MC_5 User's Guide

LINK
Technologies, Inc.

MC5 User's Guide

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Overview

Features

Display Screen:

Color 14" flat diagonal, green, amber, or white phospher with fully scanned video. External contrast and brightness controls.

Screen Refresh:

78 or 60 Hz.

Screen Formats:

26-row display in 80 or 132 columns.

Virtual Terminals:

Simultaneous connection to two hosts with a full page screen only.

Screen Attributes:

Normal, Dim, Bold, Blank, Reverse, and Blink in all combinations.

Attribute Styles:

Full screen embedded, line embedded, or character; independently selectable per session.

Line Attributes:

Double wide, double high/double wide, and double high.

Character Size:

10x16 (60Hz, 26 rows); 10x13 (78 Hz, 26 rows); 10x9 (60 Hz, 46 rows).

Character Set:

512 displayable characters per session in hidden mode; 128 displayable characters per session in embedded mode.

Font Support:

ASCII, PC Multinational, DEC Multinational, and ISO Latin 1.

Display Memory:

80-columns, up to 7 pages; 132-columns (non-embedded), up to 2 pages.

Scrolling:

Jump or Smooth.

Keyboards:

Detached, adjustable, low profile with mechanical keyswitches and 6-foot coiled RJ11 cord. Supports US Enhanced PC (EPC), International Enhanced PC (IEPC), and ANSI layouts. Up to 500 bytes of non-volatile memory available for key programming.

Communications:

Two asynchronous, bi-directional serial ports (MAIN and AUXILIARY), and one printer port (PARALLEL). The MAIN port supports RS-232 communications via its DB25F connector. The AUXILIARY port supports RS-232 communictions via its DB9M connector. RS-232 communications require a shielded interface cable. RS-422 communications can be supported from the AUXILIARY port as an option. The PARALLEL port is compatible with the Centronix parallel printer interface.

Emulation Compatibility:

Link 125, ANSI.SYS, DEC VT220-7, VT220-8, VT100, and VT52, Wyse WY-60, Wyse WY-50/WY-50+, ADM3A, ADM5, TeleVideo 955 (TVI955), TVI950, TVI925, TVI910+, PC Term, ADDS Adds VP, and Adds 60.

Power:

94-264 Vac ±10%/50/60 Hz.

Dimensions:

Height: 12.5" (320 mm), Width: 13.5" (340 mm), Depth: 12.5" (310 mm).

Shipping Weight:

25 lbs. (55 kg.)

Regulatory Compliance:

UL and CSA Approved. Meets FCC Class A, VDE Class B, IEC 950, CISPR-B, MPR II, and ZH1/618 "GS" requirements.

About This Manual

The *MC5 User's Guide* contains the information you need to install, set up, and operate the terminal. It is organized in the following manner:

Chapter 1
Installing the MC5

This chapter explains how to install the terminal as part of your host system network. Connecting external devices is also explained.

Chapter 2
Configuring the MC5

Chapter 2 explains how to invoke the *MC5*'s setup mode, and configure its operating parameters to meet your system's requirements.

Chapter 3
Operating the MC5
Chapter 3 discusses the terminal's user features, operating functions, and display capabilities.

Appendix A
Keyboard Layouts
This appendix provides illustrations of the keyboards supported by the *MC5*.

Appendix B
Error Codes
This appendix includes the *MC5's* error and system code descriptions.

Appendix C
Troubleshooting
This appendix provides a quick reference guide for troubleshooting the terminal.

Terms and Conventions

Terms

The following terms are used throughout this manual:

Application	A software program that directs the host computer and terminal to accomplish a specific task. For example, word or transaction processing.
Cursor	An on-screen indicator, such as a blinking underline, that marks the location at which keystrokes are entered from the keyboard.
Default	A value, setting, or response set by the manufacturer. For instance, the *MC5's* default emulation is VT220-7.
Host	The main computer in a network of computers or terminals connected directly or indirectly via a communications link.
Mode	A specific operational state in which the terminal exhibits a defined response.
Emulation	An operating mode that features compatible characteristics of a specific terminal, such as Digital Equipment Corporation's VT220.
Session	The active connection between the terminal and the host.

Key Symbols

The names of keys are italicized in small, **bold** typeface. For example: ***Tab***, ***F4***, or ***S***. The inscriptions *left* and *right* are used to identify a particular control key, such as *left* ***Alt*** or *right* ***Shift***.

Key Sequences

Key sequences appear simply as a series of key symbols, separated by a single space. For instance, ***Shift Setup*** means hold down the ***Shift*** and ***Setup*** keys at the same time.

Chapter 1
Installing the MC5

Setting Up the Terminal

Follow these instructions when setting up the *MC5*:

1. Choose a location away from direct sunlight or other sources of bright, direct lighting.
2. Place the terminal on a flat, hard surface, allowing three inches on all sides for ventilation and external cabling.
3. Connect the keyboard. Figure 1-1 shows the terminal's keyboard connnector location.

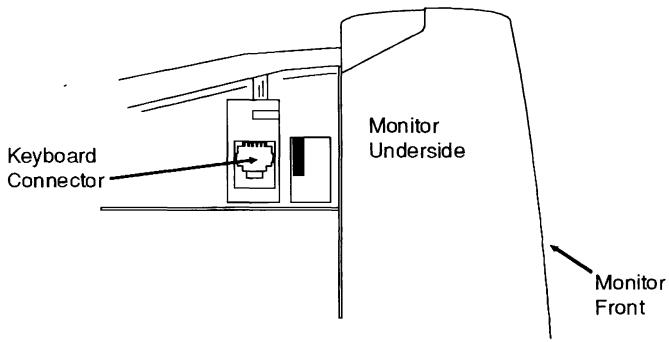


Figure 1-1. Keyboard Connector Location

4. Check that your power outlet is grounded, and that it will accommodate a three-pronged plug.
5. Ensure that your power source's voltage falls within the range shown on the back of the terminal before connecting the power cord.

Turning On the MC5

To turn the *MC5* on, press the power button on the right side of the terminal. A beep will indicate that the terminal is receiving power. A brief self-test will then take place. Afterwhich, the top of the screen will display a flashing cursor. At this point, set the brightness and contrast controls to mid-position, and then adjust the display to a comfortable viewing level. Figure 1-2 shows the power switch, and contrast and brightness control locations.

If a beep sounds at power-on, and a single character appears at the right-lower quadrant of the screen, you must exit the self-test and return to the operating screen by pressing **G**. Then enter setup, and check your parameter selections. If this happens again, note the error code, and return the terminal for servicing. Appendix B provides a list of error codes.

If a K is displayed, turn the power off. Press and hold down **G** while you turn the power back on. If this does not work, return the terminal for servicing.

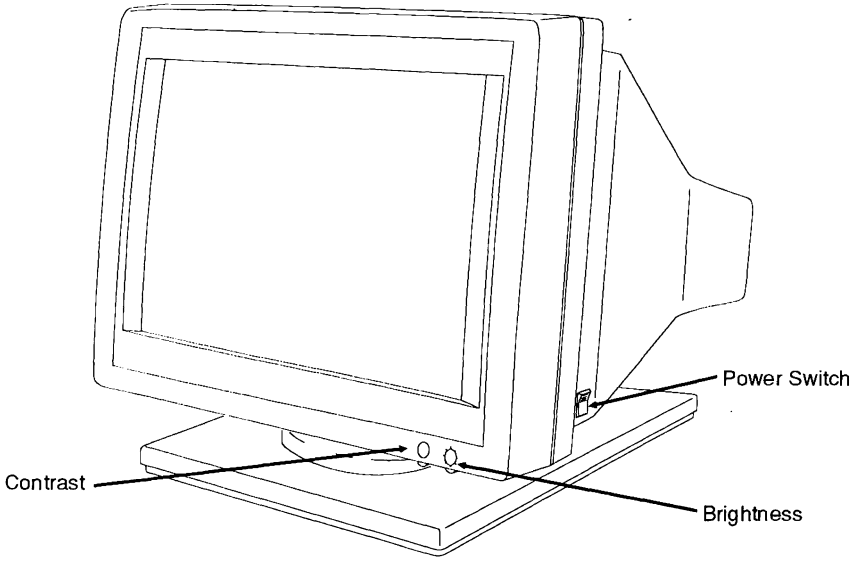


Figure 1-2. The MC5 Terminal Controls

After the *MC5's* operating screen appears, enter setup mode. If this is the very first time the terminal has been turned on, press ***Select*** on the EPC/IEPC keyboard, *left* ***Shift Setup*** on the ASCII keyboard, or ***F3*** on the ANSI keyboard. The *General Setup* menu appears. Table 1-1 lists the setup mode's keyboard commands. The parameters you see in this and the other menus are set with their factory defaults. Chapter 2 provides information about selecting different parameter values.

If the terminal's emulation has been changed to a different value other than the default (VT220-7), then refer to Table 1-2 for the keystsrokes that will invoke setup when another emulation is being used.

Table 1-1. Setup Keyboard Commands

Command	Description
↑ or ↓	Used to highlight the desired setup parameter.
← or →	Used to select a setup parameter's setting.
Tab	Moves the highlight to the opposite parameter column.
P	Switches to the setup parameters for the other communications port. (Default is MAIN port.)
D	Restores the factory settings.
S	Saves the current settings in non-volatile memory. The settings that were saved last will be in effect at the next power-up.
R	Restores the most recently saved settings.
E	Exits setup mode. If the current setup is not saved, the changes will be lost when the terminal is turned off.

Table 1-2. Keystrokes Used to Invoke Setup

Emulation	Keystrokes		
	EPC/IEPC	ANSI	ASCII
Use the keystroke(s) for the appropriate keyboard you are using to invoke setup if this is the first time the *MC5* has been turned on or it is configured for any of the following emulations: ANSI.SYS, VT220-7, VT220-8, VT100, or VT52	*left* **Shift Select**	***F3***	*left* ***Shift Setup***
Use the keystroke(s) for the appriate keyboard to invoke setup when the *MC5* has been configured for any of the following emulations: Link 125, Wyse 60, Wyse 50+, ADM3A, ADM5, TVI955, TVI950, TVI925, TVI910+, PC Term, Adds VP, or Adds 60	*left* ***Shift Select***	*left* ***Ctrl F20***	*left* ***Shift Setup***

Adjusting the Display and Keyboard

Adjust the *MC5*'s display with the brightness and contrast controls (see Figure 1-2).

