassette)	5/8	1.588	5/8	10.48	2-5/8	6.67
TDP 2	12	30.48	12	30.48	3-1/4	8.55
TDP 5	12	30.48	12	30.48	7-3/4	19.685
TDP 75S50	7-1/2	19.05	7-1/2	19.05	5	12.7
TDP 97S30	9-3/4	24.76	9-3/4	24.76	3	7.62
TDP 97S70	9-3/4	24.76	9-3/4	24.76	7	17.78
TDP 117S17	11-3/4	29.845	11-3/4	29.845	1-3/4	4.445
TDP 117S32	11-3/4	29.845	11-3/4	29.845	3-1/4	8.55
TDP 117S77	11-3/4	29.845	11-3/4	29.845	7-3/4	19.685
TDP 117S150	11-3/4	29.845	11-3/4	29.845	15	38.1

Made of AD-MU-00 .050" thick. Finished in durable textured enamel.

INEXPENSIVE INSURANCE IN THESE UNCERTAIN TIMES

Proven AD-MU Tape Data Protectors and Cassette Tape Data Protectors provide inexpensive insurance against such hidden hazards.

Satisfied customers include all branches of the armed forces, NASA, and numerous private firms as well as other governmental organizations.

There is not a single reported instance in which tapes enjoying such secure protection have ever been affected by stray magnetic fields. The investments in such tapes have remained uniformly safe from harm.

"WHY TAKE MY MAGNETIC SHIELDING PROBLEMS TO AD-VANCE MAGNETICS?"

Over 90% past and present magnetic shield designs have been created and fabricated by engineers and production personnel with Ad-Vance. With such a record of experience, it seems likely that Ad-Vance people are the logical ones to solve your particular problem.

"What facilities does Ad-Vance have?"

Two modern, fully equipped plants in Rochester, Indiana, are across the street from each other. They contain up-to-date equipment for:

All types of metal forming
heliarc and spot welding
complete in-house tool room
deep drawing
CNC equipment
processing control of heat
treating and finishing
in-house quality control

"What's Ad-Vance's industry and market position?"

Ad-Vance is the industry's largest, oldest and most experienced firm exclusively manufacturing magnetic shielding. Products from its factory are used off-planet in spacecraft and satellites as well as world-wide in exacting industrial, military, laboratory and consumer applications.

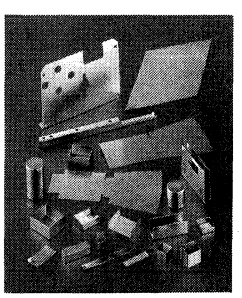
AD-MU SHEET STOCK — DELIVERY FROM STOCK

- For your in-house designing and manufacturing convenience.
- Easy to work, bend, stamp, draw, finish, etc. on ordinary sheet metal working equipment. SHIELDS MUST BE HEAT TREATED before end use or further finishing by plating, painting, etc.

JUST CUT AD-MU FOILS TO THE EXACT SHAPE YOU NEED

These Time-Saving High and Low Permeability Foils offer convenient, economical magnetic shielding. In many applications, their use can eliminate the costs of designing and manufacturing pre-fabricated shields. Foil shielding is also useful in hard-to-get-at-places. In addition, it permits more compact assemblies, accomplished by placing magnetically reacting components closer together with no performance degradation.

The foils exhibit useful ductility, so are readily hand trimmed to your desired outline on an ordinary cutting board, or with shears. They are then easily hand formed around the structure or component to be shielded. Simple adhesive tape can be used to hold them in place. They have already been properly heat treated so are ready for immediate use.

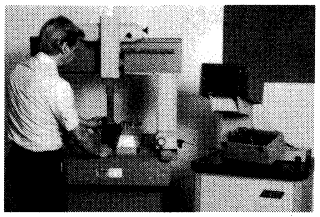


AD-VANCE MAGNETICS, INC.

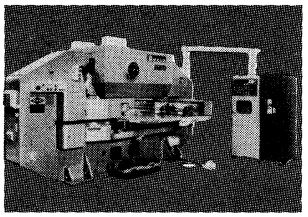
625 MONROE STREET, ROCHESTER, INDIANA 46975
(219) 223-ADMU / TWX (810) 290-0294 / FAX (219) 223-2524
The Problem Solving Magnetic Shielding Specialists—4 Decades of Magnetic Shielding Leadership

amuneal

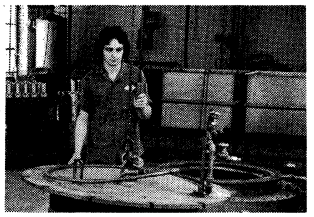
the ONLY magnetic shielding manufacturer with all this IN-HOUSE capability!



STATISTICAL QUALITY CONTROL... fully documented system. Conforms to MIL-45208A and ASTM 698-74. Computerized XYZ CMM checks the dimensional accuracy.



CNC CONTROL CAPABILITY... superior precision and cost efficiency for multiple hole punching. Up to ±.005" accuracy and ±.001" repeatability.



HYDROGEN ANNEALING... each shield is annealed after fabrication in one of our six cam-controlled furnaces with strip-chart readout.

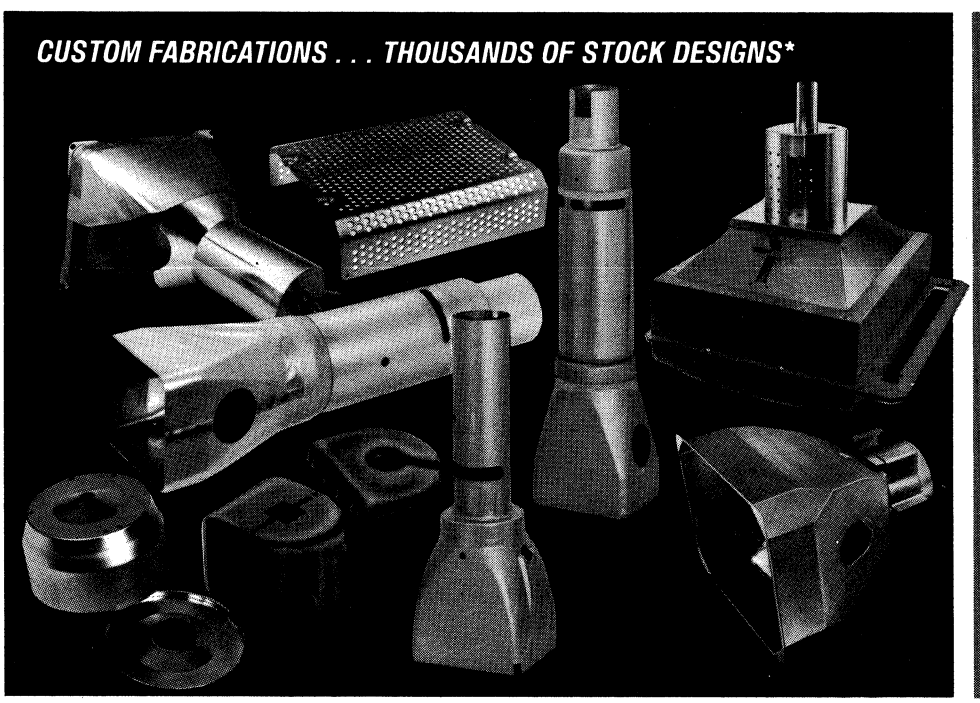


HYDROFORMING... the truest, deep-drawing technique available for highly accurate contouring of shields.
and... a complete TOOL & DIE Department.

no other shielding manufacturer can match our ability to deliver ON TIME... ON SPEC... ON BUDGET!

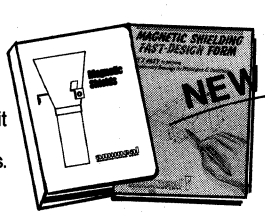
That's because no other manufacturer can match our in-house capability or design experience. Give us a drawing of the device you want shielded, and we'll select the proper alloy and suggest the most cost-effective way to design, fabricate, anneal, and test your shields.

Try us with one shield—or a production run of a million—and you'll see why we've become the largest magnetic shielding manufacturer in America.





Ask for our FREE 64-page catalog and NEW FAST-DESIGN FORM that makes it easy to prepare drawings for prototypes or quotations.

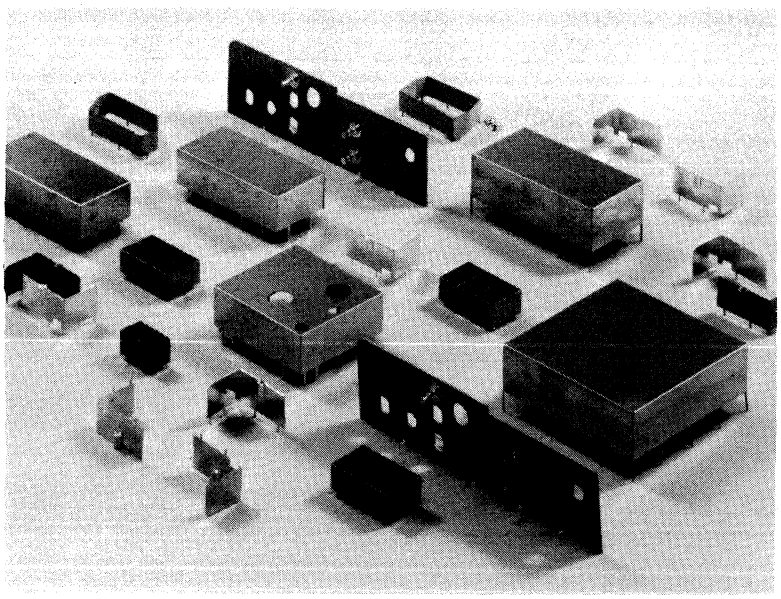


Immediate Delivery from Stock on Foil and Sheet.
Amumetal (80% nickel): Amunickel (49% nickel).
Foil Thicknesses: .002", .004", .006", .010".
Sheet Thicknesses: .014", .020", .025", .030", .040", .050", .060".

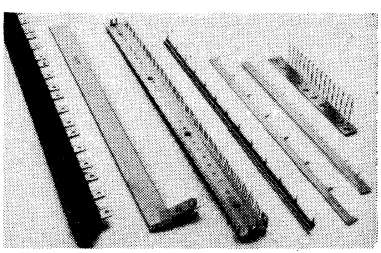
amuneal
MANUFACTURING CORP.
4737 DARRAH STREET, PHILADELPHIA, PA 19124
215/535-3000 FAX 215-743-1715

RFI / EMI SHIELDING

Atlee manufactures custom RFI / EMI shielding made from beryllium copper, brass or nickel silver. These shields are used to isolate the source of RFI on the circuit board.



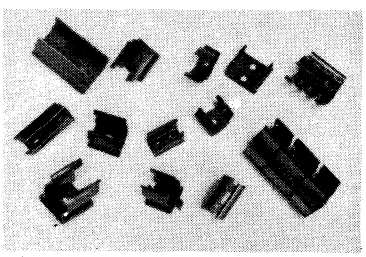
Bus Bars



Atlee is a full line manufacturer of bus bars serving the computer industry, avionics and military contractors. We have available design and engineering services as well as a prototype department. Atlee will manufacture any style bus bar to your specifications. Contact us for a catalog.

For detailed information see page C. 1716, section 3200.

Component (Spring) Clips

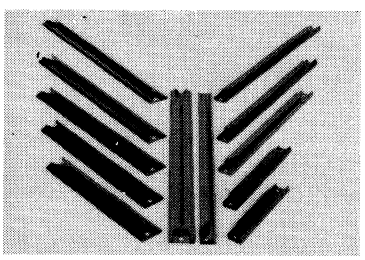


Commercial and MIL STD Clips for Immediate Delivery

M24066	M17160	MS28136
MS28137	NAS1465	MF21316

For detailed information see page B. 1236, section 4300.

Card Guides



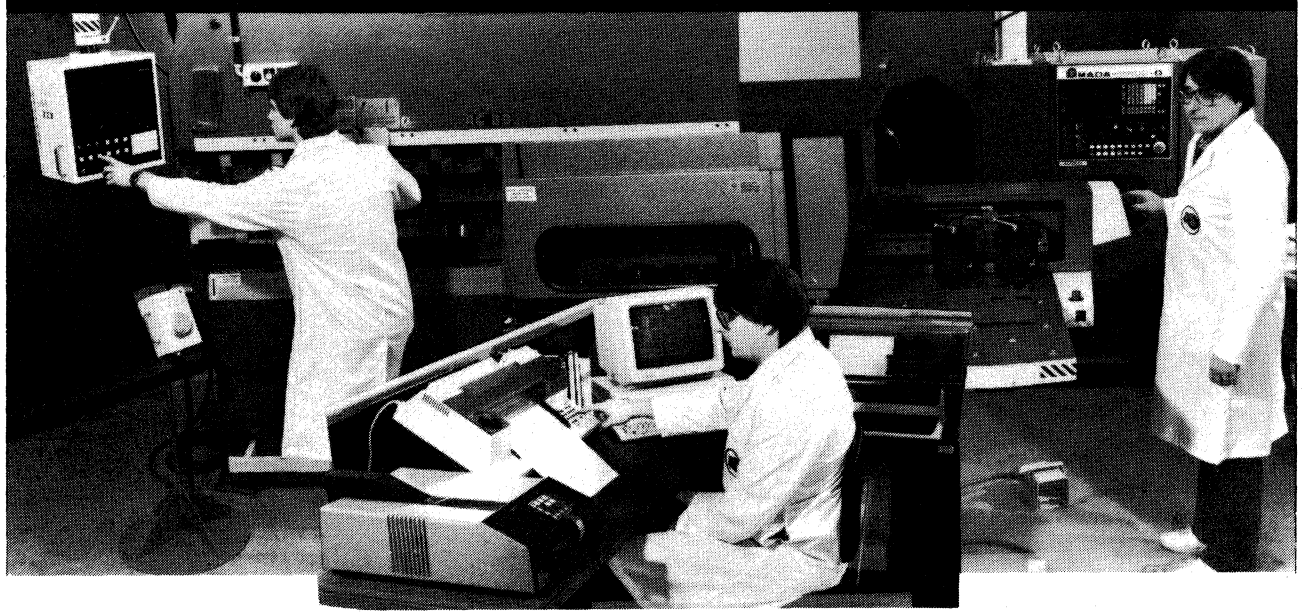
- Made of beryllium copper and stainless steel.
- Positive retention of circuit board under severe shock and vibration
- Quick and simple board insertion and withdrawal
- Military and commercial use

For detailed information see page C. 1017, section 1400.

ATLEE

10 BAYFIELD DRIVE, NORTH ANDOVER BUSINESS PARK, NORTH ANDOVER, MA 01845
(617) 681-1003 • TELEX #928252 • FAX: (617) 686-2934

Magnetic Shield Manufacturing



REPRODUCIBLE QUALITY — ON COMMAND!

COMPETITIVE EDGE

Eagle Magnetic's willingness to invest in expandable state-of-the-art automated manufacturing and control equipment reflects our desire to continue our competitive edge, serving our customers, well into the future.

CAD/CAE to CAM

Productivity begins with our sophisticated Computer process control center. Here advanced high-level programming, link design/engineering specifications to optimum machine operation. Precise monitoring compounds value added by increased machine uptime, reduced waste, and repeatable accuracy in reproducing your exact design specifications —now—or a year from now.

MORE THAN AUTOMATION

CNC/DNC and NC machines provide the precision and long term repeatability required to produce the consistent, high quality—value added products you deserve.

In addition to automated equipment, our up-rated semi-automatic and operator directed machines provide important alternatives for selecting the most cost-effective process methods.

CRAFTSMENSHIP

Talented craftsmen combine knowledge and experience, with proven CAM and up-to-the-minute fabrication techniques.

Pride of workmanship and a creative environment, result in quick, practical solutions to production problems.

You will benefit from our improved process consistency and greater productivity.

BENCHMARK QUALITY

Eagle Magnetic Benchmark Quality is our manufacturing standard. We believe value added quality is a **design-in** feature not an inspect-in incident. Skillful management of committed individuals operating state-of-the-art CAD/CAE/CAM equipment increase **design-in** value added quality with each process.

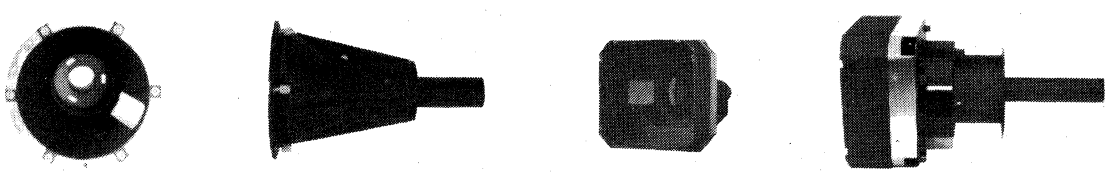
Quality begins when design specifications are CAD/CAE enhanced and continue through master programming, down-loading, and station process control.

Careful handling and shipping insures that you receive a high quality value added product.

RESPONSIVE

If you expect high quality, value added shield products, manufactured to your exacting specifications, by the latest automated technology, then you should contact Eagle Magnetic Co.—the technology leader in the material selection and production of shields to solve EMI problems.

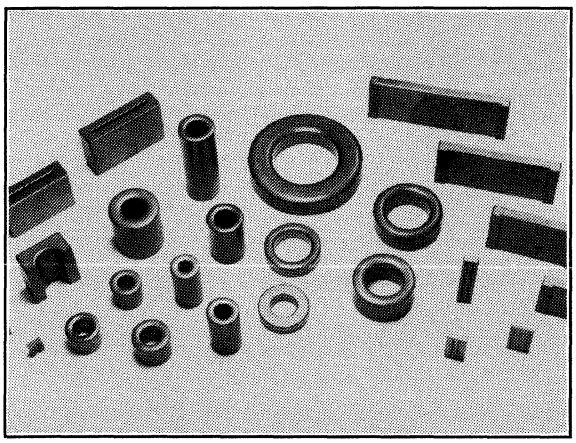
Design **Prototype** **Production**



Eagle Magnetic Co. Inc.
Magnetic Shields (CRT—XTM—PM) Sheet & Foil
P.O. Box 24283, Indianapolis, IN 46224
317-297-1030

More Black Magic...

From Fair-Rite with the New EXPANDED Cable & Connector EMI Suppressor Kit.



Ferrite—that black, crystalline oxide ceramic, offers the almost magical property of suppressing EMI—by itself—no grounds needed. That is why those concerned with EMC increasingly rely on our Engineering Evaluation Kits to determine the proper ferrite suppressor which will help solve their EMI problems.

The original Cable and Connector EMI Suppressor Kit has proven to be an extremely helpful tool in the hands of the design or EMC engineer. Since its introduction, many new shapes and sizes of ferrite suppressors have been developed.

It is the purpose of the EXPANDED kit to bring to the engineer all those parts that were in the original kit plus 17 parts that have either found wide acceptance since then, or have been recently developed at the suggestion of those responsible for creating an environment of Electro-Magnetic Compatibility.

The **NEW EXPANDED CABLE AND CONNECTOR EMI SUPPRESSOR KIT** (part no. 0199000005) provides 2 samples or pairs of samples of 29 different toroids and large beads, one-piece or split, along with multihole shielding plates for use with IC/DIPS and multipin rectangular and D connectors. Clips are included for assembly of split ribbon shield sleeves. The new kit is $50.

Two earlier Fair-Rite Kits are also available:

The BEAD-ON-LEAD KIT (part no. 0199000003): 10 different beads-on-leads, plus two wound 6-hole beads, providing impedances from 68 to 680 ohms typical, measured at 100MHz. Values from 68 to 200 ohms are available taped and reeled for automatic insertion. This kit is $25.

The **BEAD, BALUN AND BROADBAND KIT** (part no. 0199000001): A selection of 34 different cores in 7 different materials offering the designer many options for high frequency circuits. This kit is $25.

Each kit comes with its own Engineering Bulletin describing the contents and guiding the designer in the use of Fair-Rite components to solve EMI problems.

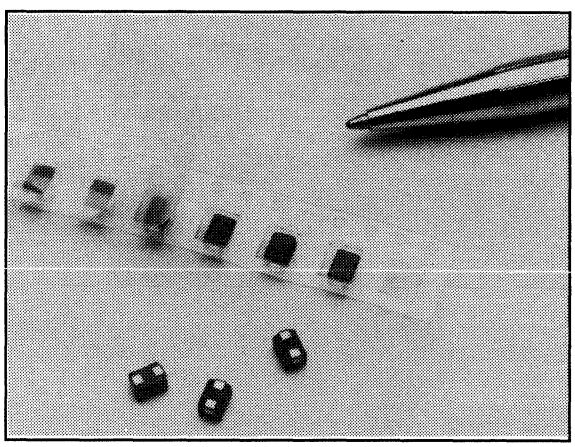
Prices are postpaid if payment accompanies order; plus shipping if ordered on your PO or letterhead. Please consult Fair-Rite for prices outside the USA and Canada. Contact us for further information on our kits.

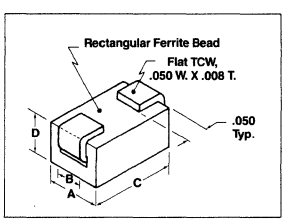
For transformer and inductor designs: Fair-Rite manufactures a broad line of ferrite bobbins, U, E and I cores; pot, ETD, and PQ cores; toroids, slugs and rods. Send for our full line catalog.

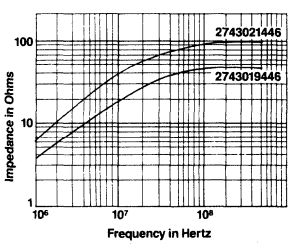
Introducing SM Beads™

(Surface Mount Beads)

Ferrite EMI suppressors expressly for use with Surface Mount Technology







Fair-Rite Part No.	A Dim	B Dim	C Dim	D Dim	Z @ 25 MHz*	Z @ 100 MHz*	DC Resistance Ohms
2743019446	.115 .125	.055 .060	.150 .170	.095 .105	30	45	<.6 Milliohms
2743021446	.115 .125	.055 .060	.325 .345	.095 .105	60	90	<.9 Milliohms

Surface Mount Technology is fast becoming the preferred method of PC Board assembly. Recognizing the need for surface mount EMI suppressors, Fair-Rite Products is introducing a line of Surface Mount Shield Beads (Patent applied for) to supplement our current array of EMI/RFI Suppressor elements. The two parts available at present offer equivalent impedances to our most popular "beads-on-leads" and can be used in place of the older technology.

The construction of these SM Beads™ is such that they offer maximum current carrying capacity, through solid flat copper conductors rather than metal plating, limited only by the saturation characteristics of the ferrite core material, and thus are highly resistant to mechanical or magnetic failure. These parts are available taped and reeled on carriers, per EIA Standard EIA-481A, at a price that makes them a most attractive method of designing EMI protection into circuitry from its inception.

Fair-Rite Products Corp. PO Box J, One Commercial Row, Wallkill, NY 12589 (Dept. M7)
Phone (914) 895-2055 • TWX 510-249-4819 • FAX (914) 895-2629

NOW! In one manual— all you need to know about EMC design and products— and it's FREE!



If you're involved in designing for EMC—if you're involved in testing and measuring electromagnetic interference—you *need* this manual. For the first time, in one place, you'll find all the data, all the formulas, and all the products you need to meet your interference control problems!

Included are charts, tables, graphs, dimensional drawings, and technical data ranging from a discussion of theoretical design requirements to how to select a specific shielding material.

For your free copy, write us directly at Dept. E EM-9.

INSTRUMENT SPECIALTIES COMPANY, INC.
Delaware Water Gap, PA. 18327
Phone: 717-424-8510 • TWX: 510-671-4526
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How sure are you of your Interference Control?

Instrument Specialties can

- **provide you with Certified Testing℠...**
- **document with computer print-outs...**
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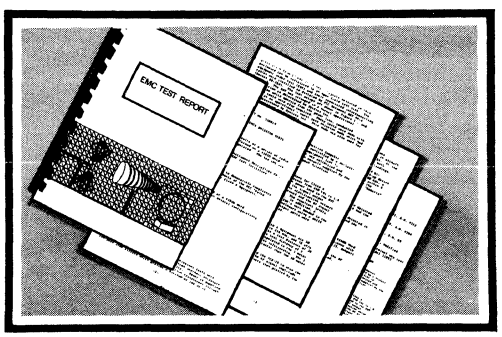
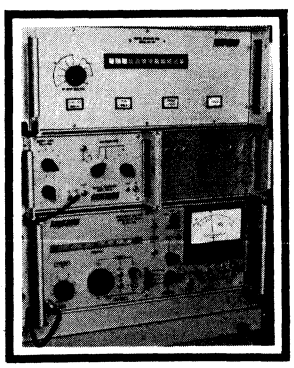
What is Certified Testing℠?

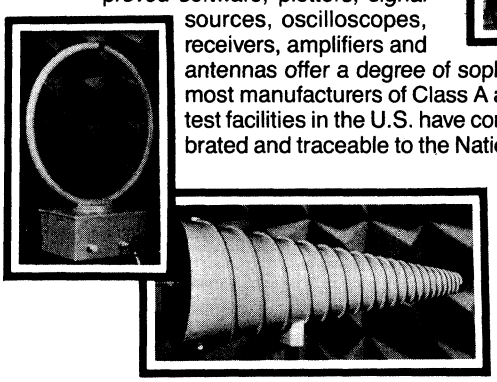


Certified Testing is our name for our automated test program that evaluates the interference control built into the equipment being tested. Available only from Instrument Specialties, it includes state-of-the-art emissions and susceptibility measurements from 20 Hz to 20 GHz up to 20 V/m... RF gasket evaluation... FCC/VDE/CISPR and MIL-STD-461A/B tests... TEMPEST facility measurements per NACSIM 5203 and 5204 requirements ...depending on your needs.

How do we test?

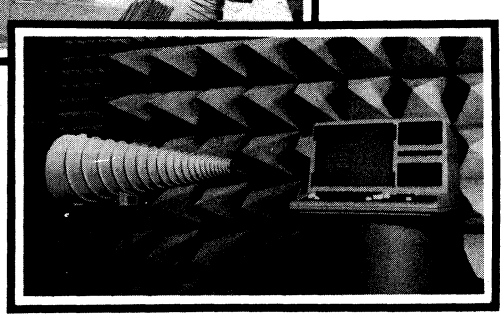


Computer-controlled tests provide customized, precise results, repeatability, and documentation. Shielding can be tested to MIL-STD-285, IEEE 188, NSA, etc. RF gaskets are tested using the SAE ARP-1705 transfer impedence method, to 140 dB. Our computers and proved software, plotters, signal sources, oscilloscopes, receivers, amplifiers and antennas offer a degree of sophistication not available to most manufacturers of Class A and B devices. Few, if any, test facilities in the U.S. have comparable equipment, calibrated and traceable to the National Bureau of Standards!



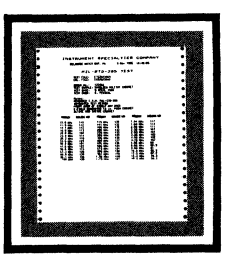
Where do we test?

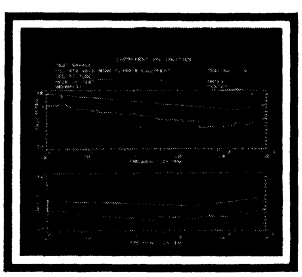




Portable equipment is tested in our new shielded enclosures, including semi-anechoic (non-echoing). Commercial tests are confirmed in an open field test site, itself tested in accordance with FCC standards. These superb facilities are available on a daily basis, as is engineering help, if requested. If on-site testing is required, we'll bring our portable laboratory instruments to you.

What do you get?





We're told our Test Reports are the best in the industry. More detailed, and clearer, with a continuous sweep of frequency spectrum—not just hand-plotted points. Computer print-outs and documented data meet both FCC and military audit requirements. If desired, we can supply engineering consultation leading to specific recommendations and verification. Of course, all reports are strictly confidential.

For more information on rates and schedule availability, or to discuss your specific needs, phone and ask for EMC Customer Service. Or, write us at Dept. EEM-30.

INSTRUMENT SPECIALTIES COMPANY, INC.
P.O. Box A • Delaware Water Gap, PA. 18327
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Specialists in interference control since 1944

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

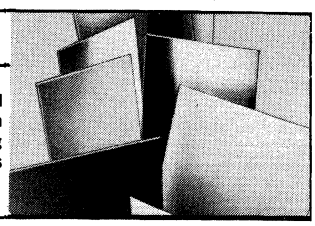
CO-NETIC & NETIC magnetic shielding material

MAGNETIC SHIELD CORP.
Perfection Mica Company
750 North Thomas Drive
Bensenville, Illinois 60106 U.S.A.
(312) 766-7800 TWX (910) 256-4815

A complete stock of CO-NETIC (high permeability) and NETIC (high saturation) shielding alloys is available in foil and sheet form. Our engineering department will gladly assist you in the development of shield designs to meet your prototype or production requirements. Request catalog MG-5, material and fabrication guide.

sheet stock: (standard—30″ x 120″) Shipped immediately from stock.

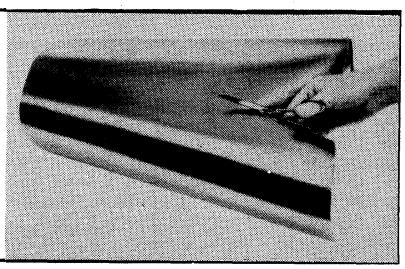
STD. THK. (Inch)	NETIC S3-6 ALLOY SHEET	CO-NETIC AA STRESS ANNEALED	CO-NETIC AA PERFECTION ANNEALED
.014			
.020	High saturation capability.	High permeability characteristics. Stress annealed for ease of fabrication. Must be final annealed for maximum attenuation characteristics. Also stocked in .100″.	High permeability characteristics. Perfection Annealed material has been fully hydrogen annealed for optimum magnetic shielding properties. No further annealing after fabrication is necessary if severe forming is avoided.
.025			
.030			
.040	.040 NETIC not stocked.		
.050			
.062	Also stocked in .095″		



foil stock: (standard coils—50 and 100 linear ft.)

STD. THK. (Inch)	NETIC PERFECTION ANNEALED WIDTH (Inch)	CO-NETIC PERFECTION ANNEALED WIDTH (Inch)
.002	—	4
.004	4	4
.004	15	15
.006	—	4
.006	—	15
.010	—	4
.010	—	15

Standard foils shipped immediately from stock. All sizes available with double-faced pressure sensitive tape and release coated liner. Foils can be slit to a minimum width of ¼″, with or without backing. Width tolerance ±.010. Backed and slit foils shipped one week after receipt of order. All foil is Perfection Annealed for maximum attenuation.



physical & magnetic data:

	CO-NETIC AA PERFECTION ANNEALED	CO-NETIC AA STRESS ANNEALED	NETIC S3-6
Specific Gravity	8.74	8.74	7.86
Coefficient of expansion per °C x 10^{-6}	12.6	12.6	13.7
Tensile strength in PSI x 10^3	64	85	42
Yield strength PSI x 10^3	18.5	33	27
Hardness, Rockwell B	50±5	70±5	50±5
Elongation in 2 inches, percent	27	32	38
Melting point (°F)	2650	2650	2790
Thermal conductivity (cal/sec/cm²/cm/°C) at 20°C	.138	.138	.118
Curie Temp. (°F)	850	850	1420

	CO-NETIC AA PERFECTION ANNEALED	CO-NETIC AA STRESS ANNEALED	NETIC S3-6
Electrical Resistivity ohms/cir mil foot	330	330	60
Microhm centimeters	55	55	11
Thickness tolerance	±10%	±10%	±10%
Saturation Induction (Gauss)	8000	8000*	21,400
Initial Permeability	30,000	30,000*	200
Permeability at 200 gauss	135,000	135,000*	500
Maximum Permeability	450,000	450,000*	4000
Induction at μmax.	3000	3000*	8000
Coercive force, H_c, oersteds	.015	.015*	1.0

* Magnetic Properties after Hydrogen Anneal.

magnetic shields for photomultiplier tubes

Magnetic shields shipped from stock for 90% of photomultiplier tubes.



MAGNETIC SHIELD CORP.

Perfection Mica Company
750 North Thomas Drive
Bensenville, Illinois 60106 U.S.A.
(312) 766-7800 TWX (910) 256-4815

CO-NETIC magnetic shields improve the amplification characteristics of photomultiplier tubes by providing significant attenuation of magnetic fields. Effective shielding is ensured over a wide range of field intensities. When grounded, the shields provide protection against electrostatic interference.

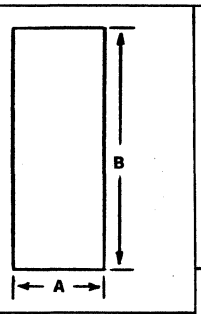
CO-NETIC shields are highly resistant to shock and vibration. The shields have minimal retentivity and do not require periodic re-annealing.

Request catalog PM-4, which lists recommended shields for over 650 photomultiplier tubes.

MAGNETIC SHIELD DIMENSIONS

Part No.	Drawing	A	B	C	D	E	F	G	Notes
06P25	1	5/8	2 1/2						
07P13V1	2	3/4	1 3/8		13/16	1/2	1/4		a
10P25	1	1	2 1/2						
10P40	1	1	4						
11P42X18	5	1 1/8	4 1/4	1 7/8	2 15/16	1 5/16	1/4		d
12P31V1	2	1 1/4	3 1/8		1 11/16	1 1/8	5/8		a
12P35	1	1 1/4	3 1/2						
12P45	1	1 1/4	4 1/2						
13P23V1	2	1 3/8	2 3/8		1 1/4	1 1/8	5/8		a
13P28V1	2	1 3/8	2 13/16		1 9/16	1 1/8	5/8		a
13P32V1	2	1 3/8	3 1/4		1 15/16	1 1/8	5/8		a
13P52V1	2	1 3/8	5 1/4		3 15/16	1 1/8	5/8		a
15P27	1	1 1/2	2 3/4						
15P40	1	1 1/2	4						
15P50	1	1 1/2	5						
17P30	1	1 3/4	3						
17P33V1	2	1 3/4	3 3/8		2 11/16	7/8	3/4		a
17P45	1	1 3/4	4 1/2						
17P53V1	4	1 3/4	5 3/8		2 3/4	2 5/8	1/4	2 1/16	b
20P50	1	2	5						
21P45V1	3	2 1/16	4 1/2		1/2	1/2	1/4		c
21P55V1	3	2 1/16	5 1/2		1/2	1/2	1/4		c
22P40	1	2 1/4	4						
22P50	1	2 1/4	5						
22P60	1	2 1/4	6						
22P70	1	2 1/4	7						
23P55X32	6	2 3/8	5 5/16		3 3/8	1 1/16		1 1/2	
23P61X37	6	2 3/8	6 1/8	3 3/4	1/4	3 3/4		2 1/8	
23P68X57	6	2 3/8	6 7/8	5 3/4	3	1 7/8		2	
23P101X57	6	2 3/8	10 1/8	5 3/4	1/2	2 3/4		6 7/8	
25P40	1	2 1/2	4						
25P50	1	2 1/2	5						
25P60	1	2 1/2	6						
25P70	1	2 1/2	7						
27P73V1	2	2 3/4	7 3/8		3 5/8	4 3/8	3		a
30P67X57	6	3	6 3/4	5 3/4	3 1/4	1 1/2		2	
32P80	1	3 1/4	8						
32P100X55	6	3 1/4	10	5 1/2	3 1/2	1		5 1/2	
35P70	1	3 1/2	7						

1



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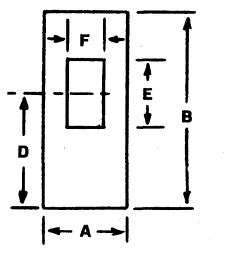

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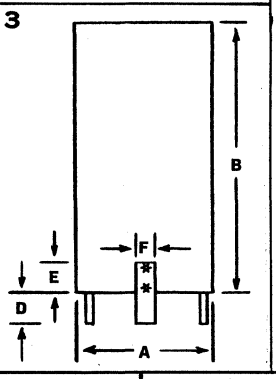

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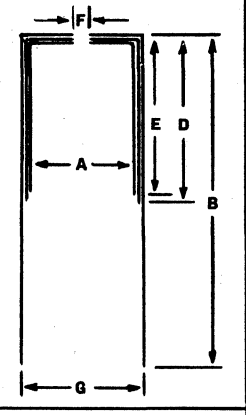
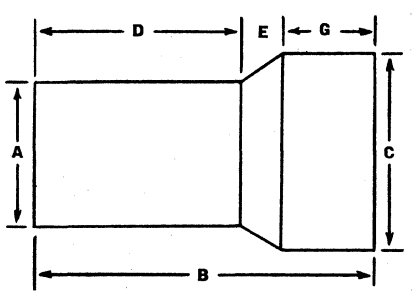


NOTES:
Unless otherwise noted:
Dimensions — All ID
Material — .040" Thick Co-Netic AA
Finish — Black baked enamel; texture outside, flat inside.
a — Upper end closed.
b — Dimensions D & E are measured from the outside of the outer shell. Dimension G is the maximum OD. Material — Three layers, separable; outer .049 Netic S3-6, two inner .031 Co-Netic AA Finish — Netic S3-6, black oxide; Co-Netic AA, none.
c — Has three tabs, spaced 120° apart, to grip the metal collar of the PM tube.
d — Material — .031" Co-Netic AA.

6



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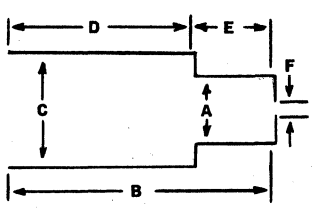
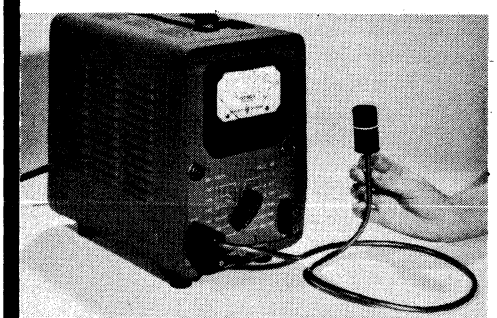


complete magnetic shielding accessories & mica

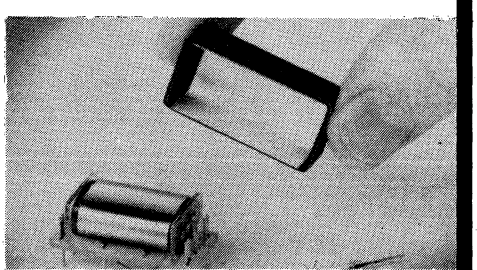
MAGNETIC SHIELD CORP.

Perfection Mica Company
750 North Thomas Drive
Bensenville, Illinois 60106 U.S.A.
(312) 766-7800 TWX (910) 256-4815



LAB KITS & PROBES

Lab Kit contains assorted CO-NETIC and NETIC shielding materials, double-faced pressure sensitive tape for shield construction and 20 millivolts/gauss A.C. magnetic pickup probe ..... all for $99.50
Probe only, 20 mV/gauss, axial $49.50
Probe only, 60 mV/gauss, axial (shown) or transverse $79.50
Request Lab Kit catalog LK-2, Probe catalog EP-3.



COMPONENT SHIELDS

Full time engineering staff available for consultation on shielding problems. Magnetic Shield Division is also the preferred source for custom shields to your specifications. Extensive standard and special tooling provide fast shipment. Call for design assistance or send print for prompt quotation.

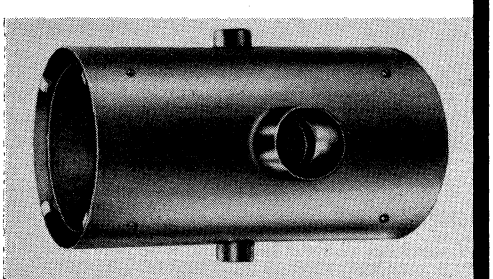


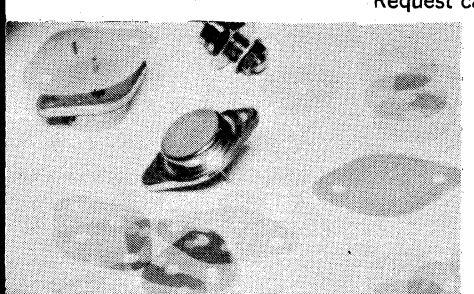
INTER-8 WEAVE CABLE

Our patented, woven configuration of four signal leads provides superior attenuation over a twisted pair. Attenuation improvement of unshielded INTER-8 WEAVE cable is −20 db for radiation and −12 db for pickup. An additional −20 db is obtained with our braided CO-NETIC jacket. Available in #24 AWG, unshielded or shielded. Request catalog WC-1

ZERO GAUSS CHAMBERS

Zero gauss chambers provide the ultimate in magnetic shielding. Magnetic Shield Division's general-purpose zero gauss chamber offers a significant reduction in both static and time varying fields found in laboratory and research environments. Degaussing coils can be furnished, and a Helmholtz coil system can be incorporated to generate known fields. Three concentrically spaced CO-NETIC chambers with closed ends and removable covers are provided. Placement of openings is optional. Attenuation in excess of −60 db is typical. Request catalog ZG-2





MICA INSULATORS

Available in sheet, wafer, flakes and ground form. Clear, natural and built-up sheet stock thicknesses from .002" to .062". Save tooling expense on a wide variety of fabricated parts, including semi-conductor insulators in .002" to .003" thickness with .002" hole tolerances. Excellent heat resistance and high dielectric strength provide improved breakdown protection and increased efficiency of electronic components. Request catalog K-14.

Do you need magnetic shielding as good as MμShield®?

Only if you need optimum attenuation.
Unless your design calls for magnetic shielding that meets the most stringent specs, you may not need to consider Bomco's MμShield materials.

But, if you need custom shielding with maximum attenuation or tubing with totally uniform permeability, you do need MμShield. And you can get MμShield materials only from Bomco, a company with more than 35 years of experience.

Bomco's MμShield Division can satisfy the most demanding applications — aerospace, nuclear and electronic — with a wide variety of custom shields, materials, and services.

MμShield cathode ray tube shields.
Assure high resolution. For use in special military applications. Also suitable for commercial, industrial, and laboratory applications.

MμShield photomultiplier tube shields.
Ideal for electro-optical devices of all kinds, CAT- and PET-scan machines, and TV cameras.

MμShield custom electronic components shields.
For use in computer-related technology such as disk drives, printed circuits, and PC terminals.

MμShield special application shields.
Nuclear Magnetic Resonance Imaging. Electron microscopes. X-ray spectography. Wide area shielding in laboratories and sensitive areas.

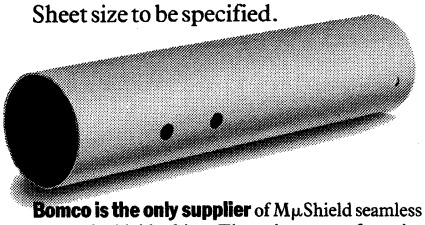
Coils, sheets and tubing in stock

- High saturation shielding. Permeability ranges from 200 to 50,000. Saturation point between 18,000 and 20,000 gauss.
- Medium permeability shielding. Permeability from 12,500 to 150,000. Saturation point approximately 15,000 gauss.
- High permeability shielding. Permeability from 80,000 (at B-40) to 350,000. Saturation point approximately 7,500 gauss.
- Dimensions:

Coils — .004", .006", .010" thickness; 8" and 15" widths. Minimum order $100.

Sheets — Cold rolled annealed, .015" to .060" thickness. Full sheet 30" × 10'. Minimum order 30" × 36".

Hot rolled, .090" to .265" thickness. Sheet size to be specified.



Bomco is the only supplier of MμShield seamless magnetic shield tubing. The unique manufacturing process eliminates the non-uniformity of permeability inherent in welded tubing.

Tubing — .10" to 2.00 ID. Wall thicknesses .010" to .060". Lengths to 20'.

Heat treating service.
Gives magnetic materials optimum permeability with low shock-sensitivity. Permeability and uniformity of MμShield-fabricated parts are guaranteed.

Special consultation services.
We'll do more than just give you a quote. We'll do everything from on-site input meetings to prototyping, testing, and manufacturing. When your designs require optimum shielding, send us your specs and we'll be happy to review your application.

Now when you need magnetic shielding as good as MμShield, you don't need to worry.

Call or write Bomco, Inc., MμShield Products Division, PO Box W, Dept E, 103 Madison Street, Malden, MA 02148. 617/321-4410. Fax 617/324-9563.



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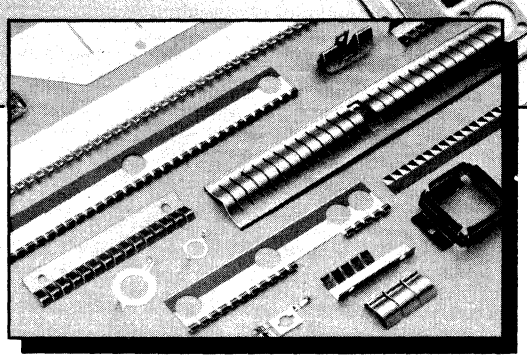
Excellence in Metal Forming

EMC Shielding Products

- Clip-on strip gaskets
- Knitted wire mesh – all shapes
- Shielded windows
- Conductive elastomers
- Mesh over elastomer cores
- Beryllium copper finger stock
- Shielded honeycomb panels
- Connector and waveguide gaskets
- Twinseal: RFI and environmental shielding



Beryllium copper shielding components custom designed for special applications which require compliance with the new FCC interference regulations or TEMPEST specifications.

From high volume requirements using progressive dies to prototype and low quantities utilizing photo-etch fabrication, Tech-Etch can be your source.

Announcing new response capabilities...and products...from Tech-Etch!

Tech-Etch manufactures the most complete line of shielding products in the industry to serve today's requirements in both the commercial and military markets. As a leading designer of shielding products for over 35 years, Tech-Etch is in a position to provide not only a broad range of stocked catalog items, but to offer a source for your custom-designed specialty products.

Call or write today for a free copy of our Design Guide and the name of our shielding specialist serving your area.

Tech-Etch

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Make Sure It's Shielded by TECKNIT®

For over twenty-five years, TECKNIT has been assisting the design community in solving EMI Shielding problems. That capability is even more important today as demands for effective shielding become critical design considerations.

With one of the most complete EMI Shielding product lines in the industry, TECKNIT "know how" provides assistance in meeting today's vexing design problems. Whether those requirements demand conductive coatings, wire mesh and conductive elastomer gaskets, vent panels or high performance shielding windows, TECKNIT products and the engineering skills to apply them are available from TECKNIT plants in Cranford, New Jersey and Santa Barbara, California.

It's little wonder TECKNIT has been described as "the EMI experts you always wanted on your staff."

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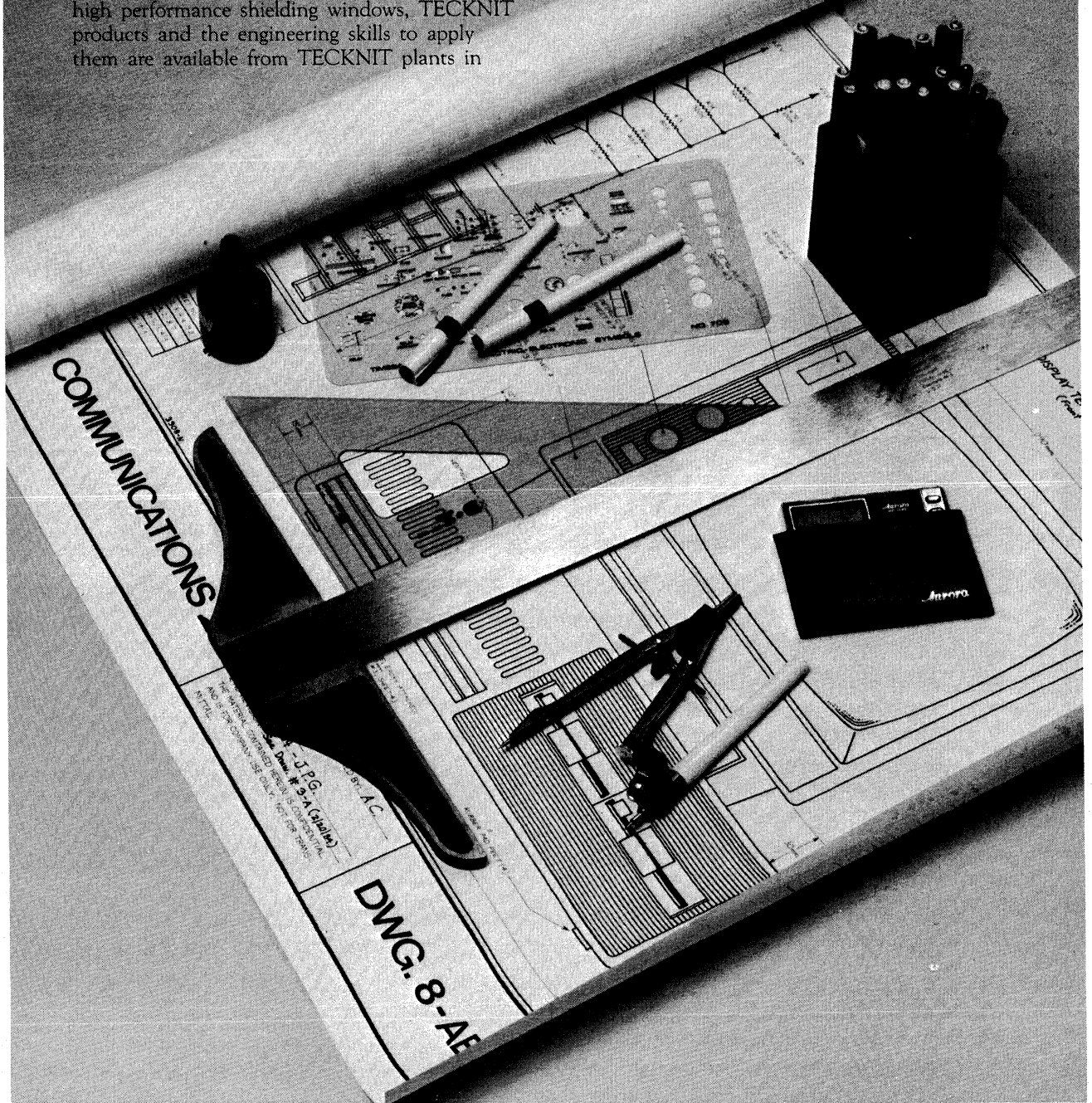
MK13 9HA, England (44)0908 222500



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50 YEARS

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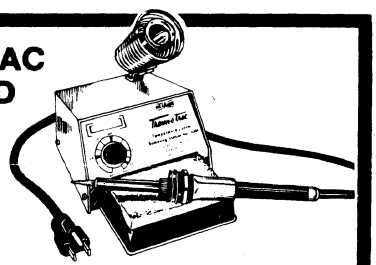
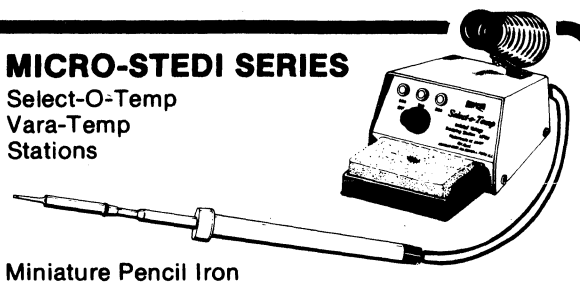
the most respected name in soldering

THERM-O-TRAC CONTROLLED HEAT SOLDERING STATIONS
Original Electronic Switching

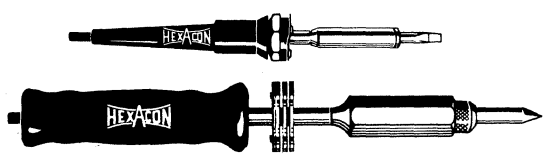


MICRO-STEDI SERIES
Select-O-Temp
Vara-Temp
Stations

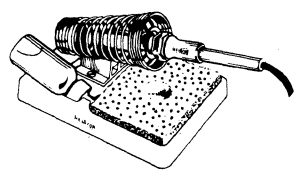


Miniature Pencil Iron

HEXACON IRONS
Most Dependable and Cost Effective



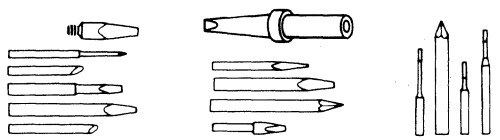
HEAT GUARD
Iron Holders



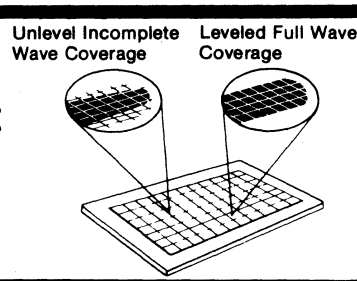


Tip Cleaning Accessories

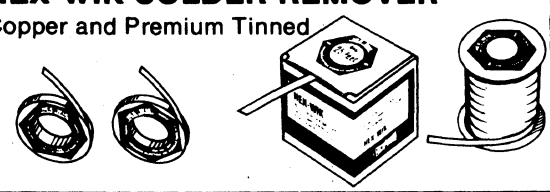
XTRADUR AND DUROTHERM
Long-Life Stainless Steel Non-Freezing Tips



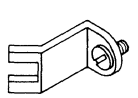
LEV CHECK SOLDER WAVE GAUGE
Diagnostic Tool Designed to Monitor Quality of Wave Soldering



HEX-WIK SOLDER REMOVER
Copper and Premium Tinned



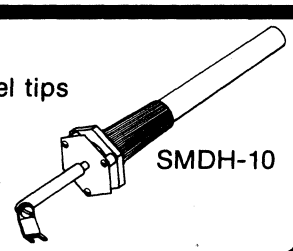
SMD IRONS
With Slotted and Tunnel tips



Spade



Tunnel



SMDH-10

HEXACON ELECTRIC CO.

159 West Clay Ave., Roselle Park, N.J. 07204
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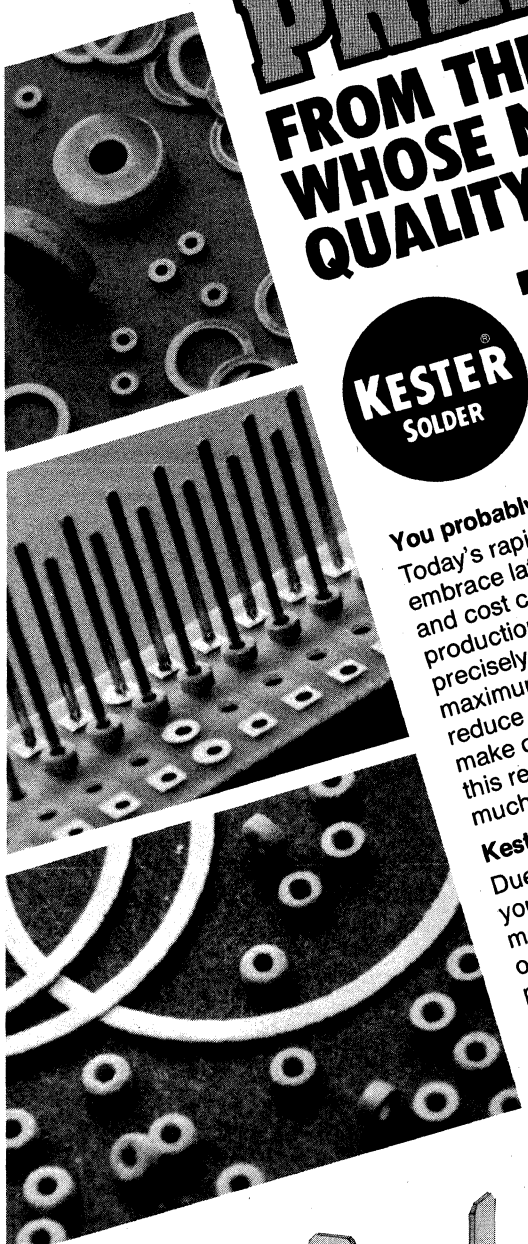
PRECISE SOLDER PREFORMS FROM THE COMPANY WHOSE NAME MEANS QUALITY.....



KESTER® SOLDER

THE SOLDER CONNECTION®

You probably have an application for Kester Solderforms®.

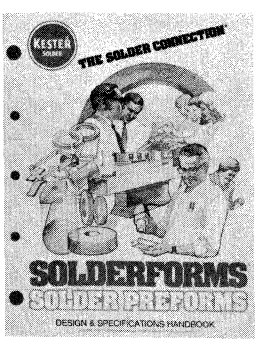
Today's rapidly changing marketplace demands that your products embrace latest technology, and at the same time be more reliable and cost competitive. Kester Solderforms® guarantee consistent production with less touch-up work since they always deliver precisely the same amount of solder and flux. You can make maximum use of cost saving automated assembly techniques, and reduce time consuming inspections and manual operations. Even make close proximity joints without worry of bridges or shorts. All this results in fewer field related failures since there's never too much flux or too little solder. Assembly is correct every time.

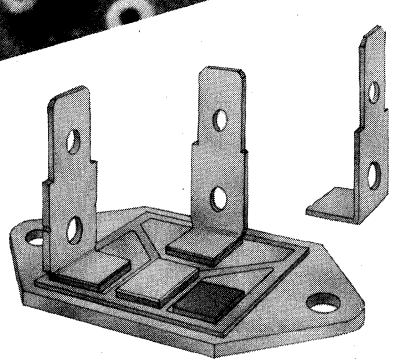
Kester Solder. Quality since 1899.

Due to the custom nature of any solder preform, the company you do business with will become part of your design team. It makes sense to get involved with a company you can really rely on. Kester Solder is a proven leader who supplies solder preforms with precise dimensional tolerances and strict alloy purity, and who has mastered the making of reliable mechanical and electrical connections. Customer service is a critical element as well, and this is where the Kester Engineered Products Laboratory and the sales engineers help you apply Solderforms® technology to your application.

We'd like you to have more information.

If you have regular production runs of products requiring solder, you should consider Kester Solderforms®. Kester's 12 page Solderforms® Design and Specifications Handbook describes the design considerations and the pros and cons of this technology. Call or write today for your copy.

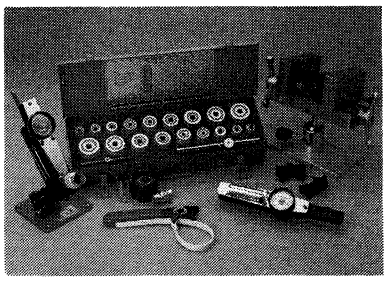




Litton **KESTER SOLDER**
515 E. Touhy Avenue, Des Plaines, Illinois 60018

CONNECTOR ASSEMBLY AND SERVICE TOOLS

DMC DANIELS MANUFACTURING CORPORATION



BACKSHELL ACCESSORY TOOLS (BETA™ LINE)

For holding and assembly/disassembly of circular connector accessories (backshell, strain relief, or EMI/RFI shielding hardware). The BETA™ LINE includes the following:

- Connector holding adaptors
- Strap wrench
- Soft jaw vise for circular parts
- Soft jaw pliers
- Torque meters and wrenches
- Tool sets and custom application kits to cover most connector series.

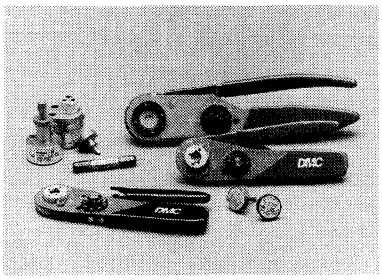


CONNECTOR SYSTEM SERVICE KITS

The DMC Wiring System Service Kits are a complete tooling and information system which includes all the necessary tools, application instruction diagrams, and tool selection charts to support a complete wiring system. All this is organized and packaged in a durable case or cabinet. Service kits are presently available for many military and commercial systems including all types of aircraft, weapon systems, ground vehicles, and marine equipment.

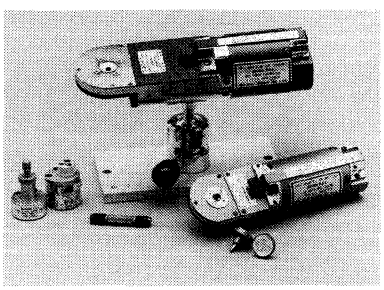
FIELD SUPPORT OFFICES

Eastern Region — (714) 996-5881
Western Region — (203) 799-2343



INDENT CRIMPING TOOLS

For crimping machined electrical contacts.
Electrical Contacts
AF8 (M22520/1-01)
AFM8 (M22520/2-01)
MH860 (M22520/7-01)
Plus many commercial tools and accessories



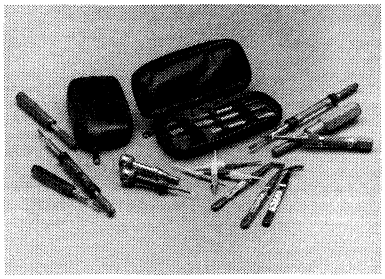
PNEUMATIC CRIMPING TOOLS

Power actuated tools for most crimping applications. Heads, dies and other accessories are interchangeable with DMC hand tools.



VIDEO TAPE TRAINING SERIES

For connector and wiring system assembly. Connector identification and the use of assembly tools are explained and visually reinforced.

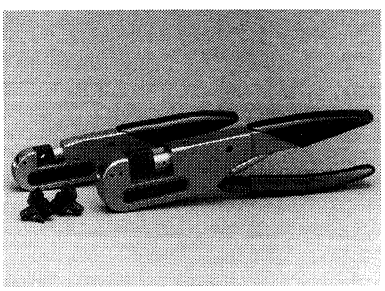


INSTALLING AND REMOVAL TOOLS (MIL-I-81969)

For assembly or disassembly of a broad line of circular, rectangular and "D" connectors in both military and commercial versions. Below is a partial listing:

MS 3159	MS 17805	MS 27534
MS 3160	MS 17806	M 83723
MS 3447	MS 24256	MS 90455
MS 3448-001	MS 27495	MS 90456

Plus many commercial tools.

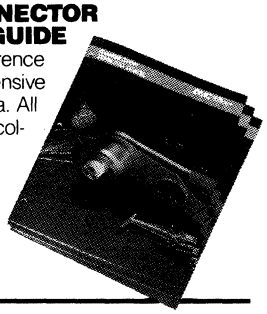


OPEN FRAME CRIMPING TOOLS

For crimping coaxial and shielded connectors, terminals, splices, and other formed terminating devices.
HX3 (M22520/10-01)
HX4 (M22520/5-01)
Plus many interchangeable dies and accessories.

FREE CONNECTOR TOOLING GUIDE

With cross reference charts and extensive application data. All featured in full color (42 pages). Available upon request.



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NORWAY, *T.G.C. Harnessing*, P.O. Box 56, 3524 Nes 1 Adal, Telephone: (067) 43-743, Telex: (856) 76233 TG N
FRANCE, *Oceta*, 10 Rue Louis Philippe, 92200 Nuilly-sur-Seine, Telephone: (01) 745-2180, Telex: (842) 611786, OCETA F
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ENGLAND, *Miles Roystone Ltd.*, Priory Works, Mansfield Woodhouse, Mansfield Notts, Telephone: (623) 27157, Telex: (851) 377224 PRIORY G
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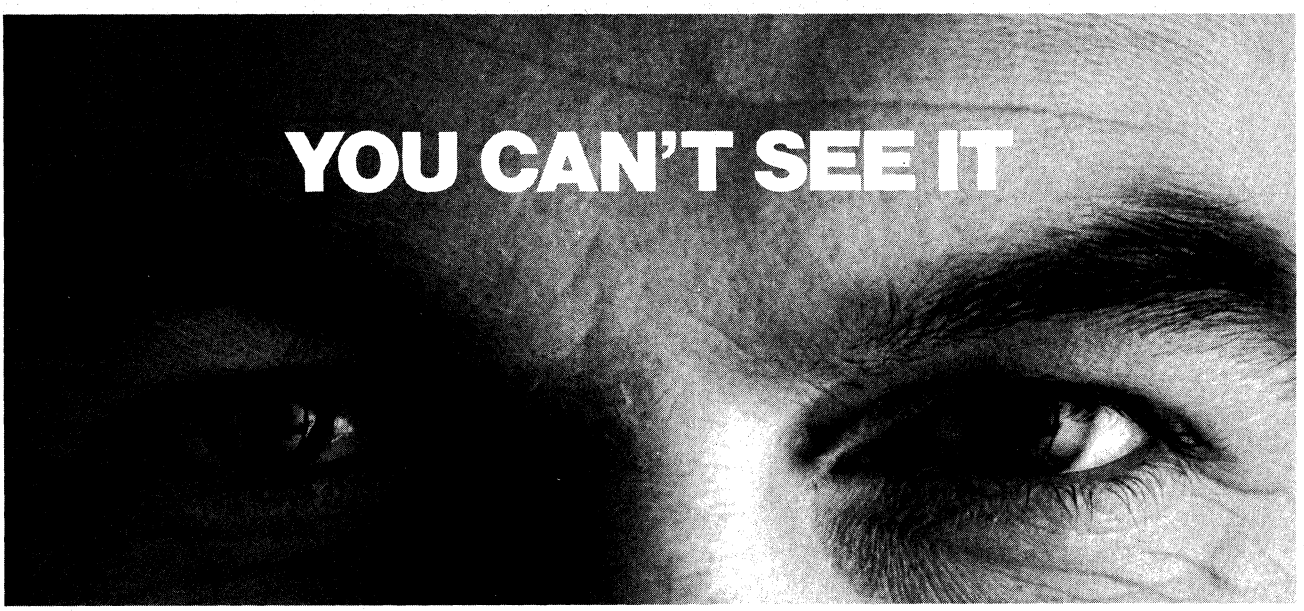
AUSTRALIA, *ECQ Electronics Pty Ltd.*, 16 Staple Street, Seventeen Mile Rocks, QLD 4073, Telephone: 376 5677, Telex: AA40821 ECQQLD
BELGIUM, *Sodimatel*, 321 Chaussee de Bruxelles, Brusselsesteenweg, 1900 Overjise, Telephone: (02) 687-4650, Telex: (846) 65224 SODIMA B
CANADA, *Pation Aircraft & Industries Ltd.*, 5502 Timerlea Blvd., Mississauga, Ontario L4W 2T7, Telephone: (416) 624-5572, Telex: (069) 60379 PATLON TOR

Daniels Manufacturing Corp., 6103 Anno Ave., Orlando, FL 32809 USA, (305) 855-6161, Telex 564321, FAX (305) 855-6884



BUT IT CAN DESTROY YOUR BEST DESIGN

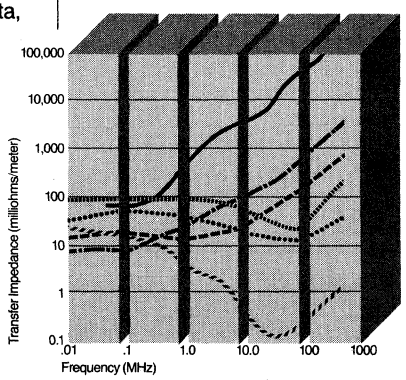
The next time your performance is measured by the success of your system's design, take a closer look at the critical link: will the shielded cable you select maintain signal integrity? At Belden, we're working to protect this critical link.

Shield Effectiveness
With the convergence of data, audio and video transmissions, one of the greatest challenges is to preserve the integrity of each signal. This evolution of technology, coupled with the need to comply with FCC regulations has created a growing demand for sophisticated cable shielding.

Belden responds to these demands with innovative shielding designed to meet the highest performance standards in the industry—including military TEMPEST requirements.

Belden helps you control interference and protect signal integrity with innovative shielded cable

Transfer Impedance Test Results



The lower the value of transfer impedance, the more effective the shielding.

Test Methods Protect Your System
To help you define interference problems, Belden's Technical Research Center evaluates the development, implementation and refinement of shields and shield effectiveness testing. Our Transfer Impedance Test is but one of many rigorous tests employed by Belden engineers. The procedures we use help you select the proper shielded cable that results in cost-effective system performance.

Effective Assistance
Belden has recently published a *Cable Shield Performance and Selection Guide.* It's free, and it helps you define your interference problem, acquaints you with current FCC regulations, and familiarizes you with the trade-offs associated with different shield designs and Belden's various test procedures for measuring shielding effectiveness. Shield performance results are detailed from each test to properly guide your cable selection.



Contact Belden today for your free personal copy. Belden Wire and Cable, P.O. Box 1980, Richmond, IN 47375. Phone: 317-983-5200.

There is no equal.™

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See Belden's listing on page C•1776—C•1817 in EEM

COOPER INDUSTRIES BELDEN

ABBREVIATIONS FOR WIRE & CABLE PRODUCT SELECTION GUIDE

CODE	EQUALS
AP	Aluminized Polyester
BC	Bare Copper
BCB	Bare Copper Braid
BCCS	Bare Copper Coated Steel
BTC	Braided Tinned Copper
DRN	Drain Wire
EPR	Synthetic Rubber
FLR	Filler

CODE	EQUALS
FPE	Foamed Polyethylene
FRSR	Fire Resistant Silicone Rubber
GLS	Glass
IRPVC	Irradiated PVC
KYN	Kynar
MYL	Mylar (DuPont™)
NEO	Neoprene
NPC	Nickel Plated Copper

CODE	EQUALS
NYL	Nylon
PCA	Polychloroalkene
PE	Polyethylene
POE	Polyethylene
POP	Polypropylene
PVC	Polyvinylchloride
REEL	Cord on Reel
RTCL	Retractile Cord

CODE	EQUALS
RUB	Rubber
SBR	Synthetic Rubber
SHLD	Shielded
SPC	Silver Plated Copper
TC	Tinned Copper
TEF	Teflon
TFG	Teflon/Fiberglass
XLP	Cross Linked Polyethylene
**	Specs Not Shown on page
—	Not Applicable

HOOKUP WIRE

Manufacturer	Starting EEM Page	Specifications: Op. Temp. °C Min.	Op. Temp. °C Max.	Volts Max. Vdc	Volts Max. V(rms)	Conductor: Type	Conductor: AWG/Strand Min.	Conductor: AWG/Strand Max.	Insulation: Prim.	Insulation: Sec.	Insulation: Jkt.	Conformance: UL#	Conformance: CSA#	Conformance: MIL	Comment
American Insul. Wire	C•1775	–80	200	**	2500	BC/TC	26/X	2/X	Var.	Var.	Var.	Yes	Yes	Yes	
Brim	C•1820	–	260	**	300	SPC	38-7/46	30-7/38	TEF	TEF	**	–	–	16878D	
Carol Cable	C•1834	**	**	**	**	**	**	**	**	**	**	**	**	**	
Consolidated Electronic Wire & Cable	C•1835	–40	80	**	300	TC	24-7/32	16-26/30	PVC	–	–	1007	TR-64	–	Solid, Stranded
		–30	105	**	600	TC	22-7/30	8-133/30	PVC	–	–	1015	TEW-105	–	Solid, Stranded
		–	105	**	**	SPC	30s	24s	KYN	–	–	1422			
		–55	200	**	600	TC	18-7/26	10-19/24	SBR	–	–	¤			
		–55	125	–	600	TC	22-7/30	10-65/28	XLP	–	–	¤			
		–	105	–	1000	TC	24-7/32	12-9/25	PVC	–	–	1430	16878C		
Judd	C•1870	**	**	**	600	**	32	2	PCA			Yes	Yes	16878	Series
		**	125	**	**	TC	32	12	XLP			Yes	Yes	16878	Series
Molecu	C•1877	See specs. on pages													
MWS Wire	C•1884	**	220	**	**	PW/CL	15	42	Var.	Var.	-	Yes	Yes	**	Magnet Wire
National Wire	C•1888	–54	105		3000	TC	24	6	VYN			1016	S-R	16878	
		–54	115		600	TC	32	14	VYN			1016	Yes	16878	
		–54	105	–	1000	TC	26	12	VYN			1007	TR-64	16878	Series
		–54	105	**	600	TC	32	14	VYN			1061	Yes	16878	Series
Omega	C•1909	**	**	**	**	**	**	**	**	**	**	**	**	**	Thermocouple
Phoenix Wire	C•1917	–90	260	**	300	TFE	30	42	TEF	TEF	Var.	**	**	**	
Rowe	C•1920	**	**	**	**	**	**	**	**	–	**	*	*	**	

DATA CABLES FOR COMPUTERS & COMMUNICATION

Manufacturer	Starting EEM Page	Type	Specifications: Op. Temp. °C Min.	Op. Temp. °C Max.	Vdc Max.	Conductors: Number Min.	Number Max.	Type	AWG/Strand Min.	AWG/Strand Max.	Shielding: Type Y/N	Shielding: Drn. Wire	Insulation: Prim.	Insulation: Sec.	Insulation: Jkt.	Conformance
Alpha Wire	C•1767	Var.	**	**	**	**	**	**	**	**	**	**	**	**	**	UL/CSA/MIL
American Insul. Wire	C*1775	Var.	**	105	**	**	**	TC	**	**	Opt.	**	Var.	Var.	PVC	**
Belden	C•1776	TC TC	** **	80 80	150 30	30 3	50 50	TC TC	22-7/30 24-7/32	22S –	AP AP+BTC	Yes Yes	PVC PVE	AP AP	PVC PVC	UL/CSA UL (Ethernet)
Brim	C•1820	TC TC	-40 -20	80 60	300 300	5Pr 3pr.	60Pr 27	TC 22	24-7/32 18	– AP	BTC Yes	No POE	PVC –	MYL PVC	PVC UL	UL1061
Carol	C•1834	Var.	**	**	**	**	**	**	**	**	**	**	**	**	**	UL
Consolidated Electronic	C•1835	TP ISTP	-20 -20	60 80	** 300	2 3pr	– 27	TC TC	25 –	18 –	No MYL	No Yes	PE POP	– MYL	PVC PVC	UL2092,2582
Daburn	C•1846	TP	-20	80	300	1Pr	51Pr	TC	24-7/32	–	AP	Yes	PVC	–	PVC	UL2464/CSA
Judd	C•1870	**	–	80	125	–		Var.	**	**	**	**	PCA	–	–	UL/CSA/MIL
Nat'l. Wire	C•1888	ISTP	-20	80	6	4Pr	50Pr	TC	24-7/32	–	AP+BTC	Yes	PVC	AP	PVC	UL AWM 2835

CABLE ASSEMBLIES

Manufacturer	Starting EEM Page No.	Subminiature "D" Assembly: 9 Pos	15 Pos	25 pos	37 Pos	50 Pos	GPIB	Ethernet Transc	Trunk	Parallel Interface	DIN Keyboard: 3-pos	5-pos	8-pos	Modular Keyboard: Straight	Retract
Allpha Wire	C•1767	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Belden	C•1776	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
Breeze	C•1818	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Cable Systems	C•1831	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Cord	C•1845	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Daburn	C•1846	**	**	**	***	**	**	**	**	**	**	**	**	**	**
GSI	C•1864	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
ISL Products	C•1868	**	**	**	**	**	**	**	**	**	**	**	**	**	**
LZR	C•1873	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
Mechatronics	C•1874	**	**	**	**	**	**	**	**	**	**	**	**	**	**
National Electric Cable	C•1886	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
National Wire & Cable	C•1888	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Shogyo	C•1921	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
Virginia Plastics	C•1924	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Woven Electronics	C•1927	**	**	**	**	**	**	**	**	**	**	**	**	**	**

COAXIAL, SINGLE CONDUCTOR, RG TYPES & SIMILAR

Manufacturer	Starting EEM Page	Specifications Op. Temp. °C Min	Op. Temp. °C Max	Volts Max. Vdc	Volts Max. V(rms)	Nom. Imped. Ohms	Type	Conductor Shielding AWG/Strand Min	Conductor Shielding AWG/Strand Max	Shield Mat'l	Insulation* Primary	Insulation* Jkt	Conformance
Alpha Wire	C•1767	**	**	**	**	**	**	**	**	**	**	**	UL/CSA/MIL
American Insul. Wire	C•1775	**	80	-	Var.	**	Var.	30	11	Var.	Var.	Var.	**
Belden	C•1776	**	80	–	–	50	Var.	26-7/34	11-7/19	Var.	PE/CPE	PVC	UL1354/MIL-C-17
		**	93	–	–	93	Var.	30s	22s	Var.	PE/CPE	PVC	UL/MIL
Carol	C•1834	**	**	–	–	**	**	**	**	Var.	Var.	Var.	**
Consolidated	C•1835	Var.	Var.	Var.	Var.	Var.	Var.	RG	Var.	Var.	Var.	Var.	
W. L. Gore	C•1861	-65	260	**	**	**	Var.	**	**	**	PTFE	**	UL/MIL/BSP
JSC	C•1869	**	**	–	–	75.	CCS.	28	18	Foil	FPE	PVC	**
		**	**	–	–	52	BC	13	–	BC	PE	PVC	**
		**	**	–	–	50	Var.	20	15	BC/TC	PE/FPE	Var.	**
		**	**	–	–	80	CCS	22	–	Var.	FPE	PVC	**
LZR	C•1873	**	**	**	**	**	Var.	**	**	**	**	**	**
Rowe	C•1920	80	200	–	100k	**	SPC	20-19/32	8	TC	Comb.	**	UL/MIL

POWER CORDS

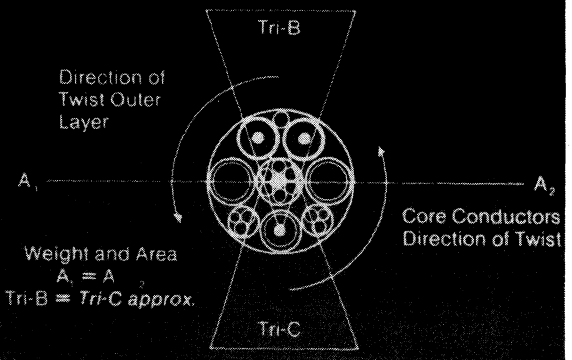
Manufacturer	EEM Page No.	3 Conductor Shielded	3 Conductor Unshielded	Detachable 3 cond. Shielded	Detachable 3 cond. Unshielded	2 conductor Shielded	2 conductor Unshielded	Jumper	Retract	Hospital	Extension
ABL Electronics	C•1763	¤	¤	¤	¤	¤	¤				
Belden	C•1776	¤	¤	¤	¤	¤	¤	¤	¤	¤	¤
Brim	C•1820	¤	¤	¤	¤	¤	¤		¤		
Canada Wire	C•1832	¤	¤	¤	¤	¤	¤				
Carol	C•1834										¤
Daburn	C•1846	¤	¤	¤	¤	¤	¤		¤		
LZR	C•1873										¤
Panel Components	C•1914	¤	¤	¤	¤	¤	¤	¤	¤		¤
Power Dynamics	C•1918										Int'l.
Shogyo	C•1921										+Custom

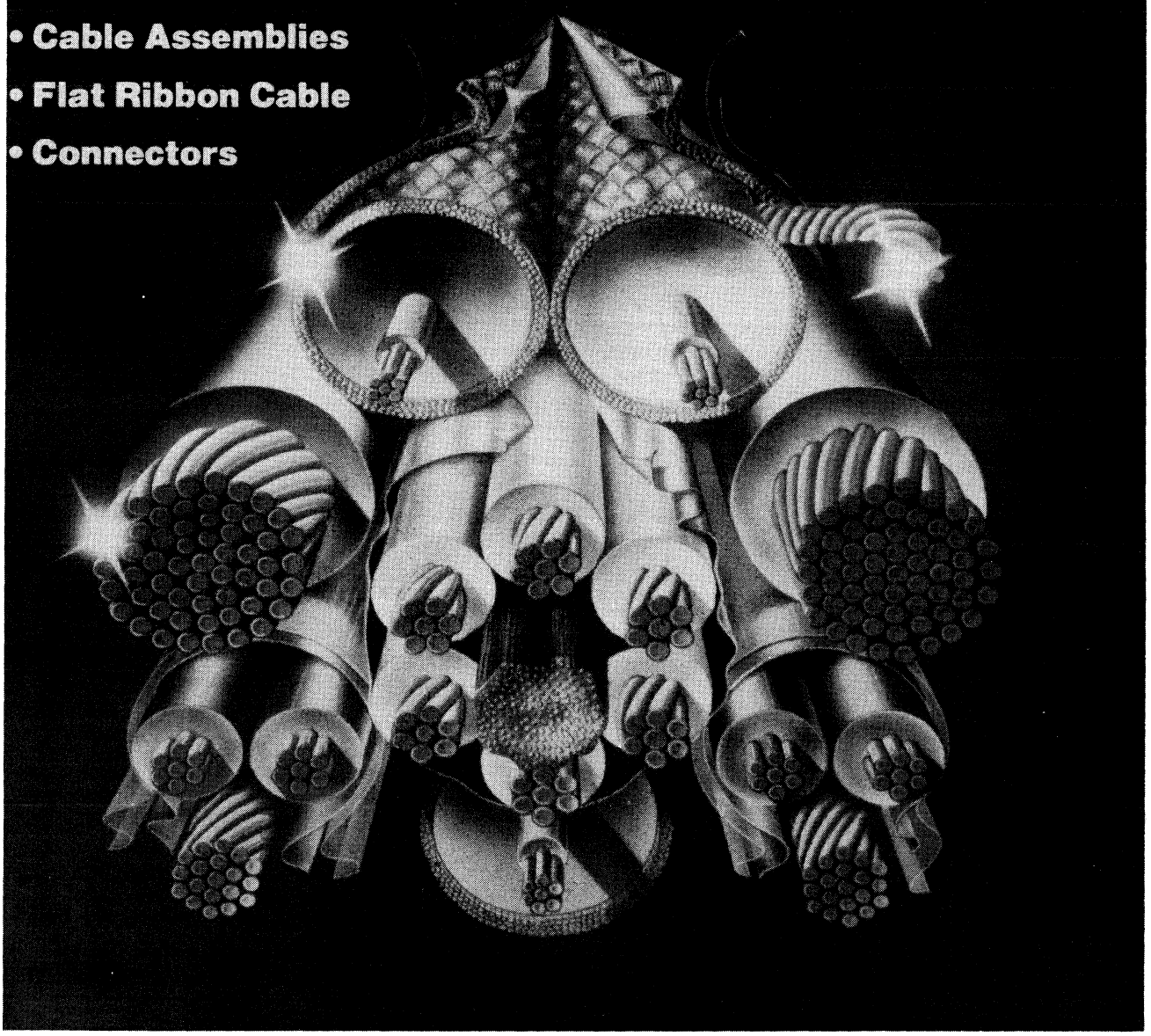
CABLE MULTICONDUCTOR

Manufacturer	Starting EEM Page	Type		Specifications			Conductors					Shielding		Insulation			Conformance
				Op. Temp. °C		Vdc	Number			AWG/Strand		Y/N	Drn				
		Rnd	Flat	Min.	Max.	Max.	Min.	Max.	Type	Min.	Max.	Type	Wire	Prim	Sec.	Jkt.	
ABL Electronics	C•1763	–	¤	**	**	**	**	**	**	**	**	**	**	PVC	**	PVC	
Alpha Wire	C•1767	¤	¤	**	**	**	2	60pr	Var.	24	12	Var.	**	**	**	**	UL/CSA/MIL
American Insul. Wire	C•1775	¤	¤	**	105	1000	**	**	Var.	26	10	**	**	Var.	Var.	Var.	**
Belden	C•1776	¤	–	–20	60	300	2	50	BC, TC	22S	14-19/27	No	No	PVC	–	PVC	UL (Various)
		TP	–	–40	80	300	1Pr	27Pr	TC	22S	22-7/30	No	No	PVC	–	PVC	UL (Various)
		¤	–	–50	105	600	2	50	BC, TC	22S	12-19/25	AP	Yes	PVC	–	PVC	UL/CSA
		TP	–	–50	105	300	1Pr	50Pr	BC, TC	28S	22S	AP	Yes	PVC	–	PVC	UL/CSA
		ISTP	–	–40	80	300	1Pr	37Pr	TC	22S	20-7/28	AP	Yes	PVC	AP	PVC	UL/CSA
Brim	C•1820	¤	–	–55	105	600	2	30	TC	28-7/36	–	BTC	No	PVC	MYL	PVC	MIL-W-16878D
		¤	–	–40	90	200	2	5	BC	38-16/50	30-40/46	BC	No	PVC	s	–	PVC Ultra flex
		¤	–	–55	105	100	1	4	TC	26-7/34	14-19/27	BTC	No	PVC	MYL	PVC	MIL-W-16878D
		TP	–	–40	80	300	5Pr	60Pr	TC	24-7/32	–	BTC	No	PVC	MYL	PVC	UL1061
		¤	–	–55	105	1000	5	30	TC	18-19/30	–	BTC	No	PVC	MYL	PVC	MIL-W-16878D
		ISTP	–	–55	105	300	3Pr	27Pr	TC	22S	22-7/30	AP	Yes	POE	AP	PVC	**
Canada Wire	C•1832	¤	–	-40	105	600	1Pr	50Pr	Var.	26	1G	Var.	Yes	PVC	PP	PVC	UL/CSA
Carol	C•1834	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Consolidated Electronic Wire & Cable	C•1835	TC	–	-20	80	300	3	27	TC	24-7/32	–	AP	Yes	–	–	PVC	UL/CSA
		TC	–	-30	105	300	2	27	TC	22-7/30	12-65/30	AP	Yes	–	–	PVC	UL/CSA
		TC	–	-20	80	–	2	60	TC	22	14	No	No	–	–	PVC	UL/CSA
		TC	–	-20	80	300	2	60	TC	24-19/32	20-19/32	TC	No	PVC	–	PVC	UL/CSA
Daburn SR-P	C•1846	–	¤	–40	105	300	9	64	TC	28-7/36	–	No	No	PVC	–	–	UL2651
		¤	–	–20	80	300	2	60	TC	24-7/32	–	AP	Yes	PVC	AP	PVC	UL1061/CSA
		TP	–	–20	80	300	1Pr	51Pr	TC	24-7/32	–	AP	Yes	PVC	AP	PVC	UL2464/CSA
Judd	C•1870	¤	–	–55	125	3000	**	**	TC	30**	10**	**	**	PCA	**	PCA	UL/CSA/MIL-W-16878E
		¤	–	–55	125	3000	**	**	TC	28**	10**	**	**	POE	**	POE	UL/CSA/MIL-W-16878E
Mechatronics	C•1874	¤	¤	**	80	300	2	20	Var.	**	**	Var.	Yes	PVC	MYL	PVC	UL/CSA
Molex	C•1883	–	¤	**	105	300	1	68	Var.	22	28	Var.	Yes	PVC	MYL	PVC	UL/CSA
National Eltrnc. Cable	C•1886	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
National Wire & Cable	C•1888	¤	–	–40	105	600	5	60	TC	24-7/32	20-7/28	No	No	PVC	–	PVC	UL/CSA/MIL
		¤	–	–40	105	600	5	60	TC	24-7/32	20-7/28	BTC	No	PVC	MYL	PVC	UL/CSA/MIL
		TP	–	–40	105	600	5Pr	60Pr	TC	24-7/32	20-7/28	No	No	PVC	–	PVC	UL/CSA/MIL
		TP	–	–40	105	600	5Pr	60Pr	TC	24-7/32	20-7/28	BTCs	No	PVC	MYL	PVC	UL/CSA/MIL
		¤	–	–40	105	600	7	102	TC	22-7/28	12-19/25	No	No	PVC	–	PVC	UL/CSA/MIL
		¤	–	–40	105	600	7	102	TC	22-7/28	12-19/25	BTCs	No	PVC	MYL	PVC	UL/CSA/MIL
		¤	–	–40	105	300	2	60	TC	28-7/36	18-19/30	No	No	PVC	–	PVC	UL/MIL
		¤	–	–40	105	300	2	60	TC	28-7/36	18-19/30	BTC	Opt	PVC	MYL	PVC	AP shield optional
		TP	–	–40	80	300	2Pr	27Pr	TC	28-7/36	18-19/30	No	No	PVC	–	PVC	UL/MIL
		TP	–	–40	80	300	2Pr	27Pr	TC	28-7/36	18-19/30	BTC	Opt	PVC	MYL	PVC	AP shield optional
		–	¤	–20	105	300	10	64	TC	28-7/36	–	No	No	PVC	–	–	0.050 centers

ABLE RATED™

- Multi-Spec Cable
- Multi-Spec Wire
- Power Supply Cords
- Shrink-ABLE Tubing
- Flex-ABLE Tubing
- Ty-ABLE Cable Ties
- Cable Assemblies
- Flat Ribbon Cable
- Connectors





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ABLE RATED™ THE MULTI-SPEC WIRE



Highest quality, top of the line ABLE RATED wire meets the electrical characteristics of UL, CSA and military specs. You pay less and get more with ABLE RATED, THE MULTI-SPEC WIRE.

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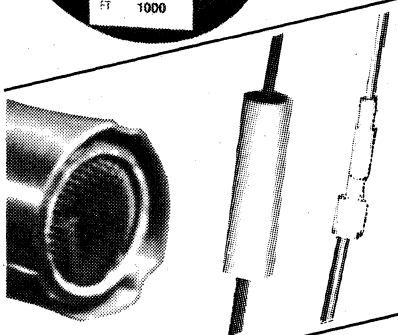

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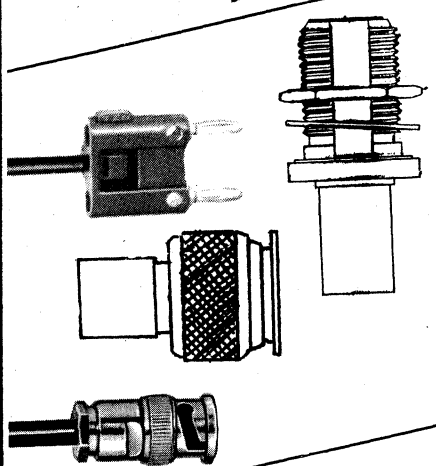

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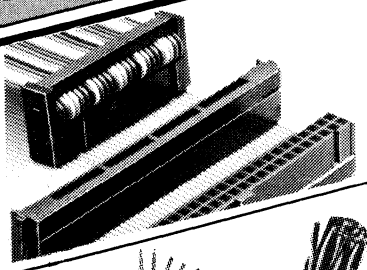
ABL ELECTRONIC SUPPLIES 1736 Front St., Yorktown Heights, N.Y. 10598

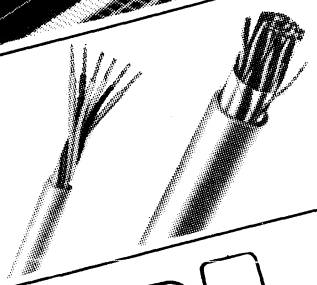
A dependABLE source is a valuABLE source

male and female IDC connectors and headers



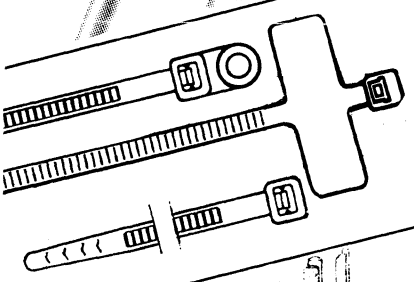
A complete line of IDC cable assemblies made to industry standard dimensions or your custom specifications for less than your cost of the unassembled components... and 100% tested.

ABLE CABLE



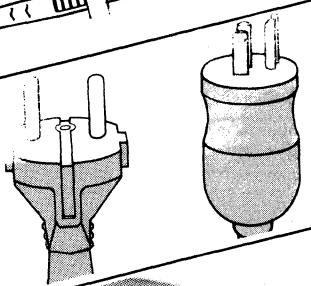
ABLE cables' quality is equal to or exceeds Alpha and Belden equivalents...with substantially lower prices.

Ty-ABLE CABLE TIES AND ACCESSORIES



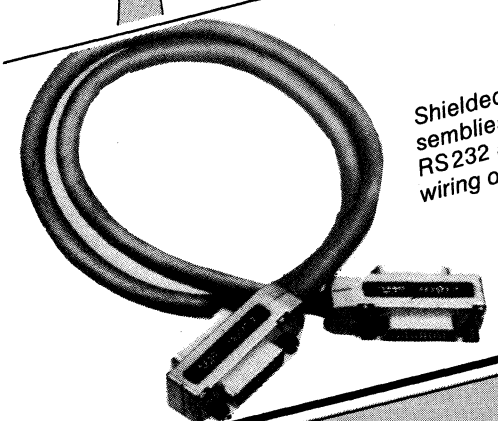
Ty-ABLE cable ties are available in a wide range of sizes and types. Also, a complete line of mounting and installation accessories, delivered from stock, at discounted prices.

CORD SETS



ABLE UL & CSA shielded and non-shielded cord sets are manufactured with North American and International color codes. Styles include detachable and extension cords, hospital and low leakage grades and power supply cords.

CABLE ASSEMBLIES



Shielded and unshielded cable assemblies to comply with IEEE-488, RS232 and RS449. Point to point wiring or wired to your specifications.

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ABL ELECTRONIC SUPPLIES 1736 Front St., Yorktown Heights, N.Y. 10598

WIRE GAUGES— DIAMETER, AREA AND COPPER WEIGHT

	Diameter at 20°C (68°F)		Area at 20°C (68°F)			Weight at 20°C (68°F), bare copper wire		
Size, AWG	mils	mm	mils	c mils	mm	lb/1,000 ft.	lb/mile	kg/km
4/0	460.0	11.68	166,200	211,600	107.2	640.5	3,382	953.2
3/0	409.6	10.40	131,800	167,800	85.01	507.8	2,681	755.7
2/0	364.8	9.266	104,500	133,100	67.43	402.8	2,127	599.5
1/0	324.9	8.252	82,891	105,600	53.49	319.5	1,687	477.6
1	289.3	7.348	85,730	83,690	42.41	253.3	1,338	337.0
2	257.6	6.543	52,120	66,360	33.62	200.9	1,061	298.9
3	229.4	5.827	41,330	52,620	26.67	159.3	841.1	237.1
4	204.3	5.189	32,780	41,740	21.15	126.3	667.1	188.0
5	181.9	4.620	25,990	33,090	16.77	100.2	528.8	149.0
6	162.0	4.115	20,610	26,240	13.30	79.44	419.4	118.2
7	144.3	3.665	16,350	20,820	10.55	63.03	332.8	93.80
8	128.5	3.264	12,970	16,510	8.367	49.98	263.9	74.38
9	114.4	2.906	10,280	13,090	6.631	39.61	209.2	58.95
10	101.9	2.588	8,155	10,380	5.261	31.43	166.0	46.77
11	90.7	2.304	6,460	8,230	4.17	24.90	131	37.1
12	80	2.05	5,130	6,530	3.310	19.8	104	29.4
13	72.0	1.83	4,070	5,180	2.63	15.7	82.9	23.4
14	64.1	1.63	3,230	4,110	2.08	12.4	65.7	18.5
15	57.1	1.45	2,560	3,260	1.650	9.87	52.1	14.7
16	50.8	1.29	2,030	2,580	1.31	7.81	41.2	11.6
17	45.3	1.150	1,610	2,050	1.040	6.21	32.8	9.24
18	40.3	1.02	1,280	1,620	0.823	4.92	26.0	7.32
19	35.9	0.912	1,010	1,290	0.653	3.90	20.6	5.81
20	32.0	0.813	804.0	1,020	0.519	3.10	16.4	4.61
21	28.5	0.724	638.0	812.0	0.412	2.46	13.0	3.66
22	25.3	0.643	503.0	640.0	0.324	1.94	10.2	2.88
23	22.6	0.574	401.0	511.0	0.259	1.55	8.16	2.30
24	20.1	0.511	317.0	404.0	0.205	1.22	6.46	1.82
25	17.9	0.455	252.0	320.0	0.162	0.970	5.12	1.44
26	15.9	0.404	199.0	253.0	0.128	0.765	4.04	1.14
27	14.2	0.361	158.0	202.0	0.102	0.610	3.22	0.908
28	12.6	0.320	125	159.0	0.0804	0.481	2.54	0.715
29	11.3	0.287	100.0	128.0	0.0647	0.387	2.04	0.575
30	10.0	0.254	78.50	100.0	0.0507	0.303	1.60	0.450
31	8.9	0.226	62.20	79.2	0.0401	0.240	1.27	0.357
32	8.0	0.203	50.30	64.0	0.0324	0.194	1.02	0.288
33	7.1	0.180	39.60	50.40	0.0255	0.153	0.806	0.227
34	6.3	0.160	31.20	39.7	0.0201	0.120	0.634	0.179
35	5.6	0.142	24.60	31.4	0.0159	0.0940	0.501	0.141
36	5.0	0.127	19.60	25.00	0.0127	0.0757	0.400	0.113
37	4.50	0.114	15.90	20.20	0.0103	0.0613	0.324	0.0912
38	4.0	0.102	12.60	16.0	0.00811	0.0484	0.256	0.0721
39	3.5	0.0889	9.62	12.2	0.00621	0.0371	0.196	0.0552
40	3.1	0.0787	7.55	9.61	0.00487	0.0291	0.154	0.0433
41	2.8	0.0711	6.16	7.84	0.00397	0.0237	0.125	0.0353
42	2.5	0.0635	4.91	6.25	0.00317	0.0189	0.0999	0.0282
43	2.2	0.0559	3.80	4.84	0.00245	0.0147	0.0774	0.0218
44	2.0	0.0508	3.14	4.00	0.00203	0.0121	0.0639	0.0180
45	1.8	0.0457	2.54	3.24	0.00164	0.00981	0.0519	0.0146
46	1.6	0.0406	2.01	2.56	0.00130	0.00775	0.0409	0.0115
47	1.4	0.0356	1.54	1.96	0.000993	0.00593	0.0313	0.00883
48	1.2	0.0305	1.13	1.44	0.000730	0.00436	0.0230	0.00649
49	1.1	0.0279	0.950	1.21	0.000613	0.00366	0.0193	0.00545
50	1.0	0.0254	0.785	1.00	0.000507	0.00303	0.0160	0.00450

alpha Meets The Challenge

TECHNOLOGY For Todays Concerns

Toxicity

Longevity

Corrosion

Flexibility

Flammability

Reliability

ALPHA WIRE CORPORATION
711 LIDGERWOOD AVENUE, P.O. BOX 711
ELIZABETH, NEW JERSEY 07207 USA
1-800-52-ALPHA

alpha New Products

Environmental Sealing Products

XTRA•SEAL™

Silicone Sealant Strips

XTRA•SEAL™ strips can be used almost anywhere when moisture and corrosion protection is required. It is a ready-to-use, cold-applied protection system which seals on a microscopic level. XTRA•SEAL™ represents the latest innovation in sealing technology and is re-enterable with ease. Its unique coating and self-heating ability makes it superior to conventional cold-applied sealing methods. XTRA•SEAL™ will perform in temperatures as high as +125°C and as low as −55°C.

FEATURES

- Inhibits corrosion
- Cold-applied
- Re-enterable
- No toxic fumes
- No special tools or cure-time required

APPLICATIONS

- Sealing electrical connections
- Pipe corrosion protection
- Masking electronic components
- Sealing high temperature equipment

FIT® Crimp Splices

Alpha's heat shrinkable, pre-insulated crimp splices completely seal electrical connections from exposure to water, salts or other contaminants. Unlike conventional butt splices, these butt connectors are covered with a heat shrinkable nylon insulator lined with an adhesive layer. Once crimped and sealed, they won't pull apart and are water-resistant. UL Listed, FIT Crimps have an operating temperature that ranges from −55°C to +125°C.

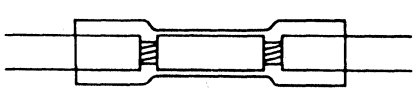
FEATURES

- All-in-one crimp and seal device
- Easy to install
- Water-resistant
- High tensile strength
- Abrasion resistant

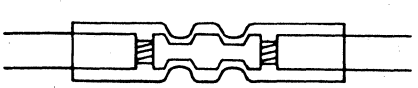
APPLICATIONS

- Marine Electronics/Electrical
- Process Control/Instrumentation
- Commercial/Industrial Wiring
- Petroleum and Chemical industries
- Automotive manufacturing and mass transit

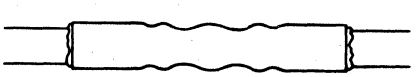
FAST, EASY INSTALLATION



Select appropriate splice. Strip wire back 0.3" (8mm). Insert wire into crimp barrel.



Crimp splice with Alpha's AT-300 crimp tool for pre-insulated crimps.



Heat splice with heat gun until tubing recovers and adhesive flows.

PRODUCT DATA

Alpha No.	Color	AWG Range of Barrel	
		Min.	Max.
FIT CRIMP 1	Red	22	18
FIT CRIMP 2	Blue	16	14
FIT CRIMP 3	Yellow	12	10

Operating Temperature: −55°C to +125°C
Shrinkage Ratio: Approximately 2:1 at 180°C

Typical wire pull out after crimping and recovery: Red—25 lbs; Blue—50 lbs; Yellow—60 lbs

ALPHA WIRE CORPORATION 711 LIDGERWOOD AVENUE, P.O. BOX 711, ELIZABETH, NEW JERSEY 07207 USA 1-800-52-ALPHA

for Todays Markets

New Polymer Technology LSOH

Low Smoke/Zero Halogen

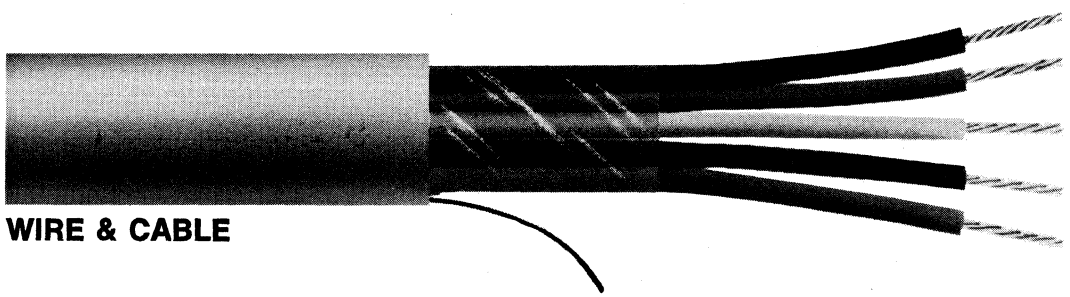
Where Toxicity and Smoke are a Prime Concern

Introducing Alpha's new polymer technology for low smoke zero halogen (LSOH) military and commercial applications. LSOH wire and cable, tubing and molded parts can be used in mass transit systems, industrial factories and office buildings or any other area where smoke generation and toxic fume generation are a hazard.

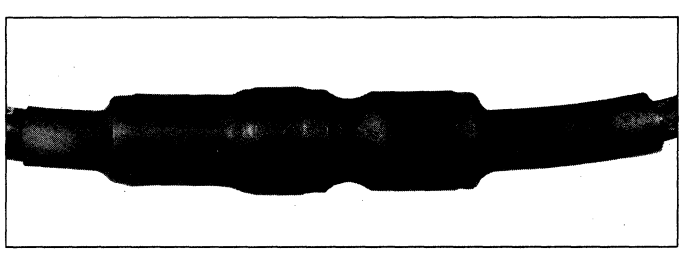
LSOH FEATURES

- 24-14 AWG sizes
- Multi conductor/multipair
- 300V or 600V
- Insulation and jacket compound ideal for military and commercial LSOH applications

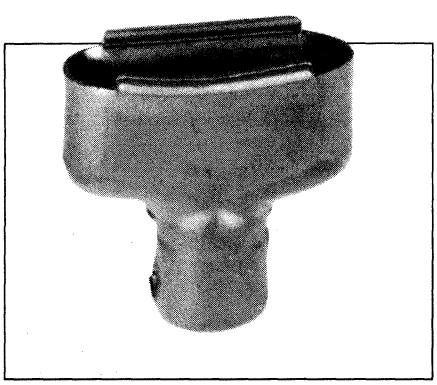
In applications for MIL-C-24643 and MIL-C-24640, please consult Alpha Wire Corporation for product availability.



WIRE & CABLE



TUBING



MOLDED PARTS

ALPHA WIRE CORPORATION
711 LIDGERWOOD AVENUE, P.O. BOX 711, ELIZABETH, NEW JERSEY 07207 USA 1-800-52-ALPHA

alpha

alpha Increases Your

XTRA•GUARD®
Communication And Control Cables Designed

XTRA•GUARD 1

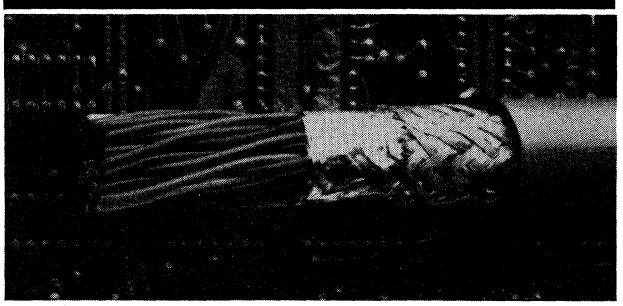
XTRA•GUARD 1 is a versatile electronic cable for internal or external wiring of OEM equipment. Available in three colors, XTRA•GUARD 1 features fully color-coded, tinned copper conductors and premium grade PVC insulation and jacket.

Available in two UL and CSA constructions, XTRA•GUARD 1 carries a UL VW-1 flammability rating. Applications range from sophisticated computer systems to medium x-ray equipment.

Multi-pairs	Multi-conductors	Jacket Material	Conductor Insulations	Voltage Rating
1-102	2-100	PVC 80°C UL Style 2464, 2343, 2344 PVC 105°C UL Style 2501	PVC 80°C CSA SR-PVC PVC 80°C CSA AWM PVC PVC 105°C CSA AWM PVC PVC 80°C UL Style 1007, 1061 PVC 105°C UL Style 1015	300V 600V

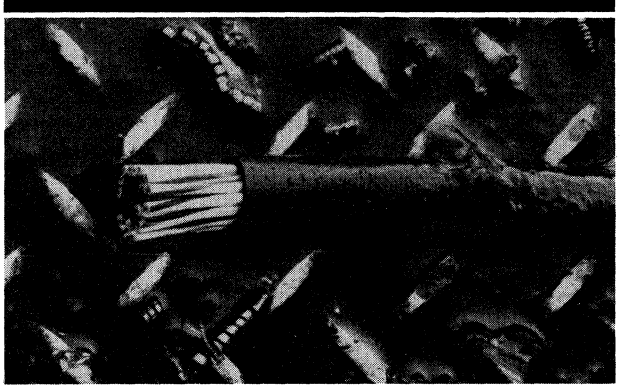
AWG Size Range: 24-14

COMPUTER, COMMUNICATIONS, INSTRUMENTATION AND CONTROL EQUIPMENT.



XTRA•GUARD 1

PETROCHEMICAL PLANTS, MACHINE TOOL, AND ROBOTICS.



XTRA•GUARD 2

XTRA•GUARD 2

For heavy duty applications in plants and factories, the specially formulated jacketing resists oils, solvents, chemicals, fuels and mechanical abuse. XTRA•GUARD 2 has up to three times more tensile tear and elongation strengths than similar cables jacketed in PVC and about twice the strengths of rubber or neoprene.

XTRA•GUARD 2 cables are available in nine jacket colors and meet MIL specs for water and for gas resistance. They have been field performance proven in robotics, printing presses, CNC and NC operations and military ground support.

Multi-pairs	Multi-conductors	Jacket Material	Conductor Insulations	Voltage Rating
1-102	2-100	Heavy duty polyurethane 80°C UL Style 20233, 20235, 20236 Heavy duty polyurethane 80°C UL Style 20234	PVC 80°C CSA SR-PVC PVC 80°C CSA AWM PVC PVC 105°C CSA AWM PVC PVC 80°C UL Style 1007, 1061 PVC 105°C UL Style 1015	300V 600V

AWG Size Range: 24-14

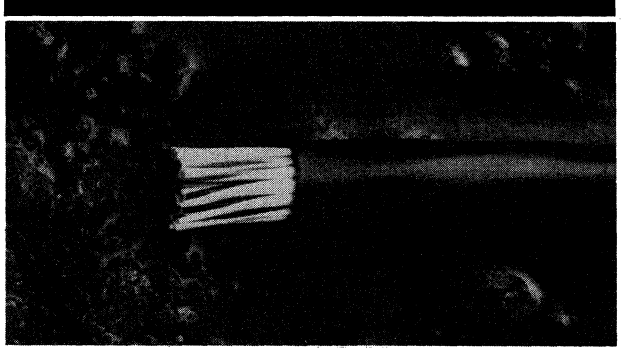
XTRA•GUARD 3

For direct burial without costly conduit, these cables have PVC-insulated conductors and a heavy duty black polyethylene jacket that withstand direct burial in wet earth or any outdoor installation. XTRA•GUARD 3 has been designed to give years of reliable service resisting the effects of weathering, moisture and mechanical abuse. Fully color-coded, tinned-copper conductors make identification fast, easy and safe. Can be used outdoors in petroleum pipelines, satellite communications and irrigation systems.

Multi-pairs	Multi-conductors	Jacket Material	Conductor Insulations	Voltage Rating
1-102	2-100	Polyethylene 80°C	PVC 80°C CSA SR-PVC PVC 80°C CSA AWM PVC PVC 105°C CSA AWM PVC PVC 80°C UL Style 1007, 1061 PVC 105°C UL Style 1015	300V 600V

AWG Size Range: 24-14

INTER-BUILDING COMMUNICATIONS, CONSTRUCTION SITES AND WATER TREATMENT PLANTS.



XTRA•GUARD 3

Margin of Protection

XTRA•GUARD®
To Withstand The Most Hostile Environments

PAPER PROCESSING PLANTS, AND INDUSTRIAL CABLE TRAY APPLICATIONS.



XTRA•GUARD 4

XTRA•GUARD 4

A general purpose outdoor cable with Thermoplastic Elastomer insulation and jacketing to insure flexibility at −60°C and performance at temperatures up to +125°C. XTRA•GUARD 4 has a low halogen content will not give off toxic or corrosive gases or fumes when exposed to flame. A UV-stabilized jacket resists most oils, chemicals, fuels, solvents and mechanical abuse and abrasion.

XTRA•GUARD 4 is available in nine colors and meets IEEE 383 flame tests.

Multi-pairs	Multi-conductors	Jacket Material	Conductor Insulations	Voltage Rating
1-102	2-100	TPR thermoplastic rubber −60°C to +125°C UL Style 20237, 20238, 20239, 20240 UL type PLCC, PLTC, Subject 13 UL type TC Subject 1277	TRP thermoplastic rubber −60°C to +125°C UL Style 1722, 1888	300V 600V

AWG Size Range: 24-14

XTRA•GUARD 5

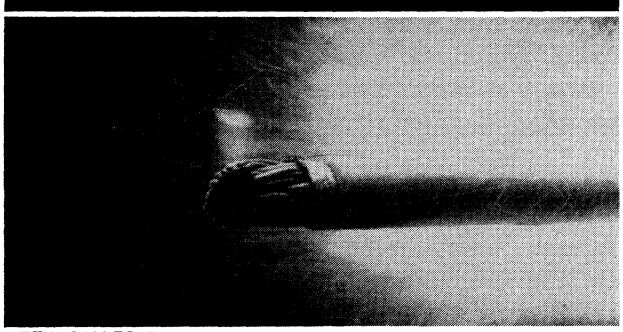
For cable protection in the most demanding OEM environments, XTRA•GUARD 5 resists any known chemical at room temperature and provides exceptionally high resistance at high temperatures. Its low friction coefficient makes installation easy for any application and these cables provide excellent abrasion and impact resistance. Meets IEEE 383 flame tests.

Where safety, chemical, electrical and physical integrity are a must, XTRA•GUARD 5 meets the challenge.

Multi-pairs	Multi-conductors	Jacket Material	Conductor Insulations	Voltage Rating
1-27	2-70	FEP-Teflon* −80°C to +150°C UL Style 20229, 20232 20230, 20231 NEC Article 725-(b), 760-4(d)	FEP-Teflon* −80°C to +150°C UL Style 1886, 1887	300V 600V

AWG Size Range: 24-16 *Teflon is a registered Trade Mark of E.I. DuPont

STEEL MILLS, HIGH TEMPERATURE, CORROSIVE INDUSTRIAL AND PLENUM APPLICATIONS.



XTRA•GUARD 5

XTRA•GUARD Cables are available in two shielded constructions and two types of cable armoring.

SHIELDING

Foil Shielding—a helically wrapped, polyester-supported aluminum foil provides 100% shield coverage. For use in low frequency data communication systems.

