OPERATING
MANUAL
model MIME I & II

MICRO-TERM, INC.

ST. LOUIS, MISSOURI 63144

# OPERATING MANUAL
MODEL: MIME-I & II

March 1, 1979

Thank you very much for your purchase of a MIME. Your unit has been thoroughly tested before shipping and should give you many years of maintenance free service. Before connecting your new MIME to your processor, please read the operating manual and be sure that the data rate and interface options are set for your application.
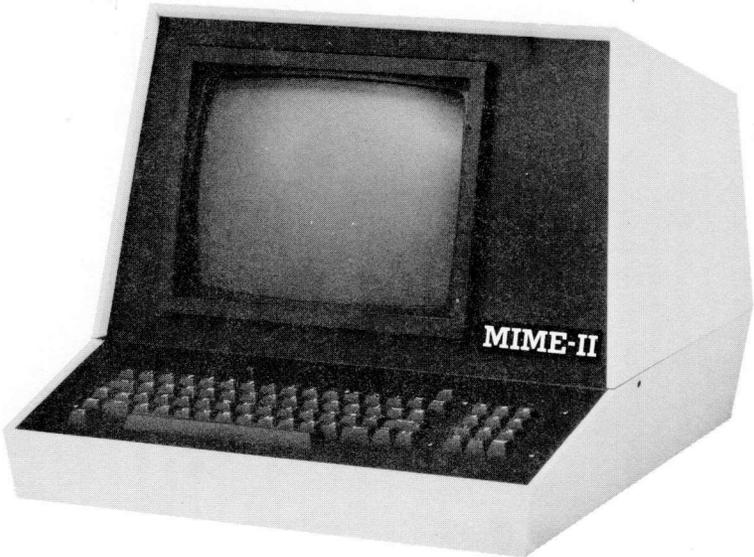
If your MIME was received in obviously damaged condition, please notify the carrier. To record your warranty which extends for 90 days from the date of purchase, fill out the enclosed card and mail it to us.

If MICRO-TERM can be of any further assistance, please do not hesitate to call or write.

MICRO-TERM,
INC.
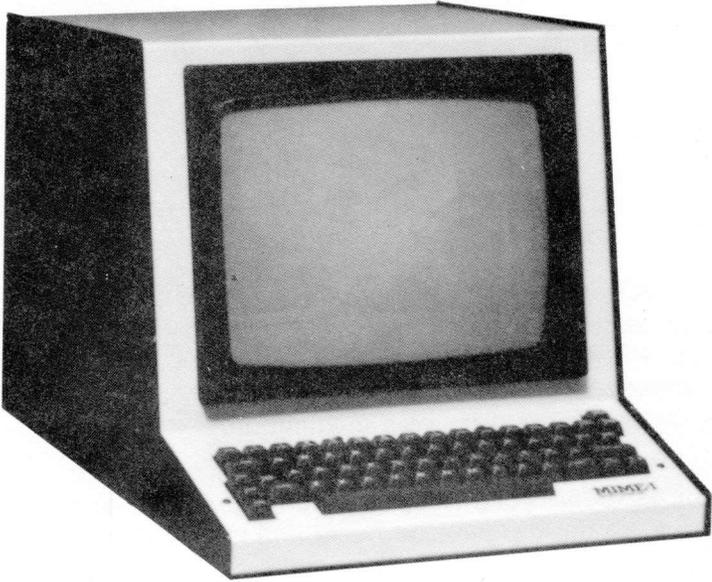
MIME-I

MIME-II

MIME COMPUTER TERMINAL BY MICRO-TERM, INC.

TABLE OF CONTENTS

(continued)

a = MIME-I ONLY
b = MIME-II ONLY

INSTALLATION AND INTRODUCTION

The MIME should be positioned on a steady surface and at a comfortable level for the user. A space of at least 3 inches must be provided at the rear of the MIME to provide ease of access to the power switch and brightness control. Care should be taken that magazines or other material do not fall behind the terminal and impede ventilation. The line cord should then be connected to a grounded power source.

The MIME power switch, on the rear, should now illuminate when switched to the "ON" position. After a one minute warm up period for the monitor, a cursor should be apparent in the upper left (HOME UP) position of an otherwise clear screen. The cursor is a double underlined character, " = ", which indicates the position on the screen for the next character to be displayed. If the cursor does not appear in the home position, turn the power switch off and then back on after approx. 5 seconds. If the cursor still does not appear, refer to appendix 7.4.

Depress the [LINE LOC.] key on the keyboard. Type on the keyboard. Characters should now appear corresponding to the keys depressed and the cursor will advance. There are 80 character positions per line; after the 80th character is entered on a line a new line is initiated. When the cursor is on the bottom line, the next new line will cause the contents of the screen to scroll upward one line so that the top line disappears.

Adjust the BRIGHTNESS control, on the rear, for comfortable viewing while maintaining a black background. Excessive brightness will cause premature   phosphor degradation or burning not covered under warranty.

USING THE MIME OPERATING MANUAL

Before attempting to operate the terminal we recommend reading this manual completely.

Section 2 will aid you in selecting the proper terminal emulation, transmission mode and explain the keyboard's special function keys.

Section 3 explains each of the thirty-seven functions available to the MIME user. Even though some function descriptions will not apply to the terminal emulation selected, they may help you with a future programming problem.

Section 4 provides interface instructions for the MIME. Selecting the proper data rate and communication protocol is explained in this section.

Section 5 offers a function summary of each emulation and may be used for programming reference.

Section 6 contains the absolute cursor addressing tables which are helpful in formatting the display.

Section 7 contains the ASCII conversion table and character set along with warranty and service information.

Throughout this manual the terms HALF INTENSITY, BACKGROUND FOLLOWS and PROTECTED FIELD are interchangeable, as are FULL INTENSITY, FOREGROUND FOLLOWS and UNPROTECTED FIELD. Also all numbers set in italics and enclosed in brackets; i.e., *[14]* are HEX.

DEFINITIONS:

Half Intensity -
Background Follows - } Characters shown in reduced brightness.
Protected Field -

Full Intensity -
Foreground Follows - } Regular brightness of characters.
Unprotected Field -

NOTE

[CTRL] This key enables the keyboard to transmit the 32 ASCII control codes instead of the usual alpha numeric or punctuation codes. In this manual the [CTRL] key may be shown in conjunction with another key; i.e., [CTRL] [G].

This indicates that the [CTRL] key must be pressed first and held down while the appropriate key is struck.

[ESC] - This key outputs the hex code *[1B]*. The [ESC] key may also be shown in conjunction with another key; i.e.: [ESC] [=]. This indicates that the [ESC] key must be pressed and released before the [=] key is struck.

2.0 MODES OF OPERATION

The MIME is an extremely versatile and complex communication device. It can mimic the operation of the ACT Ⅳ ADM-3A, HAZE 1500, and the VT-52. It also offers either character by character, line or page transmission modes.

2.1 TERMINAL OPTION SELECTION

Each time the power switch is turned on, the MIME reads the value of the three Terminal Option (TO) switches (see photo). These switches have the following significance.

	Terminal Option Switches		Enhanced Mode Switch
	1	**2**	**3**
ADM-3A	0(off)	0(off)	
HAZE-1500	0(off)	1(on)	0(off) = STANDARD
VT-52	1(on)	0(off)	1(on) = ENHANCED
ACT-.Ⅳ	1(on)	1(on)	
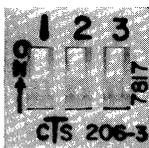
THIS EXAMPLE SHOWS THE SWITCHES SET FOR ACT Ⅳ ENHANCED MODE

TERMINAL OPTION SWITCHES
(See photos page 36-37)

Terminal Option Switch 3 selects the Enhanced Mode of operation for the particular terminal selected by switches 1 and 2. The Enhanced Mode endows the selected terminal with features not normally available with that unit as supplied by its manufacturer. A complete list of the features supported by the MIME is provided in Section 3 of this manual.

NOTE
To change either the MIME's selected terminal or to change from Enhanced to Standard Mode the MIME Power Switch must be turned off, then switched on so that the new values of the three T.O. switches will be read by the internal microprocessor.

In order to gain access to the terminal option switches unscrew the cover retaining screws and remove the cover with the unit turned off.

2.2 TRANSMISSION MODE SELECTION

The MIME features three transmission modes: Character by character, line at a time and page at a time.

The character by character mode is selected by releasing (key up) the [LINE/LOC•] key. In this on-line mode each time a key is depressed an ASCII code is transmitted serially to the computer. The ASCII code assignments for the MIME keyswitches are given in Appendix 7.1 of this manual.

The LOCAL mode is entered by depressing the [LINE/LOC•] key. When in this mode characters typed on the MIME keyboard are not transmitted to the computer until either the [SEND] key or both the [SHIFT] and [SEND] key are depressed. Depressing the [SEND] key alone causes all unprotected (full intensity) characters on the same line as the cursor to be transmitted to the computer. When the last character has been sent a carriage return and line feed code is sent and the MIME rings its bell to indicate the transmission is complete.

Depressing both the [SHIFT] and [SEND] keys simultaneously causes the MIME to transmit all of the unprotected characters on the same line as the cursor and on all lines below the line with the cursor to the computer. At the end of each line the carriage return and line feed codes are transmitted. When transmission is complete the MIME rings its bell. This block mode transmission is available only in the enhanced mode when emulating either an ADM-3A, HAZE-1500 or DEC VT-52.

PROGRAMMING HINT

In order to avoid transmitting trailing spaces (those between the last displayable unprotected character and the end of the line) the screen should be CLEARED TO BACKGROUND (protected) SPACES before entering data that is to be sent in block mode to the computer. This will minimize the time spent transmitting the line or lines.

When in the LOCAL mode if no data is being sent to the computer by the MIME it will accept data from the computer and display it. This allows the user to edit the data on the screen, send it and receive a response from the main processor without changing the [LINE/LOC.] switch. It also insures that any messages from the computer system are not ignored when in the LOCAL mode.

TRANSPARENCY MODE

A very useful feature of the MIME is its capability to display a unique symbol for each of the ASCII control codes when in the Display Control Code mode. This mode can be entered and exited only by depressing the [CTRL] and [Q] keys simultaneously while in the LOCAL (key depressed) mode. This aids both the receive and transmit operations. On the receive side it permits one to identify every character received by the terminal to settle any format problems caused by otherwise unseen control characters. On the transmit side it allows control characters to be imbedded in the displayed data for transmission in block mode to the computer.
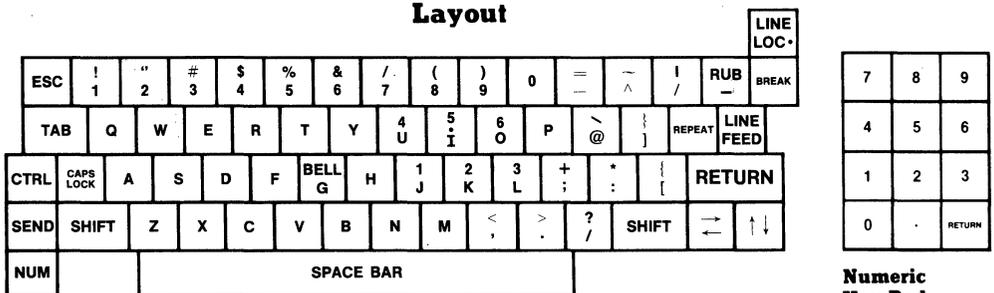
LOCAL SELF TEST

The LOCAL (key depressed) mode also provides a means of testing the terminal manually. If the terminal works in the LOCAL mode any problems are limited to either the MIME interface, the communication link or the remote computer. The LOCAL echoing of characters is disabled when the current loop interface has been selected and the loop is in the space rather than the normal mark state. To enable the echoing current must be flowing (marking state) through the receive loop of the MIME.

2.3 KEYBOARD

The MIME keyboard consists of 64 key-switches that either generate an output code when depressed or modify the codes generated by other keys when depressed simultaneously. The keyboard outputs for the various combination of unshifted, shifted, control and numeric activations of the MIME keyboard switches are given below.

