QVT 72 Plus (TK -635)

Terminal Box

Programmer's Manual

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TABLE OF CONTENTS

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Revision 1.0

1 INSTALLATION

1.1 UNPACK

In this shipping carton you will find the terminal box, power cord and this manual. If you have missing or damaged items, contact your Sales Representative or our Customer Service department.

1.2 ADDITIONAL EQUIPMENT

In addition to the terminal box you will need the following equipment:

1. VGA monitor with horizontal frequency of 31.468 KHz or LCD monitor with horizontal frequency of 48.1KHz.
2. Enhanced PC style keyboard with AT interface. (Some keyboards have a switch to select AT keyboard communication)

Any standard PC keyboard or monitor is acceptable. Figure 1.1 shows the relationship of the terminal box and other equipments.

1.3 CONNECTING THE TERMINAL

1. With the power cord disconnected, plug the keyboard cable into socket labeled "K.B." on the rear of the terminal.
2. Plug the monitor cable into the socket labeled "VIDEO" on the rear of the terminal.
3. Connecting the cable from your host computer to the SERIAL 1 port on the rear of the terminal.
4. For local printer operation, connect either a serial printer to the SERIAL 2 port or a parallel printer to the PARALLEL port.
5. The monitor power cord can be connected into the female power socket of the terminal. A special power cord is available from your monitor or PC supplier for this purpose. Connected this way, the terminal and monitor can both be powered up using only the terminal power switch.

1.4 TURNING ON THE TERMINAL

1. Switch on the terminal (and monitor) with the power switch located on the rear of the terminal.
2. Adjust the screen's brightness and contrast with the controls located on your monitor.
3. Adjust the monitor's swivel for the desired viewing angle.

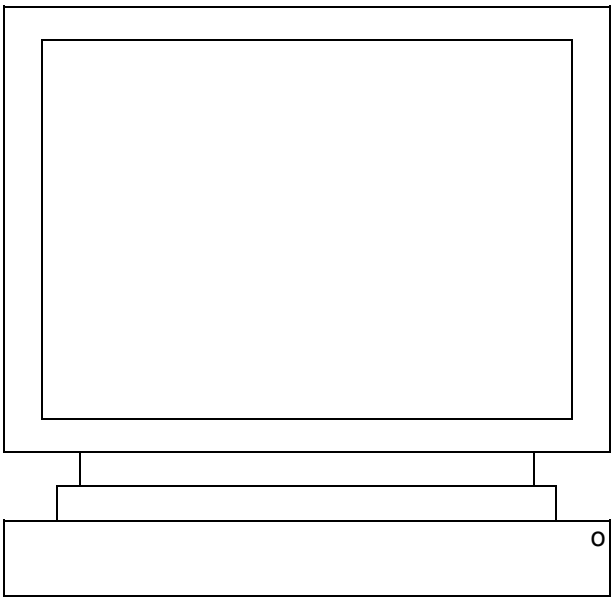

Figure 1.1 (A) Terminal box and monitor

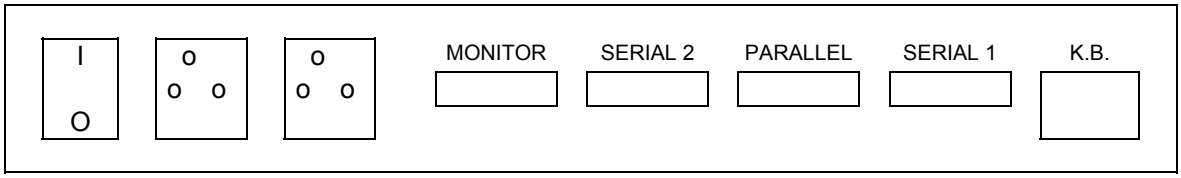

Figure 1.1 (B) Terminal box back-plane view

2
SET-UP

2.1 HOW TO SET-UP THE TERMINAL

The terminal is compatible with most host computers and application packages. A menu driven setup system is provided to select and save the settings required by your computer and application. If you are not familiar with the requirements of your computer, obtain this information from the person responsible for administering your computer system.

2.1.1 ENTERING SETUP

Hold down the ALT key and then depress the Esc key to enter Setup mode.

When you enter Setup, any text on the screen temporarily disappears, and the main SETUP directory appears (See Figure 2.1). When you leave the Setup mode, the main SETUP directory disappears, and any text that was on the screen reappears.

2.1.2 SAVING AND EXITING SETUP

The first menu seen when entering Setup serves as a directory to the other Setup menus. When you depress F12 to exit Setup, you will return to this main directory and be given the option of saving your selections.

The highlighted field at the right of the screen gives you the choice of saving or not saving parameter changes in the nonvolatile memory before returning the terminal to the normal operating mode. If you don't save your setting before you leave the Setup mode, any new selections will be lost when you power down the terminal.

To save your Setup selection, depress the Spacebar to change the save field at the right side of the screen from NO to YES before exiting Setup. (Table 2.1 describes your options on exiting Setup.)

Depress F12 to leave Setup and return to the normal display mode.

Table 2-1 Top Menu Exit Functions

Option	Function
No	Returns terminal to normal operating mode without saving parameter changes for power up.
Yes	Saves all changes (operating parameter, tabs, key definition, and answerback message,); returns terminal to its normal operating mode.
Shift+ESC	Restores all setting (operating parameters, tabs, key definitions, and answerback message) to their default values.

2.1.3 SETUP DIRECTORY

The fields at the bottom of the screen show the various setup menus, where you can change the terminal's operating parameters and the function key to press to immediately display any menu.

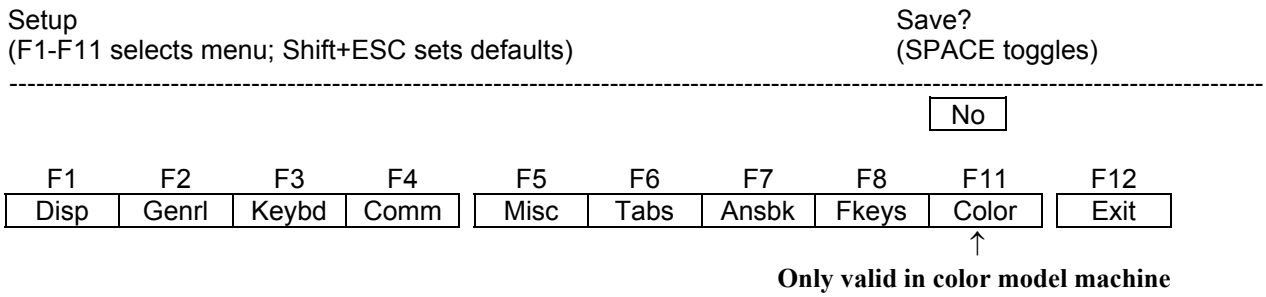

Figure 2.1

2.2 CHANGING THE OPERATING PARAMETERS

To select one of the setup menu's shown, press the indicated function key.

- The screen for that menu appears with the name highlighted.
- The fields in the middle of the screen, indicate the parameters that you can change in that menu.
- The top line identifies the keys you press to highlight the parameter fields and change the settings.
  The procedure is: (1) Use arrow key to highlight the parameter field you want to change.
  (2) Use the Spacebar to change the parameter.

F12 always returns you to the top menu.

The following tables list the parameters for each menu and explains their settings. Default settings are listed first unless otherwise noted.

F1 Disp SETUP Menu

Columns sets the screen display for 80 columns, 132 columns, or Econ-80 (80 columns with more pages of memory).

Lines sets the screen display for 24, 25, 42, or 43 lines. (25 lines is normally required for PC Term.)

Page Length sets the length of a page of display memory to:

1 x Lines: Equal to the number of lines selected in the lines parameter
2 x Lines: Two times the value of the lines parameter
4 x Lines: Four times the value of the lines parameter, or
*: Equal to the value of the lines parameter, with a second page containing the rest of the lines remaining in memory.

Cursor sets the cursor display to blink or steady, block or underline.

Background sets the screen display to Dark (light characters on a dark background) or Light (dark characters on a light background).

Auto Page causes a new page of memory to move onto the screen when the cursor reaches the top or bottom of the page.

Screen Saver = off, 1, 2, 3, 4, 5, 6, means no saver, 5, 10, ... minutes saver.

Width change clear causes the terminal to clear the screen when executing a command to change the number of columns.

Reverse = off/on control function ANSI, VT-100 and VT-220:

"**off**" means, when SGR command ESC [3? m and ESC [4? m select background and foreground color change respectively.
"**on**" means, when SGR command ESC [3? m and ESC [4? m select foreground and background color change respectively. (? can be 0,1,2,...,7)

Display=CRT/LCD chose which kind of monitor be used. If LCD monitor be selected, the display columns only support 80 columns or Econ-80 columns.

F2 Genrl SETUP Menu

Personality sets the terminal's operating mode to Wyse 325, Wyse 120/Wyse 60 (native mode), Wyse 50+ (WY-50, WY-50+, WY-100, ADM 31/5/3a), TeleVideo TVI 925, TVI910+ (includes 910), ADDS A2, Digital Equipment VT-100, VT-220 7 bits, VT-220 8 bits, VT-52, Console ANSI, PC TERM, PC graphics, or Tek 4010/4014 .

Scroll Speed sets the display scroll rate to Jump (the rate data is received), Smooth-8 (eight lines per second), Smooth-4, Smooth-2, or Smooth-1.

Rcvd CR causes the cursor to move to the beginning of the current line (CR) or the beginning of the next line (CRLF) when the terminal receives an ASCII CR.

Enhance allows the terminal to recognize an enhanced set of codes when the terminal is not in the native personality.

Auto Scroll causes the data to scroll up a line when the cursor moves past the last line of the page.

Monitor causes the terminal to display symbols for escape sequences and control codes without acting on them. (Test Feature)

Status Line sets the top line of the screen as the status line.

End of Line Wrap causes the cursor to move to the start of the next line when additional characters are entered at the end of a line.

Attribute sets display attributes to be assigned to each character as it is entered (Char), to be active to the end of the line (Line), or to be active to the end of the page (Page).

F3 Keybd SETUP Menu

Xmt Limit causes the terminal to send data through the HOST port as fast as the baud rate allows (None), or at a maximum rate of 60 cps or 150 cps. In older systems limiting character rate is necessary to prevent loss of data.

