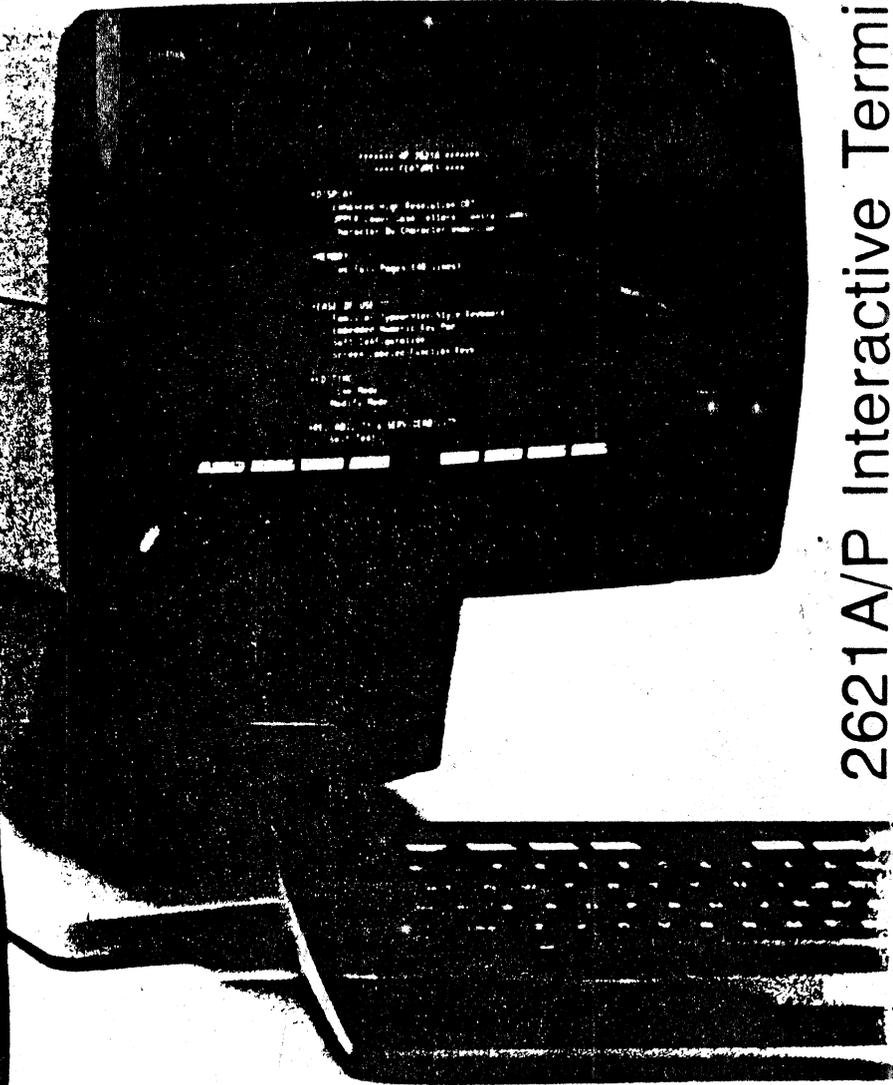


HEWLETT  PACKARD

- PRELIMINARY -



2621A/P Interactive Terminal

owner's manual

HP PART NO. 02620-90001

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Congratulations.....

You have selected Hewlett-Packard's Model 2621 Interactive Terminal. The HP 2621 is a simple, efficient terminal designed to serve your requirements for the processing of alphabetic and/or numeric data.

This owner's manual is provided to acquaint you with the characteristics of this terminal and to aid you in using them to your advantage. Included in the manual are instructions for installing and using your terminal. In addition to installation and usage information, reference material is provided for including this terminal as an input/output device within a computer system environment.

For information regarding repair and functional operation, see the HP 2621 Interactive Terminal Service Manual, HP Part No. 02620-90002.

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A Guide to Using This Manual

This owner's manual is written to introduce you to the HP 2621A and 2621P Interactive Terminals. The HP 2621A is the basic terminal while the HP 2621P provides a self-contained thermal printer together with the basic terminal.

Within this manual, the term HP 2621 is used to reference features and capabilities applicable to either version. The term HP 2621A or HP 2621P is used to reference features and capabilities unique to either the A version or the P version, respectively.

Detailed information about specific features is included so that you may use this manual as a reference guide to operating the terminal. An index of terms and phrases is included at the back of the manual to assist you in quickly locating reference material.

This owner's manual includes the following sections:

Section I — Introducing the HP 2621. This section is a general description of the terminal and briefly lists its features and capabilities.

Section II — How to Get Started. Information is given in this section about how you can identify the options and accessories delivered with your terminal. In addition to this information, you are instructed about how to prepare your terminal for use.

Section III — The Terminal's Display Characteristics. This section contains a complete description of the display screen and display memory. Included is information about the initial state of the display after the main power switch is turned on, screen and memory organization, and cursor positioning.

Section IV — The Terminal's Keyboard. A description of the keyboard is provided in this section. Examples of keyboard interaction with the terminal's display are included.

Section V — Using the Terminal as an Input/Output Device. This section describes the data communication capabilities of the HP 2621. Included is information about the terminal's configuration, operating modes, and transmission of data between the HP 2621 and an external data processing device.

Section VI — The HP 2621P. This section describes the HP 2621P Interactive Terminal with self-contained thermal printer. A complete description of operating procedures together with reference material is included.

Section VII — Preventive Maintenance. This section contains information about the care and cleaning of your terminal to keep it in the best operating condition.

Section VIII — Diagnosing Problems. Problem conditions and the messages associated with these conditions are discussed in this section. In addition to this information, this section includes a description of the self-test feature, recovery (resetting the terminal) in case of an error, and information about where to get help if you have difficulty solving a problem.

Appendix Section — This section contains a reference table in Appendix A that includes the ASCII-coded character set, and control codes and escape sequence codes. Appendix B contains tables that list cabling assignments.

Introducing the HP 2621

Section I

The HP 2621 Interactive Terminal is designed to provide you with a simple, efficient character-mode terminal device. This terminal offers many powerful features that are easy to use.

Among the features offered by the HP 2621 are:

Display Memory and Screen

- Bright, Clear Screen Display
- 24 Line by 80 Character Display Area
- Uppercase and Lowercase Character Set
- Displayable Control Code Characters
 - Character-by-Character Underlining
- Cursor Position Relocation
- 48 Line by 80 Character Display Memory (Two Pages)
- Roll, Home-up, and Home-down Display Control

Keyboard

- 68 Key Typewriter-style Keyboard Layout
- Embedded Calculator-style Numeric Key Pad
- Eight Variable Function Keys
- Labels Key

Function Keys

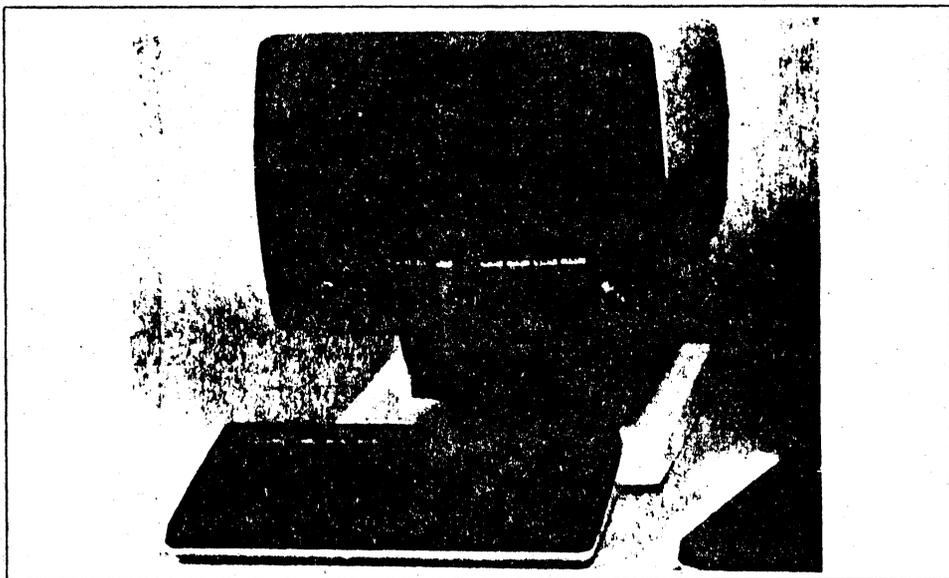
- Displayable Labels
- Redefinable Configuration
- Self-test
- Clear Line
- Clear Display
- Printer Output Control (HP 2621P Only)
- Display Function Code Enable/Disable
- Tabulation and Margin Control
- Text Editing Control
- Transmit Pre-defined Escape Sequences

Configuration

- Screen Displayable Configuration Data
- Redefinable Configuration via Function Keys
- Data Transmission Baud Rate Control
- Data Parity Control
- Duplex Control
- Strapping Control
- Communications Handshake Control
- User-definable RETURN Key
- User-definable Transmission Start Column
- Configuration Memory Protection

Data Communications

- Data Transfer Rate up to 9600 Baud
- Character or Line Mode Transfers
- Support of EIA RS232C or CCITT V.24 Interface



Display Screen

The HP 2621 Interactive Terminal has a screen with a 6 X 8 inch viewing area capable of displaying up to 1,920 characters in 24 lines of 80 character positions. Each character is formed by a 7 x 9 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 combination of these features gives you a bright, easy-to-read display.

Refer to Section III for a detailed description of the display screen.

Display Memory

Your terminal's display memory can store up to 3,840 characters (48 lines of 80 character positions). A "page" of data is the maximum number of lines that can be displayed on the screen at one time (24 lines). Thus, you can store up to two pages of data in display memory. You can examine any portion of text within display memory by using the roll Function keys on your keyboard.

A detailed description of display memory is contained in Section III.

Keyboard

The HP 2621 keyboard is a separate unit that is linked to the display portion of the terminal via 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 a Labels key. The remaining keys support the ASCII-coded character set. A numeric key pad similar to that used for calculators is embedded within the alphanumeric keys. Included within the keyboard unit is a speaker used to sound the terminal's bell tone.

Refer to Section IV for a detailed description of the keyboard.

Function Keys

The Function keys are the eight light-colored keys located across the top of the keyboard and the Labels key (an unmarked light-colored key located to the right of the keyboard). These keys provide you with access to several sets of functions. Similar to the other keys on the keyboard, the Function keys are used either unshifted or shifted.

Unshifted, the keys perform cursor and screen control functions that are labeled directly on the key caps.

Shifted, these keys perform the functions indicated by a screen label associated with each key. The screen labels are displayed in inverse video across the bottom of the screen (row 25). The labels are selected by using the Labels key. Some of the screen labeled Function keys trigger the display of a sublevel set of function labels. For example, the `[config]` and `[edit]` Function keys.

See Section IV for a detailed description of the Function keys.

Configuration

The HP 2621 provides you with the ability to change the terminal's configuration directly from the keyboard using a set of Function keys. You can cause the terminal's current configuration to be displayed on the screen in a coded format and then make changes to the configuration simply by pressing the appropriate Function key. The portion of memory used to store this configuration data is nonvolatile. A battery is used to protect this portion of memory whenever the main power source should be intentionally or accidentally shut off.

Section V contains detailed information about the configuration of your terminal.

Data Communications

You can transfer data to and from a host computer in Character mode (character-by-character) using the terminal as a completely interactive device. In addition to Character mode, you may select Line mode operation (transmit data to the computer a line at a time). In Line mode, you can compose a line of data, then verify and correct the data before you transmit it to the computer.

The terminal operates at a data transfer rate of up to 9600 baud and offers asynchronous point-to-point data communications using the EIA RS232C and CCITT V.24 communications interface specifications.

Connection to the computer is direct or through a modem. In addition to these features, the HP 2621P provides an integral thermal line printer which can be used to produce a permanent copy of your data communications transactions.

Section V contains detailed information about 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. See Section VIII for information about the terminal's Self-test function.

How To Get Started

Section II

Identifying 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.

Table 2-1 is a list of options available for the HP 2621A Interactive Terminal (see Section VI for HP 2621P options).

Table 2-2 is a list of accessories available for the HP 2621A Interactive Terminal (see Section VI for HP 2621P accessories).