SUPRASHIELD™—a helically wrapped, triple laminate foil shield with drain wire and overall tinned copper braid which exceeds FCC Docket 20780. SUPRASHIELD meets the EMI/RFI shielding standard for CAD CAM and military applications including tempest and MIL STD 461 and 462B.

ARMORING

ALPHALOC™—for mechanical protection, ALPHALOC is made of flexible galvanized interlocked steel with a UV-stabilized PVC jacket to provide resistance against crush, corrosion and chemical attack.

ALPHABON™—for excellent protection against moisture, ALPHABON is an aluminum sheath, hermetically sealed to a polyethylene jacket to insure moisture protection. Ideal for direct burial in extremely wet environments.

ALPHA WIRE CORPORATION
711 LIDGERWOOD AVENUE, P.O. BOX 711, ELIZABETH, NEW JERSEY 07207 USA 1-800-52-ALPHA

alpha

alpha Ensures Reliable

Local Area Network/Communication Cables

CABLE DATA LINK FOR HIGH SPEED OFFICE COMMUNICATIONS—LAN IEEE 802

A local area network is a data communications system that allows similar or dissimilar digital devices to talk to each other over a common transmission medium. The devices may be of various types—for example, minicomputers, data terminals, telephone sets, distributed data processors, printers, copiers, facsimile devices, and word processors. As its name implies, a local network provides communications over a limited geographical area—a floor, a section of a building, an entire building, a cluster of buildings, or in a multi-story building or factory complex.

BENEFITS

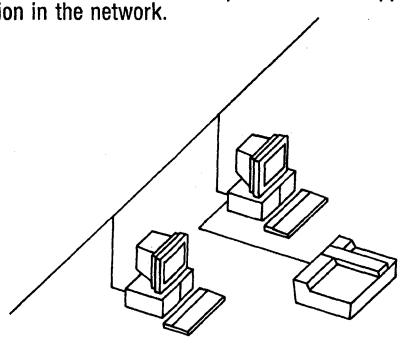
- Allows system flexibility
- Provides rapid transfer of information
- Links diverse types of equipment
- Complies with IEEE 802.3 Baseband Specifications
- Helps meet FCC Docket 20780 Shielding Requirements

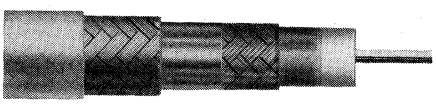
*IEEE 802 STANDARD

A dominant standard for LAN products has emerged in the IEEE 802 document with more than 100 equipment suppliers conforming to this standard.

STANDARD TRUNK/DROP CABLE TYPES

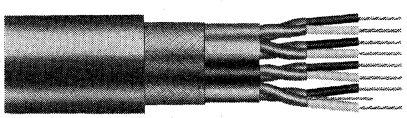
The common cabling system compatible with the requirements of IEEE 802 uses a coaxial cable for the trunk line, with twisted pair drop cables accessing the networked work stations. This configuration allows transmission speeds of 10Mb/sec over cable segments of 1640 feet maximum. The trunk cable is normally installed within ceilings and walls, and a twisted pair cable is dropped to connect each station in the network.





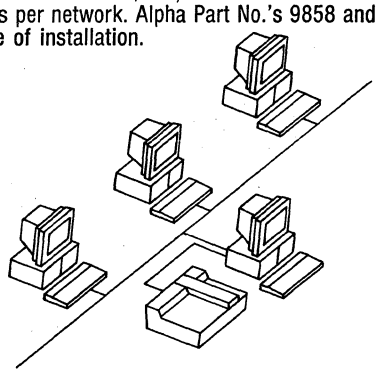
THE CABLES

The network cabling configuration is of key importance in supporting the high speed transfer of information. The LAN commonly uses twisted pair wiring and coaxial cable to transfer data at high speeds without the necessity of point-to-point wiring between each device.



10-BASE-2 "CHEAPER-NET" ALTERNATIVE

The IEEE 802.3 standard provides for a lower installation cost cabling structure known as 10-Base-2. A smaller coax is used to daisy chain stations by utilizing a BNC-T connecting device to link PC units. This configuration commonly referred to as "Cheaper-Net" can also operate at 10Mb/sec, but is limited to 600 foot segments and 30 PC's per network. Alpha Part No.'s 9858 and 9859 are used in this type of installation.



INDUSTRIAL AREA NETWORK

Alpha Part No. 9825 has been designed for use as a trunk coaxial cable with M.A.P. Systems (Manufacturing Automation Protocol), such as Allen-Bradley's Data Highway II, and other similar industrial area networking systems which bring intelligent automation to the manufacturing environment. These systems allow intelligent devices (computers, robots, graphic systems, etc.) and non-intelligent devices (printers, terminals) and other automated equipment to communicate with each other on the plant floor.

Application
- Industrial Area Network Cable for an Automated Plant Environment

Applicable Specification
- UL AWM Style 1478

Characteristic
- **Passes UL VW-1 flame test**

Electrical Characteristics
- Operating Temperature Range: 0-80°C (UL +60°C)
- UL Voltage Rating: 30 Volt

Alpha No.	RG Type	Inner Conductor			Dielecrtic		Shield		Jacket		Impedance Ohms	Vp %	Capacitance pF/ft (pF/m)
		AWG (mm²)	Strand (mm)	Mat'l.	Mat'l.	Diameter in. (mm)	Mat'l.	Nom. Coverage, %	Mat'l.	Diameter in. (mm)			
9825	11/U Type	14 (2,1)	Solid	BC	FPE	.286 (7,52)	A/M/A & TC Praid	96	Blue V	.405 (10,3)	75	78	17.9 (59)

Legend C—Bare copper TC—Tinned copper A/M/A—Aluminum/polyester/aluminum tape V—Polyvinylchloride—Type I

IEEE, Institute of Electrical and Electronic Engineers

ALPHA WIRE CORPORATION 711 LIDGERWOOD AVENUE, P.O. BOX 711, ELIZABETH, NEW JERSEY 07207 USA 1-800-52-ALPHA

Data Transmission

Local Area Network/Communication Cables

TRUNK—COAXIAL CABLES

Alpha No.	RG Type	Inner Conductor AWG (mm²)	Inner Conductor Strand (mm)	Inner Conductor Mat'l.	Dielectric Mat'l.	Dielectric Diameter In. (mm)	Shield Mat'l.	Shield Nom. Coverage, %	Jacket Mat'l.	Jacket Diameter In. (mm)	Impedance ohms	VP %	Capacitance pF/ft(pF/m)
9804†	6/U Type	18 (0,82)	Solid	C	FPE	0.180 (4,57)	A/M + TC Braid	100	Black V	0.270 (6,86)	71	78	17.3 (56,8)
9104	6/U Type FEP Plenum	18 (0,82)	Solid	C	FFEP	0.175 (4,45)	A/M/A + TC (90%) Braid	100	FEP* Black Tint	0.260 (6,60)	75	82	17.0 (55.8)
9858	58 C/U Type "Cheaper-net"	20 (0,48)	19/0.0071 (19x0,18)	TC	PE	0.116 (2,95)	TC Braid	95	Black V	0.195 (4,95)	50	66	30.8 (101)
9859	58 C/U Type FEP* Plenum "Cheaper-net"	20 (0,48)	19/0.0071 (19x0,18)	TC	FFEP	0.090 (2,29)	A/M/A + TC Braid	95	Black Tint FEP	0.178 (4,52)	50	82	25.0 (82,0)
9851	Ethernet**	.0855 (2,17)	Solid	TC	FPE	0.247 (6,27)	A/M + TC Braid + A/M/A/ + TC Braid	100	Yellow V	0.405 (10,28)	50	78	26.0 (85,0)
9851F	Ethernet FEP* Plenum	.0855 (2,17)	Solid	C	FFEP	0.247 (6,27)	A/M/A + TC (92%) Braid + A/M/A + TC (92%) Braid	100	FEP Orange Tint	0.379 (9,63)	50	80	24.9 (81,7)
9059B	59 B/U Type	23 (0,26)	Solid	CW	PE	0.146 (3,71)	C Braid	95	Black NCV	0.242 (6,15)	75	66	20.1 (65,9)
9062A	62/U Type	22 (0,32)	Solid	CW	SSP	0.146 (3,71)	C Braid	95	8 colors V	0.242 (6,15)	93	84	13.2 (43,3)

TRANSCEIVER/DROP—MULTIPAIR INDIVIDUAL AND OVERALL SHIELD CABLES UL AWM STYLE 2384

Alpha No.	Number of Pairs	Inner Conductor Description	Insulation Mat'l.	Insulation Thickness In.	Insulation Thickness (mm)	Jacket Shield	Jacket Mat'l.	Thickness In. (mm)	Diameter In. (mm)	Impedance ohms	Vp %	Capacitance pF/ft.(Pf/m)
9852 Ethernet	4	3 pair 22 AWG (0.35mm²) 7/30 (7x0,25mm) TC 1 pair 20 AWG (0,51mm²) 7/28 (7x0,38mm) TC	FPE PVC	.106 .010	(0,41) (0,25)	A/M + A/M/A + TC (95%) Braid	Gray V	.040 (1,02)	.340 (8,64)	78 (3 pair)	65	18.0 (59)
9853 IEEE 802.3	4	20 AWG (0,51mm²) 7/28 (7x0,38mm) TC	3 pair-FPE 1 pair-PVC	.021 .011	(0,53) (0,38)	A/M + A/M/A + TC (95%) Braid	Light Gray V	.040 (1.02)	.425 (10,8)	78 (3 pair)	65	18.0 (59)

MULTIPAIR COMPUTER CABLE

Alpha No.	Conductor AWG	Conductor mm²	Conductor Strand	Conductor mm	No. of Pairs	Insulation Thickness In.	Insulation Thickness mm	Jacket Thickness In.	Jacket Thickness mm	Diameter In.	Diameter mm
2466	22	0,36	7/30	7x0,25	2	0.008	0,20	0.019	0,48	0.16	4,1
5092	24	0,23	7/32	7x0,20	2	0.010	0,25	0.032	0,81	0.16	4,1
5471	24	0,23	7/32	7x0,20	1	0.010	0,25	0.032	0,81	0.15	3,9
6010	22	0,35	7/30	7x0,25	3	0.010	0,25	0.045	1,14	0.31	8,0

TWINAXIAL COMPUTER CABLE

Alpha No.	Description	AWG (mm²)	Strand (mm)	Dielectric Mat'l.	Shield Mat'l	Shield Nom. Coverage %	Jacket Mat'l.	Jacket Diameter In. (mm)	UL Style No.
9815	1 Pair TC	20 (0,56)	7/28 7x0,32	PE	TC Braid	93	Blue PVC	0.242 (6,15)	2092
9818	2CDRS—BC-1 TC-2ND	20 (0,56)	7/28 7x0,32	PE	TC Braid	95	Black PVC	0.330 (8,38)	2498
9819	2 Pair TC	22 (0,32)	Solid 0,64	PE	A/M Plus T/C Braid	100	Black PVC	0.290 (7,37)	2919

TRUNK COAXIAL CABLES

- IEEE 802.4 Broadband Alpha Nos. 9804, 9104
- IEEE 802.3 Baseband Alpha Nos. 9851, 9860
- IEEE 802.3 10-Base-2 Alpha Nos. 9858, 9859
- Plenum Rated Cables:
  UL Subject 13, Type PLCC Listed
  UL Classified (for plenum applications without conduit)
  NEC 725-2(b)

LEGEND

C—Bare copper TC—Tinned copper
A/M—Aluminum polyester tape
A/M/A—Aluminum/polyester/aluminum tape
PE—Solid polyethylene FPE—Cellular (foam) polyethylene
FEP—Fluorinated ethylene propylene
FFEP—Foam fluorinated ethylene propylene
V—Polyvinylchloride—Type I
W—Copper coated steel
V—Non-contaminating polyvinylchlorine—Type II
—Semi-solid polyethylene

*Registered Trade Mark E.I. DuPont Co. **Trade Mark Xerox Corp.

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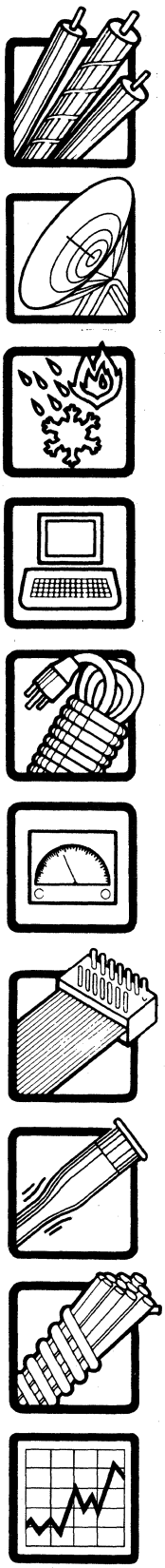
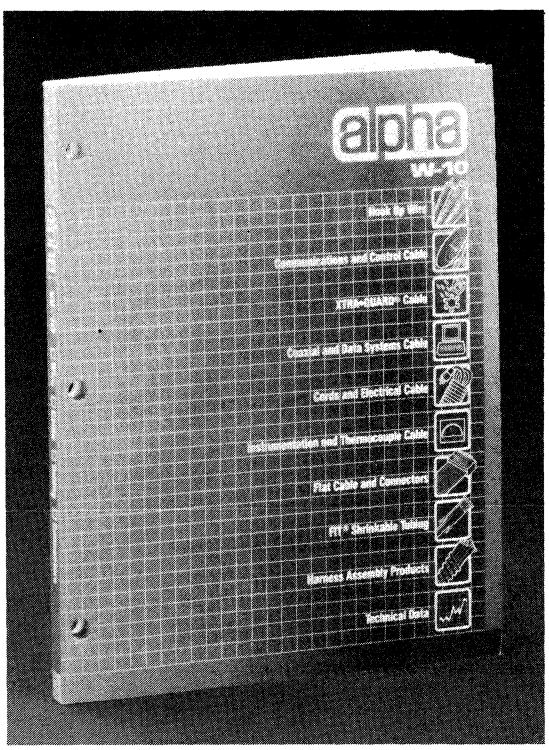


ALPHA'S FULL LINE CATALOG



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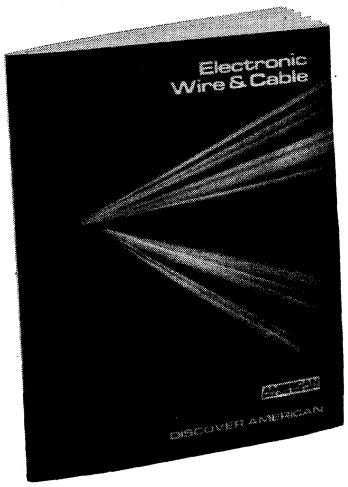

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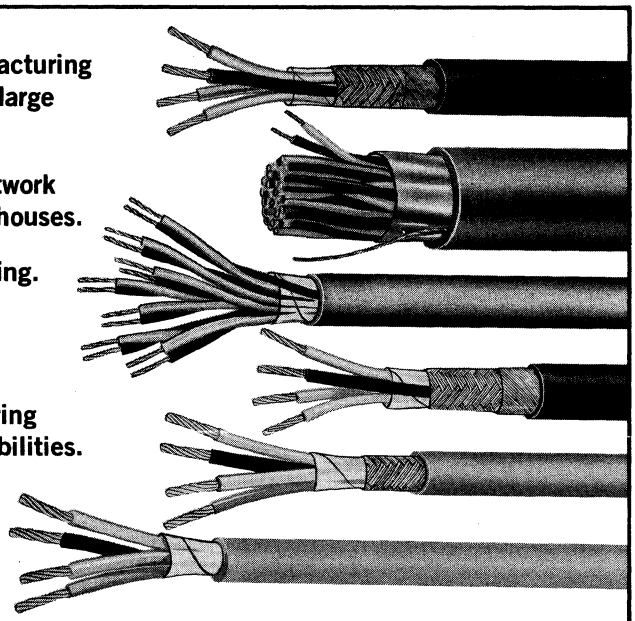

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Product Description	Maximum Voltage Rating	Maximum Operating Temp. °C	Size Range AWG	Conductor Material	Insulation Materials	Jacket Materials	Shielding*
Audio & Sound Cable	90-600	60-105	14-22	BC, TC	PE, PVC	PVC	Optional
Coaxial Cable	—	60-80	11-30	BC, TC, SC, CW	PE, FPE, SSP	PVC, NVC	Yes
Control Cable	600-1000	60-90	10-18	BC, TC	PVC, PE, RUB XLP, EPR	PVC, NEO Hypalon	Optional
Communication Cable	200-600	60-105	12-26	TC	PE, PVC, PP	PVC	Optional
Computer & P.O.S. Cable	200-300	80-105	22-26	TC	PP, PVC, PE	PVC	Yes
Fire Alarm Cable	300	105	12-22	BC, TC	PVC	PVC	Optional
Hook-up Wire (UL, CSA, MIL)	300-2500	80-200	2-26	BC, TC	PE, PVC, XLP Silicone	Nylon Laq. Glass Braid	—
Instrumentation Cable	300-600	60-105	12-26	BC, TC	PE, PP, PVC RUB, XLP, EPR	PVC, NEO Hypalon	Optional
Plenum Cable	300-600	200	12-24	BC	FEP	FEP	Optional
Portable & Flex. Cord	300-600	60-105	10-18	BC, TC	PVC, RUB, NEO HYP, EPR, XLP	PVC, RUB NEO, HYP	Optional

LEGEND:
BC = Bare Copper
CW = Bare Copper Covered Steel
EPR = Ethylene Propylene Rubber
FEP = Florinated Ethylene Propylene
FPE = Cellular (foam) polyethylene
HYP = Hypalon (DuPont™)
NVC = Non-Contaminating PVC
NEO = Neoprene
RUB = Rubber
PE = Polyethylene
PP = Polypropylene
PVC = Polyvinyl Chloride
SC = Silver Coated Copper
SSP = Semi-solid polyethylene
TC = Tinned Copper
XLP = Cross-linked Polyethylene

***AVAILABLE SHIELDS:**
- Aluminum/Polyester Tape
- Bare or Tinned Copper Tape
- Bare or Tinned Copper Braid
- Spiral Wrapped Tinned Copper

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Belden manufactures quality cables for a wide range of commercial,and industrial applications. The cables contained in this catalog represent only a small portion of Belden's standard product line. For a more complete listing, contact your local Belden distributor or call toll free 1-800-BELDEN-1. (317/983-5200 in Indiana.)

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Table of Contents

	Pages
Audio Cables	2, 3, 4, 5, 6, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22
Broadcast Cables	6, 17, 18, 19, 20, 21, 22
CAD/CAM Cables	7, 9, 10, 11, 23, 26, 29, 33, 34
Coaxial Cables	35, 36 ,37
Color Code Charts	40
Computer Cables	2, 3, 6, 7, 8, 9, 10, 11, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34
Control Cables	2, 3, 4, 5, 12, 13, 14, 15, 16
Local Area Network Cables	39
Low Capacitance Cables	8, 10, 18, 20, 24, 25, 27, 28, 31, 34
Multiconductor—Unshielded	2, 3, 4, 5
Multiconductor—Shielded	6, 7, 8, 9, 10, 11
Paired—Unshielded	12, 13, 14, 15, 16
Paired—Shielded	17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34
RS-232 Cables	2, 6, 7, 8, 9, 10, 11, 17, 18, 23, 25, 26, 28, 29
RS-422 Cables	24, 27, 28, 31, 33, 34
RS-423 Cables	8, 10
RS-485 Cables	25
Twinaxial Cables	38

Index by Product Number

Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page	Belden Trade #	Page
8102	28	8262	35	8458	2	8769	32	9393	37	9546	6	9737	31	9834	27
8103	28	8263	36	8459	2	8773	32			9550	17	9738	31	9835	27
8104	28	8267	35	8461	15	8774	32	9414	20	9555	37	9740	15	9836	27
8105	28	8268	35	8465	4	8775	32	9421	2			9741	16	9837	27
8106	28			8466	4	8776	32	9423	2	9608	9	9742	16	9838	27
8107	28	8302	29	8467	4	8777	32	9430	2	9609	9	9743	16	9839	27
8108	28	8303	29	8468	4	8778	32	9431	2	9610	9	9750	14	9840	27
8110	28	8304	29	8469	4	8795	13	9432	3	9611	9	9751	14	9851	38
8112	28	8305	29	8471	16			9433	3	9612	9	9752	14	9860	38
8115	28	8306	28	8473	16	9100	36	9434	3	9613	9	9753	19	9863	30
8118	28	8307	29	8477	16	9114	36	9438	5	9614	9	9755	14	9880	39
8125	28	8308	29	8486	14	9154	22	9439	3	9615	9	9767	32	9888	35
8132	25	8310	29	8487	4	9156	15	9444	3	9616	9	9768	32	9889	35
8133	25	8312	29	8489	4	9157	15	9445	3	9617	9	9769	32	9891	39
8134	25	8315	29			9158	12	9451	21	9618	9	9773	33	9892	39
8135	25	8318	29	8619	4	9159	15	9455	3	9619	9	9774	33	9893	39
8136	25	8325	29	8620	5	9160	12	9457	3	9620	5	9775	33	9898	39
8137	25	8332	26	8621	5	9161	15	9458	3	9621	5	9776	33		
8138	25	8333	26	8622	5	9182	38	9460	22	9622	5	9777	33	9925	10
8140	25	8334	26	8623	5	9184	20	9461	21	9623	5	9788	8	9927	10
8142	25	8335	26	8624	5			9462	21	9626	4	9789	8	9929	10
8145	25	8336	26	8627	5	9201	35	9463	38	9628	7	9790	8	9931	10
8148	25	8337	26	8628	5	9203	35	9464	21	9629	7	9791	8	9932	10
8155	25	8338	26	8629	5	9204	36			9630	7	9792	8	9933	10
8162	33	8340	26	8641	18	9207	38	9501	17	9631	7	9793	8	9934	10
8163	33	8342	26	8690	15	9212	36	9502	17	9632	7	9795	8	9935	10
8164	34	8345	26	8691	15	9221	37	9503	17	9633	7	9796	8	9936	10
8165	34	8348	26	8692	16	9240	36	9504	17	9634	7	9797	8	9937	10
8166	34	8355	26			9243	36	9505	17	9635	7	9798	8	9938	10
8167	34	8362	23	8718	22	9244	36	9506	17	9636	7	9799	8	9939	11
8168	34	8363	23	8719	22	9248	36	9507	17	9637	7			9940	11
8170	34	8364	23	8720	22	9251	35	9508	17	9638	7	9802	21	9941	11
8175	34	8365	23	8723	32	9252	35	9509	17	9639	7	9804	24	9942	11
8178	34	8366	23	8740	12	9258	35	9510	17	9662	37	9805	24	9943	11
8185	34	8367	23	8741	12	9259	36	9515	17	9680	18	9806	24	9944	11
		8368	23	8742	12	9266	36	9519	17	9681	18	9807	24	9945	11
8205	14	8370	23	8743	12	9268	37	9525	17	9682	18	9808	24	9946	11
8214	35	8372	23	8744	12	9269	37	9533	6	9683	18	9809	24	9947	11
8216	35	8375	23	8745	13	9271	38	9534	6	9684	18	9810	24	9948	11
8218	37	8378	23	8746	13	9272	38	9535	6			9811	24	9949	11
8219	35	8385	23	8751	19	9273	35	9536	6	9721	5	9812	24	9950	11
8221	36			8752	20			9537	6	9728	31	9813	24	9990	30
8227	38	8442	13	8753	13	9302	19	9538	6	9729	31	9814	24	9991	30
8228	36	8443	2	8754	13	9305	19	9539	6	9730	31	9819	24	9992	30
8238	36	8444	2	8755	13	9306	19	9540	6	9731	31	9825	24	9993	30
8241	36	8445	2	8756	13	9309	19	9541	6	9732	31	9829	27	9994	30
8254	37	8450	20	8757	12	9311	35	9542	6	9733	31	9830	27	9995	30
8255	37	8451	21	8760	22	9315	19	9543	6	9734	31	9831	27		
8259	35	8456	2	8761	21	9319	19	9544	6	9735	31	9832	27		
8261	36	8457	2	8762	21	9327	19	9545	6	9736	31	9833	27		

[redacted]

Multi-Conductor
Unshielded

BELDEN

Control, Audio and Computer Cables For EIA RS-232 Applications

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm
22 Gage Stranded Conductors (7x30) **PVC Insulated**						**Product Description** Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket.					
 AWM 2576 150V 80C	**8443†** Power Limited Cable Class 2	3	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	2.1 9.0 8.9 17.5 18.1	.010	.25	.032	.81	.164	4.17
						Color code: Black, Red, Green.					
	8444†	4	100 250 U-500 500 U-1000 1000	30.5 76.2 U-152.4 152.4 U-304.8 304.8	2.4 5.8 11.2 10.9 21.5 22.2	.010	.25	.032	.81	.182	4.62
						Color code chart No. 1, Technical Information Section.					
	8445† Power Limited Cable Class 2	5	100 250 U-500 500 U-1000 1000	30.5 76.2 U-152.4 152.4 U-304.8 304.8	2.8 6.7 12.6 13.7 25.1 25.9	.010	.25	.032	.81	.194	4.93
						Color code chart No. 1, Technical Information Section.					
 UL 2576 150V 80C	**9430†**	7	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	16.6 17.3 32.2 33.1	.010	.25	.032	.81	.214	5.44
						Color code chart No. 1, Technical Information Section.					
	9421†	8	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.1 18.5 19.1 36.1 37.0	.010	.25	.032	.81	.229	5.82
						Color code chart No. 1, Technical Information Section.					
	9423†	9	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.5 21.0 21.7 41.0 42.0	.010	.25	.032	.81	.244	6.20
						Color code chart No. 1, Technical Information Section.					
	8456†	10	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.1 24.1 24.9 47.2 50.2	.010	.25	.032	.81	.264	6.71
						Color code chart No. 1, Technical Information Section.					
	8457†	12	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.6 25.6 26.3 50.1 53.1	.010	.25	.032	.81	.264	6.71
						Color code chart No. 1, Technical Information Section.					
	8458†	15	100 500 1000	30.5 152.4 304.8	7.8 36.0 76.8	.010	.25	.040	1.02	.330	8.38
						Color code chart No. 2R, Technical Information Section.					
	9431†	20	100 500 1000	30.5 152.4 304.8	9.0 43.7 90.9	.010	.25	.040	1.02	.345	8.76
						Color code chart No. 2R, Technical Information Section.					
	8459†	25	100 500 1000	30.5 152.4 304.8	10.9 53.1 106.2	.010	.25	.040	1.02	.370	9.40
						Color code chart No. 2R, Technical Information Section.					

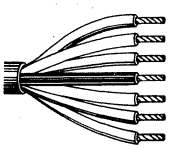
†Passes the VW-1 Vertical Wire Flame Test.

[redacted]

Multi-Conductor
Unshielded

BELDEN

Control and Audio Cables

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm
19 Gage Solid Conductors **PVC Insulated**											
	**8487†** 80C	3	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	13.0 12.8 25.0 25.8	.015	.38	.025	.64	.192	4.88
						Color code: Brown, Gray, Tan.					
18 Gage Stranded Conductors (16x30) **PVC Insulated**											
	**8489†**	4	100 250 U-500 500 U-1000 1000	30.5 76.2 U-152.4 152.4 U-304.8 304.8	5.1 11.8 23.1 23.9 45.2 48.3	.018	.46	.032	.81	.264	6.71
						Color code chart No. 1, Technical Information Section.					
ℛ 2598 300V 60C	**8465†**	5	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	6.1 28.7 29.2 56.3 60.3	.018	.46	.037	.94	.286	7.26
						Color code chart No. 1, Technical Information Section.					
	8467†	7	100 250 500 1000	30.5 76.2 152.4 304.8	8.0 20.0 38.6 81.0	.018	.46	.037	.94	.324	8.23
						Color code chart No. 1, Technical Information Section.					
	8469†	9	100 250 500 1000	30.5 76.2 152.4 304.8	10.1 25.7 51.8 103.7	.018	.46	.037	.94	.379	9.63
						Color code chart No. 1, Technical Information Section.					
	8466†	12	100 250 500 1000	30.5 76.2 152.4 304.8	12.6 31.3 64.1 126.1	.018	.46	.040	1.02	.412	10.46
						Color code chart No. 2R, Technical Information Section.					
	8468†	15	100 500 1000	30.5 152.4 304.8	17.6 87.9 172.8	.018	.46	.045	1.14	.505	12.83
						Color code chart No. 2R, Technical Information Section.					
	8619†	19	100 500 1000	30.5 152.4 304.8	20.0 99.3 195.0	.018	.46	.045	1.14	.505	12.83
						Color code chart No. 2R, Technical Information Section.					
	9626†	25	100 500 1000	30.5 152.4 304.8	27.1 134.9 270.8	.018	.46	.060	1.52	.620	15.75
						Color code chart No. 2R, Technical Information Section.					

†Passes the VW-1 Vertical Wire Flame Test.

Multi-Conductor
Unshielded

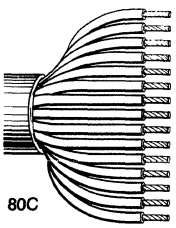
BELDEN

Control and Audio Cables

16 Gage
Stranded Conductors (19x29)

PVC Insulated

Product Description
Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket. Suggested working voltage: 600.

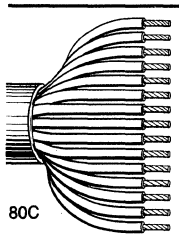


Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm
	8620†	4	100 500 1000	30.5 152.4 304.8	8.7 42.2 87.9	.031	.79	.045	1.14	.375	9.53
						Color code chart No. 2, Technical Information Section.					
	9620†	5	100 500 1000	30.5 152.4 304.8	10.5 53.9 103.0	.031	.79	.045	1.14	.405	10.29
						Color code chart No. 2, Technical Information Section.					
	8621†	7	100 500 1000	30.5 152.4 304.8	14.1 69.9 136.9	.031	.79	.045	1.14	.455	11.56
						Color code chart No. 2R, Technical Information Section.					
	9721†	8	100 500 1000	30.5 152.4 304.8	15.9 78.8 154.8	.031	.79	.045	1.14	.495	12.57
						Color code chart No. 2R, Technical Information Section.					
	8621†	9	100 500 1000	30.5 152.4 304.8	17.7 87.7 171.3	.031	.79	.045	1.14	.520	13.21
						Color code chart No. 2R, Technical Information Section.					
	8622†	12	100 500 1000	30.5 152.4 304.8	23.7 117.6 236.2	.031	.79	.060	1.52	.610	15.49
						Color code chart No. 2R, Technical Information Section.					
	8623†	15	100 500 1000	30.5 152.4 304.8	28.9 146.9 286.8	.031	.79	.060	1.52	.670	17.02
						Color code chart No. 2R, Technical Information Section.					
	8624†	19	100 500 1000	30.5 152.4 304.8	36.3 172.5 349.1	.031	.79	.065	1.65	.700	17.78
						Color code chart No. 2R, Technical Information Section.					
	8622†	25	100 500 1000	30.5 152.4 304.8	46.9 226.4 460.7	.031	.79	.065	1.65	.850	21.59
						Color code chart No. 2R, Technical Information Section.					

14 Gage
Stranded Conductors (19x27)

PVC Insulated

Product Description
Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket. Suggested working voltage: 600. Color code chart No. 2, Technical Information Section.



	8627†	4	100 500 1000	30.5 152.4 304.8	14.2 71.6 140.3	.047	1.19	.045	1.14	.495	12.57
	9623†	5	100 500 1000	30.5 152.4 304.8	19.1 94.1 189.2	.047	1.19	.060	1.52	.545	13.84
	8628†	7	100 500 1000	30.5 152.4 304.8	23.9 118.7 238.3	.047	1.19	.060	1.52	.615	15.62
	8629†	12	100 500 1000	30.5 152.4 304.8	40.9 201.8 397.2	.047	1.19	.065	1.65	.800	20.32

Roadway Loop

14 Gage
Stranded Conductor (104x34)

High Density Polyethylene Insulated

Product Description
Tinned copper conductor, black high density polyethylene insulation. Suggested working voltage: 600.



	New 9438 105C **Direct Burial**	1	1000	304.8	19.2	.032	.81	—	—	.139	3.53

†Passes the VW-1 Vertical Wire Flame Test.

BELDEN

Multi-Conductor
Unshielded

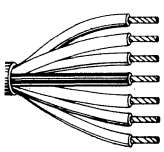
Control, Audio and Computer Cables

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm
22 Gage (cont'd.) Stranded Conductors (7x30) **PVC Insulated**						**Product Description** Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket. Color code chart No. 2R, Technical Information Section.					
	**9432†**	30	100 500 1000	30.5 152.4 304.8	12.3 62.9 119.7	.010	.25	.040	1.02	.400	10.16
	9433†	40	100 500 1000	30.5 152.4 304.8	16.7 82.8 162.8	.010	.25	.040	1.02	.455	11.56
℻ 2576 150V 80C	**9434†**	50	500 1000	152.4 304.8	101.2 201.5	.010	.25	.045	1.14	.500	12.70

Control and Audio Cables

20 Gage
Stranded Conductors (10x30)
PVC insulated

Product Description
Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket. Color code chart No. 1, Technical Information Section.



℻ 2464
300V 80C

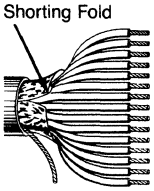
9444†	4	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.3 15.5 16.2 30.1 31.0	.013	.33	.032	.81	.217	5.51
					Color code chart No. 1, Technical Information Section.					
9445†	5	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.1 18.5 19.2 36.2 36.8	.013	.33	.032	.81	.239	6.07
					Color code chart No. 1, Technical Information Section.					
9439†	7	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.2 23.7 24.5 46.4 49.4	.013	.33	.032	.81	.260	6.60
					Color code chart No. 1, Technical Information Section.					
9455†	9	100 500 1000	30.5 152.4 304.8	6.8 32.6 68.5	.013	.33	.035	.89	.317	8.05
					Color code chart No. 1, Technical Information Section.					
9457†	12	100 500 1000	30.5 152.4 304.8	8.2 39.4 82.8	.013	.33	.035	.89	.338	8.58
					Color code chart No. 1, Technical Information Section.					
9458†	15	100 500 1000	30.5 152.4 304.8	11.3 53.2 104.5	.013	.33	.040	1.02	.389	9.88
					Color code chart No. 2, Technical Information Section.					

†Passes the VW-1 Vertical Wire Flame Test.

Multi-Conductor
Overall Beldfoil® Shield

BELDEN

Sound, Broadcast, Audio, Instrumentation and Computer Cables For EIA RS-232 Applications

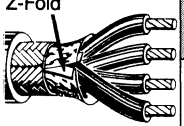
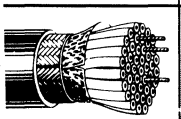
Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	(Strand-ing)	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
24 Gage Stranded Conductors (7x32) **S-R PVC Insulated**							**Product Description** Tinned copper, S-R PVC insulated, conductors cabled, Beldfoil aluminum-polyester shield with 24 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code chart No. 1, Technical Information Section.									
Shorting Fold  Beldfoil 100% Shield Coverage ®2464 300V 80C ® S-R PVC	**9533†**	3	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	2.1 9.5 9.5 17.8 9.1	(7×32)	.010	.25	.035	.89	.168	4.27	33	108	65	213
	9534†	4	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	2.4 10.9 10.9 21.3 11.8	(7×32)	.010	.25	.035	.89	.190	4.83	33	108	65	213
	9535†	5	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	2.7 12.6 12.6 24.1 13.0	(7×32)	.010	.25	.035	.89	.195	4.95	33	108	65	213
	9536†	6	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	3.0 14.4 14.4 27.8 15.0	(7×32)	.010	.25	.035	.89	.215	5.46	33	108	65	213
	9537†	7	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	3.2 15.3 15.3 30.0 15.7	(7×32)	.010	.25	.035	.89	.215	5.46	33	108	65	213
	9538†	8	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	3.8 17.3 17.3 33.5 17.9	(7×32)	.010	.25	.035	.89	.230	5.84	33	108	65	213
	9539†	9	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	4.2 19.2 19.2 37.5 19.7	(7×32)	.010	.25	.035	.89	.250	6.35	30	98	55	180
	9540†	10	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	4.5 20.2 20.2 39.3 20.9	24 (7×32)	.010	.25	.035	.89	.250	6.35	30	98	55	180
							Color code chart No. 1, Technical Information Section.									
	9541†	15	100 U-500 500 U-1000 1000	30.5 152.4 152.4 304.8 152.4	5.9 29.3 29.3 57.7 27.9	24 (7×32)	.010	.25	.035	.89	.290	7.37	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									
	9542†	20	100 U-500 500 1000	30.5 152.4 152.4 152.4	7.2 33.9 33.9 34.8	24 (7×32)	.010	.25	.035	.89	.320	8.13	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									
	9543†	25	100 500 1000	30.5 152.4 304.8	8.9 45.5 90.5	24 (7×32)	.010	.25	.042	1.07	.360	9.14	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									
	9544†	30	100 500 1000	30.5 152.4 304.8	10.2 51.0 101.6	24 (7×32)	.010	.25	.040	1.02	.380	9.65	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									
	9545†	40	100 500 1000	30.5 152.4 304.8	13.6 64.8 132.7	24 (7×32)	.010	.25	.040	1.02	.430	10.92	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									
	9546†	50	100 500 1000	30.5 152.4 304.8	16.5 81.5 165.0	24 (7×32)	.010	.25	.045	1.14	.490	12.45	30	98	55	180
							Color code chart No. 2R, Technical Information Section.									

†Passes the VW-1 Vertical Wire Flame Test.
‡At 1 Khz.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

BELDEN

Multi-Conductor
Overall Foil/Braid Shield

Computer Cables
For EIA RS-232 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Cond.	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
28 Gage Stranded Conductors (7x36) **S-R PVC Insulated**													
Product Description Tinned copper S-R PVC insulated, multi-conductor cable with overall Beldfoil aluminum-polyester plus 65% tinned copper braid shield, chrome PVC jacket.													
Z-Fold  Beldfoil® 100% Shield Coverage 2464 300V 80C S-R PVC	**New 9628**	3	100 500 1000	30.5 152.4 304.8	1.8 7.9 16.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	14.2Ω/M' 46.6Ω/km	.165	4.19	28.0	91.9	51.0	167.4
								Color code chart No. 1, Technical Information Section.					
	New 9629	4	100 500 1000	30.5 152.4 304.8	2.2 9.7 19.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	9.4Ω/M' 30.9Ω/km	.178	4.52	28.0	91.9	51.0	167.4
								Color code chart No. 1, Technical Information Section.					
	New 9630	5	100 500 1000	30.5 152.4 304.8	2.4 10.8 21.8	28 (7x36) 64.9Ω/M' 212.9Ω/km	9.4Ω/M' 30.9Ω/km	.188	4.78	28.0	91.9	51.0	167.4
								Color code chart No. 1, Technical Information Section.					
	New 9631	6	100 500 1000	30.5 152.4 304.8	2.7 11.9 24.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	10.2Ω/M' 33.5Ω/km	.198	5.03	26.0	85.4	47.0	154.3
								Color code chart No. 1, Technical Information Section.					
	New 9632	7	100 500 1000	30.5 152.4 304.8	2.7 12.2 24.7	28 (7x36) 64.9Ω/M' 212.9Ω/km	10.2Ω/M' 33.5Ω/km	.198	5.03	26.0	85.4	47.0	154.3
								Color code chart No. 1, Technical Information Section.					
	New 9633	8	100 500 1000	30.5 152.4 304.8	3.1 14.2 26.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	10.4Ω/M' 33.1Ω/km	.210	5.33	26.0	85.4	47.0	154.3
								Color code chart No. 1, Technical Information Section.					
	New 9634	9	100 500 1000	30.5 152.4 304.8	3.4 15.9 29.6	28 (7x36) 64.9Ω/M' 212.9Ω/km	6.3Ω/M' 20.7Ω/km	.220	5.59	26.0	85.4	47.0	154.3
								Color code chart No. 1, Technical Information Section.					
	New 9635	10	100 500 1000	30.5 152.4 304.8	3.6 16.8 32.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	7.0Ω/M' 23.0Ω/km	.235	5.97	26.0	85.4	47.0	154.3
								Color code chart No. 1, Technical Information Section.					
	New 9636	15	100 500 1000	30.5 152.4 304.8	4.5 21.2 42.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	6.5Ω/M' 21.3Ω/km	.260	6.60	26.0	85.4	47.0	154.3
								Color code chart No. 2R, Technical Information Section.					
	New 9637	25	100 500 1000	30.5 152.4 304.8	6.1 29.0 59.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.5Ω/M' 14.8Ω/km	.305	7.75	26.0	85.4	47.0	154.3
								Color code chart No. 2R, Technical Information Section.					
	New 9638	37	100 500 1000	30.5 152.4 304.8	7.8 39.4 78.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.1Ω/M' 13.4Ω/km	.345	8.76	26.0	85.4	47.0	154.3
								Color code chart No. 2R, Technical Information Section.					
 Beldfoil® 100% Shield Coverage 2464 300V 80C S-R PVC	**New 9639**	50	100 500 1000	30.5 152.4 304.8	11.0 51.7 101.3	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.2Ω/M' 10.5Ω/km	.400	10.16	26.0	85.4	47.0	154.3
								Color code chart No. 2R, Technical Information Section.					

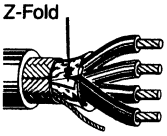
‡At 1 Khz.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

Multi-Conductor
Overall Foil/Braid Shield

Datalene® insulation features are low dielectric constant, and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

BELDEN

Computer Cables
Low Capacitance Cables For EIA RS-232 and EIA RS-423 Applications

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Cond.	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
28 Gage Stranded Conductors (7x36) **Datalene Insulated**														
Z-Fold  Beldfoil® 100% Shield Coverage UL 2919 30V 80C	**New 9788**	3	100 500 1000	30.5 152.4 304.8	2.3 10.8 20.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	7.76Ω/M' 25.4Ω/km	.195	4.95	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9789	4	100 500 1000	30.5 152.4 304.8	2.6 12.3 23.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.92Ω/M' 19.4Ω/km	.210	4.95	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9790	5	100 500 1000	30.5 152.4 304.8	3.0 13.8 26.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.91Ω/M' 19.4Ω/km	.225	5.72	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9791	6	100 500 1000	30.5 152.4 304.8	3.2 14.7 27.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	6.15Ω/M' 20.2Ω/km	.235	5.97	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9792	7	100 500 1000	30.5 152.4 304.8	3.3 14.9 28.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	6.15Ω/M' 20.2Ω/km	.235	5.97	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9793	8	100 500 1000	30.5 152.4 304.8	3.6 16.5 31.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.81Ω/M' 15.8Ω/km	.250	6.35	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9795	9	100 500 1000	30.5 152.4 304.8	3.8 17.7 35.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.87Ω/M' 16.0Ω/km	.260	6.60	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9796	10	100 500 1000	30.5 152.4 304.8	4.1 19.0 38.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.23Ω/M' 17.2Ω/km	.280	7.11	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9797	15	100 500 1000	30.5 152.4 304.8	4.9 23.0 47.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.23Ω/M' 13.9Ω/km	.310	7.87	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						
	New 9798	25	100 500 1000	30.5 152.4 304.8	6.9 34.5 68.6	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.95Ω/M' 12.9Ω/km	.385	9.78	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						
	New 9799	37	100 500 1000	30.5 152.4 304.8	8.3 42.7 83.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.51Ω/M' 11.5Ω/km	.420	10.67	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						

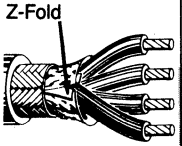
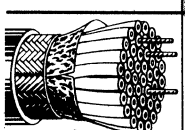
Product Description
Tinned copper, Datalene insulated multi-conductor cable with overall Beldfoil aluminum-polyester plus 65% tinned copper braid shield, 28 AWG stranded tinned copper drain wire, chrome PVC jacket.

*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

BELDEN

Multi-Conductor
Overall Foil/Braid Shield

Computer Cables
For EIA RS-232 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Cond.	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
24 Gage Stranded Conductors (7x32) **S-R PVC Insulated**													
Product Description Tinned copper, S-R PVC insulated, multi-conductor cable with overall Beldfoil aluminum-polyester plus 65% tinned copper braid shield, chrome PVC jacket.													
Z-Fold  Beldfoil® 100% Shield Coverage 2464 300V 80C S-R PVC	**New 9608†**	3	100 500 1000	30.5 152.4 304.8	2.5 12.2 22.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	8.6Ω/M' 28.2Ω/km	.190	4.83	35	115	65	180
								Color code chart No. 1, Technical Information Section.					
	New 9609†	4	100 500 1000	30.5 152.4 304.8	2.9 13.7 25.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	9.8Ω/M' 32.2Ω/km	.200	5.08	35	115	65	180
								Color code chart No. 1, Technical Information Section.					
	New 9610†	5	100 500 1000	30.5 152.4 304.8	3.3 16.1 30.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	6.5Ω/M' 21.3Ω/km	.215	5.46	35	115	65	180
								Color code chart No. 1, Technical Information Section.					
	New 9611†	6	100 500 1000	30.5 152.4 304.8	3.8 16.1 30.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	7.0Ω/M' 23.0Ω/km	.225	5.72	30	98.4	55	180
								Color code chart No. 1, Technical Information Section.					
	New 9612†	7	100 500 1000	30.5 152.4 304.8	4.0 18.6 35.8	24 (7x32) 24.0Ω/M' 78.7Ω/km	6.9Ω/M' 22.6Ω/km	.225	5.72	30	98.4	55	180
								Color code chart No. 1, Technical Information Section.					
	New 9613†	8	100 500 1000	30.5 152.4 304.8	4.4 20.7 40.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	7.3Ω/M' 23.9Ω/km	.250	6.35	30	98.4	55	180
								Color code chart No. 1, Technical Information Section.					
	New 9614†	9	100 500 1000	30.5 152.4 304.8	4.8 22.7 43.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	7.5Ω/M' 24.6Ω/km	.253	6.42	30	98.4	55	180
								Color code chart No. 1, Technical Information Section.					
	New 9615†	10	100 500 1000	30.5 152.4 304.8	5.1 24.0 48.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	6.9Ω/M' 22.6Ω/km	.270	6.86	30	98.4	55	180
								Color code chart No. 1, Technical Information Section.					
	New 9616†	15	100 500 1000	30.5 152.4 304.8	6.7 32.1 65.5	24 (7x32) 24.0Ω/M' 78.7Ω/km	6.0Ω/M' 19.7Ω/km	.300	7.62	30	98.4	55	180
								Color code chart No. 2R, Technical Information Section.					
	New 9617†	25	100 500 1000	30.5 152.4 304.8	9.9 49.7 99.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	5.1Ω/M' 16.7Ω/km	.370	9.40	30	98.4	55	180
								Color code chart No. 2R, Technical Information Section.					
 Beldfoil® 100% Shield Coverage 2464 300V 80C S-R PVC	**New 9618†**	37	100 500 1000	30.5 152.4 304.8	13.1 65.6 131.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.4Ω/M' 14.4Ω/km	.411	10.43	30	98.4	55	180
								Color code chart No. 2R, Technical Information Section.					
	New 9619†	50	100 500 1000	30.5 152.4 304.8	17.7 87.5 171.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.3Ω/M' 14.1Ω/km	.485	12.32	30	98.4	55	180
								Color code chart No. 2R, Technical Information Section.					

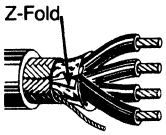
†Passes the VW-1 Vertical Wire Flame Test.
‡At 1 Khz.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

Multi-Conductor
Overall Foil/Braid Shield

Datalene® insulation features are low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

COOPER INDUSTRIES **BELDEN**

Computer Cables
Low Capacitance Cables For EIA RS-232, EIA RS-423 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Cond.	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
24 Gage Stranded Conductors (7x32) **Datalene Insulated**														
Z-Fold  Beldfoil® 100% Shield Coverage UL 2919 30V 80C	**New 9925**	3	100 500 1000	30.5 152.4 304.8	2.92 14.1 26.8	24 (7x32) 24.0Ω/M' 78.7Ω/km	5.18Ω/M' 17.0Ω/km	.215	5.46	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9927	4	100 500 1000	30.5 152.4 304.8	3.47 15.9 30.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	5.31Ω/M' 17.4Ω/km	.230	5.84	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9929	5	100 500 1000	30.5 152.4 304.8	3.72 17.2 32.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.23Ω/M' 13.9Ω/km	.246	6.25	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9931	6	100 500 1000	30.5 152.4 304.8	4.32 20.1 40.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.4Ω/M' 14.4Ω/km	.265	6.73	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9932	7	100 500 1000	30.5 152.4 304.8	4.45 20.8 42.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.41Ω/M' 14.5Ω/km	.265	6.73	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9933	8	100 500 1000	30.5 152.4 304.8	5.90 22.9 46.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.40Ω/M' 14.4Ω/km	.280	7.11	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9934	9	100 500 1000	30.5 152.4 304.8	5.39 25.6 52.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.85Ω/M' 12.6Ω/km	.300	7.62	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9935	10	100 500 1000	30.5 152.4 304.8	5.84 27.57 56.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.18Ω/M' 10.4Ω/km	.320	8.13	78%	12	39.4	22	72.2
								Color code chart No. 1, Technical Information Section.						
	New 9936	15	100 500 1000	30.5 152.4 304.8	7.26 34.8 73.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.56Ω/M' 11.7Ω/km	.360	9.14	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						
	New 9937	25	100 500 1000	30.5 152.4 304.8	11.2 53.0 104.	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.77Ω/M' 9.1Ω/km	.445	11.30	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						
	New 9938	37	100 500 1000	30.5 152.4 304.8	14.5 71.4 139.8	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.37Ω/M' 7.8Ω/km	.500	12.10	78%	12	39.4	22	72.2
								Color code chart No. 2, Technical Information Section.						

Product Description
Tinned copper, Datalene insulated, multi-conductor cable with overall Beldfoil aluminum-polyester plus 65% tinned copper braid shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket.

*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

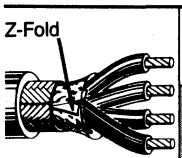
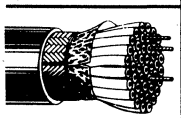
BELDEN

Multi-Conductor
Overall Foil/Braid Shield

Computer Cables
For EIA RS-232 and Cad/Cam Applications

22 Gage
Stranded Conductors (7x30)
S-R PVC Insulated

Product Description
Tinned copper, S-R PVC insulated, multi-conductor cable with overall Beldfoil aluminum-polyester plus 65% tinned copper braid shield, chrome PVC jacket.

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Cond.	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
Z-Fold  Beldfoil® 100% Shield Coverage 2464 300V 80C S-R PVC	**New 9939†**	3	100 500 1000	30.5 152.4 304.8	3.03 14.6 27.8	22 (7x30) 15Ω/M' 49.2Ω/km	6.2Ω/M' 20.4Ω/km	.202	5.13	37	122	67	220
								Color code chart No. 1, Technical Information Section.					
	New 9940†	4	100 500 1000	30.5 152.4 304.8	3.44 16.7 32.0	22 (7x30) 15Ω/M' 49.2Ω/km	5.0Ω/M' 16.4Ω/km	.215	5.46	37	122	67	220
								Color code chart No. 1, Technical Information Section.					
	New 9941†	5	100 500 1000	30.5 152.4 304.8	4.13 19.2 37.0	22 (7x30) 15Ω/M' 49.2Ω/km	7.1Ω/M' 23.3Ω/km	.230	5.84	37	122	67	220
								Color code chart No. 1, Technical Information Section.					
	New 9942†	6	100 500 1000	30.5 152.4 304.8	4.61 21.7 41.9	22 (7x30) 15Ω/M' 49.2Ω/km	7.9Ω/M' 25.9Ω/km	.245	6.22	35	115	63	207
								Color code chart No. 1, Technical Information Section.					
	New 9943†	7	100 500 1000	30.5 152.4 304.8	4.87 22.9 44.3	22 (7x30) 15Ω/M' 49.2Ω/km	7.9Ω/M' 25.9Ω/km	.245	6.22	35	115	63	207
								Color code chart No. 1, Technical Information Section.					
	New 9944†	8	100 500 1000	30.5 152.4 304.8	5.41 25.5 49.6	22 (7x30) 15Ω/M' 49.2Ω/km	5.1Ω/M' 16.7Ω/km	.260	6.60	35	115	63	207
								Color code chart No. 1, Technical Information Section.					
	New 9945†	9	100 500 1000	30.5 152.4 304.8	5.93 28.2 56.8	22 (7x30) 15Ω/M' 49.2Ω/km	5.1Ω/M' 16.7Ω/km	.280	7.11	35	115	63	207
								Color code chart No. 1, Technical Information Section.					
	New 9946†	10	100 500 1000	30.5 152.4 304.8	6.49 30.8 62.9	22 (7x30) 15Ω/M' 49.2Ω/km	4.6Ω/M' 15.1Ω/km	.300	7.62	35	115	63	207
								Color code chart No. 1, Technical Information Section.					
	New 9947†	15	100 500 1000	30.5 152.4 304.8	8.65 41.7 86.6	22 (7x30) 15Ω/M' 49.2Ω/km	4.1Ω/M' 13.5Ω/km	.340	8.63	35	115	63	207
								Color code chart No. 2R, Technical Information Section.					
 Beldfoil 100% Shield Coverage 2464 300V 80C	**New 9948†**	25	100 500 1000	30.5 152.4 304.8	12.6 64.3 126.5	22 (7x30) 15Ω/M' 49.2Ω/km	3.1Ω/M' 10.2Ω/km	.410	10.41	35	115	63	207
								Color code chart No. 2R, Technical Information Section.					
	New 9949†	37	100 500 1000	30.5 152.4 304.8	17.8 88.5 175.9	22 (7x30) 15Ω/M' 49.2Ω/km	2.7Ω/M' 8.8Ω/km	.460	11.68	35	115	63	207
								Color code chart No. 2R, Technical Information Section.					
	New 9950†	50	100 500 1000	30.5 152.4 304.8	23.4 116.4 233.4	22 (7x30) 15Ω/M' 49.2Ω/km	2.3Ω/M' 7.5Ω/km	.555	14.10	35	115	63	207
								Color code chart No. 2R, Technical Information Section.					

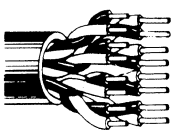
†Passes the VW-1 Vertical Wire Flame Test.
‡At 1 Khz.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

[redacted]

Paired
Unshielded

BELDEN

Sound and Control Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm
22 Gage Solid Conductors **PVC Insulated**						**Product Description** Tinned copper, PVC insulated, twisted pairs, chrome PVC jacket. Color code chart No. 3, Technical Information Section.						
	**8740** UL LISTED Wires, Misc. 90V Max. 80C	1	U-500 U-1000	U-152.4 U-304.8	7.7 14.3	.015	.38	.025	.64	.166	4.22
	8741† UL 2464 300V 80C	2	U-500 U-1000 1000	U-152.4 U-304.8 304.8	13.1 25.0 25.0	.015	.38	.032	.81	.209	5.31
	8742† UL 2464 300V 80C	3	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.9 17.6 18.3 34.2 35.2	.015	.38	.032	.81	.244	6.20
	8757† UL 2464 300V 80C	4	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	22.3 23.1 43.6 47.6	.015	.38	.032	.81	.294	7.47
	9158† UL 2464 300V 80C	5	100 500 1000	30.5 152.4 304.8	5.9 27.9 57.0	.013	.33	.040	1.02	.307	7.80
	8743† UL 2576 150V 80C	6	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.5 26.1 27.0 51.3 55.6	.010	.25	.035	.89	.305	7.75
	9160† UL 2464 300V 80C	8	500 1000	152.4 304.8	38.9 81.2	.013	.33	.040	1.02	.346	8.79
	8744† UL 2576 150V 80C	9	100 500 1000	30.5 152.4 304.8	8.0 38.0 74.3	.010	.25	.037	.94	.354	8.99

†Passes the VW-1 Vertical Wire Flame Test.

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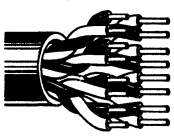
Paired
Unshielded

BELDEN

Sound and Control Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm
22 Gage (cont'd.) Solid Conductors **PVC Insulated**											
 UL 2576 150V 80C	**8753†**	11	100 500 1000	30.5 152.4 304.8	9.3 47.8 93.5	.010	.25	.037	.94	.369	9.37
	8754†	13	100 500 1000	30.5 152.4 304.8	10.5 54.3 106.6	.010	.25	.037	.94	.394	10.01
	8745†	15	100 500 1000	30.5 152.4 304.8	12.0 61.2 120.4	.010	.25	.040	1.02	.405	10.29
	8755†	19	100 500 1000	30.5 152.4 304.8	15.7 76.7 151.2	.010	.25	.040	1.02	.460	11.68
	8756†	23	500 1000	152.4 304.8	89.8 176.5	.010	.25	.040	1.02	.495	12.57
	8746†	27	500♦ 1000♦	152.4 304.8	105.5 212.0	.010	.25	.045	1.14	.535	13.59

Product Description
Tinned copper, PVC insulated, twisted pairs, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

22 Gage Solid Conductors **Polyethylene Insulated**											
 UL 2092 300V 60C	**8795**	1	U-500 U-1000 1000	U-152.4 U-304.8 304.8	8.2 15.5 16.1	.016	.41	.022	.56	.160	4.06

Product Description
Bare copper, polyethylene insulated, conductors cabled, rose gray PVC jacket. Color code: Red, Green.

22 Gage Stranded Conductors (7x30) **PVC Insulated**											
 UL LISTED Wires, Misc. 90V Max. 80C	**8442**	1	100 Chrome	30.5	1.8	.015	.38	.025	.64	.170	4.32
			U-500 Chrome Lt. Beige	U-152.4	7.9						
			500 Chrome Lt. Beige	152.4	7.4						
			U-1000 Chrome Lt. Beige	U-304.8	14.7						
			1000 Chrome Lt. Beige	304.8	15.3						

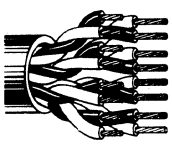
Product Description
Tinned copper, PVC insulated, twisted pair, PVC jacket. Color code: Black, Red.

†Passes the VW-1 Vertical Wire Flame Test.
♦Spools are one piece, but length may vary +20% −0 from length shown.

BELDEN

Paired
Unshielded

Sound and Control Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm
20 Gage Stranded Conductors (10x30) **PVC Insulated**											
Product Description Tinned copper, PVC insulated, twisted pairs, chrome PVC jacket. Color code chart No. 3, Technical Information Section.											
	**8205†** Ⓤ LISTED Wires, Misc. 90V 80C	1	100 Chrome	30.5	2.1	.018	.46	.025	.64	.190	4.83
			U-500 Chrome Lt. Beige	U-152.4	9.5						
			500 Chrome Lt. Beige	152.4	9.3						
			U-1000 Chrome	U-304.8	18.0						
			1000 Chrome Lt. Beige	304.8	19.0						
	9750† AWM 2464 300V 80C	3	100 500 1000	30.5 152.4 304.8	5.9 25.8 53.2	.013	.33	.040	1.02	.309	7.85
	9751† AWM 2464 300V 80C	6	100 500 1000	30.5 152.4 304.8	8.7 45.1 90.2	.013	.33	.040	1.02	.376	9.55
	9752† AWM 2464 300V 80C	9	100 500 1000	30.5 152.4 304.8	13.2 65.2 127.0	.013	.33	.040	1.02	.439	11.15
	9755† AWM 2464 300V 80C	15	100 500 1000	30.5 152.4 304.8	19.5 97.9 196.8	.013	.33	.040	1.02	.545	13.84
19 Gage Solid Conductors **PVC Insulated**											
Product Description Bare copper, PVC insulated, twisted pair, chrome PVC jacket. Suggested working voltage: 350. Color code: Brown, Tan.											
	**8486†** 80C	1	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	10.3 10.0 19.6 20.3	.015	.38	.025	.64	.182	4.62

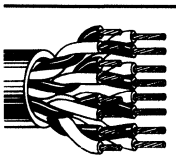
†Passes the VW-1 Vertical Wire Flame Test.

[redacted]

Paired
Unshielded

BELDEN

Sound and Control Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm
18 Gage Stranded Conductors (7x26) **PVC Insulated** **Product Description** Tinned copper, PVC insulated, twisted pair, PVC jacket. Color code: Black, White.											
 Ⓤ LISTED Wires, Misc. 90V Max. 80C	**8461**	1	100 Chrome Lt. Beige	30.5	3.3	.020	.51	.028	.71	.226	5.74
			U-500 Chrome Lt. Beige	U-152.4	14.0						
			500 Chrome Lt. Beige	152.4	14.8						
			U-1000 Chrome Lt. Beige	U-304.8	27.2						
			1000 Chrome Lt. Beige	304.8	28.0						
18 Gage Stranded Conductors (16x30) **PVC Insulated** **Product Description** Tinned copper, PVC insulated, twisted pairs, chrome PVC jacket. Color code chart No. 3, Technical Information Section.											
 Ⓤ 2464 300V 80C	**9740†**	1	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	14.1 14.8 27.3 28.1	.018	.46	.032	.81	.224	5.69
	9156†	2	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	22.6 23.8 44.2 48.2	.013	.33	.035	.89	.287	7.29
	8690†	3	100 U-500 500 1000	30.5 U-152.4 152.4 304.8	7.5 35.3 36.3 76.2	.018	.46	.037	.94	.362	9.19
	9157†	4	100 500 1000	30.5 152.4 304.8	8.4 43.0 85.4	.013	.33	.040	1.02	.358	9.09
	9159†	5	500 1000	152.4 304.8	56.5 111.0	.013	.33	.050	1.27	.416	10.56
	8691†	6	100 500 1000	30.5 152.4 304.8	14.7 71.9 141.0	.018	.46	.045	1.14	.475	12.07
	9161†	8	100 500 1000	30.5 152.4 304.8	16.4 81.2 159.5	.013	.33	.050	1.27	.478	12.14

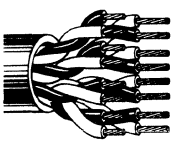
†Passes the VW-1 Vertical Wire Flame Test.

[redacted]

Paired
Unshielded

BELDEN

Sound and Control Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm
18 Gage (cont'd.) Stranded Conductors (16x30) **PVC Insulated**											
Product Description Tinned copper, PVC insulated, twisted pairs, chrome PVC jacket. Color code chart No. 3, Technical Information Section.											
 UL 2464 300V 80C	**8692**†	9	100 500 1000	30.5 152.4 304.8	23.8 107.0 215.0	.018	.46	.055	1.40	.600	15.24
	9741†	12	100 500 1000	30.5 152.4 304.8	28.5 135.2 263.3	.018	.46	.055	1.40	.675	17.15
	9742†	15	100 500 1000	30.5 152.4 304.8	34.8 165.9 335.8	.018	.46	.060	1.52	.735	18.67
	9743†	19	100 500 1000	30.5 152.4 304.8	43.5 213.0 462.0	.018	.46	.070	1.78	.865	21.97
16 Gage Stranded Conductors (19x29) **PVC Insulated**											
Product Description Tinned copper, PVC insulated, twisted pair, chrome PVC jacket. Color code: Black, White.											
	**8471**† UL 2598 300V 60C	1	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	18.9 19.7 37.0 37.9	.023	.58	.032	.81	.260	6.60
14 Gage Stranded Conductors (19x27) **PVC Insulated**											
Product Description Tinned copper, PVC insulated, twisted pair, chrome PVC jacket. Suggested working voltage: 600. Color code: Black, White.											
	**8473**† 80C	1	U-500 500 1000	U-152.4 152.4 304.8	29.2 30.0 63.8	.031	.79	.035	.89	.332	8.43
12 Gage Stranded Conductors (19x25) **PVC Insulated**											
Product Description Tinned copper, PVC insulated, twisted pair, chrome PVC jacket. Suggested working voltage: 600. Color code: Black, White.											
	**8477**† 80C	1	U-500 500 1000	U-152.4 152.4 304.8	41.8 44.8 89.1	.031	.79	.040	1.02	.384	9.75

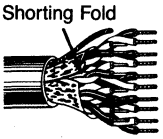
†Passes the VW-1 Vertical Wire Flame Test.

[redacted]

BELDEN

Paired
Overall Beldfoil® Shield

Sound, Broadcast, Instrumentation and Computer Cables For EIA RS-232 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nom. D.C.R. Conductor	Nom. D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
24 Gage Stranded Conductors (7x32) **S-R PVC Insulated**													
Shorting Fold 	**9501†**	1	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	1.7 7.7 7.4 14.3 15.0	24 (7×32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.156	3.96	40	131	74	243
	9502†	2	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.3 15.1 15.8 29.4 30.3	24 (7×32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.222	5.64	30	98	50	164
	9503†	3	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.3 14.7 15.3 28.7 29.6	24 (7×32) 24Ω/M' 78.7Ω/km	16.5Ω/M' 54.1Ω/km	.232	5.89	30	98	50	164
Beldfoil Coverage 100% Shield Coverage UL 2464 300V 80C CSA S-R PVC	**9504†**	4	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.1 18.2 18.9 35.5 36.5	24 (7×32) 24Ω/M' 78.7Ω/km	16.5Ω/M' 54.1Ω/km	.265	6.73	30	98	50	164
	9505†	5	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.9 22.6 23.4 44.1 48.5	24 (7×32) 24Ω/M' 78.7Ω/km	16.5Ω/M' 54.1Ω/km	.295	7.49	30	98	50	164
	9506†	6	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.2 24.3 25.2 47.6 52.0	24 (7×32) 24Ω/M' 78.7Ω/km	15.2Ω/M' 49.9Ω/km	.295	7.49	30	98	50	164
	9507†	7	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	5.8 26.6 27.5 52.3 57.0	24 (7×32) 24Ω/M' 78.7Ω/km	15.2Ω/M' 49.9Ω/km	.300	7.62	30	98	50	164
	9508†	8	100 500 1000	30.5 152.4 304.8	6.6 31.6 67.4	24 (7×32) 24Ω/M' 78.7Ω/km	15.0Ω/M' 49.2Ω/km	.330	8.38	30	98	50	164
	9509†	9	100 500 1000	30.5 152.4 304.8	7.3 34.7 73.8	24 (7×32) 24Ω/M' 78.7Ω/km	15.0Ω/M' 49.2Ω/km	.340	8.64	30	98	50	164
	9510†	10	100 500 1000	30.5 152.4 304.8	8.1 41.2 82.0	24 (7×32) 24Ω/M' 78.7Ω/km	14.0Ω/M' 45.9Ω/km	.380	9.65	30	98	50	164
	9515†	15	100 500 1000	30.5 152.4 304.8	11.7 55.6 109.1	24 (7×32) 24Ω/M' 78.7Ω/km	13.8Ω/M' 45.3Ω/km	.425	10.80	30	98	50	164
	9519†	19	100 500 1000	30.5 152.4 304.8	13.6 67.4 131.7	24 (7×32) 24Ω/M' 78.7Ω/km	13.5Ω/m' 44.3Ω/km	.460	11.68	30	98	50	164
	9525†	25	100 500 1000	30.5 152.4 304.8	17.2 85.4 168.2	24 (7×32) 24Ω/M' 78.7Ω/km	12.7Ω/M' 41.7Ω/km	.515	13.08	30	98	50	164
	9550†	50	100 500 1000	30.5 152.4 304.8	30.5 155.1 314.2	24 (7×32) 24Ω/M' 78.7Ω/km	11.3Ω/M' 37.1Ω/km	.700	17.78	30	98	50	164
								For color code information, request Technical Bulletin T/8-4.					

Product Description
Tinned copper, S-R PVC insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

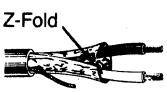
†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

[redacted]

Paired
Overall Beldfoil® Shield

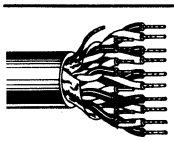
BELDEN

Sound, Broadcast, Audio and Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Length		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ ft.	* pF/ m	** pF/ ft.	** pF/ m
24 Gage Stranded Conductors (7x32) **Polyethylene Insulated**															
Z-Fold  Beldfoil 100% Shield Coverage	**8641** 2092 300V 60C	1	100 U-500 500 U-1000 1000 2000	30.5 U-152.4 152.4 U-304.8 304.8 609.6	1.8 7.7 7.4 14.4 15.1 28.6	.016	.41	.025	.64	.168	4.27	22	72	42	138

Product Description
Tinned copper, polyethylene insulated, twisted pair, Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket. The Beldfoil shield combines high cable reliability with ease of termination. Color code: Black, Clear.

Computer Cables
Low Capacitance Cables For EIA RS-232 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Nominal D.C.R.		Nominal O.D.		Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance				††6 dbv Length Limit in Thnds. of ft.
			ft.	m		Conductor	Shield	Inch	mm			* pF/ ft.	* pF/ m	** pF/ ft.	** pF/ m	
24 Gage Stranded Conductors (7x32) **Polypropylene Insulated**																
 Beldfoil 100% Shield Coverage 2919 30V 80C	**New 9680**	3	100 500 1000	30.5 152.4 304.8	4.2 19.6 40.3	24 (7x32) 24Ω/M' 78.7Ω/km	15.5Ω/M' 50.9Ω/km	.285	7.24	100	66%	15.5	50.8	27.5	90.2	2.1
	New 9681	4	100 500 1000	30.5 152.4 304.8	4.9 23.0 47.2	24 (7x32) 24Ω/M' 78.7Ω/km	14.5Ω/M' 47.6Ω/km	.310	7.87	100	66%	15.5	50.8	27.5	90.2	2.1
	New 9682	6	100 500 1000	30.5 152.4 304.8	6.1 28.9 61.4	24 (7x32) 24Ω/M' 78.7Ω/km	13.8Ω/M' 45.3Ω/km	.350	8.89	100	66%	15.5	50.8	27.5	90.2	2.1
	New 9683	9	100 500 1000	30.5 152.4 304.8	7.7 40.0 78.0	24 (7x32) 24Ω/M' 78.7Ω/km	12.7Ω/M' 41.7Ω/km	.395	10.03	100	66%	15.5	50.8	27.5	90.2	2.1
	New 9684	12½ 12 pairs + 1 single	100 500 1000	30.5 152.4 304.8	11.2 54.9 106.9	24 (7x32) 24Ω/M' 78.7Ω/km	11.8Ω/M' 38.7Ω/km	.460	11.68	100	66%	15.5	50.8	27.5	90.2	2.1

*Capacitance between conductors.
**Capacitance between 1 conductor and other conductor connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

[redacted]

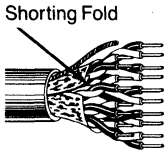
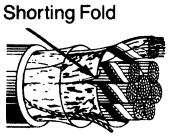
Paired
Overall Beldfoil® Shield

BELDEN

Sound, Broadcast, Instrumentation and Computer Cables

22 Gage
Solid Conductors
PVC Insulated

Product Description
Tinned copper, PVC insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

Description	Trade & U.L. Style Number	No. of Pairs	Standard Length ft.	Standard Length m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
Shorting Fold  Beldfoil 100% Shield Coverage ⚠ 2464 300V 80C	**9302**†	2	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.4 15.8 15.6 29.1 30.1	.013	.33	.032	.81	.244	6.20	35	115	50	164
	9305†	4	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.8 22.4 23.2 43.8 44.9	.013	.33	.032	.81	.265	6.73	35	115	50	164
	9306†	6	100 500 1000	30.5 152.4 304.8	6.9 32.6 60.5	.013	.33	.035	.89	.321	8.15	35	115	50	164
	9309†	9	100 500 1000	30.5 152.4 304.8	9.4 47.2 94.4	.013	.33	.037	.94	.373	9.47	35	115	50	164
	9315†	15	100 500 1000	30.5 152.4 304.8	14.7 71.8 140.6	.013	.33	.040	1.02	.455	11.56	35	115	50	164
	9319†	19	100 500 1000	30.5 152.4 304.8	17.6 87.6 172.2	.013	.33	.040	1.02	.495	12.57	35	115	50	164
	9327†	27	100 500 1000	30.5 152.4 304.8	24.3 123.9 240.8	.013	.33	.045	1.14	.615	15.62	35	115	50	164
 Beldfoil 100% Shield Coverage	**8751**† 80C	51	250♦ 500♦ 1000♦ 1500♦	76.2 152.4 304.8 457.2	94.1 189.2 379.9 602.6	.010	.25	.050	1.27	.710	18.03	30	98	42.8	140
						Product Description: Tinned copper, PVC insulated, twisted pairs, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. For color-coding information, write for Technical Bulletin T/8-4. For 38 pair polypropylene version, see 8752. Suggested working voltage: 200.									
Shorting Fold  Beldfoil 100% Shield Coverage	**9753**† 80C	102	250♦ 500♦ 1000♦ 1500♦	76.2 152.4 304.8 457.2	215.3 438.7 879.3 1380.0	.010	.25	.085	2.16	1.120	28.45	32	105	40	131
						Product Description: Tinned copper, PVC insulated, twisted pairs, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. For color-coding information, write for Technical Bulletin T/8-4. Suggested working voltage: 200.									

†Passes the VW-1 Vertical Wire Flame Test.
♦ Spools are one piece, but length may vary +20% −0 from length shown.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

BELDEN

Paired
Overall Beldfoil® ⊗Shield

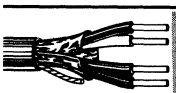
Sound, Broadcast, Instrumentation and Computer Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
22 Gage Solid Conductors **Polypropylene Insulated**															
 Beldfoil 100% Shield Coverage	**8752†** 80C	38	250♦ 500♦ 1000♦	76.2 152.4 304.8	64.7 131.3 265.8	.008	.20	.045	1.14	.610	15.49	17	56	24.3	80
						Product Description: Tinned copper, polypropylene insulated, twisted pairs, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. For color-coding information, write for Technical Bulletin T/8-4. Suggested working voltage: 200.									

Sound, Broadcast, Audio and Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
22 Gage Solid Conductors **Polypropylene insulated**															
Z-Fold  Beldfoil 100% Shield Coverage	**8450†** 105C	1	100 250 U-500 500 U-1000 1000	30.5 76.2 U-152.4 152.4 U-304.8 304.8	1.5 3.3 6.5 6.2 12.1 11.9	.006	.15	.018	.46	.118	3.00	40	131	76	249
						Product Description: Tinned copper, polypropylene insulated, twisted pair, Beldfoil aluminum-polyester shield, 22 AWG solid tinned copper drain wire, paper wrap, gray or black PVC jacket. 100% shield coverage. Belden's Miniature Type Broadcast Audio and Instrumentation Cables occupy ½ to ⅔ less space than standard cables. Suggested working voltage: 200. Color code: Black, Red.									

Computer Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	6 dbv Length Limit in Thnds. of ft.
22 Gage Solid Conductors **Datalene® Insulated**																
 Duofoil® 100% Shield Coverage	**9184†®** UL 2668 30V 60C	2	500 1000	152.4 304.8	31.0 61.9	22 (Solid) tinned copper 16.1Ω/M' 52.8Ω/km	Duofoil with stranded tinned copper drain wire 6.3Ω/M' 20.7Ω/km	.385	9.78	150	78%	8.8	28.9	15.0	49.2	4.6
								Product Description: Tinned copper, Datalene® insulated, twisted pairs, Duofoil aluminum-polyester-aluminum shield, 22 AWG stranded tinned copper drain wire, black PVC jacket. Color code: Black/Yellow, Red/Blue.									

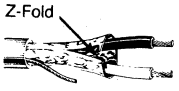
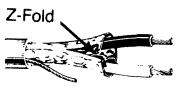
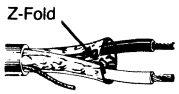
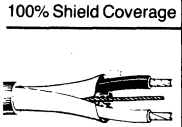
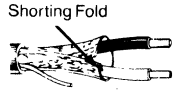
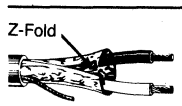
Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
22 Gage Stranded Conductors (7x30) **S-R PVC Insulated**															
Z-Fold  Beldfoil 100% Shield Coverage	**9414†** UL 2464 300V 80C	1	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	2.3 10.5 10.2 19.7 20.4	.010	.254	.035	.89	.180	4.57	50	164	95	312
						Product Description: Tinned copper, S-R PVC insulated, twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, pale fawn beige jacket-striated PVC. Color code: White, Black.										

⊗Duofoil shield on 9184
†Passes the VW-1 Vertical Wire Flame Test.
♦ Spools are one piece, but length may vary +20% −0 from length shown.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

COOPER INDUSTRIES BELDEN

Paired
Overall Beldfoil® Shield

Sound, Broadcast, Audio and Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
22 Gage Stranded Conductors (7x30)															
Z-Fold  Beldfoil 100% Shield Coverage	**9462†** UL 2464 300V 80C	1	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	2.2 9.7 9.4 18.3 19.1	.013	.33	.031	.79	.178	4.52	50	164	90	295
						Product Description: Tinned copper, **PVC insulated,** twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Red.										
Z-Fold  Beldfoil 100% Shield Coverage	**8761** UL 2092 300V 60C	1	U-500 500 U-1000 1000 2000 5000	U-152.4 152.4 U-304.8 304.8 609.6 1524.0	9.0 8.7 16.9 17.7 34.1 88.1	.016	.41	.025	.64	.175	4.45	24	79	47	154
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. 100% shield coverage. Color code: Black, Clear.										
 Beldfoil 100% Shield Coverage	**9461** UL 2092 300V 60C	1	U-500 U-1000	U-152.4 U-304.8	8.8 16.2	.016	.41	.026	.66	.180	4.57	24	79	47	154
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. 100% shield coverage. The jacket and shield are bonded so both can be removed on automatic stripping equipment.										
Z-Fold  Beldfoil 100% Shield Coverage	**8451†** 105C	1	100 250 U-500 500 U-1000 1000	30.5 76.2 U-152.4 152.4 U-304.8 304.8	1.7 3.5 7.4 7.0 13.8 13.6	.008	.20	.020	.51	.135	3.43	34	111	67	220
						Product Description: Tinned copper, **polypropylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, paper wrap, gray or black PVC jacket. 100% shield coverage. Belden's Miniature Type Broadcast Audio and Instrumentation Cables occupy ½ to ⅔ less space than standard cables. Suggested working voltage: 200. Color code: Black, Red.										
 Beldfoil 100% Shield Coverage	**9451†** 105C	1	U-500 500 T-1000 U-1000	U-152.4 152.4 T-304.8 U-304.8	7.0 7.0 13.6 12.9	.008	.20	.017	.43	.135	3.43	34	111	67	220
						Product Description: Tinned copper, **polypropylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, gray PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Belden's Miniature Type Broadcast Audio and Instrumentation Cables occupy ½ to ⅔ less space than standard cables. Suggested working voltage: 200. Color code: Black, Red.										
20 Gage Solid Conductors															
Shorting Fold 	**9802** 80C **Direct Burial**	1	500 1000	152.4 304.8	10.6 19.7	.013	.33	.035	.89	.190	4.83	25	82	46	150
						Product Description: Tinned copper, **polypropylene insulated,** conductors cabled, Beldfoil aluminum-polyester shield, 22 AWG solid tinned copper drain wire, black high density polyethylene jacket. Suggested working voltage: 350. Color code: White, Black.										
20 Gage Stranded Conductors (7x28)															
Z-Fold  Beldfoil 100% Shield Coverage	**8762** UL 2092 300V 60C	1	100 250 U-500 500 U-1000 1000 2000	30.5 76.2 U-152.4 152.4 U-304.8 304.8 609.6	2.6 6.3 12.4 13.0 23.4 24.6 49.8	.016	.41	.028	.71	.204	5.18	27	89	49	161
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.										
 Beldfoil 100 % Shield Coverage	**9464** UL 2092 300V 60C	1	U-500 U-1000	U-152.4 U-304.8	12.7 24.3	.016	.41	.030	.76	.204	5.18	27	89	49	161
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Color code: Black, Clear.										

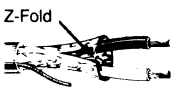
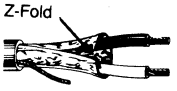
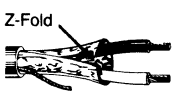
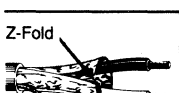
†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

[redacted]

BELDEN

Paired
Overall Beldfoil® Shield

Sound, Broadcast, Audio and Instrumentation Cables

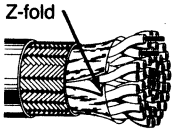
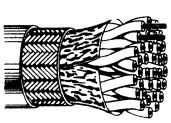
Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Insulation Thickness Inch	Insulation Thickness mm	Jacket Thickness Inch	Jacket Thickness mm	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m
20 Gage (cont'd.) Stranded Conductors (7x28)															
Z-Fold  Beldfoil 100% Shield Coverage	**9154** UL 2464 300V 80C	1	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	11.9 12.5 22.8 23.6	.013	.33	.031	.79	.198	5.03	60	197	100	328
						Product Description: Tinned copper, **PVC Insulated**, twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, beige PVC jacket. Color code: Black, Red.										
18 Gage Stranded Conductors (16x30)															
Z-Fold  Beldfoil 100% Shield Coverage	**8760** UL 2092 300V 60C	1	250 U-500 500 U-1000 1000 2000 5000	76.2 U-152.4 152.4 U-304.8 304.8 609.6 1524.0	7.5 13.7 15.1 27.4 28.7 58.7 148.2	.018	.46	.028	.71	.222	5.64	24	79	44	144
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.										
 Beldfoil 100% Shield Coverage	**9460** UL 2092 300V 60C	1	U-500 U-1000	U-152.4 U-304.8	14.5 28.0	.018	.46	.026	.66	.222	5.64	27	89	49	161
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Color code: Black, Clear.										
16 Gage Stranded Conductors (19x29)															
Z-Fold  Beldfoil 100% Shield Coverage	**8719** UL 2106 600V 60C	1	U-500 500 U-1000 1000 2000 5000	U-152.4 152.4 U-304.8 304.8 609.6 1524.0	24.1 25.0 47.2 51.2 104.3 247.8	.032	.81	.032	.81	.304	7.72	23	75	44	144
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 18 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.										
14 Gage Stranded Conductors (19x27)															
Z-Fold  Beldfoil 100% Shield Coverage	**8720** UL 2106 600V 60C	1	U-500 500 1000 2000	U-152.4 152.4 304.8 609.6	32.5 33.4 70.5 137.9	.032	.81	.035	.89	.340	8.64	24	79	47	154
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 16 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.										
12 Gage Stranded Conductors (19x25)															
Z-Fold  Beldfoil 100% Shield Coverage	**8718** UL 2106 600V 60C	1	U-500 500 1000 2000	U-152.4 152.4 304.8 609.6	48.4 52.4 102.8 206.8	.037	.94	.040	1.02	.400	10.16	.25	82	49	161
						Product Description: Tinned copper, **polyethylene insulated,** twisted pair, Beldfoil aluminum-polyester shield, 14 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.										

*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.

BELDEN

Paired
Overall Foil/Braid Shield

Computer Cables
For EIA RS-232 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
28 Gage Stranded Conductors (7x36) **S-R PVC Insulated**													
Z-fold  Beldfoil® 100% Shield Coverage AWM 2464 300V 80C CSA S-R PVC	**New 8362†**	2	100 500 1000	30.5 152.4 304.8	2.7 13.1 24.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	7.0Ω/M' 23.0Ω/km	.210	5.33	21	69	35	115
	New 8363†	3	100 500 1000	30.5 152.4 304.8	3.5 16.0 30.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	7.0Ω/M' 23.0Ω/km	.240	6.10	21	69	35	115
	New 8364†	4	100 500 1000	30.5 152.4 304.8	3.9 18.2 36.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.3Ω/M' 17.4Ω/km	.250	6.35	21	69	35	115
	New 8365†	5	100 500 1000	30.5 152.4 304.8	4.0 18.7 37.8	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.6Ω/M' 18.4Ω/km	.260	6.60	21	69	35	115
	New 8366†	6	100 500 1000	30.5 152.4 304.8	4.4 20.7 42.7	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.3Ω/M' 17.4Ω/km	.270	6.86	21	69	35	115
	New 8367†	7	100 500 1000	30.5 152.4 304.8	4.5 21.3 43.8	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.3Ω/M' 17.4Ω/km	.270	6.86	21	69	35	115
	New 8368†	8	100 500 1000	30.5 152.4 304.8	5.0 23.5 48.3	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.7Ω/M' 18.7Ω/km	.290	7.37	21	69	35	115
	New 8370†	10	100 500 1000	30.5 152.4 304.8	6.0 28.3 60.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.9Ω/M' 16.1Ω/km	.330	8.38	21	69	35	115
	New 8372†	12½ 12 pr. + 1 single	100 500 1000	30.5 152.4 304.8	6.5 30.4 64.3	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.0Ω/M' 16.4Ω/km	.340	8.64	21	69	35	115
	New 8375†	15	100 500 1000	30.5 152.4 304.8	7.6 37.7 75.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.2Ω/M' 13.8Ω/km	.370	9.40	21	69	35	115
	New 8378†	18	100 500 1000	30.5 152.4 304.8	8.3 42.7 83.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.3Ω/M' 14.1Ω/km	.385	9.78	21	69	35	115
	**New 8385†**	25	100 500 1000	30.5 152.4 304.8	11.8 58.0 113.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.5Ω/M' 11.5Ω/km	.455	11.56	21	69	35	115

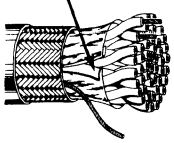
Product Description
Tinned copper, S-R PVC insulated, twisted pairs, overall Beldfoil aluminum-polyester shield plus 65% tinned copper braid, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

BELDEN

Paired
Overall Foil/Braid Shield

Computer Cables
Low Capacitance Cables for EIA RS-422 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
28 Gage Stranded Conductors (7x36) **Polypropylene Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage AWM 2960 30V 60C	**9804**	2	100 500 1000	30.5 152.4 304.8	3.2 14.6 27.8	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.87Ω/M' 12.7Ω/km	.205	5.21	100	66%	15.5	50.5	27.5	88.9	.77
	9805	3	100 500 1000	30.5 152.4 304.8	3.5 16.4 31.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.18Ω/M' 13.7Ω/km	.210	5.33	100	66%	15.5	50.5	27.5	88.9	.77
	9806	4	100 500 1000	30.5 152.4 304.8	4.0 18.7 36.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.26Ω/M' 10.7Ω/km	.223	5.66	100	66%	15.5	50.5	27.5	88.9	.77
	9807	5	100 500 1000	30.5 152.4 304.8	4.2 19.5 39.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.45Ω/M' 11.3Ω/km	.227	5.77	100	66%	15.5	50.5	27.5	88.9	.77
	New 9811	6	100 500 1000	30.5 152.4 304.8	4.5 21.3 43.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.26Ω/M' 10.7Ω/km	.240	6.10	100	66%	15.5	50.5	27.5	88.9	.77
	9808	7	100 500 1000	30.5 152.4 304.8	4.7 21.8 44.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.90Ω/M' 9.5Ω/km	.240	6.10	100	66%	15.5	50.5	27.5	88.9	.77
	9809	9	100 500 1000	30.5 152.4 304.8	5.7 26.7 54.6	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.74Ω/M' 9.0Ω/km	.257	6.53	100	66%	15.5	50.5	27.5	88.9	.77
	9810	10	100 500 1000	30.5 152.4 304.8	6.1 29.0 61.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.93Ω/M' 9.6Ω/km	.289	7.34	100	66%	15.5	50.5	27.5	88.9	.77
	9812	12	100 500 1000	30.5 152.4 304.8	6.5 30.8 65.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.26Ω/M' 10.7Ω/km	.296	7.52	100	66%	15.5	50.5	27.5	88.9	.77
	New 9813	13	100 500 1000	30.5 152.4 304.8	6.9 34.7 69.4	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.83Ω/M' 9.3Ω/km	.308	7.82	100	66%	15.5	50.5	27.5	88.9	.77
	9819	18	100 500 1000	30.5 152.4 304.8	8.3 41.5 83.1	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.04Ω/M' 6.7Ω/km	.337	8.56	100	66%	15.5	50.5	27.5	88.9	.77
	9825	25	100 500 1000	30.5 152.4 304.8	11.2 55.0 107.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	1.62Ω/M' 5.3Ω/km	.385	9.78	100	66%	15.5	50.5	27.5	88.9	.77
	New 9814	31	100 500 1000	30.5 152.4 304.8	13.1 64.6 126.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.1Ω/M' 6.9Ω/km	4.30	10.92	100	66%	15.5	50.5	27.5	88.9	.77

Product Description
Tinned copper, polypropylene insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 28 AWG stranded tinned copper drain wire, overall tinned copper braid shield (90% coverage), chrome PVC jacket. Color code chart No. 3, Technical Information Section.

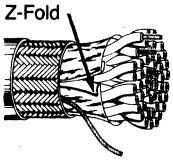
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

Paired
Overall Foil/Braid Shield

Datalene® insulation features are low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

COOPER INDUSTRIES **BELDEN**

Computer Cables
Low Capacitance Cables for EIA RS-232 and EIA RS-485 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
28 Gage Stranded Conductors (7x36) **Datalene® Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage AWM 2919 30V 80C	**New 8132†**	2	100 500 1000	30.5 152.4 304.8	3.4 15.8 30.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.07Ω/M' 16.6Ω/km	.260	6.60	120	78%	11.0	36	20	66	.9
	New 8133†	3	100 500 1000	30.5 152.4 304.8	3.8 17.5 35.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	5.20Ω/M' 17.1Ω/km	.270	6.86	120	78%	11.0	36	20	66	.9
	New 8134†	4	100 500 1000	30.5 152.4 304.8	4.4 20.4 41.2	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.37Ω/M' 14.3Ω/km	.290	7.37	120	78%	11.0	36	20	66	.9
	New 8135†	5	100 500 1000	30.5 152.4 304.8	4.5 20.9 43.0	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.21Ω/M' 13.8Ω/km	.300	7.62	120	78%	11.0	36	20	66	.9
	New 8136†	6	100 500 1000	30.5 152.4 304.8	5.1 24.0 49.3	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.35Ω/M' 14.3Ω/km	.330	8.38	120	78%	11.0	36	20	66	.9
	New 8137†	7	100 500 1000	30.5 152.4 304.8	5.2 24.3 49.9	28 (7x36) 64.9Ω/M' 212.9Ω/km	4.23Ω/M' 13.9Ω/km	.330	8.38	120	78%	11.0	36	20	66	.9
	New 8138†	8	100 500 1000	30.5 152.4 304.8	5.7 27.1 57.7	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.74Ω/M' 12.3Ω/km	.350	8.89	120	78%	11.0	36	20	66	.9
	New 8140†	10	100 500 1000	30.5 152.4 304.8	6.7 33.9 67.8	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.42Ω/M' 11.2Ω/km	.405	10.29	120	78%	11.0	36	20	66	.9
	New 8142†	12½ 12 pair + 1 single	100 500 1000	30.5 152.4 304.8	7.3 37.7 73.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	3.07Ω/M' 10.1Ω/km	.415	10.54	120	78%	11.0	36	20	66	.9
	New 8145†	15	100 500 1000	30.5 152.4 304.8	9.7 45.4 92.7	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.52Ω/M' 8.3Ω/km	.465	11.81	120	78%	11.0	36	20	66	.9
	New 8148†	18	100 500 1000	30.5 152.4 304.8	10.4 51.3 99.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.56Ω/M' 8.4Ω/km	.490	12.45	120	78%	11.0	36	20	66	.9
	New 8155†	25	100 500 1000	30.5 152.4 304.8	12.6 62.3 125.5	28 (7x36) 64.9Ω/M' 212.9Ω/km	2.32Ω/M' 7.6Ω/km	.565	14.35	120	78%	11.0	36	20	66	.9

Product Description
Tinned copper, Datalene insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 28 AWG stranded tinned copper drain wire, overall tinned copper braid shield (65% coverage), chrome PVC jacket. Color code chart No. 5, Technical Information Section.

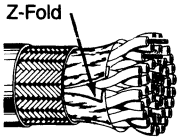
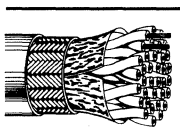
†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

[redacted]

Paired
Overall Foil/Braid Shield

COOPER INDUSTRIES BELDEN

Computer Cables For EIA RS-232 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
24 Gage Stranded Conductors (7x32) **S-R PVC Insulated**													
Z-Fold  Beldfoil® 100% Shield Coverage UL 2464 300V 80C CSA S-R PVC	**New 8332†**	2	100 500 1000	30.5 152.4 304.8	3.9 17.9 34.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	5.4Ω/M' 17.7Ω/km	.250	6.35	30	98	50	164
	New 8333†	3	100 500 1000	30.5 152.4 304.8	4.4 20.6 41.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	7.0Ω/M' 23.0Ω/km	.275	6.98	30	98	50	164
	New 8334†	4	100 500 1000	30.5 152.4 304.8	5.0 23.4 47.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.5Ω/M' 14.8Ω/km	.288	7.32	30	98	50	164
	New 8335†	5	100 500 1000	30.5 152.4 304.8	5.6 26.5 54.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.6Ω/M' 15.1Ω/km	.295	7.49	30	98	50	164
	New 8336†	6	100 500 1000	30.5 152.4 304.8	6.4 30.1 61.5	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.7Ω/M' 15.4Ω/km	.311	7.90	30	98	50	164
	New 8337†	7	100 500 1000	30.5 152.4 304.8	6.8 32.3 65.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.7Ω/M' 15.4Ω/km	.311	7.90	30	98	50	164
	New 8338†	8	100 500 1000	30.5 152.4 304.8	7.5 35.7 75.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.1Ω/M' 13.4Ω/km	.335	8.51	30	98	50	164
	New 8340†	10	100 500 1000	30.5 152.4 304.8	8.8 44.3 88.6	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.5Ω/M' 11.5Ω/km	.385	9.78	30	98	50	164
	New 8342†	12½ 12 pairs + 1 single	100 500 1000	30.5 152.4 304.8	10.6 54.3 106.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.6Ω/M' 11.8Ω/km	.405	10.29	30	98	50	164
	New 8345†	15	100 500 1000	30.5 152.4 304.8	13.3 63.3 128.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.2Ω/M' 10.5Ω/km	.445	11.30	30	98	50	164
 Beldfoil 100% Shield Coverage UL 2464 300V 80C CSA S-R PVC	**New 8348†**	18	100 500 1000	30.5 152.4 304.8	14.9 75.4 147.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.7Ω/M' 8.9Ω/km	.480	12.19	30	98	50	164
	New 8355†	25	100 500 1000	30.5 152.4 304.8	19.2 95.2 191.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.5Ω/M' 8.2Ω/km	.550	13.97	30	98	50	164

Product Description
Tinned copper, S-R PVC insulated multi-paired cable with overall Beldfoil aluminum-polyester shield plus 65% tinned copper braid shield, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

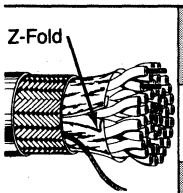
†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

[redacted]

Paired
Overall Foil/Braid Shield

BELDEN

Computer Cables
Low Capacitance Cables for EIA RS-422 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
24 Gage Stranded Conductors (7x32) **Polyethylene Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage UL 2919 30V 80C	**9829**	2	100 500 1000	30.5 152.4 304.8	5.3 25.2 50.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.68Ω/M' 8.8Ω/km	.290	7.37	100	66%	15.5	50.5	27.5	88.9	2.1
	9830	3	100 500 1000	30.5 152.4 304.8	5.9 27.8 56.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.84Ω/M' 9.3Ω/km	.310	7.87	100	66%	15.5	50.5	27.5	88.9	2.1
	9831	4	100 500 1000	30.5 152.4 304.8	6.8 32.3 68.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.26Ω/M' 10.7Ω/km	.330	8.38	100	66%	15.5	50.5	27.5	88.9	2.1
	9832	5	100 500 1000	30.5 152.4 304.8	7.2 34.7 73.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	1.92Ω/M' 6.3Ω/km	.350	8.89	100	66%	15.5	50.5	27.5	88.9	2.1
	New 9839	6	100 500 1000	30.5 152.4 304.8	8.7 43.8 87.6	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.35Ω/M' 7.72Ω/km	.370	9.40	100	66%	15.5	50.5	27.5	88.9	2.1
	9833	7	100 500 1000	30.5 152.4 304.8	9.0 45.4 90.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.07Ω/M' 6.8Ω/km	.370	9.40	100	66%	15.5	50.5	27.5	88.9	2.1
	9834	9	100 500 1000	30.5 152.4 304.8	10.9 51.6 101.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	1.60Ω/M' 5.2Ω/km	.420	10.67	100	66%	15.5	50.5	27.5	88.9	2.1
	9835	10	100 500 1000	30.5 152.4 304.8	11.8 55.9 113.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	1.65Ω/M' 5.4Ω/km	.450	11.43	100	66%	15.5	50.5	27.5	88.9	2.1
	9836	12	100 500 1000	30.5 152.4 304.8	13.2 65.0 127.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	1.77Ω/M' 5.8Ω/km	.470	11.94	100	66%	15.5	50.5	27.5	88.9	2.1
	9837	18	100 500 1000	30.5 152.4 304.8	18.4 91.0 183.0	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.04Ω/M' 6.7Ω/km	.570	14.48	100	66%	15.5	50.5	27.5	88.9	2.1
	9838	25	100 500 1000	30.5 152.4 304.8	25.3 118.3 229.6	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.35Ω/M' 7.7Ω/km	.650	16.51	100	66%	15.5	50.5	27.5	88.9	2.1
	New 9840	31	100 500 1000	30.5 152.4 304.8	31.2 148.1 300.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	1.54Ω/M' 5.1Ω/km	.745	18.92	100	66%	15.5	50.5	27.5	88.9	2.1

Product Description
Tinned copper, polyethylene insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, overall tinned copper braid shield (90% coverage), chrome PVC jacket. Color code chart No. 3, Technical Information Section.

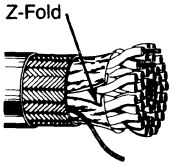
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

Paired
Overall Foil/Braid Shield

Datalene® insulation features are low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

COOPER INDUSTRIES **BELDEN**

Computer Cables
Low Capacitance Cables for EIA RS-232 and EIA RS-422 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ ft.	Nominal Capacitance * pF/ m	Nominal Capacitance ** pF/ ft.	Nominal Capacitance ** pF/ m	††6 dbv Length Limit in Thnds. of ft.
24 Gage Stranded Conductors (7x32) **Datalene® Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage UL 2919 30V 80C	**New 8102†**	2	100 500 1000	30.5 152.4 304.8	4.4 20.7 41.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.60Ω/M' 15.1Ω/km	.290	7.37	100	78%	12.5	41	22	72.2	2.1
	New 8103†	3	100 500 1000	30.5 152.4 304.8	5.0 23.5 48.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.80Ω/M' 12.5Ω/km	.305	7.75	100	78%	12.5	41	22	72.2	2.1
	New 8104†	4	100 500 1000	30.5 152.4 304.8	5.7 27.2 57.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.06Ω/M' 13.3Ω/km	.330	8.38	100	78%	12.5	41	22	72.2	2.1
	New 8105†	5	100 500 1000	30.5 152.4 304.8	6.1 28.9 61.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	4.22Ω/M' 13.8Ω/km	.340	8.67	100	78%	12.5	41	22	72.2	2.1
	New 8106†	6	100 500 1000	30.5 152.4 304.8	7.0 35.2 70.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.54Ω/M' 11.6Ω/km	.370	9.40	100	78%	12.5	41	22	72.2	2.1
	New 8107†	7	100 500 1000	30.5 152.4 304.8	7.2 36.3 72.6	24 (7x32) 24.0Ω/M' 78.7Ω/km	3.54Ω/M' 11.6Ω/km	.370	9.40	100	78%	12.5	41	22	72.2	2.1
	New 8108†	8	100 500 1000	30.5 152.4 304.8	9.1 43.3 84.6	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.70Ω/M' 8.8Ω/km	.410	10.41	100	78%	12.5	41	22	72.2	2.1
	New 8110†	10	100 500 1000	30.5 152.4 304.8	10.8 53.5 103.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.40Ω/M' 7.9Ω/km	.460	11.68	100	78%	12.5	41	22	72.2	2.1
	New 8112†	12½ 12 pr. + 1 single	100 500 1000	30.5 152.4 304.8	11.9 58.9 114.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.40Ω/M' 7.9Ω/km	.480	12.19	100	78%	12.5	41	22	72.2	2.1
	New 8115†	15	100 500 1000	30.5 152.4 304.8	14.1 69.8 140.5	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.55Ω/M' 8.4Ω/km	.540	13.72	100	78%	12.5	41	22	72.2	2.1
	New 8118†	18	100 500 1000	30.5 152.4 304.8	16.1 79.6 160.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.11Ω/M' 6.9Ω/km	.570	14.48	100	78%	12.5	41	22	72.2	2.1
	New 8125†	25	100 500 1000	30.5 152.4 304.8	22.4 104.0 200.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	2.02Ω/M' 6.6Ω/km	.650	16.51	100	78%	12.5	41	22	72.2	2.1

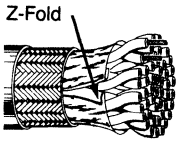
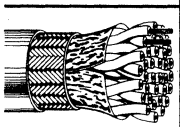
Product Description
Tinned copper, Datalene insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, overall tinned copper braid shield (65% coverage), chrome PVC jacket. Color code chart No. 5, Technical Information Section.

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

BELDEN

Paired
Overall Foil/Braid Shield

Computer Cables
For EIA RS-232 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nominal Capacitance‡ * pF/ft.	Nominal Capacitance‡ * pF/m	Nominal Capacitance‡ ** pF/ft.	Nominal Capacitance‡ ** pF/m
22 Gage Stranded Conductors (7x30) **S-R PVC Insulated**													
Z-Fold  Beldfoil® 100% Shield Coverage AWM 2464 300V 80C CSA S-R PVC	**New 8302†**	2	100 500 1000	30.5 152.4 304.8	4.4 20.3 41.2	22 (7x30) 15.0Ω/M' 49.2Ω/km	5.7Ω/M' 18.7Ω/km	.260	6.60	40	131	72	236
	New 8303†	3	100 500 1000	30.5 152.4 304.8	5.4 25.7 52.7	22 (7x30) 15.0Ω/M' 49.2Ω/km	6.2Ω/M' 20.3Ω/km	.296	7.52	35	115	63	207
	New 8304†	4	100 500 1000	30.5 152.4 304.8	6.5 30.4 65.2	22 (7x30) 15.0Ω/M' 49.2Ω/km	4.9Ω/M' 16.1Ω/km	.320	8.13	35	115	63	207
	New 8305†	5	100 500 1000	30.5 152.4 304.8	7.0 33.5 70.7	22 (7x30) 15.0Ω/M' 49.2Ω/km	4.8Ω/M' 15.7Ω/km	.322	8.18	35	115	63	207
	New 8306†	6	100 500 1000	30.5 152.4 304.8	7.9 38.0 76.6	22 (7x30) 15.0Ω/M' 49.2Ω/km	5.0Ω/M' 16.4Ω/km	.348	8.84	35	115	63	207
	New 8307†	7	100 500 1000	30.5 152.4 304.8	8.4 40.6 84.7	22 (7x30) 15.0Ω/M' 49.2Ω/km	5.0Ω/M' 16.4Ω/km	.348	8.84	35	115	63	207
	New 8308†	8	100 500 1000	30.5 152.4 304.8	9.9 50.0 100.0	22 (7x30) 15.0Ω/M' 49.2Ω/km	4.4Ω/M' 14.4Ω/km	.384	9.75	35	115	63	207
 Beldfoil 100% Shield Coverage AWM 2464 300V 80C CSA S-R PVC	**New 8310†**	10	100 500 1000	30.5 152.4 304.8	12.1 61.2 124.4	22 (7x30) 15.0Ω/M' 49.2Ω/km	4.1Ω/M' 13.4Ω/km	.440	11.18	35	115	63	207
	New 8312†	12½ 12 pr. + 1 single	100 500 1000	30.5 152.4 304.8	13.6 71.2 139.5	22 (7x30) 15.0Ω/M' 49.2Ω/km	4.2Ω/M' 13.8Ω/km	.455	11.56	35	115	63	207
	New 8315†	15	100 500 1000	30.5 152.4 304.8	16.2 79.9 156.8	22 (7x30) 15.0Ω/M' 49.2Ω/km	3.8Ω/M' 12.5Ω/km	.502	12.75	35	115	63	207
	New 8318†	18	100 500 1000	30.5 152.4 304.8	19.2 95.3 191.6	22 (7x30) 15.0Ω/M' 49.2Ω/km	3.0Ω/M' 9.8Ω/km	.535	13.59	35	115	63	207
	New 8325†	25	100 500 1000	30.5 152.4 304.8	23.5 120.8 234.6	22 (7x30) 15.0Ω/M' 49.2Ω/km	2.9Ω/M' 9.5Ω/km	.620	15.75	35	115	63	207

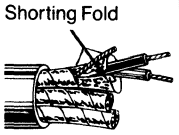
Product Description
Tinned copper, S-R PVC insulated, twisted pairs, overall Beldfoil aluminum-polyester shield plus 65% tinned copper braid shield, chrome PVC jacket. Color code chart No. 3, Technical Information Section.

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
‡At 1 Khz.

BELDEN

Paired
Individually Shielded

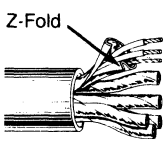
Computer Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
25 Gage Stranded Conductors (7x33) **Polyethylene Insulated** Shorting Fold 	**9863** 2094 60C 300V	3	100 500 1000	30.5 152.4 304.8	8.5 39.4 80.8	25 (7x33) .021 31.6Ω/M' 104.3Ω/km	Beldfoil with stranded tinned copper drain wire over each pair 12Ω/M' 39.4Ω/km 100% shield coverage	.430	10.92	124	66%	12.2	40.0	22.3	73.2	1.9

Product Description
Tinned copper, polyethylene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield and 22 AWG stranded tinned copper drain wire. Individual mylar wrap over each shielded pair, overall PVC jacket. Individual pairs color coded Clear, Blue. Shields color coded Blue, Red, Green.

24 Gage
Stranded Conductors (7x32)
Polypropylene Insulated

Product Description
Tinned copper, polypropylene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield and 24 AWG stranded tinned copper drain wire, overall chrome PVC jacket. Color code chart No. 3, Technical Information Section.

Z-Fold 

Beldfoil*
100% Shield Coverage
2919
30V 80C

New 9990†	3	100 500 1000	30.5 152.4 304.8	3.8 17.6 33.7	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.248	6.30	60	66%	25	82	47	154	1.25
New 9991†	6	100 500 1000	30.5 152.4 304.8	6.4 30.3 64.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.327	8.31	60	66%	25	82	47	154	1.25
New 9992†	9	100 500 1000	30.5 152.4 304.8	8.6 43.4 86.2	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.368	9.35	60	66%	25	82	47	154	1.25
New 9993†	12	100 500 1000	30.5 152.4 304.8	11.4 54.1 106.1	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.413	10.5	60	66%	25	82	47	154	1.25
New 9994†	18	100 500 1000	30.5 152.4 304.8	17.1 84.7 171.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.520	13.2	60	66%	25	82	47	154	1.25
New 9995†	25	100 500 1000	30.5 152.4 304.8	22.8 117.2 227.4	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.614	15.6	60	66%	25	82	47	154	1.25

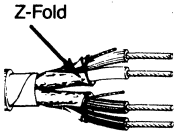
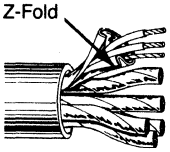
†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

Paired
Individually Shielded

Datalene® insulation features are low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

BELDEN

Computer Cables For EIA RS-422 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
24 Gage Stranded Conductors (7x32) **Datalene® Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage UL 2493 6DC	**9729†**	2	100 500 1000	30.5 152.4 304.8	4.6 21.6 46.9	24 (7x32) 24.0Ω/M' 78.7Ω/km	Beldfoil with 24 AWG stranded tinned copper drain wire 18.0Ω/M' 59.1Ω/km	.335	8.51	100	78%	12.5	41.0	23.2	76.1	2.1
	9730†	3	100 500 1000	30.5 152.4 304.8	5.2 25.1 54.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.345	8.76	100	78%	12.5	41.0	23.2	76.1	2.1
	9728†	4	100 500 1000	30.5 152.4 304.8	8.5 33.6 67.3	24 (7x32) 24.0Ω/M' 78.7Ω/km	18.0Ω/M' 59.1Ω/km	.404	10.26	100	78%	12.5	41.0	23.2	76.1	2.1
Z-Fold  Beldfoil® 100% Shield Coverage	**9731†** UL 2493 60C	6	100 500 1000	30.5 152.4 304.8	10.0 48.9 96.5	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.476	12.09	100	78%	12.5	41.0	23.2	76.1	2.1
	9732† UL 2493 60C	9	100 500 1000	30.5 152.4 304.8	14.0 70.7 142.4	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.570	14.48	100	78%	12.5	41.0	23.2	76.1	2.1
	9733† UL 2493 60C	11	100 500 1000	30.5 152.4 304.8	17.9 81.5 156.0	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.610	15.49	100	78%	12.5	41.0	23.2	76.1	2.1
	9734† UL 2493 60C	12	100 500 1000	30.5 152.4 304.8	18.5 86.9 166.7	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.630	16.00	100	78%	12.5	41.0	23.2	76.1	2.1
	9735† UL 2493 60C	15	100 500 1000	30.5 152.4 304.8	22.1 102.6 209.2	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.700	17.78	100	78%	12.5	41.0	23.2	76.1	2.1
	9736† UL 2493 60C	17	100 500 1000	30.5 152.4 304.8	23.8 111.7 226.4	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.730	18.54	100	78%	12.5	41.0	23.2	76.1	2.1
	9737† UL 2493 60C	19	100 500 1000	30.5 152.4 304.8	25.1 118.0 240.0	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.750	19.05	100	78%	12.5	41.0	23.2	76.1	2.1
	9738† UL 2490 60C	27	100 500 1000	30.5 152.4 304.8	36.5 173.2 354.5	24 (7x32) 24Ω/M' 78.7Ω/km	18Ω/M' 59.1Ω/km	.875	22.23	100	78%	12.5	41.0	23.2	76.1	2.1

Product Description
Tinned copper, Datalene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield and 24 AWG stranded tinned copper drain wire, overall chrome PVC jacket. 300 volts. Color code chart No. 3, Technical Information Section.

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

BELDEN

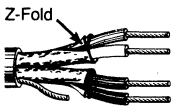
Paired
Individually Shielded

Computer Cables

22 Gage
Stranded Conductors (7x30)

Polypropylene Insulated

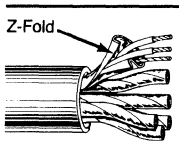
Product Description
Tinned copper, polypropylene insulated, black and red under a Beldfoil aluminum-polyester shield, green and white under a Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper common drain wire, chrome PVC jacket, pairs cabled on common axis to reduce diameter. ⊖ Color code: Red, Black, Green, White. Suggested working voltage: 400.



Beldfoil®
100% Shield Coverage

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
	8723 80C	2	100 U-500 500 U-1000 1000 5000	30.5 U-152.4 152.4 U-304.8 304.8 1524.0	2.4 10.0 10.8 21.6 21.7 107.8	22 (7x30) 15Ω/M' 49.2Ω/km	16.6Ω/M' 54.5Ω/km	.165	4.19	45	66%	95	115	62	203	1.5

Product Description
Tinned copper, polypropylene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield and 22 AWG stranded tinned copper drain wire, overall chrome PVC jacket. Color code chart No. 3, Technical Information Section.



