



HEWLETT
PACKARD



Display Station

2626A

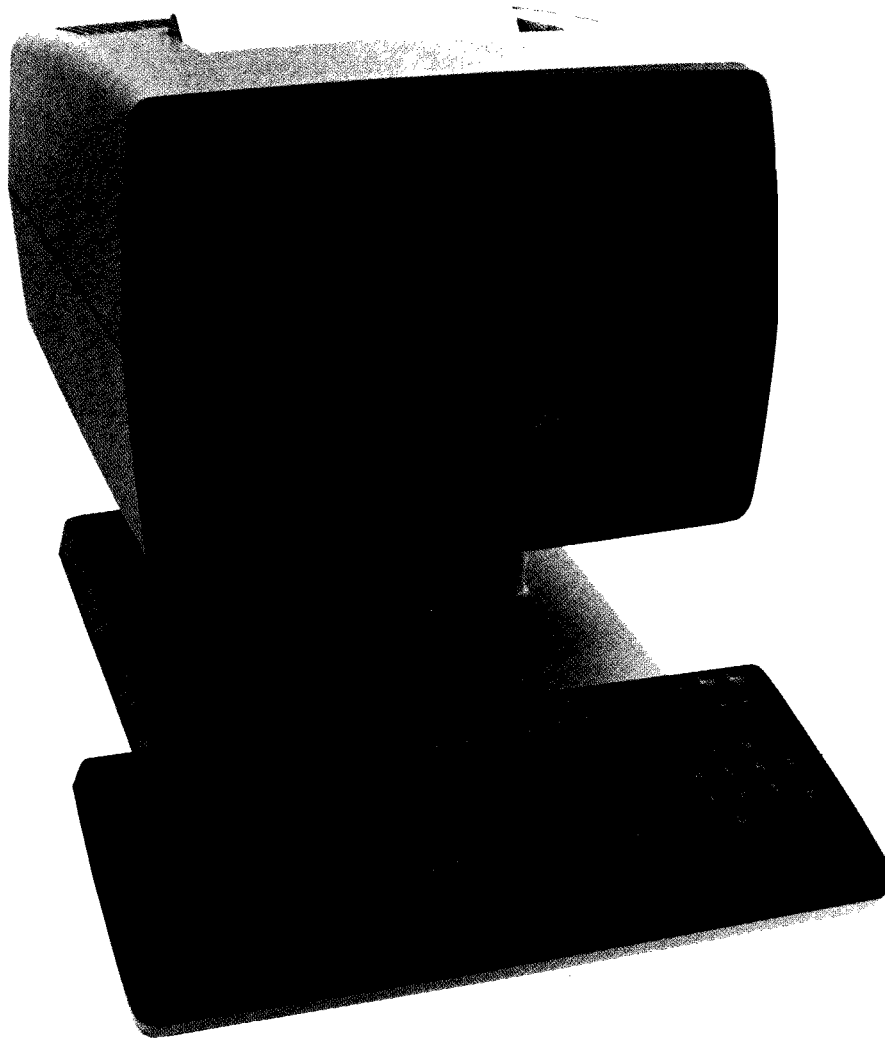
user manual

Congratulations!

You have chosen Hewlett-Packard's new 2626 Display Station, another technological advance in reliable terminals. The terminal's flexibility, extensive features, and ease of operation can save you valuable time and computer resources in a wide range of applications.

This user's manual has been prepared to acquaint you with your terminal and to serve as an aid to achieving optimum performance. This manual tells you how to install and use the terminal both off-line (by itself) and on-line (connected to a computer). It should answer most questions you have about how to use the terminal.

Detailed programming and accessory installation information is contained in the HP 2626 Reference Manual 02626-90048. The HP 2626 Service Manual 02626-90049 (ordered separately) provides information regarding troubleshooting, repair, and theory of operation.



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Introducing the HP 2626A
Getting to Know Your Terminal
The Keyboard
Function Keys
Configuring Your Terminal
Using Your Terminal By Itself
Using Your Terminal With A Computer
Using Your Terminal With Other Devices
Maintaining Your Terminal
In Case of Difficulty
Function Key Labels
Escape Codes
Keyboards

How To Use This Manual

This manual is written as an introduction to the terminal. It describes most of the terminal's features so that you can become familiar with its capabilities without worrying about all of the functional details. Once you have become familiar with the terminal or desire detailed information on specific features, you can refer to the Reference Manual. If you are already familiar with HP 2626 series terminals, you need not read the entire manual. You can use the index at the back of the manual to locate answers to specific questions you may have.

This manual is made up of the following sections and appendix.

Section 1 - Introducing the HP 2626A. This section provides a general description of the terminal and briefly describes its capabilities.

Section 2 - Getting to Know Your Terminal. This section explains how to identify terminal options and accessories. In addition it gives instructions for preparing your terminal for use.

Section 3 - The Keyboard. This section gives the location and describes the function of each of the major key groups.

Section 4 - Function Keys. This section describes and tells how to use the function keys; eight keys to which various functions can be assigned.

Section 5 - Configuring Your Terminal. This section describes how to configure your terminal to suit your needs.

Section 6 - Using Your Terminal By Itself. This section gives step-by-step examples of using the terminal in typical operations. These operations can be performed without the need of peripheral devices or a computer system.

Section 7 - Using Your Terminal With A Computer. This section explains how to use the terminal with a computer system.

Section 8 - Using Your Terminal With Other Devices. This section provides step-by-step examples of how to use the terminal with a printer.

Section 9 - Maintaining Your Terminal. This section gives instructions for cleaning the terminal.

Section 10 - In Case of Difficulty. This section explains what to do if the terminal does not work properly. Included is a simple test that can be made to verify proper terminal operation.

Appendix. The appendix contains condensed programming information for all of the terminal's features and pictures of the foreign language keyboards which are offered as options.

Index. An index is provided for quick access to all information contained in the manual.

Terms Used In This Manual

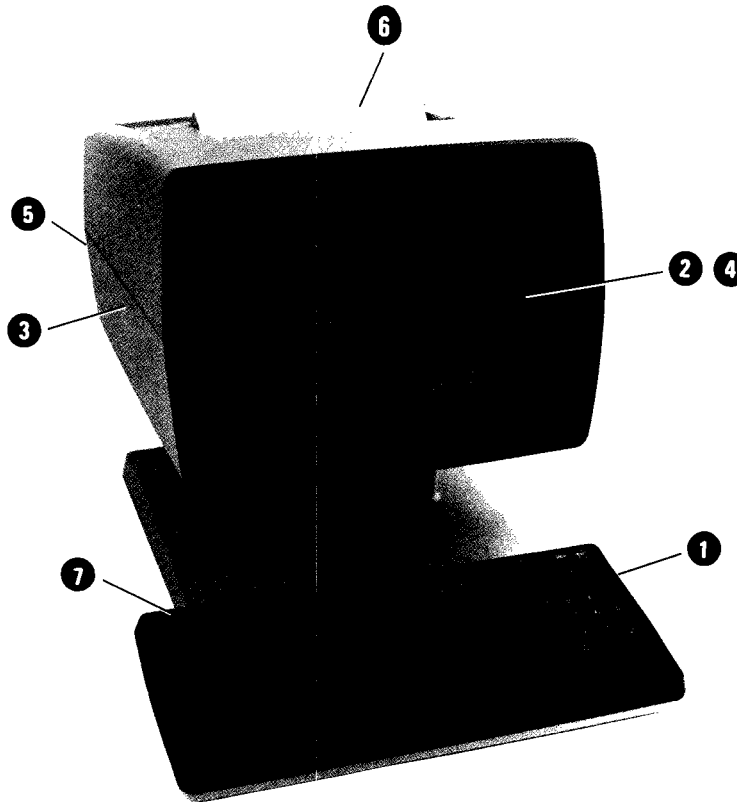
A brief glossary of terms that you should know is given in the following table. Being familiar with these terms will help you to better understand the material presented in this manual.

TERM	DESCRIPTION	TERM	DESCRIPTION
CURSOR	The blinking underline on the display that tells you where the next character or space will appear when entered.	LINE	A row of characters; may be thought of as a line of text in a book.
DATACOMM	Abbreviation for "data communication" (transfer of data between the terminal and a computer).	LOCAL MODE	Operating the terminal without the aid of a computer system (that is, "off-line").
DATA TRANSFER OPERATION	The process of transferring (or copying) data from one device to another.	PAGE	The number of workspace lines which can be displayed in the window to which the page reference refers.
DEVICE CONTROL OPERATION	The process of skipping lines, moving printer paper, or transferring data between devices.	REMOTE MODE	Operating the terminal with the aid of a computer system (that is, "on-line").
DIACRITIC MARK	A mark such as an accent, grave, circumflex, tilde, etc. used with an alphabetic character to modify the phonetic nature of the character. Used in this manual in association with foreign languages.	SCREEN	The front portion of the CRT tube viewed by the user.
FORM FEED	Moves the printer paper to the top of the next page.	"TO" DEVICE	The device that receives the data in a data transfer, also defined as the "destination" device.
"FROM" DEVICE	The device that supplies the data in a data transfer. Also defined as the "source" device.	WINDOW	A portion of the display screen which is assigned to a workspace and is used to view and edit the data in the workspace. A minimum of one and a maximum of four windows may be used. Each window must be assigned to a workspace.
FUNCTION KEYS	Eight keys located at the top of the keyboard which are used in association with eight labels displayed along the bottom of the screen. The function of each key can be changed by changing the associated label.	WORKSPACE	A block of memory used to store data. Up to four workspaces may be used in the terminal. A workspace need not have a window assigned to it.

Introducing the HP 2626A	1-1
High Resolution Display	1-3
Display Memory	1-3
Keyboard	1-3
Function Keys	1-3
Function Control Keys	1-3
Configuration	1-4
Data Communications	1-4
Self Test	1-4



Introducing The HP 2626A



The HP 2626A is a multi-workspace, multi-window terminal with dual data communications port capability. These and other capabilities may be dynamically configured as four logically-independent virtual terminals. The terminal handles line lengths up to 160 characters and offers foreign language options and an integral printer option.

Other highlights of the HP 2626A are:

1 Versatile keyboard:

- Easy to use.
- Eight variable function keys.
- 68-key typewriter-style keyboard layout.
- Eleven character sets (128-characters each) representing eight languages.
- Calculator-style numeric key pad.
- Terminal control keys.
- Display control keys.
- Edit keys.

2 High resolution display:

- Bright, clear screen display.
- Enhanced 7 X 11 dot characters in a 9 X 15 dot cell with full interstitial dots.
- 26-line by 80-character screen.
- 119-line by 80-character display memory.
- Up to 160-character lines.
- Display enhancements include:
 - Inverse video.
 - Blinking characters.
 - Underline characters.
 - Non-displaying security mode.
- Displayable control code characters.

3 Multiple workspaces:

- Display memory dividable into up to four independent workspaces; size selectable by the user.
- Each workspace assignable to up to two individually-configured data communication ports.

4 Multiple windows:

- Screen dividable into up to four display windows for displaying and manipulating data in the workspaces.
- Each window assignable to any of the workspaces.
- The workspace assigned to the window is scrollable (up, down, left, right) behind the window assigned to it so that any part of the workspace is viewable through the window.
- Size dynamically changeable.

5 Dual data communication ports:

- Enable simultaneous communication with two computers.
- Point-to-point or multipoint, full or half duplex, synchronous or asynchronous operation. (Port 2 is point-to-point only.)
- Individually configurable.

6 Integral printer option:

- Can print data entry-type forms.
- Expand print and compress print modes enable printing horizontally-expanded or compressed characters.
- Can operate in report print and metric print modes as well as standard print mode.

7 Special function keys:

Eight multi-function keys with functions selectable using three keyboard keys:

- **AIDS** key - Redefinable configuration, forms drawing, testing, printer operations, margin/tab/start column selection, display enhancements, window control.
- **MODES** key - Local/remote operating mode selection, block mode, format mode, modify mode, automatic line feed, memory lock, display functions, line mode.
- **USER KEYS** key - Enables user to define functions for the eight function keys.

Configuration:

• Local:

Up to four virtual terminals configurable. Configurable from keyboard or by computer program.

Language selectable.

Screen displayable configuration data.

Redefinable configuration using function keys.

Keyboard features selectable (caps lock, bell, key click).

Definable **RETURN** and **ENTER** keys.

Selectable number of null characters to be sent to printer.

Configuration memory protection.

• Remote:

Two independently configurable data communication ports enable concurrent communications with two computers.

Data transfer rates up to 9,600 baud.

Character, line, or page data transfers.

EIA RS232C electrical interface.

Self test:

- Exhaustive self test.

High Resolution Display

The HP 2626 Interactive Terminal has a screen with a 6 X 8.5 inch viewing area capable of displaying up to 2080 characters on 26 lines of 80 characters. Each character is formed by a 7 X 11 dot matrix within a 9 X 15 dot cell. This permits the precise formation of complex character symbols with ample separation between adjacent characters, both vertically and horizontally.

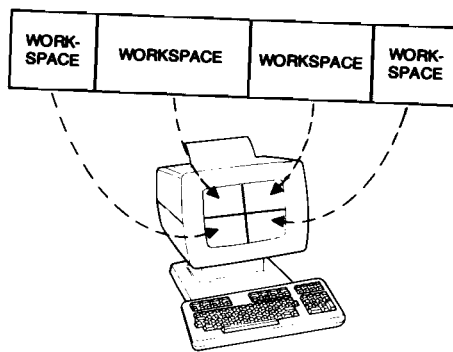
The screen area can be divided into from one to four windows with each window used to view a separate portion of display memory.

Display Memory

The HP 2626 Interactive Terminal display memory can store up to approximately 9520 characters (approximately 119 lines of 80 characters each). However, a portion of display memory is used for data communication buffers and these figures assume the default buffer size is used (two buffers of 250 bytes each). Larger buffers decrease the amount of memory available for display characters.

Display memory can be divided into from one to four workspaces. A workspace is a block of display memory which can be associated with a display screen window and a unique terminal configuration to, in effect, form a separate terminal (virtual terminal). This enables use of up to four virtual terminals in one physical terminal; each terminal

with its own configuration. Each workspace is configurable and can contain up to 119 80-character lines or 59 160-character lines (if only one workspace is used and the default data communication buffer size is used). (You can vary the line length in a workspace from 80 to 160 characters in multiples of four characters.) The ROLL keys on the keyboard enable horizontal and vertical movement of the workspace in relation to the window for viewing a large workspace with a relatively small window.



Keyboard

The HP 2626 keyboard is a separate unit that is linked to the display portion of the terminal by a flexible cable. The keyboard layout is similar to that used for standard office typewriters. It has 68 keys that include eight function keys and three keys for specifying the family of functions to be assigned to the function keys. Most of the remaining keys

support the ASCII-coded character set. A numeric pad, similar to that used for calculators is included.

Any one of 11 character sets covering eight languages can be assigned to the keyboard keys.

Function Keys

The function keys are the eight keys located across the top of the keyboard. These keys perform the functions indicated by screen labels assigned to each key. The screen labels are displayed in inverse video across the bottom of the screen (rows 25 and 26).

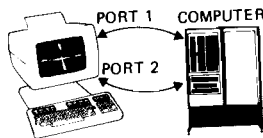
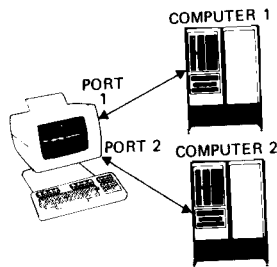
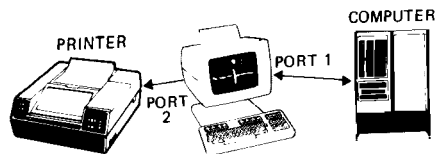
Function Control Keys

Three additional keyboard keys are used to select the family of functions available through the function keys. The **USER KEYS** key allows each of the function keys to be assigned a string of up to 80 characters selected by the user. The **MODES** key assigns terminal operating modes to the function keys for selection by the user. The **AIDS** key accesses a tree of functions assignable to the function keys by user selection. This tree comprises most of the functions assignable to the functions keys.

See Section 4 for a discussion of the function and function control keys.

Configuration

The HP 2626 provides you with the ability to create up to four virtual terminals and specify a unique configuration for each. You can also change the configuration of any of these virtual terminals directly from the keyboard using the function keys. The current configuration can be displayed on the screen and then changed by simply pressing the appropriate function key. The portion of memory used to store this configuration is non-volatile; a battery is used to preserve it whenever the main power source is shut off.



Data Communications

Two datacomm ports enable you to transfer data between any of the virtual terminals (up to four) and one or two host computers. Each port has its own configuration and is assigned to a virtual terminal. This allows you, by switching from one port to another, to use up to two datacomm configurations for data exchange with a single computer or to exchange data with two computers by switching from one port to the other.

You can transfer data to and from a computer in character mode (one character at a time), block line mode (one line at a time), or block page mode (the entire contents of the workspace). In block line or block page mode, you can compose text and edit it before sending it to the computer.

The terminal operates at a transfer rate of up to 9,600 baud and offers full- or half-duplex, asynchronous or synchronous, point-to-point or multipoint communications using the EIA RS232C communications interface specifications. (Port 2 is point-to-point only.) Connection to a computer is direct or through a modem.

In addition to these features, the HP 2626 provides, as an option, an integral thermal printer which can be used to produce a permanent copy of your data transactions. As an alternative, one of the datacomm ports can be used to connect an external printer to the terminal.

Section 7 contains further information on data communications.

Self-Test

This terminal is engineered for high reliability, ease of testing, and, if required, rapid repair. By using the test function, you get a go/no-go indication of the terminal's operating condition. Refer to Section 10 for further information on the terminal's self test function.

Getting To Know Your Terminal	2-1
How to Identify Options and Accessories	2-1
Preparing Your Terminal for Use	2-2
Turning the Terminal On and Off	2-3
On	2-3
Off	2-3



Getting To Know Your Terminal

How To Identify Options And Accessories

Any options you request when you order your terminal are delivered installed within the terminal. Accessories, such as data communication cables, are delivered with the terminal, usually in the same carton but packaged separately. Upon delivery of your terminal, verify that the options and/or accessories you ordered are included in the shipment received.

An identification label is located on the rear panel of your terminal (see figure 2-1). The first section of this label states the power requirements of the terminal. The next section states the model number and the serial number. The third section lists any options included with the terminal.

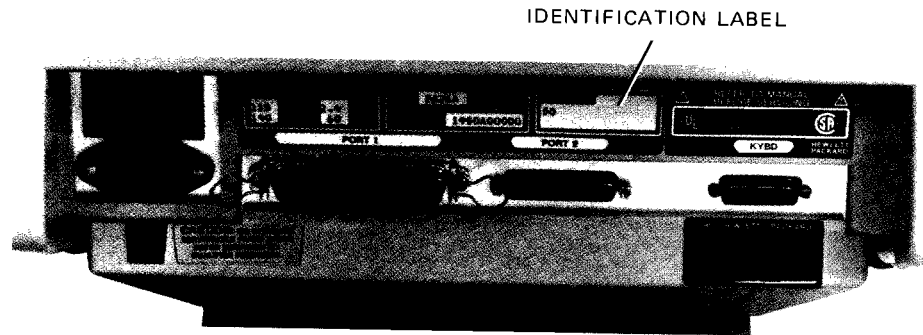


Figure 2-1. HP 2626 Identification Label, Rear Panel

Table 2-1 is a list of options available for the HP 2626A Interactive Terminal.

Table 2-1. HP 2626A Options

OPTION	
001	Swedish/Finnish Keyboard
002	Danish/Norwegian Keyboard
003	French Keyboard
004	German Keyboard
005	United Kingdom Keyboard
006	Spanish Keyboard
015	50 Hz, 230 V Power
016	50 Hz, 115 V Power
050	Integral Printer
201	Math Symbol Set

When communicating with Hewlett-Packard regarding your terminal, specify the model, serial, and the option numbers to ensure accurate identification by Hewlett-Packard. A list of Hewlett-Packard Sales and Service Offices is included at the back of this manual.

NOTE

If your terminal is already installed, you can ignore the following material and proceed to "Turning the Terminal On and Off".

Preparing Your Terminal For Use

This terminal is designed to operate in a wide range of environments. It is self-contained and provides easy access to the operator controls so that normal installation does not require that you open the unit. The terminal should be opened only by a qualified service person (refer to the HP 2626 Service Manual, HP Part No. 02626-90049).

To install your terminal, complete the following steps.

1. Place the terminal on any sturdy, convenient surface such as a desk, table, or stand designed for such a purpose. Avoid plush or spongy surfaces that might restrict the flow of air through the vents in the base of the terminal (figure 2-2). For example, do not use a typewriter pad beneath the terminal.

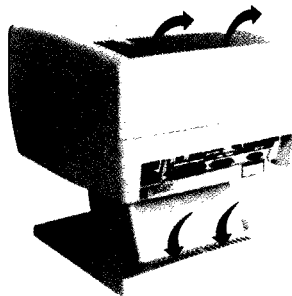


Figure 2-2. Cooling Airflow Through the Terminal

2. Connect and secure the keyboard cable hood connector to the socket connector labeled **KYBD** on the terminal's rear panel (see Figure 2-3).
3. This step is required to connect the terminal to an external data processing device such as a computer. Connect and secure the data communications cable hood connector to the port 1 socket connector on the terminal's rear panel. The cable hood connector must be securely held in place by the wire clamps provided with the socket connector. Connect the other end of this cable to the appropriate external device.
4. Set the main power switch on the terminal's rear panel (see figure 2-3) to the OFF position.
5. Connect the power cord to the connector located just below the main power switch. Ensure that the voltage to be supplied matches your terminal's power requirements (see the power requirements label on the rear panel of the terminal).
6. Plug the 3-prong connector into the outlet for your main power source.

WARNING

For your safety, a 3-prong grounded power outlet always must be used.

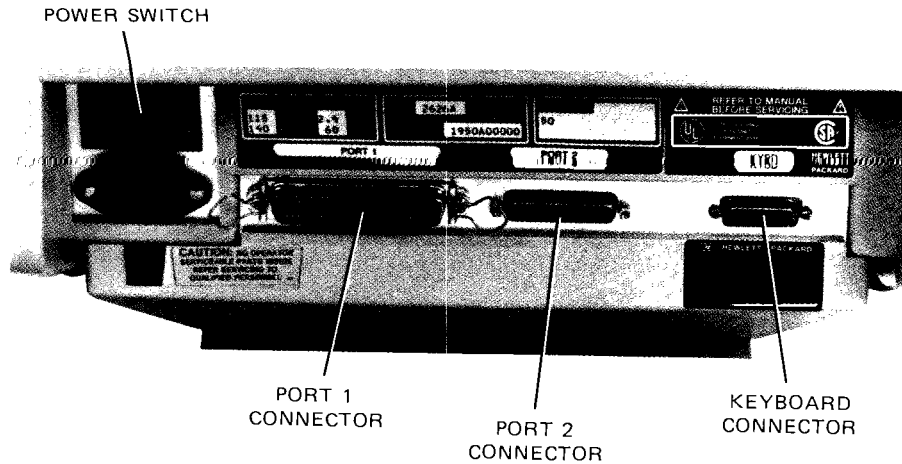


Figure 2-3. HP 2626 Power Switch and Connector Positions, Rear Panel



Figure 2-4. HP 2626 Initial Screen Display

Turning The Terminal On And Off

ON

When the installation of your terminal is completed, set the main power switch on the rear panel (see figure 2-3) to the ON position. After approximately 15 seconds, the terminal is ready to use. Figure 2-4 illustrates the condition of the display screen as it appears following the initial application of power to the terminal.

When the terminal is ready to use, the cursor is displayed in screen column 1, row 1. In addition to the cursor, the primary level of function key labels is displayed across the bottom of the screen (figure 2-4).

If the message `DEFAULT CONFIG USED` is present at the bottom of the screen, the battery that protects nonvolatile memory may have been accidentally jarred loose during shipment or unpacking. Ensure that the battery pack is securely seated (see Section 9 for instructions about removing and replacing the battery pack) then turn off the power and turn it on again. If the message remains, perform a terminal test (refer to Section 10, Terminal Test, for instructions) to determine if the terminal is malfunctioning or if the battery is dead. If the test completes successfully, replace the battery. If the message persists after the battery has been replaced, contact your nearest Hewlett-Packard sales and service office (listed at the end of this manual) for help.

OFF

To shut off your terminal, simply set the main power switch to the OFF position.



3

The Keyboard	3-1
Character Set Group	3-2
ESC Key Operations	3-2
CTRL Key Operations	3-2
ENTER Key Operations	3-3
Numeric Group	3-3
Selectable Character Sets	3-3
Display Group	3-4
Moving the Cursor	3-5
Scanning the Workspace Using the Window	3-6
Edit Group	3-7
Terminal Control Group	3-9
Reset	3-9
Break	3-9
Function Keys Group	3-9
Function Control Keys	3-9
AIDS Key	3-9
MODES Key	3-10
USER KEYS Key	3-10
What to Do in Case of Difficulty	3-10





The Keyboard

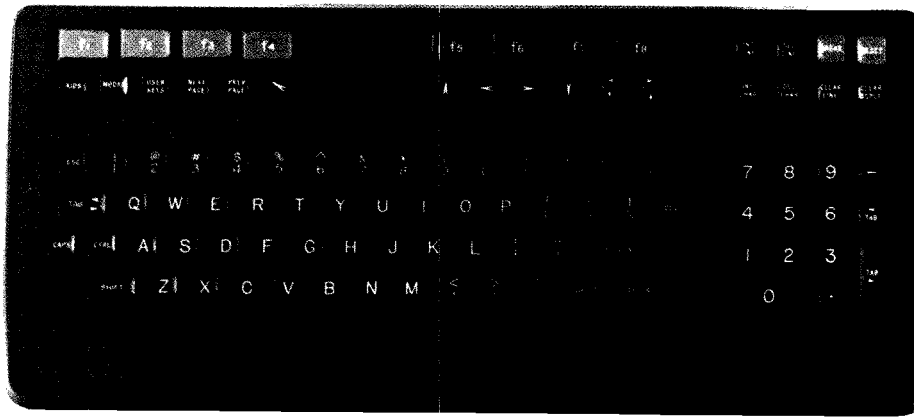
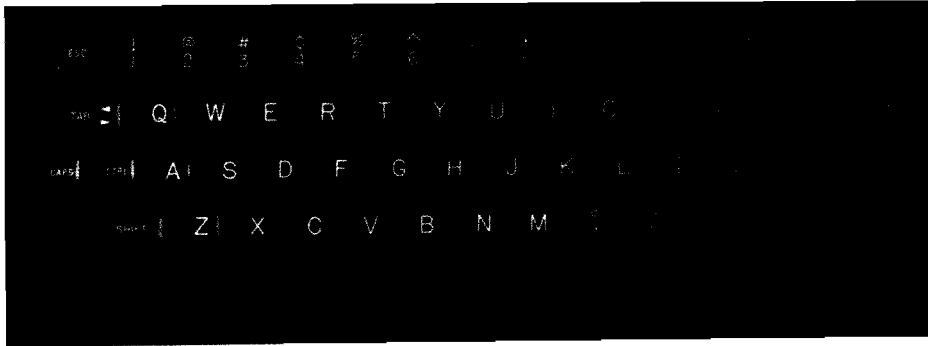


Figure 3-1. Terminal Keyboard

Before learning to control devices and transfer data, you should become familiar with the keyboard. Figure 3-1 shows the keyboard layout. The keyboard consists of the following functional groups:

- **Character Set Group.** This group of keys is similar to a standard typewriter keyboard. It is used for entering data into the terminal workspaces.
- **Display Group.** This group controls movement of the workspaces behind the windows to view or operate on portions of the workspaces. It also controls the cursor position.
- **Edit Group.** Text can be easily changed using the insert and delete functions of the edit group.
- **Terminal Control Group.** This group is used to initialize the terminal or interrupt data communications operations while in remote mode.
- **Function Keys Group.** Keys in this group can either be assigned a function from a selection of functions or be assigned a unique function by the user.
- **Function Control Keys.** Three keys, each used to select one of three separate families of functions to be assigned to the function keys.

The remainder of this section briefly describes each of the keyboard groups.



Character Set Group

The alphabetic, numeric, and symbol keys are all located in the character set group. This is the largest group of keys on the keyboard. The basic character set is made up of 128 characters. This includes upper and lower case alphabetic characters, punctuation, and some commercial symbols. In addition, several non-displaying characters are also available. The non-displaying characters are used primarily for special applications. Refer to the Reference Manual for additional information on non-displaying characters.

