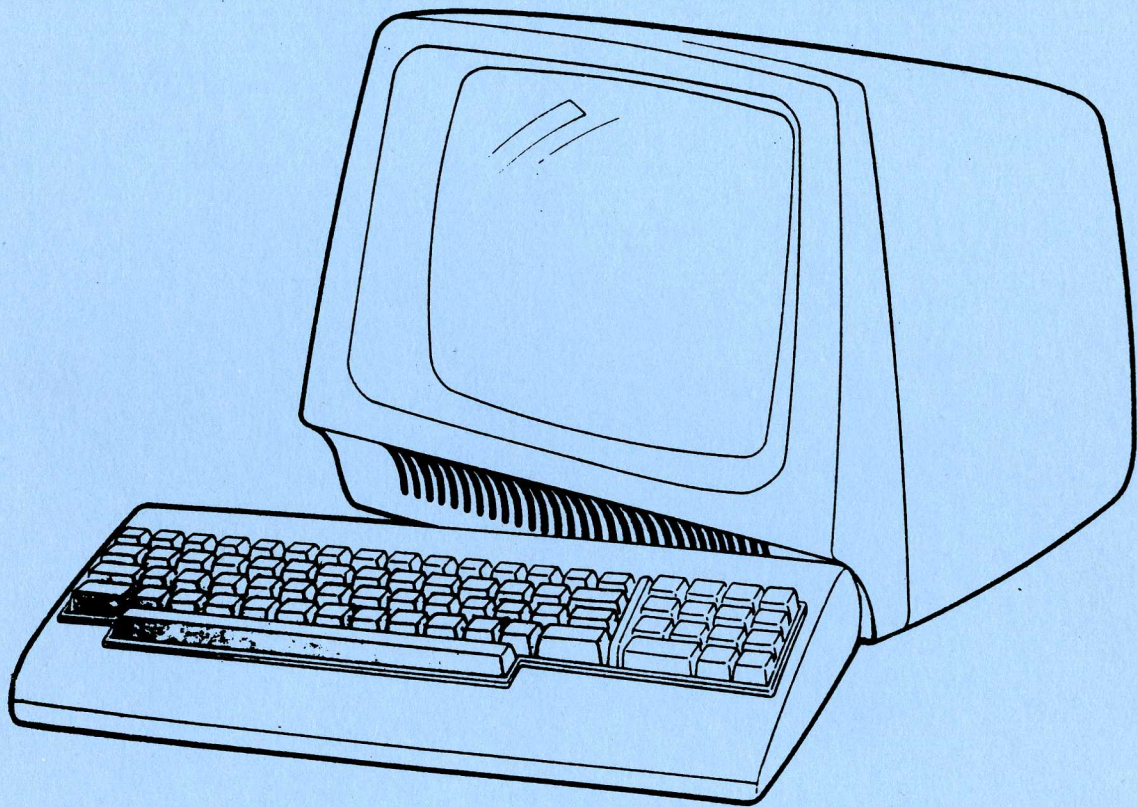


OPERATOR'S GUIDE

for the

TS-1 TERMINAL

THE BRILLIANT TERMINAL



FALCO DATA PRODUCTS
1286 Lawrence Station Road
Sunnyvale, CA 94086

(408) 745-7123

PREFACE

The purpose of this manual is to acquaint the user with the TS-1 Terminal. The manual covers installation, various features, functions, and operations of the keyboard and video display.

Detailed programming and troubleshooting are beyond the scope of this manual. Additional information on the programmable features of the TS-1 is covered in the "Programmer's Guide for the TS-1." Maintenance and troubleshooting are covered in the "Maintenance Manual for the TS-1."

Material contained in this manual is intended for information only and is subject to change without notice.

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CHAPTER 1

GENERAL INFORMATION

1-1 INTRODUCTION

The TS-1 Terminal is a general purpose ASCII data entry terminal. It is an input device to a computer where information entered through the keyboard is sent to the host computer. It is simultaneously an output device for the computer; that is, data output from the computer is displayed on the terminal video screen.

The TS-1 has complete editing capabilities and can display a large selection of visual attributes. A great deal of human engineering is designed into the TS-1 to make operating the terminal as simple and straightforward as possible.

Chapter 1 is an overview of the TS-1, including definitions of terms, and a list of specifications and features. Chapter 2 explains how to install and power up the terminal, as well as other basic information to familiarize the operator with the terminal. Chapter 3 is a detailed explanation of all the functions that an operator needs to use the TS-1. Programming the TS-1 is explained in the "Programmer's Guide for the TS-1".

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction 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.

1-2 KEYBOARD

The TS-1 Terminal keyboard unit is small, lightweight, and may be conveniently positioned anywhere near the terminal monitor. A detachable coiled cord is used to connect the TS-1 keyboard unit to the main unit. The keyboard uses inductively coupled keys for high reliability, data integrity, and longevity.

Keys on the TS-1 keyboard are classified either as code generating keys or code modifying keys. Depressing a code generating key causes a code to be displayed on the video monitor (Block Mode), or to be sent out on the communications interface to the host computer (Conversation Mode).

Code modifying keys do not generate a code when pressed alone, but will modify a code when used with a code generating key. Examples of code modifying keys are the **SHIFT**, **CONTROL**, and **FUNCTION** keys. Chapter 3 explains the purpose of these code modifying key functions in detail.

When auto repeat has been selected, holding down a key for more than one second will cause that character or operation to be automatically repeated. When this happens, the key code is sent out at the rate of sixteen characters or operations per second.

Refer to Chapter 4 for a complete description of keyboard options. These include typewriter style keyboard, separate row of function keys, and foreign language keyboards. Also included are specially designed keyboards for unique or special applications.

1-3 VIDEO MONITOR

The video monitor display is a high quality, high resolution, twelve-inch display, with a bonded, anti-glare faceplate, and non-interlaced raster scanning for accurate character reproduction. The standard color is green. White or amber are available as options.

Display characters are produced using a 6 x 10 dot matrix in a fully displayable 8 x 12 character cell. The display has a screen capacity of 1920 characters, arrayed in an 80-character line with 24 lines to a page (full screen display.) An additional 25th line (at the top of the screen) is used for displaying terminal status information.

1-4 INTERFACING

Data input or output from the terminal to a host computer or other data processing device is through two independently configurable RS-232C serial ports, at selectable baud rates from 50 to 19,200. All interface characteristics are software controlled and stored in continuous memory. The operator can select all configurations from the keyboard by pressing the color-coded **SET UP** key while simultaneously holding down the **FUNCTION** key. The desired interface characteristics are entered into a reverse video protected menu. See the Set-Up Mode section in Chapter 3 for a detailed description of this procedure. Refer to Chapter 4 for a description of interfacing options.

1-5 CONTROL LOGIC AND PROTOCOLS

The control logic consists of a Z-80 microprocessor and related integrated circuits which support the many features and functions available on the TS-1 Terminal. (Z-80 is a trademark of Zilog, Inc.) The control logic resides on a single printed circuit board for greater reliability and ease of service. The TS-1 can emulate many other terminals because of its unique software operating system. Refer to Chapter 6 for protocol and interface options.

1-6 OPERATING MODE SELECTION

All Special Function keys have color-coded labels on the front face of each applicable key for the operator's convenience. Chapter 3 explains the use of each key in detail. Programmable Function keys minimize programming efforts because one key can generate a string of user-defined key codes. The Block Mode features complete editing and transmission capabilities.

On the standard keyboard, the cursor up, down, left, right, and **HOME** keys are conveniently located on the numeric keypad so that the position of the cursor key with respect to the **HOME** key reflects the action of the key. For example, the right arrow key is located at the right of the **HOME** key. Additionally, the home key has a "braille" bump on the top center of the key to allow sense-of-touch location of the cursor and numeric keys. The optional separate row of function keys provides independent single keystroke cursor positioning.

1-7 DISPLAY ATTRIBUTES

Six display attributes can be used alone or in combination to a page, line or lines, or to individual characters. These attributes include normal video, reduced intensity video, reverse video, underlining, blinking, and blanking or optional second character font as well as character graphics. Blanking is not available when character graphics is installed.

There are three character attributes which can be used for an entire line: double width characters, double height characters, and double width/double height characters.

Use of the display attributes is described in the "Programmer's Guide for the TS-1".

1-8 SCREEN BRIGHTNESS

The screen brightness is software-controlled from either the keyboard or the host computer. To alter the screen brightness use the following function key sequence:

From the keyboard: **FUNCTION** and **BRITE** or **DIM**

1-9 AUDIBLE INDICATORS

A power-on bell tone, and an end-of-line bell tone, and key tactile feedback are discussed in Chapter 3.

1-10 VISUAL INDICATORS

The status line on the video screen is controlled either by the keyboard or the host computer. The status of the various shift locks, the transmission mode, and field protection status is displayed. The real-time clock display with AM/PM or 24-hour operation shows hours, minutes, and seconds. The time can be set from the keyboard or the host computer. The status display line title can store up to 10 double width characters starting from the left-most position on the status line. Chapter 3 describes the operation of the status line in detail. Refer to the Programmers Guide for the TS-1" for the programmable aspects of the status line.

1-11 SMOOTH SCROLLING MODE

In addition to the usual scrolling features, the TS-1 Terminal provides an optional smooth scroll at the rate of 5 lines per second. This allows the text to be read more easily as it is scrolled, a helpful feature when examining many pages of text.

Smooth scrolling can be selected at baud rates up to and including 1200 baud. Over the 1200 baud rate, data may exceed the TS-1 buffer, causing overflow to occur. Overflow can be corrected with the Xon/Xoff feature or Dtr control of the buffer. This controls the amount of data permitted in the buffer by signalling the host computer to reduce its transmission rate.

1-12 STANDARD KEYBOARDS

The standard data entry keyboard is shown in Chapter 3, Operator Information (Figure 3-1). An optional standard typewriter style keyboard is shown in Figure 1-1, at the end of this chapter. (Additional keyboard designs are available on special order for German, Swiss, French, and Swedish.)

1-13 DEFINITION OF TERMS

The following is a brief glossary of terms used in this manual:

Attribute: The particular characteristic of a displayed character, such as blinking.

Baud Rate: Interchangeable with "bits-per-second"; the rate at which serial data is transmitted or received by the terminal, computer, or other device.

Block Mode: Operating the terminal without the aid of or active connection to a computer system; it is also called the "local" or "off-line" mode.

Conversation Mode: Operating the terminal with the aid of a computer system; it is also called the "remote" or "on-line" mode.