Beldfoil
100% Shield Coverage
AWM 2919
30V 80C

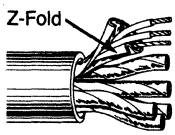
8777† Power Limited Cable Class 2	3	100 U-250 250 U-500 500 1000 5000	30.5 U-76.2 76.2 U-152.4 152.4 304.8 1524.0	4.7 11.0 11.7 21.0 21.8 45.1 217.4	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.273	6.93	50	66%	30	98	55	180	1.7
8778†	6	100 250 500 1000	30.5 76.2 152.4 304.8	10.3 23.6 48.0 93.9	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.368	9.35	50	66%	30	98	55	180	1.7
8774†	9	100 250 500 1000	30.5 76.2 152.4 304.8	13.4 30.6 65.1 128.2	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.413	10.50	50	66%	30	98	55	180	1.7
8775†	11	100 250 500 1000	30.5 76.2 152.4 304.8	14.9 35.4 74.2 144.3	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.458	11.63	50	66%	30	98	55	180	1.7
9768†	12	100 250 500 1000	30.5 76.2 152.4 304.8	15.7 33.2 77.8 152.7	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.458	11.63	50	66%	30	98	55	180	1.7
8776†	15	100 250 500 1000	30.5 76.2 152.4 304.8	20.9 52.2 102.4 205.8	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.554	14.07	50	66%	30	98	55	180	1.7
9769†	17	100 250 500 1000	30.5 76.2 152.4 304.8	25.0 58.0 118.0 228.8	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.585	14.86	50	66%	30	98	55	180	1.7
8769†	19	100 250 500 1000	30.5 76.2 152.4 304.8	26.7 61.9 127.2 247.4	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.599	15.21	50	66%	30	98	55	180	1.7
8773†	27	100 250♦ 500♦ 1000♦	30.5 76.2 152.4 304.8	35.8 87.2 175.5 344.9	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.709	18.01	50	66%	30	98	55	180	1.7
9767†	37	100 250♦ 500♦ 1000♦	30.5 76.2 152.4 304.8	48.2 112.4 228.8 496.0	22 (7x30) 15Ω/M' 49.2Ω/km	11.3Ω/M' 37.1Ω/km	.840	21.33	50	66%	30	98	55	180	1.7

†Passes the VW-1 Vertical Wire Flame Test.
♦ Spools are one piece, but length may vary +20% −0 from length shown.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.
⊖Technical Bulletin T/8-21 and T/8-9.

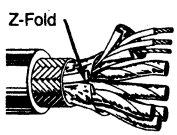
COOPER INDUSTRIES BELDEN

Paired
Individually Shielded

Computer Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
18 Gage Stranded Conductors (16x30) **Polypropylene Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage 2919 30V 80C	**9773†**	3	100 500 1000	30.5 152.4 304.8	8.3 41.8 83.5	18 (16x30) 6.4Ω/M' 21Ω/km	8.3Ω/M' 27.2Ω/km	.370	9.40	50	66%	30	98	55	180	3.9
	9774†	6	100 500 1000	30.5 152.4 304.8	19.3 95.6 192.5	18 (16x30) 6.4Ω/M' 21Ω/km	8.3Ω/M' 27.2Ω/km	.559	14.20	50	66%	30	98	55	180	3.9
	9775†	9	100 500 1000	30.5 152.4 304.8	25.7 131.8 256.6	18 (16x30) 6.4Ω/M' 21Ω/km	8.3Ω/M' 27.2Ω/km	.629	16.00	50	66%	30	98	55	180	3.9
	9776†	12	100 500 1000	30.5 152.4 304.8	32.4 162.0 336.5	18 (16x30) 6.4Ω/M' 21Ω/km	8.3Ω/M' 27.2Ω/km	.714	18.14	50	66%	30	98	55	180	3.9
	9777†	15	100 500 1000	30.5 152.4 304.8	41.8 206.4 420.8	18 (16x30) 6.4Ω/M' 21Ω/km	8.3Ω/M' 27.2Ω/km	.784	19.91	50	66%	30	98	55	180	3.9

Computer Cables
For EIA RS-422 and Cad/Cam Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
24 Gage Stranded Conductors (7x32) **Datalene Insulated**																
Z-Fold  Beldfoil® 100% Shield Coverage 2493 60C	**New 8162†**	2	100 500 1000	30.5 152.4 304.8	6.5 33.0 65.5	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 4.3Ω/M' 14.1Ω/km	.376	9.55	100	78%	12.5	41	22	72.2	2.1
	New 8163†	3	100 500 1000	30.5 152.4 304.8	7.3 37.9 73.9	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 4.4Ω/M' 14.4Ω/km	.376	9.55	100	78%	12.5	41	22	72.2	2.1

Product Description
Tinned copper, polypropylene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield and 20 AWG stranded tinned copper drain wire, overall chrome PVC jacket. Color code chart No. 3, Technical Information Section.

Product Description
Tinned copper, Datalene insulated, twisted pairs, each pair individually shielded with Beldfoil® aluminum-polyester shield and 24 AWG stranded tinned copper drain wire, overall Beldfoil aluminum-polyester shield plus 65% tinned copper braid shield. Chrome PVC jacket. Color code chart No. 3, Technical Information Section.

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

BELDEN

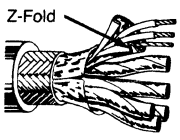
Paired
Individually Shielded Pairs with Overall Foil/Braid Shield

Datalene® insulation features are low dielectric constant and a dissipation factor for high-speed, low-distortion data handling. Physical properties include good crush resistance and light weight.

Computer Cables For EIA RS-422 and Cad/Cam Applications

24 Gage (cont'd.)
Stranded Conductors (7x32)
Datalene Insulated

Product Description
Tinned copper, Datalene insulated, twisted pairs, each pair individually shielded with Beldfoil® aluminum-polyester shield and 24 AWG stranded tinned copper drain wire, overall Beldfoil aluminum-polyester shield plus 65% tinned copper braid shield. Chrome PVC jacket. Color code chart No. 3, Technical Information Section.



Beldfoil®
100% Shield Coverage

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nominal D.C.R. Conductor	Nominal D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.
	New 8164† AL 2493 60C	4	100 500 1000	30.5 152.4 304.8	9.5 44.3 90.6	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 3.2Ω/M' 10.5Ω/km	.430	10.92	100	78%	12.5	41	22	72.2	2.1
	New 8165† AL 2493 60C	5	100 500 1000	30.5 152.4 304.8	10.4 51.3 99.6	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 3.4Ω/M' 11.2Ω/km	.460	11.68	100	78%	12.5	41	22	72.2	2.1
	New 8166† AL 2493 60C	6	100 500 1000	30.5 152.4 304.8	11.5 57.0 110.4	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.8Ω/M' 9.2Ω/km	.496	12.60	100	78%	12.5	41	22	72.2	2.1
	New 8167† AL 2493 60C	7	100 500 1000	30.5 152.4 304.8	11.9 58.8 114.6	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.8Ω/M' 9.2Ω/km	.496	12.60	100	78%	12.5	41	22	72.2	2.1
	New 8168† AL 2493 60C	8	100 500 1000	30.5 152.4 304.8	15.0 74.3 149.6	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 3.0Ω/M' 9.8Ω/km	.575	14.61	100	78%	12.5	41	22	72.2	2.1
	New 8170† AL 2493 60C	10	100 500 1000	30.5 152.4 304.8	20.3 93.2 179.5	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.7Ω/M' 8.9Ω/km	.650	16.51	100	78%	12.5	41	22	72.2	2.1
	New 8175† AL 2493 60C	15	100 500 1000	30.5 152.4 304.8	24.6 115.2 234.4	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.5Ω/M' 8.2Ω/km	.720	18.29	100	78%	12.5	41	22	72.2	2.1
	New 8178† AL 2493 60C	18	100 500 1000	30.5 152.4 304.8	27.5 134.3 262.7	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.6Ω/M' 8.5Ω/km	.770	19.56	100	78%	12.5	41	22	72.2	2.1
	New 8185† AL 2490 60C	25	100 500 1000	30.5 152.4 304.8	39.1 187.5 427.0	24 (7x32) 24Ω/M' 78.7Ω/km	Individual 18Ω/M' 59.1Ω/km Overall 2.4Ω/M' 7.9Ω/km	.935	23.75	100	78%	12.5	41	22	72.2	2.1

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

Coaxial Cables
50 ohm

BELDEN

50 Ohm Coaxial Cables


9251


8214


9888


9258


9201


8259


8262


9203

Belden Part No.		Center Conductor			Dielectric		Shields			Jacket				Nom. Att.			
UL Style No.	RG Type	AWG	Material	DCR per M′ (ohms)	Material	Core O.D.	Type	Coverage	DCR per M′ (ohms)	Material	O.D.	N.V.P.	Nom. Cap.	MHz	db/ 100 ft.	Impedance	Temp. Rating
9251† AWM 1354 MIL-C-17D Power Limited Cable Class 2	8A/U	13 (7×21)	BC	1.87Ω	PE	.285	1 BC Braid	97%	1.2Ω	Black NC-PVC	.405	66%	29.5	50 100 200 400 700 900 4000	1.6 2.2 3.2 4.7 6.9 8.0 21.5	52	60°C
8214† AWM 1354 Power Limited Cable Class 2	8/U	11 (7×19)	BC	1.15Ω	CPE	.285	1 BC Braid	97%	1.1Ω	Black PVC	.405	78%	26.0	50 100 200 400 700 900 4000	1.2 1.8 2.7 4.2 5.8 6.7 18.0	50	60°C
9888□	8/U	11 (7×19)	BC	1.17Ω	CPE	.285	2 BC Braid	96%	2.1Ω	Black PE	.480	78%	26.0	50 100 200 400 700 900 1000	1.2 1.8 2.7 4.2 5.8 6.7 7.1	50	80°C
9258 AWM 1354 Power Limited Cable Class 2	8/X	16 (19×29)	BC	4.3Ω	CPE	.155	1 BC Braid	95%	3.3Ω	Black or White PVC	.242	78%	26.0	50 100 200 400 700 900 1000	2.5 3.7 5.4 8.0 11.1 12.8 13.5	50	60°C
9201	58/U	20 (solid)	BC	10.1Ω	PE	.116	1 BC Braid	78%		Black PVC	.195	66%	28.5	50 100 200 400 700 900 1000	3.1 4.5 6.8 10.0 14.0 16.0 17.0	53.5	75°C
8259 JAN-C-17A	58A/U	20 (19×.0071)	TC	10.8Ω	PE	.114	1 TC Braid	96%	4.1Ω	Black PVC	.195	66%	30.8	50 100 200 400 700 900 1000	3.3 4.9 7.3 11.5 17.0 20.0 21.5	50	60°C
8262□ MIL-C-17F	58C/U	20 (19×.0071)	TC	10.8Ω	PE	.116	1 TC Braid	95%	4.1Ω	Black NC-PVC	.195	66%	30.8	50 100 200 400 700 900 1000	3.3 4.9 7.3 11.5 17.0 20.0 21.5	50	80°C
9203□ MIL-C-17F	58/U MA/28-RG058 QPL	20 (19×.0071)	TC	10.8Ω	PE	.116	1 TC Braid	95%	4.1Ω	Black NC-PVC	.195	66%	30.8	50 100 200 400 700 900 1000	3.3 4.9 7.3 11.5 17.0 20.0 21.5	50	80°C

Standard lengths: 100 ft. (30.5m), 500 ft. (152.5m), 1000 ft. (304.8m) □ 500 ft. (152.4m), 1000 ft. (304.8m) only † Passes the VW-1 vertical wire flame test.

Coaxial cable legend
AL—Aluminum
BC—Bare Copper
BCCS—Bare Copper Covered Steel
CC—Coated Copper
CPE—Cellular Polyethylene
NC-PVC—Non Contaminating Polyvinyl Chloride
CHDPE—Cellular High Density Polyethylene
Nom. Att.—Nominal Attenuation
NVP—Nominal Velocity of Propagation
OD—Overall Dimension
PE—Polyethylene
PVC—Polyvinyl Chloride
SCC—Silver Coated Copper
SPCCS—Silver Plated Copper Covered Steel
SSPE—Semi-Solid Polyethylene
TC—Tinned Copper

Regional Sales Office—Call 1-800 BELDEN-1 to contact any of the regional sales offices at the following locations: **Western**, 2955 E. Main Street, Suite 300, Irvine, CA 92714; **North Central**, 2625 West Butterfield Road, Suite 108E, Oakbrook, IL 60521; **South Central**, 14651 N. Dallas Parkway, Suite 144, Dallas, TX 75204; **Eastern**, 100 Pennsylvania Avenue, Suite 450, Framingham, MA 01701; **Southeastern**, 2175 Parklake Drive, Suite 120, Atlanta, GA 30345. (In Indiana, call 317-983-5200.)

Coaxial Cables
50 ohm

BELDEN

50 Ohm Coaxial Cables


8219


9311


9889


9252


8216


8267


8268


9273

Belden Part No.		Center Conductor			Dielectric		Shields			Jacket				Nom. Att.				
UL Style No.	RG Type	AWG	Material	DCR per M' (ohms)	Material	Core O.D.	Type	Coverage	DCR per M' (ohms)	Material	O.D.	N.V.P.	Nom. Cap.	MHz	db/ 100 ft.	Impedance	Temp. Rating
8219 UL 1354	58A/U	20 (19×32)	TC	8.8Ω	CPE	.114	1 TC Braid	96%	4.1Ω	Black or White PVC	.195	78%	26.0	50 100 200 400 700 900 1000	3.2 4.5 6.4 9.0 12.0 13.8 14.5	50	60°C
9311 UL 1354	58A/U	20 (19×32)	TC	8.8Ω	CPE	.114	1 TC Braid Duobond II®	+56% 100%	17.0Ω	Black PVC	.195	78%	26.0	50 100 200 400 700 900 1000	3.2 4.5 6.4 9.0 12.0 13.8 14.5	50	60°C
9889 UL 1354	58/U	18 (solid)	BC	6.5Ω	CPE	.116	1 Duofoil	100%	25.0Ω	Black PVC	.216	78%	26.0	50 100 300 500 1000	3.3 4.9 9.3 13.6 18.8	50	60°C
9252 UL 1354 MIL-C-17F	122/U	22 (27×36)	TC	17.1Ω	PE	.096	1 TC Braid	97%	5.2Ω	Black NC-PVC	.160	66%	30.8	50 100 200 400 700 900 1000	4.5 7.0 10.0 15.2 21.2 25.0 26.5	50	60°C
8216 UL 1354 MIL-C-17D	174/U	26 (7×34)	BCCS	97.0Ω	PE	.060	1 TC Braid	88%	10.3Ω	Black PVC	.101	66%	30.8	50 100 200 400 700 900 1000	6.6 8.9 12.0 17.5 24.1 28.2 30.0	50	60°C
8267†□ AWM 1354 MIL-C-17D	213/U	13 (7×21)	BC	1.87Ω	PE	.285	1 BC Braid	97%	1.2Ω	Black NC-PVC	.405	66%	30.8	50 100 200 400 700 900 1000 4000	1.6 2.2 3.2 4.7 6.9 8.0 8.9 21.5	50	60°C
8268†□ AWM 1354 MIL-C-17F	214/U	13 (7×.0296)	SCC	1.73Ω	PE	.285	2 SCC Braid	98%	.7Ω	Black NC-PVC	.425	66%	30.8	50 100 200 400 700 900 1000 4000	1.6 2.2 3.2 4.7 6.9 8.0 8.9 21.5	50	60°C
9273 UL 1354 MIL-C-17F	223/U	19 (solid)	SCC	8.05Ω	PE	.116	2 SCC Braid	97%	2.5Ω	Black NC-PVC	.212	66%	30.8	50 100 200 400 700 900 1000	3.1 4.5 6.4 9.2 12.5 14.3 16.3	50	60°C

Standard lengths: 100 ft. (30.5m), 500 ft. (152.5m), 1000 ft. (304.8m) □ 500 ft. (152.4m), 1000 ft. (304.8m) only † Passes the VW-1 vertical wire flame test.

Coaxial cable legend
AL—Aluminum
BC—Bare Copper
BCCS—Bare Copper Covered Steel
CC—Coated Copper
CPE—Cellular Polyethylene
NC-PVC—Non Contaminating Polyvinyl Chloride
Nom. Att.—Nominal Attenuation
NVP—Nominal Velocity of Propagation
OD—Overall Dimension
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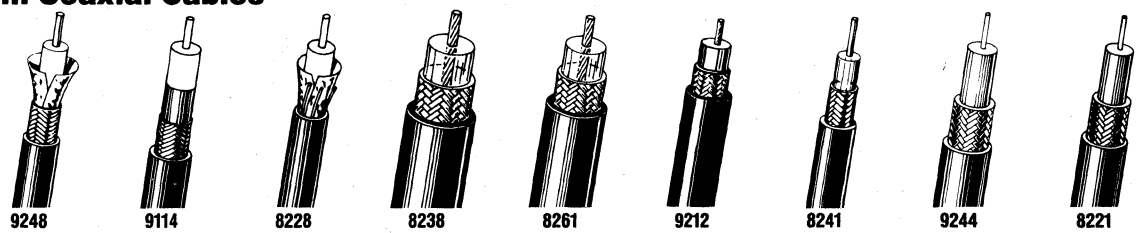
[redacted]

Coaxial Cables
75 ohm

BELDEN

75 Ohm Coaxial Cables



Belden Part No.		Center Conductor			Dielectric		Shields			Jacket			Nom. Cap. pF/ft.	Nom. Att.		Imped-ance	Temp. Rating
UL Style No.	RG Type	AWG	Mat-erial	DCR per M' (ohms)	Mat-erial	Core O.D.	Type	Coverage	DCR per M' (ohms)	Mat-erial	O.D.	N.V.P.		MHz	db/ 100 ft.		
9248† ℞1354	6/U	18 (solid)	BC	7.5Ω	CPE	.180	1-TC 1-Duofoil	61% 100%	5.2Ω	Black PVC	.270	78%	17.3	50 100 200 500 900	1.5 2.1 3.1 5.0 6.9	75	60°C
9114	6/U	18 (solid)	BCCS	45.5Ω	CPE	.180	1-AL Braid 1-Duo-bond II®	37% 100%	45.5Ω	Blk./ Lt. Bg. PVC	.275	78%	17.3	50 100 200 500 900	1.5 2.1 3.1 5.0 6.9	75	60°C
8228	6/U	18 (solid)	BC	7.5Ω	CPE	.180	1-Duofoil	100%	19.5Ω	Black PVC	.242	78%	17.3	50 100 200 500 900	1.5 2.1 3.1 5.0 6.9	75	60°C
8238 JAN-C-17A	11/U	18 (7×26)	TC	6.06Ω	PE	.285	1 BC Braid	97%	1.24Ω	Black PVC	.405	66%	20.5	50 100 200 400 700 900 1000	1.3 2.0 2.9 4.2 5.8 6.8 7.1	75	80°C
8261†□ MIL-C-17D	11A/U	18 (7×26)	TC	6.06Ω	PE	.285	1 BC Braid	97%	1.24Ω	Black NC-PVC	.405	66%	20.5	50 100 200 400 700 900 1000	1.3 2.0 2.9 4.2 5.8 6.8 7.1	75	80°C
9212† MIL-C-17F	M17/6 RG11 QPL	18 (7×26)	TC	6.06Ω	PE	.285	1 BC Braid	97%	1.24Ω	Black NC-PVC	.405	66%	20.5	50 100 200 400 700 900 1000	1.3 2.0 2.9 4.2 5.8 6.8 7.1	75	80°C
8241□ AWM1354 JAN-C-17A	59/U	22 (solid)	BCCS	55.0Ω	PE	.146	1 BC Braid	95%	2.7Ω	Black PVC	.242	66%	21.0	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.1 9.5 10.9 12.0	73	60°C
9244□ AWM1354	59/U	22 (solid)	BCCS	55.0Ω	PE	.146	1 BC Braid	86%	4.5Ω	Black PVC	.242	66%	21.0	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.1 9.5 10.9 12.0	73	80°C
8221	59/U	22 (solid)	BCCS	55.0Ω	CPE	.146	1 BC Braid	95%	2.6Ω	Grey, White, Black PVC	.242	78%	16.3	50 100 200 400 700 900 1000	2.0 2.9 4.1 5.9 7.8 8.8 9.9	80	80°C

Standard lengths: 100 ft. (30.5m), 500 ft. (152.4m), 1000 ft. (304.8m) □ 500 ft. (152.4m), 1000 ft. (304.8m) only
□□ 500 ft. (152.4m), 1000 ft. (304.8), 2000 ft. (609.6m) only † Passes the VW-1 vertical wire flame test.

Coaxial cable legend
AL—Aluminum
BC—Bare Copper
BCCS—Bare Copper Covered Steel
CC—Coated Copper
CPE—Cellular Polyethylene
NC-PVC—Non Contaminating Polyvinyl Chloride
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PE—Polyethylene
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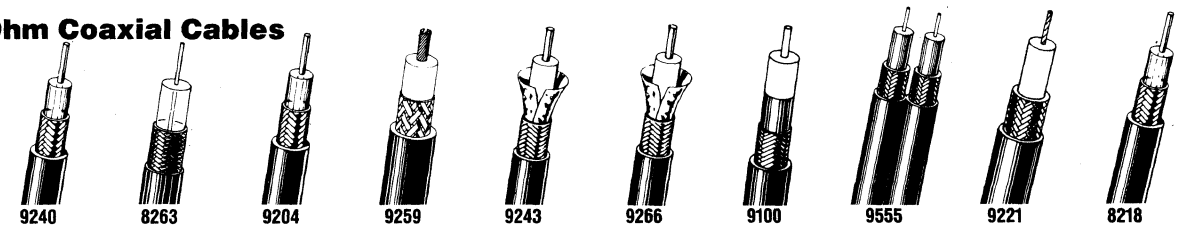
Coaxial Cables
75 ohm

BELDEN

75 Ohm Coaxial Cables



Belden Part No. / UL Style No.	RG Type	Center Conductor AWG	Center Conductor Material	Center Conductor DCR per M' (ohms)	Dielectric Material	Dielectric Core O.D.	Shields Type	Shields Coverage	Shields DCR per M' (ohms)	Jacket Material	Jacket O.D.	N.V.P.	Nom. Cap.	Nom. Att. MHz	Nom. Att. db/100 ft.	Impedance	Temp. Rating
9240□	59/U	20 (solid)	BCCS	61.5Ω	CPE	.146	1 BC Braid	80%	5.6Ω	Black PVC	.242	78%	17.3	50 100 200 500 900 1000	1.8 2.6 3.8 6.2 8.4 8.8	75	80°C
8263†□ MIL-C-17D	59B/U	23 (solid)	BCCS	47.0Ω	PE	.146	1 BC Braid	95%	2.6Ω	Black NC-PVC	.242	66%	20.5	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.0 9.7 11.1 12.0	75	80°C
9204†□ MIL-C-17F	M17/ 29- RG59 QPL	23 (solid)	BCCS	47.0Ω	PE	.146	1 BC Braid	95%	2.6Ω	Black NC-PVC	.242	66%	20.5	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.0 9.7 11.1 12.0	75	80°C
9259 AWM1354 Power Limited Cable Class 2	59/U	22 (7×30)	BC	15.0Ω	CPE	.146	1 BC Braid	95%	2.6Ω	Black PVC	.242	78%	17.3	50 100 200 400 700 900 1000	2.1 3.0 4.5 6.6 8.9 10.1 10.9	75	80°C
9243†□	59/U	20 (solid)	BCCS	61.5Ω	CPE	.146	1 AL Braid 1-Duofoil	67% 100%	14.0Ω	Black PVC	.242	78%	17.3	50 100 200 500 900	1.8 2.6 3.8 6.2 8.4	75	80°C
9266□	59/U	20 (solid)	BCCS	61.5Ω	CPE	.146	1 TC Braid 1-Duofoil	61% 100%	6.8Ω	Black PVC	.242	78%	17.3	50 100 200 500 900	1.8 2.6 3.8 6.2 8.4	75	80°C
9100□□	59/U	20 (solid)	CCS	61.5Ω	CPE	.146	1 AL Braid 1-Duo-bond II®	40% 100%	17.0Ω	Black PVC	.242	78%	17.3	50 100 200 500 900	1.8 2.6 3.8 6.2 8.4	75	80°C
9555 Dual coax UL 20063	59/U	23 (solid)	BCCS	47.0Ω	PE	.146	1 BC Braid	95%	2.6Ω	Black PVC	.238 ×.478	66%	20.5	100 200 400 700 900 1000	3.4 5.1 7.5 11.4 12.0 12.7	75	80°C
9221 UL 1375 miniature coax		30 (7×38)	TC	100.0Ω	CHD PE	.058	1 TC Braid	89%	11.7Ω	Black PVC	.097	78%	17.3	50 100 200 400 700 900 1000	5.9 9.2 15.0 24.5 36.0 44.0 48.0	75	60°C
8218 UL 1354		27 (7×35)	BCCS	112.0Ω	PE	.100	1 TC Braid	93%	6.5Ω	Black PVC	.150	66%	20.5	50 100 200 400 700 900 1000	4.2 5.7 8.3 12.1 16.5 19.0 20.0	75	60°C

Standard lengths: 100 ft. (30.5m), 500 ft. (152.4m), 1000 ft. (304.8m) □ 500 ft. (152.4m), 1000 ft. (304.8m) only
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Coaxial Cables
93 ohm

BELDEN

93 Ohm Coaxial Cables


9269


9268


9862


8255


8254


9393

Belden Part No.		Center Conductor			Dielectric		Shields			Jacket				Nom. Att.			
UL Style No.	RG Type	AWG	Material	DCR per M' (ohms)	Material	Core O.D.	Type	Coverage	DCR per M' (ohms)	Material	O.D.	N.V.P.	Nom. Cap.	MHz	db/ 100 ft.	Impedance	Temp. Rating
9269† AWM1478 Power Limited Cable Class 2	62 A/U	22 (solid)	BCCS	41.2Ω	SSPE	.146	1 BC Braid	95%	2.6Ω	Black PVC	.242	84%	13.5	50 100 200 400 700 900 1000	1.9 2.7 3.8 5.4 7.3 8.3 8.7	93	60°C
9268† AWM1478 Power Limited Cable Class 2	62 A/U	22 (solid)	BCCS	41.2Ω	SSPE	.146	1 BC Braid	95%	2.6Ω	Black PVC	.260	84%	13.5	50 100 200 400 700 900 1000	1.9 2.7 3.8 5.4 7.3 8.3 8.7	93	60°C
9862† MIL-C-17F AWM1478 Power Limited Cable Class 2	62 A/U	22 (solid)	BCCS	41.2Ω	SSPE	.146	1 BC Braid	95%	2.6Ω	Black NC-PVC	.242	84%	13.5	50 100 200 400 700 900 1000	1.9 2.7 3.8 5.4 7.4 8.8 9.4	93	60°C
8255†□ MIL-C-17D 1354	62 B/U	24 (7×32)	BCCS	53.4Ω	SSPE	.146	1 BC Braid	95%	2.6Ω	Black NC-PVC	.242	84%	13.5	50 100 200 400 700 900 1000	2.0 2.9 4.2 6.1 8.6 10.1 11.0	93	60°C
8254 JAN-C-17A	62/U	22 (solid)	BCCS	55.0Ω	SSPE	.146	1 BC Braid	95%	2.6Ω	Black PVC	.238	84%	13.5	50 100 200 400 700 900 1000	1.9 2.7 3.8 5.4 7.3 8.3 8.7	93	80°C
9393† 1354	—	30 (solid)	CC	114.0Ω	CPE	.064	— 1 Beldfoil® + Drain-wire	100%	48Ω	Red PVC	.100 ×.115	78%	14.0	50 100 200 400	6.4 8.8 12.4 17.5	93	80°C

Standard lengths: 100 ft. (30.5m), 500 ft. (152.4m), 1000 ft. (304.8m) □ 500 ft. (152.4m), 1000 ft. (304.8m) only □□ 500 ft. (152.4m), 1000 ft. (304.8) only † Passes the VW-1 vertical wire flame test.

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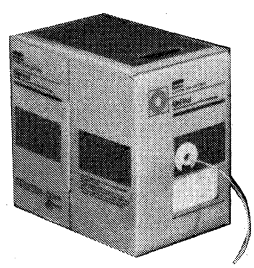
Belden "UNREEL®" Dispensers

- **Easy to use.**
- **Light in weight.**
- **Faster than standard reels.**
- **Easy to store and transport.**
- **No snagging, twisting and kinking.**
- **Not liable to backlash.**
- **Continuous feed-out system.**
- **Efficient throw away packaging.**

Belden cables are available in unique "UNREEL" dispenser packs. "UNREEL" overcomes the problems associated with spools and reels. "UNREEL" is economical: so easy to use, it saves up to 30% of your time on every job, compared to conventional spool and non spool fed systems. To order, add the letter "U" before desired length. Example: Belden Part No. 8451 Length U-1000.



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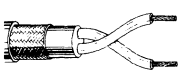
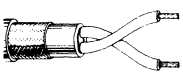
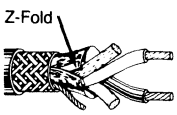
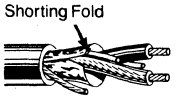
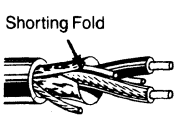
Twinaxial

BELDEN

Broadcast and Computer Cables

Description	Trade & U.L. Type Number	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D. Inch	Insulation & Nominal Core O.D. mm	Nominal O.D. Inch	Nominal O.D. mm	No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	Nominal Capacitance pF/m	Nominal Attenuation MHz	Nominal Attenuation db/100 ft.	Nominal Attenuation db/100 m
	**9272**† AWM 2092 300V 60C Power Limited Cable Class 2	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	4.3 19.3 20.0 37.6 38.6	20 (7x28) .037 tinned copper 9.5Ω/M' 31.2Ω/km	Poly-ethylene color coded clear blue		.244	6.20	Tinned copper 3.4Ω/M' 11.15Ω/km 93% shield coverage	78	66%	19.7	64.6	1 10 20 50 100 200 400	.6 2.1 3.0 5.0 7.5 11.0 16.0	2.0 6.9 9.8 16.4 24.6 36.1 52.5
											Blue PVC jacket.						
	**8227**† AWM 2498 300V 80C Power Limited Cable Class 2	500 1000 2000	152.4 304.8 609.6	28.6 60.9 118.9	20 (7x28) .037 1 tinned copper 1 bare copper 9.46Ω/M' 31.04Ω/km	Poly-ethylene		.325	8.26	Tinned copper 2.7Ω/M' 8.86Ω/km 85% shield coverage	100	66%	15.5	50.9	1 10 20 50 100 200 400	.4 1.1 1.5 2.5 4.1 6.4 10.2	1.3 3.6 4.9 8.2 13.5 21.0 33.5
						.228	5.80				Black PVC jacket.						
	**9207**† AWM 2498 300V 80C Power Limited Cable Class 2	100 U-500 500 1000 2000	30.5 U-152.4 152.4 304.8 609.6	6.6 30.7 31.6 64.5 131.0	20 (7x28) .037 1 tinned copper 1 bare copper 9.46Ω/M' 31.04Ω/km	Poly-ethylene		.325	8.26	Tinned copper 2.0Ω/M' 6.56Ω/km 95% shield coverage	100	66%	15.5	50.9	1 10 20 50 100 200 400	.4 1.1 1.5 2.5 4.1 6.4 10.2	1.3 3.6 4.9 8.2 13.5 21.0 33.5
						.228	5.80										
Z-Fold 	**9463**† AWM 2582 150V 60C Power Limited Cable Class 2	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.9 17.8 18.6 34.8 35.8	2 cond. 20 (7x28) .038 tinned copper 9.5Ω/M' 31.2Ω/km	Poly-ethylene color coded clear blue		.243	6.17	Beldfoil® + 57% tinned copper braid 4.05Ω/M' 13.29Ω/km 100% shield coverage	78	66%	19.7	64.6	1 10 20 50 100 200 400	.6 2.1 2.5 3.6 7.5 11.0 16.0	2.0 6.9 8.2 11.8 24.6 36.1 52.5
											Blue PVC jacket.						
Shorting Fold 	**9271** AWM 2092 300V 60C Power Limited Cable Class 2	100 U-500 500 U-1000 1000	30.5 U-152.4 152.4 U-304.8 304.8	3.0 13.6 14.2 26.1 27.0	2 Cond. 25 (7x33) .021 tinned copper 31.8Ω/M' 104.3Ω/km	Poly-ethylene color coded clear blue		.240	6.10	Beldfoil® w/stranded tinned copper drain wire 12.0Ω/M' 39.4Ω/km 100% shield coverage	124	66%	12.2	40.0	1 10 20 50 100 200 400	.6 1.7 2.3 3.6 5.0 6.9 9.6	2.0 5.6 7.6 11.8 16.4 22.6 31.5
											Blue PVC jacket.						
	**9860**† AWM 2448 30V 60C Power Limited Cable Class 2	500 1000 2000	152.4 304.8 609.6	54.2 106.3 213.6	2 Cond. 16 (Solid) .051 bare copper 4.2Ω/M' 13.8Ω/km	Cellular Poly-ethylene color coded clear blue		.440	11.18	Duofoil® + 92% tinned copper braid, 1.3Ω/M' 4.3Ω/km 100% shield coverage	124	78%	Between Cond. 10.9 Shield un-grn'd.	35.8	1 10 20 50 100 200	.27 .89 1.3 2.0 2.9 4.1	.89 2.9 4.3 6.6 9.5 13.5
											Black PVC jacket.						
	**9182**† AWM 2668 30V 60C Power Limited Cable Class 2	U-500 500 1000	U-152.4 152.4 304.8	25.8 27.5 57.5	22 (19x34) .031 tinned copper 15Ω/M' 49.2Ω/km	Datalene* color coded black, yellow		.350	8.89	Duofoil w/stranded tinned copper drain wire 6.3Ω/M' 20.7Ω/km 100% shield coverage	150	78%	8.8	28.9	1 10 20 50 100 200 400	.3 1.3 2.3 3.0 4.3 6.2 8.8	.98 4.3 7.5 9.8 14.1 20.3 28.9
											Black PVC jacket.						
Shorting Fold 	**9851**† UL 2777 300V 60C	100 500 1000	30.5 152.4 304.8	2.3 10.2 19.0	2 Cond. 29 (Solid) .0113 silver plated copper covered steel 202Ω/M' 622Ω/km	Flame Retardant Cellular Poly-ethylene color coded clear, blue		.245	6.22	With stranded tinned copper drain wire 25Ω/M' 82Ω/km 100% shield coverage	200	76%	6.7	22.0	1 10 20 50 100 200 400	1.7 2.1 2.7 4.0	
											Chrome PVC jacket.						

†Passes the VW-1 Vertical Wire Flame Test.
Request quotations of RG/U cables not listed.

Special Application

BELDEN

Local Area Network Cables

Trunk Coaxial Cables

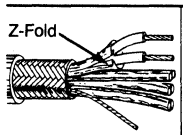
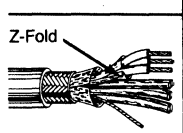
Description	Trade & U.L. Style Number	Standard Lengths ft.	Standard Lengths m	Std. Units Lbs. ea.	AWG (Stranding) Dia. in Inches D.C.R.	No. of Shields and Material D.C.R.	Insulation & Nominal Core O.D. Inch	Insulation & Nominal Core O.D. mm	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp.	Nom. Vel. of Prop.	Nominal Capacitance pF/ft.	Nominal Capacitance pF/m
 **Ethernet™▲**	**9880†** 1478 30V 60C	500 1000 1640	152.4 304.8 500.0	61.2 120.5 201.5	Solid tinned copper .0855 1.42Ω/M' 4.66Ω/km	Aluminum/Polyester shield bonded to dielectric + 92% tinned copper braid + Duofoil® + 92% tinned copper braid 1.52Ω/M' 5.0Ω/km	Cellular Polyethylene .247	6.27	.405	10.28	50	78%	26	85
							Product Description: Tinned copper, cellular polyethylene dielectric, aluminum polyester foil shield. 92% tinned copper braid, Duofoil shield, 92% tinned copper braid, yellow PVC jacket. Ring-band stripes at 2.5 meter intervals for tap-in.							
 **RG-6/U Type**	**9248†** 30V 60C	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	15.6 16.4 30.3 33.3	18 (Solid) .037 bare copper 7.5Ω/M' 24.6Ω/km	Duofoil + 61% tinned copper braid 5.2Ω/M' 17.1Ω/km 100% shield coverage	Cellular Polyethylene .180	4.57	.270	6.86	75	78%	17.3	56.8
							Black PVC jacket. 100% Sweep Tested							

Transceiver/Drop Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths ft.	Standard Lengths m	Std. Unit Lbs. ea.	Nom. D.C.R. Conductor	Nom. D.C.R. Shield	Nominal O.D. Inch	Nominal O.D. mm	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance * pF/ft.	Nominal Capacitance * pF/m	Nominal Capacitance ** pF/ft.	Nominal Capacitance ** pF/m	††6 dbv Length Limit in Thnds. of ft.

Product Description

Tinned copper, polyethylene insulated, twisted pairs, each pair individually shielded with Beldfoil aluminum-polyester shield (aluminum foil out), 20 AWG stranded tinned copper drain wire, 94% coverage tinned copper braid overall, blue PVC jacket.

 Z-Fold **Ethernet™▲** 2919 30V 80C	**9891†**	4	100 500 1000	30.5 152.4 304.8	10.1 47.2 92.4	3 Pair 22 (7x30) 14.7Ω/M' 48.2Ω/km 1 pair 20 (7x28) 9.3Ω/M' 30.4Ω/km	4 Beldfoil* shielded pairs + 94% braid overall 3.0Ω/M' 10.0Ω/km	.395	10.03	78 (3 Pairs)	66	19.7	64.6	34.7	113.8	2.6
							Blue PVC jacket.		(20 AWG pair PVC insulated) 22 AWG Pair Color Code: Black-White, Yellow-Orange, Blue-Green. 20 AWG Pair Color Code: Gray-Purple.						
	9892†	4	100 500 1000	30.5 152.4 304.8	11.0 56.3 110.6	20 (7x28) 9.3Ω/M' 30.4Ω/km	4 Beldfoil shielded pairs + 93% braid overall 3.0Ω/M' 10.0Ω/km	.450	11.43	78 (3 Pairs)	66	20.3	66.6	35.8	117.4	4.2
							Blue PVC jacket.		(One pair PVC insulated) PVC Pair Color Code: Black and Red Color Code: Black-White, Yellow-Orange, Blue-Green.						
	9893†	5	100 500 1000	30.5 152.4 304.8	15.9 78.5 153.9	20 (7x28) 9.3Ω/M' 30.4Ω/km	5 Beldfoil shielded pairs + 94% braid overall 3.0Ω/M' 10.0Ω/km	.510	12.95	78 (4 Pairs)	66	19.7	64.6	34.7	113.8	4.2
							Blue PVC jacket.		(One pair PVC insulated) PVC Pair Color Code: Black and Red Color Code: Black-White, Yellow-Orange, Blue-Green, Red-Brown.						
 Z-Fold **Ethernet™▲**	**New 9898** 2919 30V 80C	1 Triplet	100 500 1000	30.5 152.4 304.8	4.9 23.5 47.5	1 Triplet 24 (7x32) 24Ω/M' 78.7Ω/km	Beldfoil	.260	6.60	—	—	—	—	—	—	—
							Fawn Gray PVC Jacket		(Triplet is PVC insulated) Triplet Color Code: Black-Purple-Red. Color Code Pairs: Black-White, Yellow-Orange, Blue-Green.						
		3				3 Pair 28 (7x36) 64.9Ω/M' 213.0Ω/km	Beldfoil on pairs + Duofoil + 90% braid overall			78	66	19.7	64.6	34.7	113.8	6
										Product Description: Tinned copper, polypropylene insulated, three twisted pairs and one triplet, each individually shielded with Beldfoil aluminum-polyester shield, foil out. Overall Duofoil shield with 24 AWG stranded tinned copper drain wire, 90% coverage tinned copper braid overall, fawn gray PVC jacket.						

▲Xerox trademark
†Passes VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.
††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

Technical Information
Belden Color Code Charts

BELDEN

Color Code Chart No. 1

Cond.	Color
1st	Black
2nd	White
3rd	Red
4th	Green
5th	Brown
6th	Blue
7th	Orange
8th	Yellow
9th	Purple
10th	Gray
11th	Pink
12th	Tan

18 Gage conductors in cables 8446 through 8449 are Black and White.

Color Code Chart No. 2 and 2R (ICEA—Insulated Cable Engineers Association Standard)

2R—These cables feature a ring band striping. 2—These cables feature a spiral stripe.

Cond.	Color	Cond.	Color	Cond.	Color	Cond.	Color
1st	Black	14th	Green/White	27th	Blue/Black/White	40th	Red/White/Green
2nd	White	15th	Blue/White	28th	Black/Red/Green	41st	Green/White/Blue
3rd	Red	16th	Black/Red	29th	White/Red/Green	42nd	Orange/Red/Green
4th	Green	17th	White/Red	30th	Red/Black/Green	43rd	Blue/Red/Green
5th	Orange	18th	Orange/Red	31st	Green/Black/Orange	44th	Black/White/Blue
6th	Blue	19th	Blue/Red	32nd	Orange/Black/Green	45th	White/Black/Blue
7th	White/Black	20th	Red/Green	33rd	Blue/White/Orange	46th	Red/White/Blue
8th	Red/Black	21st	Orange/Green	34th	Black/White/Orange	47th	Green/Orange/Red
9th	Green/Black	22nd	Black/White/Red	35th	White/Red/Orange	48th	Orange/Red/Blue
10th	Orange/Black	23rd	White/Black/Red	36th	Orange/White/Blue	49th	Blue/Red/Orange
11th	Blue/Black	24th	Red/Black/White	37th	White/Red/Blue	50th	Black/Orange/Red
12th	Black/White	25th	Green/Black/White	38th	Black/White/Green		
13th	Red/White	26th	Orange/Black/White	39th	White/Black/Green		

Color Code Chart No. 3 for Paired Cables (Belden Standard)

Pair No.	Color Combination	Pair No.	Color Combination	Pair No.	Color Combination	Pair No.	Color Combination
1	Black paired with Red	11	Red paired with Yellow	21	White paired with Brown	31	Purple paired with White
2	Black paired with White	12	Red paired with Brown	22	White paired with Orange	32	Purple paired with Dark Green
3	Black paired with Green	13	Red paired with Orange	23	Blue paired with Yellow	33	Purple paired with Light Blue
4	Black paired with Blue	14	Green paired with White	24	Blue paired with Brown	34	Purple paired with Yellow
5	Black paired with Yellow	15	Green paired with Blue	25	Blue paired with Orange	35	Purple paired with Brown
6	Black paired with Brown	16	Green paired with Yellow	26	Brown paired with Yellow	36	Purple paired with Black
7	Black paired with Orange	17	Green paired with Brown	27	Brown paired with Orange	37	Gray paired with White
8	Red paired with White	18	Green paired with Orange	28	Orange paired with Yellow		
9	Red paired with Green	19	White paired with Blue	29	Purple paired with Orange		
10	Red paired with Blue	20	White paired with Yellow	30	Purple paired with Red		

Color Code Chart No. 4 for Paired Cables

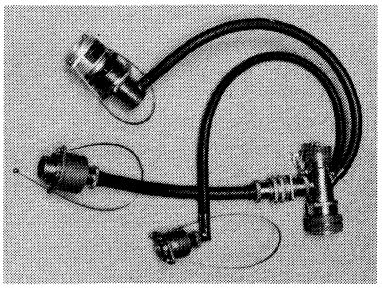
Pair No.	Color	Pair No.	Color	Pair No.	Color	Pair No.	Color	Pair No.	Color
1st	White/Blue	6th	Red/Blue	11th	Black/Blue	16th	Yellow/Blue	21st	Violet/Blue
2nd	White/Orange	7th	Red/Orange	12th	Black/Orange	17th	Yellow/Orange	22nd	Violet/Orange
3rd	White/Green	8th	Red/Green	13th	Black/Green	18th	Yellow/Green	23rd	Violet/Green
4th	White/Brown	9th	Red/Brown	14th	Black/Brown	19th	Yellow/Brown	24th	Violet/Brown
5th	White/Slate	10th	Red/Slate	15th	Black/Slate	20th	Yellow/Slate	25th	Violet/Slate

Color Code Chart No. 5 for Paired Cables (Western Electric Standard)

Pair No.	Color Combination	Pair No.	Color Combination	Pair No.	Color Combination	Pair No.	Color Combination	Pair No.	Color Combination
1	White–Blue Stripe Blue–White Stripe	6	Red–Blue Stripe Blue–Red Stripe	11	Black–Blue Stripe Blue–Black Stripe	16	Yellow–Blue Stripe Blue–Yellow Stripe	21	Purple–Blue Stripe Blue–Purple Stripe
2	White–Orange Stripe Orange–White Stripe	7	Red–Orange Stripe Orange–Red Stripe	12	Black–Orange Stripe Orange–Black Stripe	17	Yellow–Orange Stripe Orange–Yellow Stripe	22	Purple–Orange Stripe Orange–Purple Stripe
3	White–Green Stripe Green–White Stripe	8	Red–Green Stripe Green–Red Stripe	13	Black–Green Stripe Green–Black Stripe	18	Yellow–Green Stripe Green–Yellow Stripe	23	Purple–Green Stripe Green–Purple Stripe
4	White–Brown Stripe Brown–White Stripe	9	Red–Brown Stripe Brown–Red Stripe	14	Black–Brown Stripe Brown–Black Stripe	19	Yellow–Brown Stripe Brown–Yellow Stripe	24	Purple–Brown Stripe Brown–Purple Stripe
5	White–Gray Stripe Gray–White Stripe	10	Red–Gray Stripe Gray–Red Stripe	15	Black–Gray Stripe Gray–Black Stripe	20	Yellow–Gray Stripe Gray–Yellow Stripe	25	Purple–Gray Stripe Gray–Purple Stripe

Bi-LINK™ Cable System

Custom designed cable systems for special applications



If you're looking for electronic interconnecting components of the highest quality and value; if you need conduit and cable assemblies that will provide trouble-free service in any environment and shield against electromagnetic interferences; if you have unique requirements that demand specially designed systems, components or connections; you really should look into the Breeze product lines and engineering capabilities.

Interconnection systems and assemblies custom designed for the system they serve and shielded against EMI, EMP, nuclear radiation, compromising emanations (TEMPEST), mechanical shock and hostile environments are our specialty. We also design and manufacture many items that are available "off-the-shelf". Our connector products conform to all military, NASA and government specifications.

We have produced the interconnection systems on military and commercial vehicles from spacecraft to submarines . . . Our products serve communications systems, data processing and information systems, control centers . . . virtually any situation that calls for the transfer of electronic signals through wires.

Breeze-Illinois provides fast service for our customers through a comprehensive network of sales representatives. These local reps are backed up by an experienced design engineering staff at Breeze that can assist in the design and development of the interconnection product that best fills your needs, whether it is a single, off-the-shelf connector or a complete cabling system.

Breeze-Illinois is now a part of the newly formed **Electronics Division** of **Trans-Technology Corporation,** contributing 60 years experience to this group of companies that design and manufacture a broad range of electronic interconnection components and devices.

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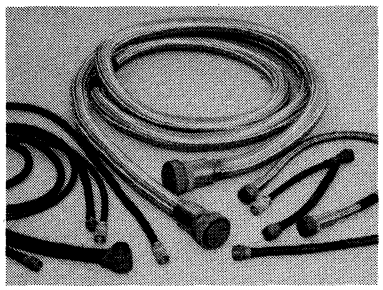
Bi-SHIELD™ Cable Assemblies

Custom Designed Interconnector Assemblies for Every Application

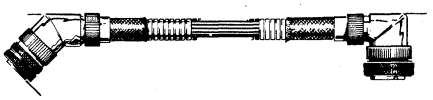




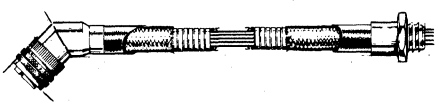
Bi-SHIELD 100 Series
For cost effective, light weight, service flexing applications.



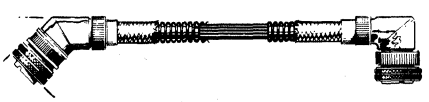
Bi-SHIELD 200 Series
Bi-SHIELD 200 series. Environmental protected cables through molded and blown on elastomer jackets or extruded jackets.



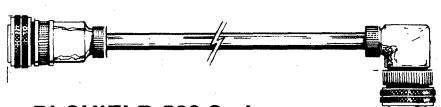
Bi-SHIELD 300 Series (301)
Repairable cables protected with Bi-PRO metallic convoluted conduit for high shielding levels.



Bi-SHIELD 300 Series (302)
Cables protected with Bi-PRO metallic convoluted conduit for high shielding levels and environmental protection.



Bi-SHIELD 400 Series
Repairable cables protected with Bi-PRO non-metallic conduit for good environmental protection.

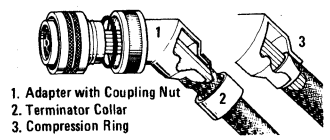


Bi-SHIELD 500 Series
Cables constructed from commercial bulk cable and state of the art backshell adapters.

Bi-SHELL™ Cable Terminations

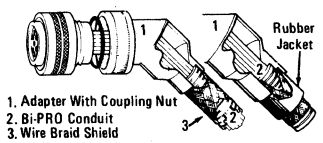
Superior Backshell Designs As Versatile as They are Varied





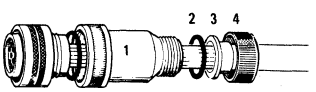
1. Adapter with Coupling Nut
2. Terminator Collar
3. Compression Ring

Bi-SHELL 10/11
Designed for flexible, hermetically sealed conduit innercores.



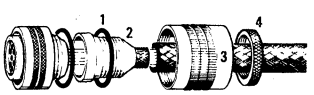
1. Adapter With Coupling Nut
2. Bi-PRO Conduit
3. Wire Braid Shield

Bi-SHELL 20/21
A 360 degree braid terminating method for metallic braided wire bundles of single or multiple layers.



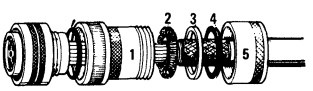
1. Adapter with Coupling nut
2. Environmental Seal*
3. Ferrule
4. Coupling Nut

Bi-SHELL 355/540
A threaded backshell/adaptor for modular conduit cable assemblies.



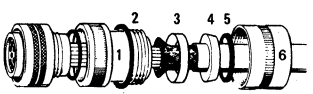
1. Environmental Seals*
2. Adapter Terminator
3. Adapter Barrel
4. Locking Ring

Bi-SHELL 50
Field installable and serviceable backshell designed for use in conjunction with shielded (braided) wire bundles.



1. Adapter
2. Compressible Contact Media
3. Collar
4. Environmental Seal*
5. Nut

Bi-SHELL 60
Field installable and serviceable backshell designed to be easily removed and reassembled.



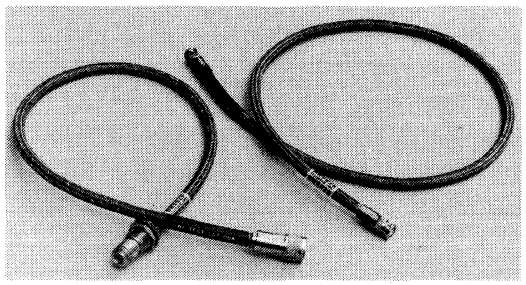
1. Adapter
2. Env Seal*
3. Collar
4. Grommet
5. Washer
6. Nut

Bi-SHELL 70 - 80
This protected adaptor interfaces commercial cable to connectors providing both EMI and environmental protection.

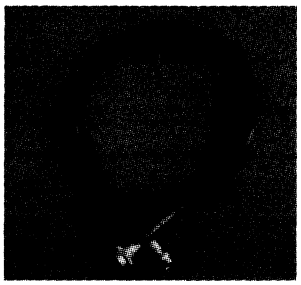
Bi-PRO™ Conduit

Flexible wire-ways constructed of metallic or non-metallic convoluted conduit with a wire or fabric overbraid

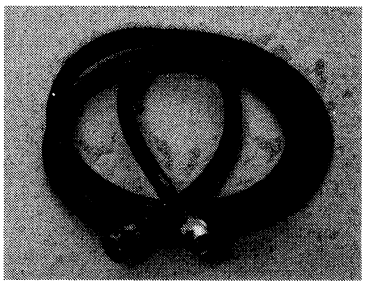
TransTechnology TE Electronics



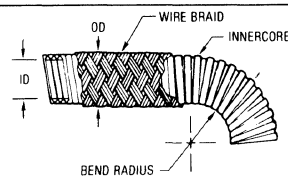
Bi-PRO 175 conduit with end Fittings



Bi-PRO 801 Cable



Elastomer Jacketed Bi-PRO cable



Bi-PRO 175

Bi-PRO 175 is a hermetically sealed, shielded, flexible wire-way consisting of a convoluted brass innercore covered by a bronze braid. The innercore is constructed of a brass strip, helically convoluted and soldered at every other convolute. It forms a flexible, hermetically sealed tube that is capable of withstanding pressures in excess of 1000 psi. Bi-PRO 175 complies with MIL-C-13909 and has withstood tests of over a half million flexing cycles without failure.

Bi-PRO 223

Bi-Pro 223 is a hermetically sealed, shielded flexible wire-way consisting of a nickle-iron alloy convoluted innercore covered with a 300 series stainless steel braid in accordance with AMS 5689. The innercore, provides optimum permeability, stability and saturation resistance, with construction and dimensions in accordance with MIL-C-13909.

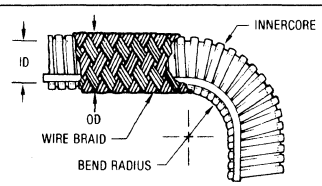
Bi-PRO 237

Bi-PRO 237 is a hermetically sealed, shielded flexible wire-way consisting of an 80% nickel, 20% iron alloy convoluted innercore covered with a 300 series stainless steel braid in accordance with MIL SPEC AMS5689. The innercore is annealed in a controlled atmosphere to provide permeability and shielding effectiveness exceeding performance specified under NAVSHIP specification 0967-283-5010.

Bi-PRO 242

Bi-PRO 242 is a hermetically sealed, shielded flexible wire-way consisting of a convoluted stainless steel innercore covered by a stainless steel braid in accordance with AMS5689. It combines high strength and flexibility with excellent corrosive resistance and high shielding capability. Construction is in accordance with MIL-C-13909.

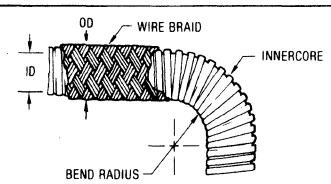
I.D.	O.D.[1]	O.D.[2]	BEND RADIUS	WT./FT.
0.187	.31	.43	1.25	.09
0.250	.40	.52	1.50	.11
0.375	.52	.64	1.75	.16
0.500	.65	.77	2.00	.20
0.625	.77	.89	2.50	.24
0.750	.90	1.02	2.78	.34
1.000	1.21	1.35	3.00	.46
1.250	1.46	1.60	3.38	.56
1.500	1.71	1.85	3.75	.69
1.750	1.96	2.10	4.50	.82
2.000	2.21	2.35	5.00	.95
2.500	2.71	2.85	6.00	1.23



Bi-PRO 001/101

Bi-PRO 001 is an all aluminum, non corrosive, flexible, convoluted conduit covered with an aluminum alloy wire braid. It features light weight and flexibility with a high level of crush resistance plus electro-magnetic shielding capability against electric fields. Bi-PRO 001 is manufactured in accordance with MIL specs. AN-WW-C561, Type 1 and MIL-C-6136, Type 1.

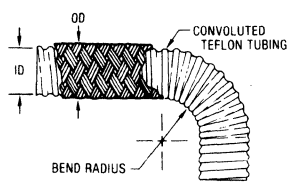
I.D.	O.D.[1]	O.D.[2]	BEND RADIUS	WT./FT.
0.187	.33	.45	2.25	.037
0.250	.39	.51	2.75	.048
0.375	.52	.64	3.75	.065
0.500	.64	.76	3.75	.084
0.625	.77	.89	3.75	.098
0.750	.92	1.04	4.25	.139
1.000	1.21	1.35	5.75	.193
1.250	1.46	1.58	8.00	.233
1.500	1.72	1.86	8.25	.278
1.750	1.97	2.11	9.00	.354
2.000	2.22	2.36	9.75	.431



Bi-PRO 198

Bi-PRO 198 is a flexible wire-way consisting of a helically convoluted and interlocked stainless steel innercore tube covered with a stainless steel braid. This extremely strong and durable interconnector protects against shock and impact, temperature up to 2000° F and has high corrosion resistance. It is manufactured dimensionally in accordance with Mil-C-6136.

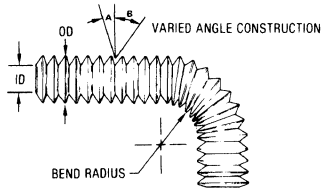
I.D.	O.D.[1]	O.D.[2]	BEND RADIUS	WT./FT.
0.187	.32	.44	2.25	.11
0.250	.39	.51	2.75	.14
0.375	.51	.63	3.75	.19
0.500	.64	.76	3.75	.24
0.625	.76	.88	3.75	.28
0.750	.92	1.04	4.25	.40
1.000	1.21	1.35	5.75	.56
1.250	1.46	1.60	8.00	.67
1.500	1.71	1.85	8.25	.80
1.750	1.96	2.10	9.00	1.02
2.000	2.22	2.36	9.75	1.25



Bi-PRO 801 - Bi-PRO 811

Bi-PRO 801 is a high quality extruded flourcarbon TFE Teflon tube. It is completely seamless, hermetically sealed, and helically convoluted for extra strength and flexibility. The convolutes are slightly angled to provide a minimum bend radius.

Bi-PRO 811 is a high quality, helically convoluted and hermetically sealed flourocarbon tube of TFE Teflon covered with a stainless steel overbraid that provides protection and prevents elongation. Braid is stainless steel in accordance with mil spec AMS 5889.



Bi-PRO 807 - Bi-PRO 827

Bi-PRO 807 is an annularly corrugated and hermetically sealed flourocarbon tube of seamless FEP Teflon with no braid. It is extremely flexible and has excellent crush resistance due to its patented deep groove and varied angle corrugated configuration. The corrugations also give the tubing the ability to be compressed or extended to varying lengths thus providing well-fitting interconnections and easy installation in tight places.

Bi-PRO 827 encorporates the same annularly corrugated and seamless Teflon Tubing as 807 covered with a stainless steel overbraid for additional protection and strength. Braid is in accordance with MIL SPEC AMS5689.

I.D.	O.D.[1]	O.D.[2]	BEND RADIUS	WT./FT.
0.187	.37	.49	.56	.03
0.250	.46	.58	.56	.05
0.375	.56	.68	.81	.06
0.500	.68	.80	1.13	.08
0.625	.81	.93	1.38	.10
0.750	.97	1.09	1.63	.14
1.000	1.29	1.43	2.63	.17
1.250	1.56	1.70	3.13	.19
1.500	1.89	2.03	4.13	.21

Breeze-Illinois / Trans Technology Electronics Division • 8823 North Industrial Rd., Peoria, IL 61615-1584 • Phone (309) 693-3322

BRIM ELECTRONICS, INC.
WIRE — CABLE — TUBING — HARDWARE
FAIR LAWN, N.J. 201-796-2886

BRIM CHV CORONA RESISTANT HIGH VOLTAGE TEFLON* CABLE

BRIM CHV eliminates the need for bulky, thick insulation, as used with silicone rubber high voltage cables, and provides high temperature resistance not available with polyethylene insulated high voltage cables, plus the added benefit of retarding and detering corona discharges. Even under severe stress, including mechanical strain, moisture, corona or chemical, or high temperature conditions, there is no cracking of the insulation. Cable construction meets and exceeds MIL-W-16878D.

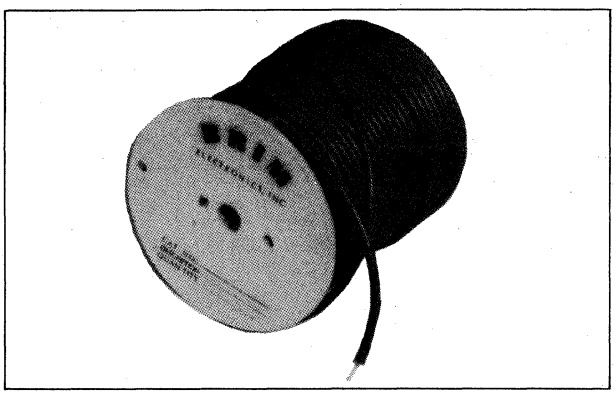
OPERATING VOLTAGE: Voltage capabilities are based on the thickness of the jacket.

OPERATING TEMPERATURE: −90°C to +250°C

DESCRIPTION: Silver plated copper conductor, per QQ-W-343, special corona retarding insulation, TFE tape wrap insulation, & a color coded jacket overall.

STD. COLORS: Red, White, Black, Green, Blue, Yellow, Orange, Brown, Purple, Gray. Stripped colors are also available.

STD. P-U: 250′, 500′, 1000′. * DuPont



Brim No.	AWG	Strand.	Volt Rating DC	Volt Rating AC	Nom. O.D.
CHV26-2	26	7/34	10000	2500	.074″
CHV26-2.5	26	7/34	12500	3800	.084″
CHV26-3	26	7/34	15000	4500	.094″
CHV26-3.5	26	7/34	17500	5400	.104″
CHV26-4	26	7/34	20000	6000	.114″
CHV26-5	26	7/34	25000	7500	.134″
CHV26-6.5	26	7/34	32500	10000	.164″
CHV26-8	26	7/34	40000	12000	.194″
CHV24-2	24	19/36	10000	2500	.080″
CHV24-2.5	24	19/36	12500	3800	.090″
CHV24-3	24	19/36	15000	4500	.100″
CHV24-3.5	24	19/36	17500	5400	.110″
CHV24-4	24	19/36	20000	6000	.120″
CHV24-5	24	19/36	25000	7500	.140″
CHV24-6.5	24	19/36	32500	10000	.170″
CHV24-8	24	19/36	40000	12000	.200″
CHV24-10	24	19/36	50000	15000	.240″
CHV22-2	22	19/34	10000	2500	.086″
CHV22-2.5	22	19/34	12500	3800	.096″
CHV22-3	22	19/34	15000	4500	.106″
CHV22-3.5	22	19/34	17500	5400	.116″
CHV22-4	22	19/34	20000	6000	.126″
CHV22-5	22	19/34	25000	7500	.146″
CHV22-6.5	22	19/34	32500	10000	.176″
CHV22-8	22	19/34	40000	12000	.206″
CHV22-10	22	19/34	50000	15000	.246″
CHV20-2	20	19/32	10000	2500	.094″
CHV20-2.5	20	19/32	12500	3800	.104″
CHV20-3	20	19/32	15000	4500	.114″
CHV20-3.5	20	19/32	17500	5400	.124″
CHV20-4	20	19/32	20000	6000	.134″
CHV20-5	20	19/32	25000	7500	.154″
CHV20-6.5	20	19/32	32500	10000	.184″
CHV20-8	20	19/32	40000	12000	.214″
CHV20-10	20	19/32	50000	15000	.254″
CHV18-2	18	19/30	10000	2500	.103″
CHV18-2.5	18	19/30	12500	3800	.113″
CHV18-3	18	19/30	15000	4500	.123″
CHV18-3.5	18	19/30	17500	5400	.133″
CHV18-4	18	19/30	20000	6000	.143″
CHV18-5	18	19/30	25000	7500	.163″
CHV18-6.5	18	19/30	32500	10000	.193″
CHV18-8	18	19/30	40000	12000	.223″
CHV18-10	18	19/30	50000	15000	.263″
CHV16-2	16	19/29	10000	2500	.109″
CHV16-2.5	16	19/29	12500	3800	.119″
CHV16-3	16	19/29	15000	4500	.129″
CHV16-3.5	16	19/29	17500	5400	.139″
CHV16-4	16	19/29	20000	6000	.149″
CHV16-5	16	19/29	25000	7500	.169″
CHV16-6.5	16	19/29	32500	10000	.199″
CHV16-8	16	19/29	40000	12000	.229″
CHV16-10	16	19/29	50000	15000	.269″
CHV14-2	14	19/27	10000	2500	.124″
CHV14-2.5	14	19/27	12500	3800	.134″
CHV14-3	14	19/27	15000	4500	.144″
CHV14-3.5	14	19/27	17500	5400	.154″
CHV14-4	14	19/27	20000	6000	.164″
CHV14-5	14	19/27	25000	7500	.184″
CHV14-6.5	14	19/27	32500	10000	.214″
CHV14-8	14	19/27	40000	12000	.244″
CHV14-10	14	19/27	50000	15000	.284″
CHV12-2	12	19/25	10000	2500	.139″
CHV12-2.5	12	19/25	12500	3800	.149″
CHV12-3	12	19/25	15000	4500	.159″
CHV12-3.5	12	19/25	17500	5400	.169″
CHV12-4	12	19/25	20000	6000	.179″
CHV12-5	12	19/25	25000	7500	.199″
CHV12-6.5	12	19/25	32500	10000	.229″
CHV12-8	12	19/25	40000	12000	.259″
CHV12-10	12	19/25	50000	15000	.299″
CHV10-2	10	37/26	10000	2500	.164″
CHV10-2.5	10	37/26	12500	3800	.174″

CONSTRUCTION VARIATIONS AVAILABLE TO ORDER.

BRIM HIGH TEMPERATURE LEAD WIRE

These small diameter high temperature lead wires allow unique constructions. The basic wire conforms to MIL-W-3861-stranded nickel plated copper; when shielded, nickel plated copper shielding is per MIL-N-46026A. Rated for 100 Volts RMS.*

Type 1: 800°F High Temperature Rating — Suitable for aircraft, or missile lead wire, heaters, furnaces, ovens and kilns for operations between 500°F to 800°F. Cond. insulation: Fiberglass braid, impregnated with a silicone varnish, over a stranded nickel plated conductor.

Type 2: 1500°F High Temperature Rating — Suitable as a radiation resistant aircraft, or missile lead wire, furnaces, ovens and kilns for operations between 800°F to 1500°F. Cond. insulation: Inorganic braid over a stranded nickel plated copper conductor.

Type 3: 2000°F High Temperature Rating — Suitable as a radiation resistant aircraft or missile lead wire for operations between 1500°F to 2000°F. Cond. Insulation: special formulated ceramic braid over a stranded nickel plated copper conductor, and a nickel plated braided shield overall.

* For dry locations.

UNSHIELDED



Brim No. Type 1	Brim No. Type 2	AWG	Strand.	Nom. O.D.	Std. P-U
2101/22	2102/22	22	19/34	.070″	500′, 1000′
2101/20	2102/20	20	19/32	.075″	500′, 1000′
2101/18	2102/18	18	19/30	.085″	500′, 1000′

SHIELDED



Brim No. Type 3	AWG	Strand.	Nom. O.D.	Std. P-U
2103/22	22	19/34	.108″	500′, 1000′
2103/20	20	19/32	.112″	500′, 1000′
2103/18	18	19/30	.122″	500′, 1000′

600 VRMS is available to order. **CONSTRUCTION VARIATIONS ARE AVAILABLE TO ORDER** WRITE FOR FREE CATALOG

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886

BRIM WIRE — CABLE — TUBING — HARDWARE ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

TFE & FEP TEFLON SHIELDED CABLES • BRIMCROM • BRIMFLYX • STAINLESS STEEL TUBULAR BRAID TEFLON IMPREGNATED BRAID OVER SHIELD PER MIL-W-16878 • SHIELDED RETRACTILE CORD



DESCRIPTION: One to five twisted conductors of Type E extruded TFE* insulation (.010″ wall), over a stranded silver plated copper conductor. If shielded, braided silver plated shield with a min. coverage of 90% over the conductor(s). When jacketed, either a fused double reversed TFE tape wrap jacket, a Teflon* impregnated fiberglass braided jacket, or an extruded FEP jacket. Cables are fungus, solvent, flame, acid, alkali, and oil resistant. Rated for 600 Volts. Stranding: 26 AWG — 7 strands, 24 AWG to 16 AWG — 19 strands. Color code: 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow. Jacket color: White. OPER. TEMP.: TFE −65°C to +250°C. FEP: −65°C to +200°C.

Brim No.	No. Cond.	AWG	Nom. O.D.	Brim No.	No. Cond.	AWG	Nom. O.D.
1751	1	26	.070″	1754/2	2	20	.154″
1751/2	2	26	.115″	1754/3	3	20	.163″
1752	1	24	.080″	1754/4	4	20	.179″
1752/2	2	24	.124″	1754/5	5	20	.195″
1752/3	3	24	.131″	1755	1	18	.105″
1752/4	4	24	.144″	1755/2	2	18	.172″
1752/5	5	24	.155″	1755/3	3	18	.183″
1753	1	22	.085″	1755/4	4	18	.200″
1753/2	2	22	.137″	1755/5	5	18	.222″
1753/3	3	22	.144″	1756	1	16	.114″
1753/4	4	22	.158″	1756/2	2	16	.187″
1753/5	5	22	.170″	1756/3	3	16	.200″
1754	1	20	.095″	1756/4	4	16	.220″

STD. P-U: 250′, 500′′, 1000′

TEFLON TAPE WRAP JACKET OVER SHIELD



Brim No.	No. Cond.	AWG	Nom. O.D.	Brim No.	No. Cond.	AWG	Nom. O.D.
1761	1	26	.076″	1764/2	2	20	.158″
1761/2	2	26	.119″	1764/3	3	20	.170″
1762	1	24	.084″	1764/4	4	20	.190″
1762/2	2	24	.128″	1764/5	5	20	.204″
1762/3	3	24	.135″	1765	1	18	.109″
1762/4	4	24	.155″	1765/2	2	18	.178″
1762/5	5	24	.162″	1765/3	3	18	.198″
1763	1	22	.090″	1765/4	4	18	.215″
1763/2	2	22	.142″	1765/5	5	18	.230″
1763/3	3	22	.150″	1766	1	16	.116″
1763/4	4	22	.163″	1766/2	2	16	.201″
1763/5	5	22	.183″	1766/3	3	16	.213″
1764	1	20	.099″	1766/4	4	16	.230″

STD. P-U: 250′, 500′′, 1000′

BRIMCROM™



MICROMINIATURE TEFLON* HOOK-UP WIRE

Conductors are silver plated copper dip coated with TFE Teflon* insulation. Rated for 300 Volts, −90°C to +260°C. BRIMCROM is highly flexible, chemically inert, weather resistant, nonflammable. Suitable wherever high temperatures and lack of space are absolutely critical, such as aircraft, missiles, medical, and microminiaturized electronic components, and system designs. STD. P-U: 1000′

Brim No.	AWG	Strand.	Nom. Wall	Nom. O.D.
1729/30	30	7/38	.0035″	.0188″
1729/32	32	7/40	.0030″	.0153″
1729/34	34	7/42	.0027″	.0129″
1729/36	36	7/44	.0020″	.0101″
1729/38	38	7/46	.0019″	.0086″

STD. COLORS: WHITE, RED, BLACK, GREEN. * DuPont
OTHER COLORS AVAILABLE TO ORDER. OTHER CONSTRUCTION AVAILABLE TO ORDER.

TWO AND THREE CONDUCTOR LAMINATED RIBBON CABLES USING BRIMCROM CONDUCTORS ARE AVAILABLE TO ORDER.

BRIMFLYX™ ULTRA-FLEXIBLE WIRE



DESCRIPTION: Soft bare copper conductor, insulated with a special flexible PVC formulation to minimize kinking & allow for ultra-low bending torque.

Designed for use where wires encounter continuous flexing, such as in data processing equipment, mercury thermostats, magnetic drums, and rotating servo platforms.
OPER. TEMP.: −40°C to +80°C

Brimflyx No.	AWG	Strand.	Nom. Wall	Max. Volt.	Nom. O.D.
1250/38	38	7/46	.005″	200	.015″
1250/36	36	7/44	.005″	200	.016″
1250/34	34	10/44	.005″	200	.018″
1250/32	32	18/44	.007″	300	.023″
1250/30	30	28/44	.010″	600	.031″
1250/29	29	51/46	.010″	600	.032″
1250/28	28	41/44	.010″	600	.035″
1250/27	27	48/44	.010″	600	.037″
1250/26	26	66/44	.010″	600	.042″
1250/24	24	105/44	.015″	1000	.058″
1250/22	22	168/44	.015″	1000	.064″
1250/20	20	259/44	.010″	600	.061″

STD. COLORS: WHITE, BLACK, RED, GREEN. STD. P-U: 1000 FT. OTHER COLORS ARE AVAILABLE TO ORDER.

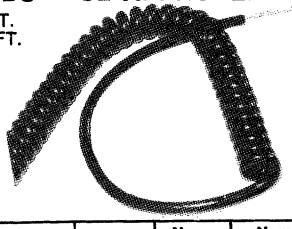
FEP TEFLON CABLES — SHIELDED — 600 VOLTS



Brim No.	No. Cond.	AWG	Strand.	Nom. O.D.	Std. P-U
1791	1	24	19/36	.087″	500′, 1000′
1791/2	2	24	19/36	.130″	500′, 1000′
1791/3	3	24	19/36	.136″	500′, 1000′
1791/4	4	24	19/36	.153″	500′, 1000′
1792	1	22	19/34	.092″	500′, 1000′
1792/2	2	22	19/34	.148″	500′, 1000′
1792/3	3	22	19/34	.155″	500′, 1000′
1792/4	4	22	19/34	.168″	500′, 1000′
1793	1	20	19/32	.100″	500′, 1000′
1793/2	2	20	19/32	.163″	500′, 1000′
1793/3	3	20	19/32	.172″	500′, 1000′
1793/4	4	20	19/32	.193″	500′, 1000′
1794	1	18	19/30	.110″	500′, 1000′
1794/2	2	18	19/30	.182″	500′, 1000′
1794/3	3	18	19/30	.200″	500′, 1000′
1794/4	4	18	19/30	.217″	500′, 1000′
1795	1	16	19/29	.118″	500′, 1000′
1795/2	2	16	19/29	.203″	500′, 1000′
1795/3	3	16	19/29	.215″	500′, 1000′
1795/4	4	16	19/29	.233″	500′, 1000′

OTHER COLOR CODES, JACKET COLORS OR CABLE CONSTRUCTIONS ARE AVAILABLE TO ORDER. * DuPont

BRIM OVERALL SHIELDED RETRACTILE COMMUNICATION CORDS — UL APPROVED



RETRACTED LENGTHS: 1, 2, 4 FT.
EXTENDED LENGTHS: 5, 10, 20 FT.
DESCRIPTION: 1 to 6 color coded conductors of 23 AWG 21/36 TC, spiral wrapped TC shield over the conductors, Black "BRYON" jacket overall. UL approved for 1 AMP & 120V max.
OPER. TEMP.: −20°C to +80°C.
STD. PKG.: 6

BRIM CAT. No. Retracted Lengths			No. Cond.	Nom. Coil O.D.	Nom. Cord O.D.
4 ft.	2 ft.	1 ft.			
135-4	135-2	135-1	1	5/8″	.175″
135/2-4	135/2-2	135/2-1	2	11/16″	.220″
135/3-4	135/3-2	135/3-1	3	3/4″	.230″
135/4-4	135/4-2	135/4-1	4	7/8″	.260″
135/5-4	135/5-2	135/5-1	5	1″	.285″
135/6-4	135/6-2	135/6-1	6	1 1/8″	.310″
135/7-4	135/7-2	135/7-1	7	1 1/4″	.340″

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886 WRITE FOR FREE CATALOG

BRIM WIRE — CABLE — TUBING — HARDWARE ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

UL & CSA POWER RECTRACTILE CORDS

RETRACTED LENGTHS: 1 ft., 2 ft., 3 ft., 4 ft. EXTENDED LENGTHS: 6 ft., 11 ft., 16 ft., 22 ft. BRIM retractile cords are long lasting, and useful where cords must change their length or position. Our cords will extend to approximately six times their retracted length, and will return to their original shape and length, when they are released. Retractile cords eliminate tangles, twists, knots. OPER. TEMP.: −20°C to +60°C. COND. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow. VOLTAGE RATING: SVO SJO SVT & SJT—300V; SO & ST—600V.

NEOPRENE

BRIM CAT NO. Retracted Lengths 4 Ft.	3 Ft.	2 Ft.	1 Ft.	No. Cond.	Size	Strand.	UL/CSA Type	Amps	Nom. Coil O.D.	Nom. Cord O.D.
151-4	151-3	151-2	151-1	2	18	41/34	SVO	7	7/8"	.255"
151/3-4	151/3-3	151/3-2	151/3-1	3	18	41/34	SVO	7	1"	.275"
152-4	152-3	152-2	152-1	2	18	41/34	SJO	7	1 3/16"	.315"
152/3-4	152/3-3	152/3-2	152/3-1	3	18	41/34	SJO	7	1 3/8"	.345"
152/4-4	152/4-3	152/4-2	152/4-1	4	18	41/34	SJO	5.6	1 7/16"	.380"
152/5-4	—	152/5-2	—	5	18	41/34	SJO	5.6	1 5/8"	.440"
152/7-4	—	152/7-2	—	7	18	41/34	SJO	5	1 7/8"	.500"
152/15-4	—	—	—	15	18	41/34	SVO	7	2 1/8"	.575"
156/3-4	156/3-3	156/3-2	156/3-1	3	18	41/34	SO	7	1 5/16"	.405"
156/4-4	156/4-3	156/4-2	156/4-1	4	18	41/34	SO	5.6	1 5/8"	.435"
156/10-4	156/10-3	156/10-2	156/10-1	10	18	41/34	SO	6	2 3/8"	.650"
153-4	153-3	153-2	153-1	2	16	65/34	SJO	10	1 3/8"	.355"
153/3-4	153/3-3	153/3-2	153/3-1	3	16	65/34	SJO	10	1 7/16"	.385"
153/4-4	153/4-3	153/4-2	153/4-1	4	16	65/34	SJO	8	1 1/2"	.445"
157/3-4	157/3-3	157/3-2	157/3-1	3	16	65/34	SO	10	1 13/16"	.470"
157/4-4	157/4-3	157/4-2	157/4-1	4	16	65/34	SO	8	1 7/8"	.500"
157/5-4	157/5-3	157/5-2	157/5-1	5	16	65/34	SO	5.6	2 1/8"	.550"
157/6-4	—	157/6-2	—	6	16	65/34	SO	8	2"	.545"
157/7-4	—	157/7-2	—	7	6/16	65/34	SO	8	2 1/4"	.600"
					1/14	41/30		12		
154-4	154-3	154-2	154-1	2	14	41/30	SO	15	2 1/8"	.535"
154/3-4	154/3-3	154/3-2	153/3-1	3	14	41/30	SO	15	2 1/8"	.560"
154/4-4	154/4-3	154/4-2	154/4-1	4	14	41/30	SO	12	2 1/4"	.605"
154/7-4	154/7-3	154/7-2	154/7-1	7	14	41/30	SO	10	2 7/8"	.720"
155/3-4	155/3-3	155/3-2	155/3-1	3	12	65/30	SO	20	2 3/8"	.635"
155/4-4	155/4-3	155/4-2	155/4-1	4	12	65/30	SO	16	2 7/16"	.675"
155/7-4	—	155/7-2	—	7	12	65/30	SO	16	2 5/8"	.775"
158/4-4	—	—	—	4	10	104/30	SO	20	2 3/4"	.745"

PLASTIC

165-4	165-3	165-2	165-1	2	18	41/34	SVT*	7	3/4"	.250"
165/3-4	165/3-3	165/3-2	165/3-1	3	18	41/34	SVT*	7	7/8"	.260"
166-4	166-3	166-2	166-1	2	18	41/34	SJT*	7	1"	.290"
166/3-4	166/3-3	166/3-2	166/3-1	3	18	41/34	SJT*	7	1 3/8"	.325"
166/4-4	166/4-3	166/4-2	166/4-1	4	18	41/34	SJT*	5.6	1 3/8"	.350"
168-4	168-3	168-2	168-1	2	18	41/34	ST*	7	1 3/8"	.350"
168/3/4	168/3-3	168/3-2	168/3-1	3	18	41/34	ST*	7	1 7/16"	.375"
168/4-4	168/4-3	168/4-2	168/4-1	4	18	41/34	ST*	5 6	1 5/8"	.400"
167-4	167-3	167-2	167-1	2	16	65/34	SJT*	10	1 1/8"	.310"
167/3-4	167/3-3	167/3-2	167/3-1	3	16	65/34	SJT*	10	1 3/8"	.350"
167/4-4	167/4-3	167/4-2	167/4-1	4	16	65/34	SJT*	8	1 5/8"	.410"
169-4	169-3	169-2	169-1	2	16	65/34	ST*	10	1 3/8"	.375"
169/3-4	169/3-3	169/3-2	169/3-1	3	16	65/34	ST*	10	1 5/8"	.390"
169/4-4	169/4-3	169/4-2	169/4-1	4	16	65/34	ST*	8	1 5/8"	.430"

STD. PKG.: 6
Other constructions available to order.

When UL Type show, cord is also CSA Approved.
* UL only



300V

UL APPROVED RETRACTILE POWER CORD SETS

RETRACTED: 18". EXTENDS TO APPX.: 9 ft.

SVO and SJO Neoprene jacketed cord sets with a molded plug on one end, other end, jacket stripped and cond. exposed for easy termination. For mobile office equipment and tools.
OPER. TEMP.: −20°C to +60°C. STD. PKG.: 6

Brim No.	No. Cond.	AWG	Strand.	UL Ty.	Coil O.D.	Cord O.D.
120/3	3	18	41/34	SVO	1"	.275"
121/3	3	18	41/34	SJO	1 3/8"	.345"
122/3	3	16	65/34	SJO	1 7/16"	.385"

COND. COLOR CODE: 1-Black, 2-White, 3-Green

BRIM MINIATURE COMMUNICATION CORDS - UL

RETRACTED: 1, 2 & 4 ft. EXTENDED: 5, 10 & 20 ft. Miniature in size. Suitable for compact equipment. All cond. 28 AWG 19/40 T.C. ½ AMP rating. Black "Bryon" jacket overall.† OPER. TEMP.: −20°C to +60°C. STD. PKG.: 6

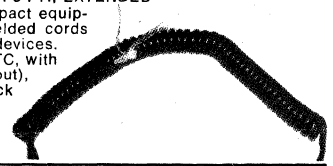
BRIM CAT. NO. Retracted Lengths 4 ft. +	2 ft.	1 ft. +	No. Cond.	AWG	Cond. Strand	Nom. Coil O.D.	Nom. Cord O.D.
118-4‡	118-2†‡	118-1‡	2	28	19/40	½"	.150"
118/3-4‡	118/3-2†‡	118/3-1‡	3	28	19/40	½"	.160"
119-4‡	119-2†‡	119-1‡	4	28	19/40	½"	.170"
124-4‡	125-2†‡	125-1‡	5	28	19/40	5/16"	.180"
125/6-4‡	125/6-2†‡	125/6-1‡	6	28	19/40	5/16"	.185"
125/7-4‡	125/7-2†‡	125/7-1‡	7	28	19/40	5/8"	.190"
126-4‡	126-2†‡	126-1‡	8	28	19/40	11/16"	.195"
—	127-2	—	9	28	19/40	11/16"	.200"
—	127/10-2	—	10	28	19/40	3/4"	.205"
—	127/11-2*	—	11	28	19/40	3/4"	.210"
—	127/12-2	—	12	28	19/40	3/4"	.215"
—	127/13-2*	—	13	28	19/40	3/4"	.220"
—	127/15-2*	—	15	28	19/40	7/8"	.240"
—	127/17-2*	—	17	28	19/40	7/8"	.260"

*STD PKG.: 12 † Also available in TPE insulation; cable O.D. slightly larger.
‡ PVC Constructions are UL approved.

BRIM MINIATURE SHIELDED COMMUNICATION CORDS

1 FT. RETRACTED FOR 5 FT., EXTENDED

Miniature in size. Suitable for compact equipment, such as FCC* required shielded cords for computers or other interfaced devices. All conductors are 28 AWG 19/40 TC, with an aluminum mylar foil shield (foil out), a spiral TC shield, & then a Black Byron VW-1 vinyl jacket overall. 18" & 2" straight ends, cut blunt. Long lasting.
OPER. TEMP.: −20° to +60°C



BRIM No.	Cord Length	No. of Cond.	AWG	Cond. Strand.	Coil O.D.	Cord O.D.
170/2-1	1 Ft.	2	28	19/40	19/32"	.160"
170/4-1*	1 Ft.	4	28	19/40	21/32"	.190"
170/5-1	1 Ft.	5	28	19/40	23/32"	.195"
170/6-1	1 Ft.	6	28	19/40	3/4"	.205"
170/7-1*	1 Ft.	7	28	19/40	25/32"	.210"
170/8-1	1 Ft.	8	28	19/40	13/16"	.220"
170/9-1	1 Ft.	9	28	19/40	7/8"	.230"
170/10-1*	1 Ft.	10	28	19/40	7/8"	.240"

MODULAR PLUGS ARE AVAILABLE FOR SOME OF THESE CABLES.
STD. PKG.: 25 * STD. PKG.: 6 * FCC DOCKET NO. 20780.

RETRACTILE COMMUNICATION CORDS

UL APPROVED

RETRACTED LENGTHS: 2, 3, 4 ft.
EXTENDED LENGTHS: 11, 16, and 22 ft. OPER. TEMP.: −20C to +80°C

DESCRIPTION: Cords are composed of multicond. 23 AWG 21/36 tinned soft copper for a longer flex life. Cords are jacketed in either TPR, or special vinyl-"Byron"-formulation, for a long service life. These cords are suitable for communication equipment, such as ham operations, head sets, radio equipment, telephone car carriers, etc. 300V working. 1 AMP carrying capacity. Nom. cond. resistance .022 ohms per linear foot, .185 ohms per retracted foot.
† Stocked in Bryon only. STD. PKG.: 6

BRIM CAT. NO. Retracted Lengths 4 Ft.	3 Ft.†	2 Ft.†	1 Ft.	No. Cond.	Nom. Coil O.D.	Nom. Cord O.D.
132-4	132-3	132-2	132-1	2	5/8"	.210"
132/3-4	132/3-3	132/3-2	132/3-1	3	3/4"	.220"
132/4-4	132/4-3	132/4-2	132/4-1	4	7/8"	.250"
132/5-4	132/5-3	132/5-2	132/5-1	5	1"	.275"
132/6-4	132/6-3	132/6-2	132/6-1	6	1 1/8"	.300"
132/7-4	132/7-3	132/7-2	132/7-1	7	1 3/16"	.310"
132/8-4	132/8-3	132/8-2	132/8-1	8	1 1/4"	.340"
132/10-4	132/10-3	132/10-2	132/10-1	10	1 3/8"	.380"
132/12-4	132/12-3	132/12-2	132/12-1	12	1 1/2"	.390"
132/15-4	132/15-3	132/15-2	132/15-1	15	1 5/8"	.400"

COND. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow, 8-Brown, 9-Wh/Blk., 10-Red/Blk., 11-Green/Blk., 12-Orange/Blk., 13-Blue/Blk., 14-Yel./Blk., 15-Red/Wh.

RETRACTILE TEST LEAD WIRE: 1 FT. & 2 FT.

Stretch these coiled test lead wire/cords repeatedly without fear of kinks. 1 ft. extends to appx. 6 ft., 2 ft. to appx. 12 ft. One cond. 20 AWG flexible stranded soft T.C., TPR insulation, for 1000V, 4 AMPS working. STD. COLORS: Black, Red. OPER. TEMP.: −20°C to +60°C.

Brim No.	Cord Lgth.	AWG	Strand.	Nom. Coil O.D.	Nom. Cond. O.D.
114T	12"	20	41/36	5/8"	.165"
115T	24"	20	41/36	5/8"	.165"

STD. PKG.: 6 PVC test lead wire available to order.

SHIELDED RETRACTILE COMMUNICATION CORDS

RETRACTED LENGTHS: 1, 2 and 4 ft.
EXTENDED LENGTHS: 6, 11 and 22 ft.

DESCRIPTION: Single and multi-cond. spiral shielded communication cables, jacketed in TPR or "Bryon" plastic. Shielded conductors are individually shielded. Shield can be pigtailed for soldering. Safe and reliable as a mike cord.
OPER. TEMP.: −20°C to +80°C.

BRIM CAT. NO. Retracted Lengths 4 Ft.	2 Ft.†	1 Ft.†	No. Cond.	Size	Strand.	Nom. Coil O.D.	Nom. Cord O.D.	Volt. Rating	Capacitance MMF/Ft. Linear	Capacitance MMF/Ft. Ret'rd
146-4	—	—	1	23	21/36	½"	.160"	300	56	440
143-4	143-2	143-1	3	2-23 23(S)	21/36	7/8"	.250"††	300	56	450
144-4	144-2	144-1	2	23(S)*	21/36	7/8"††	.250"††	300	56	450
145-4	145-2	145-1	4	2-23	21/36	1 1/8"††	.290"††	300	56	450
			4	2-23(S)*						

*Individual conductors are shielded and jacketed. † Stocked in Bryon only. STD. PKG.: 6
†† The nom. coil and cord. O.D.'s for TPR cables are slightly smaller.

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886 WRITE FOR FREE CATALOG

BRIM WIRE — CABLE — TUBING — HARDWARE
ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886
BRIM MINIATURE CABLES • COMMERCIAL RG59/U CABLE

BRIM COMMERCIAL RG 59/U CO-AX



DESCRIPTION: A type RG 59/U construction, composed of 22(1) bare Copperweld, .055″ wall of cellular Polyethylene dielectric, 4x28 AWG drain wires over an Aluminum Polypropylene tape shield, for 100% coverage, and a Black* PVC jacket overall. MAX. OPER. VOLTAGE: 500V RMS. Dielectric Strength: 1000V RMS. OPER. TEMP.: 80°C
STD. P-U: 1000′

ATTENUATION RATINGS FOR BC-59/U

83 MHz CH. 6	211 MHz CH. 13
2.3	4.0

BRIM No.	AWG	% of Shield	Nom. Imp.	Nom. Vel. of Prop.	Nom. Cap. Pf/ft.	Wall Thick.	Jck. Thick.	Nom. O.D.
BC-59/U	22(1)	100%	75 Ohms	81%	17	.058″	.042″	.242″

HI-FI STEREO CABLE



DESCRIPTION: Stranded tinned copper conductors, special soft PVC insulation, twisted, shielded or unshielded. Designed for low hum & noise pickup. Very flexible.
OPER. VOLTAGE: 200V OPER. TEMP.: −40°C to +80°C.

BRIM No.	Cond.	AWG	Strand.	Nom. Wall	Nom. O.D.
UNSHIELDED					
1542	2	32	7/40	.010″	.047″
1543	3	32	7/40	.010″	.053″
1544	4	32	7/40	.010″	.061″
SHIELDED					
1545	1	32	7/40	.010″	.040″
1546	2	32	7/40	.010″	.067″
1547	3	32	7/40	.010″	.073″
1548	4	32	7/40	.010″	.081″
1551*	2	32	7/40	.010″	.080″

STD. P-U: 500′, 1000′ * Individually shielded.
COLOR CODE: 1-White, 2-Red, 3-Black, 4-Green.

MINIATURE UNSHIELDED HI-FI & STEREO CABLE



DESCRIPTION: 2 to 4 conductors of MIL-W-16878D Type B, twisted, no jacket.
OPERATING VOLTAGE: 600V.
OPERATING TEMPERATURE: −55°C to +105°C.

BRIM No.	AWG	Cond.	Strand.	Wall	Nom. O.D.
1605/2	30	2	7/38	.010″	.058″
1605/3	30	3	7/38	.010″	.064″
1605/4	30	4	7/38	.010″	.072″

STD. P-U: 500′, 1000′. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green.

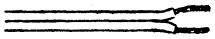
MINIATURE CABLES — SHIELDED, UNSHIELDED, JACKETED, UNJACKETED 105°C—600V.

DESCRIPTION: 2 to 4 conductors of MIL-W-16878D Type B, twisted, shielded or unshielded, jacketed or unjacketed.

BRIM No.	AWG	No. Cond.	Strand	Nom. Wall	Nom. O.D.
UNSHIELDED, CLEAR PVC JACKET					
1610/2	28	2	7/36	.010″	.090″
1610/3	28	3	7/36	.010″	.096″
1610/4	28	4	7/36	.010″	.105″
SHIELDED, UNJACKETED					
1615/2	28	2	7/36	.010″	.093″
1615/3	28	3	7/36	.010″	.099″
1615/4	28	4	7/36	.010″	.108″
SHIELDED, CLEAR PVC JACKET					
1618/2	28	2	7/36	.010″	.113″
1618/3	28	3	7/36	.010″	.119″
1618/4	28	4	7/36	.010″	.128″

STD. P-U: 500′, 1000′
COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green.

MINIATURE ZIP CORD

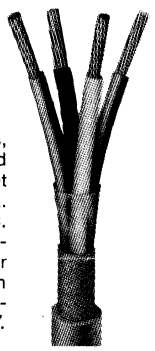


DESCRIPTION: 2 conductors of 28 AWG stranded tinned copper, insulated with 80°C PVC, extruded into a parallel or miniature zip cord. Polarity identification.

BRIM No.	AWG	Strand.	Cond.	Nom. O.D.	STD. P-U
1528	28	7/36	2	.040 x .082″	1000′
1529	29	16/40	2	.040 x .082″	1000′

STD. COLORS: White, Black.

MINIATURE SHIELDED CONTROL AND INSTRUMENTATION CABLES — 600V 105°C MIL-W-16878D TYPE B



DESCRIPTION: Stranded tinned copper conductors, .010″ wall PVC, cabled, mylar binder, braided tinned copper shield, 90% min. coverage, gray PVC jacket overall. All material pass UL VW-1 test. OPER. VOLT.: 600 Volts. OPER. TEMP.: −55°C to +105°C. PVC is resistant to acid, fungus, oils, moisture, solvents, flame. Used as an interconnecting cable for electronic equipment, control and instrumentation cable telemetry and remote control cable for sensitive recording instruments. STD. P-U: 500′, 1000′.

Brim No.	Conductor No.	Conductor AWG	Conductor Strand.	Nom. Wall	Nom. Jck.	Nom. O.D.
1202/2	2	B-28	7/36	.010″	.010″	.120″
1202/3	3	B-28	7/36	.010″	.012″	.130″
1202/4	4	B-28	7/36	.010″	.012″	.140″
1202/6	6	B-28	7/36	.010″	.015″	.170″
1202/8	8	B-28	7/36	.010″	.015″	.175″
1202/10	10	B-28	7/36	.010″	.018″	.210″
1202/12	12	B-28	7/36	.010″	.018″	.215″
1202/15	15	B-28	7/36	.010″	.020″	.230″
1202/20	20	B-28	7/36	.010″	.022″	.260″
1202/25	25	B-28	7/36	.010″	.025″	.270″
1202/30	30	B-28	7/36	.010″	.028″	.301″

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green, 5-Orange, 6-Lt. Blue, 7-Wh/Black, 8-Red/Black, 9-Green/Blk, 10-Orange/Blk, 11-Blue/Blk, 12-Black/Wh, 13-Red/Wh, 14-Green/Wh, 15-Blue/Wh, 16-Black/Red, 17-White/Red, 18-Orange/Red, 19-Blue/Red, 20-Red/Green, 21-Org./Green, 22-Blk/Wh/Red, 23-Wh/Blk/Red, 24-Red/Blk/Wh, 25-Grn/Blk/Wh, 26-Org/Blk/Wh, 27-Blu/Blk/Wh, 28-Blk/Red/Grn, 29-Wh/Red/Grn, 30-Red/Blk/Grn.

BRIM MINIFLYX™ SUBMINIATURE ULTRA-FLEXIBLE INSTRUMENTATION CABLES



DESCRIPTION: Ultra-flexible stranded bare copper conductors, .005″ wall of soft flexible PVC, braided shield, White .010″ soft flexible PVC jacket overall. Suitable as an instrumentation cable where Ultra-flexibility & subminiaturization are essential, in low voltage applications. For example: biomedical instruments, missiles, computer, miniature relays, disc drives, servo systems, recorders.
OPERATING TEMPERATURE: −40°C to +90°C.
OPERATING VOLTAGE: 200 Volts.

BRIM No.	No. Cond.	AWG	Strand.	Nom. Wall	Nom. Jck.	Nom. O.D.	Std. P-U
1210/2	2	30	40/46	.005″	.010″	.073″	1000′
1210/3	3	30	40/46	.005″	.010″	.076″	1000′
1210/4	4	30	40/46	.005″	.010″	.082″	1000′
1210/5	5	30	40/46	.005″	.010″	.088″	1000′
1211/2	2	32	65/50	.005″	.010″	.069″	1000′
1211/3	3	32	65/50	.005″	.010″	.072″	1000′
1211/4	4	32	65/50	.005″	.010″	.077″	1000′
1211/5	5	32	65/50	.005″	.010″	.083″	1000′
1212/2	2	34	40/50	.005″	.010″	.065″	1000′
1212/3	3	34	40/50	.005″	.010″	.068″	1000′
1212/4	4	34	40/50	.005″	.010″	.072″	1000′
1212/5	5	34	40/50	.005″	.010″	.078″	1000′
1213/2	2	36	25/50	.005″	.010″	.061″	1000′
1213/3	3	36	25/50	.005″	.010″	.063″	1000′
1213/4	4	36	25/50	.005″	.010″	.067″	1000′
1213/5	5	36	25/50	.005″	.010″	.072″	1000′
1214/2	2	38	16/50	.005″	.010″	.057″	1000′
1214/3	3	38	16/50	.005″	.010″	.059″	1000′
1214/4	4	38	16/50	.005″	.010″	.063″	1000′
1214/5	5	38	16/50	.005″	.010″	.067″	1000′

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow.

BRIM WIRE — CABLE — TUBING — HARDWARE
ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

BRAIDED TC SHIELDED CONTROL — INSTRUMENTATION — MICROPHONE CABLES

UL SHIELDED COMPUTER AND CONTROL CABLES

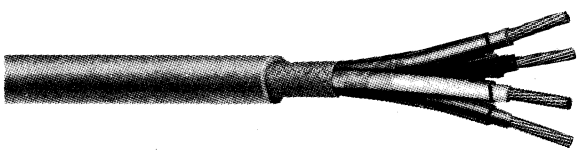


DESCRIPTION: Each conductor UL Type 1061, 24 AWG 7/32 T.C., UL VW-1. Conductors are paired, cabled, mylar wrap, braided tinned copper shield, chrome PVC jacket overall. Color coded. Shielding coverage a minimum of 85%. Cable meets UL Styles 2343 & 2344. Suitable as a control cable, computer cable, shielded audio cable. OPERATING VOLTAGE: 300V UL. OPERATING TEMPERATURE: −40°C to +80°C. STD. P-U: 500′, 1000′.

Brim No.	No. of Pairs	AWG	Strand.	Nom. Wall	Nom. Jack.	Nom. O.D.
1886/5	5	24	7/32	.009″	.062″	.355″
1886/7	7	24	7/32	.009″	.062″	.375″
1886/12	12	24	7/32	.009″	.062″	.460″
1886/15	15	24	7/32	.009″	.062″	.510″
1886/19	19	24	7/32	.009″	.062″	.530″
1886/27	27	24	7/32	.009″	.062″	.620″
1886/37	37	24	7/32	.009″	.062″	.690″
1886/48	48	24	7/32	.009″	.062″	.775″
1886/60	60	24	7/32	.009″	.062″	.845″

See color code for paired cables.
OTHER CONSTRUCTIONS AVAILABLE TO ORDER.

MIL-W-16878D TYPE BN SHIELDED CABLES

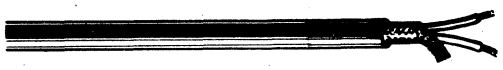


DESCRIPTION: One to four conductors, stranded tinned copper, Tyne BN insulation — .010″ wall PVC, clear nylon jacket — conductors are cabled, braided tinned copper shield, white PVC jacket overall. Cable components meet UL VW-1 vertical flame test requirements, and is resistant to oils, acids, solvents, alkalis, moisture, fungus. OPERATING VOLTAGE: 600V. OPERATING TEMPERATURE: −55°C to +105°C. STD. P-U: 500′, 1000′.

Brim No.	No. Cond.	AWG-Strand.	PVC Wall	Nylon Jack.	Nom. Jack.	Nom. O.D.
1450	1	26-7/34	.010″	.003″	.010″	.087″
1450/2	2	26-7/34	.010″	.003″	.014″	.138″
1450/3	3	26-7/34	.010″	.003″	.014″	.142″
1450/4	4	26-7/34	.010″	.003″	.016″	.162″
1451	1	24-19/36	.010″	.003″	.010″	.092″
1451/2	2	24-19/36	.010″	.003″	.016″	.155″
1451/3	3	24-19/36	.010″	.003″	.016″	.162″
1451/4	4	24-19/36	.010″	.003″	.017″	.172″
1452	1	22-19/34	.010″	.003″	.010″	.100″
1452/2	2	22-19/34	.010″	.003″	.016″	.170″
1452/3	3	22-19/34	.010″	.003″	.016″	.180″
1452/4	4	22-19/34	.010″	.003″	.019″	.194″
1453	1	20-19/32	.010″	.003″	.010″	.108″
1453/2	2	20-19/32	.010″	.003″	.019″	.190″
1453/3	3	20-19/32	.010″	.003″	.019″	.200″
1453/4	4	20-19/32	.010″	.003″	.021″	.216″
1454	1	18-19/30	.010″	.003″	.012″	.122″
1454/2	2	18-19/30	.010″	.003″	.021″	.210″
1454/3	3	18-19/30	.010″	.003″	.021″	.225″
1454/4	4	18-19/30	.010″	.003″	.023″	.250″
1455	1	16-19/29	.010″	.003″	.016″	.137″
1455/2	2	16-19/29	.010″	.003″	.023″	.236″
1455/3	3	16-19/29	.010″	.003″	.023″	.242″
1455/4	4	16-19/29	.010″	.003″	.025″	.267″
1456	1	14-19/27	.010″	.004″	.020″	.150″
1456/2	2	14-19/27	.010″	.004″	.027″	.266″

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green.

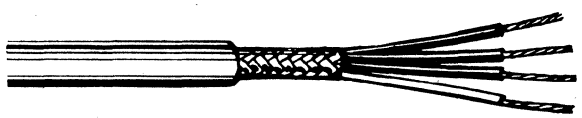
SHIELDED MICROPHONE CABLE



DESCRIPTION: 2 Cond. stranded tinned copper .016″ wall polyethylene, fillers, mylar wrap, tinned copper shield, .030″ Hi-gloss Black PVC jacket overall. OPER. VOLT.: 1000V.
COLOR CODE: 1-Black, 2-Red.
OPERATING TEMPERATURE: −20°C to +80°C. Nom. Cap./ft. between one cond. remaining cond. connected to shield: 1884/24—38MMF, 1884/22 — 31MMF

BRIM No.	No. Cond.	AWG-Strand	Shield	Nom. Wall	Nom. O.D.
1884/24	2	24-10/34	Spiral	.016″	.190″
1884/22	2	22-16/34	Braid	.025″	.240″

MICROPHONE — REMOTE-CONTROL CABLE

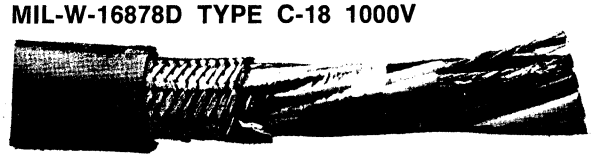


DESCRIPTION: Each conductor stranded TC .014″ wall polyethylene, cabled with fillers, mylar wrap, braided TC shield, chrome PVC jacket overall. OPER. VOLT.: 1000V.
OPERATING TEMPERATURE: −20°C to +80°C.

BRIM No.	No. Cond.	AWG	Strand	Nom. Wall	Nom. Jack.	Nom. O.D.
1883/2	2	20	26/34	.014″	.030″	.245″
1883/3	3	20	26/34	.014″	.035″	.250″
1883/4	4	20	26/34	.014″	.035″	.260″
1883/5	5	20	26/34	.014″	.035″	.275″
1883/6	6	20	26/34	.014″	.035″	.295″
1883/8	8	20	26/34	.014″	.035″	.325″
1883/10	10	20	26/34	.014″	.035″	.370″
1883/12	12	20	26/34	.014″	.035″	.380″
1883/15	15	20	26/34	.014″	.035″	.405″
1883/20	20	20	26/34	.014″	.035″	.445″

STD. P-U: 500′, 1000′

HEAVY DUTY SHIELDED CONTROL CABLES MIL-W-16878D TYPE C-18 1000V



DESCRIPTION: MIL-W-16878D Ty C-18, 19/30 TC conductors, twisted, mylar wrap braided tinned copper shield — 90% minimum coverage — chrome PVC jacket overall. Color coded. Cable resistant to acids, oils, moisture, solvents, alkalis, fungus. Cable meets UL VW-1 vertical flame test requirements. OPERATING VOLTAGE: 1000V. OPERATING TEMPERATURE: −55°C to +105°C. Suitable as an interconnecting cable for electronic equipment, instrumentation, control, telemetry data, and remote control of sensitive recording instruments.
STD. P-U: 500′, 1000′.

Brim No.	No. Cond.	AWG	Strand.	Nom. Wall	Nom. Jack.	Nom. O.D.
3019/5	5	C-18	19/30	.016″	.025″	.302″
3019/10	10	C-18	19/30	.016″	.035″	.407″
3019/15	15	C-18	19/30	.016″	.040″	.472″
3019/20	20	C-18	19/30	.016″	.045″	.531″
3019/30	30	C-18	19/30	.016″	.055″	.651″

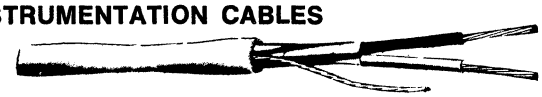
OTHER CONSTRUCTIONS AVAILABLE TO ORDER.

COLOR CODE FOR 3019 SERIES: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-White/Black, 8-Red/Black, 9-Green/Black, 10-Orange/Black, 11-Blue/Black, 12-Black/White, 13-Red/White, 14-Green/White, 15-Blue/White, 16-Black/Red, 17-White/Red, 18-Orange/Red, 19-Blue/Red, 20-Red/Green, 21-Orange/Green, 22-Black/White/Red, 23-White/Black/Red, 24-Red/Black/White, 25-Green/Black/White, 26-Orange/Black/White, 27-Blue/Black/White, 28-Black/Red/Green, 29-White/Red/Green, 30-Red/Black/Green.

BRIM WIRE — CABLE — TUBING — HARDWARE ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

ALUMINUM MYLAR FOIL SHIELDED CABLES

ALUMINUM MYLAR FOIL SHIELDED CABLE — INSTRUMENTATION CABLES

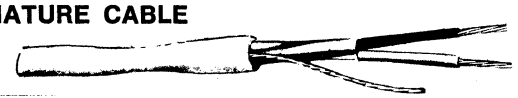


DESCRIPTION: Stranded TC conductors, polyethylene insulation, conductors twisted, an aluminum mylar foil shield, foil out, TC drain wire, gray PVC jacket overall. Color coded. Suitable as a light weight shielded instrumentation cable. Shield provides 100% coverage, and drain wire provides quick and easy grounding. OPERATING VOLTAGE: 400V.
OPERATING TEMPERATURE: −20°C to +60°C.
COLOR CODE 1-Black, 2-Red, 3-White, 4-Green.

BRIM No.	No. Cond.	AWG	Strand	Nom. Wall	Nom. Jck.	Nom. O.D.
1639	2	24	7/32	.015″	.020″	.155″
1639/3	3	24	7/32	.015″	.020″	.172″
1639/4	4	24	7/32	.015″	.020″	.195″
1640	2	22	7/30	.015″	.020″	.165″
1640/3	3	22	7/30	.015″	.020″	.182″
1640/4	4	22	7/30	.015″	.020″	.205″
1641	2	20	10/30	.015″	.020″	.184″
1641/3	3	20	10/30	.015″	.020″	.202″
1641/4	4	20	10/30	.015″	.020″	.221″
1642	2	18	16/30	.017″	.020″	.215″
1642/3	3	18	16/30	.017″	.020″	.233″
1642/4	4	18	16/30	.017″	.020″	.258″
1643	2	16	26/30	.017″	.020″	.250″
1643/3	3	16	26/30	.017″	.020″	.273″
1644	2	14	41/30	.017″	.025″	.295″
1644/3	3	14	41/30	.017″	.025″	.315″

STD. P-U: 500′, 1000′

ALUMINUM MYLAR FOIL SHIELDED CABLES — MINIATURE CABLE



DESCRIPTION: 2 conductors 22 AWG SOLID or STRANDED TC, .008″ wall of polypropylene, aluminum mylar foil shield, foil out, TC drain wire, chrome PVC jacket overall. Suitable for miniature instrumentation.
OPERATING VOLTAGE: 200V.
OPERATING TEMPERATURE: −40°C to +105°C.
COLOR CODE: 1-Red, 2-Black, 3-White, 4-Green.

BRIM No.	No. Cond.	AWG	Strand	Nom. Wall	Nom. Jck.	Nom. O.D.
1636	2	22	1	.008″	.018″	.117″
1637	2	22	7/30	.008″	.020″	.134″
1637/2*	4	22	7/30	.008″	.020″	.165″

STD. P-U: 500′, 1000′
* Common drain wire, and common axis.

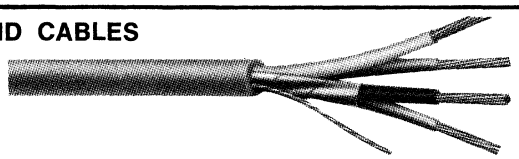
MULTIPLE PAIRED COMMUNICATION CABLES

DESCRIPTION: 22 AWG SOLID TC conductors, .008″ wall polypropylene, or .010″ wall PVC, color coded, conductors are twisted into pairs, the pairs are cabled, an aluminum mylar foil shield over all pairs, foil out, a stranded TC drain wire, chrome PVC jacket overall. Suitable for communication telephone and sound systems, control and instrumentation cable. OPERATING VOLTAGE: 200V. OPERATING TEMPERATURE: −40°C to +105°C.

BRIM NO.	NO. PAIRS	AWG	INSULA.	NOM. WALL	NOM. JCK.	NOM. O.D.
1633/38	38	22-1	Polyprop.	.008″	.045″	.575″
1633/51	51	22-1	PVC	.010″	.050″	.696″

STD. P-U: 500′, 1000′ **SEE FIGURE 1**

SOUND CABLES



DESCRIPTION: Four conductors, stranded TC, .009″ wall polypropylene, two conductors inside an aluminum mylar foil shield, foil out, a stranded TC drain wire and two conductors outside of shield, chrome PVC jacket overall. Polypropylene insulation is used because of its mechanical toughness and excellent high frequency properties. OPERATING VOLTAGE: 300V. OPERATING TEMPERATURE: −40°C to +105°C. COLOR CODE: Shielded: 1-Black, 2-Red. Unshielded: 3-Green, 4-White.

Brim No.	No. Cond.	AWG/ Strand.	No. Shld.	Nom. Wall	Nom. Jck.	Nom. O.D.
1620/4	4	20-7/28	2	.009″	.020″	.185″
1622/4	4	22-7/30	2	.009″	.020″	.167″
1624/4	4	24-7/32	2	.009″	.020″	.150″

STD. P-U: 500′, 1000′.

ALUMINUM MYLAR FOIL SHIELDED CABLES

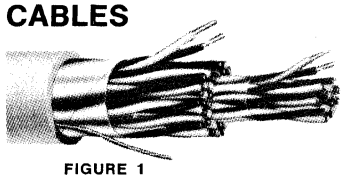


FIGURE 1

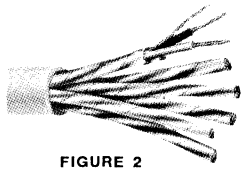


FIGURE 2

INDIVIDUALLY SHIELDED PAIRS — 22 and 18 AWG — POLYETHYLENE

DESCRIPTION: 22 AWG 7/30 TC or 18 AWG 16/30 TC, wall of polyethylene insulated conductors, conductors are twisted into pairs, an aluminum mylar foil shield with a stranded TC drain wire over each pair, the shielded pairs are cabled, chrome PVC jacket overall. Color coded. Nom. Cap. between conductors: 25PF/Ft. Nom. Cap. between one conductor and remaining conductor connected to shield: 45PF/Ft. Suitable for audio, R.F. data and pulse applications requiring superior circuit isolation.
OPERATING VOLTAGE: 300V.
OPERATING TEMPERATURE: −20°C to +60°C.

