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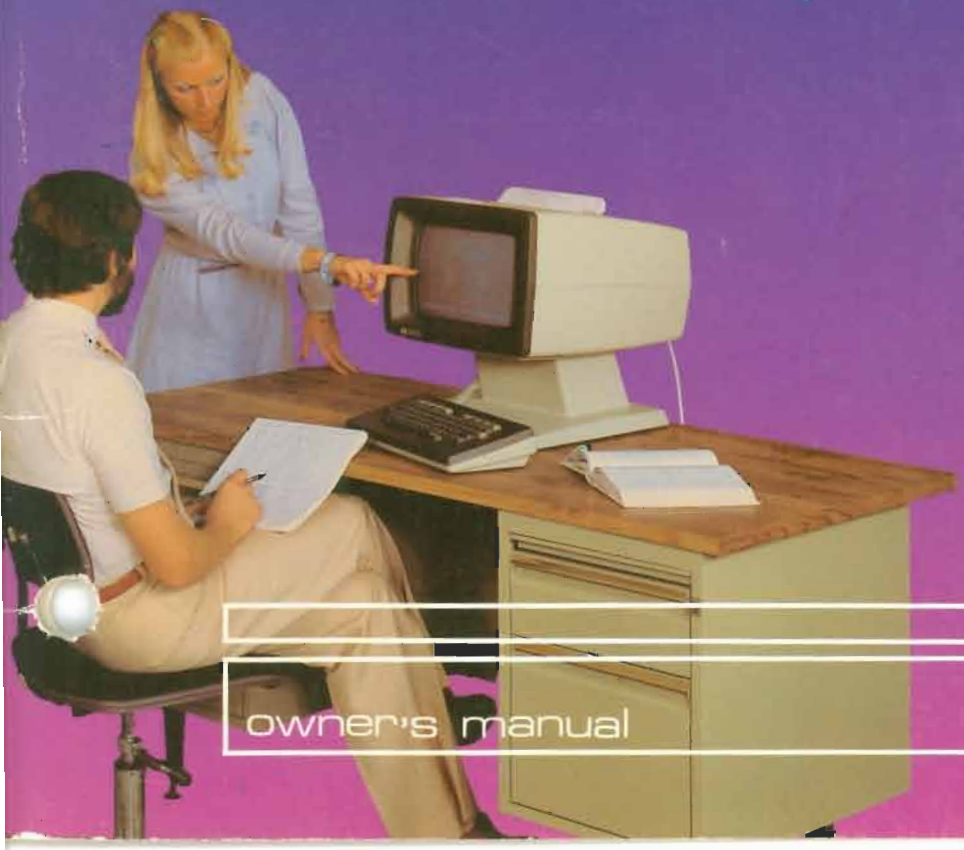

Interactive Terminal

2621B

owner's manual

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

Congratulations.....

You have selected Hewlett-Packard's Model 2621 B Interactive Terminal. The 2621 B 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 the terminal and to aid you in employing them to your advantage. Included in the manual are instructions for installing and using your terminal. In addition, reference material is provided for including this terminal as an input/output device within a computer system.

FOR THE UNITED STATES ONLY

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

The U.S. Federal Communications Commission has specified that the following notice be brought to the attention of the users of this product.

WARNING

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with this instructions manual, may cause interference to radio communications. As temporarily permitted by regulation, it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

LIST OF EFFECTIVE PAGES

Revision O (original) . . . . . November 1981

This manual applies to terminals with a serial number prefix from 2136F. If changes have been made to the terminal since this manual was printed, a yellow "manual updating supplement" supplied with this manual will define these changes and explain how to adapt this manual to the modified equipment. These changes will be incorporated in the manual the next time that it is printed.

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CONTENTS (continued)

TABLES

ILLUSTRATIONS

A Guide to Using This Manual

This owner's manual is written as an introduction to the HP 2621B Interactive Terminal. It includes detailed information about specific feaures so that it may be used as a reference guide to operating the terminal. An index of terms and phrases is included at the rear of the manual to assist in locating the reference information.

This owner's manual includes the following sections and appendices.

Section 1 — Introducing the 2621B. This section provides a general description of the terminal and briefly describes its capabilities.

Section 2 — How To Get Started. This section details how to identify the options and accessories delivered with the terminal. In addition it gives instructions for preparing the terminal for use.

Section 3 — The Terminal's Display Characteristics. This section contains a description of the display screen and display memory. Included is a description of the display enhancement.

Section 4 — The Terminal's keyboard. This section gives the location and describes the function of each of the keys.

Section 5 — Using the Terminal as an Input/Output Device. This section describes how to configure the terminal and how to control it via escape sequences. In addition, a description of its data communications capabilities is included.

Section 6 — The 2621B Printer (Option 050). This section describes the optional thermal printer. A complete description of the printer operating procedures is included.

Section 7 — Preventive Maintenance and Adjustments. This section gives instructions for cleaning the terminal.

Section 8 — Diagnosing Problems. This section describes problem conditions and the messages associated with them. In addition, a description of the self test feature is included.

Appendix A - ASCII/ISO/Roman Character Set. This appendix includes the ASCII, ISO and Roman character sets, plus control codes and escape sequence codes.

Appendix B — Cable Connector Pin Assignment. This appendix lists the terminal's data cable pin assignments.

Appendix C — Terminal Status. This appendix details how to interpret the terminal's status bytes.

Appendix D — Cursor Sensing. This appendix describes how to obtain the current cursor position.

Features

The HP 2621 B Interactive Terminal is a simple, efficient character-mode terminal with many powerful features that are easy to use.

Among the features offered by the 2621 B are:

Display Memory and Screen

- Bright, clear screen
- 24 lines by 80 characters display area
- Uppercase and lowercase character set
- Displayable control code characters
- Character-by-character underlining or inverse video (Feature not available with national character set options 001-006 and 010)
- Cursor position relocation
- 48 lines by 80 characters 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

- Redefinable configuration
- Self-test
- Clear line
- Clear display
- Printer output control
- Display function codes Enable/Disable
- Tabulation and margin control
- Text Editing Control
- Transmit pre-defined escape sequences
- User-defined soft keys

Soft Keys

- 8 User definable soft keys
- 8 character labels
- 72 character strings
- Local and remote definable

Configuration

- Switch selectable configuration
- Data transmission baud rate control
- Data parity control
- Echo control
- Strapping control
- Communications Handshake control
- User-definable RETURN key
- User-definable transmission start column

Data Communications

- Data transfer rate up to 9600 baud
- Character or line mode transfers
- Support of EIA RS232C or CCITT V.24 interface (point-to-point)
- Full duplex data transmission

Standard Terminal and Options

The standard 2621B Interactive Terminal is equipped with the USASCII keyboard. This terminal generates and displays characters from the ASCII character set only.

There are also available terminal options that allow the terminal to generate and display national language characters from the ISO character set, the characters used being dependent on the chosen language. The terminal options supply the national language keyboard and the terminal firmware required to generate the national language characters (this firmware being common for all the national languages). The terminal language options are as follows:

Option 001: Finnish/Swedish keyboard
Option 002: Danish/Norwegian keyboard
Option 003: French keyboard
Option 004: German keyboard
Option 005: United Kingdom keyboard
Option 006: Spanish keyboard
Option 010: Standard USASCII keyboard with national language firmware

Figure 1-1. The 2621B Interactive Terminal

In addition, the terminal may also be equipped with option 050 a thermal printer.

Display Screen

The 2621 B Interactive Terminal has a screen with a 15.2 × 20.3 cm (6 × 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 × 9 dot matrix within a 9 × 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 3 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 home-up, home-down, or roll Function keys on your keyboard.

A detailed description of display memory is contained in Section 3.

Keyboard

The 2621 B 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, including 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.

Refer to Section 4 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 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 across the bottom of the screen (row 25). The labels are selected by using the Labels key. Some of the screen labeled Function keys are transition keys that result in a branch to a new set of labels. For example, the [config] and [edit] Function keys.

See Section 4 for a detailed description of the Function keys.

Configuration

Section 5 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 2621 B option 050 provides an integral thermal line printer which can be used to produce a permanent copy of your data communications transactions.

Section 5 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 8 for information about the terminal's self-test function.

Unpacking/inspection

WARNING

If, upon receipt, the terminal is damaged do NOT connect it to an electric power supply.

If the shipping carton is undamaged, with the carton standing upright on a solid flat surface, the terminal should be carefully removed and placed on a solid surface free from dirt or liquids.

If upon receipt the shipping carton is damaged, request that the carrier's agent be present when the terminal is unpacked. Inspect the terminal for damage (scratches, dents, broken parts, etc.). If it is damaged, do not connect it to any electrical supply ; notify the carrier and the nearest Hewlett-Packard Office immediately (Sales and Service Offices are listed at the back of this manual). Retain the shipping carton and the packing material for the carrier's inspection. The Sales and Service Office will arrange for the repair or replacement of the damaged terminal without waiting for settlement of any claims against the carrier. If possible, retain the original shipping carton for future use.

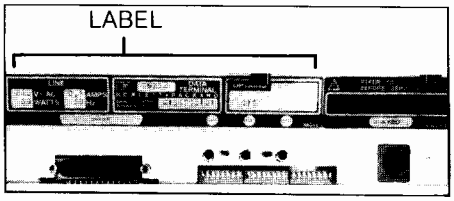


Figure 2-1. 2621 B Identification Label, Rear Panel

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 2621 B Interactive Terminal.

Table 2-2 is a list of accessories available for the 2621 B Interactive Terminal.

When communicating with Hewlett-Packard regarding your terminal, specify the model, serial, and option numbers to ensure accurate identification. 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)".

Table 2-1. 2621B Options

Option No.	Description
001	Finnish/Swedish keyboard
002	Danish/Norwegian keyboard
003	French keyboard
004	German keyboard
005	United Kingdom keyboard
006	Spanish keyboard
010	National character set firmware with standard keyboard
015	230 V - 50 Hz operation
050	Integral thermal printer
061	Green CRT

Table 2-2. 2621B Accessoires

Ref. No.	Description
40242 M	RFI Filtering modem cable 5 m (15 ft)
40242 C	RFI Filtering extender cable 5 m (15 ft)
40242 Z	RFI Filtering modem bypass cable 5 m (15 ft)
92160 A	Thermal printing paper, 24 rolls (blue print)
92160 B	Thermal printing paper, 24 rolls (black print)

Preparing The Terminal For Use

CAUTION

The terminal should be opened only by a qualified service person. Please refer to the 2621 B Service Manual.

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.

To install your terminal, carry out the following steps:

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 throught the vents in the base of the terminal. For example, do not use a typewriter pad beneath the terminal.

Step 2. Plug the keyboard cable connector into the socket labeled KYBD on the terminal's rear panel (see Figure 2-3).

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.

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 2-3) to the OFF position.

CAUTION

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

The 3-wire power cord supplied with the terminal (one of those shown in Figure 2-4) grounds the terminal when connected to the appropriate site power outlet.

If the plug on the cable does not fit your power outlet, cut the cable at the plug end and connect a suitable replacement. The plug must meet local safety standards and include the following features:

1) Minimum current rating of 2 amperes.
2) Ground connection.
3) Cable clamp.

The color coding used in the cable will depend on the cable supplied (see Figure 2-4).

Connect the power cord to the connector located just below the main power switch on the terminal's rear panel.

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.

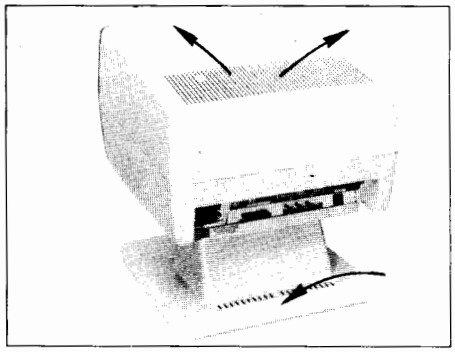


Figure 2-2. Terminal Air Flow

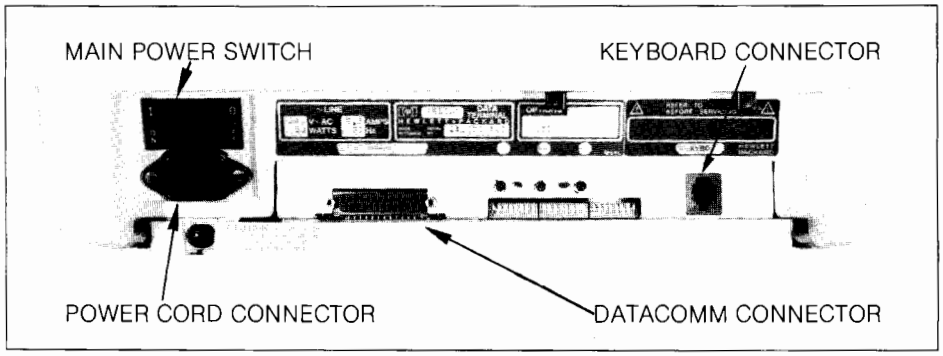


Figure 2-3. 2621B Power Switch and Connector Positions Rear Panel

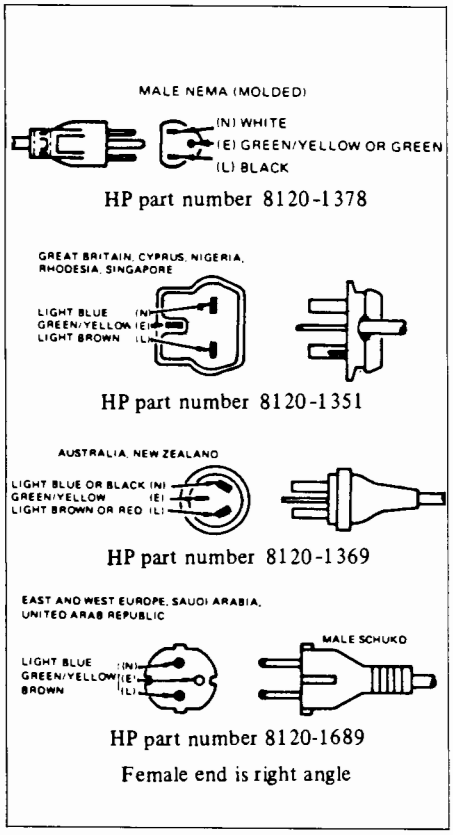


Figure 2-4. Terminal Power Cord

NOTE

If the terminal has option 050 (printer) fitted, the word "printer" appears in this label position.

Power Switch (ON/OFF)

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 5.

ON

Step 1. When the installation of your terminal is completed, set the main power switch on the rear panel (see Figure 2-3) to the ON position.

After approximately 15 seconds, the terminal is ready to use. Figure 2-5 illustrates the condition of the display screen as it appears following the initial application of power to the terminal.

When the terminal is ready to use, the cursor is displayed in screen column 1, row 1. In addition to the cursor, the first level of function key labels is displayed across the bottom of the screen, see Figure 2-5.

