Intermec
Technologies Corporation

TE 2000™ 5250 Terminal Emulation

PROGRAMMER'S GUIDE

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Before You Begin

About This Manual

This manual contains information necessary to configure, operate, and troubleshoot TE 2000™ terminal emulation applications for INTERMEC® terminals. This manual is intended for these audiences:

- All users who need to know how to use terminal emulation.
- Information systems personnel, operations personnel, analysts, and programmers who need to know how to configure, test, and use the terminal emulation application to operate in a network. You should have a good knowledge of your company's network and data collection software. You should be familiar with data communications and network protocols.

Organization of This Manual

The following chart summarizes the information in each section.

To	See Section
Get started with 5250 terminal emulation	1
Use 5250 terminal emulation applications	2
Use your terminal's keyboard	3
Use the terminal emulation configuration menus for your Trakker Antares® terminal*	4
Customize your configuration	5
Use host data stream commands and orders	6
Use extended commands to send commands over the terminal's RS-232 port	7

* *For information about the terminal emulation menus for the 6400 or 5055 computer, refer to the computer's user manual. For a list of manuals, see "Related Manuals" later in this section.*

In addition:

- Appendix A contains bar codes for 5250 terminal emulation commands.
- Appendix B contains decimal-to-hexadecimal and binary-to-EBCDIC conversion tables.
- Appendix C contains the Terminal Font Set table for 6400 and 5055 computer.

Terminology

Term	Description
248X	Indicates the 2480, 2481, 2485, and 2486 terminals.
Host	Refers to a personal computer or other computer that communicates with the terminal.
TE	Stands for terminal emulation.
Terminal	Generic term that indicates any INTERMEC terminal that supports terminal emulation.

Conventions for Input From a Keyboard

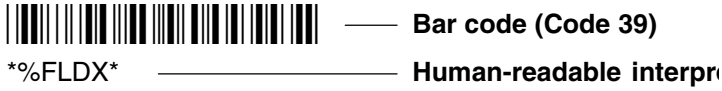
To help you quickly locate and interpret information, this manual uses the conventions in the following chart.

Convention	Meaning
`Monospace text`	Shows the command as you should enter it.
Italic text	Indicates a variable that you must replace with a real value, such as a number, file name, or command.
↵	Shows the key you must press on the terminal's keyboard. For example, "press ↵" directs you to press the Enter key.
f F1	Shows a series of keys you must press and release in the order shown. For example, "Press f F1 to open the TE configuration menus on the 2425."

Bar Code Conventions

You can scan the bar codes listed in this manual to enter data or perform a command. The bar code labels are in the Code 39 symbology. Each bar code includes the name and human-readable interpretation.

For example:



The asterisks (*) at the beginning and end of the human-readable interpretation are the start and stop codes for a Code 39 bar code label. If you are using a bar code printing utility, it may automatically supply the asterisks as the start and stop codes, so that you only need to type the actual text of the command. You can also create and print configuration labels and reader command labels in Code 93, which has its own start and stop codes.

Related Manuals

To order a printed manual, contact your Sales Representative. Several online manuals are also available in Portable Document Format (PDF) on the Intermec web site. The list of online manuals is at:

http://corp.intermec.com/manuals/english.htm

Or, choose “Products” then “Manuals” and “English” from the opening page.

You must download the free Adobe Acrobat Reader to view the PDF manuals. Instructions are at:

http://corp.intermec.com/manuals/manuals.htm#reader

Following are related INTERMEC manuals and part numbers (P/N).

Manual	P/N
2100 Universal Access Point User’s Manual	067150
5055 Data Collection PC User’s Guide	961-054-017
The Bar Code Book	051241
DCS 300 System Manual	067296
DCS 300 Technical Reference Manual	067717
EZBuilder Getting Started Guide	066450
EZBuilder Tutorial	066449
PEN*KEY Model 6400 User’s Guide	961-047-093
TE 2000 3270 Terminal Emulation Programmer’s Guide	977-055-003
TE 2000 VT/ANSI Terminal Emulation Programmer’s Guide	977-055-005
TRAKKER Antares 241X Hand-Held Terminal User’s Manual	069538
TRAKKER Antares 2420 and 2425 Hand-Held Terminal User’s Manual	064024
TRAKKER Antares 242X Serial Interface Module Instruction Sheet	067690
TRAKKER Antares 2455 Vehicle-Mount Terminal User’s Manual	067358
TRAKKER Antares 248X Stationary Terminal User’s Manual	066960
TRAKKER Antares 248X COM4 Adapter Cable Installation Instruction Sheet	068251
TRAKKER Antares Application Development Tools System Manual	064433
TRAKKER Antares Optical Link Adapter Quick Reference Guide	065826
TRAKKER Antares TD2400 Communications Dock Quick Reference Guide	065555

Customer Support

Customer Support's on-going objective is to provide quality support to all of our customers worldwide.