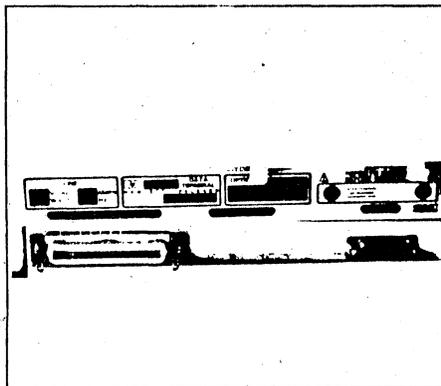


Figure 2-1. HP 2621 Identification Label, Rear Panel

Table 2-1. HP 2621A Options

Option No.	Description
013	50Hz, 240V Power
014	60Hz, 100V Power
015	50Hz, 220V Power
016	50Hz, 100V Power

Table 2-2. HP 2621A Accessories

Accessory No.	Description
13222N	U.S.A. Modem Cable (Male Connector)
13222M	European Modem Cable (Male Connector)
13222C	RS232C Cable (Female Connector)

When communicating with Hewlett-Packard regarding your terminal, specify the model, serial, and 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 "Power Switch (ON/OFF)"

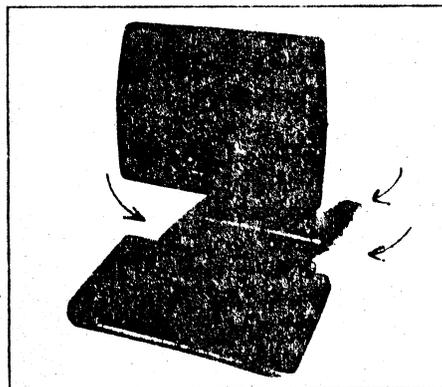
Preparing Your Terminal for Use

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.

CAUTION

The terminal should be opened only by a qualified service person. Please refer to the HP 2621 Service Manual, HP Part No. 02620-90002

To install your terminal, complete the following steps



AIR FLOW

Step 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. For example, do not use a typewriter pad beneath the terminal.

Step 2. Connect and secure the keyboard cable hood connector to the socket connector labeled KYBD on the terminal's rear panel (see Figure 2-2).

Step 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 socket connector labeled DATA COM 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.

Step 4. Set the main power switch on the terminal's rear panel (see Figure 2-2) to the OFF position.

Connect the power cord to the connector located just below the main power switch

Step 5. 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)

Plug the 3-prong power connector into the outlet for your main power source

CAUTION

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

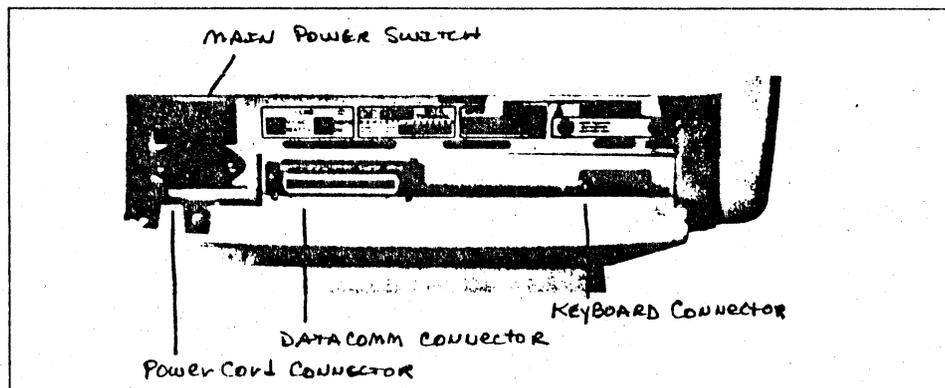


Figure 2-2. HP 2621 Power Switch and Connector Positions, Rear Panel

Power Switch (ON/OFF)

ON

Step 1. When the installation of your terminal is completed, set the main power switch on the rear panel (see Figure 2-2) to the ON position.

After approximately 15 seconds, the terminal is ready to use. Figure 2-3 illustrates the condition of the display screen as it appears following the initial application of power to the terminal.

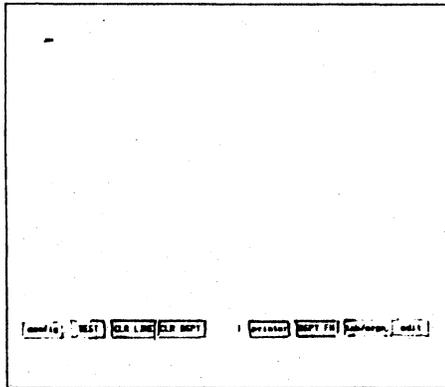


Figure 2-3. HP 2621 Initial Screen Display

As shown in Figure 2-3, when the terminal is ready to use, the cursor is displayed in screen column 1, row 1. In addition to the cursor, the first level of function key labels is displayed across the bottom of the screen.

The battery that protects nonvolatile memory may be accidentally jarred loose during shipment or unpacking. In this case, the terminal comes up initially in configuration mode when power is supplied. If this occurs, ensure that the battery pack is securely seated (see Section VII for instructions about removing and replacing the battery pack).

Step 2. (Optional) Try using the Self-test function to see the result. Press and hold down SHIFT while you press the function key associated with the screen label TEST (that is, key [TEST]). A pattern of ASCII characters is written to the screen. This pattern should be similar to the test pattern shown in Section VIII if your terminal is operating properly.

What To Do In Case of Difficulty

If the key or function you try does not work properly, or if an error message appears on the screen, refer to Section VIII. A list of messages and their meaning is given there. In addition to the list of messages, Section VIII contains information about error recovery, testing the terminal, and where to get service assistance should you require it.

Each time you switch the main power ON, it is possible that the terminal will start up either in Configuration mode or in "continuous" Self-test mode.

If the terminal starts up in Configuration mode (that is, configuration data and function key labels are displayed on the screen), it is likely that the memory-protect mechanism for nonvolatile memory failed while the main power was off. Check that the battery is functioning properly (see Section VII for instructions).

If the terminal starts up with the Self-test repeating continuously, simply reset the terminal (hold down [SHIFT] and [CTRL] while pressing [BREAK]). This action halts execution of continuous Self-test.

OFF

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

NOTE

If you intend to use the terminal interactively as an input/output device for a computer, you must configure the terminal to match the requirements of the computer. Detailed information about configuring the terminal is presented in Section V.

The Terminal's Display Characteristics

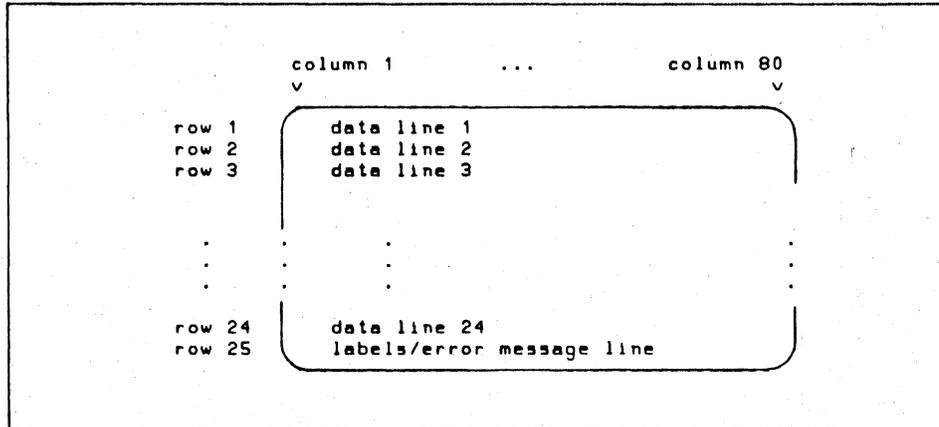
Section III

The display portion of your terminal consists of the display screen (where data appears as alphanumeric and special control characters), and display memory (where the displayable data is stored).

Screen

The display screen is capable of showing up to 24 contiguous lines of display memory data. For the HP 2621, these 24 lines are considered to be one page of data.

The screen actually provides 25 rows of 80 character positions each for the display. Rows 1 through 24 are used to display the content of display memory. Row 25, at the bottom of the screen, is used to display the currently active set of function key labels, a current cursor position column indicator, and any error messages that may be generated.



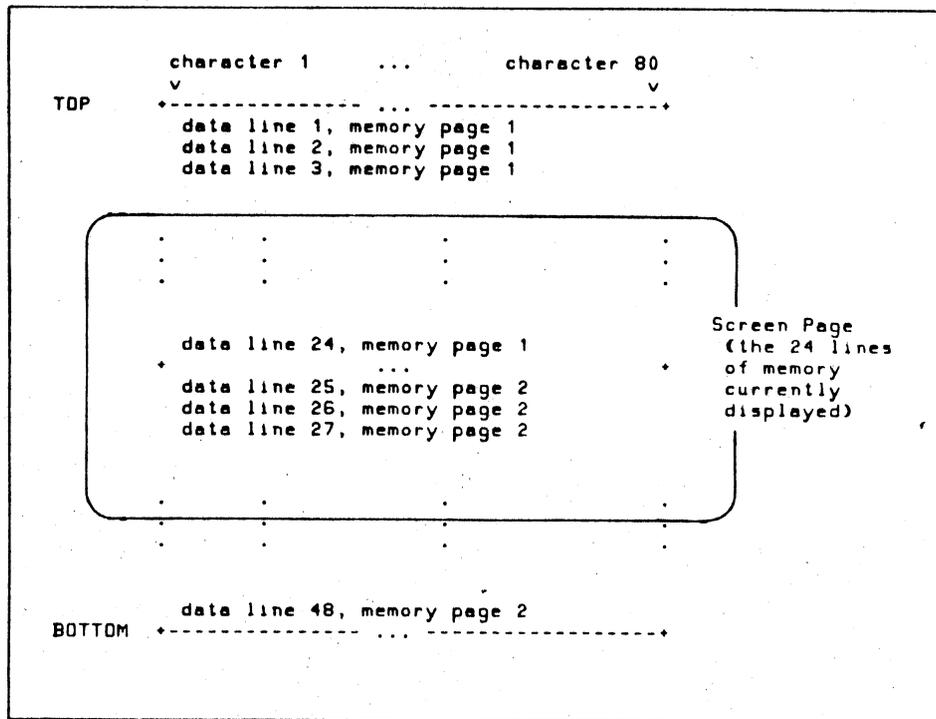
The Terminal's Display Characteristics

Memory

Display Memory can accommodate up to 48 lines of data (two pages). Each line has 80 character positions.

When you enter lines of data into memory, each line appears in its proper line position on the display screen until you have filled one page (24 lines). At this point, display memory rolling begins. When you enter line 25, the first line in Page 1 is rolled off the top of the display screen (it still exists within memory) and line 25 appears at the bottom of your screen. You can enter up to 48 lines into memory and examine them on the screen by using the Roll Function keys. Once you exceed 48 lines, the line first entered (at the "top" of display memory) is discarded to make room for the new line (at the "bottom" of display memory).

Note that if you fill 48 lines of memory with data and press [A] (home cursor down), you will lose the first line of data in memory because the home down operation positions the cursor to a blank line following the last data line in memory. One line is deleted from the top of memory to accomplish the home down operation.



Display Enhancement

You can enhance the display of data by placing an underline in any character position on your screen. You accomplish this by defining an enhanced field within a display line. Once you define the beginning of an enhanced field, the display enhancement remains in effect until the end of the current line or until you define the end of the enhanced field, whichever occurs first. A field consists of one or more character positions in any display line.

To define an enhanced field, position the cursor to the column where you want the field to begin, and then enter the following escape code key sequence:

`esc & d A` (the terminating character may be any uppercase character from the letter set A through O).

The cursor marks the beginning of the enhanced field. Characters entered subsequent to this column position appear underlined on the screen until the end of the line or until you terminate the enhanced field whichever occurs first.

To terminate the enhanced field, enter the following escape code key sequence:

`esc & d @`

When you insert or delete a character in an enhanced field, the result is the same whether the underline enhancement is enabled or disabled. For insert or delete operations, an underline character is inserted into or deleted from any enhanced field. When you replace a character, the result depends upon whether the display enhancement is enabled or disabled. The display enhancement must be enabled to replace any character with an underlined character.

Note that the underline enhancement differs from the `UNDRLINE` function (see "Edit Control Function Set" in Section IV).

The underline Enhancement causes any character entered to appear underlined. The `UNDRLINE` function places an underline beneath any existing character.