The standard or base character set is indicated on the keys. The **SHIFT** key selects upper case or shifted characters and is also used for adding a function to several other keys (**USER KEYS**, **ROLL** keys, **INS CHAR**, **DEL CHAR**, and **RESET TERMINAL**). The **BACKSPACE** and **RETURN** keys are used in the same manner as on a typewriter. Three **TAB** keys are available. The primary **TAB** key, at the left side of the keyboard, can be used to tab either left or right. When it is pressed, the cursor moves to the next tab stop to the right. A **SHIFT** **TAB** moves the cursor to the next tab stop to the left. A **TAB** key and a **TAB** key are located in the numeric pad group. The **CAPS** key selects all capital letters for all virtual terminals, overriding the Caps Lock selection on the terminal configuration menu for each virtual terminal. The **RETURN** and **ENTER** keys can be programmed at the keyboard to produce additional functions when operating with a computer (refer to Section 4, User Definable Function Key Labels).

EXERCISE

Try typing a few lines of text to get used to the keyboard. Remember, this part of the terminal works very much like a typewriter. Note that, by using the **BACKSPACE** key, you can overwrite and change characters.

The **ESC** and **CTRL** keys are used to provide additional character codes and to generate special control codes for various terminal operations. The use of the **ESC** and **CTRL** keys are explained below.

ESC Key Operations

The **ESC** key is used to extend the operating functions of the terminal. Unlike the **CTRL** key, the **ESC** key is pressed first, then released, before pressing any other keys. Some functions require only that one key be pressed following the **ESC** key to perform the function; while other functions require a sequence of character keys be pressed following the **ESC** key. These sequences must always be terminated with an upper case character, rather than a lowercase character, to tell the terminal that the sequence has ended. All the escape code functions are listed in an appendix at the end of the manual.

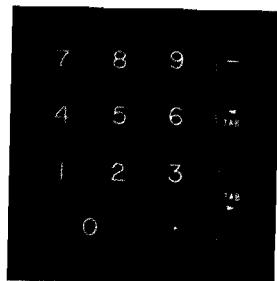
CTRL Key Operations

The **CTRL** key can be used to add another function to the **TAB** and **RESET TERMINAL** keys. It is also used together with other keys to generate ASCII control codes (see appendix). Be sure to hold down the **CTRL** key while pressing the other key.

ENTER Key Operations

When the terminal is set for Remote (on-line) mode, the **ENTER** key allows you to send blocks of data to a computer. The **ENTER** key functions differently depending on the BLOCK MODE, FORMAT MODE, and REMOTE key settings. In addition the **ENTER** key is programmable like the function keys when used in the user-defined mode. Refer to Section 4 for more programming information and to the Reference Manual for information on use of the **ENTER** key in Remote mode.

In Local mode, the **ENTER** key can be used to produce a copy of all data in the source workspace on the destination device(s).



Numeric Group

The numeric keys at the right of the keyboard act in the same way as the keys in the alphanumeric group. These keys are arranged to make it easy to enter numeric data and use tabs. In addition to the numeric keys, the pad holds a "dash" or "minus" key and a **TAB** and a **TAB** key.

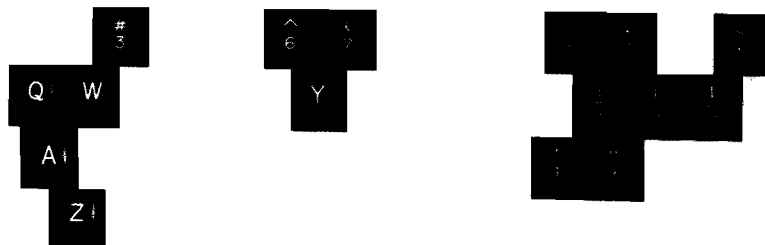


Figure 3-2. Location of Keys which may Change with Character Set Selection

Selectable Character Sets

USASCII is the standard keyboard with optional Swedish/Finnish, Danish/Norwegian, French, German, United Kingdom, and Spanish character sets. However, regardless of the keyboard used, eleven different character sets in the above-listed languages are selectable by the user on the Global Configuration menu. Refer to Section 5, Configuring the Terminal, for further information on character set selection.

There are 16 keys which might be different depending on the character set selected. Figure 3-2 locates the keys and table 3-1 associates the key location, the character set, and the character produced when the key is pressed.

Three "mute" keys are used in French and Spanish character sets. These are keys used to produce certain characters which contain an alphabetic character with a diacritic mark (such as a " ^ " or " ' "). When the diacritic mark is typed, it is displayed on the screen but the cursor remains in the same position awaiting the alphabetic character. When one of the acceptable alphabetic characters (a, e, i, o, u, A, E, U) is typed in, the cursor moves on to the next character position. If the character typed in is not one of the acceptable characters, the character which was last typed in is displayed and the cursor moves to the next position.

Table 3-1. Characters which Change with Character Set Selection

LANGUAGE	CHARACTERS															
USASCII	#	^	&	-	+	~	Q	W	Y	{	}	|	A	:	"	Z
	3	6	7	-	=	~	q	w	y	[	]	\	a	:	'	z
SVENSK/SUOMI	#	&	/	?	€	*	Q	W	Y	A	ü	>	A	ö	å	Z
	3	6	7	+	é	'	q	w	y		ü	<	a	ö	ä	Z
DANSK/NORSK	#	&	/	?	^	~	Q	W	Y	A	*	>	A	æ	ø	Z
	3	6	7	+	⊕	\	q	w	y	à	'	<	a	æ	o	z
FRANCAIS azM, az	§	+	/	?	"	€	A	Z	Y	ç	*	>	Q	é	'	W
	3	6	7	'	^	\	a	z	y	à	&	<	q	é	'	w
FRANCAIS qwM, qw	§	+	/	?	"	€	Q	W	Y	ç	*	>	A	è	'	Z
	3	6	7	'	^	\	q	w	y	à	&	<	a	é	'	z
DEUTCH	ç	&	/	?	\	^	Q	W	Z	ü	*	>	A	ö	ä	Y
	3	6	7	B	'	€	q	w	z	ü	*	<	a	ö	ä	y
UK	£	&	^	?	/	~	Q	W	Y	{	}	>	A	*	\	Z
	3	6	7	+	'	\	q	w	y	[	]	<	a	*	\	z
ESPAÑOL M and ESPAÑOL	ç	&	i	?	/	~	Q	W	Y	{	}	>	A	ñ	⊕	Z
	3	6	7	+	'	\	q	w	y	.	#	<	a	ñ	*	z



Display Group

The display group consists of the **^**, **<**, **>**, **v**, **ROLL** keys, **NEXT PAGE**, **PREV PAGE** and **↵** keys. The **^**, **<**, **>**, **v**, and **↵** keys are used to position the cursor and the **ROLL** keys, **NEXT PAGE**, and **PREV PAGE** keys are used to control the display.

A window will display all or a portion of as many lines as have been assigned to it on the workspace/window configuration menu (described in Section 5). This is called a "page" and is selectable. A workspace can hold multiple pages depending on the number of characters used in each line and the amount of memory assigned to the workspace (figure 3-3). When the window has been filled with data, the top line rolls off the screen. As you type each line, the display will roll up to make room for the new line. This continues until the memory assigned to the workspace is filled. At this point, if you enter another line, one line will be lost from display

memory to make room for the new line. The display group keys allow you to "page" or scroll through the memory assigned to the workspace to display characters that have rolled off the screen.

The **ROLL** keys allow you to use the window to scan the workspace to which the window is assigned one line at a time, when scrolling up or down, and one column at a time, when scrolling left or right.

The **NEXT PAGE** and **PREV PAGE** keys allow you to move the display one page forward or backward in the workspace. When you press these keys, the information presently displayed is replaced with the next or previous page of the workspace.

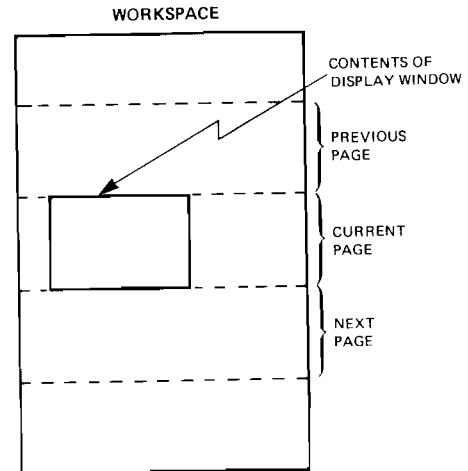


Figure 3-3. Page Locations in the Workspace.

Moving The Cursor






The cursor position is controlled by five keys. The  and  keys move the cursor in the vertical dimension, the  and  keys move it in the horizontal dimension, and the  key locates it at the left margin of the first line in the workspace and displays the first page in the workspace.

Table 3-2. Cursor Control Key Functions

KEY



FUNCTION

Cursor Up - Moves the cursor up one row each time the key is pressed. If the key is held down, the cursor moves up until either the key is released or it reaches the top row of the window. If the key is held down after the cursor reaches the first row of the window, the cursor moves to the last row of the window and the process is repeated.



Cursor Down - Moves the cursor down one row each time the key is pressed. If the key is held down, the cursor moves down until either the key is released or the last row is reached. If the key is held down after the last row is released, the cursor moves to the top row of the window and the process is repeated.



Cursor Left - Moves the cursor left one column each time the key is pressed. If the key is held down, the cursor moves left until either the key is released or the first column of the window is reached. If the key is held down after the first column is reached, the cursor moves to the last column of the preceding row. If the key is held down when the cursor is in the first column of the first row, the cursor moves to the last column of the last row and the process is repeated.

KEY



FUNCTION

Cursor Right - Moves the cursor right one column each time the key is pressed. If the key is held down, the cursor moves right until either the key is released or the last column of the window is reached. If the key is held down after the last column is reached, the cursor moves to the first column of the following row. If the key is held down when the cursor is in the last column of the last row, the cursor moves to the first column of the first row and the process is repeated.



Home Cursor - The cursor is moved to the left margin of the first row of the workspace. If this position is not displayed when the key is pressed, the window is moved to the upper left portion of the workspace so that it is displayed.



Cursor Home Down - The cursor is moved to the left margin of the first row following the last used row in the workspace. If all rows in the workspace are used, the first row in the workspace will be deleted to create a blank row at the end of the workspace to which the cursor will be moved. If this position is not displayed when the keys are pressed, the display is scrolled up until the cursor line is displayed.

Scanning The Workspace Using The Window

The location of the window on the workspace determines which lines of the workspace are displayed. The window location is controlled by the **ROLL** keys and the **NEXT PAGE** and **PREV PAGE** keys. With these keys the contents of the workspace can be scrolled vertically or horizontally past the display window or the next or previous set of lines (page) can be called to the window (figure 3-4).

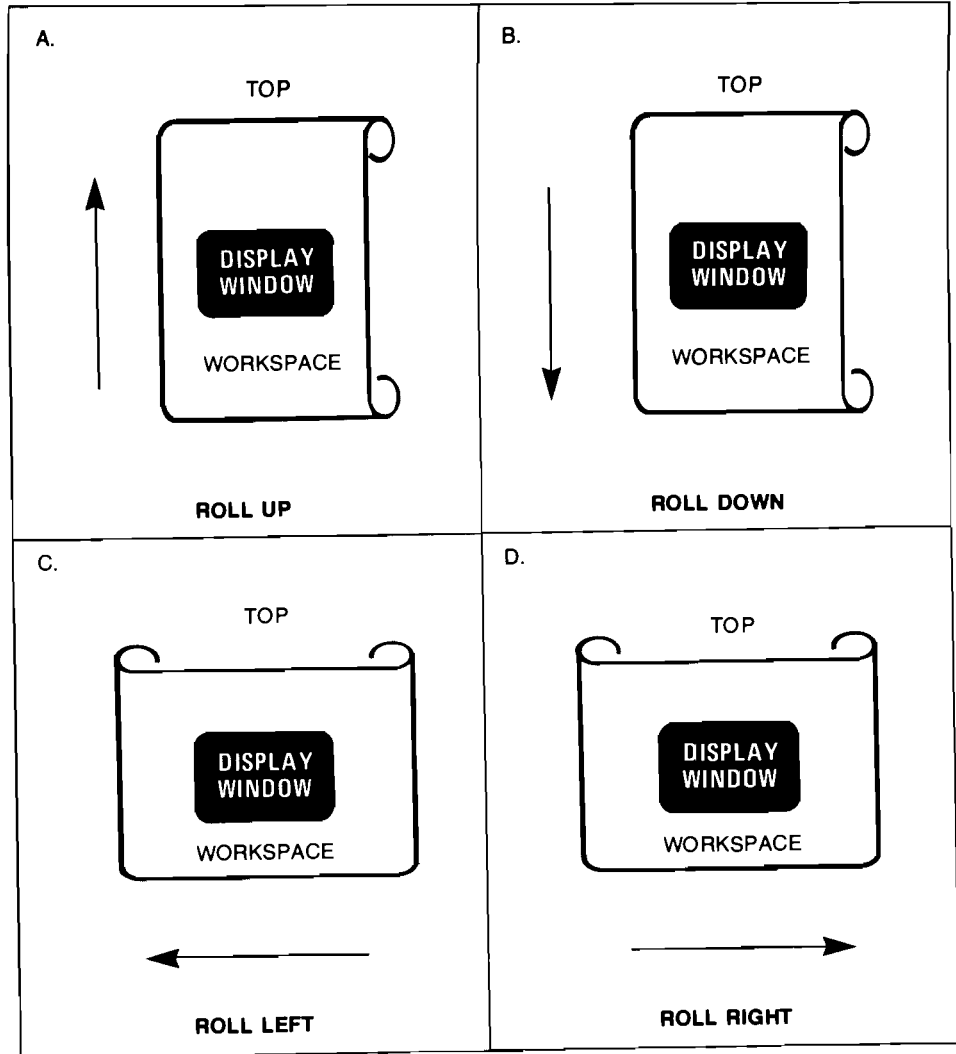


Figure 3-4. **ROLL** Key Operations.

4

Function Keys	4-1	Forms Group	4-5
MODES Function Key Labels	4-2	Sketch Forms Set	4-5
AIDS Function Key Labels	4-2	Draw Lines Set	4-5
Labels — Upper and Lower Case	4-4	Define Lines Set	4-5
Labels with an Asterisk	4-4	Config Set	4-6
To Return to Normal Operation	4-4	User Definable Function Keys	4-6
Aids Set	4-4	User Key Modes	4-7
Device Functions Group	4-4	Definition Mode	4-7
Device Control Set	4-4	Initiating Definition Mode	4-7
"From" Device Set	4-4	Defining a Function Key	4-7
"To" Devices Set	4-4	Leaving Definition Mode	4-7
Device Modes Set	4-4	Use Mode	4-7
Margin/Tab/Col Set	4-5	Initiating Use Mode	4-7
Service Set	4-5	Leaving Use Mode	4-8
Window Control Set	4-5		
Enhancements Group	4-5		
Enhance Video Set	4-5		
Define Fields Set	4-5		
Modify Char Set Set	4-5		

Function Keys

The function keys consist of keys **f1** through **f8** located along the top of the keyboard. They are used in association with function key labels displayed along the bottom of the screen. The function suggested by the label is performed when the associated key is pressed. The association between the labels and the function keys is positional. For example, the third label from the left is associated with the third key from the left (**f3**) (see figure 4-1).

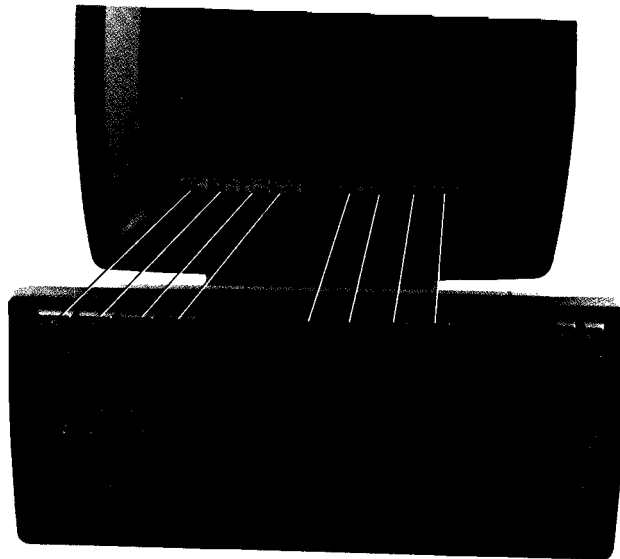


Figure 4-1. Function Keys and Labels.

Each function key can be made to perform various functions by changing the corresponding function key label. The function key labels are changed using the **MODS**, **AIDS**, and **USER KEYS** keyboard keys and the function keys themselves. There are three groups of function key labels:

- Mode function key labels.
- Predefined function key labels.
- User-definable function key labels.

The mode function key labels, which are accessed through the **MODS** key, enable selection of seven modes in which the terminal can operate. These labels also appear on the screen after a hard reset or power-on operation. Most of the user-initiated operations are accessed using the **AIDS** key. The user-definable function key capability enables the user to assign functions and labels of his own choosing to the eight function keys. This capability is accessed through the **SHIFT** and **USER KEYS** keys.

MODES Function key Labels

The **MODES** key displays the Modes set of function key labels; LINE MODIFY, MODIFY ALL, BLOCK MODE, REMOTE MODE, TERMINAL TEST, MEMORY LOCK, DISPLAY FUNCTIONS, and AUTO LF. Except for TERMINAL TEST, these labels are used to activate or deactivate the major terminal modes. Each of the function keys, when these labels are displayed, are toggleable (the label contains an asterisk when the mode is active). Alternate presses of the function key produce and delete the asterisk. Table A1 in the appendix describes the functions of the function keys when the Modes labels are displayed.

Two methods are available for entering a virtual terminal into Remote, Block, Modify All, and Auto LF modes; through use of the **MODES** key and associated function keys or by selecting the ON entry for these modes on the Terminal Configuration menu. Whichever method is used, the on or off state of the mode will be reflected in both the **MODES** function key labels and the Terminal Configuration menu. Note that the MODIFY field on the Terminal Configuration menu refers only to Modify All mode, not Modify Line mode.

AIDS Function Key Labels

Most of the terminal capabilities are accessed, directly or indirectly, through the **AIDS** key. Some of them are listed below:

- Set or clear margins.
- Set or clear tabs.
- Enable the keyboard bell.
- Enable the audible "click" to occur when a keyboard key is pressed.
- Select the set of language characters assigned to the keyboard (11 sets to choose from).
- Vary the size of the windows.
- Select the workspace/window to be active. (The active workspace/window contains the cursor and is the one selected for data entry, transmission, or editing).
- Send data to the internal printer, an external printer, or another workspace.
- Sketch forms on the display.
- Select the start column for data transmissions.
- Select alternate character sets (base set, Roman extension set, line drawing set, math set, or large character set).
- Select display enhancements (blink, inverse video, underline, and security field).

- Select space overwrite (whether spaces generated with the space bar are to replace existing characters with blanks or merely advance the cursor without altering existing characters).
- Select end of line wraparound (whether a line feed and carriage return will be automatically generated at the end of a line or the cursor will remain in the last column and overwrite the character in the column as new characters are generated).
- Select any of four types of configuration menus for configuration changes.
- Enable terminal self test.
- Enable datacomm self test.

There are 17 sets of predefined function key labels which are accessed by pressing the **AIDS** key. When the **AIDS** key is pressed, the Aids set of function key labels shown below are displayed.



The remaining sets of labels are accessed, directly or indirectly, through the Aids set. Figure 4-2 illustrates how to access each set of labels. The functions associated with each set of labels accessed through the **AIDS** key are listed in tables A2 through A16 in the appendix.

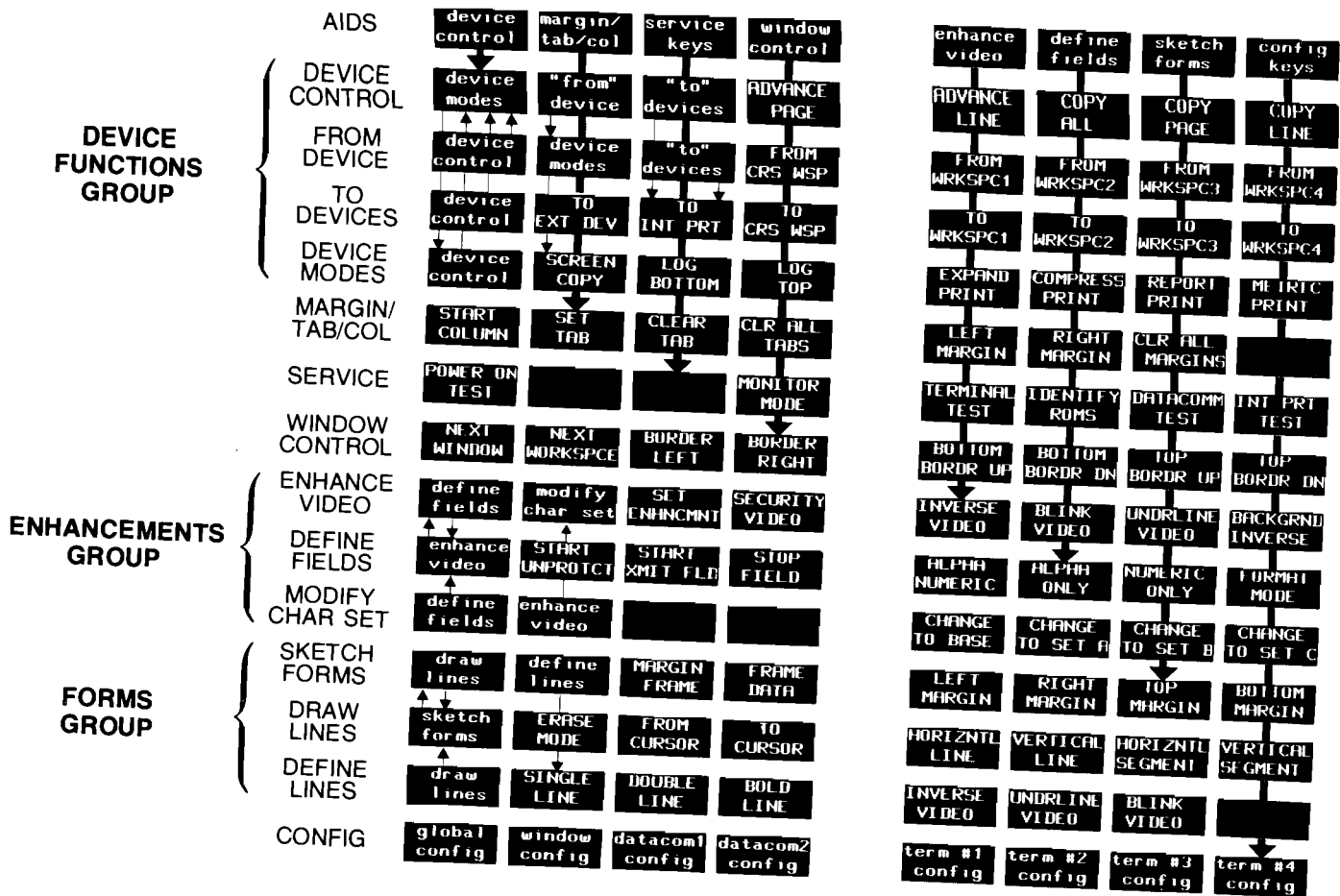


Figure 4-2. Function Key Labels Accessed Through the AIDS Key.

Labels - Upper And Lower Case

The titles in the function key labels are written in both upper- and lower-case letters. Those written in lower-case letters are used only to change to another set of function key labels. Those written in upper-case letters perform the function suggested in the label.

Labels With An Asterisk

Two types of function key labels might contain an asterisk; toggleable asterisk labels and mutually exclusive asterisk labels. Some of the predefined function keys have a toggling capability; alternate presses of the key display an asterisk in the associated label. The asterisk indicates the function suggested in the label is selected; absence of the asterisk indicates the function is not selected. In some cases, a "set" function key must be pressed to activate the selection. For example, when the Enhance Video set of function key labels (figure 4-2) are displayed, the SET ENHNCMENT function key (F3) must be pressed before the currently displayed selections will be activated.

Other function keys which have an asterisk capability are not toggleable but have a mutually exclusive nature. Such keys exist as a group in which only one label can contain an asterisk at a given time. The From Devices set of labels contains such a group to ensure that only one "from" device can be selected at a given time.

To Return To Normal Operation

To return the terminal to normal operation after use of the predefined function keys, simply press the F10 key. Then any selections you have made using toggling function keys will be in effect and the Aids set of labels will be displayed.

Aids Set

The Aids set of labels are used only to access other sets of labels. Each label in the Aids set names another set of labels. Some sets of labels are not directly accessible from the Aids set. In such cases, several such sets form a group; with one of the sets accessible from the Aids set. The other sets in the group are then accessible through the one accessed from the Aids set. There are several such groups; the Config group, the Forms group, the Device Functions group, and the Enhancements group. (The Config group will not be covered in detail in this manual.) Table A2 in the appendix describes the functions of the Aids set.

Device Functions Group

This group is composed of the Device Control, From Device, To Device and Device Modes sets of labels. These sets are used to transfer data between workspaces or to the optional integral printer or external device.

DEVICE CONTROL Set. This set is the only one of the group directly accessible from the Aids set of labels. It is used to select the amount of data to be copied (all, page, or line) and allows skipping one page or one line on the "to" device (provided it is the external device or internal printer). Table A3 in the appendix describes the functions of the Device Control set.

FROM DEVICE Set. This set enables selection of the "from" or source device which can only be a workspace. Table A4 in the appendix describes the function of the From Device set.

TO DEVICES Set. This set is used to select the "to" or destination devices. A "to" device can be another workspace, the optional integral printer, or an external device. Table A5 in the appendix describes the functions of the To Devices set.

DEVICE MODES Set. This set enables copying the entire screen (including all windows), transferring a line of data to the internal printer or an external device using either the "log top" or "log bottom" method (refer to section 7 for details on top and bottom logging), expanding or compressing the print horizontally, and printing in report or metric format. Table A6 in the appendix describes the functions of the Device Modes set.

Margin/Tab/Col Set

This set is used to set or clear tabs and the left and right margins. Table A7 in the appendix describes the functions of the Margin/Tab/Col set.

Service Set.

This set is used to perform various tests on the terminal. Table A8 in the appendix describes the functions of the Service set.

Window Control Set

This set enables you to select the active window and change the size of any window. The active window is the one containing the cursor and, therefore, the one selected for keyboard data entry, editing, and transmission. The size of the window is changed by moving the window borders left, right, up, or down. Table A9 in the appendix describes the functions of the Window Control set.

Enhancements Group

This group is composed of the Enhance Video, Define Fields, and Modify Char Set sets of labels. These sets represent the terminals display enhancements and alternate character set features.

ENHANCE VIDEO Set. This set is one of two accessible directly from the Aids set. It includes the labels for the display enhancements (security field, underline video, inverse video, and blink video). It also includes a **BACKGROUND INVERSE** label, for creating an inverse video background for characters, and a **SET ENHNCMNT** label which must be pressed after selection of your choice of display enhancements to enable the enhancements. Table A10 in the appendix describes the functions of the Enhance Video set.

DEFINE FIELDS Set. This set enables selection of the field types (alpha/numeric, alpha only, numeric only, unprotected, protected, and transmit). Table A11 in the appendix describes the functions of the Define Fields set.

MODIFY CHAR SET Set. This set enables selection of the character set to be assigned to the keyboard keys. The selections are; base set, set A, set B, and set C. Sets A, B, and C are assigned character sets on the terminal configuration menus from the five available sets (base set, math set, line drawing set, Roman extension set, and large character set). This means that each virtual terminal can have its own alternate character set. Table A12 in the appendix describes the functions of the Modify Char Set set.

Forms Group

The Forms group consists of the Sketch Forms, Draw Lines, and Define Lines sets of labels. Labels in the Forms group are used for drawing data entry-type forms on the screen.

SKETCH FORMS Set. The Sketch Forms set is the only set in this group accessible from the Aids set. The other two sets of the Forms group are accessed from this set. It is used to set margins and draw lines around the form. Table A13 in the appendix describes the functions of the Sketch Forms set.