Factory Service

If your unit is faulty, you can ship it to the nearest authorized Service Center for factory-quality service. The addresses and telephone numbers are included in the Warranty Card shipped with your product.

Customer Response Center

The Customer Response Center (technical support) telephone number is 800-755-5505 (U.S.A. or Canada) or 425-356-1799. The facsimile number is 425-356-1688. Email is *support@intermec.com*.

If you email or fax a problem or question include the following information in your message: your name, your company name and address, phone number and email to respond to, and problem description or question (the more specific, the better). If the equipment was purchased through a Premier Solution Partner, please include that information.

Web Site

The Customer Support File Libraries, including Hot Tips and Product Awareness Bulletins, are available via the Intermec Product Support page at this URL: *http://norbbs.norand.com/index.htm*. New users can sign up for a new account on this page.

PDF versions of Intermec manuals can be found at this URL: *http://corp.intermec.com/manuals/english.htm*.

Bulletin Board Service

The Customer Support Bulletin Board (BBS) provides software and documentation:

- **Phone number:** 319-369-3515 (14.4 Kbps modem)
  319-369-3516 (28.8 Kbps modem)
- **Protocol:** Full duplex, ANSI or ANSI-BBS; 300 to 28,800 bps; v.32bis; 8 bits, no parity, 1 stop bit. *For high-speed modems, disable XON/XOFF and enable RTS/CTS.*

This is the same location available via the web site. If your web access uses high-speed phone lines, the web interface provides a faster response.

Section 1

Getting Started

Understanding Network Protocol Options

TE 2000™ applications for the Enterprise Wireless LAN™ system use one of the following network protocol options:

- UDP Plus — the terminal communicates with the host computer through the INTERMEC® data collection server and access point.
- TCP/IP — the terminal communicates through an INTERMEC access point, which is directly connected to the host computer on an Ethernet or a token ring network.
- WTP — the terminal communicates with the host computer through the data collection server or other INTERMEC gateway.

For network configuration options, refer to your terminal's user manual.

Setting Up the Terminal and the Network

Before you can start using the TE 2000 application on your terminal, you need to do the following:

1. Set up your terminal.

   Set-up includes charging and installing the battery pack and turning on the terminal for the first time. For instructions, refer to your terminal's user manual.

2. Configure your terminal and the network.

   To use RF communications on the terminal, you need to:

   a. Configure the data collection server (UDP Plus or WTP), other INTERMEC gateway (WTP), or host (TCP/IP).

   b. Configure the access point.

   c. Configure the network parameters on the terminal.

   For instructions, refer to your terminal's user manual.

3. Verify that your terminal is communicating correctly with the access point and data collection server or the host.

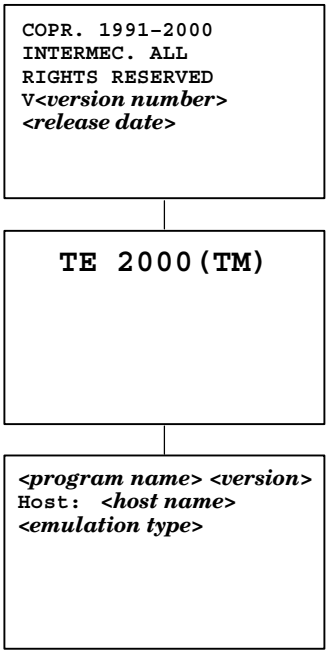
   To verify that your terminal is communicating correctly, refer to the terminal's user manual for instructions.

Starting the TE 2000 Application

Once the terminal has been set up, the terminal and the network have been configured, and communications have been established with the gateway, access point or host, you are ready to start your application.

To start your application:

Turn on the terminal. Wait a few seconds while the initialization screens (below) clear and the application starts.



▶ **NOTE:** *If your application does not start after a few seconds, you may not have configured the terminal correctly. For help, refer to your terminal's user manual.*

You can now do one of the following:

- Become familiar with 5250 TE if you have not previously used it
- Perform a quick configuration
- Configure your TE 2000 application
- Customize your TE 2000 application

Becoming Familiar With 5250 Terminal Emulation

If you have not previously used 5250 TE, see Section 2, "Using Terminal Emulation Applications," to understand 5250 commands. See Section 3, "Using the Terminal's Keyboard," to become familiar with your terminal's keyboard and the keys you need to press to perform 5250 commands.

Performing a Quick Configuration

1. Change the data stream to 5250. The default data stream is 3270 for Trakker Antares® terminals and for 6400 and 5055 computers running IP. The default data stream is Native for 6400 and 5055 computers running WTP.
   a. Access the terminal emulation configuration menus by pressing the keys in the following chart.

2415:	f F1 (55-key keyboard)
	f 5 (37-key keyboard)
2425:	f F1
2455:	f F1
248X:	f F1
6400:	[GOLD] [BLUE]
5055:	[GOLD] [M] (keyboard with color-coded keys) [ALT] [M] (keyboard with black keys)

   b. From the Main Menu, choose **1) Set-up Parms**.