The keyboard can be elevated to a comfortable position by pulling out the hinged feet located underneath the board.

Communications Ports

The terminal can be connected directly to a host computer or indirectly to a remote system via a terminal server or modem. The MAIN port has a female 25-pin RS-232 connector. Use a shielded serial interface cable fitted with a male 25-pin connector on the terminal end.

A parallel printer can also be connected to the terminal's PARALLEL port. Use a shielded parallel interface cable with a male 25-pin connector on the terminal end.

Figure 1-3 shows the location of the *MC5*'s communications ports.

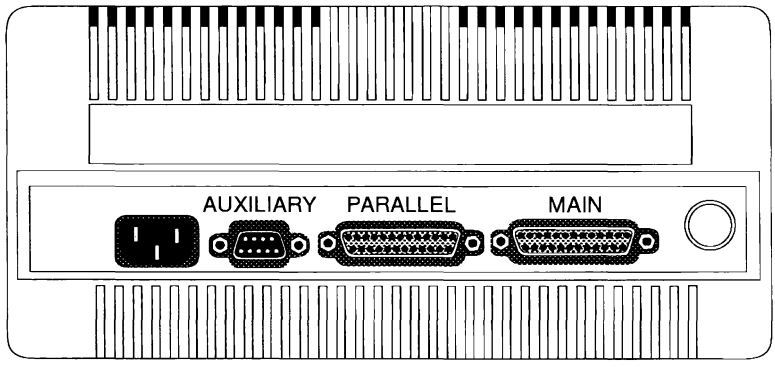
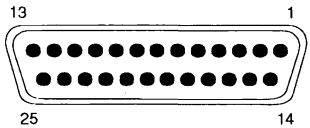


Figure 1-3. MC5 Communications Ports

CAUTION! *Be sure that your interface cable's pin assignments are compatible with those of the port to which they will be connected. Improper or incompatible cable connections can damage the terminal.*

Connector Pin Assignments



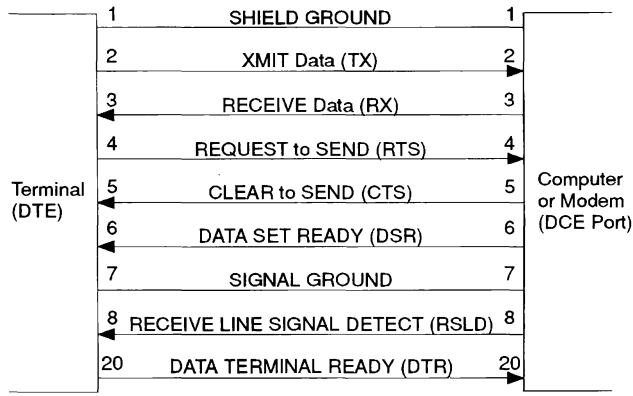


Figure 1-4. MAIN Port

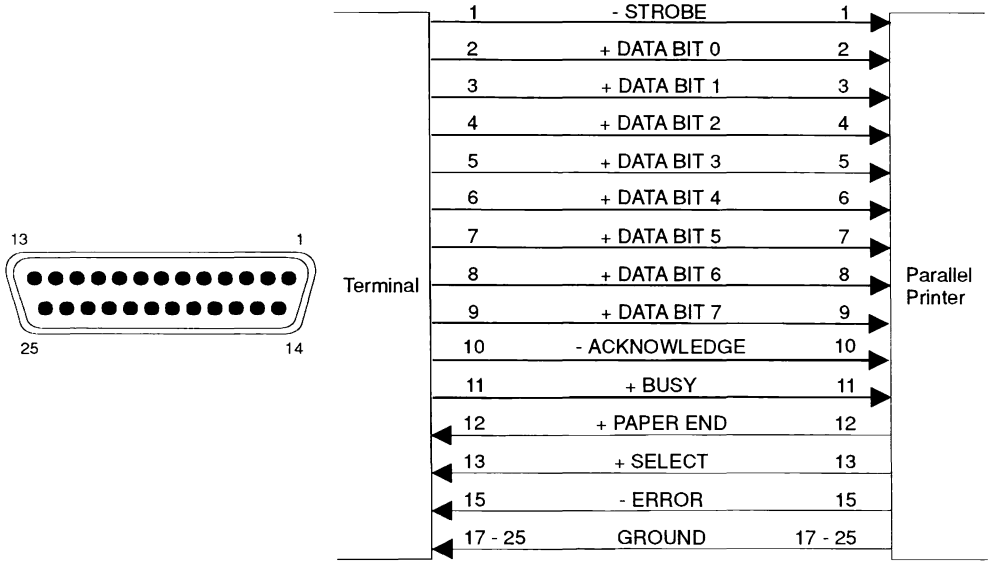


Figure 1-5. PARALLEL Port

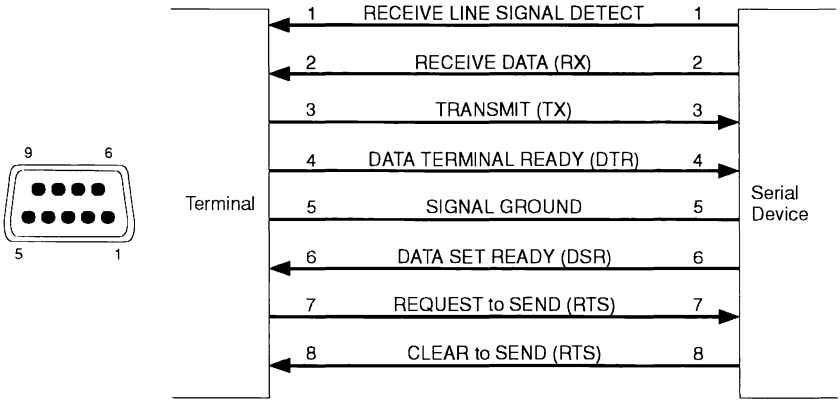


Figure 1-6. AUXILIARY Port

Chapter 2
Configuring the MC5

This chapter explains how to configure the *MC5's* operating parameters, and redefine specific keys when in setup mode.

In general, setup parameters fall into three groups:

- Parameters that must be set to match the requirements of your computer or device for successful communications. For example, the terminal and the computer must be set to the same baud rate at which data is sent and receivded or communications will not be possible.
- Parameters that must be set to meet the requirements of particular application programs. For example, does your application require that tabs be set before it is installed?
- Parameters that you can set to suit your personal preferences. For example, do you want the cursor to appear on the screen as a block or underline, blinking or non-blinking?

Consult your computer, printer, and application manuals for instructions about their setup requirements.

Invoking and Exiting Setup

Invoke the *MC5's* setup mode by pressing *left* **Shift Setup** on the ASCII keyboard, **F3** on the ANSI keyboard, or *left* **Shift Select** on the EPC/IEPC keyboards. The *General Setup* menu will appear (Figure 2-1).

Note: *Refer to Table 1-2 in Chapter 1 for keystrokes used to invoke setup when the MC5 is configured for an emulation other than the factory default.*

CAUTION! *If handshaking is not enabled, data may be lost if when invoking setup mode while the terminal is receiving data.*

Setup Menus

A screen layout common to eight different setup menus is used to display the terminal's setup parameters. Menu titles and their associated function keys appear in Table 2-1.

Table 2-1. Setup Menu List

Function Key	Associated Menu
F1	General Setup (Gen)
F2	Communications Setup (Comm)
F3	Display Setup (Disp)
F4	Keyboard Setup (Kbd)
F5	ANSI Setup (ANSI)
F6	Function Keys Setup (Fkeys)
F7	Tabs Setup
F8	Answerback Setup (Ansbk)

Exit setup by pressing ***F9*** from within any of the eight setup menus listed above.

From the *General Setup* menu you can:

- Change the *General Setup* menu's parameters
- Select and access the other seven setup screens to change their parameters

The first five setup menus may be accessed sequencially when ***Next Scr*** or ***Prev Scrn*** on the ANSI keyboard, ***Next Page*** or ***Previous Page*** on the ASCII keyboard, or ***Page Up*** or ***Page Down*** on the EPC/IEPC keyboard is pressed.

Setup Menu Organization

As shown in Figure 2-1, the setup screens are divided into five areas or blocks:

- Header Block
- Parameter Item Block
- Selection Block
- Function Key Directory Block
- Host Port Indicator Block
- Control Key Options Block

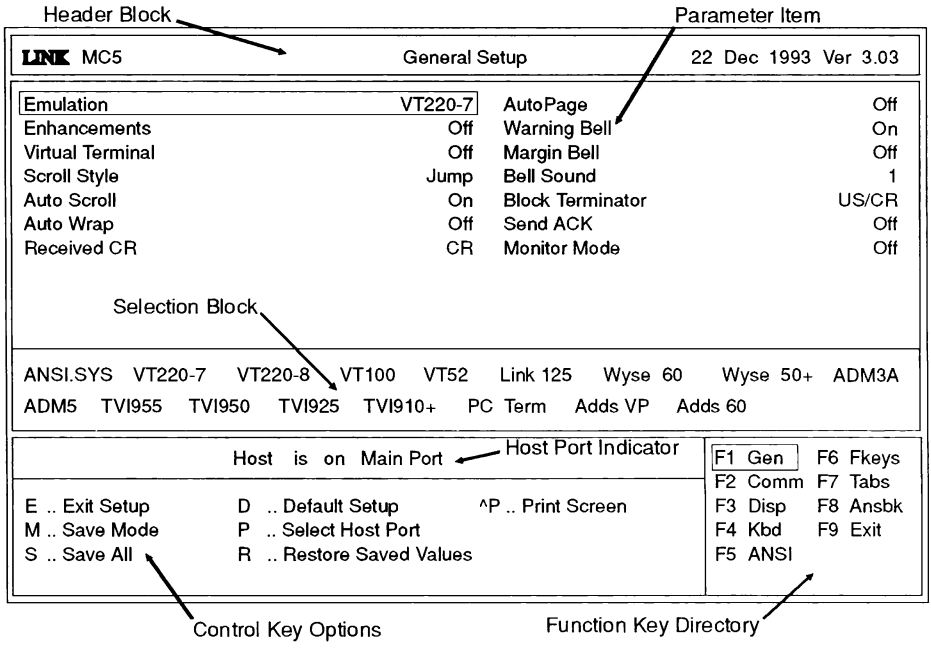


Figure 2-1. Setup Menu Organization

Header Block

This block indicates the manufacturer, model number, the title of the current setup screen, and the firmware release date and version number.