Exercise

Make sure that the terminal is in local mode (`REMOTE` disabled). Then, display data on the screen and edit it. For example, sit at the keyboard and enter your name. Notice that the cursor moves across the screen character-by-character as you type. This action shows you where the next display character will appear when you press a key.

`Alexander Hamilton_`

Changing A Character. To change a character displayed on the screen to another character, position the cursor under the character to be changed (using `←`, `→`, `↑`, `↓` keys). Now press the desired character key. The original character is replaced by the new character entered, both on the screen and in display memory.

The Terminal's Keyboard

Section IV

Before learning how to transfer data, you should become familiar with the terminal's keyboard. This simple, compact keyboard consists of the following functional groups:

- **Character Set Group.** The layout of these keys is similar to a standard typewriter keyboard. In addition to the alphanumeric character keys, this group includes typical data terminal keys such as BREAK, CTRL, ENTER, and so forth.
- **Numeric Pad Group.** This group is a calculator-type numeric key pad that is embedded into the character set keys. You may use this pad for entering large amounts of numeric data such as that required for financial reporting.
- **Function Key Group.** This group of keys is used to access screen and cursor control, and special functions that are available in the HP 2621.

Character Set Group

The alphabetic, numeric, symbolic, keyboard control, and data transfer keys are located in the Character Set Group. This is the largest group of keys. The character set is made up of 128 ASCII-coded characters. This includes the uppercase and lowercase alphabetic characters, numeric characters, punctuation and commercial symbols and control codes. The keyboard can generate the entire ASCII character code set (see Appendix A). Figure 4-1 shows the Character Set Group.

The standard character symbols are indicated on the key caps. The [SHIFT] key selects the uppercase or shifted characters. The [BACK SPACE] and [RETURN] keys are used in the same manner as those same keys on a typewriter. The [RETURN] key can be configured to transmit a two-character string each time it is pressed (See Section V).

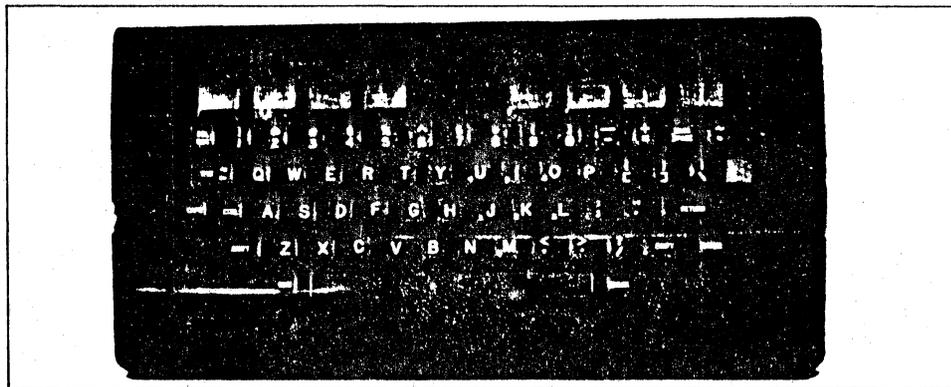


Figure 4-1. HP 2621 Keyboard Character Set Group

The Terminal's Keyboard

The **[TAB<>]** key is used to generate a move to a TAB stop position within the current row or to the next or previous row if no TAB stop exists in the current row. Used by itself, tabular moves may be performed to the right along the row. Used in combination with the **[SHIFT]** key, tabular moves may be performed to the left along the row. The TAB stop positions are set via a Function key (see "Function Key Group") or by an escape code sequence.

When you enter **[TAB>]** (TAB right), the cursor skips forward to the next tabulation stop to the right of the current cursor position, or to the default TAB stop at the left margin of the next row if no stops exist in the current row.

When you enter **[SHIFT]** and **[TAB<]** (TAB left), the cursor skips backward to the next tabulation stop to the left of the current cursor position, or to the first TAB stop encountered in the previous row if no stops exist in the current row.

A Power Off followed by a Power On (or holding down **[CTRL]** and **[SHIFT]** while pressing **[BREAK]**) resets the terminal to default conditions with a TAB stop at the left margin (in this case, column 1).

The **[CAPS]** key is a toggle switch that changes state each time you press it. When the terminal is generating lowercase alphabetic characters, press the **[CAPS]** key once to cause a shift to uppercase. Only the alphabetic characters A through Z are affected. Press it again to return to lowercase. Note that the **[SHIFT]** key remains active even when you have enabled the **[CAPS]** key. That is, if you have enabled the **[CAPS]** key, pressing the **[SHIFT]** key causes a shift to lowercase for as long as the **[SHIFT]** key is held down. The action of this key differs from that of the Caps Lock Function key (see Section V). A Power Off followed by Power On (or holding down **[CTRL]** and **[SHIFT]** while pressing **[BREAK]**) resets the terminal to default conditions with the CAPS key disabled.

THE **[DEL/ESC]** key has two purposes. Used by itself, it generates the ASCII escape character. Used in combination with the **[SHIFT]** key, it generates the ASCII delete character.

The **[CTRL]** key is used in combination with other keys to generate control sequences.

The **[ENTER]** key is used to initiate a line data transfer via the data communications interface within the terminal. The **[ENTER]** key transmits the same string configured into the **[RETURN]** key (see Section V). The **[ENTER]** key is ignored in Local mode (the REMOTE function disabled).

The **[BREAK]** key is used to interrupt data communications between the terminal and an external host computer. To reset the terminal to the initial Power On state, press and hold **[CTRL]** and **[SHIFT]** and then press the **[BREAK]** key. When REMOTE is enabled, pressing this key has no effect on the Data Communications line. The **[BREAK]** key is ignored in Local mode (the REMOTE function disabled).

Note that the use of the space bar on this terminal is normally destructive. A blank space is placed in the current character position (marked by the cursor) whenever you press the space bar.

Exercise

Make sure the terminal is in Local mode (REMOTE disabled). Then, type in a few lines of text to get used to the keyboard. This part of the terminal works much like a typewriter. Note that you can use the back-space key to overwrite and change characters on the screen.

Numeric Pad Group

This group of keys supplements the standard keyboard numeric keys. The numeric pad consists of 12 keys that are embedded into the Character Set Group, and a [NUM] key used to enable or disable the numeric pad. Figure 4-2 shows the location of the keys in the Numeric Pad Group.

The numeric pad includes the characters 0 through 9, decimal point (period), and comma. These keys are arranged in a format similar to that used for calculators. The numeric pad character symbols are imprinted on the key caps. The characters 0 through 6 appear in the lower left corner of the alphabetic character keys M, J, K, L, U, I, and O, respectively. The remaining numeric pad characters (7 through 9, decimal point, and comma) make use of those same characters from the Character Set Group.

Note that although use of the [NUM] key enables the Numeric Pad Group of keys, all of the other keys on the keyboard remain active and, if pressed, generate a character.

The [NUM] key has both an unshifted and shifted mode, as follows:

[NUM] Key Unshifted Mode

When used by itself (unshifted), the [NUM] key enables the Numeric Pad Group of keys. Press [NUM] and hold it down for as long as you want access to the numeric pad. Release [NUM] to return to the standard character set.

[NUM] Key Shifted Mode

When the [NUM] key is pressed in combination with the [SHIFT] key, access to the Numeric Pad Group is "locked" into the enabled state. When you have finished using the numeric pad and wish to return to the standard character set, simply press and release the [NUM] key to disable the pad.

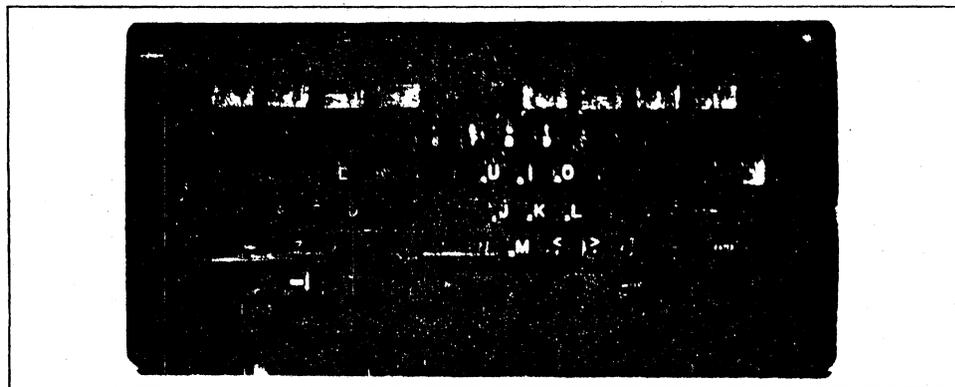


Figure 4-2. HP 2621 Keyboard Numeric Pad Group

Function Key Group

The Function Key Group consists of eight Function keys located across the top of the keyboard, and a Labels key located at the right edge of the character set group. Figure 4-3 shows the Function Key Group.

Function Key Unshifted Mode

When these keys are used by themselves (unshifted mode) they cause execution of the cursor or text control function imprinted on the key cap. The unshifted mode functions are

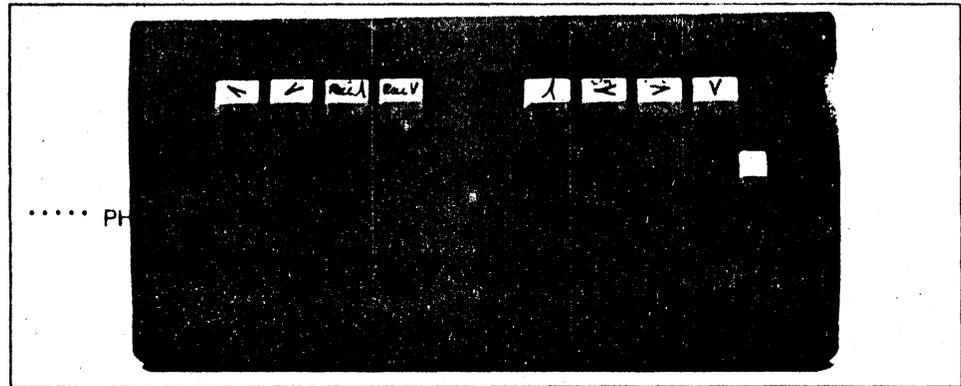


Figure 4-3. HP 2621 Keyboard Function Key Group

Key	Function
[↖]	Home Cursor Up — Positions the cursor to the top left corner of the display screen (row 1, left margin) and rolls the text in display memory down as far as possible so that the first line of text in memory appears in row 1 of the screen.
[↙]	Home Cursor Down — Positions the cursor to the bottom left corner of the display screen (row 24, left margin) and rolls the text in display memory up as far as possible so that the last line of text in memory plus one blank line appears at the bottom of the screen. If there are fewer than 24 lines of text in display memory, the cursor is positioned to the left margin of a blank line following the last screen row containing text. In the home down position, the cursor is always in a blank screen row.

Key	Function
[ROLL^]	<p>Roll Text Up — Each time this key is pressed, the text in display memory is rolled upward one row on the screen. The top row of text is rolled off the screen but is not destroyed. If you hold this key down, text continues to roll upward until the last line of text in memory appears on the screen. In any case, text may be rolled up on the screen until the last line of text in memory appears on the screen, at which time the rolling action stops. Normally, the rolling action stops whenever there is no additional data to display.</p>
[ROLLV]	<p>Roll Text Down — Each time this key is pressed, the text in display memory is rolled downward one row on the screen. The bottom row of text may be rolled off the screen but is not destroyed. If you hold this key down, text continues to roll downward until the first line of text in memory appears on the screen. In any case, text may be rolled down on the screen until the first line of text in memory appears on the screen, at which time the rolling action stops. Normally, the rolling action stops whenever there is no additional data to display.</p>
[^]	<p>Move Cursor Up — Each time this key is pressed, the cursor is moved upward one row in the current column position. If you hold the key down, upward movement continues row-by-row. When the cursor is in screen row 1, any text in memory is rolled down one line. This action continues as long as the key is held down until the first line of text in memory is reached.</p>

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Key	Function
[←]	<p>Move Cursor Left — Each time this key is pressed, the cursor is moved one column to the left in the current screen row. If you hold the key down, the cursor continues to move left. When the cursor is in column 1 of the row, it will wrap around to column 80 of the preceding row. When the cursor is in column 1 of row 1, pressing this key causes the text in display memory to be rolled down one line and the cursor moves to column 80 of the new line. This action continues as long as the key is held down until column 1 of the first line of text in display memory is reached.</p>
[→]	<p>Move Cursor Right — Each time this key is pressed, the cursor is moved one column to the right in the current screen row. If you hold the key down, the cursor continues to move right. When the cursor is in column 80 of the row, it will wrap around to column 1 of the succeeding row. When the cursor is in column 80 of row 24, pressing this key causes the text in memory to be rolled up one line and the cursor moves to column 1 of the new line. This action continues as long as the key is held down until column 80 of the last line of text in display memory is reached.</p>
[↓]	<p>Move Cursor Down — Each time this key is pressed, the cursor is moved downward one row in the current column position. If you hold the key down, downward movement continues row-by-row. When the cursor is in screen row 24, any text in display memory is rolled up one line. This action continues as long as the key is held down until the last line of text in memory is reached.</p>

Labels Key

This key is located to the right of the character set group and is the only un-marked key on the keyboard (see Figure 4-3). The Labels key is used to manipulate the screen display of the Function labels.