DRAW LINES Set. This set is used to draw and erase lines using the cursor and margins to define the end points. Table A14 in the appendix describes the functions of the Draw Lines set of labels.

DEFINE LINES Set. This set defines the type of line to be drawn (single, double, bold) and the type of video enhancement (inverse video, underline video, or blink video) to be used. Table A15 in the appendix describes the functions of the Define Lines set.

CONFIG Set

The Config set of labels is used only to select configuration menus. Four types of menus are selectable; global, window, datacomm, and virtual terminals (terminals 1 through 4). Refer to Section 5 and the Reference manual for more information on configuration. The functions of the Configuration set are described in table A16 in the appendix.

User Definable Function Keys

The **RETURN** key, the **ENTER** key, and each function key can be programmed with a character string of up to 80 characters. A type character (L, T, or N) is assigned to the character strings for the function keys and **RETURN** key. The **ENTER** key does not receive one. The character string can be defined for local use only (with the letter "L" assigned to it), for transmission to the computer only (with the letter "T" assigned to it), or to act as data entered normally from the keyboard (with the letter "N" assigned to it). Programmed this way, the function keys are useful for entering any repeatedly-used character string with no more than a couple of keystrokes.

Each of the eight function keys can be assigned a label of up to 16 characters. The label can serve as a reminder of the content of the character string when the character string is not displayed. The **RETURN** and **ENTER** keys cannot be assigned labels.

The function keys have default assignments which become effective whenever the terminal is turned on, a hard reset is performed, or the **DEFAULT VALUES** function key is pressed. These assignments are shown in figure 4-3. The default assignment for the **RETURN** key is determined by the entry in the **RETURN** Def field of the **Global Configuration** menu. The default assignment for the **ENTER** key is to perform its normal operation (send a block of data to a computer in Remote mode). The default character string assignments for the eight function keys consist of two characters each (the ESC character and one lower-case letter). The default type character for all function keys except the **RETURN** and **ENTER** keys is "T", as shown in the figure. The default type character for the **RETURN** and **ENTER** keys is "N" and "L", respectively. The default character strings have no preassigned meanings. One use to which they can be put is to transmit them to a computer where they can be interpreted by a program which the user must provide. The program can apply any desired interpretation to the character string, thus accomplishing a complex operation with a couple of keystrokes. For example, the program might be designed to output a complex data entry form to the terminal when prompted by receipt of the character string from one of the function keys.

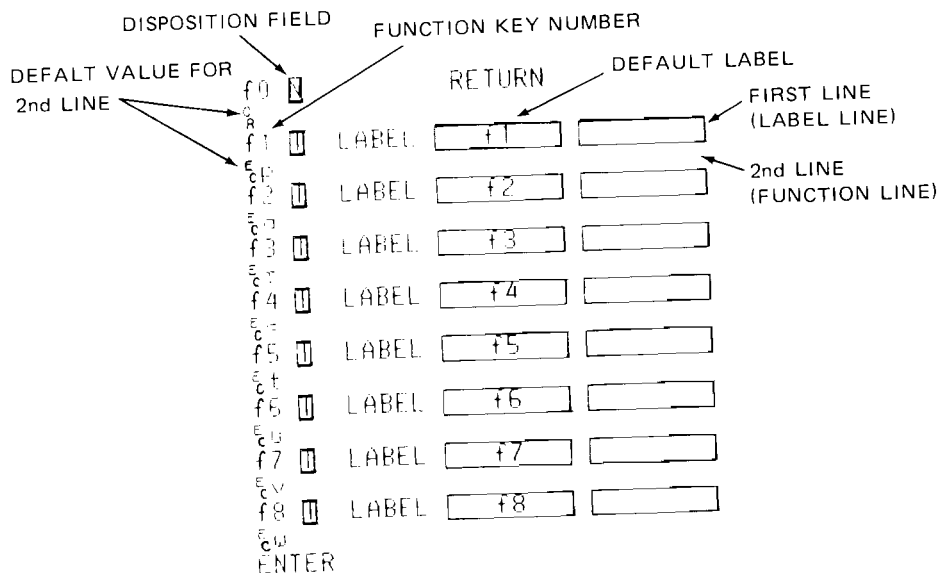


Figure 4-3. User Definable Function Key Menu with Default Values

User Key Modes

The function keys are associated with user-definable functions in two modes: Definition mode and Use mode. In Definition mode, the function keys are assigned labels, type characters, and character strings. In Use mode, the keys are made active so that, when the key is pressed, the character string assigned the key will be printed out on the display (provided the type character assigned to the key is "L" or "N" and the terminal is in Local mode). (If the type character is "T", the character string will be printed out on the display only if the terminal is in Remote mode.) When Use mode is entered, the labels assigned to the keys appear along the bottom of the screen in the normal label position.

Definition Mode

INITIATING DEFINITION MODE. To initiate Definition mode, press the **USER KEYS** key while holding down the **SHIFT** key. This causes the current key assignments to be displayed. Use the **TAB** keys or cursor-positioning keys to position the cursor for making entries on the User Keys menu.

DEFINING A FUNCTION KEY. To define a function key, first enter the type character (L for local use only, T for transmit only, and N for treatment as though it was entered from the keyboard). Use either the **PREVIOUS CHOICE** or the **NEXT CHOICE** function key to select your choice of entry. (Refer to table A17 in the appendix for a description of the functions of each of the function keys in Definition mode.)

Next, enter the label to be assigned to the function key. The label appears on the definition menu as two 8-character blocks. The first block appears on the screen located above the second block when the label is displayed at the bottom of the screen in Use mode. The labels can be entered using any of the display enhancements, including the alternate character sets. The default labels for the keys are the labels f1 through f8.

Then, type in the character string on the line below the label blocks. Use the **DISPLAY FUNCTNS** function key to enter keystrokes from the edit and display groups of keyboard keys. When entered in Display Functions mode, the keystroke operation will not be performed until the function key to which it is assigned is pressed. For example, if a **→** keystroke is assigned to one of the function keys in Display Functions mode the cursor will be homed when the function key is pressed in Use mode.

LEAVING DEFINITION MODE. Definition mode can be terminated by pressing any one of three keys; the **AIDS**, **MODES**, or **USER KEYS**. The **AIDS** or **MODES** key returns the terminal to the normal screen display. To enter Use mode, refer to the following paragraph.

Use Mode

INITIATING USE MODE. To initiate Use mode, press the **USER KEYS** key once.

EXAMPLE

This example assigns a company name and address to key **f1** to appear as follows:

```
ACME Co.
1000 Star Rt.
New York, NY
```

- Press the **MODES** key and check whether an asterisk is present in the **AUTO LF** label. If so, press the associated function key to remove the asterisk.
- Press the **USER KEYS** key while holding down the **SHIFT** key. This initiates Definition mode and displays the User Key menu.
- Locate the cursor under the type field for f1 and press the **NEXT CHOICE** function key until an "L" appears in the field. This indicates the character string is for use at the terminal only.

- Move the cursor to the label line and type in your choice of label for the function key.
- Move the cursor to the left margin of the character string field.
- Press the **DISPLAY FUNCTNS** function key to produce an asterisk in the **DISPLAY FUNCTNS** label.
- Type "ACME CO. **RETURN** 1000 Star Rt. **RETURN** New York, NY **RETURN**".
- Press the **DISPLAY FUNCTNS** function key to remove the asterisk from the label. (This turns off Display Functions mode.)
- Press the **MODS** key, then press the **AUTO LF** function key to add an asterisk to the label. (This turns on Auto LF mode.)
- Press the **USER KEYS** key, note that your label has replaced the "f1" label. Press the function key with your label on it. The data you typed into the function line on the User Keys menu should appear on the screen. Note that since **AUTO LF** is selected, a line feed is added following each **RETURN** when the function key is pressed in Use mode.

LEAVING USE MODE. To leave Use mode and display the formerly displayed set of labels, simply press the **USER KEYS** key.

Configuring The Terminal	5-1
Configuration Menus	5-2
How to Display a Menu	5-2
Configuring	5-4
To Return to Normal Operation	5-5
Global Configuration	5-5
Workspace/Window Configuration	5-5
Terminal Configuration	5-6
Datacomm Configuration	5-7



Configuring The Terminal

Introduction

The device provided for making terminal configuration changes is a configuration menu. A menu is a list of configuration parameters which are displayed on the screen. Each parameter has an associated space for a value which you select. Many of the parameters have a system-defined list of values. For others, you must enter the value from the keyboard. For parameters with system-defined values, two function key labels are displayed with the menu to enable you to scroll forward (NEXT CHOICE) or backward (PREVIOUS CHOICE) through the list of values.

Sufficient information is supplied in this section to enable you to configure the terminal provided you know the function or purpose of the menu fields on the Global, Workspace/Window, datacomm ports, and terminal configuration menus. This information is available in the Reference manual if you should wish to configure the terminal and do not have the information.

The terminal contains a battery powered portion of memory called non-volatile memory in which the set of configuration values are stored to save them when power to the terminal is shut off. The set stored is the one last stored by the user. If none has been stored by the user, the default set is stored. When a menu is called to the display screen, the values currently in use are displayed. When power to the terminal is turned on, the set of configuration values stored in non-volatile memory becomes the active set.

The sequence for changing a set of configuration values is to display the menu, make the desired changes, and store the values in non-volatile memory. The act of storing the values in non-volatile memory also makes them the active set.

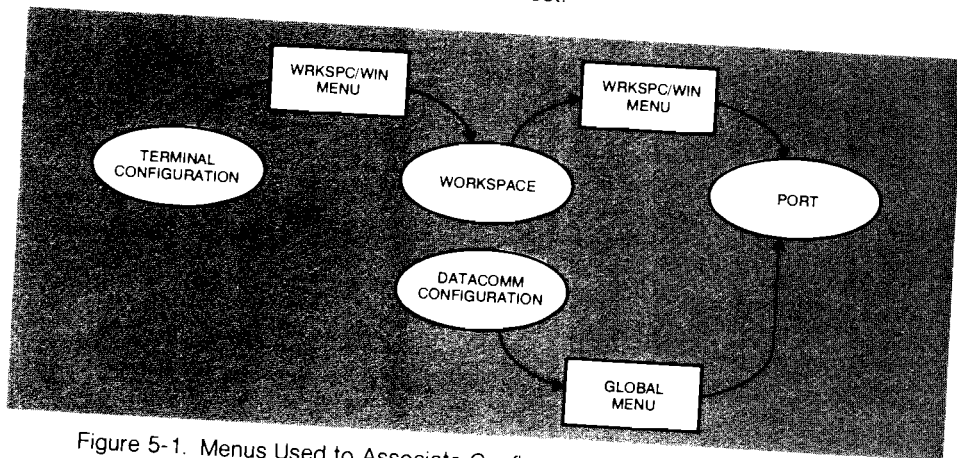


Figure 5-1. Menus Used to Associate Configurations, Workspaces, and Ports

Configuration Menus

All configuration requirements for the terminal are contained in twelve menus; The Global Configuration menu, the Workspace/Window Configuration menu, the terminal configuration menus (four identical menus, enabling selection of terminal characteristics for four virtual terminals), and the datacomm configuration menus (six menus, each for a different datacomm protocol). A workspace is associated with a terminal configuration and a datacomm port is associated with a workspace on the Workspace/Window Configuration menu. A port is associated with a datacomm configuration on the Global Configuration menu (figure 5-1).

Descriptions of each type of menu are listed below:

MENU	FUNCTION
Global Configuration	Contains parameters which apply to work spaces, windows, and datacomm ports.
Workspace/Window Configuration	Enables configuration of the workspaces and windows and selection of a set of terminal configuration parameters (term # 1 through term # 4) to be associated with each workspace.
Datacom1 and Datacom2 Configuration	Enables configuration of the two datacomm ports. Configuration of the datacomm ports selects many of the datacomm parameters. Additional datacomm parameters are selected using the terminals 1 thru 4 configuration menu. A different configuration can be given to each port. Four point-to-point protocols and two multipoint protocols are available for selection.
Term #1 thru Term #4 Configuration	Four identical menus are used, each enabling selection of both datacomm and local terminal characteristics. Each terminal configuration is assigned to a workspace/window configuration so that the workspace/window/terminal configuration, together with the global configuration, effectively defines a virtual terminal.

How To Display A Menu

To display a menu, perform the following procedures:

- Press the **AIDS** key to display the Primary set of function key labels.
- Press the **config** keys function key to display the Configuration set of function key labels as shown below.

SAVE CONFIG **NEXT CHOICE** **PREVIOUS CHOICE** **DEFAULT VALUES**

POWER ON VALUES **ACTIVE VALUES** **DISPLAY FUNCTNS** **Config Keys**

- Press the function key of your choice; the appropriate menu will be displayed with the active values. Table 5-1 lists the function key labels which will be displayed along with their functions. If one of the datacomm function keys was pressed, the menu for the currently active datacomm protocol will be displayed. To access the menu for any other protocol, just press the NEXT CONFIG key until the desired menu is displayed.

Table 5-1. Configuration Mode Function Key Labels

LABEL	FUNCTION
SAVE CONFIG	Saves the displayed configuration parameters in non-volatile memory, makes the set of parameters the active configuration set, and returns to normal operating mode with the Modes set of function key labels displayed. If the keyboard is locked in any window or if the configuration is locked, this key has no effect.
NEXT CHOICE	If an error exists in the set of displayed parameters such as an unacceptable value for one of the parameters, the keyboard bell will sound, the cursor will be positioned at the field in which the error exists, an error message will be displayed in rows 25 and 26 and the configuration menu will remain displayed.
PREVIOUS CHOICE	Most of the fields on the menus have a list of acceptable values (some have only two). These keys scroll forward or backward through the list.
DEFAULT VALUES	Displays the default values for the configuration.
POWER ON VALUES	Displays the values stored in non-volatile memory, which become active at power-on time.

Table 5-1. Configuration Mode Function Key Labels (Cont'd)

LABEL	FUNCTION
ACTIVE VALUES	Displays the values which are currently active for the configuration. (The active values might be different from the values stored in non-volatile memory.)
DISPLAY FUNCTNS	Alternately enables and disables Display Functions mode. When enabled, an asterisk is present in the label. This key is used only to make entries on configuration menus and does not affect the selection made using the DISPLAY FUNCTNS key which is accessed using the MODES key. Several menus contain fields for which entries cannot be made without entering Display Functions mode. For example, the RETURN Def field on the Global Configuration menu and the Fid Separator and Blk Terminator fields on the Terminal Configuration menu. This key is used only for these type entries.
Config Keys	Ends Configuration mode without saving the displayed values. Any changes made on the menu are lost. Returns to normal operating mode with the Configuration set of function key labels displayed.
TEMPRARY SAVE	(This label is used only when the Workspace/Window configuration menu is displayed.) It makes the displayed set of values the active set but does not save them in non-volatile memory. They will be lost if changed on the menu, power is turned off, or a hard reset is done.
NEXT CONFIG	(This label is used only when one of the datacomm configuration menus is displayed.) Displays the configuration menu for the next type of protocol. Menus are displayable for six protocol types. When the menu for the last type is displayed when the key is pressed, the menu for the first type is displayed.

Configuring

To change a selection on a menu, perform the following steps:

- Place the cursor at the character position to be changed. This can be done using the **←** key or the cursor positioning keys. The **→** key moves the cursor to the next selection field each time the key is pressed.
- If the choices are restricted to a system-defined list of selections (such as a field is underlined), use either the NEXT CHOICE or PREVIOUS CHOICE function key to cycle through the list of selections until the desired one is displayed.
- If the choices are not restricted to a system-defined list (such as the ROWS field on the Workspace/Window Configuration menu), enter the desired value from the keyboard.
- To store the new menu values in non-volatile memory after you have made all desired changes, press the SAVE CONFIG function key. If it is the workspace/window configuration being changed, you have the option of making the displayed set of values the active set without storing them in non-volatile memory. To do so, press the TEMPRARY SAVE key.

When the menu values are saved, if any of the new values are unacceptable, the bell sounds and an error message is displayed in screen rows 25 and 26. To clear the error message and restore the menu to the display, press the **RETURN** key. With the menu again displayed, the cursor will be located at the offending field. Then, the entered value must be changed to an acceptable value before the configuration will be accepted by the system.

To Return To Normal Operation

Pressing the **SAVE CONFIG** key will return the previous display contents to the display and save the displayed configuration values in non-volatile memory. However, if you wish to return the previous display contents to the display without saving the displayed configuration values, you can press the **AIDS**, **MODES**, or **USER KEYS** keyboard keys or the config keys function key to do so.

Global Configuration

One menu is used for global configuration. It contains the selections common to all virtual terminals configured. The Global Configuration menu is illustrated in figure 5-2. For the meaning of each field on the menu, refer to the Reference manual.

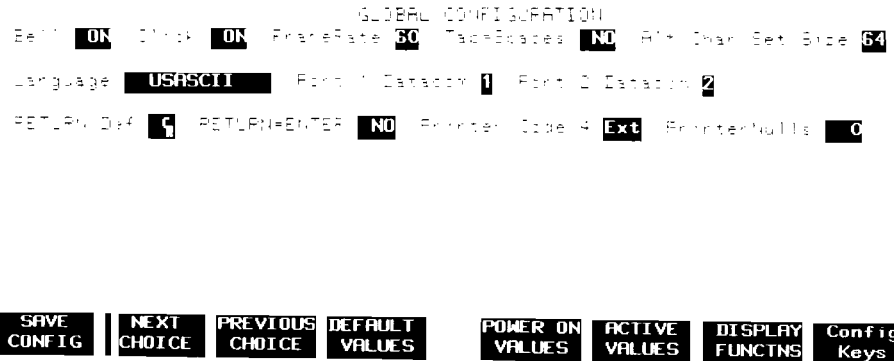


Figure 5-2. Global Configuration Menu Showing Default Entries

Workspace/Window Configuration

One menu is used for configuring up to four workspaces and four windows (see figure 5-3). Refer to the Reference manual for the meaning of each field on the menu. Selections available on the menu are listed below:

- Size of each workspace and window and the location on the screen of each window.
- Workspace to which each window is assigned.
- Whether to display each workspace (associate it with a window).
- The active window (the window connected to the keyboard).
- The width (number of characters in a line) of all workspaces.
- Whether to display the borders separating the windows.
- The set of terminal configuration menu values (Terminal # 1, # 2, # 3, or # 4 menu values) to be applied to each workspace.
- Assignment of each of the two datacomm ports to a workspace.

WORKSPACE WINDOW CONFIGURATION

Vert Border	Kybd Win	Port 1 Wrkspc	Port 2 Wrkspc	Display border:	Horiz	Vert
0	1	1		80	YES	YES
Col #	Col #	Page Width	Display border:	Side	Term Config	
Wrkspc #	Rows	Display	Start Row	Stop Row		
1	119	YES	1	24	RIGHT	1
2	0	NO	0	0	RIGHT	2
3	0	NO	0	0	RIGHT	3
4	0	NO	0	0	RIGHT	4
Max Rows	119					



Figure 5-3. Workspace/Window Configuration Menu Showing Default Values

Figure 5-4 illustrates the default workspace/window arrangement which is a single workspace, 80 characters wide, displayed by a single window of 24 lines (rows).

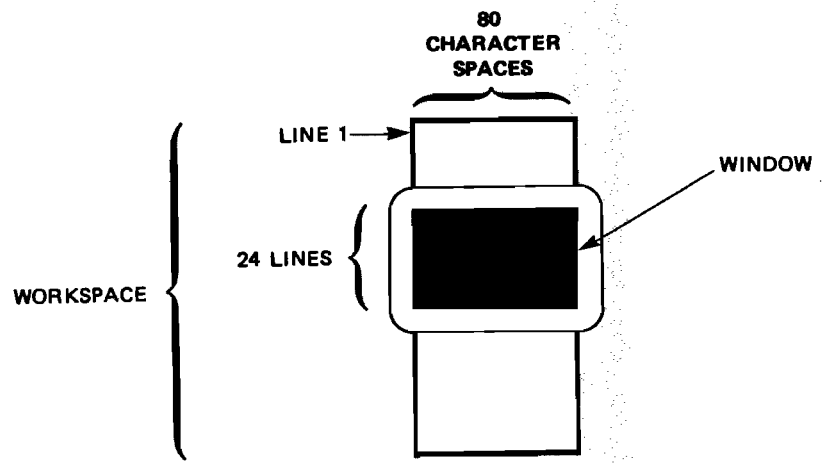


Figure 5-4. Default Workspace/ Window Arrangement

Terminal Configuration

Four identical menus (Terminal Configuration # 1, # 2, # 3, and # 4) are available for configuration of up to four virtual terminals. Figure 5-5 illustrates the menu. Each menu contains a number of datacomm selections in addition to the local terminal selections listed below. Refer to the Reference manual for a description of all menu fields.

- On/off selection of modes (Remote, Block, Modify, and Auto LF) for the virtual terminal.
- Local echo.
- Caps lock.
- End-of-line wraparound.
- Space overwrite.
- Enable or disable terminal self test.
- Selection of the alternate character set to be designated set A, set B, or set C.

Datacomm Configuration

Twelve datacomm configuration menus, representing six different datacomm protocols, are available for configuration of the two datacomm ports. Two menus of each protocol type are supplied. (All six of the protocols can be used with datacomm port 1 but only four can be used with datacomm port 2.) All fields on the menus are listed and described in the Reference manual. Figure 5-6 illustrates one of these menus. Each of the following protocols is represented by two menus:

- Full duplex hardwired (default selection).
- Full duplex modem.
- Half duplex mainchannel.
- Half duplex reverse channel.
- Asynchronous multipoint.
- Synchronous multipoint.

```

TERMINAL CONFIGURATION: #1
REMOTE OFF      BLK OFF      MODIF OFF      AutoLF OFF
Local Echo OFF  Caps Lock OFF  Start Col 1  ASCII 8 Bits NO
Print Photocopy NO  EPCWRE NO    Inr Echo/Prt NO  Line Page/Di LINE
Inchrd Enk'g NO  Inr EDC H NO  Auto Term'n NO  Clear Term'n NO
Cntrl4 Test L NO  Inr Entors' NO  Esc. Ter'n NO  InhDc Test/H NO
File Separator ESC  A B C
Math Set Line Draw Large Chr
Alternate Set B
  
```

SAVE CONFIG NEXT CHOICE PREVIOUS CHOICE DEFAULT VALUES POWER ON VALUES ACTIVE VALUES DISPLAY FUNCTNS Config Keys

Figure 5-5. Terminal Configuration Menu Showing Default Values

```

FULL DUPLEX HARDWIRED #1
BaudRate 2400 Parity 0's DataBits 7 BufSize 128 XmitClk Source Int
Asterisk OFF StopBits 2 Eng'g YES RecvClk Source Int
TR ID III Chk Parity NO BaudRate 10 StrpNul/Def YES XmitClkOut x16
RecvPage None ERRmit NO RPRIP/Rep NO
PrintPage None BPRIP/Ext NO CSIB/Ext NO
  
```

SAVE CONFIG NEXT CHOICE PREVIOUS CHOICE DEFAULT VALUES POWER ON VALUES ACTIVE VALUES DISPLAY FUNCTNS Config Keys

Figure 5-6. Typical Default Datacomm Configuration Menu Showing Default Values





6

Using Your Terminal By Itself	6-1
Workspaces and Windows	6-1
Status Readouts	6-2
Entering Data	6-2
Correcting Data	6-2
Insert Character with Wraparound	6-3
Delete Character with Wraparound	6-3
Techniques of Data Entry	6-3
Tabs	6-3
Setting Tabs	6-3
Using Tabs	6-3
Clearing Tabs	6-3
Margins	6-3
Left Margin	6-3
Right Margin	6-4
Changing Workspace/Window Parameters	6-4
Selecting the Active Window	6-7
Changing the Workspace Window Relationships	6-7
Changing Window Size	6-9
How to Transfer Data to and From Workspaces	6-9
Moving a Block of Text to Another Location Within a Window	6-10
Moving a Block of Text to Another Window	6-11
Display Features	6-12



Using Your Terminal By Itself

The terminal can store up to 9,520 characters and can be used without being connected to a computer (Local mode). It can be used alone when first learning to use it or when preparing data for printing or later transmission to the computer.

We will use the terminal in Local mode to learn how to enter and correct data and become familiar with workspaces and windows. Once you have been introduced to the basic terminal, later sections will describe how to use the terminal with a computer and with a printer.

For detailed information on workspace/window configuration, refer to the Reference manual. Refer to Section 7 for information on connecting a workspace to a computer.

Workspaces And Windows

A workspace is a block of memory in which data is stored. A window is a portion of the display screen which is assigned to a workspace for viewing and editing the data in the workspace. Up to four workspaces and up to four windows may be defined for the terminal with each window assigned to a

workspace (although each workspace need not have a window assigned) (figure 6-1). A workspace will not be displayed if it has no window assigned to it, unless you use the Window Control function keys to change the workspace/window assignment. Using the Window Control function keys, you can display any workspace using any window (refer to the paragraph "Modifying the Workspace/Window Configuration" further on in this section).

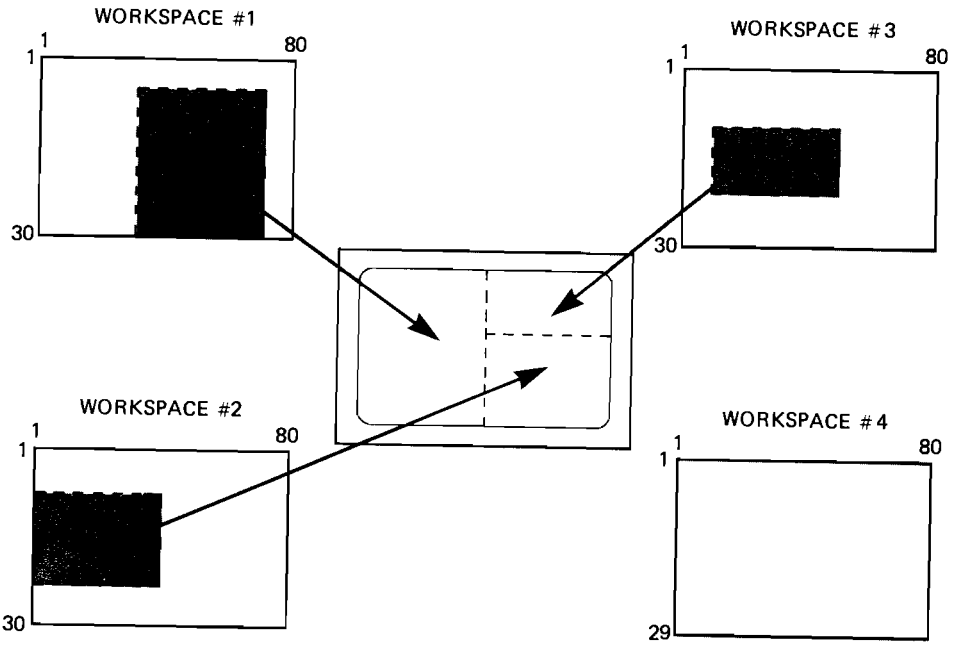


Figure 6-1. Workspace/Window Relationship

A virtual terminal is formed when a workspace/window combination is associated with a terminal configuration (as defined on one of the four Terminal Configuration menus) and the global configuration for the entire terminal (as defined on the Global Configuration menu). Four such virtual terminals may be defined for the terminal. You can assign a virtual terminal to each of the two datacomm ports using the Workspace/Window Configuration menu.

Status Readouts

Several items of useful information are displayed on the screen at all times while the terminal is on. This information is displayed in rows 25 and 26 at the bottom of the screen between function key labels f4 and f5 (figure 6-2). The information consists of the screen row and column in which the cursor is positioned (active window), and two asterisks for indicating status information on the two datacomm ports.

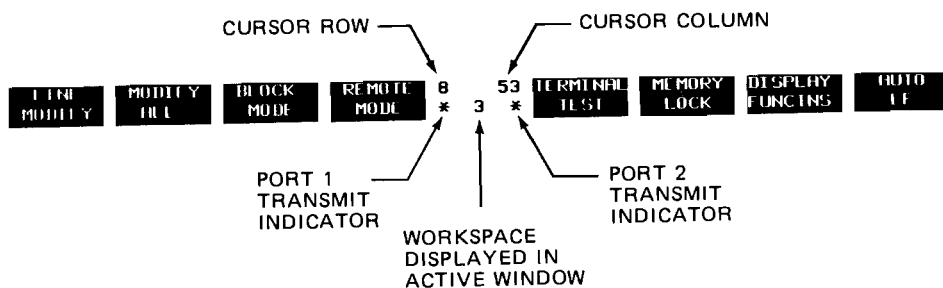


Figure 6-2. Status Indicator Locations

Entering Data

One of the most important uses of the terminal is data entry. Data is entered using the keyboard. The data can then be sent to a computer, printed out on a printer, or both.