Parameter Item Block

The Parameter Item Block displays each setup menu's parameter options. The selected option is highlighted. Its setting may be changed to any of the options shown in the selection block. Use the ↑ or ↓ key to select an option, and the ← or → key to select the setting for that option.

Selection Block

The Selection Block displays the options for a selected parameter.

Function Key Directory Block

This block lists the function keys that invoke each setup menu.

Host Port Indicator Block

This block indicates which serial port is currently connected to the host. Press **P** to toggle between the MAIN and AUXILIARY ports.

Control Instruction Block

The *Control Instruction Block* provides a summary of key commands used ito invoke each setup menu.

Saving Parameter Selections

Press **S** to save your current parameter selections to permanent memory.

Press **R** to restore the *MC5's* most recently saved parameter settings.

To restore the original factory settings, press **D**.

Press **F9** or **E** to exit setup after you have finished making changes to the terminal's parameters and saving them.

Note: *Selections not saved will remain in effect until the terminal is turned off. When it is turned back on, the most recently saved parameter settings will be restored.*

Key definitions and the answerback message are automatically saved to permanent memory as they are entered.

Setup Parameters and Options

Tables 2-2 through 2-9 describe each setup menu's parameter options. Defaults are shown in **bold** typeface.

Note: *Not all setup parameters apply to every emulation. If you select an option that is invalid for the current emulation, the terminal will default to a valid setting when exiting setup.*

General Setup Menu

The *General Setup* menu allows you to select a desired emulation, and configure such features as non-native enhancements, virtual terminal modes, and page editing. Press *left* ***Shift Setup*** on the ASCII keyboard, ***F3*** (or *left* ***Ctrl F20*** for ASCII emulations) on the ANSI keyboard, or *left* ***Shift Select*** on the EPC/IEPC keyboards to invoke setup mode from the main screen and invoke this menu. Press ***F1*** to invoke it from any other setup menu.

Figure 2-2 shows the *General Setup* menu. Table 2-2 lists describes its parameters.

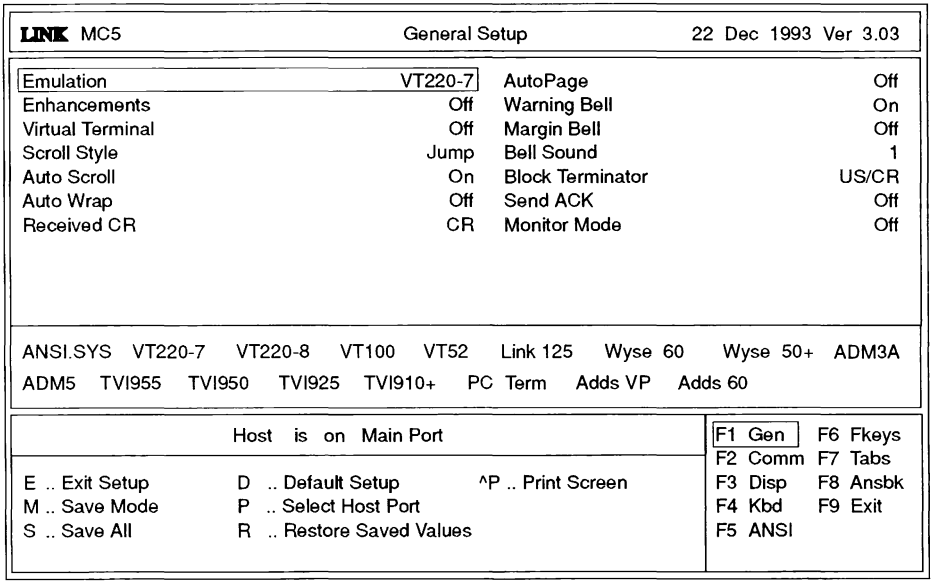


Figure 2-2. General Setup Menu

Table 2-2. General Setup Menu Parameters

Parameter	Description
Emulation[1]	The terminal will run application programs using command sets characteristic of the following terminals:
ANSI.SYS	SCO Xenix Console.
VT220-7	DEC VT220 in 7-bit mode.
VT220-8	DEC VT220 in 8-bit mode.
VT100	DEC VT100.
VT52	DEC VT52.
Link 125	Link Technologies, Inc. 125.
Wyse 60	WYSE Technologies, Inc. WY-60.
Wyse 50+	WYSE Technologies, Inc. WY-50, WY-50+.
ADM3A	Zentec ADM3A.
ADM5	Zentec ADM5.
TVI955	TeleVideo TVI955.
TVI950	TeleVideo TVI950.
TVI925	TeleVideo TVI925.
TVI910+	TeleVideo TVI910 and TVI910+.
PCTerm	PC Terminal.
ADDS VP	ADDS Viewpoint.
ADDS 60	ADDS Viewpoint 60.
Enhancements	In some non-native emulationss, an enhanced set of codes is:
Off	Disabled; not recognized by the terminal.
On	Enabled; recognized by the terminal.
Virtual Terminal	When Virtual Terminal is set to:
Off	The terminal will access only one host during a session.
On	The terminal will access two hosts in full-page display mode (Dual Session mode).
Scroll Style[2]	The screen display scrolls at:
Jump	The rate data is received.
Smooth-8	Eight lines per second.
Smooth-4	Four lines per second.
Smooth-2	Two lines per second.
Smooth-1	One line per second

[1] The terminal may clear the entire display memory after you change the emulation.
[2] When smooth scrolling is selected, receive handshaking should be enabled (see Communications Setup menu).

Table 2-2. General Setup Menu Parameters (cont.)

Parameter	Description
Auto Scroll	When the cursor moves past the last line on the page:
On	The data scrolls up one line at a time.
Off	It returns wraps around to the top of the same page.
Auto Wrap	When characters are entered at the end of a line:
On	The cursor wraps to the start of the next line.
Off	Characters at the cursor position are overwritten.
Received CR	When the *MC5* receives an ASCII CR (carriage return) character, the cursor will move to the beginning of the:
CR	Current line.
CRLF	Next line.
AutoPage	When the cursor reaches the top or bottom of the page:
Off	It wraps around and data scrolls up and down the page, depending upon the Autoscroll parameter selection.
On	A new page of memory moves onto the screen.
Warning Bell	When Virtual Terminal mode is set to On, the *MC5's* bell:
Off	Does not sound when the inactive session receives data.
On	Sounds repeatedly when the inactive session receives data from the host.
Margin Bell	The *MC5's* bell:
On	Rings when the cursor reaches the column where the bell is set (default is column 72 in 80-column mode, and column 124 in 132-column mode).
Off	Does not ring when the cursor approaches the right margin.

Table 2-2. General Setup Menu Parameters (cont.)

Parameter	Description
Bell Sound Off **1** 2 3	The sound of the *MC5's* bell is: Turned off. A low-pitched beep. A medium-pitched beep. A high-pitched beep
Block Terminator **US/CR** CRLF/ETX	When the *MC5* sends a block of data to the host, the: Line terminator is an ASCII US character; the block terminator is an ASCII CR character. Line terminators are ASCII CR and LF (line feed) characters; the block terminator is an ASCII ETX character.
Send ACK **Off** On	After executing certain commands[3], the terminal: Sends no acknowledgment. Sends an ASCII ACK character to the host port when the operation is complete.
Monitor Mode **Off** On	The *MC5*: Executes escape sequences and control codes. Displays symbols for escape sequences and control codes without acting on them.

[3] For example, commands to reconfigure the serial ports, load character sets, or print a page.

Communications Setup Menu

The *MC5's Communications Setup* menu allows you to configure the terminal's communications parameters. This includes defining the Printer Port, and setting the Serial Interface and Comm Mode options. To invoke this menu, press **F2**.

Figure 2-3 shows the *Communications Setup* menu. Table 2-3 describes each of its parameters.

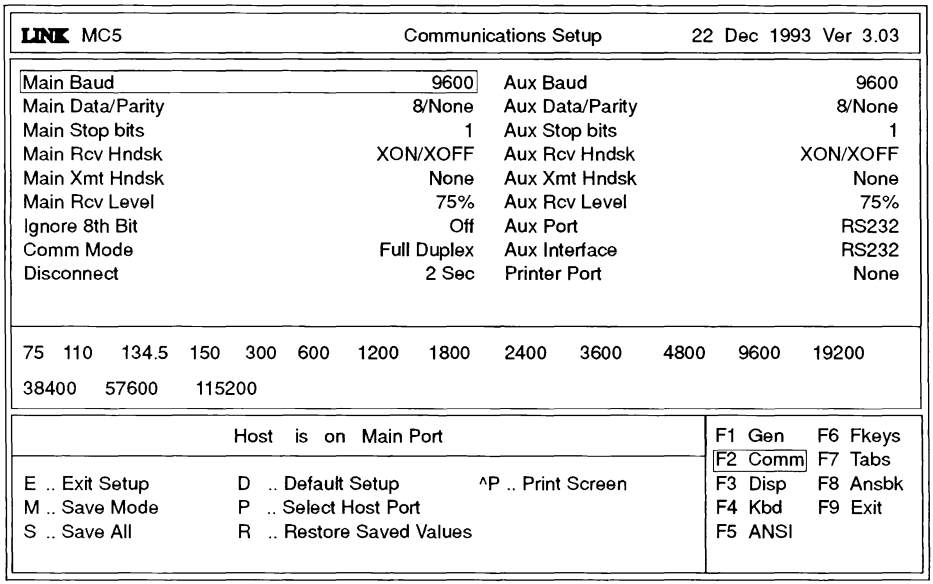


Figure 2-3. Communications Setup Menu

Table 2-3. Communications Setup Menu Parameters

Parameter	Description
Main Baud	The MAIN port's baud rate (bps) is:
75	75 bps.
110	110 bps.
134.5	134.5 bps.
150	150 bps.
300	300 bps.
600	600 bps.
1200	1200 bps.
1800	1800 bps.
2400	2400 bps.
3600	3600 bps.
4800	4800 bps.
9600	9600 bps.
19200	19200 bps.
38400	38400 bps.
57600	57600 bps.
115200	115200 bps.
Main Data/Parity	The *MC5* sends data via the MAIN port with:
8/None	8-bit data, no parity.
8/Space	8-bit data, space parity.
8/Odd	8-bit data, odd parity.
8/Even	8-bit data, even parity.
8/Mark	8-bit data, mark parity.
7/Space	7-bit data, space parity.
7/Odd	7-bit data, odd parity.
7/Even	7-bit data, even parity.
7/Mark	7-bit data, mark parity.
Main Stop Bits	The *MC5* sends and receives characters via the MAIN port with:
1	1 stop bit.
2	2 stop bits.
Main Rcv Hndsk	The *MC5* controls the receipt of data from a device connected to the MAIN port using:
None	No handshaking protocol.
XON/XOFF	XON/XOFF software handshaking.
DTR	Data Terminal Ready hardware handshake protocol.
DTR/XOFF	DTR + XOFF handshaking.
XPC	XPC handshaking.
DTR/XPC	DTR + XPC handshaking.

