SMART BACKUP!

PRIAM’s Intelligent Interfaces For Winchester Discs And Tape Drives

Save time and money by using PRIAM’s intelligent interfaces. PRIAM has expanded the SMART family to support backup to your Winchester disc systems. Take your pick from 1/4-inch streaming cartridge tape or 1/2-inch tape. PRIAM SMART Interfaces can be mounted on PRIAM drives or separately, and they can be powered from PRIAM’s disc drive power supplies.

SMART

Lowest in cost of PRIAM’s three intelligent interfaces, the SMART Interface is smart indeed. It includes error checking, disc formatting, selectable sector sizes, full-sector buffering, defect mapping, self-test, and power-down data protection.

SMART-E

Also low in cost, the SMART-E provides all the SMART functions, plus ECC with error correction transparent to the host and high-performance hardware/firmware. Backup is provided by daisy-chaining the EPI STR-Stream* 17-megabyte 1/4-inch cartridge drive or the Pragma DAC 2080* 80-megabyte 1/2-inch cartridge drive.

SMART-T

Compatible with the SMART and SMART-E, the SMART-T provides off-line streaming backup with host access to the database during backup. The SMART-T controls Archive Sidewinder*, DEI Streamer* and Cipher Quarterback* 1/4-inch streaming cartridge tape drives.

In addition to the SMART series, a complete list of disc controllers for popular host busses is available from PRIAM.

MAKE THE SMART CONNECTION FOR WINCHESTER DISC DRIVES AND BACKUP NOW! Get complete information about the SMART, SMART-E, and SMART-T by writing or calling:

PRIAM

20 West Montague Expressway, San Jose, CA 95134 (408) 946-4600 TWX 910-338-0293

Other PRIAM
Sales Offices:

New England
(617) 444-5030

Mid-Atlantic
(201) 542-8778

Midwest
(312) 961-9654

Southern Calif.
(714) 994-3593

*STR-Stream is a trademark of Electronic Processors, Inc.; DAC 2080 is a trademark of Pragma Data Systems, Inc.; Sidewinder is a trademark of Archive Corporation; Streamer is a trademark of Data Electronics, Inc.; Quarterback is a trademark of Cipher Data Products, Inc.
The PRIAM SMART-E Interface is a powerful microprocessor-controlled device that supports any mix of PRIAM disc drives from 10 to 158 megabytes. The device's high-level command set and its general purpose host interface with DMA transfer allow easy attachment to a wide range of host buses. And the advanced SMART-E Interface architecture incorporates high-speed logic to meet the performance demands of advanced systems and fast data transfer rates. The SMART-E is an extended version of PRIAM's well-known SMART Interface. It includes all SMART features plus ECC, streamlined software, sector interleaving, a 2048-byte buffer and logical sector addressing.

The SMART-E Interface was designed specifically for PRIAM disc drives and is fully tested on all PRIAM drive types to ensure smooth storage subsystem integration. And since the majority of the high-level functions are performed in firmware, parts count is reduced and reliability is increased.

FEATURES
- Controls up to four daisy-chained drives.
- Supports all PRIAM 14-inch and 8-inch disc products and any intermix thereof.
- Designed for straightforward attachment to the typical microprocessor bus.
- Performs all serialization, deserialization, and disc format related functions.
- Selectable sector size: 128, 256, 512, and 1024 bytes.
- Buffer capacity of 2048 bytes.
- Full-sector buffer:
  - Data transfers may be program I/O or DMA driven
  - Buffered mode simplifies interfacing and eliminates data-late errors due to DMA latency
  - Buffer is prefilled prior to data transfer
  - Nonbuffered mode data transfers are at disc speed
- Device control block oriented: Simplifies host interface, reduces control protocols, isolates host from physical control of the drives.
- Media defects may be automatically avoided with transparent bad-sector flagging and alternate sector mapping.
- Automatic alternate-track assignment is made when there are more than three defects per track.
- Overlapped commands: For example, the host may seek or restore on three drives while seeking, reading, or writing on another drive.
- High-level Format command supports a variety of interleaved formats.
- Data may be addressed by logical sector number or a physical sector address.
- Implied Seek: Automatic track seek and position verification.
- Implied Operations: Automatic sequence up, restore, seek and position verification on read or write operations.
- Automatic self-test mode with resident microdiagnostics.
- Automatic power down data protection.
- Automatic error retry.
- Automatic Head and Cylinder Switching during multi-sector operations.
- Header and data are checked by 32-bit ECC. Automatic correction is transparent to the Host.
- Can be mounted piggy-back on PRIAM 8-inch and 14-inch disc drives.
- Can be powered by the PRIAM 14-inch disc drive optional power supply.

TRANSFER RATE
0 to 2 megabytes/second.