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 [redacted]). A pattern of ASCII characters is written to the screen. This pattern should be similar to the test pattern shown in Section 8 if your terminal is operating properly.

Step 3. (Optional) To gain some experience in using the terminal, you should spend some time practising on the keyboard. The first step is to set the terminal into Local mode. To do this, simultaneously press SHIFT and [redacted] to enter Configuration mode. If the REMOTE label on the display has an asterisk after it (REMOTE*), this indicates that the display is in the Remote mode. Press SHIFT and [redacted] to switch to Local mode. You should also enable Auto Linefeed by pressing SHIFT and [redacted] to display an asterisk after the label AUTO LF.

Practise using the keyboard to write on the screen, refering to this manual when necessary, until you become familiar with the terminal and its features.

OFF

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

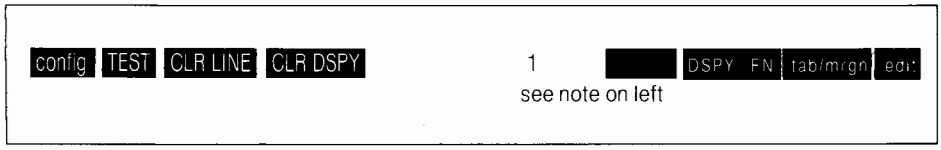


Figure 2-5. 2621B Initial Screen Display (Primary Function Labels)

What To Do In Case of Difficulty

> NOTE
>
> During printing operations, self test, the reception of data over the datacomm line at high baud rates or the execution of certain escape sequences; it may be necessary to hold down a key for longer than usual before the terminal responds.

If the key or function you try does not work properly:

1) Ensure that the terminal is correctly configured for local or remote operations, see step 3 on the previous page.
2) Ensure the key or function has been correctly employed (see Section 4).
3) If the terminal is being used in the remote mode, ensure the terminal-to-computer communications have been correctly configured, see Section 5.

If the key or function still does not work re-set the terminal (either by switching the terminal OFF then ON or by simultaneously pressing keys SHIFT , CNTL and BREAK .). Then re-operate the key or function.

If the key or function you try still does not work properly, or if an error message appears on the screen, refer to Section 8. A list of messages and their meaning is given there. In addition, Section 8 contains information about error recovery, testing the terminal, and where to get service assistance should you require it.

If the height, brightness or focus of the displayed characters need adjusting, refer to section 7.

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 2621 B, 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 (see Figure 3-1). Rows 1 through 24 are used to display the contents 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, an active modem indicator, and any error messages that may be generated.

If the height, brightness or focus of the displayed characters need adjusting, refer to Section 7.

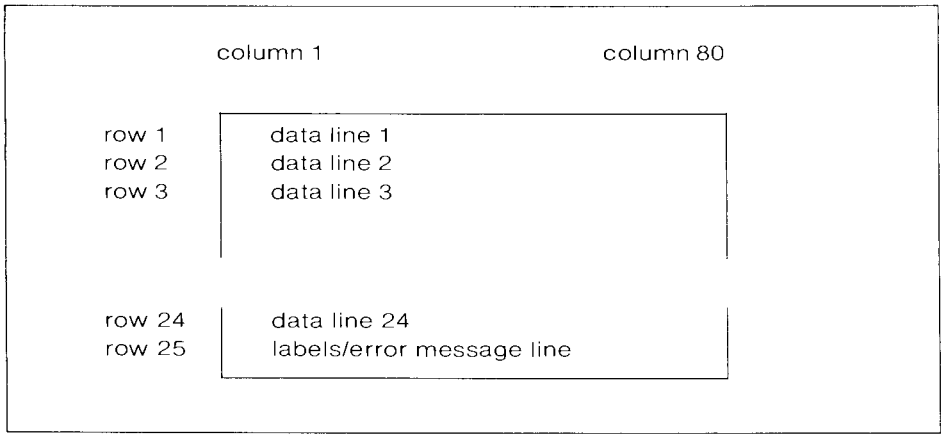


Figure 3-1.- Display Capacity

Memory

Display Memory can accomodate 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 he display screen (it still exists within the memory) and line 25 appears at the bottom of the screen (see Figure 3-2). 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 ↙ (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 the memory to accomplish the home down operation.

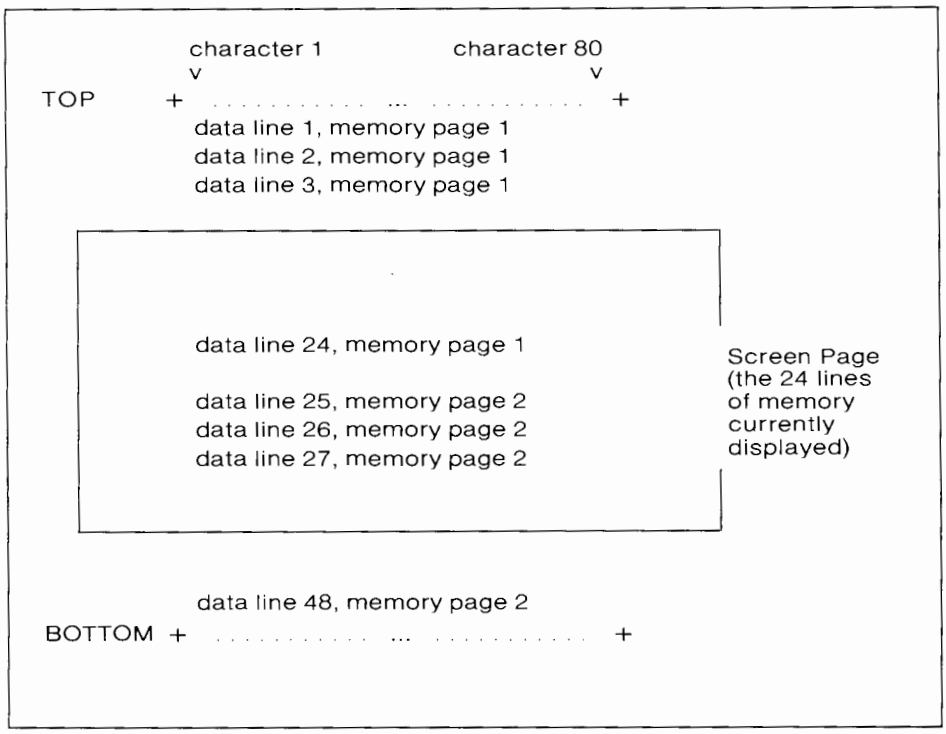


Figure 3-2. Display Memory

Display Enhancement

(standard keyboard only)

The standard keyboard provides two types of display enhancement:

- Inverse video

or

- Underlining

You can enhance the display of data by providing underlining or inverse video for any character on the screen. The power-on default enhancement (i.e. inverse video or underline) may be selected using the rear panel switches i.e. switch "IV" to 1 selects inverse video and switch "IV" to 0 selects under line (see section 5 for details). It is possible to switch from one enhancement to the other using the keyboard. To do this, first simultaneously press SHIFT and [\] to obtain the Configuration mode (from the primary screen labels). Then simultaneously press SHIFT and INV/UND to change the enhancement. Press the Labels key (blank key at right-hand side of keyboard) to return to the Primary Screen Labels.

The enhancement may operate on a character by character basis, or in a "field".

Enhanced character

To enhance on a character by character basis, simply switch on the terminal enhancement feature and the character in the cursor position will be enhanced. To do this, first simultaneously press SHIFT and [v] to obtain the Edit mode (from the primary screen labels). Then for each character position to be enhanced, simultaneously press SHIFT and ENHANCE . This procedure must be repeated for each character that requires enhancing. See Section 4 for details.

Enhanced field

This is accomplished 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 last or 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 or in inverse video on the screen until the end of the line or until the enhanced field is terminated, whichever occurs first.

To terminate (i.e. stop) the enhanced field, enter the following escape code key sequence:

esc & d @

When you replace a character in a enhanced field, the new character will not assume the enhancement type chosen, unless that display enhancement is enabled at the time.

However, inserted character will always take on the enhancement of the field.

Exercise

Make sure that the terminal is in local mode (REMOTE disabled). To do this, press SHIFT and [\] to enter Configuration mode. If the REMOTE label on the display has an asterisk after it (REMOTE *) this indicates that the terminal is in Remote mode. Press SHIFT and [ ] to switch to local mode. Press the Labels key (blank key at right-hand side of keyboard) to exit Configuration mode.

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.

Jean, Marc, Julia.

Changing a character. To change a character displayed on the screen to another character, position the cursor under the character to be changed (using [^] , [<] , [>] , [v] 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 may be equipped will either a standard (USASCII) keyboard or a national character keyboard (Option 001-006). In addition, Option 010 provides the Standard USASCII keyboard but with the national character set firmware (thereby enabling the standard keyboard to generate any of the national characters). The following section describes the standard keyboard with references to the differences on the national keyboards. More detailed information on the national keyboards is contained at the end of this section.

> NOTE
>
> During printing operations, self test, the reception of data over the datacomm line at high baud rates or the execution of certain escape sequences; it may be necessary to hold down a key for longer than usual before the terminal responds.

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

- Character Set Group. The layout of these keys is similar to a standard typewriter keyboard (see Figure 4-1). 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 (see Figure 4-2). 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 2621 B (see Figure 4-3).

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 standard keyboard can generate the entire ASCII character code set (see Appendix A). Figure 4-1 shows the Character Set Group.

On the national character keyboards, eleven of the ASCII characters are replaced by national characters, the national character used depends on the language selected using the rear panel configuration switches. The eleven replaced ASCII characters are:

@ [\ ] ^ ` { | } and ~ .

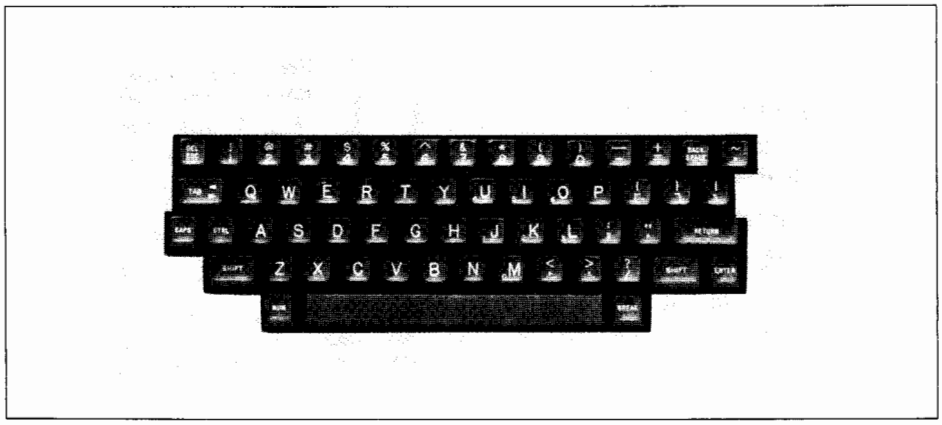


Figure 4-1. 2621B Standard Keyboard Character Set Group

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 5).

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 5). 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 enabled.

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. For Line mode and Modify mode, the data transmitted via the ENTER key is appended with the same string configured into the RETURN key (see Section 5). The ENTER key is ignored in Local mode (the REMOTE function disabled).

When REMOTE is enabled, the BREAK key is used to interrupt data communications between the terminal and an external host computer. It does this by lowering the datacomm line to a 0 level for 200 ms.

When REMOTE is disabled, and the terminal is in local mode, the BREAK key is ignored.

The terminal may be RESET by holding the CNTL and SHIFT keys down, and pressing the BREAK key.

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 backspace 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.

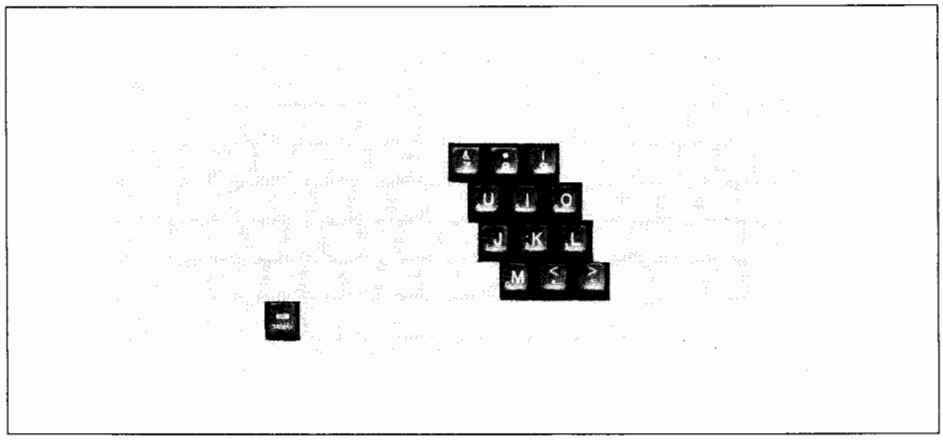


Figure 4-2. 2621B Standard Keyboard Numeric Pad Group

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.

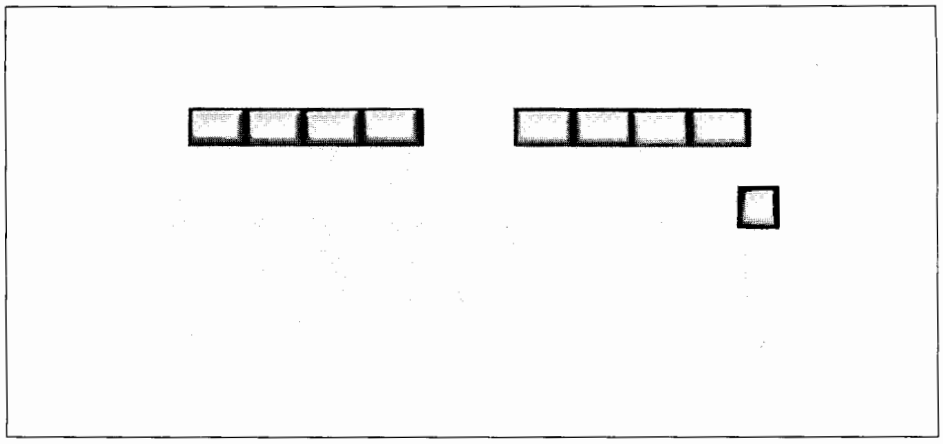


Figure 4-3. 2621B Standard Keyboard Function Key Group

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 listed in Table 4-1.

Table 4-1. Unshifted Function Keys

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 the 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.

Table 4-1. Unshifted Function Keys (continued)

Key	Function
ROLL ∧	Roll Text Up — Each time this key is pressed, the text in display memory is rolled upwards 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 upwards 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.
ROLL ∨	Roll Text Down — Each time this key is pressed, the text in display memory is rolled downwards 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 downwards 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.
∧	Move Cursor Up — Each time this key is pressed, the cursor is moved upwards 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.

