List of Software Versions
SET 2.0

1720A
Instrument Controller

Set RS-232 Utility User Manual

P/N 633131
December 1981

FLUKE®

CHANGE/ERRATA INFORMATION

ISSUE NO: 1 3/82

This change/errata contains information necessary to ensure the accuracy of the following manual.

MANUAL

Title:	1720A Instrument Controller Set RS-232 Utility User Manual
Print Date:	December 1981
Rev. and Date:	----

ORIGINAL VERSION #	CHANGE VERSION #
2.0	2.1

C/E PAGE EFFECTIVITY

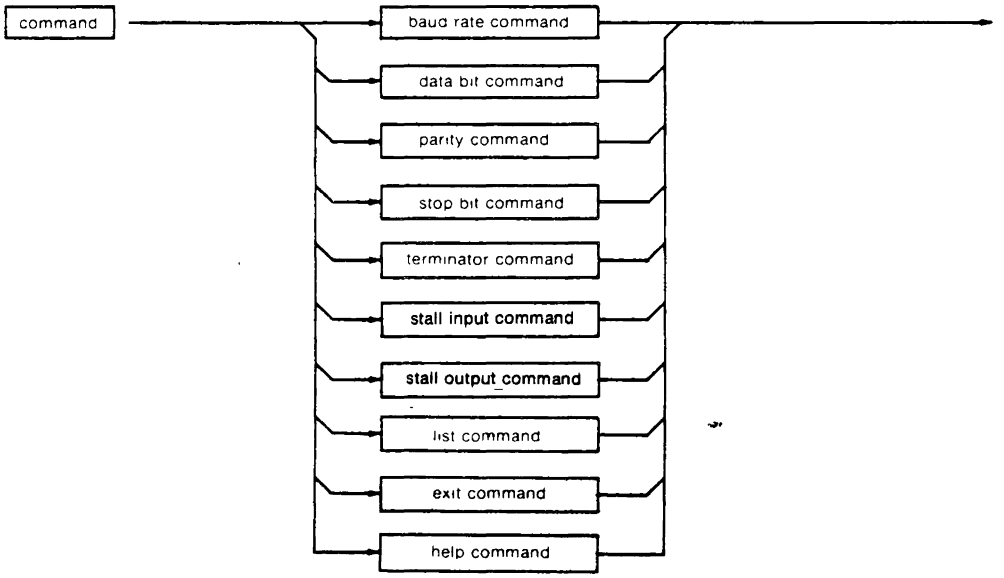
Page No.	Print Date
1	3/82
2	3/82
3	3/82

CHANGE #1 - 16031

On page 3, lower quadrant of page:
CHANGE: ...following six characteristics for the port:
TO: ...following eight characteristics for the port:

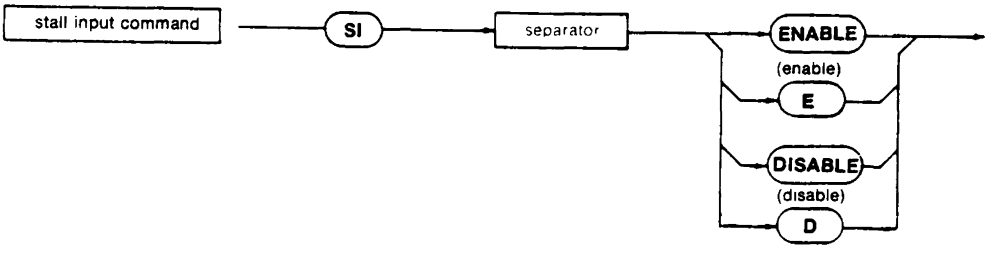
Add the following two characteristics:
Stall Input Status Stall Output Status

On page 4, change the following syntax diagram as shown below:



On page 5, add the following under "? Unknown command":
0 ?Illegal device name is displayed when an illegal character is encountered in a device name.