Layout

Main Keyboard

Numeric Key Pad

(MIME-II ONLY)

10

Output

1B 1B 1B 1B	31 21 00	32 22 00	33 23 00	34 24 00	35 25 00	36 26 00	37 27 00 37	38 28 00 38	39 29 00 39	30 00 00 30	20 30 00	5E 7E 1E	5C 7C 1C	5F 7F 1F	BREAK
09 09 09 09	71 51 11	77 57 17	65 45 05	72 52 12	74 54 14	79 59 19	75 55 15 34	69 49 09 35	6F 4F 0F 36	70 50 10	40 66 00	5D 7D 1D	REPEAT	0A 0A 0A 0A	
CTRL	CAPS LOCK	61 41 01	73 53 13	64 44 04	66 46 06	67 47 07	68 48 08	6A 4A 0A 31	6B 4B 0B 32	6C 4C 0C 33	3B 2B 00	3A 2A 00	5B 7B 1B	0D 0D 0D 0D	
SEND†	SHIFT	7A 5A 1A	78 58 18	63 43 03	76 56 16	62 42 02	6E 4E 0E	6D 4D 0D	2C 3C 00	2E 3E 00	2F 3F 00	SHIFT		08 18 00	0B 1A 00
NUM						20 – Unshifted 20 – Shifted 20 – CTRL 20 – Numeric									

Main Keyboard

Numeric Key Pad

$\left(\begin{array}{c}\text{MIME-II}\\\text{only}\end{array}\right)$

37 27 00 37	38 28 00 38	39 29 00 39
34 24 00 •	35 25 00 •	36 26 00 •
31 21 00 •	32 22 00 •	33 23 00 •
30 00 00 30	2E 3E 00 •	0D 0D 0D 0D

*Not Affected by NUM Key
†Operation of SEND is dependent upon MODE

Note that the [NUM] key affects only the output codes generated by the

[4 U], [5 I], [6 O], [1 J], [2 K] and [3 L] keys. In addition to the keys mentioned above, there are several keys with special functions.

These keys are:

1. [LINE LOC•] This key selects on-LINE or LOCal mode operation

2. [REPEAT] When depressed along with another key output codes will be repetitively generated at the rate of fifteen characters per second after an initial one half second delay. As long as the keys are held depressed.

3. [BREAK] Depressing this key forces the serial output to the space (logical zero) level.

4. [CAPS LOCK] When depressed all alphabetic keys produce the shifted version of their outputs. Numeric and punctuation key outputs are unaffected. Releasing the [CAPS LOCK] key enables full ASCII code generation.

5. [SEND] This key itself causes no immediate output to be transmitted from the MIME to the computer. It sends a code from the keyboard to the internal processor to initiate transmission of either all of the unprotected (FULL INTENSITY) characters on the line containing the cursor (if struck alone) or all characters from the line containing the cursor to the end of the screen (when struck in conjunction with the [SHIFT] key).

NOTE
In the DEC VT-52 emulation the [SEND] key is also used to control the HOLD SCREEN MODE. Therefore the terminal cannot be in the HOLD SCREEN MODE if the screen contents are to be sent. (See Section 3.15 and 3.19). The cursor control keys produce codes tailored to the ACT Ⅳ mode of operation. Hence when other terminal emulations are selected some of the codes produced by these keys will not elicit the desired response.

3.0 RESPONSES TO THE ASCII CONTROL CODES

ABSOLUTE CURSOR POSITIONING

GENERAL DESCRIPTION

ABSOLUTE CURSOR POSITIONING allows the user to position the cursor anywhere within the 24 x 80 display matrix. The general format is a lead-in code, or codes, followed by two address coordinates. These coordinates must be transmitted to the terminal in ASCII. The cursor assumes the new position after the coordinates have been given. No other coding may be imbedded within this string of characters.

NOTE

Please refer to section 6 for the ABSOLUTE CURSOR ADDRESSING TABLES and appendix 7.2 for a complete list of decimal/hex/ASCII conversions.

-DEFINITION-

MODULO - The modulo of a number is defined as the remainder after dividing it by the number following the modulo term.

i.e.:   4 modulo 24 = 4 (number remaining)
       28 modulo 24 = 4 (number remaining)
      100 modulo 24 = 4 (number remaining)

Therefore a cursor address of 4, 28, 100 would all generate the same resultant location.

```
0..10..20.....................79
1
2
.
.
.
.
.
23
```

Horizontal Columns are 0 to 79 (80 columns)
Vertical Rows (Lines) are 0 to 23 (24 rows)

The example shows a position of 4 which would be Row (or column) 5 since it is necessary to add 1 since the first Row (or column) is labeled as '0'.

ACT IV

[CTRL T] (ROW)   (COLUMN)
      ACTUAL   ACTUAL

To position the cursor the ASCII code *[14]* must be received followed by the appropriate row # (0-23) and the column # (0-79). If an invalid row # is received, it is reduced modulo 24 until a valid row # 0-23 is produced. Similarly an invalid column is reduced modulo 80. The top line of the display is line 0; the leftmost column is column 0.

EXAMPLE: To position the cursor on the tenth row (line) down and in the fifth column from the left, the following codes must be received by the terminal.

      ASCII CODES   ASCII CHARACTERS
[14] [09] [04] —   [CTRL T] [CTRL I] [CTRL D] (see appendix 6.1)

ADM 3A

[ESC] [=] (ROW#) (COLUMN#)
       CODE   CODE

To position the cursor, the ASCII codes *[1B]* and *[3D]* must be received followed by the appropriate Row #0 to 23 (Decimal Code 32 to 55) and column #0 to 79 (Decimal Code 32 to 111) Row # (Line) #(32-55) may also be addressed 0-23, 64-87 or 96-119. Column #32-63 may also be addressed 0-31. If any invalid column address is recieved the cursor will move to the rightmost column on a line.

EXAMPLE: To position the cursor on the tenth row (line) down and in the fifth column from the left, the following codes must be received by the terminal.

      ASCII CODES   ASCII CHARACTERS
   [1B] [3D] [29] [24] —   [ESC] [=] [)] [$] (see appendix 6.2)

DEC-VT52

[ESC] [Y] (ROW#) (COLUMN#)
       CODE   CODE

To position the cursor the ASCII codes *[1B]* and *[59]* must be received followed by the appropriate row # (line) (32-55) and the column # (32-111). The top line of the screen is coded 32; the leftmost column is coded column 32. Both row & column addresses less than 32 are ignored.

NOTE

Illegal row and column addresses are ignored, however if a legal column address follows an illegal row address, the row will stay the same but the column will change.

'Illegal" is defined as a number too large for the address space. If a row/column is too small, then the character is ignored.

EXAMPLE: To position the cursor on the tenth line down and in the fifth column from the left, the following codes must be received by the terminal.

      ASCII CODES   ASCII CHARACTERS

   [1B] [59] [29] [24] —   [ESC] [Y] [)] [$] (See Appendix 6.3)

HAZE 1500
[~] [CTRL Q] (COLUMN#) (ROW#)
                    ACTUAL   ACTUAL

To position the cursor the ASCII codes *[7E]* and *[11]* must be received followed by the appropriate column # (0-79) and the row # (line) (0-23). Line numbers 0-23 may also be addressed 32-55, 64-87 or 96-119. Column numbers 0-31 may also be addressed 96-126. If an invalid row (line) address is received the cursor will move to bottom line on the screen. If an invalid column address is received the cursor will move to the rightmost column on a line.

EXAMPLE: To position the cursor on the tenth line down and in the fifth column from the left, the following codes must be received by the terminal.

         ASCII CODES   ASCII CHARACTERS
    [7E] [11] [04] [09] —   [~] [CTRL Q] [CTRL D] [CTRL I] (See Appendix 6.4)

BACKGROUND FOLLOWS

GENERAL DESCRIPTION

All subsequent data received by the terminal after receipt of this function code is displayed in half intensity. The terminal is restored to full intensity by giving a FOREGROUND FOLLOWS command. Any data displayed in half intensity (PROTECTED FIELDS), including spaces, will not be transmitted when the SEND LINE, SEND PAGE, PRINT LINE or PRINT PAGE functions are executed.

ACT IV*
[19] — [CTRL Y]

ADM 3A*
[19] — [CTRL Y]

DEC VT-52*
[19] — [CTRL Y]

HAZE 1500
[7E] [19] — [~] [CTRL Y]

BACKSPACE

GENERAL DESCRIPTION

This will cause the cursor to move to the nearest character position to the left without erasing data on the screen. When the cursor reaches the leftmost column it will stop unless in the HAZE 1500 mode. If the cursor is in the HOME UP position it will not move.

*Enhanced Mode Only

ACT Ⅳ
[08] — [CTRL H]

ADM 3A
[08] — [CTRL H]

DEC VT-52
[08] — [CTRL H]
or *[1B] [44]* — [ESC] [D]

HAZE 1500
[08] — [CTRL H]

When the cursor reaches the leftmost column the BACKSPACE code will cause an up-wrap-around to the far right column of the preceeding row. If the cursor is in the HOME UP position it will not move.

BELL

GENERAL DESCRIPTION

When the BELL code is received an audible tone of 1760 hertz is generated for one half second. The cursor position is not affected.

ACT Ⅳ
ADM 3A
DEC VT-52 }   *[07]* — [CTRL G]
HAZE 1500

CARRIAGE RETURN

GENERAL DESCRIPTION

The cursor is moved to the leftmost column of the line it was in. If it is already there it stays there.

ACT Ⅳ
ADM 3A
DEC VT-52 }   *[OD]* — [RETURN]
HAZE 1500   [CTRL M]

CHANGE INTENSITY

GENERAL DESCRIPTION

All subsequent data received by the terminal after receipt of this function code is displayed in half intensity. Full intensity is restored when the

*Enhanced Mode Only

terminal receives a second code of the same type. Therefore the code acts as an on-off toggle switch. Any data displayed in half intensity (PRO-TECTED FIELDS) will not be transmitted when the SEND LINE, SEND PAGE, PRINT LINE or PRINT PAGE functions are executed.

ACT Ⅳ
[0E] — [CTRL N]
This function is only applicable to the ACT Ⅳ.

CLEAR FOREGROUND

GENERAL DESCRIPTION

Receipt of the CLEAR FOREGROUND command will replace all foreground characters (full intensity) with foreground spaces and the cursor will move to the HOME UP position.

ACT Ⅳ*
[06] — [CTRL F]

ADM 3A*
[06] — [CTRL F]

DEC VT-52*
[06] — [CTRL F]

HAZE 1500
[7E] [1D] — [~] [CTRL]]

CLEAR TO END OF SCREEN— BACKGROUND SPACES

GENERAL DESCRIPTION

CLEAR TO END OF SCREEN - BACKGROUND SPACES will replace all characters from the cursor postion to the end of the display with background spaces. The cursor position is not affected.

NOTE: This command can be used to clear the entire screen to background spaces by sending the HOME command followed by the CLEAR TO END OF SCREEN - BACKGROUND SPACES.

During a PRINT (line or screen) or SEND (line or screen) all foreground data is transmitted. Trailing foreground spaces and blank lines are also sent even though they may be of little use. Clearing the screen to BACKGROUND SPACES will enable a "smart send" which eliminates the sending of trailing spaces and blank lines.

*Enhanced Mode Only

ACT IV*
[03] — [CTRL C]

ADM 3A*
[03] — [CTRL C]

DEC VT-52*
[03] — [CTRL C]

HAZE 1500
[7E] [17] — [~] [CTRL W]

CURSOR DOWN

GENERAL DESCRIPTION

On receipt of the CURSOR DOWN command the cursor is moved down one line in the same column. If the cursor is on the bottom line of the screen, the position of the cursor will not change nor will the display scroll.

ACT IV
[0B] — [CTRL K]

ADM 3A*
[14] — [CTRL T]

DEC VT-52
[1B] [42] — [ESC][B]

HAZE 1500
[7E] [0B] — [~] [CTRL K]

CURSOR RIGHT

GENERAL DESCRIPTION

The cursor advances one column to the right. The display is not altered.

ACT IV
[18] — [CTRL X]

ADM 3A
[OC] — [CTRL L]

DEC VT-52
[1B] [43] — [ESC][C]

HAZE 1500
[10] — [CTRL P]

*Enhanced Mode Only

CURSOR UP

GENERAL DESCRIPTION

On receipt of the CURSOR UP command the cursor is moved up one line in the same column. If the cursor is on the top line of the screen, the position of the cursor will not change.

