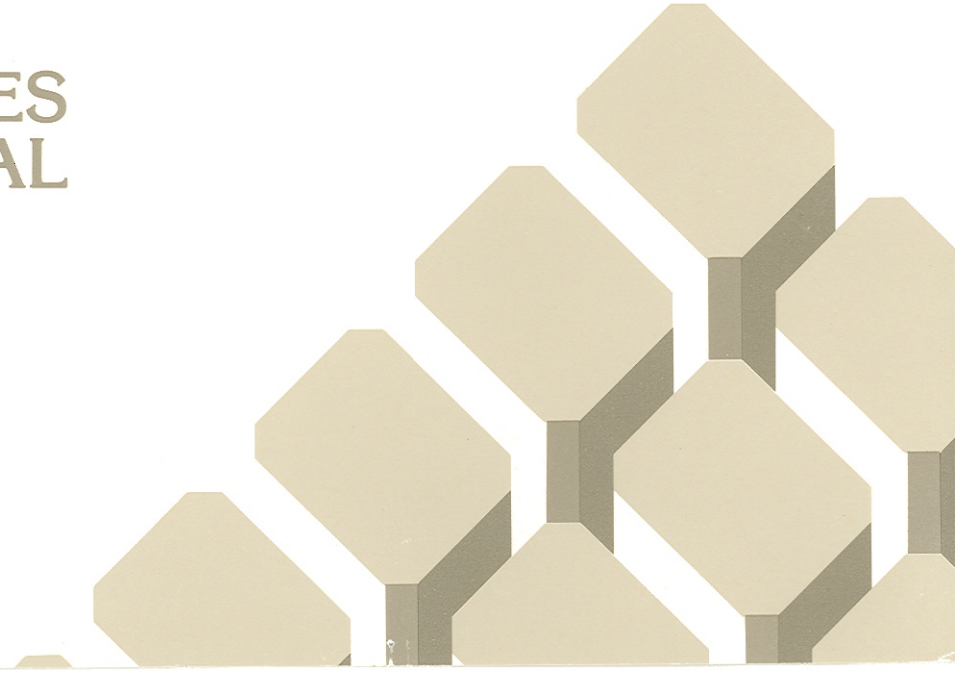
ZENITH data systems

DESKTOP COMPUTER SYSTEMS

THE QUALITY GOES IN BEFORE THE NAME GOES ON

ZTX-10 SERIES USER'S MANUAL



Personal Information Terminal

ZTX-10 Series User's Manual

First Printing
Printed in the
United States of America

ZENITH | data systems

WARNING

This equipment has been verified to comply with the limits for a Class B computing device, persuant to Subpart J of Part 15 of FCC Rules.

This equipment generates and uses radio frequency energy for its operation and if not installed and used properly, that is, in strict accordance with the instruction manual, may cause interference to radio and television reception. It has been type tested and found to comply with the RF emission limits for a Class B computing device which is intended to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which you can determine by turning the equipment off and on, try to correct the interference by one or more of the following measures:

- Move the equipment away from the receiver being interfered with.
- Relocate the equipment with respect to the receiver.
- Reorient the receiver antenna.
- Plug the equipment into a different AC outlet so that the equipment and receiver are on different branch circuits.

If you need additional help, consult your dealer or ask for assistance from the manufacturer. Customer service information may be found on the inside back cover of this manual or on an insert sheet supplied with this equipment. You may also find the following booklet helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402 - Stock No. 004-000-00345-4.

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REGISTRATION

To receive full benefits of your Warranty, complete and mail the accompanying Registration Card. Also, write the series and serial numbers of your equipment below. Mention these numbers in any correspondence you have with Zenith Data Systems about this equipment.

Model _____
Series _____
Serial # _____
Date Purchased _____

CAUTION

Do not remove the cover from the Video Monitor or Terminal. If service is required, return the unit to your dealer.

Read the "Monitor Operating Guide" carefully before you connect the Monitor to a power line.

DO NOT attempt to repair your Personal Information Terminal. Take it to an authorized agent of Zenith Data Systems.

INTRODUCTION

Your Zenith Data Systems Personal Information Terminal will let you "talk" with many RS-232 devices. Built-in cues and prompts make it easy to use as a Terminal. Even a person without typing skill or computer training will find the Terminal easy to use.

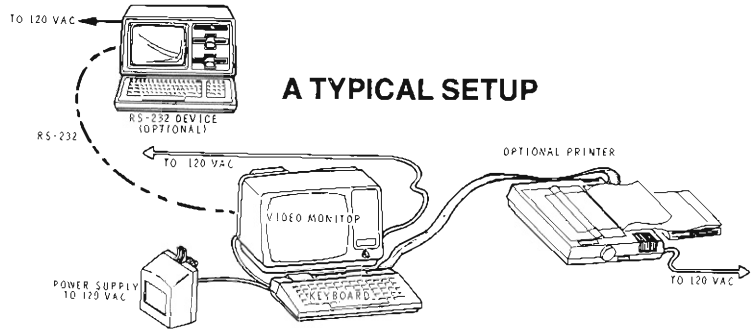
When you have this Terminal connected through an optional external modem (modulator/demodulator) to a telephone line, you can "talk" with information services or data banks, with another such Terminal with modem, or with any terminal that has a compatible modem. With an optional printer, you can have a paper printout of your "conversation", or use your Terminal as an electronic typewriter.

After you have installed your Terminal, you will see either a message or a Directory and a list of Actions displayed on the screen. From the list of Actions, you can change the Directory to add or delete listings. With a single keystroke you can select the desired action. Then, either sub-actions or "prompts" will appear on the screen to help you perform the action.

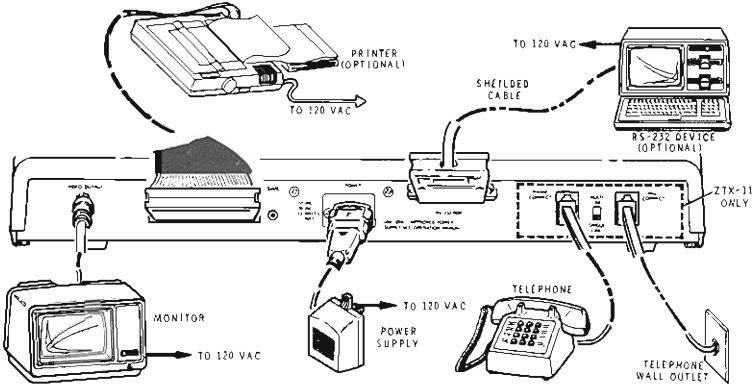
If you connect your Information Terminal to an intelligent modem, then you can enter phone numbers into the Directory, and use the Information Terminal to automatically dial any of those numbers via the modem. A single keystroke will quickly "put you in touch" for a data call to a computer data bank, time-sharing service, or another Information Terminal.

This Manual will tell you how to set up and operate your Terminal in a short time. The Operation section will tell you how to store numbers in the Directory, and go "On Line" with a subscription information service. Later sections of the Manual will present a detailed description of the keyboard and its characters, plus the special function and command keys.

The Technical Manual offers information on such things as ESC (escape) sequences, ASCII (American Standard Code for Information Interchange) characters, and Graphics capabilities. This information will allow the advanced user to more fully apply the many unique capabilities of the Terminal.



A TYPICAL SETUP



REAR PANEL CONNECTIONS

SETUP AND TESTING

Whether at home or in a business environment, you will want to set up your Information Terminal for greatest convenience and ease of operation. Select a desk or table of the right height (standard height is 27 inches). It should have a surface area large enough for the Keyboard and Video Monitor, with room for reference materials and note taking. Consider also whether or not you will use a printer. If so, allow sufficient room.

Be sure you have enough 120 VAC electrical outlets available to power the Keyboard, Monitor, and RS-232 devices, as well as a printer (if used).