POWER
3A @ +5 VDC. Supplied by optional PRIAM 14-inch disc drive power supply or by host system.

PHYSICAL DIMENSIONS
8 inches by 14 inches.

CONNECTORS
- Signal: 40-pin ribbon cable. 3M #3432-1302 or equivalent.
- Power: 2-pin Molex Housing Series 2139 #09-50-3021
  Molex Pins Series 2478 #08-50-0105 or equivalent.
FUNCTIONAL CONTROLLER COMMANDS
- Write Data: Causes data to be written according to specified parameters, e.g., which drive, cylinder, head, sector, and number of sectors. Sequence Up and Seek are implied by this command.
- Read Data: Causes data to be read according to same parameters specified in Write Data command.
- Format Disc: Performs complete disc formatting operation, including assignment of alternate sectors for each sector containing a defect.
- Format Cylinder: Limits formatting operation to the cylinder defined by parameters.
- Format Track: Limits formatting operation to track defined by parameters.
- Verify Disc: Verifies that disc is formatted correctly. Each sector ID and data field is read and CRC checked.
- Verify Cylinder: Limits verify operation to cylinder defined by parameters.
- Verify Track: Limits verify operation to track defined by parameters.
- Write ID: ID field will be written at physical sector specified by parameters.
- Read ID: ID field will be read from specified physical sector.
- Verify ID: ID field will be read from specified physical sector except that data is not transferred to the host. The ID field ECC will be checked to verify the ID was written without a disc-generated error.
- Verify Data: Specified data field will be read from disc, except that data will not be transferred to the host. Data field ECC will be checked to verify the data was written without a disc-generated error.
- Read Defect Field: Skip defect field will be read in accordance with specified parameters.
- Read Drive Status: Used to obtain current status of drive.

Sequence Up—Wait: Causes addressed drive to enable its spindle motor. When command is complete, drive will be at speed and heads will be positioned at cylinder zero.
Sequence Up—Return: Causes addressed drive to enable its spindle motor. This command is completed before drive is at speed and heads positioned at cylinder zero.
Sequence Down: Addressed drive will disable the spindle motor and initiate dynamic braking.
Restore Drive: Addressed drive moves access arm to cylinder zero.
Seek: Drive positions heads over specified cylinder and selects specified head.
Write Buffer: Causes data transfer from host to data buffer. This command is implied in every write operation.
Read Buffer: Causes data transfer from data buffer to the host. This command is implied in every read operation.
Command Completion Acknowledge: This command is issued after noticing that a command has been completed via the Controller Status Register and reading the appropriate Result Registers. Issuing this command releases the Result Registers for use in the next command completion phase.

DATA VERIFICATION/CORRECTION TECHNIQUE
- Error Checking and Correction (ECC) value is computed by the SMART-E Interface during each write operation based on actual data content or header content.
- Computed ECC value is automatically appended to the end of each data and header field by the SMART-E Interface.
- If automatic correction is enabled, the SMART-E Interface automatically computes the error syndrome value based on the actual read and performs correction. Also, the sector is checked for defects and an alternate sector will automatically be assigned if required.
- If automatic correction is not enabled, syndrome information is available for Host correction.

NOTE: While the SMART-E and SMART Interfaces are interchangeable, data written with one type cannot be read by the other. Changing from the SMART-E to the SMART, or vice versa, will require the disc to be reformatted.