ACT IV
[1A] — [CTRL z]

ADM 3A
[OB] — [CTRL K]

DEC VT-52
[1B] [41] — [ESC] [A]

HAZE 1500
[7E] [OC] — [~][CTRL L]

DELETE LINE

GENERAL DESCRIPTION
All data on the line denoted by the cursor is eliminated. Pre-existing data below the cursor is moved up one line and the bottom line is cleared.

ACT IV
[I7] — [CTRL w]

ADM 3A*
[17] — [CTRL w]

DEC VT-52*
[17] — [CTRL w]

HAZE 1500
[7E] [13] — [~] [CTRL s]

DISPLAY CONTROL CODES

GENERAL DESCRIPTION

Typing a [CTRL Q] in LOCAL conditions the terminal to display all future control characters rather than act upon them. The control characters thus become functionally transparent. This transparency mode is particularly useful for verifying the control characters sent from the main processor. While control characters are being displayed, the terminal will continue to automatically scroll and initiate a new line after filling a line with 80

*Enhanced Mode Only

18

characters. The only control code that will be acted upon is another [CTRL Q], from the keyboard in LOCAL, which will restore the terminal to its normal execution of control character commands. Appendix 7.3 lists the 32 ASCII control characters in hexadecimal, their keyboard representation and their display counterparts.

NOTE: This can be initiated in LOCAL mode ONLY.

ACT Ⅳ
[11] — [CTRL Q]

ADM 3A*
[11] — [CTRL Q]

DEC VT-52*
[11] — [CTRL Q]

HAZE 1500*
[11] — [CTRL Q]

ENTER GRAPHICS MODE

GENERAL DESCRIPTION

This funtion invokes an alternate character set for ASCII codes [60] —[a] thru [7F] —[RUB]. These codes normally are assigned to the lower case alphabet. Appendix 7.3 lists the ASCII code, its keyboard representation, and its displayed counterpart. This is particularly useful for generating graphs and displaying fractions or subscripts.

ACT Ⅳ*
[OF] — [CTRL O]

ADM 3A*
[15] — [CTRL U]

DEC VT-52
[1B][46] — [ESC] [F]

HAZE 1500*
[OB] — [CTRL K]

ENTER HOLD SCREEN MODE

GENERAL DESCRIPTION

This function allows the operator to control the rate at which lines of data enter and leave the screen. Without this function, the screen will scroll continuously regardless whether the operator has had the time to read the data.

*Enhanced Mode Only

After this function is initiated the terminal waits for the screen to fill. Then transmits the control code *[13]* to the computer which should suspend transmission of data. The computer software must be equipped to respond to this command.

When the operator is ready to receive another line of data, he should press the [SEND] key. This transmits the control code *[11]* to the computer which restarts transmission and allows a new line of characters to be sent. The terminal will allow the computer to continue to send until a LINE FEED is received. Then the terminal transmits control code *[13]* again, to suspend the transmission. The LINE FEED is not processed, but is held in a buffer inside the terminal until the [SEND] key is pressed again. If the computer does not suspend transmission, the terminal will scroll and display a new line of data rather than allow it to be lost. In this case, the terminal will transmit the control code *[13]* each line a LINE FEED is encountered, attempting to stop the transmission.

Pressing the [SHIFT] [SEND] will allow the terminal to display a new screen of data. This allows 24 LINE FEEDS to be processed before the terminal requests the computer to suspend transmission.

ACT IV
Not Available

ADM 3A
Not Available

DEC VT-52
[1B][5B] — [ESC] [l]

HAZE 1500*
[OF] [CTRL o]

ERASE TO END OF LINE

GENERAL DESCRIPTION

All characters from the cursor position to the end of the line are erased. The cursor position is not affected.

ACT IV
[1E] — [CTRL A]

ADM 3A*
[18] — [CTRL X]

DEC VT-52
[1B] [4B] — [ESC] [K]

HAZE 1500
[7E] [OF] — [~] [CTRL o]

*Enhanced Mode Only

ERASE TO END OF SCREEN

GENERAL DESCRIPTION

All characters from the cursor position to the end of the screen are erased. The cursor position is not affected.

ACT IV
[1F] — [CTRL _] (underline)

ADM 3A*
[1F] — [CTRL _] (underline)

DEC VT-52
[1B][4A] — [ESC] [J]

HAZE 1500
[7E][18] — [〰] [CTRL X]

EXIT GRAPHICS MODE

GENERAL DESCRIPTION

This will EXIT the GRAPHICS MODE and restore the standard character set. See ENTER GRAPHICS MODE.

ACT IV*
[1B] — [ESC]

ADM 3A*
[1E] — [CTRL]]

DEC VT-52
[1B] [47] — [ESC] [G]

HAZE 1500*
[OC] — [CTRL L]

EXIT HOLD SCREEN MODE

GENERAL DESCRIPTION

This will EXIT the HOLD SCREEN MODE. See HOLD SCREEN MODE.

ACT IV
Not Available

ADM 3A
Not Available

DEC VT-52
[1B][5C] — [ESC] [\]

HAZE 1500*
[1B] — [ESC]

*Enhanced Mode Only

FOREGROUND FOLLOWS

GENERAL DESCRIPTION

All characters received after this command will appear in full intensity. Only these characters, including spaces, will be transmitted during a SEND LINE or SEND SCREEN and PRINT LINE or PRINT SCREEN.

ACT IV*
[13] — [CTRL S]

ADM 3A*
[13] — [CTRL S]

DEC VT-52*
[13] — [CTRL S]

HAZE 1500
[7E][1F] — [~] [CTRL _] (underline)

FORMAT MODE

GENERAL DESCRIPTION

When in this mode the cursor may not enter the protected data fields. When the last position in an unprotected field is filled the cursor will skip to the first position of the next unprotected field. If no unprotected fields exist beyond the cursor's present position, it will move to the first unprotected field at the beginning of the display.

	ENTER	EXIT
ACT IV	*Not Available*	
ADM 3A	*Not Available*	
DEC VT-52*	*[18]* — [CTRL x]	*[14]* - [CTRL T]
HAZE 1500*	*[18]* — [CTRL x]	*[14]* - [CTRL T]

HOME UP

GENERAL DESCRIPTION

This function moves the cursor to the upper left corner of the screen.

*Enhanced Mode Only

ACT IV
[1D] — [CTRL]]

ADM 3A
[1E] — [CTRL ∧]

DEC VT-52
[1B][48] — [ESC] [H]

HAZE 1500
[7E][12] — [∼] [CTRL R]

HOME AND CLEAR

GENERAL DESCRIPTION

This function moves the cursor to the upper left corner of the screen. The screen is then cleared to foreground spaces.
below.

ACT IV
[OC] — [CTRL L]

ADM 3A
[1A] — [CTRL Z]

DEC VT-52*
[OC] — [CTRL L]

HAZE 1500
[7E][1C] — [∼] [CTRL\ ]

IDENTIFY TERMINAL TYPE

GENERAL DESCRIPTION

This function will cause the terminal to respond with a three character escape sequence. The escape sequence will verify the terminal is working and identify the terminal as a VT-52 without copier. While the terminal is responding the keyboard will lock so that no characters will be imbedded within the response.

DEC VT-52
[1B][5A] — [ESC] [Z]
The terminal responds with *[1B] [2F] [4B]* — [ESC] [/] [K]
This function is only applicable to the VT-52.
*Enhanced Mode Only

23

INSERT LINE

GENERAL DESCRIPTION

This will allow a new line of text to be added between any two pre-existing lines on the screen. A blank line will be inserted on the row denoted by the cursor. All pre-existing text on the cursor row and below is moved down by one line and the last line scrolls downward off the screen.

ACT IV
[01] — [CTRL A]

ADM 3A*
[01] — [CTRL A]

DEC VT-52*
[01] — [CTRL A]

HAZE 1500
[7E] [1A] - [~] [CTRL Z]

KEYBOARD LOCK

GENERAL DESCRIPTION

After receiving this command, data cannot be entered from the keyboard until the KEYBOARD UNLOCK command is given.

NOTE:
A locked keyboard can only be unlocked by receiving an unlock code from the computer (or by resetting the unit with a power off-on sequence). It may not be unlocked by typing the unlock code — since the keyboard is locked out.

ACT IV
Not Available

ADM 3A*
[OF] — [CTRL O]

DEC VT-52*
Not Available

HAZE 1500
[7E] [15] — [~] [CTRL U]

*Enhanced Mode Only

KEYBOARD UNLOCK

GENERAL DESCRIPTION

Data may be entered from the keyboard after receipt of this code. This is the state the terminal assumes when switched on.

ACT IV
Not Available

ADM 3A*
[OE] — [CTRL N]

DEC VT-52*
Not Available

HAZE 1500
[7E] [06] — [~] [CTRL F]

LINE FEED

GENERAL DESCRIPTION

This will cause the cursor to move down one line in the same column. If the cursor is on the bottom line, the screen will scroll upwards one line.

ACT IV
ADM 3A   }
DEC VT-52 }   *[OA]* — [CTRL J] or [LINE FEED]
HAZE 1500 }

NULL

GENERAL DESCRIPTION

Sending the ASCII NULL *[00]* is accomplished by holding the [CTRL] key down and then striking any number key. This is generally used as a filler code and is not acted upon.

ACT IV
ADM 3A   }
DEC VT-52 }   *[00]* — [CTRL ANY NUMBER KEY]
HAZE 1500 }

PRINT LINE

GENERAL DESCRIPTION

This will cause the line denoted by the cursor to be sent to the printer port. Only full intensity characters will be sent. The transmission can only be interrupted by the appropriate signal on the printer I/O busy line. While the line is being transmitted to the printer, no data will be accepted into the terminal. The BELL will sound after the line has been sent.

*Enhanced Mode Only

ACT Ⅳ*
[16] — [CTRL v]

ADM 3A*
[16] — [CTRL v]

DEC VT-52*
[16] — [CTRL v]

HAZE 1500*
[16] — [CTRL v]

PRINT SCREEN

GENERAL DESCRIPTION

All full intensity text from the line denoted by the cursor to the end of the screen will be sent to the printer port. The transmission can only be interrupted by the appropriate signal on the printer I/O busy line. While the screen is being transmitted to the printer, no data will be accepted into the terminal. The BELL will sound after all data has been sent.

ACT Ⅳ
[10] — [CTRL p]

ADM 3A*
[10] — [CTRL p]

DEC VT-52*
[10] — [CTRL p]

HAZE 1500*
[10] — [CTRL a]

REQUEST CURSOR POSITION

GENERAL DESCRIPTION

After receiving the ASCII control code ENQ *[05]*, the terminal will respond by reporting the cursor's current address coordinates. These coordinates are coded in binary and transmitted in ASCII. Please refer to section 6 for the ABSOLUTE CURSOR ADDRESSING TABLES and appendix 7.2 for a complete list of decimal/hex/ASCII conversions.

ACT Ⅳ
[05] — [CTRL E]
The terminal will respond with (LINE NUMBER) (COLUMN NUMBER)

*Enhanced Mode Only

ADM 3A*
[05] — [CTRL E]
The terminal will respond with (LINE NUMBER) (COLUMN NUMBER)

DEC VT-52*
[05] — [CTRL E]
The terminal will respond with (LINE NUMBER) (COLUMN NUMBER)

HAZE 1500
[7E][05] — [~] [CTRL E]
The terminal will respond with (LINE NUMBER) (COLUMN NUMBER)
(RETURN)

REVERSE LINE FEED

GENERAL DESCRIPTION

This function will cause the cursor to move up one line in the same column.
If the cursor is on the top line, the cursor will remain there, but the screen
will scroll downwards;the screen will appear to move down one line, losing
the bottom line of the screen, and forming a blank line at the top of the
screen.