A typical setup is shown at the left, with an optional printer and RS-232 device, and the location of the sockets and connectors on the rear panel of the Terminal. Perform the following steps to interconnect your equipment.

- Connect a shielded cable from the VIDEO OUTPUT jack on the rear of the Keyboard to the VIDEO IN jack on the Monitor. Set the Monitor CHARACTER switch to 80, if your Monitor is so equipped.

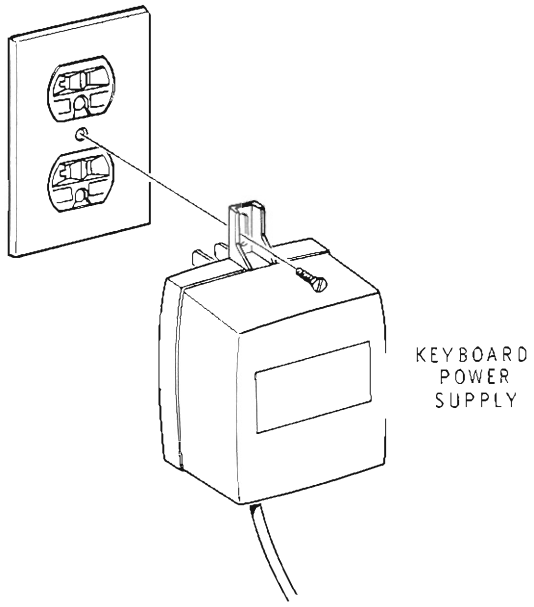
- Connect the Monitor power cord to an electrical outlet and place the Monitor power switch in the ON position. This will allow the Monitor's cathode ray tube to warm up while you complete the setup.

- If you have a printer, refer to "Using a Printer" on Page 42 for the proper type and connections. Then connect its cable to the PRINTER socket on the rear of the Keyboard and connect its power cord to an electrical outlet.

- If you have a RS-232 device with an RS-232 interface, attach it with a shielded cable as shown on Page 8.

- Connect your Keyboard power supply cable to the POWER socket, and plug the power supply into an electrical outlet. First remove the plate screw from the wall outlet and use it to mount the power supply securely, as required by Underwriters Laboratories.

The Monitor screen should now display the words ON LINE at the top of the screen, and a blinking cursor should be at the upper left-hand corner of the screen.



NOTE: The Keyboard is live whenever its power supply is connected between an AC outlet and the POWER socket on the rear panel. Although the rear panel of your Keyboard may become quite warm to the touch after a period of operation, this is normal and presents no danger.

Initial Turn-on

You may need to adjust your Video Monitor for optimum viewing in your setup. Familiarize yourself with the adjustments as described in your "Monitor Operating Guide", then make the adjustments as needed:

- Adjust the Black Level (Brightness) and Contrast controls for good visibility under the lighting conditions in your room.

You may now use your Terminal as an RS-232 Terminal that operates at 9600 baud. However, you should first read the rest of this Manual to become more familiar with your Terminal and better understand how to use it.

When first plugged in, your Terminal is "ON LINE." Then while you simultaneously press and hold down the CTRL and SHIFT keys, press down the SPACE BAR. The screen will now display:

```
Press HELP      OFF LINE
```

Press the HELP key.

If a message appears on the screen that asks for your serial number, enter the serial number of your Terminal (located on the bottom of the keyboard), or another number that is of some significance to you and press the RETURN key. The screen will then display the prompt "Hold SAVE button, then hit RETURN". Press and hold the SAVE button (located on the back of the Terminal) as you press the RETURN key. Release the keys after you hear a beep. The serial number of your particular Terminal will then be stored in the battery-backed up memory. You should not see this request for a serial number again.

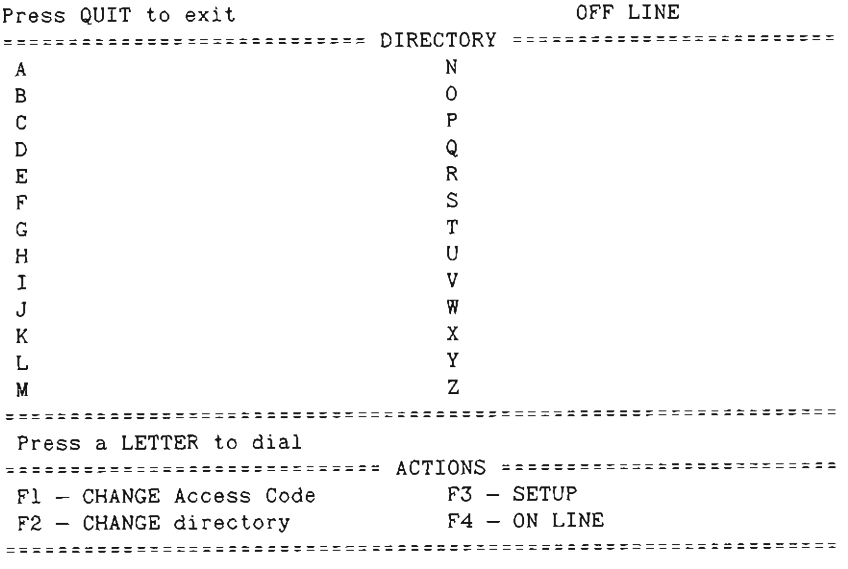
A special test of your Terminal's electronics is also run automatically at this time. If there is a problem, a display will be visible with the word ROM shown as (ROM). If you see this display, contact your nearest ZDS dealer for service assistance. You should not see this display unless there is a problem with your Terminal.

NOTE: It is a good idea to leave your Terminal plugged in for at least 16 hours to allow the internal battery to become fully charged. This battery permits the storage of information (entries you SAVE) even if power is removed from your Terminal.

The Main Menu should now appear on the screen. (See the fold-out from this page.) If your Monitor screen remains dark with no message or menu, try readjusting the Black Level (Brightness) control on your Monitor. If you still do not see a message or menu, refer to your Monitor Manual's "In Case of Difficulty" section.

- With the Main Menu displayed on your screen, adjust the Height and Width controls on your Monitor so the display properly fills the screen. Observe the corners of the display to be sure no characters or lines are lost. Also, leave the bottom line of the menu one and one half inches from the bottom of the screen.

- Press QUIT; the Main Menu will disappear, leaving only a "Status Line", including the prompt "PRESS HELP". The status line will always display whether or not there is a menu or directory on the screen, but, the prompt information may differ. The status line and menu or directory are the starting points for operation of your Terminal.

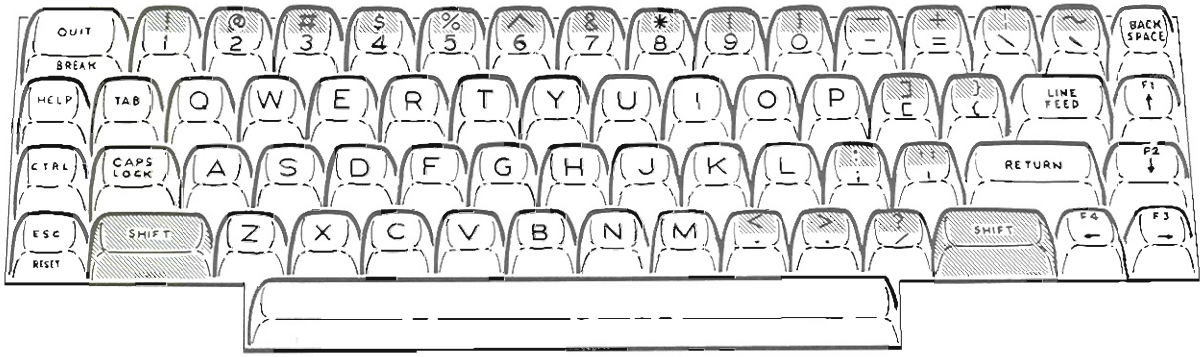


THE MAIN MENU

OPERATION

Operation of the Information Terminal is quite simple. Whether you use it primarily to communicate with a remote computer time-sharing service, or another terminal, or with an RS-232 Compatible modem as an automatic telephone dialer for frequently-called phone numbers; you will find it easy to select functions with a single keystroke. Messages and prompts that display on the screen will guide you through successful communications.