Table 2-3. Communications Setup Menu Parameters (cont.)

Parameter	Description
Main Xmt Hndsk[1]	When sending data to a device connected to the MAIN port, the *MC5*:
None	Ignores all incoming software handshaking codes.
XON-XOFF	Responds to XON/XOFF software handshaking.
Main Rcv Level	When handshaking is active, the *MC5* receives data via its Main port when:
25%	The receive buffer is 25% full.
50%	The receive buffer is 50% full.
75%	The receive buffer is 75% full.
Ignore 8th Bit	The *MC5* receives:
Off	Bits 0 through 7.
On	Bits 0 through 6.
Comm Mode[2]	The *MC5's* host port communication mode is:
Full Duplex	Full duplex.
Block	Block.
Half Duplex	Half duplex.
Half Block	Half-duplex block.
Local	Local.
Disconnect	When the Modem Control parameter is set to on, the terminal disconnects after the Receive Line Signal Detect (RLSD) goes low for:
2 sec	Two seconds.
60 msec	60 milliseconds.

[1] Do not change the default setting (none) unless another setting is specifically required by your system. Set this parameter to XON-XOFF to be fully DEC-compatible when the terminal is in an ANSI emulation.

[2] Do not select this setting unless you know it is required; duplicated characters will appear on the screen if the host also echoes the data.

Table 2-3. Communications Setup Menu Parameters (cont.)

Parameter	Description
Aux Baud	The AUXILIARY port's baud rate is:
75	75 bps.
110	110 bps.
134.5	134.5 bps.
150	150 bps.
300	300 bps.
600	600 bps.
1200	1200 bps.
1800	1800 bps.
2400	2400 bps.
3600	3600 bps.
4800	4800 bps.
9600	9600 bps.
19200	19200 bps.
38400	38400 bps.
57600	57600 bps.
115200	115200 bps.
Aux Data/Parity	The terminal sends data via the AUXILIARY port using:
8/None	8-bit data, no parity.
8/Space	8-bit data, space parity.
8/Odd	8-bit data, odd parity.
8/Even	8-bit data, even parity.
8/Mark	8-bit data, mark parity.
7/None	7-bit data, no parity.
7/Space	7-bit data, space parity.
7/Odd	7-bit data, odd parity.
7/Even	7-bit data, even parity.
7/Mark	7-bit data, mark parity.
Aux Stop Bits	The *MC5* sends and receives characters through Aux port with:
1	1 stop bit.
2	2 stop bits.

Table 2-3. Communications Setup Menu Parameters (cont.)

Parameter	Description
Aux Rcv Hndsk	The *MC5* controls the receipt of data from a device connected to the AUXILIARY port by:
None	No handshaking.
XON/XOFF	XON/XOFF software handshaking.
DTR	Data Terminal Ready hardware handshaking.
DTR/XOFF	DTR + XOFF handshaking.
XPC	XPC handshaking.
DTR/XPC	DTR + XPC handshake protocols handshaking.
Aux Xmt Hndsk	When sending data to a device connected to the AUXILIARY port, the terminal:
None	Ignores all incoming software handshaking codes.
XON-XOFF[3]	Responds to XON/XOFF software handshaking.
DSR	Responds to data-set-ready (DSR) hardware handshaking.
Aux Rcv Level	When handshaking is active, the *MC5* receives data via its AUX port when:
25%	The receive buffer is 25% full.
50%	The receive buffer is 50% full.
75%	The receive buffer is 75% full.
Aux Port	The AUXILIARY port is using:
RS232	RS-232 communications.
RS232/RS422	RS232/RS-422 communications..
Aux Interface	The AUXILIARY port supports:
RS232	RS-232 communications.
Printer Port	During print operations, the terminal sends data to a:
Parallel	Parallel printer connected to the PARALLEL port.
Serial	Serial printer connected to the MAIN or AUXILIARY port (whichever is not assigned as the host port (see Host Port parameter).
None	No printer supported.

[3] Do not change the default setting (none) unless another setting is specifically required by your system installation. Set to XON-XOFF to be fully DEC-compatible when the terminal is in an ANSI emulation.

Display Menu Setup

The *MC5's Display Setup* menu allows you to configure the terminal's display parameters. This includes setting parameters for lines, columns, text attributes, and cursor style. To invoke this menu, press ***F3***.

Figure 2-4 shows the *Display Setup* menu. Table 2-5 describes each of its parameters.

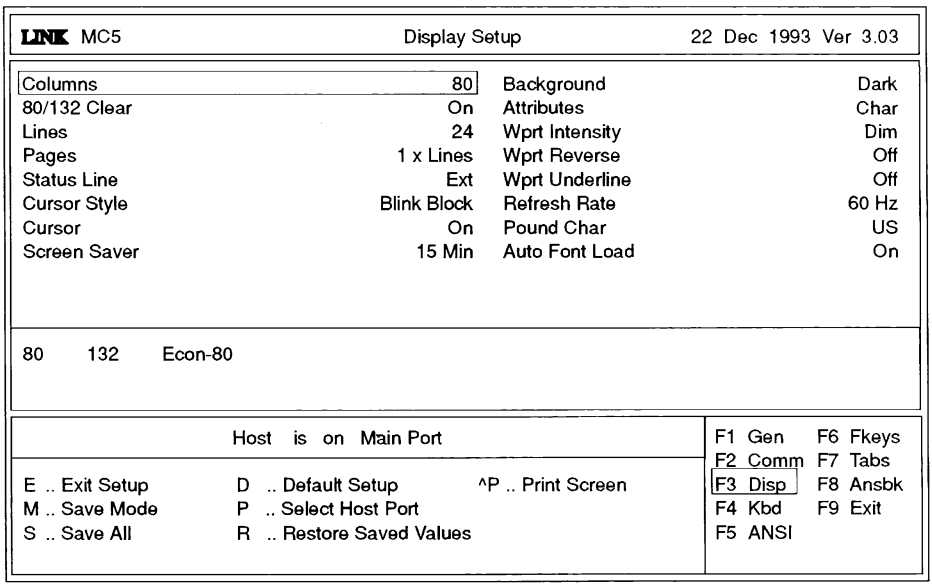


Figure 2-4. Display Setup Menu

Table 2-5. Display Setup Menu Parameters

Parameter	Description
Columns	The screen will display:
80	80 Columns.
132	132 Columns.
Econ-80	80 Columns. This option will disable the *MC5's* 132-column display format, and increase memory space for the 80-column display.
80/132 Clear	When changing the column formats, the terminal:
Off	Will not clear the screen.
On	Will clear the screen.
Lines[1]	The screen will display a status line at the top of the page, and also:
24	24 data lines with 1 label line.
25	25 data lines with 1 label line.
42	42 data lines with 1 label line.
43	43 data lines with 1 label line.
Pages[2]	The length of a memory page is equal to:
1 x Lines	The number of data lines selected from the Lines parameter.
2 x Lines	Twice the number of data lines selected from the Lines parameter.
4 x Lines	Four times the number of data lines selected from the Lines parameter.
*	The number of data lines for the first page, the remaining lines for page 2 will reside in memory.
Status Line	The screen displays:
On	A status line with cursor and column indicators.
EXT	A status line with editing information.
Off	No status line.

[1] When the screen or page format is changed, the terminal clears the entire display memory, homes the cursor, and resets the scroll margin.
[2] When the screen or page format is changed, the terminal clears the entire display memory, homes the cursor, and resets the scroll margin.

Table 2-5. Display Setup Menu Parameters (cont.)

Parameter	Description
Cursor Style	The screen will display:
Blink Block	A blinking block.
Steady Block	A steady underline.
Blink Line	Blinking underline.
Steady Line	Steady underline.
Cursor	The cursor is:
On	Visible
Off	Invisible
Screen Saver[3]	If data is not received for processing from the host or keyboard, the screen will:
Off	Continuously display data.
15 Min	Discontinue displaying data after 15 minutes.
30 Min	Discontinue displaying data after 30 minutes.
60 Min	Discontinue displaying data after 60 minutes.
Background	The screen will display:
Dark	Light characters against a dark background.
Light	Dark characters against a light background.
Attributes	Display attributes are:
Char[4]	Assigned to each character as it is entered.
Line	Active to the end of the line.
Pae	Active to the end of the page.
Wprt Intensity	Write-protected characters are:
Normal	Normal.
Blank	Hidden.
Dim	Dim.
Wprt Reverse	Write-protected characters are displayed as:
Off	Light characters against a dark background.
On	Dark characters against a light background.

Table 2-5. Display Setup Menu Parameters (cont.)