On page 9, add the following to bottom of page:
Defining Stall Input Configuration

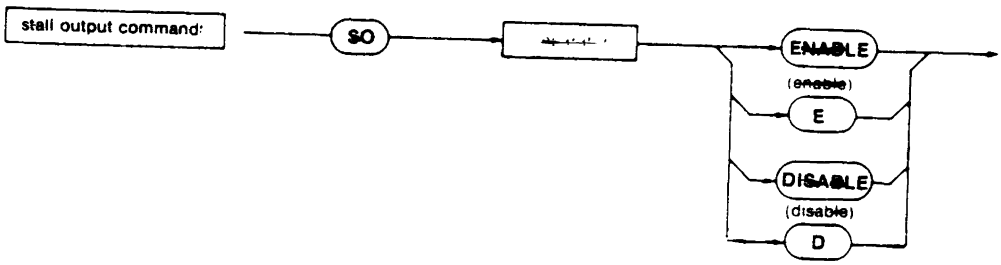


The stall input command defines the state of the stall input feature.

- When stall input is enabled, the controller will send out an XOFF (decimal 19) character when its input buffer becomes 3/4 full. Once the input buffer has been emptied to the 1/4 full point, the controller will send out an XON (decimal 17) character.
- When stall input is disabled, no XOFF/XON characters will be transmitted in response to input buffer conditions.
- ?Bad argument is displayed if a command argument is entered that is not one of the four listed above.
- The following example enables the stall feature on input for Serial Port 1:

  *KB1: SI ENABLE RETURN

Defining Stall Output Configuration



The stall output command defines the state of the stall output feature.

- When stall output is enabled, receipt of an XOFF (decimal 19) character will suspend transmission by the associated serial port. When a subsequent XON (decimal 17) character is received, transmission will be resumed.
- When stall output is disabled, receipt of XOFF/XON will not directly affect transmission.
- ?Bad argument is displayed if a command argument is entered that is not one of the four listed above.

o The following example disables the stall feature on output for serial port2:

*KB2: SO D RETURN

On page 10, add the following after "End of File 26":

Stall Input enabled
Stall Output disabled

Change Table 1 as shown below:

MESSAGE	MEANING
?Argument missing	A command was entered without the argument necessary to complete its meaning.
?Argument out of range	A command argument was entered which was beyond the range of acceptable values.
?Bad argument	A command argument was entered which was not in the list of acceptable arguments for that command.
?Illegal device	KB2: was selected when an external terminal was in use. (See Section 4A-19).
?Illegal device name	An illegal character was encountered in a device name. The legal characters are A-Z, 0-9, and ":".
?No device specified	A command was entered before specifying a device.
?Unknown command	A command was entered that was not recognized.

On page 11/12, add the following to the end of Table 2:

Define Stall Input Configuration	SI	ENABLE E DISABLE D
Define Stall Output Configuration	SO	ENABLE E DISABLE D

ERRATA #1

Cover sheet:
Change the software version number, FROM: 2.0, TO: 2.1.

Table of Contents

INTRODUCTION

The Set RS-232 Utility (SET) is a machine-language utility program on the System Disk with the file name SET.CIL. It allows the user to reconfigure the parameters used by FDOS in communicating through each of the two RS-232-C serial ports.

NOTE

The software supporting the RS-232 serial ports is not intended to handle binary data. Line and file terminators, as well as other control codes, are tested for and used to identify specific operations.

CONVENTIONS USED IN THIS MANUAL

The following paragraphs describe conventions used in this manual. Individual sections of this manual may define additional conventions.

Command Definitions

Each 1720A command is defined in a standard format that allows a maximum of 80 characters in any command line.

- The command is named on a title line.
- A syntax diagram or syntax statement follows the title line.
- The command definition follows the syntax diagram or syntax statement.

    1. The body of the command definition is a short paragraph that describes the basic function of that command.
    2. Amplifying information is separated by item and organized in a top down outline format similar to this description.
    3. A cross-reference to any associated information or documents ends the command definition.

Syntax Diagrams

Syntax diagrams define correct spelling, punctuation, and sequence of words, symbols, and expressions for system and utility commands. The following guidelines define proper use of these diagrams:

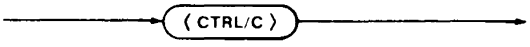
- Any path through a diagram starting from the left that does not run contrary to an arrowhead forms a legitimate command construct. The text accompanying the diagram explains legal usage.