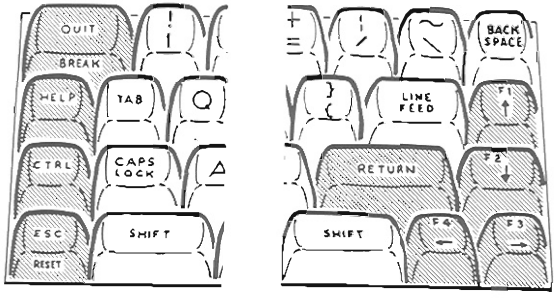
The following pages will introduce you to the Keyboard. Then the Terminal will be described, including the Status Line, the Main Menu, and the Actions Menu. Practice examples will let you enter information in the Directory. The SETUP menu and the operating parameters will also be discussed. Operation of the Keyboard is described later in this Manual.



The Keyboard

The typewriter-layout Keyboard has 26 letters, 10 numerals, 11 punctuation and special character keys, 11 control or function keys, 4 cursor control/action-select keys, and a space bar, as shown above. The lower-case letters, numerals, and characters on the lower half of the key tops are produced as long as you do not press the CAPS LOCK or SHIFT keys.

Upper-case (capital) letters and the characters on the upper half of the key tops are produced when you hold a SHIFT key down while striking a letter or character key. However, only the alphabet letters are affected by the CAPS LOCK key. Even with the CAPS LOCK key pressed, you MUST hold down a SHIFT key to produce any of the characters printed on the upper half of the key tops, shown shaded in the illustration above.



The Terminal

The following paragraphs will tell you how to use the control and function keys (QUIT, HELP, CTRL, ESC, F1, F2, F3, F4, and RETURN) to select Actions from the Menus, and the letter keys to respond to most prompts. In the practice examples, the CAPS LOCK key will not affect your typed responses.

The practice examples will show you how to select Actions from the Menu, enter a number in the Directory, and communicate with an information service or another Information Terminal.

THE CURSOR

The cursor is a small block of light, either blinking or steady, that appears on the screen under various conditions. You first saw the cursor when "Press HELP" appeared on the Status Line. You will see it again when you select Actions, and after instructions or prompts on the screen.

Since the cursor is intended to attract your attention, it is normally blinking. However, you will be able to change it to a steady block of light after you read the "Setup" section of this Manual.

THE STATUS LINE

At the top of the Monitor screen (see the Main menu, fold-out from Page 12), a Status Line shows you whether the Terminal is ON LINE or OFF LINE. The Status Line also shows the prompt "Press HELP" or "Press QUIT to exit". The Status Line will remain on the screen whether or not a Menu is displayed, but the prompt message may change.

You can toggle the Terminal back and forth between ON LINE and OFF LINE by using the CTRL, SHIFT, and SPACE BAR keys. Use this combination of keys only when ON LINE or when the "Press HELP" prompt is showing. Use this feature by pressing all three keys down and then releasing the SPACE BAR first.

THE MAIN MENU

With your Terminal set up as directed earlier, you either have the message "Press HELP", or the Main Menu on your Monitor screen. If it says "Press HELP", do so now and the Main Menu will appear.

The Main Menu (fold-out from Page 12) contains a Directory, the words "Press a LETTER to dial", and the ACTIONS: "CHANGE Access Code", "CHANGE directory", "SETUP", and "ON LINE". The Main Menu is the starting point for all Actions available on your Terminal. If you "Press QUIT to exit", the screen will go blank with only the Status Line and "Press HELP" showing. As you select Actions from the Main Menu, secondary menus and prompts will appear. Whenever you press QUIT to exit from a secondary menu, the previous menu (from which you selected the Action) will return.

ACTIONS MENU

Below the Directory on the Main Menu are ACTIONS that you can select by pressing a function key. Each of these Actions will be described, with practice examples, on the following pages.

NOTE: Although the function keys (F1, F2, F3, and F4) show on the upper half of the cursor control key tops, you need not press the SHIFT key when you select an Action from any menu.

```
================================================================
 Press a LETTER to dial
============================== ACTIONS ==========================
 F1 - CHANGE Access Code          F3 - SETUP
 F2 - CHANGE directory            F4 - ON LINE
================================================================
```

F1 — CHANGE Access Code

An access code, composed of four digits that act as a password, is built into your terminal so you can secure your directory against unauthorized use. Function key F1 is only used if you want to change this access code. The code for your Terminal, as it is shipped from the factory, is set to 0000. This is known as the "default" setting, where no access code will be needed to gain full control of your Terminal. If you want the security of an access code, you can use this key, as directed below, to select any four *digits* and enter them into the Terminal's memory. Once enabled (turned on), entry of the correct access code will be required *before* you can gain entry to or access the directory.

We strongly recommend that you select a four-digit code which will mean something to you, and be easy to remember. Then write this code number sequence down and keep it in a safe place. Once you have changed the access code from the factory-set 0000, the Terminal will only respond to successful entry of the correct access code. If you forget your access code, you will have to contact your local dealer for assistance in returning your system to the original default (no access code). In doing so, all information you have entered into your directory will be erased; so be sure you record and save the access code.

Use the following procedure to change the access code.

- Press the F1 key. You will see your directory disappear and be replaced by the message shown in the screen illustration below.

```
Press QUIT to exit                                  OFF LINE
 Access Code:1234
 Hold SAVE button, then hit RETURN
```

- Either enter a new access code or the digits 0000 (for no access code). This code must be entered as only four numbers. Suggested codes could be: your month and day of birth, using zeros to make up four digits (i.e. 0825, August 25); the last four digits of your Social Security Number (i.e. 1620); or perhaps your house address. Remember, you must make a separate record of this four-digit code to ensure that you do not forget it. Once enabled, the access code can only be changed by ZDS service *if you forget the access code*. You will, however, on entering the correct access code, be able to change the code any time you desire, or to enter 0000 to defeat the requirement for an access code entry.

- After you type in the four digits, press the RETURN key. The screen will now display the message "Hold SAVE button, then hit RETURN". [Press and hold the SAVE button (located on the back of the Terminal) as you press the RETURN key. Release the keys after you hear a beep.] By following this message, you will have entered the new access code into the Terminal's memory and be returned to the Directory.

  If you now press QUIT to exit, your screen will display the message "Press HELP" as well as the "OFF LINE".

- Now press HELP. Your screen now prompts you for your "Access Code". Type in the four numbers you have selected; *do not* press RETURN. If you have successfully entered the access code, the Directory will appear. If, however, you did not enter the access code correctly, your screen display will return to the "Press HELP" prompt previously described.

F2 — CHANGE directory

NOTE: You will find the following information useful if you connect your Information Terminal to an external modem.

You can store a name and phone number in each of the lettered areas that appear in the Directory. However, if you intend to "dial" these numbers and communicate via the telephone lines, you must supply an RS-232 compatible modem. The number of listings you can enter in the Directory may be limited by the number of characters you type in each entry. Keep each entry short if you want to maximize the number of entries. For example, enter only a first name, nickname, or initials, and omit the hyphens in the telephone numbers unless they are necessary to inject a pause into the dialing operation. You may enter up to 12 letters or characters for the name.

- From the Main Menu ACTIONS, select F2 (CHANGE directory). You now have the options shown below.

```
============================ ACTIONS ============================
 F1 - ADD                          F3 - MODIFY
 F2 - ERASE                        F4 - ERASE ALL
=================================================================
```

- Select F1 — ADD (Directory entry). Pick a letter (unused) where you wish to store a name and phone number and type that letter after the screen prompt "Entry to ADD". The screen will next prompt you with "Name:"; type the name and press RETURN.