Screen Labels

There are several levels of screen displayed function labels. The initial display is a primary set of screen labels. The structure of the screen labels function set is shown in Figure 4-4.

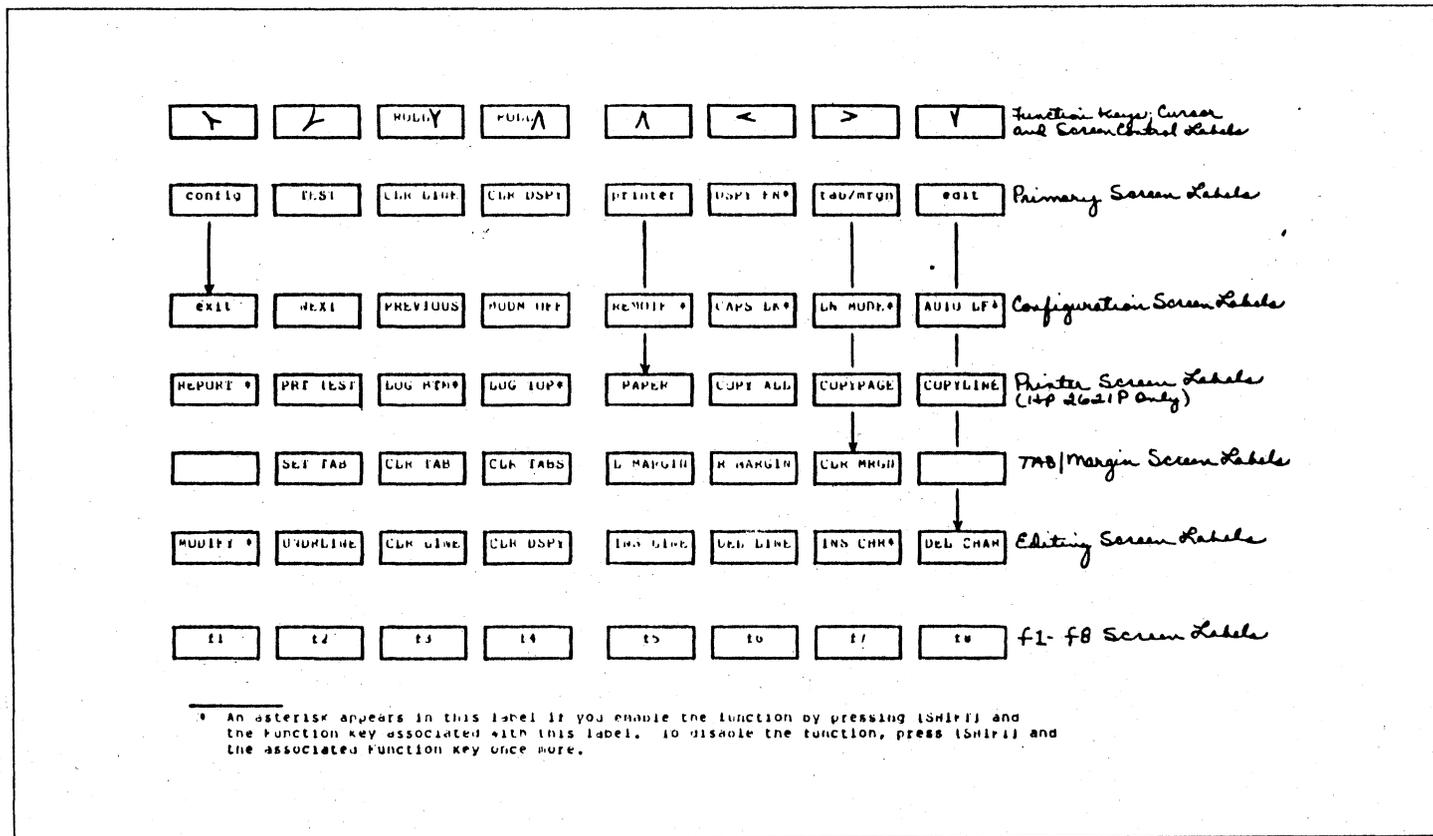


Figure 4-4. HP 2621 Screen Labels Structure

The Terminal's Keyboard

The Labels key is used by itself (unshifted), in combination with the [SHIFT] key (shifted), or in combination with the [CTRL] and [SHIFT] keys (control shifted) to obtain various results, as explained in the following paragraphs.

Labels Key, Unshifted

Usually, you use the Labels key to return to the primary set of screen labels from one of the subsets. You also can turn on the display of screen labels when it has been shut off.

When either of these conditions exists (the screen labels display is a subset such as config, tab/mrgn, or edit, or the screen labels display has been shut off), press the Labels key by itself to cause the primary set of labels to return to the screen. For results when the f1-f8 subset is displayed, see the following section.

Labels Key, Shifted

You use the Labels key in combination with the [SHIFT] key to cause the display of the f1-f8 screen labels.

When the primary set of screen labels, or any subset of screen labels (except the config subset) is displayed, press and hold down the [SHIFT] key and then press the Labels key to cause the display of the f1-f8 screen labels subset.

To terminate the f1-f8 function subset, simply press the Labels key by itself. Control returns to the set of screen labels (either primary or a subset) from which you requested the f1-f8 screen labels.

For example, if you were using the TAB and margin control functions and had the tab/mrgn screen labels displayed when you pressed the [SHIFT] and Labels keys, the tab/mrgn screen labels are replaced by the f1-f8 screen labels. Now, when you press the Labels key by itself, the screen labels display returns to the tab/mrgn screen labels. You must press the Labels key once more (unshifted) to get to the primary set of screen labels.

Labels Key, Control Shifted

To shut off the display of the screen labels, press and hold down the [CTRL] and [SHIFT] keys and then press the Labels key. The display of the screen labels is shut off until you press the Labels key (or shifted Labels key) once again.

The screen labels display line includes an "active modem" indicator asterisk and a cursor position column indicator. These indicators are shut off whenever the screen labels are shut off. See "Function Labels, Shifted Mode" for a description of the indicators. If you are using the terminal to communicate with a computer via a modem and the "active modem" indicator is required by your facility, do not shut off the screen labels.

[f1] [f2] [f3] [f4] [f5] [f6] [f7] [f8]

Function Key Shifted Mode

When the function keys are used in combination with the [SHIFT] key (shifted mode), they cause execution of the functions named by the function labels that are displayed at the bottom of your screen.

The primary Function labels appear as follows:

```
[ config ] [ TEST ] [CLR LINE] [CLR DSPY] a nn [printer ] [DSPY FN ] [tab/mrgn] [ edit ]
```

a An asterisk is displayed in this position if the Data Set Ready control line (RS232C CC line or CCITT V 24 107 line) is high (true). This indicator disappears from the display if the Data Set Ready control line goes low (false), or if the screen labels display is shut off (control shifted Labels key).

Normally, this indicator is used when your terminal is connected to a computer via a modem. The indicator signals that the modem line is active. Do not shut off the screen labels display if your facility requires the use of the active modem indicator.

nn A number appears in this position that identifies the current column position of the cursor (in the range 1–80). This column number is incremented or decremented each time the cursor is moved to a new position on the screen.

The shifted mode functions are:

Function Label	Key Stroke	Function
[config]	Shifted [F1]	Set the terminal into Configuration mode. The current configuration is displayed on the screen together with a set of configuration function key labels that you may use to manipulate the terminal's configuration. The configuration data requires three lines of display memory. When memory is full (48 lines of data), you will lose data from memory upon requesting Configuration mode. Section V contains details about the configuration of the terminal.
[TEST]	Shifted [F2]	Perform a diagnostic test of the terminal: check ROM, Video RAM, Program RAM, Keyboard Chip, then display the full character set and the status bytes. If an error condition is encountered, an appropriate message is displayed. Section VIII contains a description of the Test function.
[CLR LINE]	Shifted [ROLL F3]	Clear Line — this function clears (erases) the content of the current line from the character marked by the cursor through the last character in the line. Move the cursor to the character position where you want the line deletion to begin and press the shifted Function key associated with this label.
[CLR DSPY]	Shifted [ROLL F4]	Clear Display — this function clears (erases) the content of display memory from the character marked by the cursor through the last character in memory. Move the cursor to the character position where you want the memory deletion to begin and press the shifted Function key associated with this label.
[printer]	Shifted [F5]	Applicable only to the HP 2621P Interactive Terminal. See Section VI. This label is blank in an HP 2621A.

Function Key Shifted Mode

When the function keys are used in combination with the [SHIFT] key (shifted mode), they cause execution of the functions named by the function labels that are displayed at the bottom of your screen.

The primary Function labels appear as follows:

```
[ config ] [ TEST ] [CLR LINE] [CLR DSPY] a nn [printer ] [DSPY FN ] [tab/mrgn] [ edit ]
```

- a* An asterisk is displayed in this position if the Data Set Ready control line (RS232C CC line or CCITT V.24 107 line) is high (true). This indicator disappears from the display if the Data Set Ready control line goes low (false), or if the screen labels display is shut off (control shifted Labels key).

Normally, this indicator is used when your terminal is connected to a computer via a modem. The indicator signals that the modem line is active. Do not shut off the screen labels display if your facility requires the use of the active modem indicator.

- nn* A number appears in this position that identifies the current column position of the cursor (in the range 1–80). This column number is incremented or decremented each time the cursor is moved to a new position on the screen.

The shifted mode functions are:

The Terminal's Keyboard

Function Label	Key Stroke	Function
[config]	Shifted [↵]	Set the terminal into Configuration mode. The current configuration is displayed on the screen together with a set of configuration function key labels that you may use to manipulate the terminal's configuration. The configuration data requires three lines of display memory. When memory is full (48 lines of data), you will lose data from memory upon requesting Configuration mode. Section V contains details about the configuration of the terminal.
[TEST]	Shifted [↵]	Perform a diagnostic test of the terminal: check ROM, Video RAM, Program RAM, Keyboard Chip, then display the full character set and the status bytes. If an error condition is encountered, an appropriate message is displayed. Section VIII contains a description of the Test function.
[CLR LINE]	Shifted [ROLL↵]	Clear Line — this function clears (erases) the content of the current line from the character marked by the cursor through the last character in the line. Move the cursor to the character position where you want the line deletion to begin and press the shifted Function key associated with this label.
[CLR DSPY]	Shifted [ROLL↵]	Clear Display — this function clears (erases) the content of display memory from the character marked by the cursor through the last character in memory. Move the cursor to the character position where you want the memory deletion to begin and press the shifted Function key associated with this label.
[printer]	Shifted [↵]	Applicable only to the HP 2621P Interactive Terminal. See Section VI. This label is blank in an HP 2621A.