Cursor: The illuminated character space block, underline, or blank, in reverse video displays that indicates where the next character, space, or operation will occur. The cursor also acts as a pointer.

Data Set: Unique combinations or aggregations of related data elements.

Data Transfer Operation: The process of transferring (or copying) data from one device to another.

Destination Device: The device that receives the data in a data transfer.

Device: The terminal, disk drive, printer, tape drive, or any other peripheral to the main computer.

Field: A group of computer characters which can be treated as a single unit of information.

File: An aggregation of data sets for a defined use; a collection of related records treated as a unit.

Function: A special operation performed by the TS-1. Special Functions are designated by color-coded characters on the key face of the appropriate keys (described in detail in Chapter 3). Programmable Functions are user definable sequences that are stored in continuous memory. The F1 to F12 color-coded keys call out these functions.

Line: A row of characters, similar to a line of text in a book.

Monitor: The display portion of the data terminal (also called CRT or video display).

Null: The total absence of information (code) in contrast to a space or blank which is the presence of no information; specifically, the ASCII null character versus the space character.

Page: Twenty-four 80 character lines. The amount of data that can be displayed on the terminal monitor (screen) at one time.

Source Device: The device that supplies the data in a data transfer, also called the "from device".

Terminal: As used in this manual, the terminal refers to the TS-1 and includes the main unit and keyboard.

1-14 SPECIFICATIONS FOR THE TS-1

1-14.1 DISPLAY

Size: 22 cm x 15 cm (8.0 inch x 6.0 inch).

Refresh rate: 50 or 60 Hertz.

Colors: Green P31 phosphor is standard, with White P4E or Amber PC134 as options.

Brightness: Software-controlled from keyboard or host computer.

Format: 24 lines x 80 columns.

Status Line: Selectable 25th status line shows user-definable title (TS-1 or up to 10 double width characters); the following indicators: Fz (Freeze Mode), Sf (Shift Lock), Cp (Caps Lock), Pd (Pad Lock), In (Reduced Intensity Mode), Pr (Protected Field Mode), and Bk (Block Mode); and the real-time clock.

Characters: Complete 128 ASCII character set (fully displayable); business graphics or second language ROM optional.

Resolution: 8 x 12 character cell with a 6 x 10 dot matrix character creates a very legible font, including lower case descenders.

Cursor: User selectable 8 x 12 character; reverse video block or underline, blinking or not blinking (When the blink feature is selected, the character at the cursor position blinks), or blank.

1-14.2 KEYBOARD

Unit: Detachable and serially interfaced to the terminal with a coiled cord and modular connector.

Switches: Inductively coupled.

Keys: 60 keys with 14 key numeric keypad. Special Function keys have a 300-Character buffer. This buffer holds a maximum 77-character string per key. Continuous memory stores the Programmable Function key data.

Auto Repeat: Holding a key down for more than one second activates the repeat feature at a rate of sixteen characters per second.

Additional Features: Non-glare keycaps, N-key rollover, tactile feedback, contoured and sculptured keys with deep-dish F and J keys to aid locating the keyboard index finger positions by sense-of-touch, and a color-coded sequence identification to aid the operator in using the editing and related functions.

Layout: Data entry keyboard and 12 Programmable Function keys are standard equipment; a typewriter-style keyboard and an additional row of programmable function keys are optional. Optional foreign language keyboards are also available.

1-14.3 EDITING AND CONTROL MODES

Cursor Control: Up, Down, Forward, Backward, Home, Newline, Return, Tab, Backtab, Protect Mode Tab, Load/Read Cursor Address.

Scrolling: Scroll or no-scroll; selectable when the cursor moves down from the last line. Line scrolling or smooth scrolling is selectable.

Enter Mode: Displays all control characters along with the text as an aid to the programmer.

Insert Mode: Permits insertion of data without overwriting existing data; see paragraph 3-5.4.

Conversation: Half or Full Duplex.

Block: Transmit Line/Page of unprotected or all characters. Delete/Insert character or line, and Erase to end of line or screen. Print Line/Page with selected format.

Memory: Optional sixteen thousand character memory.

Protected Field Mode: Protect an individual character or up to an entire screen using dual intensity display technique.

Set-Up Mode: Software switches can be used to select word length, stop bits, parity, baud rate, transmission mode, duplex, refresh rate, master I/O port, X-on/X-off or Dtr buffer protocol, roll, scroll, smooth scrolling, add linefeed to carriage return, select hour clock, cursor key mode, display status line, auto repeat, tactile feedback, add bell eight characters before the end of the line, cursor type, and model selection. All selections are stored in continuous memory.

1-14.4 FONTS AND ATTRIBUTES

Characters: Normal, Double Width, Double Height, Double Width/Double Height.

Attributes: Dual intensity, reverse video, underlining, blinking, blanking, (all attributes are assignable to screen, line, cursor, character, or any combination).

1-14.5 TECHNICAL FEATURES

Control logic: Single Z-80 microprocessor-based logic board. (Z-80 is a trademark of Zilog, Inc.)

Memory: 8K ROM expandable to 16K; 2K display RAM; 1K data RAM expandable to 17K.

Interface: RS-232C is standard; RS-422, or current loop is optional. Sixteen baud rates selectable from 50 to 19,200.

Protocols: Polling and addressing bisynchronous communications line capability are optional.

Power: Standard 115/230 Vac \pm 20%, 50/60 Hertz.

Environment: 5 to 45 degrees Centigrade; relative humidity, 10 to 90% non-condensing.

Composite Video Out: External wide-band monitors can be added as an option; synchronization frequency is 19.2 Hz.

Dimensions: Main Unit: Height 30.5 cm (12 inches);
Width 40.6 cm (16 inches); Depth 21.6 cm (13.5 Inches)
Keyboard Unit: Height 6.4 cm (2.5 inches); Width 40.6 cm
(16 inches); Depth 21.6 cm (8.5 inches).

Weight: Shipping weight 26 pounds.

1-15 WARRANTY

The following standard warranty normally applies to all Falco (FDP) products:

THE WARRANTIES PROVIDED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE HEREOF, INCLUDING BUT NOT LIMITED TO WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

FDP warrants that the equipment will be free from defects in material and workmanship during the Warranty Period. The "Warranty Period" shall be the ninety (90) day period following the date of shipment by FDP to the Buyer. In the event any component part of the equipment becomes defective by reason of material or workmanship during the Warranty Period and Buyer immediately notifies FDP of such defect, FDP shall, at its option, either supply a replacement part or request return of the equipment at Buyer's expense, to FDP's designated service center. This warranty shall not extend to any equipment that has been subject to misuse, neglect, accident, or improper installation or to equipment to which repairs or modifications have been performed by persons other than FDP's own or authorized service personnel, unless such repairs by others were performed with the written consent of FDP. FDP's liability to Buyer or to Buyer's customer with respect to a breach of the foregoing warranty shall be limited solely to repair or replacement of the defective equipment. In the event FDP directs that an item of equipment or a portion thereof be returned to FDP or to a designated service center for repair or replacement, FDP shall assign a Returned Good Authorization (RGA) number. FDP will prepay transportation costs for the return of products to Buyer or Buyer's customer following repair or replacement. Exclusion: Damage to the CRT phosphor of the type caused by excessive spot intensity is not covered by this warranty.

1-16 FALCO REPAIR SERVICE

In addition to in-warranty repair service, discussed in paragraph 1-15, there are several repair service plans available to users of Falco terminals.

1. Extended Warranty. For a fixed fee, Falco will continue the original factory warranty service. Arrangements for extended warranty service must be made at the time of the equipment purchase and is renewable on an annual basis.
2. Service Contract. On-site service is available for users throughout the U.S. and Canada. Service is provided by Falco service centers or by authorized third-party maintenance arrangements.
3. Time-and-Materials Service. For out-of-warranty service for users with neither extended warranty agreements or service agreements, repair service is offered on a time-and-materials basis. Equipment repairs can be made either at the Falco factory, Falco repair depots, or on-site.

Any equipment or parts returned to Falco must be identified by a Returned Goods Authorization (RGA) number, which must be obtained from Falco before shipment. Please call the Falco "Order Administration Department" at (408) 745-7123 for assignment of an RGA number.

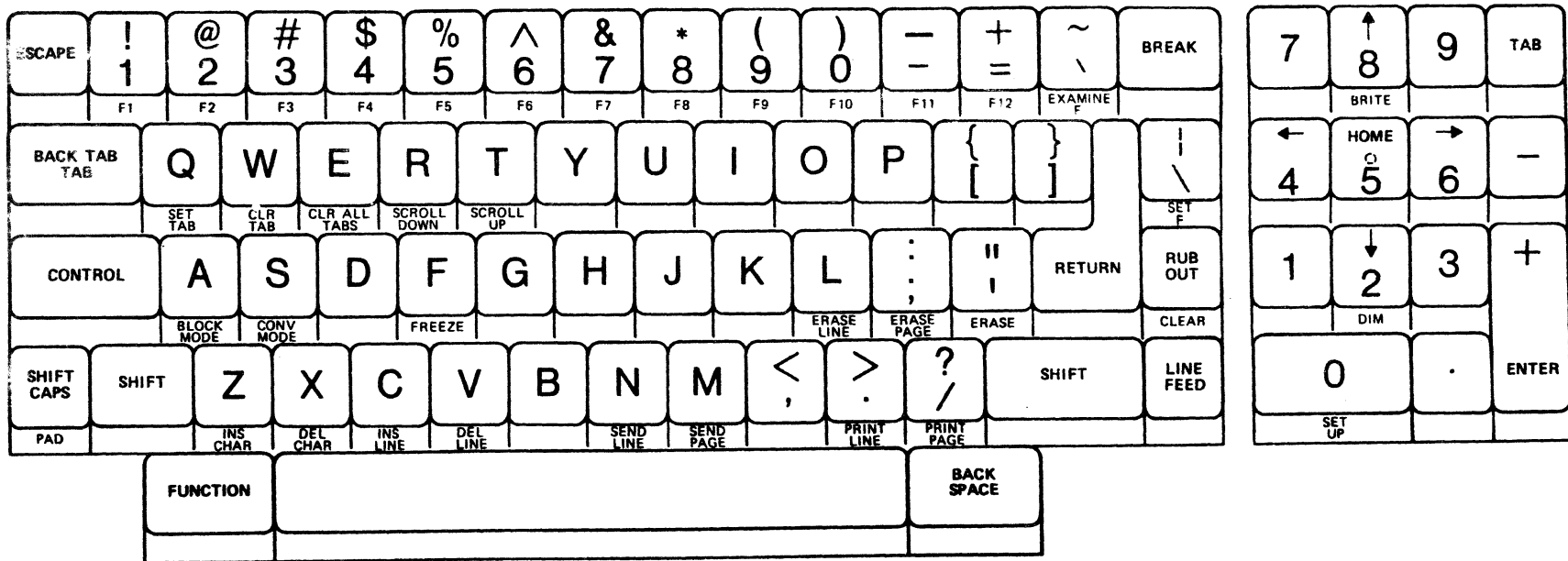


Figure 1-1. Standard Typewriter Style Keyboard

CHAPTER 2

INSTALLATION AND INTERFACING

2-1 INTRODUCTION

This chapter describes unpacking, installing, and interfacing the TS-1 Terminal. No special tools or experience are required for installation. The installer should carefully read the UNPACKING AND RESHIPPING section covering shipping and damage claims. Carefully review the portion of this chapter on interfacing, particularly relating to the host computer to be used.