- After the "Phone:" prompt, you should press the RETURN key and not enter a phone number. This will save Terminal memory space, and you will have to type in the number later to make the call anyway.

The next prompt appearing on the screen will be "Logon:". You should now enter the necessary information to permit your Terminal to access and logon to the information service or data base corresponding to the telephone number. This information will vary from data or information service to service, and will also depend on the type of modem you have selected. Consult the manual that accompanies your modem, as well as the informational package from your information or data service.

Information for the logon to a data or information service will generally follow a specific format, where you will respond to specific prompts or questions by entering information, passwords, and identification of your terminal type, etc. Examples of logons for a variety of information services are included in Appendix A of this Manual. Their format takes into account special features of your Terminal, where a single letter will take the place of a word. These letters and the words they represent, together with their meanings, are shown below.

The colon (:) automatically follows the letter you type.

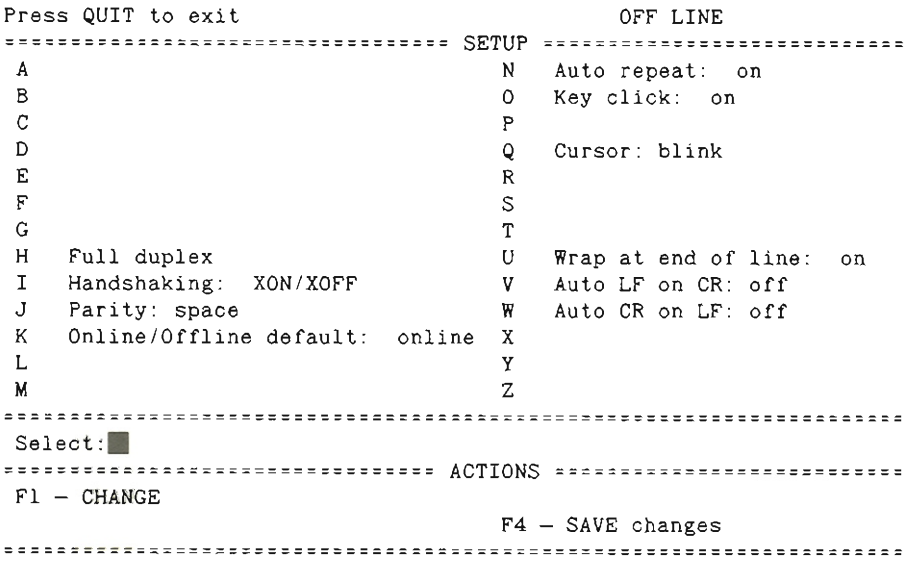
LETTER	WORD	MEANING
R:	Receive	Your Terminal will receive whatever follows the colon.
S:	Send	Your Terminal will send whatever follows the colon.
D:	Delay	Inserts a fixed-time delay into the logon sequence to permit receipt or transmission of information.

(For more information, see "Auto-Dial via RS-232" in the Technical Manual.)

Your entry is terminated (ended) when you press RETURN. You will then see a prompt "OK? Y/N". Assuming the entry is correct, you will type Y for yes and follow the next prompt: "Hold SAVE button, and hit RETURN" as described previously. If your entry contains an error, you may type N for no and reenter the information. When you have saved your entry, it will appear on your Directory listing.

F3 — SETUP

From the Main Menu (fold-out from Page 12), select F3 (SETUP). The Directory will change to a list of setup parameters (H, I, J, etc.). The Actions menu will allow you to CHANGE (F1) these parameters, or SAVE changes (F4). Typical values for the most commonly used parameters, as shown on the fold-out from this page, were preset in your Terminal when power was first applied. They represent good starting points from which you may want to customize your Terminal to meet specific requirements. As you read this section, you may wish to change these parameters and experiment with the results. To change a parameter, first type the letter for the parameter you wish to change, and then press F1 to effect the change.


Press QUIT to exit
OFF LINE
SETUP
A
B
C
D
E
F
G
H Full duplex
I Handshaking: XON/XOFF
J Parity: space
K Online/Offline default: online
L
M
N Auto repeat: on
O Key click: on
P
Q Cursor: blink
R
S
T
U Wrap at end of line: on
V Auto LF on CR: off
W Auto CR on LF: off
X
Y
Z
Select:
ACTIONS
F1 – CHANGE
F4 – SAVE changes

SETUP MENU

To change a parameter, first type the letter for the parameter you wish to change, and then press F1 to effect the change.

For example, to change parameter H (half-duplex) to full duplex:

- Type the letter H.
- Press the F1 key.

You will see the SETUP menu change the listing for "H" to Full Duplex. To restore the parameter to half duplex:

- Press the F1 key.

  To save this setting, press the F4 key, and follow the prompt "Hold SAVE button, then hit RETURN" as described previously.

NOTES:

1. The parameter modes shown in parenthesis in the following paragraphs are the modes you may change to in each of these parameters. The "default," or mode that will appear on initial power-up, is shown immediately after the colon.

2. When you save an option, all options are saved as they are presently configured even if they are not on the menu. This includes such things as baud rate, cursor, key click, etc.

H *Half Duplex (full).* Half duplex operation is used when you are communicating with another terminal. Full duplex operation does not display what you type on your monitor screen but rather, relies on the host Terminal to "echo" back each character along with responses and information from the host Terminal or computer. Since your Information Terminal does not echo received signals, you will use the half duplex mode when you are communicating with another terminal or host computer. Each Terminal's monitor will simultaneously display what is sent and received.

I *Handshaking: None (XON/XOFF).* This is the ability of a terminal and computer to send stop and start signals. For example if you were receiving and printing a document faster than your printer could print, a signal would be sent to stop the host computer and allow the printer to catch up. To manually stop or interrupt the computer, press and hold CTRL; then S. To restart, press and hold CTRL; then Q.

J *Parity: Space (Mark Even Odd).* This allows you to set your Terminal to coincide with the host computer or information system's requirements. Cycle through the options by pressing the F1 key several times.

K *Online/Offline default:online(offline).* See "F4 — ON LINE," on Page 24.

N *Auto repeat:on (off).* This allows the keyboard characters to repeat if they are held down for more than 1/2 second.

O *Key click: on (off).* This is the key-click sound you hear as you press a key.

Q *Cursor:blink (steady).* The cursor can either blink or be steady.

U *Wrap at end of line:on (off).* Causes the cursor to return to the left margin and begin a new line when it reaches the right margin.

V *Auto LF on CR:off (on).* Includes a line feed (starts a new line) when a RETURN is received from either the keyboard or the remote computer.

W *Auto CR on LF:off(on).* Includes a RETURN when a line feed is received from either the keyboard or a remote computer.

If you have not saved any of the parameters that you changed while experimenting, you can restore your Terminal to the original (default) settings by resetting the Terminal. To reset your Terminal, simultaneously press the CTRL SHIFT and ESC keys. Then press HELP (enter the access code if enabled) and the Main Menu will be restored on the screen.

F4 — ON LINE.

When you are communicating with another computer or terminal (this is referred to as being "on line"), you may need to go OFF LINE to change a parameter, or for some other reason. If you press and hold CTRL and SHIFT, and then press the SPACE BAR, you will go OFF LINE without terminating the call. You may then select HELP to call up the Main Menu, make your changes, and then press F4 to return to ON LINE.