Language sets correct terminal operation for the language of the keyboard connected to it: US, UK, Danish, German, Spanish, Swedish, Norwegian, Italian, French, Belgian, Swiss/German, Swiss/French..

Keybd SETUP Menu, Continued

Key Repeat = off, 1, ... ,8 8 different repeat rates after a key has been depressed for about 1/2 seconds.

Margin Bell sets the terminal's bell to ring when the cursor reaches the column where the bell is set (default is column 72 in 80-column mode or 124 in 132-column mode).

Keycode sets the terminal to send normal ASCII characters (ASCII) or PC-type scan codes for every key up / down (Scan). Scan is required for the PC Term personality.

Keyclick sets the terminal to sound a muted beep each time a key is pressed or repeated.

NRC sets the terminal to have national replacement character functional.

Bell Volume = off, 1, 2, 3 (3 different volume)

NUM Start = off/on when the terminal power on, this field determines whether the numeric pad starts as Numeric (NUM on) or Function (NUM off).

F4 Comm SETUP Menu

Baud rate sets the host port baud rate to 50, 110, 134.5, 200, 300, 600, 1200, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 76800, or 115200.

Rcv Hndshake allows the terminal to control the receipt of data from a device connected to the SERIAL1 port with no handshaking (None), Xon / Xoff handshaking, DTR handshaking, DTR / Xoff handshaking, or by sending special codes (XPC). XPC is possible only when the personality parameter is set to PC Term.

Data / Stop Bits through the SERIAL1 port ,the terminal to send and receive 8-bits data with one stop bit or two stop bits, or 7-bits data with one stop or two stops bits.

Xmt Hndshake causes the terminal, when sending data to a device connected to the SERIAL1 port, to ignore all incoming software handshaking signals (None) or to control data output in responds to Xon/Xoff handshaking.

Comm SETUP Menu, Continued

Parity causes the terminal send the data to the SERIAL1 port with none, odd, mark, even, or space parity.

Comm Mode sets the SERIAL1 port communication mode to full duplex (FDX), block (BLK), half duplex (HDX), or half-duplex block (HBLK).

Printer Selection

Parallel : sends data to a parallel printer connected to the parallel port.
Serial : sends data to a serial printer connected to the serial 2 port.
Off : ignores the print command.

F5 Misc SETUP Menu

Wprt Intensity = normal, blank , dim, blank/dim.

Block End causes the terminal to send a block of data to the computer with a line terminator as an ASCII US character and block terminator as an ASCII CR character (US / CR), or with line terminators as ASCII CR and LF characters and the block terminator as an ASCII ETX character (CRLF / ETX).

Wprt Reverse sets the write-protected characters to appear in reverse (dark characters on a light background).

Wprt Underline sets the write-protected characters to appear underlined.

Ptr Baud rate sets the SERIAL 2 port baud rate to 75, 150, 300, 600, 1200, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 76800, 115200, 230400, 460800.

Ptr Data/Stop Bits through the SERIAL 2 port ,the terminal to send and receive 8-bits data with one stop bit or two stop bits, or 7-bits data with one stop or two stops bits.

Ptr Parity causes the terminal to send the data to the SERIAL 2 port with none, odd, mark, even, or space parity.

Ptr Xmt Hndshake = none, DSR, Xon / Xoff, Both .

Ptr Rcv Hndshake = none, DTR, Xon / Xoff, DTR/Xoff .

F6 Tabs SET-UP Menu

On the tabs setup menu screen, the terminal's current tab stops are indicated by uppercase T's displayed along a line of periods that mark each column position.

(1) A tab stop in columns 2 through 78 is shown as a T in the upper line of periods

(2) A tab stop in columns 79 through 132 is shown as a T in the lower line of periods

You can easily determine where tabs are set by moving the cursor across the line and reading the column number displayed on the right side of the screen.

Clear and set tabs anywhere on the line, as follows:

(1) To move the cursor across the line, press → or ←.

(2) To either clear or set (toggle) an individual tab stop at the cursor position, press Spacebar

(3) To clear all tabs, press Home

(4) To set tabs to the default setting (every eighth column), press Backspace

Note: A tab stop cannot be set to column 1.

F7 FKeys SET-UP Definition Setup Menu

You can redefine the function keys and many of the editing keys to send a unique character string of up to 64 characters. Keys that are not programmed will send a default sequence which is determined by the personality selected. Table 2-2 lists the programmable keys.

To redefine a key:

1. Select the key to be redefined by pressing that key together with Ctrl. This highlights the key's definition field.
2. Press ↑ to select the shifted or unshifted key definition field.

FKeys SET-UP Definition Setup Menu, Continued

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3. Enter the key definition (up to 62 characters) at the cursor position. Correct errors by pressing ← to delete characters or Home to clear the definition.
4. If you want to change the key's direction, press Enter (on the numeric pad) until your choice appears.

Direction determines where the key data is transmitted:

- Remote: Sends data to the computer only, regardless of the terminal's communication mode. (Until redefined, the direction of all the programmable keys is remote.)
- Local: Sends data to the terminal only, regardless of the terminal's communication mode
- Normal: Sends data to the computer and / or the terminal, depending on the terminal's communication mode

Table 2-2 Programmable Keys

Enhanced PC-Style Keyboard	Enhanced PC-Style Keyboard
F1 through F12	ENTER*
↑	ESCAPE
↓	HOME
→	INSERT
←	PAGE DOWN
BACKSPACE	PAGE UP
DELETE	PRINT SCREEN
END	TAB

* Both ENTER keys are programmable.

F8 Ansbk SET-UP Menu

You can program a message of up to 20 characters to identify the terminal to the computer. Enter the message at the cursor position. Correct errors by pressing ← to delete characters or Home to clear the message.

CONCEAL hides the answerback message, so it is not displayed in setup mode.
To save the message in nonvolatile memory, exit Setup mode with the YES option.

F11 Color Set-up Menu

The color functionality differs with emulation.

In general VT100, VT220 and ANSI Console work with applications which control the color directly. The remaining personalities associate colors based on existing monochrome video attributes.

This section will define parameter selection based on personality selected.

Background = Will determine the color of the background screen under some conditions (16 colors).
Cursor = Will select the color of the cursor (16 colors).
Normal F.G. \ Normal B.G. = These fields allow you to select the character and background color (16 colors) for data entered on the display before your application defines the color display remotely.
Intensity F.G. \ Intensity B.G. = These fields allow you to select the character and background color (16 colors) for data entered on the display as Dim in ASCII emulation's and Bold in VT\ANSI emulation's before your application defines the color display remotely.
Color mode = Is automatically selected based on your emulation selected.
Color map = Applies in WY325 mode only and determines if the monochrome attribute Reverse or Blank will be used to map monochrome attributes to color.

	ASCII (NOT WY325)	WY325*	VTXXX	ANSI CONSOLE
Background =	The whole data area of the screen will be displayed in this color, when the application hasn't entered character or spaces with the Normal or Intensity B.G. color. Changes in Background color will affect Normal and Intensity B.G. Any clear screen commands will clear to this color.	No Function	Same as ASCII	Same as ASCII
Cursor =	Selects Cursor color	Selects Cursor color	Selects Cursor color	Selects Cursor color
Normal F.G. =	Selects color of Normal F.G.	No Function	Initial color selection at power up	Initial color selection at power up

	ASCII (NOT WY325)	WY325*	VTXXX	ANSI CONSOLE
Normal B.G. =	Selects color of Normal B.G.	No Function	Initial color selection at power up	Initial color selection at power up
Intensity F.G. =	Selects color of Intensity F.G.	No Function	Initial color selection at power up	Initial color selection at power up
Intensity B.G. =	Selects color of Intensity B.G.	No Function	Initial color selection at power up	Initial color selection at power up
Color Mode = Normal/Palette	Automatic	Automatic	Automatic	Automatic
Color Map = Reverse/Blank	No Function	See Above	No Function	No Function

* When the WY 325 personality is selected holding the Ctrl key down and depressing either the 0, 1, ..., 9 or (.) period keys in the numeric pad change the assignment of color on the screen. Each selection is called a palette and is described in Table 2-3.

Table 2-3 Color Palettes

Palette	Display Attribute	Foreground Color	Background Color
0	Normal	Green	Black
	Reverse (or blank)*1	Black	Yellow
	Intensity*2	Blue	Black
	Intensity*2 and reverse (or blank)*1	Black	Blue
	Underline	Cyan	Black
	Underline and reverse (or blank)*1	Black	Cyan
	Underline and intensity*2,*3	Red	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Red
1	Normal	Green	Black
	Reverse (or blank)*1	Black	Red
	Intensity*2	Yellow	Black
	Intensity*2 and reverse (or blank)*1	Black	Yellow
	Underline	Cyan	Black
	Underline and reverse (or blank)*1	Black	Cyan
	Underline and intensity*2,*3	White	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	White

Color Palettes, Continued

Palette	Display Attribute	Foreground Color	Background Color
2	Normal	Cyan	Black
	Reverse (or blank)*1	Black	White
	Intensity*2	Red	Black
	Intensity*2 and reverse (or blank)*1	Black	Red
	Underline	Magenta	Black
	Underline and reverse (or blank)*1	Black	Magenta
	Underline and intensity*2,*3	Blue	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Blue
3	Normal	Cyan	Black
	Reverse (or blank)*1	Black	Blue
	Intensity*2	White	Black
	Intensity*2 and reverse (or blank)*1	Black	White
	Underline	Magenta	Black
	Underline and reverse (or blank)*1	Black	Magenta
	Underline and intensity*2,*3	Yellow	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Yellow
4	Normal	Magenta	Black
	Reverse (or blank)*1	Black	Cyan
	Intensity*2	Blue	Black
	Intensity*2 and reverse (or blank)*1	Black	Blue
	Underline	Green	Black
	Underline and reverse (or blank)*1	Black	Green
	Underline and intensity*2,*3	Red	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Red
5	Normal	Magenta	Black
	Reverse (or blank)*1	Black	Yellow
	Intensity*2	White	Black
	Intensity*2 and reverse (or blank)*1	Black	White
	Underline	Green	Black
	Underline and reverse (or blank)*1	Black	Green
	Underline and intensity*2,*3	Cyan	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Cyan