22 AWG 7/30

Brim No.	No. Pairs	No. Cond.	Nom. Wall	Nom. Jck.	Nom. O.D.
1630/3	3	6	.010″	.025″	.255″
1630/6	6	12	.010″	.030″	.345″
1630/9	9	18	.010″	.035″	.410″
1630/11	11	22	.010″	.040″	.460″
1630/15	15	30	.010″	.045″	.535″
1630/19	19	38	.010″	.050″	.575″
1630/27	27	54	.010″	.055″	.690″

18 AWG 16/30

Brim No.	No. Pairs	No. Cond.	Nom. Wall	Nom. Jck.	Nom. O.D.
1632/3	3	6	.016″	.035″	.375″
1632/6	6	12	.016″	.045″	.555″
1632/9	9	19	.016″	.055″	.620″
1632/11	11	22	.016″	.060″	.745″
1632/15	15	30	.016″	.065″	.820″
1632/19	19	38	.016″	.075″	.870″
1632/27	27	54	.016″	.085″	.995″

STD. P-U: 500′, 1000′. CONSTRUCTION VARIATIONS TO ORDER.
SEE FIGURE 2

INDIVIDUALLY SHIELDED PAIRS — 22 AWG STRANDED — POLYPROPYLENE

DESCRIPTION: 22 AWG 7/30 TC conductors, .010″ wall polypropylene, conductors are twisted into pairs, pairs are cabled, an aluminum mylar foil shield with a stranded TC drain wire over each twisted pair, chrome PVC jacket overall. Jacket passes UL VW-1 vertical flame test. For audio, pulse, data, and RF applications requiring superior circuit isolation. Polypropylene is used for its mechanical toughness and high frequency properties. OPER. VOLT.: 300V. OPER. TEMP.:− 55°C to +105°C. STD. P-U: 500′, 1000′.

Brim No.	No. Pairs	No. Cond.	Strand.	Nom. Wall	Nom. Jck.	Nom. O.D.
1638/3	3	6	7/30	.010″	.025″	.250″
1638/6	6	12	7/30	.010″	.030″	.340″
1638/9	9	18	7/30	.010″	.035″	.405″
1638/11	11	22	7/30	.010″	.040″	.455″
1638/15	15	30	7/30	.010″	.045″	.530″
1638/19	19	38	7/30	.010″	.050″	.570″
1638/27	27	54	7/30	.010″	.055″	.685″

SEE FIGURE 2

INDIVIDUALLY SHIELDED PAIRS — 22 AWG SOLID

DESCRIPTION: 22 AWG SOLID T.C. conductors, .013″ wall PVC, conductors are twisted into pairs, an aluminum mylar foil shield with a TC drain wire over each pair, the pairs are cabled, chrome PVC jacket overall. Color coded. Suitable for audio, pulse, R.F., data applications requiring superior circuit isolation. OPER. VOLT.: 300V. OPERATING TEMPERATURE: −20°C to +60°C. **SEE FIGURE 2**

Brim No.	No. Pairs	No. Cond.	AWG/ Strand.	Nom. Wall	Nom. Jck.	Nom. O.D.
1635/3	3	6	22-1	.013″	.035″	.275″
1635/6	6	12	22-1	.013″	.037″	.395″
1635/9	9	18	22-1	.013″	.040″	.440″
1635/11	11	22	22-1	.013″	.040″	.485″
1635/15	15	30	22-1	.013″	.045″	.540″
1635/19	19	38	22-1	.013″	.055″	.660″
1635/27	27	54	22-1	.013″	.070″	.800″

STD. P-U: 500′, 1000′. CONSTRUCTION VARIATIONS TO ORDER.

BRIM

CONTROLLED IMPEDANCE CABLE — ELECTRONIC LACING CORDS & TAPES

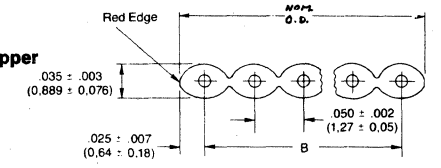
BRIM BRIBBON™ 100 OHM CONTROLLED IMPEDANCE CABLE — UL 2651

DESCRIPTION: Flexible .010" UL VW-1 PVC insulation over 28 AWG 7/36 TC conductors, laid parallel. All conductors are colored Gray, with one edge Red for polarity identification. MEETS UL 2651.

BRIBBON™ cables are designed for fast, mass termination to all standard .050" IDC connectors. Double contour allows reverse plane terminations. Easy conductor separation for circuit routing, and uniform breakouts for harness production.

BRIBBON™ cables replace bulky round twisted paired cables, providing easy routing & greater space utilization within confined chassis. Precise spacing for controlled electrical characteristics — controlled crosstalk thru precisely controlled impedance and capacitance.

CONDUCTORS:
28 AWG (7/36)
Stranded Tinned Copper



Dimensions and charactertiscs subject to change without notice.

OPER. TEMP.: 105°C — OPER. VOLTAGE: 300V — OPER. CURRENT: 1 AMP nom. — OPER. IMPEDANCE: 105 Ohms nom.* — OPER. CAPACITANCE: 15 pf/ft. nom.* OPER. PROPAGATION DELAY: 1.4 ns/ft. nom. INSULATION RESISTANCE: >1,000 mΩ/ft. — CONDUCTOR RESISTANCE: 67.5 Ohms/Mft.

BRIM No.	No. Cond.	AWG (Str.)	Cond. to Cond. Spacing	Nom. Wall	Nom. O.D.	Dim. B
2828/9	9	28 (7/36)	.050"	.010"	.035"x .450"	.400"
2828/10	10	28 (7/36)	.050"	.010"	.035"x .500"	.450"
2828/14	14	28 (7/36)	.050"	.010"	.035"x .700"	.650"
2828/15	15	28 (7/36)	.050"	.010"	.035"x .750"	.700"
2828/16	16	28 (7/36)	.050"	.010"	.035"x .800"	.750"
2828/20	20	28 (7/36)	.050"	.010"	.035"x1.000"	.950"
2828/24	24	28 (7/36)	.050"	.010"	.035"x1.200"	1.150"
2828/25	25	28 (7/36)	.050"	.010"	.035"x1.250"	1.200"
2828/26	26	28 (7/36)	.050"	.010"	.035"x1.300"	1.250"
2828/34	34	28 (7/36)	.050"	.010"	.035"x1.700"	1.650"
2828/37	37	28 (7/36)	.050"	.010"	.035"x1.850"	1.800"
2828/40	40	28 (7/36)	.050"	.010"	.035"x2.000"	1.950"
2828/50	50	28 (7/36)	.050"	.010"	.035"x2.500"	2.450"
2828/60	60	28 (7/36)	.050"	.010"	.035"x3.000"	2.950"
2828/64	64	28 (7/36)	.050"	.010"	.035"x3.200"	3.150"

STD. P-U: 100 ft.

* Measured Ground-Signal-Ground-Signal, etc., with all grounds common.

NYLON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE I FINISH B



Nylon flat braid, treated with a microcrystalline fungicidal wax finish. Stays flat, flexible, and creates a wider contact to distribute stress. Won't slip when tied. Resistant to fungus, flame, abrasion, and acids.

BRIM No.	Color	Size	Nom. Width	Nom. Thick.	Tensile Strength	Std. P-U
800	White	1	.200"	.016"	135	250 yards
800B	Black	1	.200"	.016"	135	250 yards
801	White	2	.110"	.015"	80	250 yards
801B	Black	2	.110"	.015"	80	250 yards
802	White	3	.085"	.014"	50	500 yards
802B	Black	3	.085"	.014"	50	500 yards
803	White	4	.060"	.012"	25	500 yards
803B	Black	4	.060"	.012"	25	500 yards
804	White	5	.050"	.010"	15	500 yards
804B	Black	5	.050"	.010"	15	500 yards

DACRON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE II FINISH B



Dacron flat braid, treated with a microcrystalline fungicidal wax finish to help prevent slipping when tying knots, resists fungus and mildew. Won't cut or damage items being held together. Stays flat. Superior to nylon in resistance to acids, and elongation.

BRIM No.	Color	Size	Nom. Width	Nom. Thick.	Tensile Strength	Std. P-U
819	White	2	.110"	.015"	80#	250 yards
819B	Black	2	.110"	.015"	80#	250 yards
820	White	3	.085"	.014"	50#	500 yards
820B	Black	3	.085"	.014"	50#	500 yards
821	White	4	.060"	.012"	25#	500 yards
821B	Black	4	.060"	.012"	25#	500 yards
822	White	5	.050"	.010"	15#	500 yards
822B	Black	5	.050"	.010"	15#	500 yards

TEFLON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE III FINISH A



Hazardous vapors above 400°F (204°C). OPERATING TEMPERATURE: −100°F to +450°F. Highly resistant to fluids, fuels and chemicals. Won't outgas under critical vacuum conditions.

BRIM No.	Color	Size	Nom. Width	Nom. Thick.	Tensile Strength	Std. P-U
808	Brown	2	.120"	.011"	30#	250 yards
809	Brown	4	.065"	.011"	15#	500 yards

TEFLON FIBERGLASS FLAT BRAIDED LACING TAPE — MIL-T-43435 TYPE IV



OPERATING TEMPERATURE: −103°F to +800°F FINISH D. Teflon impregnated fiberglass braided flat, gives high temperature performance, and strength. Stays flat. Teflon finish adds strength and abrasion protection. Will not cut or damage item tied.

BRIM No.	Color	Size	Nom. Width	Nom. Thick.	Tensile Strength	Yds./ Tube
805	White	1	.225"	.016"	200#	250
806	White	2	.110"	.016"	100#	250
807	White	3	.085"	.016"	75#	500

ROUND TWISTED NYLON LACING TAPE MIL-T-713D TYPE P



Round twisted nylon, treated with a microcrystalline fungicidal wax to resist mildew, fungus, and help in tying. OPERATING TEMPERATURE: −67°F to +250°F.

P-U: 1 # tubes.

BRIM No.	Color	Size	Tensile Strength	Nom. O.D.	Yds/ Tube
810	White	1	70#	.039"	550
810B	Black	1	70#	.039"	550
811	White	2	48#	.029"	750
811B	Black	2	48#	.029"	750
812	White	3	32#	.025"	1100
812B	Black	3	32#	.025"	1100
813	White	—	20#	.020"	2400
813B	Black	—	20#	.020"	2400

ROUND TWISTED LINEN LACING CORD

Mfg. from pure flax and treated with a microcrystalline fungicidal wax finish to resist fungus, mildew, and aid in tying. MIL-T-713E TyN. OTHER SIZES AND FINISHES ARE AVAILABLE TO ORDER. P-U: 1# tubes.

BRIM No. Natural	Black	Class	Ply	Nom. O.D.	Tensile Strength	Yds./ Tube
814	814B	—	4	.036"	22#	850
815	815B	3	6	.044"	32#	600
816	816B	2	8	.051"	48#	450
817	817B	—	9	.054"	56#	400
818	818B	1	12	.063"	70#	300

BRIM

FLAT BRAIDED TINNED COPPER SHIELDING — TUBULAR BRAID PER QQ-B-575A

FLAT BRAIDED TINNED COPPER

TINNED COPPER FLAT shielded braid, woven then rolled flat. Conductors are annealed for flexibility. Used as grounding cable, bonding strap for aircrafts, marine equipment, vehicles, etc., to eliminate ignition interference. Easily slides over wire and cables. Also used as a high current conductor at low voltages.

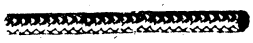


BRIM No.	Construction	Flattened I.D.	Flattened O.D.	Appx. AWG Equiv.	Nom. CMA	Current Carrying Cap.* Amps	Std. P-U	BRIM No.	Construction	Flattened I.D.	Flattened O.D.	Appx. AWG Equiv.	Nom. CMA	Current Carrying Cap.* Amps	Std. P-U
1110-1/32	12x 2 of #36	1/32"	3/64"	#22	600	7	100',1000'	1110-3/4	48x11 of #36	3/4"	13/16"	# 9	13200	62	100', 500'
1110-3/64	12x 2 of #36	3/64"	1/16"	#22	600	7	100',1000'	1110-25/32	48x19 of #36	25/32"	27/32"	# 7	22800	88	100', 250'
1110-1/16	16x 3 of #36	1/16"	5/64"	#19	1200	11	100',1000'	1110-1	48x19 of #36	1"	1 1/16"	# 7	22800	88	100', 250'
1110-3/32	16x 3 of #36	3/32"	1/8"	#17	1800	11	100',1000'	1110-1-3/8	48x19 of #36	1 3/8"	1 7/16"	# 7	22800	88	50', 100'
1110-1/8	24x 5 of #36	1/8"	5/32"	#15	3000	25	100',1000'	1110-1-1/2	48x19 of #36	1 1/2"	1 5/8"	# 7	22800	88	50', 100'
1110-3/16	24x 5 of #36	3/16"	7/32"	#15	3000	25	100',1000'	1110-1-3/4	48x27 of #30	1 3/4"	1 7/8"	#00	129600	230	50', 100'
1110-1/4	24x 7 of #36	1/4"	9/32"	#14	4200	32	100',1000'	1110-2	48x32 of #30	2"	2 1/4"	#000	153600	270	50', 100'
1110-3/8	48x 4 of #36	1/8"	13/32"	#13	4800	35	100', 500'	1110-2-1/4	48x35 of #30	2 1/4"	2 1/2"	#000	168000	300	50', 100'
1110-1/2	48x 7 of #36	1/2"	17/32"	#11	8400	50	100', 500'	1110-2-1/2	48x45 of #30	2 1/2"	2 3/4"	#0000	216000	320	50', 100'
1110-5/8	48x 8 of #36	5/8"	23/32"	#10	9600	53	100', 500'	1110-3	48x64 of #30	3"	3 1/4"	300MCM	307200	430	50', 100'

* Values are based on copper in free air at 65°F — intended as a guide only.

TUBULAR BRAID PER QQ-B-575A

TINNED COPPER TUBULAR shielded braid mfg. round per MIL Spec. QQ-B-575A. Shielding coverage of 95% or more. Used in military or critical commercial applications where maximum shielding coverage is required against electrostatic interference. Also useful as grounding wire/cable, bonds, leads, flexible connectors, and protection against mechanical abrasion and stresses for wires/cables. Each wire is soft drawn tinned copper.

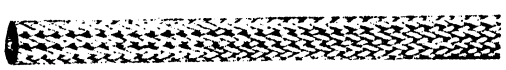


BRIM No.	Nom. I.D. Round	No. of Wires	Const.	Indiv. Wire AWG	Appx. AWG Equiv.	Nom. CMA	Current Carrying Cap.* Amps	Std. P-U	BRIM No.	Nom. I.D. Round	No. of Wires	Const.	Indiv. Wire AWG	Appx. AWG Equiv.	Nom. CMA	Current Carrying Cap.* Amps	Std. P-U
1100-1/32	1/32"	24	24-1	36	#22	600	7	100',1000'	1100-1/2	1/2"	528	48-11	36	# 9	13200	62	100', 500'
1100-1/16	1/16"	48	24-2	36	#19	1200	11	100',1000'	1100-9/16	9/16"	528	48-11	36	# 9	13200	62	100', 250'
1100-5/64	5/64"	72	24-3	36	#17	1800	16	100',1000'	1101-9/16	9/16"	480	48-10	30	# 3	48000	145	100', 250'
1100-7/64	7/64"	96	24-4	36	#16	2400	19	100',1000'	1100-21/32	21/32"	768	48-16	30	# 1	77180	190	100', 250'
1100-1/8	1/8"	120	24-5	36	#15	3000	25	100',1000'	1100-11/16	11/16"	720	48-15	36	# 8	18000	70	100', 250'
1100-5/32	5/32"	240	24-10	36	#12	6000	40	100',1000'	1100-25/32	25/32"	864	48-18	36	# 7	21600	88	100', 250'
1100-11/64	11/64"	168	24-7	36	#14	4200	32	100',1000'	1100-13/16	13/16"	864	48-18	36	# 7	21600	88	100', 250'
1100-3/16	3/16"	192	24-8	36	#13	4800	33	100',1000'	1100-7/8	7/8"	336	48-7	30	# 5	33600	100	50', 100'
1100-13/64	13/64"	312	24-13	36	#11	7800	46	100',1000'	1100-1	1"	384	48-8	30	# 4	38400	120	50', 100'
1100-1/4	1/4"	384	24-16	36	#10	9600	53	100',1000'	1100-1-1/8	1 1/8"	432	48-9	30	# 4	43200	130	50', 100'
1100-9/32	9/32"	120	24-5	30	# 9	12000	60	100', 500'	1100-1-1/4	1 1/4"	480	48-10	30	# 3	48000	145	50', 100'
1100-3/8	3/8"	384	48-8	36	#10	9600	53	100', 500'	1100-1-3/8	1 3/8"	528	48-11	30	# 3	52800	150	50', 100'
1100-7/16	7/16"	240	24-10	30	# 6	24000	90	100', 500'	1100-1-1/2	1 1/2"	576	48-12	30	# 3	57600	165	50', 100'

Larger sizes, and construction variations available to order. All of the above available in bare copper or silver plated copper.
* Values based on copper in free air at 65°F. OVAL & FLAT BRAID PER QQ-B-575 IS AVAILABLE TO ORDER.

STAINLESS STEEL TUBULAR

Shielded braid mfg. with type 304 soft drawn stainless steel. Used where higher temperatures and/or greater mechanical strength is needed. STD. P-U 100 feet



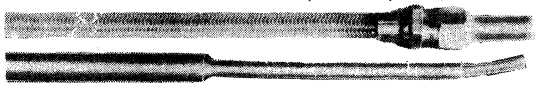
BRIM No.	Nom. I.D. When Rounded	Total No. of Wires	Construction	AWG of Indiv. Wires	AWG Equiv.	Nom. CMA	BRIM	Nom. I.D. When Rounded	Total No. of Wires	Construction	AWG of Indiv. Wires	AWG Equiv.	Nom. CMA
1150-1/32	1/32"	48	16-3	#36	#19	1200	1150-3/8	3/8"	336	48-7	#36	#11	8400
1150-1/16	1/16"	48	24-2	#36	#19	1200	1150-7/16	7/16"	384	48-8	#36	#10	9600
1150-5/64	5/64"	72	24-3	#36	#17	1800	1150-1/2	1/2"	432	48-9	#36	#10	10800
1150-7/64	7/64"	96	24-4	#36	#16	2400	1150-5/8	5/8"	528	48-11	#36	# 9	13200
1150-1/8	1/8"	120	24-5	#36	#15	3000	1150-3/4	3/4"	720	48-15	#36	# 8	18000
1150-3/16	3/16"	192	24-8	#36	#13	4800	1150-1	1"	336	48-7	#30	# 5	33600
1150-7/32	7/32"	240	24-10	#36	#12	6000	1150-1-1/2	1-1/2"	480	48-10	#30	# 3	48000
1150-1/4	1/4"	312	24-13	#36	#11	7800							

OTHER CONSTRUCTIONS AVAILABLE TO ORDER. OVAL BRAID — PER QQ-B-575 AVAILABLE TO ORDER.

BRIM WIRE — CABLE — TUBING — HARDWARE ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

HEAT SHRINKABLE TUBINGS: BRIFLON™ TEFLON • TEFZEL – SILICONE RUBBER TUBING

SH200, SH250, SH254 & SHTF tubings have excellent resistance to weathering, chemicals (oils, fuels, solvents, acids, alkalis, fluids), & fungus, are non-corrosive, low water absorption (.01%), will not burn nor support combustion, have hi dielectric strength (850V/MIL dry), low dielectric constant, & a very low coefficient of friction. Hi mechanical strength yet flexible. (Low temp. flexibility −67°C). Their excellent electrical characteristics remain stable throughout their electrical range. Longitudinal change with full shrinkage: FEP −15%: TFE −20%. Color: Natural (FEP-transparent; TFE-translucent).



SH200 (FEP) MIL-I-23053/11

SH200: an extruded modified FEP (Fluorinated-Ethylene-Propylene) Teflon* tubing, with a continuous Oper. Temp. of +205°C (400°F). SH200 completely shrinks at 350°F (partial shrinkage possible at 200°F). Shrinkage ratio — 1.3:1. It melts at 525-563°F so it can be used to encapsulate. Now many sensitive components, parts, devices, etc. can be protected with Teflon*. Fills void between the hi temp. of TFE, and low temp. of PVC and polyolefin tubings.

Briflon No.	Min. Exp. I.D.	Max. Rec. Dimen.** I.D	Max. Rec. Dimen.** Wall	±Wall Toler.
SH200-24	.031″	.027″	.008″	.002″
SH200-22	.036″	.032″	.008″	.002″
SH200-20	.045″	.039″	.008″	.002″
SH200-18	.060″	.049″	.008″	.002″
SH200-16	.075″	.061″	.009″	.002″
SH200-14	.092″	.072″	.009″	.002″
SH200-12	.115″	.089″	.009″	.002″
SH200-10	.141″	.114″	.010″	.003″
SH200-9	.158″	.124″	.010″	.003″
SH200-8	.180″	.143″	.010″	.003″
SH200-7	.197″	.158″	.011″	.004″
SH200-6	.225″	.180″	.011″	.004″
SH200-5	.248″	.198″	.011″	.004″
SH200-4	.290″	.226″	.011″	.004″
SH200-3	.310″	.249″	.011″	.004″
SH200-2	.365″	.280″	.012″	.004″
SH200-1	.400″	.311″	.012″	.004″
SH200-0	.440″	.349″	.012″	.004″
SH200-3/8″	.500″	.383″	.015″	.004″
SH200-7/16″	.580″	.448″	.020″	.004″
SH200-1/2″	.666″	.510″	.020″	.004″
SH200-5/8″	.830″	.637″	.025″	.004″
SH200-3/4″	1.000″	.764″	.030″	.004″
SH200-7/8″	1.170″	.891″	.035″	.004″
SH200-1″	1.330″	1.020″	.035″	.004″
SH200-1 1/4″	1.660″	1.270″	.035″	.004″
SH200-1 1/2″	2.000″	1.520″	.035″	.004″

STD. P-U: 100′, 4 foot minimum lengths. * DuPont.

** All dimensions are based on full recovery.

OTHER SIZES IN TFE AND FEP, AND COLORS ARE AVAILABLE TO ORDER. ETCHING FOR BONDING IS AVAILABLE TO ORDER.

SH254 4:1 SHRINKABLE TFE

SH254 tubing can recover to approximately ¼ of its expanded size when heated to its "gel" point (621°F-625°F). Because of its exceptional shrinkage capability, its recommended that the outside diameter of the object to be shrunk down upon should not be more than 50% of the expanded I.D. of the size of the tubing used. Many constructions conform to AMS 3584 and MIL-I-23053/12 class 5. SH254 is non-flammable, non-corrosive, and offers all of the other outstanding electrical, chemical, and mechanical properties of Teflon*. * DuPont

Briflon No.	Max. Exp. I.D.	Max. Rec. Dimin.** I.D.	Max. Rec. Dimin.** Wall	±Wall Toler.
SH254-3/64″*	.078″	.025″	.009″	.002″
SH254-1/8″*	.125″	.037″	.010″	.002″
SH254-3/16″	.187″	.050″	.012″	.003″
SH254-1/4″*	.250″	.063″	.012″	.003″
SH254-5/16″	.312″	.079″	.012″	.003″
SH254-3/8″*	.375″	.096″	.012″	.003″
SH254-7/16″	.438″	.112″	.012″	.003″
SH254-1/2″*	.500″	.144″	.015″	.004″
SH254-9/16″	.562″	.155″	.015″	.004″
SH254-5/8″*	.625″	.178″	.015″	.004″
SH254-1 1/16″	.687″	.198″	.015″	.004″
SH254-3/4″*	.750″	.224″	.015″	.004″
SH254-7/8″	.875″	.244″	.015″	.004″
SH254-1″*	1.000″	.278″	.015″	.004″
SH254-1 1/4″*	1.250″	.347″	.015″	.004″

STD. P-U: 100′, in 4 foot lengths. Std. Color: Natural (Clear)
* Per MIL-I-23053/12 Class 5

SH250 (TFE) MIL-I-23053/12

SH250: an extruded modified TFE (PolyTetra-FluoroEthylene) Teflon* tubing, with a continuous Operating Temperature of +250°C (550°F). SH250 will shrink when heated to 621°F. Shrinkage ratio — 2:1. Used wherever hi-temperature protection required. Applications: Protective covers in corrosive environments, protection for electronic components, cable jacketing, covers on immersion heaters, heat exchangers, light duty bearing surfaces, roll covers.

Briflon No.	Min. Exp. I.D.	Max. Rec. Dimen.** I.D.	Max. Rec. Dimen.** Wall	±Wall Toler.
SH250-30	.034″	.015″	.009″	.002″
SH250-28	.038″	.018″	.009″	.002″
SH250-26	.046″	.022″	.010″	.002″
SH250-24	.050″	.027″	.010″	.002″
SH250-22	.055″	.032″	.012″	.003″
SH250-20	.060″	.039″	.012″	.003″
SH250-19	.065″	.043″	.012″	.003″
SH250-18	.076″	.049″	.012″	.003″
SH250-17	.085″	.054″	.012″	.003″
SH250-16	.093″	.061″	.012″	.003″
SH250-15	.110″	.067″	.012″	.003″
SH250-14	.120″	.072″	.012″	.003″
SH250-13	.140″	.080″	.012″	.003″
SH250-12	.150″	.089″	.012″	.003″
SH250-11	.170″	.101″	.012″	.003″
SH250-10	.191″	.112″	.012″	.003″
SH250-9	.205″	.124″	.015″	.004″
SH250-8	.240″	.141″	.015″	.004″
SH250-7	.270″	.158″	.015″	.004″
SH250-6	.302″	.178″	.015″	.004″
SH250-5	.320″	.198″	.015″	.004″
SH250-4	.370″	.224″	.015″	.004″
SH250-3	.390″	.249″	.015″	.004″
SH250-2	.430″	.278″	.015″	.004″
SH250-1	.450″	.311″	.015″	.004″
SH250-0	.470″	.347″	.015″	.004″
SH250-3/8″	.560″	.399″	.025″	.006″
SH250-1/2″	.750″	.524″	.025″	.006″
SH250-5/8″	.930″	.655″	.030″	.006″
SH250-3/4″	1.125″	.786″	.035″	.008″
SH250-1″	1.500″	1.036″	.035″	.008″

STD. P-U 100′, Sizes 26-14: 3 foot minimum lengths. 13-1″ 1 foot minimum length. Sizes 30 to 0 are per class 3. Sizes ⅜″ to 1″ are per class 2.

SHTF SHRINKABLE TFE/FEP

SHTF is made with a combination of TFE and FEP Teflons*. The inner wall is made of FEP and the outer wall of TFE. When the tubing is heated, the TFE begins to shrink down tightly over the FEP. The FEP inner wall melts and flows-squeezes-into and around the item covered, creating a solid or near solid encapsulation. The fit is so tight that it is safe against most environmental hazards, involving pull or vibrations. It can be used as a strain relief, or moisture-proof covering for wires, connectors, terminals, splices, electronic devices, etc. SHTF is non-flamable, non-corrosive, and offers all of the other outstanding electrical, chemical, and mechanical properties of Teflon*. Color: Natural (Transparent). OPERATING TEMPERATURE: −85°F to +450°F.

Briflon No.	Min. Exp. I.D.	Max. Rec. Dimen.** I.D.	Max. Rec. Dimen.** Wall	Std. P-U+
SHTF-1	.065″	.000″**	.015″	100′
SHTF-2	.115″	.045″	.015″	100′
SHTF-3	.130″	.060″	.015″	100′
SHTF-4	.180″	.065″	.015″	100′
SHTF-5	.190″	.070″	.015″	100′
SHTF-6	.240″	.150″	.020″	100′
SHTF-7	.350″	.210″	.025″	100′
SHTF-8	.480″	.315″	.032″	100′
SHTF-9	.700″	.440″	.055″	100′
SHTF-10	1.000″	.700″	.045″	100′

** Fully closes off. +In random lengths of 1 foot to 3 feet. * DuPont

OTHER SIZES AND COLORS AVAILABLE TO ORDER.

BRIMFLEX BSR SILICONE RUBBER TUBING — MIL-R-5847 200°C



BRIMFLEX BSR Silicone Rubber tubing is an extremely elastic and stable high temperature and low temperature tubing. Besides being extremely flexible, it has excellent mechanical strength (tear resistance, tensile strength, elongation, and weather resistance), and outstanding dielectric strength, and corona resistance. BSR meets MIL-R-5847 and Fed. Spec. ZZ-R-765, Class 2b, STD. COLOR: WHITE. OPERATING VOLTAGE: 28 AWG-⅝″ — 300V, ¾″-1″ — 600V.

Brimflex No.	Size	Nom. I.D.	Nom. Wall	Std. P.U.
BSR-28	28	.015″	.016″	1000′
BSR-26	26	.018″	.016″	1000′
BSR-24	24	.022″	.016″	1000′
BSR-22	22	.027″	.016″	1000′
BSR-20	20	.034″	.016″	1000′
BSR-19	19	.038″	.016″	1000′
BSR-18	18	.042″	.016″	1000′
BSR-17	17	.047″	.016″	1000′
BSR-16	16	.053″	.016″	1000′
BSR-15	15	.059″	.016″	500′
BSR-14	14	.066″	.016″	500′
BSR-13	13	.076″	.016″	500′
BSR-12	12	.085″	.016″	500′
BSR-11	11	.095″	.016″	500′
BSR-10	10	.106″	.016″	500′
BSR-9	9	.118″	.020″	500′
BSR-8	8	.133″	.020″	500′
BSR-7	7	.148″	.020″	250′
BSR-6	6	.166″	.020″	250′
BSR-5	5	.186″	.020″	250′
BSR-4	4	.208″	.020″	250′
BSR-3	3	.233″	.020″	250′
BSR-2	2	.262″	.020″	250′
BSR-1	1	.294″	.020″	250′
BSR-0	0	.329″	.025″	250′
BSR-3/8″	3/8″	.382″	.025″	250′
BSR-7/16″	7/16″	.446″	.025″	250′
BSR-1/2″	1/2″	.508″	.025″	100′
BSR-5/8″	5/8″	.636″	.030″	100′
BSR-3/4″	3/4″	.760″	.060″	100′
BSR-7/8″	7/8″	.895″	.070″	100′
BSR-1″	1″	1.010″	.080″	100′

SHRINKABLE E-TFE TEFZEL* TUBING — MIL-I-23053/14

Designed for ruggedness. Excellent chemical resistance and high dielectric qualities which exist over a wide temperature range. Superior to Teflon* in its mechanical strength. Shrink Ratio-1.5:1. Shrinks quickly on application of only 300°F (150°C). Because of its quick shrinking ability at a relatively low temperature, many heat sensitive components and materials (solder joints, plastics, wood, metal) can now be easily protected. It is also heat sealable, chemically inert, self-extinguishing (non-flamable in air). Dielectric Strength: 400V/MIL. Uses: cable jacketing, wire markers, terminal covers, temperature probes, immersion tubing, heat exchanger coils, sight glasses, roll covers, chafe guards, component insulation. STD. COLOR: Translucent.

Brimflex No.	Min. Expd. I.D.	Recovered Dimen. I.D. Max.	Recovered Dimen. Wall	±Wall† Toler.
SH150-1/8″	.125″	.083″	.010″	.002″
SH150-3/16″	.188″	.125″	.011″	.002″
SH150-1/4″	.250″	.166″	.013″	.003″
SH150-3/8″	.375″	.250″	.013″	.003″
SH150-1/2″	.500″	.345″	.013″	.003″
SH150-3/4″	.750″	.500″	.018″	.004″
SH150-1″	1.000″	.665″	.022″	.004″

Brimflex No.	AWG**	Rec. M.M.	STD. P-U
SH150-1/8″	12	2.11	100′, 1000′
SH150-3/16″	8	3.18	100′, 1000′
SH150-1/4″	6	4.62	100′, 1000′
SH150-3/8″	2	6.35	100′, 1000′
SH150-1/2″	00	8.76	100′, 1000′
SH150-3/4″	0000	12.70	100′, 500′
SH150-1″	350MCM	16.89	100′, 500′

STD. LENGTHS: 4 foot lengths with random lengths of 1 foot minimum. † If full recovery allowed.

E-TFE TEFZEL* SPAGHETTI TUBING IS AVAILABLE TO ORDER. ** O.D. of closest equivalent wire. * DuPont SHRINKABLE PVC TUBING per MIL-I-23053/2 IS AVAILABLE.

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BRIM WIRE — CABLE — TUBING — HARDWARE

ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

BRIMFLEX™ SHRINKABLE TUBINGS — SPIRAL WRAP TUBINGS

BRIFLEX™ SHRINKABLE PVC TUBINGS: MIL-I-23053/2B & HEAVY WALL PVC TUBING

SHRINKABLE IRRADIATED POLYOLEFIN: MIL-I-23053/5 — SPIRAL WRAP TUBING

BRIMFLEX™ POLYVINYLCHLORIDE SHRINKABLE TUBING — MIL-I-23053/2B & UL VW-1



SHRINK RATIO: 2:1 (50%) — OPERATING TEMPERATURE: −20°C to +105°C

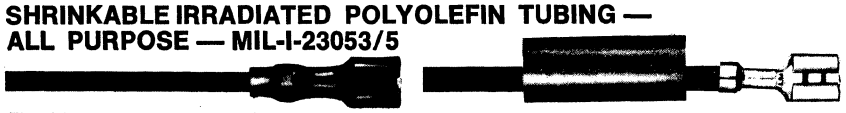
BRIMFLEX™ SH105 is a flexible all purpose shrinkable PVC tubing that shrinks 50% of its expanded size when exposed to temperatures below 200°F (within one minute). SH105 meets MIL-I-23053/2B, Class 2, and conforms to MIL-I-631D, Grade C. Longitudinal shrinkage: approximately 20%. SH105 is self-extinguishing, resistant to fungus, most oils, and chemicals, sunlight, moisture, and is non-corrosive. SH105 is suitable for insulating wires, cables, and electronic components, that vary in shapes, and dimensions. Produces a smooth snug flexible fit, in most applications — even around sharp bends. Dielectric Strength: 700V/MIL min., ASTM-D922. Tensile Strength: 2000PSI min. Suggested Storage Temperature: under 70°F for up to 10 months. UL Approved SH105 is available to order.

STD. COLORS: Black, Clear, Red, White. Other colors available to order.

Brimflex No.	Min. Exp. I.D.	Recovered Dimen.* I.D. Max.	Recovered Dimen.* Wall	±Wall Toler.	AWG**	Rec. M.M.	Std. P-U
SH105-3/64"	.046"	.023"	.020"	.003"	24-22	0.59	— — 1000'
SH105-1/16"	.063"	.031"	.020"	.003"	22-20	0.80	100', 500', 1000'
SH105-3/32"	.093"	.046"	.020"	.003"	18-16	1.19	100', 500', 1000'
SH105-1/8"	.125"	.063"	.020"	.003"	14	1.59	100', 500', 1000'
SH105-3/16"	.187"	.093"	.020"	.003"	12-10	2.39	100', 500', 1000'
SH105-1/4"	.250"	.125"	.025"	.005"	8	3.18	100', 500', 1000'
SH105-5/16"	.312"	.156"	.025"	.005"	7	3.97	100', 250', 500'
SH105-3/8"	.375"	.187"	.025"	.005"	5	4.77	100', 250', 500'
SH105-1/2"	.500"	.250"	.025"	.005"	2	6.35	100', 250', 500'
SH105-3/4"	.750"	.375"	.030"	.005"	00	9.52	100', 250', 500'
SH105-1"	1.000"	.500"	.035"	.005"	0000	12.70	100', 250', 500'
SH105-1 1/2"	1.500"	.750"	.040"	.005"	450MCM	19.05	25', 50', 100'
SH105-2"	2.000"	1.000"	.045"	.006"	750MCM	25.40	25', 50', 100'
SH105-3"	3.000"	1.500"	.068"	.007"	1750MCM	38.10	— — 100'
SH105-4"	4.000"	2.000"	.073"	.008"	2750MCM	50.80	— — 100'

* If full recovery allowed. ** O.D. of closest equivalent wire.

SHRINKABLE IRRADIATED POLYOLEFIN TUBING — ALL PURPOSE — MIL-I-23053/5

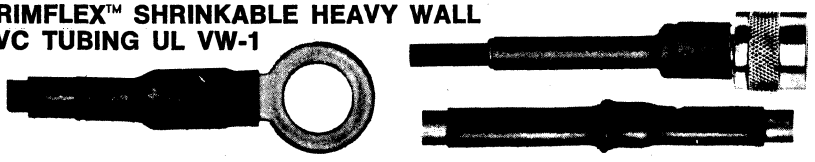


Flexible, yet greater electrical, chemical, and abrasion resistance, and greater mechanical strength than that of shrinkable PVC tubing. It not only insulates, it can also encapsulate, giving a watertight fit. Won't crack or peel. Its non-corrosive, has excellent resistance to soldering irons, oils, solvents, acids, alkalis, fuels, hydraulic fluids, fungus. Shrink Ratio-2:1 (50%). Shrinks when exposed to 250°F. Longitudinal shrinkage: 5%. Dielectric Strength: 1300V/MIL. Colored tubing is self-extinguishing; clear tubing is slow burning. Uses: Strain relief, jacketing material, component insulation. OPERATING TEMPERATURE: −55°C to +135°C. Meets MIL-I-23053/5, Class 1, 2. MIL-I-7444B, AMS 3636B, AMS 3637A, ASTM D876, ASTM D150, ASTM D257, ASTM D2671, ASTM D792.

Brimflex No.	Min. Exp. I.D.	Recovered Dimen.* I.D. Max.	Recovered Dimen.* Wall	±Wall Toler.	AWG**	Rec. M.M.	Std. P-U
SH135-3/64"	.046"	.023"	.016"	.003"	24-22	0.59	100', 500', 1000'
SH135-1/16"	.063"	.031"	.016"	.003"	22-20	0.80	100', 500', 1000'
SH135-3/32"	.093"	.046"	.020"	.003"	18-16	1.19	100', 500', 1000'
SH135-1/8"	.125"	.063"	.020"	.003"	14	1.59	100', 500', 1000'
SH135-3/16"	.187"	.093"	.020"	.003"	12-10	2.39	100', 500', 1000'
SH135-1/4"	.250"	.125"	.025"	.003"	8	3.18	100', 500', 1000'
SH135-3/8"	.375"	.187"	.025"	.003"	5	4.77	50', 100', 200'
SH135-1/2"	.500"	.250"	.025"	.003"	2	6.35	50', 100', 200'
SH135-3/4"	.750"	.375"	.030"	.005"	00	9.52	25', 50', 100'
SH135-1"	1.000"	.500"	.035"	.006"	0000	12.70	25', 50', 100'
SH135-1 1/2"	1.500"	.750"	.040"	.006"	450MCM	19.05	25', 50', 100'
SH135-2"	2.000"	1.000"	.045"	.007"	750MCM	25.40	25', 50', 100'
SH135-3"	3.000"	1.500"	.050"	.008"	1750MCM	38.10	10', 25', 50'
SH135-4"	4.000"	2.000"	.055"	.009"	2750MCM	50.80	10', 25', 50'

STD. COLORS: Black, Clear, Red, White. Other colors are available to order.
* If full recovery allowed. ** O.D. of closest equivalent wire.

BRIMFLEX™ SHRINKABLE HEAVY WALL PVC TUBING UL VW-1



Brmflex No.	Min. Exp. I.D.	Recovered Dimen.* I.D. Max.	Recovered Dimen.* Wall	±Wall Toler.	AWG**	Rec. M.M.	Std. P-U
SH110-1/8"	.125"	.063"	.032"	0.05"	14	1.59	1000'
SH110-3/16"	.187"	.093"	.032"	0.05"	12-10	2.39	1000'
SH110-1/4"	.250"	.125"	.032"	0.05"	8	3.18	1000'
SH110-5/16"	.312"	.156"	.032"	0.05"	6	3.97	500'
SH110-3/8"	.375"	.187"	.032"	0.05"	4	4.77	500'
SH110-1/2"	.500"	.250"	.032"	0.05"	2	6.35	250'

* If full recovery allowed. ** O.D. of closest equivalent wire.

SEMI-RIGID POLYOLEFIN SHRINKABLE TUBING IS AVAILABLE TO ORDER.
CUT AND PRINTED WIRE MARKERS ARE AVAILABLE TO ORDER.

SPIRAL WRAP TUBINGS FOR HARNESSING



Easily twists on and off. Can be repeatedly flexed without cracking or breaking. Expandable. Holds wire, and cable bundles securely, and allows leadoffs or additions at any point. Bends around sharp corners, and protection against sharp edges. Available in 4 types of insulations: Polyethylene, Rulan (a flame retardent type of polyethylene), Nylon, Teflon. All are resistant to organic solvents, alkalis, and acids (nylon satisfactory except for strong acids). OSHA and UL approved for harnessing cables.

Brimflex No.	Covers Max. Wire Group	Nom. O.D.	Nom. Wall
POLYETHYLENE (CLEAR)*		**−105°F to +215°F**	
PSW-1/8"	1/16" to 1/2"	1/8"	.032"
PSW-3/16"	1/8" to 1"	3/16"	.032"
PSW-1/4"	3/16" to 2"	1/4"	.045"
PSW-3/8"	5/16" to 3"	3/8"	.052"
PSW-1/2"	3/8" to 4"	1/2"	.062"
PSW-3/4"	5/8" to 5"	3/4"	.065"
PSW-1"	3/4" to 6"	1"	.095"
RULAN (WHITE)**		**−8°F to +200°F**	
RSW-1/8"	1/16" to 1/2"	1/8"	.032"
RSW-1/4"	3/16" to 2"	1/4"	.045"
RSW-3/8"	5/16" to 3"	3/8"	.052"
RSW-1/2"	3/8" to 4"	1/2"	.062"
RSW-3/4"	5/8" to 5"	3/4"	.065"
NYLON (NATURAL)***		**−121°F to +300°F**	
NSW-1/8"	1/16" to 1/2"	1/8"	.015"
NSW-1/4"	3/16" to 2"	1/4"	.025"
NSW-3/8"	5/16" to 3"	3/8"	.035"
NSW-1/2"	3/8" to 4"	1/2"	.035"
TEFLON (NATURAL)****		**−275°F to +500°F**	
TSW-1/8"	1/16" to 1/2"	1/8"	.030"
TSW-3/16"	1/8" to 1"	3/16"	.030"
TSW-1/4"	3/16" to 2"	1/4"	.030"
TSW-3/8"	5/16" to 2 1/2"	3/8"	.030"
TSW-1/2"	3/8" to 3"	1/2"	.030"
TSW-3/4"	5/8" to 4"	3/4"	.032"
TSW-1"	3/4" to 5"	1"	.040"

STD. P-U 1/8" to 1/4" — 100', 1000'; 3/8" to 1/2" — 100', 500'; 3/4" and 1" — 100'

* MIL-E-16400, MIL-P-3803, MIL-I-631D, MIL-E-5400F, Fed. Spec. L-P-390, ASTM D1248-65T.
** UL-70, ASTM D635, MIL-E-5400F.
*** MIL-P-20693A, MIL-P-17091B, L-P-4100.
**** MIL-I-22129C, AMS3653C, AMS3655.

BLACK NYLON AND POLYETHYLENE SPIRAL WRAP FOR ULTRAVIOLET RAY PROTECTION IS AVAILABLE.

LOW & HI TEMP. PVC TUBING PER MIL-I-631 & MIL-I-7444 STOCKED.

SHRINK RATIO: 2:1 (50%) — OPERATING TEMPERATURE: −20°C to +105°C

SH110 meets or exceeds the performance requirements of MIL-I-23053/2B, Class 2 but for its dimensions — its heavier wall. SH110 is a Heavy Wall Shrinkable PVC tubing, yet its flexible, and will shrink at temperatures below 200°F (within one minute). Provides outstanding dielectric and mechanical protection without damage to enclosed or adjacent components, even around sharp bends. Longitudinal shrinkage: approximately 20%. SH110 is self-extinguishing, resistant to fungus, moisture, sunlight, and most oils, and chemicals. Dielectric Strength: 600V/MIL min,. ASTM-D922. Suitable as a heavy duty all-purpose shrinkable tubing that is less expensive, almost as flexible, and has a higher temperature ability than that of Shrinkable Neoprene tubing. Suggested Storage Temperature: Under 70°F for up to 10 months.

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NOMOGRAPH VOLTAGE DROP

NOMOGRAPH OF VOLTAGE DROP ACROSS LOAD SUPPLY LEADS (as a function of wire size and load current)

THIS NOMOGRAPH CAN BE USED TO FIND:

Maximum current carrying capacity recommended for any standard wire size.*

1) With a straight edge, connect from the wire size on Scale 2 to the point "A" on Scale 3.
2) Read I_{max} on Scale 1.

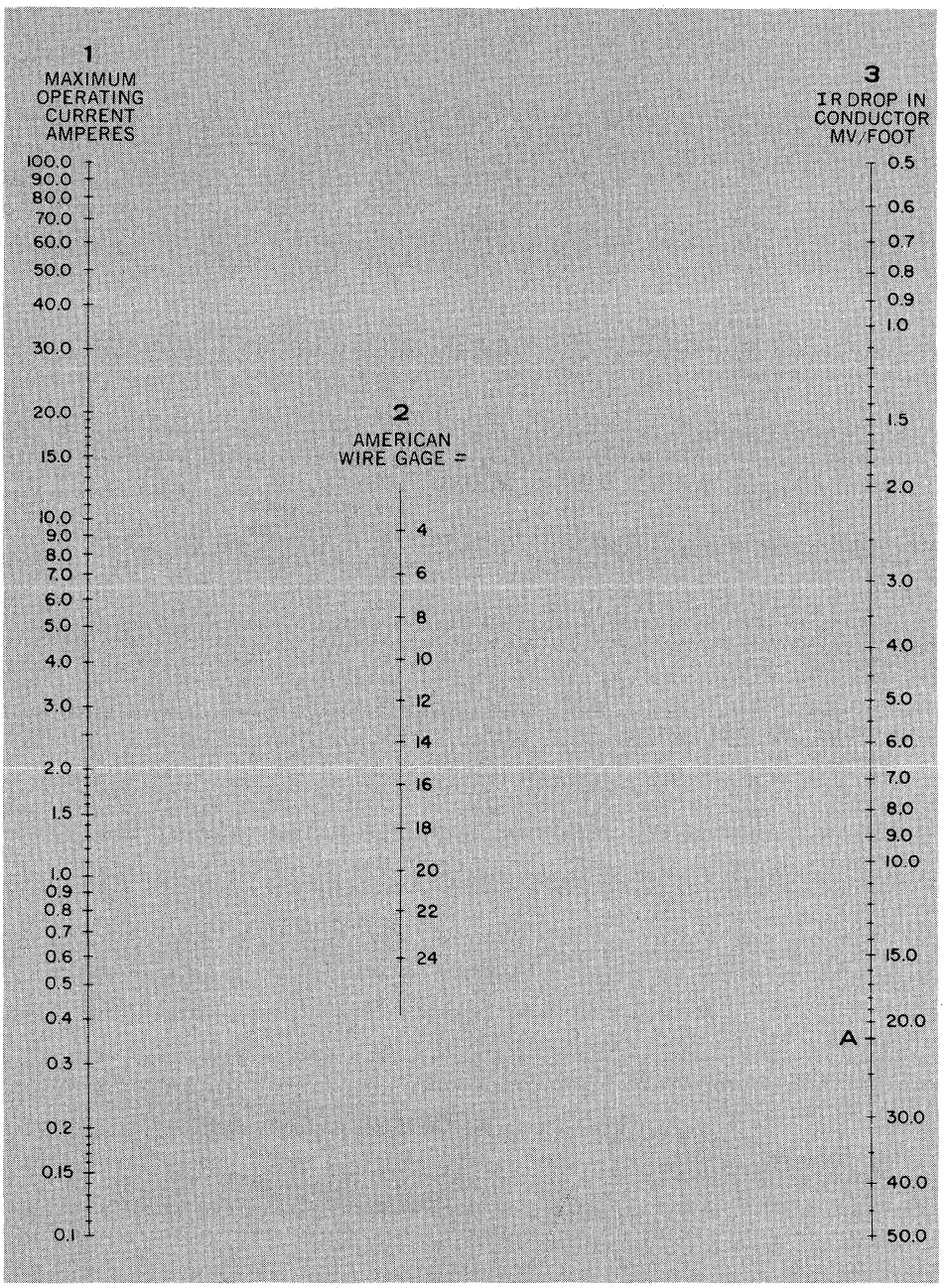
Voltage drop in millivolts per foot for known wire size and operating current.

1) With a straight edge, connect the known current on Scale 1 and the wire size on Scale 2.
2) Read voltage drop on Scale 3.

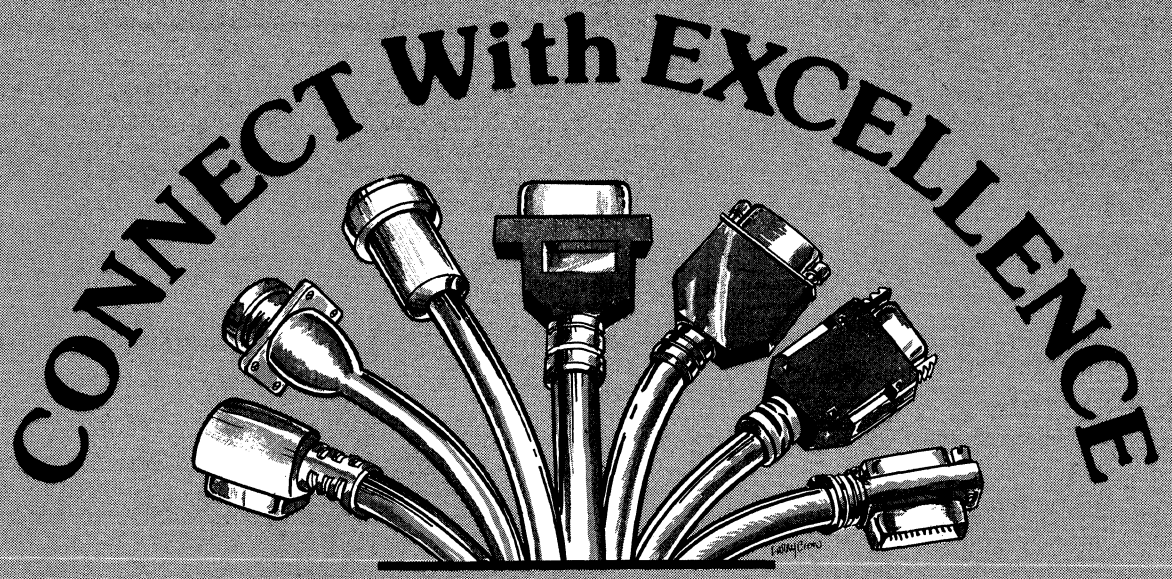
Wire size required for known operating current and known maximum tolerable voltage drop across supply leads.

1) Determine maximum tolerable drop in millivolts **per foot** of lead (sum of positive and negative leads).
2) Connect the value on Scale 3 (as determined in step 1) to the known current on Scale 1.
3) Read wire size on Scale 2.

* *Based on an arbitrary minimum 500 circular mils per ampere. High-temperature class insulation will safely allow higher currents.*



NOTE: A voltage stabilized Power Supply controls the voltage across its output terminals. Hence, the wire conductors used to connect the load must be considered as part of the load. At high load currents, the voltage drop across the supply leads may appreciably degrade stablization at the load. Kepco models equipped with the *remote error sensing* feature can automatically compensate for voltage drops of up to 500 mV across each load supply lead.



TOTAL INTERCONNECT SYSTEMS CAPABILITY FOR BOTH COMMERCIAL AND MILITARY APPLICATIONS FROM *CABLE SYSTEMS, INC.*

Cable Systems, Inc. offers "one-stop" shopping for low-cost 100% computer-tested custom cable assemblies and interconnects. ***Cable Systems*** has the highest ratio of engineers to manufacturing personnel of any cable assembly manufacturer. Its quality control department is a clean professional environment with the most modern equipment and tools, operated under the regulations of MIL-I-45208A and MIL-Q-9858A.

Interconnection products from ***Cable Systems*** are used by so many manufacturers of commercial and military products because they provide significant advantages:

DEFENSE CONNECTION

Cable Systems, Inc.'s products meet all MIL applications, including aero, space, and surface (fixed or mobile), naval, and undersea. ***Cable Systems's*** customer base includes both domestic and overseas OEMs and end users.

- Molded cable assemblies using thermoplastic and thermoset materials
- Molding techniques including transfer, compression, and injection
- EMI/RFI/EMP protection — MIL-STD 462
- Flexible and semi-rigid coaxial cable assemblies with testing
- Blown-on neoprene jackets over make cable
- Shielding and braiding for make cable applications

COMMERCIAL CONNECTION

You'll find ***Cable Systems, Inc.'s*** interconnection products in computers, data processing and peripheral equipment, office and business machines, telecommunications, process control, factory automation, medical electronics, and many other applications.

- EIA RS232C, RS449, molded circular DIN
- UL file #E79426(M); CSA LR 50395-1
- FCC docket #20780
- Built-in strain relief
- Custom color matching and logos
- Total molded protection

So, when you need cable and interconnect assemblies, contact ***Cable Systems, Inc.*** — it's the only connection you'll ever need to make. For further information, write, call, or TWX ***Cable Systems*** as listed below.



CABLE SYSTEMS, INC.
Interconnect Systems and Cable Assemblies
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Everett, MA 02149
Telephone: (617) 389-7080
TWX: (710) 348-1760

Datatrans® PLTC

300V 105°C INSTRUMENTATION CABLE

With 75 years of experience in the manufacture of electrical wire and cable for the North American marketplace, Canada Wire has pioneered many cable constructions for both power and signal circuitry. From this background of experience Canada Wire is pleased to introduce Datatrans® PLTC—a new line of fully UL listed instrumentation cables, designed to satisfy requirements in the petroleum, chemical processing, mining and other primary and secondary industries.

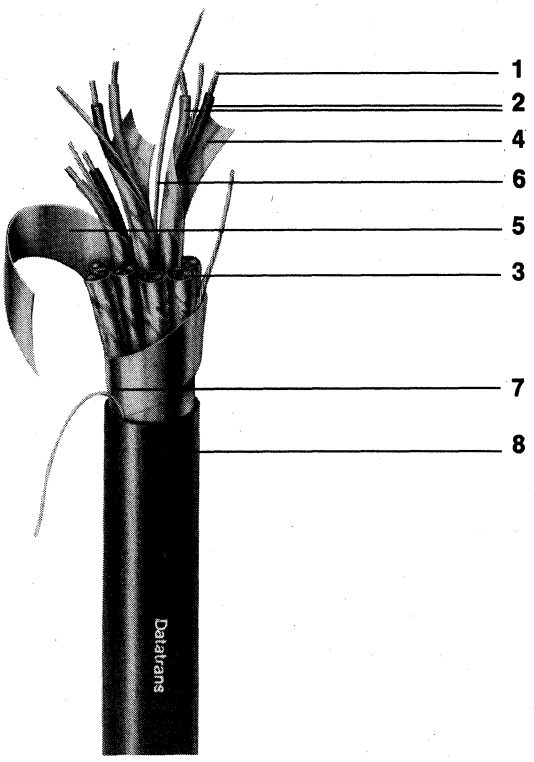
SPECIFICATIONS (UL)

UL listed to Subject 13 Appendix A and B (File E75731) and intended for use on:

- Class 2 and 3 Power Limited Ciicuits—NEC Article 725
- Class I, Div II Hazardous Locations—NEC Article 501

CONSTRUCTION

1. 22 to 12AWG 7W Copper Conductor
2. PVC Insulation—105°C
   Colour code:
   Pairs—Black, White and No. Code
   Triads—Black, White, Red and No. Code
3. **1 to 50 pairs or triads**
4. Individual aluminum/polyester shield with tinned copper drain wire (optional)
5. Overall aluminum/polyester shield with tinned copper drain wire
6. #22(7W) PVC insulation communication wire
7. Nylon Rip Cord
8. Overall PVC jacket +90°C −40°C Low Acid Gas (LAG) Low Flame Spread (LFS)



All cables are available unarmoured or with one of the following armour types to ensure peak performance in the harshest industrial environments.

1. interlocked aluminum armour
2. interlocked galvanized steel armour
3. Databon®—hermetically sealed aluminum tape
4. Impervious aluminum sheath

PRODUCT NUMBER SELECTION

How To Order Datatrans® PLTC

Datatrans® cables can be uniquely specified by product number. This designation gives meaningfull information regarding the construction and specification of the cable. The make-up of the product number is illustrated below.

Example: For 12 pr. 16 AWG 105°C 300V individually shielded, unarmoured cable.

Cable Type	PLTC	Pair/Triad Count	12	This Product No. is
Unit Make-up	9			PLTC - 901216
Configuration	0	Gauge	16	

PLTC	9	0	12	16

Cable Type
PLTC: UL 300V 105° PVC

Unit Make-up
9: Pairs 7: Quads
8: Triads 1: Singles

Configuration

Number of Pairs/Triads

Gauge Size (AWG)

When making your next instrumentation cable purchase, specify "Canada Wire" and allow our cable specialists to provide the product that best suits the particular need. Canada Wire is committed to provide the right product at the right price, on time, everytime. Contact your local Canada Wire representative for your cable requirements.

0: **Shielded Pairs/Triads:**	— unarmoured	5: **Unshielded Pairs/Triads:**	— unarmoured
1:	— interlocked aluminum armour	6:	— interlocked aluminum armour
2:	— interlocked galvanized steel armour	7:	— interlocked galvanized steel armour
3:	— Databon® aluminum tape	8:	— Databon® aluminum tape
4:	— impervious aluminum sheath	9:	— impervious aluminum sheath

canada wire

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Dataseries™

Electronic Cables

"IN STEP WITH THE FUTURE"

Since its incorporation in 1911, Canada Wire has been an industry leader in providing state-of-the-art wire and cable products for the North American marketplace. With a strong engineering background, Canada Wire operates at the leading edge of technology, manufacturing quality products from its modern production facilities. As part of a family of high technology products Canada Wire is pleased to introduce a line of electronic cables, conforming to the needs of this rapidly growing industry. The introduction of Canada Wire DATASERIES™ electronic cables provides the electronics industry with the confidence and assurance that comes from dealing with North America's largest wire and cable manufacturer. Canada Wire stands committed to excellence in providing a timely, quality engineered product, conforming to individual customer requirements.

CONSTRUCTIONS

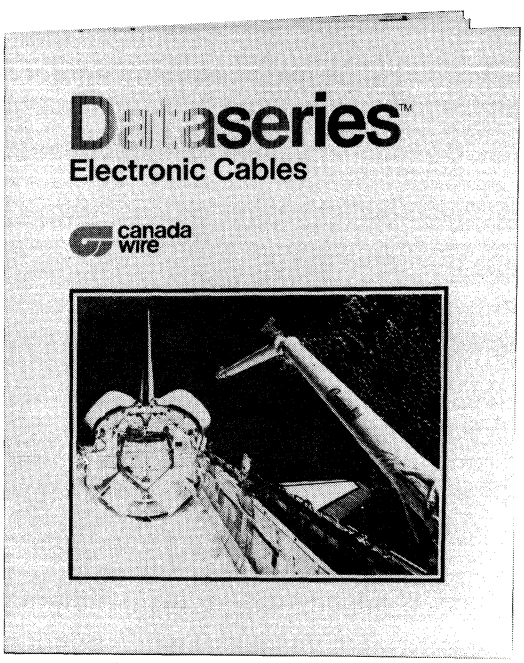
- Conductors — 26-16 AWG
- Insulation — PVC, SR-PVC, PE, PP, FPE
- Configuration — 1-100 Singles, Pairs, Triads
- Shielding — Alum/Polyester, Copper Braid
- Voltage Rating — 30-600 Volts
- Certifications — CSA/UL (as applicable)

Whether involved in an industrial project design or purchasing a computer interconnect, let the team of Canada Wire professionals assist you. When it "COMES DOWN TO THE WIRE" specify Canada Wire for all your electronic cable needs.

APPLICATIONS

Canada Wire DATASERIES™ Cables encompass a growing variety of applications.

- Computer/peripheral interconnects
- local area networks
- communication/intercom
- audio/video
- process monitoring and control
- instrumentation
- point of sale
- fire alarm and security
- satellite/TVRO cable
- hookup wire
- high temp
- coaxial cable



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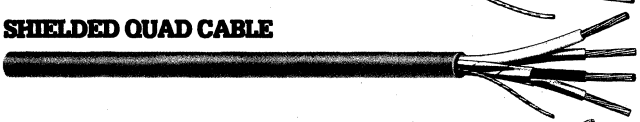
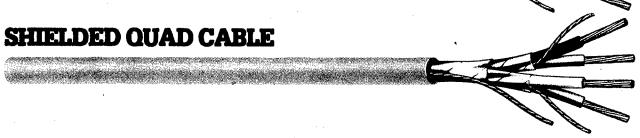
FOIL SHIELDED MINIATURE AUDIO CABLE



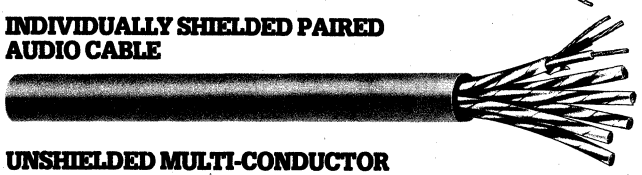
SHIELDED QUAD CABLE



SHIELDED QUAD CABLE



INDIVIDUALLY SHIELDED PAIRED AUDIO CABLE



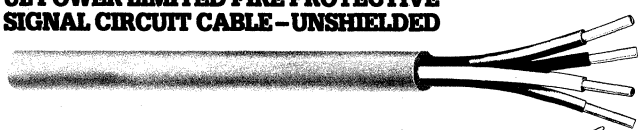
UNSHIELDED MULTI-CONDUCTOR AUDIO CABLE



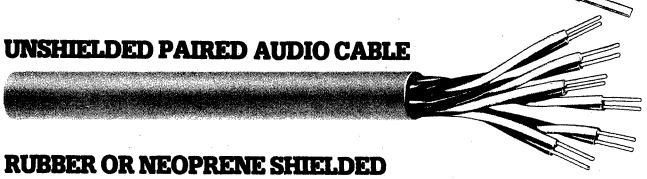
UL POWER LIMITED FIRE PROTECTIVE SIGNAL CIRCUIT CABLE–SHIELDED



UL POWER LIMITED FIRE PROTECTIVE SIGNAL CIRCUIT CABLE–UNSHIELDED



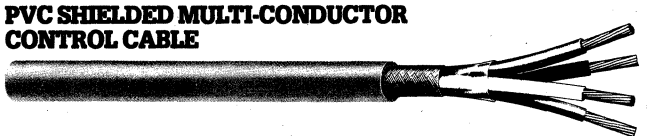
UNSHIELDED PAIRED AUDIO CABLE



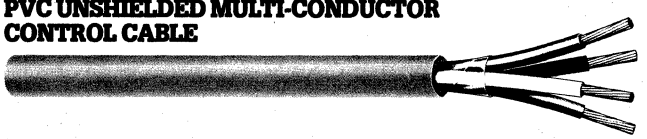
RUBBER OR NEOPRENE SHIELDED MULTI-CONDUCTOR CONTROL CABLE



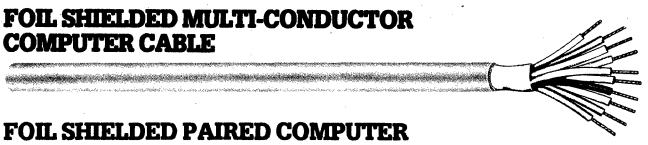
PVC SHIELDED MULTI-CONDUCTOR CONTROL CABLE



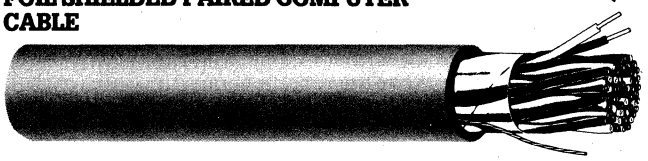
PVC UNSHIELDED MULTI-CONDUCTOR CONTROL CABLE



FOIL SHIELDED MULTI-CONDUCTOR COMPUTER CABLE



FOIL SHIELDED PAIRED COMPUTER CABLE



TWINAXIAL DATA CABLE



COAXIAL TRANSMISSION LINE CABLE



COAXIAL TRANSMISSION LINE CABLE



PORTABLE CONTROL CABLE



HOOK-UP WIRE



POWER SUPPLY CORD



CORD SETS



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Consolidated electronic wire & cable

Computer Cable

"LOW-CAP" CABLE (A)

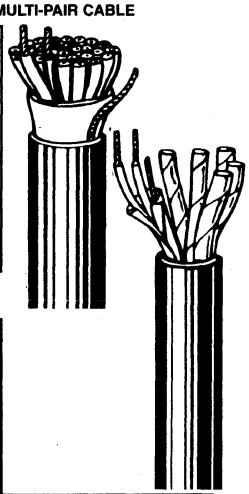
Stranded tinned copper conductors. Color coded foamed polypropylene aluminum foil shield and stranded tin copper drain, plus 65% coverage tin copper braid shield. Gray PVC outer jacket. **Temperature Range:** −20°C. to +80°C. Meets RS-422 requirements. Low distortion data handling. Low dielectric constant. **Applications:** computer; data; FCC Docket 20780 Class A and B.

"LOW-CAP" INSULATED OVERALL FOIL AND BRAID MULTI-PAIR CABLE

Consolidated Number	Pairs No.	Size	Strand	Jacket Wall	O.A. Dia.	Cap. pF Ft.
5755	2	24	7.32	.035	.290	12.5
5756	3	24	7.32	.035	.305	12.5
5757	4	24	7.32	.035	.330	12.5
5758	5	24	7.32	.035	.340	12.5
5759	6	24	7.32	.035	.370	12.5
5760	7	24	7.32	.035	.380	12.5
5761	8	24	7.32	.035	.410	12.5
5762	10	24	7.32	.045	.460	12.5
5763	12½	24	7.32	.045	.480	12.5
5764	15	24	7.32	.045	.540	12.5
5765	18	24	7.32	.045	.570	12.5
5766	25	24	7.32	.050	.650	12.5

"LOW-CAP" INSULATED INDIVIDUAL SHIELDED PLUS OVERALL FOIL AND BRAID MULTI-PAIR CABLE (B)

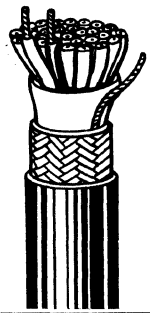
5390	2	24	7.32	.040	.376	12.5
5380	3	24	7.32	.040	.396	12.5
5381	4	24	7.32	.045	.430	12.5
5382	5	24	7.32	.060	.460	12.5
5383	6	24	7.32	.060	.495	12.5
5384	7	24	7.32	.060	.500	12.5
5385	8	24	7.32	.060	.575	12.5
5386	10	24	7.32	.060	.650	12.5
5387	15	24	7.32	.060	.720	12.5
5388	19	24	7.32	.060	.770	12.5
5389	25	24	7.32	.060	.935	12.5



OVERALL FOIL AND BRAID MULTIPAIR CABLE SUITABLE FOR RS 422 APPLICATION

Stranded tinned copper conductors. Color coded polyethylene insulation. Conductors are cabled into pairs. Overall aluminum foil shield with stranded tin copper drain, plus 90% coverage tin copper braid shield. Gray PVC outer jacket. **Temperature Range:** −20°C. to +80°C. UL 2919 30 Volts. Low dielectric constant. Low distortion data handling. Meets RS-422 requirements. **Applications:** computer; data.

Consolidated Number	Pairs No.	Size	Strand	Jacket Wall	O.A. Dia.	Cap. pF Ft.
5980	2	24	7.32	.035	.300	15.5
5981	3	24	7.32	.035	.310	15.5
5982	4	24	7.32	.035	.330	15.5
5983	5	24	7.32	.035	.350	15.5
5984	7	24	7.32	.035	.370	15.5
5985	9	24	7.32	.035	.420	15.5
5986	10	24	7.32	.045	.450	15.5
5987	12	24	7.32	.045	.470	15.5
5988	18	24	7.32	.045	.570	15.5
5989	25	24	7.32	.050	.660	15.5
5990	1	24	7.32	.035	.270	12.8
5991	2	24	7.32	.035	.355	12.8
5992	3	24	7.32	.035	.370	12.8
5993	4	24	7.32	.035	.395	12.8



OVERALL FOIL SHIELD AND BRAID MULTICONDUCTOR CABLE

Stranded tinned copper conductors. Color coded semi-rigid PVC insulation. Conductors are cabled. Overall Mylar aluminum foil shield plus 70% coverage tin copper braid shield. Gray PVC outer jacket. **Temperature Range:** −20°C. to +80°C. UL 2464 300 Volts. Passes UL VW-1. Meets FCC requirements. Docket 20780 class A and B. **Applications:** computer; data.

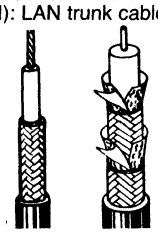
Consolidated Number	Conductors No.	Size	Strand	Ins. Wall	Jacket Wall	O.A. Dia.	Cap. pF Ft.
5850	2	24	7.32	.010	.035	.180	35
5851	3	24	7.32	.010	.035	.190	35
5852	4	24	7.32	.010	.035	.200	35
5862	5	24	7.32	.010	.035	.210	35
5853	6	24	7.32	.010	.035	.225	30
5863	7	24	7.32	.010	.035	.230	30
5854	8	24	7.32	.010	.035	.240	30
5864	9	24	7.32	.010	.035	.255	30
5855	10	24	7.32	.010	.035	.270	30
5856	15	24	7.32	.010	.035	.300	30
5857	20	24	7.32	.010	.040	.330	30
5858	25	24	7.32	.010	.040	.370	30
5859	30	24	7.32	.010	.040	.385	30
5865	37	24	7.32	.010	.040	.410	30
5860	40	24	7.32	.010	.040	.435	30
5861	50	24	7.32	.010	.045	.485	30
5870	2	22	7.30	.010	.035	.190	37
5871	3	22	7.30	.010	.035	.202	37
5872	4	22	7.30	.010	.035	.215	37
5882	5	22	7.30	.010	.035	.230	37
5873	6	22	7.30	.010	.035	.245	35
5883	7	22	7.30	.010	.035	.250	35
5874	8	22	7.30	.010	.035	.260	35
5884	9	22	7.30	.010	.035	.280	35
5875	10	22	7.30	.010	.035	.300	35
5876	15	22	7.30	.010	.035	.335	35
5877	20	22	7.30	.010	.035	.375	35
5878	25	22	7.30	.010	.040	.410	35
5879	30	22	7.30	.010	.040	.435	35
5885	37	22	7.30	.010	.040	.460	35
5880	40	22	7.30	.010	.040	.475	35
5881	50	22	7.30	.010	.045	.555	35



LOCAL AREA NETWORK TRUNK COAXIAL CABLES

Solid bare copper center conductor. Cellular polyethylene dielectric. Shield construction: Mylar aluminum foil shield, plus 92% tin copper braid (4880); Mylar aluminum foil shield plus 60% aluminum braid (4585). 4880 has yellow PVC outer jacket. 4585 has black PVC outer jacket. **Applications:** Local Area Networks (LAN): LAN trunk cable: computer; data; information handling.

Consolidated Number	Shield Construction	Imp. Ohms	Gauge & Strand	Core O.D.	O.A. Dia.	Cap. pF Ft.
4880	Ethernet	50	12 AWG	.247	.405	26
4585	6 U Type	75	18 Solid	N/A	.262	17.3



INDIVIDUALLY SHIELDED PAIR CABLE (FIG. C)

Stranded, tinned copper conductors. Color-coded polypropylene insulation; color codes available on request. Conductors twisted into pairs. Each pair individually shielded with Mylar† polyester reinforced aluminum facing inward. Shields are electrically isolated from each other. Stranded, tinned copper drain wire, each pair. Gray PVC outer jacket. **Temperature Range:** −40°C to +105°C. **Applications:** Audio, data, broadcast sound, instrumentation.

Cat. No.	No. of Pairs	Insul. Wall In.	Jacket Wall In.	Overall Dia. In.	Rated Volts	Cap. pF/ft.*
22 (7×30) STRANDED—UL STYLE 2493						
5594	2	.010	.020	.165	300	35
5323	3	.010	.030	.265	300	30
5326	6	.010	.037	.355	300	30
5329	9	.010	.040	.425	300	30
5331	11	.010	.040	.455	300	30
5332	12	.010	.040	.465	300	30
5335	15	.010	.045	.525	300	30
5339	19	.010	.050	.575	300	30
5347	27	.010	.070	.705	300	30
20 (10×30) STRANDED—UL STYLE 2493						
5573	1	.015	.025	.200	300	35
5363	3	.013	.048	.355	300	35

Cat. No.	No. of Pairs	Insul. Wall In.	Jacket Wall in.	Overall Dia. In.	Rated Volts	Cap. pF/ft.*
20 (10×30) STRANDED—UL STYLE 2493—Continued						
5366	6	.013	.048	.470	300	35
5369	9	.013	.065	.550	300	35
5371	11	.013	.065	.580	300	35
5372	12	.013	.065	.600	300	35
5375	15	.013	.065	.650	300	35
18 (16×30) STRANDED—UL STYLE 2493						
5574	1	.018	.025	.200	400	50
5353	3	.016	.045	.405	400	30
5356	6	.016	.055	.575	400	30
5359	9	.016	.065	.660	400	30
5362	12	.016	.070	.765	400	30
5365	15	.016	.070	.820	400	30



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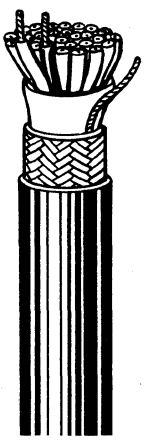
Computer Cable

OVERALL FOIL SHIELD AND BRAID MULTICONDUCTOR CABLE

Stranded tinned copper conductors. Color coded semi-rigid PVC insulation. Conductors are cabled. Overall Mylar™/aluminum foil shield plus 70% coverage tin copper braid shield. Gray PVC outer jacket. **Temperature Range:** 20°C. to +80°C (UL +80°C). CSA-SR-PVC. Passes UL VW-1. Meets FCC requirements Docket 20780 Class A and B. **Applications:** computer, data. **Trademark:** Mylar of DuPont.

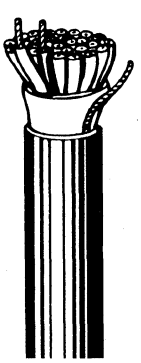
Consolidated Number	Pairs No.	Pairs Size	Pairs Strand	Ins. Wall	Jacket Wall	O.A. Dia.	Cap. pF/Ft.
5940	1	24	7/32	.010	.032	.180	35
5941	2	24	7/32	.010	.032	.250	35
5942	3	24	7/32	.010	.032	.265	30
5943	4	24	7/32	.010	.032	.290	30
5944	5	24	7/32	.010	.035	.295	30
5945	6	24	7/32	.010	.035	.311	30
5952	7	24	7/32	.010	.035	.320	30
5953	8	24	7/32	.010	.035	.335	30
5946	9	24	7/32	.010	.035	.370	30
5954	10	24	7/32	.010	.040	.385	30
5947	11	24	7/32	.010	.040	.395	30
5955	12½	24	7/32	.010	.040	.405	30
5948	15	24	7/32	.010	.040	.445	30
5956	18	24	7/32	.010	.040	.480	30
5949	19	24	7/32	.010	.040	.492	30
5957	25	24	7/32	.010	.045	.550	30
5950	27	24	7/32	.010	.045	.580	30
5951	51	24	7/32	.010	.050	.745	30
5960	1	22	7/30	.010	.032	.192	40
5961	2	22	7/30	.010	.032	.265	40
5962	3	22	7/30	.010	.032	.290	35
5963	4	22	7/30	.010	.032	.318	35
5964	5	22	7/30	.010	.035	.322	35
5965	6	22	7/30	.010	.035	.345	35
5972	7	22	7/30	.010	.035	.365	35
5973	8	22	7/30	.010	.035	.384	35
5966	9	22	7/30	.010	.035	.408	35
5974	10	22	7/30	.010	.040	.430	35
5967	11	22	7/30	.010	.040	.440	35
5975	12½	22	7/30	.010	.040	.455	35
5968	15	22	7/30	.010	.040	.502	35
5976	18	22	7/30	.010	.040	.535	35
5969	19	22	7/30	.010	.040	.545	35
5977	25	22	7/30	.010	.045	.620	35
5970	27	22	7/30	.010	.045	.655	35
5971	51	22	7/30	.010	.050	.885	35



OVERALL SHIELDED CABLE RS 232C

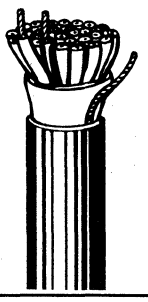
Color coded semi-rigid PVC insulation. Conductors are cabled and twisted into pairs where applicable. Overall Mylar/aluminum foil shield and stranded tinned copper drain wire. Gray PVC jacket. **Temperature Range:** −20°C. to +80°C. (UL +80°C). UL 2464 300V. CSA-SR-PVC. Meets RS 232C. **Applications:** computer; data.

Consolidated Number	Conductors No.	Conductors Size	Conductors Strand	Ins. Wall	Jacket Wall	O.A. Dia.	Cap. pF/Ft.
5722	2	22	7/30	.010	.025	.170	35
5723	3	22	7/30	.010	.035	.185	35
5724	4	22	7/30	.010	.035	.200	35
5731	5	22	7/30	.010	.035	.210	35
5726	6	22	7/30	.010	.035	.230	35
5727	7	22	7/30	.010	.035	.240	35
5728	8	22	7/30	.010	.035	.245	35
5729	9	22	7/30	.010	.035	.258	35
5732	10	22	7/30	.010	.035	.275	35
5735	15	22	7/30	.010	.035	.305	35
5736	20	22	7/30	.010	.035	.345	35
5737	25	22	7/30	.010	.040	.400	35
5738	30	22	7/30	.010	.040	.420	35
5739	40	22	7/30	.010	.040	.465	35
5741	50	22	7/30	.010	.045	.505	35
5710	2	24	7/32	.010	.035	.168	30
5711	3	24	7/32	.010	.035	.172	30
5712	4	24	7/32	.010	.035	.180	30
5713	5	24	7/32	.010	.035	.190	30
5714	6	24	7/32	.010	.035	.205	30
5715	7	24	7/32	.010	.035	.205	30
5716	8	24	7/32	.010	.035	.220	30
5717	9	24	7/32	.010	.035	.240	30
5718	10	24	7/32	.010	.035	.250	30
5719	15	24	7/32	.010	.035	.280	30
5720	20	24	7/32	.010	.035	.310	30
5725	25	24	7/32	.010	.040	.370	30
5730	30	24	7/32	.010	.040	.390	30
5740	40	24	7/32	.010	.040	.440	30
5750	50	24	7/32	.010	.045	.490	30



SHIELDED MULTIPAIR CABLE RS 232C

Consolidated Number	Pairs No.	Pairs Size	Pairs Strand	Ins. Wall	Jacket Wall	O.A. Dia.	Cap. pF/Ft.
5771	1	24	7/32	.010	.032	.156	40
5772	2	24	7/32	.010	.032	.222	30
5773	3	24	7/32	.010	.032	.232	30
5774	4	24	7/32	.010	.032	.265	30
5775	5	24	7/32	.010	.035	.295	30
5776	6	24	7/32	.010	.035	.295	30
5777	7	24	7/32	.010	.035	.300	30
5778	8	24	7/32	.010	.035	.330	30
5779	9	24	7/32	.010	.035	.340	30
5780	10	24	7/32	.010	.040	.380	30
5785	15	24	7/32	.010	.040	.425	30
5789	19	24	7/32	.010	.040	.450	30
5790	25	24	7/32	.010	.045	.515	30
5791	50	24	7/32	.010	.050	.700	30



COAXIAL COMPUTER CABLE (A)

Solid Copperweld™ (CW), stranded CW, or stranded copper conductors. Solid PE, foam PE, air foam "FEP" Teflon™. Overall bare copper braid shield. Non-contaminating black PVC or (4479) "FEP" Teflon outer jacket. **Temperature:** −20°C. to +80°C. Poly PVC. **Temperature:** −40°C. to +200°C. FEP Teflon. **Applications:** computer, data transmission. **Trademarks:** Teflon of DuPont and Copperweld of Copperweld Steel Co.

Consolidated Number	RG Type	Imp. Ohms	Center Conductor Size	Center Conductor Strand	Nom. O.D.	V.P. %	Cap. pF/Ft.
4414	59 U	75	22	7/30	.242	78	17.3
4452	62 U	93	22	solid	.242	84	13.5
4453	62A U	93	22	(solid)	.242	84	13.5
4456	62A U	93	22	(solid)	.242	84	13.5
4499	62A U	93	22	(solid)	.260	80	14.5
4472	62B U	93	24	7/32	.242	84	13.5
4479	62A U	93	22	(solid)	.216	85	14.5

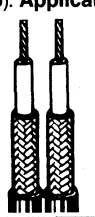


TWIN COAXIAL WANG STYLE WORD PROCESSING CABLE (B)

(4599) Solid bare CW conductors. Solid polyethylene insulation. Overall bare copper braid shield. Conductors laid parallel. Figure "eight" construction with black noncontaminating PVC jacket. **Temperature Range:** −20°C. to +80°C. **Applications:** computer; data; word processing cable.

(4799) Solid bare CW conductors. FEP Teflon™ insulation. Overall bare copper braid shield. Conductors laid parallel. Figure "eight" construction. FEP Teflon outer jacket. **Temperature Range:** −40°C. to +200°C. UL Listed-Subject 13. NEC Article 725-2(b). **Applications:** Computer; data; word processing cable.

Consolidated Number	RG Type	Imp. Ohms	Center Conductor Size	Center Conductor Strand	Nom. O.D.	V.P. %	Cap. pF/Ft.
4599	59B U	75	22	(solid)	.250 .595	66	20.5
4799	59B U	75	22	(solid)	.206 .450	70	19.7



TWINAXIAL DATA CABLE

Stranded copper or bare copper conductors. Color coded polyethylene insulation. Color coded PVC outer jacket. **Temperature Range:** −20°C. to +60°C. (UL +60°C). UL 2092, UL2582. No crosstalk. UL 2498. UL 2772. Balanced line operation. **Applications:** data transmission; broadcast.

Consolidated Number	RG UL Type	Imp. Ohms	Center Conductors No.	Center Conductors Size	Center Conductors Strand	Nom. O.D.	V.P. %	Cap. pF/Ft.
4591	2092	78	2	20	7/28	.242	66	19.7
4465	108A U	78	2	20	7/28	.235	66	23.5
4598	2582	78	2	20	7/28	.243	66	19.7
4475	22B U	95	2	18	7/26	.420	66	16.0
4592	2498	100	2	20	7/28	.330	66	15.5
4594	2092	124	2	25	7/33	.242	66	12.2
4596	2772	150	2	22	19/34	.350	78	8.8



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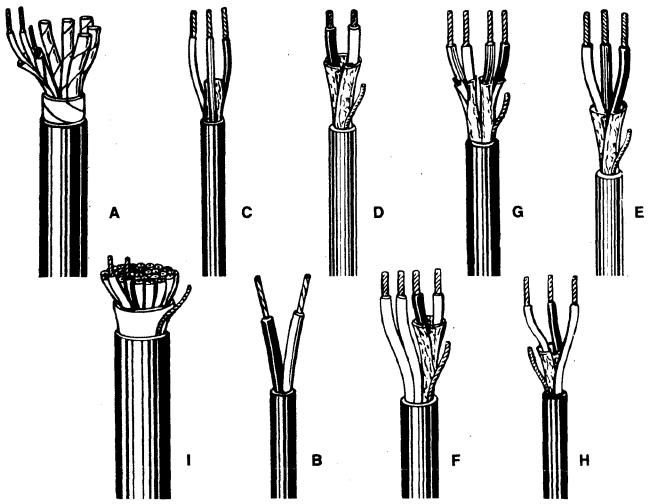
Multiconductor Cables



PVC JACKETED 2-PAIR & 3-COND. CABLES

Stranded, tinned copper conductors. Color coded polyethylene (PE), polypropylene (polyp) or polyvinylchloride (PVC) insulation: color codes available upon request. Conductors shielded. Mylar† polyester reinforced aluminum foil shield overall. Tinned copper drain wire. Gray PVC jacket. **Temperature Range:** −20°C to +80°C (UL to +80°C). **Voltage Rating:** 300 V.

Cat. No.	Gauge and Strand	Insulation Wall In.	Insulation Wall Type	Jacket Wall In.	Overall Dia. In.	Cap. pF/ft.*
INDIVIDUALLY SHIELDED 2-PAIR CABLES (FIG. G)—UL LISTED						
5594	22 (7×30)	.008	Polyp.	.019	.165	35
5592#	22 (7×30)	.008	Polyp.	.030	.198	35
ONE PAIR SHIELDED, ONE PAIR UNSHIELDED (FIG. F)—UL LISTED						
5571	22 (7×30)	.009	PE	.019	.185	34
5595	20 (7×28)	.015	PE	.028	.230	42
3-COND. CABLES—ONE PAIR SHIELDED ONE COND. UNSHIELDED (FIG. H)						
5701	22 (7×30)	.013	PVC	.032	.199	28
5702	20 (7×28)	.014	PE	.028	.210	26

*Capacitance between conductors and shield. #Same as No. 5594, but with addition of an overall Mylar† polyester reinforced aluminum foil shield and 24 AWG stranded, tinned copper drain wire.

"LOW-CAP" INDIVIDUALLY SHIELDED PAIR COMPUTER CABLE (FIG. A)

(Meets EIA RS-422B Type Requirements)

Stranded, tinned copper conductors. Color-coded "Low-Cap" foamed polypropylene insulation. Conductors are cabled. Each pair shielded with Mylar† polyester reinforced aluminum foil and contains stranded, tinned copper drain wire. Overall Mylar† polyester reinforced aluminum foil shield with stranded, tinned copper drain wire. Black PVC jacket. **Temperature Range:** −20°C to +80°C. UL Listed, Style 2493. **Voltage Range:** 300 V.

Cat. No.	No. of Pairs	Gauge and Strand	Overall Dia. In.	Imp. Ohms	Cap. pF/ft.*
5343	3	24 (7×32)	.350	100	12.5
5346	6	24 (7×32)	.460	100	12.5
5349	9	24 (7×32)	.570	100	12.5
5341	11	24 (7×32)	.610	100	12.5
5342	12	24 (7×32)	.630	100	12.5
5345	15	24 (7×32)	.700	100	12.5
5357	17	24 (7×32)	.730	100	12.5
5340	19	24 (7×32)	.740	100	12.5
5344	27	24 (7×32)	.920	100	12.5

Capacitance between conductors. †Registered Trade Mark of E.I. DuPont de Nemours & Co., Inc.

UL SUBJECT 13 POWER LIMITED CIRCUIT CABLE

Stranded, tinned copper conductors. Color-coded PVC insulation; color codes available upon request. Overall Mylar† polyester reinforced aluminum foil shield. Stranded, tinner copper drain wire (shielded versions). Gray PVC jacket. **Temperature Range:** −30°C to +105°C. (UL Subject 13 to −105°C). **Voltage Rating:** 300 V. Article 725 NEC. Applicance Wiring Material Style 2464. Certified CSA-IR-64, UL 70,000 BTU Flame and Tray Cable Teat. UL listed as tray and cable. Class 2 and 3 circuits.

Cat. No.	No. of Cond.	Gauge and Strand	Insul. Wall In.	Jacket Wall In.	Overall Dia. In.
UNSHIELDED 2-CONDUCTOR CABLE (FIG. B)					
5001	2	22 (7×30)	.016	.038	.200
5002	2	20 (10×30)	.016	.038	.214
5003	2	18 (16×30)	.016	.038	.230
5004	2	16 (26×30)	.016	.038	.260
5005	2	14 (41×30)	.020	.043	.324
5006	2	12 (65×30)	.032	.053	.410
UNSHIELDED 3-CONDUCTOR CABLE (FIG. C)					
5020	3	22 (7×30)	.016	.038	.210
5021	3	20 (10×30)	.016	.038	.225
5022	3	18 (16×30)	.016	.038	.246
5023	3	16 (26×30)	.016	.038	.274
5024	3	14 (41×30)	.022	.043	.342
SHIELDED 2-CONDUCTOR CABLE (FIG. D)					
5010	2	22 (7×30)	.016	.038	.202
5011	2	20 (10×30)	.016	.038	.216
5012	2	18 (16×30)	.016	.038	.236
5013	2	16 (26×30)	.016	.038	.262
5014	2	14 (41×30)	.022	.043	.326
5015	2	12 (65×30)	.032	.053	.412
SHIELDED 3-CONDUCTOR CABLE (FIG. E)					
5030	3	22 (7×30)	.016	.038	.212
5031	3	20 (10×30)	.016	.038	.227
5032	3	18 (16×30)	.016	.038	.248
5033	3	16 (26×30)	.016	.038	.276
5034	3	14 (41×30)	.020	.043	.344
OVERALL SHIELDED MULTIPLE-PAIR CABLE (FIG. I)					
5040	2	22 (7×30)	.016	.043	.310
5041	3	22 (7×30)	.016	.043	.326
5042	4	22 (7×30)	.016	.043	.353
5043	6	22 (7×30)	.016	.053	.425
5044	9	22 (7×30)	.016	.053	.488
5045	11	22 (7×30)	.016	.053	.536
5046	15	22 (7×30)	.016	.053	.594
5047	19	22 (7×30)	.016	.063	.631
5048	27	22 (7×30)	.016	.063	.761
5049	51	22 (7×30)	.016	.075	.950
5050	2	18 (16×30)	.016	.043	.375
5051	3	18 (26×30)	.016	.053	.416
5052	4	18 (26×30)	.016	.053	.451
5053	6	18 (26×30)	.016	.053	.516
5054	9	18 (26×30)	.016	.053	.576
5055	11	18 (26×30)	.016	.063	.676
5056	15	18 (26×30)	.016	.063	.751
INDIVIDUALLY SHIELDED-PAIR CABLE (FIG. A)					
5060	2	22 (7×30)	.016	.043	.316
5061	3	22 (7×30)	.016	.043	.331
5062	4	22 (7×30)	.016	.043	.360
5063	6	22 (7×30)	.016	.053	.431
5064	9	22 (7×30)	.016	.053	.500
5065	11	22 (7×30)	.016	.053	.551
5066	15	22 (7×30)	.016	.053	.606
5067	19	22 (7×30)	.016	.063	.646
5068	27	22 (7×30)	.016	.063	.776
5069	51	22 (7×30)	.016	.075	.970
5070	2	18 (16×30)	.016	.043	.316
5071	3	18 (16×30)	.016	.053	.421
5072	4	18 (16×30)	.016	.053	.456
5073	6	18 (16×30)	.016	.053	.526
5074	9	18 (16×30)	.016	.063	.628
5075	11	18 (16×30)	.016	.063	.688
5076	15	18 (16×30)	.016	.063	.766

†Registered Trade Mark of E.I. DuPont de Nemours & Co., Inc.

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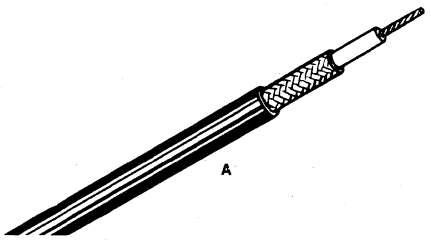
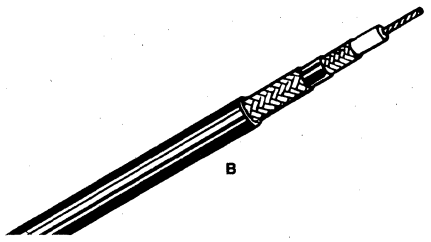
RG COAXIAL CABLE TRANSMISSION LINE





RG TYPE POLYETHYLENE COAXIAL CABLE (FIG. A)

Cat. No.	RG Type	Jacket O.D. In.	Jacket Type	Shield‡ Outer	Shield‡ Inner	Insulation Dielectric Dia./Type*	Center Conductor#	V.P. %	Nom. Cap. pF/ft.	Max. RMS Volts	Nom. Imp. Ohms
4432	5B/U	.332	1	S	S	.181/P	.053S	65.9	28.5	3000	50
4433	6A/U	.332	11A	C	C	.185/P	21CW	65.9	20	2700	75
4415	8/U	.405	1	.....	C	.285/P	7/21C	65.9	29.5	4000	52
4435	8A/U	.405	11A	.....	C	.285/P	7/21C	65.9	29.5	4000	52
4439	10A/U	.475	11A	.....	C	.285/P	7/21C	65.9	30.5	4000	50
4419	11/U	.405	1	.....	C	.285/P	7/26TC	65.9	20.5	4000	75
4440	11A/U	.405	11A	.....	C	.285/P	7/26TC	65.9	20.5	4000	75
4443	13A/U	.425	11A	C	C	.285/P	7/26TC	65.9	20.5	4000	75
4468	14A/U	.545	11A	C	C	.370/P	10C	65.9	30.0	5500	52
4482	17A/U	.870	11A	.....	C	.680/P	.188	65.9	29.5	11000	52
4471	22/U	.405	1	.....	TC	.285/P	Two 7/.0152C	65.9	16.0	1000	95
4475	22B/U	.420	11A	TC	TC	.285/P	Two 7/.0152C	65.9	16.0	1000	95
4469	54A/U	.250	111A	.....	TC	.178/P	7/.0152C	65.9	26.5	3000	58
4447	55/U	.206	111A	TC	TC	.206/P	20C	65.9	28.5	1900	53.5
4448	55A/U	.216	11A	S	S	.116/P	.035S	65.9	29.5	1900	50
4484	55B/U	.206	111A	TC	TC	.116/P	20S	65.9	28.5	1900	53.5
4405	58/U	.195	1	.....	TC	.116/P	20C	65.9	28.5	1900	53.5
4449	58A/U	.195	1	.....	TC	.116/P	19/0071TC	65.9	29.5	1900	52
4474	55B/U	.195	11A	.....	TC	.116/P	20C	65.9	28.5	1900	53.5
4450	58C/U	.195	11A	.....	TC	.116/P	19/0071TC	65.9	29.5	1900	50
4401	59/U	.242	1-Blk.	.....	C	.146/P	22CW	65.9	21	2300	73
4402	59/U	.242	1-Gry.	.....	C	.146/P	22CW	65.9	21	2300	73
4403	59/U	.242	1-Wht.	.....	C	.146/P	22CW	65.9	21	2300	73
4451	59A/U	.242	11A	.....	C	.146/P	.0253CW	65.9	20.5	2300	75
4470	59B/U	.242	11A	.....	C	.146/P	.0253CW	65.9	20.5	2300	75
4452	62/U	.242	1	.....	C	.146/ASP	22CW	84	13.5	750	93
4456	62A/U	.242	11A	.....	C	.146/ASP	22CW	84	13.5	750	93
4472	62B/U	.242	11A	.....	C	.146/ASP	7/32CW	84	13.5	750	93
4454	63/U	.405	1	.....	C	.285/ASP	22CW	84	10.0	1000	125
4455	63B/U	.405	11A	.....	C	.285/ASP	22CW	84	10.0	1000	125
4485	71B/U	.250	111A	TC	TC	.146/ASP	22CW	84	13.5	750	93
4487	79B/U	.475	11A	.....	C	.285/P	22CW	84	10.0	1000	125
4412	100/U	.242	1	.....	C	.146/P	19/.0147TC	65.9	44	2000	35
4465	108A/U	.235	11A	.....	TC	.235/P	Two 7/28TC	65.9	23.5	1000	78
4426	114/U	.405	1	.....	C	.285/P	33CW	65.9	6.8	1000	185
4427	114A/U	.405	11A	.....	C	.285/P	33CW	65.9	7.5	1000	185
4457	122/U	.160	11A	.....	TC	.096/P	27/36TC	65.9	29.5	1900	50
4428	130/U	.625	1	.....	TC	.472/P	Two 7/21C	65.9	17	3000	95
4404	164/U	.870	11A	.....	C	.680/P	.0145C	65.9	21	10000	75
4459	174/U	.105	1	.....	TC	.060/P	7/.0063CW	65.9	30	1500	50
4473	174A/U	.105	11A	.....	C	.060/P	7/.0063CW	65.9	30	1500	50
4489	213/U	.405	11A	.....	C	.285/P	7/.0296C	65.9	29.5	5000	50
4490	214/U	.425	11A	S	S	.285/P	7/.0296S	65.9	29.5	5000	50
4497	215/U	.475	11	.....	C	.285/P	7/.029C	65.9	29.5	4000	50
4491	216/U	.425	11A	C	C	.285/P	7/26TC	65.9	20.5	4000	75
4492	217/U	.545	11A	C	C	.370/P	.106C	65.9	29.5	7000	50
4493	218/U	.870	11A	.....	C	.680/P	.195C	65.9	29.5	11000	50
4408	220/U	1.120	11A	.....	C	.910/P	.260C	65.9	29.5	14000	50
4409	221/U	1.195	11A	.....	C	.910/P	.260C	65.9	29.5	14000	50
4496	223/U	.216	11A	S	S	.116/P	.035S	65.9	29.5	1900	50

‡C—Bare copper; S—Silver copper; TC—Tinned copper. *P—Polyethylene ASP—Air spaced polyethylene. #C—Bare copper; CW—Copperweld; S—Silver copper; TC—Tinned copper. *Also available in 100′ and 500′ spools except as noted. †Available in 500′ and 1000′ spools only.

RG TRIAXIAL CABLE—SOLID POLYETHYLENE DIELECTRIC (FIG. B.)

Cat. No.	RG Type	Jacket O.D. In.	Jacket Type	Shield/Shield	Insul. Dielect-ric	Center Conductor*	V.P. %	Nom. Cap. pF/ft.	Max. RMS Volts	Nom. Imp., Ohms
4462	8/U	.480	1	Copper Copper	.285	7/21TC	65.9	29.5	5000	52
4461	11/U	.460	1	Copper Copper	.285	7/26TC	65.9	29.5	5000	75
4463	58A/U	.285	1	TC TC	.116	19.0071TC	65.9	28.5	1900	52
4460	59/U	.335	1	Copper Copper	.146	22CW	65.9	21.0	2300	73

*TC—Tinned copper; CW—Copperweld.

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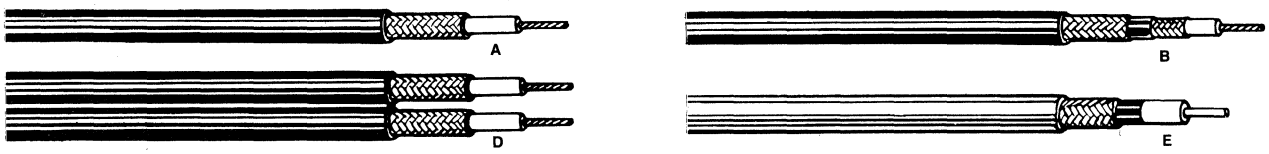

RG COAXIAL CABLE—FOAM POLYETHYLENE DIELECTRIC (FIG. A)

Cat. No.	RG Type	Jacket O.D. In.	Jacket Type	Shield	Insul. Dielect-ric	Center Conductor*	V.P. %	Nom. Cap. pF/ft.	Max. RMS Volts	Nom. Imp. Ohms
4477	8/U	.405	1	Copper	.285	7/21C	80	24.5	1500	50
4476	11/U	.405	1	Copper	.285	14C	80	16.5	1300	75
4498	58/U	.195	1	Copper	.116	20C	80	28.5	1000	53.5
4478	59/U	.242	1	Copper	.146	22CW	80	17.0	1000	75

*C—Copper; CW—Copperweld. *Also available in 100′ and 500′ spools.

RG TRIAXIAL CABLE—FOAM POLYETHYLENE DIELECTRIC (FIG. B)

Cat. No.	RG Type	Jacket O.D. In.	Jacket Type	Shield/Shield	Insul. Dielect-ric	Center Conductor*	V.P. %	Nom. Cap. pF/ft.	Max. RMS Volts	Nom. Imp. Ohms
4480	11/U	.475	1	Copper/Copper	.285	14C	80	16.5	1300	75
4481	59/U	.335	1	Copper/Copper	.146	22CW	80	17.0	1000	75

*C—Copper; CW—Copperweld. *Also available in 100′ and 500′ spools.

75-OHM TWIN COAXIAL WANG STYLE WORD PROCESSING CABLE (FIG. D)

Cat. No.	RG Type	Center Conductor	Dielectric	Shield	Shield Cov. %	O.D. In.	Type	V.P. %	Nom. Cap. pF/ft.
UL LISTED, STYLE 20020—POLYETHYLENE DIELECTRIC									
4599	59B/U	2 cond., .0253CW	.146″ polyethylene	Copper	95	.250 × .595	11A	66	20.5
UL LISTED, SUBJECT 13—FEP TEFLON† DIELECTRIC									
4799	59B/U	2 cond., .0253CW	.135″ FEP Teflon†	Copper	95	.206 × .450	FEP Teflon	70	19.7

HIGH TEMPERATURE RG TYPE TEFLON† COAXIAL CABLE (FIG. A)

Solid or stranded center conductors. Bare or silver-plated copper braid; single and double braids. Teflon† dielectrics. **Applications:** RF communications, data transmission, video.

Cat. No.	MIL No. RG-	Center Conductor Size/Mat.#	Dielectric Dia./ Type	Shield(s)†	Jacket O.D. In.	Jacket Type‡	Nom. Cap. pF/ft.	Max. Oper. Volts	Nom. Imp. Ohms
4715	141/U	.039 SPCW	.116 F-1	F	.190	V	28.5	1900	50
4716	141A/U	.039 SCCS	.116 F-1	F	.190	V	28.5	1900	50
4717	142/U	.0359 SCCS	.116 F-1	B	.206	V	28.5	1900	50
4718	142A/U	.039 SCCS	.116 F-1	B	.206	V	28.5	1900	50
4719	142B/U	.039 SCCS	.116 F-1	B	.195	FEP†	28.5	1900	50
4727	178/U	7/.0039 SPCW	.036 F-1	G	.079	KEL-F	27.9	1000	50
4728	178A/U	7/.004 SCCS	.024 F-1	G	.075	KEL-F	27.9	1000	50
4729	178B/U	7/.004 SCCS	.034 F-1	A	.075	FEP†	.....	1000	50
4761	179/U	7/.004 SCCS	.063 F-1	A	.100	KEL-F	.....	1200	75
4730	179A/U	7/.004 SCCS	.063 F-1	G	.105	KEL-F	20.0	1200	75
4731	179B/U	7/.004 SCCS	.063 F-1	A	.105	FEP†	.....	1200	75
4732	180/U	7/.0039 SCCS	.103 F-1	G	.141	KEL-F	15.3	1500	93
4733	180A/U	7/.004 SCCS	.102 F-1	G	.145	KEL-F	14.5	1500	95
4734	180B/U	7/.004 SCCS	.102 F-1	A	.145	FEP†	.....	1500	95
4735	187/U	7/.004 SCCS	.060 F-1	A	.110	Teflon	.....	1200	75
4736	187A/U	7/.004 SCCS	.060 F-1	A	.110	TFE†	.....	1200	75
4737	188/U	7/.0067 SCCS	.060 F-1	A	.110	Teflon	.....	1200	50
4738	188A/U	7/.0067 SCCS	.060 F-1	A	.110	TFE†	.....	1200	50
4741	196/U	7/.004 SCCS	.034 F-1	A	.080	Teflon	.....	1000	50
4742	196A/U	7/.004 SCCS	.034 F-1	A	.080	TFE†	.....	1000	50
4757	303/U	.039 SCCS	.116 F-1	A	.170	FEP†	28.5	1900	50
4759	316/U	7/.0067 SCCS	.060 F-1	A	.102	FEP†	.....	1200	50

#C—Copper; K—Karma or equal; SCC—Silver covered copper; SCCS—Silver covered copper steel; SPC—Silver plated copper; SPCB—Silver plated cadmium bronze; SPCW—Silver plated Copperweld.
*F-1—Solid Teflon†.
†A—Silver covered copper, single braid; B—Silver coated copper, double braid; C—Copper, double braid; D—Copper, single braid; E—Karma or equal, single braid; F—Silver coated copper, single braid; G—Silver plated copper, single braid; H—Silver covered copper, double braid.
‡V—High temperature, lacquer-impregnated fiberglass braid with Teflon† between shield and jacket; V1—High temperature, lacquer-impregnated polyester fiber over wrapped or extruded silicone-impregnated fiberglass; 11A—Low temperature, black, non-contaminating PVC; FEP—Fluorinated ethylene propylene copolymer, 200 C Teflon†; TFE—Tetrafluoride ethylene propylene copolymer, 250 C Teflon; KEL-F—
&With armor.

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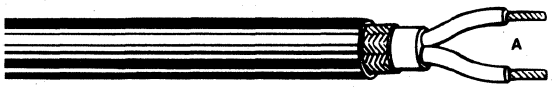
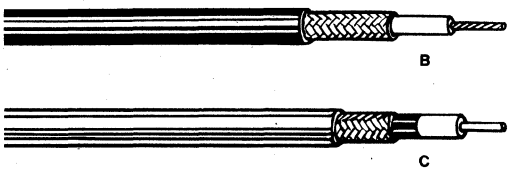
Coaxial Cables





TWINAXIAL DATA CABLES (FIG. A)

Stranded, tinned or bare copper conductors. Color-coded PE insulation; color codes available on request. Braided, tinned copper or mylar† polyester reinforced aluminum foil shield. Stranded, tinned copper drain wire. PVC outer jacket. **Temperature Range:** −20°C to +60°C (UL to +60°C). **Applications:** Data transmission, broadcast.

Cat. No.	UL or MIL No.	Gauge and Strand #	Insulation	Shield	Shield Cov. %	Nom. O.D. In.	Nom. V.P. %	Nom. Cap. pF/ft.*
78-OHM—UL LISTED								
4591	UL-2092	20 (7×28) TC	PE	TC braid	93	.242	66	19.7
4465	RG-108A/U	20 (7×28) TC	PE	TC braid	90	.235	66	23.5
4598	UL-2582	20 (7×28) TC	PE	Mylar/alum. foil plus TC braid	57	.243	66	19.7
95-OHM								
4475	RG-22B/U	18 (7×26) BC	PE	2/TC braid	95	.420	66	16
100-OHM—UL LISTED								
4592	UL-2498	20 (7×28) 1 tinned, 1 bare	PE	TC braid	95	.330	66	15.5
124-OHM—UL LISTED								
4594	UL-2092	25 (7×33) TC	.027" foam PE	Mylar alum. foil, TC drain wire	.....	.242	66	12.2
150-OHM—UL LISTED								
4596	UL-2772	22 (19×34) TC	Foam PE	Mylar alumn. foil, TC drain wire	.....	.350	78	8.8

#BC—Bare copper; TC—Tinned copper. *Nom. capacitance between conductors. †Also available in 2000' putup.

COAXIAL COMPUTER CABLES (FIG. B)

Solid Copperweld or stranded copper conductors. Semi-solid or foam PE or FEP Teflon† insulation. Overall bare copper braid shield. Non-contaminating black PVC or FEP Teflon† outer jacket. **Temperature Range:** −20°C to +80°C. **Applications:** Computer, data transmission.

Cat. No.	MIL No. RG-	Center Conductor #	Dielectric	Shield Cov. %	Nom. O.D. In.	V.P. %	Nom. Cap. pF/ft.*	Nom. Imp. Ohms
75-OHM—UL STYLE 1354								
4414	59/U	22 (7×30) C	Foam PE	95	.242	78	17.3	75
93-OHM—UL STYLE 1478								
4452	62/U	22 (solid) CW	Semi-solid PE	87	.242	84	13.5	93
4453	62A/U	22 (solid) CW	Semi-solid PE	87	.242	84	13.5	93
4456	62A/U§	22 (solid) CW	Semi-solid PE	96	.242	84	13.5	93
4499	62A/U†	22 (solid) CW	Semi-solid PE	90	.260	80	14.5	93
4472	62B/U	24 (7×32) CW	Semi-solid PE	90	.242	84	13.5	93
4479	62A/U	.0253CW	FEP Teflon†	96	.216	85	14.5	93

#C—Bare Copper; CW—Copperweld. §IBM, 323921. †Modified. ‡Available in 1000' and 5000t putups only.

6/U TYPE MYLAR† POLYESTER REINFORCED ALUMINUM FOIL AND BRAID (FIG. C)

Cat. No.	Center Conductor*	Insulation O.D. In.	Insulation Type	Shields	Jacket	Nom. O.D. In.	Nom. V.P. %	Nom. Cap. pF/ft.	Nom. Imp. Ohms	Nom. Atten-uation
4585	18 (solid) BCW	.180	CP†	Mylar† polyester reinforced alum-inum foil, 60% aluminum braid	Black PVC	.262	78	17.3	75	#

*BCW—Bare Copperweld. †CP—Cellular polyethylene #1.5 dB 100 ft. at 50 MHz; 2.1 dB 100 ft. at 100 MHz; 3.1 dB 100 ft. at 200 MHz; 5dB 100 ft. at 500 MHz; 6.9 dB 100 ft. at 900 MHz. †Registered Trade Mark of E.I. DuPont de Nemours & Co., Inc.

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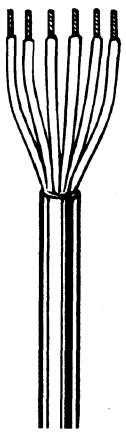
Multiconductor Cables

PVC JACKETED UNSHIELDED CABLES (FIG. A)

Stranded, tinned copper conductors. Color coded PVC insulation; color codes available on request. Conductors cabled. Gray PVC outer jacket. **Temperature Range:** −20°C. to +80°C.

Cat. No.	No. of Cond.	Gauge and Strands	Insul. Wall In.	Jacket Wall In.	Overall Dia. In.
22 GAUGE—UL STYLE 2335, 200 V					
5400	2	22 (7×30)	.010	.020	.140
5401	3	22 (7×30)	.010	.020	.150
5406	4	22 (7×30)	.010	.020	.160
5411	5	22 (7×30)	.010	.020	.175
5416	6	22 (7×30)	.010	.020	.200
5421	7	22 (7×30)	.010	.020	.210
5426	8	22 (7×30)	.010	.020	.215
5431	9	22 (7×30)	.010	.020	.225
5432	10	22 (7×30)	.010	.020	.235
5434	12	22 (7×30)	.010	.020	.250
5438	15	22 (7×30)	.010	.020	.268
5440	20	22 (7×30)	.010	.025	.300
5442	25	22 (7×30)	.010	.035	.350
5446	30	22 (7×30)	.010	.035	.375
5448	40	22 (7×30)	.010	.035	.435
5450	50	22 (7×30)	.010	.045	.500
5460	60	22 (7×30)	.010	.045	.530
22 GAUGE—UL LISTED 2335, 200 V					
5640	2	20 (10×30)	.015	.025	.180
5641	3	20 (10×30)	.015	.025	.190
5642	4	20 (10×30)	.015	.025	.190
5643	5	20 (10×30)	.015	.025	.222
5644	7	20 (10×30)	.015	.025	.240
5645	9	20 (10×30)	.015	.030	.300
5646	12	20 (10×30)	.015	.030	.320
18 GAUGE—UL STYLE 2464, 300 V					
5468	3	18 (16×30)	.018	.030	.240
5470	4	18 (16×30)	.018	.032	.265
5471	5	18 (16×30)	.018	.037	.295
5472	7	18 (16×30)	.018	.037	.324
5473	9	18 (16×30)	.018	.037	.379
5474	12	18 (16×30)	.018	.040	.412
5475	15	18 (16×30)	.018	.045	.465
5476	19	18 (16×30)	.018	.045	.505
5477	25	18 (16×30)	.018	.060	.600
16 GAUGE—UL STYLE, 2463, 600 V					
5466	3	16 (19×29)	.030	.045	.360
5480	4	16 (19×29)	.030	.045	.375
5488	5	16 (19×29)	.030	.045	.405
5481	7	16 (19×29)	.030	.045	.455
5489	9	16 (19×29)	.030	.045	.510
5482	12	16 (19×29)	.030	.060	.600
5483	15	16 (19×29)	.030	.060	.650
5484	19	16 (19×29)	.030	.065	.715
5490	25	16 (19×29)	.030	.065	.820
14 GAUGE—UL STYLE 2463, 600 V					
5464	3	14 (19×27)	.045	.045	.465
5485	4	14 (19×27)	.045	.045	.495
5491	5	14 (19×27)	.045	.060	.560
5486	7	14 (19×27)	.045	.060	.630
5492	9	14 (19×27)	.045	.065	.750
5487	12	14 (19×27)	.045	.065	.770
5493	15	14 (19×27)	.045	.080	.900

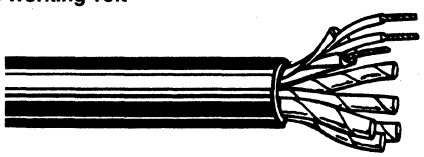


4-PAIR SHIELDED INSTRUMENTATION CABLES (FIG. C)

Stranded, tinned copper conductors. Color-coded polypropylene insulation; color codes available on request. Conductors cabled into pairs, each pair individually shielded with Mylar† polyester reinforced aluminum foil. Tinned copper drain wire. Gray PVC outer jacket. **Temperature Range:** −40°C to +105°C. **Suggested Working Voltage:** 400 V.