Parameter	Description
Wprt Underline **Off** On	Write-protected characters are: Not Underlined. Underlined.
Refresh Rate **60 Hz** 78 Hz	The display screen is redrawn: 60 times per second. 78 times per second.
Pound Char **US** British	When the *MC5* receives an ASCII # character (23H), the character displayed is a: U.S. pound symbol (#). British pound symbol (£).
Auto Font Load Off **On**	When changing personalities, the *MC5*: Will not change the current character set. Loads the appropriate character set.

[3] Press any key to restore the screen display.
[4] Selection not supported in non-hidden attribute personalities (WY-50+, ADDS VP, Link 125, ADM3A, ADM5, TeleVideo 910+, 925, 950)

Keyboard Setup Menu

The *MC5's Keyboard Setup* menu allows you to configure the terminal's display parameters. This includes setting parameters for lines, columns, text attributes, and cursor style. To invoke this menu, press **F4**.

Figure 2-5 shows the *Keyboard Setup* menu. Table 2-6 describes each of its parameters.

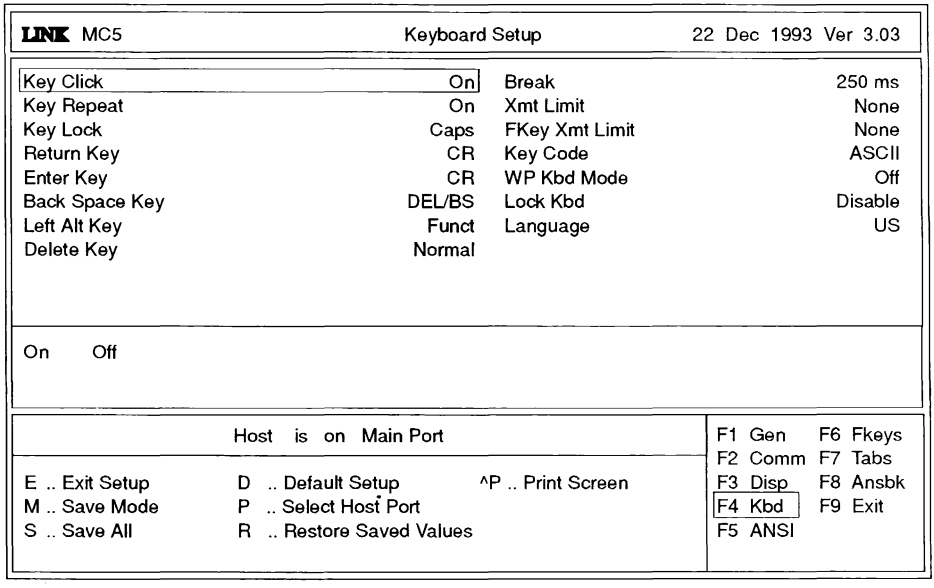


Figure 2-5. Keyboard Setup Menu.

Table 2-6. Keyboard Setup Menu Parameters

Parameter	Description
Key Click	Each time a key is pressed or held down, the *MC5's* bell:
On	Emits a beep.
Off	Does not emit a beep.
Key Repeat	When held down for more than .5 seconds, a key:
On	Will repeatedly enter the character until the key is released.
Off	Will not repeat the character.
Key Lock	When ***Lock*** or ***Caps Lock*** is pressed:
Caps	Alphabet keys will generate uppercase characters only. Numeric and symbol keys are unaffected.
Reverse	The ***Shift*** key's function is reversed: shifted alphabet keys will generate lowercase characters, and unshifted alphabet keys will generate uppercase characters. Numeric and symbol keys are unaffected.
Shift	All keys will generate shifted characters only.
Return Key	***Return*** sends the ASCII character for:
CR	Carriage return (CR).
CRLF	Carriage return (CR) and linefeed (LF).
Enter Key	***Enter*** sends the ASCII character for:
CR	Carriage return (CR).
CRLF	Carriage return (CR) and linefeed (LF).
+	+ (plus character).
Back Space Key	The ***Back Space*** key sends a:
DEL/BS	Delete character (DEL), and the shifted key sends a backspace character (BS).
BS/DEL	Backspace character, and the shifted key sends a delete character.

Table 2-6. Keyboard Setup Menu Parameters (cont.)

Parameter	Description
Left Alt Key	Pressing ***Compose Character***, ***Funct***, or *left* ***Alt***:
Funct	Together with an alphanumeric key sends an ASCII SOH, the alphanumeric key's ASCII code, and an ASCII CR.
Hold	Freezes the current data on the screen until the key is pressed again.
Meta	Together with an alphanumeric key, sends the other key's code with the high bit set.
Compose	In sequence with certain other keys, composes nonstandard characters.
	Note: *This parameter's title changes with the keyboard being used. For instance, Left Alt Key is displayed when using the EPC keyboard; Compose Key with the ANSI boards, and Funct Key with the ASCII board.*
Delete Key	The ***Delete*** key responds according to the selected emulation in the following manner:
Normal	Deletes individual characters from the screen.
DEL	Sends a DEL code (7f) to the host.
Break	When ***F5***, ***Break***, or ***Ctrl Break*** is pressed, the *MC5* sends the following to the host:
170 msec	170 ms break signal.
250 msec	250 ms break signal.
500 msec	500 ms break signal.
Off	None.
Xmt Limit	The teriminal sends data via the host port:
None	As fast as the baud rate allows.
60 cps	At a maximum 60 characters per second.
150 cps	At a maximum 150 characters per second.
Fkey Xmt Limit	the *MC5* sends function key definitions:
None	As fast as the baud rate allows.
60 cps	At 60 characters per second.
150 cps	At 150 characters per second.

Table 2-6. Keyboard Setup Menu Parameters (cont.)

Parameter	Description
Keycode[1]	When keys are pressed, the terminal sends:
ASCII	Standard ASCII key codes.
Scan	PC scan codes (up/down).
WP Keyboard Mode	Enables WordPerfect when running on a host under Unix:
Off	WordPerfect key codes disabled.
On	WordPerfect key codes enabled.
Lock Keyboard	When set to:
Disable	Prevents the host from disabling the keyboard.
Enable	Allows the host to disable (lock) the keyboard.
Language	Sets the keyboard language to match the keycap set:
US	ANSI, ASCII, EPC.
UK	ANSI, ASCII, IEPC.
Norwegian	ANSI, IEPC.
Norwegian/Danish	ASCII.
Danish	ANSI, IEPC.
German	ANSI, ASCII, IEPC.
French	ASCII, IEPC.
Spanish	ANSI, ASCII, IEPC.
Swedish/Finnish	ASCII, IEPC.
Swedish	ANSI.
Flemish	ANSI.
Finnish	ANSI.
French/Canadian	ANSI, IEPC.
French/Belgian	ANSI.
Belgian	IEPC.
Italian	ANSI, ASCII, IEPC.
Swiss(French)	ANSI, ASCII, IEPC.
Swiss(German)	ANSI, ASCII, IEPC.
Dutch	ANSI, ASCII, IEPC.

[1] If the Comm Mode parameter is set to block, half block, or local, the terminal sends ASCII key codes regardless of this parameter's setting. In full-duplex mode the *MC5* automatically changes the setting to scan when the PC Term emulation is selected. To select ASCII, you must already be in PC Term when you enter setup (exit and reenter setup if necessary).

ANSI Setup Menu

The *MC5's ANSI Setup* menu allows you to configure the terminal's display parameters. This includes setting parameters for character sets, the numeric keypad, and answerback messages. To invoke this menu, press **F5**.

Figure 2-6 shows the *ANSI Setup* menu. Table 2-7 describes each of its parameters.

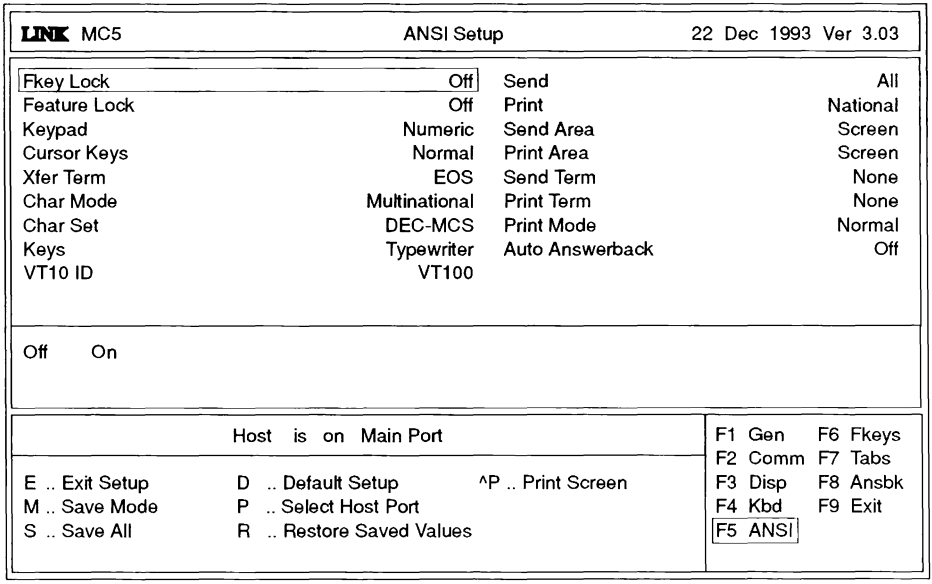


Figure 2-6. ANSI Setup Menu

Table 2-7. ANSI Setup Menu Parameters

Parameter	Description
Fkey Lock	Function keys:
Off	Can be redefined by host application programs.
On	Cannot be redefined by the host.
Feature Lock[1]	User preference features:
Off	Can be redefined by host application programs.
On	Are locked so that they cannot be redefined by the host.
Keypad	Keystrokes from the numeric keypad send:
Numeric	Numeric or other values according to the characters depicted on the keycaps.
Application[2]	Application-specific control codes and escape sequences.
Cursor Keys	The cursor keys send:
Normal	Normal cursor movement commands.
Application[3]	Application-specific control codes and escape sequences.
Xfer Term	The terminal transmits blocks of data to the host ending at the:
EOS	End of the page or line.
Cursor	Cursor position.

[1] User preference features are key repeat, scrolling speed, screen background, tab stops, and keyboard lock. Locking these features may cause problems for an application program that expects to control them.
[2] This setting cannot be saved to permanent memory. This parameter will always return to its numeric setting at power-on.
[3] This setting cannot be saved to permanent memory. This parameter will always return to its normal setting at power-on.