Table 4-1. Unshifted Function Keys (continued)

Key	Function
<	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.
>	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.
v	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.

Labels Key

This key is located to the right of the character set group and is the only unmarked 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.

NOTE

To return to the primary set of labels from any of the other sets, press the Labels key.

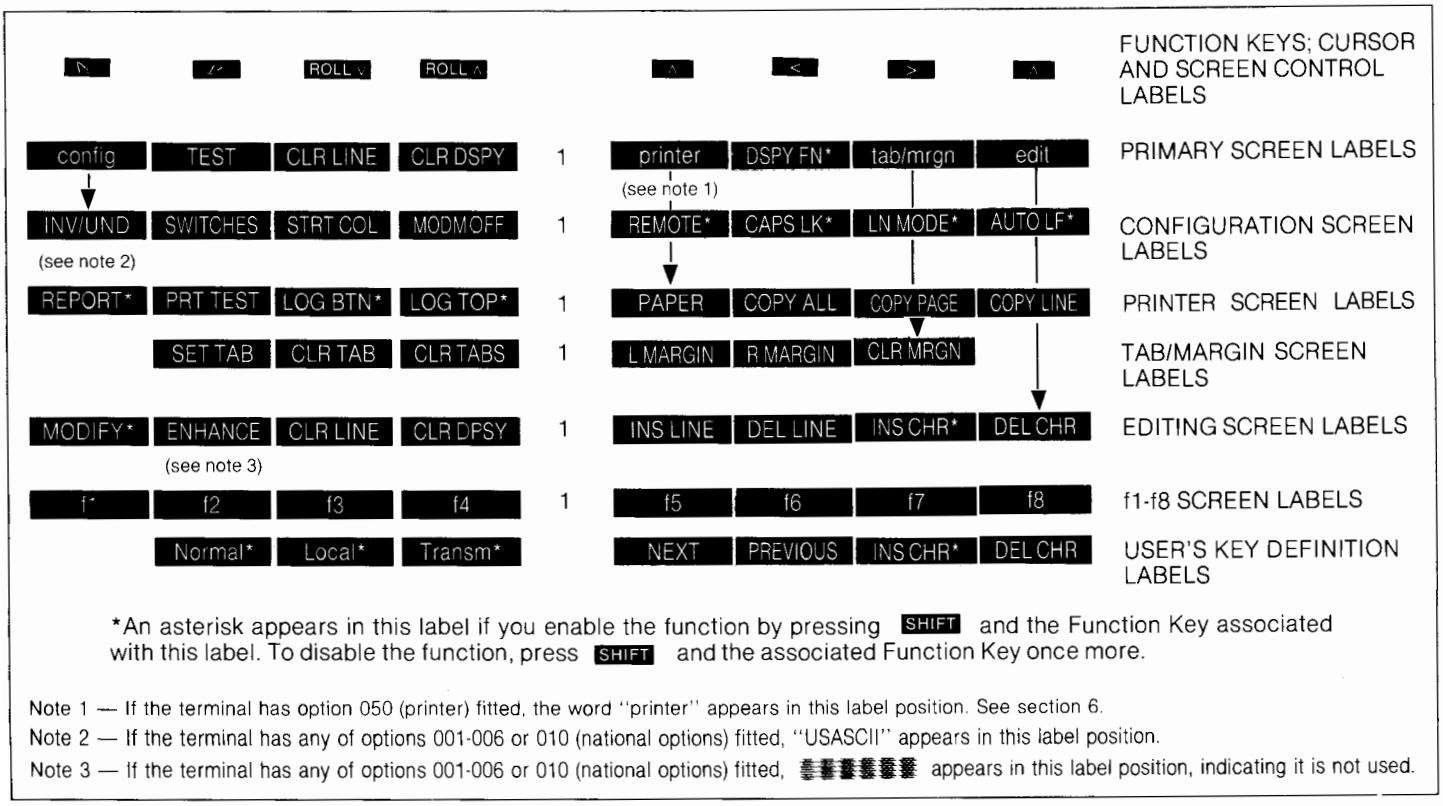


Figure 4-4. 2621B Screen Labels Structure

The Labels key (the blank key at 'the right-hand side of the keyboard) 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 user mode section .

Labels Key, Control Shifted

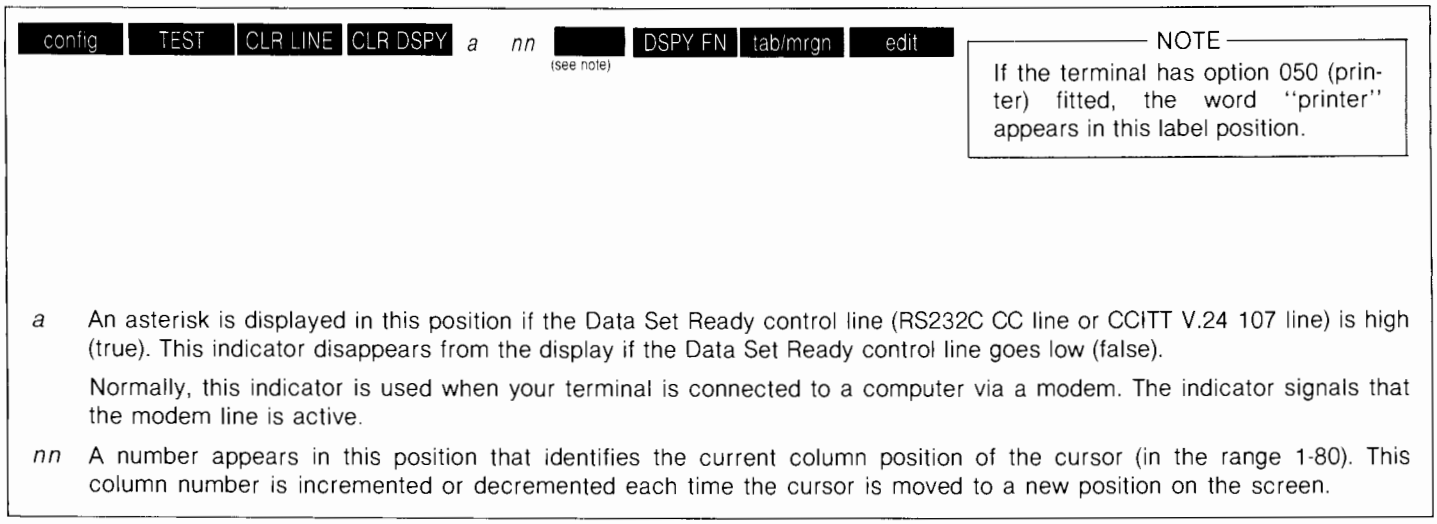
To shut off the display of the screen labels, press and hold down the CTRL and SHIFT keys and then press the Labels key. The display of the screen labels is shut off until you press the Labels key (or shifted Labels key) once again.

Labels Key, Shifted

For a description of the "Labels Key, Shifted" function see "User's Mode".

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 shifted mode functions are described in Table 4-2. The primary Function labels are depicted in Figure 4-5.



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).

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.

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.

Figure 4-5. Primary Function Labels

Table 4-2. Shifted Function Keys With Primary Screen Labels

Function Label	Key Stroke	Function
[config]	Shifted	Sets the terminal into Configuration mode: on the screen is displayed a set of configuration function key labels that you may use to manipulate the terminal's configuration. Table 4-3 details these controls. Section 5 contains details about the configuration of the terminal.
[TEST]	Shifted	Performs a diagnostic test of the terminal: checks ROM, Video RAM, Program RAM, then displays the full character set and the status bytes. If an error condition is encountered, an appropriate message is displayed. Section 8 contains a description of the Test function.
[CLR LINE]	Shifted ROLL ^	Clear Line — this function clears (erases) the contents 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 v	Clear Display — this function clears (erases) the contents 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] (only available when option 050 fitted)	Shifted	Sets the terminal into Printer mode: on the screen is displayed a set of function key labels that may be used to control the terminal's printer. Table 4-4 details these controls.

Table 4-2. Shifted Function Keys With Primary Screen Labels (continued)

Function Label	key Stroke	Function
[DSPY FN]	Shifted <	Causes 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*]). 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. In Remote operating mode, the Null and Delete characters are used for padding and are not displayed. If the ENQ/ACK handshake is enabled (See Configuration, Section 5), the ENQ character is executed but not displayed. If the ENQ/ACK handshake is disabled, ENQ is not executed but is displayed. 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.
[tab/mrgn]	Shifted >	Displays 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.
[edit]	Shifted <	Displays a set of function key labels that you may use to perform editing operations upon text in display memory. Editing operations provided include: modify, enhance, clear line or display, insert or delete line, and insert or delete character.

Configuration Function Set

The Configuration mode may only be selected when the primary screen labels are displayed (see Figure 4-5).

> **NOTE**
> If the terminal is equipped with a national keyboard, INV/UND is replaced by USASCII.

To request Configuration mode press SHIFT together with the Function key labeled [config]. The set of configuration labels will then appear across the bottom of the screen (see Figure 4-6). The function keys may then be used to change certain configuration parameters. The operation of the keys is detailed in Table 4-3.
For further details see Section 5.

Figure 4-6. Configuration Function Labels

Table 4-3. Configuration Function Keys

Function Label	Key Stroke	Function
INV/UND	Shifted \	In the standard terminal, this function selects either inverse video or underline as the character enhancement mode. If the terminal is fitted with any of options 001 to 006 or 010 (national character options), INV/UND, is replaced by USASCII. When disabled, the keyboard character keys are coded according to their national character codes. When enabled, the keyboard character keys are coded according to the standard keyboard USASCII codes. An asterisk appears in the label when the function is, enabled (for example [USASCII*]). See section on National Character Set Keyboards.
SWITCHES	Shifted /	This function enables you to change the setting of the rear panel configuration switches and reconfigure the terminal without having to perform a power off/on. Change the switches and then press the SWITCHES key. This reads the new switch configuration into the terminal (Section 5 details the switches).
STRT COL	Shifted ROLL ∧	The STRT COL function is used with the line mode to set the starting column to the current position of the cursor (displayed in line 25). See function LN MODE opposite.
[MODM 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.

Table 4-3. Configuration Function Keys (continued)

Function Label	Key Stroke	Function
[CAPS LK]	Shifted <	This function causes the terminal's alphabetic keys to be locked into uppercase characters. Specifically, when Caps Lock is enabled, the terminal generates the uppercase characters for the set of characters a through } . The characters ` and ~ are ignored. (Refer to the ASCII-coded Character Set in Appendix A). An asterisk appears in the label when this function is enabled, e.g. [CAPS LK*]. 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.
[LN MODE] (See note below)	Shifted >	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 (e.g. [LN MODE*]). 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 it. 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 STRT COL function opposite. 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. 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.
[AUTO LF] (See note below)	Shifted V	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 (e.g. [AUTO LF*]).

Note. For the line mode and line feed functions, the default configuration at power-on is determined by configuration switches LF and LM as follows (see Section 5 for details):

	UP = 1	DOWN = 0
LM	line mode	character mode
LF	auto linefeed enabled	auto linefeed disabled

Printer Control Function Set

The printer functions apply only when the terminal is equipped with option 050.

The printer mode may only be selected when the primary screen functions are displayed.

To request printer mode, simultaneously press SHIFT and the function key labeled [printer]. The set of printer labels will appear across the bottom of the screen (see Figure 4-7).

The function keys may then then be used to control the printer as detailed in Table 4-4. For details see Section 6.

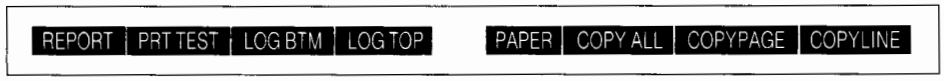


Figure 4-7. Printer Function Labels

Table 4-4. Printer Function Keys

Function Label	Key Stroke	Function
[REPORT]	Shifted \	Enable REPORT print mode; display an asterisk in label, i.e. [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 this 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, ie. [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, see Section 6 for details.
[LOG BTM]	Shifted ROLL ^	Enable Logging from Bottom of Memory; display asterisk in Label, ie. [LOG BTM*]. Current line entry is copied to the printer upon the cursor leaving this line.
[LOG TOP]	Shifted ROLL v	Enable Logging from Top of Memory; display asterisk in label, ie. [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.

TAB and Margin Control Function Set

The tab/margin mode may selected when the primary screen labels are displayed.

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 shown in Figure 4-8. The function keys may then be used to control the tabs and margins as detailed in Table 4-5.

Figure 4-8. Tab and Margin Function Labels

Table 4-5. Tab and Margin Function Keys

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 v	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 its position is changed via this function.
[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/or 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 mode may only be selected when the primary screen labels are displayed.

NOTE

On national character keyboards ENHANCE is not used.

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 shown in Figure 4-9. The function keys may then be used to control the edit mode as described in Table 4-6.

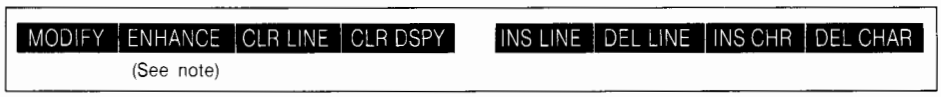


Figure 4-9. Edit Function Labels

Table 4-6. Edit Function Keys

Function Label	Key Stroke	Function
[MODIFY]	Shifted \	Modify Text — this function enables the 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 the transmission. The current line (marked by the cursor) is transmitted to the computer and the asterisk is removed from the [MODIFY] screen label. 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. The amount of data retransmitted is a function of the Line mode transmission rules. See "Sending Data To The Computer" in Section 5 for a description of Line mode data transmission.

Table 4-6. Edit Function Keys (continued)

Function Label	Key Stroke	Function
[ENHANCE] (only available with standard keyboard)	SHIFTED ↙	Enhance Character — this function adds an underline character or creates an inverse video field at the current cursor position. Each time the Enhance Function key is pressed the current valid enhancement is added to the current character. If you hold this key down the enhancement repeats along the line until you release the Function key. Note that the underline function differs from the ASCII-coded underline character.
[CLR LINE]	Shifted ROLL ∧	Clear line — this function clears (erases) the contents 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 associated with this label.
[CLR DSPY]	Shifted ROLL ∨	Clear Display — this function clears (erases) the contents of the 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 ∧	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). 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.
[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).

Table 4-6. Edit Function Keys (continued)

Function Label	key Stroke	Function
[INS CHR]	Shifted >	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. Any characters shifted beyond the right margin setting are lost. No wraparound occurs. 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.
[DEL CHR]	Shifted v	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.

User Mode

User Definable Soft Keys

The eight function keys (← to ↓), besides performing their usual terminal control functions, can be employed as user definable soft keys. i.e:

1) Each key can be assigned a string of up to 72 ASCII alphanumeric data characters and/or control characters (BS, CR, Esc, etc.).

2) The characters called up by each key can be defined for use locally at the terminal (Local) or to be transmitted to the computer (Transmit) or both (Normal).