Cat. No.	Gauge and Strand	Insul. Wall In.	Jacket Wall In.	Overall Dia. In.	Cap. pF/ft.*
5528	20 (7×28)	.015	.030	.345	27

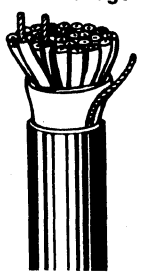
*Capacitance between conductors



OVERALL SHIELDED, MULTI-PAIRED CABLES—UL LISTED (FIG. A)

22 AWG, solid, tinned copper conductors. Color-coded PVC insulation; color codes available on request. Conductors twisted into pairs. Overall Mylar† polyester reinforced aluminum foil shield. Stranded, tinned copper drain wire. Gray PVC overall jacket. **Temperature Range:** −20°C to +80°C (UL to +80°C). UL Style 2464. **Voltage Rating:** 300 V. CSA SR-PVC.

Cat. No.	No. of Pairs	Insul. Wall In.	Jacket Wall In.	Overall Wall In.	Cap. pF/ft.*
5912	2	.013	.032	.224	35
5914	4	.013	.032	.265	35
5916	6	.013	.035	.321	35
5919	9	.013	.037	.373	35
5925	15	.013	.040	.437	35
5929	19	.013	.040	.475	35
5937	27	.013	.045	.590	35
5901	38	.008	.045	.600	35
5902	51	.008	.050	.700	35



BRAIDED, TINNNED COPPER SHIELDED COMPUTER & CONTROL CABLE (FIG. B)

Stranded, tinned copper conductors. Color-coded PVC insulation; color codes available on request. Conductors cabled with fillers and wrap. Overall braided, tinned copper sheild. Gray PVC jacket. **Temperature Range:** −20°C to +80°C (UL to +80°C). UL listed. **Voltage Rating:** 300 V.

Cat. No.	No. of Cond.	Gauge and Strands	Insul. Wall In.	Jacket Wall In.	Overall Dia. In.
24 AWG—UL STYLE 2343					
5802	5	24 (7×32)	.010	.060	.266
5803	7	24 (7×32)	.010	.060	.281
5804	12	24 (7×32)	.010	.060	.331
5805	15	24 (7×32)	.010	.060	.356
5806	19	24 (7×32)	.010	.060	.375
5807	27	24 (7×32)	.010	.060	.426
5808	37	24 (7×32)	.010	.060	.464
5809	48	24 (7×32)	.010	.060	.516
5810	60	24 (7×32)	.010	.060	.553
22 AWG—UL STYLE 2343					
5821	5	22 (7×30)	.010	.060	.284
5822	7	22 (7×30)	.010	.060	.296
5833	12	22 (7×30)	.010	.060	.356
5834	15	22 (7×30)	.010	.060	.390
5835	19	22 (7×30)	.010	.060	.406
5836	27	22 (7×30)	.010	.060	.457
5837	37	22 (7×30)	.010	.060	.501
5838	48	22 (7×30)	.010	.060	.564
5839	60	22 (7×30)	.010	.060	.608
20 AWG—UL STYLE 2725					
1722	2	20 (26×34)	.015	.020	.220
1723	3	20 (26×34)	.015	.020	.235
1724	4	20 (26×34)	.015	.020	.240
1725	5	20 (26×34)	.015	.020	.260
1726	6	20 (26×34)	.015	.020	.280
1727	7	20 (26×34)	.015	.020	.290
1728	8	20 (26×34)	.015	.020	.300
1740	10	20 (26×34)	.015	.045	.360
1741	12	20 (26×34)	.015	.045	.385
1742	15	20 (26×34)	.015	.045	.415
1743	20	20 (26×34)	.015	.045	.455
20 AWG—UL STYLE 2343					
5841	19	20 (19×32)	.010	.060	.450
5842	27	20 (19×32)	.010	.060	.575
5843	37	20 (19×32)	.010	.060	.645
5844	48	20 (19×32)	.010	.060	.700



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Hook-Up Wire

80°C PVC INSULATED WIRE (FIG. A)

Solid or stranded tinned copper or stranded "topcoat" conductor (stranded copper conductor passed through a tin bath to bond individual strands (together). Color-coded PVC insulation; .016" nom. thickness. **Temperature Range:** −40°C to +80°C. **Voltage Rating:** 300 V.

Cat. No.	Gauge and Strand	Insul. Wall In.	Nom. O.D. In.
TINNED CONDUCTORS—UL-1007 CSA-TR-64 VW-1			
801	22 (solid)	.016	.065
811	20 (solid)	.016	.071
841	18 (solid)	.016	.080
819	24 (7 × 32)	.016	.059
821	22 (7 × 30)	.016	.069
831	20 (10 × 30)	.016	.078
846	18 (16 × 30)	.016	.085
816	16 (26 × 30)	.016	.095
"TOPCOAT" CONDUCTORS—UL-1007 CSA-TR-64 VW-1			
813	24 (7 × 32)	.016	.059
823	24 (7 × 30)	.016	.069
833	20 (10 × 30)	.016	.078
843	18 (16 × 30)	.016	.085
STRANDED CONDUCTORS—UL-1061 CSA-SR-64-PVC VW1			
896	22 (7 × 30)	.009	.050
897	20 (7 × 28)	.009	.058
898	18 (16 × 30)	.099	.068



105°C PVC INSULATED WIRE (FIG. B)

Stranded or solid tinned copper or stranded "Topcoat" conductor (stranded copper conductor passed through tin bath to bond individual strands together). Color-coded PVC insulation; .032 nom. thickness. **Temperature Range:** −30°C to +105°C. **Voltage Rating:** 600 V.

Cat. No.	Gauge and Strand	Insul. Wall In.	Nom. O.D. In.
TINNED CONDUCTORS—UL-1015 CSA-TEW-105 VW-1			
851	22 (solid)	.032	.097
856	20 (solid)	.032	.104
861	18 (solid)	.032	.112
866	22 (7 × 30)	.032	.102
871	20 (10 × 30)	.032	.110
876	18 (16 × 30)	.032	.119
890	16 (26 × 30)	.032	.127
891	14 (41 × 30)	.032	.141
892	12 (65 × 30)	.032	.160
893	10 (105 × 30)	.032	.194
TINNED CONDUCTORS—UL-1028 CSA-TEW-105 VW-1			
894	8 (133 × 30)	.032	.255
"TOPCOAT" CONDUCTORS—UL-1015 CSA-TEW-105 VW-1			
865	22 (7 × 30)	.032	.102
875	20 (7 × 28)	.032	.110
885	18 (16 × 30)	.032	.119



KYNAR INSULATED WIRE (FIG. A)

Silver-plated solid OFHC copper conductors. Color-coded Kynar insulation. UL Style 1422 and 1426. VW-1 vertical flame test. Rated 105°C.

Cat. No.	Gauge and Strand	Insul. Wall In.	Nom. O.D. In.
901	30 (solid)	.005	.020
902	28 (solid)	.005	.023
903	26 (solid)	.005	.026
904	24 (solid)	.005	.030



IRRADIATED PVC INSULATED WIRE (FIG. A)

Consolidated IRR/PVC is a polyvinylchloride insulation which has been cross-linked by an irradiation process, resulting in an insulation which is far superior to ordinary PVC. Extremely heat and abrasion resistant. Stranded, tinned copper conductors. **Max. Operating Temperature:** 105°C; UL Style 1429, 80°C.

Cat. No.	Gauge and Strand	Type Designation	Insul. Wall In.	Nom. O.D. In.	Rated Volts
MIL-W-16878 TYPE B—UL STYLE 1429					
920	26 (7×34)	B-26	.010	.039	600
921	24 (7×32)	B-24	.010	.044	600
927	24 (19×36)	B-24	.010	.045	600
922	22 (7×30)	B-22	.010	.050	600
928	22 (19×34)	B-22	.010	.051	600
923	20 (7×28)	B-20	.010	.058	600
929	20 (19×32)	B-20	.010	.059	600
924	18 (7×26)	B-18	.010	.068	600
930	18 (19×30)	B-18	.010	.068	600
925	16 (19×29)	B-16	.010	.078	600
MIL-W-16878 TYPE C—UL STYLE 1430					
931	24 (7×32)	C-24	.016	.058	1000
932	22 (7×30)	C-22	.016	.064	1000
933	20 (7×28)	C-20	.016	.072	1000
934	18 (19×30)	C-18	.016	.082	1000
935	16 (19×29)	C-16	.016	.092	1000
926	14 (19×27)	C-14	.016	.105	1000
936	12 (19×25)	C-12	.016	.124	1000

*When ordering, specify catalog number and MIL Type or UL Style. UL Style is identified by surface printing; MIL Type has no marking.



CROSS-LINKED (XLP) POLYETHYLENE INSULATED WIRE UL STYLES 3173 AND 3171—CSA (CL-1251) (FIG. B)

Stranded, tinned copper conductors. Cross-linked (XLP) polyethylene insulation. **Temperature Range:** −55°C to +125°C. **Working Voltage:** 600 V.

Cat. No.	Gauge and Strand	Insul. Wall In.	Nom. O.D. In.	UL Style
940	22 (7×30)	.030	.093	3173
941	20 (10×30)	.030	.100	3173
942	18 (16×30)	.030	.110	3173
943	16 (26×30)	.030	.123	3173
944	14 (41×30)	.030	.138	3173
945	12 (65×30)	.030	.162	3173
946	10 (65×28)	.030	.185	3171



SILICONE RUBBER INSULATED WIRE (FIG. E) UL LISTED

Stranded, tinned copper conductor (SF-2); flexible, stranded, tinned copper conductor (SFF-2). Color-coded, extruded silicone rubber insulation. Nom. insulation thickness, .031". Lacquered, white glass yarn braid outer jacket .009" thick. **Temperature Range:** −55°C to +200°C (SF-2); −55°C to +150°C (SFF-2). **Voltage Rating:** 600 V.

Cat. No.	Gauge and Strand	Nom. O.D. In.	Net per 1000	Cat. No.	Gauge and Strand	Nom. O.D. In.
TYPE SF-2				**TYPE SFF-2**		
9900	18 (7×26)	.126	**$286.28**	**9907**	18 (16×30)	.123
9901	16 (7×24)	.135	**329.59**	**9908**	16 (26×30)	.135
9902	14 (7×22)	.153	**382.72**	**9910**	14 (41×30)	.153
9903	12 (19×20)	.176	**515.38**	**9911**	12 (65×30)	.173
9904	10 (19×24)	.234	**821.70**			



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CIT-221 AND CIT-221V SERIES HEAT SHRINKABLE FLEXIBLE CROSS-LINKED POLYOLEFIN TUBING

Thermally stable Class B (130°C) material. Excellent flame retardant properties. CIT-221 Series meets MIL-I-23053C 5. CLasses and II, UL VW-1. Available in standard colors: Black, white or clear: clear tubing available only in Class II. CIT-221V Series materials meet the requirements of UL Standard 224, issue of February 21, 1979 and CSA Electrical Bulletin No. 985 Ptd. January 9, 1975. Available in black or white. CIT-221V Series are surface printed.

Consolidated Number*	Min. Supplied ID (In.)	Max. Recovered ID (In.)	Nom. Recovered Wall Thickness (In.)	6" Lengths Std. Pkg.	4" Lengths Std. Pkg.	Spools Ft. per Spool
CIT-221-3/64	.046	.023	.016	500'	100'	1000
CIT-221-1/16	.063	.031	.017	500	100	1000
CIT-221-3/32	0.92	.046	.020	500	100	500 1000
CIT-221-1/8	.125	.062	.020	500	100	500 1000
CIT-221-3/16	.187	.093	.020	500	100	500
CIT-221-1/4	.250	.125	.025	500	100	250 500
CIT-221-3/8	.375	.187	.025	500	100	200 250
CIT-221-1/2	.500	.250	.025	500	20	150 250
CIT-221-3/4	.750	.375	.030	500	20	100 250
CIT-221-1	1.000	.500	.035	500	20	100 250
CIT-221-1 1/2	1.500	.750	.040	500	20	100 125
CIT-221-2	2.000	1.000	.045	500	20	100 125



*For surface printed tubing, add the letter **V** following 221 in part number, i.e., CIT-221**V**-3:64; same prices.

CIT-105 SERIES HEAT SHRINKABLE FLEXIBLE PVC TUBING

Outstanding dieletric and mechanical properties. Oil and chemical resistant. Non-irradiated material. **Temperature Range:** −12°C to +105°C. Meets ASTM D 922, Grades C and CFR; MIL-I-631D. Grade C and MIL-I-23053C/MIL-I-23053/2. Class 2. **Longitudinal Change:** −25% maximum. Secant Modulus at 2% strain: 25,000 psi maximum. Heat Shock (4 hrs. at 180°C): no cracking, flowing or dripping. No cracking when bent 360° around a mandrel. **Tensile Strength:** 2,000 psi minimum. Ultimate Elongation: 200% minimum. **Standard colors:** black, white and clear. Special colors and dimensions are available, subject to minimum runs.

CIT Consolidated Number*	Min. Supplied I.D. (In.)	Max. Recovered I.D. (In.)	Nom. Recovered Wall (In.)
105-3/64	.046	.023	.020
105-1/16	.062	.031	.020
105-3/32	.093	.046	.020
105-1/8	.125	.062	.025
105-3/16	.187	.093	.025
105-1/4	.250	.125	.025
105-3/8	.375	.187	.030
105-1/2	.500	.250	.030
105-3/4	.750	.375	.035
105-1	1.000	.500	.040
105-1 1/2	1.500	.750	.045
105-2	2.000	1.000	.050



*Specify color.

CFT-200 SERIES EXTRUDED TFE TEFLON™ TUBING

High performance electrical insulation grade. Available in thin wall (CFT-200) or standard wall (CFT-250). Temperature range: −70°C to +260°C. CFT-200 meets AMS 3655, ASTMD3295, UL Listed, 300 Volts, VW-1 rated. CFT-250 meets MIL-I-22129C, AMS-3653, SPIFD103 and ASTMD3295, UL Listed, 600 Volts, VW-1 rated. **Standard color:** natural. Additional colors available subject to minimum runs.

CFT-200 SERIES/EXTRUDED TFE TEFLON™ TUBING

Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)	Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)
CFT-200-30	.012	.009	CFT-200-12	.085	.012
CFT-200-28	.015	.009	CFT-200-11	.095	.012
CFT-200-26	.018	.010	CFT-200-10	.106	.012
CFT-200-24	.022	.010	CFT-200-8	.133	.015
CFT-200-22	.027	.010	CFT-200-7	.148	.015
CFT-200-20	.034	.012	CFT-200-6	.166	.015
CFT-200-19	.038	.012	CFT-200-5	.186	.015
CFT-200-18	.042	.012	CFT-200-4	.208	.015
CFT-200-17	.047	.012	CFT-200-3	.234	.015
CFT-200-16	.053	.012	CFT-200-2	.263	.015
CFT-200-15	.059	.012	CFT-200-1	.294	.015
CFT-200-14	066	.012	CFT-200-0	.330	.015
CFT-200-13	.076	.012			

CFT-250 SERIES/EXTRUDED TFE TEFLON™ TUBING

Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)	Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)
CFT-250-24	.022	.012	CFT-250-11	.095	.016
CFT-250-22	.027	.012	CFT-250-10	.106	.016
CFT-250-20	.034	.016	CFT-250-8	.133	.020
CFT-250-19	.038	.016	CFT-250-7	.148	.020
CFT-250-18	.042	.016	CFT-250-6	.166	.020
CFT-250-17	.047	.016	CFT-250-5	.186	.020
CFT-250-16	.053	.016	CFT-250-4	.208	.020
CFT-250-15	.059	.016	CFT-250-3	.234	.020
CFT-250-14	.066	.016	CFT-250-2	.263	.020
CFT-250-13	.076	.016	CFT-250-1	.294	.020
CFT-250-12	.085	.016	CFT-250-0	.330	.020



CVC-105 SERIES GENERAL PURPOSE PLASTIC TUBING (105°C)

Tough, flexible vinyl tubing is made with non-migrating plasticizers. Rated for a continuous operating temperature of 105°C. High degree of mechanical strength. Exceptional long-term resistance to deformation from cold flow. **Rated:** 300 volts. Meets MIL-I-631D, Type F, Form U, subforms Ua and Ub, Grade C, Class 1, Category 1, ASTM D922. **Standard colors:** clear and black.

Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)	Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)	Consolidated Number	Nom. I.D. (In.)	Nom. Wall Thickness (In.)
CVC-105-24	.022	.013	CVC-105-8	.133	.020	CVC-105-5/8"	.625	.035
CVC-105-22	.027	.012	CVC-105-7	.148	.020	CVC-105-3/4"	.750	.035
CVC-105-20	.034	.016	CVC-105-6	.166	.020	CVC-105-7/8"	.875	.035
CVC-105-19	.038	.016	CVC-105-5	.186	.020	CVC-105-1"	1.000	.035
CVC-105-18	.042	.016	CVC-105-4	.208	.020	CVC-105-1 1/8"	1.125	.040
CVC-105-17	.047	.016	CVC-105-3	.234	.020	CVC-105-1 1/4"	1.250	.040
CVC-105-16	.053	.016	CVC-105-2	.263	.020	CVC-105-1 3/8"	1.375	.045
CVC-105-15	.059	.016	CVC-105-1	.294	.020	CVC-105-1 1/2"	1.500	.055
CVC-105-14	.066	.016	CVC-105-0	.330	.020	CVC-105-1 3/4"	1.750	.055
CVC-105-13	.076	.016	CVC-105-5/16"	.312	.025	CVC-105-2"	2.000	.060
CVC-105-12	.085	.016	CVC-105-3/8"	.375	.025	CVC-105-2 1/4"	2.250	.065
CVC-105-11	.095	.016	CVC-105-7/16"	.438	.025	CVC-105-2 1/2"	2.500	.070
CVC-105-10	.106	.016	CVC-105-1/2"	.500	.030			
CVC-105-9	.118	.020	CVC-105-9/16"	.562	.030			



#Net per putup of 50'

11044 KING STREET, DEPT: EEM, FRANKLIN PARK, IL 60131
PHONE: 312/455-8830 • TWX: 910/227-1705 • WATS LINE: 800/621-4278 • FAX: 312/455-8837

eem MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination.* This is the point where the wires or PC board is attached to the connector.

Contact alignments: Often called *contact float.* Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof.* May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card.* The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement.*

Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage.* Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage.* The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

CORD ELECTRONICS INCORPORATED

177 Cantiague Rock Road, Westbury, N.Y. 11590 U.S.A.
Phone: (516) 935-3640 • Tlx: 4758020 • Fax: (516) 935-0780

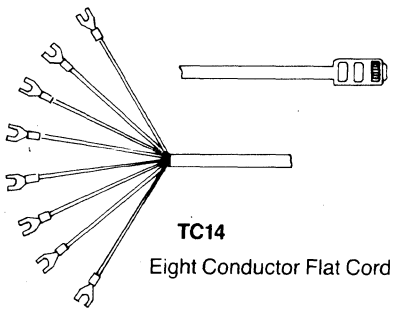
MODULAR CORDS PLUGS & JACKS

Below are shown only a sampling of the many modular cords, plugs and jacks available from CORD. Custom molded plugs and jacks assure a high quality and uniform product.

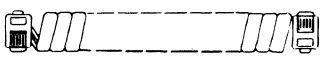
All modular telephone items are manufactured to FCC requirements under the license of Western Electric. If a standard cord assembly does not suit your application, CORD will welcome the opportunity to develop cord assemblies to your specifications.

Catalogs are available on the product lines shown here. Call or write CORD today.

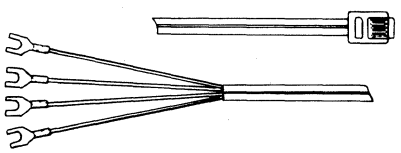
TELEPHONE



TC14 Eight Conductor Flat Cord

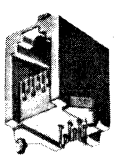


TC8 Modular Handset Cord



TCO Modular Line Cord

PCB MOUNT

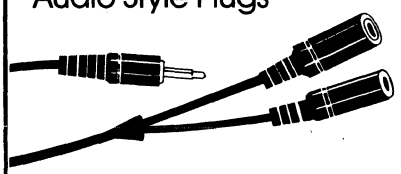




TCO1 Modular Extension Cord

COMMUNICATION

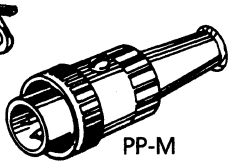
Audio Style Plugs



Din Style



CP-F



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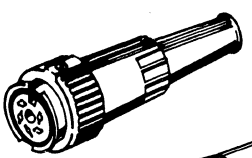

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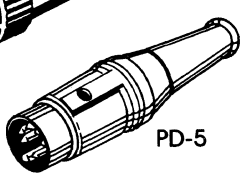
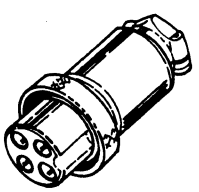


PD-5

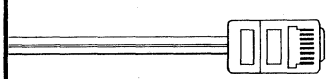
CB Style



CM

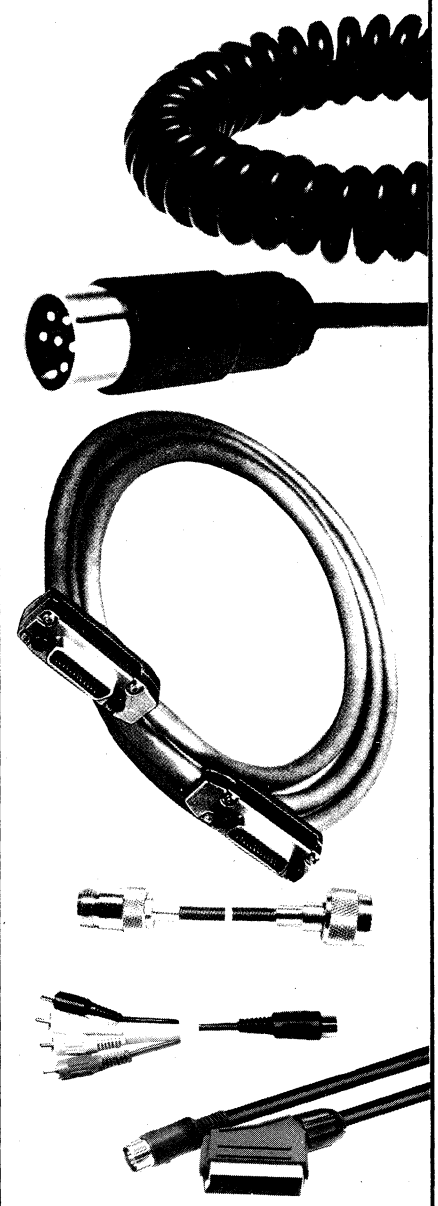


PF



TC1

CUSTOM



ALSO AVAILABLE–

Cord offers a complete line of Modular Jack Connectors for 2, 4, 6 and 8 wire connections.

DABURN

SHRINKABLE IRRADIATED POLYOLEFIN TUBING 2:1, 4:1, SHRINK/MELT

This series is designed for maximum mechanical strength at stress or points of connection. It is strong, abrasion resistant and is supplied in expanded sizes. It insulates, jackets, splices, encapsulates, weatherproofs components, connectors, cables and irregular shaped objects. When exposed to heat 250°F the tubing shrinks 50% in diameter, 5% longitudinal contraction. Controlled shrinkage to exact requirement takes place. SH275 meets or exceeds UL STD 224, MIL-I-23053B/5 Class 1 (colors) and 2 (clear), and MIL-R-468464 (MI), TY 5, CL 1. SH290 meets or exceeds MIL-I-23053/6. SH275 is available with UL approval. AMS 3636B (colors), 3637A (clear). Flame retardant (except clear).



SPECIFICATIONS —

All Tests Made on Tubing in Recovered Dimension

Continuous Operating Temp: 135°C	Shrinkage Ratio: 2:1 (50%)
Longitudinal Change: 5% Max.	Dielectric Strength: 500 V/MIL Min.
Tensile Strength: 1500 PSI Min.	Dielectric Constant: 2.87 Max.
Ultimate Elongation: 200% Min.	Corrosive Resistance: Non-Corrosive
Special Gravity: 1.29 Max.	Resistance to Soldering Iron: Excellent
Low Temp. Flexibility (−54°C): No Cracking	Fuel, Oil, Solvent, Acid, Alkali, Hydraulic Fluid Resistance: Excellent

PACK ASSORTMENTS

DAFLEX Cat. No.	Lengths Per Pack	Tubing Size
SH275-PA1	30	3/64" thru 3/16"
SH275-PA2	16	1/4" thru 3/4"
SH275-PA3	10	1"
SH275-PA4	10	1" thru 4"

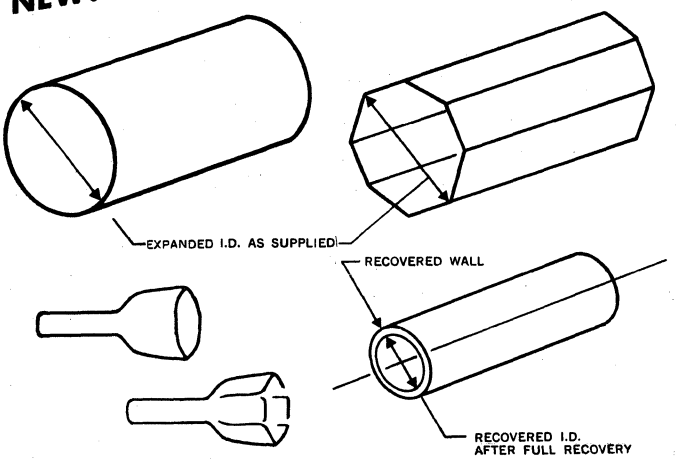
COLORS: Black, White, Clear, Red. Each pack contains an assortment of 6" lengths in mixed sizes and colors.

DAFLEX SH275 All Purpose	DAFLEX SH290 Semi-Rigid†	Supplied I.D. Min.	Recovered I.D. Max.	Recovered Wall Nom.*	Standard Package††	DAFLEX Cat. No.	# 6" Lgths. Per Pkg.*†
SH275-3/64	SH290-3/64	.046"	.023"	.016"	100',1000'	SH275PA-3/64	40
SH275-1/16	SH290-1/16	.063"	.031"	.020"	100',250',1000'	SH275PA-1/16	36
SH275-3/32	SH290-3/32	.093"	.046"	.020"	100',250',1000'	SH275PA-3/32	32
SH275-1/8	SH290-1/8	.125"	.062"	.020"	100',250',1000'	SH275PA-1/8	28
SH275-3/16	SH290-3/16	.187"	.093"	.020"	100',250',1000'	SH275PA-3/16	24
SH275-1/4	SH290-1/4	.250"	.125"	.025"	100',250',500'	SH275PA-1/4	20
SH275-3/8	SH290-3/8	.375"	.187"	.025"	100',200'	SH275PA-3/8	16
SH275-1/2	SH290-1/2	.500"	.250"	.025"	100',200'	SH275PA-1/2	14
SH275-3/4	—	.750"	.375"	.030"	100',200'	SH275PA-3/4	12
SH275-1"	—	1.00"	.500"	.035"	100'	SH275PA-1"	8
SH275-1½"	—	1.50"	.750"	.040"	12'**,24'**,100'**	SH275PA-1½"	5
SH275-2"	—	2.0"	1.00"	.045"	12'**,24'**,100'**	SH275PA-2"	3
SH275-3"	—	3.0"	1.50"	.050"	12'**,24'**,100'**	SH275PA-3"	2
SH275-4"	—	4.0"	2.00"	.055"	12'**,24'**,50'**	SH275PA-4"	1

STOCK COLORS: Black, White, Red, Clear. Additional colors available. Although processed by hi-energy radiation the **Daflex SH275** and **SH290** shrinkable tubings **do not** at any time become radioactive or possess any residual radioactivity.

* Wall thickness will be less if recovery is restricted.
** 4' lengths, long length package available.
† STOCK: Black 4' lengths. Colors avail.
†† Also stocked: 4', ½", and 1" lengths.
*† **STOCK COLORS:** Black, Clear. Additional Colors to order.
NOTE: Extra flexible, & industrial grade shrinkable polyolefin is available to order.

NEW! 4:1 SHRINKABLE POLYOLEFIN TUBING



DAFLEX SH277 shrinkable irradiated polyolefin tubing recovers to 25% of its supplied size when full recovery is permitted. Material will shrink with the application of 120°C (250°F); is rated for continuous operation from −55°C to 135°C and will withstand up to 300°C (572°F) for short durations. 500V/MIL. Minimum dielectric strength.

SH277 is flame retardant and meets or exceeds the specified properties of MIL-I-23053/5 Class 1 and 3. Its longitudinal shrinkage is a maximum of 10%. **DAFLEX SH277** can be hot stamped.

Typical applications are where tubing must fit over a large object such as the repair or replacement of cable jacketing, with a connector in place.

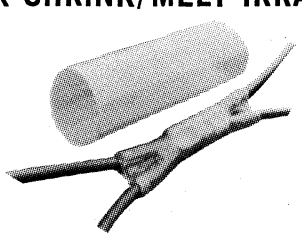
DABURN Cat. No.	Expanded I.D. Min.		Recovered* I.D. Max.		Recovered* Wall		Standard Package
	In.	MM	In.	MM	In.	MM	
SH277-1"	1.0	25.4	.250	6.5	.060	1.5	20', 60', 120' †
SH277-2"	2.0	50.8	.500	12.7	.060	1.5	20', 60', 120' †
SH277-3"	3.0	76.2	.750	19.0	.060	1.5	15', 30', 75' †
SH277-4"	4.0	101.6	1.00	25.4	.060	1.5	15', 30', 75' †

* When full recovery is allowed. † Preferred package

STANDARD COLOR: Black

STANDARD PACKAGING: SH277-1" & SH277-2" — 4 ft. lengths
SH277-3" & SH277-4" — 3 ft. lengths.

NEW! DAFLEX SHRINK/MELT IRRADIATED POLYOLEFIN TUBING LARGE SHRINK RATIO



Daburn's dual wall polyolefin heat shrinkable tubing is designed to provide a tight moisture proof encapsulating seal. It is suitable as end cap, strain relief, whip cord for ropes and may be used as a selective potting and/or molding compound over wires and cables. When 125°C is applied, the inner wall melts and flows, as the outer wall shrinks; forcing the melting wall to fill voids and interstices and to encapsulate what is covered. The result is a semi-rigid mass.

Daflex SM270 series is ideal for covering splices, cable junctions and as a shield for coarse surfaces. SM270 is flame retardant. It resists oil, hydraulic fluids, acids and alkalis.

It meets or exceeds MIL-I-23053/4, AMS3634, is UL approved VW-1 for 105°C.

STANDARD COLOR: Black. Clear (not flame retardant) available to order.

STANDARD LENGTH: 100', 1000', in 4' lengths, additional lengths to order.

Ordering Size Nom. I.D. Size	Minimum Expanded I.D.		Maximum Recovered† I.D.		Nominal Recovered Wall	
	Inch	MM	Inch	MM	Inch	MM
SM270-1/8	.125	3.2	.023	.06	.038	0.96
SM270-3/16	.187	4.8	.060	1.5	.043	1.09
SM270-1/4	.250	6.4	.080	2.0	.047	1.19
SM270-3/8	.375	9.5	.120	3.0	.050	1.27
SM270-1/2	.500	12.7	.157	4.0	.055	1.39
SM270-3/4	.750	19.0	.313	8.0	.065	1.65
SM270-1"	1.000	25.4	.400	10.2	.075	1.90

† When full recovery is permitted.

PROPERTIES

Tensile Strength, Min.: 1500 PSI
Elongation, Min.: 200%
Longitudinal Change, Max.: 10%
Operating Temperature: −55°C to +125°C
Shrinkage Temperature Nom.: 125°C
Fungus Resistance: Inert
Dielectric Strength, Min.: 500 V/MIL
Dielectric Constant, Max.: 3.1

DABURN ELECTRONICS & CABLE CORP. • 70 E. OAK STREET • NORWOOD, NJ 07648 • 201/768-5400 • TWX 710-991-9856

DABURN

MIL-W-16878 INSTRUMENTATION—SHIELDED • UNSHIELDED • TEFLON • VW-1 • KAPTON WIRE

DESCRIPTION: One or more conductors, each conductor silver plated concentrically stranded copper wire. Type E, MIL-W-16878E/4 extruded TFE .010″ insulation. When shielded, braided silver plated copper shield over conductor(s), 90% shield coverage. When covered, either a TEFLON* impregnated fiberglass braid or a .010″ TEFLON* fused, double tape jacket overall. Fungus, solvent, moisture, flame, acid, alkali and oil resistant. Multiconductors are twisted.

TEMP. RATING: −65°C to +200°C. FOR 250°C USE N.P. CONDUCTOR.

VOLT. RATING: 600V. VW-1

TEFLON* IMPREGNATED BRAID OVER SHIELD



DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.	DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.
2444	1	26	7/34	.075″	2447	1	20	19/32	.093″
2444/2	2	26	7/34	.119″	2447/2	2	20	19/32	.154″
2445	1	24	19/36	.081″	2447/3	3	20	19/32	.163″
2445/2	2	24	19/36	.126″	2447/4	4	20	19/32	.180″
2445/3	3	24	19/36	.133″	2447/5	5	20	19/32	.195″
2445/4	4	24	19/36	.144″	2448	1	18	19/30	.097″
2445/5	5	24	19/36	.156″	2448/2	2	18	19/30	.162″
2446	1	22	19/34	.088″	2448/3	3	18	19/30	.172″
2446/2	2	22	19/34	.137″	2448/4	4	18	19/30	.192″
2446/3	3	22	19/34	.144″	2448/5	5	18	19/30	.207″
2446/4	4	22	19/34	.158″	2449	1	16	19/29	.117″
2446/5	5	22	19/34	.172″	2449/2	2	16	19/29	.196″

TEFLON* TAPE WRAP JACKET OVER SHIELD



DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.	DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.
2454	1	26	7/34	.078″	2457	1	20	19/32	.099″
2545/2	2	26	7/34	.125″	2457/2	2	20	19/32	.158″
2455	1	24	19/36	.084″	2457/3	3	20	19/32	.167″
2455/2	2	24	19/36	.128″	2457/4	4	20	19/32	.184″
2455/3	3	24	19/36	.135″	2457/5	5	20	19/32	.204″
2455/4	4	24	19/36	.148″	2458	1	18	19/30	.109″
2455/5	5	24	19/36	.162″	2458/2	2	18	19/30	.178″
2456	1	22	19/34	.090″	2458/3	3	18	19/30	.189″
2456/2	2	22	19/34	.140″	2458/4	4	18	19/30	.208″
2456/3	3	22	19/34	.148″	2458/5	5	18	19/30	.230″
2456/4	4	22	19/34	.162″	2459	1	16	19/29	.130″
2456/5	5	22	19/34	.183″	2459/2	2	16	19/29	.230″

STANDARD SPOOL PUT-UPS: 250 Ft., 500 Ft., 1000 Ft. **CONDUCTOR COLOR CODE:** 1-White, 2-Black, 3-Red, 4-Green, 5—Yellow. Additional constructions to order.

SHIELDED BRAID OVERALL



DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.	DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.
2434	1	26	7/34	.066″	2437	1	20	19/32	.082″
2434/2	2	26	7/34	.104″	2437/2	2	20	19/32	.142″
2435	1	24	19/36	.068″	2437/3	3	20	19/32	.151″
2435/2	2	24	19/36	.112″	2437/4	4	20	19/32	.168″
2435/3	3	24	19/36	.120″	2437/5	5	20	19/32	.180″
2435/4	4	24	19/36	.132″	2438	1	18	19/30	.093″
2435/5	5	24	19/36	.140″	2438/2	2	18	19/30	.162″
2436	1	22	19/34	.075″	2438/3	3	18	19/30	.172″
2436/2	2	22	19/34	.124″	2438/4	4	18	19/30	.191″
2436/3	3	22	19/34	.132″	2438/5	5	18	19/30	.210″
2436/4	4	22	19/34	.146″	2439	1	16	19/29	.103″
2436/5	5	22	19/34	.154″	2439/2	2	16	19/29	.184″

NO SHIELD—TEFLON* IMPREGNATED FIBERGLASS OVERALL



DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.	DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.
2464	1	26	7/34	.040″	2467	1	20	19/32	.058″
2464/2	2	26	7/34	.080″	2467/2	2	20	19/32	.118″
2465	1	24	19/36	.044″	2467/3	3	20	19/32	.127″
2465/2	2	24	19/36	.088″	2467/4	4	20	19/32	.144″
2465/3	3	24	19/36	.096″	2467/5	5	20	19/32	.156″
2465/4	4	24	19/36	.108″	2468	1	18	19/30	.069″
2465/5	5	24	19/36	.116″	2468/2	2	18	19/30	.138″
2466	1	22	19/34	.051″	2468/3	3	18	19/30	.148″
2466	2	22	19/34	.100″	2468/4	4	18	19/30	.167″
2466/3	3	22	19/34	.108″	2468/5	5	18	19/30	.186″
2466/4	4	22	19/34	.122″	2469	1	16	19/29	.086″
2466/5	5	22	19/34	.131″	2469/2	2	16	19/29	.172″

STANDARD SPOOL PUT-UPS: 250 Ft., 500 Ft., 1000 Ft. **CONDUCTOR COLOR CODE:** 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow. Special cable constructions and colors available.

FEP TEFLON* CABLE
FEP EXTRUDED JACKET OVER SHIELD
TYPE E CONDUCTORS



DESCRIPTION: Each conductor silver plated stranded copper wire, Type E extruded TFE .010″ insulation. Color coded, cabled, braided silver plated copper shield — 90% coverage, FEP white teflon jacket overall.

TEMPERATURE RATING: −65°C to +200°C

VOLT. RATING: 600V. VW −1.

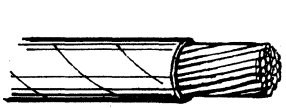
CONDUCTOR COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green * Dupont

STD. PUT-UP: 500 Ft., 1000 Ft.

Additional FEP construction available to order.

DABURN No.	Conds.	AWG Size	Strand	Nom. O.D.
2480	1	24	19/36	.085″
2480/2	2	24	19/36	.130″
2480/3	3	24	19/36	.135″
2480/4	4	24	19/36	.148″
2481	1	22	19/34	.091″
2481/2	2	22	19/34	.150″
2481/3	3	22	19/34	.158″
2481/4	4	22	19/34	.172″
2482	1	20	19/32	.100″
2482/2	2	20	19/32	.168″
2482/3	3	20	19/32	.178″
2482/4	4	20	19/32	.193″
2483	1	18	19/30	.110″
2483/2	2	18	19/30	.188″
2483/3	3	18	19/30	.207″
2483/4	4	18	19/30	.222″
2484	1	16	19/29	.123″
2484/2	2	16	19/29	.220″

H FILM KAPTON* WIRE — DALITE™
HIGH TEMPERATURE HOOK-UP AND AIRFRAME WIRE
200°C CONTINUOUS TEMPERATURE RATING (a)



INSULATED WITH DUPONT KAPTON* POLYIMIDE FILM WITH TEFLON* — FEP HEAT SEALED COATING CONFORMS TO MIL-W-60904 & MIL-W-81381.

CHARACTERISTICS: Dalite™ insulated wire provides high temperature stability, low temperature flexibility, high radiation resistance, resistance to cold flow, impervious to most chemicals, high dielectric strength, low dielectric constant, smaller diameters and lighter weight than any other comparable wire used for continuous operation up to 200°C. This hook-up wire meets the test requirements of MIL-W-16878 for 300 V, 600 V and 1000 V with **smaller wall thicknesses, weight and dimensions.**

(a) Temperature based on lowest temperature rating of materials in the insulation — FEP 200°C. Will pass 96 hour heat age tests at 250°C per MIL-W-16878.

DESCRIPTION: Single conductor, silver plated annealed copper conductors, Type H* Polyimide film with Teflon* FEP coating tape wrapped.

DABURN No.	Type Designation	Size AWG	Strand	Voltage Rating (rms)	Nom. Wall	Nom. O.D.	Weight Per 1000′ (lbs.)
2490/30	HF 30	30	7/38	600	.0045″	.021″	0.52
2495/30	HHF 30	30	7/38	1000	.006″	.024″	0.57
2490/28	HF 28	28	7/36	600	.0045″	.024″	0.75
2495/28	HHF 28	28	7/36	1000	.006″	.027″	0.83
2490/26	HF 26	26	7/34	600	.0045″	.028″	1.11
2495/26	HHF 26	26	7/34	1000	.006″	.031″	1.21
2490/24	HF 24	24	19/36	600	.0045″	.034″	1.78
2495/24	HHF 24	24	19/36	1000	.006″	.037″	1.90
2490/22	HF 22	22	19/34	600	.0045″	.041″	2.71
2495/22	HHF 22	22	19/34	1000	.006″	.044″	2.86
2490/20	HF 20	20	19/32	600	.0045″	.049″	4.18
2495/20	HHF 20	20	19/32	1000	.006″	.052″	4.35
2490/18	HF 18	18	19/30	600	.0045″	.059″	6.46
2495/18	HHF 18	18	19/30	1000	.006″	.062″	6.67
2490/16	HF 16	16	19/29	600	.0045″	.066″	8.16
2495/16	HHF 16	16	19/29	1000	.006″	.069″	8.39

STD. COLOR: Natural Gold. Striping and solid colors available. Variations of conductor material—to special order.

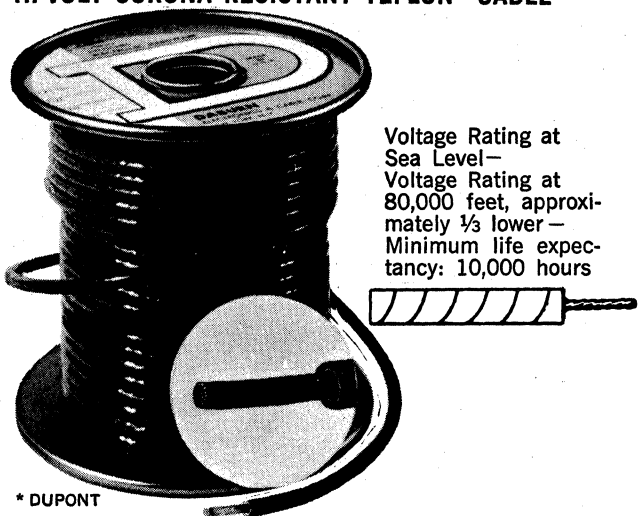
STD. PUT-UP: 1000 Ft.

*DUPONT

DABURN

HI-VOLTAGE CABLE

HI-VOLT CORONA RESISTANT TEFLON* CABLE©



Voltage Rating at Sea Level—
Voltage Rating at 80,000 feet, approximately ⅓ lower—
Minimum life expectancy: 10,000 hours

* DUPONT

SMALL SIZE: You do not need bulky, thick, insulation jacketing as used with silicone rubber and polyethylene insulations to get your hi-voltage requirements. Wire used is MIL-SPEC QQ-W-343 and MIL-W-16878. Insulation used conforms to and surpasses MIL-SPEC-W-16878.

AVOID CORONA PROBLEMS: Corona Resistant Teflon construction is specifically designed to retard and prevent corona penetration.

Temperature variations from −60°C to +250°C have no life effect on the corona resistant Teflon. In addition, there is no stress or crack failure under severe, adverse conditions including mechanical strain, moisture, corona or chemical conditions.

DESCRIPTION: Single Conductor, Stranded Silver Plated Copper, Corona Resistant Teflon* Insulation.

TEMPERATURE RATING: −90°C to +250°C.

VOLTAGE RATING: Based on insulation thickness.

AVAILABLE COLORS: White, Black, Red, Green, Yellow, Lt. Blue, Brown, Orange, Gray, Violet. (Also available in tracer colors)

PUT-UP: 250′, 500′, 1000′.

ADDITIONAL SIZES AND VOLTAGES AVAILABLE

DABURN No.	AWG Size	Strand	Voltage Rating AC	Voltage Rating DC	Nom. O.D.
CRT10-2	10	37/26	2500	10,000	.158″
CRT10-2.5	10	37/26	3750	12,500	.168″
CRT12-2	12	19/25	2500	10,000	.142″
CRT12-2.5	12	19/25	3750	12,500	.152″
CRT12-3	12	19/25	4500	15,000	.162″
CRT12-3.5	12	19/25	5300	17,500	.172″
CRT12-4	12	19/25	6000	20,000	.182″
CRT12-5	12	19/25	7500	25,000	.202″
CRT12-6.5	12	19/25	10,000	32,500	.232″
CRT12-8	12	19/25	12,000	40,000	.262″
CRT12-10	12	19/25	15,000	50,000	.302″
CRT14-2	14	19/27	2500	10,000	.124″
CRT14-2.5	14	19/27	3750	12,500	.134″
CRT14-3	14	19/27	4500	15,000	.144″
CRT14-3.5	14	19/27	5300	17,500	.154″
CRT14-4	14	19/27	6000	20,000	.164″
CRT14-5	14	19/27	7500	25,000	.184″
CRT14-6.5	14	19/27	10,000	32,500	.214″
CRT14-8	14	19/27	12,000	40,000	.244″
CRT14-10	14	19/27	15,000	50,000	.284″
CRT16-2	16	19/29	2500	10,000	.111″
CRT16-2.5	16	19/29	3750	12,500	.119″
CRT16-3	16	19/29	4500	15,000	.129″
CRT16-3.5	16	19/29	5300	17,500	.141″
CRT16-4	16	19/29	6000	20,000	.151″
CRT16-5	16	19/29	7500	25,000	.172″
CRT16-6.5	16	19/29	10,000	32,500	.201″
CRT16-8	16	19/29	12,000	40,000	.231″
CRT16-10	16	19/29	15,000	50,000	.271″
CRT18-2	18	19/30	2500	10,000	.105″
CRT18-2.5	18	19/30	3750	12,500	.114″
CRT18-3	18	19/30	4500	15,000	.124″
CRT18-3.5	18	19/30	5300	17,500	.135″
CRT18-4	18	19/30	6000	20,000	.145″
CRT18-5	18	19/30	7500	25,000	.166″
CRT18-6.5	18	19/30	10,000	32,500	.194″
CRT18-8	18	19/30	12,000	40,000	.225″
CRT18-10	18	19/30	15,000	50,000	.265″

DABURN No.	AWG Size	Strand	Voltage Rating AC	Voltage Rating DC	Nom. O.D.
CRT20-2	20	19/32	2500	10,000	.095″
CRT20-2.5	20	19/32	3750	12,500	.105″
CRT20-3	20	19/32	4500	15,000	.115″
CRT20-3.5	20	19/32	5300	17,500	.126″
CRT20-4	20	19/32	6000	20,000	.135″
CRT20-5	20	19/32	7500	25,000	.156″
CRT20-6.5	20	19/32	10,000	32,500	.185″
CRT20-8	20	19/32	12,000	40,000	.215″
CRT20-10	20	19/32	15,000	50,000	.255″
CRT22-2	22	19/34	2500	10,000	.087″
CRT22-2.5	22	19/34	3750	12,500	.097″
CRT22-3	22	19/34	4500	15,000	.107″
CRT22-3.5	22	19/34	5300	17,500	.118″
CRT22-4	22	19/34	6000	20,000	.127″
CRT22-5	22	19/34	7500	25,000	.148″
CRT22-6.5	22	19/34	10,000	32,500	.177″
CRT22-8	22	19/34	12,000	40,000	.207″
CRT22-10	22	19/34	15,000	50,000	.247″
CRT24-2	24	19/36	2500	10,000	.081″
CRT24-2.5	24	19/36	3750	12,500	.091″
CRT24-3	24	19/36	4500	15,000	.101″
CRT24-3.5	24	19/36	5300	17,500	.112″
CRT24-4	24	19/36	6000	20,000	.121″
CRT24-5	24	19/36	7500	25,000	.142″
CRT24-6.5	24	19/36	10,000	32,500	.171″
CRT24-8	24	19/36	12,000	40,000	.201″
CRT24-10	24	19/36	15,000	50,000	.241″
CRT26-2	26	7/34	2500	10,000	.071″
CRT26-2.5	26	7/34	3750	12,500	.081″
CRT26-3	26	7/34	4500	15,000	.091″
CRT26-3.5	26	7/34	5300	17,500	.101″
CRT26-4	26	7/34	6000	20,000	.111″
CRT26-5	26	7/34	7500	25,000	.131″
CRT26-6.5	26	7/34	10,000	32,500	.161″
CRT26-8	26	7/34	12,000	40,000	.191″
CRT26-10	26	7/34	15,000	50,000	.231″

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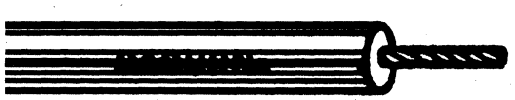
HI-VOLTAGE CABLE

One conductor, stranded copper tinned, flame retardant polyethylene insulation, braided tinned copper overall when shielded. Used as hi-voltage leads in electronic equipment to minimize RF radiation in equipment. UL style 1067, 1068, 1069 available.

DESCRIPTION: One conductor; stranded copper tinned; flame retarding polyethylene insulation. Available white/red tracer. Temp. Rating: 90°C.

Shielded: Same as above with tinned copper braided shield overall. Special construction available to order.



Daburn No.	Size AWG	Strand	Nom. Ins. Wall	Voltage Breakdown AC	Voltage Breakdown DC	Nom. O.D.
UNSHIELDED						
2638*	20	7/28	.047″	—	80,000	.180″
2641	22	7/30	.047″	5,000	10,000	.124″
2642	20	10/30	.047″	5,000	10,000	.125″
2643	20	10/30	.068″	10,000	20,000	.168″
2644	18	16/30	.047″	5,000	10,000	.134″
2645	18	16/30	.068″	10,000	20,000	.178″
2648	18	16/30	.095″	18,000	40,000	.235″
2649	18	16/30	.124″	26,000	60,000	.298″
2649-16	16	26/30	.125″	26,000	60,000	.310″
SHIELDED						
2652	20	10/30	.095″	16,000	40,000	.252″
2655	18	16/30	.095″	16,000	40,000	.255″
2656	16	26/30	.095″	16,000	40,000	.276″
2656-14	14	41/30	.095″	16,000	40,000	.285″

STD. PUT-UP: 100 Ft., 500 Ft., 1000 Ft.

* UL style 3239, 7/28 tin overcoat, UL operating voltage: 40 KVDC; breakdown: 80 KVDC; .020 Red PVC jacket overall; VW-1.

DABURN

RIBBON CABLE — HI-TEMP — CONTROLLED IMPEDANCE — BONDED MIL-W-16878 UL • 20424 UL • 2651 UL 2555 VW-1

TEFLON HIGH TEMPERATURE FLAT RIBBON CABLE

UL STYLE 20424 • 200°C • 300 VOLTS • VW-1

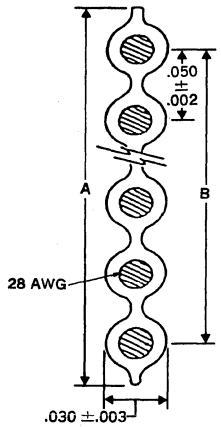
Each conductor is 28 AWG, 7 strand of 36 AWG silver plated copper with flexible FEP insulation overall. Conductors are spaced on .050″ ±.002″ centers, allowing for mass termination with conventional insulation displacement connectors.

The insulation strips and slits easily using conventional equipment available today. It resists corrosion and adhesion and offers the positive properties of Teflon in an IDC configuration.

Daburn FEP ribbon cable reduces crosstalk, compared to PVC constructions. It provides high-fidelity and dense signal transmission with low dielectric constant. Its low coefficient of friction and excellent abrasion resistance provide a unique non-adhesive and self lubricating surface quality which is ideal for robotic or printer head applications.

Cables are listed under UL STYLE 20424, VW-1.

AWG: 28 (7/36) Silver Plated Copper
NOM. WALL: .008″
CENTER TO CENTER SPACING: .050 ±.002″ (1.27mm ±.05)
THICKNESS: .030 ±.003″
UL STYLE: 20424
FLAMMABILITY RATING: UL VW-1
TEMPERATURE RATING: −65°C to +200°C
VOLTAGE RATING: 300 V RMS
DIELECTRIC CONSTANT: 1.54
CONDUCTOR RESISTANCE: 63 Ohms/M
CAPACITANCE NOM.: 10.9 PF/FT/ (G.S.G.)
IMPEDANCE: 120 Ohms nom. (G.S.G.)



DABURN Cat. No.	No. Cond.	(.050 Pitch) Nom. Span B	Nom. Width A
2488/9	9	.400 ±.008	.450 ±.010
2488/10	10	.450 ±.008	.500 ±.010
2488/14	14	.650 ±.008	.700 ±.010
2488/15	15	.700 ±.010	.750 ±.010
2488/16	16	.750 ±.010	.800 ±.015
2488/20	20	.950 ±.010	1.000 ±.015
2488/24	24	1.150 ±.010	1.200 ±.015
2488/25	25	1.200 ±.010	1.250 ±.015
2488/26	26	1.250 ±.010	1.300 ±.015
2488/34	34	1.650 ±.012	1.700 ±.018
2488/37	37	1.800 ±.012	1.850 ±.018
2488/40	40	1.950 ±.014	2.000 ±.020
2488/50	50	2.450 ±.015	2.500 ±.020
2488/60	60	2.950 ±.020	3.000 ±.020
2488/64	64	3.150 ±.020	3.200 ±.020

STD. PUT-UP: 100′ (30.48M); larger packages available to order.
STD COLOR: Natural

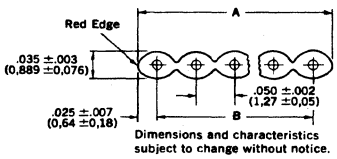
ADDITIONAL CONSTRUCTIONS AVAILABLE: Shielded, shielded and jacketed; PFA (for higher temperature), Tefzel; .100″ center spacing: 19 strand (for high flexing — above 50,000,000 flexures.)

NEW! CONTROLLED IMPEDANCE FLAT RIBBON CABLE

UL STYLE 2651 — 105°C — 300 VOLTS — VW-1

DESCRIPTION: Each conductor is 28 AWG, 7 strand of 36 AWG T.C. with .010″ nominal wall of extruded PVC insulation overall. Conductors are to provide .050″ ±.002″, center to center conductor spacing allowing for nominal impedance of 105 Ohms (measured ground-signal-ground). Cables are listed under UL style 2651 and meet UL VW-1 flame test. Conductors separate cleanly and one has a red stripe for polarity. Because of controlled center to center spacing, cables may be mass terminated with insulation displacement connectors designed for .050″ spacing of conductors. Crosstalk is also controllable.

AWG: 28 (7/36) T.C.
NOM. WALL: .010″ (.25mm)
CENTER TO CENTER SPACING: .050 ±.002 (1.27mm ±.05)
DIELECTRIC WITHSTAND VOLTAGE: 2000 VRMS
INSULATION RESISTANCE: 10^{10} Ohms/10 ft. min.
PROPAGATION DELAY: 1.4 ns/ft. (G.S.G.) nom.



Dimensions and characteristics subject to change without notice.

UL STYLE: 2651
FLAMABILITY RATING: UL VW-1
TEMPERATURE RATING: 105°C
CURRENT RATING: 1 Amp
VOLTAGE RATING: 300 V RMS
HEIGHT: .035 ±.003″ (.84mm ±.08)
COLOR: Gray with red polarity stripe
CAPACITANCE NOM.: 15 PF/FT. (G.S.G.)
IMPEDANCE: 105 Ohms nom. (G.S.G.)
STANDARD PUT-UP: 100′ (30.48M); larger packages available to order.

DABURN Cat. No.	No. of Cond.	Nom. Width A in.	Nom. Width A mm	Nom. Span B in.	Nom. Span B mm
1888/9	9	.45 ±.01	11.43	.40 ±.007	10.16
1888/10	10	.50 ±.01	12.70	.45 ±.007	11.43
1888/14	14	.70 ±.01	17.80	.65 ±.007	16.51
1888/15	15	.75 ±.01	19.05	.70 ±.007	17.78
1888/16	16	.80 ±.01	20.35	.75 ±.009	19.05
1888/20	20	1.00 ±.02	25.40	.95 ±.009	24.13
1888/24	24	1.20 ±.02	30.50	1.15 ±.009	29.21
1888/25	25	1.25 ±.02	31.75	1.20 ±.009	30.48
1888/26	26	1.30 ±.02	33.00	1.25 ±.009	31.75
1888/34	34	1.70 ±.02	43.20	1.65 ±.009	41.91
1888/37	37	1.85 ±.02	47.00	1.80 ±.009	45.92
1888/40	40	2.00 ±.02	50.80	1.95 ±.011	49.53
1888/50	50	2.50 ±.02	63.50	2.45 ±.011	62.23
1888/60	60	3.00 ±.02	76.20	2.95 ±.011	74.93
1888/64	64	3.20 ±.02	81.30	3.15 ±.011	80.01

FLAT RIBBON CABLE • TYPES B & C PER MIL-W-16878D • VW-1

DESCRIPTION: Each conductor is stranded T.C. with extruded PVC insulation, bonded together to form a flat ribbon cable. Conductors separate easily for clean terminations with standard wire connectors, jacks and pins. Ribbon cable saves space and time on circuit interconnecting assemblies, wiring harnesses, sliding drawers and drop assemblies and simplifies identification. Resists acid, alkalis, flame, moisture, oil, solvents and fungus.
TEMPERATURE RATING: −55°C to +105°C. Insulation meets or exceeds UL VW-1 vertical flame test.

Per MIL-W-16878 — TYPE B — 600 V — (UL) 2713 (150 V 80°C)

DABURN No.	Cond.	Size	Strand	Nom. Wall	Nom. O.D.
1805/10	10	22	19/34	.010″	.510″ x .051″
1805/15	15	22	19/34	.010″	.765″ x .051″
1805/20	20	22	19/34	.010″	1.02″ x .051″
1805/30	30	22	19/34	.010″	1.53″ x .051″
1806/10	10	24	19/36	.010″	.430″ x .043″
1806/15	15	24	19/36	.010″	.645″ x .043″
1806/20	20	24	19/36	.010″	.860″ x .043″
1806/30	30	24	19/36	.010″	1.30″ x .043″
1807/10	10	26	7/34	.010″	.370″ x .037″
1807/15	15	26	7/34	.010″	.555″ x .037″
1807/20	20	26	7/34	.010″	.740″ x .037″
1807/30	30	26	7/34	.010″	1.11″ x .037″
1808/10	10	28	7/36	.010″	.340″ x .034″
1808/15	15	28	7/36	.010″	.510″ x .034″
1808/20	20	28	7/36	.010″	.680″ x .034″
1808/30	30	28	7/36	.010″	1.020″ x .034″
1809/10	10	30	7/38	.010″	.310″ x .031″
1809/15	15	30	7/38	.010″	.465″ x .031″
1809/20	20	30	7/38	.010″	.620″ x .031″
1809/30	30	30	7/38	.010″	.930″ x .031″

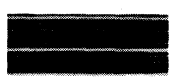
Per MIL-W-16878 — TYPE C — 1000 V — (UL) 2555 (300 V) — CSA 90°C (300 V)

DABURN No.	Cond.	Size	Strand	Nom. Wall	Nom. O.D.
1823/5	5	22	7/30	.016″	.062″ x .310″
1823/10	10	22	7/30	.016″	.062″ x .620″
1823/15	15	22	7/30	.016″	.062″ x .930″
1823/20	20	22	7/30	.016″	.062″ x 1.240″

STANDARD PUT-UP: 100 Ft., large put-ups available.
COLOR CODE: Solid Colors.
COLOR CODE: 1—Brown, 2—Red, 3—Orange, 4—Yellow, 5—Green, 6—Blue, 7—Violet, 8—Gray, 9—White 10†—Black.
†Beyond 10 conductors, code is repeated.



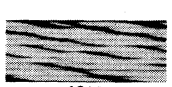
1805
SOLID COLOR CODE



1823
SOLID COLOR CODE



1804
INDIVIDUAL COLORS



1822
INDIVIDUAL COLORS

INDIVIDUALLY COLOR CODED WITH STRIPES

Per MIL-W-16878 — TYPE B — 600 V

DESCRIPTION: Each conductor stranded tinned copper, polyvinylchloride insulation, bonded to form flat ribbon cable. Conductors are color coded and separate easily for clean terminations. Saves space, time on circuit and interconnecting assemblies, wiring harnesses, sliding drawers and drop assemblies.
Rated: −55°C to +105°C
INSULATION PASSES UL VW-1 FLAME TEST

DABURN No.	Cond.	Size	Strand	Nom. Wall	Nom. O.D.
1804/4	4	24	7/32	.010″	.043″ x .172″
1804/8	8	24	7/32	.010″	.043″ x .344″
1804/12	12	24	7/32	.010″	.043″ x .516″
1804/16	16	24	7/32	.010″	.043″ x .688″
1804/20	20	24	7/32	.010″	.043″ x .860″

STD. PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
CONDUCTOR COLOR CODE: Same as noted below for C-22 Series.

Per MIL-W-16878 — TYPE C

VOLTAGE RATING: 1000 VOLTS

DABURN No.	Cond.	Size	Strand	Nom. Wall	Nom. O.D.
1822/4	4	22	7/30	.016″	.062″ x .248″
1822/8	8	22	7/30	.016″	.062″ x .416″
1822/12	12	22	7/30	.016″	.062″ x .744″
1822/16	16	22	7/30	.016″	.062″ x .992″
1822/20	20	22	7/30	.016″	.062″ x 1.240″

STD. PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
CONDUCTOR COLOR CODE — INDIVIDUALLY CODED:

1—White	6—Lt. Blue	11—Wh/Black	16—Wh/Brown
2—Black	7—Brown	12—Wh/Red	17—Wh/Orange
3—Red	8—Orange	13—Wh/Green	18—Wh/Gray
4—Green	9—Gray	14—Wh/Yellow	19—Wh/Violet
5—Yellow	10—Violet	15—Wh/Blue	20—Wh/Blk/Red

ADDITIONAL SIZES & TYPES AVAILABLE TO ORDER

DABURN

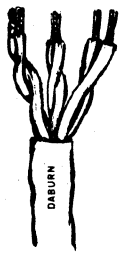
UNSHIELDED CABLES • MULTI-CONDUCTOR • PAIRED • SOLID & STRANDED • VW-1

HEAVY DUTY TWISTED PAIRS INTERCOM CABLES
(UL) STYLE 2464 VW-1

Where larger conductors are indicated, we suggest these No. 18 gauge cables. Rugged yet flexible — abrasion resistant. Gray vinyl jacket overall.

Standard intercom color coding for paired cables applies.

OPERATING VOLTAGE: 300 V.
OPERATING TEMP.: −20°C to +80°C



DABURN No.	Pairs	Cond.	Size	Nom. O.D.
3003/3	3	6	18-16/30	.365″
3003/6	6	12	18-16/30	.560″
3003/9	9	18	18-16/30	.650″
3003/15	15	30	18-16/30	.875″

STD. PUT-UP: 500 Ft., 1000 Ft.
COLOR CODE: Color Chart A
Additional constructions to order.

PLASTIC INTERCOM CABLE — TWISTED PAIRS
SOLID — (UL) STYLE 2576 VW-1

Each conductor is #22 AWG solid tinned copper, with .010″ wall of vinyl plastic insulation. Conductors are color coded and twisted into pairs, cabled with a gray vinyl jacket overall.

OPERATING TEMPERATURE: −20°C to +80°C
OPERATING VOLTAGE: 200V (150V-UL 2576)

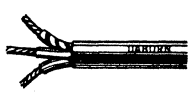
DABURN Cat. No.	No. Pairs	No. Cond.	Nom. Jacket	Nom. O.D.
3000	1	2	.032″	.155″
3000/2	2	4	.032″	.215″
3000/3	3	6	.032″	.225″
3000/4	4	8	.032″	.242″
3000/6	6	12	.032″	.290″
3000/9	9	18	.032″	.335″
3000/11	11	22	.032″	.374″
3000/13	13	26	.032″	.397″
3000/15	15	30	.032″	.405″
3000/16	16	32	.032″	.415″
3000/27	27	54	.040″	.540″
3000/31	31	62	.040″	.560″
3000/41	41	82	.040″	.650″
3000/51	51	102	.045″	.720″
3000/76	76	152	.050″	.900″
3000/101	101	202	.060″	1.200″

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
Additional constructions to order.
COLOR CODE: Chart A
NOTE: Plenum constructions (for non-conduit application) similar to the above are available to order.

MULTI-CONDUCTOR PLASTIC JACKETED FLEXIBLE UNSHIELDED AUDIO CABLE (UL) VW-1
(UL) 2576, 2905

Each conductor is #22 AWG 7/30 tinned copper with .010″ wall of color coded plastic insulation. Conductors are twisted and covered by a gray vinyl jacket overall. Suitable for signal, P.A. systems, computers — for indoor and outdoor use.

OPERATING VOLTAGE: 200V. UL Style 2576-150V, Style 2905 — No rating.
OPERATING TEMPERATURE:
−20°C to +80°C



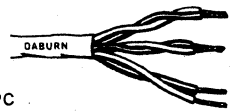
DABURN Cat. No.	No. Cond.	Size	Nom. Wall	Nom. Jacket	Nom. O.D.	UL Style
3054/2	2	22	.010″	.032″	.168″	2576
3054/3	3	22	.010″	.032″	.175″	2576
3054/4	4	22	.010″	.032″	.194″	2576
3054/5	5	22	.010″	.020″	.182″	2905
3054/6	6	22	.010″	.032″	.210″	2576
3054/7	7	22	.010″	.032″	.220″	2576
3054/8	8	22	.010″	.020″	**.200″**	2905
3054/9	9	22	.010″	.020″	**.230″**	2905
3054/10	10	22	.010″	.020″	**.235″**	2905
3054/12	12	22	.010″	.020″	.258″	2905
3054/15	15	22	.010″	.032″	.308″	2576
3054/20	20	22	.010″	.020″	.316″	2905
3054/25	25	22	.010″	.020″	.350″	2905
3054/30	30	22	.010″	.032″	.370″	2576
3054/40	40	22	.010″	.032″	.440″	2576
3054/50	50	22	.010″	.032″	.500″	2576
3054/60	60	22	.010″	.032″	.531″	2576

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
COLOR CODE: Chart E.

NOTE: We stock a full line of shielded and unshielded audio, microphone, communication and computer cable — Send for our full catalog.

PLASTIC INTERCOM CABLE — TWISTED PAIRS
(UL) STYLE 2576 VW-1

Each conductor is #22 AWG 7/30 tinned copper, with .010″ wall of vinyl plastic insulation. Conductors are color coded and twisted into pairs, cabled with a gray vinyl jacket overall.



OPERATING TEMPERATURE: −20°C to +80°C
OPERATING VOLTAGE: 200V (150V-UL)

DABURN Cat. No.	No. Pairs	No. Con.	Nom. Jacket	Nom. O.D.
3002	1	2	.032″	.163
3002/2	2	4	.032″	.235
3002/3	3	6	.032″	.250
3002/4	4	8	.032″	.270
3002/5	5	10	.032″	.300
3002/6	6	12	.035″	.320
3002/9	9	18	.035″	.370
3002/11	11	22	.035″	.400
3002/15	15	30	.040″	.451
3002/19	19	38	.040″	.480
3002/23	23	46	.040″	.532
3002/27	27	54	.040″	.580
3002/31	31	62	.040″	.635
3002/41	41	82	.040″	.710
3002/51	51	102	.045″	.800

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft. **COLOR CODE:** Chart A
Similar construction to UL Style 2464 available to order.

UNSHIELDED AUDIO CABLE
(UL) STYLE 1007, 1581 80°C 300V VW-1
SOLID AND STRANDED CONDUCTORS



OPERATING TEMPERATURE: −20°C to +80°C
OPERATING VOLTAGE: #22 AWG 300V (300V UL). #20 AWG 350V (300V UL), #18 AWG 400V (300V UL), #16 and #14 AWG 600V (300V UL).

DABURN No.	Cond.	Size	Strand	Insul. Wall	Nom. O.D.
3004	2	22 Solid	1	.016″	.100″
3004/3	3	22 Solid	1	.016″	.115″
3005	2	20 Solid	1	.016″	.120″
3005/3	3	20 Solid	1	.016″	.140″
3006	2	18 Solid	1	.016″	.145″
3006/3	3	18 Solid	1	.016″	.155″
3007	2	16 Solid	1	.016″	.175″
3007/3	3	16 Solid	1	.016″	.190″
3011	2	22 Stranded	7/30	.016″	.125″
3011/3	3	22 Stranded	7/30	.016″	.140″
3012	2	20 Stranded	10/30	.016″	.145″
3012/3	3	20 Stranded	10/30	.016″	.160″
3013	2	18 Stranded	16/30	.016″	.165″
3013/3	3	18 Stranded	16/30	.016″	.180″
3014	2	16 Stranded	26/30	.016″	.190″
3014/3	3	16 Stranded	26/30	.016″	.210″
3015*	2	14 Stranded	41/30	.016″	.220″
3015/3*	3	14 Stranded	41/30	.016″	.240″
3016*	2	12 Stranded	65/30	.020″	.250″
3016/3*	3	12 Stranded	65/30	.020″	.275″

* UL1581
CONDUCTOR COLOR CODE: 1—Brown, 2—Tan, 3—Gray.
STD. PUT-UP: 1000 Ft.

PLASTIC JACKETED CABLE — UNSHIELDED
FOR OUTDOOR USE U/L STYLE 2905 80°C 125V VW-1

OPERATING TEMPERATURE:
−20°C to +80°C
OPERATING VOLTAGE: #22 AWG 300V (125V UL), #20 AWG 350V (125V UL), #18 AWG 400V (125V UL), #16 and #14 AWG 600V (300V UL).

DABURN No.	Cond.	Size	Strand	Nom. Wall	Nom. Jacket	O.D. Nom.
3020	2	22	1	.010″	.020″	.125″
3020/3	3	22	1	.010″	.020″	.130″
3020/4	4	22	1	.010″	.020″	.150″
3021	2	20	1	.016″	.020″	.170″
3021/3	3	20	1	.016″	.020″	.180″
3021/4	4	20	1	.016″	.020″	.200″
3022	2	18	1	.016″	.020″	.185″
3022/3	3	18	1	.016″	.020″	.190″
3022/4	4	18	1	.016″	.020″	.220″
3022/5	5	18	1	.016″	.020″	.235″
3022/6	6	18	1	.016″	.020″	.265″
3027	2	22	7/30	.010″	.020″	.130″
3027/3	3	22	7/30	.010″	.020″	.140″
3027/4	4	22	7/30	.010″	.020″	.165″
3028	2	20	10/30	.016″	.020″	.175″
3028/3	3	20	10/30	.016″	.020″	.185″
3028/4	4	20	10/30	.016″	.020″	.195″
3029	2	18	16/30	.016″	.020″	.195″
3029/3	3	18	16/30	.016″	.020″	.205″
3029/4	4	18	16/30	.016″	.020″	.235″
3029/6	6	18	16/30	.016″	.020″	.290″
3030	2	16	26/30	.016″	.020″	.220″
3003/3	3	16	26/30	.016″	.020″	.245″
3030/4	4	16	26/30	.016″	.020″	.270″
3031	2	14	41/30	.016″	.020″	.260″
3031/3	3	14	41/30	.016″	.020″	.280″

CONDUCTOR COLOR CODE: 1—Black, 2—Red, 3—White, 4—Green, 5—Orange, 6—Blue.
STD. PUT-UP: 1000 Ft. Additional constructions available.

DABURN

COAXIAL CABLE • SHIELDED AUDIO CABLE • BRAID & SPIRAL SERVE • (UL) VW-1

MIL SPEC AND COMMERCIAL CO-AXIAL CABLE

Teflon dielectric co-axial cable combines both miniaturization and hi temperature qualities. Cables are weatherproof and flexible.



Rg/U Type	DABURN Cat. No.	Resist. Ohms	Cap.‡ Ff/Ft	Cond. Strand	Dielectric	O.D. Cable	Jack Type	P-U	Shield
6/U	**D6/U**	75	17.3	18(1)B	FPE	.270″	V	1,5	FB
8/U	**1925***	52	29.5	7/21B	PE	.405″	V	5	M
8/U	**1925C**	50	26.0	7/21B	FPE	.405″	V	3	C
8/U	**1925F**	52	29.5	7/21B	FPE	.405″	V	3	M
8/X	**1925X**	50	28.0	19/28B	FPE	.242″	V	1,5	M
11/U	**1927***	75	20.5	7/26T	PE	.405″	V	5	M
58/U	**1929***	53.5	28.5	20(1)B	PE	.195″	V	1	M
58A/U	**1928***	50	29.0	19/33T	PE	.195″	V	1	M
58/U	**1929C**	52	22.0	20(1)B	FPE	.195″	V	1,5	C
58C/U	**1928C***	50	29.5	19/33T	PE	.195″	VN	1	M
59/U	**1930***	73	21.0	22(1)CW	PE	.242″	V	1	M
59/U	**1930C**	80	16.3	22(1)CW	FPE	.242″	V	1,5	C
59/U	**1930L**	80	16.3	22(1)CW	FPE	.242″	V	1,5	FB
59/U	**1930F**	80	16.3	22(1)CW	FPE	.242″	V	1,5	M
59/U	**D59****	75	19.6	22(1)CW	FC	.215″	FC	1	M
59/U-Dual	**1923**	75	20.5	22(1)B	PE	.242″x .505″	V	1,5	M
62A/U	**1931A***	93	13.5	22(1)CW	FPE	.242″	V	1	M
62A/U	**D62A****	93	12.9	22(1)CW	FC	.210″	FC	1	M
142B/U	**D142B/U***	50	30.0	18(1)SCW	T	.195″	F	1,5	M
149/U	**D149/U***	75	20.6	7/26T	PE	.405″	VN	5	M
174/U	**D174/U***	50	30.8	7/34CW	PE	.100″	V	1,5	M
178B/U	**D178B/U***	50	29.0	7/38SCW	T	.075″	F	1,5	M
179B/U	**D179B/U***	75	20.0	7/38SCW	T	.100″	F	1,5	M
180B/U	**D180B/U***	95	15.0	7/38SCW	T	.142″	F	1,5	M
187A/U	**D187A/U***	75	19.5	7/38SCW	T	.105″	T	1,5	M
188A/U	**D188A/U***	50	29.0	7/33SCW	T	.110″	T	1,5	M
195A/U	**D195A/U***	95	15.0	7/38SCW	T	.145″	T	1,5	M
196A/U	**D196A/U***	50	28.5	7/38SCW	T	.078″	T	1,5	M
213/U	**D213/U***	50	30.5	7/21B	PE	.405″	VN	5	M
214/U	**D214/U***	50	30.8	7/21S	PE	.425″	VN	1,5	M
316/U	**D316/U***	50	29.0	7/33SCW	T	.097″	F	1,5	M

CODES:
‡ — ±3.
RG/U TYPE: * MIL-C-17; ** Plenum style. (For non-conduit installation.)
COND. STRAND: B—Bare copper; CW—Copperweld; S—Silver coated copper; SCW—Silverplated copperweld; T—Tinned.
DIELECTRIC: F—FEP teflon; FC—Fluoropolymer resin; FPE—Foam polyethylene; PE—Polyethylene; T—TFE teflon.
JACKET TYPE: F—FEP teflon; FC—Fluorocarbon; T—PTFE teflon tape; V—Vinyl; VN—Non-contaminating vinyl.
SHIELD: C—Commercial copper braid (75-85%); FB—Aluminum polyester foilshield (100%) and aluminum braid (40%); M—Mil spec copper braid (95%).
STANDARD PUT-UP: 1—1000 Ft., 3—100 Ft., 500 Ft., 1000 Ft., 5—500 Ft. Additional put-ups available.

AUDIO CABLE 2 CONDUCTOR SHIELDED

NO OUTER JACKET

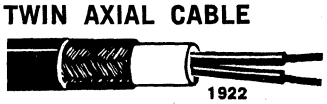


Each conductor copper tinned, plastic insulation, color coded, twisted, tinned copper shield.
Suitable for sound systems, industrial paging systems, broadcast-audio cable, rack panel wiring, etc.
OPERATING TEMPERATURE:
−20°C to +60°C

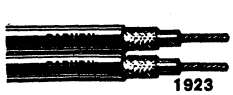
DABURN Cat. No.	Conds.	Size AWG	Strand	NOM. Wall	Nom. O.D.	Nom. Operating Voltage
2902/30	2	30	7/38	.010″	.085″	200V
2902/28	2	38	7/36	.010″	.090″	200V
2902/26	2	26	7/34	.010″	.095″	200V
2902/24	2	24	7/32	.017″	.120″	350V
2902/22	2	22	7/30	.017″	.140″	350V
2902/20	2	20	10/30	.017″	.155″	350V
2902/18	2	18	16/30	.017″	.170″	350V
2902/16	2	16	26/30	.020″	.210″	450V
2902/14	2	14	41/30	.020″	.225″	450V
2902/12	2	12	65/30	.025″	.295″	600V
2902/10	2	10	105/30	.025″	.375″	600V

STD. PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
CONDUCTOR COLOR CODE: 1—Black, 2—Red.

TWIN AXIAL CABLE



1922



1923

Suitable for computer applications — long or short haul transmissions; electronic cash register interconnect when high levels of noise interference may be expected.

DABURN Cat. No.	No. Cond.	AWG No.	Stranding	Shield Coverage	Dielectric	Non. Imp.	Vel. Prop.	Nom. Cap./Ft.	Nom. O.D.	UL Style
1922	2	20	7/28 T.C., 7/28 B.C.	95% T.C.	Solid Poly	100	66%	15.5	.330	2498
1923	Dual 59/u	23	Solid B.C.	95% B.C.	Solid Poly	75	66%	20.5	.242 x .505	—

STANDARD PUT-UP: 500 Ft., 1000 Ft.
NOTE: #1922 is designed for IBM System 34-5250 (Cable #736221), #1923 is designed for Wang System (Cable #420-0057).

PLASTIC JACKETED TINNED COPPER BRAID SHIELD CABLE

(UL) STYLE 2095, 1108 VW-1



The braided tinned copper construction allows ease of pigtailing and provides additional strength for the cable.
Each conductor is stranded tinned copper with PVC insulation, color coded, twisted, braided tinned copper shield and an overall gray vinyl jacket, .020″. Suitable for outdoor installation.
Operating Temperature: −20°C to +80°C
VOLTAGE RATING: 450V (300V U/L).

DABURN Cat. No.	No. Cond.	Size	Strand	Nom. Wall	Nom. O.D.
2970	2	22	7/30	.017″	.185″
2970/3	3	22	7/30	.017″	.200″
2971	2	20	10/30	.017″	.200″
2971/1*	1	20	10/30	.017″	.135″
2971/3	3	20	10/30	.017″	.220″
2972	2	18	16/30	.017″	.235″
2972/3	3	18	16/30	.017″	.245″
2974	2	16	26/30	.017″	.255″
2974/3	3	16	26/30	.017″	.260″
2975	2	14	41/30	.020″	.290″
2975/3	3	14	41/30	.020″	.295″
2956	2	12	65/30	.020″	.335″
2956/3	3	12	65/30	.020″	.340″

STANDARD COLOR CODE: 1—Black, 2—Red, 3—White.
STANDARD PUT-UP: 500 Ft., 1000 Ft.
* 1 conductor — UL 1108.
NOTE: Plenum constructions similar to the above are available to order.

MULTI CONDUCTOR SHIELDED AUDIO CABLE SPIRAL WRAP SHIELD —

(UL) STYLE 1108 AND 2095 VW-1



Each conductor is tinned copper with plastic insulation. Conductors are color coded and twisted then wrapped with spiral tinned copper shielding. Jacket is gray polyvinylchloride.
The spiral shield provides almost 100% shield coverage and simplifies pigtailing and grounding.
OPERATING TEMPERATURE: −20°C to +80°C
OPERATING VOLTAGE: UL-300V. Others-450V.

DABURN Cat. No.	No. Cond.	Size	Strand	Nom. Wall	Nom. Jacket	Nom. O.D.	UL Style
2949	2	22	1	.017″	.020″	.170″	2095
2950	2	22	7/30	.017″	.020″	.178″	2095
2950/1	1	22	7/30	.017″	.020″	.115″	1108
2950/3	3	22	7/30	.017″	.020″	.190″	2095
2950/4	4	22	7/30	.017″	.020″	.205″	2095
2950/6	6	22	7/30	.017″	.020″	.235″	2095
2952	2	20	10/30	.017″	.020″	.195″	2095
2952/1	1	20	1	.017″	.020″	.125″	1108
2952/3	3	20	10/30	.017″	.020″	.205″	2095
2952/4	4	20	10/30	.017″	.020″	.222″	2095
2952/6	6	20	10/30	.017″	.020″	.260″	2095
2953	2	18	16/30	.017″	.020″	.215″	2095
2953/1	1	18	1	.017″	.020″	.133″	1108
2953/3	3	18	16/30	.017″	.020″	.230″	2095
2953/4	4	18	16/30	.017″	.020″	.245″	2095
2954	2	16	26/30	.017″	.020″	.245″	2095
2954/3	3	16	26/30	.017″	.020″	.259″	2095
2954/4	4	16	26/30	.017″	.020″	.283″	2095
2955	2	14	41/30	.020″	.025″	.300″	—
2955/3	3	14	41/30	.020″	.025″	.320″	—
2955/4	4	14	41/30	.020″	.025″	.350″	—
2956	2	12	65/30	.020″	.025″	.330″	—
2956/3	3	12	65/30	.020″	.025″	.348″	—

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
Conductor Color Code: 1—Black, 2—Red, 3—White, 4—Green.
Construction variations to order.

AUDIO CABLE



DESCRIPTION: Two conductors #22 AWG, 7/30 T.C., .010 PVC, spiral T.C. shield overall. Solid T.C. drain wire over shield. Special soft formulation black jacket overall which allows the drain wire to pull it open.
IDEAL FOR STUDIO USE.

DABURN No.	No. Cond.	AWG	Ins.	Jacket	Nom. O.D.
2958/2	2	22(7)	.010″	.015″	.130″

STD. PUT-UP: 500′, 1000′ **COLOR CODES:** 1-Red, 2-Black

DABURN ELECTRONICS & CABLE CORP. • 70 E. OAK STREET • NORWOOD, NJ 07648 • 201/768-5400 • TWX 710-991-9856

DABURN

MICROPHONE • CONTROL CABLE • BRAID & POLYESTER FOIL • SHIELD • SOLID & STRANDED SHIELDED PAIRS • (UL) VW-1

NEW HEAVY DUTY MICROPHONE CABLE

Studio type heavy duty plastic, shielded microphone cable. The hi-gloss, abrasion resistant jacket will withstand rough usage.
DESCRIPTION: 2 conductor #18 AWG stranded tinned copper, fillers where necessary. Braided tinned copper shield and black jacket overall.
OPERATING TEMPERATURE: −20°C to +80°C

DABURN No.	Conds.	Size	Strand	Nom. Cap.	Nom. O.D.
2779	2	18	41/34	45 MMF*	.293″

STD. PUT-UP: 500′, 1000′. Red jacket to order
COLOR CODE: 1-White, 2-Black.
* Between one conductor and remaining conductor connected to shield.

MULTI-CONDUCTOR MICROPHONE AND CONTROL CABLE — PLASTIC



Each conductor tinned copper, polyethylene insulation — color coded. Multi-conductors cabled with fillers, textile wrapped, tinned copper braided shield, gray polyvinyl jacket overall.
OPERATING TEMPERATURE: −20°C to +80°C, 600 Volts.

DABURN Cat. No.	Cond.	Size	Strand	Nom. Cap./Wall	Nom. Jacket	O.D. Nom.
2782††	2	22	16/34	31 MMF	.035″	.231″
2782/20	2	20	26/34	45 MMF	.025″	.240″
2782/24*††	2	24	10/34	38 MMF	.030″	.190″
2783	3	20	26/34	.014″	.030″	.250″
2784	4	20	26/34	.014″	.035″	.260″
2785	5	20	26/34	.014″	.035″	.275″
2786	6	20	26/34	.014″	.035″	.300″
2786/8	8	20	26/34	.014″	.035″	.330″
2786/10	10	20	26/34	.014″	.035″	.375″
2786/12	12	20	26/34	.014″	.035″	.380″
2786/15	15	20	26/34	.014″	.035″	.410″
2786/20	20	20	26/34	.014″	.035″	.455″

STD. PUT-UP: 100′, 500′, 1000′. * Spiral Tinned Copper Shield
CONDUCTOR COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow, 6-Blue, 7-Brown, 8-Orange, 9-Purple, 10-Slate, 11-White/Black, 12-White/Red, 13-White/Green, 14-White/Yellow, 15-White/Blue, 16-White/Brown, 17-White/Purple, 18-White/Slate, 19-Black/Red, 20-Black/Yellow.
* Spiral Tined Copper Shield. †† 1000V nom. operating voltage.

NEW DABURN SHIELDED SOUND CABLE



Suitable for balanced systems, small O.D., less bulk.
DESCRIPTION: Four conductor #22 stranded tinned copper, color coded polypropylene insulation, aluminum mylar foil shield and stranded T.C. drain wire over one pair. Chrome vinyl jacket overall.
OPERATING TEMPERATURE: −20°C to +80°C

DABURN No.	Cond.	Size	Strand	No. Cond. Shielded	Nom. Wall	Nom. Jacket	Nom. O.D.
2936/4	4	22	7/30	2	.009	.020	.167

STD. PUT-UP: 500′, 1000′.
COLOR CODE: 1-Red, 2-Black, 3-Green, 4-White.

SHIELDED MICROPHONE CABLE ONE CONDUCTOR



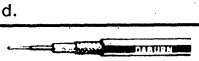
Will withstand abuse and is resistant to oil, moisture, aging. Have low capacitance, Hi insulation resistance and low attenuation. Will not strain or mark. Uses tinned copper for ease in soldering — extremely flexible-plastic.

2772 — For hi impedance microphone.
2773 — For crystal, ribbon, etc. mikes. All are suitable for hi-fi interconnecting cables.
2774 — For hi impedance lapel mikes.
OPERATING TEMPERATURE: −20°C to +60°C

DABURN Cat. No.	Cond.	Size	Strand	Shield	Nom. Cap./Ft. MMF	Sugg. Work Voltage	Nom. O.D.
2770	1	25	7/33	Spiral	23	3000	.159″
2771	1	25	7/33	Spiral	33	1000	.120″
2772	1	20	26/34	Braid	36	4000	.175″
2773	1	25	7/33*	Braid	34	3500	.144″
2774	1	25	7/33*	Braid	23	5000	.190″

* 3 strand tinned copper, 4 strand tinned copperweld.

SHIELDED ULTRA LOW CAPACITY MICROPHONE CABLE — BRAIDED SHIELD



Plastic Jacket — Cellular Foam Polyethylene Insulation
DESCRIPTION: Constructed with white foam polyethylene insulation, braided tinned copper shield, chrome gray vinyl jacket. The low loss foam polyethylene construction has lower capacitance and attenuation than standard polyethylene mike cables — as much as 50%. This increases the effective length of cable as much as 50% without signal loss.
OPERATING TEMPERATURE: −20°C to +60°C

DABURN Cat. No.	Cond.	Size	Strand	Nom. Cap./Ft.	Nom. Jacket	Nom. O.D.
2690	1	26	7/34*	30MMF	.020″	.114″
2691	1	24	10/34	20MMF	.030″	.180″
2692	1	24	10/34	15MMF	.030″	.220″
2693	2	22	16/34	11MMF	.030″	.295″

STD. PUT-UP: 100′, 250′, 500′, 1000′.
CONDUCTOR COLOR CODE: 1-White, 2-Black.
* 3 strands tinned copper, 4 strands tinned copperweld.

FOIL SHIELD PLASTIC JACKETED CABLE (UL) ‡ 2092, 2093, 2094



Extremely light in weight, provides 100% shield coverage-small diameters. Each conductor is stranded tinned copper — color coded with polyethylene insulation, twisted with an overall aluminum polyester foil shield. Drainwire provides quick and easy grounding.
OPERATING TEMPERATURE: −20°C to +80°C (UL +60°C).
OPERATING VOLTAGE: 400 (300 for U/L). Passes VW-1.
‡ 2 cond.-UL style 2092, 3 cond.-UL style 2093, 4 cond.-UL style 2094.

DABURN Cat. No.	Cond. No.	Size	Strand	Nom. Wall	Nom. Jacket	Nom. O.D.
2960	2	22	7/30	.016″	.020″	.174″
2960/3	3	22	7/30	.016″	.020″	.184″
2960/4	4	22	7/30	.016″	.020″	.205″
2961	2	20	10/30	.016″	.020″	.190″
2961/3	3	20	10/30	.016″	.020″	.205″
2961/4	4	20	10/30	.016″	.020″	.225″
2962	2	18	16/30	.016″	.020″	.220″
2962/3	3	18	16/30	.016″	.020″	.230″
2962/4	4	18	16/30	.016″	.020″	.245″
2963	2	16	26/30	.016″	.020″	.255″
2963/3	3	16	26/30	.016″	.020″	.275″
2964*	2	14	41/30	.020″	.030″	.310″
2964/3*	3	14	41/30	.020″	.030″	.324″

STD. PUT-UP: 500′, 1000′. * Not UL Listed
CONDUCTOR COLOR CODE: 1-Black, 2-Red, 3-White, 4-Green.
NOTE: Plenum constructions similar to the above are available to order.

AUDIO AND DATA SHIELDED PAIRS — STRANDED CONDUCTOR

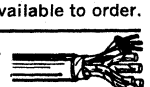


(UL) Style 2493 — Individually Polyester Foil Shielded Pairs
Each conductor is #22 AWG stranded tinned copper, insulated with color coded, high density polyethylene-twisted pairs. Each pair is shielded with a laminate of aluminum polyester foil and stranded tinned copper drain wire. Pairs are jacketed with a chrome gray PVC jacket. Passes VW-1.
NOM. CAP. BETWEEN CONDUCTORS OF A PAIR: 25 Pf/Ft. **CAPACITANCE OF A SINGLE CONDUCTOR TO A SHIELD:** 45 Pf/Ft. #2933/2 35 Pf/Ft between conductors.
OPERATING TEMPERATURE: −40°C to +60°C
OPERATING VOLTAGE: 300V. **NOTE:** UL—No specified voltage.

DABURN Cat. No.	No. Pairs	No. Cond.	Cond. Strand	Nom. Wall	Nom. Jacket	Nom. O.D.
2933/2	2	4	7/30	.010″	.020″	.200″
2932/3	3	6	7/30	.010″	.045″	.310″
2932/6	6	12	7/30	.010″	.045″	.380″
2932/9	9	18	7/30	.010″	.045″	.450″
2932/11	11	22	7/30	.010″	.045″	.480″
2932/15	15	30	7/30	.010″	.060″	.560″
2932/19	19	38	7/30	.010″	.060″	.630″
2932/27	27	54	7/30	.010″	.060″	.730″

STANDARD PUT-UP: 500′, 1000′. Construction variations to order.
COLOR CODE: See Chart A.
NOTE: Plenum constructions similar to the above are available to order.

AUDIO AND DATA SHIELDED PAIRS — SOLID CONDUCTOR



(UL) Style 2464 — Individually Polyester Foil Shielded Pairs
Each conductor is #22 AWG solid tinned copper, insulated with .013″ color coded vinyl cabled in pairs. Each pair is shielded with a laminate of aluminum polyester foil and stranded tinned copper drain wire. Pairs are jacketed with a chrome gray PVC jacket. Passes VW-1.
NOM. CAP. BETWEEN CONDUCTORS OF A PAIR: 40 Pf/Ft. **CAPACITANCE OF A SINGLE CONDUCTOR TO A SHIELD:** 77 Pf/Ft.
OPERATING TEMPERATURE: −40°C to +80°C
OPERATING VOLTAGE: 300V.

DABURN Cat. No.	No. Pairs	No. Cond.	Nom. Wall	Nom. Jacket	Nom. O.D.
2930/3	3	6	.013″	.037″	.280″
2930/6	6	12	.013″	.037″	.380″
2930/9	9	18	.013″	.040″	.425″
2930/11	11	22	.013″	.040″	.470″
2930/15	15	30	.013″	.045″	.525″
2930/19	19	38	.013″	.060″	.630″
2930/27	27	54	.013″	.060″	.730″

STANDARD PUT-UP: 500′, 1000′. Construction variations to order.
COLOR CODE: See Chart A.
NOTE: Plenum constructions similar to the above are available to order.

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DABURN

RETRACTILE POWER CORDS • SHIELDED COMMUNICATIONS CORDS • TEST LEAD WIRE •

(UL) CSA POWER CORDS

Retracted Lengths: 1, 2, 3 & 4 Ft. Extended Lengths: 5, 10, 15 & 20 Ft.
UL Listed — Neoprene Jacketed Cord • Operating Temperature: −20°C to +60°C

DABURN No. & Retracted Lengths				No.			UL‡ & CSA		Volt	Coil Nom. O.D.		Cord Nom.	
4 Ft.*	3 Ft.	2 Ft.	1 Ft.	Cond.	Size	Strand	Type	Amps	Rating	in.	mm	in.	mm
986-4	986-3	966-2	986-1	2	18	41/34	SVO	7	300	7/8	22	.260	7
986/3-4	986/3-3	986/3-2	986/3-1	3	18	41/34	SVO	7	300	1	25	.275	7
989-4	989-3	989-2	989-1	2	18	41/34	SJO	7	300	1 3/16	30	.320	8
989/3-4	989/3-3	989/3-2	989/3-1	3	18	41/34	SJO	7	300	1 3/8	35	.330	9
989/4-4	989/4-3	989/4-2	989/4-1	4	18	41/34	SJO	5.6	300	1 7/16	37	.360	10
989/5-4	—	989/5-2	—	5	18	41/34	SJO	5.6	300	1 3/4	41	.440	11
989/7-4	—	989/7-2	—	7	18	41/34	SJO	4.9	300	1 7/8	48	.522	13
989/15-4†	—	—	—	15	18	41/34	SVO	7	300	2 1/8	54	.575	15
990/3-4	—	950/3-2	—	3	18	41/34	SO	7	600	1 3/16	40	.405	10
990/4-4	—	990/4-2	—	4	18	41/34	SO	5.6	600	1 3/8	41	.435	11
991-4	991-3	991-2	991-1	2	16	65/34	SJO	10	300	1 3/8	35	.330	9
991/3-4	991/3-3	991/3-2	991/3-1	3	16	65/34	SJO	10	300	1 7/16	37	.365	10
991/4-4	991/4-3	991/4-2	—	4	16	65/34	SJO	8	300	1 5/8	38	.395	11
991/5-4	—	991/5-2	—	5	16	65/34	SO	5.6	600	2	54	.540	14
991/6-4	—	991/6-2	—	6	16	65/34	SO	8	600	2 1/8	51	.550	14
					6/16	#16-64/34	—	#16-8					
991/7-4	—	991/7-2	—	7	1/14	#14-41/30	SO	#14-12	600	2 1/4	57	.600	15
992/3-4	—	992/3-2	—	3	16	65/34	SO	10	600	1 13/16	46	.470	12
992/4-4	—	992/4-2	—	4	16	65/34	SO	8	600	1 7/8	48	.500	13
993-4	993-3	993-2	—	2	14	41/30	SO	15	600	2	54	.535	14
993/3-4	993/3-3	993/3-2	—	3	14	41/30	SO	15	600	2 1/8	54	.560	14
993/4-4	993/4-3	993/4-2	—	4	14	41/30	SO	12	600	2 1/4	57	.605	15
994/3-4	994/3-3	994/3-2	—	3	12	65/30	SO	20	600	2 3/8	60	.635	16
994/4-4	994/4-3	994/4-2	—	4	12	65/30	SO	16	600	2 1/2	60	.665	17
					2/12	#12-65/30	—	#12-17					
994/6-4	—	—	—	6	4/18	#18-41/34	—	#18-16	600	2 1/4	57	.605	15
994/7-4	—	994/7-2	—	7	12	65/30	SO	16	600	2 5/8	67	.775	20
996/4-4	—	—	—	4	10	104/30	SO	20	600	2 3/4	70	.745	19



Long Lasting Service — useful wherever cords must change length or position. Extend to approximately five times its retracted length. Returns to its original shape or length when released. Eliminates tangling, twisting or knots. Cords are UL and CSA approved.

Wherever UL Type is shown, approved by CSA testing laboratories.

* Preferred Put-up. 6″ tangents on all but 1 Ft. cords — 12″ tangents.

Also available: 18/2, 18/3 SVT; 18/2, 18/3, 18/4 SJT; 18/2, 18/3 ST; 16/2, 16/3, 16/4 SJT; 16/2, 16/3, 16/4 SJT in 4 Ft., 3 Ft. and 1 Ft. Retracted, UL Listed.

Conductor Color Code:
1-Black, 2-White, 3-Green, 4-Red, 5-Orange, 6-Blue, 7-Yellow.

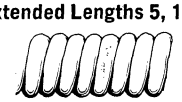
† 989/15-5 Extended to 25 Ft.



SHIELDED RETRACTILE COMMUNICATION CORDS

Retracted Lengths 1, 2 & 4 Ft. — Extended Lengths 5, 10 & 20 Ft.

Single and multi-conductors. Shielded mike cables. TPE, Neoprene or "Danyon" plastic jacketed shielded conductors are individually shielded. Shield can be pigtailed for soldering. Safe — Reliable.



DANYON PLASTIC JACKETED

DABURN No. Retracted Lengths			No.			Nom. Coil O.D.		Nom. Cord O.D.		Max.	Capacitance	
4 Ft.†	2 Ft.	1 Ft.	Cond.	Size	Strand	in.	mm	in.	mm	Volt	MMF Lin. Ft.	MMF Retr. Ft.
995D-4	995D-2	995D-1	1	23(S)	21/36	5/8	16	.175	4.1	100	56	410
999D-4	999D-2	999D-1	2	2-23 (Ind. S & J)	21/36	7/8	22	.260	5.7	100	56	440
997D-4	997D-2	997D-1	3	2-23 (1-23(S)	21/36	1 1/8	29	.250	6.4	100	56	450
998D-4	998D-2	998D-1	4	2-23 2-23 (Ind. S & J)	21/36	1 1/8	29	.290	7.4	100	56	450

TPE OR NEOPRENE JACKETED

995-4	1	23(S)	21/36	3/4	19	200	5.1	100	56	440
998-4	2	2-23 (Ind. S & J)	21/36	5/8	16	200	5.1	300	56	450
994-4	3	2-23	21/36	7/8	22	.240	6.1	100	56	450
		1-23(S)	21/36					75		
997-4	4	2-23	21/36	1	25	.270	6.9	100	56	450
		2-23(S**)	21/36					75		

** Individually shielded. † Preferred Put-up. Standard Package: 10. Conductors Are Color Coded.

(UL) LISTED RETRACTILE POWER CORD SETS

18″ Retracted — Approx. 7½ Ft. Extended — 300V — UL Listed

For portable use. Mobile and office equipment. Neoprene jacketed cord sets with molded male plug on one end, other end remove jacket and strip cond. Operating Voltage: 300 Volts.

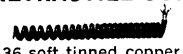


DABURN	No. Cond.	AWG Size	Amps	Strand	Type UL	Coil O.D. in.	Coil O.D. mm	Cord O.D. in.	Cord O.D. mm
980/3	3	18	7	41/34	SVO	1	25	.275	7
981/3	3	18	7	41/34	SJO	1 3/8	35	.350	9
982/3	3	16	13	65/24	SJO	1 7/16	37	.390	10

Conductor Color Code: 1-Black, 2-White, 3-Green.
Standard Package: 10

OVERALL SHIELDED PLASTIC RETRACTILE CORDS

Retracted Lengths 1, 2, 3, 4 Ft.
Extended Lengths 5, 10, 15, 20 Ft. (UL)



Shielded communication cords 23 AWG 21/36 soft tinned copper with min. 85% spiral T.C. shield coverage. Black "Danyon" plastic jacket overall. Six inch tangents on 2, 3 & 4 ft. cords. Twelve inch tangents on 1 ft. cords. Operating voltage 300V (120V U/L) max. Current carrying capacity 1.0 amp. Std. pkg. 10 pcs. UL Listed as AWM.

DABURN Cat. Nos. Retracted Length				No.	Cord		Coil	
					in.	mm	in.	mm
4 Ft.†	3 Ft.	2 Ft.	1 Ft.	Cond.	Nom. O.D.		Nom. O.D.	
995D-4	995D-3	995D-2	995D-1	1	.175	4.4	5/8	16
995D/2-4	995D/2-3	995D/2-2	995D/2-1	2	.220	5.6	5/8	16
995D/3-4	995D/3-3	995D/3-2	995D/3-1	3	.230	5.9	3/4	19
995D/4-4	995D/4-3	995D/4-2	935D/4-1	4	.260	7.0	7/8	22
995D/5-4	995D/5-3	995D/5-2	995D/5-1	5	.285	7.2	1	25
995D/6-4	995D/6-3	995D/6-2	995D/6-1	6	.310	7.9	1 1/8	29

TPE jacketed (not U/L) constructions available.

DABURN MINIATURE RETRACTILE COMMUNICATION CORDS — (UL) SHIELDED — UNSHIELDED 300V .5 AMP

1, 2 Foot Retracted — 5, 10 Foot Extended

Miniature. Suitable for compact equipment. Cords are #28 AWG. 19/40 soft tinned copper, color coded, where shielded, aluminum polyester foil shield, overall black plastic jacket. 1 Ft. retracted — 12″ tangents; 2 Ft. retracted — 6″ tangents.

OPERATING TEMPERATURE: −20°C to +60°C

Color Code: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow, 8-Brown.

STANDARD PACKAGE: 10.
* Not UL construction.

The above cords are also available in 3 Ft. and 4 Ft. retracted, which extend to 15 and 20 feet respectively.

Additional cords available in tough TPE (Thermo Plastic Elastomer) with many of the properties of rubber and superior retractability.

UNSHIELDED						
DABURN Cat. No.			Coil		Cord	
1 Ft.	2 Ft.	Cond.	in.	mm	in.	mm
975/28A	975/28	2	.5	13	.14	3.4
976/28A	976/28	3	.5	13	.14	3.5
977/28A	977/28	4	.5	13	.15	3.8
978/28A	978/28	5	.6	14	.18	4.0
979/28A	979/28	6	.6	14	.19	4.3
980/28A	980/28	7	.6	16	.20	4.5
981/28A	981/28	8	.9	22	.24	4.8
SHIELDED*						
975/28SA	975/28S	2	.5	13	.16	4.0
976/28SA	976/28S	3	.5	13	.17	4.3
977/28SA	977/28S	4	.6	15	.18	4.6
978/28SA	978/28S	5	.6	15	.19	4.8
979/28SA	979/28S	6	.6	16	.20	5.0
980/28SA	980/28S	7	.6	16	.21	5.2
981/28SA	981/28S	8	.9	22	.25	6.3

Note: Retracted lengths are approximate, extended lengths are guaranteed.

RETRACTILE TEST LEAD WIRE



Stretch coiled kinkless test lead wire. 12″ coil — stretches to approximately 5 feet, 24″ to approx. 10 Ft. One conductor #20 stranded copper, rubber insulation .165 O.D. Colors: Red, Black.

WORKING VOLTAGE: 1000V, 4 Amps.

DABURN No.	Lgth. in.	Size	Strand	Coil O.D. in.	Coil O.D. mm	Cord O.D. in.	Cord O.D. mm
984A	12	20	41/36	3/4	19	.165	4.2
984	24	20	41/36	3/4	19	.165	4.2

12″ Extends Approx. 5 Ft.
24″ Extends Approx. 10 Ft.
Specify Color, Red or Black.
Standard Package: 6

DABURN

MODULAR PLUG CABLES STRAIGHT AND RETRACTABLE CABLES

Each Daburn modular cord is 28 AWG 7/36 soft tinned copper, color coded with an overall PVC jacket and modular plugs at each end. Shielded constructions use an overall aluminum/polyester shield and drain wire.

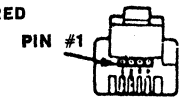
Daburn modular cords are suitable for data equipment, interface, keyboards, audio, telephone handsets, security and alarm applications.

They resist oils, grease, acids, fumes and are abrasion resistant. They will not mar surfaces with which they come in contact.

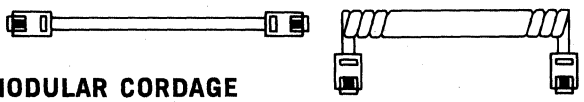
Note: "Half-Modular" cords — lugs on one end, keyed plugs and UL approved styles are available to order.

CROSS WIRED
1 — 4
2 — 3
3 — 2
4 — 1

STRAIGHT WIRED
1 — 1
2 — 2
3 — 3
4 — 4



CONTACT VIEW



MODULAR CORDAGE

For use as telephone, computer cable. Daburn modular cordage is #28 AWG 7/36 soft T.C., color coded, flat configuration, with a PVC silver satin jacket overall. Additional jacket colors, #26 AWG stranded, tinsel conductors and overall shield are available to order.

DABURN Cat. No.	No. of Cond.	Strand T.C.	STD P-U
2800/4	4	7/36	100′, 1000′, 2500′
2800/6	6	7/36	100′, 1000′, 2500′
2800/8	8	7/36	100′, 1000′, 2500′

MODULAR PLUG CORDS

STRAIGHT CORDS: DABURN Straight Wired	STRAIGHT CORDS: Cat. No. Cross Wired	No. of Cond.	Lgth. in Ft.	Construction	RETRACTILE CORDS: DABURN Straight Wired	RETRACTILE CORDS: Cat. No. Cross Wired	No. of Cond.	Lgth. Extend.	Construction
28-04-7	28-04-7X	4	7	F	28-14-1	28-14-1X	4	5 Ft.	F
28-04-14	28-04-14X	4	14	F	28-14-2	28-14-2X	4	10 Ft.	F
28-04-25	28-04-25X	4	25	F	28-14-5	28-14-5X	4	20 Ft.	F
28-06-7	28-06-7X	6	7	F	28-16-1	28-16-1X	6	5 Ft.	F
28-06-14	28-06-14X	6	14	F	28-16-2	28-16-2X	6	10 Ft.	F
28-06-25	28-06-25X	6	25	F	28-16-5	28-16-5X	6	20 Ft.	F
28-08-7	28-08-7X	8	7	F	28-18-1	28-18-1X	8	3 Ft.	F
28-08-14	28-08-14X	8	14	F	28-18-2	28-18-2X	8	6 Ft.	F
28-08-25	28-08-25X	8	25	F	28-18-5	28-18-5X	8	12 Ft.	F
SHIELDED					**SHIELDED**				
28-08-7S	28-08-7SX	8**	7	R	28-18-1S	28-18-1SX	8**	5 Ft.	R
28-08-14S	28-08-14SX	8**	14	R	28-18-2S	28-18-2SX	8**	10 Ft.	R
28-08-25S	28-08-25SX	8**	25	R	28-18-5S	28-18-5SX	8**	20 Ft.	R

STOCK JACKET COLORS: Silver Satin, Black. If not specified Silver Satin will be supplied.
STANDARD PACKAGE: 25 pcs
Additional lengths to order.
** 7 conductors + 1 conductor ground
F = Flat construction
R = Round construction
Above also available in #26 AWG, i.e., 26-04-7

Modular plugs, with and without tabs; modular crimping tool for the above cable available.

DANYON PLASTIC JACKETED COMMUNICATION CORDS —

Retracted Lengths 2, 3 & 4 Ft. — Extended Lengths 10, 15 & 20 Ft.

Multi-conductors stranded extra flexible #23 AWG 21/36 tinned soft copper for long flex life. "Danyon" plastic jacketed. 120 volt working, current carrying capacity 1 amp. Nom. cond. resist. .022 ohms per linear foot, .185 ohms per retracted foot. For communication equipment such as ham operations, telephone car carriers, radio equipment, head sets, etc.
OPERATING TEMP.: −20°C to +60°C
MAXIMUM VOLTAGE: 300V



DABURN No. - Retracted Lengths			No. Cond.	Size	Strand	No. Coil O.D.		Nom. Cord O.D.	
4 Ft.†	3 Ft.	2 Ft.				in.	mm	in.	mm
975D-4	975D-3	975D-2	2	23	21/36	5/8	16	.210	5.6
976D-4	976D-3	976D-2	3	23	21/36	3/4	19	.210	5.8
977D-4	977D-3	977D-2	4	23	21/36	7/8	22	.255	6.5
978D-4	978D-3	978D-2	5	23	21/36	1	25	.265	6.7
978D/6-4	978D/6-3	978D/6-2	6	23	21/36	1 1/8	29	.305	7.7
978D/7-4	978D/7-3	978D/7-2	7	23	21/36	1 3/16	30	.325	8.3
978D/8-4	978D/8-3	978D/8-2	8	23	21/36	1 1/4	32	.360	9.1
978D/10-4	978D/10-3	978D/10-2	10	23	21/36	1 3/8	35	.380	9.7
978D/12-4	978D/12-3	978D/12-2	12	23	21/36	1 1/2	38	.390	9.9
978D/15-4	978D/15-3	978D/15-2	15	23	21/36	1 5/8	41	.400	10.2

Conductor Color Code: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow, 8-Brown, 9-White/Black, 10-White/Red, 11-White/Green, 12-White/Orange, 13-White/Yellow, 14-White/Brown, 15-White/Blue.
† Preferred Put-up **Standard Package:** 5

RETRACTILE COMMUNICATION CORDS

Retracted Length 4 Ft. — Extended Length 20 Ft.

Multi-conductors stranded extra flexible #23 AWG 21/36 tinned soft copper for long life, Neoprene or TPE (Thermoplastic Elastomer) jacketed cable. 300 volt max. working, current carrying capacity 1 amp. Nom. cond. resist. .022 ohms per linear foot, .185 ohms per retracted foot.

For communication equipment such as ham operations, telephone car carriers, radio equipment, head sets, etc.
OPERATING TEMPERATURE: −20°C to +60°C
MAXIMUM VOLTAGE: 300V



TPE OR NEOPRENE JACKETED

DABURN Cat. Nos. Retracted Length 4 Ft.	No. Cond.	Size	Strand	Coil Nom. O.D.	Nom. Cord O.D.
975-4	2	23	21/36	3/4″	.200″
976-4	3	23	21/36	13/16	.210″
977-4	4	23	21/36	7/8″	.240″
978-4	5	23	21/36	1″	.285″
978/6-4	6	23	21/36	1 1/8″	.305″
978/7-4	7	23	21/36	1 1/4″	.320″
978/15-4	15	23	21/36	1 1/2″	.470″

CONDUCTOR COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow.
STANDARD PACKAGE: 5

DAFLEX ULTRA FLEXIBLE SUB-MINIATURE WIRE U/L STYLE 1568, 1605



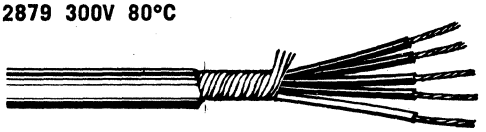
Daflex ultra flexible sub-miniature hook-up wire is designed for continuous flexing applications, such as data processing, mercury thermostats, magnetic memory drums and rotation servo platforms. It offers superior limpness and flexing characteristics.

DESCRIPTION: Stranded soft bare copper conductor, insulated with a special formulation of flexible PVC to minimize kinking and fatigue.
OPERATING TEMPERATURE: −40°C to +80°C

DABURN Cat. No.	AWG	Strand	Nom. Wall	Max. Volt	Nom. O.D.
2671/36**	36	7/44	.005″	150	.016″
2671/32**	32	18/44	.007″	300	.023″
2671/30**	30	28/44	.010″	600	.031″
2671/29**	29	51/46	.008″	300	.032″
2671/28*	28	41/44	.010″	600	.035″
2671/27*	27	48/44	.010″	600	.037″
2671/26*	26	66/44	.010″	600	.042″
2671/24*	24	105/44	.015″	600	.058″
2671/22*	22	168/44	.015″	600	.064″

* To U/L Style 1568. ** To U/L Style 1605. **STANARD P-U: 1000 Ft.**
STOCK COLORS: Black, White, Red, Green. Additional colors to order.