- Boldface words in a circular enclosure are to be entered exactly as shown. Example:

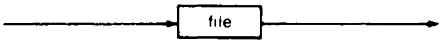
- Key entries with names, such as ESC or RETURN, are shown in a box with rounded corners. Example:

- A required space character entry is always shown as:

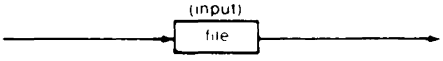
- Control character entries are shown in circular enclosures within angle brackets. The representation CTRL/ means to hold the CTRL key depressed while typing the character that follows. Example:



- Lower case words enclosed in a box represent other information to be supplied.



- Words outside the path of the diagram, usually in parentheses, provide supplementary information. These words are normally not part of the definition of the statement. Example:

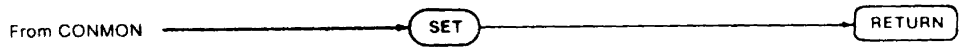


Notation Conventions

There are several notation conventions used in the text and in the examples.

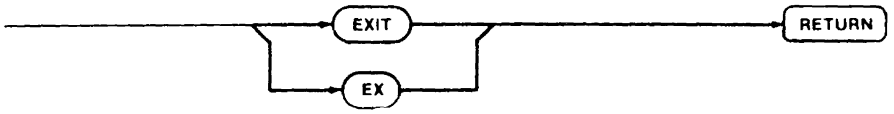
- **<XX> is understood to mean press key XX.**
  1. **<cr> is understood to mean a carriage return (the RETURN key).**
  2. **<lf> is understood to mean line feed.**
- **[xxx] is understood to mean that xxx is an optional input.**
- **{xxx} is understood to mean that xxx is a required input.**

ENTERING THE SET RS-232 UTILITY



SET is accessible through CONMON by typing SET.

EXITING THE SET RS-232 UTILITY



SET may be exited at any time by entering EXIT or EX in response to the SET prompt *.

USING THE SET RS-232 UTILITY

SET displays the message:

```
SET (time)(date)
Set Version <x.y>

*
```

NOTE

Verify that the version number <x.y> is the same as on the front of this manual. If it is not, contact a Fluke Customer Service Center for advice.

After first specifying a port, SET allows the user to set any of the following six characteristics for the port:

Baud Rate	Number of Stop Bits
Number of Data Bits	End of Line Character
Parity	End of File Character

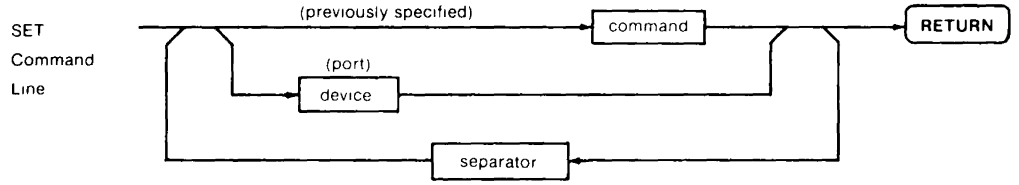
In addition, SET displays the current configuration of the selected port or a summary of SET commands.