EXAMPLE

Enter the following name and date:

John Doe June 1976

Correcting Data

If you make an error or wish to change an entry you have made, you can use any of the cursor or edit keys discussed earlier. For example, to add the middle initial "T" to the entry in the previous example, move the cursor under the "D", press the **INS CHAR** key (the cursor becomes a blinking blob in Insert mode), and type "T" and a space. Press the **INS CHAR** key again to return to normal overwrite mode.

Insert Character With Wraparound

You can insert characters with wraparound by pressing the **INS CHAR** key while holding down the **SHIFT** key. This will cause the cursor to become a blinking blob. While in this mode, characters that overflow a line due to insertion are moved to the next line. Pressing **INS CHAR** again returns the terminal to normal operation.

EXAMPLE

Type **SHIFT INS CHAR**. The cursor should become a blinking blob. Type two or more lines of data. Move the cursor to the middle of the first line and type characters until the line is full. Add more characters and observe that they push characters from the end of the first line to the beginning of line two. If line two becomes full while the cursor is still in the first line, a blank line will be inserted between line one and two. The characters overflowing line one will then be entered on the new line.

Delete Character With Wraparound

When characters are deleted using **SHIFT DEL CHAR**, one character from the left margin of the next line is moved up to the right margin of the line containing the cursor. If the next line is blank, no wraparound is performed.

Techniques Of Data Entry

To simplify data entry, you can use tabs, margins, specially defined data fields, and data forms. The following text describes how to use tab stops and margins; refer to the Reference manual for information on specially defined data fields and data forms. Before performing the following instructions, use the function keys to arrange for the full display screen to display a single window (press the **AIDS** key and the **WINDOW CONFIG**, **DEFAULT VALUES**, and either the **TEMPRARY SAVE** or **SAVE CONFIG** keys, in sequence).

Tabs

SETTING TABS. To set a tab, move the cursor to the desired column and press the **AIDS** key to display the Aids set of function key labels. Then press the **MARGIN/TAB/col** function key to display the Margin/Tab/Col set of function key labels. Now press the **SET TAB** function key. Once a tab is set, the **TAB** keys (one located on the left side of the keyboard and the other two in the numeric pad) can be used to move the cursor to the next tab setting.

USING TABS. Once tab positions have been set, you can tab using the **TAB** keys in the same manner that you would on a typewriter. You can tab backwards to the previous tab position using the backtab key in the numeric pad or by pressing the **TAB** key at the left of the keyboard while holding down the **SHIFT** key. When you are at the first tab position in a line and you backtab, the cursor moves to the last tab position in the previous line. Once the cursor has reached the first tab position in the first line of memory, no further backtabbing movement is made.

CLEARING TABS. You can clear individual tabs by moving the cursor to the tab position, accessing the Margin/Tab/Col set of labels, and pressing the **CLEAR TAB** function key. All of the tab stops can be cleared at once without having to position the cursor. Simply press the **CLR ALL TABS** function key.

Margins

You can set the left and right margins to make the entry of data easier. When the terminal is turned on or a hard reset performed, the margins are set at the width of the workspace. You can set new margins as described below.

LEFT MARGIN. Move the cursor to the desired left margin setting. With the Margin/Tab/Col labels displayed, press the **LEFT MARGIN** key.

RIGHT MARGIN. Move the cursor to the desired right margin setting. With the Margin/Tab/Col labels displayed, press the **RIGHT MARGIN** key.

The terminal will beep when you are eight characters from the right margin. When the right margin is reached, the cursor will move to the left margin of the next line if end of line wraparound is selected.

The left margin cannot exceed the right margin. An invalid margin setting will not be accepted but will cause the terminal to beep.

EXAMPLE

Set the margins for a 40 column page centered on the screen.

With the Margin/Tab/Col labels displayed, move the cursor to column 20 and press the **LEFT MARGIN** function key. Then move the cursor to column 59 and press the **RIGHT MARGIN** function key.

Place the cursor back at column 20 by pressing **RETURN** and begin typing.

Margins are changed by setting new margins (or by a hard reset). They are cleared by pressing the **CLR ALL MARGINS** function key.

```
column numbers
2           3           4           5           6
0           0           0           0           0
```

This is an example using margins to control data entry.

Changing Workspace/ Window Parameters

The Window Control function keys provide a means for modifying the workspace/window configuration to suit immediate needs without changing the workspace/window configuration stored in non-volatile memory. The following items can be changed using the Window Control function keys:

- The active window (window containing the cursor).
- The assignment of windows to workspaces.
- The size of the windows.

The configuration parameters, which are established using the Workspace/Window Configuration menu, are stored in non-volatile memory. Use of the Window Control function keys does not change these configuration parameters although, when the Workspace/Window Configuration menu is displayed, it displays the parameters as changed using the Window Control function keys. (The Workspace/Window Configuration menu displays the parameters in use, which are not necessarily the stored configuration parameters.) When the terminal is turned off or a hard reset is performed, the configuration stored in non-volatile memory is restored automatically.

Modifications made using the Window Control function keys remain in effect until changed again using the Window Control function keys, until the basic configuration is changed using the Workspace/Window Configuration menu, until the terminal is turned off, or a hard reset is performed. When any except the first-listed of these events occurs, the configuration stored in non-volatile memory becomes effective.

To access the Window Control function keys, press the **AI/BS** key and the window control function keys, in sequence. The functions of the Window Control function keys, which appear in table A9 in the Appendix, are repeated in the following table for convenience.

NEXT WINDOW **NEXT WORKSPACE** **BORDER LEFT** **BORDER RIGHT**

BOTTOM BORDER UP **BOTTOM BORDER DN** **TOP BORDER UP** **TOP BORDER DN**

LABEL

FUNCTION

WINDOW CONTROL FUNCTION KEYS

NEXT WINDOW

If there is more than one window defined, pressing this key moves the cursor from one window to the next. The workspace/window relationships are not altered. The progression from one window to another occurs in ascending order according to the workspace number currently associated with each defined window. When there is no window associated with a higher-numbered workspace, the sequence wraps around to the window associated with the lowest-numbered workspace.

NEXT WORKSPACE

When there are more workspaces defined than windows, pressing this key causes the next higher-numbered workspace that is not currently being displayed in any window to be displayed in the active window (provided the next higher-numbered workspace has as many or more rows as the active window). If there is no higher-numbered workspace which is not being displayed (or if there is but it lacks as many rows as the active window) the sequence wraps around to the lowest-numbered workspace.

BORDER LEFT

Pressing this key causes the vertical border to move one character position to the left. If you hold this key down, the border continues to move to the left until you release the key or until it reaches the leftmost screen column, or column 1 if there is a window on the left side of the vertical border.

LABEL

FUNCTION

Any window to the right of the border is increased by one column at the left side of the window. This displays one more column of the workspace for each column the border moves left. Any window to the left of the vertical border loses one column on its right edge for each column the border moves. If the vertical border reaches the left edge of the workspace displayed in a right-side window, the data in the window is scrolled left one column for each column the vertical border is moved.

If the cursor is in a window to the left of the vertical border and the vertical border reaches the cursor before reaching the leftmost screen column, the data is scrolled left, maintaining its position with respect to the border, until leftward movement of the vertical border is stopped.

BORDER RIGHT

Pressing this key causes the vertical border to move one character position to the right. If you hold this key down, the border continues to move to the right until you release the key or until it reaches the rightmost screen column, or column 79 if there is a window to the right of the vertical border.

Any window to the left of the border is increased by one column at the right side of the window. This displays one more column of the workspace for each column the border moves right. Any window to the right of the vertical border loses one column on its left edge for each column the

NEXT WINDOW NEXT WORKSPACE BORDER LEFT BORDER RIGHT

BOTTOM BORDER UP BOTTOM BORDER DN TOP BORDER UP TOP BORDER DN

LABEL

FUNCTION

WINDOW CONTROL FUNCTION KEYS (Cont.)

border moves. If the vertical border reaches the right edge of the workspace displayed in a left-side window, the data in the window is scrolled right one column for each column the vertical border is moved beyond that point.

If the cursor is in a window to the right of the vertical border and the vertical border reaches the cursor before reaching the rightmost screen column, the data is scrolled right, maintaining its position with respect to the border, until movement of the vertical border is stopped.

BOTTOM BORDER UP

Pressing this key causes the bottom border of the active window to move up one line on the screen. When the border moves up, the window above the border loses a line on its bottom edge and any window below the border gains a line on its upper edge for each line the border moves up. If you hold this key down, the border continues to roll upward until you release the key or until the active window contains only one line. In the latter case, pressing or continuing to hold down the key has no further effect.

BOTTOM BORDER DN

Pressing this key causes the bottom border of the active window to move down one line on the screen. When the border moves down, the window above the border gains a line on its lower edge and any window below the border loses a line for each line the border moves down. If you

LABEL

FUNCTION

hold this key down, the border continues to move downward until you release the key, until the last row in the workspace is displayed, until the next lower window (if there is one) on the same side of the vertical border contains only one line, or until the border reaches the bottom of the screen (if there are no windows defined beneath the active window). In the latter two cases, pressing or continuing to hold down the key has no further effect. If the key is held down after all lines of the workspace are displayed, the operation is stopped and an error message is displayed at the bottom of the screen.

TOP BORDER UP

Pressing this key causes the top border of the active window to move up one line on the screen. As the border moves up, the data in the active window rolls up also. If you hold this key down, the border continues to move upward until you release the key, until the top row of the workspace is displayed, until the next-higher window on the same side of the vertical border is reduced to one line (if there are any windows defined above the active window), or until the border reaches the top edge of the screen (if there are no windows defined above the active window). In the latter two cases, pressing or continuing to hold down the key has no further effect. If the key is held down after all rows of the workspace are displayed, the operation is stopped and an error message is displayed at the bottom of the screen.

NEXT WINDOW NEXT WORKSPACE BORDER LEFT BORDER RIGHT

BOTTOM BORDER UP BOTTOM BORDER DN TOP BORDER UP TOP BORDER DN

LABEL

FUNCTION

WINDOW CONTROL FUNCTION KEYS (Cont.)

TOP BORDER DN

Pressing this key causes the top border of the active window to move down one line on the screen. As the border moves down, the data in the active window rolls down also. If you hold this key down, the border continues to move downward until you release the key or until the active window contains only one line. In the latter case, pressing or continuing to hold down the key has no further effect.

Selecting The Active Window

The active window is the one connected to the keyboard and contains the cursor. A window is selected to be the active one by displaying the Window Control function key labels and using the `NEXT WINDOW` function key to locate the cursor in the selected window. You can select the active window by performing the following steps:

- Press the **AIDS** key, then press the Window Control function key. The Window Control set of function key labels should be displayed.
- Press the `NEXT WINDOW` function key until the cursor appears in the window you want to be the active one. The window in which the cursor is located is the active window.

Changing The Workspace/Window Relationships

The Window Control set of function keys can be used to switch the relationships of workspaces to windows such that any workspace can be displayed in any window provided the window does not have more rows than the workspace. Later in this section, you will learn to copy data from one workspace to another so that you can display the same data in as many of the configured windows as you like.

EXAMPLE

This example demonstrates that any currently undisplayed workspace can be displayed in any existing window provided it has as many or more rows as the active window. (If the active window has more rows than the workspace, the `BOTTOM BORDER UP` or `TOP BORDER DN` function keys can be used to reduce the window size.)

The terminal is configured for four workspaces and three windows, leaving one workspace undisplayed. The windows are assigned arbitrary numbers for identification. Then it is demonstrated that the undisplayed workspace can be displayed in any of the windows.

1. Press the **AIDS** key, then press `config keys` and the Window Config function keys, in sequence. The Workspace/Window Configuration menu should be displayed.
2. Use the `NEXT CHOICE` key and the keyboard to select the configuration values illustrated in figure 6-3. Use the **TAB** keys to move the cursor to the field in which a value is to be entered.

```

WORKSPACE WINDOW CONFIGURATION
  Port 1 Win-ipc: 1  Port 2 Win-ipc:
Vert Border: 10  Page width: 80  Display border:
Win-ipc #  Rows  Display  Start Row  Stop Row  Side  Term Config
  1      30      YES      1        24      RIGHT 1
  2      30      YES      1        12      LEFT  1
  3      30      YES      13       24      LEFT  1
  4      29      NO       0         0      RIGHT 1
Max Rows 119
  
```

Figure 6-3. Workspace/Window Configuration Values for Three Windows and Four Workspaces

3. When the value changes are completed, press the **TEMPRARY SAVE** function key to make the displayed set of values the active set. The configuration menu should disappear from the screen and the screen should be divided into three windows. The cursor will be in window 1.
4. Type the identity of workspace 1 into window 1 as shown in figure 6-4. If the window does not respond to the keyboard, do the following steps:

- a. the **MODDES** key and check for an asterisk in the **REMOTE MODE** function key label. If one is present, press the **REMOTE MODE** function key once to remove the asterisk.
- b. Press the **AIDS** key to return to normal operating mode, then type the workspace identity into the window.

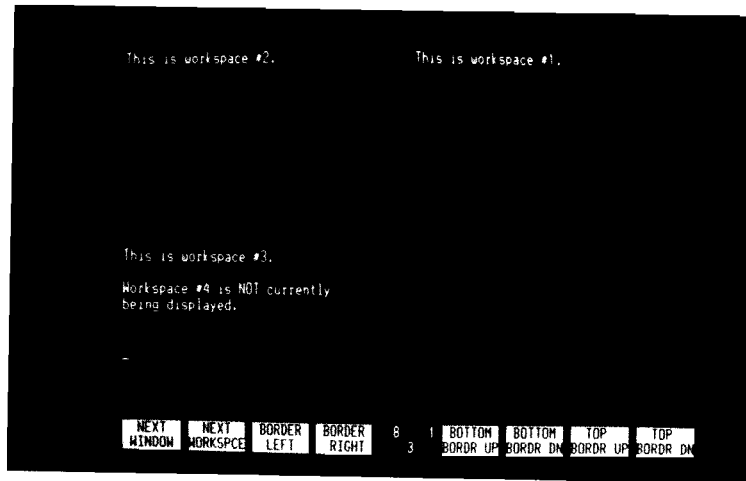


Figure 6-4. Display Screen Divided into Three Windows

5. Press the **AIDS** key, then press the **wINDOW CONTROL** and **NEXT WINDOW** function keys in sequence. The cursor should move to window 2.
6. Type the identity of workspaces 2 and 3 into windows 2 and 3 as shown in figure 6-4. The cursor can be moved from one window to the next with the **NEXT WINDOW** function key. If the window does not respond to the keyboard, perform steps 4a and 4b to remove the workspace from Remote mode.

7. If window 3 is not the active window, use the **NEXT WINDOW** function key to select window 3 as the active window and press the **NEXT WORKSPACE** function key. This should bring workspace 4, which is empty, into window 3.

8. Type the identity of workspace 4 into window 3. If the workspace does not respond to the keyboard, perform steps 4a and 4b to remove it from Remote mode.
9. Now, with each workspace identified, press the **NEXT WORKSPACE** key repeatedly. Workspaces 3 and 4 should cycle through window 3. Leave workspace 4 displayed in window 3.
10. Use the **NEXT WINDOW** function key to select window 1 as the active window, then press the **NEXT WORKSPACE** function key repeatedly. Workspaces 1 and 3 should cycle through the window.
11. If you wish to return the workspace/window configuration to the values stored in non-volatile memory, perform step 1 to display the Workspace/Window Configuration menu, press the **POWER ON VALUES** function key, then press the **SAVE CONFIG** function key.

Changing Window Size

The following example demonstrates how to change the size of windows.

EXAMPLE

1. If the screen is not presently divided into two or more windows, perform steps 1 through 3 of the previous example to display several windows.
2. Press the **AIDS** key, then the **window control** function key to display the Window Control function key labels.
3. Experiment with the **BORDER LEFT**, **BORDER RIGHT**, **BOTTOM BORDER UP**, **BOTTOM ORDER DN**, **TOP BORDER UP**, and **TOP BORDER DN** function keys to become familiar with their use in changing the size and location of the windows. Note that these keys can be used to reduce the size of a window to one column or one row.
4. To return to the set of configuration values stored in non-volatile memory, press the **AIDS** key and the following function keys, in sequence: **config keys**, **window config**, and **POWER ON VALUES**. Then press the **SAVE CONFIG** function key.

How To Transfer Data To And From Workspaces

Data can be transferred to or from a workspace with the following devices as sources or destinations:

SOURCES	DESTINATIONS
Keyboard	Another workspace
Workspace	Internal printer
Computer	External device
	Computer

For information on data entry from the keyboard, refer to the paragraph titled "Character Set Group" in Section 3, data transmission to an external device or internal printer is discussed in section 8, and data transfer to and from a computer is discussed in a section 7.

Transfer of data to or from a workspace is done in three steps; selection of the source, selection of the destination, and selection of the amount of data to be transferred. A data transfer can be performed using the following sequence of operations:

1. Press the **AIDS** device control, and "from" device keys in succession. The following function key labels will be displayed:



The "from" device can be selected using one of the last five keys. If the number identity (1, 2, 3, or 4) of the window (workspace) is not known, the **FROM CRS WSP** function key can be used after placing the cursor in the desired "from" window.

2. Press the "to" `devices` function key; the following function key labels will be displayed:

device control
TO EXT DEV
TO INT PRT
TO CRS WSP
TO WRKSPC1
TO WRKSPC2
TO WRKSPC3
TO WRKSPC4

Select the destination(s) by pressing the appropriate keys, an asterisk will appear in the selected labels to indicate the selected destination(s).

3. Press the `device control` function key to display the Device Control set of function key labels shown below; then press the appropriate function key to select the amount of data to be transferred (`COPY ALL`, `COPY PAGE`, or `COPY LINE`).

device modes
"from" device
"to" devices
ADVANCE PAGE
ADVANCE LINE
COPY ALL
COPY PAGE
COPY LINE

NOTE

If the data destination is a window which is currently in character mode (not block mode) and is connected to a computer, the data transferred to the window will be sent to the computer and will not be displayed in the window except as it is echoed to the terminal by the computer.

Two methods can be used to move blocks of text or data from one place to another in memory. You can move blocks of text or data from one place to another within the same window using Memory Lock mode. If the block is located in a different window than the destination window, use the function keys.



Moving A Block Of Text To Another Location Within A Window

You can move blocks of text using Memory Lock mode.





EXAMPLE

In the following text, move the paragraphs into the proper order.

Initial order:

(Top of screen)

3. This is paragraph 3.
It should be last in this group.
2. This is paragraph 2.
It should be second
1. This is paragraph 1.
It should be first
(blank line)

1. Press the  key and type in the paragraphs as shown. Be sure to type  following the last line.
2. Position the cursor in the first line of paragraph 2.
3. Press the  key, then press the `MEMORY LOCK` function key to turn on Memory Lock mode.
4. Use the  key until the remaining paragraphs have rolled up under the cursor position and off the screen.

5. Turn off Memory Lock mode by pressing the **MEMORY LOCK** function key so the asterisk disappears from the label.
6. Press the **↵** key.

The display should appear as follows:

(Top of screen)

```

3. This is paragraph 3.
   It should be last in
   the group.
2. This is paragraph 2.
   It should be second.
1. This is paragraph 1.
   It should be first.

```

7. Now move paragraph 1 by positioning the cursor in the first line of paragraph 1 and turning on Memory Lock mode.
8. Use the **ROLL ▲** key until the cursor is in the first line of paragraph 3.
9. Turn off Memory Lock mode and press the **↵** key. The paragraphs should now be in order.

Note that if the data is not on the first page of memory, the **ROLL ▲** key can be used instead of the **↵** key to view the newly ordered text.

Moving A Block Of Text To Another Window

The Device Control, From Devices, To Devices, and Device Modes sets of function keys can be used to move a block of text from one window to another. To do so, the appropriate sets of function key labels are called to the screen to select the "from" device, the "to" device, and the amount of text to copy.

EXAMPLE

This example copies a line from workspace 1 to workspace 3 beginning at the cursor location in workspace 3.

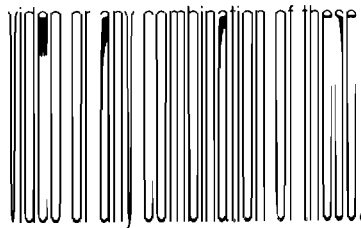
1. Configure the terminal as shown in figure 6-3.
2. Press the **AIDS** key, then the **device control** function key to display the Device Control set of labels.
3. Type "This is an example." in workspace 1.
4. Locate the cursor anywhere you please in workspace 3 but note its location for later reference.
5. Use the **NEXT WINDOW** function key to select window 1 as the active window.
6. Locate the cursor anywhere on the line which contains the statement "This is an example." and press the **AIDS** key to display the Aids set of function key labels.
7. Press the following function keys in sequence: **device control**, "from" device, **FROM WRKSPC1**, "to" devices, **TO WRKSPC3**, **device control**, and **COPY LINE**. The line "This is an example" should appear in window 3 beginning at the position where you located the cursor in window 3. You can also copy the full page from one workspace to another by using the **COPY PAGE** function key instead of the **COPY LINE** key. The data is copied starting at the cursor location in the source window and is copied beginning at the cursor location in the destination workspace. The entire line is copied for all lines displayed in the source window even though a part of the line is not displayed because the line is longer than the window.

Display Features

The terminal provides the following display features:

- DISPLAY ENHANCEMENTS - Parts of the display can be underlined, blinking, or inverse

video or any combination of these.



- ALTERNATE CHARACTER SETS - The keyboard can be used to select characters from Line Drawing, or other special character sets.

The following features are available in Format mode:

- PROTECTED FIELDS - Data cannot be entered and changed. Data will not be sent to the computer.
- UNPROTECTED FIELDS - Data can be entered and changed. Data will be sent to the computer.
- TRANSMIT ONLY FIELDS - Displayed data will be sent to the computer but cannot normally be changed.
- DATA CHECKING - Data can be checked to determine if it is numeric or alphabetic.

Forms can be created with these features to make data entry easier and reduce the chance of errors. The forms used are similar to paper forms except that they are displayed on the terminal screen. Forms are made by defining "fields" of one or more characters. Each character can be given one or more of the display features. Once a form is created, it can be stored in the computer and displayed as needed. Refer to the Reference manual for information on using these features.





Using Your Terminal With A Computer	7-1
Preparing the Terminal for Use On-Line	7-1
Configuring the Datacomm Port	7-1
Selecting Operating Modes	7-2
Remote	7-2
Block Mode	7-2
Auto LF	7-2
Caps Lock	7-2
If a Modem is Used	7-2
Sending Data to the Computer	7-3
Character Mode	7-3
Normal Operation	7-3
Modify Mode	7-3
Using Start Column	7-3
Block Mode	7-4
Receiving Data from the Computer	7-4
To the Display	7-4
To the Integral Printer or an External Device	7-4



Using Your Terminal With A Computer

7

The Terminal can be connected to a computer system either directly or through a modem. It is possible to connect the second datacomm port to either the same computer system or a different one. (Port 2 can be used only in a point-to-point configuration.) The procedure for establishing the communications link is the same for both ports.

Preparing The Terminal For Use On-Line

Preparing the terminal for use on-line consists of configuring the port, if necessary, and selecting the operating modes. The following procedures are not complete; they consist only of those procedures most likely to be needed. For complete information on configuring the terminal/computer link, refer to the Reference manual.

Configuring The Datacomm Port

Following is a suggested procedure for selecting the configuration values to be associated with the port. Essentially, the procedure assigns a terminal configuration to a workspace, the workspace is assigned to a port, then a datacomm configuration is also assigned to the port.

- Select the terminal configuration (Terminal Configuration menu # 1, # 2, # 3, or # 4) you wish to use. If none of the configurations are suitable, modify one to suit your needs as described in section 5 and use the `SAVE CONFIG` function key to store the values in non-volatile memory and make them active. Most of the fields on the menu, once set, will probably not be changed. If you do wish to change some values, refer to the Reference manual for detailed information on the menu fields.
- Display the Workspace/Window Configuration menu (`AIDS`, `config keys`, and `window config`) and assign the selected terminal configuration to the workspace you intend to assign to the port. This is done by displaying the number of the terminal configuration (1, 2, 3, or 4) in the `Term Config` column associated with the workspace you intend to assign to the port.
- While the Workspace/Window Configuration menu is displayed, assign the workspace to the port to be used by displaying the workspace number in either the `'Port 1 Wrkspc'` or `'Port 2 Wrkspc'` field.
- Make any other appropriate changes to the menu and press the `SAVE CONFIG` key to store the displayed values in non-volatile memory and make them active.
- Display the Config Keys set of function key labels (`AIDS`, `config keys`) and press your choice of the `datacom1 config` or `datacom2 config` keys. Then use the `NEXT CONFIG` function key to display the menu for the protocol to be used. Make any necessary changes, then save the values in non-volatile memory by pressing the `SAVE CONFIG` key.
- Display the Global Configuration menu (`AIDS`, `config keys`, `Global Config`) and assign the datacomm configuration (1 or 2) to the port to be used. This is done by displaying the number of the datacomm configuration (1 or 2) in either the `'Port 1 Datacom'` or `'Port 2 Datacom'` field (depending on the port to be used) and pressing the `SAVE CONFIG` key.

Selecting Operating Modes

Two methods are available for selecting Remote, Block, Modify All, and Auto LF modes; through the **MODES** key or by entering **ON** in the appropriate field of the terminal configuration menu for the virtual terminal being configured. The **MODES** key method is used in the following discussion; however, the other method would work as well. Whichever method is used, both the Modes function key labels and the terminal configuration menu will reflect the latest selection. (Note that the **MODIFY** field on the terminal configuration menu refers only to Modify All mode, not Line Modify mode.)

REMOTE. For the terminal to communicate with the computer, Remote mode must be selected. To select Remote mode, press the **MODES** key to display the Modes labels, then, if no asterisk is present in the **REMOTE MODE** label, press the associated function key to produce an asterisk in the label.

BLOCK MODE. Block mode is used to select whether data will be sent to the computer character-by-character or in blocks of characters. When Block mode is not selected, the characters are sent to the computer as they are typed. This mode of operation is used for conversational exchanges with the computer. In Block mode, the characters are stored in the terminal as

they are typed. They are not sent to the computer until the **ENTER** key is pressed. This enables you to edit your data before sending it to the computer. The block is sent by pressing the **ENTER** key. The block can be one of two sizes; a line or a page. The block size selection is made on the terminal configuration menu for the terminal being connected to the computer.

To select the block size, display the terminal configuration menu by pressing the **AIDS**, **config keys**, and **term #x config keys** (where x is the number of the terminal being connected to the computer). Then place the cursor in the **Line/Page** field and use the **NEXT CHOICE** key to display your choice of block size. With your choice displayed, press the **SAVE CONFIG** key to store the displayed configuration values in non-volatile memory.

AUTO LF. Normally, automatic line feed is not selected when communicating with a computer. To select it, display the Modes labels by pressing the **MODES** key, then, if no asterisk is present in the **AUTO LF** label, press the associated function key once to produce an asterisk in the label.

CAPS LOCK. Unless the computer system to which your terminal is connected accepts lower-case letters, Caps Lock mode should be selected. Caps Lock is selected on the terminal configuration menu for the terminal (# 1, # 2, # 3, or # 4) being connected to the computer. To access the menu, press the **AIDS**, **config keys**, and **term #x config keys**, in sequence (where x is the number of the terminal). With the menu displayed, position the cursor at the **Caps Lock** field and use the **NEXT CHOICE** key to display your choice of **ON** or **OFF**; then press the **SAVE CONFIG** key to store the configuration values in non-volatile memory.

If A Modem Is Used

If a modem is used, it may be necessary to turn on the modem, make modem speed and parity settings, or dial a telephone number. Baud rate and parity settings should be the same values used for the terminal. These settings can be observed by displaying the datacomm configuration menu used in configuring the datacomm port.

Sending Data To The Computer

Data can be sent to the computer from the keyboard in either Character or Block mode. Block mode enables editing the data before sending it. Modify mode is available for editing data before transmission while operating in Character mode.