Function Label	Key Stroke	Function
[DSPY FN]	Shifted [←]	<p>Cause terminal control function codes, such as escape sequences, to be displayed symbolically on the screen rather than being executed by the terminal. An asterisk appears on the screen immediately to the right of this label when this function is enabled (for example, [DSPY FN*])</p> <p>When Display Functions is enabled in Local operating mode, all characters are displayed. The Return character (CR) is displayed and a Return/Linefeed (CR/LF) is executed.</p> <p>In Remote operating mode, the Null and Delete characters are used for padding. They are not displayed. If the ENQ/ACK handshake is enabled (See Configuration, Section V), the ENQ character is executed but not displayed. If the ENQ/ACK handshake is disabled, ENQ is not executed but is displayed.</p> <p>To terminate the display of function codes, press this key again. The asterisk disappears from the label and function codes are no longer displayed on the screen.</p>
[tab/mrgn]	Shifted [→]	<p>Display a set of function key labels that you may use to set TAB stop positions, clear any single TAB stop position, or clear all TAB stop positions. You may also define the position of the left and right margins of the display screen, and clear these margins.</p>
[edit]	Shifted [V]	<p>Display a set of function key labels that you may use to perform editing operations upon text in display memory. Editing operations provided include: Modify, underline, clear line or display, insert or delete line, and insert or delete character.</p>

The Terminal's Keyboard

Configuration Function Set

When you request Configuration mode (press [SHIFT] together with the Function key labeled [confi]), you are able to examine and change the internal configuration of your terminal. The process of reconfiguration is described in Section V.

Printer Control Function Set

The printer functions apply only to the HP 2621P. These functions are described in Section VI.

TAB and Margin Control Function Set

When you request TAB and Margin Control (press [SHIFT] together with the Function key labeled [tab/mrgn]), a new set of Function labels appears on your screen, as follows:

[] [SET TAB] [CLR TAB] [CLR TABS] [L MARGIN] [R MARGIN] [CLR MRGN] []

Function Label	Key Stroke	Function
[SET TAB]	Shifted [↵]	Set TAB Stop — this function sets a tabulation stop at the current position of the cursor. Move the cursor to the column where you want a TAB stop and press the shifted Function key associated with this label.
[CLR TAB]	Shifted [ROLL↵]	Clear TAB Stop — this function clears (erases) any tabulation stop at the current position of the cursor. Position the cursor to the column where you want to remove a TAB stop and press the shifted Function key associated with this label. Note that the default TAB stop at the left margin can be cleared using this function. The TAB key is ignored when no TAB stops are defined.
[CLR TABS]	Shifted [ROLL↵]	Clear All TAB Stops — this function clears (erases) all existing tabulation stops. Simply press the shifted Function key associated with this label. Following execution of this function, a default TAB stop is set at the left margin.
[L MARGIN]	Shifted [↵]	Set Left Margin — this function sets the left text margin at the current position of the cursor. Move the cursor to the column where you want the left margin and press the shifted Function key associated with this label. A default TAB stop is set at the left margin whenever this function is executed.
[R MARGIN]	Shifted [↵]	Set Right Margin — this function sets the right text margin at the current position of the cursor. Move the cursor to the column where you want the right margin and press the shifted Function key associated with this label. It is illegal to set the right margin to the left of the left margin. If you attempt to do this, the terminal ignores your request and sounds a bell tone.
[CLR MRGN]	Shifted [↵]	Clear Margins — this function clears (erases) any left and right margin set between column 2 and 79 inclusive. The left margin is reset at column 1 and the right margin is reset at column 80. A default TAB stop is set at the left margin (in this case, column 1).

Edit Control Function Set

The edit control functions allow you to perform various editing operations upon text in display memory. When you request Edit Control (press [SHIFT] together with the Function key labeled **(edit)**), a new set of Function labels appear on the screen, as follows:

[MODIFY] [UNDRLINE] [CLR LINE] [CLR DSPY] [INS LINE] [DEL LINE] [INS CHR] [DEL CHAR]

Function Label	Key Stroke	Function
[MODIFY]	Shifted [F7]	<p>Modify Text — this function enables Modify mode while you are interacting with a host computer. For example, if you are in Character mode and transmit an erroneous command string to the host computer and receive an error message in response, you can enable Modify mode, correct the error in the command string on the screen, and retransmit the command without having to retype the entire string. To enable Modify mode, press the shifted Function key associated with this label. An asterisk is displayed within the label to indicate that the Modify mode is in the enabled state. Move the cursor to the line you want to change and use the Edit Functions to make the desired changes. When the line is changed to what you want, press [ENTER] or [RETURN] to transmit the changed line to the host computer. The use of the [ENTER] or [RETURN] key executes Modify mode. The current line (marked by the cursor) is transmitted to the computer and the asterisk is removed for the [MODIFY*] screen label.</p> <p>To disable modify mode (before you press either [ENTER] or [RETURN]), press the shifted function key associated with the [MODIFY*] screen label. The asterisk is removed from the label and Modify mode is disabled.</p> <p>The amount of data retransmitted is a function of the line mode transmission rules. That is, if you never typed anything into the line to be retransmitted, transmission is from the column position defined by the value set into the Start Column field during Configuration mode. If you have typed new data into the line, then transmission begins at the point where you typed in the new data.</p>

The Terminal's Keyboard

Function Label	Key Stroke	Function
[UNDRLINE]	SHIFTED [A]	Display Underline — this function adds an underline character at the current cursor position. Each time the [UNDRLINE] Function key is pressed an underline character is added to the current character. If you hold this key down the underline repeats along the line until you release the Function key. Note that this underline function differs from the ASCII-coded underline character.
[CLR LINE]	Shifted [ROLL^]	Clear Line — this function clears (erases) the content of the current line from the character marked by the cursor through the last character in the line. Move the cursor to the character position where you want the line deletion to begin and press the shifted Function key associated with this label.
[CLR DSPY]	Shifted [ROLLV]	Clear Display — this function clears (erases) the content of display memory from the character marked by the cursor through the last character in memory. Move the cursor to the character position where you want the memory deletion to begin and press the shifted Function key associated with this label.
[INS LINE]	Shifted [A]	<p>Insert Line — this function inserts a blank line into display memory immediately preceding the line marked by the cursor. Move the cursor to the line before which you want to insert a line and press the shifted Function key associated with this label. A new blank line is inserted into memory and the cursor position remains unchanged (it remains in the same row and column).</p> <p>When memory is full (48 lines of data) and the cursor is at row 1, an insert request deletes a line from the bottom of memory to make room for the line to be inserted. When memory is full and the cursor is at any row other than 1, an insert request deletes a line from the top of memory.</p>
[DEL LINE]	Shifted [←]	Delete Line — this function deletes an entire line at the current cursor position. Move the cursor to any character position within the line you want deleted and press the shifted Function key associated with this label. The entire line is deleted from display memory. The cursor position is unchanged (it remains in the same row and column).

Function Label	Key Stroke	Function
[INS CHR]	Shifted [V]	<p>Insert Character — this function enables the Insert Character mode. When enabled, any character that you enter is inserted into display memory in the position immediately preceding the cursor. Move the cursor to the character position at which you want to insert one or more characters and press the shifted Function key associated with this label. An asterisk is displayed within the label to indicate that the Insert Character mode is enabled. Then, insert new characters. While inserting characters, any existing characters are shifted to the right one character position within the same line for each new character entered.</p> <p>Any characters shifted beyond the right margin setting are lost. No wraparound occurs.</p> <p>To disable Insert Character mode, simply press the shifted Function key associated with this label. The asterisk is removed from the label and you cannot insert new characters. Any characters entered when Insert Character mode is disabled overwrite existing characters in the line.</p>
[DEL CHAR]	Shifted [Y]	<p>Delete Character — this function deletes one character marked by the cursor. Move the cursor to the character you want deleted and press the shifted Function key associated with this label. The character is erased from memory. Remaining characters within the same line are shifted to the left one character position for each character deleted.</p>

Using the Terminal as an Input/Output Device

Section V

The HP 2621 Interactive Terminal can be connected, either directly or through a modem, to an external data processing device such as a computer.

You may be required to select specific characteristics that define the terminal operation before you can use it as a data communications device. This set up procedure is called "configuring" the terminal.

For the HP 2621, configuration parameters are maintained within programmable fields that are displayable on the screen. Included among these fields are:

- Values that define the terminal's data transfer baud rate.
- Keywords that define the type of parity generated by the terminal and the duplex setting of the terminal.
- Single-character mnemonics that define the data handling straps and the type of data communications handshake.
- Values that define the frequency rate for your local A.C. electric power and the starting column position for the transmission of data across the data communications line.
- A two-character redefinable string associated with the [RETURN] and [ENTER] keys.

You use the cursor left or right [←], or [→] keys to position the cursor for modification of the desired parameter.

You may use the TAB right or left [TAB>], or [TAB<] key to position the cursor to the beginning of any displayed field in the configuration data.

The configuration function descriptions follow:

You use the [config] function key to enter configuration mode and display the configuration parameters on the screen. When requested, these parameters are displayed together with a set of function key labels with which you may change the parametric values. Using the keys associated with these labels, you configure the terminal to match your Local mode requirements or the Remote mode requirements of an external computer system.

Using the Terminal as an I/O Device

The initial HP 2621 configuration data is displayed on the screen in the following format

Baud Rate	Parity	Duplex	Straps	Handshake	Hz	Start Col	Return
2400	NONE(0)	FULL	bogHz	EtX	60	1	[]

[exit] [NEXT] [PREVIOUS] [MODM OFF] [REMOTE] [CAPS LK] [LN MODE] [AUTO LF]

Note that the configuration data uses three lines of display memory. Thus, if memory is full and you request the configuration data, you may lose up to three lines from display memory.

When you are in Configuration mode and make changes to the displayed configuration fields, these changes do not become effective until you terminate the Configuration mode.

Configuration Function Keys

The configuration function "exit" terminates Configuration mode. You may also press the Labels key to terminate Configuration mode. In either case, the configuration data and screen labels disappear from the screen and are replaced by the content of display memory and the primary set of screen labels.

The NEXT and PREVIOUS functions are used to manipulate the displayed configuration data.

The remaining functions define conditions such as Modem Disconnect, REMOTE mode enable/disable, uppercase character (CAPS) lock/unlock (teletypewriter simulation), Line mode enable/disable, and automatic linefeed enable/disable.

Function Label	Key Stroke	Function
[EXIT]	Shifted [N]	This function terminates Configuration mode. The screen returns to the screen conditions that existed before you requested configuration mode. You also may terminate Configuration mode by pressing the Labels key.
[NEXT]	Shifted [N]	The NEXT function sets the current configuration parameter (the cursor marks the current parameter) to the next available value. For the straps and for handshake, NEXT simply changes the state of the parameter from lowercase to uppercase, or vice versa. For Baud Rate, Parity, Duplex, Hz, and Start Col, the next available value replaces the current value each time you execute NEXT. The RETURN field is not affected by the NEXT function.
[PREVIOUS]	Shifted [ROLL^]	The PREVIOUS function sets the current configuration parameter (the cursor marks the current parameter) to the previous available value. For the straps and for handshake, PREVIOUS changes the state of the parameter from lowercase to uppercase, and vice versa. For Baud Rate, Parity, Duplex, Hz, and Start Col, the previous available value replaces the current value each time you execute the PREVIOUS function. The RETURN field is not affected by the PREVIOUS function.
[MODEM OFF]	Shifted [ROLL^]	Modem Disconnect — This function directs the terminal to "hang-up" the modem. The action resulting from pressing the function key associated with this label occurs immediately. The cursor disappears from the screen for approximately three seconds.
[REMOTE]	Shifted [^]	This function enables the connection to a remote computer via the data communication interface. An asterisk appears in the label when this function is enabled (for example, [REMOTE*]). To disable this mode (that is, to allow Local mode) press the function key associated with this label once again.