3096 Orchard Drive, San Jose, CA 95134  (408) 946-4600  TWX 910-338-0293
4/81  15M
## PRIAM BACK UP SUGGESTIONS

<table>
<thead>
<tr>
<th>Type of Device</th>
<th>Manufacturer and Contact</th>
<th>Brief Specifications</th>
</tr>
</thead>
</table>
| Standard 1/2-inch streaming tape drive        | Cipher Data Products, Inc.  
10225 Willow Creek Road  
San Diego, CA 92131  
TEL: (714) 578-9100  
TWX: 910-335-1251  
Larry Hemmerich, VP Marketing  
Frank Kirchoff, Sales Manager | Model: MicroStreamer  
Capacity: 45 & 90 megabytes  
Size: 8.75" x 17" x 22"                                                                 |
| 1/2-inch tape cartridge drive                 | Pragma Data Systems, Inc.  
610 Palomar Avenue  
Sunnyvale, CA 94086  
TEL: (408) 738-8215  
TLX: 171627-Atttn: PRAGMA  
TWX: 910-379-0029-Atttn: PRAGMA  
Tom McCrystal, President  
John Peters, Product Manager | Model: DAC 2080  
Capacity: 80 megabytes  
Size: 4.62" x 8.55" x 14.25"  
Interface: PRIAM compatible                                                                 |
| Megatape Corporation                          |                                                                                         | Model: MegaStor 200 & 400  
Capacity: 160 & 300 megabytes  
(available June '82)  
Size: 8.75" x 12" x 20"  
Interface: Cipher MicroStreamer compatible                                               |
| 1/4-inch tape cartridge drive                 | Electronic Processors, Inc.  
1255 West Dartmouth Avenue  
Englewood, CO 80110  
TEL: (303) 761-8540  
TWX: 910-933-0171  
Bob Dershang, Executive VP  
Vince Stinton, Product Manager | Model: STR-Stream  
Capacity: 17 megabytes  
Size: 4" x 7" x 13"  
Interface: PRIAM, DEI Funnel, and Pertec compatible                                         |
| Archive Corporation                           |                                                                                         | Model: Sidewinder  
Capacity: 10 & 20 megabytes  
Size: 4" x 8" x 14"                                                                 |
| Cipher Data Products, Inc.  
(See address and phone above)                 |                                                                                         | Model: Quarterback  
Capacity: 10 & 20 megabytes  
Size: 4" x 8" x 14"  
Interface: Archive Sidewinder compatible                                                   |
| Data Electronics, Inc.  
10150 Sorrento Valley Road  
San Diego, CA 92121  
TEL: (714) 452-7840  
TLX: 69-7118  
Sam Thompson, VP Marketing  
Whitney Lynn, Nat'l Sales Manager | Model: Funnel & Streamer  
Capacity: 10, 17 & 20 megabytes  
Size: 4" x 8" x 14"                                                                 |

(OVER FOR SELECTED CONTROLLERS)
PRIAM BACK UP SUGGESTIONS (CONTINUED)

BACKUP DEVICE CONTROLLERS

SMART-Compatible (Generalized Host Bus)

EPI and PRAGMA are supported in daisy-chain mode by the PRIAM SMART-E.

Host Bus

Host adapters are available from selected sources:

<table>
<thead>
<tr>
<th>Host</th>
<th>Adapter Vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data General</td>
<td>Rianda</td>
</tr>
<tr>
<td>DEC LSI-11</td>
<td>Peritek</td>
</tr>
<tr>
<td>General Automation</td>
<td>Dataplex</td>
</tr>
<tr>
<td>Motorola -MC6800</td>
<td>Nevox</td>
</tr>
<tr>
<td>-MC68000</td>
<td>Child</td>
</tr>
<tr>
<td>S-100</td>
<td>Alloy Engineering</td>
</tr>
</tbody>
</table>

Archive Sidewinder/Cipher Quarterback and DEI Streamer are supported by the SMART-T.

CIPHER MICROSTREAMER/MEGATAPE MEGASTOR

Alloy Engineering
Computer Products
Custom Systems
Dataplex
Dilog
MicroComputer Systems
Quentin Research
Schuler & Associates
Spectra Logic

Archive Sidewinder/Cipher Quarterback

SMART-T
Child
Computer Products
Rianda Electronics
Spectra Logic

DEI STREAMER

SMART-T

DEI FUNNEL/EPI STR-STREAM

Alloy Engineering
Xylogics

EPI STR-STREAM* & PRAGMA DAC 2080*

Computer Products
Custom Systems (available '82)
Dataplex
Dilog
Intel
Motor
U.S. Design
Xylogics

Intel Multibus
Data General, TI-990
General Automation
DEC LSI-11, PDP-11
TI-990
Data General
TI-990
Data General, DEC PDP-11, Perkin Elmer,
TI-990

S-100
Multibus
Data General, TI-990
General Automation
DEC LSI-11, PDP-11
TI-990
Data General
TI-990
Data General, DEC PDP-11, Perkin Elmer,
TI-990

S-100

* NOTE: PRIAM-compatible controllers and SMART-E host adapters may require microcode
or software driver modifications to support the EPI STR-Stream and PRAGMA DAC 2080.

** **

See the PRIAM Controller Directory for more complete information on controllers and vendors. The
directory is available from PRIAM on request.