3) Each key can be assigned an alphanumeric label which, in the user mode, is displayed at the bottom of the screen.

At power-on or after a reset (performed by simultaneously pressing SHIFT , CNTL and BREAK), by default:

- The assigned characters are Escp, Escq, Escr, Escs, Esct, Escu, Escv and Escw.
- The characters are only transmitted (i.e. they are not used at the terminal).
- The soft key labels are f1 through F8.

This can be changed either locally at the keyboard or remotely by the computer.

Local Soft Key Defining

To define the soft keys from the keyboard, simultaneously press the SHIFT and Labels key; the Labels key is the unmarked key at the right-hand side of the keyboard. This causes the primary soft key labels to be displayed at the bottom of the display. The default labels are shown in Figure 4-10.

If required, the primary soft key labels can be displayed by entering escape sequence Esc&jB at the keyboard.

To assign data to any of the soft keys, simultaneously press SHIFT , CNTL and the relevant soft key. This causes the terminal to enter the user definition mode for the given soft key with:

1) The soft key control labels displayed at the bottom of the screen, see Figure 4-10.

2) The current string for the soft key to be displayed in the first 72 columns at the top of the screen.

The soft key string may now be edited from the keyboard. The terminal operates in the display function mode for the entered data, e.g. pressing the RETURN key causes the CR character to be displayed. If required, the string may include escape sequences used to control the terminal.

In addition, when the soft key control labels are displayed, the following controls are available:

- Shifted ← causes the cursor to jump to the 73rd column at the top of the screen. Any characters entered into columns 73 to 80 provide the label for the associated soft key. Pressing SHIFT and ← returns the cursor to the start of the soft key data string.

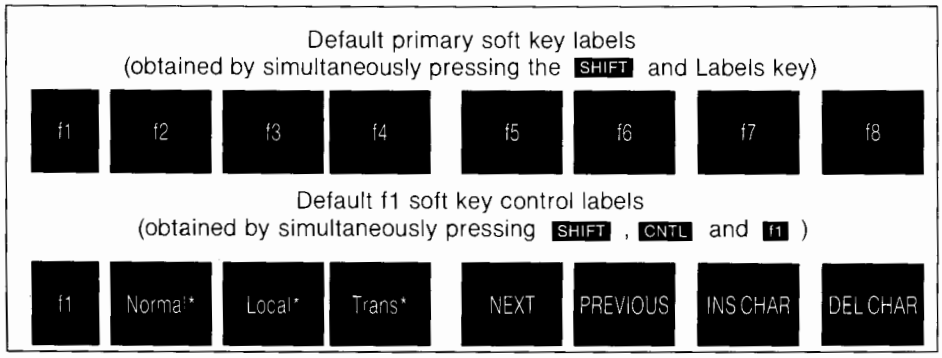


Figure 4-10. Soft Key Labels

- Shifted ↓ or ROLL ↑ or ROLL ↓ sets the soft key string to be used for normal (i.e. both local and transmit) local, or transmit operations respectively. An asterisk after the label indicates the selected operation.
- Shifted ↑ or ← allows the next or previous soft key string to be displayed for editing.
- Shifted → or ↑ allows characters to be inserted or deleted from the string.

To exit from the soft key definitions mode, press the Labels key once (pressing the Label key twice returns the soft keys to function keys).

To use the assigned soft key, simultaneously press the SHIFT and the relevant soft key.

To return the soft keys to functions keys, press the Labels key.

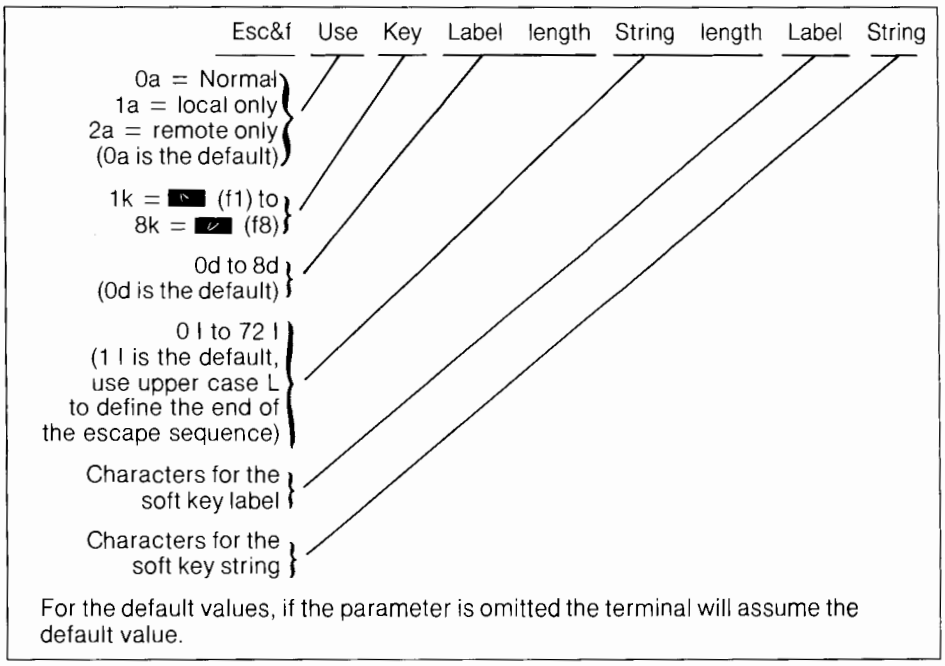


Figure 4-11. Escape Sequence To Define Soft Keys

Remote Soft Key Defining

The soft keys may be defined from the computer using the escape sequence format shown in Figure 4-11.

For example, the following escape sequence may be used to define soft key f5 (↑) as follows:

1) Set the label to LOG-ON.

2) Set the string to HELLO USER.ACCOUNT.

3) Display the string and send it to the computer.

Esc&f0a5k6d18LLOG-ONHELLO USER.ACCOUNT

The key can be used as a soft key by:

- Simultaneously pressing the SHIFT and Labels key (this causes the primary soft key labels to be displayed).
- Then simultaneously press the SHIFT and f5 (↑) key.

National Character Set Keyboards (Options 001 to 006 and option 010)

The terminal may be equipped with any one of the following six national character set keyboards:

1) Option 001 Finnish/Swedish.
2) Option 002 Danish/Norwegian.
3) Option 003 French (QWERTY or AZERTY).
4) Option 004 German.
5) Option 005 United Kingdom.
6) Option 006 Spanish.

In addition, Option 010 provides the standard USASCII keyboard, but with the national character set firmware (thereby enabling the standard keyboard to generate any of the national characters).

Figure 4-12 depicts the available keyboards.

NOTE

The rear panel terminal configuration switches set the national language that the terminal will interpret, see Section 5 for details.

The national character set keyboards can generate either:

1) The ISO national character set that corresponds to the language defined by the terminal's configuration switches. The ISO character set is similar to the ASCII character set, except that eleven of the ASCII characters are replaced by national characters that are not available on the standard keyboard. The eleven replaced ASCII characters are:

   # @ [\ ] ^ ` { | } and ~ .

   The corresponding ISO characters for each language are listed in Table 4-7.

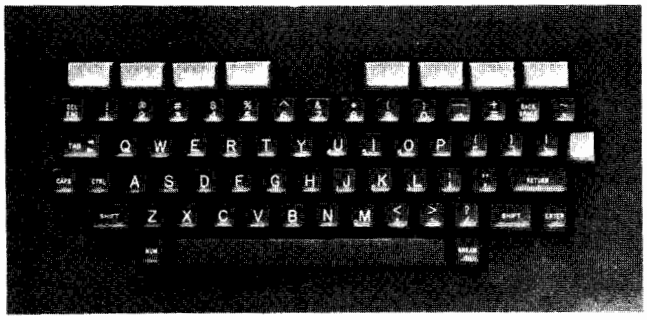
or

2) All the 128 ASCII characters that are available on the standard USASCII keyboard.

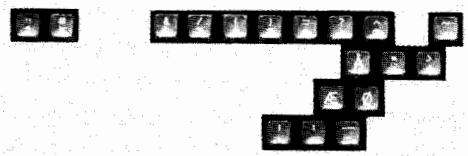
In addition, the position of some of the keys on the national keyboards is different to the position of keys generating the same characters on the standard keyboard, see Figure 4-12.

Table 4-7. ISO Equivalent Characters

		DECIMAL VALUE										
		35	64	91	92	93	94	96	123	124	125	126
ASCII (U.S)	standard	#	@	[	\	]	^	`	{	|	}	~
Swedish/Finnish (S/SU)	001	#	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Norwegian/Danish (DK/N)	002	#	@	Æ	Ø	Å	^	`	æ	ø	å	~
French (F)	003	£	à	°	ç	§	^	`	é	ù	è	¨
German (D)	004	£	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
United Kingdom (UK)	005	£	@	[	\	]	^	`	{	|	}	~
Spanish (E)	006	#	@	¡	Ñ	¿	^	`	{	ñ	}	~

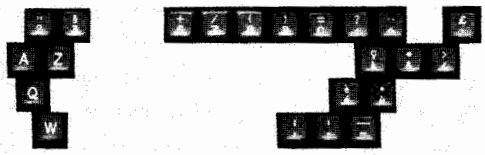


Standard USASCII (US)



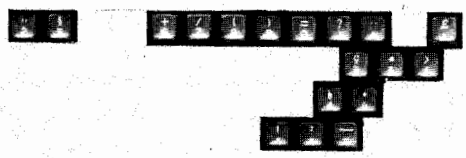
Option 002 Norwegian/Danish (N/DK)

Option 001 Swedish/Finnish (S/SU)



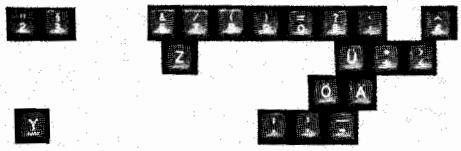
Option 003 French (F) AZERTY

Figure 4-12. Available 2621B Keyboards



Option 003 French (F) QWERTY

Option 005 United Kingdom (UK)



Option 004 German (D)

Option 006 Spanish (E)

Figure 4-12. Available 2621B Keyboards (continued)

National Keyboard Primary And Secondary Character Sets

The terminal can be set with either the ISO national characters as the primary (i.e. main) character set and the USASCII as the secondary character set, or vice-versa.

NOTE

Since the computer can send data using either the primary or secondary character set, the primary character set used by both the terminal and the computer MUST be the same.

Configuration switch ASC on the terminal rear panel sets the default (i.e. at power-on or after a reset) primary character set to either the ISO national character set or the USASCII character set, see Section 5 for details. i.e.:

1) If the USASCII set is selected as the default primary set, then when the configuration function labels are displayed (see Figure 4-6) an asterisk appears after the USASCII label, i.e. USASCII*. In this case the ISO character set is secondary.
2) If the ISO national character set is selected as the default primary set an asterisk does NOT appear after this label, i.e. USASCII. In this case the ASCII character set is secondary.

If required, the primary character set can be changed from ASCII to ISO (and vice-versa), by simultaneously pressing the SHIFT and USASCII keys. The asterisk is displayed after the USASCII label when the ASCII character set is primary, see Table 4-3 for details.

Character set selection. When the terminal sends data to the computer, by default the data characters originate from the primary character set. Similarly, when the computer sends data to the terminal, by default, the displayed data characters originate from the primary set.

However, if required either or both the primary character set characters and the secondary character set characters may be sent to and received from the computer.

The selection of the primary character set is controlled by the Shift In control character, this is equivalent to CNTL O. The selection of the secondary character set is controlled by the Shift Out control character, this is equivalent to CNTL N.

For keyboard generated data:

- To send characters from the primary character set, the primary set must be selected by simultaneously pressing keys CNTL and upper case O . This causes the terminal to display all terminal and computer originated characters from the primary set and also informs the computer to interpret the characters as being from the primary set.
- To send characters from the secondary character set, the secondary set must be selected by simultaneously pressing keys CNTL and upper case N . This causes the terminal to display all keyboard and computer originated characters from the secondary set and also informs the computer to interpret the characters as being from the secondary set.

Whenever a new line is started, the terminal will automatically revert to the primary character set; except if the user is pressing a key, and characters are being generated by the auto repeat feature. In that case, the terminal will not revert to primary mode until the key is released.

It should be noted that the positions of some characters are different in the USASCII keyboard and in various national keyboards. If the user has selected the USASCII character set, then the terminal will not only replace some national characters with USASCII characters, but will also interpret any character typed into the keyboard as if the key in the corresponding position had been pressed on a USASCII keyboard.

Likewise, when a national language has been selected, any key pressed is interpreted as the corresponding key on the appropriate national keyboard would be.

In order to assist users in locating the keys that they wish to use for keyboard layouts other than the one that they have attached to the terminal, a set of self-adhesive keyboard stickers has been included that depict all of the available keyboard layouts. These may be placed on the flat surfaces of the keyboard at the user's convenience.

For computer originated data:

- To display characters from the primary character set, the primary set must be selected by sending the Shift In control character (SI = octal 017). This is equivalent to entering CNTL O on the keyboard.
- To display characters from the secondary character set, the secondary set must be selected by sending the Shift Out control character (SO = octal 016). This is equivalent to entering CNTL N on the keyboard.

As with data generated from the keyboard, the terminal will automatically revert to the primary character set after receiving a Cr Lf, and starting a new line.

Diacritical Characters (French and Spanish Keyboards only)

The French and Spanish keyboards employ diacritical characters (i.e. accented) that are formed from a combination of two characters, an accent followed by an alpha character (e.g. circumflex plus vowel, tilde plus n, etc.).
The terminal handles these characters as follows:

1) When the first part of the diacritical character is typed it is displayed on the screen and the cursor remains under it. In addition, for seven bit data communictions, the corresponding character code is transmitted. For eight bit data communications, nothing is transmitted.

2) When the second part of the character is typed:

   a) If it is a valid character (i.e. one giving a valid diacritical combination), the corresponding combination is displayed and the cursor moves to the next character position. In seven bit data communications the corresponding code of the second character is transmitted. In eight bit communications, the corresponding code for the combination character is transmitted.

   b) If it is an invalid character (other than space), it replaces the previously displayed character. In both seven bit and eight bit communications, the code of this second character is transmitted.

   c) If it is a space, the first character remains on the screen and the cursor is moved to the next character position. In seven bit communications, the code for a space is transmitted. In eight bit communications, the codes of the first character and the space are transmitted.

The terminal handles diacritical character received from the computer in a similar manner.

National Keyboard Data Communications

NOTE

The terminal configuration switches control the data word length, see Section 5.

For both the ASCII and ISO character sets, the characters are coded using seven data bits. For the extended Roman character set, the characters are coded using eight data bits.

Seven bit data communications. When the terminal is configured for seven bit operations using the ISO national character set, it replaces ASCII characters # @ [\ ] ^ ` { | } and ~ by the selected ISO national language character shown in Table 4-7.