ACT Ⅳ*
[12] — [CTRL R]

ADM 3A*
[12] — [CTRL R]

DEC VT-52
[1B][49] — [ESC] [I]

HAZE 1500*
[12] — [CTRL R]

SEND LINE

GENERAL DESCRIPTION

This will cause the line denoted by the cursor to be sent to the computer.
Only full intensity characters will be sent. The transmission can only be inter-
rupted by the appropriate signal on the Data Set Ready. While the line is
being transmitted, no data will be accepted into the terminal. The BELL will
sound after the line has been sent.

ACT Ⅳ*
[1C] — [SEND] or [CTRL\]

*Enhanced Mode Only

ADM 3A*
[1C] — [SEND] or [CTRL\]

DEC VT-52*
[1C] — [SEND] or [CTRL\]

HAZE 1500* or [CTRL\]
NOTE: Send line function is done in local mode only if initiated by typing
CTRL\. The SEND key works in both LINE & LOCAL.

SEND SCREEN

GENERAL DESCRIPTION

Depressing the [SHIFT] and [SEND] key simultaneously will send only full in-
tensity text from the line denoted by the cursor to the end of the screen. At
the end of each line a CARRIAGE RETURN and LINE FEED will be sent.
After the last line is sent a *[03]* (end of text) is sent and the bell will sound.
The transmission can only be interrupted by the appropriate signal on the
I/O busy line.

NOTE:

To avoid sending "trailing spaces" and thus minimize transmission time
the screen should be cleared to background spaces prior to entering data
that will be sent using the send screen (or send line) function(s).

ACT IV
[02] — [CTRL B] or [SHIFT] [SEND]

ADM 3A*
[02] — [CTRL B] or [SHIFT] [SEND]

DEC VT-52*
[02] — [CTRL B] or [SHIFT] [SEND]
Not available while in the HOLD SCREEN MODE.

HAZE 1500*
[02] — [CTRL B] or [SHIFT] [SEND]
NOTE: Send screen function is done in local mode only if initiated by typing
CTRL B. SHIFT SEND works in both LINE & LOCAL.

TAB

GENERAL DESCRIPTION

This function causes the cursor to advance along the same line to the next
TAB column. There are fixed TAB stops equally spaced every 8 columns
across each line at columns 9, 17, 25, 33, 41, 49, 57, 65, and 73. When the
cursor is within the range of 74-79 it will advance one character position at a
time until the end of the line.

*Enhanced Mode Only

ACT Ⅳ
[09] — [CTRL I] or [TAB]

ADM 3A*
[09] — [CTRL I] or [TAB]

DEC VT-52
[09] — [CTRL I] or [TAB]

HAZE 1500*
[03] — [CTRL C]

TAB (SKIP) PROTECTED FIELDS

GENERAL DESCRIPTION

The cursor will move to the next full intensity field (FOREGROUND). Each time the command key is pressed, the cursor will continue to move to the next full intensity field until the last (FOREGROUND) field is encountered.

This function is particularly useful for formating data on the screen. By alternating between the half intensity and full intensity fields, a form may be displayed. The form is displayed in half intensity (BACKGROUND) and is a protected field, while data is displayed in full intensity (FOREGROUND) and may be cleared to be replaced with new data by the CLEAR FOREGROUND command.

ACT Ⅳ*
[04] — [CTRL D]

ADM 3A*
[04] — [CTRL D]

DEC VT-52*
[04] — [CTRL D]

HAZE 1500
[09] — [CTRL I] or [TAB]

UNDERLINE

GENERAL DESCRIPTION

This function may be used to underline character already displayed on the screen. The cursor must be positioned under each character to underlined.

*Enhanced Mode Only

Underlining is erased by moving the cursor back over the underlined field or by clearing the screen.

ACT Ⅳ*
[15] — [CTRL U]

ADM 3A
Not Available

DEC VT-52*
[15] — [CTRL U]

HAZE 1500*
[15] — [CTRL U]

INTERFACE INSTRUCTIONS: (MIME·I ONLY)

4.1a EIA CONNECTOR PIN ASSIGNMENTS:

The MIME-I connects to both the computer and the printer through the 25 pin EIA connector located at the rear of the cabinet. Pin assignments for this connector are:

PIN NUMBER	SIGNAL
2	RS232C Serial Data Out of MIME-I
3	RS232C Serial Data In to MIME-I
6	Data Set (Computer) Ready (H = Ready)
7	Ground
10,11	Current Loop Out of MIME-I
12,13	Current Loop In to MIME-I
14	RS232C Serial Output to Printer
20	Data Terminal (MIME-I) Ready (H = Ready)
24	Printer Ready (High = Ready)

Pin 13   Pin 1

Pin 25
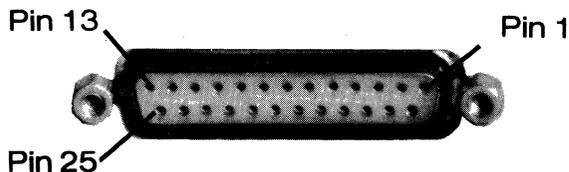
I/O CONNECTOR

INTERFACE INSTRUCTIONS: (MIME-II ONLY)

4.1b EIA CONNECTOR PIN ASSIGNMENTS:

The pin assignments for the three 25 pin EIA connectors on the rear of the **MIME-II**: are as follows:

I/O CONNECTOR

PIN NUMBER	SIGNAL
2	Serial RS232C Data Out of MIME II
3	Serial RS232C Data into MIME II
7	Ground (Signal and chassis)
6	Data Set (Processor) Ready (High = Ready)
20	Data Terminal (MIME II) Ready (High = Ready)

AUX CONNECTOR:

PIN NUMBER	SIGNAL
2	Serial RS232C Data Out of MIME II
3	Serial RS232C Data Into MIME II
7	Ground

PRINTER CONNECTOR

PIN NUMBER	SIGNAL
3	Printer Serial RS232C Data Out of MIME II
20	Printer Ready (High = Ready)
7	Ground

4.2a RS232C/20 MA CURRENT LOOP SELECTION: (MIME-I ONLY)

The MIME-I is equipped with both RS232C and 20MA Current Loop serial interfaces to communicate with your computer. It also has a serial RS232C output interface to drive a local printer for hard copy applications. All MIME-I terminals are shipped with the RS232C interface selected. To select the current loop interface the jumper between the collector of Q9 and R21 must be cut (see photo). Note

that if the current loop interface has been selected and no current is flowing in the loop from the computer to the MIME-I the MIME-I input will be in the space (logical zero) state and echoing of characters in the LOCAL or HALF DUPLEX/REMOTE mode is disabled. If current is flowing in the loop from the computer characters will be echoed locally.

Current for both loops must be provided by the procesor or modem and the loop voltage source should not exceed 20 volts. The RS232C and current loop interfaces will not operate simultaneously.

4.2b CURRENT LOOP INTERFACE: (MIME-II ONLY)

An optically isolated, non-polarized 20MA current loop interface is available as a standard feature of the MIME II. In order to enable it the user must install four wires and cut one jumper. The wires have to run from the main logic board to the EIA connector board as follows:

Hole # on Main Logic Board	Pin Connection on I/O Conn.
10,11	22,23*
12,13	24,25*

Signal
Current Loop Out of MIME II
Current Loop Into MIME II

The holes on the main logic board are located in the lower left corner of the board as viewed from the rear of the MIME II. These holes are numbered as per the following diagram.

```
13                                    1
  .  .  .  .  .  .  .  .  .  .  .  .

     .  .  .  .  .  .  .  .  .  .  .
25                                  14
```
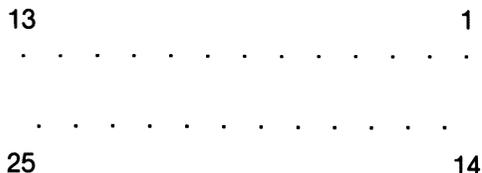
The jumper that has to be cut to enable the current loop can be found 3 inches up from the lower left corner of the main logic board.

*These connections correspond to those on an ACT IV. Any other unused pins on the EIA connector may be used if desired.

NOTE: When the current loop interface is enabled, the MIME II will not echo characters in either the LOCAL or LINE-Half Duplex modes unless the current loop into the MIME II is in the mark (current flowing) state. To enable LOCAL mode echoing, the terminal should be connected to an active loop.

4.3 FULL DUPLEX OPERATION

In the full duplex mode (selected by the slide switch on the rear of the cabinet) the MIME transmitter and receiver circuits operate independently — data may flow both into and out of the serial interface concurrently. Pins 2, 3 and 7 of the 25 pin EIA connector need to be connected to the computer (modem) to establish full duplex communication.

4.4 HALF DUPLEX OPERATION

In the half duplex mode (selected by the slide switch at the rear of the cabinet) all characters typed at the keyboard are sent out the serial port are also displayed on the screen. The REQUEST TO SEND/CLEAR TO SEND protocal is not used in the half duplex mode.

4.5 TERMINAL, COMPUTER (MODEM)AND PRINTER STATUS SIGNALING

Pins 6, 20 and 24 are used to report the computer status to the MIME, the MIME status to the computer and the printer status to the MIME respectively. If the MIME is sending a line or screen of data to the computer and pin 6 drops (indicating the computer is busy) it will suspend transmission until pin 6 returns high. Similarly, when sending a line or screen of data to a serial printer through the printer interface, if pin 24 goes low (indicating printer busy) the MIME will suspend transmission until the status returns to the ready (high) state.

When the MIME is busy sending either a line or a screen of data to either the computer or the printer it pulls pin 20 (Data Terminal Ready) low to indicate that it is incapable of receiving data. As soon as the block of data is sent the MIME raises this line. During normal LINE mode operation the Data Terminal Ready line remains high (Asserted) and the Data Set Ready line is assumed high.

4.6a DATA RATE SELECTION (MIME-I ONLY)

The data rates for both transmission and reception for communication with the computer are both selected by the labeled rotary switch on the rear of the MIME-I cabinet. The following data rates are possible: 110, 300, 600, 1200, 2400, 4800 and 9600 baud (bit/second). The data rate is selected by rotating the switch until the pointer (see figure) indicates the desired rate.
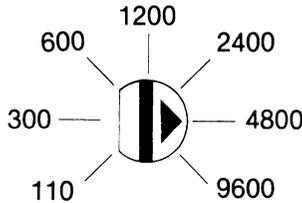
The data rate for transmission to the printer is jumper selectable at J2. The printer UART clock must be fed to J2 pin 15 and the available clock signals appear at the following pins on J2:

Data Rate	J2 Pin Number
110	14
300	13
600	12
1200	11
2400	10
4800	9
9600	8

To select the printer data rate insert a jumper wire from J2 pin 15 to the pin of J2 that corresponds to the desired rate.

4.6b DATA RATE SELECTION (MIME-II ONLY)

The data rates for both transmission and reception for communication with the computer and printer are selected by the labeled rotary switches on the rear of the MIME II cabinet. The following data rates are possible: 110, 300, 600, 1200, 2400, 4800 and 9600 baud (bits/second). The data rate is selected by rotating the switch until the pointer (see figure) indicates the desired rate.

I/O DATA RATE

```
              2400
      1200           4800
           \    |   /
            \   |  /
    600 ———  |▶  ——— 9600
            /   |  \
           /    |   \
      300        110
```

PRINTER

```
              1200
       600           2400
           \    |   /
            \   |  /
    300 ———  |▶  ——— 4800
            /   |  \
           /    |   \
      110        9600
```
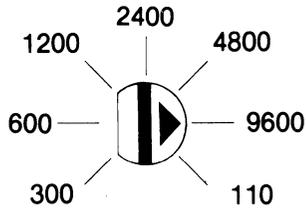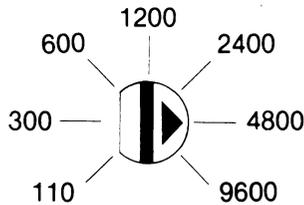
4.7 UART OPTIONS

The MIME is factory set to transmit and receive a data word consisting of 1 start bit, 7 ASCII data bits, an 8th data bit (tied high on transmit, ignored on receive) and two stop bits. The parameters of the data word may be modified by resetting the UART option switches located on the logic board in the rear of the cabinet (see photo below). To gain access to these switches the rear cover must be removed by removing the retaining screws. The UART option switches have the following effects on the data transmission format:

UART SWITCH #   FUNCTION

1   8th bit transmit select: Off (switch down) causes a logical 1 (mark) to be transmitted; On (switch up) chooses a logical 0 (space).