2-2 UNPACKING AND RESHIPPING

Unpacking the TS-1 Terminal is normally a simple procedure; however, improper handling during shipment can damage the terminal which, if undetected, may create unnecessary problems when checking out the equipment after installation.

The TS-1 Terminal is shipped in a heavy cardboard box which should always be kept in an upright position and opened only after careful inspection of the container.

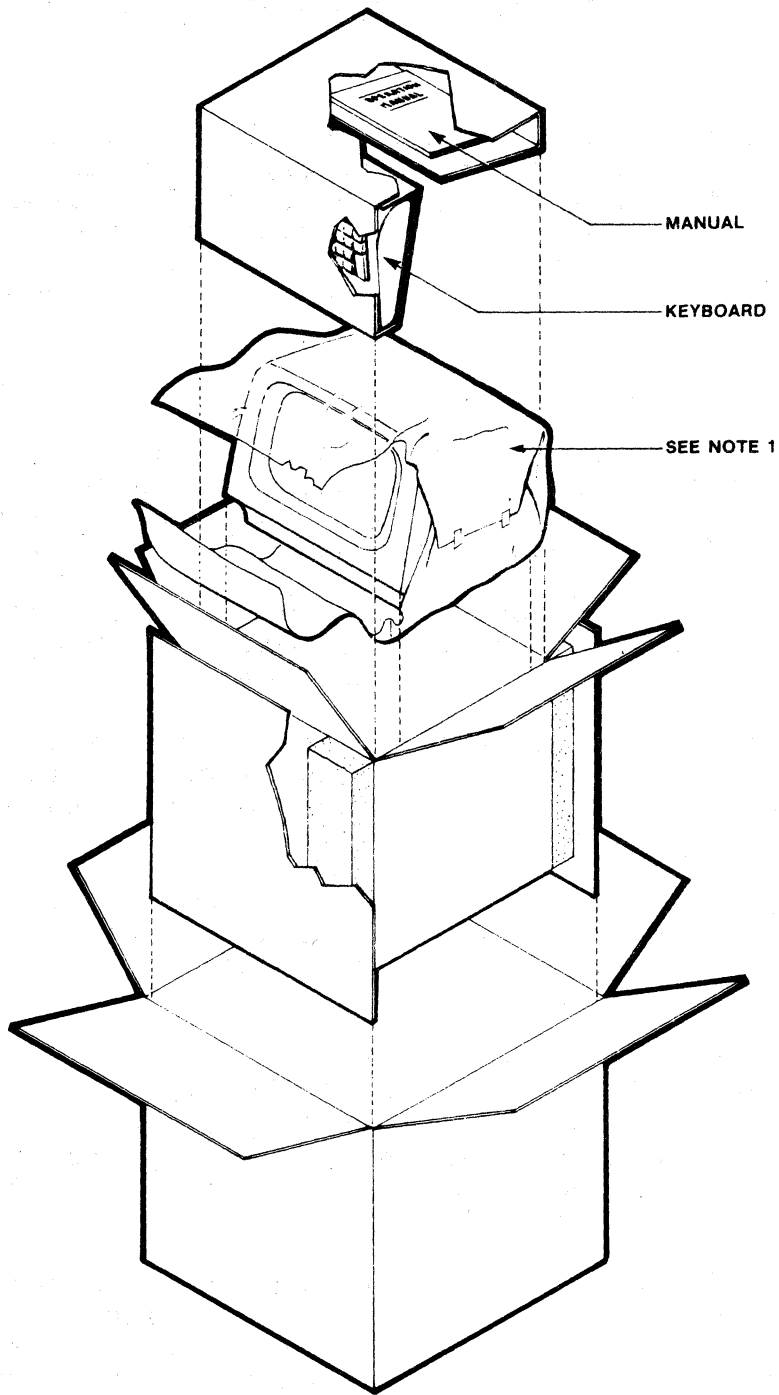
Before accepting the TS-1 Terminal shipment from a carrier, inspect the shipping container for evidence of external damage. Any indication of external damage must be noted by both the recipient and the carrier.

The TS-1 is protected during shipping by specially constructed foam mountings. When unpacking, save all packing materials and the shipping container in case the terminal has to be reshipped or moved at a later date.

Carefully unwrap and inspect all equipment for evidence of shipping damage. If such evidence is present, stop unpacking as soon as the damage is discovered, notify the carrier, and immediately arrange to have the shipment inspected by the carrier's agent or authorized representative. All damage claims should be promptly filed with the carrier.

Any equipment returned to the factory must be packed in either the original container or a substitute container of equal strength and durability. The original packing material, or a substitute providing comparable protection should surround all protruding surfaces of the keyboard and the display screen.

A description of the equipment defect or damage, its suspected cause, and the name and address of the sender should accompany the returned equipment. Repack the terminal following the method illustrated in Figure 2-1.



NOTE 1:

**SAVE ALL PACKAGING MATERIALS FOR
FUTURE USE.**

Figure 2-1. TS-1 Terminal Packing/Unpacking

Contact Falco Data Products for a Return Goods Authorization (RGA) number and shipping information regarding the nearest repair center.

Falco Data Products
1286 Lawrence Station Road
Sunnyvale, CA 94086

(408) 745-7123

2-3 PRE-INSTALLATION INSPECTION

Prior to installing the TS-1 Terminal, carefully inspect the delivered equipment to determine that all items are complete. The TS-1 shipping container has a packing slip against which all items should be checked. The shipping container should contain the following items:

TS-1 Display Monitor

TS-1 Detached Keyboard

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Check the packing slip to verify that all options ordered with the terminal have been included. Check the rear panel of the display monitor (Figure 2-2) and verify that the serial number on the terminal matches the number on the packing slip. Verify that the POWER ON/OFF rocker switch is in the OFF position.

2-4 INSTALLATION

2-4.1 Site Requirements

The dimensions of the TS-1 Terminal (Figure 2-3) will normally pose few constraints on selecting a place in which to install the terminal. In most cases, any environment satisfactory for the operator will be suitable to the terminal. Extremes of temperature and humidity should be avoided. A summary of the TS-1 operation specifications is listed in Chapter 1.

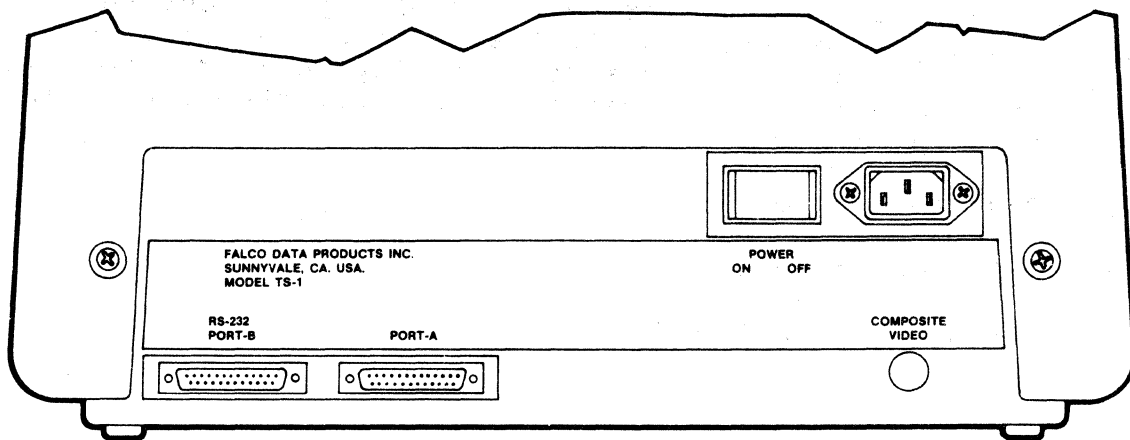
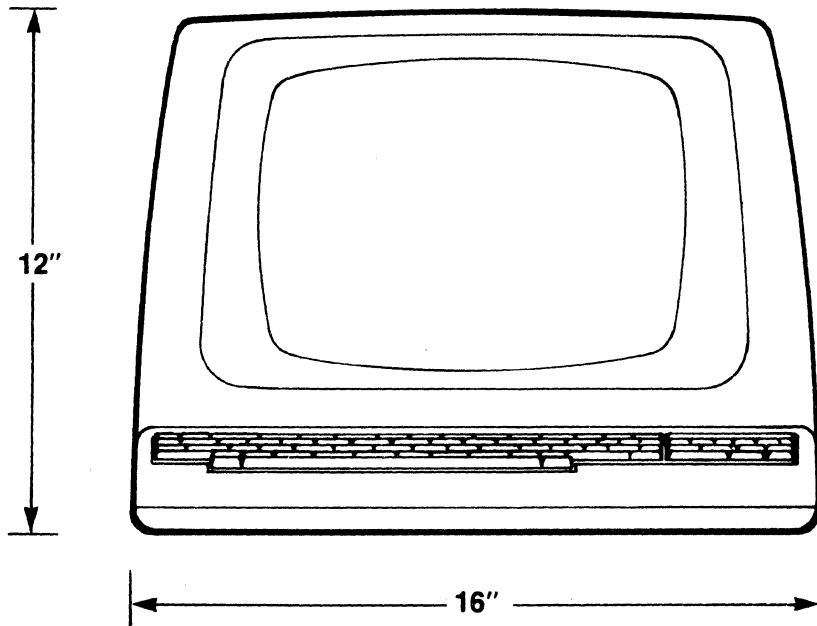
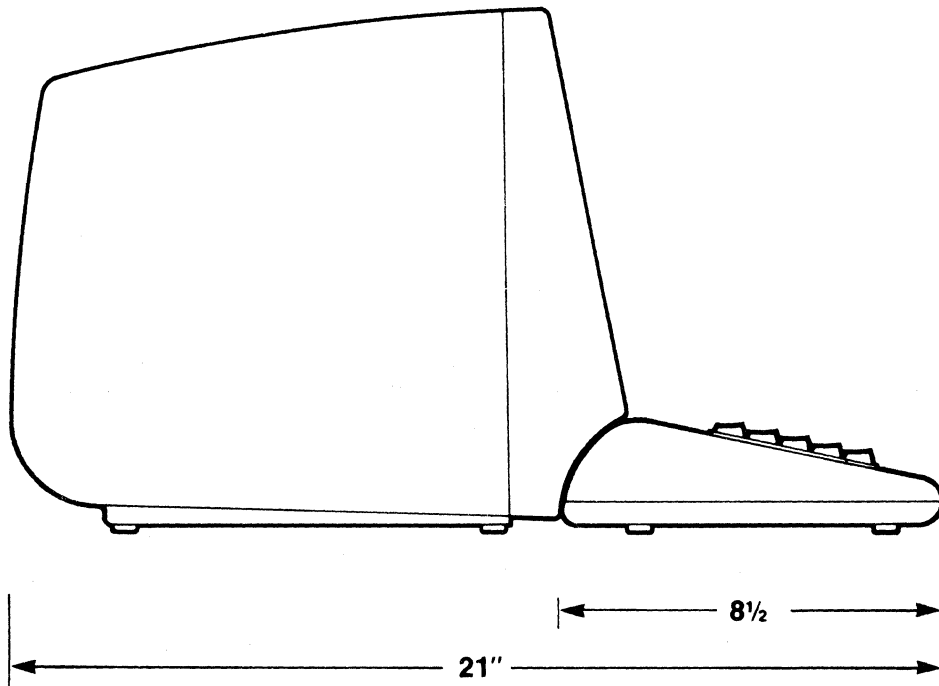