▶ **NOTE:** *To select a menu option, press the number of the option. To return to a previous menu, press Enter.*

   c. At the **Enter Password** prompt, enter **cr52401**.
   d. From the Set-up Parms menu, choose **3) Protocol Opts**.
   e. From the Protocol Opts menu, choose **2) Data Stream**.
   f. From the Data Stream menu, choose **3) 5250**.
2. Extended commands govern abilities unique to terminals. Enable the Extended Commands option if your host computer is configured to send extended commands to the terminal. It is disabled by default.
   a. From the Protocol Opts menu, choose **3) Extended Cmds**.
   b. From the Extended Cmds menu, choose **1) Enabled**.
3. Save your changes.
   a. From the Main Menu, choose **6) Exit Menus**.
   b. At the **Enter 'Y' to Save Parms** prompt, press **Y**.
   c. At the **Enter Password** prompt, enter **cr52401**.
4. Login to a TE session.
5. Start using the terminal to collect and transmit data.

Configuring the TE 2000 Application

You can use the terminal's TE configuration menus to configure site-specific operational parameters, including:

- UDP Plus, WTP, or TCP/IP communications
- Terminal emulation options
- Main Menu password

For information about configuring the 2415, 2425, 2455, or 248X terminal, see Section 4, "Using the Trakker Antares' Terminal Emulation Menus." For information about configuring the 6400 or 5055 computer, refer to the computer's user manual.

Using Advanced Features

You can customize the standard TE 2000 program to do the following:

- Use the auto-login feature to send the same login information each time you login to the host.
- Display double-byte characters.
- Create a custom parameter set-up file.
- Change the text of TE configuration menus or system messages.
- Preinitialize the 5250 TE program

For more information, see Section 5, "Customizing Your Configuration."

Program Names

This manual covers TE 2000 version 6.32 or greater. The following chart lists TE options and program names.

Model	Option	Program Name
2415, 2425, 2455, 248X	TE/UDP Plus/2.4 GHz OpenAir TE/UDP Plus/802.11 TE/IP/2.4 GHz OpenAir TE/IP/802.11	FWP240H0
6400	TE/WTP/2.4 GHz OpenAir TE/WTP/802.11 TE/WTP/900 MHz Falcon TE/IP/2.4 GHz OpenAir TE/IP/802.11	FWP640H0/H4* FWP640H0/H4 FWP640H0/H4 FWP64TH0/H4 FWP64TH0/H4
5055	TE/WTP/2.4 GHz OpenAir TE/WTP/802.11 TE/WTP/900 MHz Falcon TE/IP/2.4 GHz OpenAir TE/IP/802.11	FWP650H0 FWP650H0 FWP650H0 FWP65TH0 FWP65TH0

** FWP640H0 is the 51-key keyboard. FWP640H4 is the 41-key keyboard.*

Unsupported Commands and Functions for Trakker Antares Terminals

TE 2000 terminal emulation for the 2415, 2425, 2455, and 248X does not support the commands and functions in the following chart.

Command or Function	Description
End (viewport)	Moves the window/viewport to the end of the last line displayed on the TE screen.
Erase Field	Erases all characters in the field where the cursor was positioned.
Erase Last Word	Erases all characters from the cursor back to the start of a word or a space on the screen.
Fast Cursor Right or Left	Moves the cursor two positions to the right or left rather than one.
Home (viewport)	Moves the window/viewport to the top left corner of the TE screen.
Reshow	Resends a screen image from the locally maintained host buffer to refresh the terminal screen.
Status	Toggles the terminal's screen between the status line display and the normal field input display.
Status line messages	Reports the operating status of the terminal and host system.
#H extended command	Sets TE configuration parameters that you would otherwise set at the terminal.

If you scan the bar code for an unsupported command, the bar code data is read into the terminal. If you press the key sequence for the command, the sequence is ignored.

TE 2000 does not support the following 5250 commands:

5250 Command	Description
Alternate cursor	Allows selection of either the bar-type or block-type cursor.
Display cursor location	Displays the cursor location.
Display Mode	Allows the operator to adjust the display to his or her preference. To adjust the terminal's display, refer to the terminal's user manual.
Test Request	Accesses diagnostic routines.

Also note that Trakker Antares terminals with UDP Plus allow only one session per terminal.

Section 2

Using Terminal Emulation Applications

Annunciators

The terminal's display reserves a location for annunciators (icons) that help you monitor RF and network communications, or alert you of a condition that requires action. Following are 5250 TE annunciators.

X Input inhibited. The keyboard has accepted enough information for the defined input field. The "key-ahead" feature stores keystrokes after the "input inhibited" annunciator appears. These are saved for the next field.

Insert mode. The keyboard inserts characters instead of overwriting them.

M Message waiting. The host has a message waiting for the operator.

For information about annunciators that indicate battery condition and general operational status, refer to the terminal's user manual.