DABURN SUB-MINIATURE SHIELDED CABLE U/L 2879 300V 80°C



Ultra-flexible, multi-conductor, shielded sub-miniature cable. Suitable for computer print head and other high flexing, repetitive operations.

Each conductor is #32 AWG, 7/40 tinned copper, .007″ nominal wall of specially formulated soft vinyl, 72% minimum spiral tinned copper shield coverage, .010″ black PVC jacket. U/L labled spools available. Meets U/L style 2879.

DABURN Cat. No.	No. of Cond.	AWG	Strand	Nom. O.D.	Nom. Resist.	Nom. Cap./Ft.
2752/5	5	32	7/40	.082″	.073	23 pf

STANDARD P-U: 1000 Ft.
COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Yellow.
Additional constructions available.

DABURN

COMPUTER CABLE MULTIPAIR FOIL SHIELD TO UL STYLE 2464



DESCRIPTION: Each conductor is #24 AWG 7/32 tinned copper, color coded, .009" wall of semi-rigid PVC (UL Style 1061, CSA Type S-R PVC). Conductors are twisted in pairs. Overall aluminum/polyester foil shield and 7 strand tinned copper drain wire. Gray PVC jacket. To UL style 2464.

Construction is suitable for computer, communication and control applications.

Cable resists acids, alkalis, oil, solvents, moisture and fungus.

TEMPERATURE RANGE: −20°C to +80°C
VOLTAGE RATING: 300V
FLAMMABILITY: Passes UL VW-1

DABURN Cat. No.	No. of Pairs	Nom. Jacket Wall		Nominal O.D.	
		Inches	MM	Inches	MM
2937	1	.032	.81	.162	4.08
2937/2	2	.032	.81	.220	5.59
2937/3	3	.032	.81	.240	6.10
2937/4	4	.032	.81	.275	6.99
2937/6	6	.032	.81	.290	7.37
2937/9	9	.032	.81	.360	9.14
2937/11	11	.032	.81	.375	9.53
2937/15	15	.032	.81	.430	10.92
2937/19	19	.032	.81	.445	11.30
2937/27	27	.032	.81	.515	13.08
2937/51	51	.053	1.35	.715	18.16

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
AVAILABLE TO ORDER: Overall polyester foil shield and braid; plenum constructions.
COLOR CODE: Chart B

MULTICONDUCTOR FOIL SHIELD TO UL STYLE 2464



DESCRIPTION: Each conductor is #24 AWG 7/32 tinned copper, color coded, .009" wall of semi-rigid PVC (UL Style 1061, CSA Type S-R PVC). Conductors are twisted. Overall aluminum/polyester foil shield and 7 strand tinned copper drain wire. Cable is jacketed with gray PVC. To UL Style 2464.

Construction is suitable for computer, communication and control applications.

Cable resists acids, alkalis, oil, solvents, moisture and fungus.

TEMPERATURE RANGE: −20°C to +80°C
VOLTAGE RATING: 300V
FLAMMABILITY: Passes UL VW-1

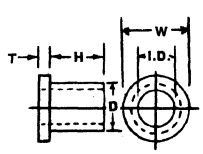
DABURN Cat. No.	No. of Cond.	Nom. Jacket Wall		Nominal O.D.	
		Inches	MM	Inches	MM
2980	2	.032	.081	.164	4.17
2980/3	3	.032	.081	.168	4.29
2980/4	4	.032	.081	.185	4.70
2980/6	6	.032	.081	.210	5.33
2980/8	8	.032	.081	.225	5.72
2980/10	10	.032	.081	.250	6.35
2980/15	15	.032	.081	.280	7.11
2980/20	20	.032	.081	.305	7.75
2980/25	25	.032	.081	.345	8.76
2980/50	50	.032	.081	.445	11.30
2980/60	60	.032	.081	.475	12.07

STANDARD PUT-UP: 100 Ft., 500 Ft., 1000 Ft.
AVAILABLE TO ORDER: Overall polyester foil shield and braid; plenum constructions.
COLOR CODE: Chart F

DABURN NYLON SPACER/BUSHINGS

Wide flanges isolates screw from mounting surface. Has hi-tensile and torque strength.

6/6 Nylon



Daburn No.	Screw Size I.D.	W	T	H	D
14-79	# 4 (.115")	.235"	3/64"	1/4"	.146"
14-79A	# 6 (.140")	.290"	3/64"	1/4"	.170"
14-79B	# 8 (.173")	.344"	1/16"	3/8"	.205"
14-79C	#10 (.200")	.399"	1/16"	3/8"	.260"
14-79D	1/4" (.260")	.513"	1/16"	3/8"	.312"

COLOR: Natural. MIL-P-20693A. Std. Pkg. 100, 1000.

DABURN NYLON HEX NUTS

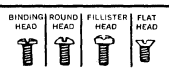


Daburn No.	Size	Daburn No.	Size
14-85	2-56	14-88	8-32
14-86	4-40	14-89	10-32
14-87	6-32	14-90	1/4-20

COLOR: Natural. MIL-P-20693A. Std. Pkg. 100, 1000

SEND FOR FREE COMPLETE CATALOG

DABURN NYLON FASTENINGS ZYTEL 101 MIL-P-20693A



Has outstanding insulation specs, hi-resistance to heat, shock, vibration, chemical, is light in weight, superior, torque strength. Corrosion resistant, non magnetic. Continuous service temperature to 300°F. All parts made to American thread standards to Class 2A or 2B fit. B18.2 (hex nuts), B18.6 (machine screws), B1.1 (thread specs.).

Daburn No.	Size	Type	Daburn No.	Size	Type
14-40	2-56 x 1/4"	Rd. Hd.	14-48A	6-32 x 1/2"	Bind. Hd.
14-40A	2-56 x 1/4"	Fill. Hd.	14-48B	6-32 x 1/2"	Fill. Hd.
14-40B	2-56 x 1/4"	Bind. Hd.	14-48C	6-32 x 1/2"	Flat. Hd.
14-41	2-56 x 3/8"	Rd. Hd.	14-49	6-32 x 3/4"	Rd. Hd.
14-41A	2-56 x 3/8"	Fill. Hd.	14-49A	6-32 x 3/4"	Fill. Hd.
14-41B	2-56 x 3/8"	Bind. Hd.	14-49B	6-32 x 3/4"	Bind. Hd.
14-42	2-56 x 1/2"	Rd. Hd.	14-50	6-32 x 1"	Rd. Hd.
14-42A	2-56 x 1/2"	Fill. Hd.	14-50C	6-32 x 1"	Flat. Hd.
14-42B	2-56 x 1/2"	Bind. Hd.	14-51	8-32 x 1/4"	Rd. Hd.
14-43	4-40 x 1/4"	Rd. Hd.	14-51A	8-32 x 1/4"	Fill. Hd.
14-43A	4-40 x 1/4"	Fill. Hd.	14-51B	8-32 x 1/4"	Bind. Hd.
14-43B	4-40 x 1/4"	Bind. Hd.	14-52	8-32 x 1/2"	Rd. Hd.
14-44	4-40 x 3/8"	Rd. Hd.	14-52A	8-32 x 1/2"	Fill. Hd.
14-44A	4-40 x 3/8"	Fill Hd.	14-52B	8-32 x 1/2"	Bind. Hd.
14-44B	4-40 x 3/8"	Bind. Hd.	14-52C	8-32 x 1/2"	Flat. Hd.
14-44C	4-40 x 3/8"	Flat Hd.	14-54	8-32 x 5/8"	Rd. Hd.
14-45	4-40 x 1/2"	Rd. Hd.	14-54A	8-32 x 5/8"	Fill. Hd.
14-45A	4-40 x 1/2"	Fill. Hd.	14-55	8-32 x 3/4"	Rd. Hd.
14-45B	4-40 x 1/2"	Bind. Hd.	14-55A	8-32 x 3/4"	Fill. Hd.
14-61	4-40 x 1"	Rd. Hd.	14-55B	8-32 x 3/4"	Bind. Hd.
14-61C	4-40 x 1"	Flat Hd.	14-56A	8-32 x 1"	Fill. Hd.
14-46	6-32 x 1/4"	Rd. Hd.	14-56C	8-32 x 1"	Flat. Hd.
14-46A	6-32 x 1/4"	Fill. Hd.	14-57	10-32 x 3/8"	Rd. Hd.
14-46B	6-32 x 1/4"	Bind. Hd.	14-58	10-32 x 1/2"	Rd. Hd.
14-46C	6-32 x 1/4"	Flat Hd.	14-58C	10-32 x 1/2"	Flat Hd.
14-47	6-32 x 3/8"	Rd. Hd.	14-59	10-32 x 5/8"	Rd. Hd.
14-47A	6-32 x 3/8"	Bind. Hd.	14-60	10-32 x 1"	Rd. Hd.
14-47B	6-32 x 3/8"	Fill. Hd.	14-60C	10-32 x 1"	Flat Hd.
14-47C	6-32 x 3/8"	Flat. Hd.	14-62	1/4-20 x 1"	Rd. Hd.
14-48	6-32 x 1/2"	Rd. Hd.	14-63	1/4-20 x 2"	Rd. Hd.

STOCK COLOR: Natural. Additional sizes available to order. Std. Pkg.: 100, 1000

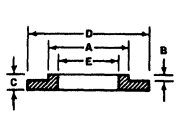
DABURN NYLON FLAT WASHERS



Daburn No.	For Screw Size	I.D.	O.D.	Thickness
14-92	2	3/32"	1/4"	.016"
14-93	4	1/8"	1/4"	.016"
14-94	6	5/32"	5/16"	.031"
14-95	8	.170"	3/8"	.031"
14-96	10	.195"	3/8"	.031"
14-97	1/4	5/32"	5/8"	.063"

COLOR: Natural 6/6 Nylon Std. Pkg. 100, 1000

DABURN NYLON SHOULDER WASHERS



Natural Nylon Per MIL-P-20693A

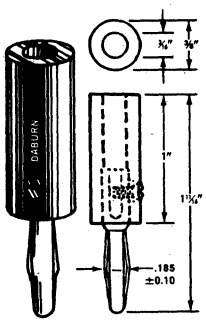
Catalog No.	E	Hole Size	D	C	B	A
14-540	.140	6	.375	.093	.031	.237
14-541	.110	4	.250	.062	.031	.187
14-542	.136	6	.250	.093	.031	.187
14-543	.136	6	.312	.093	.031	.187
14-544	.250	1/4"	.500	.093	.028	.312
14-545	.172	8	.375	.093	.031	.246
14-546	.196	10	.375	.093	.031	.308
14-547	.265	17/64"	.500	.097	.031	.365
14-548	.375	3/8"	.750	.093	.031	.500
14-549	.385	3/8"	.625	.093	.031	.500

Standard Package: 1000

DABURN

PLUGS & JACKS

INSULATED BANANA PLUG
SOLDERLESS

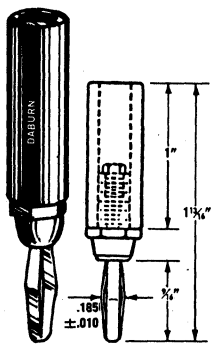


Mates with any standard banana jack. Side set screw secures wire without soldering. Plug is brass, nickle plated. Plastic handle.

COLORS: Red, Black, Yellow, Green, Blue (specify)

Spring	
DABURN No.	**Std. Pkg.**
19-46 Phosphor Bronze N.P.	50
19-46A Beryilium Copper N.P.	50

INSULATED BANANA PLUG
SOLDERLESS

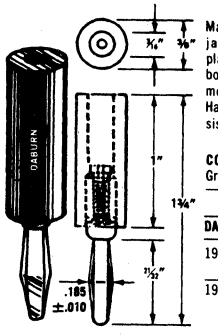


Mates with any standard banana jack. Plug is Hex Brass, nickle plated. Wire may be soldered to body or passed thru hex brass stud, flared and secured by screwing into body. Shock resistant plastic handle.

COLORS: Red, Black, Yellow, Green, Blue (specify)

Spring	
DABURN No.	**Std. Pkg.**
19-04 Phosphor Bronze N.P.	50
19-04B Beryilium Copper S.P.	50

INSULATED BANANA PLUG
SOLDERLESS

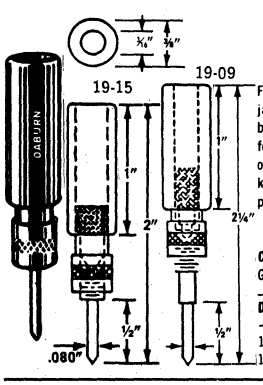


Mates with any standard banana jack. Plug is brass, nickel plated. Wire may be soldered to body or secured by solderless means, as with our #19-04. Handle is flush fitting, shock resistant. Plastic.

COLORS: Red, Black, Yellow, Green, Blue, (specify)

Spring	
DABURN No.	**Std. Pkg.**
19-65 Phosphur Bronze N.P.	50
19-65B Beryllium Copper S.P.	50

MIL-C-28901/5 INSULATED PHONE TIP
SOLDERLESS JUNIOR & SENIOR

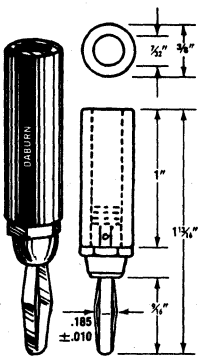


Fits any standard phone tip jack. Brass, nickle plated body. Solderless connection for wire which fits thru body of tip and secured under knurled nut. Shock resistant plastic handle.

COLORS: Red, Black, Yellow, Green, Blue. (specify)

DABURN No.		Std. Pkg.
19-15	Junior	50
19-09	Senior	50

INSULATED BANANA PLUG
SOLDERLESS

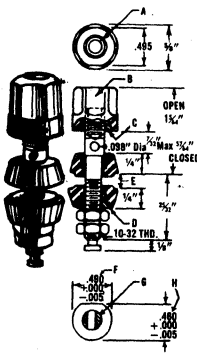


Mates with any standard banana jack. Wire may be soldered or passed through side hole and dressed around brass, nickle plated body to be secured by flush fitting shock resistant plastic handle.

COLORS: Red, Black, Yellow, Green, Blue (specify)

Spring	
DABURN No.	**Std. Pkg.**
19-63 Phosphur Bronze N.P.	50

BINDING POSTS - MULTI-PURPOSE
Wrap Around

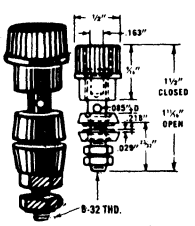


Molded nylon body. Accepts tip plug, spade lug. banana plug, wire alligator clip and direct solder connection. Has molded-in brass inserts in head and washer. Rated at 30 amps. AC Capacitance 5. OMMFD. Banana plug recepticle .161" I.D. head non-removable from stud and washer completely insulates post from panel. For panels 1/16" to ¼" thick; drill ½" hole for mounting washers. Wire hole is at right angle to flat on insulated washer.

COLORS: Red, Black (specify)

DABURN No.		Std. Pkg.
18-72	Fluted Head Post	100
18-75	Hex-head Post	100

STANDARD DUTY BINDING POST

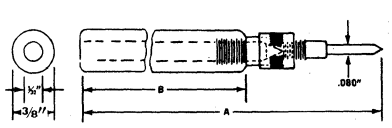


Molded nylon captive head. Brass, nickle plated stud and nuts. Rated at 15 amps. AC, capacitance 3.0 PF. Mounts in ¼" round hole in panels up to ⅛" thick.

COLORS: Red, Black (specify)

DABURN No.		Std. Pkg.
18-78	All insulated type	100
18-79	Grounded type	100

SOLDERLESS TEST PROD



Body is brass, nickle plated with molded plastic handle. Solderless connection for wire fits thru handle and plug body and wraps under knurled nut.

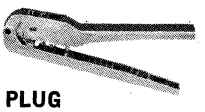
COLORS: Red, Black (specify)

DABURN No.	Handle (B)	Overall length (A)	Std. Pkg.
19-10	4"	5-3/16"	50
19-43	5"	6½"	50

Patch cord sets using the above plugs are available to order.

TOOL FOR MODULAR PLUG ASSEMBLY
CAT. NO. MPT-1

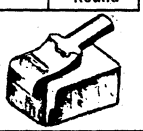
For repairing or replacing plugs on 4 conductor modular cables.



MODULAR PHONE PLUG

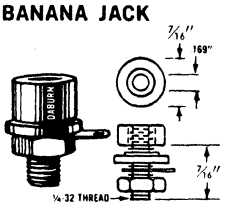
DABURN No.	No. Cond.	Max. Insulated Cond. O.D.	Cable Type
12-4	4	.038"	Flat
12-4R	4	.038"	Round

STD. PKG.: 50, 100
STANDARD COLOR: Clear
FINISH ON CONTACTS: Gold



INSULATED BANANA JACK

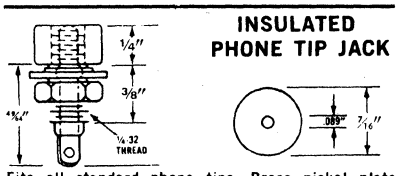
Body is brass nickel plated, mounts in 5/16" hole in panels up to 3/8" thick. Comes thru with hex nut, tinned copper lug and fibre washer. Takes all standard banana plugs. Molded plastic head.



COLORS
Red, Black, Yellow, Green, Blue, (Specify)

DABURN No.	Description	Std. Pkg.
19-06	Insulated Jack	50

INSULATED PHONE TIP JACK



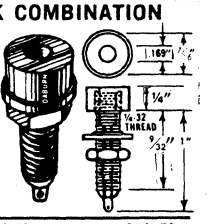
Fits all standard phone tips. Brass nickel plated body. Phosphor bronze spring provides positive contact. Comes thru complete with hex nut and fibre washer. Molded plastic head.

COLORS: Red, Black, Yellow, Green, Blue. (Specify)

DABURN No.	Description	Std. Pkg.
19-07	Insulated Phone Tip Jack	50

INSULATED JACK COMBINATION

Will take senior phone tips or standard banana plugs Body is brass, nickel plated. Mounts in 3/8" hole in panels up to ½" thick. Springs are phosphor bronze. Comes thru with hex nut and fibre washer.



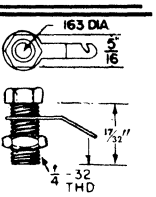
COLORS:
Red, Black, Yellow, Green, Blue. (Specify)

DABURN No.	Description	Std. Pkg.
19-33	Insulated Combination Jack	50

BANANA JACK

Hexed brass nickel plated hex nut and tinned copper lug. Has recessed head. Mounts in ¼" hole in panels up to 5/16" thick. Fits all standard banana plugs.

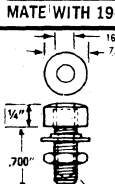
Rated: 15 amps AC.



DABURN No.		Std. Pkg.
17-03	Banana Jack	100

MATE WITH 19-46, 19-44, 19-63, 19-65, 19-04, 17-40, 17-41

INSULATED BANANA JACK TURRET TERMINAL



Body is brass nickel plated. Mounts in 5/16" hole in panels up to 3/8" thick. Molded plastic head. Takes standard banana plugs.

COLORS: Red, Black, Yellow, Green, Blue, White.

DABURN No.	Description	Std. Pkg.
19-26	Banana jack	100

DABURN

LACING CORD-TAPE TO MEET MIL-T-713C TYPE P* AND MIL-T-43435 COMP. P-TYPE S NYLON FLAT BRAIDED LACING TAPE

TYPE I FIN. B

Addtl. fin. to order.

Nylon fiber flat braided impregnated with MW microcrystaline fungicidal wax. Stays flat. Designed to create a wider contact to distribute the stress. Flexible. Won't slip when knotted. Resistant to fungus, flame, abrasion, acids, MIL-T-43435 (new) supersedes MIL-T-713 (old).

DABURN No.	Color	(New) Size	(Old) Class	Nom. Width	Nom. Thickness	Tensile Strength	Standard Put-Up Tubes
2035	Natural White	1	—	.200″	.014″	150 lbs.	250 yd.
2035B	Black	1	—	.200″	.014″	150 lbs.	250 yd.
2036	Natural White	2	1	.120″	.014″	80 lbs.	250 yd.
2036B	Black	2	1	.120″	.014″	80 lbs.	250 yd.
2037	Natural White	3	2*	.090″	.014″	50 lbs.	500 yd.
2037B	Black	3	2*	.090″	.014″	50 lbs.	500 yd.
2038	Natural White	4	3	.065″	.010″	30 lbs.	500 yd.
2038B	Black	4	3	.065″	.010″	30 lbs.	500 yd.
2039	Natural White	5	4	.046″	.010″	15 lbs.	500 yd.
2039B	Black	5	4	.046″	.010″	15 lbs.	500 yd.

DACRON FLAT BRAIDED LACING TAPE

TYPE II FIN. B

Addtl. fin. to order.

Dacron fiber flat braided impregnated with non-slip fungicidal finish. Will not cut or damage insulation. Stays flat. Has all characteristics of nylon with elongation, better resistance to acids.

DABURN No.	Color	Nom. Width	Nom. Thickness	Tensile Strength	Standard Put-Up Tubes
2041	Natural White	.120″	.014″	80	250 yd.
2041B	Black	.120″	.014″	80	250 yd.
2042	Natural White	.090″	.014″	48	500 yd.
2042B	Black	.090″	.014″	48	500 yd.
2043	Natural White	.060″	.010″	35	500 yd.
2043B	Black	.060″	.010″	35	500 yd.
2044	Natural White	.046″	.010″	25	500 yd.
2044B	Black	.046″	.010″	25	500 yd.

TEFLON* FIBERGLASS FLAT BRAIDED LACING TAPE TYPE IV FIN. D

Teflon coated fiberglass flat braided lacing tape bonded for high temp. operations (550°). Stays flat — for strength, stability. Teflon finish increases strength and abrasion resistant surface. Will not cut or damage insulation. Additional finishes to order.

DABURN No.	Color	Nom. Width	Nom. Thickness	Test lbs.	Standard Put-Up Tubes
2045	White	.170″	.025″	150	250 yd.
2046	White	.120″	.020″	90	250 yd.
2047	White	.080″	.020″	70	500 yd.

TEFLON* FLAT BRAIDED LACING TAPE

for high temperature operations (550°F) **TYPE III FIN. A**

DABURN No.	Color	Nom. Width	Nom. Thickness	Test lbs.	Standard Put-Up Tubes
2048	Brown	.100″	.016″	35	250 yd.
2049	Brown	.075″	.010″	15	500 yd.

Additional finishes to order.

ROUND TWISTED NYLON LACING CORD



Manufactured to meet MIL-T-713D Type P specification, Composition P, Classes 3, 2, 1. Wax finish — compounded with fungicide to resist mildew. Easy to tie.

PUT-UP ON 1 LB. TUBES

DABURN No.	Color	Class	Tensile Strength	Nom. Diam.	Yds. Per Tube
2070	Natural	1	70 lbs.	.039″	600
2070B	Black	1	70 lbs.	.039″	600
2071	Natural	2	48 lbs.	.029″	800
2071B	Black	2	48 lbs.	.029″	800
2072	Natural	3	32 lbs.	.025″	1140
2072B	Black	3	32 lbs.	.025″	1140
2072/1	Natural	4	20 lbs.	.020″	2400
2072/1B	Black	4	20 lbs.	.020″	2400

SPIRAL WRAP — PLASTIC TUBING FOR HARNESSES



Available in four formulations: Polyethylene (605, 605B), Rulan (flame retardant polyethylene) (606), Nylon (607, 607B) and Teflon (608). Easily applied. Twists on easily. Can be flexed repeatedly without cracking or breaking. Reusable, bends around sharp corners. Expandable. **Per MIL-P-22692, MIL-I-631D, MIL-P-3803.** Cut lengths available.

POLYETHYLENE — **Temp. Range:** −105°F to +200°F

DABURN Cat. No. Natural	DABURN Cat. No. Black*	Covers Wire Groups	Outside Diam.	Nom. Wall	Standard Package
605-⅛″	605B-⅛″	1/16″ to ½″	⅛″	.031″	100′, 500′, 1000′
605-¼″	605B-¼″	3/16″ to 2″	¼″	.045″	100′, 500′, 1000′
605-⅜″	605B-⅜″	5/16″ to 3″	⅜″	.058″	100′, 500′, 1000′
605-½″	605B-½″	¾″ to 4″	½″	.058″	100′, 500′, 1000′

*** Black Polyethylene is Ultra Violet Resistant and Recommended for Outdoor Use.**

RULAN (White) — **Temp. Range** −10°F to +200°F

606-⅛″		1/16″ to ½″	⅛″	.030″	100′, 500′, 1000′
606-¼″		3/16″ to 1½″	¼″	.058″	100′, 500′, 1000′
606-⅜″		5/16″ to 2″	⅜″	.058″	100′, 1000′
606-½″		¾″ to 4″	½″	.060″	100′, 1000′

Per MIL-P-17091B, MIL-P-20693 & MIL-M-22096 — **NYLON** — **Temp. Range:** −212°F to +300°F

607-⅛″	607B-⅛″	1/16″ to ½″	⅛″	.030″	100′, 500′, 1000′
607-¼″	607B-¼″	3/16″ to 2″	¼″	.025″	100′, 500′, 1000′
607-⅜″	607B-⅜″	5/16″ to 3″	⅜″	.035″	100′, 500′, 1000′
607-½″	607B-½″	¾″ to 4″	½″	.035″	100′, 500′, 1000′

*** Black Nylon is Recommended for Outdoor Use.**

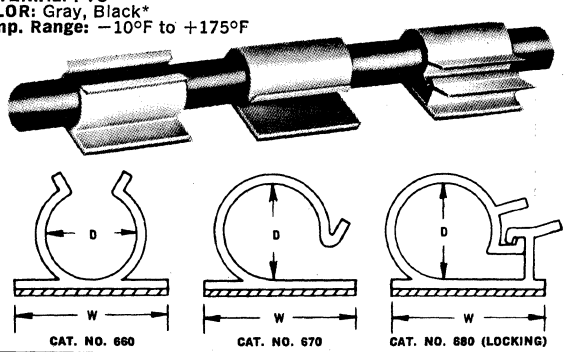
Per MIL-I-22129 — **TEFLON (Natural)** — **Temp. Range:** −450°F to +500°F

608-⅛″	1/16″ to ½″	⅛″	.031″	100′, 500′
608-¼″	3/16″ to 2″	¼″	.030″	100′, 500′
608-⅜″	5/16″ to 2½″	⅜″	.030″	100′, 500′
608-½″	¾″ to 3″	½″	.030″	100′, 500′

COLOR: Natural (White). 608-¾ and 608-1″. Available to order.

DABURN STIK KLIPS™ — SELF ADHESIVE

MATERIAL: PVC
COLOR: Gray, Black*
Temp. Range: −10°F to +175°F



For fast secure mounting on smooth surfaces. No need to screw, nail or staple in place. Fastens in a flash — just peel off the protective backing and press in place on a clean, dry, smooth surface. For best results allow a few seconds for adhesive to set before applying load.

These plastic clips are insulating, strong and elastic. They have many uses, such as keeping telephone wires off the floor, holding wire, cable, tubing rods, etc. in position.

DABURN Cat. No.	D	W	Std. Pkg.
660-⅛	⅛″	¾″	100, 1000
660-¼	¼″	¾″	100, 1000
660-⅜	⅜″	¾″	100, 1000
660-½	½″	1″	100, 1000
660-¾	¾″	1″	100, 1000
670-⅛	⅛″	¾″	100, 1000
670-¼	¼″	¾″	100, 1000
670-⅜	⅜″	¾″	100, 1000
670-½	½″	1″	100, 1000
670-¾	¾″	1″	100, 1000
680-¼*	¼″	¾″	100, 1000
680-½	½″	1″	100, 1000
680-¾	¾″	1″	100, 1000

DABURN ELECTRONICS & CABLE CORP. • 70 E. OAK STREET • NORWOOD, NJ 07648 • 201/768-5400 • TWX 710-991-9856

MINIGLOSSARIES
FORMULAS • CHARTS
PRODUCT SELECTION GUIDES
FORMS
CODES

TECHNICAL INFORMATION

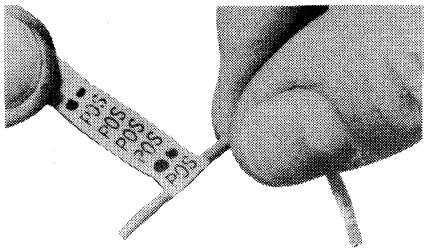
WHERE TO FIND THEM IN THE 87/88 EDITION OF EEM

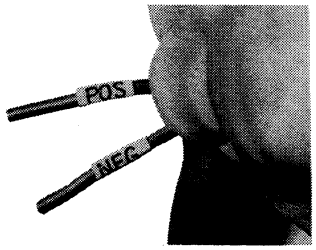
Abbreviations/Acronyms ..... A•1090, B•1096, C•1076, D•1020
ASCII Code ..... D•1082
Batteries, Product Selection Guide ..... D•1417
Batteries & Fuel Cells, Characteristics ..... D•1432
Cabinets, Enclosures, Racks & Chassis, Product Selection Guide ..... C•1003
Capacitors, Basic Formulas ..... A•1037
Capacitors, Miniglossary ..... A•1033
Capacitors, Product Selection Guide ..... A•1003
Circuit Boards (Printed), Product Selection Guide ..... C•1109
Coils, Chokes, Inductors, Product Selection Guide ..... A•1201
Conductors, Maximum Current Capacity of Copper & Aluminum ..... C•1882
Connectors, Miniglossary ..... C•1210
Connectors, Terminals & Sockets, Product Selection Guide ..... C•1115
Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide ..... A•1329
Delay Lines, Product Selection Guide ..... A•1489
Discrete Semiconductors, Product Selection Guide ..... A•2131
Displays, Readouts, Lamps & Lights, Product Selection Guide ..... B•1029
EBCDIC Code ..... D•1090
Encapsulation, Miniglossary ..... C•1112
Fans, Blowers, Cooling Equipment & Heat Exchangers, Product Selection Guide .. C•1607
Filters, Product Selection Guide ..... A•1642
IC Master ..... A•2152
Instruments, Graphic Recording, Product Selection Guide ..... D•1405
Instruments, Panel Meters, Product Selection Guide ..... D•1335
Instruments, Test & Measuring, Product Selection Guide ..... D•1191
Interconnection Systems, Product Selection Guide ..... C•1709
Keyboards & Keypads, Product Selection Guide ..... B•1703
Logo Finder & Trademark Directories ..... B•901
Microwave Components, Product Selection Guide ..... A•1777
Military Qualified Products List ..... B•1003
Motors, Drives, & Rotating Components, Product Selection Guide ..... B•1153
Opto Semiconductor, Miniglossary ..... B•1226
Oscilloscopes, Product Selection Guide ..... D•1387
Panel Hardware, Product Selection Guide ..... C•1569
Potentiometers, Trimmers, Controls & Rheostats, Product Selection Guide ..... A•2076
Power Supplies, Miniglossary ..... D•1571
Power Supplies, AC, Product Selection Guide ..... D•2017
Power Supplies, DC, Product Selection Guide ..... D•1483
Protective Components (Fuses, Circuit Breakers, Etc.), Product Selection Guide .... B•1233
Relay Contact Forms ..... B•1339
Relays, Electromechanical, Miniglossary ..... B•1325
Relays, Product Selection Guide ..... B•1285
Resistor Color Codes ..... A•1904
Resistors, Product Selection Guide ..... A•1863
Servo Components, Miniglossary ..... B•1202, D•2121
SI Units, Basic Guide To ..... A•1216, B•1822, C•1228, D•1040
Solenoids, Product Selection Guide ..... B•1509
Switches, Product Selection Guide ..... B•1529
Thermal Components, Product Selection Guide ..... B•1729
Thermal Conductivity of Dielectrics at Room Temperature ..... B•1734
Thyristors/High Power Diodes, Miniglossary ..... A•2148
Trademark & Logofinder Directories ..... B•901
Transducers & Encoders, Product Selection Guide ..... B•1769
Transformers, Product Selection Guide ..... A•2161
Voltage Drop Nomographic ..... C•1830, D•1698
Wire & Cable, Product Selection Guide ..... C•1759
Wire Guages—Diameter, Area, Copper Weight ..... C•1766

DATAK FLEXY•MARKER™ cabelabel™

RUGGED, CONFORMABLE MARKERS FOR ALL WIRE SIZES

ADJUSTS FOR ALL WIRE SIZES





CLEAR PERMANENT MARKINGS

WITH ONE FLEXY-MARKER, YOU CAN:
- **MARK** with a full wrap around #0 solid wire, **OR**
- **MARK** a terminal strip and any two wires from #24 to #14, **OR**
- **MARK** just one wire and replace the rest of the marker on its card for later use.

Flexy-Marker is a radically new style of wire marker. Ultra-thin and flexible, it will neatly wrap around and mark wires as small as #24. Yet, the same marker will make a full wrap around wires as large as .350" diameter. The secret is in the mechanical design. Each marker has four sections divided by perforations that are graduated in strength. The smallest section, with one legend, is held by the weakest perforation and will mark a terminal. The second section, with two legends, is held by a stronger perforation and will mark a thin wire (#24 to #14). The third section, with four legends, is held by the strongest perforation and will mark wires from #24 to #5. The fourth section is the applicator tab and has no adhesive. You can apply only part of the marker, pull off the rest, and save it for later use.

THE FLEXY-MARKER PACKAGE

Flexy-Marker wire markers are supplied in packs of 24 sheets bound into a handy pocket-sized pad. You receive 1056 two-figure markers, 768 three-figure markers, or 624 four-figure markers.

MARKER ASSORTMENT PACKS

Datak No. FBUS Electrical Assortment—Contains 32 each of POS, NEG, GND, HOT, PH1, PH2, PH3; 44 each of L1, L2, L3, L4, NEUT, T1, T2, T3, AC, DC; 26 each of XTRA; and 8 sets of A through Z, 854 total. Net Each.....**$7.65**

Datak No. F1S104 Number Assortment—Contains 24 sets of consecutive numbers 1-22 and 6 sets of consecutive numbers 23-104. 1014 total consecutive numbers. Net Each.....**$7.65**

OTHER CONSECUTIVE NUMBER PACKS

The following consecutive number packs are available. Two-digit packs have 1056 markers. Three-digit packs have 768 markers.

Datak No.	Description	Sets per Pad	Datak No.	Description	Sets per Pad
F1S104	1-104	36	**F265S96**	265-296	24
F1S22	1-22	48	**F297S28**	297-328	24
F23S66	23-66	24	**F329S60**	329-360	24
F67S104	67-104	24	**F361S92**	361-392	24
F105S36	105-136	24	**F393S24**	393-424	24
F137S68	137-168	24	**F425S56**	425-456	24
F137S00	169-200	24	**F457S88**	457-488	24
F201S32	201-232	24	**F489S20**	489-520	24
F233S64	233-264	24			

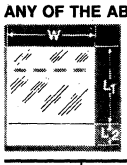
ANY OF THE ABOVE PACKS. Net Each.....**$7.65**

LETTER PACKS

The following letter packs are available. All solid letter packs contain 1056 markers. The alphabet pack contains 1248 markers. All are supplied in bound and padded 24-sheet packs.

Datak No.	Description	Datak No.	Description
FALPHA	A-Z	**FB**	B
FA	A	**etc. to**	etc. to
		FZ	Z

ANY OF THE ABOVE PACKS. Net Each.....**$7.65**



WRITE-ON FLEXY MARKERS

Supplied in sets of 6 identical 8½" × 9¾" sheets suitable for typewriter or platen-feed printers. Markers are spaced in 1/6" multiples for easy typing. Will also accept pen or pencil. A treated area absorbs ink slowly so that corrections may be made if done at once. The write-on portion is protected by a clear vinyl overwrap when marker is wrapped around a wire.

Datak No.	Dimensions, Ins. W	L1	L2	Max. Wire Diam.	Markers per Set
FWR1	0.50	0.50	0.1875	0.156	630
FWR2	1.25	0.50	0.1875	0.156	252
FWR3	2.00	0.50	0.1875	0.156	168
FWR4	0.50	1.20	0.300	0.375	360
FWR5	1.25	1.20	0.300	0.375	144
FWR6	2.00	1.20	0.300	0.275	96
FWR7	1.25	2.40	0.750	0.750	72
FWR8	2.00	2.40	0.750	0.750	48
FWR9	1.90	3.83	0.750	1.220	48

ANY OF THE ABOVE PACKS. Net Each.....**$7.65**

FLEXY-MARKER SPECIFICATIONS

Dimensions: 0.25" nominal w. × 1.125" lg.
Base Film: 0.003" ultra-soft vinyl plastisol.
Adhesive: Modified acrylic.
Temperature Range: For Class A or B insulations. −55° C to 130° C. May be used to 150° C, but yellowing will occur when at this temperature for long periods.
Resistance to Petroleum Products: Unaffected by immersion in most lubricating and hydraulic oils.
Max. Wire Diam. for Full Wrap: 0.350". Marker holds securely without full wrap on Kynar, Vinyl, Nylon, Fiberglas, asbestos, cotton, Polyethylene, Polypropylene, and silicone rubber. Use a full wrap on other rubber insulations and on Teflon. Note: Your conditions may vary from the test conditions. Test this product under your conditions to determine its suitability.

SOLID NUMBER PACKS

Datak No.	Description	Datak No.	Description
FN0SLASH	ø	**F2**	2
FN0	0	**etc. to**	etc. to
F1	1	**F520**	520

ANY OF THE ABOVE PACKS. Net Each.....**$7.65**

OTHER ELECTRICAL AND ELECTRONIC LEGENDS

The following legends are used for electrical bus and machinery interconnection wiring. Supplied in padded 24-card packs.

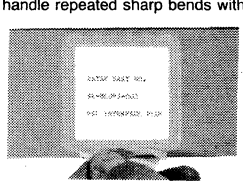
Datak No.	Description	Markers per Pad	Datak No.	Description	Markers per Pad
FL1	L1	1056	**F120V**	120V	624
FL2	L2	1056	**F208V**	208V	624
FL3	L3	1056	**F220V**	220V	624
FL4	L4	1056	**F240V**	240V	624
FPH1	PH1	768	**F277V**	277V	624
FPH2	PH2	768	**F440V**	440V	624
FPH3	PH3	768	**F480V**	480V	624
FT1	T1	1056	**FAC**	AC	1056
FT2	T2	1056	**FDC**	DC	1056
FT3	T3	1056	**FNEUT**	NEUT	624
FT4	T4	1056	**FBUS**	†	768
FT5	T5	1056	**FCOLORS**	‡	768
FT6	T6	1056	**FBLK**	(black)	768
FT7	T7	1056	**FBRN**	(brown)	768
FT8	T8	1056	**FRED**	(red)	768
FGND	GND	768	**FORG**	(orange)	768
FHOT	HOT	768	**FYEL**	(yellow)	768
FMINUS	−	1056	**FLTGRN**	(lt. green)	768
FNEG	NEG	768	**FDKGRN**	(dk. green)	768
FPLUS	+	1056	**FLTBLU**	(lt. blue)	768
FPOS	POS	768	**FDKBLU**	(dk. blue)	768
FXTRA	XTRA	624	**FVIO**	(violet)	768
F110V	110V	624	**FGRY**	(gray)	768
F115V	115V	624	**FWHT**	(white)	768

†Contains 8 sets of A thru Z and one sheet each of POS, NEG, GND, AC, DC, 120V, 240V, HOT, NEUT, PH1, PH2, PH3, L1, L2, L3, L4, XTRA, T1, T2, T3.
‡Contains 12 NEMA colors.
ANY OF THE ABOVE PACKS. Net Each.....**$7.65**

CABELABEL™ WRITE-ON MARKERS FOR RIBBON CABLE

Ultra flexible write-on labels use same plastic as flexy-markers. They adhere securely to the ribbed surface of vinyl ribbon cable without wrapping around the back side. A clear vinyl overlay seals over and all around write-on portion for full protection from abrasion and oil. Labels handle repeated sharp bends without separating from cable.

Datak No.	Label Length	Dims. Depth	Labels per Set
FCL-1	1.8"	0.25"	108
FCL-2	1.8"	0.50"	72
FCL-3	1.8"	0.75"	54
FCL-4	1.8"	1.00"	54
FCL-5	1.8"	1.80"	36



ANY OF THE ABOVE PACKS. Net Each.....**$7.65**

SEE SECTIONS 2400 AND 4200 FOR DATAK PRINTED CIRCUIT KITS AND WIRE MARKERS

The **DATAK** Corporation • 3117 M Paterson Plank Rd. North Bergen, NJ 07047

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GORE high reliability wire & cable products for the electronics industry

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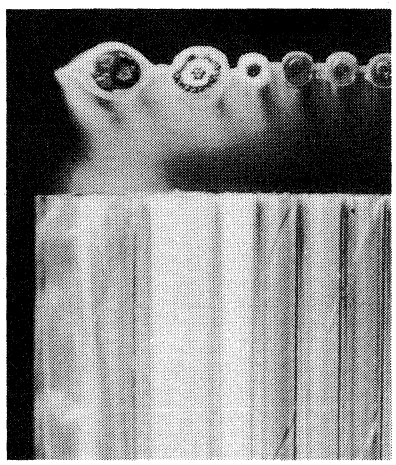

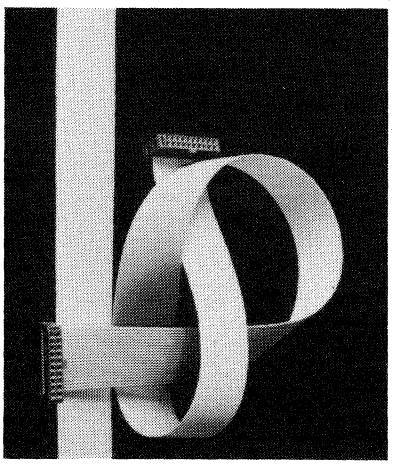

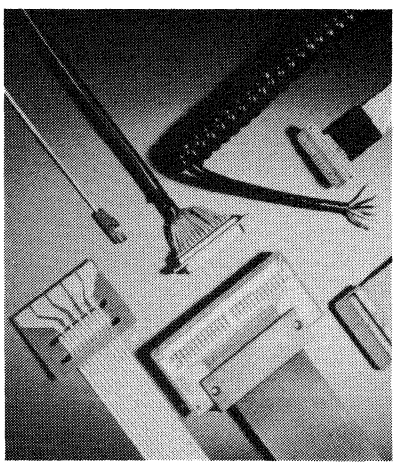

Ribbon Cables

Our round conductor ribbon cables are available in almost any configuration you can imagine: singles, pairs, coaxial leads, high voltage lines, optics, tubing for liquids—or any combination of these. Available in a variety of high performance insulation materials, these cables offer:

- Design flexibility to meet your specific needs
- Added strength through load sharing
- Weight and space savings
- Wide temperature range (—65°C to +260°C) and virtual immunity to solvents and other chemicals
- Ease of termination

Ribbon Cables for IDCs

High performance ribbon cables reduce installation costs by making it possible to use insulation displacement connector (IDC) systems in many critical applications —from high-speed printers to avionics. The PTFE and GORE-TEX® expanded PTFE insulation of our IDC ribbon cables contribute to their:

- Continuous flex life of up to 100,000,000 cycles at ¾" radius
- Virtual immunity to lubricants, solvents, oils, acids, and other chemicals
- Wide operating temperature range: —65°C to +260°C
- Extremely low dielectric constant
- Low capacitance and crosstalk (they can often be used instead of twist & flat wires)
- Faster signal speeds

Various shielding options are also available.

Assemblies

The cable-connector interface is critical to the performance of your system. We can supply complete, zero-defect cable assemblies for those applications which require the highest possible levels of performance and reliability.

Our extensive experience in the engineering, assembly, inspection, calibration and testing of cable assemblies is matched by our continuing commitment to the advancement of this technology. Gore engineers and product specialists work closely with major connector manufacturers in developing high-performance, cost-effective methods of cable termination.

Each assembly is inspected and documentation of test results can be supplied for each and every unit, if required.

An assembly, utilizing any of the cables shown in this brochure, can be engineered and manufactured by Gore to help you maximize the physical and electrical performance of your system.

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GORE high reliability wire & cable products for the electronics industry

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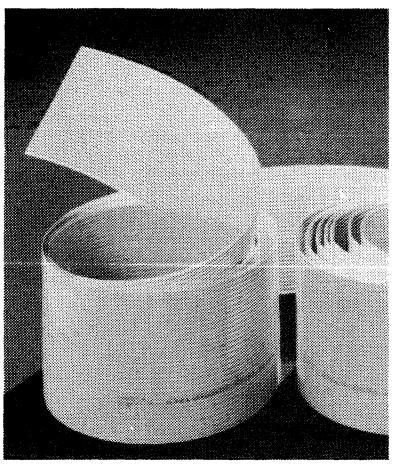

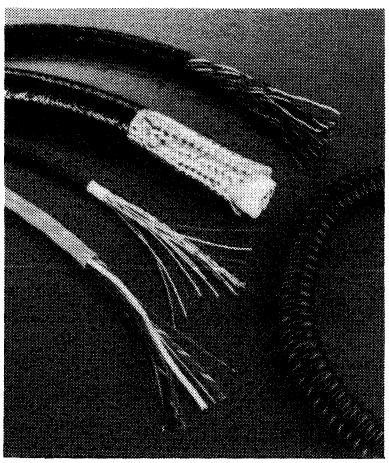

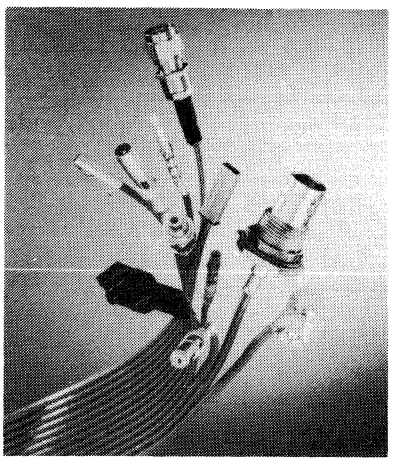

Flat Conductor Flat Cables

Thin-profile flat conductor flat cables insulated with self-extinguishing polyester provide a low-cost, high-density, and abrasion-resistant way to interconnect assemblies. We can meet your specific requirements with one of our many configurations of signal lines, power lines, or combinations of the two. The excellent heat-dissipation characteristics of flat conductors make them especially useful for power transmission. These cables are easy to terminate, and are available in constructions compatible with any low or zero insertion force connectors.

Gore flat conductor flat cables (also available with PTFE insulation) feature:

- Extremely thin profiles (.011")
- Extended flex life
- High cut-through and abrasion resistance
- High power handling capability (to 150 amps at .020" profile)
- Controlled electrical characteristics, tailored to your specifications
- UL approval (available with cable style 2690)

We also supply these cables in high-density pluggable assemblies.

Round Cables, Coil Cords

Gore round cables can fulfill your electrical, space, weight, flexibility, reliability and other design requirements like no off-the-shelf product can. We will design and build the exact cable you need, using those materials best suited to the job.

We also make round cable coil cords to your specifications—coil cords with superior mechanical and electrical properties that remain stable over the life of your product.

Our round cables and coil cords are:

- Smaller
- Tougher
- More flexible
- Engineered to your electrical requirements (controlled impedance, capacitance, velocity of propagation)
- Tailored to your environmental requirements (operating temperatures, chemical exposure, abrasion resistance)
- Available, design through delivery in just a few weeks

Coaxial Cables

High speed digital system designers use our custom designed coaxial cables to meet their packaging and electrical requirements. The microporous structure of our GORE-TEX® expanded PTFE provides a low dielectric constant (1.3) insulation system which is tough enough to be applied in thin walls over small conductors. The result is a reliable interconnect which is optimized to meet the specific needs of your system. Typical benefits are:

- Higher packaging density
- Higher signal fidelity
- Lowest propagation delay (about 1.2 nsec/ft)
- Lower capacitance

The benefits of the GORE-TEX® dielectric can also be utilized in controlled impedance pairs for differential signals. For critical signal bussing applications our coaxes and pairs can be cabled in ribbon form.

Gore can complete your interconnection system by providing fully tested assemblies. Where standard connectors won't work, we will develop custom assemblies designed to suit your mechanical or electrical requirements.

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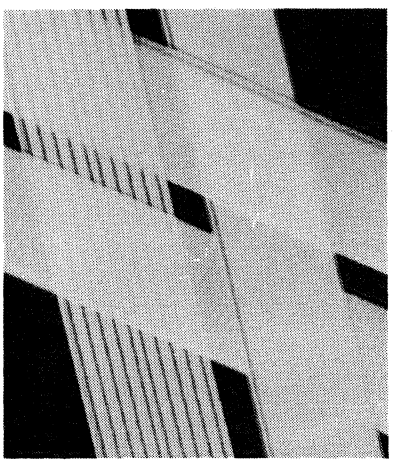
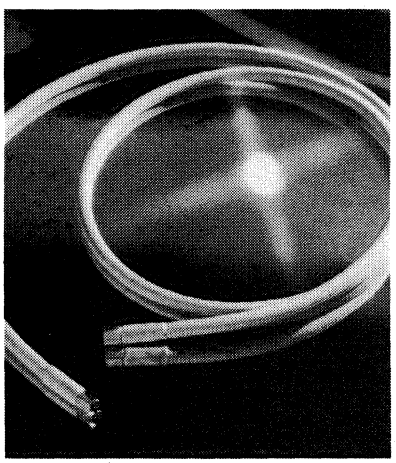


Signal Transmission Line

Our ribbon cable signal transmission lines are designed for digital signal bus applications which require both high density *and* high fidelity. PTFE insulation and silver-plated copper conductors combine to produce a cable with:

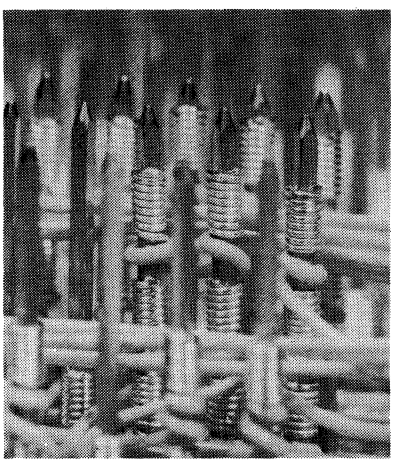
- High signal wire density (on .050" —or smaller—centers)
- High signal fidelity (second only to coax)
- Resistance to aging phenomena (will not degrade physically or electrically for the life of your equipment)
- Unbalanced or balanced designs (for single-end or differential signals)
- Efficient termination (compatible with .100" x 100 connectors and other rectangular connectors)



Microwave Coaxial Assemblies

The unsurpassed flexibility of our GORE-TEX® Microwave Coaxial Assemblies (GMCAs) makes installation easy and eliminates the need for a large inventory of specially-shaped interconnects. And performance is in no way compromised to achieve flexibility: our Type 5 GMCAs have 25% less insertion loss than .141" semi-rigid assemblies (38% less than .195" flex assemblies) at 18 GHz; the Type 2 GMCAs have five times greater thermal stability than do .141" semi-rigid assemblies.

- Low insertion loss (specifications guaranteed up to 40 GHz)
- Optimized VSWR (specifications guaranteed up to 40 GHz)
- Excellent shielding effectiveness
- High power handling capability
- MIL-C-39012 interface compatibility



Wrappable Hook-up Wire & Cable

To help increase the speed and reduce the costs of automatic wire wrapping operations, Gore has developed a family of hook-up wires with insulation that is significantly tougher, thinner, and more durable than ordinary extruded insulations. We also manufacture wrappable coaxes, twisted pairs, shielded twisted pairs —or any combination of these in precision-designed round or flat multiple conductor cables. Our wrappable wires and cables offer:

- Greatly increased cut-through protection
- Greatly increase cold-flow protection
- Up to 37% reduction in back-panel density and harness bulk
- Superior break strength (for increased automatic wrapping machine speeds)
- Conformance to UL, military and BSP specifications

SALES OFFICES

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TETRA-ETCH®
Fluorocarbon Etchant
and Etching Service Information
602/526-1290

MAXIMUM CURRENT CAPACITY—CONDUCTORS

Size, AWG	MIL-W-5088				National Electrical Code	Underwriters Laboratory		American Insurance Association	500 c mils/A
	Copper		Aluminum			60°C	80°C		
	Single-wire	Wire-bundled	Single-wire	Wire-bundled					
30	...	...	...	...	...	0.2	0.4	...	0.20
28	...	...	...	...	...	0.4	0.6	...	0.32
26	...	...	...	...	...	0.6	1.0	...	0.51
24	...	...	...	...	...	1.0	1.6	...	0.81
22	9	5	...	...	...	1.6	2.5	...	1.28
20	11	7.5	...	...	...	2.5	4.0	3	2.04
18	16	10	...	...	6	4.0	6.0	5	3.24
16	22	13	...	...	10	6.0	10.0	7	5.16
14	32	17	...	...	20	10.0	16.0	15	8.22
12	41	23	...	...	30	16.0	26.0	20	13.05
10	55	33	...	...	35	...	...	25	20.8
8	73	46	58	36	50	...	...	35	33.0
6	101	60	86	51	70	...	...	50	52.6
4	135	80	108	64	90	...	...	70	83.4
2	181	100	149	82	125	...	...	90	132.8
1	211	125	177	105	150	...	...	100	167.5
0	245	150	204	125	200	...	...	125	212.0
00	283	175	237	146	225	...	...	150	266.0
000	328	200	...	...	275	...	...	175	336.0
0000	380	225	...	...	325	...	...	225	424.0

GSI CORPORATION

HIGH PERFORMANCE FLAT WOVEN CABLE

GSI Woven Cable is produced to order and shipped on spools in continous lengths, as straight or branched harnesses, or as elements of complex assemblies.

Weave Patterns and materials are engineered to provide attributes such as wide or close spacing between conductors, flexibility or rigidity, permanent bonding or fast and easy lead separation.

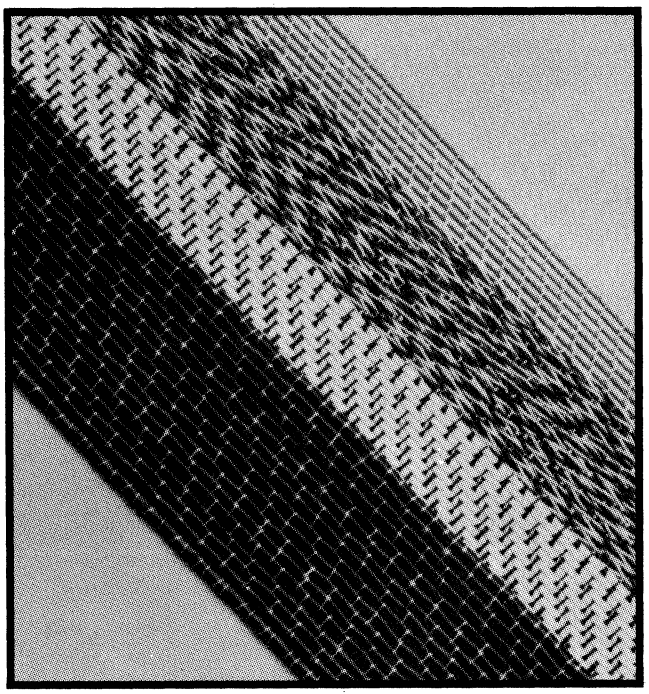
Conductor Types have virtually no limit. Wire may be MIL spec or UL listed of many formulations. Twisted pairs, triplets, coax and other constructions are readily handled. Flexible conductors of 10 AWG to 40 AWG are standard.

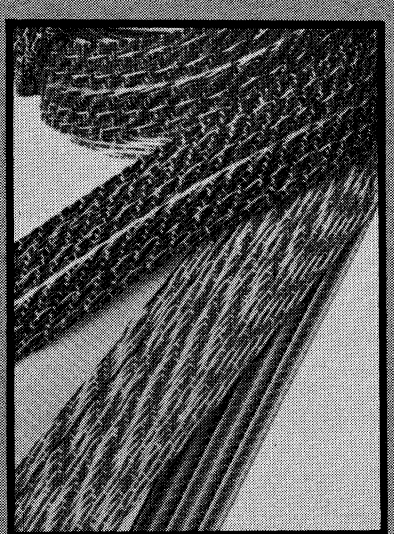
Color Coding options are many and varied. NEMA color sequence is a popular choice for wire, but other combinations are available for conductors and weave material.

Space and Weight are saved with woven cable. Weave elements such as Kevlar provide strength, and flat designs require less space than round cables.

Mixing of Components is a unique feature of woven cable. Conductors of different sizes or constructions can be placed side by side in the same cable.

Wire Preparation is made easy and fast without risk of damage to components. Wires are individually insulated. Color coding and placement of conductors makes identification nearly foolproof.





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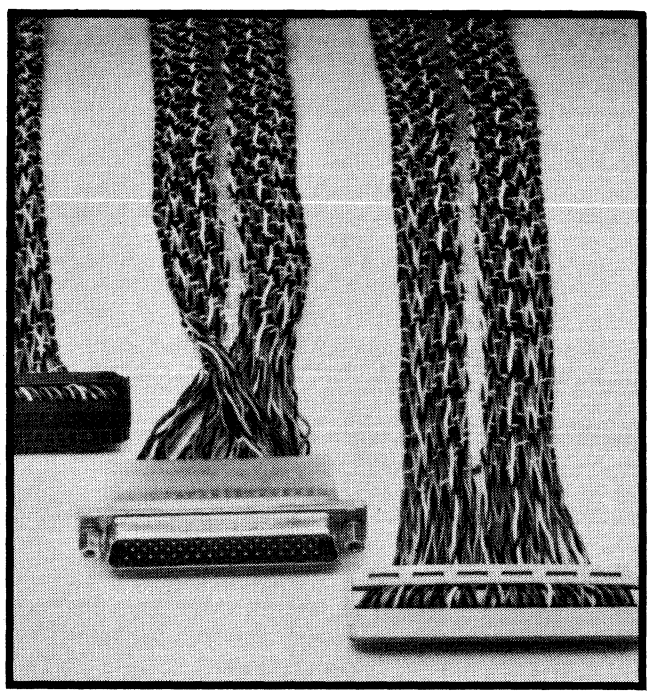
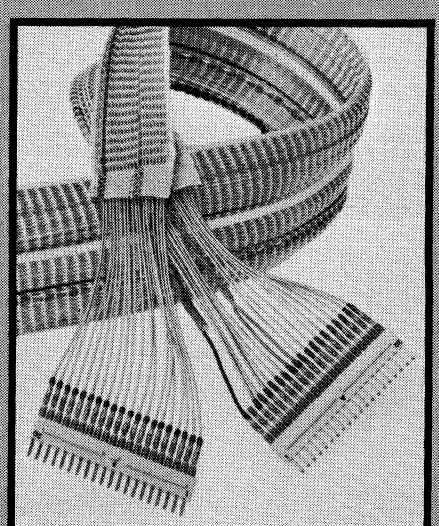
HIGH PERFORMANCE WOVEN CABLE SYSTEMS

GSI CORPORATION





Programmed Harnesses provide dimensional accuracy at low cost. These machine made assemblies look great, work perfectly, and save on installation time.

Cut or Fold Lines can be designed-in to allow for rapid separation of groups of wires and the folding and stacking of woven elements.

Multiple Layers may be utilized so that the cable assumes a space-efficient box shaped cross section.

UL Labeling is available for GSI wire and for GSI woven cable and harness assemblies.

Terminations are available in a wide range of industrial and military styles. Woven cable is easily adapted to mass termination systems.

Composite Construction combines diverse technologies. Flat woven cable may be combined with contrahelically twisted round cable and other construction methods to achieve optimum design and performance.

MIL-Spec procedures and processes guarantee satisfaction on military jobs. Inspection to MIL-I-45208A, high reliability soldering to MIL-S-45743E and calibration to MIL-STD-45662 are integral to GSI's operations.

GSI CORPORATION · 1917 Greenspring Drive · Timonium, Maryland 21093 · (301) 252-1768

GSI CORPORATION

HIGH PERFORMANCE INTERCONNECTION SYSTEMS

Complex Assemblies are produced from customer drawings by skilled operators. Assembly and test operations are performed in appropriate controlled environments.

Shields and Jackets may be braided onto both round and flat cable. RFI, EMI, EMP and Tempest requirements are met with multiple layers of dense shielding.

Wire Markers have been a GSI specialty for over 20 years. Products include both shrinkable and non-shrinkable tubing in a number of standard colors. Cable ties and marker plates are also permanently imprinted.

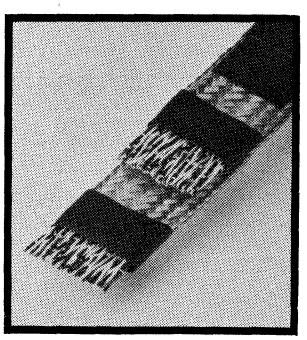
Color Banding is a superior process for marking fine wire for military aircraft and other high technology applications. Up to five colored bands make up to 100,000 discrete color codes available for white wire from 12 AWG to 30 AWG. GSI color banded wire is used in advanced U.S. military aircraft and submersibles.

Soldering is done by certified operators in designated clean facilities with controlled temperature, humidity and air pressure. Equipment includes resistance reflow soldering systems for mass terminations.

Testing and Certification are available for all GSI products. Hi-pot and electronic tests may be specified in addition to standard continuity and spark tests. Abrasion, pull, hardness and other mechanical tests are routinely performed.



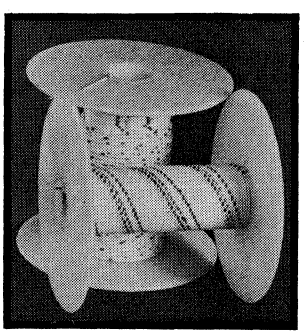
COMPLEX ASSEMBLIES



SHIELDS AND JACKETS



WIRE MARKERS



COLOR BANDING

System Integration is another option offered by GSI. Cable assemblies may be combined with termination devices, other hardware and cabinetry to form complete assemblies or major subassemblies. GSI's complementary skills and technologies ensure competitive price and delivery.

Technical Support is available for the asking. GSI's engineering staff has expert knowledge and can work quickly to solve problems. And, since GSI is not wedded to one technology, each problem is approached objectively.

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(301) 252-1768
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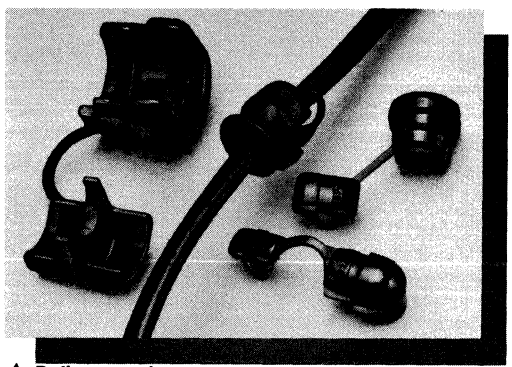
SOLUTIONS IN NYLON BY HEYCO®



▲ **Relieve strain...**

Strain Relief Bushings insulate and protect cables against pull, push, flex and twist. 63 sizes.

- Straight-through.
- Bell-mouth.
- Right angle.
- International.



▼ **Seal out liquids...**

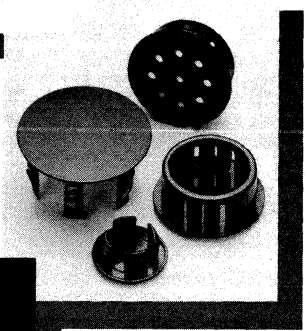
Liquid Tight Fittings seal on cable or tubing. 10 sizes for diameters of 3/32" to 1". VDE and SEV accepted. Flex extender prevents sharp bends.

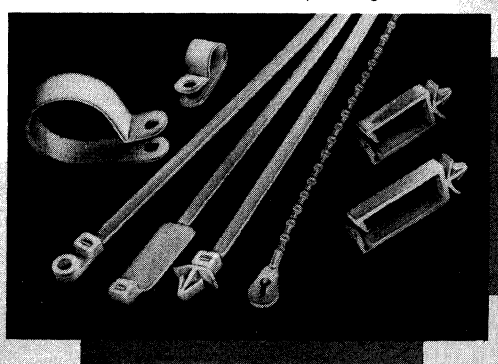
- Regular Liquid Tight Fitting.
- Flex Liquid Tight Fitting.

Plug holes... ▶

Hole, Vent and Pry-out plugs close unneeded holes and provide needed ventilation. 21 sizes for 1/4" to 2 1/2" diameter holes.

- Vent Plug.
- Hole Plug.
- Pry-out Plugs.

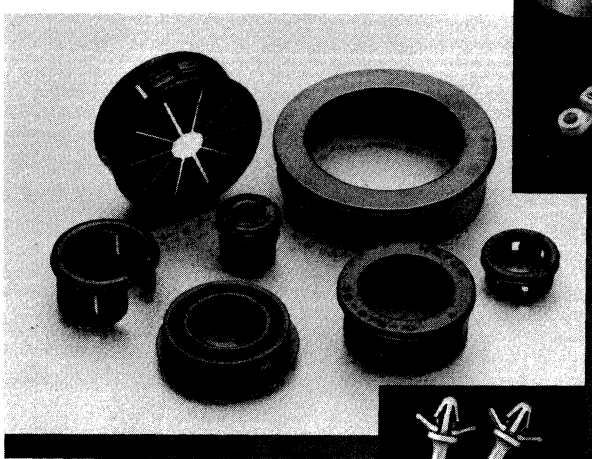




Gather and tie...

Cable Ties, Holders and Clamps bundle, anchor and direct cables, tubings, etc.

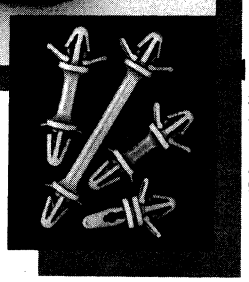
- Cable Clamp.
- Nytye® Cable Tie.
- Beaded Wire Tie.
- Wire & Cable Holder.



Insulate cables...

Insulating Bushings in 73 sizes and types to protect cables from raw-edged holes. Finger-tip installation.

- Shorty Bushing.
- Double Insulated Bushing.
- Open-closed Bushing.
- Snub Bushing.



Connect wires... ▶

Turn-on and Crimp-on wire connectors for quick, easy, low-cost and secure connection of #6 to #22 AWG conductors.

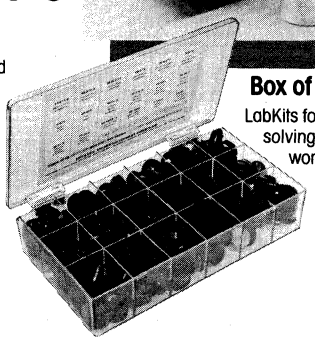
- Polypropylene & Phenolic Turn-on.
- Urea All Plastic Turn-on.
- Nylon Crimp-on.



For spacing...

Spacer Supports provide needed 3/16" to 1 3/8" spacing between boards or boards and chassis.

2 Nylon materials: 94V-2 and 94V-0.



Box of Solutions...

LabKits for handy problem solving or development work. Clear plastic, compartmentalized box with lid.



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- **Audio and Video**
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TOOLING SERVICES AVAILABLE FOR CUSTOM MOLDED CABLE ASSEMBLIES AND CUSTOM CONNECTORS

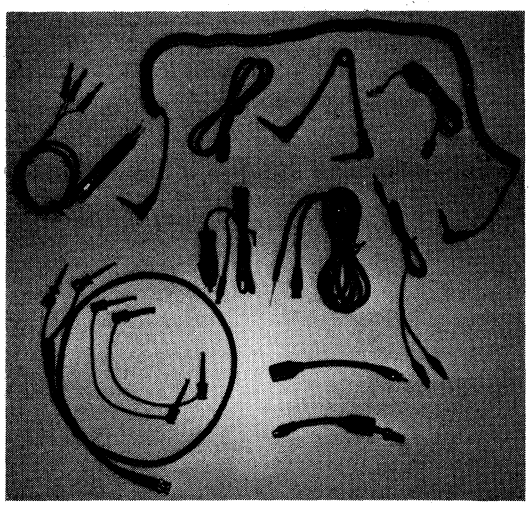
DESIGN OPTIONS

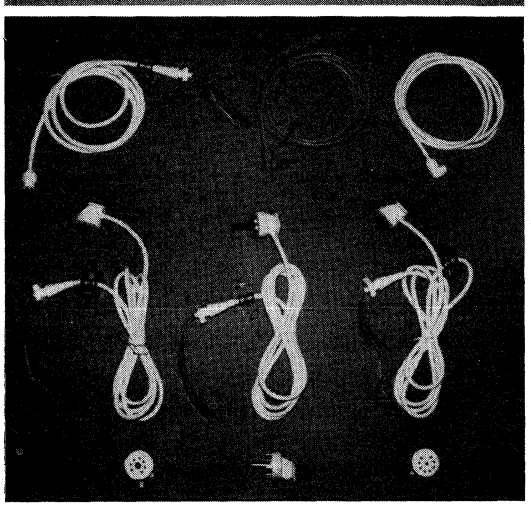
CABLE
- Conductor Type
  - Solid, Stranded, & Gauge
  - Number of Conductors
  - Paired or Unpaired
- Dielectric Type
- Types of Shields
  - Braided Copper
  - Foil/Drain Wire
  - Foil/Braid
  - 100% Shield
- Insulation of Conductors & Jacket
- Other

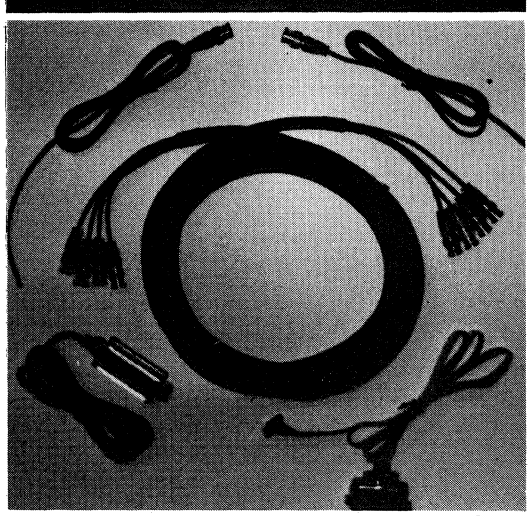
TERMINATION
- Stripped and Tinned
- Terminals
- Connectors
- Other

CONNECTORS

- AUDIO
- F CONNECTORS
- BNC
- TNC
- DIN CONNECTORS
- D SUB CONNECTORS
- UHF
- PCB MOUNT COAXIAL







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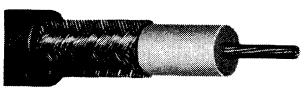
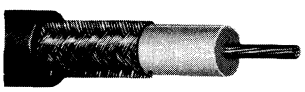
COAXIAL CABLES



6/U



8/U, 8A/U



11/U



58/U, 58A/U, 58C/U



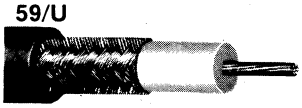
MINI 8/U



59/U, 59B/U



59/U



213/U

RG NO.	PART NO.	CENTER CONDUCTOR	DIELECTRIC AND O.D.	SHIELD	JACKET AND O.D.	NOM. IMP. (OHMS)	NOM. VEL. OF PROP.	NOM. CAP. PF/FT
6/U	JFG-06	18 (SOLID) CCS	FPE (.180)	100% FOIL + 46% AL	PVC (.270)	75	78%	17.3
8/U	JPA-08	13 (7/21) BC	PE (.285)	96% BC	PVC (.405)	52	66%	29.6
8A/U	JPA-08R	13 (7/21) BC	PE (.285)	96% BC	NCPVC (.405)	52	66%	29.5
8/U TYPE	JFB-08	13 (7/21) BC	FPE (.285)	80% BC	PVC (.405)	57	78%	22.6
11/U	JPB-11	18 (7/26) BC	PE (.285)	80% BC	PVC (.405)	75	66%	20.5
58/U	JPA-58	20 (SOLID) BC	PE (.116)	96% TC	PVC (.195)	53.5	66%	28.5
58A/U	JPA-58R	20 (19/33) TC	PE (.116)	96% TC	PVC (.195)	50	66%	30.8
58C/U	JPA-58T	20 (19/33) TC	PE (.116)	96% TC	NCPVC (.195)	50	66%	30.8
58/U	JPB-58	20 (SOLID) BC	PE (.116)	80% BC	PVC (.195)	53	66%	28.5
58/U TYPE	JFB-58	20 (SOLID) BC	FPE (.116)	80% BC	PVC (.195)	53	78%	22.0
58A/U TYPE	JFB-58R	20 (19/33) BC	FPE (.116)	80% BC	PVC (.195)	50	78%	26.0
8/U MINI	JFA-08Q	16 (19/29) BC	FPE (.157)	95% BC	PVC (.240)	50	78%	26.0
59/U	JPA-59	22 (SOLID) CCS	PE (.146)	95% BC	PVC (.240)	73	66%	21.0
59B/U	JPA-59S	23 (SOLID) CCS	PE (.146)	95% BC	NCPVC (.240)	75	66%	20.5
59/U	JPB-59	22 (SOLID) CCS	PE (.146)	80% BC	PVC (.240)	73	66%	21.0
59/U	JPC-59	22 (SOLID) CCS	PE (.146)	70% BC	PVC (.240)	73	66%	21.0
59/U TYPE	JFC-59	22 (SOLID) CCS	FPE (.146)	70% BC	PVC (.240)	80	78%	16.3
59/U TYPE	JFG-59	22 (SOLID) CCS	FPE (.146)	100% FOIL + 38% AL	PVC (.240)	80	78%	16.3
59/U TYPE	JFG-59R	20 (SOLID) CCS	FPE (.146)	100% FOIL + 38% AL	PVC (.240)	75	78%	17.3
213/U	JPA-213	13 (7/21) BC	PE (.285)	96% BC	NCPVC (.405)	50	66%	30.8

PARALLEL CORD



TYPE	PART NO.	NUMBER OF CONDUCTORS	CONDUCTOR SIZE	INSULATION AND O.D.
12/2	JSW-12	2	12 (65/30) BC	PVC (.200 x .405)
14/2	JSW-14	2	14 (19/27) BC	PVC (.160 x .255)
16/2	JSW-16	2	16 (19/29) BC	PVC (.120 x .215)
18/2	JSW-18	2	18 (16/30) BC	PVC (.105 x .200)
20/2	JSW-20	2	20 (7/28) BC	PVC (.090 x .185)
22/2	JSW-22	2	22 (7/30) BC	PVC (.068 x .130)
24/2	JSW-24	2	24 (7/32) BC	PVC (.062 x .125)

Judd Wire

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PIONEERS IN IRRADIATED WIRE

JUDD WIRE is a diversified wire and cable company offering hook-up wire, multiconductor cable and many specialized products for the electronics industry. Products are available for applications in the temperature range of -55°C to 200°C.

In addition to conventional products JUDD WIRE has pioneered and specializes in the manufacture of irradiation cross linked wire and cable product lines.

JUDD WIRE's design engineers work daily on providing solutions to wire and cable problems. Our customer count on JUDD WIRE to meet their requirements for engineering, manufacturing, testing, and packaging everything from the smallest hook-up wire to complex, state of the art multiconductor cables.

Decades of experience and thousands of design efforts back the commitment of JUDD WIRE to engineer solutions for today and tomorrow's wire and cable needs.

JUDD WIRE APPLICATION GUIDE

Airframe Wire
Anticapillary Wire
Apparatus Wire
Audio Cable
Braid Shielded Cable
Cathodic Protection Cable
Coaxial Cable
Communication Cable
Computer Cable
Control Cable
CSA Approved Wire & Cable
Customized Cable
Flame Retardant Wire & Cable
Flat Cable, Bonded
Flat Cable, Woven
Foil Shielded Cable
High Temperature Wire
High Voltage Wire
Hook-up Wire
Instrumentation Cable
Irradiated Wire & Cable
Kynar Back Panel Wire
Low Capacitance Cable
Medical Cable
Microphone Cable
Miniature Cable
Military Specified Wire & Cable
Motor Lead Wire
Multiconductor Cable
Parallel Cable
Paired Cable
Radiation Resistant Wire & Cable
Ribbon Cable
RG Coaxial Cable
RS 232 Cable
SIS Wire
Spiral Shielded Cable
Tefzel Wire
Telephone Cable
Test Lead Wire
Thermocouple Extension Cable
Tinsel Wire
Transformer Lead Wire
Twin Lead Wire
UL Approved Wire & Cable

PCA THE UNIVERSAL HOOK-UP WIRE

PCA is JUDD WIRE's tradename or an acronym for Polychloroalkene, which is an exclusive irradiation cross-linked polyvinylchloride insulation.

In order to process PVC by electron beam, it is necessary to improve the formulation of the plastic insulation to withstand the high energy electrons that bombard the wire insulation. Electron beam irradiation of the special PCA formula results in a superior thermoset that improves the inherent desirable characteristics of PVC.

Compare the product advantages of PCA with conventional non-irradiated PVC and learn why billions of feet are sold annually to a variety of industries which prefer the superior characteristics and cost savings of JUDD WIRE's PCA hook-up wire.

THE JUDD WIRE PCA hook-up wire cross-reference guide for tri-rated approvals

UL					CSA				MIL-W-16878E			
STYLE NO.	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES	AVERAGE WALL THICK.	CLASS	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES	SPEC. SHEET	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES
1472	80°C	125 V	32-20	.007"	AWM	80°C	125 V	32-16				
1429	80°C	150 V	32-16	.011"	AWM	80°C	150 V	32-12	1	105°C	600 V	32-14
1534	80°C	No Voltage Specified	14	.012"	AWM	80°C	150 V	32-12	1	105°C	600 V	32-14
1536	80°C	No Voltage Specified	12-10	.013"	AWM	80°C	150 V	32-12	1	105°C	600 V	32-14
1787	80°C	300 V	32-16	.011"					1	105°C	600 V	32-14
1430	105°C	300 V	30-16	.016"	REW	105°C	300 V	26-10	2	105°C	1000 V	26-12
1557	105°C	No Voltage Specified	14-10	.016"	REW	105°C	300 V	26-10	2	105°C	1000 V	26-12
3317	105°C	300 V	14-10	.016"	REW	105°C	300 V	26-10	2	105°C	1000 V	26-12
1431	105°C	600 V	30-10 8 6-2	.032" .051" .065"	REW	105°C	600 V	24-10	3	105°C	3000 V	24-2

Judd Wire

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FLEXRAD 125® HIGH TEMPERATURE HOOK-UP WIRE

FLEXRAD 125 is a flexible irradiation cross-linked polyethylene wire with a high temperature rating of 125°C. This proven high temperature hook-up wire with a flame retardant rating of VW-1 (FR-1), offers excellent abrasion and solder resistance and an unusual ability to withstand exposure to many chemicals and solvents.

FLEXRAD 125 has a variety of uses in many industries. Its high temperature and flame retardant ratings recommend it as a replacement for many other UL and CSA approved wires. It is also approved for military applications under Specification Mil-W-16878, Revision E, slash sheets 14, 15 and 16.

Electrical and electronic component and equipment manufacturers now have an alternative to solve the problems encountered while using conventional PVC. The problems of a limited temperature range, solder iron shrinkback, creeping insulation during automated cut and strip operations, and poor abrasion resistance can now be eliminated by utilizing FLEXRAD 125.

Silver plated copper wire conductors must be used in order to withstand the high heat encountered when processing many fluorocarbon constructions. Fluctuations in the precious metals market over the past several years have caused many users of fluorocarbon insulated wires to review their use of these expensive constructions and seek comparable alternatives that provide similar quality.

FLEXRAD 125, processed with tinned copper conductors, provides an ideal alternative to fluorocarbon insulations for most applications where the maximum operating temperature does not exceed 125°C.

Production problems associated with fluorocarbon insulations, such as poor cold flow, low adhesion, poor cut through resistance, short lengths, limited flexibility, and poor potability, will be alleviated by specifying FLEXRAD 125.

THE JUDD WIRE FLEXRAD 125 cross-reference guide for tri-rated approvals

UL					CSA				MIL-W-16878E			
STYLE NO.	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES	AVERAGE WALL THICK.	CLASS	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES	SPEC. SHEET	TEMP. RATING	VOLTAGE RATING	AWG WIRE SIZES
3265	125°C	150 V	32-16	.011"	AWM	125°C	150 V	30-16	14	125°C	600 V	32-14
3266	125°C	300 V	32-10	.016"	AWM	125°C	300 V	32-12	15	125°C	1000 V	26-12
3266	125°C	300 V	32-10	.016"	CL 1252	125°C	300 V	22-10	15	125°C	1000 V	26-12
3271	125°C	600 V	30-10 8 6-2	.032" .047" .063"	CL 1251	125°C	600 V	22-2	16	125°C	3000 V	26-12
3272	125°C	600 V	26-10 8-4	.032" .047"	CL 1251	125°C	600 V	22-2	16	125°C	3000 V	26-12

CUSTOM CABLE DESIGN

JUDD WIRE can custom design, or manufacture to your specification, a broad spectrum of special cables. Cables are available without shielding, or with conventional braids, spiral braids, aluminum foils, or conductive plastics. JUDD WIRE's cable jacketing facilities extrude irradiation cross-linked compounds as well as vinyls, nylons, polyethylenes, polyurethanes, and 150°C fluorocarbons. JUDD WIRE is a completely integrated wire and cable manufacturing facility combining technology with superior customer service.

PCA cables offer all the advantages of JUDD WIRE's exclusive irradiation cross-linked polychloro alkene insulation in a multi-conductor package.

Manufacturers of computers, data processing equipment, communication systems, and test equipment can use the superior characteristics and cost saving benefits of PCA cables.

THE JUDD WIRE PCA multi-conductor cable cross-reference for tri-rated approvals

CABLE UL STYLE	PRIMARY UL STYLE	CABLE CSA STYLE	PRIMARY MILITARY SPECIFICATION	PRIMARY NOMINAL WALL	JACKET NOMINAL WALL	TEMPERATURE	VOLTAGE RATING	WIRE AWG SIZES
2584	1472	AWM		.007"	.031-.060"	80°C	125 V	30-20
2576	1429	AWM	Mil-W-16878E/1	.011"	.030"	80°C[1]	150 V[2]	30-10
2095	1787		Mil-W-16878E/1	.011"	.015-.060"	80°C[1]	300 V[2]	30-16
2464	1787		Mil-W-16878E/1	.011"	.030-.060"	80°C[1]	300 V[2]	30-16
2517	1430	AWM	Mil-W-16878E/2	.016"	.030-.060"	105°C	300 V[3]	30-10
2586	1431	AWM	Mil-W-16878E/3	.031"	.031-.060"	105°C	600 V[4]	30-10

[1] Military Temperature Rating: 105°C
[2] Military Voltage Rating: 600 V
[3] Military Voltage Rating: 1000 V
[4] Military Voltage Rating: 3000 V

FLEXRAD 125 MULTI-CONDUCTOR CABLES

Industrial Automation and Central Process Computer Control cables manufactured with JUDD WIRE's FLEXRAD 125 primary conductors and irradiation cross-linked polyethylene jacket compound, are a superior instrumentation cable for applications utilizing data processing systems interfaced with manufacturing control equipment.

THE JUDD WIRE FLEXRAD 125 high temperature multi-conductor cable cross-reference guide

CABLE UL STYLE	CABLE CSA STYLE	PRIMARY MILITARY SPECIFICATIONS	PRIMARY NOMINAL WALL	JACKET NOMINAL WALL	TEMPERATURE	VOLTAGE RATING	WIRE AWG SIZES
4311	AWM	Mil-W-16878E/14	.011"	.030-.045"	125°C	150 V[1]	28-16
4312	AWM	Mil-W-16878E/15	.016"	.030-.060"	125°C	300 V[2]	28-10
4313	AWM	Mil-W-16878E/16	.032"	.045-.080"	125°C	600 V[3]	26-10

Military Voltage : [1] 600 V, [2] 1000 V, [3] 3000 V

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COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

A
AC alternating current
ABS acrylonitrile butadiene-styrene
A/D analog to digital
ADC analog to digital converter
ADP automatic data processing
AF audio frequency
AFC automatic frequency control
ALGOL algorithmic language
AM amplitude modulation
AND a logical operator
AQL acceptable quality level
ASCII American national standard code for information interchange
ASIC application specific IC
ATE automatic test equipment
AWG American wire gauge

B
BALUN balanced to unbalanced
BASIC beginners' all-purpose symbolic instruction
BCD binary-coded decimal
BNC baby "N" connector
BUS basic utility system

C
CAD computer aided design
CAM computer aided manufacture
CAMAC computer automated measurement and control
CATV cable television or community antenna television
CCC (leaded) ceramic chip carriers
CCD computer-controlled display
CERMET ceramic metal element
CLCC ceramic leadless chip carriers
CMOS complementary metal-oxide semiconductor
Comm. communications
CPS characters per second
CPU central processing unit

D
D/A digital to analog
DAC digital to analog converter
DC direct current
DIAC bidirectional trigger diode
DIL dual in-line
DIN Deutsche Industrie Normenausschuss
DIP dual in-line package
DPM digital panel meter
DRAM dynamic RAM
DTL diode transistor logic

E
EDP electronic data processing
EBCDIC extended binary coded decimal interchange code
EEPROM electrically erasable PROM
EIA Electronic Industries Association
EMC electromagnetic compatibility
EMI electromagnetic interference
EMP electromagnetic pulse
EPROM electrically programmable ROM
ESR equivalent series resistance

F
FEP fluorinated ethylene propylene Copolymar, 200° Teflon
FET field-effect transistor
FM frequency modulation
FORTRAN formula translator

G
GaAsFET gallium arsenide FET
GPIB general purpose interface bus
GPS global positioning system

H
HF high frequency (3 to 30 MHz)
HIPOT test, measurement and diagnostic equipment
HLL high level language
HV high voltage
Hz Hertz

I
IC integrated circuit
IDC insulation displacement contact
IF intermediate frequency
IO input/output (devices)
IR insulation resistance (or) infrared

J
JEDEC Joint Electronic Device Engineering Council
JFET junction FET
JMOS junction MOS

K
kHz kilohertz (10^3)
KSR keyboard send /receive

L
LC inductance capacitance
LCC leaded chip carrier
LCD liquid crystal display
LED light-emitting diode
LF low frequency (30 to 300 kHz)
LIF low insertion force
LNA low noise amplifier
LNB low noise band
LSI large scale integration
LVDT linear velocity displacement transformer

M
MASER microwave amplification by stimulated emission of radiation
MATV master antenna television
μF microfarad
MHz megahertz
MIB microcomputer interface board
MIC microwave IC
MIPS million instructions per second
MOS metal oxide semiconductor
MOSFET metal oxide semiconductor FET
MOSIGT metal oxide semiconductor insulated-gate transistor
MOV metal oxide varistor
MPU microprocessor unit
MSI medium scale integration

N
NBS National Bureau of Standards
NEMP nuclear electromagnetic pulse
NIM national instrumentation module
NOR not OR
NTC negative temperature coefficient

O
OCR optical character reader
OEM original equipment manufacturer
OR a logical operator

P
PC printed circuit
PCB printed circuit board
PCM pulse code modulation
pF picofarad
PGA pin grid array
PIN positive-intrinsic-negative (transistor)
PLA programmable logic array
PLCC plastic leaded chip carrier
PLL phased lock loop
PPI plan position indicator
PROM programmable ROM
PTC positive temperature coefficient
PUT programmable unijunction transistor

Q
QAM quadrature amplitude modulation
Q (meter) quality-factor meter

R
RAM random access memory
RC resistance-capacitance
RFI radio frequency interference
RMS root mean square
ROM read only memory
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
RTD resistance-temperature detector
RTL resistor transistor logic
RTV room temperature vulcanizing
RW read/write

S
SAS silicon asymmetrical switch
SBC single board (micro) computer
SBS silicon bilateral switch
SCR silicon-controlled rectifier
SCS silicon controlled switch
SDA source & detector assemblies
SIDAC bidirectional voltage-triggered switch
SIMM single in-line memory module
SIP single in-line package
SMD surface mount device
SMT surface mount technology
SO small outline
SOIC small outline IC
SOT small outline transistor
SSI small scale integration
SSR solid state relay
STL Schottky transistor logic
SUS silicon unilateral switch

T
TC temperature coefficient
TCE thermal coefficient of expansion
TXCO temperature compensated crystal oscillator
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon
TRIAC bidirectional AC switch
TTL transistor-transistor logic
TTY teletypewriter

U
UHF ultra high frequency (300 MHz to 3 GHz)
UJT silicon unijunction transistor
UL Underwriters Laboratory
UPS uninterruptible power supply

V
VAC volts (of) alternating current
VAN value added network
VAR volt-ampere reactive
VCR video cassette recorder
VDC volts (of) direct current
VHF very high frequency (30 kHz to 300 MHz)
VHSIC very high speed integrated circuit
VLF very low frequency (3 to 30 kHz)
VLSI very large scale integration
VME virtual machine environment
VRM voice recognition module
VTVM vacuum tube volt meter
VU volume unit
VSWR voltage standing wave ratio

W
WPS word processing software

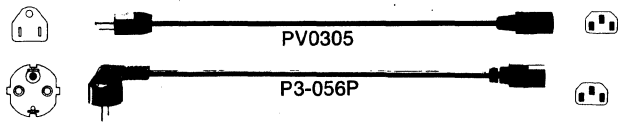
Y
YIG yttrium iron garnet

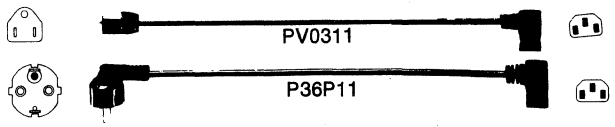
Z
ZIF zero insertion force

CABLE ASSEMBLIES

STANDARD AND CUSTOM ASSEMBLIES TO YOUR SPECIFICATION.
WE CAN MAKE ANY CABLE OR MOLDED CABLE TO YOUR REQUIREMENTS.
SEND US YOUR PRINT OR SPEC.
THE FOLLOWING ARE SOME REPRESENTATIVE EXAMPLES OF OUR PRODUCT LINE.

AC POWER CORDS

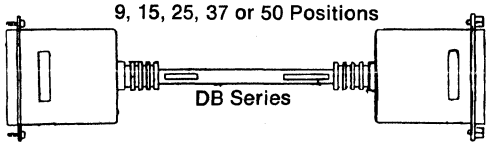




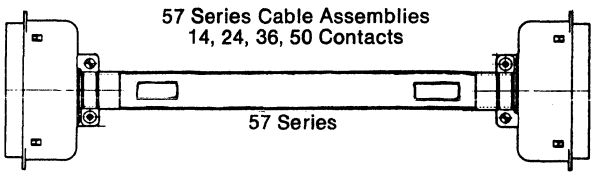
To UL, CSA, VDE, SAA and other standards.

COMPUTER & PERIPHERALS CABLES

"D" Sub Cable Assemblies
9, 15, 25, 37 or 50 Positions



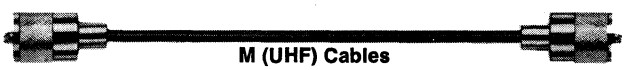
57 Series Cable Assemblies
14, 24, 36, 50 Contacts



COAXIAL CABLES: BNC, N, F, UHF, TNC, TWINAXIAL, ETC.

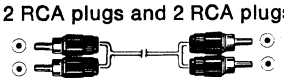




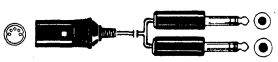


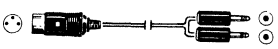
AUDIO CABLE ASSEMBLIES

2 RCA plugs and 2 RCA plugs

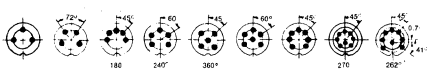


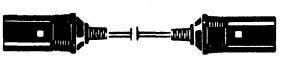


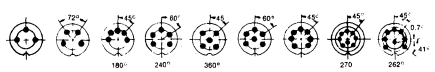




DIN PLUG OR JACK CABLE ASSEMBLIES



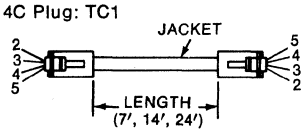




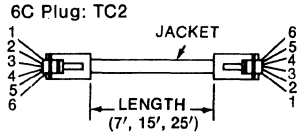
Available in coiled, straight or Shielded Cords, molded or assembly type.

TELEPHONE LINE CORDS AND COILED CORDS

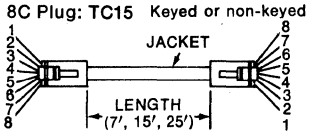
4C Plug: TC1



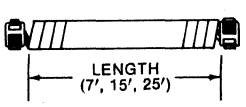
6C Plug: TC2



8C Plug: TC15 Keyed or non-keyed

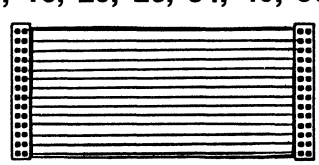


4C Coiled Cord: TC8
6C Coiled Cord: TC9



Custom Color, Custom Length and Cords to your own specification are welcome.

FLAT RIBBON CABLES: 10, 14, 16, 20, 26, 34, 40, 50, 60 POSITIONS



LZR ELECTRONICS, INC.
8174 Beechcraft Ave., Gaithersburg, MD 20879
Tel: (301) 921-9440
Telex: 71-3746453 (LZR INC USA) Telefax: (301) 6700436

Fujikura Ltd.

Electronic Wiring Materials

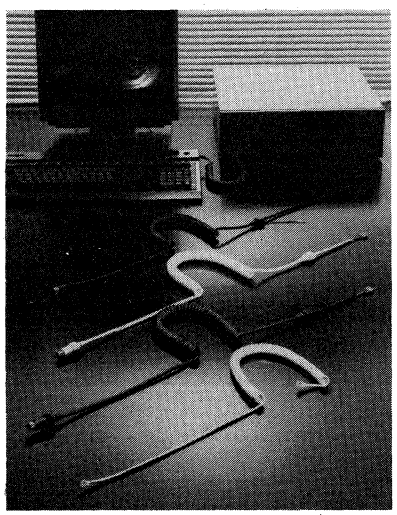
PROVEN QUALITY SINCE 1885

The history of Fujikura Ltd. literally represents the development of Japan's electric cable industry. Since its establishment in 1885, Fujikura has become a leading manufacturer of wiring products by constantly developing new technology. By achieving the highest technical levels in every field of cable engineering, we have made contributions to industry in Japan and in the rest of the world. Today, Fujikura does over $900 million in sales annually and employs more than 4300 persons worldwide.

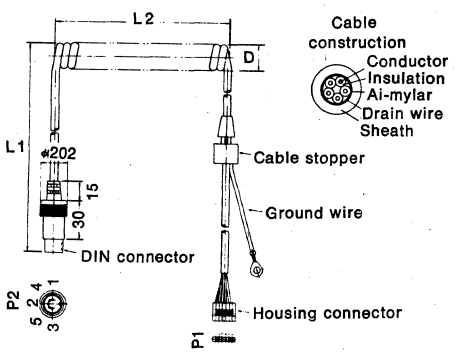
An example of our technical achievement in telecommunications is the pioneer development of ultralow-loss optical fiber cables and their related systems, now being used commercially.

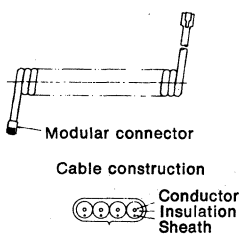
Other Fujikura innovations are being used in many new applications of wiring materials and components. Our products are approved by UL, CSA and other international standards bodies. Today we are able to offer a very broad "product menu" of wiring products designed to meet the needs of virtually every segment of the electronics industry. This brochure contains certain typical products selected from that "menu."

COILED CABLE ASSEMBLIES



Recognizing the sharply rising demands for office automation equipment and the need for properly shield-protected products, Fujikura has developed a complete line of coiled cable assembly sets for use on keyboards, telephones, and wireless equipment. Available as either cables or assembly sets, these products satisfy the needs for high-grade technical power involving FCC shielding measures, excellent bending characteristics and other important factors. Cable and connector terminations can be manufactured according to users' specifications.





Subject to change without notice

1. CABLE, CURLING

Item			
Type of cable		Round type	Flat type
Number of conductors		2 ~ 20	2 ~ 6
UL style no.		2464, 2990, 2969, 20197, etc.	
Rating	Temperature (°C)	60, 80	
	Voltage (V)	80, 150, 300	
Insulation material		Semirigid PVC, Heat-resistant PVC, Polypropylene Polyester-elastomer	
Sheath material		Flame retardant PVC, Polyurethane	
Shield		Aluminum foil shield, Spiral shield, Braided shield Double shield (Aluminum foil + Spiral shield)	
Length of curling portion		200 ~ 1000mm	
Length of straight portion		50 ~ 1000mm	
Diameter of coil		50 ~ 30mm	

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Fujikura Ltd.

Electronic Wiring Materials

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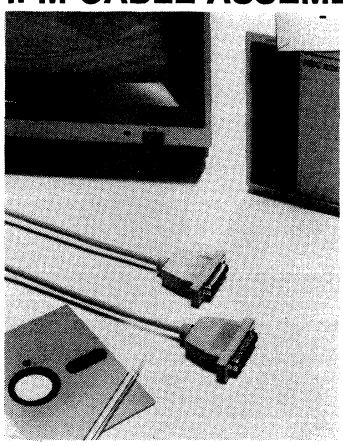
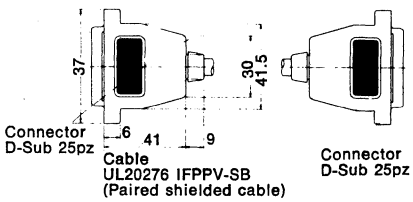
IFM CABLE ASSEMBLIES FOR RS-232C, CENTRONIC SPECIFICATION

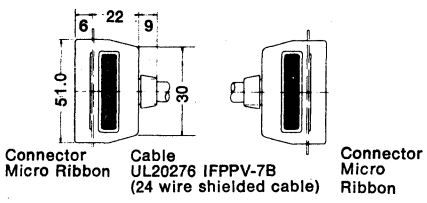


EMI Shielded small diameter interface cable mold type assembly series

IFM 1000 SERIES INTERFACE CABLE



IFM 2000 SERIES INTERFACE CABLE



IFM-1XXX

Connector Type
1: Male to Male (Std.)
2: Male to Female
3: Female to Female

Cable Length L
(Unit: 0.1m)

IFM-2XXX

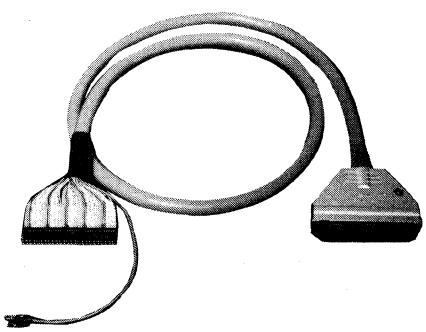
Connector Type
1: 57 24P
2: 57 36P (Std.)
3: 57 50P

Cable Length L
(Unit: 0.1m)

• **CONSTRUCTION** unit: mm

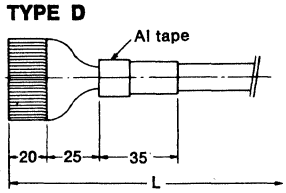
ITEM		UL20276 IFVV1SB AWG28 X 24C	UL20276 IFVV1SB AWG28 X 18P
UL Style No.		20276	
Rating		30V, 80°C	
Conductor	Size (AWG)	28	
	Construction	7/0.127 Tinned Copper wire	
Insulation	Material	Polypropylene	
	Out. Dia.	0.6	
Number of Conductor		24 conductors	18 pairs
Shield		Tinned Copper wire Braid	
Sheath	Material	Polyvinylchloride	
	Color	Light Grey	
	Thickness	0.85	
Cable Out Dia.		5.7	7.2

INTERFACE CABLE FOR IDC TYPE CONNECTOR

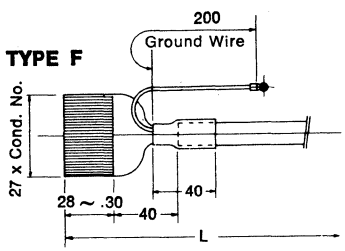


1. EXAMPLE: FLATTENING OF CABLE

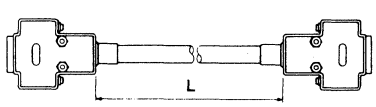
(1) TYPE D



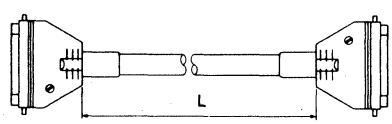
(2) TYPE F



2. EXAMPLE: CABLE ASSEMBLIES



Connector D Sub. 25p | Cable 25 wire shielded cable | Connector D Sub. 25p



Connector 57FE | Cable Paired, Shield Cable | Connector 57FE

• **CONSTRUCTION** UL2464 IFVV-SB AWG 28 X P

Number of Pairs	Conductor AWG Size	Conductor Construction (No. mm)	Diameter of Insulation (mm)	Thick. of Sheath (mm)	Out. Dia. (mm)
5	28	7/0.127	0.88	1.0	7.0
10	28	7/0.127	0.88	1.0	8.5
13	28	7/0.127	0.88	1.0	9.0
17	28	7/0.127	0.88	1.0	10.0
20	28	7/0.127	0.88	1.0	10.5
25	28	7/0.127	0.88	1.0	11.5
30	28	7/0.127	0.88	1.0	12.0

Note: Conductor: Tinned copper wire stranded/Concentrical layer type also available. SB: Braid shield/Recognized type of UL.

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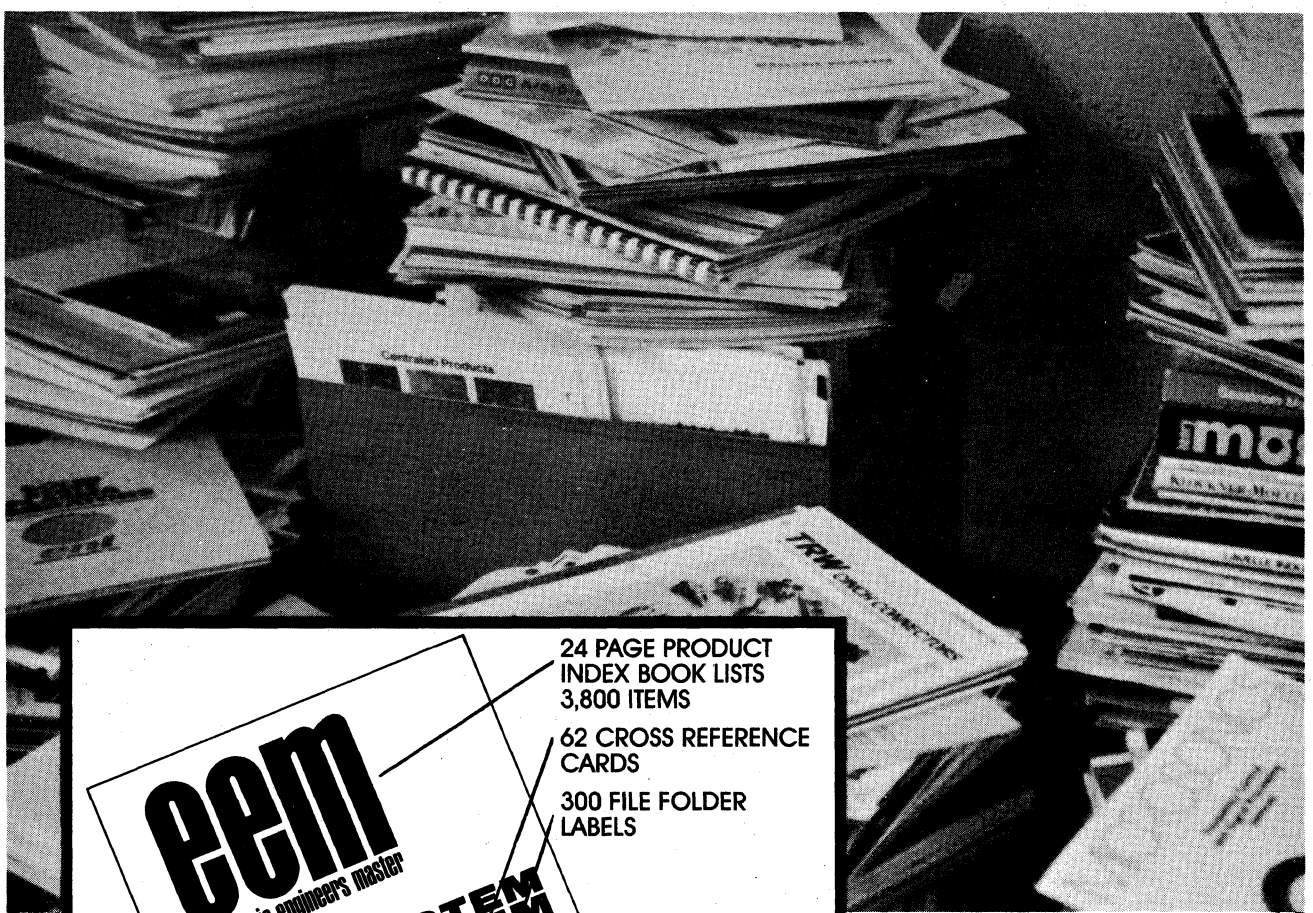

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Are your catalog files organized? Can you find any given catalog in a matter of seconds? If your answer is "Yes," you probably already have the EEM File System. But, if you said "No," you really ought to look into this simple system. It will save hours of time and tons of aggravation.

The EEM File System was invented over twenty-five years ago to help people who specify, buy, or work with electronic products and equipment. It is upgraded on a constant basis to reflect the current state of the art. It's easy to use and easy to customize to your particular needs.

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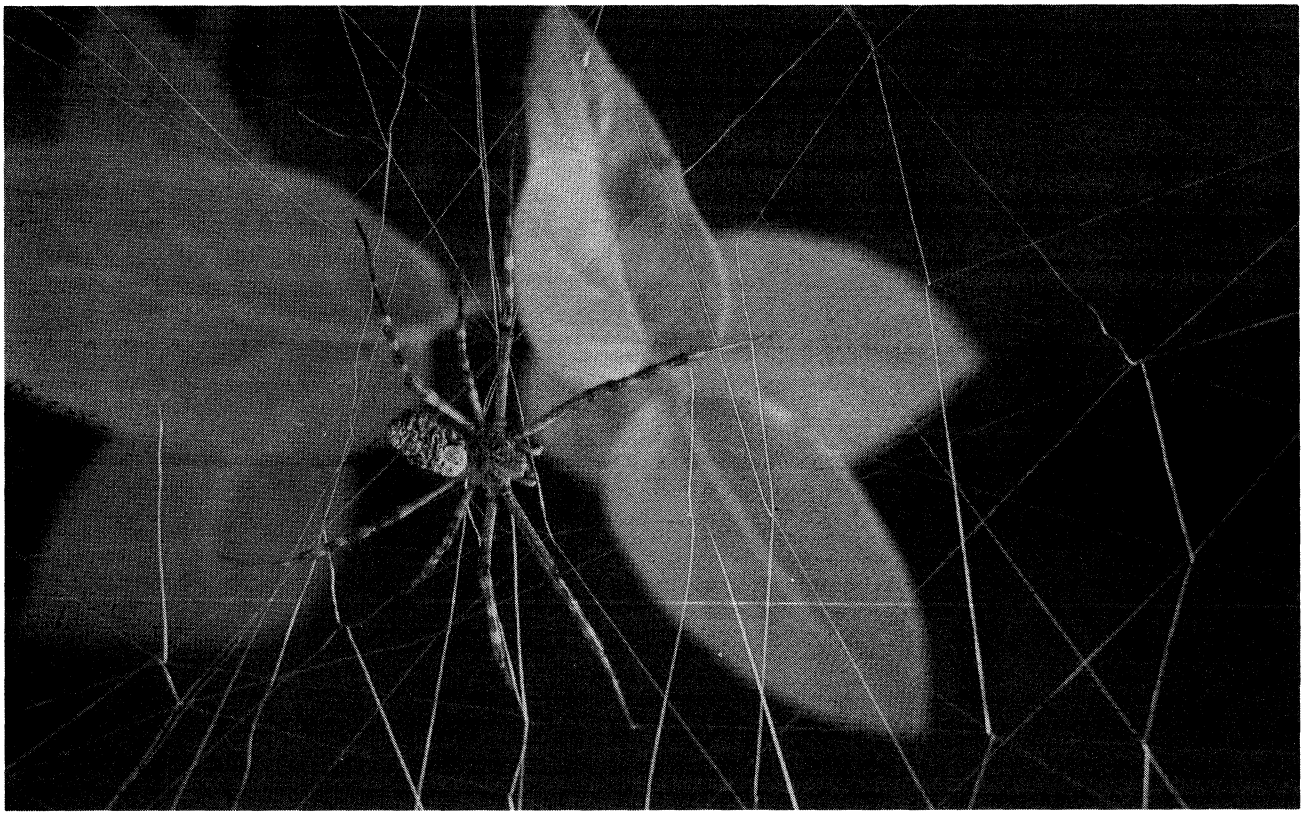
Don't waste any more time. Get organized now!

EEM FILE SYSTEM,
645 stewart ave., garden city, ny 11530

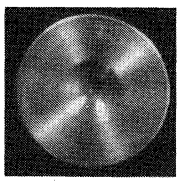


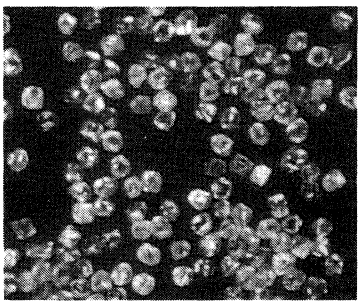
Molecu's custom wire is so precise and fine, it will impress even an expert

The web you're looking at was "spun" from Molecu's .0015" Moleculoy® wire. (And frankly, this is the only bug you'll ever see in it).

Every foot of custom Molecu wire is produced to meet very demanding standards: yours. So no matter how tough your process or product parameters, you can specify the ultra-close tolerances you need—in size, resistance, temperature coefficient, temper, and finish.

Precision drawing through near gem quality diamond dies lets you specify bare metal or alloy wire of any type—resistance, thermal expansion, mechanical, or electrical conductor—as small as .0002" ± .00050" in diameter.





▲ *Your Molecu wire is drawn through near gem quality diamond dies, up to a full carat in size, to control diameter and finish precisely. Each die is so hard, that 400 tons of copper could be drawn through it into wire fine enough to circle the earth 20 times before showing any wear.*

◀ *Each Molecu die blank is made from tool steel in our own die shop. Based on the properties of the metal or alloy your wire is made of, we engineer and mill every crucial drawing angle to within fine tolerances.*

And, if your wire application calls for enameling or precious metal plating, Molecu's strict QA and QC assure tight coating purity, thickness, and concentricity for the precise, consistent operation you need.

In short, if your next project calls for better than run-of-the-mill, call or write to Molecu Wire for further information or a quotation.

Molecu Wire

Molecu Wire Corporation
Route 547, P.O. Box 495, Farmingdale, NJ 07727
Telephone: (201) 938-9473 TWX: 710-723-6943 Cable: MOLECUWIRE

© 1985, Molecu Wire Corporation
Moleculoy is a registered trademark of Molecu Wire Corporation.