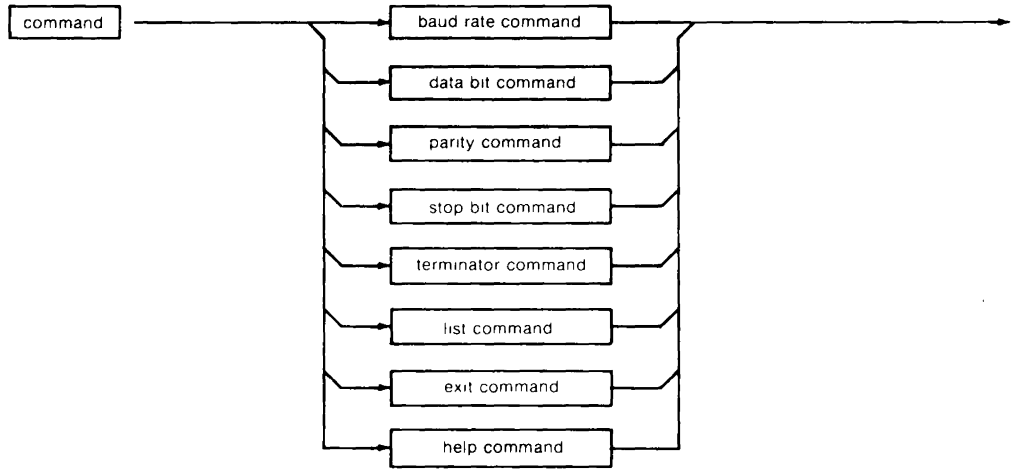
SET Command Structure

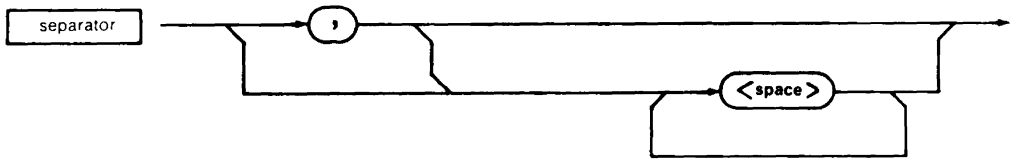
The SET utility program uses a flexible and straightforward command structure. After selecting a device, the user may list the current settings and change selected ones in any order.

- Commands may be entered singly or may be combined into a multiple command line.
- Both upper and lower case entries are accepted.
- Commands become effective when the command line is terminated by <cr>.
- All SET commands may be automated through command files.
- Parameters controlled by SET may be independently set for each serial port.

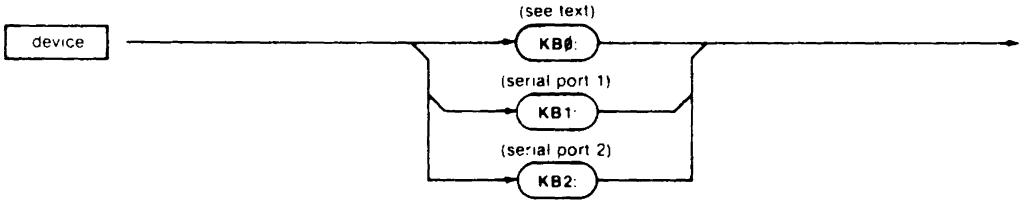
The following syntax diagrams define the structure of SET commands:







Device Specification



SET requires that a port device be selected prior to accepting other commands.

- Once selected, subsequent commands affect the specified port until a different port is selected.

- When a device is selected other than KB0:, KB1:, or KB2:, the following display appears:

  ?Unknown command

- When KB2: is selected while an external terminal is in use, the following display appears (see the discussion of KB0 that follows):

  ?Illegal device

- When a command is entered before a port is selected, the following display appears:

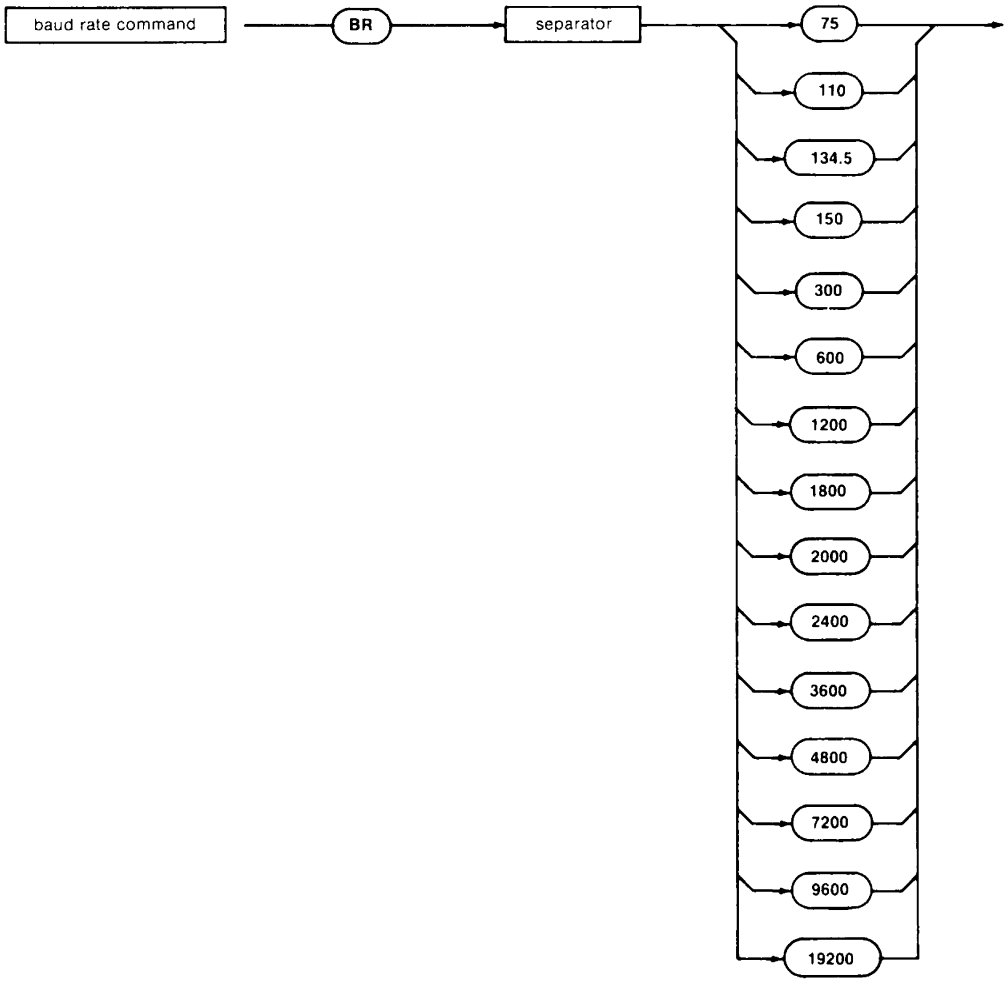
  ?No device specified

KB0: identifies the console device. All command inputs except baud rate are ignored for KB0:. Normally, the console device is the Programmer Keyboard for input, and the display for output.

NOTE

The baud rate of the 1720A Programmer Keyboard and display is 4800. Setting KB0: to any other baud rate immediately disables both the programmer keyboard and the display. This condition is remedied by pressing RESTART.

Setting Baud Rates



The baud rate command changes the baud rate of the selected port to that specified by the command argument. Baud rate is the bit transfer rate in bits per second, including start, stop, parity, and unused bits.

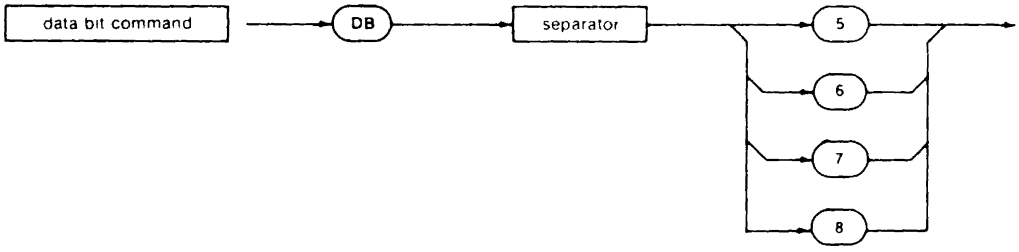
- The baud rate change takes effect when RETURN is pressed.
- If a baud rate is entered that is not one of the 15 values given in the syntax diagram, the following display appears:

  ?Bad argument

The following example sets 2400 baud for Serial Port 2, and 300 baud for Serial Port 1:

```
*KB2:  BR 2400, KB1:  BR 300 <cr>
```

Setting Character Length



The data bit command sets the number of data bits that will be included in each character.