DATA COMMUNICATIONS

Your Information Terminal is capable of transmitting to and receiving data communications from a host computer, or another Terminal, or a data or information service. It can transmit and receive this data from one unit directly to the other through the RS-232 interface port (located on the rear of the keyboard module); or through this port and a compatible modem (not supplied with your Terminal) and your local or long distance telephone lines. In the following paragraphs, you will learn about the RS-232 interface, baud rates and other information you will need to know in order to use the data communications capabilities of your Information Terminal

TECHNICAL NOTE

The RS-232 port, communicates at baud rates of up to 9600 (the factory preset default). The data transmission format is serial asynchronous, with one start bit, eight data bits and one stop bit. You can select different parity modes from the SETUP menu. Baud rates are user-selectable via escape sequences. The Terminal is configured for DTE, and does not support hardware handshaking. However, the Terminal will support software handshaking.

RS-232 Interface

It is the RS-232 interface port on your Terminal that makes it possible for you to communicate with other personal and business computers, as well as other devices which have a serial RS-232 port. But to use this port, you will need a shielded cable with the appropriate connectors for both the Terminal and the remote computer or device. NOTE: Use of, or configuration of your Terminal for RS-232 interface requires that you have a good knowlege of your computer's operating system and the devices you desire to interface. More information, and technical specifications about interfacing via the RS-232 port, will be found in your Technical Manual.

The following chart identifies the pins of the RS-232 connector, P302 (located on the rear panel of the keyboard).

PIN	FUNCTION
1	Ground
2	Transmit Data (Tx Data)
3	Receive Data (RX Data)
4	Request to Send (RTS)
7	Signal Ground
20	Data Terminal Ready (DTS)

PORT COMMUNICATION MODES

"Baud rate" is a numerical representation of the speed in which information is transferred from one system to another. The higher the baud rate, the faster the transfer. Your Terminal, is set up to operate at 9600 baud when you receive it. You might however, want to change the baud rate, for a variety of reasons.

Your Information Terminal is set to operate in the RS-232 Terminal mode when you receive it; this is called the "default mode" (the factory-set mode). This RS-232 Terminal Mode, Mode 1, lets you communicate through a cable from another local RS-232 compatible device to the RS-232 port on your Terminal. This direct-wired connection will enable you to communicate at faster baud rates.

However, be sure to read the "Baud Rate" section, which follows, in case you should want to change to a baud rate slower than 9600 baud, or use some of the features of other modes, which may require faster baud rates.

Baud Rate

If you were trying to communicate with another device which operated at a different baud rate, you would have to alter your baud rate, or have the other device's baud rate changed. However, if you are using a modem, you will normally use either 300 or 1200 baud, depending on the type of modem you have. Consult your Information Terminal's Technical Manual or the manual that accompanies your modem for the maximum baud rate permissible.

As you learned earlier, communication or data transfer is possible via the Terminal's RS-232 port. You can change the baud rate from 110 to 9600, which will allow for faster data transfer.

HOW TO CHANGE BAUD RATES

NOTE: You can only make baud rate changes in the OFF LINE mode.

- Press the QUIT key three times or until the "Press HELP" prompt appears.
- Press the ESC key.
- Press the r key (this *must* be a lower case "r").
- Press one of the following *upper-case* letters corresponding to the baud rate desired:

A.....110	E.....1200
B.....150	H.....2400
C.....300	J.....4800
D.....600	L.....9600

Examples

To Set a Baud Rate of 110:

- Go OFF LINE (press the QUIT key until the "Press HELP" prompt appears).
- Press the ESC r A keys in sequence, one after another.

To Reset to 9600 Baud:

- Go OFF LINE (press the QUIT key until the "Press HELP" prompt appears).
- Press the ESC r L keys in sequence, one after another.

Interrupting Communication

If you must interrupt your communication (to change a parameter in the SETUP menu or for any other reason), press and hold the CTRL and SHIFT keys. Then press the SPACE BAR. This will take your Terminal OFF LINE without you having to hang up or disconnect the call. Then you can resume by calling the Main Menu to your screen and pressing F4 — ON LINE.

When you are through communicating with the host, hang up by pressing CTRL ESC. Refer to the instructions supplied by your information-service for the correct procedure to log off.

Remote Terminal

You can communicate with a remote terminal (such as another Information Terminal) in the same manner as you would with an information-service or data service, except that requests and responses for identification are not normally exchanged. You can establish communications by directly connecting the RS-232 ports, or with an RS-232 compatible modem.

Before you attempt to dial up a remote terminal (using an optional modem), check your SETUP Menu to be certain that the Terminal is set for Half duplex and the Auto LF on CR is on. After you dial the remote terminal, watch for the Menu to disappear and the Status Line to show ON LINE.

Type an appropriate greeting to the person using the remote terminal such as:

This is George calling Hi: RETURN RETURN

Always end your messages by sending two RETURNS to signal that you are waiting for a reply. The person at the other (remote) terminal should also send two RETURNS when he is ready for your reply. Then you can continue your conversation with the remote terminal.

If you are making communications directly via the RS-232 port, your SETUP Menu should be configured to the same baud rate as the remote Terminal or computers. For example, if your remote Terminal or computer is set up for 4800 baud, your Terminal must be set to 4800 baud.

If you must interrupt your conversation (go OFF LINE) for any reason, press and hold the CTRL and SHIFT keys. Then press the SPACE BAR. Then you can press HELP to bring up your Main Menu and perform whatever Actions you must. When you press F4, you will go ON LINE again.

Information-Sharing Services

Some information services and data services are located in distant cities, which could mean a long distance telephone call for you. However, you can access most of these services through one or more of the data networks, such as Telenet or Tymnet, which frequently have local telephone numbers. Information about these data networks and the local access phone number can be found in the information package which accompanies your paid subscription to the information or data service. This package will include the protocol (format) you address the service, and a password, as well as instructions for using them. You will, however, need to acquire an RS-232 compatible modem in order to make use of these data networks, or information and data services.

Auto-Dial Via RS-232

Assuming you have acquired and connected an "intelligent" (software controllable) modem to your Terminal, you are ready to make a data call. While space will not permit descriptions of all the various intelligent modems available, an example of setting up an auto-logon — auto-dial call via a Hayes 1200 baud modem (Heath catalog, Model WH-53) will be described below. The interconnecting cable from your Terminal to the modem should be a shielded RS-232 cable assembly.

Changing the Baud Rate:

NOTE: The first part of this example deals with ensuring that your Terminal's baud rate is compatible with the 1200 baud rate modem. As you may recall, your Terminal is shipped with a baud rate of 9600.

- Be sure the Terminal is OFF LINE.
- Press the QUIT key three times, or until the "Press HELP" prompt appears.
- Press the ESC key.
- Press the r key (this *must* be a lower-case "r")
- Press the E key (this *must* be an upper-case "E")

Your baud rate is now set to 1200. If you want the Terminal to be at 1200 baud each time you power up the Terminal, then you must save this change as follows:

- Press the HELP key and enter your access code.
- The main menu will be displayed. Press the F3 key to obtain the Setup menu.
- Press the F4 key and save the new baud rate by using the SAVE button and RETURN key.

Refer to Appendix A (Page A.1) for logon examples.

ENTERING THE AUTO-LOGON CALL

With your Main Menu on screen:

- Press the F2 key.
- Press the F1 key.
- In response to the prompt, enter the letter of an *unused* Directory entry.
- In response to the name prompt, type INTERFACE and RETURN.
- Press the RETURN key.

NOTE: This call may be a long distance toll call from your area. At present, it is not serviced by the data networks.

- At the "Logon:" prompt, enter the following:

D: RETURN
S: ATPD1,2139269553 RETURN
S: RETURN
R: > RETURN
S: NEW RETURN
R: name RETURN
S: Type your first name and RETURN
R: name RETURN
S: Type your last name and RETURN
R: ? RETURN
S: Y RETURN
R: number RETURN
S: Type your telephone number as 312-555-1212 RETURN
R: ? RETURN
S: Y RETURN
RETURN
RETURN

This concludes the auto-dial, auto-logon example. At this point, you could either make use of the data service, or by typing the word OFF, terminate your call.