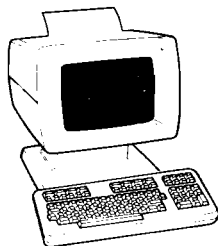
Character Mode

NORMAL OPERATION. In Character mode, each character is sent to the computer, automatically, as it is typed into the keyboard.

MODIFY MODE. While operating in Character mode, two Modify modes can be used to edit data already displayed on the screen before sending it to the computer. These modes are Line Modify and Modify All. For example, if you have transmitted to the computer a string of data which contains an error and the computer returns an error message, instead of retyping the data you can enter Line Modify mode, correct the error using the keyboard edit keys, and retransmit the string by pressing the **RETURN** or **ENTER** key.

Modify All mode is used like Line Modify mode except that, unlike Line Modify mode, Modify All mode does not end when the **RETURN** or **ENTER** key is pressed. To enter Line Modify mode, press the **MODES** and **LINE**

MODIFY keys. The mode is ended when the **ENTER** or **RETURN** key is pressed. To enter Modify All mode, press the **MODES** and **MODIFY ALL** keys. An asterisk is present in the **MODIFY ALL** label when the mode is activated. Pressing the **MODIFY ALL** key while in Modify All mode ends the mode and removes the asterisk from the label.



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COMPUTER



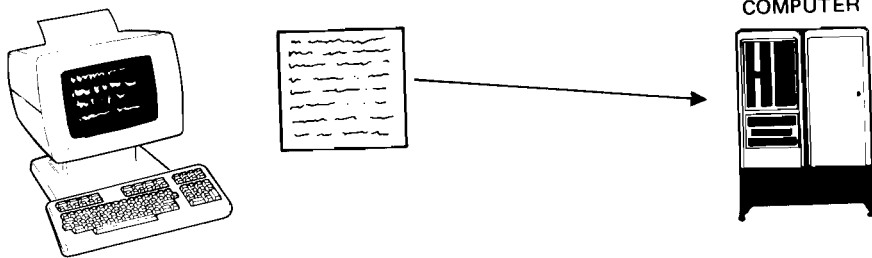
USING START COLUMN. The start column feature is used only in Line Modify or Modify All mode. Provided certain conditions are met, it can be used to transmit data to the computer, deleting any data to the left of a selected column. It works as follows. Under certain conditions, a "logical start of text" pointer is set for each line of text by the terminal firmware, at the leftmost column in which a character is entered. Then, when the user presses the **ENTER** or **RETURN** key to transmit the text to the computer, transmission starts at the column indicated by the pointer. However, if no pointer exists for the line, transmission starts at the column specified in the Start Col field of the applicable Terminal Configuration menu.

The conditions required to generate a "logical start of text" pointer are as follows:

1. The terminal must be in Remote mode but not Block or Format mode when the line is entered.
2. The line to which the pointer applies must be entered from the keyboard (not from the computer).
3. At the time the line is entered, it must be the bottommost non-blank line in the workspace.

Block Mode

In Block mode, data is stored in the terminal until the **ENTER** key is pressed, then it is transmitted as a block of data. The block size can be either a line or a page, as selected on the terminal configuration menu for the terminal connected to the computer. To enter Block mode, press the **MODES** and **BLOCK MODE** keys. An asterisk is present in the **BLOCK MODE** label while Block mode is active. To return to Character mode, remove the asterisk from the label by pressing the **BLOCK MODE** key again.



Receiving Data From The Computer

To The Display

No special action is required to receive data from the computer. When the terminal is in Remote mode, data is normally displayed on the screen as it is received.

To The Integral Printer Or An External Device

The terminal can be set to perform on-line data logging – automatically routing data, when it is received from the computer, to the integral printer, an external device con-

integral printer, an external device connected to port 2, or both. You can do this using two methods; logging from the top of the workspace or logging from the bottom (figure 7-1). When data is logged from the top, the top line in the workspace is routed to the destination device when it is crowded off the top of the workspace by lines added at the bottom. When bottom logging is used, a line is routed to the destination device when the cursor leaves the line to begin a new line. If top logging is used, the data remaining in the workspace when communication with the computer is completed is left uncopied to the destination device. In data logging, the source device is always the workspace active when data logging is selected. To do either top or bottom logging, proceed as follows:

- Display the To Devices labels by pressing the **AIDS**, **device control**, and **"to" devices** keys.
- Select the destination(s). You can select as many destination devices as you like. The selectable destination devices consist of the integral printer or an external device (which must be connected to port 2). When selected, the label for a device contains an asterisk.
- Display the Device Modes set of labels by pressing the **device control** key followed by the **device modes** key.
- Select either **LOG TOP** or **LOG BOTTOM**.

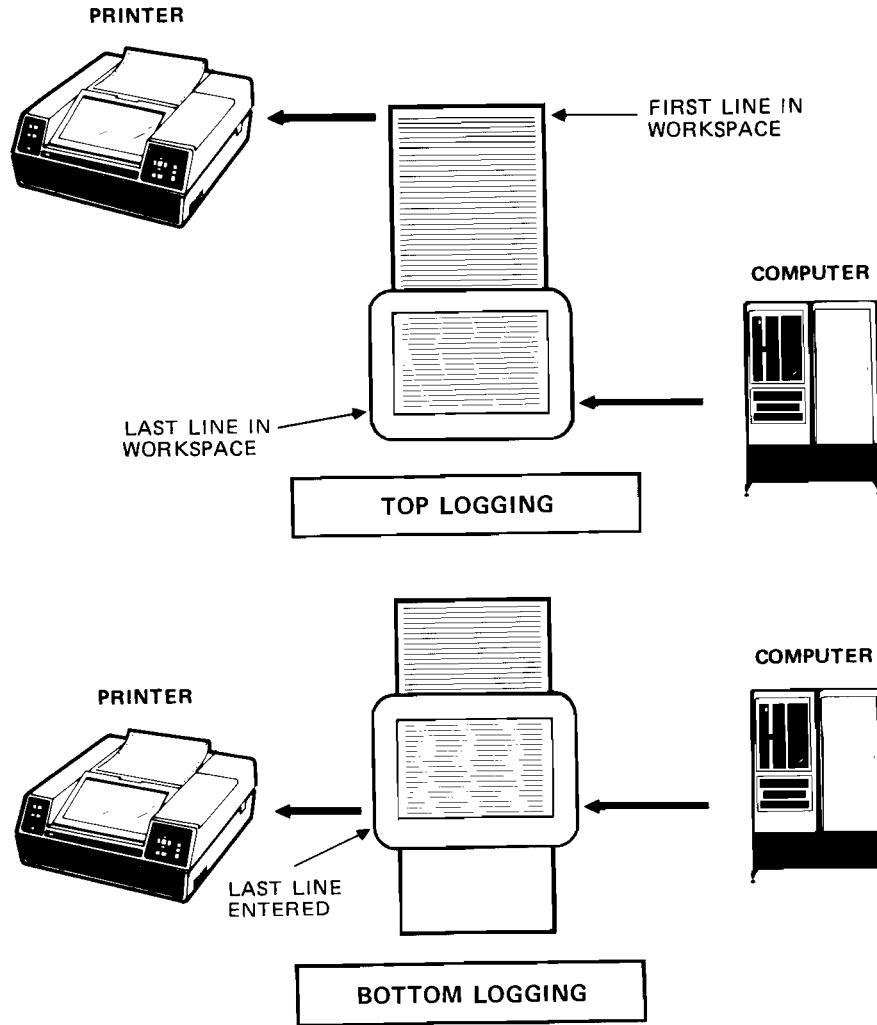


Figure 7-1. Data Logging.



88

Using Your Terminal With Other Devices 8-1



Using Your Terminal With Other Devices

You can use your terminal to copy data from a workspace to the integral printer, to an external device, or to another workspace. In all cases, the source must be one of the workspaces. Two copy methods can be used: copying data after all data entry has been completed or copying while data is being entered into the workspace. The latter method is called data logging. The procedure is similar for both methods.

Procedure

The steps for copying data by either method are as follows:

- Display the From Device function key labels by pressing the **AIDS**, **device control**, and **"from" device** keys in sequence.
- Select the data source. You can select either the active workspace (**FROM CRS WSP**) or select the workspace by number (1, 2, 3, or 4). If data logging is to be used, a source need not be selected since the active workspace is automatically selected as the source for a data logging operation.
- Display the To Devices labels by pressing the **"to" devices** key.
- Select the destination(s). You can select as many destination devices as you like. The selectable destination devices consist of the integral printer, an external device, and all workspaces except the source workspace. When selected, the label for a device contains an asterisk.
- If data logging is to be used or if the entire screen is to be copied, display the Device Modes set of labels by pressing the **device control** key followed by the **device modes** key. Then, if data logging is to be used, select either **LOG TOP** or **LOG BOTTOM**. (For the data logging method, this completes the setup procedure; at this point, you can begin to enter data). If the screen is to be copied, press the **SCREEN COPY** key.
- If data logging is not used, display the Device Control set of labels by pressing the **device control** key. If you wish to skip a line or a page on the destination device before beginning printing, you can do so by pressing the **ADVANCE LINE** or **ADVANCE PAGE** key. (For the integral printer, **ADVANCE PAGE** works only in Report or Metric mode.) Then select the amount to be printed by pressing the **COPY ALL**, **COPY PAGE**, or **COPY LINE** key. **COPY ALL** copies all data in the workspace between the line containing the cursor and the end of the workspace.



9

Maintenance	9-1
Loading Printer Paper	9-1
Battery Replacement	9-2
Cleaning	9-3



Maintenance of the terminal consists of loading paper into the integral printer (for terminals containing one), replacing the battery which powers non-volatile memory under power off conditions, and cleaning the screen, plastic housing, and keyboard to remove dust and grease.

Loading Printer Paper

The integral printer uses a thermal printing paper produced specifically for use in the integral printer. Printer paper can be purchased through your local HP Sales and Service office using the following nomenclature and part number:

1 box (24 rolls) Thermal Paper (blue), HP part no. 9270-0638.

1 box (24 rolls) Thermal Paper (black), HP part no. 9270-0656.

CAUTION

It is recommended that you always use the HP thermal paper in your integral printer because use of non-HP paper can shorten the life of the print head and the print quality might be affected. Also, if you have an HP Warranty Service Contract, you must use HP Thermal Paper to maintain a valid contract.

Load printer paper according to the following instructions:

1. Lift the top cover of the printer mechanism (figure 9-1). An illustration of the correct paper position and flow is embossed on the underside of the cover.

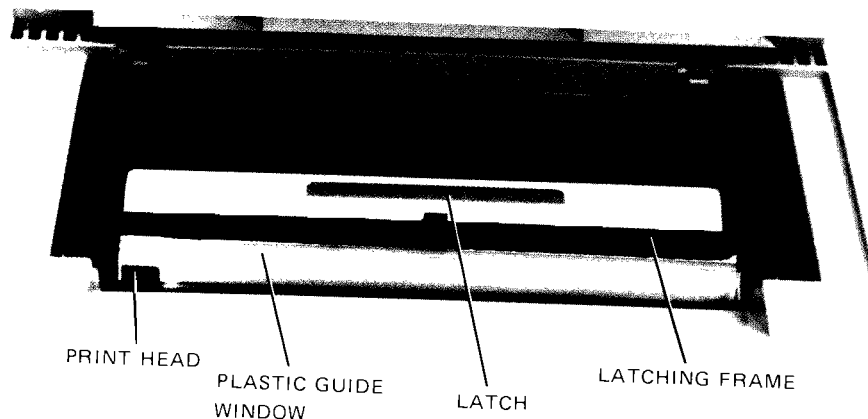


Figure 9-1. Printer Mechanism.

2. Press the latch toward the front of the terminal to release the latching frame. Lift the hinged latching frame to its forward position.
3. Remove any paper remaining in the printer.
4. The cardboard cylinder on which the paper is rolled is held in place by a metal rod which passes through the cylinder. Lift the cylinder upward and forward along the guide slots to remove the cylinder and rod.

5. Remove the rod from the cylinder and insert it in the new roll of paper.

NOTE

The paper used is coated with print material on one side only and must be inserted correctly in the printer to produce print. The paper must feed toward the front of the terminal from the underside of the paper roll. See the embossed illustration on the underside of the top cover.

6. Place the ends of the metal rod in the guide slots on either side of the print mechanism and press down and toward the rear until the rod snaps into place.

CAUTION

The print head (figure 9-1) is relatively fragile and susceptible to damage; be careful not to strike it while loading paper.

7. Feed the leading edge of the paper through the latching frame between the latching frame and the clear plastic guide window.
8. Lower the latching frame into place without locking it.

9. Align the sides of the paper with the guide lines embossed on each side of the guide window.

NOTE

Each new roll of paper has a glue spot, used to hold the roll intact, near the leading edge of the roll. The print head should not be allowed to pass over this glue spot during print operations.

10. Feed approximately 12 inches of paper through the latching frame so that the glue spot is beyond (outside) the print head and guide window.
11. Press down the latch until it locks into place with an audible click. If the latch is not locked, a printer error will be printed at the bottom of the screen when a printer operation is attempted.
12. Tear off any excess paper using the guide window as a cutting edge.
13. Close the top cover.

NOTE

If subsequent print operations appear normal except that no print image appears, the paper may have been installed backwards. An image can be printed on only one side of the paper.

Battery Replacement

Configuration data stored in non-volatile memory is protected from destruction by a storage battery located above the rear panel of the terminal (figure 9-2). The battery should be replaced every 12 months. A new battery can be obtained through commercial sources by requesting Mallory Battery, Type TR133. In addition to commercial sources, you can order batteries through your local HP Sales and Service Office using the following nomenclature and number:

HP 2626A Battery, HP Part No. 1420-0259.

You may want to record the configuration data on paper before removing the old battery in case the configuration data should be destroyed when the battery is removed (although, normally, data will not be lost if terminal power is left on while the battery is replaced).

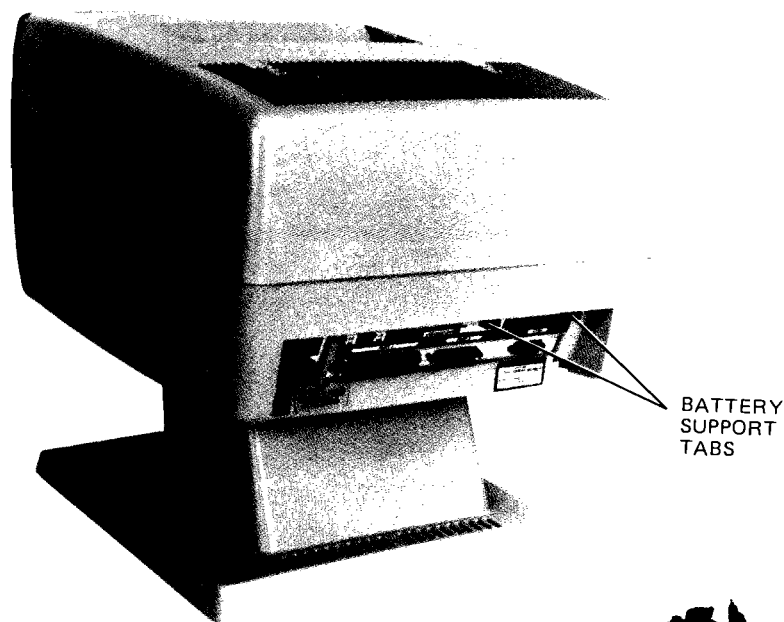


Figure 9-2. Battery Support Location.



To replace the battery, perform the following procedures:

- If the terminal power is off, turn it on and wait till the terminal is ready to operate.
- Squeeze the tabs (figure 9-3) toward the center of the battery support with enough pressure to disengage the flanges which hold the battery support in the terminal and pull down to free the battery support from the terminal.
- Remove the old battery from the support.
- Insert the new battery in the support making sure the positive end of the battery is located at the positive end of the support (+ to + and - to -).
- Reinsert the battery support in the terminal. A slotted guide in the outward-facing side of the support ensures that the battery support is inserted with the right polarity.

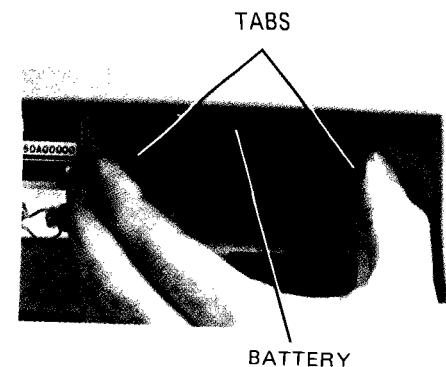


Figure 9-3. Battery Replacement.

Cleaning

First, dust lightly using a damp, lint-free cloth. The cloth should not be wet, but just damp enough to pick up dust. Paper towels are fine. Avoid wiping dust or lint into the keyboard area.

CAUTION

Do not use petroleum-based cleaners, such as lighter fluid, or cleaners containing benzene, trichloroethylene, dilute ammonia, ammonia, or acetone. These cleaners could harm the plastic surfaces. Also, avoid spraying cleaner between the keyboard keys.

Smudges and fingerprints can be removed using most conventional cleaners (such as "SNAP" glass and plastic cleaner, manufactured by Mist Products Inc., 16 Watch Hill Rd., Croton-on-Hudson, N.Y. 10520).



10

In Case Of Difficulty	10-1
Error Messages	10-1
Configuration Checking	10-3
Resetting the Terminal	10-3
Soft Reset	10-4
Hard Reset	10-4
Self Tests	10-4
Terminal Test	10-4
Printer Test	10-5
How to Get Help	10-5



In Case Of Difficulty

This section contains explanations of error messages, instructions for determining if a malfunction has actually occurred, error recovery instructions, and testing information. Once you have determined that the terminal is not functioning properly, procedures for requesting service are included at the end of this section under the heading "How to Get Help".

Error Messages

The terminal generates two kinds of error messages of concern to the user; user error messages and printer test error messages. User error messages occur when the user makes an error while using the terminal and printer test error messages occur while the integral printer is being tested. The messages appear on lines 25 and 26, replacing the function key labels. To clear an error message and restore the labels, press the **RETURN** key. User error messages and their meanings are listed in table 10-1. Printer test error messages and their meanings are listed later under the heading "PRINTER TEST".

Table 10-1. User Error Message Meanings

MESSAGE	MEANING
ALPHA ONLY FIELD	With format mode enabled, you attempted to enter numeric data into a field defined as "alphabetic only". Clear the message (by pressing RETURN) and then enter the proper
DEFAULT CONFIG(S) USED	This message occurs whenever non-volatile memory is found to be malfunctioning or cannot be read for any reason. In this case, a default set of configuration parameters is used.
DEVICE TRANSFER IN PROGRESS	You attempted to perform a device-to-device data transfer while one is currently in progress.
"FROM" = "TO" DEVICE	You attempted to perform a device-to-device data transfer but one of the defined "to" devices is the same as the "from" device.
FUNCTION LOCKED	The function you have attempted to perform has been "locked" programmatically.

Table 10-1. User Error Message Meanings (Cont.)

MESSAGE	MEANING	MESSAGE	MEANING
INTEGRAL PRINTER ERROR	Something is wrong with the integral printer. It may just be out of paper or the metal latch (under the plastic printer lid) may not be pressed down securely.	NO PORT ATTACHED TO WORKSPACE	Both Character mode and Remote mode are enabled but the workspace associated with the active window is not currently attached to an active datacomm port. In such a case this error message is displayed every time you attempt to enter a data character through the keyboard. If local echo is enabled the data character is entered into the workspace.
KYBD WORKSPACE DOES NOT EXIST	The workspace number specified in the <code>Kybd Win</code> field of the Workspace/Window Configuration menu is not associated with a defined workspace.	NO "TO" DEVICE	You are attempting to perform a device-to-device data transfer without having first defined a "to" device.
KYBD WORKSPACE NOT OPEN	The workspace specified in the <code>Kybd Wksp</code> field of the Workspace/Window Configuration menu is not currently associated with any display window.	NOT MULTIPLE OF FOUR	The value specified in the <code>Page Width</code> field of the Workspace/Window Configuration menu is not a multiple of four.
DEVICE TRANSFER IN PROGRESS. LOGGED DATA LOST	With data logging enabled, data that should have been directed to a printer ("logged") was NOT because a device-to-device data transfer was in progress.	NUMERIC ONLY FIELD	In format mode, you attempted to enter alphabetic data into a field defined as "numeric only".
MONITOR MODE INVALID	You attempted to enable monitor mode but the cursor active window is not attached to a datacomm port.	PORTS ATTACHED TO SAME WORKSPACE	You have specified the same workspace number in both the <code>Port 1 Wksp</code> and <code>Port 2 Wksp</code> fields of the Workspace/Window Configuration menu. This is not allowed.
MONITOR MODE LOCKED	Monitor mode is disabled (you cannot enable it from the keyboard).	RANGE ERROR	The configuration menu field marked by the cursor contains a value that is not within the allowed range.
MULTIPT INVALID ON PORT 2	You have attempted to attach a multipoint configuration menu to port # 2. This is not allowed. Only port # 1 can support a multipoint configuration.		

Table 10-1. User Error Message Meanings (Cont.)

MESSAGE	MEANING	MESSAGE	MEANING
ROWS EXCEED MAX	The total number of rows assigned to workspaces exceeds the Max Rows value shown at the bottom of the Workspace/Window Configuration menu.	VERTICAL BORDER INVALID	One of the following conditions exist: <ol style="list-style-type: none"> 1. One or more display windows are designated as existing to the left of the vertical border (Side=LEFT), but the vertical border is set to column zero (Vert Border Col # = 0). 2. One or more display windows are designated as existing to the right of the vertical border (Side=RIGHT), but the vertical border is set to column 80 (Vert Border Col # = 80).
SCREEN ROWS EXCEED WORKSPACE ROWS	In the Workspace/Window Configuration menu, you are attempting to define a display window with more screen rows than there are memory rows in the associated workspace. You must either increase the size of the workspace or decrease the size of the display window.	WINDOWS OVERLAP	Two or more display windows on the same side of the vertical border are defined such that they would overlap. The cursor is positioned in the offending Start Row field (of the Workspace/Window Configuration Menu). If more than two windows overlap, the cursor is positioned in the first offending Start Row field; when you correct that field and then try to save the menu the cursor moves to the next offending Start Row field.
SCREEN ROWS WOULD EXCEED WORKSPACE ROWS	Using the BORDR UP or BORDR DN window control function keys, you have attempted to increase the size of a display window beyond that of the associated workspace.	WORKSPACE DOES NOT EXIST	The workspace number specified in either the Port 1 Wrkspc or Port 2 Wrkspc field of the Workspace/Window Configuration Menu is not associated with a defined workspace.
START > STOP ROWS	The Start Row value (in the Workspace/Window Configuration menu) marked by the cursor is greater than the associated Stop Row value.		

Configuration Checking

Sometimes what appears to be a terminal malfunction may be caused by incorrect configuration for the job you are trying to do. When the terminal appears to malfunction, the usual procedure is to reset the terminal, then, if the problem isn't corrected, a terminal test is performed and a call for service is made if the test fails. However, resetting the terminal disrupts printer and datacomm operations and resets (hard reset only) some of the configurable items to the values stored in non-volatile memory which may not be desirable. If the current configuration isn't stored in non-volatile memory and you wish to save it, you may want to check the configurable items to ensure that the configuration is compatible with the task you are trying to perform before performing a hard reset. Refer to Section 5 for configuration instructions.

Resetting The Terminal

It may be necessary to use the **RESET TERMINAL** key to clear the terminal of an error condition. There are two types of reset; a soft reset and a hard reset. Either type resets printer and datacomm operations and a hard reset resets the active configuration values to the values stored in non-volatile memory. Also, all data in all workspaces is destroyed. For these reasons, you may not wish to reset the terminal unless you are quite certain it is necessary.

Soft Reset

A soft reset is performed by pressing the **RESET TERMINAL** key. The effects are listed below. Except for datacomm configuration values, currently active configuration values are preserved during a soft reset; the values in non-volatile memory do not become the active values as is the case when a hard reset is performed.

- The keyboard bell rings.
- Any error messages present are cleared.
- The keyboard is unlocked for all workspaces.
- If the Display Functions capability is active, it is turned off in all workspaces.
- Operations of all devices controlled by the terminal are stopped.
- All datacomm transfers are cancelled and any data stored in the datacomm buffers is cleared out.

Hard Reset

A hard reset is performed by simultaneously pressing the **SHIFT** and **RESET TERMINAL** keys. A hard reset has the following effects:

- All data in all workspaces is destroyed.
- All configurations are reset to the values stored in non-volatile memory.

- The keyboard, if disabled, is enabled.
- CAPS lock is turned off.
- For each window, the left margin is set to column 1 and the right margin is set to the last column of the window (the window configuration is not changed by a reset).
- All tabs are cleared except the left margin.
- The following capabilities, if on, are turned off:
 1. Display functions.
 2. Line Modify mode.
 3. Insert character (with or without wraparound).
 4. Memory Lock mode.
- The following functions are turned off for terminals containing an integral printer:
 1. Report mode selection.
 2. Log top or log bottom selection.

Self Tests

Two tests are available to the user; a terminal test, for checking out the terminal for proper operation, and a printer test for checking out the integral printer only.

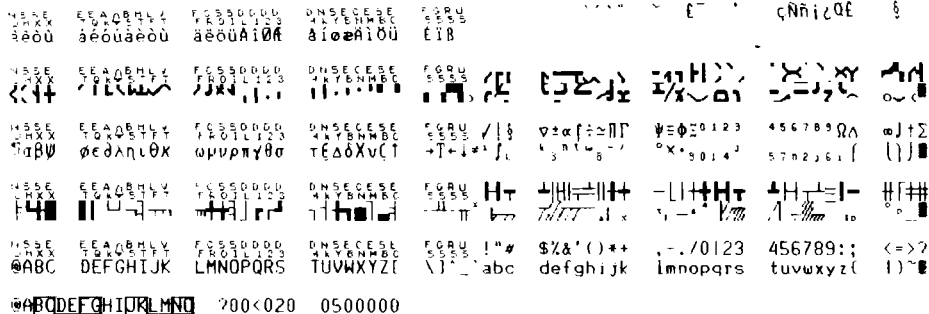


Figure 10-1. Terminal Test Pattern

Printer Test

The printer test checks out only the integral printer. To initiate the test, press the following keys, in sequence: **AIDS**, service keys, and INT PRT TEST. If the test results are satisfactory, a printer test pattern which includes all the characters the terminal can produce is printed out (figure 10-2). If the test is unsatisfactory, an error message, INTEGRAL PRINTER ERROR will be printed out. This means the printer latch is not locked, the printer is out of paper, or the printer self test has failed.



Figure 10-2. Printer Test Pattern.

Terminal Test

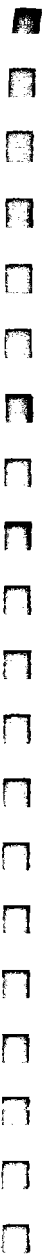
The terminal test will tell whether or not the terminal is operating correctly. The test can be initiated by any one of the procedures listed below.

1. Press the following keys, in sequence: **AIDS**, service keys, and TERMINAL TEST.
2. Press the **MODES** key followed by the TERMINAL TEST function key.
3. Press the **ESC** key followed by the "z" key.

If the test is successful, indicating the terminal is operating correctly, a test pattern (figure 10-1) will appear on the screen. If an error occurs during the test, one of three error messages will be displayed; ROM ERROR Uxx, ("xx" is a number which identifies the ROM chip in which the error is located), RAM ERROR, or NV RAM ERROR. Refer to the "How to Get Help" paragraph at the end of this section if an error message occurs.

How To Get Help

If the terminal doesn't complete the terminal test correctly or an error message occurs, the terminal is probably malfunctioning. At this point you can either perform further tests, as described in the Reference manual or contact your nearest Hewlett-Packard service office. A list of service offices is supplied at the end of this manual.