Figure 2-2. Rear Panel of the TS-1 Terminal



FRONT VIEW



SIDE VIEW

Figure 2-3. TS-1 Terminal Dimensions

2-4.2 Cable Connections

The TS-1 Terminal has only two cables to connect, the coiled cable that interfaces the keyboard to the main unit and the power cable that is connected to either a 115 Vac or 220 Vac outlet on the rear panel of the main unit (see Figure 2-5).

Connections from the terminal ports to a host computer, a modem, or a printer are made by cables furnished by the user. The TS-1 is normally furnished with the standard EIA RS-232C connectors although several interface connection options are available. (Refer to Chapter 4 for a description of interface connection options.) For connector pin assignments refer to Table 2-1.

2-5 INSTALLATION CHECKOUT

Perform the following steps to verify the correct TS-1 operation:

1. Place the TS-1 main unit in the desired work area.
2. Place the keyboard in front of the display monitor and plug the coiled keyboard cable into the keyboard receptacle located on the lower right front receptacle of the terminal (Figure 2-4).
3. Verify that the wall outlet (Figure 2-5) is of the correct voltage rating (115 Vac is standard in the U.S.) and that the power switch on the terminal is OFF. Connect the power cable to the wall receptacle.
4. Connect the communications cable from the host computer to the I/O ports (refer to the interfacing section of this chapter).
5. Turn the POWER switch, located on the rear panel of the display monitor, to the ON position. A bell tone will sound, indicating that power has been applied. The terminal will now automatically perform the Power-Up self-test. At the completion of the self-test, the cursor and TS-1 status line will appear on the monitor display. If no cursor appears, press the **FUNCTION** key and the **BRITE** key (Numeric Pad 8 key) simultaneously. This is the control signal to increase brightness. If no cursor appears, verify Status Line and cursor selection in the Set-Up Mode.
6. Set the desired Set-Up features (refer to the Set-Up Mode section in Chapter 3).

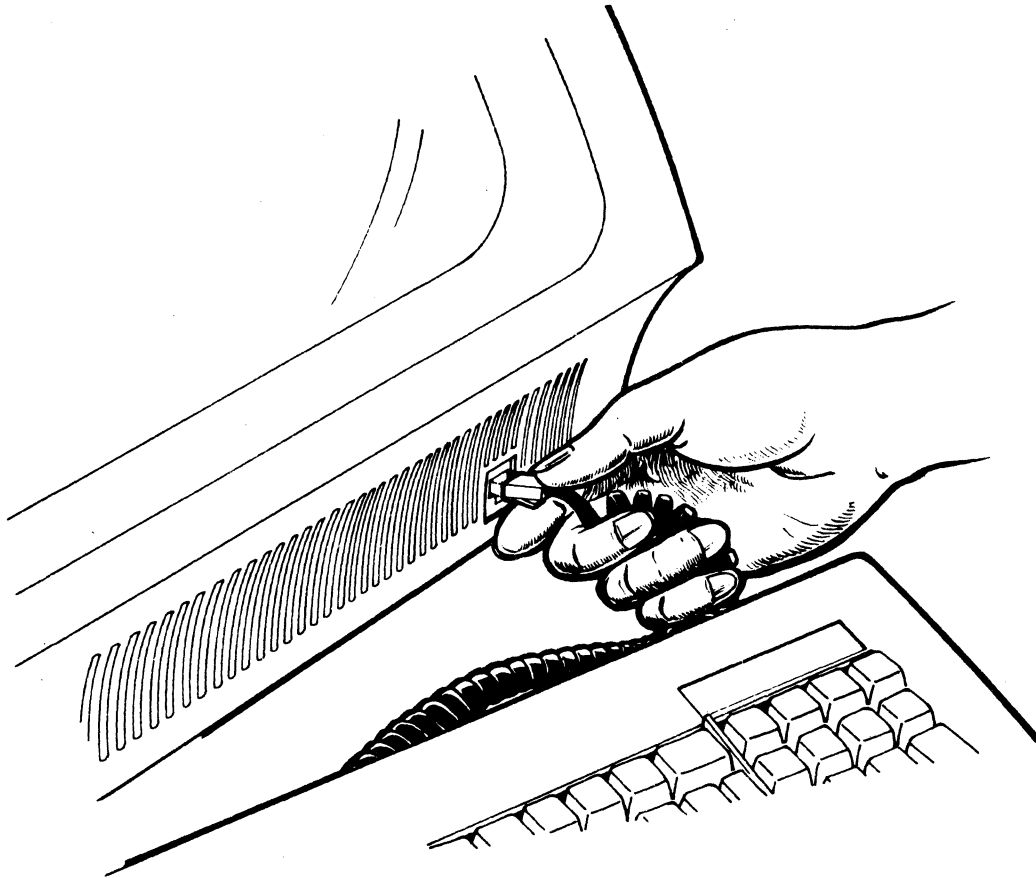


Figure 2-4. Keyboard Cable Connection

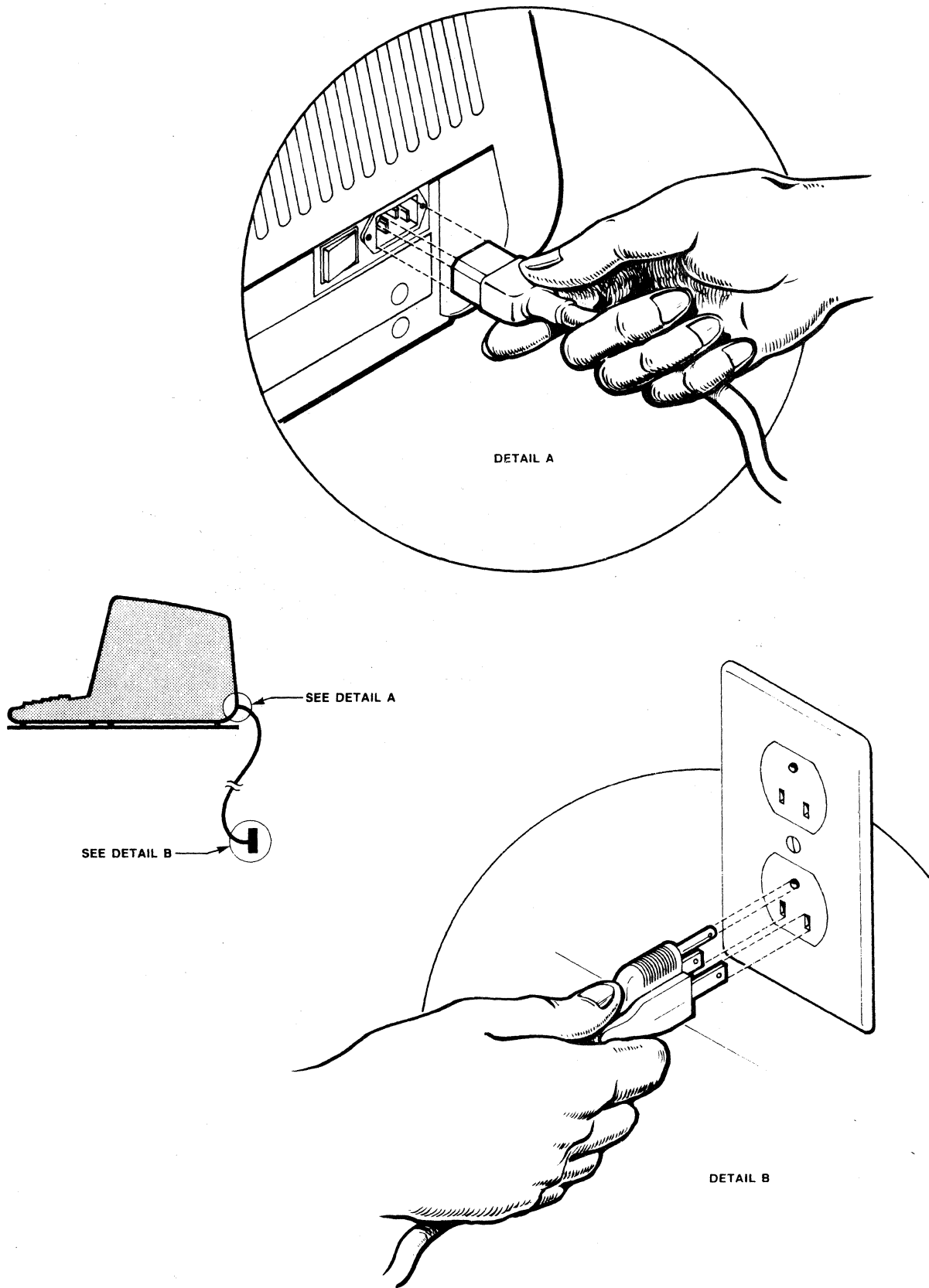


Figure 2-5. Power Cord Connection

2-5.1 Terminal Reset

To reset the terminal, perform the following reset sequence:

From the keyboard: **CONTROL, FUNCTION,**
and **CLEAR** simultaneously

CAUTION

Invoking this reset sequence causes all data on the screen and in the input data buffer to be lost.