Auto-Advancing Through Fields

You can set up your Trakker Antares® terminal to auto-advance through the fields on a 5250 TE screen. When you scan data into a field on a 5250 TE screen, a Field Exit command clears the rest of the field, advances to the next field, and triggers an auto-enter field to send an ENTER to the application and submit the data. You can just scan data and never touch the keyboard.

To set this up, you need to disable Auto Tab Scan in the TE configuration menus, and set the Postamble command to the 5250 Field Exit code. There are three ways to configure the Postamble command:

- Use the TRAKKER Antares 2400 Menu System.
- Download the Postamble command from the DCS 300 to one or more terminals.
- Download the Postamble command from a host using either the TCP/IP direct connect protocol or UDP Plus protocol.

The first two configuration methods are listed in this section. The third method involves creating an application and then downloading the application to the terminals. For help creating the application, refer to your terminal's user manual.

The 5250 Field Exit code is a character in the extended ASCII character set. The terminal supports the full and extended ASCII character sets. For a list of the full and extended ASCII characters, refer to your terminal's user manual.

▶ **NOTE:** *You can also configure the postamble by scanning the Postamble command. However, you cannot scan in extended ASCII characters like the 5250 Field Exit code.*

To disable Auto Tab Scan:

1. Configure the Auto Tab Scan setting to Disable. For help, see Section 4, "Using the Terminal Emulation Configuration Menus."

   With the Auto Tab Scan feature disabled, the terminal functions as if the field has a mandatory field exit turned on (an AS/400 activated feature known as Check FE). As a result, legacy AS/400 applications do not have to be modified to turn this field on properly for bar code support.

▶ **NOTE:** *The default is Auto Tab Scan disabled.*

2. Save your new TE configuration.

To add Field Exit to the postamble using the TRAKKER Antares 2400 Menu System:

1. Access the TRAKKER Antares 2400 Menu System. For help, refer to your terminal's user manual.
2. From the Main Menu, choose Configuration Menu.
3. From the Configuration Menu, choose Terminal Menu.
4. From the Terminal Menu, choose Preamble/Postamble.
5. Move the cursor to the postamble field.
6. Type `\x9A` for the literal Field Exit code.
7. Press ↵ or choose OK to save your changes and exit the screen.
8. Exit the TRAKKER Antares 2400 Menu System and save your new configuration to flash memory. For help, refer to your terminal's user manual.

To download Field Exit as a postamble from the DCS 300:

You must configure the postamble to the Field Exit's literal value using the download server on the DCS 300. You can use the download server on the DCS 300 to configure one or more terminals in the network.

1. In the download server on the DCS 300, select the terminal or group to receive the Postamble (AE) configuration command. For help on configuring a group of terminals, refer to the *DCS 300 System Manual*.

▶ **NOTE:** *You can continue running the 5250 TE application on the terminal while configuring a terminal from the DCS 300.*

2. Choose the option to enter a command.
3. Type the string `$+AE` and then enter the ASCII code 154 by holding down the Alt key while typing `154` on the numeric keypad. You should see an Ü to represent the literal Field Exit code in the edit box, which now shows this command and value:

   `$+AEÜ`
4. Download the commands to change the runtime configuration of the terminals selected. The changes are saved in RAM, but not in flash memory.
5. To save the configuration change in flash memory, download this command:

   `.+1`

   You can also use the TRAKKER Antares 2400 Menu System to save the configuration in flash memory. For help, refer to your terminal's user manual.

You can set the postamble or preamble to any character from the extended ASCII character set using these instructions. Type the literal ASCII value in Step 3 instead of the Field Exit code. To set the preamble, use the syntax $+AD instead of $+AE.

For more information about screen modes, see Section 4, "Using the Terminal Emulation Configuration Menus."

Special Function Keys

Special function keys are:

- Attention Identification (AID) keys
- Cursor movement keys
- Field Exit key
- Signal keys
- Special control keys
- Special host keys

To enter a special function key:

Press the key(s) listed in the section for the terminal. Or, scan the bar code in Appendix A.

The following pages describe the special functions keys. For complete descriptions, refer to the appropriate IBM 5250 reference manual.

AID-Generating Keys

AID-generating keys generate AID codes that go in the display data stream to the host system. They alert the host system that the DCS 300 or controller requires some action.

The terminal emulates all of the AID-generating keys on a 5291 Display Station. The following chart lists the keys.

AID-Generating Key	Description
Clear	The system environment determines the results of this key. If the terminal is in session, [CLEAR] issues the AID code hex BD, which requests that the host system issue a Clear Unit command to the terminal to clear the display. If not in session, [CLEAR] clears the entire display regeneration buffer.
Enter/Rec Adv	Enters information.
F1–F24	User-defined command functions. Refer to your application's user manual for detail on the functions.
Help (nonerror state)	Issues a hex F3 AID byte to the host system.
Print	Tells the controller that the operator wants to print the contents of the present display. Issues hex F6 to the host system.
Record Backspace (Home)	When pressed with the cursor in the home position, a record backspace is requested. The AID code hex F8 and cursor address are sent to the host system.
Roll Up and Roll Down	Roll display up or down one page. Roll Up issues AID code hex F5. Roll Down issues AID code hex F4. For more information about the Roll keys, see the following description.