Eight bit data communications. When the terminal is configured for eight bit operations it uses the extended Roman character set as listed in Appendix A. This character set includes the ASCII and ISO characters, plus additional national characters NOT available in the ASCII/ISO sets (or with the national keyboards). However, these national characters may be generated by the computer for display on the terminal. The eighth data bit is used to distinguish the extended Roman characters; i.e. the ASCII/ISO characters have the eighth bit equal to 0, the additional national characters have the eighth bit equal to 1.

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

For the 2621 B, fixed configuration parameters (those which are defined at ins-tallation time) are set up on switches located on the rear panel (see Figure 5-1). The state of these switches is read, and the parameters are set up accordingly each time the terminal is powered-on or reset.

Certain configuration parameters can be changed from the terminal keyboard. These are modified using the Function keys when the terminal is in Configuration mode and are described later in this section.

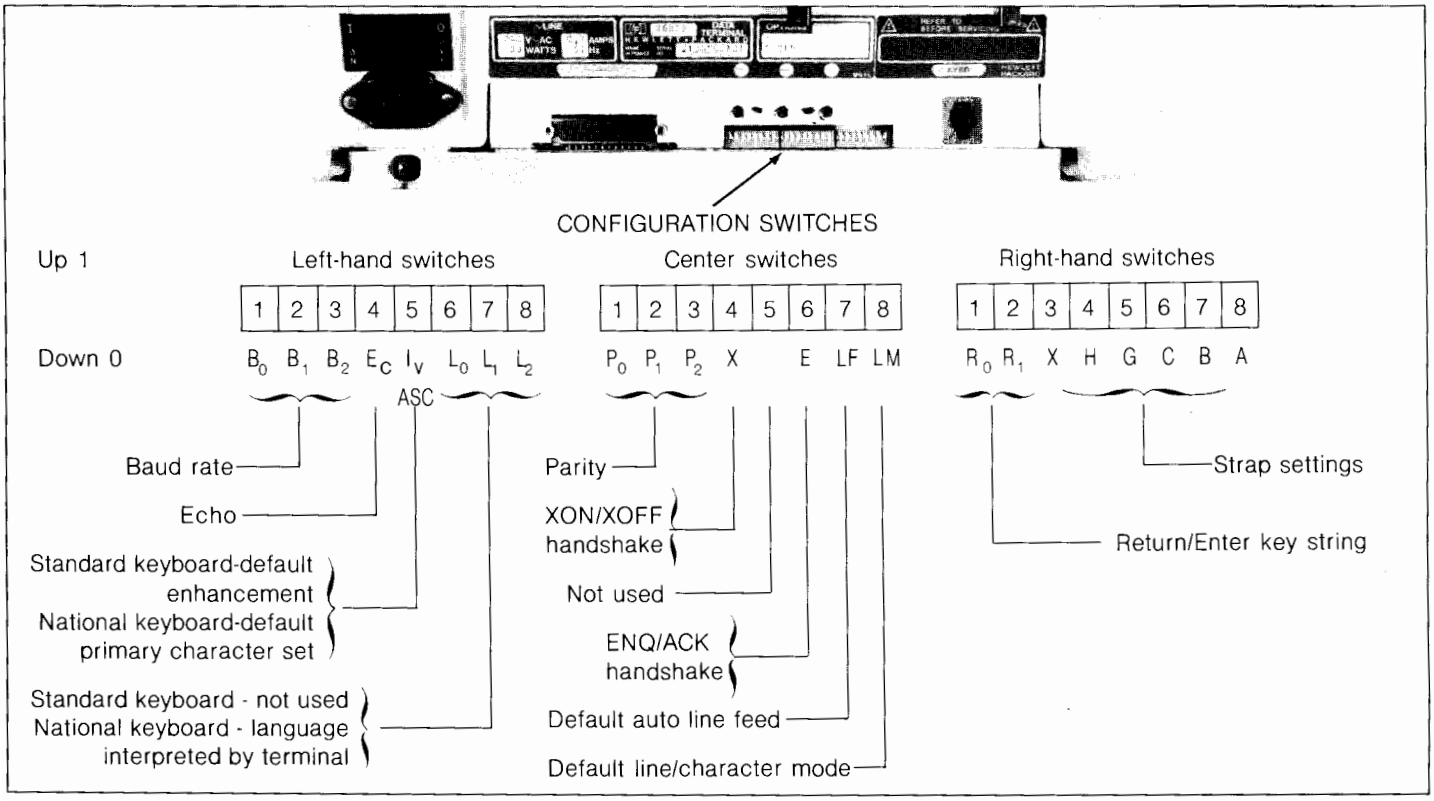


Figure 5-1. 2621B Rear Panel Configuration Switches

Left-hand Configuration Switches

1 = open (up)
0 = closed (down)

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 110, 150, 300, 600, 1200, 2400, 4800, and 9600. The value you select must match the cabability of the host computer or that of the modem link between the terminal and computer.

To change the Baud rate, set switches B0-B2 according to the following table:

B_0	B_1	B_2	Baud Rate
0	0	0	110, 2 stop bits
1	0	0	150
0	1	0	300
1	1	0	600
0	0	1	1200
1	0	1	2400
0	1	1	4800
1	1	1	9600

Echo Configuration

The type of echo for character mode data communications transmission can be determined by the Ec switch. The available echo types are Local Echo and Computer-generated echo (Remote Echo).

Remote echo indicates that the terminal transmits a character to the computer and the computer should provide the echo to the display screen.

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

To change the echo configuration, set the Ec switch as follows:

1 for Local
0 for Remote

In Line mode, the keyboard characters are always displayed on the screen (independently of the transmission).

Inverse Video/Underline (Standard Keyboard)

With the standard keyboard, switch 5 of the left-hand switches is labeled IV and is used to select the default enhancement as follows:

1 for Inverse Video
0 for Underline

This may be changed from the keyboard using the configuration function labels.

Primary Character Set (National Keyboard)

With the national keyboard options (001-006 and 010), switch 5 of the left-hand switches is labeled ASC and is used to select the default primary character set as follows:

1 for ASCII set as primary (national set as secondary)
0 for national set as primary (ASCII as secondary).

This may be changed from the keyboard using the configuration function labels. The national language is set by switches L0, L1 and L2.

Language Configuration (National Keyboard)

With the national keyboard, (options 001 to 006 and 010), switches 6, 7 and 8 of the left hand switches are labeled L0, L1 and L2. These switches must be used to set the national language that the terminal with interpret, this setting should match the keyboard's language. The available settings are as follows:

L_0	L_1	L_2	
0	0	0	USASCII
1	0	0	Swedish/Finnish
0	1	0	Norwegian/Danish
1	1	0	French (QWERTY keyboard)
0	0	1	French (AZERTY keyboard)
1	0	1	German
0	1	1	English (United Kingdom)
1	1	1	Spanish

With the standard keyboard the terminal is permently set to USASCII.

Center Configuration Switches

Parity Configuration

The type of parity generated for each data byte is determined by the setting of the parity switches P_0 to P_2

The available parity types are:

P_0	P_1	P_2		
0	0	0	NONE (1)	No parity is generated; eighth bit is always 1.
1	0	0	NONE (0)	No parity is generated; eighth bit is always 0.
0	0	1	EVEN	Even parity is generated; eighth bit is parity result.
1	0	1	ODD	Odd parity is generated; eighth bit is parity result.
0	1	0	8	Transmission is performed on 8-bit coded data. No parity is generated. This enables national characters from the extended Roman character set to be transmitted/received.

XON/XOFF handshake

The XON/XOFF handshake may be selected using switch 4 of the centre switches and is labeled X. To configure the handshake set the switches as follows:
1 for XON/XOFF enabled (X)
0 for XON/XOFF disabled (x).

When enabled, the XON/XOFF handshake allows the terminal to signal the host computer to stop transmitting data and, subsquently, to resume transmitting data as the input buffer fills and empties.

When disabled, 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.

ENQ/ACK Handshake

Configure the handshake by setting switch 6 as follows:
1 for ENQ/ACK enabled (E)
0 for ENQ/ACK disabled (e).

The ENQ/ACK handshake may be used to ensure that the terminal has an empty input buffer before the host computer transmits more data.

When ENQ/ACK is enabled, 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 switch 6 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.

Automatic Line Feed

Switch 7 of the centre configuration switches is labeled LF and is used to select the default automatic line feed as follows:
1 for automatic line feed enabled
0 for automatic line feed disabled.

This may be changed from the keyboard using the configuration function labels.

Line Mode/Characters Mode Selection

Switch 8 of the centre configuration switches is labeled LM and is used to select the default communications mode as follows:
1 for Line Mode
0 for Character mode.

This may be changed from the keyboard using the configuration function labels.

Right-hand Configuration Switches

Return/Enter Key String

Switches R0 and R1 may be used to select which characters are transmitted each time the RETURN or ENTER key is pressed. The available settings are:

R_0	R_1	
0	0	CR
0	1	CR ETX
1	0	CR LF
1	1	CR EOT

Table 5-1. 2621B Strapping Configuration

Strap	Use	0 = Closed	1 = Open
A	Escape Sequence Transmission	a (disabled)	A (enabled)
B	Space Overwrite (SPOW) Latch	b (disabled)	B (enabled)
C	Wraparound Cursor, End-Of-Line	c (enabled)	C (disabled)
G	Short Transfer Trigger Handshake (Block Transfer Handshake)	g (enabled)	G (disabled)*
H	Long Transfer Warning Handshake (Inhibit DC2)	h (enabled)	H (disabled)
X	Data Speed Select	x (disabled)	X (enabled)

*Note: 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.

Strap Configuration

Each strap is represented by one of the rear panel strap switches (A, B, C, G, H, X - see Figure 5-1) and is enabled or disabled by opening or closing the associated switch. Table 5-1 lists the straps and their conditions. Each strap is then described in detail as follows.

Escape Sequence Transmission (A). When enabled, escape sequences generated by the function keys are transmitted to the computer. When disabled, the sequences are not transmitted.

Space Overwrite (SPOW) Latch (B). When this strap is enabled, the SPOW latch can be turned on by a Return character (CR), 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 overwritting 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 SPOW latch is not accessible.

Wraparound Cursor, End-Of-line (C). When enabled, 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 characters are generated at the end of a line. The cursor remains at the end of the line and overwrites the content of the right margin.

Short Transfer Trigger Handshake (Block Transfer Handshake) and Long Transfer Warning Handshake (Inhibit DC2). The 2621 B 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.

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

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 key while the terminal's Line mode and Modify functions are disabled.

Short Transfer

A data transfer operation involving

1. Terminal Status
2. User defined functions
3. Completion Status Indicator (S, F, or U) following a remote print operation request via escape code sequence (HP 2621 B option 050 only).
4. Cursor Sensing
5. Escd initiated communication (see table 5.8).

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

1. Status Requests
2. Cursor Sense Requests
3. User defined Function Requests
4. ENTER or RETURN Key Line Transfer Requests
5. 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 5-2 illustrates the handshake protocol.

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	TYPE 1	TYPE 2	TYPE 1
G,h	TYPE 3	TYPE 3	TYPE 3
G,H	TYPE 1	TYPE 1	TYPE 1

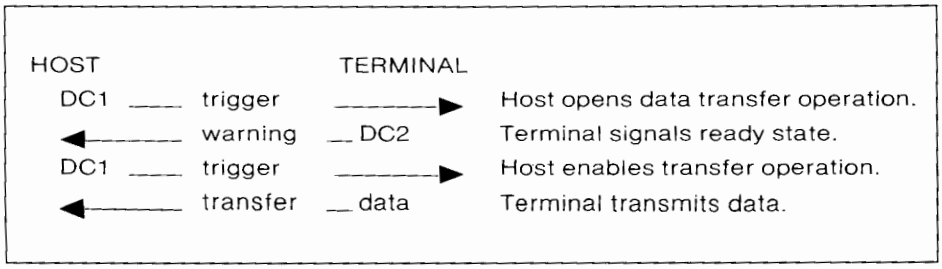


Figure 5-2. DC1/DC2 Handshake Protocol

Depending on the state of the g and h straps, one of three subsets of the handshake protocol shown in Figure 5-2 is used by the terminal, as shown in Figure 5-3.

Data Speed Select (X). 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 Low (off) state. When disabled, the data speed signal (RS232C CH line or CCITT V.24 111 line) is in the High (on) state.

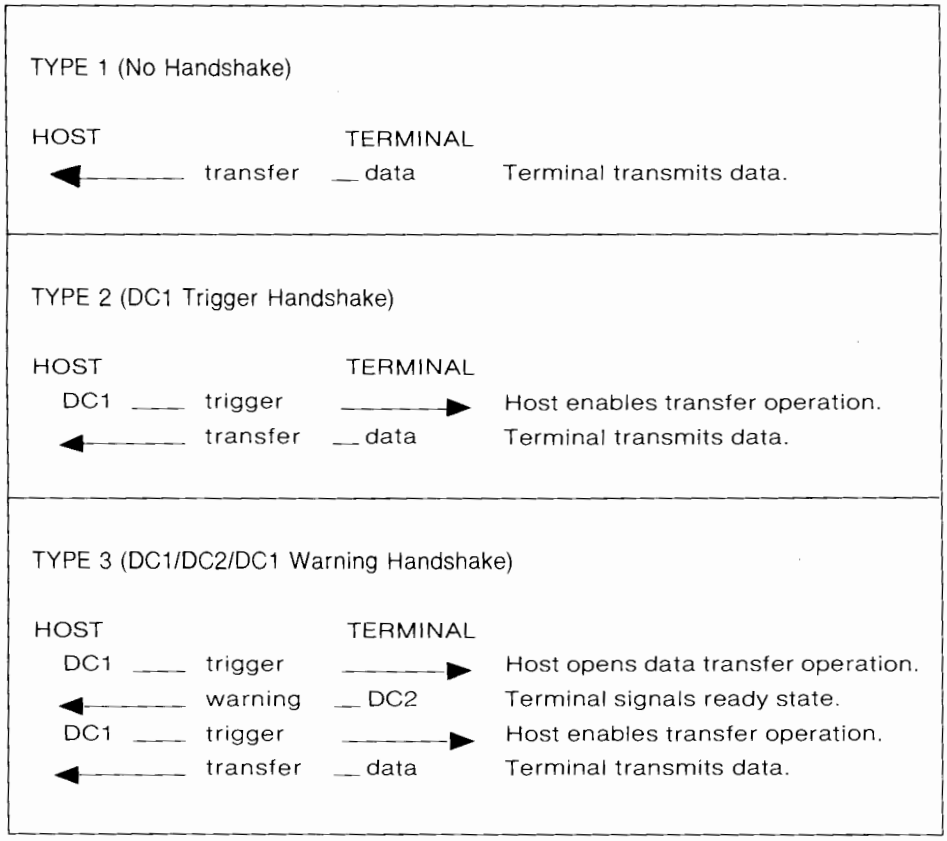


Figure 5-3. Available Handshake Protocols

Configuration Function Keys

Certain configuration parameters can be changed using the keyboard. These may be modified using the function keys when the terminal is in the Configuration mode.