2-6 USER ADJUSTMENTS

The Set-Up Mode offers a convenient way to select interface characteristics, as well as other features. (Refer to the Set-Up Mode section in Chapter 3.) The display brightness can be controlled from the keyboard (refer to the Screen Brightness Control section in Chapter 3). The message on the status line, the time indicator setting, and control of the display attributes are all software-controlled (refer to the "Programmer's Guide for the TS-1").

2-7 INTERFACING

The TS-1 Terminal may be equipped with two interfacing connectors. This portion of the manual describes the RS-232C interface. Optional interfaces are described in Chapter 4.

RS-232C General Interface

The standard TS-1 is operated on full duplex or half duplex asynchronous communications lines. The terminal interfaces to the line with two 25-pin receptacles (Port A and Port B) mounted on the back of the terminal. Both ports meet the requirements of EIA specification RS-232C. Table 2-1 summarizes the EIA connector signals while the following paragraphs explain each signal used in the standard TS-1. Pins not listed are not connected.

Protective Ground (PIN 1). This conductor electrically grounds the TS-1 chassis. Do not use this connector for electrical ground reference potential (see PIN 7).

Transmitted Data, from TS-1 (PIN 2). The TS-1 transmits serially encoded characters and break signals which are held in the mark state while break signals are being transmitted.

Received Data, to TS-1 (PIN 3). The TS-1 receives serially encoded characters and break signals generated by the user's equipment such as another terminal, a printer, or the host computer.

Request to Send, from TS-1 (PIN 4). Asserted at all times when the terminal is powered up.

Clear to Send, from TS-1 (PIN 5). Asserted to transmit.

Data Set Ready, to TS-1 (PIN 6). Asserted to receive.

Signal Ground (PIN 7). This conductor establishes the common ground reference potential for all voltages on the interface. It is permanently connected to the TS-1 chassis.

Carrier Detect, to TS-1 (PIN 8). Ignored at all times.

Data Terminal Ready, from TS-1 (PIN 20). Normally asserted, except under the following conditions: (1) When the terminal is not powered up, (2) When the receive character buffer is almost full.

ELECTRICAL CHARACTERISTICS

TS-1 Output Voltages. The mark or unasserted state of signals designated "from TS-1" is -12.0 V to -3.0 V; the space or asserted state of the output signal is +3.0 V to +12.0 V.

TS-1 Input Voltages. Input signals designated "to TS-1" with voltages of -12 V to -3 V are interpreted as the mark or unasserted state; whereas input signals from +3 V to +12 V are interpreted as a space or the asserted state. Voltage cannot exceed +25 V. These voltage levels comply with EIA STD RS-232C and CCITT Recommendation V.28.

Table 2-1

EIA RS-232C CONNECTOR SIGNALS

<u>Pin Number</u>	<u>Description</u>
1	Protective ground
2	Transmitted data
3	Received data
4	Request to send
5	Clear to send
6	Data set ready
7	Signal ground (common return)
8	Carrier detect
9	(not used)
10	(not used)
11	(not used)
12	(not used)
13	(not used)
14	(not used)
15	(not used)
16	(not used)
17	(not used)
18	(not used)
19	(not used)
20	Data terminal ready
21	(not used)
22	(not used)
23	(not used)
24	(not used)
25	(not used)

CHAPTER 3

OPERATOR INFORMATION

3-1 INTRODUCTION

The TS-1 Brilliant Terminal provides simple, logical organization of keyboard controls and functions designed for operator comfort and ease of operation. In order to develop proficiency with the TS-1, the operator should become familiar with its controls and indicators, especially with the TS-1 Set-Up Mode.

3-2 CONTROLS

The keyboard unit of the TS-1 Terminal consists of an alphanumeric keyboard and a numeric keypad. The alphanumeric keyboard consists of the standard ASCII code set keys, function keys, and control keys. The numeric keypad keys consist of numbers 0-9, cursor controls, screen brightness controls, SET UP Special Function Key, ENTER, +, -, decimal point, and TAB.

For ease of recognition, the standard alphanumeric keys are dark brown with white key top symbols. The standard numeric/cursor control keys are ivory with black key top symbols. The Special Function Keys have color-coded characters on the applicable key faces.

The TS-1 Terminal keys are classified into the following four categories:

Code Generating. Keys that generate the ASCII standard character set. See Chapter 4 for graphics, second language, or special purpose codes.

Code Modifying. Keys that do not generate a code but modify the code generated when simultaneously pressed with a code generating key.

Special Function. Keys for terminal configuration, screen control, Block Mode control, and Conversation Mode control.

Programmable Function. Keys which execute user-definable command strings.

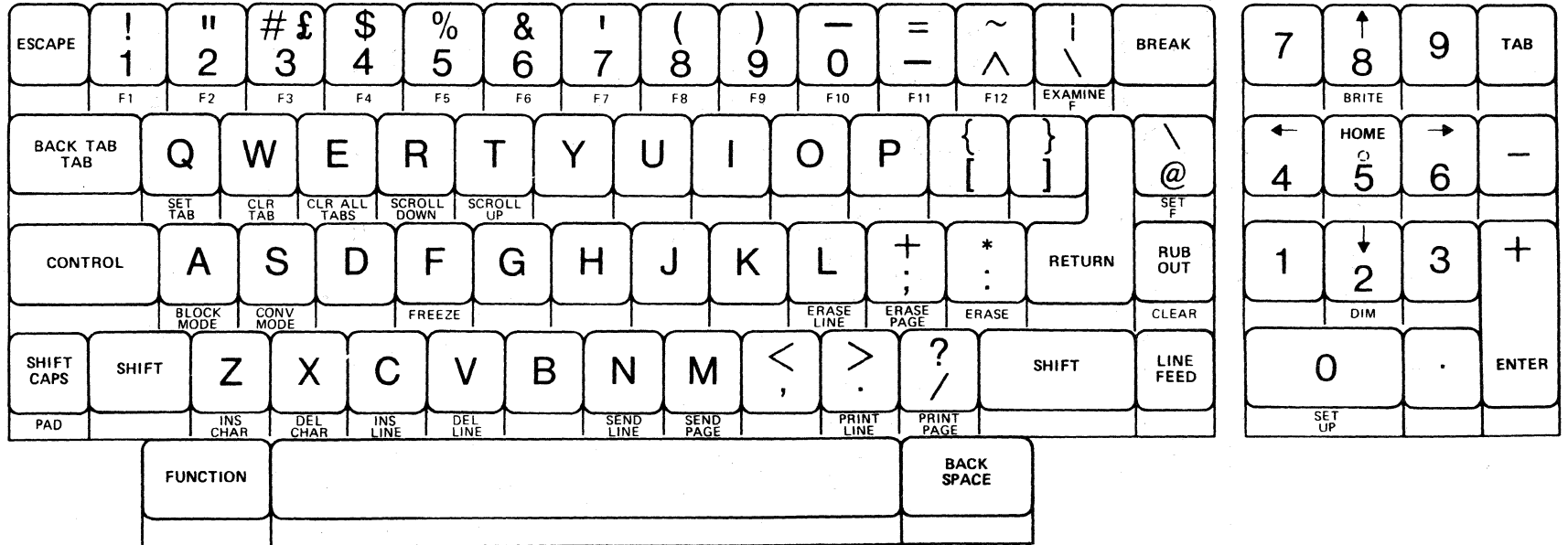


Figure 3-1. Standard Data Entry Keyboard

3-2.1 Numeric Keypad

Cursor Positioning

The numeric keypad has five cursor positioning keys that control the cursor position. The main keyboard must be in the upper case mode. There are three ways to use the cursor position control keys: (1) Hold down the **SHIFT** key while pressing the desired cursor control key, (2) Engage the **SHIFT** Lock mode placing the entire keyboard in the upper case mode, or (3) Engage the **PAD** key which places only the numeric keypad in the upper case mode.

↑ Cursor Up Key (8 key). This key moves the cursor up within the same column, one line position at a time, if the key is pressed and immediately released. If the auto repeat feature has been selected in the Set-Up Mode, and the cursor up key is held down, then the cursor will move rapidly upward.

↓ Cursor Down Key (2 key). This key moves the cursor down within the same column, one line position at a time, if the key is pressed and immediately released. If the auto repeat feature has been selected in the Set-Up mode, and the cursor key is held down, then the cursor will move rapidly downward. The cursor, upon reaching the last line will cause the page to scroll up one line at a time or smoothly upwards, if the appropriate scrolling features have been selected in the Set-Up mode, and the key is held down.

← Cursor Left Key (4 Key). This key moves the cursor to the left, one column position at a time, if the key is pressed and immediately released. If the auto repeat feature has been selected in the Set-Up Mode, the cursor will move rapidly to the left when the key is held down. If the auto repeat and roll features have been selected in the Set-Up mode, the cursor will move rapidly left. Upon reaching the first column the cursor rolls up to the last column of the preceding line when the key is held down.

→ Cursor Right Key (6 Key). This key moves the cursor to the right one column at a time, if the key is pressed and immediately released. If the auto repeat and roll features have been selected in the Set-Up Mode, the cursor will move rapidly right, and when reaching the last column the cursor rolls to the first column of the next line when the key is held down.

HOME Cursor Home Key (5 Key). This key moves the cursor to the first column of the first line (home position), or to the first unprotected position closest to the home position.

Other Numeric Keypad Keys

0 TO 9 Numerical Keys: These keys enter numbers associated with the key pressed on the monitor screen or, if the terminal is in Conversation Mode, transmit the selected number to the host computer.

TAB Cursor Tab Key: This key moves the cursor to the next tab stop or the next field if the next position is in the Protect Mode. If the cursor is at the last column, the tab function has no effect.

ENTER/+ Enter Key: This key returns the cursor to the first column of the current line. If the cursor is already at the first column, pressing the key has no effect. When this key is pressed at the same time the **SHIFT** key is held down, a plus sign is entered on the monitor screen. In the Conversation Mode, it transmits a plus sign to the host computer.