Table 2-7. ANSI Setup Menu Parameters (cont.)

Parameter	Description
Char Mode	The supplemental character set:
Multinational	Allows the terminal to display characters from the 8-bit extended ASCII set when in VT220 mode.
National	Invokes a local country set using international, 7-bit characters for the selected keyboard.
Char Set	The supplemental character set is:
Multinational	Multinational.
ISO Latin-1	ISO 8859-1, Latin Alphabet #1.
Keys	For some international ANSI keyboards, certain keys send codes as:
Typewriter	The standard character shown on the left half of the keycap.
VT100 ID	In answer to a host request, the terminal will identify itself as a:
VT100	VT100 terminal.
VT101	VT101 terminal.
VT102	VT102 terminal.
VT220	VT220 terminal.
Send	During block transmissions:
All	Eraseable and non-eraseable data is sent to the host.
Eraseable	Only eraseable data is sent.
Print	During a print page or print line operation:
Multinational	Escape sequences and control codes are sent, allowing printing of ASCII, line-drawing.
National	Escape sequences are not sent, and non-ASCII characters are replaced with ASCII underline characters.
Line Drawing	Escape sequences and control codes are sent, allowing printing of ASCII and line-drawing graphics characters and line attributes

Table 2-7. ANSI Setup Menu Parameters (cont.)

Parameter	Description
Send Area	In a Send page operation, the terminal sends data to the host from the:
Screen	Page.
Scroll Rgn	Defined scrolling region.
Print Area	In a page print operation, the *MC5* sends data to the printer port from the:
Screen	Page.
Scroll Rgn	Defined scrolling region.
Send Term	At the end of a send page operation:
None	No terminator character is sent.
FF	A formfeed character (FF) is sent.
Print Term	At the end of a page print operation:
None	No terminator character is sent.
FF	A formfeed character (FF) is sent.
Print Mode	Data is sent to the printer port:
Normal	In response to print page and print line commands from the keyboard or the host.
Auto	And displayed on the screen as received from the host.
Ctrl	As received from the host without being displayed on the screen.
Bi-Dir	As received from the host. Printer status signals are also sent from the printer back to the host.
Auto Answerback[4]	In response to an ASCII ENQ character, the terminal:
Off	Does not send an answerback message.
On	Automatically sends an answerback message to the host.

[4] In ANSI personalities, the answerback message is always sent to the host computer in response to an ENQ. This parameter's setting determines whether the message is sent at power-on or after a communications disconnect.

Key Programming

The *Function Keys Setup* menu (see Figure 2-7) allows you to program shifted and unshifted function and editing keys to perform a desired command or sequence of commands. Invoke the *Function Keys Setup* menu by pressing **F6**.

CAUTION! *Applications that have defined actions for certain keys may not run properly if they are programmed to perform other functions.*

If a problem is encountered, you can restore the factory default values by returning to the General Setup menu, and press **D**. *(Pressing* **D** *restores the defaults for the other setup menus, as well.)*

Key programs are directed (or echoed) to the host and/or terminal when Remote is displayed in the *Function Keys Setup* menu's Direction field (see Figure 2-13). Press **Enter** from the numeric keypad to redirect the key's definition to Remote, Local, or Normal.

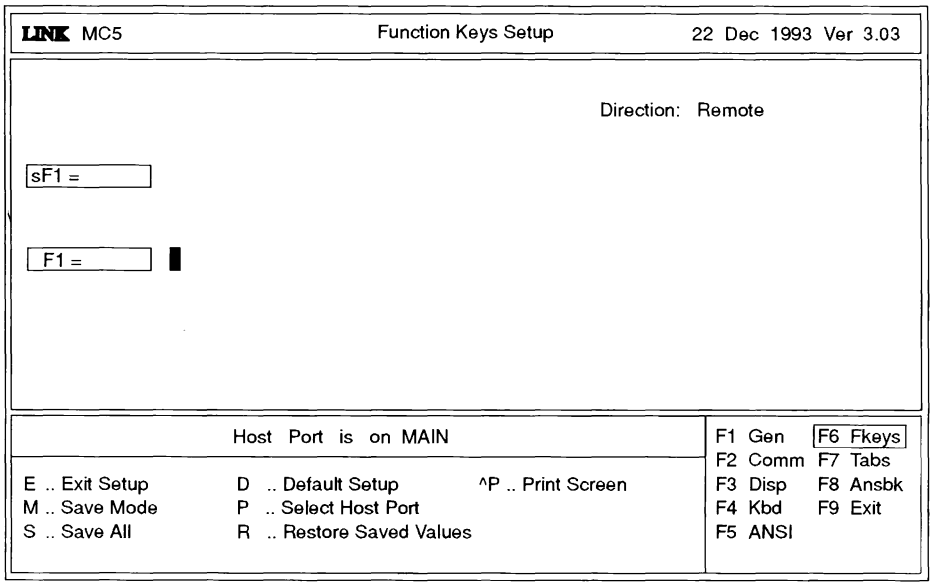


Figure 2-7. Function Keys Setup Menu

A key program can be directed in one of three ways:

- To the terminal (local).
- To the host (remote).
- To the setting selected from the Comm Mode parameter (normal).

To program a key:

1. Press **F6** to invoke the *Function Keys Setup* menu.
2. Simultaneously press **Ctrl** with the key to be programmed. This highlights the key's direction and definition fields.
3. Press ↑ or ↓ to highlight the shifted or unshifted key definition field (see Figure 2-7).
4. Enter the key program (up to 255 characters) at the cursor position. Correct any errors by backspacing to delete an individual character or press **F14** on the ANSI or **Home** on the EPC/IEPC keyboards to clear the entire definition. Use the ← or → key to position the cursor.

Note: *Control characters can be entered by simultaneously pressing* **Ctrl** *and the appropriate keys.*

If the Funct Key, Compose Key, or Left Alt Key parameter in the Keyboard Setup Menu has been set to Meta, characters can be entered with the high bit set. Simultaneously press the **Compose Character** *or left* **Alt** *key with the appropriate alphanumeric key.*

Unless the Funct Key, Compose Key, or Left Alt Key parameter was set to Meta before you entered setup mode, you must set the parameter to Meta. Then exit and reenter setup mode to enter the 8-bit characters.

When the Virtual Terminal parameter is set to On, a key can be programmed to perform one function in one session, and perform a different function in the other by following the instructions outlined above. To program keys in an alternate session, press *left* **Ctrl Shift F6**.

Key Programming Example

This example shows how to prgoram the key sequence, ***Shift F10***, to display the following signature block at the left margin of a page:

Sincerely yours,

Stephen DeMont

1. Enter setup mode.
2. Invoke the *Function Keys Setup* menu.
3. Press ***Ctrl F10.***
4. Press ↑ to highlight the shifted key field.
5. Enter the control codes for three line feeds ($^{L}_{F}$) and one carriage return ($^{C}_{R}$). The line feed control code is ***Ctrl J***; the carriage return code is ***Ctrl M.***
6. Type Sincerely yours,
7. Enter the control codes for five line feeds and one carriage return.
8. Type Stephen DeMont

   The definition string should look like this:

   $^{L}_{F}{}^{L}_{F}{}^{L}_{F}{}^{C}_{R}$Sincerely yours,$^{L}_{F}{}^{L}_{F}{}^{L}_{F}{}^{L}_{F}{}^{L}_{F}{}^{C}_{R}$Stephen DeMont

11. Press ***F9*** to exit setup mode and return to the current emulation.
12. Now, press ***Shift F10*** to end your letters with your usual signature block.

Key Program Storage Limitations

Key programs are automatically saved to memory, occupying up to 500 bytes of permanent memory space. If more than 255 characters are entered for any key or the 500-byte limit is reached, the terminal will beep, warning that you cannot enter any more characters.

When the terminal is set up for dual sessions, programs are limited to no more than 250 characters per session.

Defining Tab Stops

When you turn the *MC5* on, the most recently saved tab stops will be activated. (Tab stops are cleared by default.) Tab stops are defined from within the *Tabs Setup* menu (see Figure 2-8). To invoke this menu press **F7** from within any setup menu.

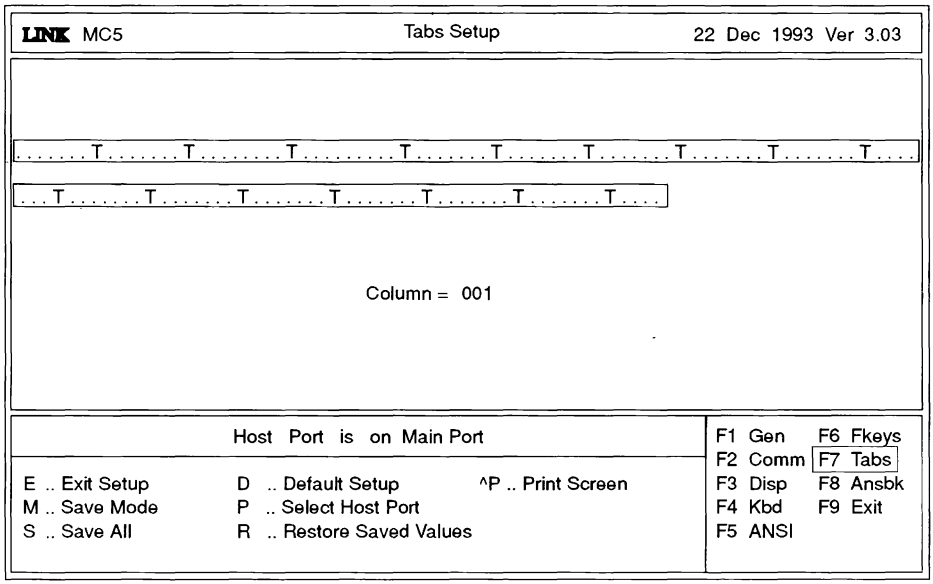


Figure 2-8. Tabs Setup Menu

Tab stops are identified by uppercase Ts displayed along a line of periods that mark each column position. A tab stop in columns 2 through 78 is shown as a T along the upper line of periods. A tab stop in columns 79 through 132 is shown as a T along the lower line of periods (see Figure 2-8).