To enter the Configuration Mode, first press the Labels key to display the primary screen function labels, then simultaneously press SHIFT and config. .

The Configuration function labels are shown below and their use is described in Table 5-3

INV/UND | SWITCHES | STRT COL | MODM OFF | REMOTE* | CAPS LK* | LN MODE* | AUTO LF*

or

USASCII

Table 5-3. Configuration Mode Switches

Function Label	Key Stroke	Function
[INV/UND] or [USASCII] with national keyboards	Shifted	In the standard terminal, this function changes the default character enhancement mode to either inverse video or underline. If the terminal is fitted with any of options 001 to 006 or 010 (national character options) INV/UND is replaced with USASCII. This function changes the default primary character set to either USASCII or national.
[SWITCHES]	Shifted	This function enables you to change the setting of the rear panel configuration switches and reconfigure the terminal without having to perform a power off/on. Change the switches and then press the SWITCHES key. This reads the new switch configuration into the terminal.
[STRT COL]	Shifted ROLL A	The STRT COL function is used with Line mode communications to set the starting column to the current position of the cursor (displayed in line 25). See Line Mode overleaf.
[MODM OFF]	Shifted ROLL V	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.

Table 5-3. Configuration Mode Switches (continued)

Function Label	Key Stroke	Function
[CAPS LK]	Shifted <	This function causes the terminal's alphabetic keys to be locked into uppercase characters. Specifically, when Caps Lock is enabled, the terminal generates the uppercase characters for the set of characters a through { . The characters ` and ~ are ignored. (Refer to the ASCII-coded Character Set in Appendix A). An asterisk appears in the label when this function is enabled, e.g. [CAPS LK*]. When Caps Lock is disabled, the complete ASCII Character Set (128 characters) is generated by the terminal. For remote operation, the HP 2621B always accepts the complete 128 characters whether Caps Lock is enabled or disabled.
[LN MODE] (See note)	Shifted >	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 (e.g. [LN MODE*]). 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 defined 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. 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.
[AUTO LF] (See note)	Shifted V	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 (e.g. [AUTO LF*]).

Note. For functions LM and LF, the default configuration at power-on is determined by configuration switches LF and LM as follows:

	UP = 1	DOWN = 0
LM	line mode	character mode
LF	auto linefeed enabled	auto linefeed disabled

Selecting the Remote Operating Mode

Before the terminal can send and receive data via the data communications interface, it must be in the Remote mode.

The terminal is always in the Remote mode at power-on or after a reset. This is indicated when the Configuration function labels are displayed by an asterisk after the REMOTE label (i.e. REMOTE*).

To disable Remote mode, simultaneously press SHIFT and [redacted].

The asterisk will disappear from the label to indicate that the terminal is in Local mode.

To enable Remote mode, press SHIFT and [redacted] again.

The asterisk will appear after the label to indicate that the terminal is once more in the Remote mode.

Start Column Configuration

The STRT COL configuration function may be used (when the terminal is configured for the Line mode) to 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.

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 this pointer.

The default starting column is 1.

Terminating the Configuration Mode

When you are satisfied with the configuration data on the screen, you terminate the Configuration Mode by pressing the Labels key.

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 2621 B 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.

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 ENTER or RETURN to transmit the data a line at a time.

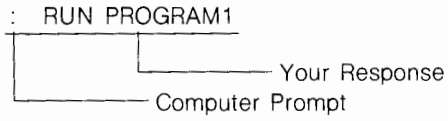
Line mode. Line mode allows you to enter into memory an entire line of up to 80 characters. The data that you type into the line is not transmitted to the computer until you press either ENTER or RETURN. The line appears on the screen and you can make changes to the displayed data at any time before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

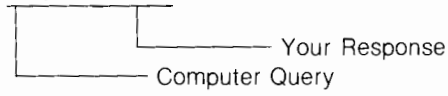
Examples:

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 and Modify 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 transfered 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 2621 B printer (option 050).

Escape Code Sequences

The 2621 B 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, cursor sensing, 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 soft keys. To access these codes, press and hold down SHIFT, and then press the Labels key. The soft key labels f1 to f8 are displayed across the bottom of the screen. Table 5-13 details the escape sequence contained in each key as the default. These strings may be modified as described on the section USER'S MODE.

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 5-14. The printer escape sequences are listed in Table 6-2.

NOTE

During printing operations, self test, the reception of data over the datacomm line at high baud rates or the execution of certain escape sequences; it may be necessary to hold down a key for longer than usual before the terminal responds.

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 [DSPY FN*]).
Display Functions Off	esc Z	Enable execution of any control functions; do not display their code; remove asterisk from screen label ([DSPY FN]).

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.

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. See Appendix C for information about the terminal's Primary status.
esc d	Enable Line Transfer Mode (ENTER key function).
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.

NOTES

1) Generally, actual cursor positional values are referenced in the following notation:
- screen column positions-1 through 80
- screen row positions-1 through 24
- memory row positions-1 through 48

2) For cursor sensing and addressing, the positional values are referenced in the following notation:
- screen column positions-0 through 79
- screen row positions-0 through 23
- memory row positions-0 through 47

Table 5-9. Escape Sequences, Cursor Sensing

Function	Code	Description
Absolute Cursor Sense	esc a	Obtain absolute column and row location of cursor within display memory.
Relative Cursor Sense	esc	Obtain column and row location of cursor relative to the beginning of the currently displayed screen page.

Table 5-10. Escape Sequences, Cursor Address Control

Note that the base sequence is esc & a

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

Table 5-11. Escape Sequences. Display Enhancement Control (Standard Terminal)

Note that the base sequence is esc & d

Code	Description
esc & d A through O	Enable enhancement Function; subsequent character entries include enhancement on display screen.
esc & d @	Disable enhancement Function.

Table 5-12. Escape Sequences, Screen Labels Control

Note that the base sequence is esc & j

Function	Code	Description
Clear Labels	esc & j @	Clear Screen Labels. Turn off display of screen labels.
Display Labels	esc & j A	Display Primary Screen Function Labels (turns on display of first level of screen labels).
Display User Defined Labels	esc & j B	Display soft key labels f1 through f8 (turns on display of f1-f8 default primary soft key labels, or user defined primary labels).

Table 5-13. Escape Code Sequences Transmitted by the 2621 B

Code	Description
esc ` 7-byte status data	Primary Status Response; When an esc ^ sequence is received, the terminal generates this 7-byte status response and transmits it to the requesting computer.
S, F, or U	2621 B option 050 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).

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.

NOTES

1) 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 Table 5-2.

2) The escape codes esc p-esc w are the default values for Function keys f1-f8, ie. the values at power-on or reset. They can be modified as described in "User's Mode", Section 4.

Table 5-14. ASCII-coded Control Codes

ASCII Code		Code Definition
(hexadecimal)	(decimal)	
07	7	Bell
08	8	BACKSPACE
09	9	Horizontal TAB
0A	10	Linefeed
0D	13	RETURN
05	5	ENQ-Enquiry; if ENQ/ACK hankshake is enabled, terminal responds with 06 (ACK Acknowledge).
0C	12	Form Feed to printer (option 050 only); if Report Mode is enabled, printer skips to top of new page. If Report Mode is disabled, Form Feed code is ignored.
11	17	DC1; depending on which type of DC1/DC2 handshake protocol is enabled, the terminal responds with data, DC2, or nothing.
1B	27	ESC; signals start of an escape sequence.

Press SHIFT together with the TEST Function key to perform a diagnostic test of the terminal. The test checks ROM, Video RAM, and Program RAM. In addition to these checks, a list of the full character set is displayed on the screen followed by a list of the terminal's status bytes. Figure 8-1 shows the Self-test screen display. Appendix C defines the terminal's Primary status data.

If an error condition is encountered, an appropriate error message is displayed across the bottom of the screen (line 25). Table 8-1 contains a list of the error messages that may be generated as a result of test execution.

A diagnostic test of the terminal's data communication transmit, receive, and control lines can be performed under specific conditions. The data communications self-test is executed when you press both CTRL and SHIFT together with the TEST Function key. During the data communications test, signals are generated and transmitted from the terminal which must be "looped back" to the terminal to check the functioning of the data and control lines. This loop-back can be either a connector hood assembly or a modem interface that has an integral loop-back mode.

Detailed information about performing the data communications self-test and an interpretation of any resultant message is contained in the 2621 B Service Manual.

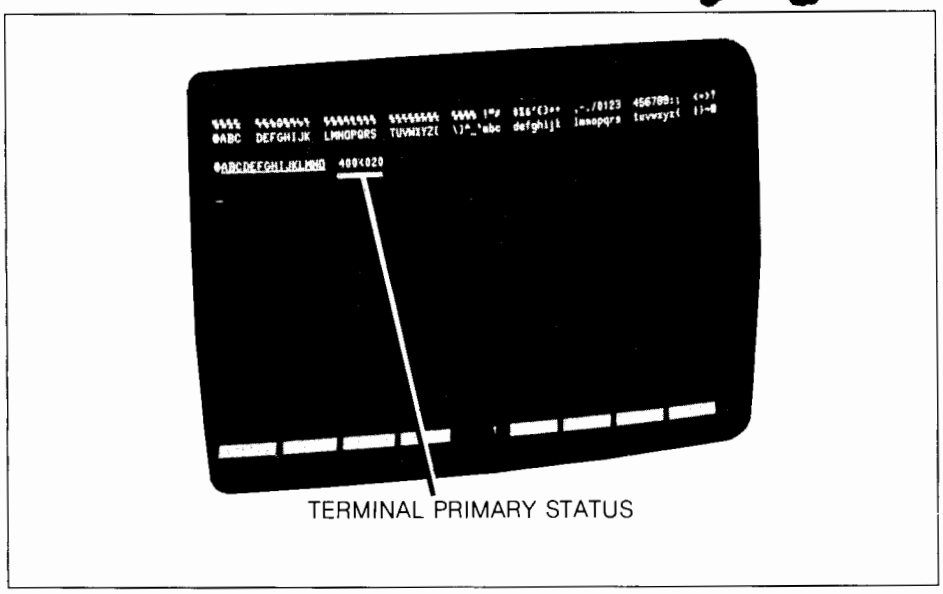


Figure 8-1. Self-Test Screen Display

Table 8-1. 2621 B Diagnostic Error Messages

Message	Meaning	Action
RAM?	Error condition encountered in the RAM.	Contact a qualified service person (see the 2621 B Interactive Terminal Service Manual).
ROM?	Error condition encountered in the ROM.	Contact a qualified service person (see the 2621 B Interactive Terminal Service Manual).
PRINTER?	Error condition encountered in the printer mechanism.	Check to ensure that the latch or top cover is securely closed; check that the printer has a supply of paper. If the error message persists, contact a qualified service person (see the 2621 B Interactive Terminal Service Manual).

Table 8-2 contains a list of possible problem conditions that might occur together with suggested action for correcting the problem condition.

Table 8-2. Problem Conditions

Problem	Action
1. You press a character key on the keyboard and nothing appears on the screen.	This indicates that the terminal may have Remote mode enabled. Enter the Configuration mode to make sure that Remote mode is disabled. To do this, press SHIFT and ╲. If the REMOTE label on the display has an asterisk after it (REMOTE*) this indicates that the terminal is in Remote mode. Press SHIFT and ╲ to switch to Local mode. Press the Labels key (blank key at right-hand side of keyboard) to exit Configuration mode.
2. In Remote Mode, the DEL character appears on the screen.	This indicates that there may be a Data Communications error, or a buffer overflow condition.

NOTE

During printing operations, self test, the reception of data over the datacomm line at high baud rates or the execution of certain escape sequences; it may be necessary to hold down a key for longer than usual before the terminal responds.

Resetting the Terminal

You reset the terminal by pressing and holding down the CTRL and SHIFT keys while you press the BREAK key. The result of this action is a reset to the initial Power On state. Certain parameters mays be changed. The following list gives the default conditions after a power-on or a reset.

REMOTE — enabled

Starting column — set to col. 1.

User's soft keys — reset to esc p-esc w (see table 5-13).

CAPS Lock — disabled

NUM Key — disabled

TAB Stops — cleared except for left margin (column 1)

Left Margin — set to column 1

Right Margin — set to column 80

DSPY FN — disabled

MODIFY — disabled

INS CHAR — disabled

REPORT (2621 B option 050 only) — disabled

LOG BTM (2621 B option 050 only) — disabled

LOG TOP (2621 B option 050 only) — disabled

Standard keyboard and terminal. For the standard terminal, irrespective of whether the terminal is configured for seven or eight bit operations, the keyboard and display always use the 7-bit ASCII character set listed in Table A-2. i.e. if the terminal is configured for eight bit operations, the eighth bit is always equal to 0.

National keyboard. For the national keyboards (options 001 to 006 and 010), the terminal can be configured to use either the ASCII character set or the ISO character set.

1) When the terminal is configured for 7-bit operations:
   a) If the terminal is configured for ASCII, it uses the ASCII character set listed in Table A-2.
   b) If the terminal is configured for ISO, it replaces eleven of the ASCII characters by the selected ISO national character (according to the configured language) as shown in Table A-1.
2) When the terminal is configured for 8-bit operations it uses the extended Roman character set as listed in Table A-3. This character set includes the ASCII and ISO characters, plus additional national characters NOT available in the ASCII/ISO sets (for with the national keyboards). The eighth data bit is used to distinguish the extended Roman characters; i.e. the ASCII character have the eighth bit equal to 0, the extended roman characters have the eighth bit equal to 1.