Color Palettes, Continued

Palette	Display Attribute	Foreground Color	Background Color
6	Normal	Yellow	Black
	Reverse (or blank)*1	Black	Yellow
	Intensity*2	Red	Black
	Intensity*2 and reverse (or blank)*1	Black	Red
	Underline	Cyan	Black
	Underline and reverse (or blank)*1	Black	Cyan
	Underline and intensity*2,*3	Magenta	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Magenta
7	Normal	Red	Black
	Reverse (or blank)*1	Yellow	Red
	Intensity*2	Magenta	Black
	Intensity*2 and reverse (or blank)*1	Black	Magenta
	Underline	Cyan	Black
	Underline and reverse (or blank)*1	Black	Cyan
	Underline and intensity*2,*3	Green	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Green
8	Normal	White	Black
	Reverse (or blank)*1	Black	White
	Intensity*2	Red	Black
	Intensity*2 and reverse (or blank)*1	Black	Red
	Underline	Yellow	Black
	Underline and reverse (or blank)*1	Black	Yellow
	Underline and intensity*2,*3	Magenta	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Magenta
9	Normal	White	Black
	Reverse (or blank)*1	Black	White
	Intensity*2	Yellow	Black
	Intensity*2 and reverse (or blank)*1	Black	Yellow
	Underline	Blue	Black
	Underline and reverse (or blank)*1	Black	Blue
	Underline and intensity*2,*3	Cyan	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Cyan

Color Palettes, Continued

Palette	Display Attribute	Foreground Color	Background Color
10 (soft palette)	Normal	Green	Black
	Reverse (or blank)*1	Black	Yellow
	Intensity*2	Blue	Black
	Intensity*2 and reverse (or blank)*1	Black	Blue
	Underline	Cyan	Black
	Underline and reverse (or blank)*1	Black	Cyan
	Underline and intensity*2,*3	Red	Black
	Underline, intensity,*2 and reverse (or blank)*1	Black	Red

***1.** Whether the reverse or blank attribute is mapped to the colors shown depends on an escape sequence or the setting of the Color Map setup parameter on the Attribute menu. The default is *reverse*. When the *blank* attribute is mapped, only the background is visible.

***2.** The intensity is *dim* in ASCII personalities and *bold* in ANSI personalities. (The intensity attribute is not supported in the following personalities: Wyse 50+, ADDS A2, TVI 910+, TVI925, and VT52.) The attribute can be disabled by an escape sequence or in setup mode (Intensity Attribute parameter).

***3.** In each palette, the status line displays the same foreground and background colors as shown here for the underline-and-intensity attribute.

3
Local Keyboard Commands

Table 3-1 lists local keyboard commands in the terminal's native mode.

Table 3-1
Local Keyboard Commands in Native Mode

Command	Key Sequence by keyboard Style
	Enhanced PC
Toggle CAPS LOCK on/off	CAPS LOCK
Toggle NUM LOCK on/off	NUM LOCK
Put terminal in SETUP mode	ALT ESC
Partially reset terminal, including communication unlock keyboard, turn off all print modes.	ALT PAUSE
Send break*1	BREAK*2
Toggle between block and full-duplex modes	SHIFT BREAK
Print Screen formatted	PRINT SCREEN
Turn auxiliary print mode on/off	SHIFT SYS REQ*3
Turn monitor mode on/off	CTRL SHIFT 1 (kpd)
Turn status line display on/off	CTRL →
Speed scrolling rate	CTRL SHIFT ↑
Slow scrolling rate	CTRL SHIFT ↓
Home cursor and clear page	CTRL SHIFT HOME
Display page 0	CTRL 0kpd
Display page 1	CTRL 1kpd
Display next page (or active other window)*4	PAGE DOWN
Display previous page (or active other window)*5	PAGE UP
Toggle between split screen*5 and full screen format	CTRL SHIFT -kpd

Table 3-1
Local Keyboard Commands in Native Mode, Continued

*1. To MODEM port only when configured as data port: has no effect on AUX port.
*2. [BREAK] = [PAUSE] pressed together with [CTRL].
*3. [SYS REQ] = [PRINT SCREEN] pressed together with [CTRL].
*4. If screen is split.
*5. Splits screen at line 12.

4
Connector Pin Assignment

Table 4-1
Host Port (Serial 1) Connector Pin Assignments (RS-232C 25-pin connector)

Pin	Signal	Mnemonic	Direction
2	Transmit RS-232C -data	TxD	Out
3	Receive RS-232C -data	RxD	In
4	Request to send	RTS	Out
5	Clear to send	CTS	In
6	Data set ready	DSR	In
7	Signal ground	SGND	
8	Data carrier detect	DCD	In
20	Data terminal ready	DTR	Out

Table 4-2
Serial printer port (Serial 2) Connector Pin Assignments (RS-232C 9-pin connector)

Pin	Signal	Mnemonic	Direction
1	Data carrier detect	DSD	In
2	Receive data	RxD	In
3	Transmit data	TxD	Out
4	Data terminal ready	DTR	Out
5	Signal ground	SGND	
6	Data set ready	DSR	In
7	Request to send	RTS	Out
8	Clear to send	CTS	In

Table 4-3
Printer Port Connector Pin Assignments (Compatible with the IBM PC parallel port)

Pin	Signal	Mnemonic	Direction
1	-Strobe		Out
2	Data bit 0		Out
3	Data bit 1		Out
4	Data bit 2		Out
5	Data bit 3		Out
6	Data bit 4		Out
7	Data bit 5		Out
8	Data bit 6		Out
9	Data bit 7		Out
10	-Acknowledge		In
11	Busy		In
12	Paper end		In
13	Slct		In
14	-Auto feed XT		Out
15	-Error		In
16	-Init		Out
17	-Slctn		Out
18-25	Ground		Out

5
COMMAND GUIDE

Commands Supported in ASCII Personalities

Table 5-1 lists all the ASCII commands recognized by the terminal. The native mode code for the command is given in the second column. (The native mode include WY-325,WY-120 and WY-60.) The remaining columns show the support for the command in other ASCII personalities according to the following notations:

Same
Same as native code (code is native to other terminal also)

Wyse
Same as native code (Wyse enhancement- code not native to other terminal)

ENH
Same as native code when enhance mode is on (Wyse enhancement - code not native to other terminal)

A code listed under a nonnative personality indicates that the related terminal's native code is supported.
A blank in any column indicates that the command is not supported.

Variables are shown in italics. Their values are listed in alphabetical order at the end of the table.

Table 5-1
Commands Supported in ASCII personalities

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Monitor Mode					
Monitor mode on	ESC U	Same		Same	Same
Monitor mode off	ESC u or ESC X	Same		Same	Same Same
Selecting Personalities					
Enhance mode off	ESC ~ SPACE	Same	ENH	ENH	ESC v SPACE
Enhance mode on	ESC ~ !	Same	ENH	ENH	ESC v !
Select WY-50+ mode	ESC ~"	Same	ENH	Wyse	ESC v "
Select TVI 910+ mode	ESC ~ #	Same	ENH	Wyse	ESC v #
Select TVI 925 mode	ESC ~ $	Same	ENH	Wyse	ESC v $
Select ADDS VP A2 mode	ESC ~ %	Same	ENH	Wyse	ESC v %
Select Console ANSI mode	ESC ~ A	Same	ENH	Wyse	ESC v A
Select Native mode	ESC ~ 4	Same	ENH	Wyse	ESC v 4
Select PC Term mode	ESC ~ 5	Same	ENH	Wyse	ESC v 5
Select VT52 mode	ESC ~ 6	Same	ENH	Wyse	ESC v 6
Select VT100 mode	ESC ~ ;	Same	ENH	Wyse	ESC v ;
Select PCGAPHIC mode*1	ESC ~ I	Same	ENH	Wyse	ESC v I
Select VT220-7 mode	ESC ~ <	Same	ENH	Wyse	ESC v <
Select VT220-8 mode	ESC ~ =	Same	ENH	Wyse	ESC v =
Select Tek 4010/4014 mode*2	ESC ~ @	Same	ENH	Wyse	ESC v @
Select WY-325 mode*3	ESC ~ B	Same	ENH	Wyse	ESC v B
Communicating with the computer					
Enable transmission	CTRL Q	Same	Same	Same	Same
Stop transmission Disconnect	CTRL S	Same	Same	Same	Same

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Send ACK (if ACK mode on)	CTRL E	Same		Wyse	Same
ACK mode off	ESC e 6	Same		ENH	
ACK mode on	ESC e 7	Same		ENH	
Full-duplex mode on	ESC C ESC D F	Same		Same	ESC }
Half-duplex mode on	ESC C ESC D H	Same		Same	ESC {
Block mode on	ESC B	Same		Same	Same
Block mode off (conversation)					ESC C
Half-duplex block mode on	ESC D H ESC B	Same		Same	ENH
Set Serial 1 port receive handshaking protocal	ESC c 2 ***hndshk***	Same	ENH		
Set Serial 1 port transmit handshaking protocal	ESC c 4 ***hndshk***	Same	ENH		
Set maximum data transmission speed for host port	ESC c 6 ***max***				
Set Serial 1 port operating parameters	ESC c 0 ***baud stop parity word***				
Set Serial 2 port operating parameters	ESC c 1 ***baud stop parity word***				
Enable DTR Serial port 1handshaking			CTRL N	CTRL N	CTRL N
Enable X-on/X-off Serial port 1			CTRL O	CTRL O	CTRL O
Program answerback message	ESC c; ***answer*** CTRL Y	Same	ENH		
Conceal answerback message	ESC c =	Same	ENH		
Send answerback message	ESC c <	Same	ENH		
Turn answerback mode off	ESC e SP	Same	ENH		
Turn answerback mode on	ESC e !	Same	ENH		