Using the Terminal as an I/O Device

Function Label	Key Stroke	Function
[CAPS LK]	Shifted [⇐]	<p>This function causes the terminal's alphabetic keys to be locked into uppercase characters. Specifically, the terminal generates only the ASCII characters a through { (the characters ` and ~ are ignored) when Caps Lock is enabled. An asterisk appears in the label when this function is enabled (for example, [CAPS LK*]).</p> <p>When Caps Lock is disabled, the complete ASCII Character Set (128 characters) is generated by the terminal. For remote operation, the HP 2621 always accepts the complete 128 characters whether Caps Lock is enabled or disabled.</p>
[LN MODE]	Shifted [⇨]	<p>This function enables Line Mode. When Line Mode is enabled, data entered into display memory appears on the screen but is not transmitted across the data communications link until after the [ENTER] or [RETURN] key is pressed and the host computer has responded. An asterisk appears in the label when this function is enabled (for example, [LN MODE*]).</p> <p>In Line mode, the amount of data transmitted is determined as follows: If you have created the line to be transmitted using the keyboard, data is transmitted from the point where you started typing data. If the remote computer created the line to be transmitted (and you have not typed anything into the line) data is transmitted from the point defined by the Start Col field in Configuration mode. Trailing blanks are suppressed. If you have typed data into a computer-generated line of data, transmission begins at the point where you started typing.</p> <p>When this function is disabled, the terminal operates in Character Mode. Each character entered is transmitted immediately across the data communications link when the character's key is pressed.</p>
[AUTO LF]	Shifted [⇩]	<p>This function enables Automatic Linefeed. When enabled, a Linefeed is generated automatically each time the [RETURN] or [ENTER] key is pressed. This function should be enabled when you operate the terminal in local mode and should be disabled when you operate the terminal in remote mode, depending on the requirements of the host computer. An asterisk appears in the label when Automatic Linefeed is enabled (for example, [AUTO LF*]).</p>

Baud Rate Configuration

The speed at which data transfers occur between the terminal and the host computer is determined by the value set into the Baud Rate parameter field. The available Baud Rate values are EXT., 110, 150, 200, 300, 600, 1200, 1800, 2400, 3600, 4800, and 9600. The value you select must match the capability of the host computer or that of the modem link between the terminal and computer. The defaulted baud rate value is 2400.

To change the Baud Rate value, use the cursor left [←] or cursor right [→] key to position the cursor beneath the first character of the current Baud Rate value on the screen. You also may use [TAB>] or [TAB<] to move the cursor to this field. Then execute the NEXT or PREVIOUS function ([SHIFT] and [↗] or [SHIFT] and [↘]) until the appropriate value is displayed.

Parity Configuration

The type of parity generated for each data byte is determined by the value set into the Parity parameter field. The available parity types are NONE(0), NONE(1), EVEN, and ODD. The type selected must match the requirements of the host computer. The defaulted parity is NONE(0).

The available parity types are:

NONE(0)	No parity is generated; eighth bit is always 0
NONE(1)	No parity is generated; eighth bit is always 1
EVEN	Even parity is generated; eighth bit is parity result
ODD	Odd parity is generated; eighth bit is parity result

To change the Parity value, use the cursor left [←] or cursor right [→] key to position the cursor beneath the first character of the current Parity value on the screen. You also may use [TAB>] or [TAB<] to move the cursor to this field. Then, execute the NEXT or PREVIOUS function ([SHIFT] and [↗] or [SHIFT] and [↘]) until the appropriate value is displayed.

Duplex Configuration

The type of echo duplex for data communications transmission can be determined by the keyword set into the Duplex parameter field. The available duplex types are FULL and HALF. The default type is FULL Duplex.

In Character mode, FULL duplex indicates that the terminal transmits a character to the computer and the computer should provide the echo to the display screen.

HALF duplex indicates that the terminal both transmits a character to the computer and echoes that character locally to the display screen.

To change the Duplex keyword, use the cursor left [←] or cursor right [→] key to position the cursor beneath the first character of the current Duplex keyword on the screen. You also may use [TAB>] or [TAB<] to move the cursor to this field. Then, execute the NEXT or PREVIOUS function ([SHIFT] and [↗] or [SHIFT] and [↘]) until the appropriate value is displayed.

Strap Configuration

Each strap is represented on the screen by a single alphabetic character. You enable or disable a strap by changing the state of the displayed character from lowercase to uppercase, or vice versa. Table 5-1 lists the straps and their condition when either lowercase or uppercase. A description of each strap follows Table 5-1.

When the configuration parameters are displayed, you use the cursor left [←] or cursor right [→] key to move the cursor to a position beneath the character representing the strap you want to change. You may use [TAB→] or [TAB←] to move the cursor to this field. When the cursor is positioned correctly, press and hold down [SHIFT] while you press [↵]. This executes the NEXT function which results in a change of state for the strap character. Either the NEXT or PREVIOUS function may be used to change a character's state.

Table 5-1. HP 2621 Strapping Configuration

Strap	In/Open	Out/Closed
Space Overwrite (SPOW) Latch	b (disabled)	B (enabled)
Wraparound Cursor, End-Of-Line	c (enabled)	C (disabled)
Short Transfer Trigger Handshake (Block Transfer Handshake)	g (enabled)	G (disabled)
Long Transfer Warning Handshake (Inhibit DC2)	h (enabled)	H (disabled)
Data Speed Select	x (disabled)	X (enabled)
Parity Check	z (enabled)	Z (disabled)

Although the Short Transfer Trigger Handshake is disabled, transfer conditions become dependent on the state of the Long Transfer Warning Handshake strap. For further information, see the description for these straps, below.

Space Overwrite (SPOW) Latch. When this strap is enabled, the SPOW latch can be turned on by a Return character (␣), and turned off by [↑] (home up), a Linefeed, or [TAB→]. When the SPOW latch is on, the space bar causes the cursor to move to the right along the current line without overwriting existing characters. When the SPOW latch is off, the space bar causes an overwrite of blank (space) characters as the cursor moves along the current line.

When this strap is disabled (the defaulted state), the SPOW latch is not accessible.

Wraparound Cursor, End-Of-Line. When enabled (the defaulted state), this strap causes the cursor to wrap around to the beginning of the next line on the screen whenever the right margin of any line is exceeded. The terminal generates a Return and a Linefeed character to accomplish this.

When this strap is disabled, no Return or Linefeed character is generated at the end of a line. The cursor remains in, and overwrites the content of the right margin.

Short Transfer Trigger Handshake (Block Transfer Handshake), Long Transfer Warning Handshake (Inhibit DC2). The HP 2621 provides three kinds of data transfer operations that are meaningful in Remote mode only: Long Transfer in Line mode, Long Transfer in Character Mode, and Short Transfer.

Long Transfer, Line Mode

A data transfer operation initiated via the [ENTER] or [RETURN] key while the terminal's Line mode or Modify function is enabled.

Long Transfer, Character Mode

A data transfer operation initiated via the [ENTER] or [RETURN] key while the terminal's Line mode or Modify function is disabled.

Short Transfer

A data transfer operation involving:

1. Terminal Status
2. f1 through f8 functions
3. Completion Status Indicator (S, F, or U) following a remote print operation request via escape code sequence (HP 2621P only).

If more than one transfer request is pending simultaneously, the execution priority is:

1. Status Requests
2. f1-f8 Function Requests
3. [ENTER] or [RETURN] Key Line Transfer Requests
4. Completion Status Responses

The complete DC1/DC2 handshake protocol consists of a "trigger" signal (DC1) sent from the host computer to inform the terminal that a data transfer is possible. In response, the terminal sends a "warning" signal (DC2) to the host computer indicating that the data to be transferred is ready. The host computer sends another trigger signal (DC1) to enable the transfer. Figure 5-1 illustrates the handshake protocol.

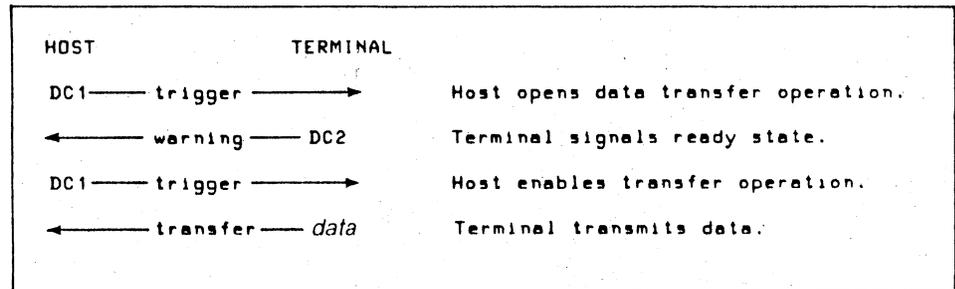
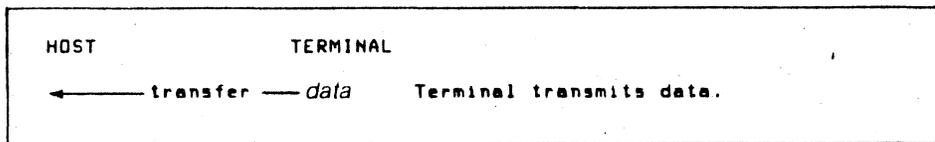


Figure 5-1. DC1/DC2 Handshake Protocol

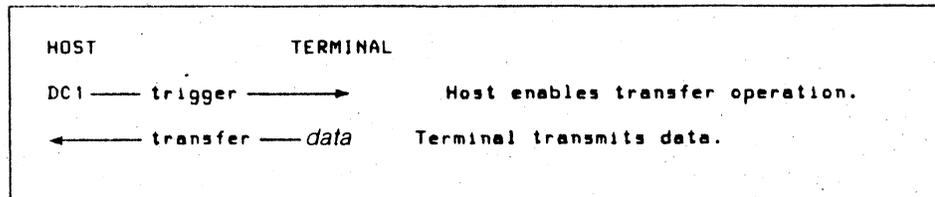
Using the Terminal as an I/O Device

Depending on the state of the g and h straps, one of three subsets of the handshake protocol shown in Figure 5-1 is used by the terminal, as follows:

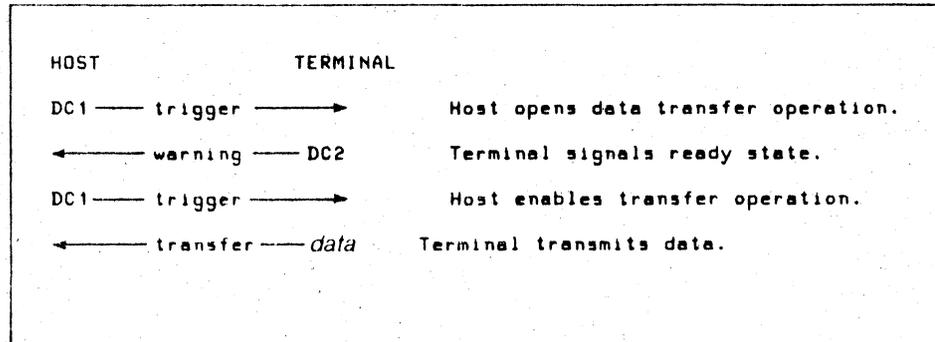
TYPE 1 (No Handshake)



TYPE 2 (DC1 Trigger Handshake)



TYPE 3 (DC1/DC2/DC1 Warning Handshake)



The effect of the various g and h strap states is shown in Table 5-2.

Table 5-2. DC1/DC2 Handshake Protocol Strapping Effects

Strap State	Transfer Category		
	Long (Line Mode)	Short	Long (Char Mode)
g,h	TYPE 3	TYPE 2	TYPE 1
g,H (default)	TYPE 1	TYPE 2	TYPE 1
G,h	TYPE 3	TYPE 3	TYPE 3
G,H	TYPE 1	TYPE 1	TYPE 1

Data Speed Select. This strap allows the operation of modems that support dual speed data transmission. When this strap is enabled, the data speed signal (RS232C CH line or CCITT V.24 111 line) is in the High (on) state.

When disabled (the defaulted state), the data speed signal (RS232C CH line or CCITT V.24 111 line) is in the Low (off) state.

Parity Check. When the Parity Check strap is enabled (the defaulted state), a parity check for even or odd parity is performed by the terminal upon received data.

When this strap is disabled, no parity check is performed.

Note that parity is never checked for received data if the terminal is not generating parity, i.e., is configured for either NONE(0) or NONE(1) parity.

Handshake Configuration

Each handshake type is represented on the screen by a single alphabetic character. You enable or disable the type of handshake by changing the state of the displayed character from lowercase to uppercase, or vice versa. Table 5-3 lists the handshake types and their condition when either lowercase or uppercase. A description of each handshake type follows Table 5-3.

When the configuration parameters are displayed, you use the cursor left [←] or cursor right [→] key to move the cursor to a position beneath the character representing the handshake you want to change. You may use [TAB→] or [TAB←] to move the cursor to this field. When the cursor is positioned correctly, press and hold down [SHIFT] while you press [↵]. This executes the NEXT function which results in a change of state for the handshake character. Either the NEXT or PREVIOUS function may be used to change a character's state.