** **
<table>
<thead>
<tr>
<th><strong>HOST BUS</strong></th>
<th><strong>DATA GENERAL (NOVA/ECLIPSE)</strong></th>
<th><strong>HOST BUS</strong></th>
<th><strong>DISC INTERFACE</strong></th>
<th><strong>COMMENTS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Custom Systems</td>
<td></td>
<td>PRIAM</td>
<td>Emulates DG-6070, 6060; backup controller for Cipher MicroStreamer; supports RIDOS, AOS, BLISCORAL, IRIS</td>
</tr>
<tr>
<td></td>
<td>Minicomputer Technology</td>
<td></td>
<td>SMD</td>
<td>Emulates all models of Zebra 6060 series; supports RIDOS, AOS</td>
</tr>
<tr>
<td></td>
<td>Quentin Research</td>
<td></td>
<td>SMD</td>
<td>Models 6100 and 8200; emulates DG-6098 or DG-6103; supports RIDOS, AOS, Point &amp; IRIS, TP1 BLISCORAL; 8200 has Cipher Microstreamer port</td>
</tr>
<tr>
<td></td>
<td>Riaida Electronics</td>
<td></td>
<td>SMART</td>
<td>Model 2900; backup port for Archive/Cipher streamers; supports RIDOS, IRIS</td>
</tr>
<tr>
<td></td>
<td>Spectra Logic</td>
<td></td>
<td>SMD</td>
<td>Spectra 20; DG-6067 emulator; backup port for Cipher Microstreamer; supports RIDOS, AOS, IRIS; Spectra 10 supports disc only</td>
</tr>
<tr>
<td></td>
<td>Xylogics</td>
<td></td>
<td>SMD</td>
<td>Model 850; supports RIDOS, AOS, BLISCORAL, IRIS</td>
</tr>
<tr>
<td><strong>DIGITAL EQUIPMENT CORP</strong></td>
<td></td>
<td></td>
<td><strong>Q-BUS (LSI-11)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dilog</td>
<td></td>
<td>PRIAM</td>
<td>Model DQ413; RPO2 and RL01/02 emulation; Cipher Microstreamer backup</td>
</tr>
<tr>
<td></td>
<td>Emulex</td>
<td></td>
<td>SMD</td>
<td>Model SC02; RPO2/03 emulation</td>
</tr>
<tr>
<td></td>
<td>Minicomputer Technology</td>
<td></td>
<td>SMD</td>
<td>RX06/07 and RM02/03 emulation; supports RXS-1LM, RT-11, RSTS/E</td>
</tr>
<tr>
<td></td>
<td>Peritek</td>
<td></td>
<td>SMART</td>
<td>Model PRM-Q11; supports RXS-1LM, RT-11, UNIX</td>
</tr>
<tr>
<td></td>
<td>USBC</td>
<td></td>
<td>PRIAM</td>
<td>Model USBC 1101; supports RSTS/E, RXS-1LM, UNIX; multiported, data caching, ECC; backup port for PRAGMA and EPI tape drives</td>
</tr>
<tr>
<td></td>
<td>Xylogics</td>
<td></td>
<td>PRIAM</td>
<td>Model 530; emulates RL01/02; supports RXS-1LM, RT-11, RSTS/E</td>
</tr>
<tr>
<td><strong>UNITBUS (PDP-11)</strong></td>
<td></td>
<td></td>
<td>SMD</td>
<td>Model DU202; RPO2 and RL01/02 emulation; Cipher Microstreamer backup</td>
</tr>
<tr>
<td></td>
<td>Dilog</td>
<td></td>
<td>SMD</td>
<td>Model SC21; RPO2/03 emulation; also attaches to PDP-11/70</td>
</tr>
<tr>
<td></td>
<td>Emulex</td>
<td></td>
<td>SMD</td>
<td>Spectra 21; RM02/03 emulation; backup port for Cipher Microstreamer; supports RXS-1LM, RSTS/E; Spectra 11 supports disc only</td>
</tr>
<tr>
<td></td>
<td>Spectra Logic</td>
<td></td>
<td>PRIAM</td>
<td>Model USBC 1151; supports RSTS/E, RXS-1LM, RT-11, UNIX; multiported, data caching, ECC; backup port for PRAGMA and EPI tape drives</td>
</tr>
<tr>
<td></td>
<td>Xylogics</td>
<td></td>
<td>SMD</td>
<td>Model 650; emulates RM02; supports RXS-1LM, RT-11, RSTS/E</td>
</tr>
<tr>
<td><strong>GENERAL AUTOMATION</strong></td>
<td></td>
<td></td>
<td>SMART</td>
<td>Attaches to GA-16 and SPC-16 series CPU models; supports CONTROL, MIBS, RTOS, DBOS; backup controller for Cipher Microstreamer</td>
</tr>
<tr>
<td></td>
<td>Dataplex</td>
<td></td>
<td>PRIAM</td>
<td>Attaches to Commodore PET (emulates DOS) and Hewlett Packard; EPI/PRAGMA</td>
</tr>
<tr>
<td><strong>IEEE 1168</strong></td>
<td></td>
<td></td>
<td>PRIAM</td>
<td>Attaches to iSBC or MDS, 8-bit or 16-bit Multibus; supports CP/M and MP/M; backup port for Archive/Cipher and DEI streamers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRIAM</td>
<td>Attaches to iSBC or MDS; supports CP/M &amp; MP/M; backup port for Cipher Microstreamer and Archive/Cipher streamers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PRIAM</td>
<td>Model iSBC 215B; attaches to iSBC 80, 88, and 86</td>
</tr>
<tr>
<td><strong>INTEL (MULTIBUS)</strong></td>
<td></td>
<td></td>
<td>PRIAM</td>
<td>Operates in DMA or parallel modes; supports EPI/PRAGMA tape drives</td>
</tr>
<tr>
<td></td>
<td>ADIS</td>
<td></td>
<td>SMART</td>
<td>Macromodule Series-The Controller; 5809 software driver; 4-channel DMA; uninterruptible clock calendar; backup port for floppy disc</td>
</tr>
<tr>
<td></td>
<td>Computer Products</td>
<td></td>
<td>SMART</td>
<td>Model DTA; backup port for Archive/Cipher streamers; supports DMA</td>
</tr>
<tr>
<td></td>
<td>Intel</td>
<td></td>
<td>SMD</td>
<td>Model M68KUDC; supports VERSADOOS executive and multi-user/multi-task file manager; backup port for floppy disc</td>
</tr>
<tr>
<td><strong>MOTOROLA</strong></td>
<td></td>
<td></td>
<td>SMD</td>
<td>Model Spectra 14; M5M emulation</td>
</tr>
<tr>
<td></td>
<td>WC5800 (EXORCISER BUS)</td>
<td></td>
<td>PRIAM</td>
<td>Full communications envelope and file management; supports EPI/PRAGMA</td>
</tr>
<tr>
<td></td>
<td>Novex</td>
<td></td>
<td>PRIAM</td>
<td>Supports CP/M, MP/M; backup port for Archive/Cipher and DEI streamers</td>
</tr>
<tr>
<td></td>
<td>EXP58000 (VERSABUS)</td>
<td></td>
<td>SMART</td>
<td>Supports CP/M; backup port for DEI cartridge, Cipher Microstreamer</td>
</tr>
<tr>
<td></td>
<td>Child</td>
<td></td>
<td>PRIAM</td>
<td>Attaches to CPU models/10, 12; supports DX-10; Cipher Microstreamer backup</td>
</tr>
<tr>
<td></td>
<td>Motorola</td>
<td></td>
<td>SMD</td>
<td>Model 1990; attaches to CPU models /5, /10, /12; supports DX-10; backup controller for Cipher Microstreamer</td>
</tr>
<tr>
<td></td>
<td>PERKIN ELMER (INTERDATA)</td>
<td></td>
<td>SMD</td>
<td>Spectra 26; backup ports for Cipher Microstreamer and Archive/Cipher streamers; supports DX-10; Spectra 16 is disc only</td>
</tr>
<tr>
<td></td>
<td>Spectra Logic</td>
<td></td>
<td>PRIAM</td>
<td>Supports CP/M, MP/M; backup port for Archive/Cipher and DEI streamers</td>
</tr>
<tr>
<td><strong>MOTOROLA</strong></td>
<td></td>
<td></td>
<td><strong>S-100</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADIS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alloy Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>T-100</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Custom Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microcomputer Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spectra Logic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zilog Z-80</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ADES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2/3/82
1705A/8A
ADES
2627 Pomona Blvd.
Pomona, CA 91766
(714) 594-5858
DON WATZ, Sales Manager
BILL HORTON, V.P. Engineering