A

Modes Key Set	A-1
Aids Key Set	A-2
Device Control Set	A-3
"From Device" Set	A-4
"To Device" Set	A-5
Device Modes Set	A-6
Margin/Tab/Col Softkey	A-7
Service Set	A-8
Window Control Set	A-9
Enhance Video Set	A-11
Define Fields Set	A-12
Modify Char Set	A-14
Sketch Forms	A-15
Draw Lines Set	A-16
Define Lines Set	A-17
Configuration Set	A-18
User-Definable	A-19



**LINE
MODIFY** **MODIFY
ALL** **BLOCK
MODE** **REMOTE
MODE**

**TERMINAL
TEST** **MEMORY
LOCK** **DISPLAY
FUNCTNS** **AUTO
LF**

LABEL

FUNCTION

Table A1. MODES KEY SET

**LINE
MODIFY**

Used only in Remote mode and applies to all virtual terminals. When enabled, this mode allows editing a line of data, while in Character mode, then using the **ENTER** or **RETURN** key to transmit the line to the computer as a block. Line Modify mode ends when the **ENTER** or **RETURN** key is pressed.

**MODIFY
ALL**

Similar to **LINE MODIFY** except that Modify All mode is not ended by the **ENTER** or **RETURN** key. Also, it applies to any workspace assigned to a virtual terminal for which **MODIFY** is selected (ON) on the Terminal Configuration menu. When Modify All mode is active, an asterisk is present in the label. Pressing the **MODIFY ALL** function key while the mode is active ends the mode and removes the asterisk from the label.

**BLOCK
MODE**

This label is used only in Remote mode and applies to any workspace assigned to a virtual terminal for which **BLOCK** is selected (ON) on the Terminal Configuration menu. When active, (asterisk present in the label), typed data is displayed but not sent to the computer until after the **ENTER** key has been pressed. Otherwise the terminal is in Character mode and each character is transmitted to the computer as typed.

**REMOTE
MODE**

When an asterisk is present in the label, any workspace assigned to a virtual terminal for which **REMOTE** is selected (ON) on the Terminal Configuration menu is selected for Remote mode (prepared for communications with the computer when it becomes the active workspace). When the asterisk is absent, it is selected for Local mode.

**TERMINAL
TEST**

Initiates a go/no go test of overall terminal operation. On completion of the test, a test pattern which includes all character sets the terminal is capable of displaying are displayed on the screen.

**MEMORY
LOCK**

Applies only to the window active when the **MEMORY LOCK** function key is pressed. Operates in two modes; overflow protect and display lock.

LABEL

FUNCTION

Overflow Protect. When Memory Lock mode is activated in the first line of the window, data can be entered to the end of workspace memory; then, when the end of memory is reached, no more data is entered and the bell sounds.

Display Lock. Invoked by activating Memory Lock mode; deactivated by leaving Memory Lock mode. When Display Lock mode is entered, all data between the first line displayed and the line in which the cursor is located is frozen. Then, when new data is entered following the displayed data, the new data, when it is entered beyond the last line on the screen, scrolls up under the frozen data and the lines scrolled up off the screen are inserted in memory immediately preceding the first line of frozen data.

When the **ROLL** key is pressed in Display Lock mode, the line on which the cursor is located and succeeding lines roll up under the lines preceding the cursor line. The lines of data which were rolled up off the screen are inserted in memory preceding the first line of frozen data.

NOTE

When the active window has less rows assigned to it than those locked with the **MEMORY LOCK** key, the cursor row and column readouts at the bottom center of the screen will display seemingly incorrect row and column identifications.

**DISPLAY
FUNCTNS**

Applies only to the window active when the **DISPLAY FUNCTNS** function key is pressed. In this mode, the action normally produced by any keyboard control key, such as **RETURN**, **TAB**, or any of the display or edit groups of keys, is not performed. Instead an ASCII character or escape sequence representing the function is displayed on the screen.

**AUTO
LF**

Applies to any workspace assigned to a virtual terminal for which **AUTO LF** is selected (ON) on the Terminal Configuration menu when the **AUTO LF** function key is pressed. Generates a line feed with every carriage return (**RETURN** key).

device control **margin/tab/col** **service keys** **window control**

enhance video **define fields** **sketch forms** **config keys**

LABEL

FUNCTION

Table A2. AIDS KEY SET

device control

Displays the first of four sets of labels for transferring data from a workspace to one or more of the following: another workspace, the integral printer, or an external device. The other sets are accessible from the first set.

margin/tab/col

Displays a set of labels which enable control of margins, tabs, and selection of the start column for transmission of data to a computer in Remote mode.

service keys

Displays the set of service labels which allow the following selections.

- Power-on test.
- Monitor mode (for use in multipoint datacomm operation).
- Terminal test.
- Identify ROMs used in terminal
- Datacomm test
- Integral printer test.

window control

Displays the Window Control set of labels which can be used to change the size of each of the windows, select the active window, and change the workspace/window relationships

enhance video

Displays the first of three sets of enhancements labels which represent the terminals display enhancements and alternate character set selection.

LABEL

FUNCTION

define fields

Displays a set of field enhancements labels.

sketch forms

Displays one of three sets of forms-drawing labels. The second and third sets are accessible from the first set. The set accessed by the "sketch forms" function key (Sketch Forms set) enables framing (drawing a line around) the window and setting the left, right, top, and bottom margins for the window in which the cursor is located.

config keys

The second set (Draw Lines set) enables drawing and erasing horizontal and vertical lines.

The third set (Define Lines set) enables selection of the type of lines to be drawn using the Draw Lines set. The selections are: single line (default type), double line, bold line, inverse video line, underline, and blinking line.

Displays the configuration function key labels for selecting the following characteristics:

- Global terminal characteristics (those characteristics common to all four virtual terminals).
- Characteristics for the four virtual terminal configurations.
- Characteristics for all of the four available workspaces and windows used.
- Characteristics for the two data communication ports.

device modes "from" device "to" devices ADVANCE PAGE

ADVANCE LINE COPY ALL COPY PAGE COPY LINE

LABEL

FUNCTION

Table A3. DEVICE CONTROL SET

device modes	Displays the Device Modes set of labels.
"from" device	Displays the From Device set of labels.
"to" devices	Displays the To Devices set of labels.
ADVANCE PAGE	Provided either the integral printer (with Report or Metric mode selected) or the external device has been selected as a destination, this key causes the printer or device to skip to the top of the next page.
ADVANCE LINE	Provided either the integral printer or an external device is selected as the destination device this key causes the printer or device to skip the next line, leaving it blank.

LABEL

FUNCTION

COPY ALL	Provided a source and destination have been selected, all contents of the source workspace, starting with the line in which the cursor is positioned, are copied to the selected device(s).
COPY PAGE	Provided a source and destination have been selected, all lines in the source workspace which are displayed on the screen, starting with the line in which the cursor is positioned, is copied to the selected device(s).
COPY LINE	Provided a source and destination have been selected, the line in which the cursor is positioned in the source workspace is copied to the selected device(s).

*Note: Labels in the first column which are marked with an asterisk have a toggling action. If the mode controlled by the label is inactive, it can be activated by pressing the function key; if it is active, it can be deactivated by pressing the function key. When the mode is active, an asterisk is present in the displayed function key label.



FROM WRKSPC1 FROM WRKSPC2 FROM WRKSPC3 FROM WRKSPC4

device control device modes "to" devices FROM CRS WSP

LABEL

FUNCTION

Table A4. "FROM DEVICE" SET

device control	Displays the Device Control set of labels.
device modes	Displays the Device Modes set of labels.
"to" devices	Displays the To Devices set of labels.
FROM CRS WSP	Selects the active workspace (the one with the cursor) as the source for the data being transferred.
FROM WRKSPC1	Selects workspace 1 (so designated on the Workspace/window Configuration menu) as the source for the data being transferred.

LABEL

FUNCTION

FROM WRKSPC2	Selects workspace 2 (so designated on the Workspace/Window Configuration menu) as the source for the data being transferred.
FROM WRKSPC3	Selects workspace 3 (so designated on the Workspace/Window Configuration menu) as the source for the data being transferred.
FROM WRKSPC4	Selects workspace 4 (so designated on the Workspace/Window Configuration menu) as the source for the data being transferred.

*Note: Asterisks in the first column of the table indicate source devices. All source devices are mutually exclusive; when one is selected, all others are unselected. The label for the one currently selected contains an asterisk. To unselect the presently selected device, another device must be selected.

device control TO EXT DEV TO INT PRT TO CRS WSP

TO WRKSPC1 TO WRKSPC2 TO WRKSPC3 TO WRKSPC4

LABEL

FUNCTION

Table A5. "TO DEVICE" SET

device control

Displays the Device Control set of labels.

TO EXT DEV

Selects the external copy device (if one is provided) as a destination device for data transfer.

TO INT PRT

Selects the integral printer as a destination device for data transfer.

TO CRS WSP

Selects the active workspace (the one with the cursor) as a destination for the data being transferred.

TO WRKSPC1

Selects workspace 1 (so designated on the Workspace/Window Configuration menu) as a destination for the data being transferred.

LABEL

FUNCTION

TO WRKSPC2

Selects workspace 2 (so designated on the Workspace/Window Configuration menu) as a destination for the data being transferred.

TO WRKSPC3

Selects workspace 3 (so designated on the Workspace/Window Configuration menu) as a destination for the data being transferred.

TO WRKSPC4

Selects workspace 4 (so designated on the Workspace/Window Configuration menu) as a destination for the data being transferred.

*Note: Labels in the first column which are marked with an asterisk have a toggling action. If the mode controlled by the label is inactive, it can be activated by pressing the function key; if it is active, it can be deactivated by pressing the function key. When the mode is active, an asterisk is present in the displayed function key label.

device control SCREEN COPY LOG BOTTOM LOG TOP

EXPAND PRINT COMPRESS PRINT REPORT PRINT METRIC PRINT

LABEL

FUNCTION

Table A6. DEVICE MODES SET

device control

Displays the Device Control set of labels.

SCREEN COPY

Provided a destination has been selected, all data displayed on the screen is copied to the destination device. (Only printers are valid destinations for this operation.)

LOG BOTTOM

LOG BOTTOM is applicable only to the integral device. When LOG BOTTOM is selected, a line feed (whether produced directly or from an end-of-line wraparound) results in the line the cursor leaves being copied to the destination device (provided one has been selected). The data in the workspace is not changed. The LOG TOP and LOG BOTTOM labels are mutually exclusive; if one is selected while the other is selected, the one previously selected is automatically deselected.

LOG TOP

LOG TOP is applicable only to the integral printer and the external device. If a line is added to the currently selected workspace after it is filled with data, the line which is scrolled off the top of the workspace is copied to the destination device (provided one has been selected). The LOG TOP and LOG BOTTOM labels are mutually exclusive; if one is selected while the other is selected, the one previously selected is deselected.

EXPAND PRINT

The integral printer will print 5 characters per inch (approximately double the normal width). The vertical height remains the same. EXPAND and COMPRESS PRINT are mutually exclusive; if one is selected, the other is automatically deselected.

LABEL

FUNCTION

COMPRESS PRINT

The integral printer will print characters which are compressed horizontally (16.2 characters per inch). The vertical height remains the same. EXPAND and COMPRESS PRINT are mutually exclusive; if one is selected, the other is automatically deselected.

REPORT PRINT

Report format is selected for the integral printer and produces an 11-inch page. Report format is a three-line top margin, 60 lines of text, and a three-line bottom margin with a small tic mark to indicate the end of one page and the start of a new one. REPORT PRINT and METRIC PRINT are mutually exclusive; if one is selected, the other is automatically deselected.

METRIC PRINT

Metric format is selected for the integral printer. Metric format is a three-line top margin, 64 lines of text, and a three-line bottom margin with a small tic mark to indicate the end of one page and the start of a new one. REPORT PRINT and METRIC PRINT are mutually exclusive; if one is selected, the other is automatically deselected.

*Note: Labels in column 1 which are marked with an asterisk have a toggling action. If the mode controlled by the label is inactive, it can be activated by pressing the function key; if it is active, it can be deactivated by pressing the function key. When the mode is active, an asterisk is present in the displayed function key label.

START COLUMN SET TAB CLEAR TAB CLR ALL TABS

LEFT MARGIN RIGHT MARGIN CLR ALL MARGINS

LABEL

FUNCTION

Table A7. MARGIN/TAB/COL SOFTKEY

START COLUMN

Used only in Line Modify or Modify All mode. In Remote mode (provided the terminal is not in Format or Block mode), for the last line in the workspace on which text is entered, a logical start of text pointer is set at the column of the line in which the user types the first character. Then, when the user presses the **ENTER** or **RETURN** key, the terminal starts transmitting from the column indicated by the logical start of text pointer. However, if the terminal is not in Remote mode when the data is entered, if when the data was entered the line was not the last line in the workspace on which data was entered, or if the line is entered by the computer, no logical start of text pointer is generated by the terminal. In this case the terminal starts transmitting text from the column indicated in the `Start Col` field of the Terminal Configuration menu.

SET TAB

Sets a tab in the column in which the cursor is located for the workspace in which the cursor is located.

LABEL

FUNCTION

CLEAR TAB

Clears any tab set in the column in which the cursor is located for the workspace in which the cursor is located.

CLR ALL TABS

Clears all tabs in the workspace in which the cursor is positioned.

LEFT MARGIN

Sets the left margin for the workspace in which the cursor is positioned at the column in which the cursor is positioned.

RIGHT MARGIN

Sets the right margin for the workspace in which the cursor is positioned at the column in which the cursor is positioned.

CLR ALL MARGINS

Sets the left margin at column 1 and the right margin at the rightmost column for the workspace in which the cursor is located.

POWER ON
TEST

MONITOR
MODE

TERMINAL
TEST

IDENTIFY
ROMS

DATA COMM
TEST

INT PRT
TEST

LABEL

FUNCTION

Table A8. SERVICE SET

POWER ON
TEST

Initiates the power on test (the test automatically performed when power is applied to the terminal). This test is similar to turning off the power, then turning it back on in that all data in display memory is deleted and the configuration values stored in non-volatile memory become the active configuration values.

MONITOR
MODE

Initiates Monitor mode. Monitor mode is used only during data communications where two or more terminals are connected to the same computer. It allows a terminal to monitor data transfers between the computer and other terminals on the same communication line.

LABEL

FUNCTION

TERMINAL
TEST

Performs a test of the terminal.

IDENTIFY
ROMS

Displays a list of the ROMS installed in the terminal supplying their part numbers and identifying their contents.

DATA COMM
TEST

Initiates the data communications test which can be used to check the equipment used for data communications.

INT PRT
TEST

Initiates the integral printer test in which all upper and lower case characters are printed out in normal, expanded, and compressed form. Also, the single line, bold line, and underline capabilities are demonstrated.

NI XT **NE XT** **BORDER** **BORDER**
WI NDOW **WO RKS PCE** **LE FT** **RI GHT**

LABEL

FUNCTION

Table A9. WINDOW CONTROL SET

NI XT
WI NDOW

If there is more than one window defined, pressing this key moves the cursor from one window to the next. The workspace/window relationships are not altered. The progression from one window to another occurs in ascending order according to the workspace number currently associated with each defined window. When there is no window associated with a higher-numbered workspace, the sequence wraps around to the window associated with the lowest-numbered workspace.

NE XT
WO RKS PCE

When there are more workspaces defined than windows, pressing this key causes the next higher-numbered workspace that is not currently being displayed in any window to be displayed in the active window (provided the next higher-numbered workspace has as many or more rows as the active window). If there is no higher-numbered workspace which is not being displayed (or if there is but it lacks as many rows as the active window) the sequence wraps around to the lowest-numbered workspace.

BORDER
LE FT

Pressing this key causes the vertical border to move one character position to the left. If you hold this key down, the border continues to move to the left until you release the key or until it reaches the leftmost screen column, or column 1 if there is a window on the left side of the vertical border.

Any window to the right of the border is increased by one column at the left side of the window. This displays one more column of the workspace for each column the border moves left. Any window to the left of the vertical border loses one column on its right edge for each column the border moves. If the vertical border reaches the left edge of the workspace displayed in a right-side window, the data in the window is scrolled left one column for each column the vertical border is moved.

BOTTOM **BOTTOM** **TOP** **TOP**
BORDR UP **BORDR DN** **BORDR UP** **BORDR DN**

LABEL

FUNCTION

If the cursor is in a window to the left of the vertical border and the vertical border reaches the cursor before reaching the leftmost screen column, the data is scrolled left, maintaining its position with respect to the border, until leftward movement of the vertical border is stopped.

BORDER
RI GHT

Pressing this key causes the vertical border to move one character position to the right. If you hold this key down, the border continues to move to the right until you release the key or until it reaches the rightmost screen column, or column 79 if there is a window to the right of the vertical border.

Any window to the left of the border is increased by one column at the right side of the window. This displays one more column of the workspace for each column the border moves right. Any window to the right of the vertical border loses one column on its left edge for each column the border moves. If the vertical border reaches the right edge of the workspace displayed in a left-side window, the data in the window is scrolled right one column for each column the vertical border is moved beyond that point.

If the cursor is in a window to the right of the vertical border and the vertical border reaches the cursor before reaching the rightmost screen column, the data is scrolled right, maintaining its position with respect to the border, until movement of the vertical border is stopped.

BOTTOM
BORDR UP

Pressing this key causes the bottom border of the active window to move up one line on the screen. When the border moves up, the window above the border loses a line on its bottom edge and any window below the border gains a line on its upper edge for each line the border moves up. If you hold this key down, the border continues to roll upward until you release the key or until the active window contains only one line. In the latter case, pressing or continuing to hold down the key has no further effect.

NEXT WINDOW **NEXT WORKSPACE** **BORDER LEFT** **BORDER RIGHT**

BOTTOM BORDR UP **BOTTOM BORDR DN** **TOP BORDR UP** **TOP BORDR DN**

LABEL

FUNCTION

Table A9. WINDOW CONTROL SET (Cont.)

BOTTOM BORDR DN

Pressing this key causes the bottom border of the active window to move down one line on the screen. When the border moves down, the window above the border gains a line on its lower edge and any window below the border loses a line for each line the border moves down. If you hold this key down, the border continues to move downward until you release the key, until the last row in the workspace is displayed, until the next lower window (if there is one) on the same side of the vertical border contains only one line, or until the border reaches the bottom of the screen (if there are no windows defined beneath the active window). In the latter two cases, pressing or continuing to hold down the key has no further effect. If the key is held down after all lines of the workspace are displayed, the operation is stopped and an error message is displayed at the bottom of the screen.

TOP BORDR UP

Pressing this key causes the top border of the active window to move up one line on the screen. As the border moves up, the data in the active window rolls up also. If you hold this key down, the border continues to move upward until you release the key, until the top row of the workspace is displayed, until the next-higher window on the same side of the vertical border is reduced to one line (if there are any windows defined above the active window), or until the border reaches the top edge of the screen (if there are no windows defined above the active window). In the latter two cases, pressing or continuing to hold down the key has no further effect. If the key is held down after all rows of the workspace are displayed, the operation is stopped and an error message is displayed at the bottom of the screen.

TOP BORDR DN

Pressing this key causes the top border of the active window to move down one line on the screen. As the border moves down, the data in the active window rolls down also. If you hold this key down, the border continues to move downward until you release the key or until the active window contains only one line. In the latter case, pressing or continuing to hold down the key has no further effect.

define fields modify char set SET ENHNCMNT SECURITY VIDEO

UNDRLINE VIDEO INVERSE VIDEO BLINK VIDEO BACKGRND INVERSE

LABEL

FUNCTION

Table A10. ENHANCE VIDEO SET

define fields	Selects the Define Fields set of Enhancement group function key labels.
modify char set	Selects the Modify Char Set set of Enhancement group function key labels.
SET ENHNCMNT	Activates the currently selected state (whether on or off) of every enhancement. This key must be used to activate or deactivate any enhancement
SECURITY VIDEO	Characters in a field defined as a security field are stored in memory but are not displayed. Their place on the screen is left blank. If the field is later returned to the unsecure state, the characters will be displayed.
UNDRLINE VIDEO	Underlines all characters (including blanks).
INVERSE VIDEO	Inverts the intensity of the background and all characters in the field. The characters are made dark on a light background instead of the normal light characters on a dark background.
BLINK VIDEO	Causes all characters and enhancements in the field to blink on and off.

LABEL

FUNCTION

BACKGRND INVERSE

Switches the intensity of the background and the data on the whole screen. If the background is dark and the data is light, the background is made light and the data is made dark, and vice-versa.

Notes:

1. An asterisk below a label indicates the label has a toggling action. The enhancement is selected to be active when an asterisk is present in the label on the screen and inactive when the asterisk is absent. Alternate presses of the key produce and eliminate the asterisk.
2. Each enhancement must be activated and deactivated using the SET ENHNCMNT function key. When the SET ENHNCMNT key is pressed, all enhancements with an asterisk in the label are activated and all those without an asterisk in the label are deactivated. The asterisk in the function key label is removed when the SET ENHNCMNT key is pressed.
3. Each enhancement is active from the cursor position to the end of the line or to the start of the next enhancement if one has been defined between the cursor position and the end of the line.

ALPHA NUMERIC ALPHA ONLY NUMERIC ONLY FORMAT MODE

enhance video START UNPROTECT START XMIT FLD STOP FIELD

LABEL

FUNCTION

Table A11. DEFINE FIELDS SET

enhance video

Displays the Enhance Video set of labels.

START UNPROTECT

Defines all character positions between the cursor and either the start of the next field, a "stop field" marker, or the end of the line (whichever comes first) as an unprotected field. Any type of character can be entered in an unprotected field. Data in unprotected fields can be transmitted to the computer in Remote mode. (A transmit-only field is started using the **START XMIT FLD** key.) An unprotected field is ended by either a "stop field" marker (produced with the **STOP FIELD** key) or the end of the line.

START XMIT FLD

Defines all character positions between the cursor and the start of the next field, a "stop field" marker, or the end of the line (whichever comes first) as a transmit-only field. In Remote mode, data in a transmit-only field is transmitted to the computer along with data in any unprotected field. In Format mode, the **TAB** keys skip over transmit-only fields. Data can be entered in a transmit-only field by positioning keys. The **STOP FIELD** key must be used to end a transmit-only field. Transmit-only fields can be further defined as alpha/numeric, alpha-only, numeric only, or any combination of these fields.

STOP FIELD

Defines the end of any unprotected or transmit-only type field (by generating a "stop field marker").

ALPHA NUMERIC

Defines all character positions between the cursor and the end of the line, the start of the next field, or a "stop field" marker (whichever comes first) as an alpha/numeric field. Any character in the character set is allowed to be entered in an alpha/numeric field. An alpha/numeric field is ended with either a "stop field" marker, the start of another field, or the end of the line.

LABEL

FUNCTION

ALPHA ONLY

Defines all character positions between the cursor and the start of the next field, a "stop field" marker, or the end of the line (whichever occurs first) as an alpha-only field. Only a through z (upper and lower case) and a space can be entered in an alpha-only field. If an attempt is made to enter any other type of character in the field, the bell will sound, the keyboard will be locked, an error message will be displayed, and no character will be entered. To unlock the keyboard and erase the error message, press the **ENTER** key. An alpha-only field is ended either with a "stop field" marker, the start of another field, or the end of the line.

NUMERIC ONLY

Defines all character positions between the cursor and a "stop field" marker, the start of the next field, or the end of the line (whichever occurs first) as a numeric-only field. Only 0 through 9, a space, +, -, ., and , can be entered in a numeric-only field. If an attempt is made to enter any other type of character in the field, the bell will sound, the keyboard will be locked, an error will be displayed, and no character will be entered. To unlock the keyboard and erase the error message, press the **RETURN** key. A numeric-only field is ended with either a "stop field" marker, the start of another field, or the end of the line.

FORMAT MODE

In this mode, the fields (defined using the Define Fields function key label set) are made active. They apply only to the window currently active. When Format mode is entered, all memory in the active workspace is protected unless specifically defined otherwise using the Define Fields function keys. Normal procedure is to define the display enhancements, field, and character sets, then enter Format mode and enter data into the fields. An asterisk in the **FORMAT MODE** label indicates the mode is active. Alternate presses of the associated function key activate and deactivate the mode.

ALPHA NUMERIC ALPHA ONLY NUMERIC ONLY FORMAT MODE

enhance video START UNPROTECT START TRANSMIT FLD STOP FIELD

Table A11. DEFINE FIELDS SET (Cont.)

Notes:

1. Three general field types are used in Format mode; protected, unprotected, and transmit-only. Unless previously defined as unprotected or transmit-only, all lines are automatically defined as protected fields. Three subtype fields are also recognized; alpha/numeric, alpha-only, and numeric-only. Unprotected and transmit-only fields can be divided into any of the three subtype fields. The hierarchy is as shown below:

- - - FORMAT MODE - - -

PROTECTED FIELDS	UNPROTECTED FIELDS	TRANSMIT-ONLY FIELDS
---------------------	-----------------------	-------------------------

Alpha/numeric	Alpha/numeric	
Alpha-only	Alpha-only	
Numeric-only	Numeric-only	

2. When data is entered into the form designed using the forms-designing sets of labels, the cursor automatically skips to the start of the next unprotected field when a character is entered in the last character space in an unprotected field. The **TAB** keys advance the cursor to the next unprotected field.

define fields enhance video *

CHANGE TO BASE CHANGE TO SET A CHANGE TO SET B CHANGE TO SET C

LABEL

FUNCTION

Table A12. MODIFY CHAR SET

define fields

Displays the Define Fields set of labels.

enhance video

Displays the Enhance Video set of labels.

CHANGE TO BASE

Selects the base character set to be the alternate character set and, also, the character set used from the cursor position to the end of the line or the start of the next enhancement if one is located between the cursor position and the end of the line.

CHANGE TO SET A

Selects character set A, as defined on the Terminal Configuration menu associated with the active workspace, to be the alternate character set and also the set used from the cursor position to the end of the line or to the start of the next enhancement, if one is located between the cursor position and the end of the line.

LABEL

FUNCTION

CHANGE TO SET B

Selects character set B, as defined on the Terminal Configuration menu associated with the active workspace, to be the alternate character set and, also, the set used from the cursor position to the end of the line or to the start of the next enhancement, if one is located between the cursor position and the end of the line.

CHANGE TO SET C

Selects character set C, as defined on the Terminal Configuration menu associated with the active workspace, to be the alternate character set and, also, the set used from the cursor position to the end of the line or to the start of the next enhancement, if one is located between the cursor position and the end of the line.

draw
Lines

define
Lines

MARGIN
FRAME

FRAME
DATA

LABEL

FUNCTION

Table A13. SKETCH FORMS

draw
Lines

Displays the Draw Lines set of forms-drawing labels. These labels enable drawing and erasing horizontal and vertical lines.

define
Lines

Displays the Define Lines set of function key labels. These labels enable selection of the type of lines to be drawn using the Draw Lines set (single, double, bold, inverse video, underline, and blinking line).

MARGIN
FRAME

Draws a line around the margins as defined by the **LEFT MARGIN**, **RIGHT MARGIN**, **TOP MARGIN** and **BOTTOM MARGIN** function keys (listed below). The line skips over any fields or data which would otherwise be crossed by the line.

FRAME
DATA

Draws a box around the visible data in the window. The leftmost character or field establishes the location of the left side of the box, the rightmost character or field establishes the

LEFT
MARGIN

RIGHT
MARGIN

TOP
MARGIN

BOTTOM
MARGIN

LABEL

FUNCTION

location of the right side, and the top and bottom data lines do the same for the top and bottom lines. If no visible data or fields are present in the window, the frame is drawn around the perimeter of the window.

LEFT
MARGIN

Sets the left margin at the column in which the cursor is currently positioned.

RIGHT
MARGIN

Sets the right margin at the column in which the cursor is currently positioned.

TOP
MARGIN

Sets the top margin at the row in which the cursor is currently positioned. The top margin applies only to the Sketch Forms function keys. If the cursor is homed using the **↶** key, it will move to the left margin of the first row in the workspace.

BOTTOM
MARGIN

Sets the bottom margin at the row in which the cursor is positioned. The bottom margin, like the top margin, applies only to the Sketch Forms function keys.

sketch forms ERASE MODE FROM CURSOR TO CURSOR

LABEL

FUNCTION

Table A14. DRAW LINES SET

sketch forms

Displays the Sketch Forms set of function key labels. These labels enable drawing a line around the visible data or window perimeter and setting the left, right, top, and bottom margins for the window in which the cursor is positioned.

ERASE MODE

Used with the FROM CURSOR, TO CURSOR, HORIZNTL LINE, VERTICAL LINE, HORIZNTL SEGMENT, and VERTICAL SEGMENT function keys to erase existing lines in the window in which the cursor is located. Line drawing is inhibited when this mode is active. An asterisk in the ERASE MODE label indicates the mode is active. Alternate presses of the associated function key activate and deactivate the mode.