You can easily determine where tabs are set by moving the cursor across the line, and reading the column number displayed at the center of the screen.

Clear and set tabs anywhere along these lines by following these instructions:

1. Press the ← or → to move the cursor along the line.
2. Press the ***Spacebar*** to set or clear individual tab stops at the cursor position.
3. Press ***F14*** on the ANSI or ***Home*** on the EPC/IEPC keyboards to clear every tab stop.
4. Press the ***Backspace*** key to set one tab stop at every eighth column. When running the *MC5* in the VT100 or VT220 emulations, tab stops should be set at every eighth column.
5. Press ***F1*** to save the tab settings and return to the *General Setup* menu.
6. When the *General Setup* menu appears, press ***S*** to save all setup parameters, including your tab stops.
7. Turn the terminal off and back on so that your new setup will take effect.

When the *MC5* is configured as a virtual terminal in dual sessions, tabs can be set for each session according to the instructions outlined above.

To program alternate sessions, press *left* ***Ctrl Shift F7*** simultaneously.

Defining An Answerback Message

Answerback messages are defined from within the *Answerback Setup* menu (see Figure 2-9). Press **F8** to invoke this menu. Up to 30 characters may be entered to identify the terminal to your host system.

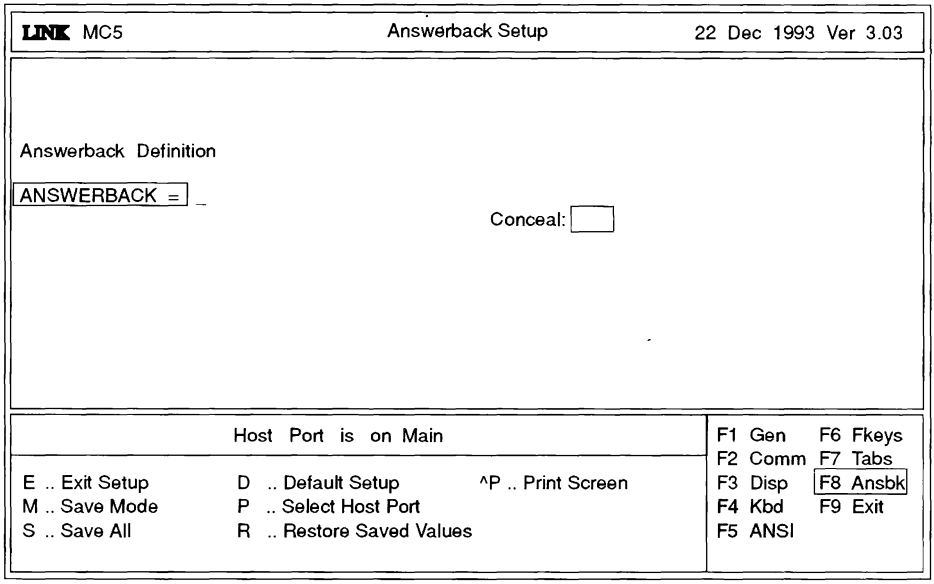


Figure 2-9. Answerback Setup Menu

To define an answerback message, follow these instructions:

1. Enter the message at the cursor position.

   Correct any errors by backspacing to delete individual characters or press **F14** on the ANSI keyboards or **Home** on the EPC/IEPC keyboards to clear the entire message.

Note: *Control characters may be entered by simultaneously pressing* **Ctrl** *and the appropriate key. If the Compose Key or Left Alt Key parameter has been set to Meta, characters can be entered with the high bit set (8-bit characters, ASCII 80H through FFH hexadecimal) by simultaneously pressing the* **Compose Character** *or the left* **Alt** *key with the appropriate alphanumeric key.*

Unless the parameter was set to Meta before entering setup mode, the Compose/Left Alt Key parameter must be set to meta. Exit and reenter setup mode before entering the 8-bit characters.

3. To prevent the answerback message from being displayed while in setup mode, press the **Enter** key on the numeric keypad. The message will be replaced by the word Concealed. The message will be hidden, and cannot be redisplayed or modified unless you clear and redefine it.

4. Press **F1** to go to the *General Setup* menu. The answerback message is automatically saved when you press **S** while in the *General Setup* menu.

Separate answerback messages can be defined when the *MC5* is setup up as a virtual terminal during dual session operations by following the instructions outlined above.

To define separate answerback messages when the terminal is configured for dual sessions, simultaneously press **Ctrl Shift F8** to switch between sessions.

Defining a Session I.D.

When the terminal is configured for dual sessions, a session I.D. message of up to 30 characters can be defined for each session. To define a session I.D., follow these instructions:

1. Press **F1** to invoke the *General Setup* menu.

2. Press **P** to select the session (port) to be set up—MAIN or AUXILIARY.

3. Press **F8** to invoke the *Answerback Setup* menu.

4. Use the ↓ to move the cursor from the ANSWERBACK field to the SESSION I.D. field.

5. To enter the session I.D. definition for the alternate session, simultaneously press the *left* **Ctrl Shift F8** keys, and repeat the previous steps.

The session I.D. cannot be concealed, and is automatically saved when you press **S** while in the *General Setup* menu.

Chapter 3
Operating the MC5

Virtual Terminal

When the Virtual Terminal parameter is set to On, the *MC5* can run two emulations (selected when in setup) to enable seamless interaction between applications that are written for typical terminal command sets. The subsections include information about each type of emulation.

Emulations

ANSI Emulations

The default emulation, VT220-7, operates according to the American National Standards Institute (ANSI) command functions. It is compatible with applications written for many ANSI terminals, including Digital Equipment Corporation's VT220.

Other ANSI emulations supported by the *MC5*, and the terminals they represent, include:

- VT220 8-bit (DEC VT220 in 8-bit mode)
- VT100 (DEC VT100)
- VT52 (DEC VT52)
- PC Term

The VT52 emulation should be used with applications written for the DEC VT52 terminal. The PC Term emulation should be used with applications written for IBM PC-compatible terminals.

ASCII Emulations

When an ASCII emulation is selected, the *MC5* will operate according to the American Standard Code for Information Interchange (ASCII) command functions. ASCII emulations supported by the *MC5*, and the terminals they represent, include:

- Link 125 (Link Technologies, Inc. 125)
- Wyse 60 (WYSE Technologies, Inc. WY-60)
- Wyse 50+ (WYSE Technologies, Inc. WY-50, WY-50+, WY-100)
- ADM3A (Zentec 3A)
- ADM5 (Zentec 5)
- TVI955 (TeleVideo Systems TVI955)
- TVI950 (TeleVideo Systems 950)
- TVI925 (TeleVideo Systems 925)
- TVI910+ (TeleVideo Systems 910 and 910+)
- Adds VP (ADDS Viewpoint)
- Adds 60 (ADDS Viewpoint 60)

Display Features

The *MC5* displays up to 27 or 45 lines down the screen, and 80 or 132 columns across the screen. The default screen configuration is 80 columns separated into two display areas—the status line, and the data area. Figure 3-1 illustrates the default screen format.

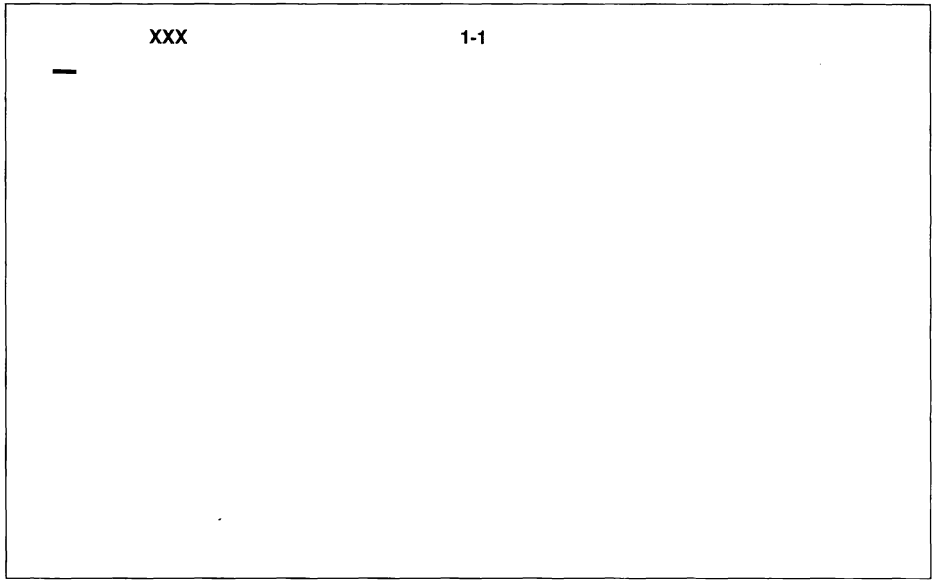


Figure 3-1. Default Display Screen

The Status Line

Messages from the *MC5* or host are displayed on the status line.

The status line appears at the top of the screen when the Status Line parameter from the *Display Setup* menu is set to Off, On, or Ext. The status line (when set to On) identifies the cursor's current line and column position. An EXT status line displays information when performing functions such as copying and pasting text.

The Data Area

The screen's data area displays data entered from the keyboard or application. The default is set for 24 lines and 80 columns. This value can be changed from the Data Lines parameter within the *Display Setup* menu. (Refer to Table 2-3 in Chapter 2 for more information.)

Label Lines

The label line at the bottom of the screen can display both shifted and unshifted function key labels or messages when the Data Lines parameter is set to 24 or 42. When this parameter is set to 25 or 43, the label line will display labels only.

Screen Saver

The *MC5's* screen saver helps prevent CRT phosphor burn-in by blanking the screen if the terminal does not receive keyboard input or data from the host after a specified time period. This time period is selected from the Screen Saver parameter in the *Display Setup* menu. (Refer to Table 2-3 in Chapter 2 for more information.)

The screen will come back up by pressing any key (press ***Shift*** to avoid entering data) or when the terminal receives data from the host. To deliberately blank the screen, press ***Ctrl***, ***Shift***, and ***F3*** on the ANSI or ***Ctrl***, ***Shift***, and ***End*** on the EPC/IEPC keyboards.