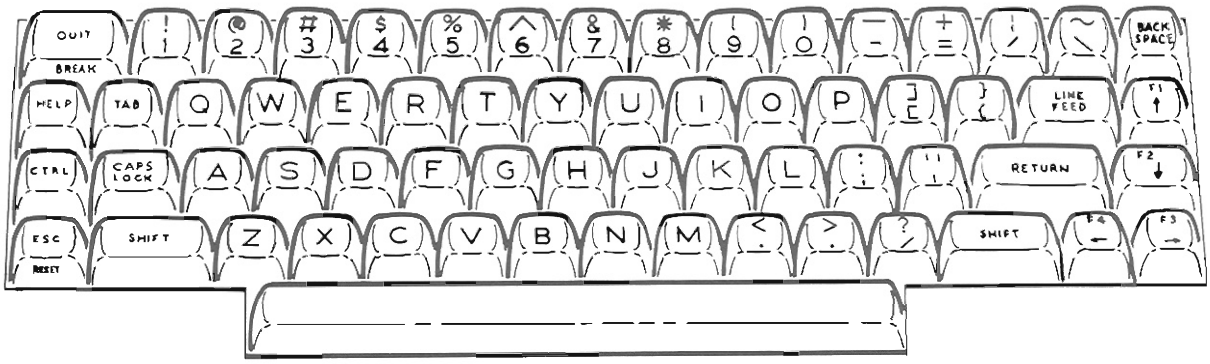
Examples of other information services using the Hayes Smartmodem can be found in Appendix B of this Manual. If you are using another type of modem, consult your user's manual for details on the protocol required to use your particular modem.

OTHER FEATURES

Your Terminal also has a special feature called the "downloadable logon". This permits you to use a remote computer and a program written in BASIC to answer the prompts required by a number of information and data services, and then SAVE this information as a listing in your Directory. Additionally, there are now some data services which will permit a similar set of entries and then send the data back (download it) to your Terminal where you can SAVE it as a Directory entry. However, this service is quite new and you should consult the information package accompanying your data or information service subscription to see if this is available and for specific instructions in its use. A sample BASIC program for the downloadable logon feature may be found in the Technical Manual.

You can enable (turn on) another feature, "Answer-Back Serial Number", with the control sequence CTRL E (see "Other Functions, Page 49). On receipt of this control sequence from an information service, your Terminal will transmit the serial number of your Terminal and a RETURN back to the service. This feature, if it is offered by your information service, adds an additional security feature by comparing the serial number automatically transmitted to the serial number assigned to your Terminal and password. This unique process is not yet available from all information services. Consult your information package for more details on if this service is offered and how to enter the serial number into your information or data service.

KEYBOARD OPERATION



With a Menu (Directory and/or Actions list) displayed on your Monitor, some keys on the Keyboard will respond differently than when you have data, text, or just a cursor displayed along with the Status Line. Also, the alphabet, numeral, and character keys function differently when unshifted, shifted, and with the CAPS LOCK key down. The function of the various keys will be described in this section of the Manual.

You will become more familiar with the Keyboard if you try the keys as they are described. Have your Keyboard and Monitor set up with only the Status Line (Press HELP, and OFF LINE), showing as you read the following paragraphs. If you have a printer, connect it as described on Page 42, turn it on and make sure it is ready to print.

Check your SETUP parameters (Page 21) and be sure the following are set as indicated. If necessary, change the parameters and then save them.

N Auto repeat (on)
O Key click (on)
Q Cursor (blink)
U Wrap at end of line (on)
V Auto LF on CR (off)
W Auto CR on LF (off)

The following description of the Keyboard will assume that the above parameters are set.

NOTES:

1. As you become familiar with the Keyboard, you will notice that when typing fills a line on the screen, the cursor will automatically move to the beginning of the next line. This is the "Wrap at end of line" feature that was set to "on" in the SETUP menu.

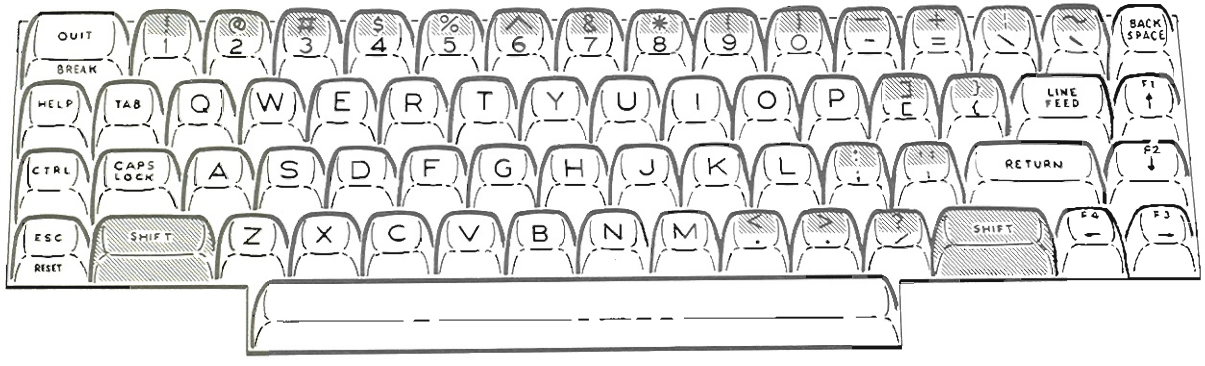
2. All alphabet, numeral, and character keys will repeat if held down for more than a half second. This is the "Auto-repeat" feature that was set to "on" in the SETUP menu.

3. If you fill the screen the typing, the first line will move upward (scroll), off the top of the screen, and the new line will shown at the bottom. NOTE: The first line of text is lost when it scrolls upward. In actual use, you would probably have read the first line, or output it to a printer or host computer before it scrolled upward.

4. If you have a printer connected to your Terminal, be sure its power switch is in the ON position, and it is ready to print, if you intend to print out your text.

ALPHABET KEYS

Normally, you should have the CAPS LOCK key up, so lower-case letters will be produced by the 26 alphabet keys. If you press an alphabet key while you hold down either of the SHIFT keys, or with the CAPS LOCK key down, upper-case or capital letters are produced.

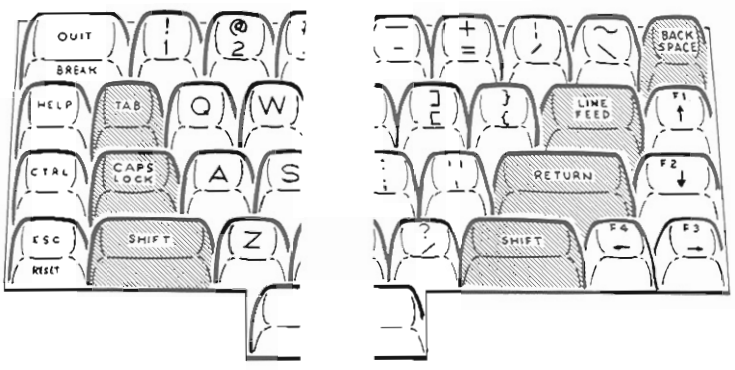


NUMERALS AND OTHER CHARACTERS

Numbers 1 through 9 and 0, and characters that are printed on the lower half of the key tops will be produced when you are typing unshifted or with the CAPS LOCK key either up or down. The CAPS LOCK key has no effect on the characters printed on the upper half of the key tops. They are produced ONLY if you hold down either SHIFT key while you press the character key. These characters are shown shaded in the illustration above.

CAPS LOCK

With the CAPS LOCK key down, all letters are produced in upper-case. However, as noted above, CAPS LOCK does not effect the numerals or characters printed on the lower half of the key tops. To produce the characters that are printed on the upper half of the key tops, you must hold down either SHIFT key while you strike the character.