Table 5-3. Data Communications Handshake Configuration

Handshake	In/Open	Out/Closed
ENQ/ACK Handshake	e (disabled)	E (enabled)
Transmit Handshake	t (disabled)	T (enabled)
XON/XOFF Handshake	x (disabled)	X (enabled)

ENQ/ACK Handshake. This type of handshake may be used to ensure that the terminal has an empty input buffer before the host computer transmits more data. When this strap is enabled (the defaulted state), an acknowledge signal (ACK) is transmitted by the terminal each time an enquiry signal (ENQ) is encountered from the host computer. Any data contained in the buffer is processed before the ACK signal is transmitted. The buffer size is 128 characters. You should transmit an ENQ from the computer following 120 characters (maximum).

When this strap is disabled, any enquiry signal (ENQ) encountered from the host computer is treated by the terminal as a normal data character. No acknowledge signal (ACK) is generated.

Transmit Handshake. When this handshake type is enabled, the host computer can transmit a "busy" signal across the Clear To Send (RS232C CB or CCITT V 24 I06) line to temporarily stop the transmission of data from the terminal (temporarily set the signal to the false state).

When this handshake type is disabled (the defaulted state), data transmission continues uninterrupted by the computer.

XON/XOFF Handshake. This handshake protocol allows the terminal to signal the host computer to stop transmitting data and, subsequently, to resume transmitting data as the input buffer fills and empties.

When this strap is enabled, the input buffer fills to within approximately 16 bytes of its capacity. At this point, the terminal sends a Transmit Off (XOFF) signal to cause the computer to stop sending data. When the buffer has emptied below half of its capacity, the terminal sends a Transmit On (XON) signal which causes the computer to resume sending data. This process is repeated until the current data transfer operation is completed.

When this handshake type is disabled (the defaulted state), no XON/XOFF handshake occurs between the terminal and the computer.

Note that the XON signal is represented by a DC1 (CTRL Q) character transmission. The XOFF signal is represented by a DC3 (CTRL S) character transmission.

Hz Configuration

The value set for this strap must match the frequency of your local A.C. power (that is, the frequency on your power line). For an area with a 60-cycle power frequency (such as the U.S.A. or Canada), set this value to 60 (the defaulted state). For Europe and elsewhere with 50-cycle power frequency, set this value to 50.

To change the state of the Hz Configuration, use the cursor control keys [←] or [→] to position the cursor at the first character of this field. You also may use [TAB→] or [TAB←] to move the cursor to this field. Press [SHIFT] and [↵], or [SHIFT] and [ROLLA] to change the state within the Hz field. Either the NEXT or PREVIOUS function may be used to change the frequency value from 60 to 50, and vice versa.

Start Column Configuration

You may specify a column number from which data transmission is to begin on the screen. Any characters to the left of the starting column are ignored when the [ENTER] or [RETURN] key is pressed. This allows you to retransmit a line without having to physically remove the computer's prompt character. For example, if the computer issues a 1-character prompt in response to your entries, you can specify a starting column of 2. Subsequent entry lines are transmitted from column 2 to the end of the line.

The defaulted starting column is 1. To change this value, use the cursor left [←] or cursor right [→] key to position the cursor to the first position within the Start Col field. You also may use [TAB→] or [TAB←] to move the cursor to this field. Then, use the NEXT or PREVIOUS Function key to increment or decrement the starting column value (press [SHIFT] and [↵], or [SHIFT] and [ROLLA]).

This parameter is overridden by the logical start-of-text pointer maintained by the terminal. See "Sending Data to the Computer" for a description of the logical start-of-text pointer.

Return Key Configuration

You can specify one or two characters that will be transmitted each time the [RETURN] or [ENTER] key is pressed. Any ASCII character is legal, however, these are usually control codes that you wish to pass to the host computer. See Appendix A for a table of legal ASCII characters.

To specify RETURN key characters, use the cursor left [←] or cursor right [→] key to move the cursor to the first character position in the RETURN parameter field. You may use [TAB→] or [TAB←] to move the cursor to this field. Enter the desired character or characters from the keyboard. The default value is [↵].

Terminating the Configuration Mode

When you are satisfied with the configuration data on the screen, you terminate the Configuration Mode by executing the exit function ([SHIFT] and [↵]) or by pressing the Labels Key. The configuration data is stored in nonvolatile memory, protected from destruction by a battery should the main power source be interrupted for any reason.

Selecting The Remote Operating Mode

Before the terminal can send and receive data via the data communications interface, you must enable remote operation. You accomplish this by enabling the REMOTE function. Press [SHIFT] and [config] keys to obtain the Configuration screen labels. The labels appear in the following format:

```
[ exit ] [ NEXT ] [PREVIOUS] [MODEM OFF] [ REMOTE ] [CAPS LK ] [LN MODE ] [AUTO LF ]
```

To execute the REMOTE function, press and hold down [SHIFT] while you press [A].

An asterisk appears in the REMOTE function label to indicate that the function is enabled. For example, [REMOTE*].

To disable Remote mode, press Shifted [A] once more. The asterisk disappears from the label and Local mode is in effect.

Modem Considerations

If you are communicating with the host computer through a modem, it may be necessary for you to turn on a modem power switch or make modem parity setting changes. The modem's baud rate and parity settings should be the same as those configured in the terminal.

The HP 2621 supports the Bell 103A or equivalent type of modem.

Whenever the modem line is active, an asterisk appears between the fourth and fifth screen label at the bottom of the screen. If your facility requires the display of this "active modem" indicator, do not shut off the screen labels display.

Sending Data To The Computer

You enter the data to be sent to the host computer into display memory from the terminal's keyboard. If your terminal is configured for Character mode, the data is transmitted, character-by-character, as you type it.

If your terminal is configured for Line mode, you type a single line and use the [ENTER] or [RETURN] key to transmit the data a line at a time.

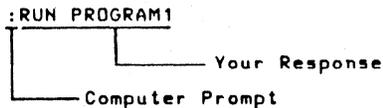
Line mode allows you to enter into memory an entire line of up to 80 characters. The data that you type into the line is not transmitted to the computer until you press either [ENTER] or [RETURN]. The line appears on the screen and you can make changes to the displayed data at any time before you press [ENTER] or [RETURN].

The amount of data transferred to the computer is dependent on the logical start-of-text pointer or the value set into the Configuration mode Start Column field.

A logical start-of-text pointer is maintained by the terminal for each line in memory. The pointer is zero until a character is typed into the line. Then, the pointer is set to the column number where the first character was entered. Note that the setting of the logical start-of-text pointer occurs only at the bottom (last) line of memory.

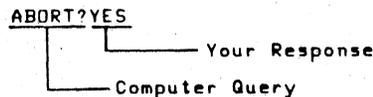
Examples:

1. Assume that the computer sends a single-character colon prompt (:) to the terminal and that you enter a system command in response to this prompt:



The logical start-of-text pointer for this line (at the bottom of memory) is zero until you enter the RUN command, at which time the pointer is set to column 2.

2. Assume that the computer sends a query message that, in turn, you respond to with "YES":



In this case, the logical start-of-text pointer is set in column 7.

The logical start-of-text pointer is meaningful only for Line mode operations. Either this pointer or the Configuration Start Column value affect the amount of data transmitted to the computer.

When the value of the logical start-of-text pointer is zero, the Configuration Start Column value is used to determine the starting point of the data transmission.

When the value of the logical start-of-text pointer is any value greater than zero, the pointer itself is used to determine the starting point of the data transmission.

Modify mode (a screen labeled Edit function) places your terminal in temporary Line mode. When you want to change the content of a line in memory, enter Modify mode and position the cursor to the appropriate line on the screen. Type in the changes you want to make within the line and then press [ENTER] or [RETURN]. The line marked by the cursor is transmitted to the computer and Modify mode is disabled automatically.

The amount of data transferred is governed by the logical start-of-text pointer or the Configuration mode Start Column value described for Line mode, above.

Receiving Data From The Computer

No special action is required to receive data from the host computer other than having the REMOTE function enabled. Data is displayed on the screen as it is received from the computer.

It may be necessary to configure for a specific type of handshake when you transmit control codes, escape sequences, or are using the HP 2621P printer.

Escape Code Sequences

The HP 2621 recognizes a set of escape code sequences that can be transmitted from a host computer. These sequences are used to control cursor and screen display, the terminal, margin and tabulation stop settings, editing, cursor addressing, display enhancement, and so forth.

In addition to the escape code sequences recognized upon receipt from a host computer, you can transmit some escape code sequences from the terminal to a host computer via the Function keys. To access these codes, press and hold down [SHIFT], and then press the Labels key. The following Function labels are displayed across the bottom of the screen:

[f1] [f2] [f3] [f4] [f5] [f6] [f7] [f8]

See Table 5-12 for escape sequence function definitions.

The terminal also recognizes and acts upon a set of ASCII-coded control codes transmitted from a host computer. The escape code sequences and control codes recognized by the terminal are listed and defined in Tables 5-4 through 5-13.

Table 5-4. Escape Sequences, Cursor and Screen Control

Function	Code	Description
Cursor Up	esc A	Move cursor up by one row
Cursor Down	esc B	Move cursor down by one row
Cursor Right	esc C	Move cursor right by one column
Cursor Left	esc D	Move cursor left by one column
Home Down	esc F	Cursor Home Down.
Home Up	esc H	
	esc h	Cursor Home Up.
Roll Up	esc S	Scroll display up by one line
Roll Down	esc T	Scroll display down by one line

Table 5-5. Escape Sequences, Terminal Control

Function	Code	Description
Reset Terminal	esc E	Set terminal to power ON state
Test Terminal	esc z	Self-test, terminal.
Display Functions On	esc Y	Disable execution of any control functions, but display their code. display asterisk in screen label (<code>{DSPY FN*}</code>).
Display Functions Off	esc Z	Enable execution of any control functions, do not display their code; remove asterisk from screen label (<code>{DSPY FN }</code>)

Table 5-6 Escape Sequences, TAB and Margin Control

Function	Code	Description
Set TAB Stop	esc 1	Set a tabulation stop at current cursor position
Clear TAB Stop	esc 2	Delete a tabulation stop at current cursor position
Clear All TAB Stops	esc 3	Delete all tabulation stops
Set Left Margin	esc 4	Set left margin at current cursor position
Set Right Margin	esc 5	Set right margin at current cursor position

Table 5-7. Escape Sequences, Edit Control

Function	Code	Description
Clear Line	esc K	Delete current line from current cursor position to end-of-line
Clear Display	esc J	Clear display memory from current cursor position to end-of-memory
Insert Line	esc L	Insert blank line at current cursor position
Delete Line	esc M	Delete entire line at current cursor position
Insert Character On	esc Q	Enable Insert Character Function. display asterisk in screen label subsequent character-entry inserts a character into line at current cursor position
Insert Character Off	esc R	Disable Insert Character Function remove asterisk from screen label
Delete Character	esc P	Delete character at current character position

Using the Terminal as an I/O Device

Table 5-8. Escape Sequences, Miscellaneous Control

Code	Description
esc @	Delay; generate a one second pause within the terminal.
esc ^	Primary status request; generate the terminal's primary status bytes and transmit them to the requesting computer.
esc d	Enable Line Transfer Mode.
esc f	Modem Disconnect; Set CD signal (RS232C) or 108.2 signal (CCITT V.24) on modem line low for 3 seconds.
esc i	Backtab; move cursor left to TAB stop position.

Table 5-9. Escape Sequences, Cursor Address: Control

Note that the base sequence is `esc & a`

Code	Description
<code>esc & a</code> <i>memory row number r</i> <i>column number C</i>	Absolute Memory Addressing; move cursor to any displayable position by using absolute memory coordinates. The range of <i>memory row number</i> is 0-47. The range of <i>column number</i> is 0-79.
<code>esc & a</code> <i>screen row number y</i> <i>column number C</i>	Absolute Screen Addressing; move cursor to any position currently displayed on the screen by using screen relative coordinates. The range of <i>screen row number</i> is 0-23. The range of <i>column number</i> is 0-79.
<code>esc & a</code> <i>+/-</i> <i>memory row number r</i> <i>column number C</i>	Relative Memory Addressing; move cursor to any displayable position by using memory coordinates relative to the current cursor position (+ or - memory row; + or - column).
<code>esc & a</code> <i>+/-</i> <i>screen row number y</i> <i>+/-</i> <i>column number C</i>	Relative Screen Addressing; move cursor to any position currently displayed on the screen by using screen coordinates relative to the current cursor position (+ or - screen row; + or - column number).

These sequences always must be terminated with an uppercase character (rather than a lowercase character) to inform the terminal that the sequence has ended. For example, in the sequence `esc & a 12r 45C`, the uppercase C character is the sequence terminator.