ALLOY ENGINEERING CO., INC.
12 Mercer Road
Waltham, MA 01760
(617) 655-3900
TX: 710-346-0394
DICK GORENS, VP & General Manager
NIGEL SPICER, Director of Marketing

CHILD, INC.
P.O. Box 2326
Ann Arbor, MI 48106
(313) 971-8192
 GEOFF ROGER, Exec. VP
MICHAEL FISCHER, VP Systems

COMPUTER PRODUCTS CORPORATION
2413 Annapolis Lane
Plymouth, MN 55441
(612) 559-2034
TLX: 985651-ATTN-SHERMAN KEMMER
RON THOMAS, President
STU REILE, Director, Marketing & Sales

CUSTOM SYSTEMS, INC.
6850 Shady Oak Road
Eden Prairie, MN 55344
(612) 961-9480
TLX: 290975
DAVE CLINTON, President
PARIS CAMPBELL, VP Marketing

DATAPLEX, INC.
2351 Devon Avenue
Elk Grove Village, IL 60007
(312) 860-5665
WALTER WULCZAK, President
RUBY CUTZER, Director Marketing

DILOG
12800-C Garden Grove Blvd.
Garden Grove, CA 92643
(714) 534-8950
TLX: 681399
LES ALBERTS, VP Marketing
DENNIS EDWARDS, Sales Manager

EMULEX
2001 E. Deere Ave.
Santa Ana, CA 92705
(714) 557-7580
TX: 910-595-2521
FRED OX, President
FLIP BEICHE, National Sales Director