Roll Up and Roll Down are AID keys the terminal sends to the host to request and display additional screens. The host transmits a new screen in response to this command. The new screens allow you to view data either above or below what appears on the current screen.

5250 terminals support the Roll command (hex 23) received from a host application. Using this command, a host application can roll an area of the screen up or down. The direction of the roll and number of lines to roll are specified in the command.

Do not confuse the Roll Up and Roll Down AID keys with the Roll command. The Roll keys cause the host to send down additional screens when you are at a Roll screen. A Roll screen typically has text in the lower right-hand corner of the screen indicating that there are additional screens to view.

Note the following:

- A Roll command received from a host application moves the screen, but not the window/viewport. You can see the screen scroll through the window/viewport when you roll up or down, but the window/viewport itself remains stationary.
- Paging keys (window/viewport page up, window/viewport page down, window/viewport page right, window/viewport page left) move the viewport within one screen. They do not move the screen itself.

For help with the Roll command, see Section 6, "Display Data Stream."

Cursor Keys

You can manually move the terminal's window/viewport by using the cursor keys and paging keys. For more information about the window/viewport, refer to the terminal's user manual.

Field Exit Key

Field Exit exits an input field and moves the cursor to the beginning of the next input field. If you press this key while the cursor is between characters, then all characters to the right of the cursor are erased.

▶ **NOTE:** *On Trakker Antares terminals, you can set the Postamble or Preamble command to use characters from the extended ASCII character set such as the Field Exit code for 5250 TE. For help, see "Auto-Advancing Through Fields" earlier in this section.*

Signal Keys

Signal keys cause a Signal command to go from the controller to the host system. The following chart describes the keys.

Signal Key	Description
Attn	The operator presses this key to alert the host system that the function requested (for example, [ENTER]) is not being honored. Attn is valid when the keyboard is locked or unlocked. It does not change the keyboard state or the cursor location.
Help (from error state)	The operator uses this key to request that the host system send data about the error to the display.

Special Control Keys

Use special control keys to change operator-generated information in the display. The keys do not work when the keyboard is locked.

Special Control Key	Description
Del	Deletes the character in the position where the cursor was located. All remaining characters in the field shift to the left to fill the column.
Erase Input	Clears all fields to nulls, and the cursor moves to the first input position on the screen. This command does not erase protected fields. If you press this key when the screen shows only protected fields, the cursor returns to the home position.
Error Reset	Restores the original data on the error line of the display and resets the state.
Hex	Enters hexadecimal codes from the keyboard to generate any EBCDIC characters needed for input or display.
Home	Moves the cursor to the position specified by the insert cursor (IC) address.
Insert	Sets or turns off the insert mode for the input field the operator has the cursor in. The operator must reset the insert state before exiting it, by either pressing [RESET] or [INSERT] again.
Shift Lock	Puts the keyboard into shift lock mode.

Special Host Key

The special 5250 host key is System Request.

Special Host Key	Description
Sys Req	Data on the error line is saved, the error line is cleared, a column separator and underscore field attribute are supplied to column 1 of the error line, and the cursor is located under column 2 to begin polling keystrokes.

5250 Additional Functions

The following chart lists additional operations you can perform on your terminal.

Operation	Description
¢ (cent sign)	Enters a cent sign.
↵ (New Line)	Moves the cursor to the first unprotected character position of the first line in the screen. If the entire screen is a protected field, the cursor returns to the home position.
¬ (Not symbol)	Enters a Not symbol.
Back Tab	Moves the cursor back to the most recent first field position. If the cursor in in the middle of a field, it moves it to the first position of the same field. If the cursor is at the first position of a field, it moves it to the first position of the preceding input field.
Dup (duplicate enabled fields only)	Controller repeats hex “1C” from the cursor position to the end of the field. This shows in the display as an overstruck asterisk.
Field–	For numeric fields, makes the input a negative number.
Field+	Advances cursor to the next input field. For numeric fields, makes the input a positive number.
Field Mark	Field Mark is valid within any unprotected entry input field in which the Dup or Field Mark key is allowed (FFW bit 3 set to on). The Field Mark character (X′1E′) is displayed as an overscore on IBM 5251 Display Stations and as a space on all other supported workstations. If an operator presses the Field Mark key in an entry field that does not allow the Dup or Field Mark key, operator error 0019 is posted. The Field Mark code point is allowed in an outbound data stream.
Forward Tab	Moves the cursor to the first position in the next input field.

To enter an operation:

Press the key(s) listed in the section for the terminal. Or, scan the bar code in Appendix A.

System Messages

The terminal's display reserves a line for status information. The status line can display system (nonlocal) information such as a message waiting from the host computer, help messages in response to the [Help] key, or the system request state of the terminal.