FROM CURSOR

TO CURSOR

Used together to set boundaries for drawing and erasing line segments. For drawing, the type of line should be defined first using the Define Lines set of labels. The default is a single line. Pressing the FROM CURSOR key defines the current cursor position as the "from" position. Pressing the TO CURSOR key defines the cursor position when the key is pressed as the "to" position. If the "to" position is in the same column or row as the "from" position, a single line is drawn between the two positions. If both the row and column of the "to" position are different from the "from" position, four line segments are drawn to form a box with the two positions located at diagonally opposite corners of the box.

If the TO CURSOR key is pressed without first pressing the FROM CURSOR key, the last "to" position is taken as the default "from" position. If, after a hard reset, the TO CURSOR key is pressed without first pressing the FROM CURSOR key, the first column and first row of the workspace is taken as the default "from" position.

HORIZNTL LINE VERTICAL LINE HORIZNTL SEGMENT VERTICAL SEGMENT

LABEL

FUNCTION

In Erase mode, the performance is the same except the line or box is erased.

HORIZNTL LINE

Draws a horizontal line, as defined using the Define Lines set of function key labels, between two boundaries which can be one of the following:

1. A margin defined using the Sketch Forms set of function keys.
2. A workspace boundary.

VERTICAL LINE

Draws a vertical line, as defined using the Define Lines set of function key labels, between two boundaries which can be one of the following:

1. A margin defined using the Sketch Forms set of function keys.
2. A workspace boundary.

HORIZNTL SEGMENT

Draws a horizontal line, as defined using the Define Lines set of function key labels, between two boundaries which can be one of the following:

1. A margin defined using the Sketch Forms set of function keys.
2. A workspace boundary.
3. A vertical line.

VERTICAL SEGMENT

Draws a vertical line, as defined using the Define Lines set of function key labels, between two boundaries which can be one of the following:

1. A margin defined using the Sketch Forms set of function keys.
2. A workspace boundary.
3. A horizontal line.

draw Lines SINGLE LINE DOUBLE LINE BOLD LINE

INVERSE VIDEO UNDERLINE VIDEO BLINK VIDEO

LABEL

FUNCTION

Table A15. DEFINE LINES SET

draw Lines	Displays the Draw Lines set of Forms group labels. These labels enable drawing and erasing horizontal and vertical lines.
SINGLE LINE	Defines the line to be drawn, using the Draw Lines set of labels as a single line. This is the default choice; if no line selection is made, a single line is drawn when the Draw Lines function keys are used.
DOUBLE LINE	Defines the line to be drawn, using the Draw Lines set of labels, as a double line.
BOLD LINE	Defines the line to be drawn, using the Draw Lines set of labels, as a bold line.
INVERSE VIDEO	Defines the line to be drawn, using the Draw Lines set of labels, as an inverse video line.
UNDERLINE VIDEO	Draws an underline under the line of character positions selected using the Draw Lines set of labels. In the case of a vertical string of character positions, a short horizontal line is drawn across the bottom of each character position.

LABEL

FUNCTION

BLINK VIDEO

Defines the line of character positions selected using the Draw Lines set of labels as blinking video.

*Notes:

1. An asterisk in a label indicates the mode is active. The mode, if inactive, is activated by pressing the associated function key.
2. The three labels **SINGLE LINE**, **DOUBLE LINE**, and **BOLD LINE** are mutually exclusive; if one is selected, either of the other two previously selected is automatically deselected.
3. The three labels **INVERSE VIDEO**, **UNDERLINE VIDEO**, and **BLINK VIDEO** have a toggling action. Alternate presses of the associated function key activates and deactivates the mode. These enhancements are not mutually exclusive.

**global
config** **window
config** **datacom1
config** **datacom2
config**

**term #1
config** **term #2
config** **term #3
config** **term #4
config**

LABEL

FUNCTION

Table A16. CONFIGURATION SET

**global
config**

Displays the Global Configuration menu which enables selection of the terminal characteristics common to all virtual terminals.

**window
config**

Displays the Window Configuration menu which enables selection of the following window characteristics:

1. Create workspaces and windows and select their sizes.
2. Select whether the borders between windows are to be displayed.
3. Create virtual terminals by assigning windows and terminal configurations to workspaces.
4. Assign datacomm ports to virtual terminals.
5. Select a page width for all virtual terminals.
6. Select the active window.

LABEL

FUNCTION

**datacom1
config**

Displays one of six selectable datacomm protocol menus. The other menus are selectable after the first is displayed. Each menu enables selection of from 18 to 26 datacomm parameters

**datacom2
config**

**term #1
config**

Allows selection of various terminal operating characteristics for both local and remote operation.

**term #2
config**

**term #3
config**

**term #4
config**

modify char set NEXT CHOICE PREVIOUS CHOICE DEFAULT VALUES

enhance video [] DISPLAY FUNCTNS []

LABEL

FUNCTION

Table A17. USER-DEFINABLE

modify char set

Selects the Modify Char Set set of function key labels for display on the screen. These keys can be used to select any one of the alternate character sets to be used for the label or function being assigned to the key.

NEXT CHOICE

The Disposition field of the menu has a list of three choices; L, T, and N. These keys are used to cycle forward or backward through the list selecting the choice for display in the field.

PREVIOUS CHOICE

DEFAULT VALUES

Displays the default values for the type, label, and character string for all keys.

LABEL

FUNCTION

enhance video

Selects the Enhance Video set of function key labels for display on the screen. These keys can be used to select the type of enhancement to be used for either the label or the function assigned to the function key.

DISPLAY FUNCTNS

Alternately enables and disables Display Functions mode. When enabled, an asterisk is present in the label. In this mode, the action normally produced by any keyboard control or cursor control key, such as RETURN or TAB, or any of the display control or edit groups of keys, is not performed. Instead an ASCII character representing the function is entered in the character string; then, when the function key is pressed in Use mode, the action is performed.



B





KEY(S)	CODE	FUNCTION
TERMINAL CONTROL FUNCTIONS		
ENTER (as used in Local mode)	⌘ 0	Copy workspace to destination(s)
AIDS margin/ tab/col SET TAB	⌘ 1	Set tab
AIDS margin/ tab/col CLEAR TAB	⌘ 2	Clear tab
AIDS margin/ tab/col CLR ALL TABS	⌘ 3	Clear all tabs
AIDS margin/ tab/col LEFT MARGIN	⌘ 4	Set left margin
AIDS margin/ tab/col RIGHT MARGIN	⌘ 5	Set right margin
AIDS define fields ALPHA ONLY	⌘ 6	Define alphabetic-only field
AIDS define fields NUMERIC ONLY	⌘ 7	Define numeric-only field
AIDS define fields ALPHA NUMERIC	⌘ 8	Define alphanumeric field
AIDS MARGIN/ tab/col CLR ALL MARGINS	⌘ 9	Clear all margins
A	⌘ 0	Delay one second
V	⌘ A	Cursor up
>	⌘ B	Cursor down
<	⌘ C	Cursor right
CTRL SHIFT RESET	⌘ D	Cursor left
SHIFT LINE MODE	⌘ E	Hard reset (Power on reset)
	⌘ F	Cursor home down

KEY(S)	CODE	FUNCTION
RETURN (with Auto LF disabled)	⌘ G	Move cursor to left margin
TAB or TAB #	⌘ H	Cursor home up
CLEAR DSPY	⌘ I	Horizontal tab
HIG LINE	⌘ J	Clear display from cursor to end of workspace
DEL LINE	⌘ K	Clear line from cursor to end of line
SHIFT INS CHAR	⌘ L	Insert line
DEL CHAR	⌘ M	Delete line
SHIFT DEL CHAR	⌘ N	Start insert character wraparound mode (insert characters with wraparound to next line)
DEL CHAR	⌘ O	Delete character with wraparound
INS CHAR	⌘ P	Delete character without wraparound
INS CHAR	⌘ Q	Start insert character mode (insert character without wraparound)
INS CHAR	⌘ R	End both insert character (⌘ Q) and insert character with wraparound (⌘ N) modes
ROLL	⌘ S	Roll up
ROLL	⌘ T	Roll down
NEXT PAGE	⌘ U	Next page
PREV PAGE	⌘ V	Previous page

KEY(S)	CODE	FUNCTION
TERMINAL CONTROL FUNCTIONS (Cont.)		
AIDS , define fields, FORMAT MODE	⌘ W	Format mode on
AIDS , define fields, FORMAT MODE *	⌘ X	Format mode off
MODES , DISPLAY FUNCTNS	⌘ Y	Display Functions mode on
AIDS , DISPLAY FUNCTNS *	⌘ Z	Display Functions mode off
AIDS , define fields, START UNPROTECT	⌘ [	Start unprotected field
AIDS , define fields, STOP FIELD	⌘]	End unprotected field
	⌘ ^	Primary terminal status request
	⌘ _	Write non-displaying terminator
	⌘ ' (relative)	Sense cursor position (relative)
	⌘ a (absolute)	Sense cursor position (absolute)
	⌘ b	Unlock keyboard
	⌘ c	Lock keyboard
	⌘ d	Transmit a block of text to computer
	⌘ f	Modem disconnect
RESET	⌘ g	Soft reset

KEY(S)	CODE	FUNCTION
LINE MODE	⌘ h	Cursor home up (ignoring transmit fields)
TAB ← OR SHIFT ROLL	⌘ l	Backtab
SHIFT USER KEYS	⌘ j	Begin User Key Definition mode
USER KEYS OR AIDS OR MODES	⌘ k	End User Keys Definition mode
MODES MEMORY LOCK	⌘ l	Begin Memory Lock mode
MODES MEMORY LOCK *	⌘ m	End Memory Lock mode
f1	⌘ p	Default definition for user definable function key f1
f2	⌘ q	Default definition for user definable function key f2
f3	⌘ r	Default definition for user definable function key f3
f4	⌘ s	Default definition for user definable function key f4
f5	⌘ t	Default definition for user definable function key f5
f6	⌘ u	Default definition for user definable function key f6
f7	⌘ v	Default definition for user definable function key f7
f8	⌘ w	Default definition for user definable function key f8

KEY(S) CODE FUNCTION

CURSOR CONTROL OPERATIONS

TERMINAL CONTROL FUNCTIONS (Cont.)

NOTE

AIDS	service MONITOR keys , MODE	⌘ y	Begin Monitor mode
AIDS	service TERMINAL keys , TEST	⌘ z	Initiate terminal self test
MODES	TERMINAL TEST		
AIDS	define START fields, XMIT FLD	⌘ {	Start transmit only field
		⌘ |	Erase non-displaying terminator
		⌘ ~	Secondary terminal status request

Columns and rows are numbered starting with 0 as the leftmost column and the top row.

⌘ &a <col>x <row>Y

Moves the cursor to column "col" and row "row" in the active window.

⌘ &a <col>c <row>R

Moves the cursor to column "col" and row "row" in the active workspace.

⌘ &a ±<col>x ±<row>Y

Moves the cursor to column "col" and row "row" in the active window relative to its present position ("col" and "row" are signed integers). A positive number indicates right or upward movement and a negative number indicates left or downward movement.



⌘ &a ±<col>c ±<row>R

Moves the cursor to column "col" and row "row" in the active workspace relative to its present position ("col" and "row" are signed integers). A positive number indicates right or upward movement and a negative number indicates left or downward movement.

CURSOR CONTROL OPERATIONS (Cont.)

- `␣ &a 1S` Moves cursor forward to next block terminator or non-displaying terminator.
- `␣ &a -1S` Moves cursor backward to preceding block terminator or non-displaying terminator.

DISPLAY CONTROL OPERATIONS

The following escape sequences control the display.

- `␣ &r <x>U` Rolls the display up "x" rows.
- `␣ &r <x>D` Rolls the display down "x" rows.
- `␣ &r <x>L` Rolls the display left "x" columns (provided the workspace is wider than the window).
- `␣ &r <x>R` Rolls the display right "x" columns (provided the workspace is wider than the window).

GENERAL MENU OPERATIONS

These escape sequences are applicable to the following configuration menus: Global, Workspace/Window, and all four terminal configuration menus.

- `␣ &q 0L` Unlock all menus.
- `␣ &q 1L` Lock all menus.
- `␣ &q <x>t <y>L` Locks or unlocks menu "x"; where "x" and "y" are as follows:

"x"	Menu
3	Workspace/Window Configuration.
4	Terminal Configuration #1.
5	Terminal Configuration #2.
6	Terminal Configuration #3.
7	Terminal Configuration #4.
8	Global Configuration.

"y"	Action
0	Unlock
1	Lock

GLOBAL CONFIGURATION MENU OPERATIONS

The following F_c sequences set (without changing the values in non-volatile memory) the active Global Configuration menu values for the workspace which receives the sequence from the computer or keyboard.

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
$\text{F}_c \&k \langle x \rangle D$	Bell	OFF ON	x=0 x=1
$\text{F}_c \&k \langle x \rangle Q$	Click	OFF ON	x=0 x=1
$\text{F}_c \&k \langle x \rangle J$	FrameRate	60 50	x=0 x=1
$\text{F}_c \&w \ 8f \ 1p \ \langle x \rangle G$	Port 1 Datacom	1 2	x=1 x=2
$\text{F}_c \&w \ 8f \ 2p \ \langle x \rangle G$	Port 2 Datacom	1 2	x=1 x=2

These F_c sequences are used to change the Global Configuration menu entry values for the workspace which receives the sequence from the computer or keyboard. The values are also changed in non-volatile memory.

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
$\text{F}_c \&q \ 8te \ 0\{ \langle x \rangle 0$	Bell	OFF ON	x=0 x=1
$\text{F}_c \&q \ 8te \ 0\{ \langle x \rangle Q$	Click	OFF ON	x=0 x=1
$\text{F}_c \&q \ 8te \ 0\{ \langle x \rangle J$	FrameRate	60 50	x=0 x=1
$\text{F}_c \&q \ 8te \ 1\{ \langle x \rangle T$	Tab \rightarrow Spaces	NO YES	x=0 x=1
$\text{F}_c \&q \ 8te \ 1\{ \langle x \rangle C$	Alt Char Set Size	64 96	x=0 x=1
$\text{F}_c \&q \ 8te \ 1\{ \langle x \rangle L$	Language	USASCII Swedish/ Finnish Danish/ Norwegian French azM French qwM	x=0 x=1 x=2 x=3 x=4



ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
GLOBAL CONFIGURATION MENU OPERATIONS (Cont.)			
		French az	x=5
		French qw	x=6
		German	x=7
		United Kingdom	x=8
		Spanish M	x=9
		Spanish	x=10

␣ &q 8te 1{ <x>D	Port 1 Datacom	1 2	x=0 x=1
␣ &q 8te 1{ <x>E	Port 2 Datacom	1 2	x=0 x=1
␣ &q 8te 1{ <x>A	RETURN Def (first char)	See note	
␣ &q 8te 1{ <x>B	RETURN Def (2nd char)	See note	
␣ &q 8te 1{ <x>N	Printer Nulls	"x"=no. of nulls	
␣ &q 8te 1{ <x>P	Printer Code 4	Ext Int	x=0 x=1
␣ &q 8te 1{ <x>R	RETURN=ENTER	NO YES	x=0 x=1

Note: "x" indicates the decimal value of the ASCII code for the desired character.

WORKSPACE/WINDOW CONFIGURATION MENU OPERATIONS

These escape sequences select active workspace/window values without changing the values in non-volatile memory.

␣ &w 0f <r>n <w>I	Create a workspace with workspace number "w" and "r" rows.
␣ &w 1f <w>I	Delete workspace number "w".
␣ &w 2f <w>i <fdr>d <ssr>u <esr>l <s>5	Define a window to be assigned to workspace "w", with "fdr" as first data row of workspace to be displayed initially, starting screen row "ssr", ending screen row "esr", on side "S" (0=right, 1=left) of screen vertical border.
␣ &w 3f <w>I	Close window assigned to workspace "w".
␣ &w 4f <w>I	Move cursor to window assigned to workspace "w".
␣ &w 5f <c>W	Set line length for all workspaces to "c" characters.
␣ &w 6f <c>C	Define vertical screen border to be in column "c".
␣ &w 7f <pt>p <w>I	Assign datacomm port "pt" to workspace "w".
␣ &w 8f <pt>p <c>G	Assign datacomm configuration # "c" (1 or 2) to port "pt".
␣ &w 9f <tc>t <w>I	Assign terminal configuration no. "tc" to workspace "w".
␣ &w 10F	Move cursor to next window.
␣ &w 11F	Display next workspace which has no window.

WORKSPACE/WINDOW CONFIGURATION MENU OPERATIONS (Cont.)

These escape sequences are used to change configuration values on the Workspace/Window Configuration menu and store them in non-volatile memory.

ESCAPE SEQUENCE	MENU FIELD	COMMENT
␣ &q 3t 0f <x>A	Kybd Win	Assigns workspace "x" as the active workspace.
␣ &q 3t 0f <x>P	Port 1 Workspc	Assigns workspace "x" to datacomm port 1.
␣ &q 3t 0f <x>G	Port 2 Workspc	Assigns workspace "x" to datacomm port 2.
␣ &q 3t 0f <x>C	Vert Border Col #	Assigns column "x" as the vertical border column.
␣ &q 3t 0f <x>W	Page Width	Assigns "x" columns as the page width for all workspaces.
␣ &q 3t 0f <x>H	Display border: Horiz	Enters NO ("x"=0) or YES ("x"=1) as the entry value.
␣ &q 3t 0f <x>V	Display border: Vert	Enters NO ("x"=0) or YES ("x"=1) as the entry value.

ESCAPE SEQUENCE	MENU FIELD	COMMENT
␣ &q 3t <w>f<x>D	Wrkspc #/Display	Closes ("x"=0) or opens ("x"=1) workspace "w".
␣ &q 3t <w>f<x>N	Wrkspc #/Rows	Assigns "x" rows to window assigned to workspace "w".
␣ &q 3t <w>f<x>U	Wrkspc #/Start Row	Assigns row "x" as the start row for the window assigned to workspace "w".
␣ &q 3t <w>f<x>L	Wrkspc #/Stop Row	Defines row "x" as last row of window assigned to workspace "w".
␣ &q 3t <w>f<x>S	Wrkspc #/Side	Assigns window assigned to workspace "w" to left ("x"=1) or right ("x"=0) side of vertical border.
␣ &q 3t <w>f<x>T	Wrkspc #/Term Config	Assigns terminal configuration # "x" to workspace "w".

TERMINAL CONFIGURATION MENU OPERATIONS

These escape sequences select (without changing the values in non-volatile memory) active terminal configuration menu values for the workspace which receives the sequence from the computer or keyboard.

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
Esc &k <x>A	AutoLF	OFF ON	x=0 x=1
Esc &k <x>B	BLOCK	OFF ON	x=0 x=1
Esc &k <x>C	Caps Lock	OFF ON	x=0 x=1
Esc &k <x>I	ASCII 8 Bits	NO YES	x=0 x=1
Esc &k <x>L	LocalEcho	OFF ON	x=0 x=1
Esc &k <x>M	MODIFY	OFF ON	x=0 x=1
Esc &k <x>P	Caps Lock	OFF ON	x=0 x=1
Esc &k <x>R	REMOTE	OFF ON	x=0 x=1
Esc &s <x>A	XmitFunctn(A)	NO YES	x=0 x=1

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
Esc &s <x>B	SPDw(B)	NO YES	x=0 x=1
Esc &s <x>C	InhEolWrp(C)	NO YES	x=0 x=1
Esc &s <x>D	Line/Page(D)	LINE PAGE	x=0 x=1
Esc &s <x>G	InhHndShk(G)	NO YES	x=0 x=1
Esc &s <x>H	Inh DC2(H)	NO YES	x=0 x=1
Esc &s <x>J	Auto Term(J)	NO YES	x=0 x=1
Esc &s <x>K	ClearTerm(K)	NO YES	x=0 x=1
Esc &s <x>L	InhSlfTst(L)	NO YES	x=0 x=1
Esc &s <x>M	InvertWrp(M)	NO YES	x=0 x=1
Esc &s <x>N	Esc Xfer(N)	NO YES	x=0 x=1
Esc &s <x>W	InhDcTst(W)	NO YES	x=0 x=1

**TERMINAL CONFIGURATION MENU OPERATIONS
(Cont.)**

These escape sequences are used to change terminal configuration menu entry values for the workspace which receives the escape sequence from the computer or keyboard. The values are also changed in non-volatile memory.

NOTE

In the following Esc sequences, a number inserted in place of the variable "m" identifies the terminal configuration menu to which the sequence applies. The menu/number association is as follows:

"m"	TERM CONFIG MENU #
4	#1
5	#2
6	#3
7	#4

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle H$	Inh DC2(H)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle J$	Auto Term(J)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle K$	ClearTerm(K)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle L$	InhSIfTst(L)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle M$	InvertWrp(M)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle N$	Esc Xfer(N)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle W$	InhDcTst(W)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle A$	AutoLF	OFF ON	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle B$	BLOCK	OFF ON	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle C$	Caps Lock	OFF ON	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle I$	ASCII 8 Bits	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle L$	LocalEcho	OFF ON	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 1 \{ \langle x \rangle M$	MODIFY	OFF ON	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle A$	XmitFnctn(A)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle B$	SPOW(B)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle C$	InhEolWrp(C)	NO YES	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle D$	Line/Page(D)	LINE PAGE	x=0 x=1
$\text{Esc} \ \&q \ \langle m \rangle \text{te} \ 0 \{ \langle x \rangle G$	InhHndShk(G)	NO YES	x=0 x=1

TERMINAL CONFIGURATION MENU OPERATIONS
(Cont.)

ESCAPE SEQUENCE	MENU FIELD	ENTRY VALUE	x
ESC & q <m> te 1 (<x> R	REMOTE	OFF ON	x=0 x=1
ESC & q <m> te 2 (<x> A	ESC) A	Base set	x=0
		Line drawing set	x=1
		Math set	x=2
		Large char set	x=3
		Extended Roman set	x=4
ESC & q <m> te 2 (<x> B	ESC) B	Same as ESC) A	
ESC & q <m> te 2 (<x> C	ESC) C	Same as ESC) A	
ESC & q <m> te 2 (<x> D	Alternate Set	@ A B C	0 1 2 3
ESC & q <m> te 2 (<x> F	FldSeparator	Note 1	Note 1
ESC & q <m> te 2 (<x> R	BlkTermnator	Note 1	Note 1
ESC & q <m> te 2 (<x> S	Start Col	Value entered as "x"	0 thru 160

Note 1. "x" is a decimal integer, from 0 to 127, representing the decimal equivalent of the ASCII character to be used.

DATA OPERATIONS

The following escape sequences control data transfer to and from devices (integral printer, external device, and workspaces).

ESC & k <x> S

Enables Expanded, Compressed or Normal Character modes for the integral printer as designated by the control character "x".

x FUNCTION

- 0 Disable both Expanded and Compressed Character modes.
- 1 Initiate Expanded Character mode.
- 2 Initiate Compressed Character mode.

ESC & p <x> C

Initiates or disables, according to control character "x", data logging and the following modes: Compressed, Expanded, and Normal Character modes, and Report, and Metric modes.

- 11 Initiate bottom logging for the printer and external device.
- 12 Initiate top logging for the printer and external device.
- 13 Disable both top and bottom logging for the printer and external device.
- 14 Disable Compressed and Expanded Character modes for the integral printer.
- 15 Enable Expanded Character mode for the integral printer.

DATA OPERATIONS (Cont.)

- 16 Enable Compressed Character mode for the integral printer.
- 17 Enable Report mode for the integral printer.
- 18 Enable Metric mode for the integral printer.
- 19 Disable Report and Metric modes for the integral printer.

The following escape sequences transfer data.

```
⌘ &p <x>s <a>c <b>d
      <c>d Y
```

Copies "Y" amount of data from source device "x" to destination devices "a", "b", and "c". (As many destinations as desired can be specified.) Where "x" and "y" are represented by one or two digits as follows:

**x, a, b,
and c DEVICE**

- 3 Active window.
- 31 Workspace 1.
- 32 Workspace 2.
- 33 Workspace 3.
- 34 Workspace 4.
- 4 External device.
- 6 Integral printer.

The amount of data "Y" is represented by a letter as follows:

Y AMOUNT

- B Copy the line in which the cursor is located.
- E Copy screen contents (to integral printer, external printer, or both).
- F Copy the page from the cursor location through the last displayed line.
- M Copy the workspace from the line containing the cursor to the end of the workspace.

```
⌘ &p <char>w <r>
```

Copies one record "r" from the active computer program to the printer or external device (which must have been previously selected). The record is ended by the 256th character, after the number of characters specified as "char" have been copied, or by an ASCII line feed, whichever comes first.

```
⌘&x <handshake ID>h      Sends a block of data to the computer:
      <data end ID>d
      <line terminator
        length>1
      <block terminator
        length>t
        <line terminator
        string>
      <block terminator
        string>
```

TERM	SYMBOL	MEANING
------	--------	---------

DATA OPERATIONS (Cont.)

HANDSHAKE ID	0	Use concurrently configured handshake.
	1	No handshake.
	2	DC1 trigger handshake.
	3	DC1/DC2/DC1 handshake.
Data end ID	0	Use currently configured Block mode/Line/Page configuration.
	1	Transmit data from cursor position thru end of line in workspace.
	-1	Same as 1 except ignore all terminators.
	2	Transmit data from cursor position thru end of last line visible on screen. (Not valid in Format Mode.)
	-2	Same as 2 except ignore all terminators.
	3	Transmit data from cursor position thru end of workspace.
Line terminator length	0	Suppress the use of line terminators and field separators.
	1 thru 15	Length of supplied line terminator string.
	0	Suppress the use of block terminators.
Block terminator length	1 thru 15	Length of supplied block terminator string.

TERM	SYMBOL	MEANING
------	--------	---------

Line terminator string	(none)	String of characters to be used as a line terminator/block separator.
Block terminator string	(none)	String of characters to be used as a block terminator.

FUNCTION KEY AND ERROR MESSAGE OPERATIONS

To enable and disable the function keys (**f1** thru **f8**), use the following escape sequence:

Esc & j <x>

x

MEANING

- A Display the Modes set of function key labels.
- B Enable the User function keys. (The user key labels are displayed.)
- @ Disable the function keys and remove the function key labels from the screen.

To enable or disable the Function Control Keys:











- S Disables the **AIDS**, **MODES**, and **USER KEYS** keys.
- R Enable the **AIDS**, **MODES**, and **USER KEYS** keys.



To define functions for the **RETURN**, **ENTER**, and function keys:

Esc & f <attribute>a <key>k <label length>c
<string length>l <label><string>

TERM SYMBOL MEANING DEFAULT











FUNCTION KEY AND ERROR MESSAGE OPERATIONS (Cont.)

Attribute	0	Normal (N)	0
	1	Local only (L)	
	2	Transmit only (T)	
Key	-1	 key	1
	0	 key	
	1	 function key	
	2	 function key	
	3	 function key	
	4	 function key	
	5	 function key	
	6	 function key	
	7	 function key	
8	 function key		
Label length	0	Number of characters in the label. (The label length plus the string length must be <=160 characters.)	0
	thru 160		
String length	0	Number of characters in the string. (The string length plus the label length must be <=160 characters.)	1
	thru 160		
Label	(none)	The label is entered at this point in the sequence.	
String	(none)	The character string is entered at this point in the sequence.	

To execute functions assigned to the , , and function keys:

$\text{E} \&f \langle x \rangle \text{E}$

x KEY

-1	
0	
1	
2	
3	
4	
5	
6	
7	
8	

To replace the function key labels with your own message:

$\text{E} \&j \langle \text{string length} \rangle \text{L} \langle \text{message} \rangle$

"String length" — A number (up to 160) indicating the number of characters in the string.

"Message" — The content of the message.

0





Keyboards and Character Sets

National Keyboards

Figures C-1 through C-7 show the various national keyboards which are available as options 001 through 006. Note that these options also include the extended character set ROMs which support all of the national languages, the math set, and the large character set (the line drawing set is standard).

If you order the standard USASCII keyboard and you wish the terminal to include the extended character set ROMs, then you must specifically order the ROMs as option 201.

The French keyboard (option 003), when delivered, is physically arranged in the AZERTY layout; a keycap extraction tool comes with it. To change the keyboard to the QWERTY layout, you must physically rearrange the A, Z, Q, and W keys as shown in figure C-4.