INTEL CORPORATION
5200 Northeast Elan Young Parkway
M/S H2-E2-34
Hillsboro, OR 97123
(503) 660-7135/7156
TX: 910-667-7073
BILL WALKER, OEM Marketing (x 7135)
BRUCE OLENCHUK, 215B Prod. Mgr. (x 7156)

MOTOR NEW TECHNOLOGY
Willet House
12 Grand Avenue
Hove, East Sussex, BN3 2PQ
Brighton 720451/2 (std code 0273)
TLX: 877680
JOHN MARSH, VP Marketing

MOTOR INC.
3002 Santa Monica Blvd.
Santa Monica, CA 90404
213-826-5200
TOM MISKELLY, Managing Director

MICROCOMPUTER SYSTEMS CORPORATION
432 Lakeside Drive
Sunnyvale, CA 94086
(408) 733-4200
TX: 910-339-9359
MIKE RAIY, General Manager-OEM
NEAL CREELEY, National OEM Sales Manager

MINICOMPUTER TECHNOLOGY
2740 El mediocreo Way
Palo Alto, CA 94303
(415) 856-7400
TX: 910-373-1292
RICHARD HILL, President
NICK HORN, VP Marketing

MOTOROLA, INC.
(See local Motorola Semiconductor Division 3MC68000 Sales Engineer)

NOVEX, INC.
P.O. Box 3006
Gaithersburg, MD 20760
(301) 845-8575
STEVE PARKS, President

PERITEK
3014 Lakeshore Avenue
Oakland, CA 94610
(415) 465-9000
TX: 910-366-2029
ERIC WEGBERG, President
TOM BIRCHET, Sales Manager

QUENTIN RESEARCH, INC.
19355 Business Center Drive
Northridge, CA 91324
(213) 701-1006
TX: 910-499-2174
DAN DREY, President

RIANDA ELECTRONICS
2535 Via Palma
Anahiem, CA 92801
(714) 995-6552
TX: 18-1523
WALLY RIANDA, President

REDROCK, National Sales

SPECTRA LOGIC
1227 Innsbruck Drive
Sunnyvale, CA 94086
(408) 764-0930
TX: 172-524
STEVE ROBERTS, VP Marketing

U.S. DESIGN CORPORATION
5100 Philadelphia Way
Lanham, MD 20706
(301) 577-2880
BOB RUDY, National Sales Manager