System codes can also appear on the status line. System messages and codes are described in Section 6, "Display Data Stream."

Section 3

Using the Terminal's Keyboard

Your terminal has a special keyboard that contains most of the keys available on your 5250 terminal keyboard. Use the keyboard to enter data in the TE screens.

The keys on the keyboard have their main character or operation marked directly on the key itself. To access that character or operation, just press the key.

You can access TE commands and functions printed above the keys by pressing key combinations. For example, on a 2415, 2425, 2455, or 248X, you can use the Function Left (f), Function Right (f), Shift (⇧), and Control (△) keys to access characters or functions listed above the keys.

2415 Terminal

Your 2415 terminal has either a 55-key keyboard (Figure 3-1) or a 37-key keyboard (Figure 3-2).

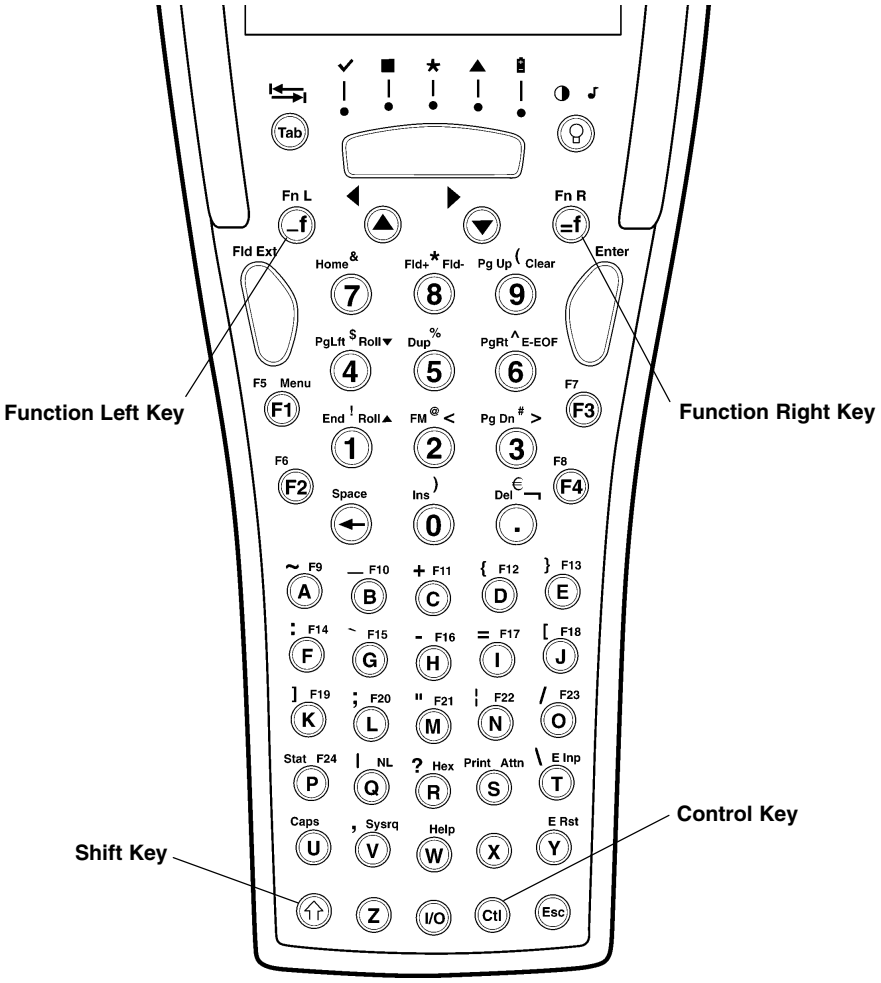


Figure 3-1
2415 Terminal 55-Key Keyboard

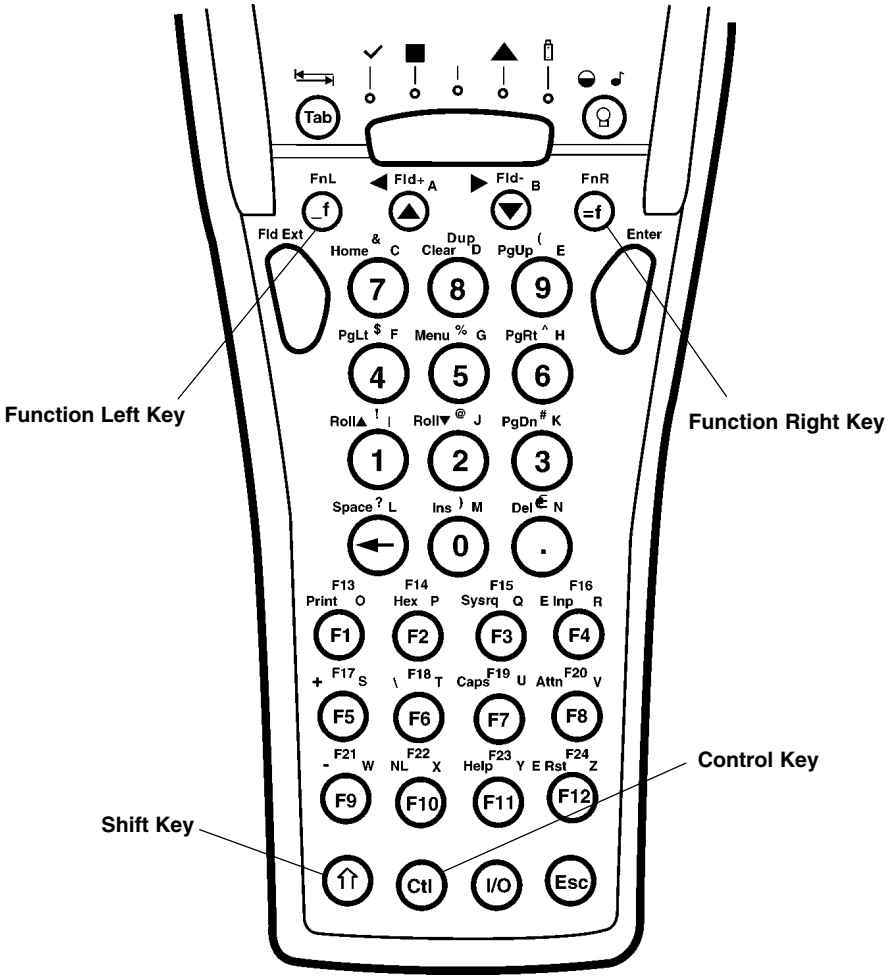


Figure 3-2
2415 Terminal 37-Key Keyboard

For help with using the keyboard, refer to the *TRAKKER Antares 241X Hand-Held Terminal User's Manual* (P/N 069538).

2415 Cursor Keys

To Enter	Press the Keys
Window/viewport up	▲
Window/viewport down	▼
Window/viewport right	f ▼
Window/viewport left	f ▲

2415 Paging Keys

To Enter	Press the Keys
Page up	f 9
Page down	f 3
Page right	f 6
Page left	f 4

2415 Tab Keys

To Enter	Press the Keys
Back Tab	f Tab
Forward Tab	Tab

2415 AID-Generating Keys