Minus Minus (-) Key: This key enters a minus sign on the monitor screen. In the Conversation Mode it transmits a minus sign to the host computer.

Decimal Point Decimal Point (.) Key: This key enters a decimal point on the monitor screen. In Conversation Mode, it transmits a decimal point to the host computer.

NOTE: The Special Function Keys, **BRITE**, **DIM**, and **SET UP**, which are located on the numeric keypad, are described later in this chapter.

3-2.2 Main Keyboard

The main keyboard resembles a standard typewriter keyboard; however, there are some additional keys which are explained in detail below. The first group of keys are non-alphanumeric ASCII code generating keys, followed by the Code Modifying, Special Function, and Programmable Function Keys.

3-2.21 Non-Alphanumeric Code Keys

LINE FEED This key moves the cursor down one line. Scrolling occurs if the cursor is on the last line. The cursor remains in the same column it occupied prior to pressing the key.

RETURN This key moves the cursor to the first column of the same line (field) or to the start of the next line (field) if a "1" has been entered next to "Crlf" in the SETUP menu.

BACKTAB This key moves the cursor back to the preceding tab stop or to the preceding line (field if in the

Protect Mode.) The **SHIFT** key is held down while pressing the **BACK TAB** key.

TAB This key moves the cursor to the next selected tab stop or to the next line (or field if in the Protect Mode).

RUB OUT In the Conversation Mode, the ASCII standard RUB OUT code is sent to the host computer.

ESCAPE This key is used to begin an escape sequence in the TS-1 Model Mode (refer to the "Programmer's Guide for the TS-1" or Appendix A). An escape sequence consists of an ASCII ESCAPE code to signify the start of a sequence, followed by one or more characters which define the desired operation.

BREAK This key is only used in Conversation Mode. When the **BREAK** key is pressed, transmission is interrupted and the RS-232C transmit enable (Txen) line is held high as long as the key is pressed.

BACKSPACE This key will move the cursor one position to the left, unless it is in the first column, in which case it will move the cursor to the last column of the previous line.

Auto Repeat When a single code generating key (or in combination with any code modifying key) is held down for more than one second, the code will automatically be regenerated at a rate of sixteen characters or operations per second. Auto Repeat will not function if two or more code generating keys are pressed simultaneously. Auto Repeat can be disabled in the SETUP Menu.

3-2.22 Code Modifying Keys

SHIFT This key engages the upper case function of all keys. The **SHIFT** key does not affect the color-coded Special Function Keys.

CONTROL Typing while holding the **CONTROL** key down produces the control codes of the standard ASCII code set. For a list of control key functions and an explanation of how to use the **CONTROL** keys, refer to the "Programmer's Guide for the TS-1".

FUNCTION This key is pressed simultaneously with any of the color-coded Special Function Keys used to override standard key functions and activate a Special Function key code.

3-2.23 Code Lock Keys

SHIFT Lock Shift lock is engaged when the **SHIFT** and the **SHIFT CAPS** keys are pressed simultaneously. This sequence displays upper case characters or functions for the entire keyboard until disengaged by repeating the operation. "Sf" appears on the display status line whenever shift lock is engaged.

SHIFT CAPS This key is used to display upper case letters only. This function is disengaged by pressing the key again. "Cp" appears on the display status line when this key is engaged. The **SHIFT CAPS** key does not affect numbers or symbols on the numeric keypad.

PAD This key is used to lock only the numeric keypad functions in the upper case mode (primarily the cursor controls). Enable this function by pressing and holding the **FUNCTION** key while pressing the **PAD** key. "Pd" appears in the status line whenever pad lock is engaged. Repeat the procedure to disengage the pad lock.

3-2.24 Special Function Keys

This section describes the functions of the Special Function Keys. These keys are identified by the color-coded characters appearing on the applicable key faces. All Special Functions described below are invoked by pressing and holding the **FUNCTION** key while pressing the desired Special Function Key.

TERMINAL CONFIGURATION

SET UP This key is used to display a reverse video protected menu, which the user can manipulate to select desired interface characteristics. Refer to the section on Set-Up Mode later in this chapter.

SCREEN BRIGHTNESS CONTROL

These keys alter screen brightness. To modify the screen brightness, use the following function key sequence:

From the keyboard: **FUNCTION** with **BRITE**
or **DIM**

Note

If the auto repeat feature has been selected in the Set-Up mode, then holding the **BRITE** or **DIM** keys down will smoothly and continuously adjust the screen brightness, otherwise, the key must be repeatedly pressed to attain the desired brightness level.

Block Mode Control

BLOCK MODE This key places the terminal transmission under the control of the block editing and sending operations. All keystroke functions are internally looped for processing and display on the monitor; however, the terminal will concurrently accept data from external sources.

Block Mode Editing

CLEAR This key clears the entire screen to nulls and returns the cursor to the home position. Protected and unprotected characters as well as display attributes are cleared. Character attributes are not affected.

ERASE This key is used to erase all characters and attributes from the display screen and return the cursor to home. This replaces all erased positions with the ASCII space character.

ERASE LINE This key is used to erase all characters from the cursor location to the end of the line. Protected characters and attributes are unaffected.

ERASE PAGE This key is used to erase all characters from the cursor location to the end of the page. The erase operations will not affect screen intensity, and protected characters and attributes are unaffected.

DEL LINE This key is used to delete the display line on which the cursor is located. The cursor row and column positions do not change. **DEL LINE** is inactive in the Protect Mode. All subsequent lines are moved up one line space.

INS LINE This key is used to insert a blank line at the line on which the cursor is located. The cursor line and any subsequent lines are each moved down one line space. The cursor position does not change. If the cursor is at the last line, the last line is lost. **INS LINE** is inactive in the Protect Mode.

DEL CHAR This key is used to delete the character at the

cursor position and move all the remaining characters to the right of the cursor one column space to the left. The previous character position is erased and filled with a space. Protected characters and all characters after a protected character will not be moved.

INS CHAR This key is used to move all the characters located to the right of the cursor one column to the right (cursor does not move.) Any character in the last column of the line (field) is lost.

SET TAB This key is used to set a tab stop for the column where the cursor is positioned.

CLR TAB This key is used to clear a tab stop from the column where the cursor is positioned.

CLR ALL TABS This key is used to clear all tab stops for all columns.

Block Mode with the Optional Page Memory

SCROLL UP This optional feature key is used to scroll the page displayed up one line; it is only active when the terminal contains the page memory option. See the options chapter for detailed operating instructions.

SCROLL DOWN This optional feature key is used to scroll the cursor line down one line; it is only active when the terminal contains the page memory option.

Block Mode Transmission

Before attempting any Block Mode transmissions, verify that the terminal is in Block mode; a "Bk" should be present on the status line. If not, perform the following function key sequence:

From the keyboard: **FUNCTION** and **BLOCK MODE**

SEND LINE This key is used to send all unprotected characters of the current line from the first column of the current line up to and including the cursor through the selected Block Send Channel, the Primary Port. An ASCII code file separator (FS) is sent to replace each protected field. A unit separator (US) is sent to separate the lines. A carriage return (CR) is sent at the end of the operation. If not in the Protect Mode and scrolling is engaged, the cursor will advance to the first column of the next line.

SEND PAGE This key is used to send all unprotected characters from the home position up to and including the

cursor through the selected Block Send Channel, the Primary Port. An ASCII code file separator (FS) is sent to replace each protected field. A unit separator (US) is sent to separate the lines. A carriage return (CR) is sent at the end of the operation. If not in the Protect Mode and scrolling is enabled, the cursor will advance to the first column of the next page.

PRINT LINE This key is used to send the current line in exactly the same way as the **SEND LINE** key except through the selected Secondary Port to a printer or other output device.

PRINT PAGE This key is used to send the page in exactly the same way as the **SEND PAGE** key except through the selected Secondary Port to a printer or other output device.

Entering The Conversation Mode

To enter the Conversation Mode, use the following function key sequence:

From the keyboard: **FUNCTION** and **CONV MODE**

Verify that "Bk" (Block Mode) is not present on the status line; the absence of "Bk" indicates that the Conversation Mode is engaged.

CONV MODE This key is used to initiate operation in either of two submodes, Full or Half Duplex, depending on the terminal configuration selected in the SETUP menu.

Full Duplex Operation. The terminal communicates with the host computer on a character-by-character basis. Characters displayed on the monitor are echoed from the host computer.

Half Duplex Operation. Similar to the Full Duplex operation except that the characters sent to the host computer are displayed on the monitor as well. If the host computer echoes each character, the characters will be displayed twice.

3-2.25 Programmable Function Keys

These keys are used to store user-selected character string commands in the continuous memory. Once entered, these commands will remain, even during power off cycles, until deleted or modified by the user.

F1 to F12 Each Programmable Function key is used to execute the stored command string for the selected Programmable Function key. Refer to the "Programmer's

Guide for the TS-1" for additional details on programming these keys.

SET F This key is used to place the current line (the line containing the cursor) of programmable data into continuous memory. Up to 77 character positions may be entered for a key.

EXAMINE F This key is used to examine command strings that have been programmed into continuous memory. The first line of the display will show a number indicating the total remaining number of character positions available. Listed below that number are the actual stored sequences identified by function key number. (Note: The total available character positions for all Programmable Function keys is 300 positions.)

All the standard TS-1 Terminals have Programmable Functions 01 through 28 (although the optional Programmable Function Keys **F13** through **F28** are not present). To examine the contents of Programmable Functions 01-12 use the following key sequence:

FUNCTION with EXAMINE F

To examine the contents of Programmable Functions 13-28 use the following key sequence:

**SHIFT with FUNCTION
then EXAMINE F**

If the Programmable Function Key is being programmed from the keyboard, verify that the terminal is in Block Mode. (Press the **FUNCTION** key simultaneously with the **BLOCK MODE** key.)

1. Locate the cursor in the first column of any blank line.
2. Enter the number of the Programmable Function Key to be programmed (01-28).
3. Enter the desired character string to be stored (up to 77 characters).
4. Verify that the cursor is one position to the right of the last character entered.
5. Store the string by performing the following operation:

FUNCTION with SET F

All the programmable functions are invoked by using the following function key sequence:

FUNCTION and a Program-
mable Function Key (**F1**
through **F12**)

On a keyboard with a separate row of function keys, depress the single **F** key for functions 01 through 14 or **SHIFT** with **F** key for functions 15 through 28.