2   Parity select: Off (switch down) selects no parity; On enables the type of parity selected by switch 6

UART OPTION SWITCHES

LOOP ENABLE JUMPER
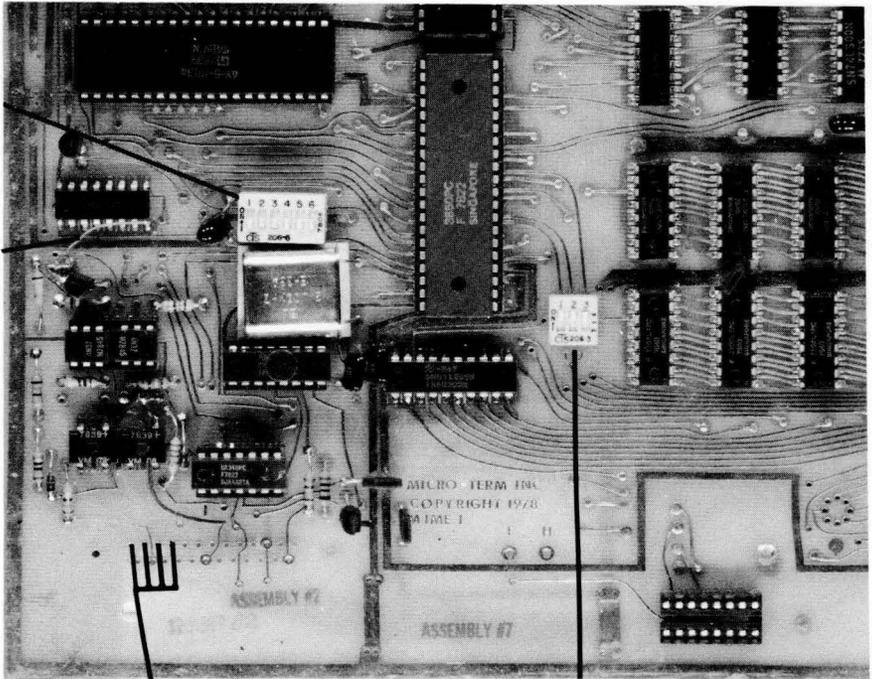
LOOP JUMPERS

TERMINAL OPTION SWITCHES

MIME-II CIRCUIT BOARD

3   Number of stop bits: Off (switch down) selects 2 stop bits; On selects one stop bit.

4,5   Word length: Lengths of 5, 6, 7 or 8 are possible. The parity bit (if selected) is added on to the word length.

Length	Switch 4	Switch 5
8	Off	Off
7	Off	On
6	On	Off
5	On	On

6   Odd/Even Parity Select: Off (switch down) selects even parity; On selects odd parity. Switch 2 must be on to enable parity generation.
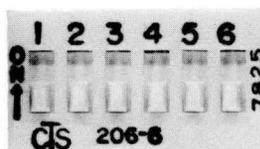
UART switches one through six are all factory set to the off position. After completing the data word modifications the cover should be replaced.

UART OPTION
SWITCHES

LOOP
ENABLE
JUMPER

I/O
CONNECTOR

FULL/HALF
DUPLEX
SWITCH

J2

BAUD RATE
SWITCH
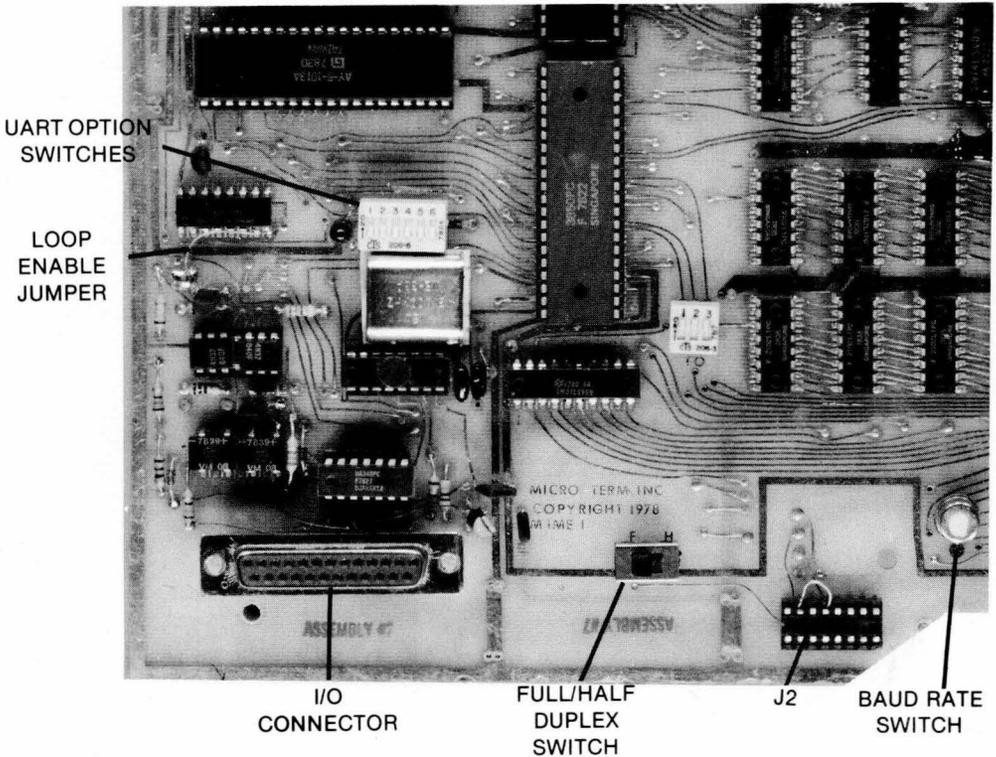
MIME-I CIRCUIT BOARD

4.8a PRINTER PORT (MIME-I ONLY)

An RS232C serial ASCII printer port output is available at pin 14 of the 25 pin EIA connector on the rear of the MIME-I. The printer data rate is independent from the I/O data rate to and from the computer and can be selected as described in Section 4.6 above. The data word parameters are set by UART switched one through six. They are the same as the I/O data word parameters.

4.8b PRINTER PORT (MIME-II ONLY)

An RS232C serial ASCII printer port is available on a separate 25 pin EIA connector as indicated in section 4.1. The printer data rate is independent from the I/O data rate to and from the computer and can be selected as described in Section 4.6 above. The data word parameters are set by UART switched one through six. They are the same as the I/O data word parameters.

5.1   Summary of ACT-IV Control Code Responses

FUNCTION	KEYBOARD	HEX	DECIMAL
Absolute Cursor Position	[Ctrl T]	(14)y,x	20
Background Follows	[Ctrl Y]*	(19)*	25*
Backspace	[Ctrl H]	(08)	08
Bell	[Ctrl G]	(07)	07
Carriage Return	[Ctrl M]	(OD)	13
Change Intensity	[Ctrl N]	(OE)	14
Clear Foreground	[Ctrl F]*	(06)*	06*
Clear to End of Screen Background Spaces	[Ctrl C]*	(03)*	03*
Cursor Down	[Ctrl K]	(0B)	11
Cursor Right	[Ctrl X]	(18)	24
Cursor Up	[Ctrl Z]	(1A)	26
Delete Line	[Ctrl W]	(17)	23
Display Control Codes**	[Ctrl Q]	(11)	17
Enter Graphics Mode	[Ctrl O]*	(0F)*	15*
Enter Hold Screen Mode	——	——	
Erase to End of Line	[Ctrl∧]	(1E)	30
Erase to End of Frame	[Ctrl _]	(1F)	31
Exit Graphics Mode	[ESC]*	(1B)*	27
Exit Hold Screen Mode	——	——	
Foreground Follows	[Ctrl S]*	(13)*	19*
Format Mode (Enter)	——	——	
Format Mode (Exit)	——	——	
Home Up	[Ctrl]]	(1D)	29
Home & Clear	[Ctrl L]	(0C)	12
Identify Terminal Type	——	——	
Insert Line	[Ctrl A]	(01)	01
Keyboard Lock	——	——	
Keyboard Unlock	——	——	
Line Feed	[Ctrl J]	(0A)	10
Null	[Ctrl@]	(00)	0
Print Line	[Ctrl V]*	(16)*	22*
Print Screen	[Ctrl P]	(10)	16
Request Cursor Position	[Ctrl E]	(05)	05
Reverse Line Feed	[Ctrl R]*	(12)*	18*
Send Line	[Send]*	(1C)*	28*
Send Screen	[Shift Send]	(02)	02
Tab (every 8 columns)	[Ctrl I]or Tab	(09)	09
Tab to Next Unprotected Field	[Ctrl D]*	(04)*	04*
Underline	[Ctrl U]*	(15)*	21*

*   Enhanced Mode
** Local Only

5.2 Summary of ADM-3A Control Code Responses

FUNCTION	KEYBOARD	HEX	DECIMAL
Absolute Cursor Position	[ESC =]	(1B,3D)y,x	27,61
Background Follows	[Ctrl Y]*	(19)*	25*
Backspace	[Ctrl H]	(08)	08
Bell	[Ctrl G]	(07)	07
Carriage Return	[CtrlM]	(OD)	13
Change Intensity	——	——	
Clear Foreground	[Ctrl F]*	(06)*	06*
Clear to End of Screen			
Background Spaces	[Ctrl C]*	(03)*	03*
Cursor Down	[Ctrl T]*	(14)*	24*
Cursor Right	[Ctrl L]	(0C)	12
Cursor Up	[Ctrl K]	(0B)	11
Delete Line	[Ctrl W]*	(17)*	23*
Display Control Codes**	[Ctrl Q]*	(11)*	17*
Enter Graphics Mode	[Ctrl U]*	(15)*	21*
Enter Hold Screen Mode	——	——	
Erase to End of Line	[Ctrl X]*	(18)*	24*
Erase to End of Frame	[Ctrl _]	(1F)*	31*
Exit Graphics Mode	[Ctrl]]*	(1D)*	16*
Exit Hold Screen Mode	——	——	
Foreground Follows	[Ctrl S]*	(13)*	19*
Format Mode (Enter)	——	——	
Format Mode (Exit)	——	——	
Home Up	[Ctrl^]	(1E)	30
Home & Clear	[Ctrl Z]	(1A)	26
Identify Terminal Type	——	——	
Insert Line	[Ctrl A]*	(01)*	01*
Keyboard Lock	[Ctrl O]*	(0F)*	15*
Keyboard Unlock	[Ctrl N]*	(0E)*	14*
Line Feed	[Ctrl J]	(0A)	10
Null	[Ctrl @]	(00)	0
Print Line	[Ctrl V]*	(16)*	22*
Print Screen	[Ctrl P]*	(10)*	16*
Request Cursor Position	[Ctrl E]*	(05)*	05*
Reverse Line Feed	[Ctrl R]*	(12)*	18*
Send Line	[Send]*	(1C)*	28*
Send Screen	[Shift Send]*	(02)*	02*
Tab (every 8 columns)	[Ctrl I]*or Tab	(09)*	09*
Tab to Next Unprotected Field	[Ctrl D]*	(04)*	04*
Underline	——	——	