	Press the Keys	
To Enter	**55-Key Keyboard**	**37-Key Keyboard**
Clear	f 9	f 8
Enter/Rec Adv		
F1	F1	F1
F2	F2	F2
F3	F3	F3
F4	F4	F4
F5	f F1	F5
F6	f F2	F6
F7	f F3	F7
F8	f F4	F8
F9	f A	F9
F10	f B	F10
F11	f C	F11
F12	f D	F12
F13	f E	⇧ F1
F14	f F	⇧ F2
F15	f G	⇧ F3
F16	f H	⇧ F4
F17	f I	⇧ F5
F18	f J	⇧ F6
F19	f K	⇧ F7
F20	f L	⇧ F8

To Enter	55-Key Keyboard	37-Key Keyboard
F21	f M	⇧ F9
F22	f N	⇧ F10
F23	f O	⇧ F11
F24	f P	⇧ F12
Help (nonerror state)	f W	f F11
Print	f S	f F1
Record Backspace (Home)	f 7	f 7
Roll Down	f 4	f 2
Roll Up	f 1	f 1

2415 Field Exit Key

To Enter	Press the Key
Field Exit	⎔

2415 Signal Keys

	Press the Keys	
To Enter	**55-Key Keyboard**	**37-Key Keyboard**
Attn	f S	f F8
Help (from error state)	f W	f F11

2415 Special Control Keys

	Press the Keys	
To Enter	**55-Key Keyboard**	**37-Key Keyboard**
Del	f .	f .
Erase Input	f T	f F4
Error Reset	f Y	f F12
Hex	f R	f F2
Home	f 7	f 7
Insert	f 0	f 0
Shift Lock	f U	f F7

2415 Special Host Key

	Press the Keys	
To Enter	**55-Key Keyboard**	**37-Key Keyboard**
Sys Req	f V	f F3

2415 5250 Additional Functions

To Enter	Press the Keys	
	55-Key Keyboard	37-Key Keyboard
¢ (cent sign)	Not supported.	Not supported.
↵ (New Line)	f Q	f F10
¬ (Not symbol)	f .	Not supported.
Dup (duplicate enabled fields only)	f 5	⇧ 8
Field–	f 8	⇧ ▼
Field+	f 8	⇧ ▲
Field Mark	f 2	Not supported.

2415 Auto-Login Restart

To enter Auto-Login Restart, scan the bar code in Appendix A.

2425 Terminal

Figure 3-3 shows the keyboard for the 2425 terminal.