XYLOGICS
42 Third Avenue
Burlington, MA 01803
(617) 272-8140
TX: 710-332-0262
WAYNE GRIFFITH, President
LYNN SPEAKER, VP Sales
<table>
<thead>
<tr>
<th>HOST BUS</th>
<th>DISC INTERFACE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA GENERAL (KIVA/ECLIPSE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Custom Systems</td>
<td>PRIAM Emulates DC-6070, 6060; backup controller for Cipher Microstreamer; supports RDOS, AOS, BLISCORAL, IRIS</td>
<td></td>
</tr>
<tr>
<td>Minicomputer Technology</td>
<td>SMD Emulates all models of Zebra 6060 series; supports RDOS, AOS</td>
<td></td>
</tr>
<tr>
<td>Quentin Research</td>
<td>SMD Models 6100 and 8200; emulates DC-6098 or DC-6103; supports RDOS, AOS, Point 4 IRIE, IPI Blis/Cobol; model 8200 has Cipher Microstreamer backup port emulating DC-6021 and DC-6026</td>
<td></td>
</tr>
<tr>
<td>Rianda Electronics</td>
<td>SMART Backup port for Archive cartridge drives; supports RDOS, BLISCORAL, IRIS</td>
<td></td>
</tr>
<tr>
<td>Spectra Logic</td>
<td>SMD Spectra 2G; DC-6067 emulator; backup port for Cipher Microstreamer; supports RDOS, AOS, IRIS</td>
<td></td>
</tr>
<tr>
<td>Xylogics</td>
<td>SMD Model 850; supports RDOS, AOS, BLISCORAL, IRIS</td>
<td></td>
</tr>
<tr>
<td>DIGITAL EQUIPMENT CORP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q-BUS (LSI-11)</td>
<td>PRIAM Model DQ203; RPO2 and RL01/02 emulation; backup controller for Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>Dilog</td>
<td>PRIAM Model SEC02; RPO2/03 emulation</td>
<td></td>
</tr>
<tr>
<td>Eumex</td>
<td>SMD Model RM02/03 emulation; supports RSX-1M, RT-11, RSTS/E</td>
<td></td>
</tr>
<tr>
<td>Motor Systems Ltd.</td>
<td>SMART Model FM-QL1; supports RSX-1M, RT-11, UNIX; also supports DEC 22-bit &quot;STD 160&quot; Q-BUS</td>
<td></td>
</tr>
<tr>
<td>Minicomputer Technology</td>
<td>PRIAM Model 530; emulates RL01/02; supports RSX-1M, RT-11, RSTS/E</td>
<td></td>
</tr>
<tr>
<td>Peritek</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xylogics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIBUS (PDP-11)</td>
<td>PRIAM Model DU203; RPO2 and RL01/02 emulation; backup controller for Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>Dilog</td>
<td>SMD Model SC21; RPO2/03 emulation; also attaches to PDP-11/70</td>
<td></td>
</tr>
<tr>
<td>Eumex</td>
<td>SMD Same as LSI-11 above; also emulates RPO4/06</td>
<td></td>
</tr>
<tr>
<td>Minicomputer Technology</td>
<td>SMD Spectra 21; RM02/03 emulation; backup port for Cipher Microstreamer; supports RSX-1M, RSTS/E</td>
<td></td>
</tr>
<tr>
<td>Spectra Logic</td>
<td>SMD Model 650; emulates RM02; supports RSX-1M, RT-11, RSTS/E; also attaches to VAX-11/780</td>
<td></td>
</tr>
<tr>
<td>Xylogics</td>
<td>SMART Attaches to GA-16 and SPC-16 series CPU models; supports CONTROL, MIBS, RTOS, DBOS; backup controller for Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>GENERAL AUTOMATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dataplex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTEL (MULTIBUS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADES</td>
<td>PRIAM Attaches to IBM or MDS, 8-bit or 16-bit Multibus; supports CP/M and MP/M; backup port for Archive cartridge</td>
<td></td>
</tr>
<tr>
<td>Computer Products</td>
<td>PRIAM Attaches to IBM or MDS; supports CP/M; backup port for Cipher Microstreamer or DEI cartridge; also attaches to 2-80 Multibus</td>
<td></td>
</tr>
<tr>
<td>Intel</td>
<td>PRIAM Model iSEC 215B; attaches to iSEC 80, 88, and 86</td>
<td></td>
</tr>
<tr>
<td>Motor Systems Ltd.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOTOROLA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC98000 (EXORCISE BUS)</td>
<td>SMART Macromodule Series-The Controller; 6809 software driver; 4-channel DMA; uninterruptible clock calendar; backup port for floppy disc</td>
<td></td>
</tr>
<tr>
<td>Novex</td>
<td>SMD Model M68KUD; supports VERSADOS executive and multi-user/multi-task file manager; backup port for floppy disc</td>
<td></td>
</tr>
<tr>
<td>MC980000 (VERSABUS)</td>
<td>PRIAM</td>
<td></td>
</tr>
<tr>
<td>Motorola</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SV Associates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERKIN ELMER (INTERDATA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minicomputer Technology</td>
<td>SMD Model EDC23; supports OS/16 and OS/32</td>
<td></td>
</tr>
<tr>
<td>Spectra Logic</td>
<td>SMD Model Spectra 14; MSM emulation</td>
<td></td>
</tr>
<tr>
<td>RS-232</td>
<td>PRIAM</td>
<td></td>
</tr>
<tr>
<td>Mator Systems Ltd.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-100</td>
<td>PRIAM</td>
<td></td>
</tr>
<tr>
<td>ADES</td>
<td>PRIAM Supports CP/M, MP/M; backup port for Archive cartridge</td>
<td></td>
</tr>
<tr>
<td>Alloy Engineering</td>
<td>SMART Supports CP/M; backup port for DEI cartridge, Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>Motor Systems Ltd.</td>
<td>PRIAM</td>
<td></td>
</tr>
<tr>
<td>T1-990</td>
<td>PRIAM</td>
<td></td>
</tr>
<tr>
<td>Custom Systems</td>
<td>PRIAM Attaches to CPU models/10, 12; supports DX-10; backup controller for Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>Microcomputer Systems</td>
<td>SMD Model 1990; attaches to CPU models /5, /10, /12; supports DX-10; backup controller for Cipher Microstreamer</td>
<td></td>
</tr>
<tr>
<td>Schuler &amp; Associates</td>
<td>SMD Distributor for MSC T1-990 controller line</td>
<td></td>
</tr>
</tbody>
</table>
ALLE
2677 Pomea Blvd.
Pomona, CA 91766
(714)356-5858
RAY LAHAT, President
DAYN NELSTROM, V.P. Marketing

ALLOY ENGINEERING CO., INC.
12 Mercer Road
Natick, MA 01760
(617)365-3900
TX: 710-346-0394
DICK GORGENS, VP & General Manager
NEIL SPIKER, Director of Marketing

COMPUTER PRODUCTS CORPORATION
2415 Annapolis Lane
Plymouth, MN 55441
(612) 559-2036
TLX: 985641-ATTN-SHERMAN KEMPER
RON THOMAS, President
MIKE O'QUELY, Vice President