* Enhanced Mode
** Local Only

5.3 Summary of VT-52 Control Code Responses

FUNCTION	KEYBOARD	HEX	DECIMAL
Absolute Cursor Position	[ESC Y]	(1B,59)y,x	24,89
Background Follows	[Ctrl Y]*	(19)*	25*
Backspace [ESC D] or	[Ctrl H]	(1B,44or08)	27,68,or08
Bell	[Ctrl G]	(07)	07
Carriage Return	[Ctrl M]	(OD)	13
Change Intensity	——	——	
Clear Foreground	[Ctrl F]*	(06)*	06*
Clear to End of Screen			
Background Spaces	[Ctrl C]*	(03)*	03*
Cursor Down	[ESC B]	(1B,42)	27,66
Cursor Right	[ESC C]	(1B,43)	27,67
Cursor Up	[ESC A]	(1B,41)	27,65
Delete Line	[Ctrl W]*	(17)*	23*
Display Control Codes**	[Ctrl Q]*	(11)*	17*
Enter Graphics Mode	[ESC F]	(1B,46)	27,70
Enter Hold Screen Mode	[ESC [ ]	(1B,5B)	27,91
Erase to End of Line	[ESC K]	(1B,4B)	27,75
Erase to End of Frame	[ESC J]	(1B,4A)	27,74
Exit Graphics Mode	[ESC G]	(1B,47)	27,71
Exit Hold Screen Mode	[ESC @]	(1B,5C)	27,96
Foreground Follows	[Ctrl S]*	(13)*	19*
Format Mode (Enter)	[Ctrl X]*	(18)*	24*
Format Mode (Exit)	[Ctrl T]*	(14)*	20*
Home Up	[ESC H]	(1B,48)	27,72
Home & Clear	[Ctrl L]*	(0C)*	12*
Identify Terminal Type	[ESC Z]	(1B,5A)	27,26
Insert Line	[Ctrl A]*	(01)*	01*
Keyboard Lock	——	——	
Keyboard Unlock	——	——	
Line Feed	[Ctrl J]	(0A)	10
Null	[Ctrl @]	(00)	0
Print Line	[Ctrl V]*	(16)*	22*
Print Screen	[Ctrl P]*	(10)*	16*
Request Cursor Position	[Ctrl E]*	(05)*	05*
Reverse Line Feed	[ESC I]	(1B,49)	27
Send Line	[Send]*	(1C)*	12*
Send Screen	[Shift Send]*	(02)*	02*
Tab (every 8 columns)	[Ctrl I]or Tab	(09)	09
Tab to Next Unprotected Field	[Ctrl D]*	(04)*	04
Underline	[Ctrl U]*	(15)*	21*

* Enhanced Mode
** Local only

5.4 Summary of HAZE 1500 Control Code Responses

FUNCTION	KEYBOARD	HEX	DECIMAL
Absolute Cursor Position	‡[Ctrl Q]	‡(11)x,y	126,17
Background Follows	‡[Ctrl Y]	‡(19)	126,25
Backspace	[Ctrl H]	(08)	08
Bell	[Ctrl G]	(07)	07
Carriage Return	[Ctrl M]	(OD)	13
Change Intensity	——	——	
Clear Foreground	‡[Ctrl]]	‡(1D)	126,29
Clear to End of Screen Background Spaces	‡[Ctrl W]	‡(17)	126,23
Cursor Down	‡[Ctrl K]	‡(0B)	126,11
Cursor Right	[Ctrl P]	(10)	16
Cursor Up	‡[Ctrl L]	‡(0C)	126,12
Delete Line	‡[Ctrl S]	‡(13)	126,19
Display Control Codes**	[Ctrl Q]*	(11)*	17*
Enter Graphics Mode	[Ctrl K]*	(0B)*	11*
Enter Hold Screen Mode	[Ctrl O]	(0F)*	15
Erase to End of Line	‡[Ctrl O]	‡(0F)	126,15
Erase to End of Frame	‡[Ctrl X]	‡(18)	126,24
Exit Graphics Mode	[Ctrl L]*	(0C)*	12*
Exit Hold Screen Mode	[ESC]*	(1B)*	27*
Foreground Follows	‡[Ctrl_]	‡(1F)	126,31
Format Mode (Enter)	[Ctrl X]*	(18)*	24*
Format Mode (Exit)	[Ctrl T]*	(14)*	20*
Home Up	‡[Ctrl R]	‡(12)	126,18
Home & Clear	‡[Ctrl ʌ]	‡(1C)	126,28
Identify Terminal Type	——	——	
Insert Line	‡[Ctrl Z]	‡(1A)	126,26
Keyboard Lock	‡[Ctrl U]	‡(15)	126,21
Keyboard Unlock	‡[Ctrl F]	‡(06)	126,22
Line Feed	[Ctrl J]	(0A)	10
Null	[Ctrl @]	(00)	00
Print Line	[Ctrl V]*	(16)*	22*
Print Screen	[Ctrl A]*	(01)*	01*
Request Cursor Position	‡[Ctrl E]	‡(05)	126,05
Reverse Line Feed	[Ctrl R]*	(12)*	18*
Send Line	[Send]*	(1C)*	28*
Send Screen	[Shift Send]*	(02)*	02*
Tab (every 8 columns)	[Ctrl C]*	(03)*	03
Tab to Next Unprotected Field	[Ctrl I]or Tab	(09)	09
Underline	[Ctrl U]*	(15)*	21*

* Enhanced Mode
** Local only
‡ tilde (∿) must be used first

6.1 Absolute Cursor Addressing Table · ACT-Ⅳ

DECIMAL CODE	CHARACTER	ROW #	COLUMN #	DECIMAL CODE	CHARACTER	ROW #	COLUMN #
0	CTRL @	0	0	64	@	16	64
1	CTRL A	1	1	65	A	17	65
2	CTRL B	2	2	66	B	18	66
3	CTRL C	3	3	67	C	19	67
4	CTRL D	4	4	68	D	20	68
5	CTRL E	5	5	69	E	21	69
6	CTRL F	6	6	70	F	22	70
7	CTRL G	7	7	71	G	23	71
8	CTRL H	8	8	72	H	0	72
9	CTRL I	9	9	73	I	1	73
10	CTRL J	10	10	74	J	2	74
11	CTRL K	11	11	75	K	3	75
12	CTRL L	12	12	76	L	4	76
13	CTRL M	13	13	77	M	5	77
14	CTRL N	14	14	78	N	6	78
15	CTRL O	15	15	79	O	7	79
16	CTRL P	16	16	80	P	8	0
17	CTRL Q	17	17	81	Q	9	1
18	CTRL R	18	18	82	R	10	2
19	CTRL S	19	19	83	S	11	3
20	CTRL T	20	20	84	T	12	4
21	CTRL U	21	21	85	U	13	5
22	CTRL V	22	22	86	V	14	6
23	CTRL W	23	23	87	W	15	7
24	CTRL X	0	24	88	X	16	8
25	CTRL Y	1	25	89	Y	17	9
26	CTRL Z	2	26	90	Z	18	10
27	CTRL [	3	27	91	[	19	11
28	CTRL \	4	28	92	\	20	12
29	CTRL]	5	29	93	]	21	13
30	CTRL ∧	6	30	94	∧	22	14
31	CTRL _	7	31	95	—	23	15
32		8	32	96	\	0	16
33	!	9	33	97	a	1	17
34	"	10	34	98	b	2	18
35	#	11	35	99	c	3	19
36	$	12	36	100	d	4	20
37	%	13	37	101	e	5	21
38	&	14	38	102	f	6	22
39	'	15	39	103	g	7	23
40	(	16	40	104	h	8	24
41	)	17	41	105	i	9	25
42	*	18	42	106	j	10	26
43	+	19	43	107	k	11	27
44	'	20	44	108	l	12	28
45	—	21	45	109	m	13	29
46	.	22	46	110	n	14	30
47	/	23	47	111	o	15	31
48	0	0	48	112	p	16	32
49	1	1	49	113	q	17	33
50	2	2	50	114	r	18	34
51	3	3	51	115	s	19	35
52	4	4	52	116	t	20	36
53	5	5	53	117	u	21	37
54	6	6	54	118	v	22	38
55	7	7	55	119	w	23	39
56	8	8	56	120	x	0	40
57	9	9	57	121	y	1	41
58	:	10	58	122	z	2	42
59	;	11	59	123	{	3	43
60	<	12	60	124	|	4	44
61	=	13	61	125	}	5	45
62	>	14	62	126	~	6	46
63	?	15	63				

Repeats of row or column numbers are a result of the terminal performing modulo 24 on the row and modulo 80 on the column.

6.2 Absolute Cursor Addressing Table - ADM-3A

ASCII DECIMAL CODE	CHARACTER	ROW #	COLUMN #	ASCII DECIMAL CODE	CHARACTER	ROW #	COLUMN #
0	CTRL 0			64	@		32
1	CTRL A			65	A		33
2	CTRL B			66	B		34
3	CTRL C			67	C		35
4	CTRL D			68	D		36
5	CTRL E			69	E		37
6	CTRL F			70	F		38
7	CTRL G			71	G		39
8	CTRL H			72	H		40
9	CTRL I			73	I		41
10	CTRL J			74	J		42
11	CTRL K			75	K		43
12	CTRL L			76	L		44
13	CTRL M			77	M		45
14	CTRL N			78	N		46
15	CTRL O			79	O		47
16	CTRL P			80	P		48
17	CTRL Q			81	Q		49
18	CTRL R			82	R		50
19	CTRL S			83	S		51
20	CTRL T			84	T		52
21	CTRL U			85	U		53
22	CTRL V			86	V		54
23	CTRL W			87	W		55
24	CTRL X			88	X		56
25	CTRL Y			89	Y		57
26	CTRL Z			90	Z		58
27	CTRL [			91	[		59
28	CTRL \			92	\		60
29	CTRL]			93	]		61
30	CTRL ^			94	^		62
31	CTRL _			95	_		63
32		0	0	96	`		64
33	!	1	1	97	a		65
34	"	2	2	98	b		66
35	#	3	3	99	c		67
36	$	4	4	100	d		68
37	%	5	5	101	e		69
38	&	6	6	102	f		70
39	'	7	7	103	g		71
40	(	8	8	104	h		72
41	)	9	9	105	i		73
42	*	10	10	106	j		74
43	+	11	11	107	k		75
44	,	12	12	108	l		76
45	—	13	13	109	m		77
46	.	14	14	110	n		78
47	/	15	15	111	o		79
48	0	16	16	112	p		
49	1	17	17	113	q		
50	2	18	18	114	r		
51	3	19	19	115	s		
52	4	20	20	116	t		
53	5	21	21	117	u		
54	6	22	22	118	v		
55	7	23	23	119	w		
56	8		24	120	x		
57	9		25	121	y		
58	:		26	122	z		
59	;		27	123	{		
60	<		28	124				
61	=		29	125	}		
62	>		30	126	~		
63	?		31				

6.3 Absolute Cursor Addressing Table · DEC VT-52

ASCII DECIMAL CODE	CHARACTER	ROW #	COLUMN #
0	CTRL @		
1	CTRL A		
2	CTRL B		
3	CTRL C		
4	CTRL D		
5	CTRL E		
6	CTRL F		
7	CTRL G		
8	CTRL H		
9	CTRL I		
10	CTRL J		
11	CTRL K		
12	CTRL L		
13	CTRL M		
14	CTRL N		
15	CTRL O		
16	CTRL P		
17	CTRL Q		
18	CTRL R		
19	CTRL S		
20	CTRL T		
21	CTRL U		
22	CTRL V		
23	CTRL W		
24	CTRL X		
25	CTRL Y		
26	CTRL Z		
27	CTRL [		
28	CTRL \		
29	CTRL]		
30	CTRL ∧		
31	CTRL __		
32		0	0
33	!	1	1
34	"	2	2
35	#	3	3
36	$	4	4
37	%	5	5
38	&	6	6
39	'	7	7
40	(	8	8
41	)	9	9
42	*	10	10
43	+	11	11
44	,	12	12
45	—	13	13
46	.	14	14
47	/	15	15
48	0	16	16
49	1	17	17
50	2	18	18
51	3	19	19
52	4	20	20
53	5	21	21
54	6	22	22
55	7	23	23
56	8		24
57	9		25
58	:		26
59	;		27
60	≤		28
61	=		29
62	>		30
63	?		31

ASCII DECIMAL CODE	CHARACTER	ROW #	COLUMN #
64	@		32
65	A		33
66	B		34
67	C		35
68	D		36
69	E		37
70	F		38
71	G		39
72	H		40
73	I		41
74	J		42
75	K		43
76	L		44
77	M		45
78	N		46
79	O		47
80	P		48
81	Q		49
82	R		50
83	S		51
84	T		52
85	U		53
86	V		54
87	W		55
88	X		56
89	Y		57
90	Z		58
91	[		59
92	\		60
93	]		61
94	∧		62
95	—		63
96	\		64
97	a		65
98	b		66
99	c		67
100	d		68
101	e		69
102	f		70
103	g		71
104	h		72
105	i		73
106	j		74
107	k		75
108	l		76
109	m		77
110	n		78
111	o		79
112	p		
113	q		
114	r		
115	s		
116	t		
117	u		
118	v		
119	w		
120	x		
121	y		
122	z		
123	{		
124				
125	}		
126	~		

All incorrect row addresses will be ignored. Incorrect column addresses below decimal 32 will be ingored. However column addresses above decimal 112 will place the cursor 1 — column 79.