Table A-1. ISO Equivalent Characters

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

Table A-2. 7-Bit ASCII Character Codes

BIT 7 6 / 4 3 2 1 5	CONTROL (CNTL) CHARACTERS 0 0 0	CONTROL (CNTL) CHARACTERS 0 0 1	DISPLAYABLE CHARACTERS 0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0000	@ 0 N_U NUL	P 16 DL DLE	SP	0	@	P	`	p
0001	A 1 S_H SOH	Q 17 D_1 DC1	!	1	A	Q	a	q
0010	B 2 S_X STX	R 18 D_2 DC2	"	2	B	R	b	r
0011	C 3 E_X ETX	S 19 D_3 DC3	#	3	C	S	c	s
0100	D 4 E_T EOT	T 20 D_4 DC4	$	4	D	T	d	t
0101	E 5 E_Q ENQ	U 21 N_K NAK	%	5	E	U	e	u
0110	F 6 A_K ACK	V 22 S_Y SYN	&	6	F	V	f	v
0111	G 7 BEL	W 23 E_B ETB	'	7	G	W	g	w
1000	H 8 B_S BS	X 24 C_N CAN	(	8	H	X	h	x
1001	I 9 H_T HT	Y 25 E_M EM	)	9	I	Y	i	y
1010	J 10 L_F LF	Z 26 S_B SUB	*	:	J	Z	j	z
1011	K 11 V_T VT	[27 E_C ESC	+	;	K	[	k	{
1100	L 12 F_F FF	\ 28 F_S FS	>	<	L	\	l	:
1101	M 13 C_R CR	] 29 G_S GS	—	=	M	]	m	}
1110	N 14 S_O SO	^ 30 R_S RS	.	>	N	^	n	~
1111	O 15 S_I SI	- 31 U_S US	/	?	O	_	o	● DEL

A_K — ACKNOWLEDGE
BELL — BELL
B_S — BACKSPACE
C_N — CANCEL LINE
C_R — CARRIAGE RETURN
D_L — DATA LINK ESCAPE
D_1 — DEVICE CONTROL 1
D_2 — DEVICE CONTROL 2
D_3 — DEVICE CONTROL 3
D_4 — DEVICE CONTROL 4
■ — DELETE
E_M — END OF MEDIUM
E_Q — ENQUIRY
E_T — END OF TRANSMISSION
E_C — ESCAPE
E_B — END OF BLOCK
E_X — END OF TEXT
F_F — FORM FEED
F_S — FILE SEPARATOR
G_S — GROUP SEPARATOR
H_T — HORIZONTAL TAB
L_F — LINE FEED
N_K — NEGATIVE ACKNOWLEDGE
R_S — RECORD SEPARATOR
S_I — SHIFT IN
S_O — SHIFT OUT
SP — SPACE
S_H — START OF HEADING
S_X — START OF TEXT
S_B — SUBSTITUTE
S_Y — SYNCHRONOUS IDLE
U_S — UNIT SEPARATOR
V_T — VERTICAL TAB

Control Character Legend

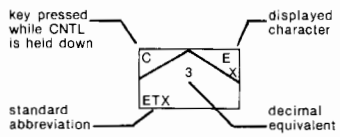


Table A-3. 8-Bit Extended Roman Character Codes

BIT 7 6 / 4 3 2 1 5	$B_8 = 1$ EXTENDED ROMAN CHARACTERS 0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
0000					â	Å		
0001					ê	Î		
0010					ô	Ø		
0011				°	û	Æ		
0100					á	a		
0101				ç	é	í		
0110				Ñ	ó	ø		
0111				ñ	ú	æ		
1000			´	¡	à	Ä		
1001			`	¿	è	ì		
1010			^	¤	ò	Ö		
1011			¨	£	ù	Ü		
1100			~		ä	É		
1101				§	ë	ï		
1110					ö	ß		
1111			£		ü			

Table A-4 lists the escape sequence parameters used to control the terminal, each parameter MUST be preceded by the Ec escape character (decimal 27).

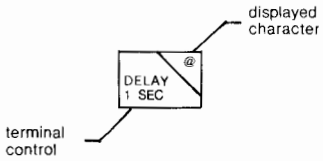
For example:

1) J is bits 1001010 (see Table A-2).

2) Simultaneously pressing CNTL and J generates a line feed (see Table A-2).

3) Escape (ESC) followed by J is clear display (see Table A-4).

Escape Parameter Legend:



For notes ①, ② and ③ see overleaf.

Table A-4. Escape Sequence Parameters

BIT 7 6 4321 5	ESCAPE SENT FIRST					
	0 1 0	0 1 1	1 0 n	1 0 1	1 1 0	1 1 1
0000	SP	① 0 PRINT ALL	@ DELAY 1 SEC	P DELETE CHAR	` RELATIVE CURSOR SENSE ④	③ p f1
0001	!	1 SET TAB	A ↑ CURSOR UP	Q INSERT CHAR ON	a ABSOLUTE CURSOR SENSE ⑤	q f2
0010	"	2 CLEAR TAB	B ↓ CURSOR DOWN	R INSERT CHAR OFF	b	r f3
0011	=	3 CLEAR ALL TABS	C → CURSOR RIGHT	S ROLL UP	c	s f4
0100	$	4 SET LEFT MARGIN	D ← CURSOR LEFT	T ROLL DOWN	d ENTER	t f5
0101	%	5 SET RIGHT MARGIN	E RESET TERMINAL	U	e	u f6
0110	& PARA METER SEQUENCE	6	F CURSOR HOME DOWN	V	f MODEM DIS-CONNECT	v f7
0111	'	7	G CURSOR RETURN	W	g	w f8
1000	(	8	H HOME CURSOR	X	h HOME CURSOR	x
1001	)	9	I HORI-ZONTAL TAB	Y DISPLAY FUNCTIONS ON	i BACK TAB	y
1010	*	:	J CLEAR DSPLY	Z DISPLAY FUNCTION OFF	j	z TERMINAL SELF TEST
1011	+	;	K ERASE TO END OF LINE	{	k	{
1100	,	<	L INSERT LINE	② PRIMARY STATUS RESPONSE	l	|
1101	-	=	M DELETE LINE	}	m	}
1110	.	>	N	~ TERM PRIMARY STATUS	n	~
1111	/	?	O	_	o	DEL

NOTES:

(1) The Esc & parameter sequences are:

Memory and Screen Addressing

Esc & a memory row number r column number C	Absolute Memory Addressing
Esc & a screen row number y column number C	Absolute Screen Addressing
Esc & a ± memory row number r ± column number C	Relative Memory Addressing
Esc & a ± screen row number y ± column number C	Relative Screen Addressing

Display Enhancement

Esc & d A through O	Enable Enhancement
Esc & d @	Disables Enhancement

Screen Labels Control

Esc & j @	Clear Screen Labels
Esc & j A	Display Screen Labels
Esc & j B	Display soft key Labels

Printer Control (Option 050 Only)

Esc & p 11 C	LOG BTM On
Esc & p 12 C	LOG TOP On
Esc & p 13 C	LOG BTM/LOG TOP Off
Esc & p M	Copy All Memory
Esc & p B	Copy Current Line
Esc & p F	Copy Current Page

This section describes the features offered by the 2621 B option 050 Interactive Terminal. It provides all of the features described in the preceding sections of this manual, plus an integral thermal printer.

A set of screen labeled printer control functions is available to control the form and contents of the printer's output data. In addition to the control functions, the 2621 B option 050 supports a set of printer control escape sequences. An external computer may use these escape sequences to program the form and contents of the printer's output data.

Identifying Options and Accessories

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

During printing operations, self test, the reception of data over the datacomm line at high baud rates or the execution of certain escape sequences; it may be necessary to hold down a key for longer than usual before the terminal responds.

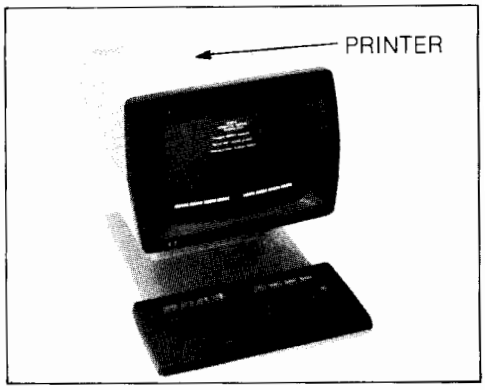


Figure 6-1. 2621B Equipped with Printer (Option 050)

Thermal Printer paper

The 2621 B option 050 printer uses thermal printing paper. This 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 Ref. No. 92160A/B.

In some countries, it can also be purchased through the HP computer supplie organisation.

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.

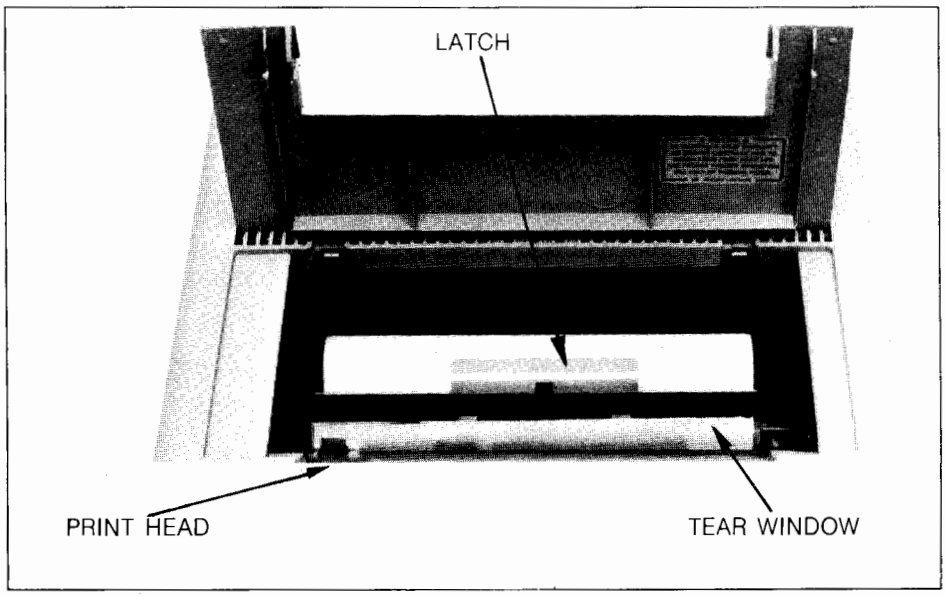


Figure 6-2. Printer Mechanism

Paper Loading

The print mechanism is shown in Figure 6-2.

To load a roll of Thermal Paper into the printer, refer to Figure 6-2 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 6-2) 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. 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.
10. Feed approximately 12 inches of paper through the latching frame so that the glue spot is beyond (outside) the print head and guide window.
11. Lower the latching frame without locking in into place.

    Align the sides of the paper with the guide lines embossed on each side of the guide window.
12. **IMPORTANT!** Press down the latch until it locks into place with an audible click.
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.

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 shown in Figure 6-3 and described in Table 6-1.

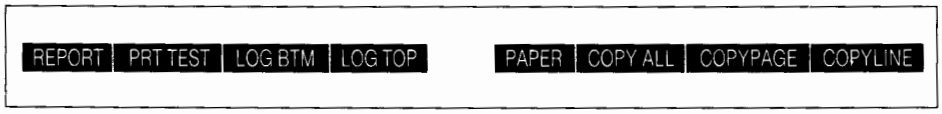


Figure 6-3. Printer Function Labels

Table 6-1. Printer Functions Keys

Function Label	Key Stroke	Function
[REPORT]	Shifted [\]	Enable REPORT print mode; display an asterisk in label, i.e. [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, ie. [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 [L]	Printer Test; execute test of internal printer mechanism. Display test pattern on printer, see Figures 6-4 and 6-5.
[LOG BTM]	Shifted [ROLL ^]	Enable Logging from Bottom of Memory; display asterisk in Label, i.e. [LOG BTM*]. Current line entry is copied to the printer upon the cursor leaving this line.
[LOG TOP]	Shifted [ROLL v]	Enable Logging from Top of Memory; display asterisk in label, ie. [LOG TOP*]. The subsequent line that rolls off the top of the 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 is completion of logging from the screen to the printer, a top-of-page operation on the printer (skip to new page and print tic mak), 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 transfered. Instead, a period (full stop) character is substituted for the Carriage Return and Linefeed during the print operation.

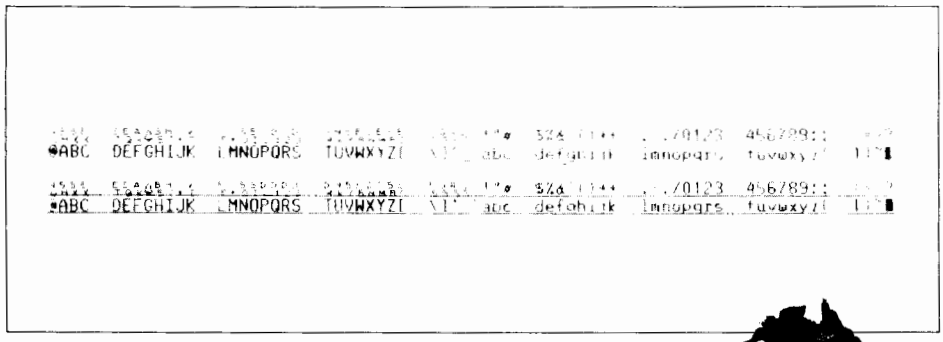


Figure 6-4. Printer Test Printout with Standard Keyboard

Figure 6-5. Printer Test Printout with National Keyboard

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 6-2. 2621 B Option 050 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 F	Print all data on screen from current line (marked by cursor) to end of screen.
Copy One Line	esc & p B	Print current line (marked by cursor).

Cleaning the Screen and Keyboard

The display screen and the keyboard should be cleaned regularly to remove dust and grease. First, lightly dust the entire terminal using a damp, lint-free cloth or paper towel. The cloth or paper towel should be damp enough to pick up any dust, but should not be wet. Avoid wiping dust or lint into the key area of the keyboard.

Greasy smudges and fingerprints can be removed using most conventional spray cleaners. Avoid spraying between the keys.

DO NOT use petroleum-based cleaners such as lighter fluid, or cleaners containing benzene, trichlorethylene, ammonia, dilute ammonia, or acetone because the terminal's plastic surfaces may be damaged.

Adjustments

There are three knobs on the terminal rear panel (Figure 7-1) for adjusting the height, brightness and focus of the display. Proceed as follows:

1) Fill of the screen with a single letter, such as "H".

2) Adjust the HEIGHT control to expand or contract the display in the vertical dimension, as required.

3) Adjust the BRIGHTNESS control for the required brightness.

4) Adjust the FOCUS control for uniform clarity across the screen.

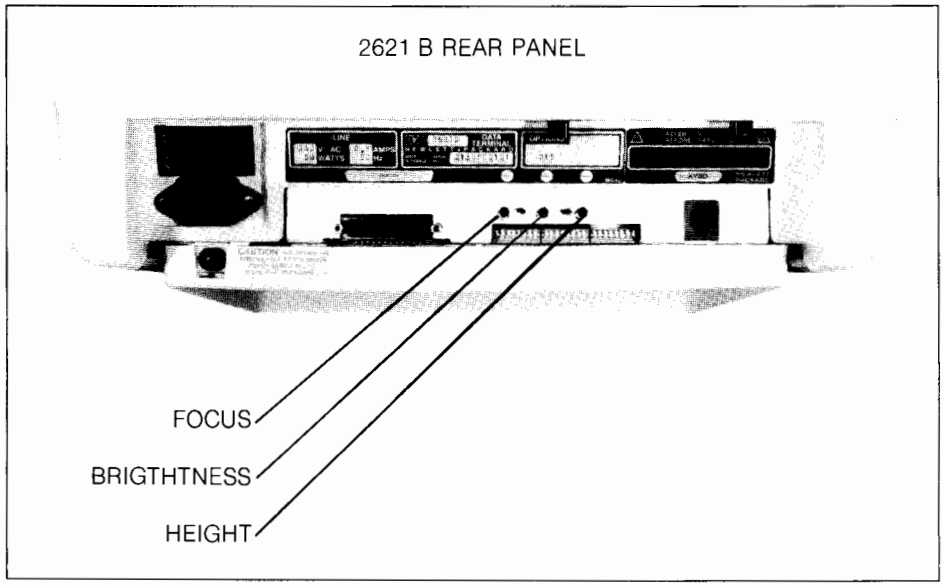


Figure 7-1. 2621 B Height, Focus and Brightness Controls

Solt key defining example :

Esc& f 0a 5k 5d 10L NAME JOHN SMITH

Assign to function key 5 (5k), normal mode (0a), a 5-character label (5d) which is "NAME" and a 10-character string (10L) which is "JOHN SMITH".