Figure C-1. Swedish/Finnish Keyboard (Option 001)



Figure C-2. Danish/Norwegian Keyboard (Option 002)



Figure C-3. French Keyboard (Option 003), AZERTY Layout

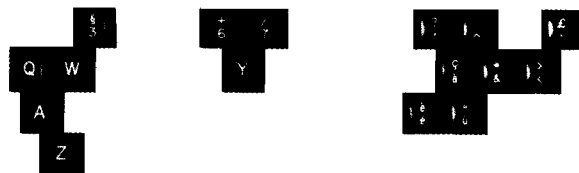


Figure C-4. French Keyboard (Option 003), QWERTY Layout



Figure C-5. German Keyboard (Option 004)



Figure C-6. United Kingdom Keyboard (Option 005)



Figure C-7. Spanish Keyboard (Option 006)

7-Bit vs. 8-Bit Operation

You configure the terminal for 7-bit operation by setting the **ASCII 8 Bits** field of the applicable Term # 1-4 menu to "NO" and the appropriate data comm configuration field as follows:

Point-to-Point Menus: **DataBits=7**

Multipoint Menus: **Code=ASCII7**

When the terminal is configured for 7-bit operation, the ASCII **<S0>** code (which enables the active alternate character set) applies through the end of the current line; when the cursor moves to the next lower line you must once again issue a **<S0>** if you wish to continue typing in the active alternate character set.

You configure the terminal for 8-bit operation by setting the **ASCII 8 Bits** field of the applicable Term # 1-4 menu to "YES" and the appropriate data comm configuration field as follows:

Point-to-Point Menus: **DataBits=8**

Multipoint Menus: **Code=ASCII8**

When the terminal is configured for 8-bit operation, the ASCII **<S0>** code applies until the next subsequent **<S1>** code (which disables the active alternate character set), even if the **<S1>** occurs several lines below the **<S0>** code.

ISO/ASCII Character Set

Table C-1 shows the standard ISO/ASCII character set.

If the terminal includes the extended character set ROMs and is configured for 7-bit operation, the shaded characters in table C-1 are replaced on the screen with the following characters (depending on which national language is specified in the Global configuration menu):

LANGUAGE	KEYBOARD		DECIMAL VALUE										
	OPTION #		35	64	91	92	93	94	96	123	124	125	126
USASCII	(standard)	#	@	[	\	\]	^	`	{	|	}	~
Swedish/Finnish	001	#	Å	Ä	Ö	À	Û	É	Ä	Ö	À	Û	
Danish/Norwegian	002	#	Æ	Ø	À	^	`	æ	ø	À	~		
French	003	£	à	·	ç	§	^	`	é	ù	è	·	
German	004	£	§	Ä	Ö	Û	^	`	ä	ö	ü	ß	
United Kingdom	005	£	@	[	\	\]	^	`	{	|	}	~
Spanish	006	#	@	í	ñ	ç	·	`	{	ñ	}	~	

If the terminal is configured for a foreign language but does NOT include the extended character set ROMs, the characters in the above table are displayed on the screen as spaces.

If the terminal is configured for 8-bit operation and a foreign language, the active alternate character set **MUST** be "Roman Ext".

Extended Roman Set

If the terminal is configured for 8-bit operation and "Roman Ext" is selected as the active alternate character set, the entire character set comprising tables C-1 and C-2 is used when interpreting character codes. In such a case, the eighth data bit determines which table applies. If bit 8 is a zero, the character code is interpreted according to table C-1. If bit 8 is a one, the character code is interpreted according to table C-2.

Note that if the terminal does NOT include the extended character set ROMs, the character codes are still interpreted as described above but those codes which map to table C-2 are displayed on the screen as spaces.

If the terminal is configured for 7-bit operation and "Roman Ext" is selected as the active alternate character set, the terminal defaults to "Base Set".

As with any of the alternate character sets, you enable the Extended Roman set with a <SQ> control code (control-N) and disable it with a <SI> control code (control-O).

The extended character set is used by the HP 300 and HP 250 computer systems and the HP 2631 and HP 2608 printers.

Keyboard

Table C-1. Standard ISO/ASCII Character Codes

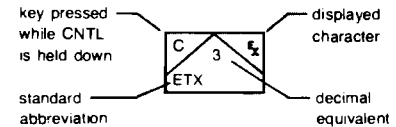
BIT 4321	CONTROL (CNTL) CHARACTERS				DISPLAYABLE CHARACTERS			
	0 0	0 1	1 0	1 1	0 0	0 1	1 0	1 1
0000	@ NUL	@ DL	SP	@	P	'	~	p
0001	A SOH	A DC1	!	A	O	a	q	
0010	B STX	B DC2	"	B	R	b	r	
0011	C ETX	C DC3	=	C	S	c	s	
0100	D EOT	D DC4	\$	D	T	d	t	
0101	E ENQ	E NAK	%	E	U	e	u	
0110	F ACK	F SYN	&	F	V	f	v	
0111	G BEL	G ETB	'	G	W	g	w	
1000	H BS	H CAN	{	H	X	h	x	
1001	I HT	I EM	}	I	Y	i	y	
1010	J LF	J SUB	*	J	Z	j	z	
1011	K VT	K ESC	+	K	|	k	|	
1100	L FF	L FS	,	L	\	l	;	
1101	M CR	M GS	-	M	]	m	}	
1110	N SO	N RS	.	N	^	n	~	
1111	O SI	O US	/	O	_	o	DEL	

Table C-2. Extended Roman Character Codes

BIT 4321	B ₈ = 1							
	EXTENDED ROMAN CHARACTERS							
	0 0	0 1	0 1	1 0	1 0	1 1	1 1	
0000			-	â	À			
0001				ê	Ê			
0010				ô	Ë			
0011			.	û	Ë			
0100				á	À			
0101			ç	é	Í			
0110			Ñ	ó	ø			
0111			ñ	ú	æ			
1000			ı	à	Ä			
1001			ı	é	İ			
1010			ˆ	ò	Ö			
1011			˜	ù	Ü			
1100			˜	ä	É			
1101			§	ë	İ			
1110				ö	ß			
1111			£	ü				

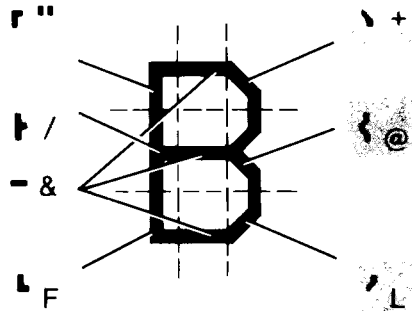
- ␣ — ACKNOWLEDGE
- 🔔 — BELL
- ␣ — BACKSPACE
- ␣ — CANCEL LINE
- ␣ — CARRIAGE RETURN
- ␣ — DATA LINK ESCAPE
- ␣ — DEVICE CONTROL 1
- ␣ — DEVICE CONTROL 2
- ␣ — DEVICE CONTROL 3
- ␣ — DEVICE CONTROL 4
- ␣ — DELETE
- ␣ — END OF MEDIUM
- ␣ — ENQUIRY
- ␣ — END OF TRANSMISSION
- ␣ — ESCAPE
- ␣ — END OF BLOCK
- ␣ — END OF TEXT
- ␣ — FORM FEED
- ␣ — FILE SEPARATOR
- ␣ — GROUP SEPARATOR
- ␣ — HORIZONTAL TAB
- ␣ — LINE FEED
- ␣ — NEGATIVE ACKNOWLEDGE
- ␣ — RECORD SEPARATOR
- ␣ — SHIFT IN
- ␣ — SHIFT OUT
- ␣ — SPACE
- ␣ — START OF HEADING
- ␣ — START OF TEXT
- ␣ — SUBSTITUTE
- ␣ — SYNCHRONOUS IDLE
- ␣ — UNIT SEPARATOR
- ␣ — VERTICAL TAB

Control Character Legend:



Large Character Set

When "Large Chr" is selected as the active alternate character set, you construct each large character by combining up to ten individual character segments. Each character segment corresponds to one of the alphanumeric or symbol keys (see figure B-8). For example, you construct the letter "B" using the following nine keystrokes:

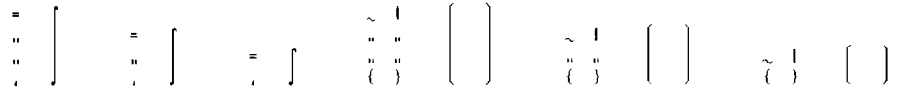


As with any of the alternate character sets, you enable the Large Character set with a <S0> control code (control-N) and disable it with a <S1> control code (control-O).

Table B-3 shows the standard keystrokes (USASCII keyboard) for generating all of the available large characters.

Math Set

When "Math Set" is selected as the active alternate character set, you can generate mathematical symbols using the alphanumeric and symbol keys (see figure C-9). Three of the symbols (left bracket, right bracket, and integral sign) require two or more characters, depending on how many screen rows the entire symbol is to encompass. Some examples of these symbols are as follows:



As with any of the alternate character sets, you enable the Math set with a <S0> control code (control-N) and disable it with a <S1> control code (control-O).

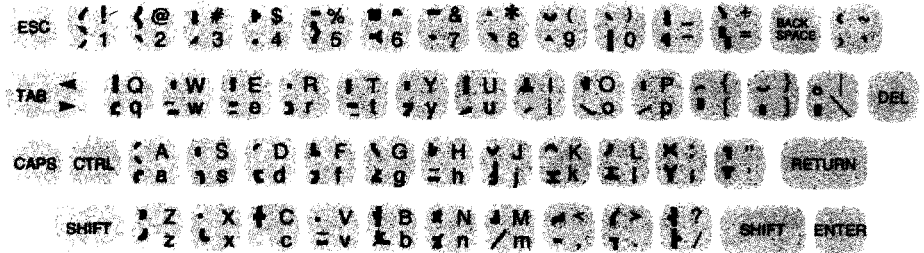


Figure C-8. Large Character Set Elements

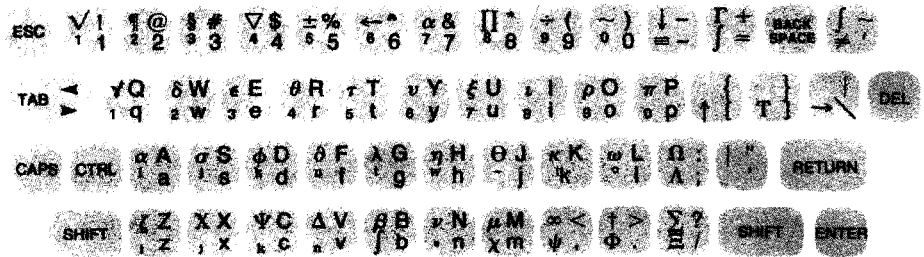


Figure C-9. Math Set Elements

Table C-3. Coding the Large Character Set

!	# 0 S	-	%", Z	9	!&+ G&? G&L	E	"&, /& F&,	Q	!&+ 0 0 G&N	J	%. 0 %M	i	* # E	u	" FM	ß	!&+ 0% 0%L	ç	a5 zy
"	"	.	Z	:	Z Z	F	"&, /& E	R	"&+ /&@ E E	^	9 K	j	* %x	v	" GL	À	! !&+ /&? E E	é	) qr dw
#	CC CC	÷	%&, 4	;	Y L	G	!&+ 0 G&L	S	!&+ G&+ G&L	-	^^	k	# /@ EE	w	" HO	ø	a&n 0m0 b&x	è	3 qr dw
\$	!C+ GC+ GCL	0	!&+ 0 0 G&L	<	3 2	H	!&+ /&? E E	T	%", 0 E	`	*	l	# 0 E	x	5@ EE	Æ	! /' /C EF,	ñ	<> "s EE
%	P P 3<D Y Y	1	- 0 E	=	%&, %&, %&,	I	# 0 I	U	# # 0 0 G&L	a	er df	m	\$- EE	y	" zj	Ñ	!op \$) 08B E E	o	añ bx
&	!+ SIC G&L	2	!&+ !&L F&, F&,	>	) D	J	# 0 L	V	# # 0 0 2JD	b	# /s Fx	n	"s EE	z	%. F,	É	"&, /& F&, F&,		
'	'	3	!&+ &@ G&L	?	!&+ >D S	K	!&+ /6A E E	W	!&+ 090 HkD	c	a, z,	o	a5 zx	{	! @, G,	£	! C I&		
(	! 0 G,	4	# # F&C E	@	!&+ ! .0 GIL	L	# 0 F&, F&,	X	! :A E E	d	a? zM	p	"s /x	!	Q U	ï	V !L G&L		
)	%+ 0 %L	5	"&, F&+ G&L	A	!&+ /&? E E	M	\$(- 070 E E	Y	# # 2;D E	e	qr dw	q	a' z?	}	%+ 5 %L	â	~\ er df		
x	! :A	6	!&+ /&+ G&L	B	"&] /&@ F&L	N	\$) 08B E E	Z	"&. 3<D F&M	f	a C E	r	! E	~	!&L	ä	** er df		
+	* %C, 4	7	%&. >D E	C	!&+ 0 G&L	O	"&# 0 0 F&M	[	" 0 F,	g	a5 zj	s	qc vf	■	xxx xxx xxx	â	3) er df		
,	L	8	!&+ 5&@ G&L	D	"&+ 0 0 F&L	P	"9+ /&L E	x	# :) E	h	# /s EE	t	* z,	i	V 0 U	æ	ekr dlw		

Line Drawing Set

When "Line Draw" is selected as the active alternate character set, you can construct data entry forms by combining different types of line segments. Each individual type of line segment is associated with one of the alphanumeric or symbol keys (see figure C-10). Figure C-11 illustrates the keystrokes used for generating a sample data entry form.

As with any of the alternate character sets, you enable the Line Drawing set with a <SD> control code (control-N) and disable it with a <SI> control code (control-O).

As demonstrated by figures 5-10 through 5-13 in Section V of this manual, you may also use the Line Drawing set to generate bar charts.

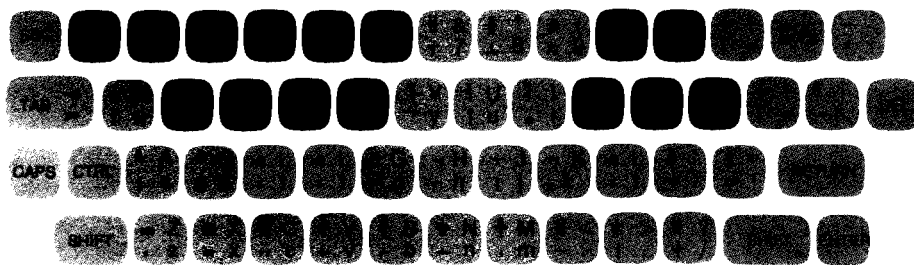


Figure C-10. Line Drawing Set Elements

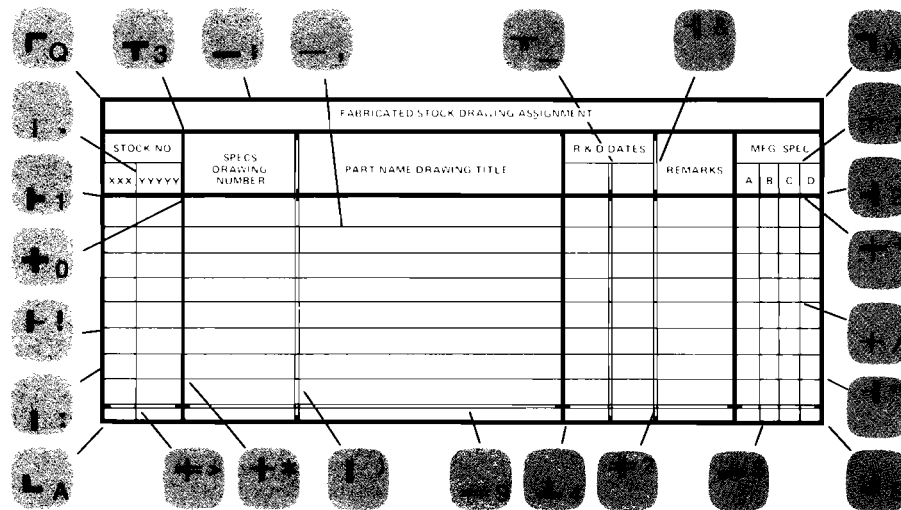


Figure C-11. Sample Data Entry Form

INDEX

INDEX

- active window 6-4
- active window, selecting 6-7
- AIDS key 1-2, 3-9
- alternate character sets 6-12

- BACK SPACE key 3-2
- battery location 9-3
- Block Mode 7-4
- bottom data logging 7-4
- BREAK key 3-9

- changing workspace/window parameters 6-4
- Character Mode 7-3
 - Line Modify Mode 7-3
 - Modify All Mode 7-3
 - Modify Mode 7-3
 - normal operation 7-3
 - using start column 7-3
- Character Set Group 3-1, 3-2
- character sets 3-3
- character sets, alternate 6-12
- checking, configuration 10-3
- checking data 6-12
- CLEAR DSPLY key function 3-8
- Clearing tabs 6-3
- computer, sending data to the 7-3
- computer, receiving data from the 7-4
- computer, using your terminal with 7-1
- configuration checking 10-3
- configuration 1-4
 - local 1-2
 - remote 1-2
 - terminal 5-1, 5-7
- Configuration Mode 5-3
- Configuring the datacomm port 7-1
- configuring the terminal 5-1
- Congratulations iv
- correcting data 6-2
- CTRL key 3-2

- CTRL key, operations 3-2
- cursor vi
- Cursor Down key 3-5
- Cursor Home Down key 3-5
- Cursor Home key 3-5
- Cursor Left key 3-5
- Cursor Right key 3-5
- Cursor Up key 3-5
- Cursor, moving the 3-5

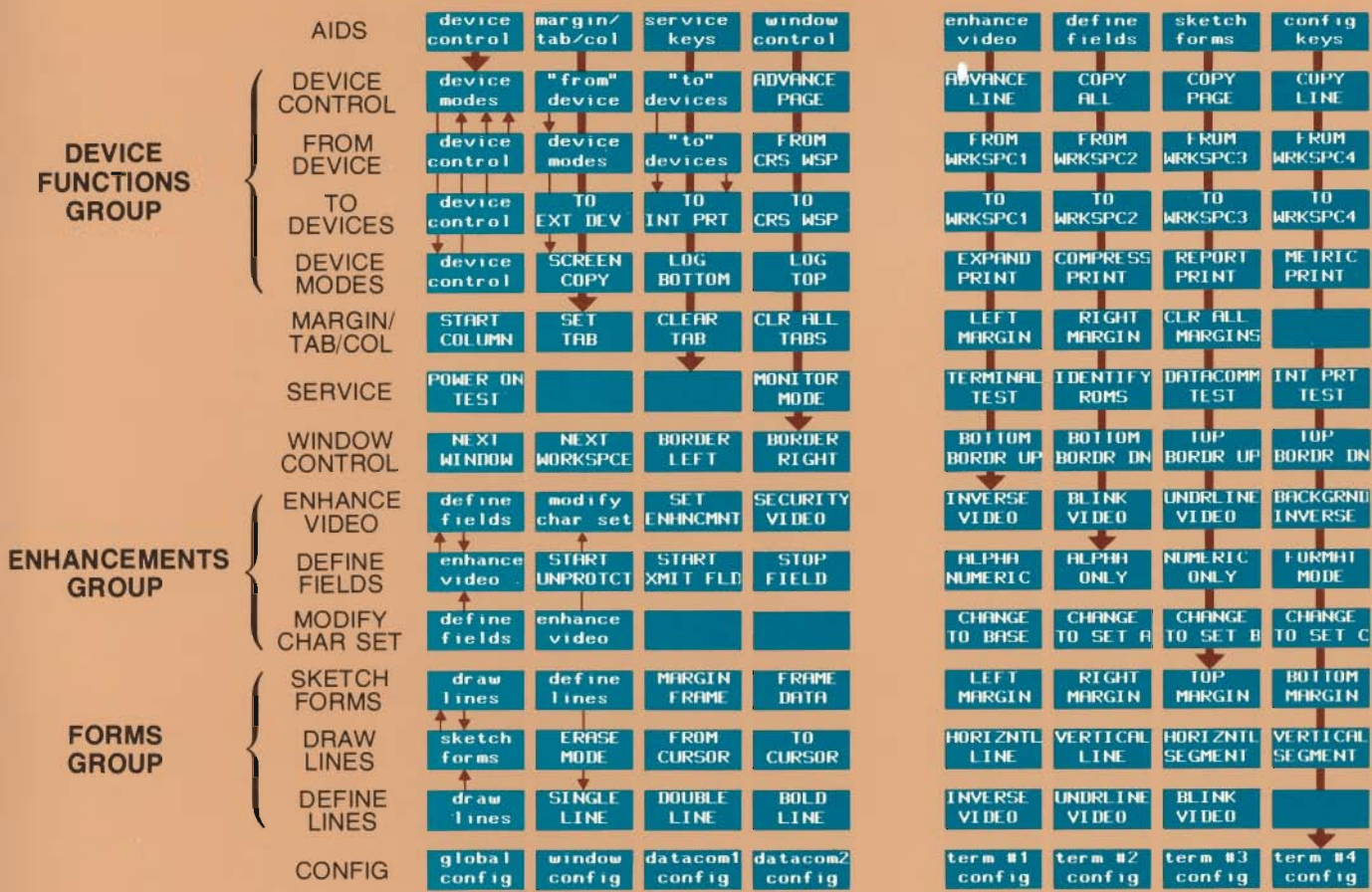
- data
 - from the computer to the display 7-4
 - logging 7-4
 - receiving data from the computer 7-4
 - sending data to the computer 7-3
- data checking 6-12
- data communication cable 2-2
- data correction 6-2
- data entering 6-2
- data logging 7-4
 - bottom 7-4
 - top 7-4
- data transfer 6-9
 - destinations 6-9
 - sources 6-9
- data transfer operation vi
- data transfer to and from workspaces 6-9
- datacomm configuration
 - Asynchronous Multipoint menu 5-7
 - Full Duplex Hardwired menu 5-7
 - Full Duplex Modem menu 5-7
 - Half Duplex Main Channel menu 5-7
 - Half Duplex Reverse Channel menu 5-7
 - Synchronous Multipoint 5-7
- Datacomm port, configuring 7-1
- Datacomm1 and Datacomm2 Configuration menus 5-2
- DEL CHAR key function 3-8
- DEL LINE key function 3-8
- Delete character with wraparound 6-3

- description
 - "from" device vi
 - cursor vi
 - data transfer operation vi
 - datacomm vi
 - diacritic mark vi
 - form feed vi
 - function keys vi
 - line vi
 - local mode vi
 - page vi
 - remote mode vi
 - screen vi
 - "to" device vi
 - window vi
 - workspace vi
- diacritic mark vi
- display 1-1
- Display Control key functions 3-7
- display enhancements 6-12
- display features 6-12
- Display Group of keys 3-1, 3-4
- display memory 1-3

- Edit Group of keys 3-1, 3-7
- Edit key functions 3-8
- ENTER key 3-2
- entering data 6-2
- error messages 10-1
- ESC key 3-2
- forms 6-12
- Function Control Group of keys 3-9
- Function key labels
 - Aids set 4-4
 - Config set 4-6
 - Configuration mode 5-3
 - Define Fields set 4-5
 - Define Lines set 4-5
 - Device Control set 4-4

Device Functions group	4-4	labels, function key	4-1, 4-2	NEXT PAGE key	3-7
Device Control set	4-4	configuration mode function key labels	5-3	on-line, using the terminal	7-1
Device Modes set	4-4	function key labels with an asterisk	4-4	operating modes	7-2
From Device set	4-4	window control	6-5	Auto LF	7-2
To Devices set	4-4	Line Modify mode	7-3	Block	7-2
Device Modes set	4-4	loading printer paper	9-1	Caps Lock	/-2
Draw Lines set	4-5	Local mode	vi	Modify All	7-2
Enhance Video set	4-5	logging, data	8-1	Remote	7-2
Enhancements group	4-5	margins	6-3	options	2-2
Define Fields set	4-5	left	6-3	options, how to identify	2-1
Enhance Video set	4-5	right	6-4	paper, printer	9-1
Modify Char set	4-5	Memory Lock mode	6-10	paper, thermal	9-1
Forms group	4-5	menu		part number	
Define Lines set	4-5	Configuration	5-2	battery	9-2
Draw Lines set	4-5	Datacomm1 and Datacomm2 Configuration		printer paper	9-1
Sketch Forms set	4-5	menus	5-2, 5-7	power cord	2-2
From Device set	4-4	for associating configurations, workspaces,		Predefined Function key labels	4-1
and ports		and ports	5-1	print head	9-2
Modify Char set	4-5	Global configuration menu	5-2, 5-5	printer paper	9-1
Service set	4-5	how to display	5-2	Protected Fields	6-12
Sketch Forms set	4-5	Term #1 thru Term #4 Configuration		readouts, status	6-2
To Devices set	4-4	menu	5-2, 5-6	receiving data from the computer	7-4
upper and lower case	4-4	Workspace/Window Configuration menu	5-2, 5-6	Remote mode	vi
Function keys	vi, 1-3, 3-9	model number	2-1	replacement	
Function Keys group	3-9	modem	7-2	battery	9-2
global configuration	5-5	MODES function key labels	4-2	printer paper	9-1
Global Configuration menu	5-2	MODES key	3-10	RESET TERMINAL key	3-9
How to get help	10-5	modes		reset, terminal	10-3
How to transfer data to/from workspaces	6-9	Block mode	7-4	resetting the terminal	
identification label	2-1	Caps Lock	7-2	hard reset	10-4
in case of difficulty	3-10	Character	7-3	soft reset	10-4
insert character with wraparound	6-2	Configuration mode, function keys	5-3	RETURN key	3-2, 4-6
integral printer	1-2	Format mode	6-12	scanning the workspace using the window	3-6
Introducing the HP 2626A	1-1	Line Modify mode	7-3	selecting operating modes	7-2
inverse video	6-12	Local mode	vi	selecting the active window	6-7
keyboard		Memory Lock mode	6-10	self test	1-2
Character Set group	3-2	Modify All mode	7-3	Self-test	1-4
Display group	3-4	Modify mode	5-6, 7-3	sending data to the computer	7-3
Edit group	3-7	operating modes, selecting	7-2	setting tabs	6-3
Function Keys group	3-9	Remote mode	5-6, 7-2	SHIFT key	3-2
Function Control Keys group	3-9	selecting operating modes	7-2	soft reset	10-4
Numeric group	3-3	Use mode, user keys	4-7	start column, using	7-3
Terminal Control group	3-9	User Key modes	4-7	status readouts	6-2
		Modify All mode	7-3		
		Modify mode	7-3		

TAB keys	3-2	text, moving to another window	6-11	using your terminal with other devices	8-1
tabs	6-3	text, moving to another location within a window	6-10	window	vi, 1-2, 6-1
clearing tabs	6-3	thermal paper	9-1	using the window to scan the workspace	3-6
setting tabs	6-3	Transmit Only Fields	6-12	window, active	6-4, 6-7
terminal		underlining characters	6-12	window size, changing	6-9
cleaning	9-3	Unprotected Fields	6-12	workspace/window	6-1
installation	2-2	use, preparing the terminal for	2-2	association of workspaces with	
terminal, preparing for use on line	7-1	User-definable function key labels	4-1	configurations and ports	5-1
preparation for use	2-2	User Key Modes	4-7	changing the workspace/window relationships	6-7
resetting	10-3	Definition mode	4-7	changing workspace/window parameters	6-4
tests	10-4	defining a function key	4-7	Configuration menu	5-2, 5-6
turning on and off	2-3	initiating definition mode	4-7	data transfer to and from workspaces	6-9
using your terminal with a computer	7-1	leaving definition mode	4-7	moving a block of text to another window	6-11
using your terminal with other devices	8-1	Use mode	4-7	moving a block of text within a window	6-10
Terminal Configuration menus	5-2, 5-6	initiating Use mode	4-7	relationship	6-1
terminal, virtual	6-2	leaving Use mode	1-2, 4-8	scanning the workspace using the window	3-6
Terminal Control group of keys	3-9	USER KEYS key	3-10	selecting the active window	6-7
terms used in the manual	vi	using Block mode	7-4	using the window to scan the workspace	3-6
tests		using the start column feature	7-3	wraparound	
printer test	10-5	using your terminal with a computer	7-1	delete character with	6-3
self test	10-4			insert character with	6-2



Labels accessed through the AIDS key.