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Controlling the Terminal and Keyboard					
Sound bell	CTRL G	Same	Same	Same	Same
Select bell volume	ESC c ***volume***	Same	ENH		
Unlock keyboard	CTRL N or ESC"	Same	CTRL B	ESC "	ESC "
Lock keyboard	CTRL O or ESC#	Same	CTRL D	Same	ESC #
CAPS LOCK off	ESC e '	ENH	ENH	ENH	ESC SP M
CAPS LOCK on	ESC e &	ENH	ENH	ENH	ESC SP L
NUM LOCK off	ESC e @	ENH	ENH	ENH	ESC SP K
NUM LOCK on	ESC e A	ENH	ENH	ENH	ESC SP J
SCROLL LOCK off	ESC e B	ENH	ENH	ENH	ESC SP O
SCROLL LOCK on	ESC e C	ENH	ENH	ENH	ESC SP N
Keyclick off	ESC e $	Same	ENH	ESC <	ESC <
Keyclick on	ESC e %	Same	ENH	ESC >	ESC >
Margin bell off	ESC e L	Same	ENH	ENH	ESC n
Margin bell on	ESC e M	Same	ENH	ENH	ESC o
Set margin bell at curs position	ESC ' J	Same	ENH		
Select standard ASCII key code mode	ESC e H	Same	ENH		
Select PC scan code mode	ESC e I	Same	ENH		
Key repeat off	ESC e ,	Same	ENH	ENH	
Key repeat on	ESC e -	Same	ENH	ENH	
Read keyboard status					ESC [
Redefining the keys					
Clear function key definition	ESC z ***fkey*** DEL	Same			
Clear key direction and definition	ESC Z ***dir key/fkey*** DEL	Same	ENH		

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Program function key definition	ESC z ***fkey sequence*** DEL	Same	ENH	ENH	
Program key direction and definition	ESC Z ***dir key/fkey sequence*** DEL	Same		Wyse	ESC | ***p1 p2 sequence*** CTRL Y
Read key direction and definition	ESC Z ***~key*** or ESC Z ***~fkey***	Same			
Screen and Cursor Display					
Screen display off	ESC ` 8	Same	ENH	ESC o	ESC O
Screen display on	ESC ` 9	Same	ENH	ESC n	ESC N
Screen saver off	ESC e P	Same	ENH	ENH	
Screen saver on	ESC e Q	Same	ENH	ENH	
Set reverse screen	ESC ^ 1	Same	ENH	ESC b	
Restore normal screen	ESC ^ 0	Same	ENH	ESC d*4	
Set scrolling speed and type	ESC ` ***scroll***	Same	ENH		
Smooth scrolling on				ESC 8*5	
Smooth scrolling off				ESC 9*5	
Set cursor display features	ESC ` ***cursor***	Same	ENH	ESC . ***cursor1***	ESC . ***cursor1***
Cursor display off	ESC ` 0	Same	CTRL W		
Cursor display on	ESC ` 1	Same	CTRL X		
25th line display off					ESC e

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Displaying the Message Fields					
Extended status line on	ESC ` a	Same	ENH		
Standard status line on	ESC ` b	Same	ENH		
Status line off	ESC ` c	Same	ENH		
Program/display computer message on status line	ESC F ***message*** CR	Same	ENH		
Program computer message on unshifted lable line*6	ESC z (***text*** CR	Same	ENH	ESC f*5 ***text*** CR	ESC f ***text*** CR
Program computer message on shifted label line	ESC z) ***text*** CR	Same	ENH		
Turn off shifted label line	ESC z DEL	Same	ENH	ENH	
Clear unshifted label line	ESC z (CR	Same	ENH		
Clear shifted label line	ESC z) CR	Same	ENH	ENH	
Program/display function key label	ESC z ***field label*** CR	Same	ENH	ENH	
Clear function key label	ESC z ***field*** CR	Same	ENH	ENH	
Defining the data Area					
Select 80-column display	ESC ` :	Same	ENH		
Select 132-column display	ESC ` ;	Same	ENH		
Economy 80-column mode off	ESC e F	Same	ENH		
Economy 80-column mode on	ESC e G	Same	ENH		
Width-change-clear mode off	ESC e .	Same	ENH		
Width-change-clear mode on	ESC e /	Same	ENH		
Display 24 data lines*7	ESC e (	Same	ENH		
Display 25 data lines*7	ESC e)	Same	ENH		ESC ^

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Display Memory/Split Screen					
Divide memory into pages	ESC w ***length***	Same	ENH		
Display previous page	ESC w B or ESC J[*8]	Same	ENH	ESC J	
Display next page	ESC w C or ESC K[*8]	Same	ENH	ESC K	
Display page n	ESC w ***page***	Same	ENH		
Split screen horizontally (simple split)	ESC x A ***line***	Same			
Split screen horizontally (simple split) and clear pages	ESC x 1 ***line***	Same			
Split screen horinontally (adjustable split) and clear pages	ESC x 3 ***line***	Same			
Split screen horizontally (adjustable split)	ESC x C ***line***	Same			
Activate upper window	ESC]	Same			
Activate lower window	ESC }	Same			
Activats other window (or page [*8])	ESC J or ESC K	Same	ESC J[*5]		
Lower horizontal split	ESC x P	Same			
Raise horizontal split	ESC x R	Same			
Roll window up in page	ESC w E	Same			
Roll window down in page	ESC w F	Same			
Redefine screen as one window	ESC x @	Same			
Redefine screen as one window and clear pages	ESC x 0	Same			
Display Attributes					
Assign display attribute to a message field	ESC A ***mf attr***	Same		ESC \[*4]	
Assign character display attribute	ESC G ***attr***	Same	ENH	Same	Same

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Character attribute mode off	ESC e 0				
Character attribute mode on	ESC e 1				
Page attribute mode on	ESC e 2	Same			
Line attribute mode on	ESC e 3	Same			
Assign write-protected character display attribute	ESC `***wpca***	Same	ESC 0 ***wpca1***		
Clear unprotected page to display attribute	ESC !	ENH ***attr***	Wyse		
Assign line attribute	ESC G ***lattr***	Same	ENH		
Redefine color map values*9	ESC d y ***fcolor bcolor map***				
Set tag protect attribute			CTRL N		
Reset tag protect attribute			CTRL O		
Select a predefined color palette*9	ESC d z ***palette***				
Map blank attribute*9	ESC d {				
Map reverse attribute*9	ESC d |				
Protecting Data					
Write-protect mode off	ESC (	Same	CTRL O	Same	Same
Write-protect mode on	ESC)	Same	CTRL N	Same	Same
Clear cursor column to write-protected spaces	ESC V	Same	ENH	Same	
Protect mode off	ESC ,	Same	ENH	Same	Same
Protect mode on	ESC &	Same	ENH	Wyse	Same

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Graphics Characters					
Graphics mode on	ESC H CTRL B	Same		ESC $	ESC $
Graphics mode off	ESC H CTRL C	Same		ESC %	ESC %
Display graphics character	ESC H ***ldraw***	Same			
Controlling the Cursor					
Cursor left (backspace)	CTRL H	Same	Same	Same or CTRL U	Same
Cursor right	CTRL L	Same	CTRL F	Same	Same
Cursor up; no scroll	CTRL K	Same	CTRL Z	Same	Same
Cursor up; scroll (reverse linefeed)	ESC j	Same	ENH	Same[*10]	Same
Cursor down; no scroll				CTRL V	CTRL V
Cursor down; scroll (Linefeed)	CTRL J	Same	Same	Same	Same
Cursor to start of line	CTRL M	Same	Same	Same	Same
Cursor to start of next line	CTRL _	Same	ENH	Same	Same
Home cursor	ESC { or CTRL ^	Same	ENH or CTRL A	Wyse Same	CTRL ^
Cursor to specific column			CTRL P ***col***	ESC][*11]	
Cursor to specific line			CTRL K ***line***	ESC [	
End-of-line wrap off	ESC d .	Same	ENH		ESC 0
End-of line wrap on	ESC d /	Same	ENH		ESC ~
Received CR mode off	ESC e 4	Same	ENH	ENH	ESC 9
Received CR mode on	ESC e 5	Same	ENH	ENH	ESC 8
Autopage mode off	ESC d *	Same	ENH	ESC w	
Autopage mode on	ESC d +	Same	ENH	ESC v	

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Autoscrolling mode off	ESC N	Same	ENH		
Autoscrolling mode on	ESC O	Same	ENH		
Address cursor in curren 80-column page	ESC = ***line col***	Same	ENH or ESC Y	Same	Same
Address cursor in specific 80-column page	ESC w @ ***page line col***	Same	ENH	ESC - ***page line col***	
Address cursor in specific 80-column window/page[*8]	ESC - ***wnd/ page line col***	Same	ENH		Same
Address cursor in specific 80/132-column current page	ESC a ***lll*** R ***ccc*** C	Same	ENH		Same
Read cursor line and column address in 80-column current page	ESC ?	Same	ENH	Same	Same
Read 80-column page number and cursor address	ESC w 、	Same	ENH		
Read 80-column window/page number and cursor address	ESC /	Same	ENH	Same	Same
Read cursor address in 80/132-column page	ESC b	Same	ENH		
Editing					
Clear all tab stops	ESC 0	Same	ENH	ESC 3	ESC 3
Set tab stop	ESC 1	Same	ENH	Same	Same
Clear tab stop	ESC 2	Same	ENH	Same	Same
Tabulate cursor	ESC i or CTRL I	Same	ENH	CTRL I	CTRL I
Backtab	ESC I	Same	ENH	Same	Same
Field tab				ESC I	ESC i
Insert mode on, replace mode off	ESC q	Same	ENH	ENH	ESC Z
Insert mode off, replace mode on	ESC r	Same	ENH	ENH	Same
Insert space character	ESC Q	Same	ENH	Same	Same

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Insert line of spaces	ESC E	Same	ENH	Same	Same
Delete cursor character	ESC W	Same	ENH	Same	Same
Delete cursor line	ESC R	Same	ESC l	Same	Same
Clearing Data					
Clear page to nulls	ESC *	Same	ENH	Same	Same
Clear page to spaces	ESC +	Same	ENH		
Clear page to write-protected spaces	ESC ,	Same	ENH		Same
Clear unprotected page to spaces	ESC ; or CTRL Z	Same	ESC ; ENH	ESC ; or ESC +	Same
Clear unprotected page to nulls	ESC :	Same	ENH	Same	Same
Clear unprotected page to a specific character	ESC *.char*	Same	ENH		
Clear unprotected page to protected spaces				ESC ,	
Clear unprotected page to display attribute		ESC ! *attr*	ENH	ENH	
Clear unprotected page to spaces from cursor	ESC Y	Same	ESC k	Same	Same
Clear unprotected page to nulls from cursor	ESC y	Same	ENH	Same	Same
Clear unprotected line to spaces from cursor	ESC T	Same	ESC K	Same	Same
Clear unprotected line to nulls from cursor	ESC t	Same	ENH	Same	Same
Fill page with H's					ESC F
Sending data					
Begin print / send at top of page	ESC d'	Same	ENH		
Begin print / send at top of screen	ESC d&	Same	ENH		