Soft Key Definitions

Esc& f (A)a (K)k (LL) d (SL)L (label) (string)

where :

A = 0 for normal, 1 for local or 2 for transmit mode
K = 1 to 8 depending on soft key to be defined
LL = length of screen label for soft key 0-8 characters
SL = string length, 1 to 72 characters.
label = soft key label, 0 to 8 characters.
string = character string to be assigned to the soft key
The parameters do not need to be in any particular order, but the final character (L in the above example) must always be a capital letter.

(2) In REMOTE Mode, upon receipt of Esc ^, the terminal responds with: Esc \ terminal primary status bytes (see appendix C).

(3) These escape sequences (Esc p through Esc w) are transmit sequences only.

(4) In REMOTE Mode, upon receipt of Esc \, the terminal responds with: Esc& a column number c screen row Y.

(5) In REMOTE Mode, upon receipt of Esc a, the terminal responds with: Esc& a column number c memory row R.

The terminal's rear panel data connector is a standard female 25 pin RS232C plug. The signals listed in Table B-1 are present at the connector.

Table B-1. 2621B RS232C Connector Signals

Pin	CIRCUIT	Input/Output	Description
1	AA	—	Protective ground
2	BA	out	Transmitted data
3	BB	in	Received data
4	CA	out	Request to send
5	CB	in	Clear to send
6	CC	in	Data set ready
7	AB	—	Signal ground
8	CF	in	Rec. line. signal detect
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20	CD	out	Data terminal ready
21			
22			
23	CH	out	Data sig. rate selector
24			
25			

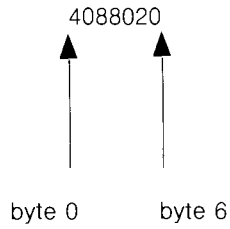
Note: Only BA, BB, and AB are mandatory

Primary Status

The primary status of the terminal is shown as the last data item whenever the terminal self-test function is executed. In addition to obtaining a display of primary status using self-test, you may request the primary status programmatically by sending the status request escape sequence (esc ^) from a computer to your terminal.

Upon receipt of the status request escape sequence, the terminal responds with an esc \ followed by seven status bytes represented in ASCII character notation, and a terminator. The terminator included in the response is usually a Return character but its value depends on the selected value of the return termination string, and on the state of the automatic linefeed function.

The primary status bytes provide information about the terminal's current status, i.e., display memory size, strap states, keyboard interface configuration, and terminal error conditions. The seven status bytes are referred to as byte 0 through 6 and are displayed as seven ASCII characters. For example:

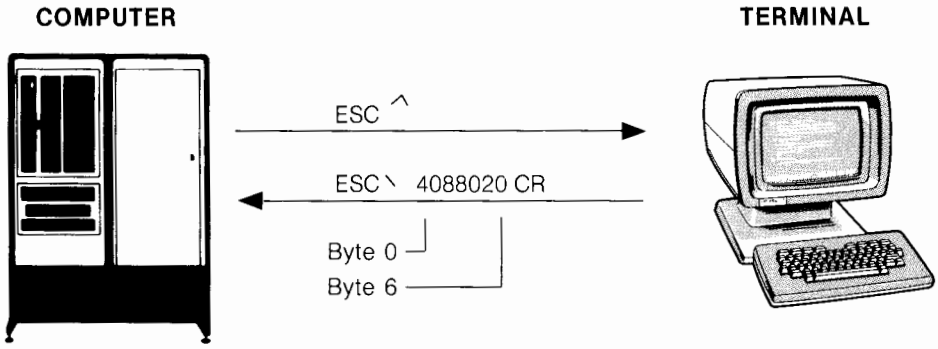


The status data is contained in the lower four bits of each byte. The upper four bits are set so that the entire byte represents an ASCII character. Thus, each status byte is interpreted as one ASCII character. These characters are defined in Table C-1.

Table C-1. Status Byte Interpretation

ASCII Character	Binary Value	ASCII Character	Binary Value
0	0011 0000	8	0011 1000
1	0011 0001	9	0011 1001
2	0011 0010	:	0011 1010
3	0011 0011	;	0011 1011
4	0011 0100	<	0011 1100
5	0011 0101	=	0011 1101
6	0011 0110	>	0011 1110
7	0011 0111	?	0011 1111

Figure C-1 shows an example of a typical status request and response interchange between a computer and a terminal.



BYTE	ASCII	BINARY	STATUS
0	4	0011 0100	4,096 bytes of display memory
1	0	0011 0000	Space overwrite latch disabled, strap b Cursor wraparound enabled, strap c Escape function transmission disabled, strap a
2	8	0011 1000	Short transfer handshake enabled, strap g Long transfer handshake disabled, strap H
3	8	0011 1000	CAPS LK disabled LN MODE disabled AUTO LF disabled
4	0	0011 0000	No Function key transfer pending No ENTER key transfer pending No cursor sense pending
5	2	0011 0010	No data communication errors Last Self-Test successful
6	0	0011 0000	No device completion pending

Figure C-1. Example: Typical Terminal Status

Figure C-2 is an illustration of the binary characteristics of each byte together with an interpretation of its meaning in the terminal's status response.

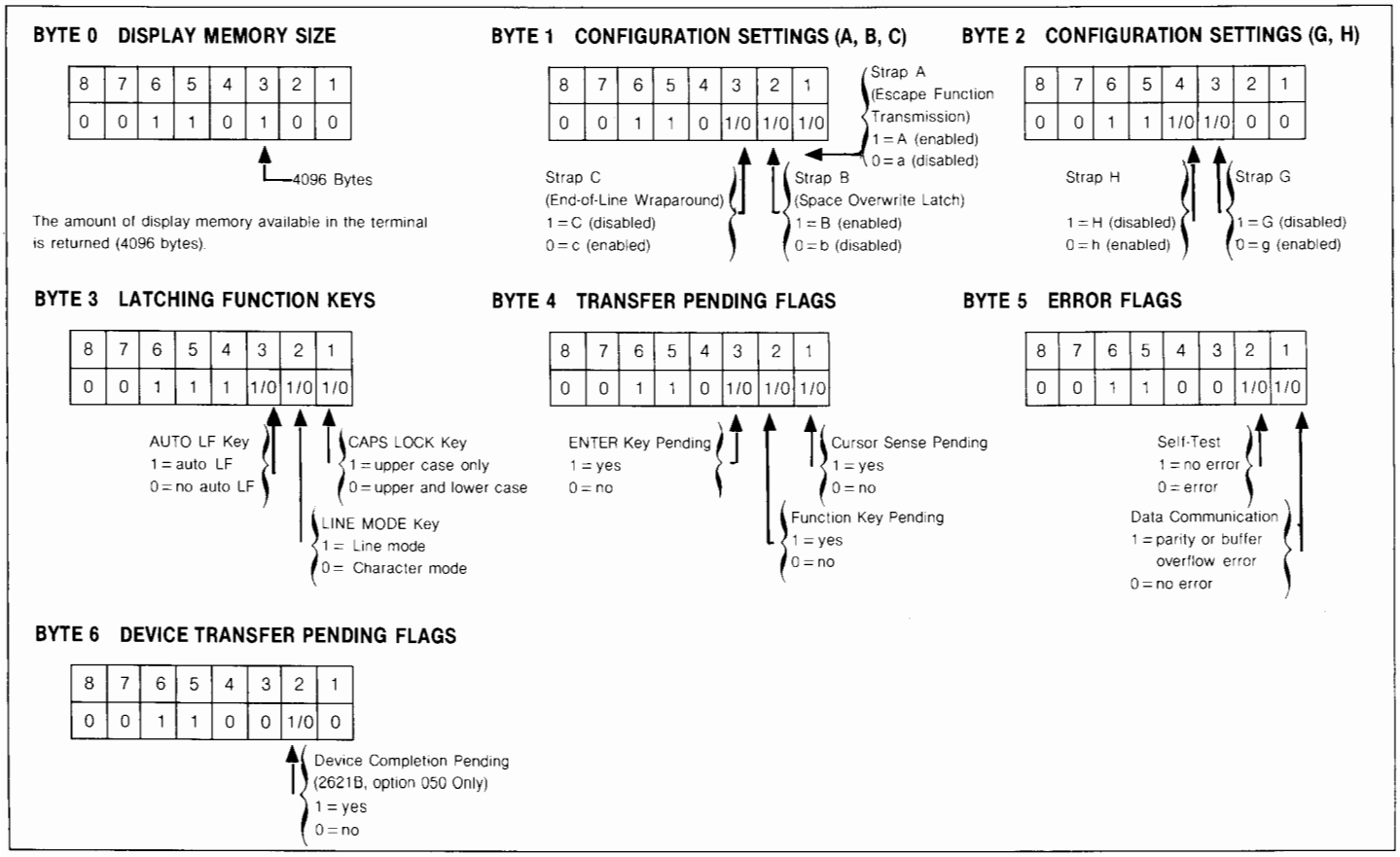


Figure C-2. Primary Status Byte Characteristics

You can obtain the current position of the screen cursor via an escape sequence. You may issue a request either for the absolute position of the cursor in display memory, or for the cursor position relative to the beginning of the current screen page. The terminal's response to these requests is a Short Transfer Trigger Handshake and is affected by the setting of the g and h straps (see Strap Configuration in Section 5).

NOTES

1) Generally, actual cursor positional values are referenced in the following notation:

- screen column positions-1 through 80
- screen row positions-1 through 24
- memory row positions-1 through 48

2) For cursor sensing and adressing, the positional values are referenced in the following notation:

- screen column positions-0 through 79
- screen row positions-0 through 23
- memory row positions-0 through 47

Absolute Cursor Sensing

You determine the absolute position of the cursor within display memory by issuing the following escape sequence:

esc a

In response to this request, the terminal generates an esc & a followed by numeric values that specify the column and row number at which the cursor currently resides within display memory.

For example, assume that the cursor resides at column 20, memory row 40.

You cause the following escape sequence to be issued from the computer:

esc a

The terminal responds with:

esc & a 019c 039R

You use this response to determine the absolute position of the cursor, where 019c represents physical column 20 and 039R represents physical memory row 40.

Relative Cursor Sensing

You determine the position of the cursor relative to the beginning of the currently displayed screen page by issuing the following escape sequence:

esc `

In response to this request, the terminal generates an esc & a followed by numeric values that specify the column number and the row number at which the cursor resides relative to screen row 0.

For example, assume that the cursor resides at column 20, memory row 40, and screen row 0 is at memory row 35.

You cause the following escape sequence to be issued from the computer:

esc `

The terminal responds with:

esc & a 019c 005Y

You use this response to determine the position of the cursor relative to the beginning of the currently displayed screen page, where 019c represents physical column 20 and 005Y represents physical row 6.

Terms Used In This Manual

A glossary of terms pertinent to the 2621 B Interactive Terminal is given in the following table. Being familiar with these terms and their definitions will help you to understand the descriptive material in this manual.

Column	A single character position within a row or line of data on the display screen. Beginning with the first character position at the left side of your display screen, the columns are numbered from 1 through 80.
Configuration Data	Your 2621 B has a set of configuration switches on the rear panel that are used to set such parameters as data transfer rate, parity, data communications handshake, terminator characters etc. Certain parameters can only be changed by changing the switch settings. Others can be changed from the keyboard in Configuration Mode.
Cursor	The cursor acts as a pointer for subsequent character-entry action. The cursor blinks to show you where the next character or space will occur. You can control cursor movement via cursor positioning keys, or escape sequence codes.
Data Communication	The means by which your terminal handles the transfer of data between itself and an external data processing device, such as a computer. The 2621 B supports asynchronous point-to-point data communication.
Data Transfer Operation	The process of transferring data from one device to another. For example, the transfer of data from the display screen (or display memory) to a remote computer, or to a peripheral device such as a line printer.
Display Memory	The random access display memory (RAM) portion of your terminal in which the results of your keyboard or data transfer operations are stored. The display memory stores up to 48 text lines of 80 character positions per line.
Display Screen	The cathode ray tube (CRT) screen portion of your terminal upon which the results of your keyboard or data transfer operations are displayed. The display screen format is 25 rows of 80 character positions per row. Text from display memory appears in screen rows 1 through 24. Row 25 is used to display the current function key labels and error messages.
Function Keys	A set of nine light-colored keys on your keyboard that cause execution of special functions such as cursor and text control, terminal control, and so forth. Eight of the function keys are located across the top of your keyboard. The remaining key (the Labels key) is located to the right of the character keys. The Labels key cap is unmarked and it is the only blank key cap on the keyboard.

Home Cursor	The cursor has two home positions: the left margin setting of the first row of display memory data (home cursor up), and the left margin setting of the blank line following the last row of display memory data (home cursor down). These home positions are obtained via cursor control function keys, or escape sequence codes.
Labels Key	This is the function key (with a blank key cap) located to the right of the character keys. The Labels key is used to select various screen labeled functions which you can access via the function keys.
Line	A string of from 0 through 80 characters appearing on your display screen and/or stored in display memory. A zero-length line is displayed as a blank line on the screen. The terms line and row are synonymous. Generally, line is used in reference to data in display memory while row is used for data displayed on the screen. See "Display Memory".
Local Operation	The off-line operation of your terminal. That is, without the aid of an external data processing device such as a computer.
Numeric Pad	A calculator-type numeric key pad is incorporated into the ASCII-character keyboard. This pad is useful for entering large amounts of numeric data. The numeric pad is accessed via the NUM key.
Page	The 24 lines of data (including blank lines) that can be displayed on your terminal's screen at any given time.
Parity	Parity refers to a check bit that is added as the eigth bit of each byte as it is transmitted, and checked for the correct value as it is received, over the data communications line.
Remote Operation	The on-line operation of your terminal; that is, using the terminal while actively connected to an external data processing device such as a computer.
Row	A single horizontal line on the display screen capable of containing a line of data from display memory. There are 25 rows on you terminal's screen. The first 24 rows are used for displaying text from display memory. Row 25 is used to display function key labels, the active modem indicator, current column position pointer, and error messages. The terms row and line are synonymous. Generally, row is used in reference to data displayed on the screen while line is used for data in display memory. See "Display Screen".

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