Functions 01 through 28 can be linked together by entering the key sequence shown below:

1. Repeat steps 1 through 3 above.
2. Press **ESCAPE** then **ESCAPE** then **** then the two digit function line number next in the desired sequence.
3. Repeat steps 3, 4, and 5 above.

3-3 INDICATORS (Figure 3-2)

3-3.1 Status Line Indicators

3-3.11 Title Indicator. The title appears at the beginning of the status line. The terminal model designator "TS-1" normally appears in the title area; the user may create any title up to 10 characters. Refer to the "Programmer's Guide for the TS-1" for programming the title indicator.

3-3.12 Freeze Mode Indicator. This mode is used by the operator to halt data being sent to the display screen by the host computer. No additional data will be processed by the TS-1; however, incoming data will continue to fill the data buffer. This feature allows the operator to load a Programmable Function Key while still on-line. The indicator "Fz" appears on the status line when this mode is selected.

3-3.13 Code Lock Key Indicators. The code lock has three indicators on the status line. When the terminal is in the SHIFT Lock mode, a "Sf" appears; when the terminal is in the CAPS Lock mode, a "Cp" appears; when the terminal is in the PAD Lock mode, the "Pd" indicator appears.

3-3.14 Protect Mode Indicator. When the Protect Mode is set, the indicator "Pr" appears on the status line of the monitor screen. In Protect Mode, all reduced intensity areas, from a single character to a whole page, are

protected. They cannot be changed unless the Protect Mode is cleared. The "Programmer's Guide for the TS-1" provides programming instructions for the Protect Mode.

When the terminal is operated in the Protect Mode, **DEL LINE**, **INS LINE**, and scrolling functions are disabled. The tab function is modified so that the cursor moves to the beginning of the next unprotected field, while the back-tab function is modified to move backward to the beginning of the previous unprotected field.

3-3.15 Reduced Intensity Indicator. When the terminal is displaying characters at reduced intensity, an "In" appears on the status line. If the Protect Mode is also entered, along with the Reduced Intensity Mode, then all characters in reduced intensity become protected and cannot be typed over. Because the cursor cannot be positioned over a protected character, unless the whole page (screen) is protected, it will automatically move (point) to the beginning of the next unprotected field.

3-3.16 Transmission Mode Indicator. The TS-1 Terminal communicates in one of two modes, Block Mode or Conversation Mode. If the terminal is in the Block Mode, the indicator "Bk" is displayed on the Status line of the monitor screen. If the terminal is in the Conversation Mode, no indication is displayed.

3-3.17 Time Indicator. Whenever the terminal is turned on, and the timer blanking setup feature has not been selected, the status line will display time beginning at one o'clock a.m. If the timer is to be used as a time-of-day display, it must be set to the correct time. Refer to the "Programmer's Guide for the TS-1".

3-3.2 Audible Indicators

3-3.21 End-of-Line Bell. An optional bell tone indicates that the cursor is eight characters from the right margin. The End of Line Bell is selected in the SETUP Menu.

3-3.22 Power-On Bell. A bell tone sounds whenever the terminal is powered up. This is a TS-1 self-test feature.

3-3.23 Tactile Feedback A click indicates that a code generating key has been pressed on the keyboard. The tactile feedback function is selectable in the SETUP Menu.

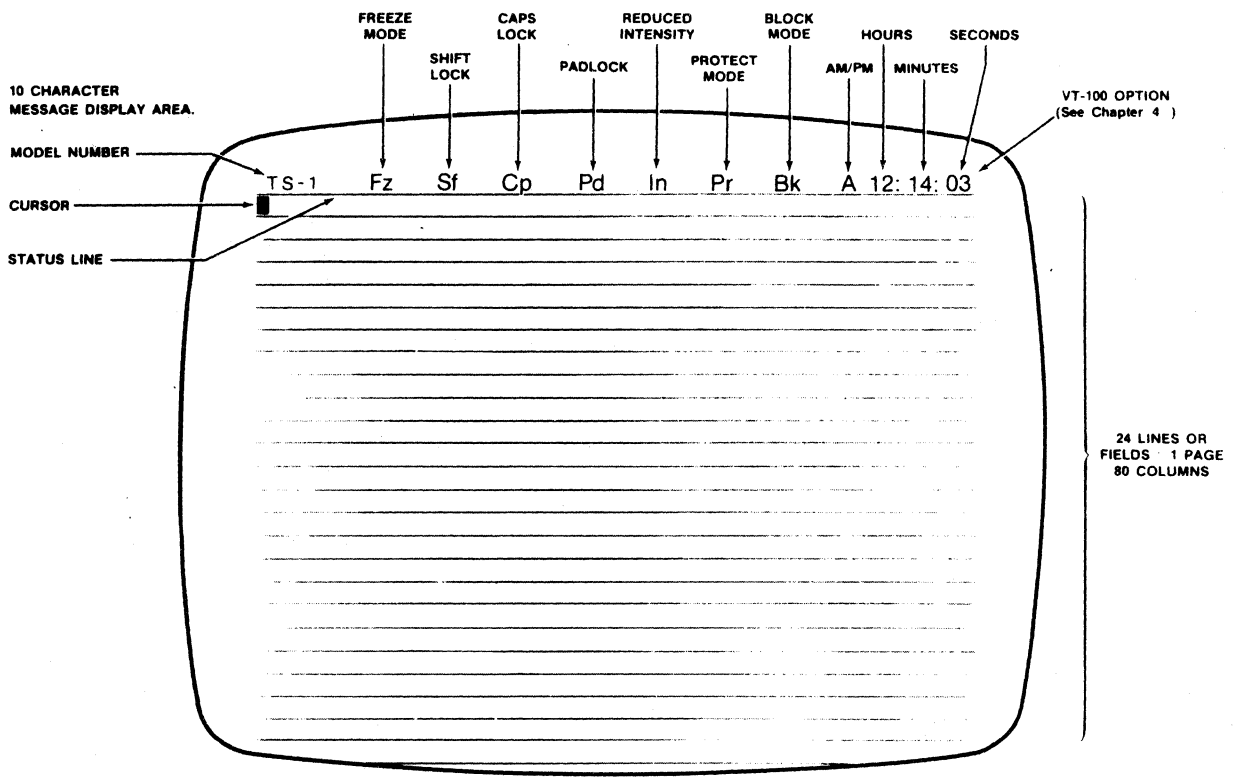


Figure 3-2. TS-1 Terminal Display Format

3-4 SET-UP MODE (Figure 3-3)

Selection and storage of terminal interface characteristics and other features are accomplished by the use of software switches and continuous memory. The operator invokes a reverse video protected menu called the "SETUP" Menu.

There are a number of operator-selectable features that may be used to configure the TS-1 Terminal. These features are classified into two categories: features that affect the input/output interface to the host computer, and features that affect keystroke or display operations.

The TS-1 interface characteristics must be set correctly for proper communication with the host computer. An error in these settings may cause incorrect data to be sent to or received from the host computer, thus preventing the TS-1 from correctly communicating with the host computer. Settings for the terminal features must be obtained from the host computer specifications. Terminal feature settings would normally change only when communicating with a different computer or when a unique software package is required.

Keystroke and display features allow the operator to tailor the TS-1 to fit individual preferences. These features do not affect any operations that occur between the terminal and the host computer. When the full-screen SETUP Menu is selected, the TS-1 automatically enters the local mode.

There are two methods to examine and/or change the Set-Up Mode parameters; they are the Single Line method and the Full Screen method. To enter either mode, press and hold the **FUNCTION** key and then press the **SET UP** key. (This operation will display the Single Line "SETUP Menu Select:".) To select the Full Screen SETUP Menu, press a zero key (either on the main keyboard or the numeric keypad).

Note

If Pad Lock is enabled ("Pd" appears on the Status Line), the 0 key on the numeric keypad will not operate. If Shift Lock is enabled ("Sf" appears on the Status Line), the 0 key on the Main keyboard will be the shifted character and will prevent access to the SETUP Menu, because the **SHIFT** key locks the numeric keypad for the cursor controls.

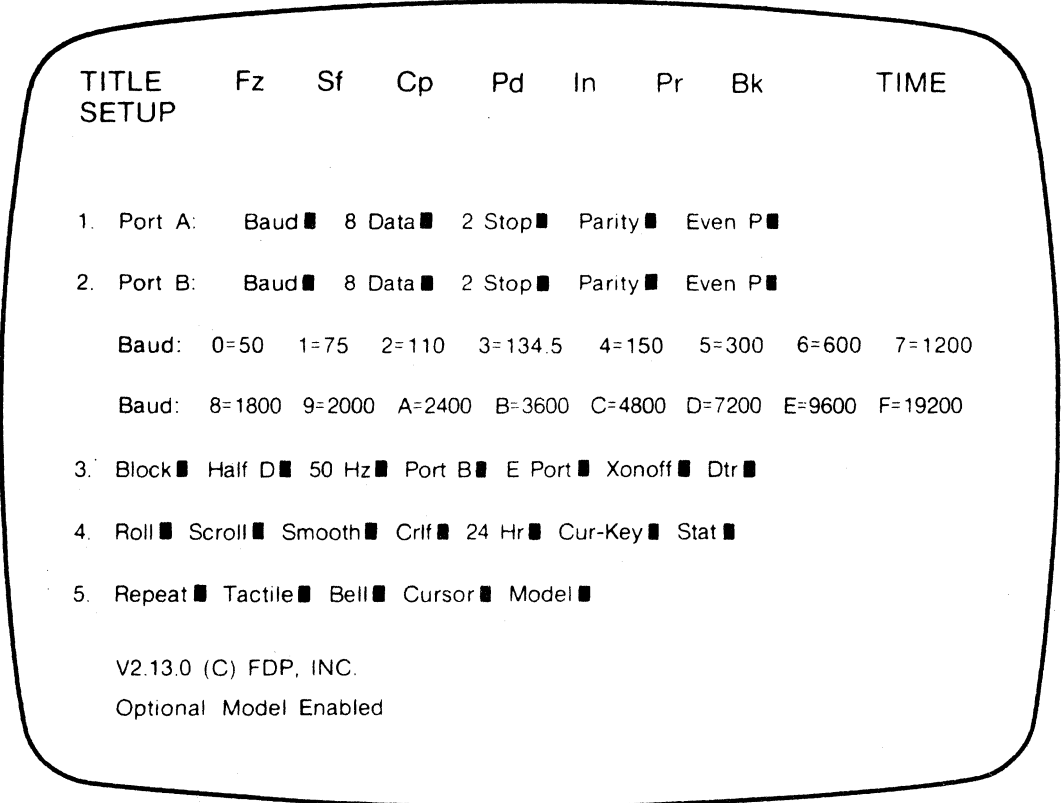


Figure 3-3. TS-1 Terminal SETUP Menu Display

Invoking the full screen SETUP Menu will over-write any data displayed on the screen; however, invoking the single line SETUP Menu permits Set-Up mode changes while retaining all screen data. (The single line SETUP Menu only temporarily displaces the first line of screen data, which returns when the SETUP Menu line is removed. The cursor will also return to its previous screen location before the SETUP Menu line was invoked.)