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command: Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Send cursor character	ESC M	Same			
Send line through cursor	ESC 6	Same		Same	ESC 6
Send unprotected line through cursor	ESC 4	Same		Same	ESC 4
Send page through cursor	ESC 7	Same	ENH	Same	ESC 7
Send unprotected page through cursor	ESC 5	Same		Same	ESC 5
Mark block beginning	ESC 8	Same	ENH		
Mark block end	ESC 9	Same	ENH		
Send entire block	ESC s	Same	ENH	Same	Same
Send unprotected	ESC S	Same	ENH	Same	Same
Report terminal status					ESC [
Report attribute under cursor					ESC D
Print Functions					
Print formatted page	ESC P	Same	ENH	Same	Same
Print formatted unprotected page	ESC @	Same	ENH		
Print unformatted page	ESC p or ESC L	Same	ESC p	ESC L*11	
Select Parallel printer	ESC d (	Same	Same		
Select Serial printer	ESC d)	Same	Same		
Auxiliary print mode off	CTRL T	Same	Same	ESC A	ESC A
Auxiliary print mode on	CTRL R	Same	Same	ESC @	
Transparent print mode off	CTRL T	Same	ESC 4	ESC a	ESC a
Transparent print mode on	ESC d #	Same	ESC 3	ESC `	ESC `
Bidirectional mode off	ESC d $			CTRL T	CTRL T
Bidirectional mode on	ESC d %			CTRL R	CTRL R
Auxiliary receive mode off	ESC d SPACE				
Auxiliary receive mode on	ESC d !				
Set print terminator				ESC p	ESC p
Define delimiters				ESC x	ESC x

Table 5-1
Commands Supported in ASCII personalities, Continued

FUNCTION	Command Native Mode	Wyse WY-50+	ADDS VP A2	TVI 910+/925	PC Term
Character Sets					
Select primary character set	ESC c D	Same			
Select secondary character set	ESC c E	Same			
Define primary character set	ESC c B ***bank***	Same			
Define secondary character set	ESC c C ***bank***	Same			
Load font bank with predefined ***set***	ESC c @ ***bank***	Same			
Clear font bank	ESC c ? ***bank***	Same			
Define and load character	ESC c A ***bank pp bb...bb*** CTRL Y	Same			

***1**. PCG ALPHA in Mono. Text Model machine.
***2**. Valid only in Color Model and Mono Graphics Model machines.
***3**. Valid only in Color Model machine.
***4**. With enhance mode off.
***5**. With enhance mode on.
***6**. Automatically display in native mode. May be hidden by assigning blank attribute (ESC A 1l).
***7**. Screen cleared.
***8**. If screen is not split.
***9**. In WY-325 only
***10**. In TeleVideo 925 only
***11**. In TeleVideo 910+ only

Variable Values for Table 5-1 Commands

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answer Up to 20 characters to define answerback message

attr	Display Attributes	*attr*	Display Attributes
SPACE	Space character	p	Dim
0	Normal	q	Dim and invisible
1	Blank	r	Dim and blink
2	Blink	s	Dim, blink, invisible
3	Blink and Blank	t	Dim and reverse
4	Reverse	u	Dim, reverse, invisible
5	Reverse and invisible	v	Dim, reverse, blink
6	Reverse and blink	w	Dim, reverse, blink invisible
7	Reverse, blink, invisible	x	Dim and underline
8	Underline	y	Dim, underline, invisible
9	Underline and invisible	z	Dim, underline, blink
:	Underline and blink	{	Dim, underline, blink invisible
;	Underline, blink, invisible	|	Dim, underline, reverse
<	Underline and reverse	}	Dim, underline, reverse invisible
=	Underline, reverse, invisible	~	Dim, underline, reverse blink
>	Underline, reverse, blink	DEL	Dim, underline, reverse blink, invisible
?	Underline, reverse, blink invisible		

bank	Font Bank*a	*bank*	Font Bank*a
0	Font bank 0	2	Font bank 2
1	Font bank 1	3	Font bank 3

***a** Holds predefined character set

baud	Baud Rate	*baud*	Baud Rate	*baud*	Baud Rate	*baud*	Baud Rate
0	115200	4	19200	8	2400	<	200
1	76800	5	9600	9	1200	=	134.5
2	57600	6	7200	:	600	>	110
3	38400	7	4800	;	300	?	50

bb...bb 32-byte character string defining bit pattern of character

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Variable Values for Table 5-1 Commands, Continued

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bcolor	Background Color	*bcolor*	Background Color
1	Black	5	Red
2	Blue	6	Magenta
3	Green	7	Yellow
4	Cyan	8	White

ccc One-to three-decimal value of column relative to home

char Character that replaces unprotected characters

col See line/col

color	color	*color*	color	*color*	color
1	Black	6	Magenta	D	Dim cyan
2	Blue	7	Yellow	E	Dim red
3	Green	8	White	F	Dim magenta
4	Cyan	B	Dim blue	G	Dim yellow
5	Red	C	Dim green	H	Dim white

cursor	Cursor Display	*cursor*	Cursor Display
0	Cursor display off	3	Blinking line cursor
1	Cursor display on	4	Steady line cursor
2	Steady block cursor	5	Blinking block cursor

cursor1	Cursor Display	*cursor1*	Cursor Display
0	Cursor display off	3	Blinking line cursor
1	Blinking block cursor	4	Steady line cursor
2	Steady block cursor		

dir	Direction
0	Normal
1	Remote
2	Local

Variable Values for Table 5-1 Commands, Continued

fcolor	Foreground Color	*fcolor*	Foreground Color
1	Black	5	Red
2	Blue	6	Magenta
3	Green	7	Yellow
4	Cyan	8	White

Key	*field* Unshifted	*field* shifted	Key	*field* Unshifted	*field* shifted
F1	0	P	F7	6	V
F2	1	Q	F8	7	W
F3	2	R	F9	8	X
F4	3	S	F10	9	Y
F5	4	T	F11	:	Z
F6	5	U	F12	;	[

Function Key	*fkey* Unshifted	*fkey* Shifted	Function Key	*fkey* Unshifted	*fkey* Shifted
F1	@	`	F7	F	f
F2	A	a	F8	G	g
F3	B	b	F9	H	h
F4	C	c	F10	I	i
F5	D	d	F11	J	j
F6	E	e	F12	K	k

hndshk	Handshaking Protocol Receive	Transmit
0	None (default)	None (default)
1	XON/XOFF	XON/XOFF
2	DTR	
3	Both	

Keyboard Style

key	Enhanced PC	*key*	Enhanced PC	*key*	Enhanced PC
SPACE	ESC	&	SHIFT TAB →	$	RETURN
%	SHIFT ESC	"	← BACKSPACE	)	SHIFT RETURN
!	TAB →	'	SHIFT← BACKSPACE	*	HOME

Variable Values for Table 5-1 Commands, Continued

Keyboard Style, continued

key	Enhanced PC	*key*	Enhanced PC	*key*	Enhanced PC
/	SHIFT HOME	3	SHIFT →	6	SHIFT DELETE
+	↑	s	ENTER kpd	R	PRINT SCREEN
0	SHIFT ↑	4	SHIFT ENTER kpd	X	SHIFT PRINT SCREEN
,	↓	q	INSERT	\	END
1	SHIFT ↓	p	SHIFT INSERT	]	SHIFT END
-	←	r	PAGE DOWN	:	PAGE UP
2	SHIFT ←	w	SIFT PAGE DOWN	;	SHIFT PAGE UP
.	→	5	DELETE		

label 9 characters (80 columns); 7 characters (132 columns)

lattr	Line Attribute
@	Single-high, single-wide characters
A	Single-high, double-wide characters.
B	Top half of double - high, single-wide characters
C	Bottom half of double - high, single-wide characters
D	Top half of double-high, double-wide characters
E	Bottom half of double-high, double-wide characters

ldraw	Graphics Character	*ldraw*	Graphics Character
0	┬	8	┼
1	└	9	┤
2	┌	:	─
3	┐	;	▒
4	├	<	═
5	┘	=	┴
6	│	>	‖
7	▒	?	▒

Variable Values for Table 5-1 Commands, Continued

length	Multiple	Length of Page
G	1xlines	Equal to the number of data lines
H	2xlines	Double the number of data lines
I*b	4xlines	Four times the number of data lines

***b** Available only in WY-50+ personality.

Line/Column	*line/col**c	Line/Column	*line/col**c	Line/Column	*line/col**c	Line/Column	*line/col**c
1	space	25	8	49	P	73	h
2	!	26	9	50	Q	74	i
3	"	27	:	51	R	75	j
4	#	28	;	52	S	76	k
5	$	29	<	53	T	77	l
6	%	30	=	54	U	78	m
7	&	31	>	55	V	79	n
8	'	32	?	56	W	80	o
9	(	33	@	57	X	81	p
10	)	34	A	58	Y	82	q
11	*	35	B	59	Z	83	r
12	+	36	C	60	[	84	s
13	,	37	D	61	\	85	t
14	-	38	E	62	]	86	u
15	.	39	F	63	^	87	v
16	/	40	G	64	_	88	w
17	0	41	H	65	`	89	x
18	1	42	I	66	a	90	y
19	2	43	J	67	b	91	z
20	3	44	K	68	c	92	{
21	4	45	L	69	d	93	|
22	5	46	M	70	e	94	}
23	6	47	N	71	f	95	~
24	7	48	O	72	g	96	DEL/RUB

***c** Native codes also recognized in WY-50+, TVI 910+/925, and PC Term personalities, and in ADDS VP A2 personality absolute cursor addressing.

lll One- to three-decimal value of line relative to home

Variable Values for Table 5-1 Commands, Continued

map	Definition	*map*	Definition
1	Normal	5	Underline
2	Reverse (or blank*d)	6	Underline and reverse (or blank*d)
3	Intensity	7	Unterline and intensity
4	Intensity and reverse (or blank*d)	8	Underline, intensity, and reverse (or blank*d)