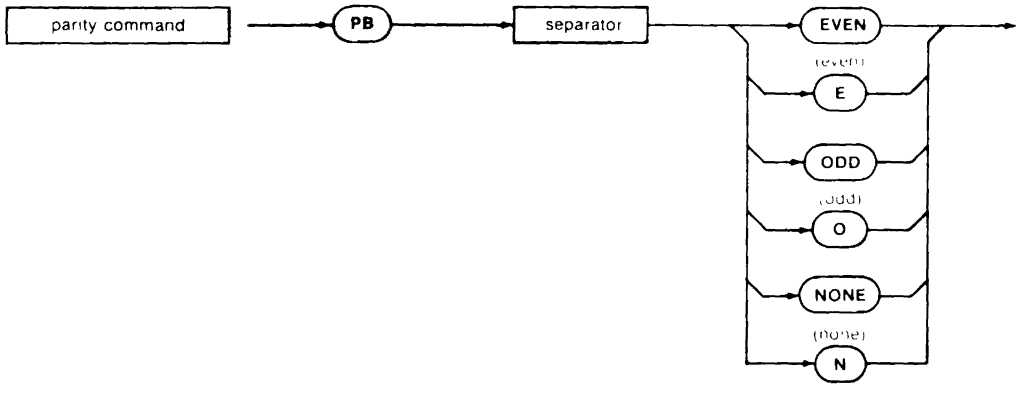
- When character length is shorter than the actual data, the lower (least significant) data bits are used.
- When character length is longer than the actual data, the remaining (most significant) bits are set to zero.
- If a word length is entered that is not one of the four values shown in the syntax diagram, the following display appears:

  ?Bad argument

The following example selects Serial Port 2, sets its baud rate to 1200, and sets the character length to 7 bits:

*KB2: BR 1200, DB 7 <cr>

Defining a Parity Bit



The parity command defines a parity bit to be generated and checked for the selected port. Parity is an error detection scheme that uses an extra bit appended after the last data bit of each word. This bit is set so that the total number of 1-bits in each word is always even or odd.

- The command argument NONE or N eliminates parity generation and checking.
- If a command argument is entered that is not one of the six shown in

the syntax diagram, the following display appears:

?Bad argument

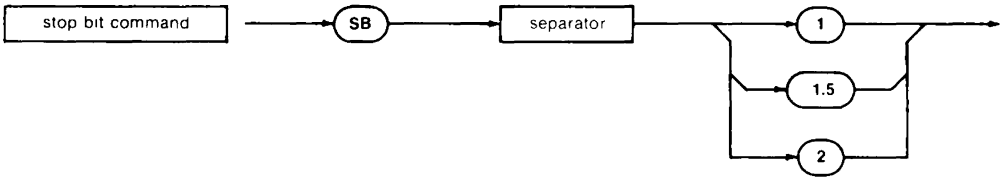
During input, parity is checked as defined by SET for each character. If an error is detected, it is identified to FDOS as a device error. In a BASIC program, this returns error number 311. This error can only be cleared by closing the channel associated with the serial port.

During output, parity is generated as defined by SET, and appended to each character. Parity is always in addition to the data bits.

The following example selects Serial Port 2, sets its baud rate to 1200, sets the word length to 7 data bits, and defines even parity:

*kb2: br 1200, db 7, pb even <cr>

Defining Character Spacing



The stop bit command defines the number of bit-cell time periods to be allocated as a minimum spacing between characters transmitted to external equipment that requires additional settling or synchronization time.

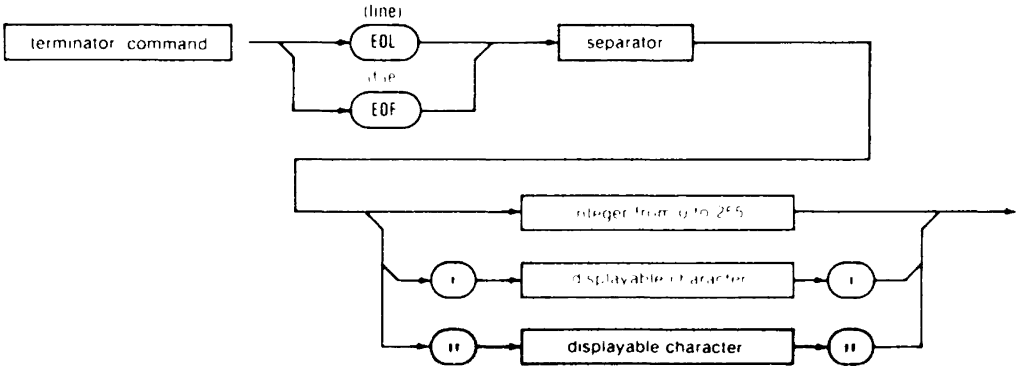
- This command does not affect incoming data.
- If an argument is entered that is not one of the three given in the syntax diagram, the following display appears:

  ?Bad argument

The following example defines a minimum transmission word spacing of 1.5 bit-cell time periods for Serial Port 1:

*KB1: SB 1.5 <cr>

Defining Terminator Characters



The terminator command defines a character that will be used to identify the end of a line or file. When received with incoming data, a terminator will generate an interrupt if enabled by the user program.

- If an integer argument greater than 255 is entered, the following display appears:

  ?Arguement out of range

- If an arguement is entered that otherwise does not meet the requirements of the syntax diagram, the following display appears:

  ?Bad arguement

- Line and file terminator characters are handled as described in the following paragraph.

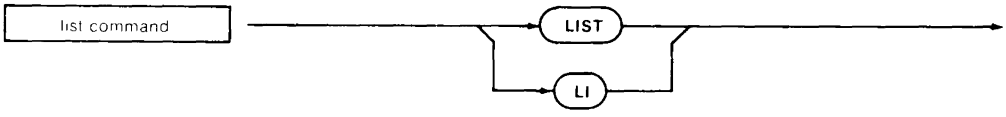
The end-of-line character defined by SET only affects data input:

- All Carriage Return and Line Feed characters are deleted.
- A Carriage Return, Line Feed sequence is then appended after each occurence of the line terminator character.
- If Line Feed or Carriage Return is the terminator, this process does not duplicate it.
- Resulting data is compatible with 1720A internal format.
- During output, data is not changed by the line terminator defined by SET.

The end-of-file character defined by SET affects both input and output:

- During input, each occurence of the file terminator defined by SET is deleted, and <CTRL/Z> (character 26) is put in its place.
- During output, each occurence of a <CTRL/Z> character is deleted, and the file terminator defined by SET is put in its place.

Listing Port Configuration



The list command displays the configuration of the currently selected port. Displayable terminator characters are shown as their decimal value and as the character.

The following example lists the configuration of Serial port 2:

```
*KB2: LIST <cr>
```

The resulting display from this command might appear as follows:

```
Device          KB1:
Baud Rate       2400
Data Bits       7
Parity          even
Stop Bits       1
End of Line     10
End of File     26
```

The SET Help Display

The help command clears the screen and displays a summary of all SET commands with examples.

SET ERROR MESSAGES

SET provides error messages that aid the user in recognizing faulty command inputs. Table 1 summarizes and defines these errors.

Table 1. SET Error Messages

MESSAGE	MEANING
?Argument missing	A command was entered without the argument necessary to complete its meaning.
?Argument out of range	A command argument was entered which was beyond the range of acceptable values.
?Bad argument	A command argument was entered which was not in the list of acceptable arguments for that command.
?Illegal device	KB2: was selected when an external terminal was in use. (See Section 4A of the 1720A User Manual.)
?No device specified	A command was entered before specifying a device.
?Unknown command	A command was entered that was not recognized.

SET COMMAND SUMMARY

Table 2 summarizes SET commands and command arguments.

Table 2. SET Commands and Arguments

FUNCTION	COMMAND	ARGUMENTS
Select Port Device	KB0: KB1: KB2:	
Define Baud Rate	BR	75 600 3600 110 1200 4800 134.5 1800 7200 150 2000 9600 300 2400 19200
Define Data Bits Per Character	DB	5 6 7 8
Define Parity Bit	PB	EVEN E ODD O NONE N
Define Stop Bits For Character Spacing	SB	1 1.5 2
Define End of Line Terminator	EOL	Integer 0 through 255 ' character ' " character "
Define End of File Terminator	EOF	Integer 0 through 255 ' character ' " character "
Return to CONMON	EXIT EX <CTRL/P>	
List Port Configuration	LIST LI	
Ignore this Command Line	<CTRL/C>	
Display Command Summary	?	