Typical Properties of Metal

Resistance Wires

Material		Moleculoy	Electroloy	Protoloy	35-20 Ni Chromium	Neutroloy	Manganin	18% Nickel Silver	180 Alloy	Pelcoloy	90 Alloy
Nominal Composition, Percent		20 Cr 4 Al 1 Si 1-5 Mn Bal. Ni	60 Ni 15 Cr Bal. Fe	80 Ni 20 Cr	35 Ni 20 Cr Bal. Fe	55 Cu 45 Ni	12 Mn 4 Ni Bal. Cu	55 Cu 27 Zn 18 Ni	23 Ni Bal. Cu	70 Ni 30 Fe	11 Ni Bal. Cu
Specific Resistivity	Ohm • cir. mil/ft	800	675	650	610	300	290	190	180	120	90
	Micro-ohm • cm	133	112	108	101.5	50.5	48	31	30	19.9	14.9
Temperature Coefficient of Resistance ppm/°C Ref. 25°C	High Temp. Range, °C	±5/±10 (+150)	+140±30 (+200)	+80±20 (+250)	+400±40 (+125)	±20 (+150)	±15*	+290±30 (+125)	+180±30 (+150)	+4300±400 (+100)	+450±50 (+150)
	Low Temp. Range, °C	±5/±10 (−65)	+140±30 (−65)	+80±20 (−65)	+380±40 (−65)	±20 (−65)	±15*	+290±30 (−55)	+180±30 (−65)	+3700±300 (−50)	+450±50 (−65)
Magnetic Attraction		None	Para	None	Para	None	None	None	None	Strong	None
Specific Heat cal/g/°C @ 20°C		.115	.107	.104	.110	.094	.097	.090	.092	.125	.092
Linear Coefficient of Thermal Expansion	10^{-6}/°C	13.2	14	13	15.7	14.9	18.7	16.7	15.9	15	17.1
	Temp. Range, °C	+20 to +100	+20 to +100	+20 to +100	+20 to +100	+20 to +100	+20 to +100	+20 to +300	+25 to +105	+20 to +700	+20 to +300
Density @ 20°C	g/cm³	8.1	8.2	8.4	8.0	8.9	8.3	8.7	8.9	8.5	8.9
	lb/in³	.29	.30	.30	.29	.32	.30	.31	.32	.30	.32
Thermal EMF vs. Copper	mV/°C	+.002	+.002	+.006	−.001	−.045	−.003	−.05	−.037	−.040	−.026
	Temp. Range, °C	0 to +100	−65 to +200	−65 to +250	+25 to +100	−65 to +150	+15 to +35	+20 to +100	−65 to +150	+25 to +105	−65 to +150
Maximum Recommended Operating Temperature, °C		250	900	1150	815	500	35	500	500	590	425
Nominal Tensile Strength psi @ 20°C	Minimum	130,000	95,000	100,000	80,000	60,000	40,000	60,000	50,000	70,000	35,000
	Maximum	250,000	175,000	200,000	175,000	135,000	90,000	145,000	100,000	150,000	75,000

* Temperature Range 25°–35°C with Peak Resistance at 28°C

Round Wire Finishes

Flat Wire (Ribbon)[1]

Dimension	Size Range	Standard Tolerance[2]
Width	.003" to .0315"	±.0015"
	.032" to .062"	±.003"
	.0625" to .125"	±.005"
Thickness	.001" to .00495"	±.0005"
	.005" or thicker	±.001"
Resistance Tolerance	Any thickness or width	±5%

[1] Ribbon can be processed either to resistance or size tolerances.

[2] Tighter tolerances are available upon request.

Round Wire[3]

	Tolerances	
Diameter Range	Standard	Premium[4]
.0004" to .00095"	±.00005"	±.000025"
.001" to .0049"	±.0001"	±.00005"
.005" to .0109"	±.00015"	±.00005"
.011" to .020"	±.0002"	±.0001"
.0201" to .032"	±.00025"	±.0001"
.0321" to .045"	±.0003"	±.0002"

[3] Round wire can be produced to both size and resistance tolerances.

[4] Tighter tolerances are available upon request.

Molecu Wire

and Alloy Wires†

(Continued)

60 Alloy	Nickel 200	Nickel 270	30 Alloy
6 Ni Bal. Cu	** 99.5 Ni	** 99.9 Ni	2 Ni Bal. Cu
60	57	45	30
10	9.5	7.5	5
+700±200 (+150)	+5000±500 (+125)	+6000±300 (+125)	+1400±300 (+150)
+700±200 (−65)	+4000±500 (−55)	+5000±300 (−65)	+1400±300 (−65)
None	Strong	Strong	None
.092	.11	.11	.092
16.3	14.4	14.4	16.5
+25 to +105	+20 to +315	+20 to +315	+20 to +105
8.9	8.9	8.9	8.9
.32	.32	.32	.32
−.022	−.022	−.022	−.014
−65 to +155	+20 to +100	+20 to +100	−65 to +150
300	315	315	200
35,000	60,000	50,000	30,000
70,000	135,000	100,000	60,000

†For information only. For specific design data, contact Molecu-Wire.

Spools

Wire can be supplied on standard spools or to your specifications.

Precious Metal Plating

Available within required tolerances in:

Gold, Silver, Nickel, Tin, Tin-Lead, Chrome, Composites

Others on request.

Wire Size Tolerances

Brite, Semi-Matte or Matte Available

Diameter Range	Type
.032" or smaller[1]	Diamond Drawn
.0325" to .064"	Compax[2] Drawn
.0645" or larger	Tungsten Carbide Drawn

[1] Compax finish available down to .010" diameter.

[2] Registered trademark of the General Electric Co.

Brite Wire Standards[3]

Alloy	Resistivity
Moleculoy/Moleculoy III	800 ± 5% ohms/CMF
Electroloy	675 ± 5% ohms/CMF
Protoloy	650 ± 5% ohms/CMF
Neutroloy	300 ± 10% ohms/CMF

Temperature Coefficient

High Range: +25° C to +125° C
Low Range: −55° C to +25° C
Moleculoy ± 20 ppm (Std.)
± 10 ppm (Prem.)
Neutroloy ± 20 ppm H&L
Closer tolerances available.

Diameter Range	Resistance: Ohms/foot, tolerances	
	Standard	Premium
Under .002"	±.10%	±5%
.002" to .005"	±8%	±3½%
.005" or larger	±5%	±2½%

Enamel Coating Specifications

Coating Name	Type	Rating
Himol	Polyimide	220°C
Formvar	Polyvinyl-Formal	105°C
Polyurethane	Polyurethane Resins	105°C
	Polyamide Resins	105°C
Poly/Nylon	Polyurethane Resins and Polyamide Resins	130°C
Isonel 200	Polyester	200°C

Temperature Coefficient

High Range: +25°C to +125°C
Moleculoy Himol ±5 ppm, H&L
Closer tolerances are available.

Low Range: −55°C to +25°C
Neutroloy ±20 ppm, H&L

Dielectric

Maximum 10 breaks/100 ft. @ 150V DC for .001" diameter wire and larger.
(Wire smaller than .001" is tested @ 100V DC). Electrolite is $NaCl/H_2O$ @ 0.9 Molar.

Molecu Wire Corporation
Mailing: P.O. Box 495, Farmingdale, NJ 07727
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Thermal Expansion and Mechanical Wires

Material		36% Ni Iron	42% Ni Iron	Fenicoloy	46% Ni Iron	50% Ni Iron	304 Stainless Steel	316 Stainless Steel	420 Stainless Steel
Nominal Analysis, Percent		36 Ni Bal. Fe	42 Ni Bal. Fe	29 Ni 17 Co .2 Mn Bal. Fe	46 Ni Bal. Fe	50 Ni Bal. Fe	18 Cr 8 Ni Bal. Fe	18 Cr 12 Ni 2.5 Mo Bal. Fe	13 Cr .15 Min. C Bal. Fe
Linear Coefficient of Thermal Expansion ppm/°C Ref. 25°C	10^{-6}/°C	1.0	6.0	5.3	7.5	9.9	17.3	16.0	12.2
	Temp. Range, °C	+20 to +100	+30 to +400	+30 to +450	+30 to +400	+30 to +400	+20 to +100	+20 to +100	0 to +650
Magnetic Attraction		Strong	Strong	Strong	Strong	Strong	None	None	Strong
Specific Heat cal/g/°C @ 20°C		.12	.12	.12	.12	.12	.12	.12	.11
Density @ 20°C	g/cm³	8.1	8.1	8.4	8.2	8.2	7.9	8.0	7.7
	lb/in³	.29	.29	.30	.30	.30	.29	.29	.28
Maximum Recommended* Operating Temperature, °C		200	400	450	500	525	500	500	425
Nominal Tensile Strength psi @ 20°C	Minimum	70,000	70,000	75,000	70,000	70,000	90,000	90,000	125,000
	Maximum	150,000	150,000	150,000	150,000	150,000	355,000	275,000	250,000

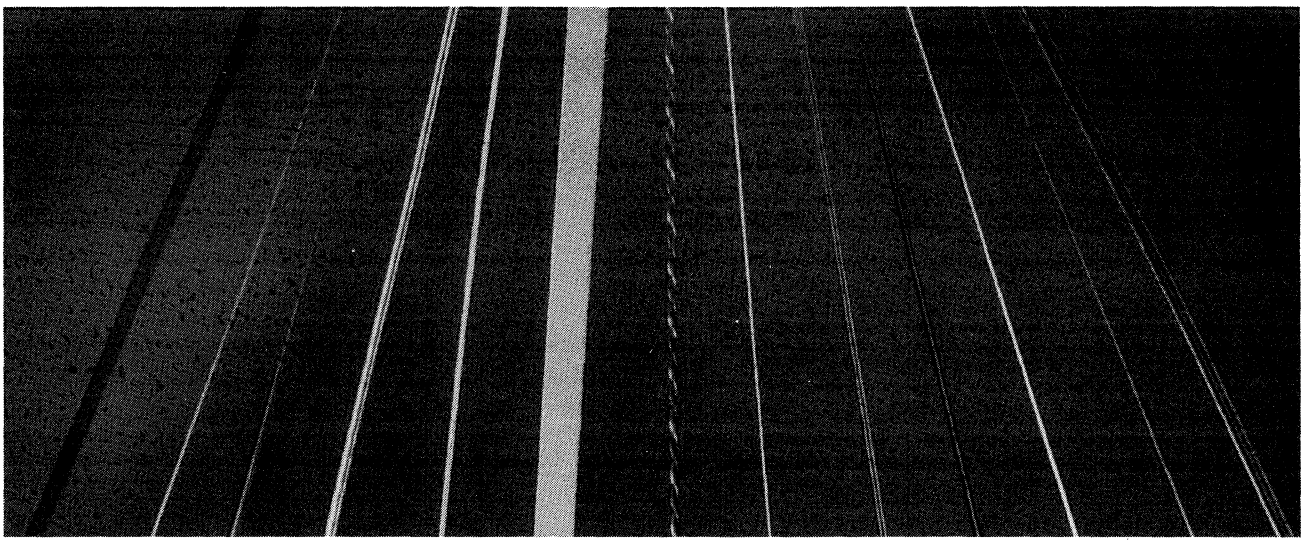
*Dependent on usage

Electrical Conductor Wire

Material		Silver	Copper	Gold	Cadmium Copper (C16200)	Zirconium Copper (C15000)	1350 Aluminum (EC)	1100 Aluminum	5005 Aluminum	Beryllium Copper (C17200)
Nominal Analysis, Percent		Commercially Pure Ag	99.90 Min. Cu (ETP)	Commercially Fine Au	1 Cd Bal. Cu	.15 Zr Bal. Cu	99.5 Min. Al	99.0 Min. Al	.8 Mg Bal. Al	.19 Be .20 Ni Min Bal. Cu
Electrical Conductivity % IACS @ 20°C	Soft	102.8	100	73.4	90	N.A.(1)	61.8	59	52	18
	Hard	98	97	N.A.(1)	85	93	61.0	57	52	23
Linear Coefficient of Thermal Expansion	10^{-6}/°C	20.6	17.0	14.2	17.0	16.9	23.6	23.6	23.7	17.0
	Temp. Range, °C	0 to +500	+20 to +100	@ 20	+20 to +100	+20 to +100	+20 to +100	+20 to +100	+20 to +100	+20 to +200
Specific Heat cal/g/°C @ 20°C		.056	.092	.031	.092	.092	.215	.216	.215	.100
Density @ 20°C	g/cm³	10.5	8.9	19.3	8.9	8.9	2.7	2.7	2.7	8.2
	lb/in³	.38	.32	.70	.32	.32	.10	.10	.10	.30
Maximum Recommended(2) Operating Temperature, °C		Room Temp.	100	Room Temp.	150	150	100	100	100	200
Nominal Tensile Strength psi @ 20°C	Minimum	18,800	35,000	19,000	38,000	30,000	14,000	14,000	18,000	80,000
	Maximum	50,800	66,000	32,000	88,000	76,000	25,000	25,000	29,000	190,000

(1) N.A. = Not Applicable (2) Dependent on usage

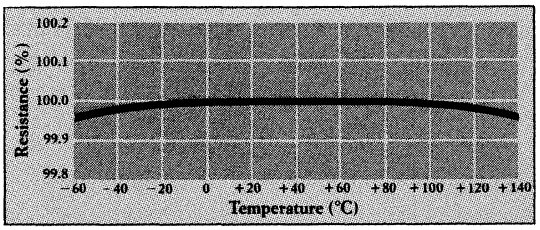
Molecu Wire



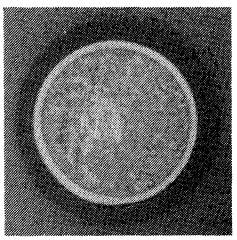
Sampling of custom wires shown at 5X magnification.

How Molecu Wire's precision custom wire assures your project's success

You can specify premium wires in diameters from .0002" to .050", in any metal or alloy, with any coating and in any configuration. Superb engineering, quality control and quality assurance mean you always get the precise qualities and tolerances you need.



Standard Moleculoy® resistance wire has ±5 ppm temperature coefficient of resistance. Tolerances as close as ±1 ppm are also available.



QA includes metallographic testing for concentricity. Shown at 450X magnification is a cross-section of a .0019" ± .0001"diameter copper wire, including 70 µ-inch ± 10 µ-inch soft gold plating insulated with.00018"to.00024" polyurethane.

Now you can meet impossibly tight TCs... create a totally noise-free environment... guarantee positive wire brazing... deliver consistent operation within any temperature range... assure uniform and ultra-concentric enameling or plating...

No matter how tough your process or product parameters are, we'll create the solutions you need. At Molecu Wire, every foot of wire is made to meet your most exacting specifications.

Turn to Molecu Wire for fine-sized wires of all kinds: resistance, stranded, twisted pair, bifilar, thermocouple, flat ribbon/voice coil, braided, insulated, metal coated (gold, silver, nickel, and others), color-enameled and more.

Whether your field is aerospace or data processing... medical devices or robotics... telecommunications, consumer electronics, or virtually anything else, Molecu Wire's accomplished R&D staff can help you bring your design to reality.

Call or write to discuss your next project, for more information or a quotation.

Molecu Wire

Mailing Address: P.O. Box 495, Farmingdale, NJ 07727
Shipping Address: Route 547, Wall, NJ 07719
Telephone: (201) 938-9473 TWX: 710-723-6943 Cable: MOLECUWIRE

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MAXIMUM CURRENT CAPACITY—CONDUCTORS

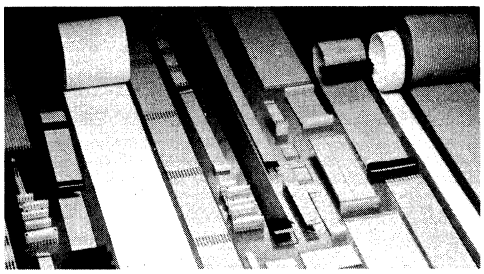
Size, AWG	MIL-W-5088				National Electrical Code	Underwriters Laboratory		American Insurance Association	500 c mils/A
	Copper		Aluminum						
	Single-wire	Wire-bundled	Single-wire	Wire-bundled		60°C	80°C		
30	...	...	...	...	...	0.2	0.4	...	0.20
28	...	...	...	...	...	0.4	0.6	...	0.32
26	...	...	...	...	...	0.6	1.0	...	0.51
24	...	...	...	...	...	1.0	1.6	...	0.81
22	9	5	...	...	...	1.6	2.5	...	1.28
20	11	7.5	...	...	...	2.5	4.0	3	2.04
18	16	10	...	...	6	4.0	6.0	5	3.24
16	22	13	...	...	10	6.0	10.0	7	5.16
14	32	17	...	...	20	10.0	16.0	15	8.22
12	41	23	...	...	30	16.0	26.0	20	13.05
10	55	33	...	...	35	...	...	25	20.8
8	73	46	58	36	50	...	...	35	33.0
6	101	60	86	51	70	...	...	50	52.6
4	135	80	108	64	90	...	...	70	83.4
2	181	100	149	82	125	...	...	90	132.8
1	211	125	177	105	150	...	...	100	167.5
0	245	150	204	125	200	...	...	125	212.0
00	283	175	237	146	225	...	...	150	266.0
000	328	200	...	...	275	...	...	175	336.0
0000	380	225	...	...	325	...	...	225	424.0

Service to the Customer ... Worldwide

molex®

Planar Cable Products

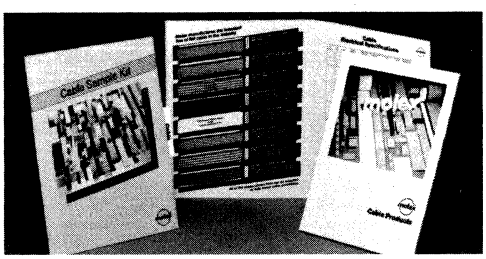
Molex manufactures the broadest line of flat cable in the industry.



- .050" center round conductor flat cable
- Gray PVC insulation
- Up to 68 circuits; 26 and 28 AWG
- UL Style 2651 - 300 V, 105°C, V W-1

- .100" center round conductor flat cable
- Gray PVC insulation
- Up to 36 circuits; 22, 24, 26 and 28 AWG
- UL Style 2651 - 300 V, 105°C VW-1

- .156" center round conductor flat cable
- Gray PVC insulation
- Up to 24 circuits; 18 and 22 AWG
- UL style 2651 - 300 V, 105°C, VW-1



Write for free sample kit

- .050" center foil shielded cable
- Reduces EMI/RFI
- Gray PVC insulation/black PVC jacket
- Up to 60 circuits
- UL style 2651 - 300 V, 105°C, VW-1

- .050" center foil ground plane cable
- Reduces crosstalk/controls impedence
- Gray PVC insulation/Black PVC jacket
- Up to 60 circuits
- UL style 2651 - 300 V, 105°C, VW-1

- .100" and .156" centers Polyshield™ cable
- Alternative to coax below 5 MHz
- Reduces crosstalk and EMI/RFI
- UL style 20325 - 300 V, 80°C VW-1

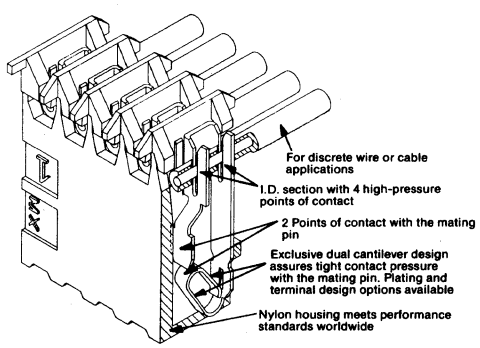
- .100" center heavy duty composite cable
- Tough insulation resists cut/melt through
- Natural irradiated PVC/Tan PVC insulation
- Up to 24 circuits

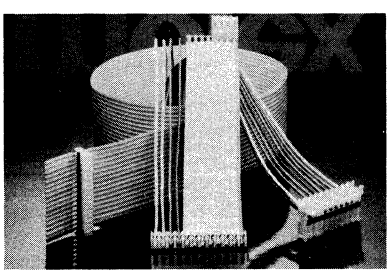
IDT™ Insulation Displacement Technology

Molex offers a complete insulation displacement system including harness and non-harness board connectors, edge connectors, and UL listed round conductor flat cable.

Molex IDT connectors are offered on five center spacings: .050", .098", .100", .156", and .200".

Detail of Standard IDT Connector





IDT features

- **Mass termination to lower your applied costs**
- Housings are pre-loaded with IDT terminals
- Proven double cantilever contacts
- Accepts round conductor flat cable and discrete wires
- Optional locking ramp and voided circuits
- Polarizing keys and pegs available
- Molded-in strain reliefs on each side of daisy chain connectors
- Drop in replacement for Molex crimp-type connectors
- Optional dust covers available

Molex Incorporated, Dept. JJ • 2222 Wellington Court • Lisle, IL 60532 • Phone (312) 969-4550

LARGEST SELECTION OF WIRE PRODUCTS

ALUMINUM
BERYLLIUM COPPER
BRASS
BUS WIRE
COPPER CLAD ALUMINUM
DUMET
EXOTIC ALLOYS
INCONEL
INDIUM
KOVAR
LITZ WIRE
LOCKWIRE/MS20995
MOLYBDENUM
MONEL

MAGNET WIRE
All sizes to 56 AWG Round per—NEMA MW 1000 JW 1177A, MIL W 583C High Temperatures, Colors, Half Sizes, Bondable Wires, Copper, Aluminum and Special Conductors

MICROSQUARE™ MAGNET WIRE
Miniature Square and Rectangular smaller than 14 AWG

MULTIFILAR® MAGNET WIRES
2—20 Conductor, Parallel Bonded, Color Coded

MUSIC WIRE
NICKEL
NICKEL SILVER
NIOBIUM
OFHC COPPER

PHOSPHOR BRONZE
PLATED WIRE AND RIBBON
Gold, Silver, Tin, Cadmium

PRECIOUS METALS
Gold, Silver, Platinum

RESISTANCE ALLOYS
Nickel-Chrome, Copper-Nickel, Nickel-Iron, Manganin

SPECIAL CABLES
STAINLESS STEEL
SUPERCONDUCTOR
TANTALUM
TITANIUM
THERMOCOUPLE WIRE
TUNGSTEN

TWISTITE™ MAGNET WIRE
24 AWG and Finer
Up to 33 TPI ± 1%
Up to 10 colors in some sizes

FACILITIES/SERVICES

CUSTOM ENAMELING
In our custom enameling facilities we enamel most metals from .072″ to .0004″ round or square and rectangular sizes smaller than 14 AWG or 3500 sq. mil. cross-sectional area. Insulations are available in special colors, builds and bondable overcoats. All insulations meet NEMA MW 1000, 105-220°C, single thru quadruple film builds. Up to 10 insulation colors are available to aid in conductor identification.

WIRE SHAPING
MWS produces a complete line of miniature square and rectangular wires in a variety of metals. Sizes smaller than 14 AWG sq. and rectangular shapes smaller than 3500 sq. mils. are produced bare as well as film insulated.

RIBBON ROLLING
MWS operates facilities for production of flat ribbon wire in a wide variety of metals. Thicknesses range from .0005″ with widths up to .125″. Ribbon wires are available bare, film insulated and plated.

DRAWING AND ANNEALING
Our drawing and annealing capabilities round out our custom manufacturing facilities. These capabilities allow us to fabricate most metals from .064″ through .0004″ diameter in the temper and quantity you require.

TESTING LABORATORY
Expanded test facility provides complete chemical, physical and electrical test data for applicable military, federal, commercial and customer standards. Metallurgical and I/R spectro analysis are also available. We can provide you with fast and accurate answers to your technical questions.

CUSTOM PACKAGING
MWS has designed custom molded, individual foam shipping containers for our 2½″, 3″, 5″ and 6″ plastic spools. These containers eliminate damage in shipping, and later prevent breakage in storage and production line handling.

WIRE TWISTING
MWS operates facilities for twisting 2 or more conductors 24 AWG and finer. Twisting tightness up to 33 twists per inch and to tolerances of ±1%. Conductor materials include copper, silver, plated conductors and specialty alloys, in bare and insulated constructions.

WIRE SPOOLING
Spooling facilities handle every size wire from heavy square and rectangular to ultra-fine. This enables you to buy the quantity of wire you need on the spool size you want.

MWS
Wire Industries

CALL TOLL FREE
1 800 423-5097

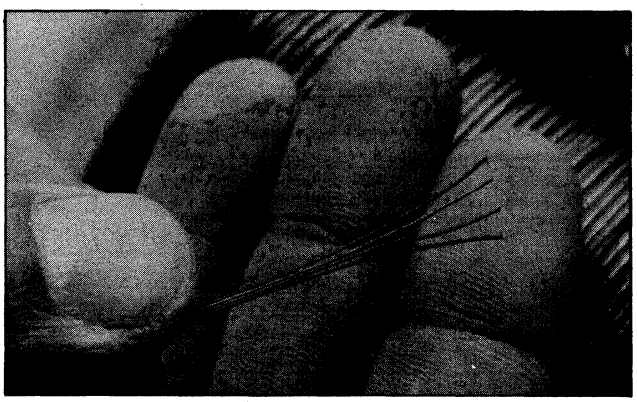
In California: (800) 992 8553 • In Los Angeles Area: (818) 991-8553

Our goal is to have the wire you need, when you need it. That's why MWS stocks the largest inventory of specialty wires in the country. Over 20,000 types and sizes. If we don't have the wire you need in stock, we'll custom manufacture it. Our short run capabilities provide an alternative to large factory minimums and long deliveries.

31200 Cedar Valley Dr., Westlake Village, CA 91362

®Multifilar is a registered trademark of MWS Wire Industries.

MULTIFILAR® MAGNET WIRE



Whenever two or more magnet wires travel together, MULTIFILAR magnet wire is worth a closer look. This parallel-bonded, color-coded magnet wire offers many benefits for both small and large users.

Engineers should specify it when they're concerned with space, weight and reliability. Where consistent capacitance and impedance characteristics are needed, MULTIFILAR magnet wire outperforms windings where two separate magnet wires are used.

Production users benefit from increased layer winding speeds, reduced labor and handling. Color-coding assists in conductor identification and reduces termination errors.

MULTIFILAR magnet wires are custom produced by MWS. We guarantee flat, parallel construction in an array of sizes 16 AWG and finer, with up to 20 conductors in some sizes.

Both round and flat constructions are available. Color-coded conductors are available in most insulations with up to 10 different colors in some sizes. Conductor separation is also guaranteed with certain bonding mediums.

For an even closer look, send for a free sample, specifications and ordering information. Production minimums are as low as 500 feet.

GENERAL PRODUCT INFORMATION

Code No.	INSULATIONS	Thermal Rating	NEMA MW1000	JW 1177 Class/Type
1	**Polyurethane***	105°C	MW2C	JW 1177/2A CL-105 U thru U-4
2	**Poly-Nylon***	130°C	MW28C	JW 1177/9A CL-130 UN thru UN-4
4	**Modified Polyester**	180°C	MW30C	JW 1177/12A CL-180 H thru H-4
5	**Armored Polyester**	200°C	MW35C	JW 1177/14A CL-200 K thru K-4
6	**Solderable Polyester***	180°C	MW26C	None
7	**Formvar**	105°C	MW15C	JW 1177/4A CL-105 T thru T4
8	**Pyre M.L.†**	220°C	MW16C	JW 1177/15A CL-220 M thru M-4

Code No.	Bonding Films (operating temp.)	Solvents for Conductor Separation
1	**Polyvinyl Butyral** (105°C)	Alcohol Isopropyl or Denatured
2	**Polyamide (Nylon)** (105°C)	None
3	**Epoxy** (130°C)	Acetone

BOND THICKNESS STANDARDS

AWG Size	Thickness	Tolerances
16-20	.0007"	±.0002"
21-28	.0005"	±.0002"
29-32	.0004"	±.0001"
33-36	.0003"	±.0001"
37-41	.0002"	±.0001"
42-finer	.0001"	+.0001" −.0

* Solderable Insulations † Trademark of DuPont

NOTE: The above referenced insulations, bonding films, and bond thickness are standard. Other insulations, films and thicknesses are available upon request.
CONDUCTOR SEPARATION: Bonding films can be softened and removed by immersion in appropriate solvents. Some mechanical action (i.e. wiping wires following immersion in solvent) may be required to affect conductor separation.

PART NUMBER ORDERING SYSTEM

Make your own 8 digit part number by following the guidelines outlined below.

EXAMPLE **B-2 3 8 1 1 1 1**

- **B-** Product letter for all multifilar magnet wire
- **2** Number of conductors. Use ( ) for more than 9 conductors
- **3** AWG gauge sizes
- **8** Insulation thickness 1= single 2=heavy 3=triple 4=quadruple
- **1** Insulation type "See above chart for correct code number"
- **1** Color coded conductors 0=none required 1=red/green 2=green/clear 3=red/green/clear *9=special – call for color code
- **1** Bonding film "See above chart for correct code number"

EXAMPLE = 2 Conductors–38AWG Single Polyurethane–Red/Green–Butyral Bond
* Denotes Change

If you have any questions regarding how to specify a correct part number for the **multifilar** wire you need, don't hesitate to call us. Our salesmen or engineering staff will be happy to assist you.

CALL TOLL FREE 1 800 423-5097
In California: 1 800 992-8553 In Los Angeles Area: (818) 991-8553.
31200 Cedar Valley Drive, Westlake Village, California 91362

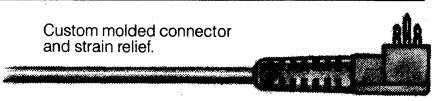
MWS Wire Industries

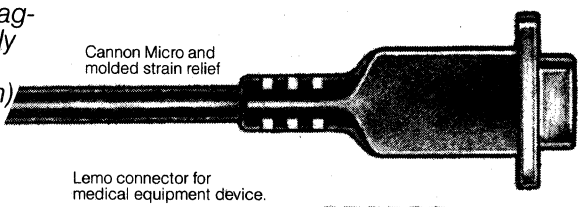
MICRO CABLE SOLUTIONS

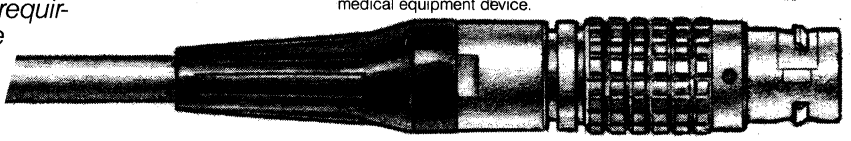
National Electric Cable designs, tests, produces, and improves cables, connectors and complete cable assemblies for specific applications in instrumentation and medical electronics. Our experience has taught us that advanced cable technology not only influences system design but frequently determines whether a system is functionally and economically viable and reliable. We are the leading U.S. manufacturer of micro-miniature cable assemblies and have successfully supplied companies like General Electric Medical Systems, Hewlett-Packard, Tektronix, and Phillips.

Electronic Cable Assemblies

We design and produce exceptionally high quality cable assemblies for high tech products ranging from logic analyzers to medical diagnostic machines. We manufacture cables with extruders that apply insulation as thin as .002in. (0,05mm) with taping machines that apply low density materials on wires as small as .0048in. (0,12mm) in diameter, with braiding machines that can braid strands as small as .002in. (0,05mm). Assemblies involving standard or molded connectors, stringent military standards, micro-miniature soldering and other processes requiring automated termination techniques are typical of the ongoing projects in our new manufacturing facility. Tell us your needs and we will build you a prototype.


Custom molded connector and strain relief.

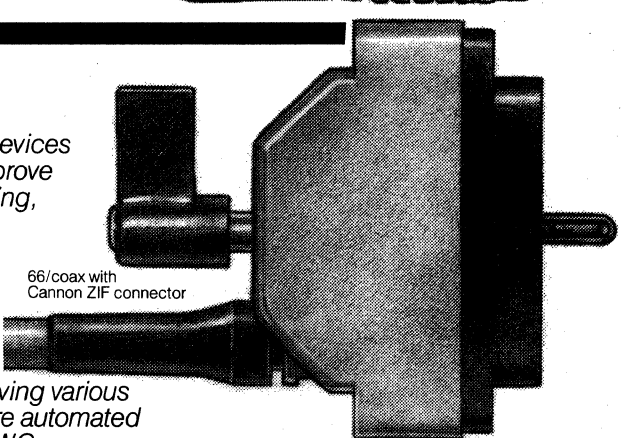

Cannon Micro and molded strain relief

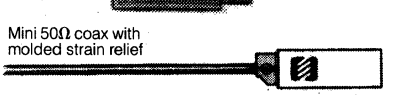

Lemo connector for medical equipment device.

Cables & Connectors

If you are designing electronic equipment using hand-held devices or high speed data transmission, let us show you ways to improve miniaturization, flexibility, flex life, abrasion resistance, shielding, capacitance, specific impedance and other critical cable requirements. Think of us as an extension of your design department for the latest in cable technology.

We usually terminate our cables to connectors like Cannon Micro-D and ZIF, Fischer, Lemo, Amp CPC's and Coaxicon, Berg Mini PV, SMA and SMB, Selectro Nanohex and military circulars. We also design and build custom connectors involving various moldings and strain reliefs in our cable assembly plant, where automated crimping is done to 36 AWG and precision soldering to 40 AWG.


66/coax with Cannon ZIF connector


Mini 50Ω coax with molded strain relief

NATIONAL ELECTRIC CABLE

(503) 620-9400
16640 S.W. 72nd Ave.
Portland, OR 97224 U.S.A.

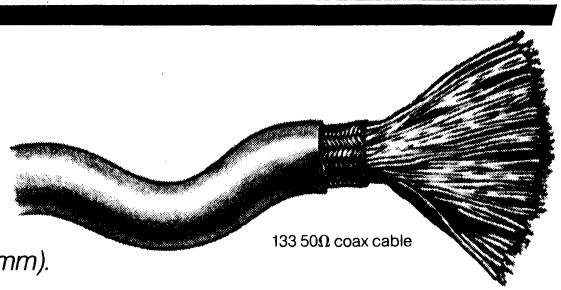
Telex 36-0963 NEC PTL
Facsimilie (503) 620-7131


75Ω mini-coax/Selectro Nanohex connector

After 7/1/87 name changed to Precision Interconnect Corp.

Micro-miniature Coaxes

Ultrasmall cables designed for maximum flex-life and flexibility are our specialty. Coaxes (50-125ohm) are of Tex-L 88® low density Teflon,® foamed Teflon, full-density Teflon and irradiated cross-linked polyolefin dielectrics over 34-38 AWG center conductors with braid, tape, or spiral shields. We have produced 133 coaxial conductors in one cable with an outside diameter of .530in. (0,135mm).



133 50Ω coax cable

Standard Micro-Miniature Coax

AWG	Stranding	O.D. Over Jacket (In.)	Dielectric Constant	Capacitance (pF/ft) (NOM)	Velocity of Propagation (NOM)
50 ohm Coax					
Full-Density Teflon®					
38	7x46	.030	2.1	29.0	69%
36	7x44	.034			
34	7x42	.038			
32	7x40	.044			
30	19x42	.054			
Tex L-88® Low-Density Teflon					
32	7x40	.043	1.7	27.0	78-80%
30	19x42	.05			
75 ohm Coax					
Full-Density Teflon					
38	7x46	.041	2.1	19.0	69%
36	7x44	.049			
34	7x42	.057			
32	7x40	.063			
30	19x42	.087			
Tex L-88 Low-Density Teflon					
38	7x46	.039	1.7	17.5	78-80%
36	7x44	.046			
34	7x42	.053			
32	7x40	.063			
30	19x42	.080			
95 ohm Coax					
Full-Density Teflon					
38	7x46	.057	2.1	15.0	69%
36	7x44	.060			
34	7x42	.080			
32	7x40	.097			
30	19x42	.130			
Tex L-88 Low-Density Teflon					
38	7x46	.053	1.7	14.0	78-80%
36	7x44	.061			
34	7x42	.074			
32	7x40	.086			
30	19x42	.114			
125 ohm Coax					
Full-Density Teflon					
38	7x46	.097	2.1	11.3	69%
36	7x44	.119			
34	7x42	.144			
32	7x40	.176			
30	19x42	.236			
Tex L-88 Low-Density Teflon					
38	7x46	.084	1.7	10.5	78-80%
36	7x44	.102			
34	7x42	.122			
32	7x40	.148			
30	19x42	.195			

1. Jacket is .005" Teflon. All dimensions are normal.
2. Tolerances: Impedances of coaxes with Teflon dielectric:
   50 Ohms ±2 95 Ohms ±3 125 Ohms ±5

Impedances of coaxes with Tex L-88 dielectric:
50 Ohms ±4 95 Ohms ±5 125 Ohms ±8

More Information

Want to read more about our custom capabilities? Ask for our brochure, a full-color booklet which outlines examples of custom cable development and manufacturing. Yours free for the asking.

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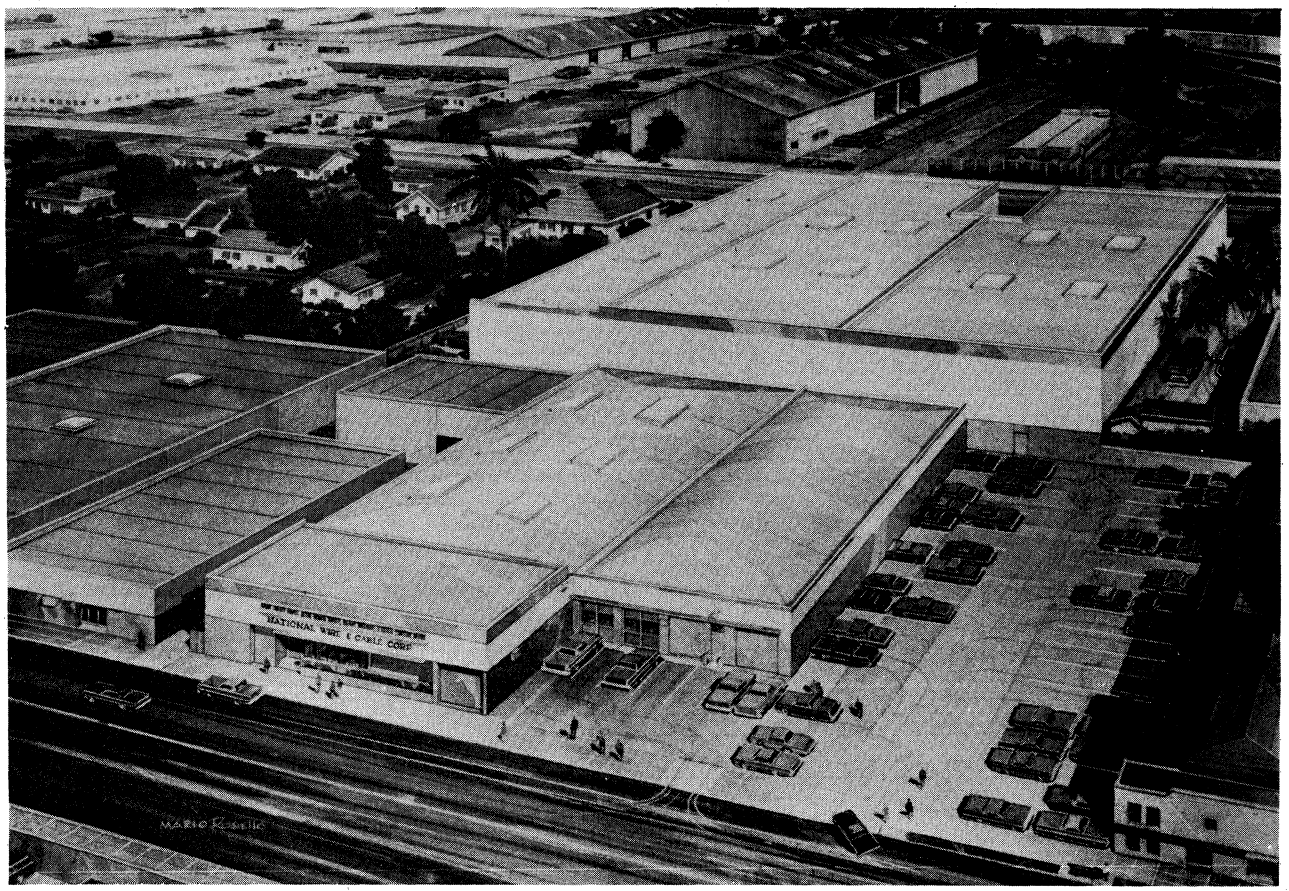
Portland, OR 97224 U.S.A.
(503) 620-9400
Telex 36-0963 NEC PTL
Facsimilie (503) 620-7131

NATIONAL ELECTRIC CABLE

After 7/1/87 name changed to Precision Interconnect Corp.

NATIONAL WIRE AND CABLE CORPORATION

Dept. EM, 136 San Fernando Rd., Los Angeles, CA 90031
Phone: (213) 225-5611, TWX: 910-321-4155, TLX: 181409,
FAX: (213) 225-4630. Fed. Stock Code H4-04569



As a manufacturer of wire and cable products . . . with warehouses on both East and West coasts, National Wire & Cable is ready to fill your immediate needs. Choose from our standard lines of wire or cable . . . OR let us design and custom manufacture exactly what you require for your application.

Our wire inventory is now over 200 million feet, and our 500 different standard multi-conductor cables total in excess of 2.0 million feet!

When you call National Wire, you'll find we are especially well equipped to handle your large as well as minimal requirements. If our "standard" items won't meet your application, we have the wire inventory, the machinery, the expertise to come up with exactly what you need. 180,000 square feet of manufacturing area and our expert engineering staff are at your disposal!!! All cable components are produced within our own facility in order to assure complete quality control.

Review the following catalog pages. If you need some assistance with your specific requirement, call our factory direct, or call our representative nearest you. See Manufacturers and Sales Office Directory Yellow Pages.

NATIONAL WIRE
AND CABLE CORPORATION

Dept. EM, 136 San Fernando Rd., Los Angeles, CA 90031
Phone: (213) 225-5611, TWX: 910-321-4155, TLX: 181409,
FAX: (213) 225-4630. Fed. Stock Code H4-04569

CAVEAT EMPTOR

LET THE BUYER BEWARE

National Wire and Cable Corporation is proud of its quality and good name, and has made it a practice of enforcing its copyrights to protect its customers from imitators who would pass off its own products as ours, by using our part numbers on reels and packing slips.

WHAT IS MEANT BY: "OR EQUAL"?

When a "similar" product is represented as being "equal" the buyer should demand proof of equal quality in all details, that all components are identical in temperature and voltage ratings, and that cable geometry, manufacturing practices, flexibility, life expectancy, quality control procedures, and packaging, are truly "equal".

We wish to point out to all that the part numbers shown on the following pages are the copyrighted property of National Wire and Cable Corporation and are not "generic" part numbers for anyone else to use. Our part numbers and company name are always printed on the cable jacket. If you receive a cable without this information printed on the cable jacket, we respectfully suggest that you assure yourself that you have not been the victim of an unfair practice through misrepresentation. Demand proof!

Sincerely,

National Wire and Cable Corporation

NATIONAL WIRE AND CABLE CORPORATION

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U/L Listed Wire
CSA Listed Wire

- Wires listed by the Underwriter's Laboratories, Inc. for operation in an air or an oil environment. U.L. File #E35793.
- Wires listed by the Canadian Standards Association for radio or electronic uses. CSA File #LR-20482 & LR-32511.

U/L Style 1061

Appliance wiring material available as FR-1 rated 80-degree C Service. .009" semi-rigid vinyl insulation U/L rated: 300-volt service. Meets Mil-W-16878D Type B, and CSA S-R PVC. Also available with solid conductors.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
28	N304-736U	7	36	.015	.034	69.0	1.0
26	N304-1938U	19*	38	.019	.038	42.9	1.5
24	N304-1936U	19*	36	.024	.043	26.8	2.0
22	N304-1934U	19*	34	.030	.050	16.7	3.0
20	N304-1932U	19*	32	.038	.057	10.5	4.75
18	N304-1930U	19	30	.048	.068	6.57	6.5
16	N304-1929U	19	29	.057	.077	4.85	9.0

U/L Style 1007

Appliance wiring available as FR-1 rated 80-degree C Service. 1/64" vinyl insulation U/L rated: 300 volt appliance, use 600 volt electronic use. Meets Mil-W-16878D Type C. Also approved by CSA as Type TR-64 radio wiring for 90-degree C Service. Colors: 10 standard colors plus tracers on solid colors. Also available with solid conductors.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
24	N303-732U	7	32	.024	.058	26.8	2.75
22	N303-1934U	19*	34	.030	.063	16.7	3.75
20	N303-1932U	19*	32	.038	.072	10.5	5.50
18	N303-1930U	19	30	.048	.082	6.57	8.0
16	N303-1929U	19	29	.057	.090	4.85	10.0

U/L Style 1015

Appliance wiring material available as FR-1 rated 105-degree C Service 1/32" vinyl insulation U/L rated, 2500 volts electronic use, 600 volt appliance use. Meets Mil-W-16878D Type D. Colors: 10 standard colors plus tracers on solid colors.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
24	N600-732U	7	32	.024	.082	26.8	4.0
22	N600-730U	7	30	.030	.090	16.7	5.2
20	N600-728U	7	28	.038	.098	10.5	7.3
18	N600-1930U	19	30	.048	.108	6.57	10.0
16	N600-1929U	19	29	.057	.117	4.85	12.0
14	N600-1927U	19	27	.071	.130	3.05	17.1
12	N600-1925U	19	25	.090	.162	1.92	27.4
10	N600-4927U	49	27	.111	.181	1.24	38.6

CSA/Type TR-32 Radio Wire

Rated: 90-degree C 600 volt, 1/32" vinyl insulation. Also listed as CSA Appliance Wiring Material 90-degree 600 V. Meets U/L Style 1015 & Mil-W-16878D Type D.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
24	N307-732U	7	32	.024	.082	26.8	4.0
22	N307-730U	7	30	.030	.090	16.7	5.2
20	N307-728U	7	28	.038	.098	10.5	7.3
18	N307-1930U	19	30	.048	.108	6.57	10.0
16	N307-1929U	19	29	.057	.117	4.85	12.0
14	N307-1927U	19	27	.071	.130	3.05	17.1
12	N307-1925U	19	25	.090	.162	1.92	27.4
10	N307-4927U	49	27	.111	.181	1.24	38.6

*Also available in 7 strands

CSA Listed Type TR-64 Radio Wire

Rated 90-degree C 300 volt, 1/64" vinyl insulation. Meets U/L Style 1007 & Mil-W-16878D Type C.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
24	N308-732U	7	32	.024	.058	28.4	2.75
22	N308-1934U	19*	34	.030	.063	19.0	3.50
20	N308-1932U	19*	32	.038	.072	13.12	5.25
18	N308-1930U	19	30	.048	.082	7.89	6.75
16	N308-1929U	19	29	.057	.090	4.97	10.0

Also available with Nylon Jacket

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FAX: (213) 225-4630. Fed. Stock Code H4-04569

Military Electronic Hookup Wire

MIL-W-16878/1
Type BU

For internal wiring of electronic equipment.
.010" wall vinyl primary insulation. No outer covering.
—54-degree C to +105-degree C, 600 V, R.M.S. (working). Also available as NABOND. Meets U/L Style 1061, and CSA S-R PVC.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
32	NB740U	7	40	.009	.028	179.0	0.70
30	NB738U	7	38	.012	.031	111.0	0.75
28	NB736U	7	36	.015	.034	69.0	1.0
26	NB1938U	19*	38	.019	.038	42.9	1.5
24	NB1936U	19*	36	.024	.043	26.8	2.0
22	NB1934U	19*	34	.030	.050	16.7	3.0
20	NB1932U	19*	32	.038	.057	10.5	4.5
18	NB1930U	19	30	.048	.068	6.57	6.5
16	NB1929U	19	29	.057	.077	4.85	9.0
14	NB1927U	19	27	.071	.091	3.05	14.0

*Also available in 7 strands

MIL-W-16878/1
Type BN

For internal wiring of electronic equipment.
Vinyl primary insulation with Nylon jacket overall.
—54-degree C to +115-degree C, 600 V, R.M.S. (working). Meets U/L Style 1006.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
32	NB740N	7	40	.009	.032	179.0	0.75
30	NB738N	7	38	.012	.036	111.0	1.0
28	NB736N	19	40	.015	.039	69.0	1.25
26	NB1938N	19*	38	.019	.044	42.9	1.75
24	NB1936N	19*	36	.024	.049	26.8	2.25
22	NB1934N	19*	34	.030	.056	16.7	3.25
20	NB1932N	19*	32	.038	.063	10.5	4.75
18	NB1930N	19	30	.048	.074	6.57	7.0
16	NB1929N	19	29	.057	.083	4.85	9.0
14	NB1927N	19	27	.071	.098	3.05	14.7

*Also available in 7 strands

MIL-W-16878/2
Type CU

For internal wiring of meters, panels & electronic equipment, .015" Wall Vinyl primary insulation (no outer covering). —54° C to +105° C, 1000 Volts, R.M.S. (working). Also available as NABOND. Meets U/L Style 1007 and CSA TR-64.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
26	NC734U	7	34	.019	.053	42.9	2.1
24	NC732U	7	32	.024	.058	26.8	2.75
22	NC1934U	19*	34	.030	.063	16.7	3.75
20	NC1932U	19*	32	.038	.072	10.5	5.50
18	NC1930U	19	30	.048	.082	6.57	8.0
16	NC1929U	19	29	.057	.090	4.85	10.0
14	NC1927U	19	27	.071	.104	3.05	15.0
12	NC1925U	19	25	.090	.124	1.92	24.0

*Also available in 7 strands

MIL-W-16878/3
Type DU

Resists the effect of salt water, aviation fuel, motor oil, ethylene glycol and alcohols (methyl or ethyl). .031" wall vinyl primary insulation. No outer covering. —54-degree C to +105-degree, 3000 V, R.M.S. (working). Meets U/L Style 1015 and CSA TR-32.

GAUGE (AWG)	NATIONAL CATALOG NUMBER	NO. OF STRANDS	GA. OF STRANDS (AWG)	NOM. DIAM. OF STRANDED CONDUCTOR (INCHES)	NOM. FIN. WIRE DIAM. (INCHES)	MAX. RESISTANCE (dc) AT 25°C OHMS/1000 FT.	NOM. WT. PER 1000 FT. (LBS.)
24	ND732U	7	32	.024	.082	26.8	4.0
22	ND730U	7	30	.030	.090	16.7	5.2
20	ND728U	7	28	.038	.098	10.5	7.3
18	ND1930U	19	30	.048	.108	6.57	10.0
16	ND1929U	19	29	.057	.117	4.85	12.0
14	ND1927U	19	27	.071	.130	3.05	17.1
12	ND1925U	19	25	.090	.162	1.92	27.4
10	ND4927U	49	27	.111	.181	1.24	38.6
8	ND13329U	133	29	.167	.246	0.726	70.5
6	ND13327U	133	27	.210	.290	0.444	104.0

*Also available in 7 strands.

NOTE: THE ABOVE WIRES COME IN 10 STANDARD COLORS PLUS TRACERS ON SOLID COLORS.

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NATIONAL WIRE AND CABLE CORPORATION

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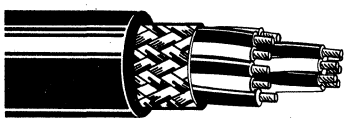
FAX: (213) 225-4630. Fed. Stock Code H4-04569

Miniature Signal & Control Cables Single Conductors (NX Series)



(NX1922SJ shown)

National Wire & Cable Corporation manufactures a complete line of MINIATURE low voltage signal and control cable. Available as cabled pairs or cabled singles, with optional overall shield. Conductors are stranded tinned copper with .010" wall of vinyl primary insulation for use up to 105°C per MIL-W-16878 Type B. Insulated for 600 volts working voltage. (Also meets U.L. AWM Type 1061; 300 volt, 80°C.) All are coded using 10 standard colors plus stripes on white per MIL-STD-681.

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape barrier under shields. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078; and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C. vinyl meeting MIL-I-631 Type F. All materials are self-extinguishing and fungus resistant. All items are U.L. LISTED STYLE 2343 COMPUTER CABLE; rated 80°C. (Higher temp. ratings apply for any non-U.L. service.)

U.L. and C.S.A. certification furnished only when requested.

Standard Putups: 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

IN STOCK

MIL-SPEC U.L. LISTED COMPUTER GRADE STYLE 2343

For light duty, gray jacketed version of these cables in the U.L. Style 2464, see NQ Series on following pages.

TECHNICAL DATA (all cables)

Insulation Breakdown Voltage: Greater than 5000 volts AC RMS, 60 cps.

Capacitance: Nominal capacitance from a wire to all else in a cable ranges from 45. to 70. pf/ft. at 1. kc, depending on gauge and position.

Insulation Leakage: 200. megohms/1000 ft. min. @ 500. VDC from any conductor to all else in cable.

Sheath Leakage: 10. megohms/1000 ft. min. @ 500 VDC from shield or conductor group through sheath to ground.

Temperature Range: Suitable for continuous use from −40°C. to +105°C. (U.L. Service limited to +80°C.)

Bending Characteristics: All cables are suitable for flexing to a circle diameter of 6. cable diameters from +105°C. to −20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at −40°C.

MULTICONDUCTOR STOCK CABLED SINGLES

Cond: 22, 24 are 7 strand; 20 AWG is 19 strand

UNSHIELDED							OVERALL SHIELDED							
PART NO.	NO. COND.	COND. AWG	COND. O.D.	JKT. WALL	NOM. O.D.	WEIGHT LB/M'	PART NO.	NO. COND.	COND. AWG	COND. O.D.	JKT. WALL	SHIELD AWG	NOM. O.D.	WEIGHT LB/M'
NX-524 J	5	24	.045	.062	.220	32 Lbs.	NX-524 SJ	5	24	.045	.062	36	.245	44 Lbs.
NX-724 J	7	24	.045	.062	.250	40 Lbs.	NX-724 SJ	7	24	.045	.062	36	.275	55 Lbs.
NX-1224J	12	24	.045	.062	.300	53 Lbs.	NX-1224SJ	12	24	.045	.062	36	.325	68 Lbs.
NX-1524J	15	24	.045	.062	.330	65 Lbs.	NX-1524SJ	15	24	.045	.062	36	.350	80 Lbs.
NX-1924J	19	24	.045	.062	.340	73 Lbs.	NX-1924SJ	19	24	.045	.062	36	.365	88 Lbs.
NX-2724J	27	24	.045	.062	.390	85 Lbs.	NX-2724SJ	27	24	.045	.062	36	.415	102 Lbs.
NX-3724J	37	24	.045	.062	.420	120 Lbs.	NX-3724SJ	37	24	.045	.062	36	.445	140 Lbs.
NX-4824J	48	24	.045	.062	.470	142 Lbs.	NX-4824SJ	48	24	.045	.062	36	.495	172 Lbs.
NX-6024J	60	24	.045	.062	.510	170 Lbs.	NX-6024SJ	60	24	.045	.062	36	.535	205 Lbs.
NX-522 J	5	22	.050	.062	.265	40 Lbs.	NX-522 SJ	5	22	.050	.062	36	.285	50 Lbs.
NX-722 J	7	22	.050	.062	.270	48 Lbs.	NX-722 SJ	7	22	.050	.062	36	.295	58 Lbs.
NX-1222J	12	22	.050	.062	.330	72 Lbs.	NX-1222SJ	12	22	.050	.062	36	.355	87 Lbs.
NX-1522J	15	22	.050	.062	.350	85 Lbs.	NX-1522SJ	15	22	.050	.062	36	.380	101 Lbs.
NX-1922J	19	22	.050	.062	.370	96 Lbs.	NX-1922SJ	19	22	.050	.062	36	.395	111 Lbs.
NX-2722J	27	22	.050	.062	.430	130 Lbs.	NX-2722SJ	27	22	.050	.062	36	.455	150 Lbs.
NX-3722J	37	22	.050	.062	.480	163 Lbs.	NX-3722SJ	37	22	.050	.062	34	.510	193 Lbs.
NX4822J	48	22	.050	.062	.530	210 Lbs.	NX-4822SJ	48	22	.050	.062	34	.560	245 Lbs.
NX-6022J	60	22	.050	.062	.570	255 Lbs.	NX-6022SJ	60	22	.050	.062	34	.600	295 Lbs.
NX-520 J	5	20	.057	.062	.275	49 Lbs.	NX-520 SJ	5	20	.057	.062	36	.300	59 Lbs.
NX-720 J	7	20	.057	.062	.290	59 Lbs.	NX-720 SJ	7	20	.057	.062	36	.315	69 Lbs.
NX-1220J	12	20	.057	.062	.360	90 Lbs.	NX-1220SJ	12	20	.057	.062	36	.385	105 Lbs.
NX-1520J	15	20	.057	.062	.390	110 Lbs.	NX-1520SJ	15	20	.057	.062	36	.415	137 Lbs.
NX-1920J	19	20	.057	.062	.410	128 Lbs.	NX-1920SJ	19	20	.057	.062	36	.435	158 Lbs.
NX-2720J	27	20	.057	.062	.490	166 Lbs.	NX-2720SJ	27	20	.057	.062	36	.515	196 Lbs.
NX-3720J	37	20	.057	.062	.520	220 Lbs.	NX-3720SJ	37	20	.057	.062	34	.550	255 Lbs.
NX-4820J	48	20	.057	.062	.580	275 Lbs.	NX-4820SJ	48	20	.057	.062	34	.610	320 Lbs.
NX-6020J	60	20	.057	.062	.640	335 Lbs.	NX-6020SJ	60	20	.057	.062	34	.670	385 Lbs.

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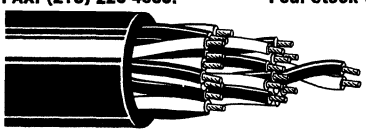

(NXP1924J shown)

Miniature Signal & Control Cables Twisted Pairs (NXP Series)

IN STOCK MIL-SPEC

U.L. LISTED COMPUTER GRADE STYLE 2343 & 2344

For light duty, gray jacketed version of these cables in the U.L. Style 2464, see NQ Series on following pages.

National Wire & Cable Corporation manufactures a complete line of MINIATURE low voltage signal and control cable. Available as cabled pairs or cabled singles, with optional overall shield. Conductors are stranded tinned copper with .010" wall of vinyl primary insulation for use up to 105°C per MIL-W-16878 Type B. Insulated for 600 volts working voltage. (Also meets U.L. AWM Type 1061; 300 volt, 80°C.) All are coded using 10 standard colors plus stripes on white per table below.

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape barrier under shields. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078; and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C. vinyl meeting MIL-I-631 Type F. All materials are self-extinguishing and fungus resistant. All items are U.L. LISTED STYLE 2343 COMPUTER CABLE; rated 80°C. (Higher temp. ratings apply for any non-U.L. service.)

U.L. and C.S.A. certification furnished only when requested.

Standard Putups: 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

* Denotes U.L. Style 2344.

TECHNICAL DATA (all cables)

Insulation Breakdown Voltage: Greater than 5000 volts AC RMS, 60 cps.

Capacitance: Nominal capacitance from a wire to all else in a cable ranges from 45. to 70. pf/ft. at 1. kc, depending on gauge and position.

Insulation Leakage: 200. megohms/1000 ft. min. @ 500. VDC from any conductor to all else in cable.

Sheath Leakage: 10. megohms/1000 ft. min. @ 500 VDC from shield or conductor group through sheath to ground.

Temperature Range: Suitable for continuous use from −40°C. to +105°C. (U.L. Service limited to +80°C.)

Bending Characteristics: All cables are suitable for flexing to a circle diameter of 6. cable diameters from +105°C. to −20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at −40°C.

Impedance: (24. AWG pairs) **Balanced: 87. ohms ±5%** **Unbalanced: 52. ohms ±5%**

MULTI-CONDUCTOR STOCK CABLED PAIRS

Cond: 22, 24 are 7 strand; 20 AWG is 19 strand

UNSHIELDED							OVERALL SHIELDED						
PART NO.	NO. PAIRS	COND. AWG	COND. O.D.	JKT. WALL	NOM. O.D.	WEIGHT LB/M'	PART NO.	NO. PAIRS	COND. AWG	COND. O.D.	JKT. WALL	SHLD. AWG	NOM. O.D.	WEIGHT LB/M'
NXP-524 J	5	24	.045	.062	.330	52 Lbs.	NXP-524 SJ	5	24	.045	.062	36	.355	67 Lbs.
NXP-724 J	7	24	.045	.062	.350	60 Lbs.	NXP-724 SJ	7	24	.045	.062	36	.375	75 Lbs.
NXP-1224J	12	24	.045	.062	.435	90 Lbs.	NXP-1224SJ	12	24	.045	.062	36	.460	115 Lbs.
NXP-1524J	15	24	.045	.062	.485	110 Lbs.	NXP-1524SJ	15	24	.045	.062	36	.510	140 Lbs.
NXP-1924J	19	24	.045	.062	.505	126 Lbs.	NXP-1924SJ	19	24	.045	.062	36	.530	161 Lbs.
NXP-2724J	27	24	.045	.062	.590	167 Lbs.	NXP-2724SJ	27	24	.045	.062	34	.620	211 Lbs.
NXP-3724J	37	24	.045	.062	.660	216 Lbs.	NXP-3724SJ	37	24	.045	.062	34	.690	266 Lbs.
NXP-4824J	48	24	.045	.062	.745	270 Lbs.	NXP-4824SJ	48	24	.045	.062	34	.775	330 Lbs.
NXP-6024J	60	24	.045	.062	.815	325 Lbs.	NXP-6024SJ*	60	24	.045	.062	34	.845	390 Lbs.
NXP-522 J	5	22	.050	.062	.365	56 Lbs.	NXP-522 SJ	5	22	.050	.062	36	.390	77 Lbs.
NXP-722 J	7	22	.050	.062	.390	82 Lbs.	NXP-722 SJ	7	22	.050	.062	36	.415	100 Lbs.
NXP-1222J	12	22	.050	.062	.470	120 Lbs.	NXP-1222SJ	12	22	.050	.062	36	.495	150 Lbs.
NXP-1522J	15	22	.050	.062	.545	145 Lbs.	NXP-1522SJ	15	22	.050	.062	34	.575	185 Lbs.
NXP-1922J	19	22	.050	.062	.550	170 Lbs.	NXP-1922SJ	19	22	.050	.062	34	.580	210 Lbs.
NXP-2722J	27	22	.050	.062	.640	230 Lbs.	NXP-2722SJ	27	22	.050	.062	34	.670	280 Lbs.
NXP-3722J	37	22	.050	.062	.750	300 Lbs.	NXP-3722SJ	37	22	.050	.062	34	.780	357 Lbs.
NXP-4822J*	48	22	.050	.080	.850	375 Lbs.	NXP-4822SJ*	48	22	.050	.080	34	.880	445 Lbs.
NXP-6022J*	60	22	.050	.080	.930	460 Lbs.	NXP-6022SJ*	60	22	.050	.080	34	.960	535 Lbs.
NXP-520 J	5	20	.057	.062	.395	82 Lbs.	NXP-520 SJ	5	20	.057	.062	36	.420	102 Lbs.
NXP-720 J	7	20	.057	.062	.440	108 Lbs.	NXP-720 SJ	7	20	.057	.062	36	.465	123 Lbs.
NXP-1220J	12	20	.057	.062	.540	163 Lbs.	NXP-1220SJ	12	20	.057	.062	34	.570	203 Lbs.
NXP-1520J	15	20	.057	.062	.600	196 Lbs.	NXP-1520SJ	15	20	.057	.062	34	.630	241 Lbs.
NXP-1920J	19	20	.057	.062	.630	235 Lbs.	NXP-1920SJ	19	20	.057	.062	34	.660	280 Lbs.
NXP-2720J	27	20	.057	.062	.745	320 Lbs.	NXP-2720SJ	27	20	.057	.062	34	.775	380 Lbs.
NXP-3720J	37	20	.057	.062	.820	420 Lbs.	NXP-3720SJ*	37	20	.057	.080	34	.850	490 Lbs.
NXP-4820J*	48	20	.057	.080	.950	530 Lbs.	NXP-4820SJ*	48	20	.057	.080	34	.980	605 Lbs.
NXP-6020J*	60	20	.057	.080	1.040	650 Lbs.	NXP-6020SJ*	60	20	.057	.080	34	1.070	735 Lbs.

COLOR CODING USED IN TWISTED PAIRS

PR#	PAIR COLORS	PR#	PAIR COLORS	PR#	PAIR COLORS	PR#	PAIR COLORS	PR#	PAIR COLORS	PR#	PAIR COLORS
1	White with Black	11	Black with Red	21	Brown with Green	31	Orange with Yellow	41	Green with Violet	51	Wht/Blk with Green
2	White with Brown	12	Black with Orange	22	Brown with Blue	32	Orange with Green	42	Green with Gray	52	Wht/Blk with Blue
3	White with Red	13	Black with Yellow	23	Brown with Violet	33	Orange with Blue	43	Blue with Violet	53	Wht/Blk with Violet
4	White with Orange	14	Black with Green	24	Brown with Gray	34	Orange with Violet	44	Blue with Grey	54	Wht/Ik with Gray
5	White with Yellow	15	Black with Blue	25	Red with Orange	35	Orange with Gray	45	Violet with Gray	55	Wht/Brn with Black
6	White with Green	16	Black with Violet	26	Red with Yellow	36	Yellow with Green	46	Wht/Blk with Black	56	Wht/Brn with Brown
7	White with Blue	17	Black with Gray	27	Red with Green	37	Yellow with Blue	47	Wht/Blk with Brown	57	Wht/Brn with Red
8	White with Violet	18	Brown with Red	28	Red with Blue	38	Yellow with Violet	48	Wht/Blk with Red	58	Wht/Brn with Orange
9	White with Gray	19	Brown with Orange	29	Red with Violet	39	Yellow with Gray	49	Wht/Blk with Orange	59	Wht/Brn with Yellow
10	Black with Brown	20	Brown with Yellow	30	Red with Gray	40	Green with Blue	50	Wht/Blk with Yellow	60	Wht/Brn with Green

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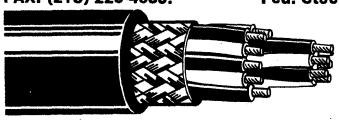

(NW1918SJ shown)

Heavy Duty Signal & Control Cables Single Conductors (NW Series)

IN STOCK

MIL-SPEC U.L. LISTED — STYLE 2343 & 2344

National Wire & Cable Corporation manufactures a complete line of multiple conductor control cable. Conductors are stranded tinned copper with 1/64" wall of vinyl primary insulation for use up to 105°C per MIL-W-16878 Type C.* Insulated for 1000 volts working voltage. Color coded using 10 standard colors plus stripes on white per MIL-STD-681.

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape serve over cable bundle. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078, and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C vinyl meeting MIL-I-631 Class F. All materials are self-extinguishing and fungus resistant. All cables are U. L. LISTED STYLE 2343; rated 80°C. (Higher temp. ratings apply to any non-U.L. service.) U.L. certification furnished only when requested.

Standard Putups: 100, 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

For applications in extreme environments, consult factory for alternative sheath materials.

TECHNICAL DATA (all cables)

Insulation Breakdown Voltage: Greater than 8000 volts AC RMS, 60 cps.

U.L. Voltage Rating: 300 volts RMS AC (appliance use). 600 volts RMS AC (electronic use).

Military Voltage Rating: 1000 volts RMS.

Capacitance: Nominal capacitance from a wire to all else in the cable ranges from 40 to 65 mmfd per ft., @ 1000 cps; dependent on gauge and position.

Insulation Leakage Res.: 200. megohms/1000 ft. min. at 500 VDC from any conductor to all else in cable.

Sheath Leakage Res.: 10. megohms/1000 ft. min. at 500 VDC from overall shield through sheath to outside world.

Usable Temp. Range: Suitable for continuous use from +105°C to −55°C.

Cold Bending Capability: All cables are suitable for flexing to a circle diam. of approx. 6 cable diameters from +105°C to −20°C; Recommended flex diameter should be greater than 20 cable diam. for flexing at −40°C. For continuous flexing applications consult factory.

* Insulated wires also meet U.L. style 1007 and CSA type TR-64.
† Denotes U.L. Style 2344.

Conductor sizes 22, 20, 18, 16, 14 & 12 gauge. 22 AWG is 7 strand. All others 19 strand.

UNSHIELDED						OVERALL SHIELDED						
PART NO.	NO. COND.	COND. AWG	JKT. THICK	NOM. O.D.	WEIGHT PER M'	PART NO.	NO. COND	COND AWG	T.C. SHIELD	JKT. THICK	NOM. O.D.	WEIGHT PER M'
NW-722 J	7	22	.060	.315	40 Lbs.	NW-722 SJ	7	22	No. 36	.060	.340	55 Lbs.
NW-1222J	12	22	.060	.385	70 Lbs.	NW-1222SJ	12	22	No. 34	.060	.410	90 Lbs.
NW-1922J	19	22	.060	.440	110 Lbs.	NW-1922SJ	19	22	No. 34	.060	.465	145 Lbs.
NW-2722J	27	22	.060	.510	160 Lbs.	NW-2722SJ	27	22	No. 34	.060	.535	200 Lbs.
NW-3722J	37	22	.060	.565	200 Lbs.	NW-3722SJ	37	22	No. 34	.060	.590	245 Lbs.
NW-4822J	48	22	.060	.635	245 Lbs.	NW-4822SJ	48	22	No. 34	.060	.660	300 Lbs.
NW-6022J	60	22	.060	.695	300 Lbs.	NW-6022SJ	60	22	No. 34	.060	.720	355 Lbs.
NW-7222J	72	22	.060	.755	360 Lbs.	NW-7222SJ	72	22	No. 34	.060	.780	425 Lbs.
NW-8822J	88	22	.060	.820	425 Lbs.	NW-8822SJ	88	22	No. 34	.080	.895†	500 Lbs.
NW-10222J	102	22	.080	.920†	485 Lbs.	NW-10222SJ	102	22	No. 34	.080	.945†	560 Lbs.
NW-720 J	7	20	.060	.340	50 Lbs.	NW-720 SJ	7	20	No. 34	.060	.365	68 Lbs.
NW-1220J	12	20	.060	.420	105 Lbs.	NW-1220SJ	12	20	No. 34	.060	.445	125 Lbs.
NW-1920J	19	20	.060	.485	160 Lbs.	NW-1920SJ	19	20	No. 34	.060	.510	195 Lbs.
NW-2720J	27	20	.060	.565	210 Lbs.	NW-2720SJ	27	20	No. 34	.060	.590	250 Lbs.
NW-3720J	37	20	.060	.630	280 Lbs.	NW-3720SJ	37	20	No. 34	.060	.655	325 Lbs.
NW-4820J	48	20	.060	.710	360 Lbs.	NW-4820SJ	48	20	No. 34	.060	.735	415 Lbs.
NW-6020J	60	20	.060	.775	435 Lbs.	NW-6020SJ	60	20	No. 34	.060	.800	500 Lbs.
NW-7220J	72	20	.080	.885†	485 Lbs.	NW-7220SJ	72	20	No. 34	.080	.910†	555 Lbs.
NW-8820J	88	20	.080	.960†	580 Lbs.	NW-8820SJ	88	20	No. 34	.080	1.035†	660 Lbs.
NW-10220J	102	20	.080	1.030†	670 Lbs.	NW-10220SJ	102	20	No. 34	.080	1.055†	750 Lbs.
NW-718 J	7	18	.060	.370	75 Lbs.	NW-718 SJ	7	18	No. 34	.060	.395	95 Lbs.
NW-1218J	12	18	.060	.460	135 Lbs.	NW-1218SJ	12	18	No. 34	.060	.485	170 Lbs.
NW-1918J	19	18	.060	.535	225 Lbs.	NW-1918SJ	19	18	No. 34	.060	.560	265 Lbs.
NW-2718J	27	18	.060	.625	300 Lbs.	NW-2718SJ	27	18	No. 34	.060	.650	350 Lbs.
NW-3718J	37	18	.060	.700	390 Lbs.	NW-3718SJ	37	18	No. 34	.060	.725	445 Lbs.
NW-4818J	48	18	.060	.790	510 Lbs.	NW-4818SJ	48	18	No. 34	.060	.815	575 Lbs.
NW-6018J	60	18	.080	.905†	600 Lbs.	NW-6018SJ	60	18	No. 34	.080	.930†	680 Lbs.
NW-7218J	72	18	.080	.985†	720 Lbs.	NW-7218SJ	72	18	No. 34	.080	1.010†	820 Lbs.
NW-716 J	7	16	.060	.395	95 Lbs.	NW-716 SJ	7	16	No. 34	.060	.420	125 Lbs.
NW-1216J	12	16	.060	.495	155 Lbs.	NW-1216SJ	12	16	No. 34	.060	.520	195 Lbs.
NW-1916J	19	16	.060	.575	230 Lbs.	NW-1916SJ	19	16	No. 34	.060	.600	275 Lbs.
NW-2716J	27	16	.060	.615	320 Lbs.	NW-2716SJ	27	16	No. 34	.060	.640	375 Lbs.
NW-3716J	37	16	.060	.755	430 Lbs.	NW-3716SJ	37	16	No. 34	.060	.780	500 Lbs.
NW-4816J	48	16	.080	.895†	625 Lbs.	NW-4816SJ	48	16	No. 34	.080	.920†	700 Lbs.
NW-6016J	60	16	.080	.975†	750 Lbs.	NW-6016SJ	60	16	No. 34	.080	1.000†	830 Lbs.
NW-714 J **	7	14	.060	.435	150 Lbs.	NW-714 SJ	7	14	No. 34	.060	.465	180 Lbs.
NW-1214J **	12	14	.060	.555	240 Lbs.	NW-1214SJ	12	14	No. 34	.060	.580	280 Lbs.
NW-1914J **	19	14	.060	.645	370 Lbs.	NW-1914SJ	19	14	No. 34	.060	.670	420 Lbs.
NW-2714J **	27	14	.060	.760	515 Lbs.	NW-2714SJ	27	14	No. 34	.060	.785	575 Lbs.
NW-512 J **	5	12	.060	.460	175 Lbs.	NW-512 SJ	5	12	No. 34	.060	.485	210 Lbs.
NW-712 J **	7	12	.060	.500	225 Lbs.	NW-712 SJ	7	12	No. 34	.060	.525	265 Lbs.
NW-1212J **	12	12	.060	.680	375 Lbs.	NW-1212SJ	12	12	No. 34	.060	.705	430 Lbs.
NW-1912J **	19	12	.060	.745	560 Lbs.	NW-1912SJ	19	12	No. 34	.060	.770	625 Lbs.

**Not listed under UL styles 2343 or 2344 in these gauges.

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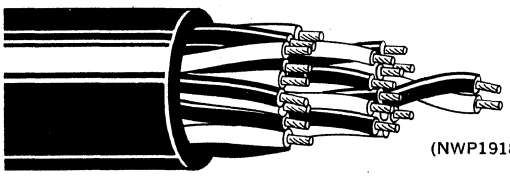
Heavy Duty Signal & Control Cables Twisted Pairs (NWP Series)



(NWP1918J shown)

IN STOCK MIL-SPEC

U.L. LISTED

Identical to National's NW-Series Cables except offered as twisted pairs.

National Wire & Cable Corporation manufactures a complete line of multiple pair control cables. Conductors are of tinned copper strand with 1/64" vinyl primary insulation for use up to 105° C per MIL-W-16878D Type C. Insulated for **1000** volts working voltage. Conductors are color coded using 10 standard basic colors, plus spiral tracers on white per table below.

All pairs are planetary cabled and contra-helically laid with a Mylar tape serve over the cable bundle. The overall jacket is a 105°C black vinyl plastic per MIL-I-631; or may be Neoprene to MIL-R-6855 Class 2 Grade 60 specification. (Neoprene at added cost and only available for non-U.L. applications).

SHIELDED CABLES

National Multiple Conductor SHIELDED CABLES are to the same specifications as above with addition of tinned copper braided shield over cable complex with 85-90% coverage to MIL-C-7078A.

TECHNICAL DATA (all cables)

Insulation Breakdown Voltage: Greater than 8,000 volts AC RMS, 60 cps.

Capacitance: Nominal capacitance wire to wire for a pair ranges from 27. to 40. mmfd/ft. Capacitance from both wires tied together measured to all else in common ranges from 35. to 60. mmfd/ft. dependent on gauge and position. Overall shield has negligible effect on W-W capacitance.

Insulation Leakage Res.: 200. megohms / 1000 ft. min. at 500 VDC from any conductor to all else in cable.

Sheath Leakage Res.: 10. megohms / 1000 ft. min. at 500 VDC from overall shield through sheath to outside world.

Usable Temp. Range: Suitable for continuous use from +105°C to −55°C.

Cold Bending Capability: All cables are suitable for flexing to a circle diam. of approx. 6 cable diameters from +105°C to −20°C; Recommended flex diameter should be greater than 20 cable diam. for flexing at −40°C. For continuous flexing applications consult factory.

UNSHIELDED OVERALL						OVERALL SHIELDED					
PART NO.	NO. OF PAIRS	COND. GA.	JKT. THICK	NOM. O.D.	WEIGHT	PART NO.	NO. OF PAIRS	COND. GA.	JKT. THICK	NOM. O.D.	WEIGHT
NWP-722 J	7	22	.045	.470	90 Lbs.	NWP-722 SJ	7	22	.045	.495	135 Lbs.
NWP-1222J	12	22	.050	.600	150 Lbs.	NWP-1222SJ	12	22	.050	.630	206 Lbs.
NWP-1922J	19	22	.050	.700	200 Lbs.	NWP-1922SJ	19	22	.050	.730	260 Lbs.
NWP-2722J	27	22	.055	.830	280 Lbs.	NWP-2722SJ	27	22	.055	.860	358 Lbs.
NWP-3722J	37	22	.060	.960	370 Lbs.	NWP-3722SJ	37	22	.060	.990	460 Lbs.
NWP-4822J	48	22	.060	1.080	470 Lbs.	NWP-4822SJ	48	22	.060	1.110	570 Lbs.
NWP-6022J	60	22	.060	1.200	560 Lbs.	NWP-6022SJ	60	22	.060	1.230	675 Lbs.
NWP-720 J	7	20	.050	.520	120 Lbs.	NWP-720 SJ	7	20	.050	.550	170 Lbs.
NWP-1220J	12	20	.050	.660	200 Lbs.	NWP-1220SJ	12	20	.050	.690	260 Lbs.
NWP-1920J	19	20	.050	.800	290 Lbs.	NWP-1920SJ	19	20	.050	.830	355 Lbs.
NWP-2720J	27	20	.060	.960	420 Lbs.	NWP-2720SJ	27	20	.060	.990	510 Lbs.
NWP-3720J	37	20	.060	1.100	500 Lbs.	NWP-3720SJ	37	20	.060	1.130	603 Lbs.
NWP-4820J	48	20	.060	1.240	620 Lbs.	NWP-4820SJ	48	20	.060	1.270	735 Lbs.
NWP-6020J	60	20	.060	1.380	750 Lbs.	NWP-6020SJ	60	20	.060	1.410	880 Lbs.
NWP-718 J	7	18	.050	.580	150 Lbs.	NWP-718 SJ	7	18	.050	.610	205 Lbs.
NWP-1218J	12	18	.050	.740	290 Lbs.	NWP-1218SJ	12	18	.050	.770	360 Lbs.
NWP-1918J	19	18	.060	.920	400 Lbs.	NWP-1918SJ	19	18	.060	.950	487 Lbs.
NWP-2718J	27	18	.060	1.080	560 Lbs.	NWP-2718SJ	27	18	.060	1.110	660 Lbs.
NWP-3718J	37	18	.060	1.240	750 Lbs.	NWP-3718SJ	37	18	.060	1.270	865 Lbs.
NWP-4818J	48	18	.060	1.400	900 Lbs.	NWP-4818SJ	48	18	.060	1.430	1030 Lbs.
NWP-716 J	7	16	.050	.640	180 Lbs.	NWP-716 SJ	7	16	.050	.670	240 Lbs.
NWP-1216J	12	16	.060	.840	300 Lbs.	NWP-1216SJ	12	16	.060	.870	377 Lbs.
NWP-1916J	19	16	.060	1.020	430 Lbs.	NWP-1916SJ	19	16	.060	1.050	520 Lbs.
NWP-2716J	27	16	.060	1.200	720 Lbs.	NWP-2716SJ	27	16	.060	1.230	830 Lbs.
NWP-3716J	37	16	.060	1.380	1000 Lbs.	NWP-3716SJ	37	16	.060	1.410	1330 Lbs.

COLOR CODING USED ON TWISTED PAIRS

PR #	PAIR COLORS	PR #	PAIR COLORS	PR #	PAIR COLORS	PR #	PAIR COLORS	PR #	PAIR COLORS
1.	WHITE WITH BLACK	11.	BLACK WITH RED	21.	BROWN WITH GREEN	31.	ORANGE WITH YELLOW	41.	GREEN WITH VIOLET
2.	WHITE WITH BROWN	12.	BLACK WITH ORANGE	22.	BROWN WITH BLUE	32.	ORANGE WITH GREEN	42.	GREEN WITH GRAY
3.	WHITE WITH RED	13.	BLACK WITH YELLOW	23.	BROWN WITH VIOLET	33.	ORANGE WITH BLUE	43.	BLUE WITH VIOLET
4.	WHITE WITH ORANGE	14.	BLACK WITH GREEN	24.	BROWN WITH GRAY	34.	ORANGE WITH VIOLET	44.	BLUE WITH GREY
5.	WHITE WITH YELLOW	15.	BLACK WITH BLUE	25.	RED WITH ORANGE	35.	ORANGE WITH GRAY	45.	VIOLET WITH GRAY
6.	WHITE WITH GREEN	16.	BLACK WITH VIOLET	26.	RED WITH YELLOW	36.	YELLOW WITH GREEN	46.	WHT/BLK WITH BLACK
7.	WHITE WITH BLUE	17.	BLACK WITH GRAY	27.	RED WITH GREEN	37.	YELLOW WITH BLUE	47.	WHT/BLK WITH BROWN
8.	WHITE WITH VIOLET	18.	BROWN WITH RED	28.	RED WITH BLUE	38.	YELLOW WITH VIOLET	48.	WHT/BLK WITH RED
9.	WHITE WITH GRAY	19.	BROWN WITH ORANGE	29.	RED WITH VIOLET	39.	YELLOW WITH GRAY	49.	WHT/BLK WITH ORANGE
10.	BLACK WITH BROWN	20.	BROWN WITH YELLOW	30.	RED WITH GRAY	40.	GREEN WITH BLUE	50.	WHT/BLK WITH YELLOW

51.	WHT/BLK WITH GREEN
52.	WHT/BLK WITH BLUE
53.	WHT/BLK WITH VIOLET
54.	WHT/BLK WITH GRAY
55.	WHT/BRN WITH BLACK
56.	WHT/BRN WITH BROWN
57.	WHT/BRN WITH RED
58.	WHT/BRN WITH ORANGE
59.	WHT/BRN WITH YELLOW
60.	WHT/BRN WITH GREEN

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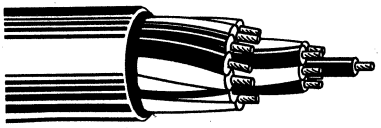
Miniature Signal & Control Cables Single Conductors (NQ Series)

EXTRA FLEXIBLE — GRAY PVC JACKET



(NQ1928J shown)

GRAY PVC JACKET

National Wire & Cable Corporation manufactures a complete line of highly flexible micro-miniature low-voltage instrument control cable. These are available as cabled pairs or singles, with optional overall shield of either foil with drain or a braided shield. Stocked with braided shields.

Conductors are stranded tinned copper with .010" wall of tough extruded polyvinyl chloride primary insulation, rated for 300 volt use at +80°C under U. L. listed style 1061.* All are color coded using ten standard colors plus white with stripes per MIL-STD-681. Coded pairs use the same sequence as type NXP and NWP.

Conductors are planetary cabled and helically laid for optimum flexibility, with a barrier under braids. Shielded cables have a tinned copper braid of 90% coverage per MIL-C-7078, with braid angles below 40° for easy pushback; or have a 100% coverage foil shield in intimate contact with a drain wire for easy termination. See Section 3 of our master catalog for relative shield effectiveness.

Outer jacket is highly flexible abrasion-resistant gray polyvinyl chloride thermoplastic, meeting the requirements of U.L. listed style 2464.**

Military certification furnished only when requested.
All materials are flame retardant and fungus resistant.

Standard Putups: 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

* Wire also meets MIL-W-16878 type B, rated 600 volts, +105°C.

MIL-SPEC & U.L. LISTED STYLE 2464

TECHNICAL DATA (all cables)

Insulation breakdown voltage:	Greater than 3000 volts AC RMS, 60cps.
Capacitance:	Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 pf/ft at 1kc, depending on gauge and position.
Insulation Leakage:	200 megohms/1000 feet minimum @ 500VDC from conductor to all else in cable.
Sheath Leakage:	10 megohms/1000 feet minimum @ 500VDC from shield or conductor group through sheath to ground.
Temperature Range:	U.L. rating: +80°C per U.L. style 2464. Military: Continuous use from −40°C to +105°C.
Bending Characteristics:	All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to −20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at −40°. For continuous flexing applications consult the factory.
Foil Shielded Cables:	The nominal overall diameter of foil shielded cables will be .006" greater than the non-shielded cables of the same conductor count and wire size.
Characteristic Impedance: (NQP Paired Cables)	Ranges from 150 ohms to 45 ohms, dependent on wire size (AWG), geometry and drive method. Consult our technical staff for data on specific cable types.

MULTI-CONDUCTOR STOCK CABLED SINGLES

Conductor sizes 28, 26, 24, 22 are 7 strand. All others 19 strand.

UNSHIELDED CABLES							OVERALL SHIELDED CABLES						
Part No.	No. Cond.	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght. LB/M'	Part No.	No. Cond.	Cond AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght. LB/M'
NQ-228 J	2	28	.034	.031	.135	8	NQ-228 SJ	2	28	.034	.031	.159	16
NQ-328 J	3	28	.034	.031	.142	9	NQ-328 SJ	3	28	.034	.031	.165	17
NQ-428 J	4	28	.034	.031	.150	11	NQ-428 SJ	4	28	.034	.031	.173	20
NQ-528 J	5	28	.034	.031	.161	12	NQ-528 SJ	5	28	.034	.031	.184	21
NQ-628 J	6	28	.034	.031	.171	13	NQ-628 SJ	6	28	.034	.031	.194	23
NQ-728 J	7	28	.034	.031	.171	14	NQ-728 SJ	7	28	.034	.031	.194	24
NQ-828 J	8	28	.034	.031	.196	19	NQ-828 SJ	8	28	.034	.031	.219	31
NQ-928 J	9	28	.034	.031	.206	22	NQ-928 SJ	9	28	.034	.031	.229	35
NQ-1028 J	10	28	.034	.031	.206	23	NQ-1028SJ	10	28	.034	.031	.229	36
NQ-1228 J	12	28	.034	.031	.212	25	NQ-1228SJ	12	28	.034	.031	.235	38
NQ-1528 J	15	28	.034	.031	.231	28	NQ-1528SJ	15	28	.034	.031	.254	42
NQ-1928 J	19	28	.034	.031	.241	33	NQ-1928SJ	19	28	.034	.031	.264	48
NQ-2728 J	27	28	.034	.031	.282	42	NQ-2728SJ	27	28	.034	.031	.305	60
NQ-3728 J	37	28	.034	.031	.311	55	NQ-3728SJ	37	28	.034	.031	.333	75
NQ-226 J	2	26	.038	.031	.144	9	NQ-226 SJ	2	26	.038	.031	.167	17
NQ-326 J	3	26	.038	.031	.150	11	NQ-326 SJ	3	26	.038	.031	.173	20
NQ-426 J	4	26	.038	.031	.160	13	NQ-426 SJ	4	26	.038	.031	.183	22
NQ-526 J	5	26	.038	.031	.171	15	NQ-526 SJ	5	26	.038	.031	.194	25
NQ-626 J	6	26	.038	.031	.183	17	NQ-626 SJ	6	26	.038	.031	.205	28
NQ-726 J	7	26	.038	.031	.183	18	NQ-726 SJ	7	26	.038	.031	.205	29
NQ-826 J	8	26	.038	.031	.210	23	NQ-826 SJ	8	26	.038	.031	.233	36
NQ-926 J	9	26	.038	.031	.222	25	NQ-926 SJ	9	26	.038	.031	.245	39
NQ-1026 J	10	26	.038	.031	.222	26	NQ-1026SJ	10	26	.038	.031	.245	40
NQ-1226 J	12	26	.038	.031	.228	30	NQ-1226SJ	12	26	.038	.031	.251	44
NQ-1526 J	15	26	.038	.031	.249	35	NQ-1526SJ	15	26	.038	.031	.272	51
NQ-1926 J	19	26	.038	.031	.261	42	NQ-1926SJ	19	26	.038	.031	.284	58
NQ-2726 J	27	26	.038	.031	.306	55	NQ-2726SJ	27	26	.038	.031	.329	75
NQ-3726 J	37	26	.038	.031	.339	70	NQ-3726SJ	37	26	.038	.031	.362	92
NQ-4826 J	48	26	.038	.031	.384	92	NQ-4826SJ	48	26	.038	.031	.407	117

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(continued on following page)

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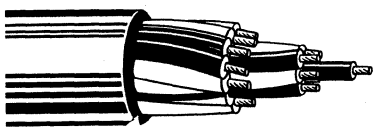
Miniature Signal & Control Cables Single Conductors (NQ Series)

EXTRA FLEXIBLE — GRAY PVC JACKET



(NQ1928J shown)

MIL-SPEC & U.L. LISTED **STYLE 2464**

MULTI-CONDUCTOR STOCK CABLED SINGLES continued from previous page.

UNSHIELDED CABLES

Part No.	No. Cond.	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght. LB/M'
NQ-224 J	2	24	.043	.031	.154	11
NQ-324 J	3	24	.043	.031	.161	13
NQ-424 J	4	24	.043	.031	.172	15
NQ-524 J	5	24	.043	.031	.185	18
NQ-624 J	6	24	.043	.031	.198	21
NQ-724 J	7	24	.043	.031	.198	23
NQ-824 J	8	24	.043	.031	.229	27
NQ-924 J	9	24	.043	.031	.242	30
NQ-1024 J	10	24	.043	.031	.242	32
NQ-1224 J	12	24	.043	.031	.249	37
NQ-1524 J	15	24	.043	.031	.273	44
NQ-1924 J	19	24	.043	.031	.286	53
NQ-2724 J	27	24	.043	.031	.337	70
NQ-3724 J	37	24	.043	.031	.374	93
NQ-4824 J	48	24	.043	.031	.425	120
NQ-6024 J	60	24	.043	.031	.462	145
NQ-222 J	2	22	.050	.031	.166	13
NQ-322 J	3	22	.050	.031	.174	17
NQ-422 J	4	22	.050	.031	.186	20
NQ-522 J	5	22	.050	.031	.201	25
NQ-622 J	6	22	.050	.031	.216	28
NQ-722 J	7	22	.050	.031	.216	31
NQ-822 J	8	22	.050	.031	.251	36
NQ-922 J	9	22	.050	.031	.266	40
NQ-1022 J	10	22	.050	.031	.266	43
NQ-1222 J	12	22	.050	.031	.274	50
NQ-1522 J	15	22	.050	.031	.301	60
NQ-1922 J	19	22	.050	.031	.316	73
NQ-2722 J	27	22	.050	.031	.374	100
NQ-3722 J	37	22	.050	.031	.416	142
NQ-4822 J	48	22	.050	.031	.474	169
NQ-6022 J	60	22	.050	.031	.590	210
NQ-220 J	2	20	.057	.031	.182	17
NQ-320 J	3	20	.057	.031	.191	23
NQ-420 J	4	20	.057	.031	.205	28
NQ-520 J	5	20	.057	.031	.223	33
NQ-620 J	6	20	.057	.031	.240	39
NQ-720 J	7	20	.057	.031	.240	43
NQ-820 J	8	20	.057	.031	.281	51
NQ-920 J	9	20	.057	.031	.298	55
NQ-1020 J	10	20	.057	.031	.298	60
NQ-1220 J	12	20	.057	.031	.307	70
NQ-1520 J	15	20	.057	.031	.339	85
NQ-1920 J	19	20	.057	.031	.356	103
NQ-2720 J	27	20	.057	.031	.423	143
NQ-3720 J	37	20	.057	.031	.472	190
NQ-218 J	2	18	.068	.031	.202	23
NQ-318 J	3	18	.068	.031	.213	29
NQ-418 J	4	18	.068	.031	.229	37
NQ-518 J	5	18	.068	.031	.250	44
NQ-618 J	6	18	.068	.031	.270	52
NQ-718 J	7	18	.068	.031	.270	59
NQ-818 J	8	18	.068	.031	.318	68
NQ-918 J	9	18	.068	.031	.338	75
NQ-1018 J	10	18	.068	.031	.338	82
NQ-1218 J	12	18	.068	.031	.349	96
NQ-1518 J	15	18	.068	.031	.386	117
NQ-1918 J	19	18	.068	.031	.406	144
NQ-2718 J	27	18	.068	.031	.484	206

OVERALL SHIELDED CABLES

Part No.	No. Cond.	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght LB/M
NQ-224 SJ	2	24	.043	.031	.177	20
NQ-324 SJ	3	24	.043	.031	.184	22
NQ-424 SJ	4	24	.043	.031	.195	25
NQ-524 SJ	5	24	.043	.031	.208	29
NQ-624 SJ	6	24	.043	.031	.221	33
NQ-724 SJ	7	24	.043	.031	.221	35
NQ-824 SJ	8	24	.043	.031	.252	41
NQ-924 SJ	9	24	.043	.031	.265	45
NQ-1024SJ	10	24	.043	.031	.265	47
NQ-1224SJ	12	24	.043	.031	.272	53
NQ-1524SJ	15	24	.043	.031	.296	61
NQ-1924SJ	19	24	.043	.031	.309	71
NQ-2724SJ	27	24	.043	.031	.360	92
NQ-3724SJ	37	24	.043	.031	.397	118
NQ-4824SJ	48	24	.043	.031	.453	148
NQ-6024SJ	60	24	.043	.031	.490	176
NQ-222 SJ	2	22	.050	.031	.189	23
NQ-322 SJ	3	22	.050	.031	.197	27
NQ-422 SJ	4	22	.050	.031	.209	31
NQ-522 SJ	5	22	.050	.031	.224	37
NQ-622 SJ	6	22	.050	.031	.239	41
NQ-722 SJ	7	22	.050	.031	.239	44
NQ-822 SJ	8	22	.050	.031	.274	52
NQ-922 SJ	9	22	.050	.031	.289	57
NQ-1022SJ	10	22	.050	.031	.289	60
NQ-1222SJ	12	22	.050	.031	.297	67
NQ-1522SJ	15	22	.050	.031	.324	79
NQ-1922SJ	19	22	.050	.031	.339	93
NQ-2722SJ	27	22	.050	.031	.397	125
NQ-3722SJ	37	22	.050	.031	.434	169
NQ-4822SJ	48	22	.050	.031	.502	201
NQ-6022SJ	60	22	.050	.031	.618	245
NQ-220 SJ	2	20	.057	.031	.205	28
NQ-320 SJ	3	20	.057	.031	.214	35
NQ-420 SJ	4	20	.057	.031	.228	41
NQ-520 SJ	5	20	.057	.031	.246	47
NQ-620 SJ	6	20	.057	.031	.263	54
NQ-720 SJ	7	20	.057	.031	.263	58
NQ-820 SJ	8	20	.057	.031	.304	69
NQ-920 SJ	9	20	.057	.031	.321	74
NQ-1020SJ	10	20	.057	.031	.321	79
NQ-1220SJ	12	20	.057	.031	.330	90
NQ-1520SJ	15	20	.057	.031	.362	107
NQ-1920SJ	19	20	.057	.031	.379	126
NQ-2720SJ	27	20	.057	.031	.451	171
NQ-3720SJ	37	20	.057	.031	.500	221
NQ-218 SJ	2	18	.068	.031	.225	35
NQ-318 SJ	3	18	.068	.031	.236	42
NQ-418 SJ	4	18	.068	.031	.252	51
NQ-518 SJ	5	18	.068	.031	.273	60
NQ-618 SJ	6	18	.068	.031	.293	69
NQ-718 SJ	7	18	.068	.031	.293	76
NQ-818 SJ	8	18	.068	.031	.341	88
NQ-918 SJ	9	18	.068	.031	.361	97
NQ-1018SJ	10	18	.068	.031	.361	104
NQ-1218SJ	12	18	.068	.031	.372	119
NQ-1518SJ	15	18	.068	.031	.409	142
NQ-1918SJ	19	18	.068	.031	.434	171
NQ-2718SJ	27	18	.068	.031	.513	238

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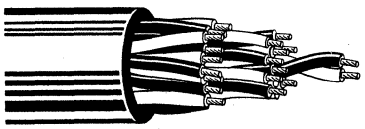
Miniature Signal & Control Cables Twisted Pairs (NQP Series)

EXTRA FLEXIBLE — GRAY PVC JACKET



(NQP1928J shown)

MIL-SPEC & U.L. LISTED **STYLE 2464**

GRAY PVC JACKET

National Wire & Cable Corporation manufactures a complete line of highly flexible micro-miniature low-voltage instrument control cable. These are available as cabled pairs or singles, with optional overall shield of either foil with drain or a braided shield. Stocked with braided shields.

Conductors are stranded tinned copper with .010" wall of tough extruded polyvinyl chloride primary insulation, rated for 300 volt use at +80°C under U. L. listed style 1061.* All are color coded using ten standard colors plus white with stripes per MIL-STD-681. Coded pairs use the same sequence as type NXP and NWP.

Conductors are planetary cabled and helically laid for optimum flexibility, with a barrier under braids. Shielded cables have a tinned copper braid of 90% coverage per MIL-C-7078, with braid angles below 40° for easy pushback; or have a 100% coverage foil shield in intimate contact with a drain wire for easy termination. See Section 3 of our master catalog for relative shield effectiveness.

Outer jacket is highly flexible abrasion-resistant gray polyvinyl chloride thermoplastic, meeting the requirements of U.L. listed style 2464.**

Military certification furnished only when requested.

All materials are flame retardant and fungus resistant.

Standard Putups: 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

* Wire also meets MIL-W-16878 type B, rated 600 volts, +105°C.

** Jacket material is military rated for +105°C; meets MIL-I-631, Class F.

TECHNICAL DATA (all cables)

Insulation breakdown voltage:	Greater than 3000 volts AC RMS, 60cps.
Capacitance:	Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 pf/ft at 1kc, depending on gauge and position.
Insulation Leakage:	200 megohms/1000 feet minimum @ 500VDC from conductor to all else in cable.
Sheath Leakage:	10 megohms/1000 feet minimum @ 500VDC from shield or conductor group through sheath to ground.
Temperature Range:	U.L. rating: +80°C per U.L. style 2464. Military: Continuous use from −40°C to +105°C.
Bending Characteristics:	All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to −20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at −40°. For continuous flexing applications consult the factory.
Foil Shielded Cables:	The nominal overall diameter of foil shielded cables will be .006" greater than the non-shielded cables of the same conductor count and wire size.
Characteristic Impedance: (NQP Paired Cables)	Ranges from 150 ohms to 45 ohms, dependent on wire size (AWG), geometry and drive method. Consult our technical staff for data on specific cable types.

MULTI-CONDUCTOR STOCK CABLED PAIRS

UNSHIELDED CABLES

No. Part	No. of Pairs	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O/A Diam.	LB/M' Wght.
NQP- 228J	2	28	.034	.031	.206	15
NQP- 328J	3	28	.034	.031	.217	16
NQP- 428J	4	28	.034	.031	.234	20
NQP- 528J	5	28	.034	.031	.255	23
NQP- 628J	6	28	.034	.031	.276	29
NQP- 728J	7	28	.034	.031	.276	28
NQP- 828J	8	28	.034	.031	.325	34
NQP- 928J	9	28	.034	.031	.346	41
NQP-1028J	10	28	.034	.031	.346	39
NQP-1228J	12	28	.034	.031	.357	43
NQP-1528J	15	28	.034	.031	.395	55
NQP-1928J	19	28	.034	.031	.416	61
NQP- 226J	2	26	.038	.031	.222	20
NQP- 326J	3	26	.038	.031	.234	21
NQP- 426J	4	26	.038	.031	.253	26
NQP- 526J	5	26	.038	.031	.277	34
NQP- 626J	6	26	.038	.031	.300	37
NQP- 726J	7	26	.038	.031	.300	38
NQP- 826J	8	26	.038	.031	.355	52
NQP- 926J	9	26	.038	.031	.370	60
NQP-1026J	10	26	.038	.031	.370	51
NQP-1226J	12	26	.038	.031	.382	59
NQP-1526J	15	26	.038	.031	.420	75
NQP-1926J	19	26	.038	.031	.441	85
NQP-2726J	27	26	.038	.031	.530	115

OVERALL SHIELDED CABLES

Part No.	Pairs No. of	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O/A Diam.	LB/M' Wght.
NQP- 228SJ	2	28	.034	.031	.229	28
NQP- 328SJ	3	28	.034	.031	.240	29
NQP- 428SJ	4	28	.034	.031	.257	35
NQP- 528SJ	5	28	.034	.031	.278	37
NQP- 628SJ	6	28	.034	.031	.299	46
NQP- 728SJ	7	28	.034	.031	.299	45
NQP- 828SJ	8	28	.034	.031	.348	55
NQP- 928SJ	9	28	.034	.031	.369	63
NQP-1028SJ	10	28	.034	.031	.369	61
NQP-1228SJ	12	28	.034	.031	.380	66
NQP-1528SJ	15	28	.034	.031	.423	81
NQP-1928SJ	19	28	.034	.031	.444	88
NQP- 226SJ	2	26	.038	.031	.245	34
NQP- 326SJ	3	26	.038	.031	.257	36
NQP- 426SJ	4	26	.038	.031	.276	42
NQP- 526SJ	5	26	.038	.031	.300	52
NQP- 626SJ	6	26	.038	.031	.323	56
NQP- 726SJ	7	26	.038	.031	.323	57
NQP- 826SJ	8	26	.038	.031	.378	75
NQP- 926SJ	9	26	.038	.031	.393	85
NQP-1026SJ	10	26	.038	.031	.393	76
NQP-1226SJ	12	26	.038	.031	.405	84
NQP-1526SJ	15	26	.038	.031	.448	103
NQP-1926SJ	19	26	.038	.031	.469	115
NQP-2726SJ	27	26	.038	.031	.558	152

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(continued on following page)

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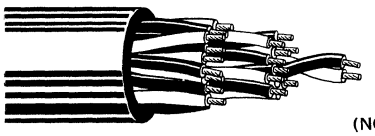
Miniature Signal & Control Cables Twisted Pairs (NQP Series)

EXTRA FLEXIBLE — GRAY PVC JACKET



(NQP1928J shown)

MIL-SPEC & U.L. LISTED **STYLE 2464**

MULTI-CONDUCTOR STOCK CABLED PAIRS continued from previous page.

UNSHIELDED CABLES

Part No.	No. Pairs	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght. LB/M'
NQP- 224J	2	24	.043	.031	.216	24
NQP- 324J	3	24	.043	.031	.237	26
NQP- 424J	4	24	.043	.031	.256	32
NQP- 524J	5	24	.043	.031	.280	40
NQP- 624J	6	24	.043	.031	.312	46
NQP- 724J	7	24	.043	.031	.312	47
NQP- 824J	8	24	.043	.031	.365	65
NQP- 924J	9	24	.043	.031	.383	75
NQP-1024J	10	24	.043	.031	.383	65
NQP-1224J	12	24	.043	.031	.395	74
NQP-1524J	15	24	.043	.031	.444	95
NQP-1924J	19	24	.043	.031	.462	108
NQP-2724J	27	24	.043	.031	.554	141
NQP- 222J	2	22	.050	.031	.236	30
NQP- 322J	3	22	.050	.031	.260	33
NQP- 422J	4	22	.050	.031	.282	42
NQP- 522J	5	22	.050	.031	.309	51
NQP- 622J	6	22	.050	.031	.346	62
NQP- 722J	7	22	.050	.031	.346	64
NQP- 822J	8	22	.050	.031	.406	87
NQP- 922J	9	22	.050	.031	.426	100
NQP-1022J	10	22	.050	.031	.426	88
NQP-1222J	12	22	.050	.031	.440	102
NQP-1522J	15	22	.050	.031	.496	131
NQP-1922J	19	22	.050	.031	.516	143
NQP-2722J	27	22	.050	.031	.620	198
NQP- 220J	2	20	.057	.031	.263	39
NQP- 320J	3	20	.057	.031	.292	45
NQP- 420J	4	20	.057	.031	.312	57
NQP- 520J	5	20	.057	.031	.348	70
NQP- 620J	6	20	.057	.031	.391	85
NQP- 720J	7	20	.057	.031	.391	89
NQP- 820J	8	20	.057	.031	.460	121
NQP- 920J	9	20	.057	.031	.484	139
NQP-1020J	10	20	.057	.031	.484	124
NQP-1220J	12	20	.057	.031	.500	144
NQP-1520J	15	20	.057	.031	.565	176
NQP-1920J	19	20	.057	.031	.588	205
NQP- 218J	2	18	.068	.031	.297	52
NQP- 318J	3	18	.068	.031	.330	60
NQP- 418J	4	18	.068	.031	.360	77
NQP- 518J	5	18	.068	.031	.396	96
NQP- 618J	6	18	.068	.031	.447	117
NQP- 718J	7	18	.068	.031	.447	122
NQP-1218J	12	18	.068	.031	.575	188

OVERALL SHIELDED CABLES

Part No.	No. Pairs	Cond. AWG	Cond. Diam.	Jkt. Wall	Nom. O.D.	Wght. LB/M
NQP- 224SJ	2	24	.043	.031	.239	39
NQP- 324SJ	3	24	.043	.031	.260	42
NQP- 424SJ	4	24	.043	.031	.279	50
NQP- 524SJ	5	24	.043	.031	.303	59
NQP- 624SJ	6	24	.043	.031	.335	67
NQP- 724SJ	7	24	.043	.031	.335	68
NQP- 824SJ	8	24	.043	.031	.390	91
NQP- 924SJ	9	24	.043	.031	.406	102
NQP-1024SJ	10	24	.043	.031	.406	92
NQP-1224SJ	12	24	.043	.031	.418	102
NQP-1524SJ	15	24	.043	.031	.467	127
NQP-1924SJ	19	24	.043	.031	.485	142
NQP-2724SJ	27	24	.043	.031	.577	185
NQP- 222SJ	2	22	.050	.031	.259	47
NQP- 322SJ	3	22	.050	.031	.283	51
NQP- 422SJ	4	22	.050	.031	.305	62
NQP- 522SJ	5	22	.050	.031	.332	73
NQP- 622SJ	6	22	.050	.031	.369	86
NQP- 722SJ	7	22	.050	.031	.369	88
NQP- 822SJ	8	22	.050	.031	.430	116
NQP- 922SJ	9	22	.050	.031	.449	131
NQP-1022SJ	10	22	.050	.031	.449	119
NQP-1222SJ	12	22	.050	.031	.463	134
NQP-1522SJ	15	22	.050	.031	.519	167
NQP-1922SJ	19	22	.050	.031	.539	180
NQP-2722SJ	27	22	.050	.031	.645	245
NQP- 220SJ	2	20	.057	.031	.286	58
NQP- 320SJ	3	20	.057	.031	.315	65
NQP- 420SJ	4	20	.057	.031	.335	79
NQP- 520SJ	5	20	.057	.031	.371	95
NQP- 620SJ	6	20	.057	.031	.414	112
NQP- 720SJ	7	20	.057	.031	.414	116
NQP- 820SJ	8	20	.057	.031	.483	154
NQP- 920SJ	9	20	.057	.031	.507	174
NQP-1020SJ	10	20	.057	.031	.507	159
NQP-1220SJ	12	20	.057	.031	.525	181
NQP-1520SJ	15	20	.057	.031	.588	216
NQP-1920SJ	19	20	.057	.031	.615	248
NQP- 218SJ	2	18	.068	.031	.320	74
NQP- 318SJ	3	18	.068	.031	.353	83
NQP- 418SJ	4	18	.068	.031	.383	103
NQP- 518SJ	5	18	.068	.031	.420	124
NQP- 618SJ	6	18	.068	.031	.475	148
NQP- 718SJ	7	18	.068	.031	.475	153
NQP-1218SJ	12	18	.068	.031	.600	230

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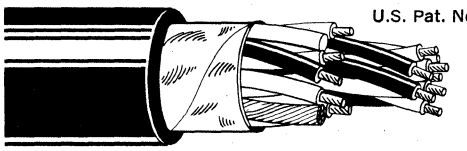
IN STOCK

Digital Data Transmission Cables

(D-200 Series)

UL AWM STYLE 2835



U.S. Pat. No. 3489844

Grey (Extra Flexible) or Black Vinyl Jackets
D-200 XX (XX designates number of pairs)
D-200 XXRF (RF designates braided shield over aluminum mylar foil shield) △

LOW VOLTAGE COMPUTER CABLE

THE D-200 SERIES CABLES ARE MULTIPLE-PAIR FLEXIBLE CABLES DESIGNED FOR TRANSMISSION OF DIGITAL PULSE SIGNALS BETWEEN A COMPUTER AND ITS PERIPHERAL EQUIPMENT.

DESIGN FEATURES OF THE D-200 SERIES DIGITAL DATA CABLE

Unlike conventional flexible cable construction, the primary features offered by the D-200 series data cable are the high and accurately controlled characteristic impedance of every pair, regardless of its position in the cable and special geometry chosen to reduce crosstalk.

ADVANTAGES

1. Less crosstalk and noise from mismatched loads, due to proper matching.
2. Uniform light loading on drivers allows direct I.C. drive, accurate prediction of current demands from power supply, and driver power dissipation.
3. Proper load match reduces re-flection and inversion noise where driver end is not matched to line. (Typical of TTL.)
4. Special geometry and pair construction provides exceptionally close capacitance balance between pair wires, reducing differential crosstalk.

USAGE

We recommend use of balanced drive and differential-input line receivers for lowest crosstalk and best pulse reproduction, utilizing the 110 ohm balanced impedance of the pairs. With such a system, TTL speeds have been used on D-200 cable at 1 mc data rates over 1000 ft.

Where the system is single-ended drive and receive, all pairs exhibit the 78 ohm impedance. Since these line receivers cannot discriminate between noise and the desired signal, crosstalk limits the cable distance over which transmission is reliable. Typical runs for DTL having 50 ns risetimes are 200 ft. Where risetimes can be slowed to longer than 100 ns, run lengths are practical to 500 ft. Without differential line reception, runs over 500 ft are not recommended for D-200 cable due to external noise aspects.

The D-210 series cable are recommended for high noise or long-run application. (Utilizing individual shields.)

Although use of balanced drive and differential line reception will avoid most noise problems, there are some installations where the expected external noise is unknown but assumed to be very great. Here, the use of data cables having individually-shielded pairs may be considered as conservative engineering practice. The assurance of a lower received noise may justify the increased size, cost and rise-time.

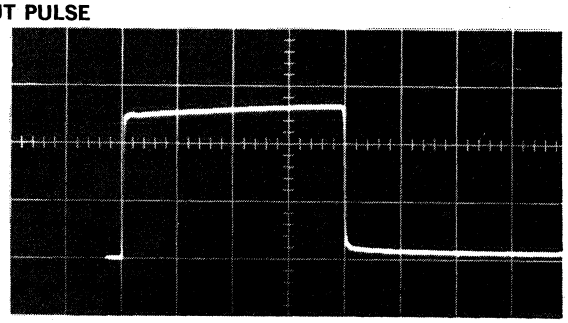
For these high noise-long run applications, Dynatronic Cable Engineering Corp has developed the D-210 series data cables. Electrical performance is essentially the same as the D-200 series cables, which use only an overall shield. △ An overall tinned-copper shield braid may be specified on either series by the suffix -RF on the part number. Standard D-200 shield is aluminum-mylar foil.

For runs of 1000-5000 ft. or where extra-fast output pulse risetime is required, we offer the D-220 series cable: a larger version of the D-200 series having improved transmission properties with sufficient mechanical strength for long pulls in conduit. Consult factory for technical data.

PULSE TRANSMISSION LOSS in D-series data cables causes a moderate amplitude loss, with definite rounding of the leading and trailing edges from 50% to 90% amplitude. The photos below (for a 1.25 megabit clock rate) show typical waveforms. The D-220 and D-222 series cables offer even lower losses than the D-200 or D-210 cables for long-run or fast-clocked applications.

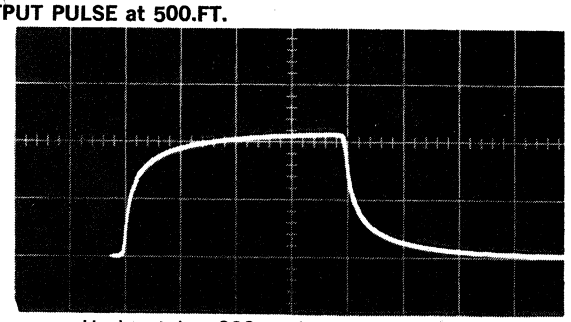
Contact our factory engineering staff for detailed pulse-shape versus distance information, or for special applications.

INPUT PULSE



Horizontal: 200. ns/cm
Vertical : 2. volts/cm

OUTPUT PULSE at 500.FT.