Using the Terminal as an I/O Device

Table 5-10. Escape Sequences, Display Enhancement Control

Note that the base sequence is `esc & d`

Code	Description
<code>esc & d A through O</code>	Enable Underline Function; subsequent character entries include underline on display screen.
<code>esc & d @</code>	Disable Underline Function.

Table 5-11. Escape Sequences, Screen Labels Control

Note that the base sequence is `esc & j`

Function	Code	Description
Clear Labels	<code>esc & j @</code>	Clear Screen Labels. Turn off display of screen labels.
Display Labels	<code>esc & j A</code>	Display Primary Screen Labels. Turn on display of first level of screen labels.
Display f1 - f8 Labels	<code>esc & j B</code>	Display Function Keys f1 through f8. Turn on display of f1-f8 screen labels.

Table 5-12. Escape Code Sequences Transmitted by the HP 2621

Code	Description	
esc\ 7-byte status data S, F, or U	<p>Primary Status Response. When an esc ^ sequence is received, the terminal generates this 7-byte status response and transmits it to the requesting computer.</p> <p>HP 2621P Only; device completion response transmitted following any printer control escape sequence, esc & p The terminal responds with S to indicate that the print operation was successful; F to indicate failure; or U to indicate user interference (for example, the RETURN key was held down preventing completion of the print operation).</p>	
Function	Code	Description
Transmit Key [f1]	esc p	Transmit esc p sequence to computer.
Transmit Key [f2]	esc q	Transmit esc q sequence to computer.
Transmit Key [f3]	esc r	Transmit esc r sequence to computer.
Transmit Key [f4]	esc s	Transmit esc s sequence to computer.
Transmit Key [f5]	esc t	Transmit esc t sequence to computer.
Transmit Key [f6]	esc u	Transmit esc u sequence to computer.
Transmit Key [f7]	esc v	Transmit esc v sequence to computer.
Transmit Key [f8]	esc w	Transmit esc w sequence to computer.

Note that the terminating character for each code transmitted is the string configured into the RETURN key together with a linefeed character if automatic linefeed is enabled. The transmission occurs under control of the g and h strap state for a Short Transfer Trigger Handshake (Block Transfer Handshake), see Section V.

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Table 5-13. ASCII-coded Control Codes

ASCII Code (hexadecimal)	Code Definition
07	Bell
08	BACKSPACE
09	Horizontal TAB
0A	Linefeed
0D	RETURN
05	ENQ -- Enquiry; if ENQ/ACK handshake is enabled, terminal responds with 006 (ACK Acknowledge).
0C	Form Feed to printer (HP 2621P only); if Report Mode is enabled, printer skips to top of new page. If Report Mode is disabled, Form Feed code is ignored.
11	DC1; depending on which type of DC1/DC2 handshake protocol is enabled, the terminal responds with data, DC2, or nothing.
1B	ESC; signals start of an escape sequence.

The HP 2621P

Section VI

Options and Accessories

Table 6-1 is a list of options available for the HP 2621A Interactive Terminal.

Table 6-1. HP 2621P Options

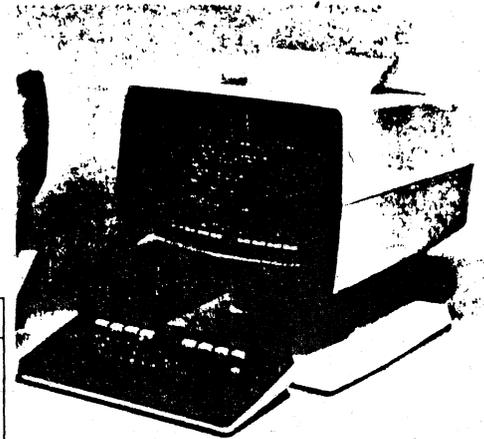
Option No.	Description
015	50Hz, 230V Power
016	50Hz, 115V Power

Table 6-2 is a list of accessories available for the HP 2621P Interactive Terminal.

Table 6-2. HP 2621P Accessories

Accessory No.	Description
13222N	U.S.A. Modem Cable (Male Connector)
13222M	European Modem Cable (Male Connector)
13222C	RS232C Cable (Female Connector)

When communicating with Hewlett-Packard regarding your terminal, specify the model, serial, and 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.



Thermal Printer Paper

The HP 2621P mechanism uses a thermal printing paper produced specifically for use by this product. 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, HP Part No. 9270-0638

It is recommended that you always use this HP Thermal Paper in your terminal. If you have an HP Warranty and Service Contract, you must use HP Thermal Paper to maintain a valid contract. HP Warranty and Service Contracts are available through your local HP Sales and Service Office.

Paper Loading

The print mechanism is shown in Figure 6-1

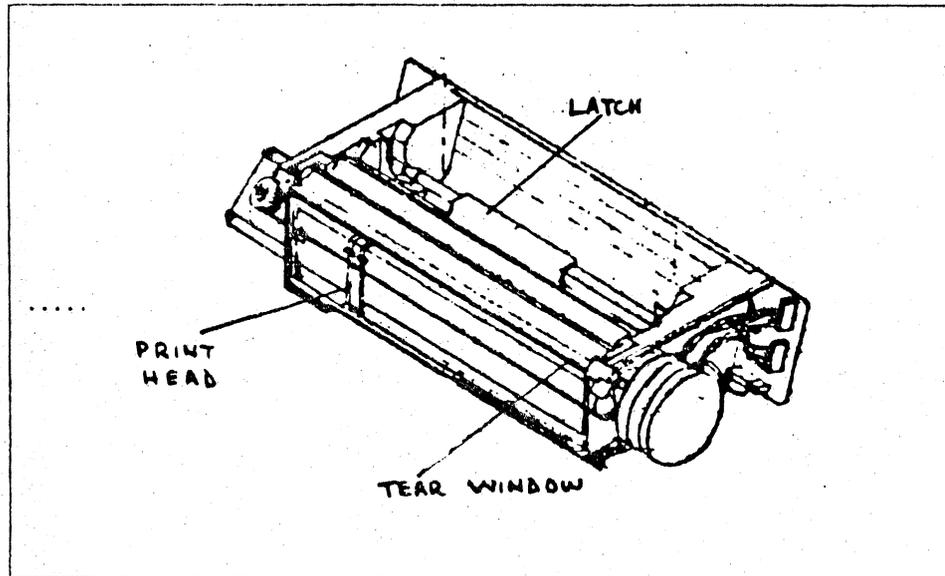


Figure 6-1. Printer Mechanism

To load a roll of Thermal Paper into the printer, refer to Figure 6-1 and use the following instructions:

1. Lift the top cover of the printer mechanism. An illustration of the correct paper position and flow is embossed on the underside of this cover.
2. Press the latch (Figure 6-1) 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 center paper core is held in place by a metal rod inserted through the center of the core. Grasp the core and lift forward and upward along the guide slots to remove the paper core and rod.
5. Remove the rod from the old core and insert the rod through the core of a new roll of paper.
6. The Thermal Paper is coated with print material on one side and must be inserted into the printer correctly to produce the print image. The paper must feed toward the front of the terminal from the underside of the paper roll (see the embossed illustration on the top cover).

7. Place the ends of the metal rod into the guide slots on either side of the print mechanism and press downward and then toward the back of the terminal until the rod snaps into place.

8. Feed the leading edge of the paper through the latching frame (between the latching frame and the clear plastic guide window). Be careful not to sharply strike the print head because damage may result.

9. Lower the latching frame without locking it into place.

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

11. Each new roll of paper has a glue spot near the leading edge of the roll that holds the paper roll intact. You should not allow the print head to pass over this glue spot during print operations.

Feed approximately 12 inches of paper through the latching frame so that the glue spot is beyond (outside) the print head and guide window.

12. Press down the latch until it locks into place with an audible click sound.

13. Tear off excess paper using the edge of the guide window as a cutting edge.

14. Close the top cover securely.

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

Printer Control Functions

The printer control functions allow you to copy data from display memory to the internal line printer. When you request printer control functions (press [SHIFT] together with the Function key labeled [printer]), a new set of screen labels appear, as follows:

[REPORT] [PRT TEST] [LOG BTM] [LOG TOP] [PAPER] [COPY ALL] [COPYPAGE] [COPYLINE]

Function Label	Key Stroke	Function
[REPORT]	Shifted [↵]	Enable REPORT print mode; display an asterisk in label. For example, [REPORT *]. Subsequent print operations are in paged format, i.e., print 60 lines, skip 3 lines, print a tic mark for a page break, skip 3 lines, then print 60 lines, and so forth. To disable REPORT print mode, press the Shifted Function key once more.
	Control Shifted [↵]	Enable Metric REPORT mode; press and hold down the [CTRL] and [SHIFT] keys while you press [↵]. An asterisk is displayed in the REPORT label. For example, [REPORT *]. Subsequent print operations are in metric paged format; that is, print 64 lines, skip 3 lines, print a tic mark for a page break, skip 3 lines, then print 64 lines, and so forth. To disable Metric REPORT print mode, press either the Shifted Function key or Control Shifted Function key once more.
[PRT TEST]	Shifted [↵]	Printer Test; execute test of internal printer mechanism. Display test pattern on printer.
[LOG BTM]	Shifted [ROLL↑]	Enable Logging from Bottom of Memory; display asterisk in label. For example, [LOG BTM*]. Current line entry is copied to the printer upon the cursor leaving this line.
[LOG TOP]	Shifted [ROLL↓]	Enable Logging from Top of Memory; display asterisk in label. For example [LOG TOP*]. Subsequent line that rolls off top of memory is copied to printer.
[PAPER]	Shifted [↵]	Paper advance on Printer; move printer paper up one line.
[COPY ALL]	Shifted [←]	Copy all data from memory to printer (from current line position marked by cursor to end-of-memory).
[COPYPAGE]	Shifted [→]	Copy all data on screen to printer (from current line position marked by cursor to end-of-screen).
[COPYLINE]	Shifted [V]	Copy current line on screen (marked by cursor) to printer.

The control code for a Form Feed produces various results depending on the conditions existing when a Form Feed is encountered. If REPORT mode is disabled, Form Feed is ignored.

If REPORT mode is enabled, and LOG TOP and LOG BTM are disabled, Form Feed results in a top-of-page operation on the printer (skip to new page and print tic mark).

If REPORT mode is enabled, and LOG TOP is enabled, Form Feed results in completion of logging from the screen to the printer, a top-of-page operation on the printer (skip to new page and print tic mark), and a top-of-page operation on the screen (home up, clear display).

If REPORT mode is enabled, and LOG BTM is enabled, Form Feed results in a top-of-page operation on the printer (skip to new page and print tic mark), and a top-of-page operation on the screen (home up, clear display).

The cursor does not leave its current position when either LOG TOP or LOG BTM are enabled and a COPY ALL, COPY PAGE, or COPY LINE operation is requested. The copy operation is performed and the cursor remains stationary.

Control codes for operations such as Form Feed and Escape that are displayed on the screen are transferred to the printer during logging or copy operations. However, displayed control codes for Carriage Return and Linefeed are not transferred from the screen to the printer. Instead, a period character is substituted for the Carriage Return and Linefeed during the print operation.

Printer Control Escape Sequences

Note that for each printer control sequence (`esc & p`) received from a host computer, the terminal generates a device completion status response character to inform the computer of the final disposition of the requested print operation. An S is returned to indicate successful completion, F to indicate a failed completion, or U to indicate that the user interfered with the completion of the requested operation (for example, the RETURN key was held down which prevented the operation from being completed).

Table 6-3. HP 2621P Escape Sequences, Printer Control

Function	Code	Description
Copy All Memory	esc 0	Position the cursor to the left margin of first line of memory data and copy all of memory to printer.
Log Data From Memory Bottom	esc & p 11 C	Enable data logging from the bottom of memory (print the current entry line)
Log Data From Memory Top	esc & p 12 C	Enable data logging from the top of memory (print line as it rolls off top of memory).
Log Data Function Off	esc & p 13 C	Disable data logging (top or bottom, whichever is enabled).
Copy All Memory	esc & p M	Print all data in memory from current line (marked by cursor) to end of memory
Copy One Page	esc & p B	Print all data on screen from current line (marked by cursor) to end of screen
Copy One Line	esc & p F	Print current line (marked by cursor).