OTHER TYPING KEYS

RETURN — When the Terminal is OFF LINE and only the Status Line is displayed, the RETURN key moves the cursor to the left edge of the next line on the Monitor screen if the Auto LF on CR is on. If the Auto LF on CR is turned off (SETUP menu), then the RETURN key will move the cursor to the beginning of the same line.

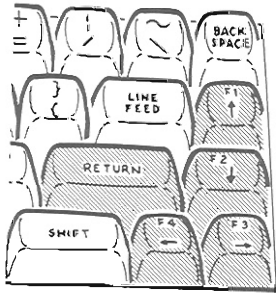
NOTE: The RETURN key is also normally used when the Terminal is ON LINE to a computer, or with a Menu on the screen, after you enter data in reply to a prompt, to execute a response.

LINE FEED — Moves the cursor to the start of the next line when Auto CR on LF is on in the SETUP menu. When it is off, LINE FEED moves the cursor to the same position on the next line. If the cursor is at the bottom of the screen and you press LINE FEED, text will scroll upward, losing the top line and leaving the bottom line blank — for continued typing.

BACKSPACE — Moves the cursor one space to the left each time you press the key until it reaches the left margin.

If you hold down the SHIFT key while you press the BACK-SPACE key, the screen will not change, but a DELETE code will be transmitted.

TAB — Each time you press the TAB key, the cursor moves to the first space in the next tab column. There are eight spaces in a tab column in this Terminal. If the cursor is within eight columns of the right margin of the screen, the TAB key will still transmit the TAB code, but the cursor will only move one column at a time until it reaches the right margin. NOTE: When you are ON LINE with a host computer, the code transmitted by the TAB key may be echoed as spaces to adjust the tab column to other than eight spaces wide.



CURSOR CONTROL KEYS

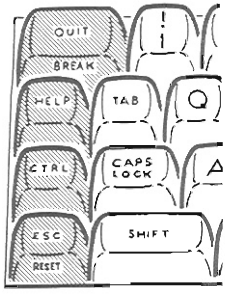
The cursor control keys move the cursor up, down, left, or right, as indicated by the arrows printed on them. Each press of the key moves the cursor one character or one line in the direction of the arrow. If you hold the key down, the cursor will move rapidly in the direction of the arrow. When the cursor reaches any edge of the screen, further attempts to move it in that direction will be ignored.

You can also control the cursor by using ESCape sequences. While some basic ESCape sequences are described under "Special Function Keys", a complete list of ESCape sequences is presented in the Appendix section of this Manual. Detailed technical descriptions of the ESCape sequences are contained in your Technical Manual.

ACTION SELECT (FUNCTION) KEYS

Whenever a Menu is displayed on the screen, the cursor control keys operate as Function keys (F1, F2, F3, and F4), and are used to select Actions from the Menu, as described in the "Operation" section of this Manual.

NOTE: Up to this point, the Keyboard has been described in the OFF LINE mode, without a menu displayed. The keys produced letters and characters, and the cursor control keys positioned the cursor on the screen. The following description of Special Function Keys will repeat some of the information that was presented in the "Operation" section of this Manual.



SPECIAL FUNCTION KEYS

You will use most of the following function keys while you are ON LINE with a host computer or terminal, which will be at the other end of the telephone line. These keys do not print on the Monitor screen, but send commands to the host.

NOTE: As with characters printed on the upper half of key tops, you must press and hold either SHIFT key while you strike a function key that calls for a SHIFT.

QUIT/BREAK — When the QUIT key is pressed while you hoid down either SHIFT, it becomes a BREAK key. When the Terminal is OFF LINE and a Menu is on the screen, the QUIT key (no SHIFT) will return the previous Menu to the screen, or, if the Main Menu is on the screen, it will remove all display except the Status Line.

While ON LINE the code transmitted by the QUIT key is interpreted by the host, and its function may vary.

When you hold down either SHIFT key and press the QUIT, BREAK, a BREAK or interrupt signal is transmitted to the RS-232 device. The RS-232 device interprets the BREAK signal and its meaning may vary from one RS-232 system to another.

HELP — If you press the HELP key while OFF LINE and without a Menu on the screen, you will be required to enter an access code if the access code has not been set to 0. Then, the Main Menu (Directory and Actions list) will appear. If you press HELP while you are ON LINE with a host computer, the screen may display a list of available functions and menus from the host, but only if the host computer recognizes the code that the HELP key transmits as a request for such menus.

CTRL (Control) — The CTRL key is used with other keys for control functions, and must be held down while you press and release the other key. Some control functions include the SHIFT key, such as ON/OFF LINE, hard RESET, and CHANGE mode. When you use these functions, you must hold down the SHIFT and CTRL keys while you press and release the other key.

ESC/RESET — The ESC key is followed by various other keys to generate commands called ESCape sequences. You should not hold down the ESC key while you press the accompanying letter or character. However, if the sequence requires a capital letter or a character that is printed on the upper half of the key tops, be sure to hold down the SHIFT key as you press the character.

A complete list of the ESCape sequences appears in the Technical Manual. The following are examples of some basic ESCape sequences.

Basic ESCape Sequences

	FUNCTION	ESC
	Clear screen display	ESC E
	Cursor to home position	ESC H
	Save cursor position	ESC j
	Set cursor to saved position	ESC k
	Insert line in text	ESC L
	Delete line	ESC M
	Printer ON (when OFF LINE)	ESC x:
	Printer OFF (when OFF LINE)	ESC y:
	Output page to printer	ESC ` (ESC, grave accent)
*	Printer ON/OFF (when ON LINE)	CTRL SHIFT P (CAPS LOCK will not do.)

NOTE: If you simultaneously press the SHIFT, ESC, and CTRL keys, and then release the CTRL key, you will reset the Terminal. Any parameters that you might have set and not saved in the SETUP menu will be returned to default or previously saved values.

* While this is not an ESCape sequence, it is a useful command to control a printer while you are ON LINE with a host computer or another terminal.

USING A PRINTER

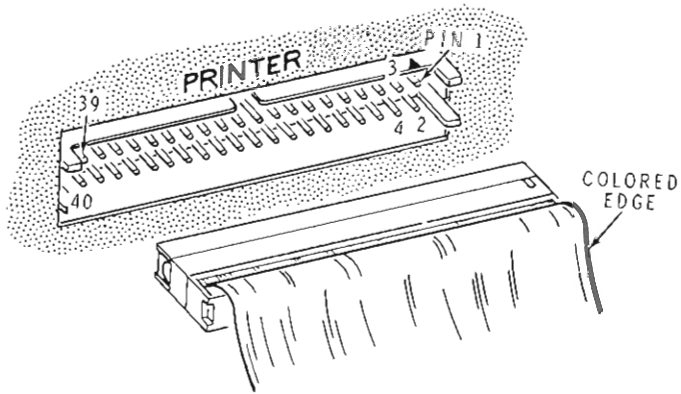
PRINTER PORT

PLUG-#3m-3417 SERIES OR EQUIVALENT.

DESCRIPTION	PIN		
DATA STROBE	1.	2.	
(LOW ORDER DATA BIT) D0	3.	4.	
D1	5.	6.	
D2	7.	8.	
D3	9.	10.	GROUND
D4	11.	12.	
D5	13.	14.	
D6	15.	16.	
(HIGH ORDER DATA BIT) D7	17.	18.	
ACKNOWLEDGE	19.	20.	
	21.	22.	
	23.	24.	
	25.	26.	
	27.	28.	NO CONNECTION
NO CONNECTION	29.	30.	
	31.	32.	
	33.	34.	
	35.	36.	
	37.	38.	GROUND
	39.	40.	NO CONNECTION

If you have a line printer with a Centronics compatible parallel interface, you can use it to provide a printout of your data communications, or to make your Terminal function as an electronic typewriter.