6.4 Absolute Cursor Addressing Table · HAZE 1500

ASCII DECIMAL CODE	CHARACTER	CRT POSITION ROW #	CRT POSITION COLUMN #	ASCII DECIMAL CODE	CHARACTER	CRT POSITION ROW #	CRT POSITION COLUMN #
0	CTRL 0	0	0	64	@	0	64
1	CTRL A	1	1	65	A	1	65
2	CTRL B	2	2	66	B	2	66
3	CTRL C	3	3	67	C	3	67
4	CTRL D	4	4	68	D	4	68
5	CTRL E	5	5	69	E	5	69
6	CTRL F	6	6	70	F	6	70
7	CTRL G	7	7	71	G	7	71
8	CTRL H	8	8	72	H	8	72
9	CTRL I	9	9	73	I	9	73
10	CTRL J	10	10	74	J	10	74
11	CTRL K	11	11	75	K	11	75
12	CTRL L	12	12	76	L	12	76
13	CTRL M	13	13	77	M	13	77
14	CTRL N	14	14	78	N	14	78
15	CTRL O	15	15	79	O	15	79
16	CTRL P	16	16	80	P	16	
17	CTRL Q	17	17	81	Q	17	
18	CTRL R	18	18	82	R	18	
19	CTRL S	19	19	83	S	19	
20	CTRL T	20	20	84	T	20	
21	CTRL U	21	21	85	U	21	
22	CTRL V	22	22	86	V	22	
23	CTRL W	23	23	87	W	23	
24	CTRL X		24	88	X		
25	CTRL Y		25	89	Y		
26	CTRL Z		26	90	Z		
27	CTRL [		27	91	[		
28	CTRL \		28	92	\		
29	CTRL]		29	93	]		
30	CTRL ^		30	94	^		
31	CTRL __		31	95	_		
32		0	32	96	`	0	0
33	!	1	33	97	a	1	1
34	"	2	34	98	b	2	2
35	#	3	35	99	c	3	3
36	$	4	36	100	d	4	4
37	%	5	37	101	e	5	5
38	&	6	38	102	f	6	6
39	'	7	39	103	g	7	7
40	(	8	40	104	h	8	8
41	)	9	41	105	i	9	9
42	*	10	42	106	j	10	10
43	+	11	43	107	k	11	11
44	'	12	44	108	l	12	12
45	—	13	45	109	m	13	13
46	.	14	46	110	n	14	14
47	/	15	47	111	o	15	15
48	0	16	48	112	p	16	16
49	1	17	49	113	q	17	17
50	2	18	50	114	r	18	18
51	3	19	51	115	s	19	19
52	4	20	52	116	t	20	20
53	5	21	53	117	u	21	21
54	6	22	54	118	v	22	22
55	7	23	55	119	w	23	23
56	8		56	120	x		24
57	9		57	121	y		25
58	:		58	122	z		26
59	;		59	123	{		27
60	<		60	124				28
61	=		61	125	}		29
62	>		62	126	~		30
63	?		63				

The recommended cursor addresses are shown in the outlined areas they are the codes produced when the cursor address is requested.

Other codes send will produce the row & column indicated.

45

7.1 KEYBOARD LAYOUT AND OUTPUT ASSIGNMENTS

Output

																LINE LOC•
1B 1B 1B 1B *	31 21 00 *	32 22 00 *	33 23 00 *	34 24 00 *	35 25 00 *	36 26 00 *	37 27 00 37	38 28 00 38	39 29 00 39	30 00 00 30	20 00 00 *	5E 7E 1E *	5C 7C 1C *	5F 7F 1F *	BREAK	
09 09 09 09	71 51 11 *	77 57 17 *	65 45 05 *	72 52 12 *	74 54 14 *	79 59 19 *	75 55 15 34	69 49 09 35	6F 4F 0F 36	70 50 10 *	40 60 00 *	5D 7D 1D *	REPEAT	0A 0A 0A 0A		
CTRL	CAPS LOCK	61 41 01 *	73 53 13 *	64 44 04 *	66 46 06 *	67 47 07 *	68 48 08 *	6A 4A 0A 31	6B 4B 0B 32	6C 4C 0C 33	3B 2B 00 *	3A 2A 00 *	5B 7B 1B *	0D 0D 0D 0D		
SEND†	SHIFT	7A 5A 1A *	78 58 18 *	63 43 03 *	76 56 16 *	62 42 02 *	6E 4E 0E *	6D 4D 0D *	2C 3C 00 *	2E 3E 00 *	2F 3F 00 *	SHIFT	08 18 00 *	0B 1A 00 *		
NUM				20 – Unshifted 20 – Shifted 20 – CTRL 20 – Numeric												

Layout

															LINE LOC•
ESC	! 1	" 2	# 3	$ 4	% 5	& 6	/ 7	(8	) 9	0	= —	~ ^	! /	RUB —	BREAK
TAB	Q	W	E	R	T	Y	4 U	5 I	6 O	P	` @	}]	REPEAT	LINE FEED	
CTRL	CAPS LOCK	A	S	D	F	BELL G	H	1 J	2 K	3 L	+ ;	* :	{ [	RETURN	
SEND	SHIFT	Z	X	C	V	B	N	M	< ,	> .	? /	SHIFT	⇄	↑↓	
NUM				SPACE BAR											

* Not Affected by NUM Key

† Operation of SEND is dependent upon MODE

37 27 00 37	38 28 00 38	39 29 00 39
34 24 00 *	35 25 00 *	36 26 00 *
31 21 00 *	32 22 00 *	33 23 00 *
30 00 00 30	2E 3E 00 *	0D 0D 0D 0D

Numeric Key Pad (MIME-II ONLY)

7	8	9
4	5	6
1	2	3
0	.	RETURN

Numeric Key Pad (MIME-II ONLY)

7.2 TABLE OF THE ASCII CODES

CTRL	Character	Binary	Bit 7 to Bit 0	Octal	Decimal	Hexadecimal
@	NUL	00000000	000	000	00
A	SOH	00000001	001	001	01
B	STX	00000010	002	002	02
C	ETX	00000011	003	003	03
D	EOT	00000100	004	004	04
E	ENQ	00000101	005	005	05
F	ACK	00000110	006	006	06
G	BEL	00000111	007	007	07
H	BS	00001000	010	008	08
I	HT	00001001	011	009	09
J	LF	00001010	012	010	0A
K	VT	00001011	013	011	0B
L	FF	00001100	014	012	0C
M	CR	00001101	015	013	0D
N	SO	00001110	016	014	0E
O	SI	00001111	017	015	0F
P	DLE	00010000	020	016	10
Q	DC1	00010001	021	017	11
R	DC2	00010010	022	018	12
S	DC3	00010011	023	019	13
T	DC4	00010100	024	020	14
U	NAK	00010101	025	021	15
V	SYN	00010110	026	022	16
W	ETB	00010111	027	023	17
X	CAN	00011000	030	024	18
Y	EM	00011001	031	025	19
Z	SUB	00011010	032	026	1A
[	ESC	00011011	033	027	1B
\	FS	00011100	034	028	1C
]	GS	00011101	035	029	1D
^	RS	00011110	036	030	1E
—	US	00011111	037	031	1F
	SP	00100000	040	032	20
	!	00100001	041	033	21
	''	00100010	042	034	22
	#	00100011	043	035	23
	$	00100100	044	036	24
	%	00100101	045	037	25
	&	00100110	046	038	26
	'	00100111	047	039	27
	(	00101000	050	040	28
	)	00101001	051	041	29
	*	00101010	052	042	2A
	+	00101011	053	043	2B

Character	Binary	Bit 7 to Bit 0	Octal	Decimal	Hexadecimal
,	00101100	054	044	2C
-	00101101	055	045	2D
.	00101110	056	046	2E
/	00101111	057	047	2F
0	00110000	060	048	30
1	00110001	061	049	31
2	00110010	062	050	32
3	00110011	063	051	33
4	00110100	064	052	34
5	00110101	065	053	35
6	00110110	066	054	36
7	00110111	067	055	37
8	00111000	070	056	38
9	00111001	071	057	39
:	00111010	072	058	3A
;	00111011	073	059	3B
<	00111100	074	060	3C
=	00111101	075	061	3D
>	00111110	076	062	3E
?	00111111	077	063	3F
@	01000000	100	064	40
A	01000001	101	065	41
B	01000010	102	066	42
C	01000011	103	067	43
D	01000100	104	068	44
E	01000101	105	069	45
F	01000110	106	070	46
G	01000111	107	071	47
H	01001000	110	072	48
I	01001001	111	073	49
J	01001010	112	074	4A
K	01001011	113	075	4B
L	01001100	114	076	4C
M	01001101	115	077	4D
N	01001110	116	078	4E
O	01001111	117	079	4F
P	01010000	120	080	50
Q	01010001	121	081	51
R	01010010	122	082	52
S	01010011	123	083	53
T	01010100	124	084	54
U	01010101	125	085	55
V	01010110	126	086	56
W	01010111	127	087	57

Character	Binary	Bit 7 to Bit 0	Octal	Decimal	Hexadecimal
X	01011000	130	088	58
Y	01011001	131	089	59
Z	01011010	132	090	5A
[	01011011	133	091	5B
\	01011100	134	092	5C
]	01011101	135	093	5D
∧	01011110	136	094	5E
—	01011111	137	095	5F
'	01100000	140	096	60
a	01100001	141	097	61
b	01100010	142	098	62
c	01100011	143	099	63
d	01100100	144	100	64
e	01100101	145	101	65
f	01100110	146	102	66
g	01100111	147	103	67
h	01101000	150	104	68
i	01101001	151	105	69
j	01101010	152	106	6A
k	01101011	153	107	6B
l	01101100	154	108	6C
m	01101101	155	109	6D
n	01101110	156	110	6E
o	01101111	157	111	6F
p	01110000	160	112	70
q	01110001	161	113	71
r	01110010	162	114	72
s	01110011	163	115	73
t	01110100	164	116	74
u	01110101	165	117	75
v	01110110	166	118	76
w	01110111	167	119	77
x	01111000	170	120	78
y	01111001	171	121	79
z	01111010	172	122	7A
{	01111011	173	123	7B
|	01111100	174	124	7C
}	01111101	175	125	7D
~	01111110	176	126	7E
DEL	01111111	177	127	7F

CTRL	ABBR.		DESCRIPTION
@	NUL	–	null, or all zeros
A	SOH	–	start of heading
B	STX	–	start of text
C	ETX	–	end of text
D	EOT	–	end of transmission
E	ENQ	–	enquiry
F	ACK	–	acknowledge
G	BEL	–	bell
H	BS	–	backspace
I	HT	–	horizontal tabulation
J	LF	–	line feed

CTRL	ABBR.		DESCRIPTION
K	VT	–	vertical tabulation
L	FF	–	form feed
M	CR	–	carriage return
N	SO	–	shift out
O	SI	–	shift in
P	DLE	–	data link escape
Q	DC1	–	device control 1 (X ON)
R	DC2	–	device control 2
S	DC3	–	device control 3 (X OFF)
T	DC4	–	device control 4
U	NAK	–	negative acknowledge