***d**. Colors mapped to reverse or blank depending on the setting of the Color Map setup parameter or the equivalent escape sequences.

max	Maximum Speed
1	60 characters per second
2	No limit (default)
3	150 characters per second

message 46 characters (80 columns); 98 characters (132 columns)

mf	Screen Area*e	*mf*	Screen Area*e
0	Data area	2	Terminal message field
1	Function key label line	3	Computer message field

***e** In native mode, only the reverse attribute can be assigned to the data area.

p1	Function Key	*p1*	Function Key
1	F1	6	F6
2	F2	7	F7
3	F3	8	F8
4	F4	9	F9
5	F5	0	F10

p2	Direction
1	Remote
2	Local
3	Normal

Variable Values for Table 5-1 Commands, Continued

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page	**Page**	
0	page 0	In the 80 columns mode: There have 4 pages of display memory.
1	page 1	In the 132 columns mode: There have 3 pages of display memory.
2	page 2	In the Econ-80 columns mode: There have 7 pages of display memory.
3	page 3	
4	page 4	
5	page 5	
6	page 6	

palette	**Color Palette**	*palette*	**Color palette**	*palette*	**Color palette**
0	Palette 0	4	Palette 4	8	Palette 8
1	Palette 1	5	Palette 5	9	Palette 9
2	Palette 2	6	Palette 6	.	Palette 10
3	Palette 3	7	Palette 7		

parity	**Parity Bits**	*parity*	**Parity Bits**
0	None	2	Mark
1	Odd	3	Even

pp 2-byte hex value of character position*f.

***f** In the illustrations, DEC = decimal value; HEX = hexadecimal value. Read across, then down.

scroll	**Scrolling Type**	**Speed(lps)**
@	Jump scroll	
<	Smooth scroll	1
=	Smooth scroll	2
>	Smooth scroll	4
?	Smooth scroll	8

sequence Up to 64 bytes to be loaded in function key

Variable Values for Table 5-1 Commands, Continued

set	**Predefined Character Set**
@	Native Mode
A	PC Multinational
B	Standard ASCII
D	PC Standard
G	Standard ANSI

stop	**stop bits**
0	1
1	2

text 78 characters (80 columns); 130 characters (132 columns)

volume	**BELL Volume**	*volume*	**BELL Volume**
#	Loud	!	Low
"	Medium	SP	Off

wnd/page	**Window or Page**
0	Page 0 or upper window
1	Page 1 or lower window

word	**Data Word**
0	7 bits
1	8 bits

wpca	**Write-Protected Display Attribute**	*wpca*	**Write-Protected Display Attribute**
6	Reverse*g	C	Invisible on
7	Dim*g	E	Underline on
A	Normal*g	F	Reverse on
B	Blink on	G	Dim on

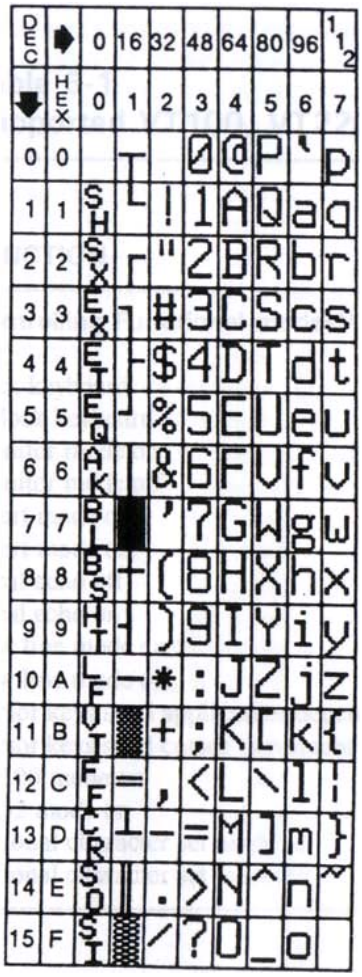
***g** Clears other write-protected attributes

Variable Values for Table 5-1 Commands, Continued

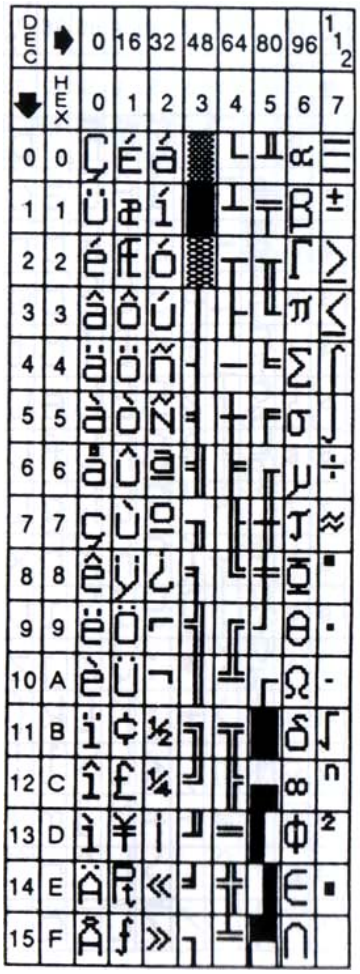
wpca1	Display Attribute	*wpca1*	Write-Protected Display Attribute
@	Normal	H	Normal
A	Dim	I	Dim
B	Blink	J	Blink
C	Dim/Blink	K	Dim/Blink
D	Invisible	L	Invisible
P	Reverse(Rev)	X	Reverse(Rev)
Q	Rev/Dim	Y	Rev/Dim
R	Rev/Blink	Z	Rev/Blink
S	Rev/Dim/Blink	[	Rev/Dim/Blink
T	Rev/Invisible	\	Rev/Invisible
.	Underline(UL)	h	Underline(UL)
a	UL/Dim	i	UL/Dim
b	UL/Blink	j	UL/Blink
c	UL/Dim/Blink	k	UL/Dim/Blink
p	UL/Rev	x	UL/Rev
q	UL/Rev/Dim	y	UL/Rev/Dim
r	UL/Rev/Blink	z	UL/Rev/Blink
s	UL/Rev/Dim/Blink	{	UL/Rev/Dim/Blink