The Printer port on the rear panel of your Terminal requires a 3M #3417 series (or equivalent) connector. Check your printer specifications for the correct pin connections of the connector as shown at the left.



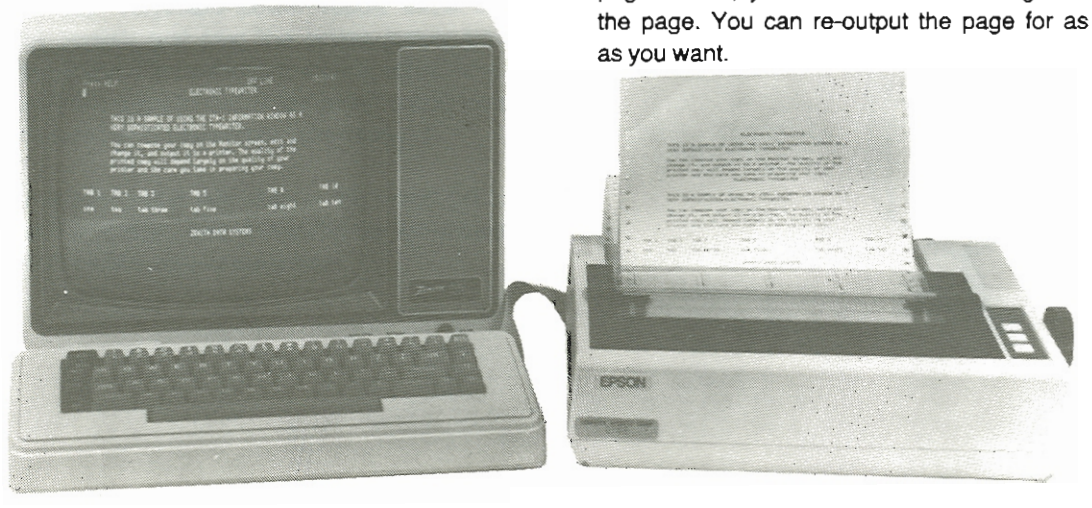
With your printer connected to a power receptacle and to the Printer port on the rear of the Keyboard, be sure its Power switch is on and that it is "on line" and ready to print.

If you turn on the printer from your Keyboard (ESC x: or toggle with CTRL SHIFT P), text will output a line at a time. Or, you can output a page of text by pressing ESC (escape, grave accent), even if you had output a line at a time or if you had not turned on the printer from the Keyboard.

USE AS AN ELECTRONIC TYPEWRITER

This section will discuss the use of your Terminal with a printer as an electronic typewriter. If you do not have a printer, you may ignore this section of the Manual.

With a parallel interface printer connected, you can use your Information Terminal as an electronic typewriter. You can type a full screen (page) of text, edit and correct it, and then output the screen to the printer. Or, you can output dynamically, a line at a time, as you compose on the screen. Even after you have output a line at a time, and composed a full page of text, you can reedit and change it and then print the page. You can re-output the page for as many copies as you want.



To use the "typewriter" feature:

1. Press QUIT to remove the menus and clear all the display except the Status Line from the screen.

2. Be sure the Status Line shows "OFF LINE". (Press the CTRL SHIFT and SPACE keys if necessary.)

3. Press ESC x: to turn on the printer if you want each line to print as it is completed. The word PRINTER should display on the Status Line. If you do not want to print until you have composed and edited the page, press ESC y: to turn off the printer.

4. Proceed to compose your text on the screen. Use the letter, number, character, and cursor control keys as they were described in the "Keyboard" section of this Manual. You may also use the TAB key to indent text or to center headings, and the RETURN key to end a line and start a new one.

5. When you have finished your page of text, or when you near the bottom of the screen, output the page to the printer by pressing ESC ` (grave accent).

6. If you have more text to compose, clear the screen by typing ESC E and proceed to compose and output your text as before.

7. When you have finished using your Terminal as a typewriter, be sure the printer is turned off (ESC y:).

NOTE: If you are printing a line at a time, it will be necessary to press RETURN and LINE FEED at the end of each line, or configure your printer to send an automatic line feed upon receiving a carriage return.

APPENDIX A

Sample Auto Logon Information

The following log-on samples cover the major information services as well as Dow Jones. Each sample contains the necessary information, delays, and responses to the information services prompts for auto-logon with the Hayes Smartmodem. If you are using another form of intelligent modem, you will have to modify these instructions to meet the requirements of your specific modem. Other time-sharing or information service log-ons can be constructed in a similar manner. Some trial and error may be necessary to indicate where delays (D:) may be required. **Remember to use *your* I.D. and Password and *not* the samples shown in these examples when you enter this data.**

NOTE: Be sure the main menu is on the screen before you start a logon sequence.

Log-on for the Source via TYMNET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter SOURCE and RETURN.
- In response to the phone prompt, press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATPD (the local telephone access number) RETURN
R: ﬁer RETURN
S: A RETURN
R: : RETURN
D: RETURN
S: SOURCE10:PRIM:RETURN
R: > RETURN
S: ID ABC000 PASSWORD RETURN
(Your I.D. password and RETURN)
S: RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

Log-on for the Source via TELENET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter SOURCE and RETURN.
- Press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATPD (the local telephone access number) RETURN
D: RETURN
S: RETURN
D: RETURN
S: RETURN
R: = RETURN
S: D1 RETURN
S: RETURN
R: @ RETURN
S: C 30124 RETURN
S: RETURN
R: > RETURN
S: ID_ABC_123_ PASSWORD RETURN (Send your ID and password)followed by RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

Log-On for CompuServe via TYMNET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter CompuServe and RETURN.
- Press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATDP (the local telephone access number) RETURN
R: filer RETURN
S: A RETURN
R: : RETURN
D: RETURN
S: CPS01: : RETURN
R: : RETURN
D: RETURN
D: RETURN
S: 123456,789 RETURN (Your user I.D.) followed by RETURN
S: RETURN
R: : RETURN
S: XMT/BNG RETURN (Your password) followed by RETURN
S: RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

Log-On for CompuServe via TELENET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter CompuServe and RETURN.
- Press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATPD (the local telephone access number) RETURN
D: RETURN
S: RETURN
D: RETURN
S: RETURN
R: = RETURN
S: D1 RETURN
R: @ RETURN
S: C 123456 RETURN
R: : RETURN
D: RETURN
D: RETURN
S: 123456,789 RETURN (Your user I.D.) followed by RETURN
S: RETURN
R: : RETURN
S: YXC/MNT RETURN (Your password) followed by RETURN
S: RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

Log-On for Dow Jones via TELENET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter DOW JONES and RETURN.
- Press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATPD (the local telephone access number) RETURN
D: RETURN
S: RETURN
D: RETURN
S: RETURN
R: = RETURN
S: D1 RETURN
S: RETURN
R: @ RETURN
S: C 60942 RETURN
S: RETURN
S: RETURN
R: ▮▮▮ RETURN (three spaces followed by RETURN)
S: ---------- RETURN (Your Dow Jones password followed by RETURN
S: RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

Log On for Dow Jones via TYMNET

- Press the F2 Key.
- Press the F1 Key.
- In response to the prompt, enter the letter of an *unused* directory entry.
- In response to the name prompt, enter DOW JONES and RETURN.
- Press RETURN.
- At the prompt Logon:, enter the following information:

D: RETURN
S: ATPD (the local telephone access number) RETURN
R: l RETURN (lower case L)
S: A RETURN
R: : RETURN
S: CRTL R RETURN
D: RETURN
S: DOW2:: RETURN
S: RETURN
R: ___ RETURN (Three spaces, followed by RETURN)
S: ---------- RETURN (Dow Jones password, followed by RETURN)
S: RETURN
RETURN

At the screen prompt OK? (Y/N), enter Y.

Then follow the instructions to: "Hold SAVE button, then hit RETURN."

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