Keyboard Features

The *MC5* accommodates one of four different keyboards:

- 102-key Enhanced PC (EPC)
- 103-Key International PC (IEPC)
- 105-key ANSI

Note: *Because the MC5 uses one of four keyboards, keyboard commands presented here are discussed in general terms.*

Keyboard features can be defined from within the *Keyboard Setup* menu. (Refer to Table 2-4 in Chapter 2 for *Keyboard Setup* parameter descriptions.) Depending on the emulation you selected, most of the function and edit keys for each keyboard can be programmed to perform specialized functions. (Refer to *Key Programming* in Chapter 2 for information about programming these keys.)

Keyboard Language

Keyboard languages may be selected from the *Keyboard Setup* menu's Keyboard parameter. (Refer to Table 2-4 in Chapter 2 for more information).

The language setting takes effect only after you exit setup mode. Function and edit keys should not be programmed until after you select a language, then exit and reenter setup mode.

Keyclick and Bell

The *MC5's* Keyclick option is enabled or disabled from the *Keyboard Setup* menu. The Warning and Margin Bells are enabled/disabled from the *General Setup* menu.

When the Keyclick parameter is enabled, a beep is emitted from the terminal each time a key is pressed.

The *MC5's* warning bell serves as a warning and a margin bell. The bell will alert you to a system error. The margin bell functions as a typewriter bell, alerting you that text entries are approaching the right margin. The bell tone can be adjusted from the *General Setup* menu's Bell Sound parameter.

Key Functions

When the *MC5* communicates with the computer in full-duplex or half-duplex mode, most keys will perform remote functions. That is, they send codes that are interpreted and acted upon by the host's operating system and your application. Alphanumeric keys send the ASCII characters shown on the keycaps. Codes sent by the function ***Ctrl***, ***Enter***, and ***Shift*** keys are dependant upon the selected emulation, keycode, and other keyboard options.

Local Keyboard Commands

Certain keys, and combinations of keys, perform local command functions that initiate actions from the terminal. For example: simultaneously pressing the → and ***Ctrl*** keys alternates the status line from Off to On to Etx. (This sequence will not function during ANSI.SYS or PC Term sessions.)

The Compose Character Key

The **Compose Character** key on the ANSI and the *left* **Alt** key on the EPC/IEPC keyboards perform special functions selected from the *Keyboard Setup* menu's Compose Key parameter.

National Replacement Characters

National replacement characters can be used with the ANSI keyboard. Figure 3-3 provides a character chart for each language supported by the *MC5*. To use the replacement characters follow these instructions:

1. First, select the appropriate keyboard language from the *Keyboard Setup* menu, and exit setup.
2. Cross-reference the desired keyboard language character with the appropriate ANSI keyboard character from the chart in Figure 3-3.
3. Enter the ANSI keyboard character, and the keyboard language character will be displayed.

ANSI Keyboard Character / Keyboard Language	"	#	$	'	/	0	1	2	7	9	:	;
	22H	23H	24H	27H	2FH	30H	31H	32H	37H	39H	3AH	3BH
Danish											Æ	æ
Dutch		£										
Finnish	Ä			ä							Ö	ö
Flemish				ù		à		é	è	ç		
French/Belgian				ù		à		é	è	ç		
French Canadian					ê							
German	Ä			ä							Ö	ö
Italian				ù	ò	à	£	é	è	ç		
Norwegian	Æ			æ								
Portuguese	¨				-						Ñ	
Spanish											Ñ	ñ
Swedish	Ä			ä							Ö	ö
Swiss French	ä		ç	à							ö	é
Swiss German	à		ç	ä							é	ö

ANSI Keyboard Character / Keyboard Language	?	[	\	]	‘	{	¦	}	~
	3FH	5BH	5CH	5DH	60H	7BH	7CH	7DH	7EH
Danish		å				Å			
Dutch									
Finnish		å		ü		Å		Ü	
Flemish									
French/Belgian									
French Canadian	É	ç				Ç			
German		ü				Ü			
Italian		ì							
Norwegian		å				Å			
Portuguese	–	‘	ç	+	¿	^	~	*	¡
Spanish					¿				¡
Swedish		å	ç	ü		Å		Ü	
Swiss French		è				ü	£		
Swiss German		ü				è			

Figure 3-2. ANSI National Replacement Characters

Generating 8-bit Characters

Generating 8-bit characters from the keyboard is possible when the Data/Parity parameter in the *Communications Setup* menu is set to any 8-bit environment, and the Compose Key or Left Alt Key parameter in the *Keyboard Setup* menu is set to Meta.

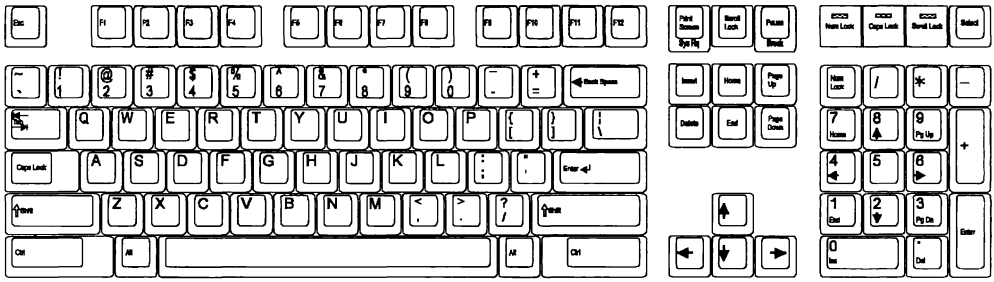
Once these parameters have been set, hold down the ***Compose Character*** or *left* ***Alt*** and press the desired key.

Printer Control Features

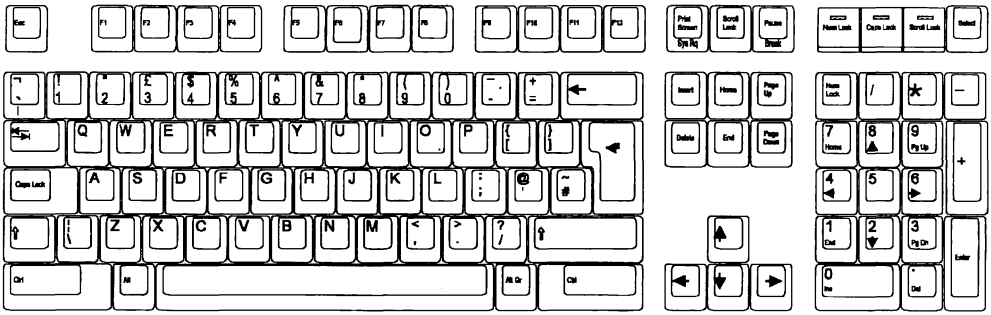
The *MC5* supports printer functions via its parallel or serial ports. The printer may be controlled locally from the terminal or remotely from the host. When the terminal is running as a virtual terminal, the printer can be host-controlled from two separate ports.

Appendix A
Keyboard Layouts

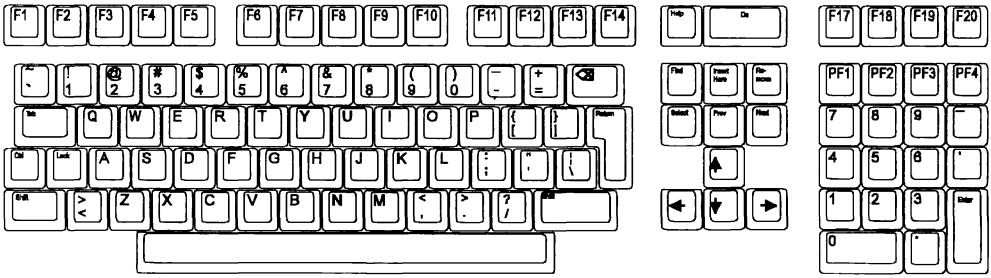
US 102-Key Enhanced PC (EPC) Keyboard



103-Key International Enhanced PC (IEPC) Keyboard



ANSI Keyboard



Appendix B
Error Codes

If the *MC5* detects an error when turned on or during normal operations, an error code will appear at the lower right hand corner of the screen. A complete listing of the terminal's error codes is given below:

Code	Description
P	EPROM Checksum
0 (Zero)	Character RAM
1	Attribute RAM
2	Font RAM
K	NVR Checksum
A	MAIN port RTS to CTS error
B	DTR to DSR
C	DTR to DCD
X	Transmit Data to Receive Data error
D	AUXILIARY port RTS to CTS error
E	DTR to DSR
F	DTR to DCD
Y	Transmit Data to Receive Data error

Appendix C
Troubleshooting

The following troubleshooting information can be used to resolve several problems that may occur when setting up and operating the *MC5*.

Note: *Before you default the parameter settings and begin troubleshooting, enter setup as directed in Chapter 2, and copy the current operating parameters from each setup menu. It is important that you have these settings recorded and in front of you while diagnosing the terminal.*

Problem	Action
Setup selection(s) contain garbage	Default and redefine setup parameters.
The terminal does not communicate with the host.	**1** Ensure that the terminal is connected securely to their communications ports, and that the cables match the pin assignments given in Chapter 1. **2** Connect the terminal to a line that is known to be in good working order. **3** Enter the *ANSI Setup* menu, and ensure that the terminal is not in a print mode. The default is Normal. **4** Enter setup, and ensure that the terminal is operating on the selected port. 5 Default the setup parameters, and reconfigure them.

Problem	Action
The display screen shakes.	Ensure that the terminal is not located next to another electrical device, such as a terminal or printer. Electric motors and high voltage equipment often provide a source of electromagnetic interference that cause power drops.
Excessive noise or "garbage" on the screen.	**1** Ensure that the *Communications Setup* menu's parameters are configured correctly. 2 Check the terminal out on a good line. **3** Enter the *Communications Setup* menu, and put the terminal in Local mode from the Comm Mode parameter, and enter some text on the screen. If the terminal's Keycode parameter from the *Keyboard Setup* menu is set for Scan, reset it to ASCII. **4** Default the setup and reconfigure all parameters.
Data is overwriting data from the previous screen.	Enter setup, and ensure that the AutoScroll parameter in the *General Setup* menu is set to On.

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