ASCII Character Sets

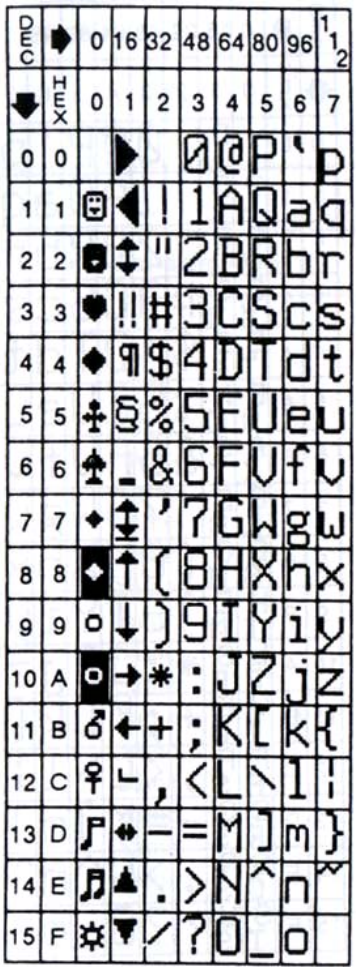
Native Mode



PC Multinational



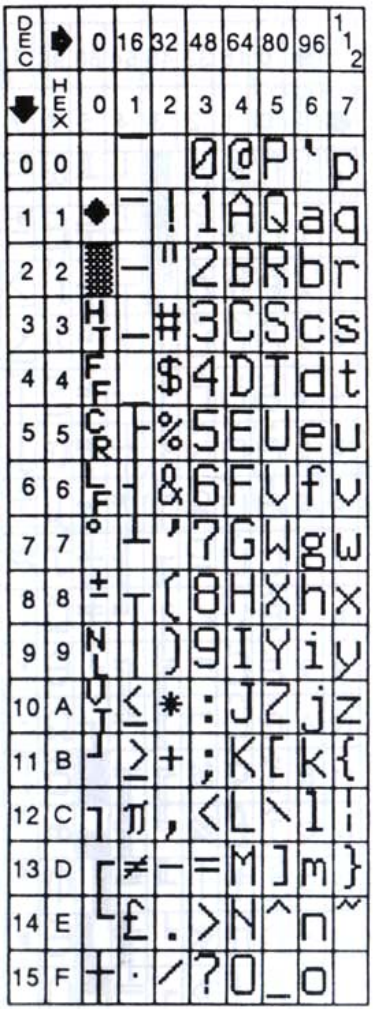
PC Standard



ASCII Character Sets, Continued

Standard ASCII

Standard ANSI



6
ANSI COMMAND GUIDE

VT100, VT220 and Console ANSI Command Guide

Table 6-1
Supported VT100, VT220 and Console ANSI Commands

FUNCTION	Command	
	VT100, VT220	Console ANSI
Controlling Functional modes[*1]		
Lock keyboard	CSI 2 h	Same
Unlock keyboard	CSI 2 l	Same
Monitor mode on [*2]	CSI 3 h	Same
Monitor mode off	CSI 3 l	Same
Insert mode on	CSI 4 h	Same
Insert mode off	CSI 4 l	Same
Local echo off	CSI 12 h	Same
Local echo on	CSI 12 l	Same
New line mode on	CSI 20 h	Same
New line mode off	CSI 20 l	Same
Cursor keys send application-dependent codes	CSI ?1 h	Same
Cursor keys send cursor movement codes	CSI ?1 l	Same
VT100 mode on	CSI ?2 h or CSI 61 "p	Same
VT52 mode on	CSI ?2 l	Same
National character set mode on	CSI ?42 h	Same
National character set mode off	CSI ?42 l	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
132-column display	CSI ?3 h	Same
80-column display	CSI ?3 l	Same
Smooth scrolling on	CSI ?4 h	Same
Jump scrolling on	CSI ?4 l	Same
Reverse screen video on	CSI ?5 h	Same
Normal screen video on	CSI ?5 l	Same
Line 1 is top of scrolling region	CSI ?6 h	Same
Line 1 is top of display area	CSI ?6 l	Same
Autowrap on	CSI ?7 h	Same
Autowrap off	CSI ?7 l	Same
Autorepeat on	CSI ?8 h	Same
Autorepeat off	CSI ?8 l	Same
Block mode on	CSI ?10 h	Same
Block mode off	CSI ?10 l	Same
Send form feed after print screen operation	CSI ?18 h	Same
No form feed sent after print screen operation	CSI ?18 l	Same
Print full screen	CSI ?19 h	Same
Print scrolling region	CSI ?19 l	Same
Display cursor	CSI ?25 h	Same
Cursor off	CSI ?25 l	Same
Blank screen	CSI 30 h	Same
Display screen	CSI 30 l	Same
Display status line	CSI 31 h	Same
Blank status line	CSI 31 l	Same
Screen saver	CSI 32 h	Same
Screen saver off	CSI 32 l	Same
Cursor steady (nonblinking)	CSI 33 h	Same
Cursor blinking	CSI 33 l	Same
Underline cursor on	CSI 34 h	Same
Block cursor on	CSI 34 l	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Don't clear screen after width change	CSI 35 h	Same
Clear screen after width change	CSI 35 l	Same
Send erasable and nonerasable characters	CSI 37 h	Same
Send only erasable characters	CSI 37 l	Same
Send full screen	CSI 38 h	Same
Send scrolling region	CSI 38 l	Same
Turn 25th line on	CSI 40 h	Same
Turn 25th line off	CSI 40 l	Same
Select standard ANSI key codes	CSI 54 h	Same
Select PC scan codes	CSI 54 l	Same
VT220 8-bit mode on	CSI 62;2"p	Same
VT220 7-bit mode on	CSI 62;1"p	Same
8-bit transmission mode on (VT220)	ESC space G	
7-bit transmission mode on (VT220)	ESC space F	
Select next page		CSI U
Select preceding page		CSI V
Select page 0		CSI 0 z
Select page 1		CSI 1 z
Character Set Selection	**ESC *Ps final***	**Same**

Ps	Label assigned	*Ps*	Label assigned
(	G0	*	G2(VT220 only)
)	G1	+	G3(VT220 only)

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command: VT100, VT220	Command: Console ANSI

final	Final character	*final*	Final character
A	Designating UK ANSI character set	<	Designating DEC supplemental(VT220 only)
B	Designating ASCII character set	DSCS*	Designating Down-line loadable character set
0	Designating DEC special graphics		

* DSCS can consist of zero, one or two intermediate character and a final character. Intermediate characters are in the range of 2/0 to 2/15. Final characters are in the range of 3/0 to 7/14

Load G0 character set into GL	CTRL O	Same
Load G1 character set into GL	CTRL N	Same
Load G1 character set into GR	ESC ~	Same
Load G2 character set into GL	ESC n	Same
Load G2 character set into GR	ESC }	Same
Load G3 character set into GL	ESC o	Same
Load G3 character set into GR	ESC |	Same
Shift G2 character set into GL for one character only	ESC N	Same
Shift G3 character set into GL for one character only	ESC O	Same

Controlling Character, Field, and Line Attributes

Define character attributes*3	**CSI *Ps* m**	**Same**

Ps	Character Attribute	*Ps*	Character Attribute
0	Normal (all attributes off)	25	Blink off
1	Bold (blank off)	27	Reverse off
4	Underline	28	Blank off
5	Blink	30	Black character
7	Reverse	31	Red character
8	Blank (bold off)	32	Green character
22	Normal intensity	33	Brown character (Bold on = Yellow)
24	Underline off	34	Blue character

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI

Ps	Character Attribute	*Ps*	Character Attribute
35	Magenta character	43	Brown background (Bold on = Yellow)
36	Cyan character	44	Blue background
37	White character	45	Magenta background
40	Black background	46	Cyan background
41	Red background	47	White background
42	Green background		

Select Graphic Rendition (Console ANSI mode only) **CSI *ps* m**

ps	Function
10	Select Primary Font
11	Select First Altemate Font. Allows ASCII characters less than 32 to be displayed as ROM character.
12	Sleect Second Alteenate Font. Toggles high bit of extened ASCII code before displaying as ROM character.

Set bold background bit ***Pn*** = 0: set bit 7 of attribute byte as B/G intensity 1: set bit 7 of attribute byte as B/G blink	ESC[=***Pn***E	same
Set normal foreground color	ESC[= ***Psn*** F	same
Set normal background color	ESC[= ***Psn*** G	same
Set reverse foreground color	ESC[= ***Psn*** H	same
Set reverse background color	ESC[= ***Psn*** I	same
Set graphic foreground color	ESC[= ***Psn*** J	same
Set graphic background color	ESC[= ***Psn*** K	same
Set boader color	ESC[= ***Psn*** A	same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Psn **Color** ***Psn*** **Color** ***Psn*** **Color** ***Psn*** **Color**		
0 Black 4 Red 8 Gray 12 Lt. Red		
1 Blue 5 Magenta 9 Lt. Blue 13 Lt. Magenta		
2 Green 6 Brown 10 Lt. Green 14 Yellow		
3 Cyan 7 White 11 Lt. Cyan 15 Lt. White		
Access alternate graphic set		CSI Png
Define erasable character	CSI 0 "q or CSI 2 "q	Same
Define nonerasable character	CSI 1 "q	Same
Define top half of double-high, double-wide line	ESC # 3	Same
Define bottom half of double-high, double-wide line	ESC # 4	Same
Define single-high, single-wide line	ESC # 5	Same
Define single-high, double-wide line	ESC # 6	Same
Define top half of double-high, single-wide line	ESC # :	Same
Define bottom half of double-high, single-wide line	ESC # ;	Same
Controlling the Cursor		
Display cursor	CSI ?25 h	Same
Corsor off	CSI ?25 l	Same
Cursor steady (nonblinking)	CSI 33 h	Same
Cursor blinking	CSI 33 l	Same
Underline cursor on	CSI 34 h	Same
Block cursor on	CSI 34 l	Same
Cursor keys send application-dependent codes	CSI ?1 h	Same
Cursor keys send cursor movement codes	CSI ?1 l	Same
Move cursor to n column	CSI n G or CSI n `	Same
Move cursor up n lines	CSI n A	Same
Move cursor down n lines	CSI n B or CSI n e	Same
Move cursor right n columns	CSI n C or CSI n a	Same
Move cursor left n columns	CSI n D	Same
Move cursor down cusor n line to column 1	CSI n E	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Move cursor up n lines to column 1	CSI n F	Same
Move cursor to line n	CSI n d	Same
Move cursor to line n1, column n2	CSI n1; n2 H	Same
	or CSI n1; n2 f	Same
Move cursor down one line in current column,	IND	Same
scroll up if at bottom line	or ESC D	Same
Move cursor down one line in current column,	CTRL J	Same
execute CR if linefeed mode is on	or CTRL K or CTRL L	Same
Move cursor up one line in current column,	RI	Same
scroll down if at top line	or ESC M	Same
Move cursor down one line to column 1	NEL or ESC E	Same
Save display attributes, cursor position, character sets,	ESC 7	Same
wrap flag and origin mode status	or CSI s	Same
Restore last saved display attributes, cursor position,	ESC 8	Same
character set, wrap flag, and origin mode status	or CSI u	Same
Backspace cursor	CTRL H	Same
Move cursor to next tab stop	CTRL I	Same
Move cursor to column 1 of current line	CTRL M	Same
Editing Functions		
Erase from cursor to end of display	CSI 0 J	Same
Erase from start of display to cursor	CSI 1 J	Same
Erase entire display	CSI 2 J	Same
Erase from cursor to end of line	CSI 0 K	Same
Erase from start of line to cursor	CSI 1 K	Same
Erase entire line	CSI 2 K	Same
Erase erasable characters from cursor to end of display	CSI ?0 J	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Erase erasable characters from start of display to cursor	CSI ?1 J	Same
Erase erasable characters in entire display	CSI ?2 J	Same
Erase erasable characters from cursor to end of line	CSI ?0 K	Same
Erase erasable characters from start of line to cursor	CSI ?1 K	Same
Erase erasable characters from entire line	CSI ?2 K	Same
Erase n characters beginning at cursor	CSI n X	Same
Insert n blank characters beginning at cursor	CSI n @	Same
Insert n blank lines beginning at cursor line	CSI n L	Same
Delete n line beginning at cursor line	CSI n M	Same
Delete n characters beginning at cursor	CSI n P	Same
Controlling Margins		
Set top/bottom margins of scrolling	**CSI *t*;*b* r**	**Same**
t: Top line number ***b***: Bottom line number (optional; if omitted, treated as bottom screen line)		
Controlling Tabs		
Clear tab stop at cursor	CSI 0 g or CSI 2 W	CSI 2W
Clear all tab stops	CSI 3 g or CSI 5 W	CSI 5W
Set tab stop at cursor	CSI 0 W or ESC H	Same
Set tab stop every 8th column	CSI ?5 W	Same
Move forward n tab stops	CSI n I	Same
Move backward n tab stops	CSI n Z	Same
Move cursor to next tab stop	CTRL I	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Controlling Scrolling		
Smooth scrolling on	CSI ?4 h	Same
Jump scrolling on	CSI ?4 l	Same
Set 0 lps smooth scrolling speed	CSI 0 z	
Set 1 lps smooth scrolling speed	CSI 1 z	
Set 2 lps smooth scrolling speed	CSI 2 z	
Set 4 lps smooth scrolling speed	CSI 3 z	
Set 8 lps smooth scrolling speed	CSI 4 z	
Program function keys	**DCS *c*;*kl* | *kc*/*hc* ST**	**ESC Q *Fn* "*string*"**

1. VT100 mode:

c	Clear
0	Clear all key definitions
1	Clear keys only as they are redefined

kl	Key lock
0	Lock key definitions
1	Don't lock key definitions

kc	Shifted function key	*kc*	Shifted function key
12	F1	18	F7
13	F2	19	F8
14	F3	20	F9
15	F4	21	F10
16	F5	23	F11
17	F6	24	F12

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI

kc	Unshifted function key	*kc*	Unshifted function key
6	F1	38	F7
7	F2	39	F8
8	F3	40	F9
9	F4	41	F10
10	F5	43	F11
37	F6	44	F12

hc Hexadecimal representation of character string assigned to the function key.