Changing any Set-up feature is basically similar in both modes. To change a feature, simply position the block cursor at the box to be changed, and enter the appropriate character from the keyboard. The "0" or "1" or O through F for Baud Rate, Cursor 0 to 7, and 0 to 3 for Model are the only valid characters; all others will result in a bell tone, indicating an attempted illegal character entry. Illegal characters will not be accepted. Select the desired code characters from Table 3-1. To change a feature in the Single Line SETUP menu, first select the line containing the feature to be changed by pressing the appropriate numbers 1 through 5. The selected line will then appear.

The SETUP Menu cursor position is changed with the space bar, **RETURN** key, or **LINE FEED** key. Press the space bar to move the cursor from left to right one box position at a time on the same line. The cursor will return to the first box on the same line if advanced from the last position. Press the **RETURN** key to advance the cursor to the first box of the next line. Press the **LINE FEED** key to return the cursor to the first box of the preceding line.

The single line SETUP menu is manipulated by using the **RETURN** key to change lines in the menu, for example, to change from line 3 to line 4, in ascending numerical order. Use the **LINE FEED** key to change menu lines in descending numerical order, such as from line 2 to line 1. Use the space bar to move to cursor position within a single line.

To terminate the Single Line SETUP menu, press **ESCAPE** twice; terminate the Full Screen SETUP Menu, press **ESCAPE** once.

The procedures for the Set-Up operation are summarized in Table 3-2.

Table 3-1

SETUP MENU CODES AND THEIR MEANINGS

Baud	0-F = Baud rate selected from SETUP menu.
8 Data	0 = Seven-bit word length for I/O port. 1 = Eight-bit word length for I/O port.
2 Stop	0 = One stop-bit on data word for I/O port. 1 = Two stop-bit on data word for I/O port.
Parity	0 = No parity on data word for I/O port. 1 = Parity bit on data word for I/O port.
Even P	0 = If parity is invoked, it will be odd parity. 1 = If parity is invoked, it will be even parity.
Block	0 = Conversation Mode. 1 = Block Mode.
Half D	0 = Full Duplex. 1 = Half Duplex.
50 Hz	0 = 60 Hz for U.S. operation. 1 = 50 Hz for foreign operation.
Port B	0 = Port A (Primary) & Port B (Secondary). 1 = Port B (Primary) & Port B (Secondary).

- E Port**
- 0 = Extension Port is not activated.
 - 1 = Extension Port is activated and will pass data from the Primary port at the selected baud rate to other devices connected to the Secondary Port such as a local printer.
- XonXoff**
- 0 = Xon/Xoff is not activated.
 - 1 = Xon/Xoff is activated and a **CONTROL S** signals the computer to halt transmission when the terminal buffer is 32 characters short of being full. A **CONTROL Q** signals the host computer to resume transmission when the character buffer is at least half empty.
- Dtr**
- 0 = Data Terminal Ready feature is not activated.
 - 1 = Data Terminal Ready feature is activated and will respond by dropping the "Data Terminal Ready" signal indicating to the host computer that the terminal input buffer is 32 characters from being full. This feature complements the Xon/Xoff by providing an alternative to sending **CONTROL S** and receiving **CONTROL Q** for input buffer control. If both Xon/Xoff and Dtr features are selected a **CONTROL S** code will automatically be sent prior to dropping the "Data Terminal Ready" signal.
- Roll**
- 0 = Cursor will not wrap around to the next line.
 - 1 = Cursor advances to first column of the next line when cursor is advanced from the last column on the right.
- Scroll**
- 0 = All lines do not move up when the bottom line is filled to the 80th position. Additional data will continue to be written on the bottom line.

1 = All lines move up when the bottom line is filled to the 80th position.

Smooth 0 = Regular Line Scrolling, a single line at a time.

 1 = Smooth Scrolling is enabled; at speeds of over 1200 baud the Xon/Xoff will prevent buffer overflow.

Crlf 0 = No line feed when **RETURN** is pressed.

 1 = Line feed when **RETURN** is pressed.

24 hr 0 = Standard 12-hour clock (AM/PM).

 1 = 24-hour clock (military time).

Cur-key 0 = The six non-standard cursor movement controls are not initialized to match the terminal emulated by the Model selected. (See Model described below.)

 1 = The six non-standard cursor movement controls are initialized to match the model emulation selected. **EXAMINE F** will show the following character sequences for the selected Model:

HM Home

RG Right Cursor

LF Left Cursor

UP Up Cursor

DN Down Cursor

BT Back Tab

Stat 0 = Status line is not displayed.

 1 = Status line is displayed.

Repeat 0 = Keystrokes are not automatically repeated.

1 = Keystrokes are automatically repeated when the key is held down for more than one second. Characters or operations are repeated at a rate of 16 per second.

Tactile

0 = No audible click is produced when a code-generating key is pressed.

1 = An audible click is produced when a code-generating key is pressed.

Bell

0 = No bell before line end.

1 = Bell sounds eight characters before end of line for block mode convenience.

Cursor

0-7 = provides the following eight possible cursor display modes:

0 = No cursor display (blank)

1 = Cursor position underline

2 = No cursor display, blinking character

3 = Cursor position underline and blinking character

4 = Reversed video display block

5 = Reversed video underlined display block

6 = Reversed video display block

with blinking character

7 = Reversed video underlined display block with blinking character

Model

0-3 = Select the desired terminal model to be emulated by the TS-1 for cursor positioning, and the most commonly used escape sequences from those listed below. The three emulations provided with the standard TS-1 are listed below.

<u>Model Code</u>	<u>Model Emulation</u>
0	TS-1 (Falco Data Products)
1	ADM-31(Lear Siegler)
2	VT-52 (Digital Equipment Corp.)

Note: FDP is not responsible for maintaining total compatability with model emulations; however, the TS-1 will support most commonly used sequences.

Va.bc.d (c) FDP, INC. = Firmware version installed in the TS-1.

a = Major release number
bc = Current versior. of firmware
d = Type of keyboard supported

Optional model enabled = When this appears in the lower left corner, the VT-100, or other optional emulation is incorporated into both the hardware and the software.

If an optional emulation (such as VT-100 is present, then use the following model codes:

<u>Model Code</u>	<u>Model Emulation</u>
0	Optional model emulation
1	ADM-31 (Lear Siegler, Inc.)
2	VT52 (Digital Equipment Corp.)
3	TS-1 (Falco Data Products)

Table 3-2

TS-1 TERMINAL SET-UP PROCEDURES

<u>Operation</u>	<u>Function</u>
1. POWER UP	Press the POWER ON/OFF switch to the ON position. The status line normally appears on the display after the monitor warms up.
2. ENTER THE SET UP MENU	Hold the FUNCTION key down and press the SET UP key to enter the single line SETUP menu; release the FUNCTION key and press the numeric keypad 0 to enter the full-screen SETUP menu.
3. SETUP Menu Features	Enter a "0" or a "1" (or other appropriate code) in the box of the feature that is to be changed. When all desired changes have been made, proceed to the next line.
4. ESCAPE	Press ESCAPE when all changes are completed to remove the full screen SETUP menu from the display. Press ESCAPE twice to remove the single SETUP menu from the display.

3-5 ADDITIONAL FEATURES

Additional operator conveniences include the following features:

3-5.1 Title Memory. The first 10 double wide, characters of the status line are retained in the continuous memory. Use **ESCAPE** then] to write-into this field and **ESCAPE** to return to other functions.

3-5.2 Freeze. The Freeze mode allows the operator to freeze data being sent to the display screen; no additional data will be processed by the TS-1's central processing unit. Incoming data will continue to fill the data buffer to avoid the loss of data. This mode can be used to instantly stop scrolling or load a Programmable Function Key while online to the host computer. To use this feature, press and hold the **FUNCTION** key while pressing the **FREEZE** key; "Fz" will appear on the status line indicating this function has been enabled. Repeat this procedure to disengage the Freeze mode.

3-5.3 Split Screen. The Split Screen mode allows the operator to horizontally split the screen at nearly any location (the smallest segment is two lines). See the "Programmer's Guide for the TS-1" for instructions.

3-5.4 Insert Mode. The Insert Mode is used to move the remainder of the line where the cursor is located to the right after the entry of any displayable character, and terminates at the end of that line. If the line was full before the operation, the right-most character of that line is lost.

If, during an Insert Mode operation, a protected field is encountered, and the line cannot be shifted to the right without endangering a protected character, then the operation is aborted and no insertion is made.

The cursor position does not change during an Insert Mode operation. Each time a displayable character is entered, the line is shifted to the right as required.

With the extended memory option, the Insert Mode will wrap the last character of the line down to the first character position of the next line so no characters will be lost.

Use the following escape sequence to enter the Insert Mode:

From the keyboard: **ESCAPE** then **q**

From the computer: **ESCAPE** then **q**

Use the following escape sequence to exit the Insert Mode:

From the keyboard: **ESCAPE** then **r**

From the computer: **ESCAPE** then **r**

3-6 SETTING THE TIME INDICATOR FROM THE KEYBOARD

The Time Indicator is normally set by the host computer. For users who do not have this feature, it may be desirable to use two Programmable Function Keys to conveniently set the Time Indicator. Use the following steps to load this feature into the Programmable Function Keys:

1. Display the Examine Functions menu:

Press **FUNCTION** then **EXAMINE F**

2. Select two unused Programmable Function Keys, for example, F10 and F11.

First enter the hour increment
escape sequence as follows:

1 then 0 then
ESCAPE then h
then **ESCAPE** then h
then 2 then **FUNCTION**
and **SET F**

3. Enter the minute increment
escape sequence as follows:

1 then 1 then **ESCAPE** then
ESCAPE then h then 3 then
FUNCTION and **SET F**

The Time Indicator can then be set for hours and minutes by invoking the appropriate Programmable Function Keys. Holding the key down will engage auto repeat, which will cycle through the hours or minutes to the appropriate value without having to continuously enter the appropriate escape sequence.