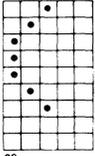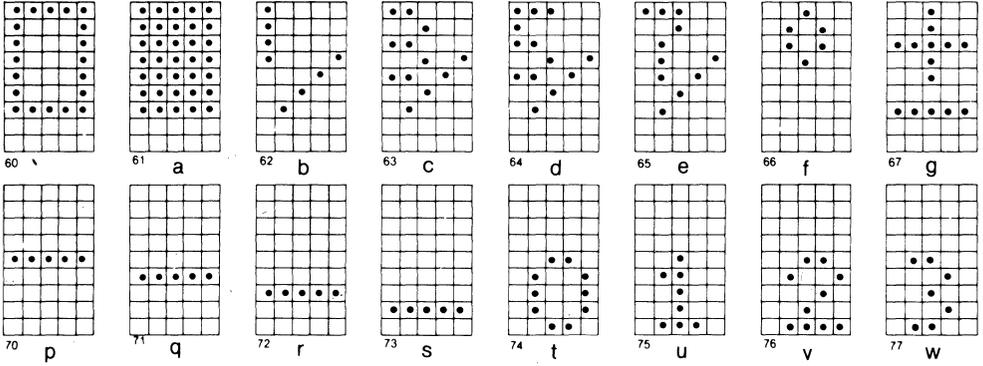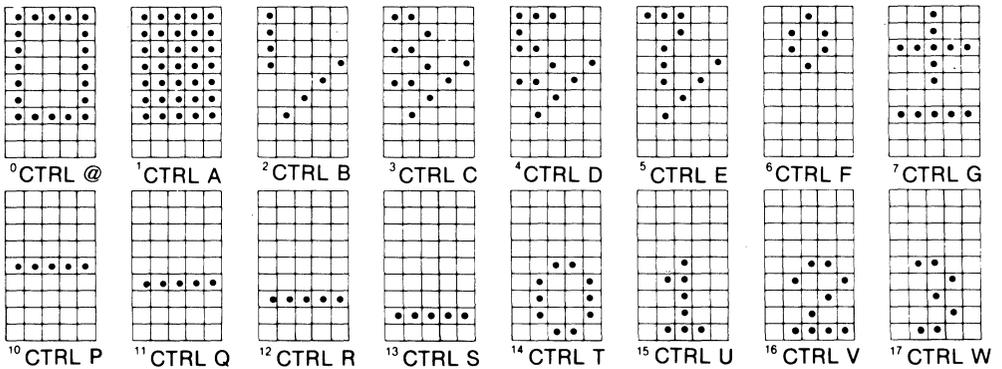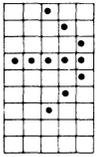| CTRL	ABBR.		DESCRIPTION
V	SYN	–	synchronous idle
W	ETB	–	end of transmission block
X	CAN	–	cancel
Y	EM	–	end of medium
Z	SUB	–	substitute
[	ESC	–	escape
\	FS	–	file separator
]	GS	–	group separator
∧	RS	–	record separator
—	US	–	unit separator
	SP	–	space
	DEL	–	delete

7.3 CHARACTER SET (Regular)
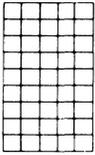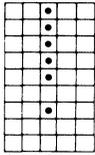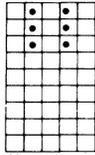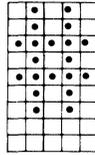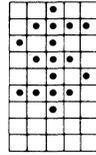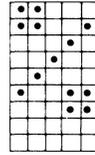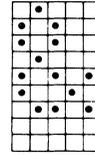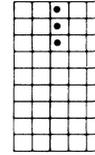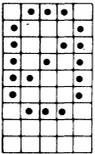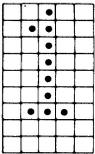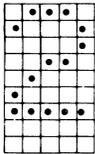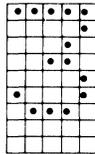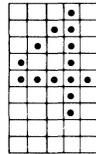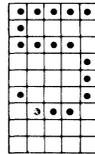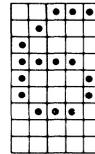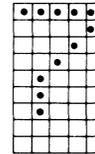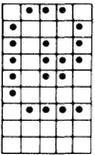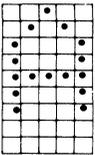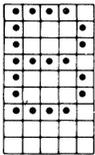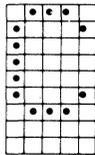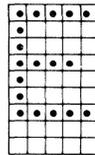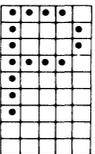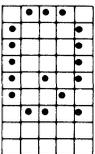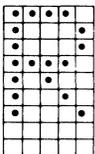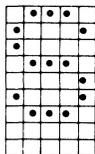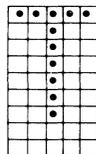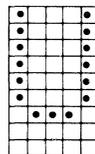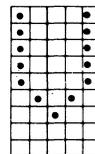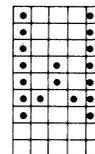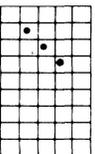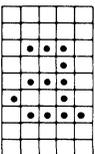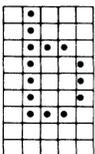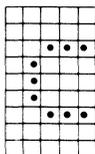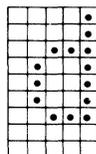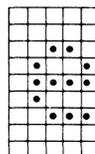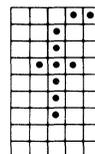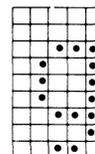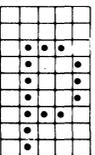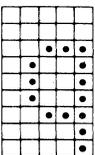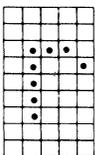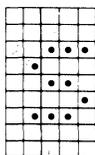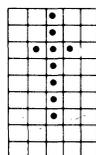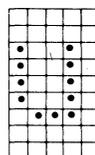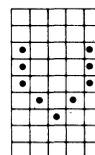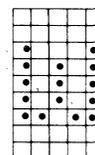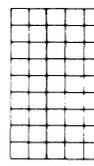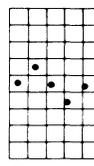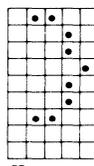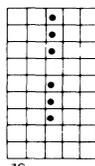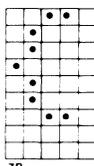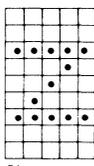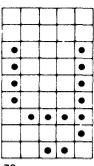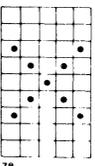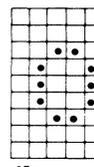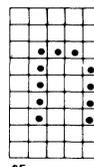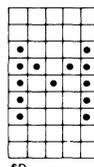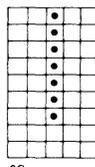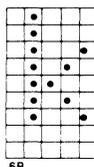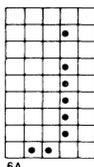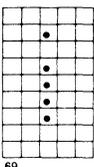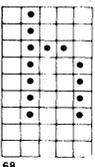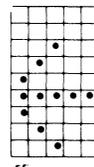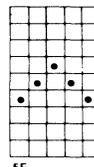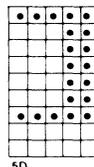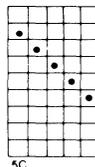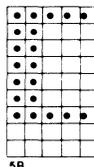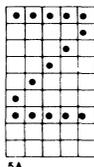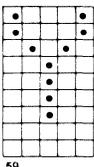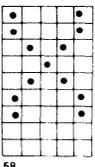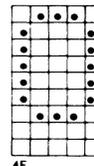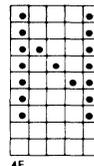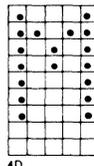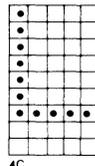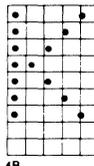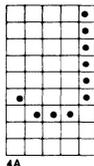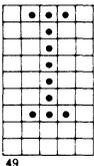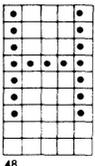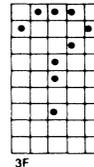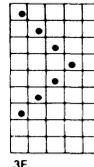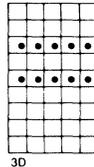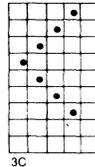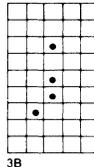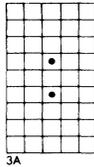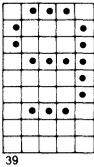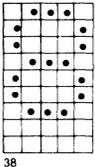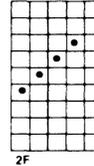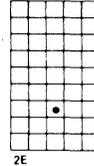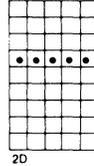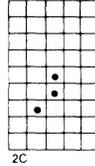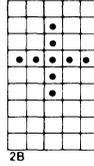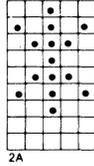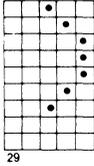
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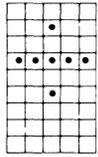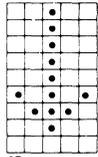
GRAPHICS

CONTROL CHARACTERS
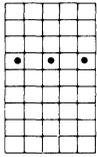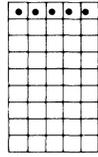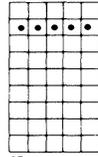
68 h	69 i	6A j	6B k	6C l	6D m	6E n	6F o
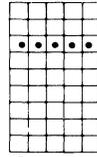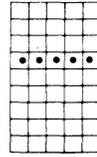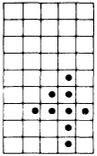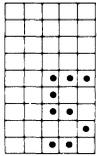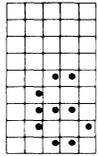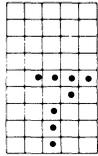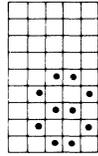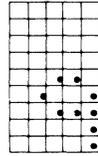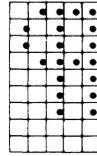
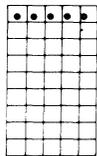|							
78 x	79 y	7A z	7B {	7C ¦	7D }	7E ~	7F RUB
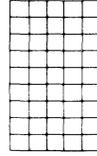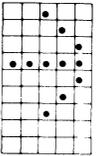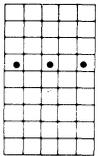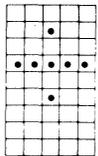
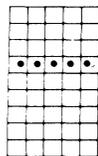|							
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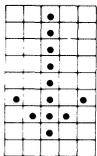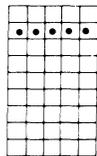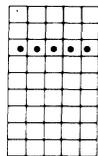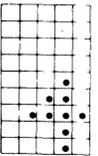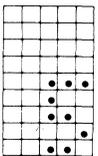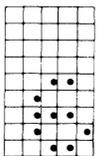
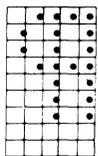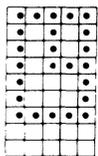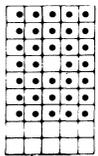|							
18 CTRL X	19 CTRL Y	1A CTRL Z	1B CTRL [	1C CTRL \	1D CTRL]	1E CTRL ^	1F CTRL __
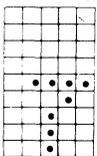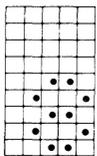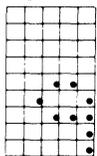
7F RUB

7.4 WARRANTY AND SERVICE INFORMATION

a) The MIME requires no maintenance and should perform faithfully for many years. MICRO-TERM will repair any unit which fails within the original warranty period provided that no modifications have been performed on the circuit, other than the jumper modifications outlined in this manual.

b) Beyond the warranty period MICRO-TERM will charge a nominal fee for the repair of any MIME. A complete technical manual including schematic, theory of operation and timing diagrams is available to owners of the MIME. Any further information relating to the operation or interfacing of your MIME can be obtained by writing directly to:

> TECHNICAL STAFF
> MICRO-TERM,INC.
> 1314 Hanley Industrial Ct.
> St. Louis, Missouri 63144

7.5a DISASSEMBLY (MIME-I)

Unplug the unit. Remove the two rear cover retaining screws and lift the rear cover upwards and out.

7.5b DISASSEMBLY (MIME-II)

Unplug the unit. Remove the five Phillips head cover retaining screws and lift the cover upwards and off of the terminal.

7.6 BOARD REMOVAL

Before attempting to remove the board, unplug the unit. The main logic board is mounted in the MIME with three brackets. Two of these hold the bottom of the board in place and the third stabilizes the top of the logic board by tying it to the monitor mount. To remove the main logic board, free it from these brackets and unplug S1, 2, 3, 4 and the ribbon connectors at J1 and J2. Be sure these connectors are all replaced properly before plugging the unit back in and applying power.

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