* *Multiple function key definitions can be programmed by entering the <kc>/<hc> parameters for each, separated by semicolons (;).*

2. Console ANSI mode:

Redefine keys with string
Function: Define Specific Programmable Function key or Numeric keypad with String.
Format: ESC Q Fn " string "
Parameters: Fn

0 - F1	< - S_F1	H - C_F1	T - C_S_F1
1 - F2	= - S_F2	I - C_F2	U - C_S_F2
2 - F3	> - S_F3	J - C_F3	V - C_S_F3
3 - F4	? - S_F4	K - C_F4	W - C_S_F4
4 - F5	@ - S_F5	L - C_F5	X - C_S_F5
5 - F6	A - S_F6	M - C_F6	Y - C_S_F6
6 - F7	B - S_F7	N - C_F7	Z - C_S_F7
7 - F8	C - S_F8	O - C_F8	[- C_S_F8
8 - F9	D - S_F9	P - C_F9	\ - C_ S_F9
9 - F10	E - S_F10	Q - C_F10	] - C_ S_F10
: - F11	F - S_F11	R - C_F11	^ - C_ S_F11
; - F12	G - S_F12	S - C_F12	_ - C_ S_F12

Supported VT100,VT220 and Console ANSI Commands, Continued

-

for numeric keypad:

` - ‘7’ key	c - ‘-’ key	f - ‘6’ key	i - ‘2’ key
a - ‘8’ key	d - ‘4’ key	g - ‘+’ key	j - ‘3’key
b - ‘9’ key	e - ‘5’ key	h - ‘1’ key	k - ‘0’ key

Notes:

1. The string should not include the delimiter, or unexpected conditions maybe occur.
2. The defined contents of F1 ~F12 will be transmitted out by keying F1~F12.
   The defined contents of S_F1~S_F12 will be transmitted out by multi-keying the Shift and Function key.
   The defined contents of C_F1~C_F12 will be transmitted out by multi-keying the Ctrl and Function key.
   The defined contents of C_S_F1~C_S_F12 will be transmitted out by multi-keying the Ctrl, Shift and Function key.

   Examples: Define Function Key F1 to the character ABC123: ESC Q 0"ABC123"

Auxiliary Keypad Modes

Auxiliary keypad numeric mode on	ESC >	Same
Auxiliary keypad application mode on	ESC =	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Transmission/Printer Control		
Transmit through cursor position	CSI 16 h	Same
Transmit to end of line or end of display	CSI 16 l	Same
Send form feed after print screen operation	CSI ?18 h	Same
No form feed sent after print screen operation	CSI ?18 l	Same
Print full screen	CSI ?19 h	Same
Print scrolling region	CSI ?19 l	Same
Print screen	CSI 0 i or CSI i	Same
Send screen	CSI 2 i	Same
Transparent print mode off	CSI 4 i	Same
Transparent print mode on	CSI 5 i	Same
PR port receive mode off	CSI 6 i	Same
PR port receive mode on	CSI 7 i	Same
Select parallel printer	CSI 8 i	Same
Select serial printer	CSI 9 i	Same
Print line	CSI ?1 i	Same
Send line	CSI ?3 i	Same
Copy print mode off	CSI ?4 i	Same
Copy print mode on	CSI ?5 i	Same
Transmit form feed after send screen operation	CSI 1 |	Same
No form feed after send screen operation	CSI 0 |	Same
Send characters at cursor	ESC 5	Same
Send answerback message	CTRL E	Same
Suspend transmission	CTRL S	Same
Resume transmission	CTRL Q	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
More Terminal Control Commands		
Display screen adjustment pattern	ESC # 8	Same
Sound bell, if enabled	BEL (CTRL G)	Same
Abort escape sequence; no character displayed*3	CAN (CTRL X)	Same
Abort escape sequence; display reverse question mark^	SUB (CTRL Z)	Same
Initiate escape sequence	ESC (CTRL [)	Same
Next Page	CSI U	Same
Preceding Page	CSI V	Same
Terminal Resets		
Soft terminal reset	CSI ! p	Same
Hard terminal reset	ESC c	Same
Terminal Status Reports		
Request primary attributes report	CSI 0 c or ESC Z	Same
Request secondary attributes report	CSI > 0 c	Same
Respond with current revision	CSI > 1; 20; 0c	Same
Request terminal status report	CSI 5 n	Same
Respond terminal functioning and ready	CSI 0 n	Same
Request cursor position report	CSI 6 n	Same
Respond cursor at line l, column c	CSI l; c R	Same
Request printer status report	CSI ?15 n	Same
Respond printer ready	CSI ?10 n	Same
Respond printer not ready	CSI ?11 n	Same
Respond printer not connected	CSI ?13 n	Same
Request function key status report	CSI ?25 n	Same
Respond key definitions not locked	CSI ?20 n	Same
Respond key definitions locked	CSI ?21 n	Same

Table 6-1
Supported VT100, VT220 and Console ANSI Commands, Continued

FUNCTION	Command	
	VT100, VT220	Console ANSI
Request keyboard status report	**CSI ? 26 n**	**Same**
Respond with keyboard language	**CSI ? 27; *Ps* n**	**Same**

Ps	Keyboard Language	*Ps*	Keyboard Language
1	U. S.	6	Spanish
2	U. K.	7	Swedish
3	Danish	8	Norwegian
4	German	9	Italian
5	French		

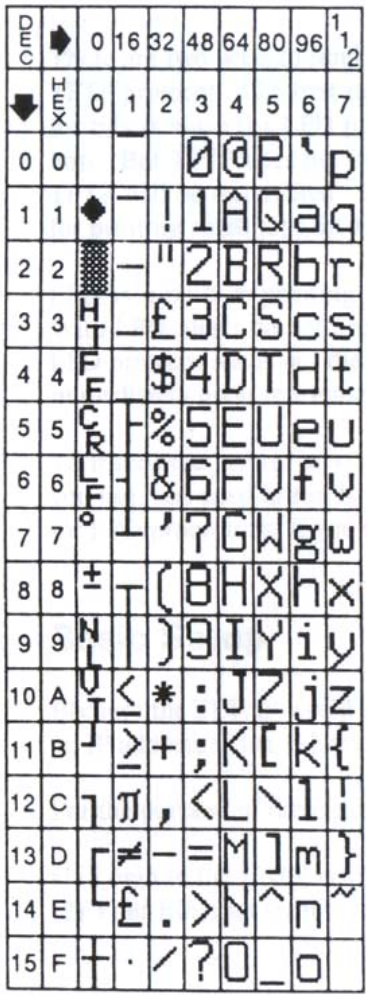
***1.** More than one mode, but less than 17, may be set with one sequence. Enter multiple numeric parameters separated by semicolons (;). However you cannot combine sequences containing "?" with those that don't contain "?", nor can you combine sequences ending with "h" with those ending with "l".

***2.** To toggle monitor mode from the keyboard, press CTRL SHIFT 1 (use the 1 on the numeric keypad).

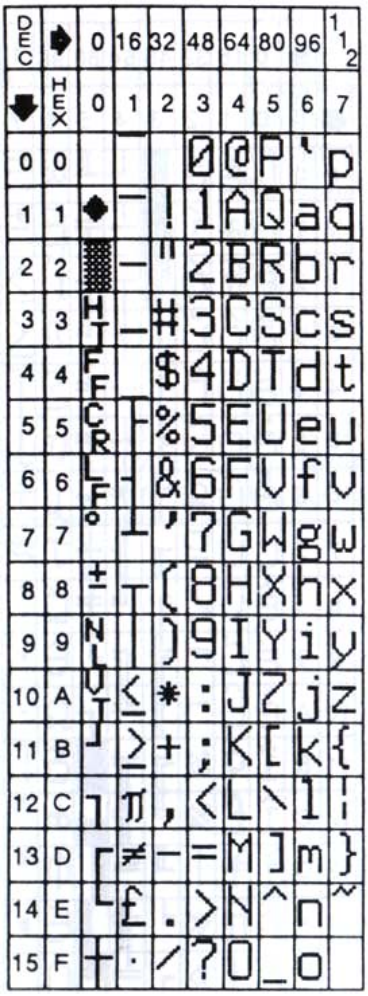
***3.** In VT52 or VT100 modes, displays checkerboard character.

ANSI Character Sets

UK ANSI



Standard ANSI



ANSI Graphics

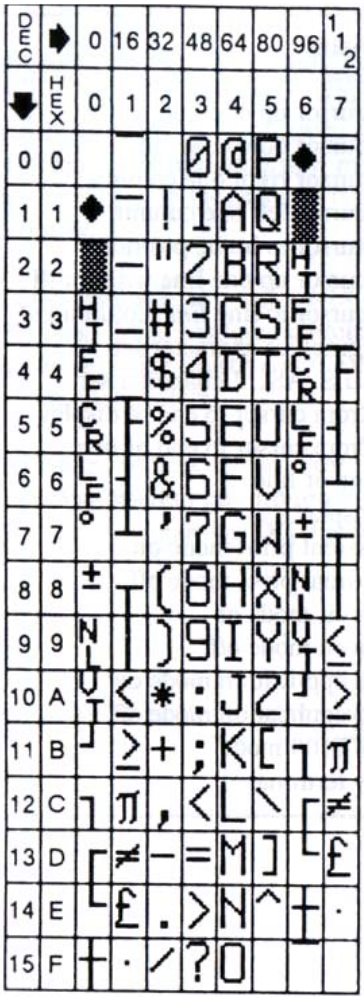


Table 6-2
VT52 Mode Escape Sequences

Command	VT52
Move cursor up one line	ESC A
Move cursor down one line	ESC B
Move cursor right one column	ESC C
Move cursor left one column	ESC D
Move cursor to home position	ESC H
Move cursor up one line with scroll	ESC I
Move cursor to line ***line***, column ***col***	ESC Y ***line col***
Select graphics character set	ESC F
Select U.S. ASCII character set	ESC G
Erase from cursor to end of display	ESC J
Erase from cursor to end of line	ESC K
Print cursor line	ESC V
Print display	ESC]
Transparent print mode on	ESC W
Transparent print mode off	ESC X
Copy print mode on	ESC ^
Copy print mode off	ESC _
Keypad application mode on	ESC =
Keypad application mode off	ESC >
Enter VT100 mode	ESC <
Identify terminal	ESC Z