Horizontal: 200. ns/cm
Vertical : 2. volts/cm

We invite your telephone inquiries for technical information on data cables. Contact Mr. Frank Motley or Steve Keith in our Engineering Dept.

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Digital Data Transmission Cables (D-200 Series continued)

Low Voltage Computer Cable

Manufactured by our affiliate, Dynatronic Cable Engineering Corp.

STANDARD DATA CABLE CONSTRUCTIONS — D-200 SERIES

Part No. Black Jacket	Part No. Extra Flexible Gray Jacket	No. of Pairs	Cond. AWG.	Delay NS/FT	Cable Diam.	Weight (Lbs. per M ft.)
D-200-4	D-200-4G	4	24	1.61	.315"	41.
D-200-7	D-200-7G	7	24	1.61	.410"	73.
D-200-12	D-200-12G	12	24	1.61	.455"	96.
D-200-15	D-200-15G	15	24	1.61	.510"	120.
D-200-20	D-200-20G	20	24	1.61	.635"	160.
D-200-24	D-200-24G	24	24	1.61	.660"	180.
D-200-27	D-200-27G	27	24	1.61	.690"	210.
D-200-30	D-200-30G	30	24	1.61	.710"	230.
D-200-33	D-200-33G	33	24	1.61	.750"	250.
D-200-42	D-200-42G	42	24	1.61	.840"	280.
D-200-50	D-200-50G	50	24	1.61	.910"	320.

TECHNICAL DATA

Characteristic	Balanced**	Single-ended*
Characteristic Impedance	110. ohms ±5%	78. ohms ±4%
Capacitance	14. pf/ft.	21. pf/ft.
Signal Delay	1.61 ns/ft.	1.61 ns/ft.
DC Resistance/100 ft.	5.6 ohms loop	2.8 ohms
Insulation Breakdown	6. KV min. DC	6. KV min. DC
Insulation Resistance	> 1000. megohms/M'	> 1000. megohms/M'
Temperature Range	−20. C up to +80. C (60. C for U.L.)	
Min. Bend Radius	6 x cable diameter	

*One conductor of each pair tied to common.

STANDARD DATA CABLE CONSTRUCTIONS — D-210 SERIES INDIVIDUALLY SHIELDED DATA PAIRS

Part. No.	No. of Pairs	Z_O	Delay NS/FT	Cond. AWG.	Cable Diam.	Sheath
D-210-1	1	110.	1.61	24	.220	PVC
D-210-12	12	110.	1.61	24	.980	PVC
D-210-15	15	110.	1.61	24	1.06	PVC
D-210-20	20	110.	1.61	24	1.20	PVC
D-210-30	30	110.	1.61	24	1.42	PVC
D-210-40	40	110.	1.61	24	1.69	PVC
D-210-48	48	110.	1.61	24	1.76	PVC

All items available in 50 ft. multiples.

TECHNICAL DATA

Characteristic	Balanced**	Single-ended*
Characteristic Impedance	110. ohms ±5%	63. ohms ±4%
Capacitance	14. pf/ft.	23.5 pf/ft.
Signal Delay	1.61 ns/ft.	1.61 ns/ft.
DC Resistance/100 ft.	5.6 ohms loop	2.8 ohms
Insulation Breakdown	6. KV min. DC	6. KV min. DC
Insulation Resistance	> 1000. megohms/M'	> 1000. megohms/M'
Temperature Range	−20. C up to +80. C (60. C for U.L.)	
Min. Bend Radius	9 x cable diameter	

**Both driven, one inverted. *One conductor of each pair tied to common.

We invite your telephone inquiries for technical information on data cables. Contact Mr. Frank Motley or Mr. Steve Keith in our Engineering Dept.

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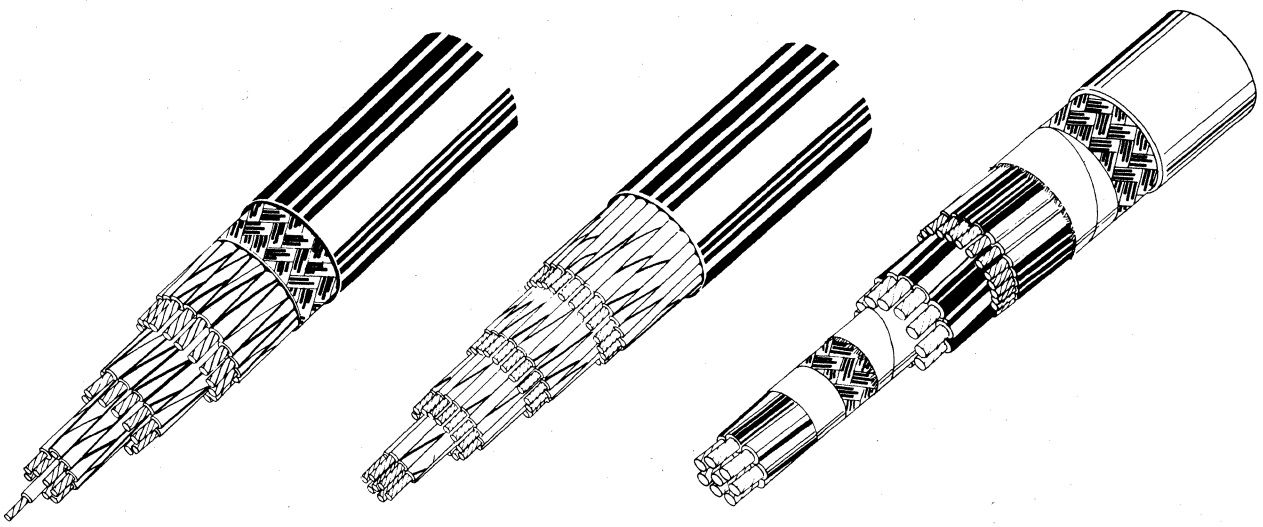
NATIONAL WIRE
AND CABLE CORPORATION

Dept. EM, 136 San Fernando Rd., Los Angeles, CA 90031
Phone: (213) 225-5611, TWX: 910-321-4155, TLX: 181409,
FAX: (213) 225-4630. Fed. Stock Code H4-04569

CUSTOM-MADE CABLE TO YOUR OWN SPECIFICATIONS....



COMPLETE WIRE AND CABLE FACILITIES TO MEET YOUR NEEDS

If the standard cables shown on the preceeding pages do not meet your application requirements, Custom-Made cables to your own specifications are available promptly—and at lower cost than you may suppose . . . **including cables or cable assemblies with both copper conductors, and optical fiber components.**

BECAUSE NATIONAL HAS:

1- The organization & experience to handle short-runs or rush schedules with consistent quality.

2- All types of mill machinery for fabricating cable and all intermediate operations.

3- An enormous wire inventory to draw from for material for your cable. Over 200 million feet of our own manufacture in stock.

4- Technical consultants to aid you in properly specifying your cable needs.

Mr. DESIGNER: May we suggest:

A- Ask our nearest representative for his assistance and for our larger "Engineers & Designers Master Catalog". His name and address is shown on inside back cover.

B- Call our engineering department (213-225-5611) and discuss your needs with our technical consultants. They understand your problem and may have just the answers you need.

C- Our consultants will assist you in design, obtain cost and delivery information, provide formal quotations and drawings, and assist with sales & procurement liaison.

D- On most custom cables, we can print your company name and part number at regular intervals on the outside jacket at no extra cost. This will make your packaging truly "Custom".

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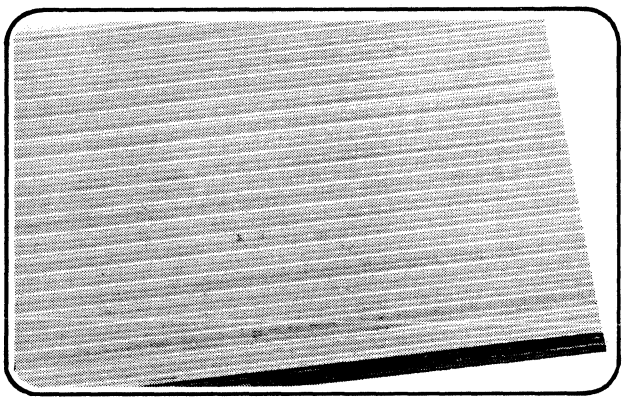
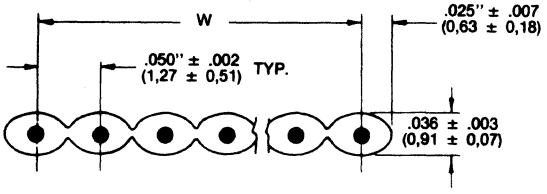
LAMINATED FLAT CABLES

GREY PVC LAMINATE
(NFG Series) UL Listed Style 2651



National Wire & Cable Corporation offers a wide variety of laminated flat cables, utilizing grey PVC insulation laminated around uninsulated stranded tinned copper conductors. The conductors are on .050" centers which make the cables compatible with most insulation displacement connectors (IDC). The cables are marked with one red edge to indicate conductor number one, and the laminate is applied in a manner to allow for simple conductor separation. Packaged in 100 foot lengths. Other lengths available on special request.

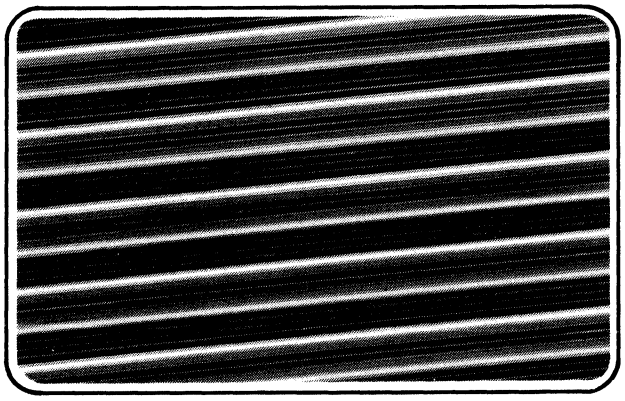


TECHNICAL DATA

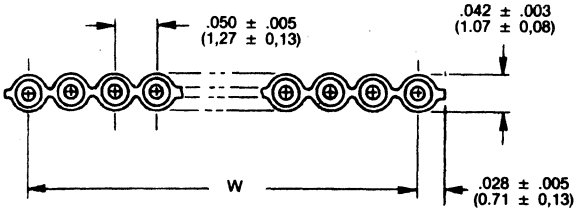
Conductors:	28 AWG 7 x 36 Stranded Tinned Copper
Insulation:	Grey PVC
Cond. Spacing:	.050 ± .002
Cable Thickness:	.036 ± .003
Voltage Rating:	300V
Temp. Rating:	105 C
Impedance:	105 ohms Nom.
Capacitance:	14 pf/ft Nom.
Propagation Delay:	1.4 ns/ft Nom.

Part No.	No. Cond.	Width "W" In.
NFG-LU-10	10	.450 ± .007
NFG-LU-14	14	.650 ± .007
NFG-LU-16	16	.750 ± .011
NFG-LU-20	20	.950 ± .011
NFG-LU-24	24	1.150 ± .011
NFG-LU-25	25	1.200 ± .011
NFG-LU-26	26	1.250 ± .011
NFG-LU-34	34	1.650 ± .011
NFG-LU-37	37	1.800 ± .015
NFG-LU-40	40	1.950 ± .015
NFG-LU-50	50	2.450 ± .015
NFG-LU-60	60	2.950 ± .015
NFG-LU-64	64	3.150 ± .015

COLOR-CODED, CLEAR LAMINATE
(NFC Series) UL Listed Style 2697



National Wire & Cable Corporation offers a wide variety of flat cables, utilizing clear PVC insulation, laminated over preinsulated, stranded tinned copper conductors manufactured to UL Style 1061. The conductors are on .050" centers which make the cables compatible with most insulation displacement connectors (IDC). The preinsulated wires are color-coded for easy identification, and the clear laminate is applied in a manner to allow for simple conductor separation. Packaged in 100 foot lengths. Other lengths available on special request.



TECHNICAL DATA

Conductors:	28 AWG 7 x 36 Stranded Tinned Copper, UL Style 1061
Insulation:	PVC-Color-Coded Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White, Black (Repeat)
Laminate:	Clear PVC
Cond. Spacing:	.050" ± .005"
Cable Thickness:	.042" Nom.
Voltage Rating:	300V
Temp. Rating:	80 C
Impedance:	103 ohms Nom.
Capacitance:	15 pf/ft Nom.
Propagation Delay:	1.4 ns/ft Nom.

Part No.	No. Conds.	Width "W" In.
NFC-LI-10	10	.450 ± .007
NFC-LI-14	14	.650 ± .007
NFC-LI-16	16	.750 ± .011
NFC-LI-20	20	.950 ± .011
NFC-LI-24	24	1.150 ± .011
NFC-LI-25	25	1.200 ± .011
NFC-LI-26	26	1.250 ± .011
NFC-LI-34	34	1.650 ± .015
NFC-LI-37	37	1.800 ± .015
NFC-LI-40	40	1.950 ± .015
NFC-LI-50	50	2.550 ± .015
NFC-LI-60	60	2.950 ± .015
NFC-LI-64	64	3.150 ± .015

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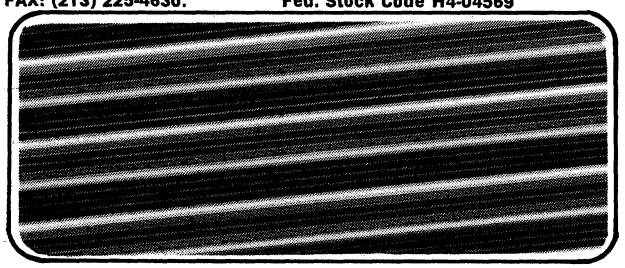
BONDED AND WOVEN FLAT CABLES



BONDED FLAT CABLES

(NFBC Series)

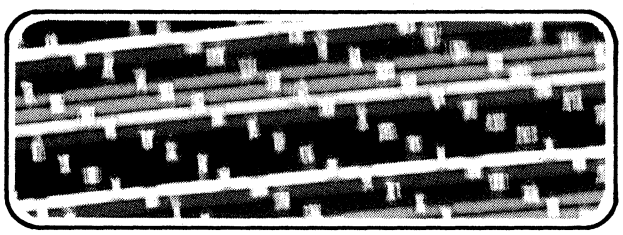
UL Listed Style 2697

National Wire and Cable Corporation offers a wide selection of bonded flat cables by bonding together preinsulated, stranded tinned copper conductors. This cable series is listed as Cable Style 2697, and can utilize any stranded PVC style of insulated wires. Stocked with UL1061 conductors, from 16–30 AWG. Other component styles available on special request. Color-coded BROWN through BLACK as shown below. Available in any number of conductors, providing total width does not exceed 4 inches. Packaged in 100 foot lengths.

PART NUMBER GENERATION

NFBC 10 20 19 B (UL 1061)
C (UL 1007)
D (UL 1015)
- Insulation Code (Select One)
- No. of Strands
- AWG of Conductors
- No. of Conductors
- Series Identification

NOTE: Certain gauges are available only in one specific stranding. Consult sales department when placing order.



WOVEN FLAT CABLES, SINGLES

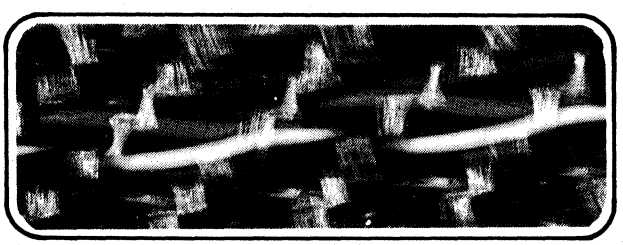
(NFWS Series)

National Wire and Cable Corporation offers a wide selection of woven flat cables by weaving together preinsulated, stranded tinned copper conductors. The weave is a twill type utilizing nylon, which allows conductors to move under flexing, creating a highly flexible cable. Stocked with UL1061 conductors from 16–30 AWG. Other component styles available on special request. Color-coded BROWN through BLACK as shown below. Available in any number of conductors providing total width does not exceed 3 inches. Packaged in 100 foot lengths.

PART NUMBER GENERATION

NFWS 20 26 7 B (UL 1061)
C (UL 1007)
D (UL 1015)
- Insulation Code (Select One)
- No. of Strands
- AWG of Conductors
- No. of Conductors
- Series Identification

NOTE: Certain gauges are available only in one specific stranding. Consult sales department when placing order.



WOVEN FLAT CABLES, PAIRS

(NFWP Series)

National Wire and Cable Corporation offers a wide selection of woven flat cables made with twisted pairs, by weaving together the preinsulated, stranded tinned copper conductor pairs. The weave is a twill type utilizing nylon, which allows the pairs to move under flexing, creating a highly flexible twisted pair cable. Stocked with UL1061 conductors from 16–30 AWG. Other component styles available on special request. Color-coded BROWN through BLACK as shown below. The common conductor in each pair is black. Available in any number of pairs, providing total width does not exceed 3 inches. Packaged in 100 foot lengths.

PART NUMBER GENERATION

NFWP 12 24 7 B (UL 1061)
C (UL 1007)
D (UL 1015)
- Insulation Code (Select One)
- No. of Strands
- AWG of Conductors
- No. of Conductors
- Series Identification

NOTE: Certain gauges are available only in one specific stranding. Consult sales department when placing order.

Color Code : BROWN, RED, ORANGE, YELLOW, GREEN, BLUE, VIOLET, GRAY, WHITE, BLACK (Repeat)

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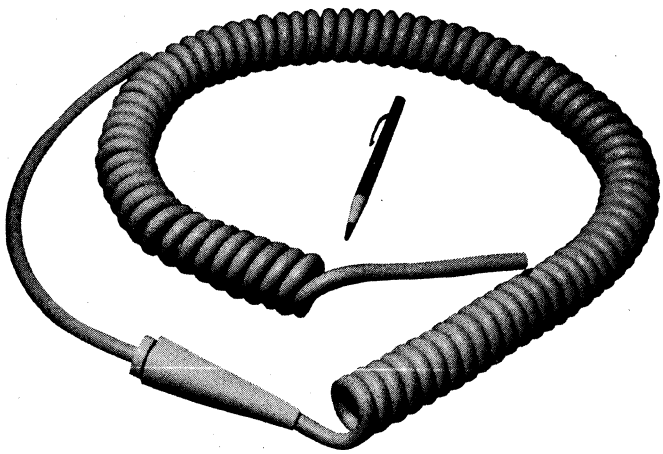
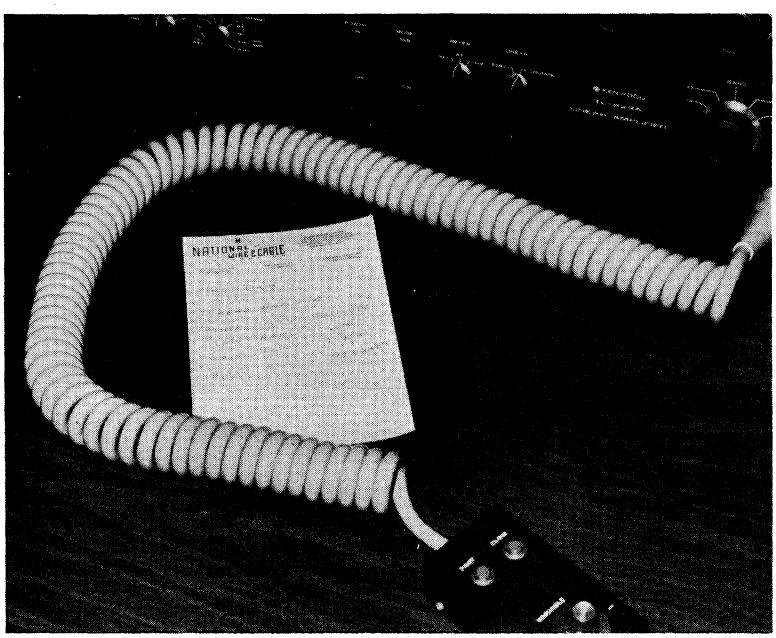
Coiled Instrumentation Cables for Custom Applications



Our new, automated coiling department is ready to design, and manufacture coiled instrumentation cables for your specific requirements. These cables are available in any number of conductors, and in gauge sizes 18 through 30 AWG. They are designed for high reliability, ultra-flexible long-life applications, as encountered in computer interconnects, bio-medical electronics, and optimum retractability, and general control cable use. Call our technical staff to discuss your custom application!



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NATIONAL CABLE MOLDING CORPORATION

AN AFFILIATE OF NATIONAL WIRE & CABLE CORPORATION

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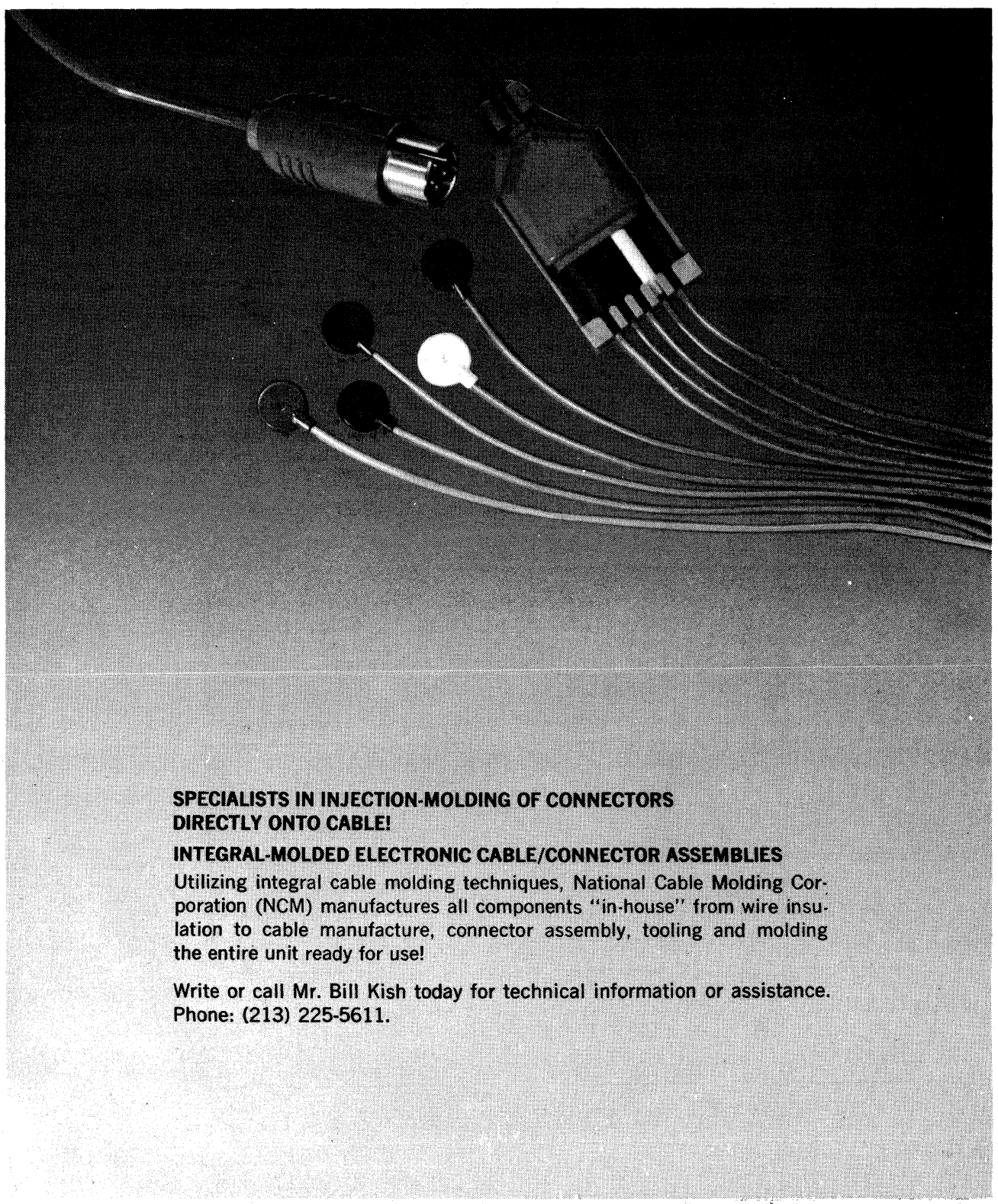
Molded Instrumentation Cables for all Types of Medical & Electronic Applications



SPECIALISTS IN INJECTION-MOLDING OF CONNECTORS DIRECTLY ONTO CABLE!

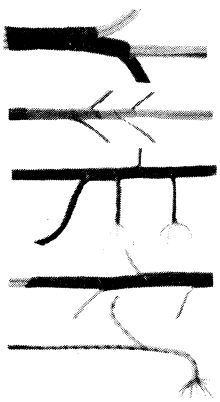
INTEGRAL-MOLDED ELECTRONIC CABLE/CONNECTOR ASSEMBLIES

Utilizing integral cable molding techniques, National Cable Molding Corporation (NCM) manufactures all components "in-house" from wire insulation to cable manufacture, connector assembly, tooling and molding the entire unit ready for use!

Write or call Mr. Bill Kish today for technical information or assistance. Phone: (213) 225-5611.

Heli-Tube®

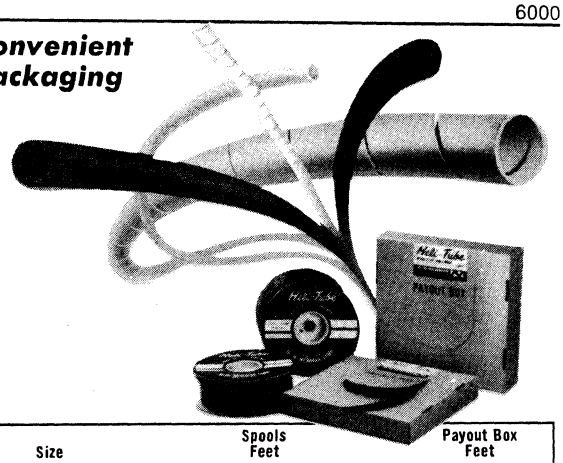
SPIRALLY CUT CABLE WRAP for bundling wires, hoses, and cables.



Exceptional Features and Uses:

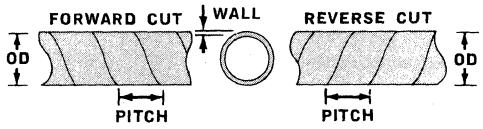
- **Bundles wires, cables or hoses firmly, allowing flexibility.**
- **Organizes messy clusters of wires.**
- **Resists abrasion and protects steel braided hose.**
- **Wire break-outs can be in any orientation.**
- **Colors available for color coding.**

Convenient Packaging



Size	Spools Feet	Payout Box Feet
1/8"	100 or 500	
1/4"	100 or 500	250
3/8"	100 or 500	100
1/2"	100 or 500	50 or 100
3/4"	100 or 200	25 or 50
1"	100	200
Special Packaging Available		

TO ORDER please state size, material and spooling requirement.



Standard Materials	Max. Oper. Temp.	Min. Oper. Temp.	Abrasion Resistance Lower Better mg loss per M cycles	Effect of Solvents	Effect of Acids	Effect of Alkalies	Flammability	Mil Spec. & Approvals
CLEAR POLYETHYLENE Low cost material . . . ideal for general applications. Not affected by ordinary solvents and extremely resistant to abrasion.	215°F 101°C	-105°F -76°C	22	None below 122°F 50°C	None	None	Flammable	Fed. Spec. LP390 MIL I 631D MIL P 26692
BLACK POLYETHYLENE Ultraviolet-resistant for outdoor use. This has the same qualities as Clear Polyethylene and, in addition, contains an ultraviolet absorber which permits it to be used in direct sunlight for long periods of time.	215°F 101°	-105°F -76°C	20	None below 122°F 50°C	None	None	Flammable	Fed. Spec. LP390 MIL I 631 D MIL P 26692
FIRE-RESISTANT POLYETHYLENE SELF EXTINGUISHING, yet has lower cost than Nylon or Teflon. Made of duPont White Rulan. (Also available in Black).	200°F 93°C	-1°F -19°C	27	None below 122°F 50°C	None	None	UL 94V-0	
NYLON Natural - Offers combination of light weight, temperature range, and high abrasion resistance. Self-extinguishing. Recommended for use in enclosed environments where possibility of fire exists. Even at temperatures beyond its operating range, or on exposure to flame, Nylon does not give off any toxic or irritating by-products. Nylon is six times as strong as Polyethylene.	250°F 121°C	-121°F -85°C	6-8	None	Satisfactory except for strong acids	None	UL 94V-2	MIL M-20693A Type I MIL M 22096 LP 410A
BLACK NYLON Has the same characteristics as Nylon Natural, but, in addition, has an ultraviolet absorber which permits use in direct sunlight. This Nylon is heat stabilized.	250°F 121°C	-121°F -85°	6-8	None	Satisfactory except for strong acids	None	UL 94V-2	MIL M-20693A Type II MIL M 22096 LP 410A
TEFLON Natural (TFE) - Has the widest temperature range. Can be used from -450°F to 500°F. Chemically inert. Non-flammable.	500°F 260°C	-450°F -85°C	7	None	None	None	Non-Flammable	MIL M-20693 AMS 3651B AMS 3653 AMS 3654 AMS 3655

Dimensions & Weights

Material	Part No.	Outside Dia.	Wall Thickness	Pitch Decimal	Max. Bundle Range	Weight Lbs./ M Ft.
Clear Polyethylene	HT 1/8C	.125	.032	.187	1/16 to 1/2	4
	HT 1/4C2	.250	.035	.375	3/16 to 2	9
	HT 1/4C	.250	.045	.375	3/16 to 2	12
	HT 3/8C	.375	.052	.438	5/16 to 3	22
	HT 1/2C	.500	.062	.563	3/8 to 4	35
	HT 3/4C	.750	.065	.750	3/4 to 5	58
	HT 1C	1.00	.095	1.00	1 to 7	105
Black Polyethylene Ultraviolet-Resistant for Outdoor Use	HT 1/8UR	.125	.032	.187	1/16 to 1/2	4
	HT 1/4UR	.250	.045	.375	3/16 to 2	12
	HT3/8UR	.375	.052	.438	5/16 to 3	22
	HT 1/2UR	.500	.062	.500	3/8 to 4	35
	HT 3/4UR	.750	.065	.750	3/4 to 5	58
	HT 1UR	1.00	.095	1.00	1 to 7	105
Fire-Resistant White Rulan	HT 1/8FR	.125	.032	.187	1/16 to 1/2	6
	HT 1/4FR	.250	.045	.375	3/16 to 2	17
	HT 3/8FR	.375	.052	.438	5/16 to 3	29
	HT 1/2FR	.500	.062	.563	3/8 to 4	52
	HT 3/4FR	.750	.065	.750	3/4 to 5	85
	HT 1FR	1.00	.095	1.00	1 to 7	156
Fire-Resistant Black Rulan	HT 1/4FR-B	.250	.045	.375	3/16 to 2	17
	HT 1/2FR-B	.500	.062	.563	3/8 to 4	52
Nylon	HT 1/8N	.125	.015	.187	1/16 to 1/2	3
	HT 1/4N	.250	.025	.375	3/16 to 2	9
	HT 3/8N	.375	.035	.438	5/16 to 3	18
	HT 1/2N	.500	.035	.500	3/8 to 4	25
	HT 3/4N	.750	.032	.750	1/2 to 5	38
	HT 1N	1.00	.032	1.00	1 to 7	50
Black Nylon Heat Stabilized	HT 1/8N-B	.125	.015	.187	1/16 to 1/2	3
	HT 1/4N-B	.250	.025	.375	3/16 to 2	9
	HT 3/8N-B	.375	.035	.438	5/16 to 3	18
	HT 1/2N-B	.500	.035	.500	3/8 to 4	25
	HT 3/4N-B	.750	.032	.750	1/2 to 5	38
	HT 1N-B	1.00	.032	1.00	1 to 7	50
Teflon	HT 1/8T1	.125	.030	.187	1/16 to 1/2	9.4
	HT 1/8T2	.125	.020	.187	1/16 to 1/2	7.4
	HT 3/16T	.187	.030	.250	1/8 to 1-1/12	15.2
	HT 1/4T	.250	.030	.375	3/16 to 2	20.7
	HT 3/8T	.375	.030	.438	5/16 to 2-1/2	36.5
	HT 1/2T	.500	.030	.500	3/8 to 3	50.5
	HT 3/4T	.750	.032	.750	1/2 to 4	81.3
	HT 1T	1.00	.040	1.00	3/4 to 5	175.0

Heli-Tube is recognized under the component program of Underwriters Laboratories, Inc. Category ZODZ2 File Card E83405(M).

Heli-Tube Division **M.M. NEWMAN CORPORATION**
PO BOX 615 • MARBLEHEAD, MASSACHUSETTS 01945 • (617) 631-7100

NOMOGRAPH VOLTAGE DROP

NOMOGRAPH OF VOLTAGE DROP ACROSS LOAD SUPPLY LEADS
(as a function of wire size and load current)

THIS NOMOGRAPH CAN BE USED TO FIND:

Maximum current carrying capacity recommended for any standard wire size.*

1) With a straight edge, connect from the wire size on Scale 2 to the point "A" on Scale 3.
2) Read I_{max} on Scale 1.

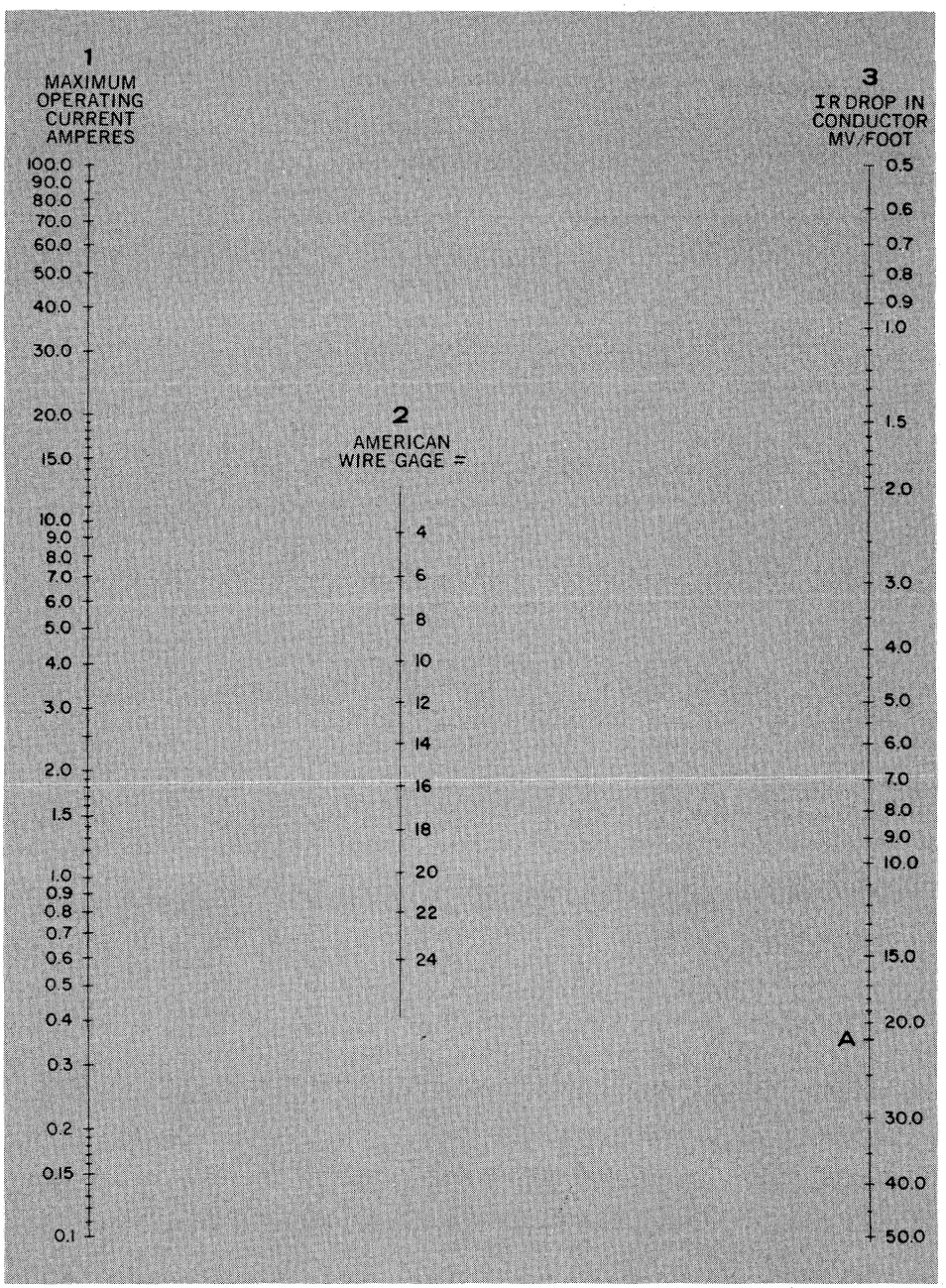
Voltage drop in millivolts per foot for known wire size and operating current.

1) With a straight edge, connect the known current on Scale 1 and the wire size on Scale 2.
2) Read voltage drop on Scale 3.

Wire size required for known operating current and known maximum tolerable voltage drop across supply leads.

1) Determine maximum tolerable drop in millivolts **per foot** of lead (sum of positive and negative leads).
2) Connect the value on Scale 3 (as determined in step 1) to the known current on Scale 1.
3) Read wire size on Scale 2.

** Based on an arbitrary minimum 500 circular mils per ampere. High-temperature class insulation will safely allow higher currents.*



NOTE: A voltage stabilized Power Supply controls the voltage across its output terminals. Hence, the wire conductors used to connect the load must be considered as part of the load. At high load currents, the voltage drop across the supply leads may appreciably degrade stablization at the load. Kepco models equipped with the *remote error sensing* feature can automatically compensate for voltage drops of up to 500 mV across each load supply lead.

THERMOCOUPLE WIRE AND CABLE

✓ ***OMEGA® Features:***
Uninsulated Base Metal Thermocouple Wire from .0005 to .032 inch diameters



✓ ***Insulated Duplex Thermocouple Wire—Insulations Include:***

- ***Polyvinyl***
- ***Nylon***
- ***Teflon***
- ***Glass***
- ***Ceramic***

✓ ***Metal Clad Thermocouple Cable 304 SS and Inconel 600 OMEGACLAD™ in Diameters from .010 to .250***

OMEGA® offers the Largest Selection of Products for Temperature, Pressure, pH, Flow Measurement and Control.

Thousands of Products Ready for Immediate Delivery!

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OMEGA'S COMPLETE TEMPERATURE MEASUREMENT HANDBOOK AND ENCYCLOPEDIA™



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  - **Digital Thermometers**
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  - **Thermistors**
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  - **Thermometers**
  - **Wire**

OMEGA® ENGINEERING, INC.

(203) 359-RUSH

One Omega Drive, Box 4047, Stamford, CT 06907
Telex 996404 Cable OMEGA FAX (203) 359-7700

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PANDUIT® WIRING PRODUCTS

CABLE TIES
Designed to increase productivity and reduce total installed cost

The Largest Selection of Sizes, Styles, Colors and Materials
■ For bundle diameters up to 13″ ■ Locking and releaseable styles ■ Low threading force ■ Finger grip tip ■ No sharp edges ■ Bent tip ■ Choose from nylon, polypropylene or fluoropolymers to meet application environments ■ Choose the color to blend in with the application ■ Meet all applicable military and U.L. specifications.

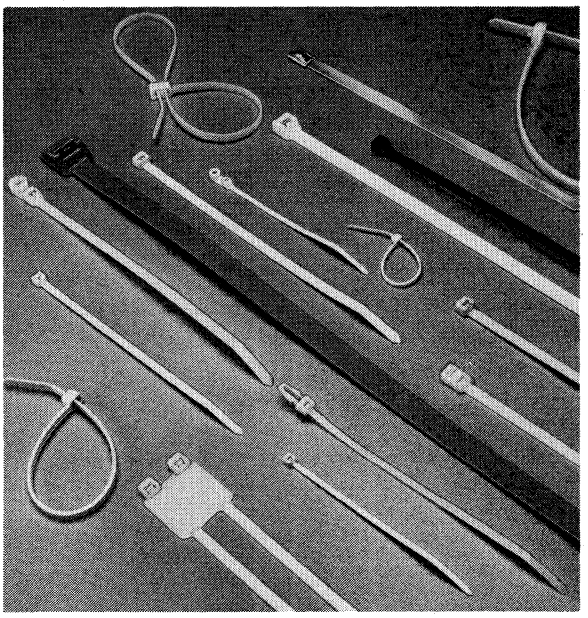
Clamp Ties
Flexible head permits mounting *before* wire installation. Eliminates the need for inventory of various fixed diameter clamps.

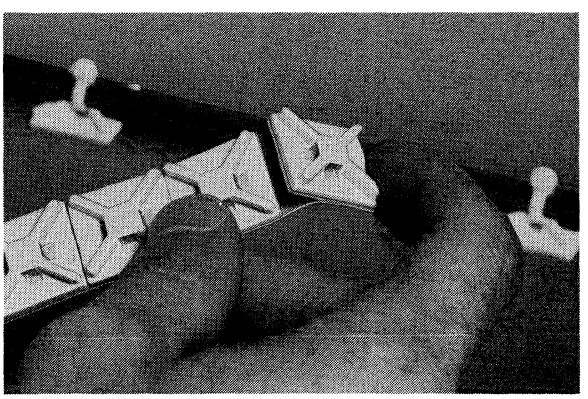
Pushmount Ties
Available in two styles. Integral mounting device eliminates need for separate mounting hardware. For bundle diameters to 1¾″ and panel thicknesses to .125″.

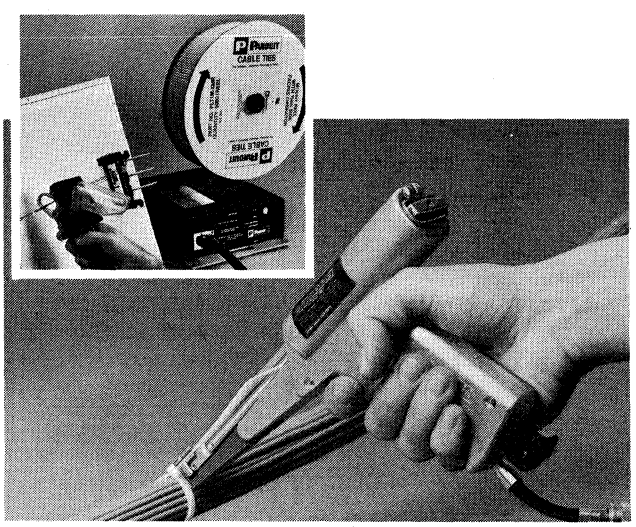
Marker Ties
Clean, permanent identification of wire bundles and harnesses. Convenient, marker and tie in one.

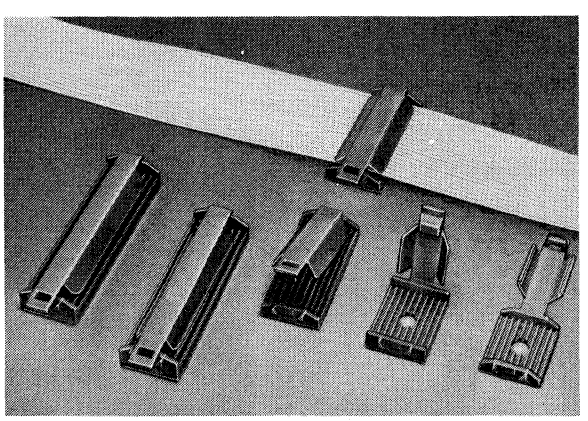
Mounting Accessories
The largest selection used with or without cable ties— adhesive backed mounts, tie mounts, tie anchors, low profile mounts, control panel mounts, adhesive backed cord clips, fixed diameter clamps, flat cable mounts, flat cable clips in wide range of sizes.

Cable Tie Installation Tools
Complete line of tooling, from simple hand tools to semi-automatic and automatic installation equipment, including systems designed for robotics applications.









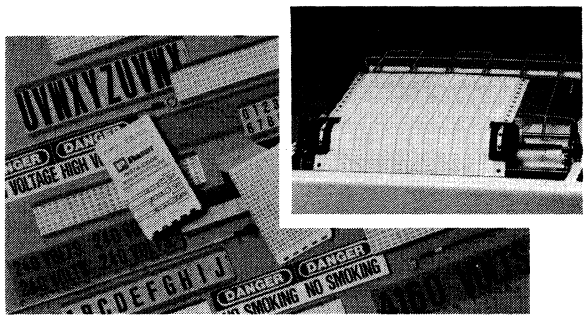
PANDUIT CORP.
ELECTRICAL GROUP

DEPT. EM, 17301 Ridgeland Avenue,
Tinley Park, IL 60477-0981
Telex 25-4560

For further information and samples,
Call 1-800-323-4439
(in Illinois: 1-312-532-1800)

PANDUIT® WIRING PRODUCTS

INSTA-CODE® Wire and Identification Markers



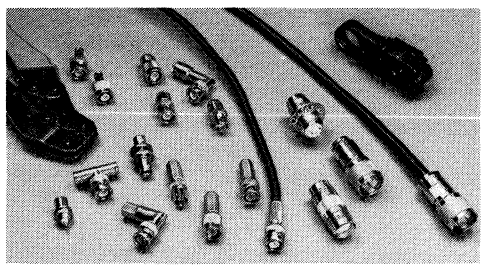
Crisp legends—complete line—proven service
Wire markers available in vinyl cloth, vinyl polyester, aluminum or acetate, on dispenser cards with full or half sizes, in a large variety of legends.

EDP printable labels for in-house custom capability. A large selection of sizes, materials and colors.

Clip-on markers—seven sizes from .075″ up to .617″.

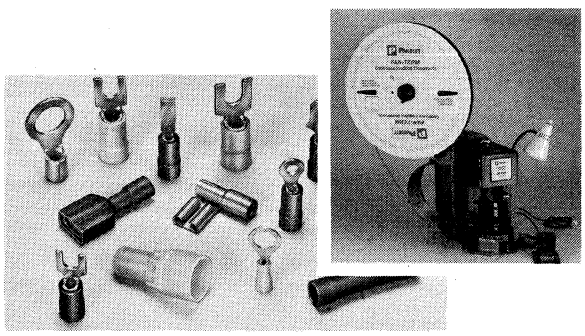
Custom markers—any legend, size or color to meet your specific requirements.

Coax Connectors



Designed to provide fast, reliable connections
- Twist-on, wedge clamp and crimp types
- BNC, TNC or Twinax
- Coax sizes RG-58, 59 or 62/U and industry standard Twinax
- Plugs, jacks, adapters and receptacles
- Individually packaged for convenient storage and use
- Stripping and crimping tools

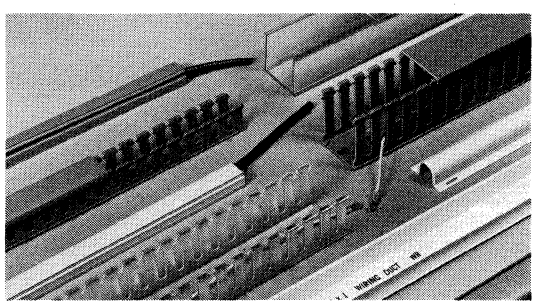
PAN-TERM® Terminals



- Complete line of terminals, disconnects, splices and wire joints for #26 through #2 AWG wire
- Funnel entry available on most terminals and disconnects to speed assembly
- Electrolytically refined copper for optimum crimping, low resistance and high conductivity
- All applicable sizes UL listed and CSA certified and meet MIL specs

Continuously Molded Terminals and Disconnects

For high volume production, terminals and disconnects furnished on reels
- TERMO™ continuously molded, barrel insulated terminals
- DISCO™ continuously molded, barrel and fully insulated disconnects
- Guaranteed alignments due to molded-in carrier strip
- Color coded insulation speeds wire size identification and die selection
- Universal applicator, combined with a minimum number of die sets, speeds changeover for greater productivity and versatility



PANDUCT® Plastic Wiring Duct

The number one name in wiring duct—the largest selection of sizes, styles, colors and materials.
- Type "E" features snap-in slot design to hold break-out wires and assure complete accessibility
- Complete line of accessories available for installation
- Universal mounting holes for maximum design and layout flexibility
- Standard color: light gray; white and dark gray available
- Also available: Type "S" solid wall duct
  Type "D" round hole duct
  Type "NE" & "NS" chlorine-free high temperature duct
  Type "PE" & "PS" clear polycarbonate high temperature duct
  and . . . matching non-slip covers for all styles.
  Outdoor materials also available.

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eem SI UNITS

RELATIVE QUANTITY SYMBOLS

$\neq$	not equal to
$\approx$	approximately equal to
$\propto$	proportional to
$<$	smaller than
$\leq$	smaller than or equal to
$\ll$	much smaller than
$>$	larger than
$\geq$	larger than or equal to
$\gg$	much larger than
$\equiv$	identical to or equivalent
$\uparrow$	increases
$\downarrow$	decreases

PREFIXES FOR SI UNITS

Multiple	Prefix	Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p

Quantity	Symbol	SI Unit	Symbol	Derivation
acceleration	a	m s^{-2}	—	velocity/time
acceleration due to gravity	g	m s^{-2}	—	velocity/time
amount of substance	n	mole	mol	mole fraction (n) used
amplification factor	μ	*a ratio*	—	—
angle	$\theta_1, \varphi_1, \alpha_1$	—	—	—
angle of incidence	i	degree or radian	°	—
angle of refraction	r	degree or radian	°	—
angle, Bragg	θ	number	—	—
angle, critical	c	degree or radian	°	—
anode slope resistance	R_A	ohm	Ω	$\Delta V_a / \Delta I_a$
area	A	metres squared	m^2	$l \times b$
atomic number	Z	a number	—	number of protons
Avogadro constant	L, N_A	number	—	—
breadth	b	metre	m	fundamental unit
capacitance	C	farad	F	charge/p.d.
charge, electric	Q	coulomb	C	current × time
charge on electron	e	coulomb	C	$1{\cdot}6 \times 10^{-19}$ C
conductance	G	ohm^{-1}	Ω^{-1}	reciprocal of resistance
current, electric	I	ampere	A	fundamental unit
decay constant	λ	*a ratio*	—	—
density	ρ	kg m^{-3}	—	m/V
distance along path	s	metre	m	fundamental unit
efficiency	η	*a ratio*	—	work output/work input
electrochemical equiv.	z	g C^{-1}	—	mass/charge
electromotive force	E	volt	V	energy/charge
electron	e	—	—	—
energy	E	joule	J	N m
energy, kinetic	E_k	joule	J	N m. $E_k = 1/2mv^2$
energy, potential	E_p	joule	J	N m. $E_p = mgh$
Faraday constant	F	coulomb mol^{-1}	C mol^{-1}	96,500 C mol^{-1}
field strength, electric	E	V m^{-1}	—	potential gradient: p.d./dist.
field-strength magnetic	H	ampere-turns	—	current × no. of turns
flux, magnetic	Φ	weber	Wb	e.m.f/rate of change of flux
flux density	B	tesla	T	flux/area
focal length	f	metre	m	—
force	F	newton	N	kg m s^{-2}
free energy	ΔG	joule	J	—
frequency	f	hertz	Hz	oscillations/time
gas constant	r	joule	J	energy
half-life,radioactivity	$t_{1/2}$	second	s	fundamental unit
heat capacity	C	J K^{-1}	—	quantity of heat/temp. rise
heat of reaction	ΔH	joule	J	heat energy
heat capacity, specific	c	J K^{-1} kg^{-1}	—	heat capacity/mass
heat, quantity of	q	joule	J	energy

eem SI UNITS

Quantity	Symbol	SI Unit	Symbol	Derivation
height	h	metre	m	fundamental unit
image distance	υ	metre	m	fundamental unit
inductance, mutual	M	henry	H	induced e.m.f./rate of change of current
inductance, self	L	henry	H	—
intensity of radiation	I	*a number*	—	—
latent heat	L	joule	J	quantity of heat
latent heat, specific	l	J kg^{-1}	—	quantity of heat
latent heat, molar	L_m	joule mol^{-1}	J	quantity of heat
length	l	metre	m	fundamental unit
magnetizing force	H	ampere-turns	—	—
magnetic moment	m	Wb m	—	torque in unit magnetic field
magnification, linear	m	*a ratio*	—	—
mass	m	kilogramme	kg	fundamental unit
mass number	A	*a number*	—	number of neutrons + protons
molar volume	V_m	(dm^3)	—	volume of 1 mole
molar solution	M	*a ratio*	—	moles/dm^3
moment of force	—	N m	—	force × perp. distance
neutron number	N	*a number*	—	number of neutrons
number	n	—	—	—
number of molecules	N	—	—	—
number turns on coil	n	*a number*	—	—
number order spectrum	p	*a number*	—	—
object distance	u	metre	m	fundamental unit
peak current	I_o	ampere	A	see current
peak e.m.f.	E_o	volt	V	see e.m.f.
period	T	second	s	fundamental unit
permeability	μ	H m^{-1}	—	henry/metre
permeability, vacuum	μ_o	H m^{-1}	—	—
permeability, relative	μ_r	*a ratio*	—	$\mu = \frac{\mu}{\mu_o}$
permittivity	ε	F m^{-1}	—	farad/metre
permittivity, vacuum	ε_o	F m^{-1}	—	farad/metre
permittivity, relative	ε_r	*a ratio*	—	$\varepsilon_r = \frac{\varepsilon}{\varepsilon_o}$
potential, electric	V	volt	V	energy/charge
potential difference	V	volt	V	energy/charge
power	P	watt	W	J s^{-1}
pressure	p	pascal	Pa	N m^{-2}: force/area
radius	r	metre	m	fundamental unit
reactance	X	ohm	Ω	E_o/I_o
refractive index	n	*a ratio*	—	—
resistance	R	ohm	Ω	p.d./current
resistivity, electrical	ρ	ohm-metre	—	resistance × length
relative density	d	*a ratio*	—	ρ_{sub}/ρ_{water}
r.m.s. current	$I_{r.m.s}$	ampere	A	see current
r.m.s. voltage	$V_{r.m.s}$	volt	V	see e.m.f.
slit separation	s	metre	m	fundamental unit
tension	T	newton	N	see force
temperature, Celsius	θ	degree C	°C	from kelvin
temp. interval	θ	degree	° or K	—
temp. absolute	T	kelvin	K	fundamental unit
thickness	d	metre	m	fundamental unit
time	t	second	s	fundamental unit
torque	T	Nm	—	see moment
turns ratio	T	*a ratio*	—	n_{sec}/n_{prim}
(unit of electricity)	—	kW h	—	kilowatt × hour
velocity	u,υ	ms^{-1}	—	distance/time
velocity, angular	ω	$second^{-1}$	s^{-1}	angle/time
velocity, e.m.waves	c	m s^{-1}	—	—
velocity of sound	υ	m s^{-1}	—	—
volume	V	metre cubed	m^3	l × b × h
wavelength	λ	metre	m	fundamental unit
work	w	joule	J	force x distance (Nm)
weight	W	newton	N	kg m s^{-2} or mg

INTERNATIONAL Cords, Cordsets and Cordage

1. Detachable cordsets:

Detachable cordsets offer flexibility for both the equipment manufacturer and user.

The manufacturer can meet most international cord requirements with just one product model that is equipped with an IEC 320/CEE-22 connector. Then a cordset with the mating IEC 320 connector and the appropriate international plug can be specified at the time the product is shipped to the end user. The table below describes eight standard PCC cordsets.

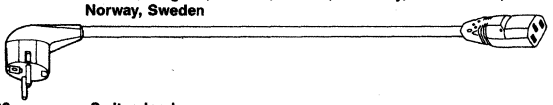
International cordsets have some limitations. First, current ratings are limited to 6 amps by European agencies. The limitation is derived from restrictions placed on the IEC 320 connector. Equipment which draws more than 6 amps at 220 VAC should be equipped with permanently installed power cords described below. (For applications up to 10 amps, some countries allow the use of a new replaceable connector which is patterned after the IEC 320 unit but which is polarized to prevent insertion of the 6 amp models.)

Secondly, addition of the connector adds to the cost of the power cord. Typically, the IEC 320 connector which is molded to the cord adds 50-75 cents to the cord cost. A panel mounting IEC 320 receptacle is about 50 cents. Both prices assume purchases in the 100-piece range. Clearly, a trade-off between added cost and manufacturing flexibility has to be made.

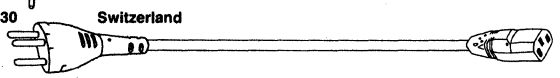
(See our North American cordsets on next page.)

TABLE 1

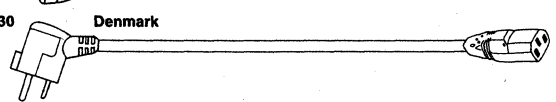
86512030 Austria, Belgium, Finland, France, Germany, Netherlands, Norway, Sweden



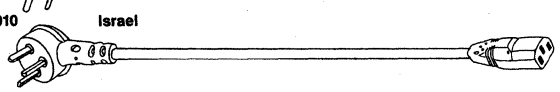
86515030 Switzerland



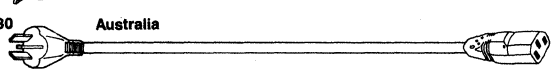
86536030 Denmark



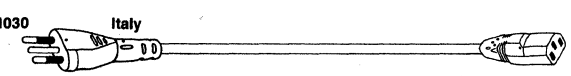
86558010 Israel



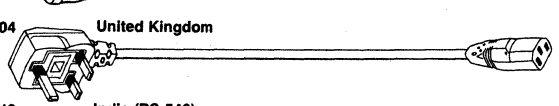
86516030 Australia



86531030 Italy



86552004 United Kingdom



86559010 India (BS 546)



Part Number	Color	Length	Conductor Size	Current Rating	Approval(s)
86512030	Black (Note 2)	2.5 meters (98.4 inches)	0.75 mm²	6A	Note 1
86515030	Black (Note 2)	"	"	6A	SEV
86536030	Black (Note 2)	"	"	6A	DEMKO
86558010	Black (Note 2)	"	"	6A	SII
86516030	Black (Note 2)	"	"	7.5A	*
96531030	Black (Note 2)	"	"	6A	**
86552004	Black (Note 2)	"	"	6A	***
86559010	Black (Note 3)	"	"	6A	

NOTE 1: Approved by VDE, OVE, KEMA, CEBEC, NEMKO, SEMKO, FEI, UTE.
NOTE 2: Conductors are color-coded blue, brown, green/yellow.

2. Unterminated IEC 320/CEE-22 cords:

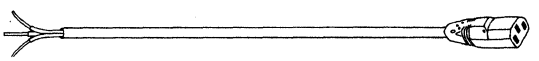
With some products, export volume does not justify stocking different cordsets for even major foreign markets. In other situations, sales volume in Germany and the U.K. may be large enough to justify unique cordsets, whereas export volume to Switzerland, Denmark, Australia, and Israel, for example, are not sufficient.

In both of these cases, the equipment manufacturer can specify the model 86525000 unterminated IEC 320/CEE-22 cord for use in low-volume markets. Cordsets described in the previous section would be specified for high-volume markets.

The disadvantage to this approach is, of course, that your customer or sales people must attach a suitable power plug to the cord. The decision on this issue will depend on the cost of stocking an additional cordset vs. the size of the affected market segment and the cost of field termination. (Call us for our brochure on international plugs and sockets.)

TABLE 2

86525050 Universal



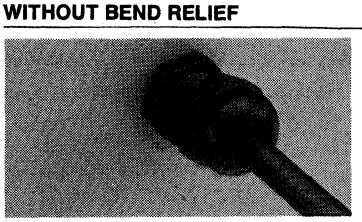
Part Number	Color	Length	Conductor Size	Current Rating	Approval(s)
86525050	Black	2.5 meters (98.4 inches)	0.75 mm²	6A	VDE, OVE, KEMA, CEBEC, NEMKO SEMKO, FEI, SEV, UTE

NOTE: Free end on model 86525000 is stripped 50/5 mm.

Strain Reliefs

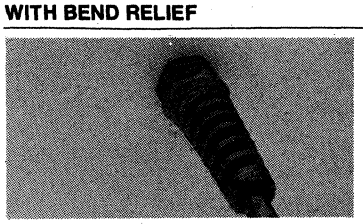
Power supply cords all require some type of mechanical mounting device which positively secures them to an enclosure or piece of equipment. PCC strain reliefs provide an effective cable grip with or without an integral bend relief. Furthermore, the strain relief comes with a neoprene compression gland which prevents moisture intrusion along the cord when used with round cordage and when the cord and strain relief have been selected and assembled properly. UL recognized and CSA certified.

WITHOUT BEND RELIEF



PCC Part No.	Cordage O.D. Range
85810010	.187-.312 in. 4.7-7.9 mm
85810020	.231-.394 in. 5.9-10.0 mm
85810030	.270-.480 in. 6.9-12.2 mm

WITH BEND RELIEF



PCC Part No.	Cordage O.D. Range
85810040	.187-.312 in. 4.7-7.9 mm
85810050	.231-.394 in. 5.9-10.0 mm
85810060	.270-.480 in. 6.9-12.2 mm

PANEL COMPONENTS CORPORATION P.O. Box 6626, Santa Rosa, CA 95406 • (707) 523-0600 • TX 176-747

From Panel Components Corporation

3. International power supply cords:

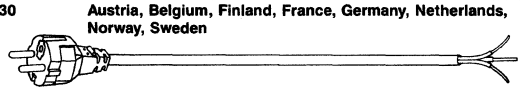
Permanently installed power supply cords are specified when the equipment requires more than 6 amps at 220-240 VAC. Generally, for applications in which the current requirement is 6-10 amps, 1.0 mm^2 conductors are specified. For applications rated at 10-16 amps, 1.5 mm^2 conductors should be specified. For comparison purposes, 16 AWG is 1.23 mm^2 and 14 AWG is 1.95 mm^2. (Note: the limit for portable equipment in Switzerland is 10 amps; in the U.K., 13 amps. In most other European countries, the limit is 16 amps. In equipment that draws greater amounts of current, the equipment must be permanently connected to the power system or connected via an IEC 309 connector pair [see PCC cat. pages section 2100.])

Power supply cords may also be used to reduce component costs, especially in very high-volume production. This is particularly true in Class II (two wire, ungrounded) appliances. The model 86532000 cord described below is intended for these applications.

The power supply cords illustrated below are supplied with standard cut and strip terminations (50/5 or 50/8 mm) on the free end. Panel Components will customize these cords to meet your requirements.

TABLE 3

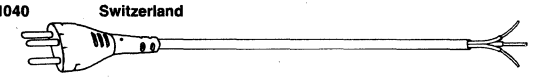
86517030 **Austria, Belgium, Finland, France, Germany, Netherlands, Norway, Sweden**



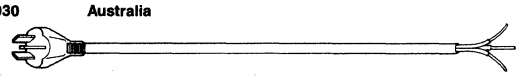
86518030



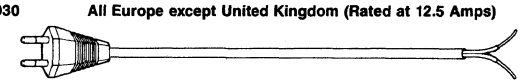
86521040 **Switzerland**



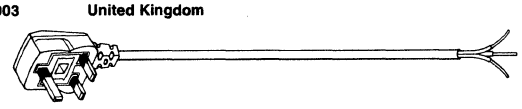
86522030 **Australia**



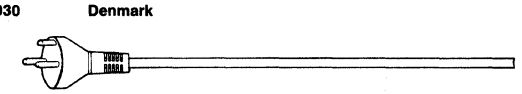
86532030 **All Europe except United Kingdom (Rated at 12.5 Amps)**



86554003 **United Kingdom**



86539030 **Denmark**



Part Number	Color	Length	Cable O.D.	Conductor Size	Current Rating	Approval(s)
86517030	Black	2.5 meters (98.4 inches)	7.0 mm	1.0 mm^2	10A	Note 1
86518030	Black	"	8.5 mm	1.5 mm^2	16A	Note 1
86521040	Black	"	7.0 mm	1.0 mm^2	10A	SEV
86522030	Black	"	7.0 mm	1.0 mm^2	10A	SECV
86532030	Black	1.8 meters	3.4 x 5.6 mm	0.75 mm^2	2.5A	Note 2
86554003	Black	2.5 meters	6.8 mm	0.75 mm^2	6.0A	ASTA
86539030	Black	"	7.0 mm	1.0 mm^2	10A	DEMKO Note 5

NOTE 1: VDE, OVE, KEMA, CEBEC, NEMKO, SEMKO, FEI, UTE.
NOTE 2: VDE, OVE, KEMA, CEBEC, NEMKO, SEMKO, FEI, SEV, DEMKO; 2 wires.

4. International cordage:

When neither a molded power supply cord or cordset is suitable, international cordage with appropriately sized conductors may be the best alternative. This cordage is tested and certified to HAR (HD-21) standards as written by CENELEC.

CABLE **Universal**

TABLE 4 – THREE WIRE CORDAGE

Part Number	Conductor (mm^2)	Max. Curr.	O.D.	Jacket Color	Jacket Material	HD-21 Number	AWG Equiv.
86010011	3 x 0.75	6A	6.8 mm	Black	PVC	H05VVF3G0.75	18 AWG
86010021	3 x 0.75	6A	6.8 mm	Gray	PVC	H05VVF3G0.75	18 AWG
86010041	3 x 1.00	10A	7.0 mm	Black	PVC	H05VVF3G1.00	16 AWG
86010051	3 x 1.00	10A	7.0 mm	Gray	PVC	H05VVF3G1.00	16 AWG
*86010071	3 x 1.50	16A	8.5 mm	Black	PVC	H05VVF3G1.50	14AWG
*86010081	3 x 1.50	16A	8.5 mm	Gray	PVC	H05VVF3G1.50	14 AWG
86010121	3 x 2.50	25A	10.2 mm	Black	PVC	H05VVF3G2.50	12 AWG

Four and five-wire cordage is used in 3-phase applications. The cordage below complies with CENELEC requirements.

TABLE 5 – FIVE WIRE CORDAGE FOR 3-PHASE APPLICATIONS

Part Number	Conductor (mm^2)	Max. Curr.	O.D.	Jacket Color	Jacket Material	HD-21 Number
86010311	5 x 0.75	6A	8.3	Black	PVC	H05VVF5G0.75
86010331	5 x 1.00	10A	8.8	Black	PVC	H05VVF5G1.00
*86010351	5 x 1.50	16A	10.4	Black	PVC	H05VVF5G1.50
*86010371	5 x 2.50	20A	12.4	Black	PVC	H05VVF5G2.50
*86010410	5 x 4.00	32A		Black	Rubber	H07RNF5G4.00

(rubber insulated, rated at 450-750V)

*These sizes can be used with IEC 309 plugs, sockets and connectors for use in high power mains connections. See our ad in EEM section 2100.

Custom Cord Termination, Preparation And Packaging Services

We offer cords terminated in accordance with special requirements, i.e., special lengths, special cut and strip requirements, solderless terminals, special labeling, packaging, coiling and hanking. We specialize in short runs of 500-1000 pieces with quick turn-arounds. No minimum order.

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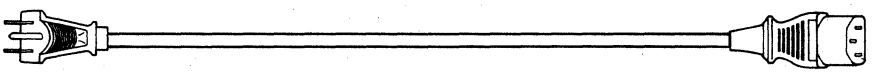
North American Cordsets, Adapter & Jumper Cords

North American Cordset P/N 86537030

Standard North American cordset with NEMA 5-15P plug, IEC 320/CEE-22 connector and SJT cordage, rated for use at 10 amps.
Approvals: UL recognized; CSA certified.
Cordage specifications: see below
Delivery: stock to 10 weeks

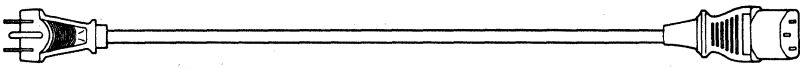
Model	Conductor Size	Maximum Current Rating	Color	Length (± 4 inches)	Termination/ Drawing #	Delivery Status
86537030	3 x 18 AWG	10 Amp	Black	8 feet	CEE-22	Standard



North American Cordset P/N 86551000

Standard North American cordset with NEMA 5-15P plug and IEC 320 connector. Similar to P/N 86537030 above but 6″ shorter and utilizing lighter-weight SVT cordage.
Approvals: UL recognized; CSA certified.
Cordage specifications: see below
Delivery: stock to 10 weeks

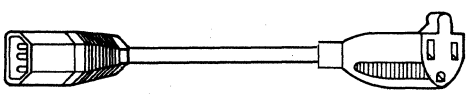
Model	Conductor Size	Maximum Current Rating	Color	Length (± 4 inches)	Termination/ Drawing #	Delivery Status
86551000	3 x 18 AWG	10 Amp	Black	7′ 6″	CEE-22	Standard



IBM PC* Adapter Cord P/N 8656000

Designed for use with an IBM PC* and a monitor, printer, or other accessory which has a permanently installed U.S. power supply cord, this adapter cord has a NEMA 5-15S socket on one end and a male IEC 320 connector on the other. Note: accessory should not draw more than 750 mA or the accessory power outlet may become overloaded.
Approvals: UL recognized; CSA certified.
Cordage specifications: see below (SJT)
Delivery: stock to 10 weeks

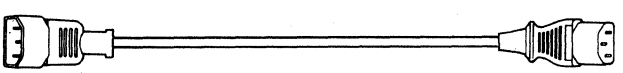
Model	Conductor Size	Maximum Current Rating	Color	Length	Plug End Termination	Connector End Termination	Delivery Status
865600000	3 x 18 AWG	10 Amp	Black	1 foot	NEMA S-15S	Molded-on male IEC 320/ CEE-22	Standard



Accessory "Jumper" Cord P/N 86548030

Intended for use in accessory power applications, this jumper cord has a male IEC 320/CEE-22 connector on one end and a female IEC 320 connector on the other.
Approvals: UL recognized; CSA certified.
Cordage specifications: see below (SJT)
Delivery: stock to 10 weeks

Model	Conductor Size	Maximum Current Rating	Color	Length	Plug End Termination	Connector End Termination	Delivery Status
86548030	3 x 18 AWG	10 Amp	Black	1 meter	Male IEC 320/ CEE-22	Molded-on female IEC 320/ CEE-22	Standard



Cordage Specifications:

Cordage compiles with UL 817 and CSA C22.2 used in cordsets on this page. Color-coding of conductors: brown—line; blue—neutral; green/yellow—ground.

Conductor size	Current rating	Stranding	Jacket	Outside Diameter
3 x 18 AWG	10 Amp	41 strands of 0.16 mm O.D.	PVC	8 mm (± 0.3 mm)

*IBM PC is a Trademark of International Business Machines

Custom Cord Termination, Preparation And Packaging Services

We offer cords terminated in accordance with special requirements, i.e., special lengths, special cut and strip requirements, solderless terminals, special labeling, packaging, coiling and hanking. We specialize in short runs of 500-1000 pieces with quick turn-arounds.
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Catalog Number	AWG Size	Bare Conductor Diameter	Stranding	Insulation Wall Thickness		Insulated Wire Diameter		
				Minimum	Maximum	Minimum	Nominal	Maximum
30738MHW	30	.0120	7/38	.0029	.0039	.0178	.0188	.0198
301040MHW	30	.0114	10/40	.0029	.0039	.0172	.0182	.0192
301942MHW	30	.0125	19/42	.0029	.0039	.0183	.0193	.0203
302544MHW	30	.0115	25/44	.0029	.0039	.0173	.0183	.0193
304046MHW	30	.0117	40/46	.0029	.0039	.0175	.0185	.0195
32740MHW	32	.0093	7/40	.0025	.0035	.0143	.0153	.0163
321944MHW	32	.0100	19/44	.0022	.0036	.0154	.0163	.0172
322546MHW	32	.0093	25/46	.0025	.0035	.0143	.0153	.0163
326450MHW	32	.0093	64/50*	.0025	.0035	.0143	.0153	.0163
34540MHW	34	.0078	5/40	.0025	.0032	.0128	.0135	.0142
34742MHW	34	.0075	7/42	.0024	.0030	.0123	.0129	.0135
341044MHW	34	.0073	10/44	.0022	.0028	.0121	.0127	.0133
341646MHW	34	.0074	16/46	.0023	.0029	.0122	.0128	.0134
341946MHW	34	.0080	19/46	.0024	.0032	.0129	.0137	.0145
344050MHW	34	.0073	40/50*	.0022	.0028	.0121	.0127	.0133
36340MHW	36	.0061	3/40	.0015	.0025	.0093	.0102	.0111
36744MHW	36	.0060	7/44	.0015	.0025	.0092	.0101	.0110
361046MHW	36	.0059	10/46	.0015	.0025	.0091	.0100	.0109
362550MHW	36	.0058	25/50*	.0015	.0025	.0090	.0099	.0109
38444MHW	38	.0046	4/44	.0017	.0021	.0080	.0084	.0088
38746MHW	38	.0048	7/46	.0017	.0021	.0082	.0086	.0090
381650MHW	38	.0046	16/50*	.0017	.0021	.0080	.0084	.0088
401050MHW	40	.0037	10/50*	.0015	.0017	.0067	.0069	.0071
42650MHW	42	.0031	6/50*	.0013	.0015	.0057	.0059	.0061

*Bare Copper Conductor

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Catalog Number	AWG Size	Bare Conductor Diameter	Insulation Wall Thickness		Insulated Wire Diameter		
			Minimum	Maximum	Minimum	Nominal	Maximum
24TDQ	24	.0201	.0035	.0049	.0269	.0285	.0301
26TDQ	26	.0159	.0032	.0045	.0222	.0236	.0251
28TDQ	28	.0126	.0029	.0039	.0183	.0194	.0206
30TDQ	30	.0100	.0027	.0036	.0153	.0163	.0173
32TDQ	32	.0080	.0025	.0032	.0129	.0137	.0145
34TDQ	34	.0063	.0021	.0027	.0104	.0111	.0118
36TDQ	36	.0050	.0019	.0023	.0087	.0092	.0097
38TDQ	38	.0040	.0016	.0019	.0071	.0075	.0079
40TDQ	40	.0031	.0013	.0015	.0056	.0059	.0062
42TDQ	42	.0025	.0010	.0012	.0044	.0047	.0050
44TDQ	44	.0020	.0009	.0011	.0037	.0040	.0043

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- **Teflon® Tubing & Lead Wire**
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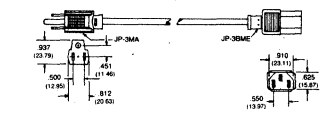
Power Dynamics now offers a line of internationally approved Cord Sets, consistent with our line of IEC Connectors. Selection of the proper Cord Set allows your international customer the convenience of a finished product ready for use immediately upon unpacking. The proper selection of a Cord Set also makes the product easier to use by overseas customers and enhances its overseas marketing value.

Power Dynamics offers seven basic Cord Sets to meet most international requirements. Each Cord Set is molded to indicate the appropriate National Safety Agency approvals as follows:

UNITED STATES	UL	BELGIUM	CEBEC	NETHERLANDS	KEMA		
CANADA	CSA	FINLAND	FEI	NORWAY	NEMKO		
ENGLAND	BSI	FRANCE	UTE	SWEDEN	SEMKO		
AUSTRALIA	SECV	GERMANY	VDE	SWITZERLAND	SEV		
AUSTRIA	OVE	ITALY	MQ				

AMERICAN CORD SET

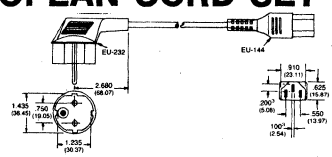
10088



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
10088	7'6" (2.3M)	18/3 SVT 41/34 B.C.	.255 (6.5)	10A 125V	Black	UL CSA

EUROPEAN CORD SET

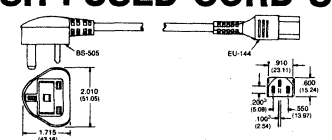
12013



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
12013	8'2" (2.5M)	3 x 0.75mm² H05VV-F	.255 (6.5)	6A 250V	Black	

ENGLISH FUSED CORD SET

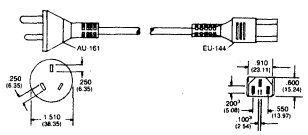
14012



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
14012	8'2" (2.5M)	3 x 0.75mm² H05VV-F	.255 (6.5)	6A 250V	Black	

AUSTRALIAN/NEW ZEALAND CORD SET

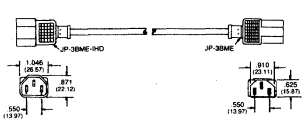
15012



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
15012	8'2" (2.5M)	3 x 0.75mm² H05VV-F	.255 (6.5)	6A 250V	Black	

AMERICAN ELECTRONIC JUMPER CORD SET

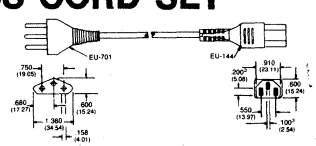
10095
10096



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
10095	3'3" (1.0M)	18/3 SVT 41/34 B.C.	.255 (6.5)	10A 250V	Black	UL CSA
10096	7'6" (2.3M)	18/3 SVT 41/34 B.C.	.255 (6.5)	10A 250V	Black	

SWISS CORD SET

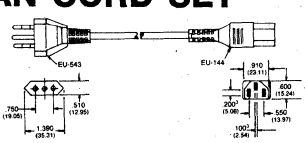
13012



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
13012	8'2" (2.5M)	3 x 0.75mm² H05VV-F	.255 (6.5)	6A 250V	Black	

ITALIAN CORD SET

14512



Part Number	Cord Length	Description	Nominal O.D.	Rating	Color	Approvals
14512	8'2" (2.5M)	3 x 0.75mm² H05VV-F	.255 (6.5)	6A 250V	Black	

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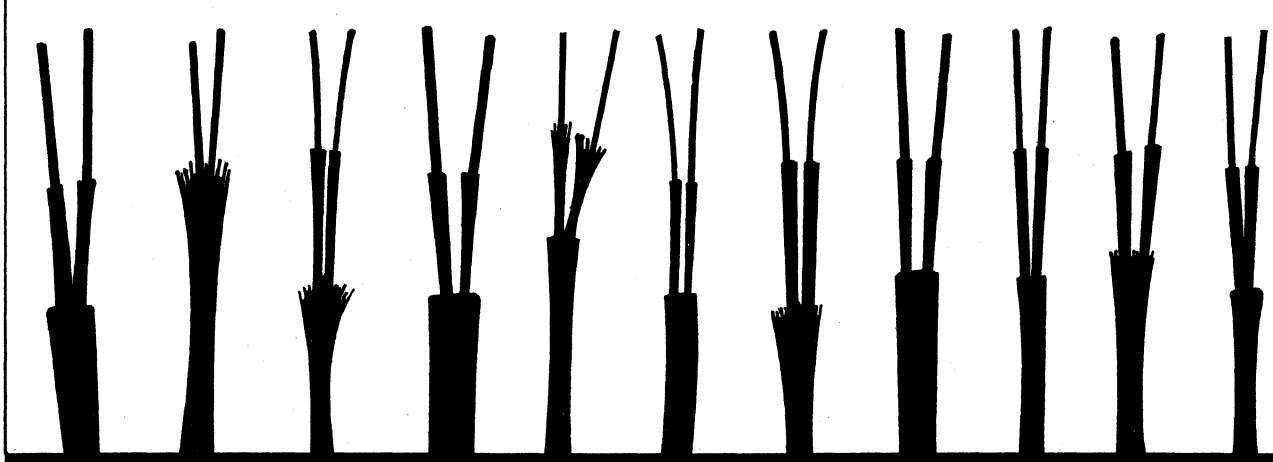

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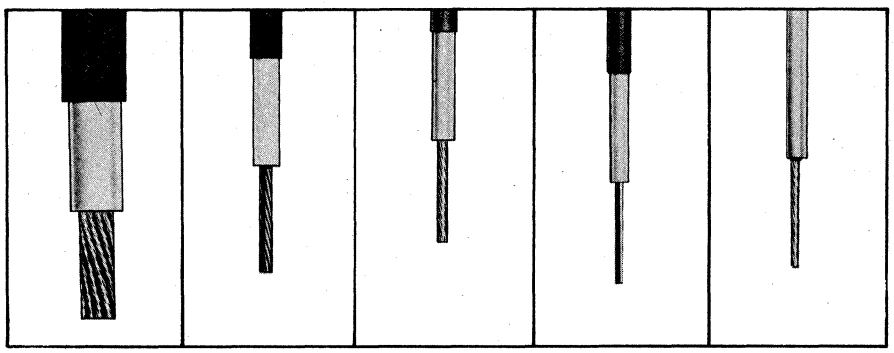
High Temperature silicone rubber wire and cable.

Rowe's silicone rubber insulation offers better performance and longer life than natural rubber or thermoplastic insulation. For example, our high temperature wire and cable is: heat stable to 200°C and flexible to −90°C, unaffected by severe thermal cycling, ultraviolet radiation, ozone or corona, resistant to ageing, moisture and chemicals, highly flame retardant and tough enough for unbraided lead wire.

Choose from a variety of UL listed styles or ask us to design one that meets your special requirements.



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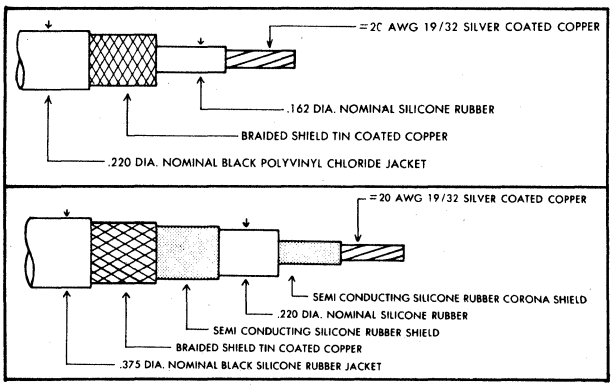
COAXIAL.



Features: 5-100KV minimum voltage ratings, 8-22 AWG corona-free and ozone resistant, 80°C to 200°C operating temperature range. Excellent for high pulse applications and for use with Rowe high voltage miniature coaxial connector series, G series connectors, Hi-pulse 40KV series and Rowe R75 connector series. All exhibit good corona-free RFI-EMI capabilities and have excellent flexibility properties.

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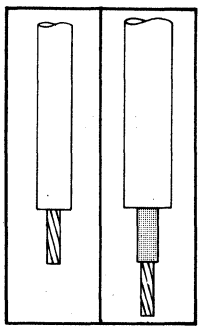

Features: 5-60 KVDC minimum voltage ratings, 10-20 AWG corona-free, ozone-resistant material, 200°C operating temperature, excellent flexibility at high and low temperatures.

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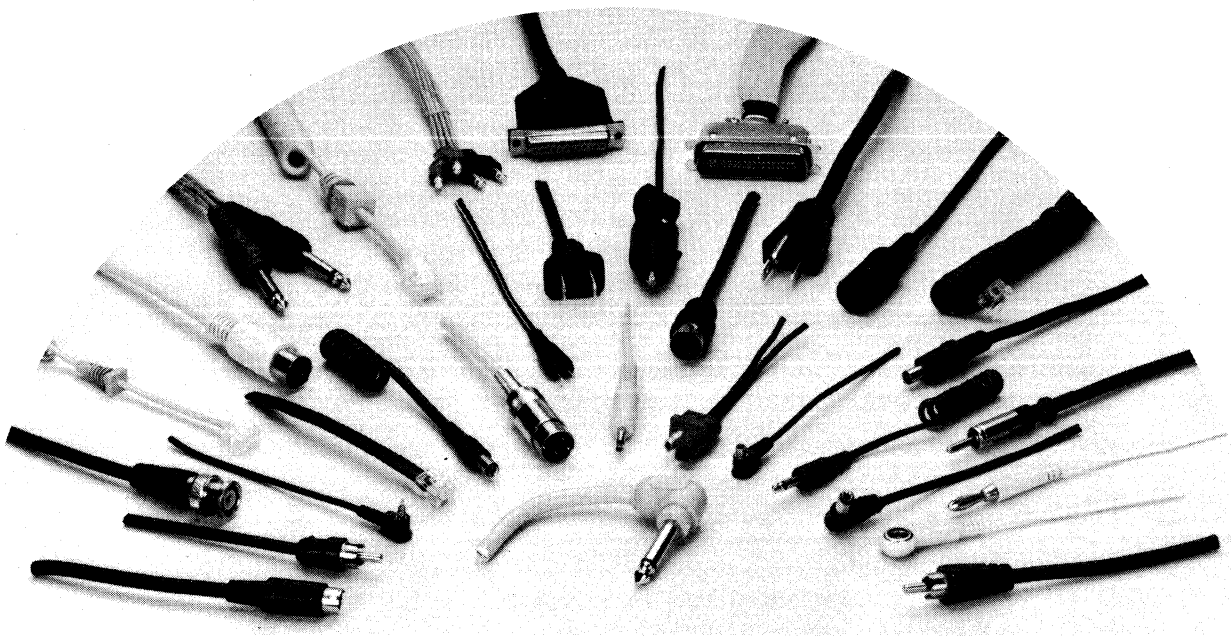
CORD SETS AND CABLE ASSEMBLIES



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Coiled or straight; round, flat or oval; copper, stranded or tinsel. Available with 4, 6 or 8-position modular plugs or spade lugs, keyed or unkeyed to mate with any standard modular connector.

AUDIO

A wide variety of molded plugs and in-line jacks for stereo or mono are offered shielded or unshielded with single or multi-conductors.

ZIP

Manufactured in standard or custom lengths, gauges, insulation thickness and jacket colors. Also available with molded DC plugs (2.1mm and 2.5mm) or phone plugs (2.1mm, 2.5mm, 3.5mm and 6.3mm). For use with wall-plug transformers.

COMPUTER and VIDEO

Designed to interface with all major computer/video products. Manufactured with molded or crimped "D" connectors, from 9 to 50 pins, male or female, plastic or metal, for round or flat cable. Teminations may be low-profile, edgewise or multipolar. DIN cables produced to spec and available with shielding.

POWER

Custom made to specified current and temperature ratings or produced in standard types including SPT-1, SPT-2, ST, SVT, SJT, XT or PXT with UL/CSA approval.

Cord sets and cable assemblies may be ordered to OEM specifications — length, AWG, number of conductors, color, etc. All Shogyo products are manufactured under one roof and quality assurance is 100% guaranteed.

SEE SHOGYO PAGES IN EEM SECTIONS 1300/2100/2450/2950/5100/5600/6000

MAXIMUM CURRENT CAPACITY—CONDUCTORS

Size, AWG	MIL-W-5088				National Electrical Code	Underwriters Laboratory		American Insurance Association	500 c mils/A
	Copper		Aluminum			60°C	80°C		
	Single-wire	Wire-bundled	Single-wire	Wire-bundled					
30	...	...	...	...	...	0.2	0.4	...	0.20
28	...	...	...	...	...	0.4	0.6	...	0.32
26	...	...	...	...	...	0.6	1.0	...	0.51
24	...	...	...	...	...	1.0	1.6	...	0.81
22	9	5	...	...	...	1.6	2.5	...	1.28
20	11	7.5	...	...	...	2.5	4.0	3	2.04
18	16	10	...	...	6	4.0	6.0	5	3.24
16	22	13	...	...	10	6.0	10.0	7	5.16
14	32	17	...	...	20	10.0	16.0	15	8.22
12	41	23	...	...	30	16.0	26.0	20	13.05
10	55	33	...	...	35	...	...	25	20.8
8	73	46	58	36	50	...	...	35	33.0
6	101	60	86	51	70	...	...	50	52.6
4	135	80	108	64	90	...	...	70	83.4
2	181	100	149	82	125	...	...	90	132.8
1	211	125	177	105	150	...	...	100	167.5
0	245	150	204	125	200	...	...	125	212.0
00	283	175	237	146	225	...	...	150	266.0
000	328	200	...	...	275	...	...	175	336.0
0000	380	225	...	...	325	...	...	225	424.0

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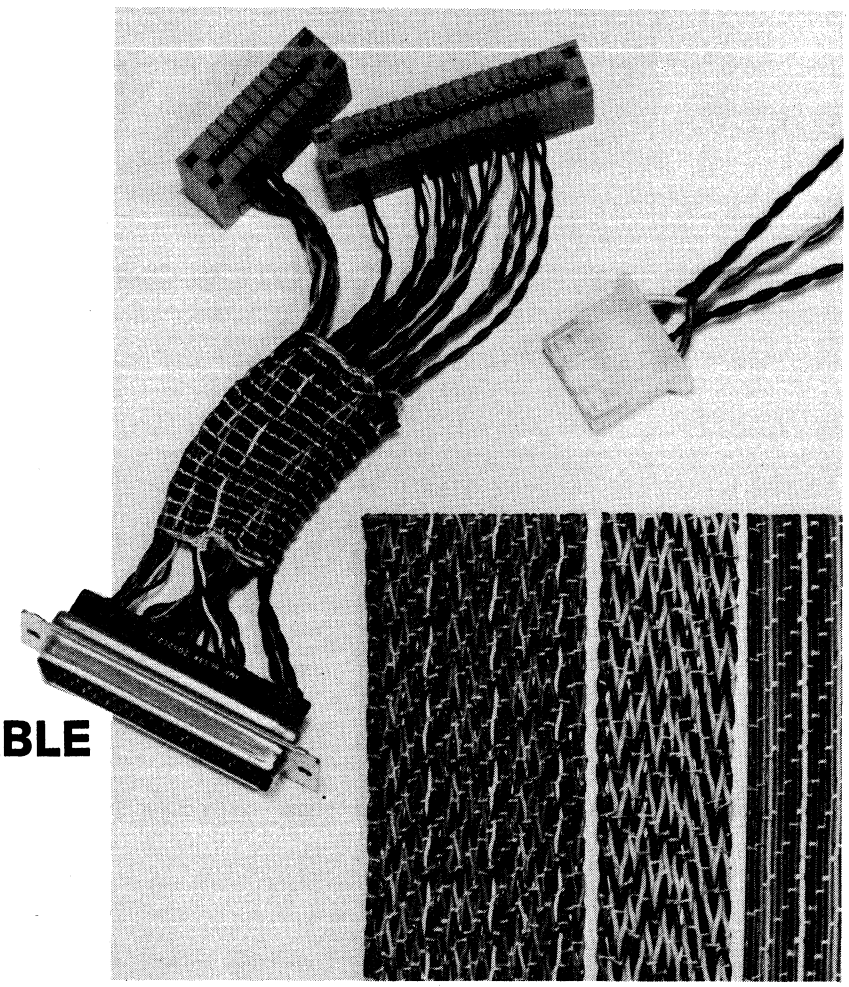

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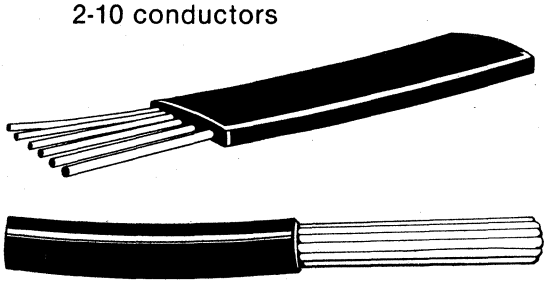
Flat/oval and round multi conductor
2-10 conductors



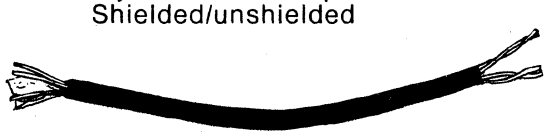
Data transmission/telecommunications

Aluminum/Mylar/Aluminum Foil Tape is wrapped around the conductor with a minimum overlap of 20%. Each signal conductor in the conductor bundle is in intimate contact with the shielding tape. The shield ground (drain) conductor is in high compression contact with the shield tape at any and every point along the length of the cable.

Multi purpose data
2-10 conductors—shielded



LAN Systems twisted pair
Shielded/unshielded



Local area networking/impedance matched data transmission

COLORS

Name	Pearl Grey	Satin Ivory	Satin Black	Computer Grey

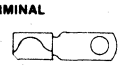
OUTER JACKETS: PVC or CPRE 75

END TERMINATIONS

DESCRIPTION	CODE	PICTORIAL (IN INCHES)
SIX POSITION LINE	S	.260 .390 .480
EIGHT POSITON UNKEYED	U	.312 .260 .460 .532 .845
TEN POSITION UNKEYED	Y	
EIGHT POSITION KEYED	K	.312 .260 .460 .532 .845
SPADE TERMINAL	T	UNINSULATED INSULATED
BLUNT CUT	B	BLUNT JACKET STRIPPED; JACKET AND INSULATION STRIPPED; JACKET STRIPPED, SEMI-STRIPPED INSULATION
SPECIAL TERMINALS	A	CONTACT FACTORY WITH REQUIREMENTS

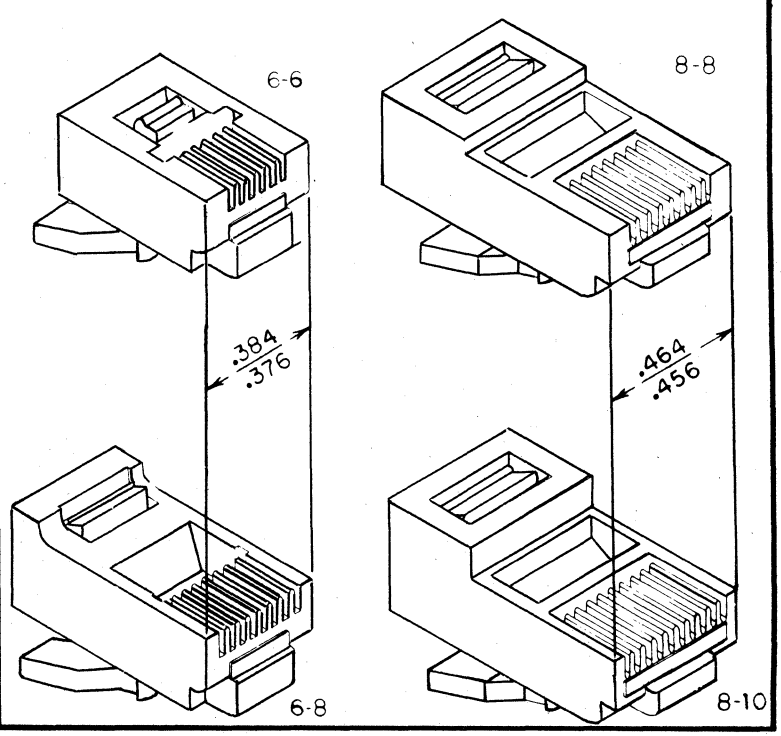
IN RELIEFS

TERMINAL



TOP

TEN LINE CAPACITY IN MODULAR CONNECTION SYSTEM



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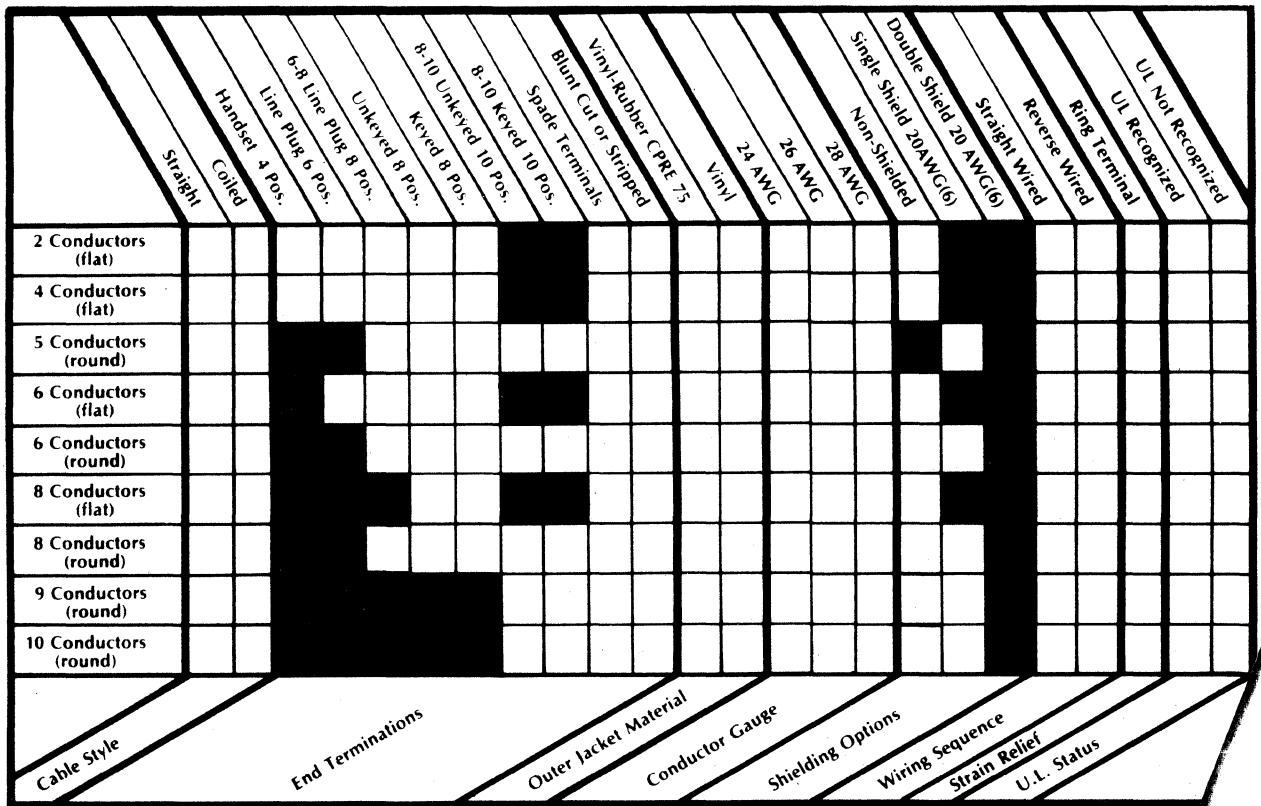
- UL Recognized wiring harnesses.
- Shield is drained by way of 20 AWG ground wire.
- Standard conductor gauge sizes available; 26 AWG, 28 AWG.
- 24 AWG conductor & special sizes upon request.

FEATURE	SHIELDED	NON-SHIELDED
CONDUCTOR TYPE	TIN PLATED COPPER ALLOY	TIN PLATED COPPER ALLOY
CONDUCTOR STRANDING AWG	7X36 (28) 7X34 (26)	7X36 (28) 7X34 (26)
NUMBER OF CONDUCTORS (EX DRAIN)	3, 4, 5, 7, 9	2, 4, 6, 8, 10
DIELECTRIC STRENGTH 1. SIG. COND. TO SIG. COND. 2. SIG. COND. TO GROUND COND. 3. SIG. COND. TO SHIELD COND.	 1000 VRMS MIN. 500 VRMS MIN. 500 VRMS MIN.	 1000 VRMS MIN. 500 VRMS MIN. 500 VRMS MIN.
RESIST. SIG. COND. 26 AWG SIG. COND. 28 AWG GROUND COND. 20 AWG	.131 OHMS/ METER .212 OHMS/ METER .039 OHMS/ METER	.131 OHMS/ METER .212 OHMS/ METER N/A
INSULATION MATERIAL	ORIENTED POLYESTER MYLAR OR CPRE 21	ORIENTED POLYESTER MYLAR OR CPRE 21
INSULATION RESISTANCE SIG. TO SIG. COND. SIG. TO GROUND SIG. TO SHIELD	 1000 MEGOHMS MIN. 500 MEGOHMS MIN. 500 MEGOHMS MIN.	 1000 MEGOHMS MIN. N/A N/A

FEATURE	SHIELDED	NON-SHIELDED
DRAIN WIRE TYPE	TIN PLATED COPPER/ALLOY	N/A
DRAIN WIRE STRANDING	33X36 (20 AWG)	N/A
SHIELD TYPE	DOUBLE FOIL TAPE	N/A
SHIELD COVERAGE	100%	N/A
SHIELD CONFIGURATION	SPIRAL WRAP MIN. 20% OVERLAP	N/A
JACKET MATERIAL	VINYL-RUBBER CPRE 75	VINYL-RUBBER CPRE 75
JACKET FLAMMABILITY RATING	UL94V0 @ .025" THICKNESS UL94V1 @ .030" THICKNESS	UL94V0 @ .025"THICKNESS UL94V1 @ .030" THICKNESS
STRAIGHT CORD	YES	YES
COILED CORD	YES	YES
UL TEMP RATING	80° CELSIUS	80° CELSIUS
UL STYLE IN CPRE 75 ONLY	20187	20187
Jacket Color	Pearl Grey, Satin Ivory, Satin Black, Computer Grey	

WIRING HARNESS OPTIONS



eem

MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

Shape—Circular, cylindrical, and rectangular.

Electrical application—High voltage, RF, microwave, input/output, etc.

Mechanical application—Printed circuit, rack & panel, cable, etc.

Conductor type—Coaxial, flat cable, ribbon cable, flex circuit, etc.

Termination method—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

Contact: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

ents: Often called *con-* ...es the amount of al- ...ement within the ...s self-alignment.

Male vs. female: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

Closed entry: A female contact which prevents entry of a male contact larger than a specific size.

Open entry: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

Hermaphrodite: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

Hermetic seal: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

Waterproof seal: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

Printed circuit connector: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

Edgeboard. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

Two-piece: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

Readout: Describes the arrangement at the terminating edge of a PC board. May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

Ribbon connectors: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

Ribbon contact connector: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

Solderless terminal: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement.*

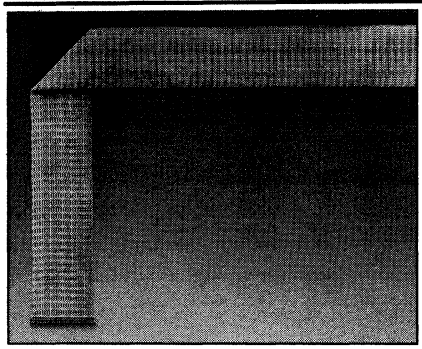
Crimp termination: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

Insulation displacement: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

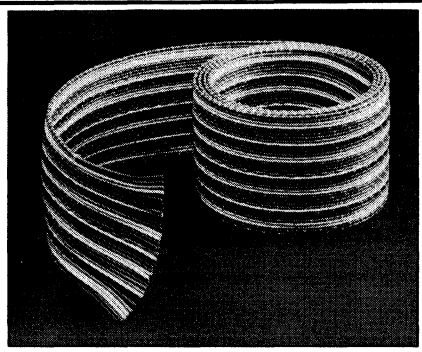
Service rating: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage.* Can be confused with the term used to describe how many times a connector may be mated and separated.

Withstanding voltage: Also called *test voltage.* The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

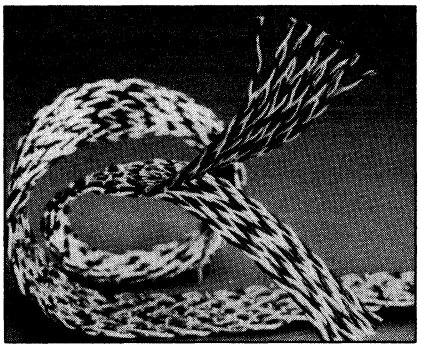
C-1925



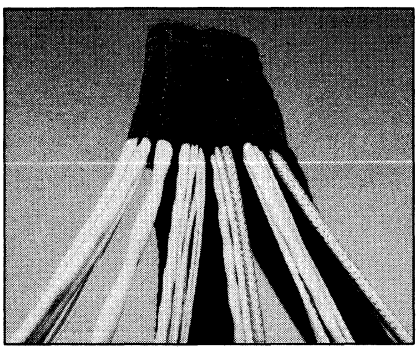
Space-Mizer™ Cable



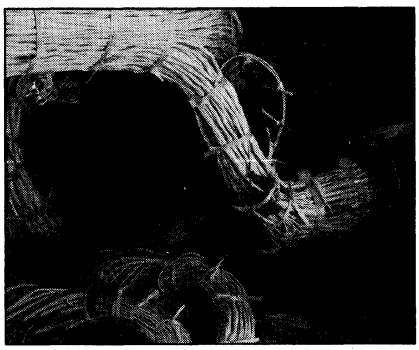
Woven Ribbon Cable



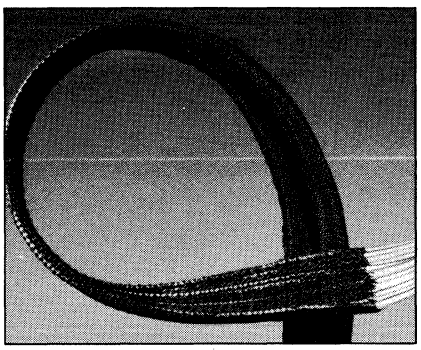
Multi-Layer™ Cable



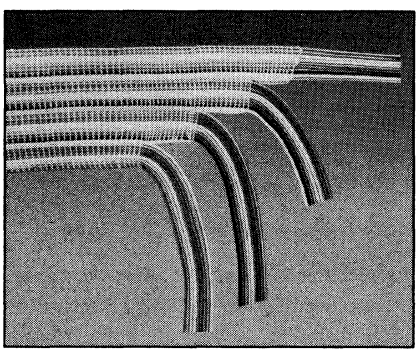
Dense-Pak™ Cable



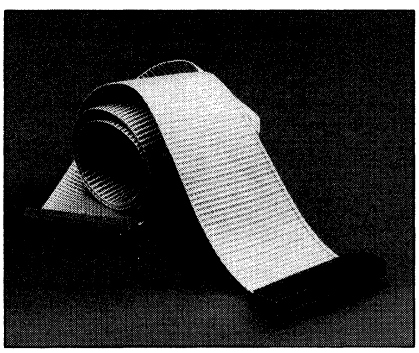
Custom Harnesses



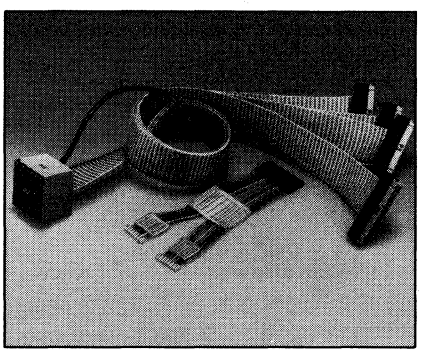
Flat-To-Round™ Cable



Programmed Breakouts



Controlled Impedance Cable



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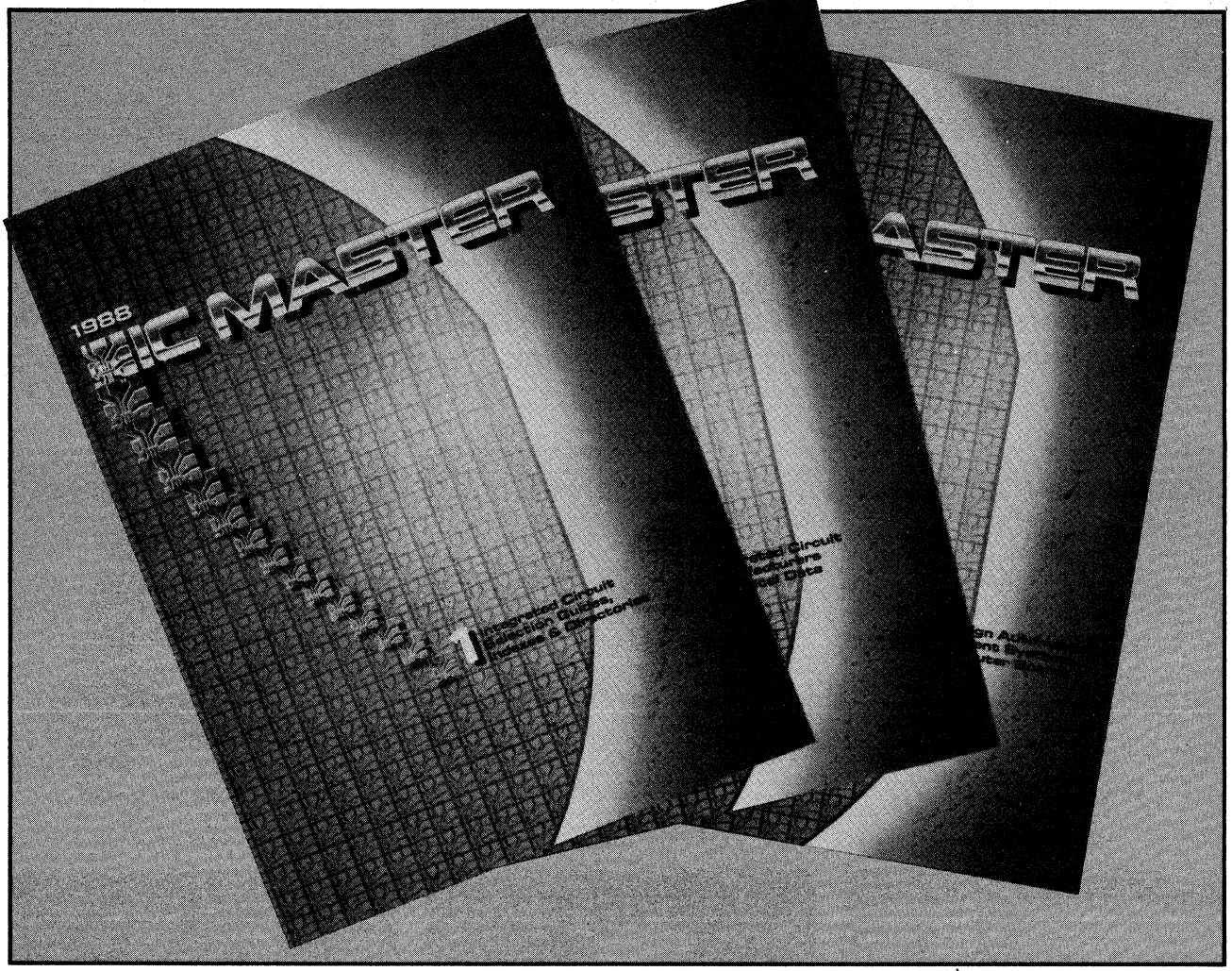

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C-1927

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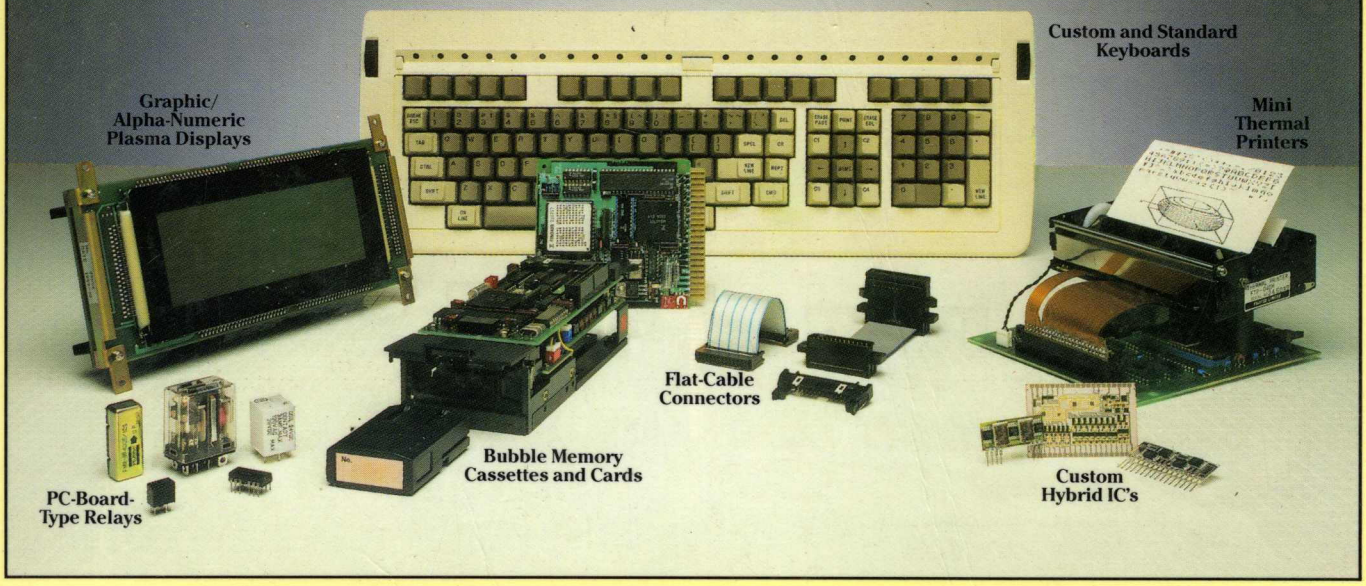

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