CUSTOM SYSTEMS, INC.
6550 Shady Oak Road
Eden Prairie, MN 55344
(612) 941-9480
TX: 290975
DAVE CLINTON, President
PARIS CAMPBELL, VP Marketing

DATAFLEX, INC.
3231 Devon Avenue
Elk Grove Village, IL 60007
(312)860-5665
WALTER WIJZAK, President
TOM PHINNEY, VP Marketing

DILOG
12800-G Garden Grove Blvd.
Garden Grove, CA 92643
(714)534-8950
TLX: 661399
GLEN SALLEY, President
LES ALBERTS, Sales Manager

EMLER
2001 E. Deere Ave.
Santa Ana, CA 92705
(714)557-7680
TX: 910-585-2521
FRED COX, President
BILL ROBERTS, Chairman

INTEL CORPORATION
5200 Northeast Elam Young Parkway
M/S HZ-ZE-343
Hillsboro, OR 97123
(503)364-7135/7156
TX: 910-467-7073
BILL WALKER, OEM Marketing (x 7135)
BRUCE OLCHUK, 215R Prod. Mgr. (x 7156)

MATOR SYSTEMS LTD.
Willet House
12 Grand Avenue
Hove, East Sussex, BN3 2PQ
Brighton 720451/2 (std code 0273)
TLX: 877680
TOM MISKELLY, Managing Director

MICROCOMPUTER SYSTEMS CORPORATION
421 Lakeside Drive
Sunnyvale, CA 94086
(408)733-4200
TX: 910-339-6359
MIKE RAINEY, General Manager-OM
NEAL GREELY, National OEM Sales Manager

MINICOMPUTER TECHNOLOGY
2470 Ebarbrodero Way
Palo Alto, CA 94303
(415)856-7400
TX: 910-376-1292
DON DILLEY, President
NICK BORN, VP Marketing

MOTOROLA, INC.
(See local Motorola Semiconductor Division salesperson)

NOVEX, INC.
P.O. Box 3006
Gaithersburg, MD 20760
(301)840-8575
STEVE PARKS, President

PERITEX
3014 Lakeshore Avenue
Oakland, CA 94610
(415)465-9000
TX: 910-366-2029
ERIC WUSISBERG, President
TOM BIRCHELL, Sales Manager

QUENTIN RESEARCH, INC.
19335 Business Center Drive
Northridge, CA 91324
(213)701-1006
TX: 910-493-2174
DAN DUKE, President

RIANDA ELECTRONICS
2535 Via Palm
Anaheim, CA 92801
(714)995-6552
TX: 18-1623
WALLY RIANDA, President
DICK MC CORMICK, VP Marketing

SCHULER & ASSOCIATES, INC.
225 East Airport Freeway
Irving, TX 75062
(214)258-8600
JOE SCHULER, President
JACKIE POWELSON, Program Manager

SPECTRA LOGICS
1227 Innesbruck Drive
Sunnyvale, CA 94086
(408)744-0930
ALAN ABBOTT, President
STEVE ROBERTS, VP Marketing

SV ASSOCIATES
526 San Gabriel Court
Pleasanton, CA 94566
(415)846-7153
MARTY PLOTKIN, President

XYLOGICS
42 Third Avenue
Burlington, MA 01803
(617)277-8140
TX: 710-339-0262
W AYNE GRAFFITH, President
LYNN SPEAKER, VP Sales
August 24, 1981

Mr. Eric Wugsberg, President
Peritek
3014 Lakeshore Avenue
Oakland, CA 94610

Dear Eric:

I note that you offer our disc drive plus SMART Interface to the LSI-11 market. We have now delivered our first SMART-E interface (attached to a 6650-10).

Benchmark performance improved from 20 minutes with the SMART Interface to 6 minutes with the SMART-E. Moreover, the customer (Tom Phinney, VP; Dataplex, Inc.; (312) 860-5665) says that the SMART-E is four times as fast on some tasks. Our own engineers say that you can expect anywhere from 2X to 10X performance improvement using the SMART-E versus the SMART.

So, we have a real hot product to sell: The DISKOS 6650 with the SMART-E. I have enclosed a couple of specs for you as well as a little extra ammo. It's a product that will give an awful lot of bang for the buck, so you can be proud to present it to your customers. For example, a Q500 account can get 68 megabytes of disc storage (6650-10), a sophisticated controller (SMART-E), and a power supply and terminator for only $3,575. And very soon (early 4Q81) the SMART-E will support the EPI and PRAGMA tape drives.

All your accounts need to attach this powerhouse to a LSI-11 bus is your host adapter. I thought you might want to know about it so you can modify your adapter to support the SMART-E as well as the SMART.

As always the SMART-E supports the entire PRIAM line.

Good luck with your market and the new SMART-E!

Sincerely,

WILLIAM J. SCHROEDER
President

WJS/jen

encl.