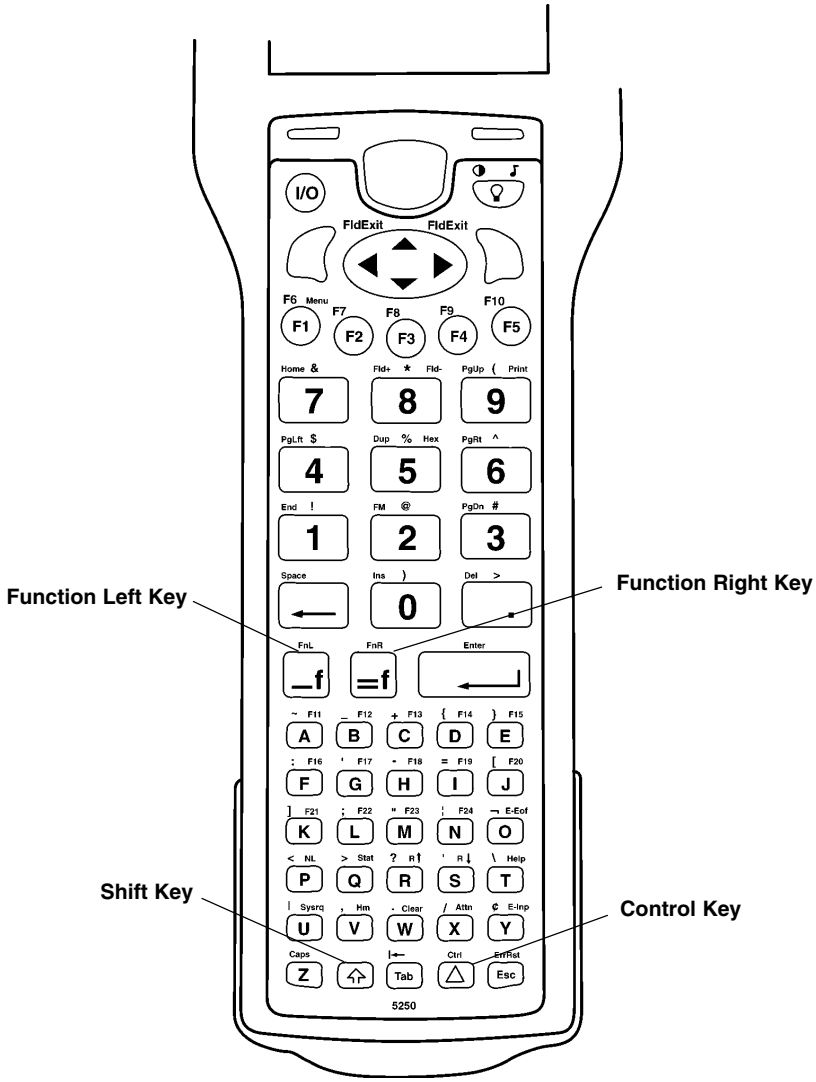


Figure 3-3
2425 Terminal Keyboard

For help with using the keyboard, refer to the *TRAKKER Antares 2420 and 2425 Hand-Held Terminal User's Manual* (P/N 064024).

2425 Cursor Keys

To Enter	Press the Keys
Window/viewport up	_f ▲
Window/viewport down	_f ▼
Window/viewport right	_f ▶
Window/viewport left	_f ◀

2425 Paging Keys

To Enter	Press the Keys
Page up	f 9
Page down	f 3
Page right	f 6
Page left	f 4

2425 Tab Keys

To Enter	Press the Keys
Back Tab	f Tab
Forward Tab	Tab

2425 AID-Generating Keys

To Enter	Press the Keys
Clear	f W
Enter/Rec Adv	↵
F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	f F1
F7	f F2
F8	f F3
F9	f F4
F10	f F5
F11	f A
F12	f B
F13	f C
F14	f D
F15	f E
F16	f F
F17	f G
F18	f H
F19	f I
F20	f J
F21	f K
F22	f L
F23	f M
F24	f N
Help (nonerror state)	f T
Print	f 9
Record Backspace (Home)	f V
Roll Down	f S
Roll Up	f R

2425 Field Exit Key

To Enter	Press the Key
Field Exit	◁ *or* ▷

2425 Signal Keys

To Enter	Press the Keys
Attn	f X
Help (from error state)	f T

2425 Special Control Keys

To Enter	Press the Key(s)
Del	f .
Erase Input	f Y
Error Reset	f Esc
Hex	f 5
Home	f V
Insert	f 0
Shift Lock	f Z

2425 Special Host Key

To Enter	Press the Keys
Sys Req	f U

2425 5250 Additional Functions

To Enter	Press the Keys
¢ (cent sign)	f Y
↵ (New Line)	f P
¬ (Not symbol)	f O
Dup (duplicate enabled fields only)	f 5
Field–	f 8
Field+	f 8
Field Mark	f 2

2425 Auto-Login Restart

To enter Auto-Login Restart, press f F5 or scan the bar code in Appendix A.

2455 Terminal

Figure 3-4 shows the keyboard for the 2455 terminal.

▶ **NOTE:** *You must use the 2455 keyboard (P/N 067028) with the TE applications.*

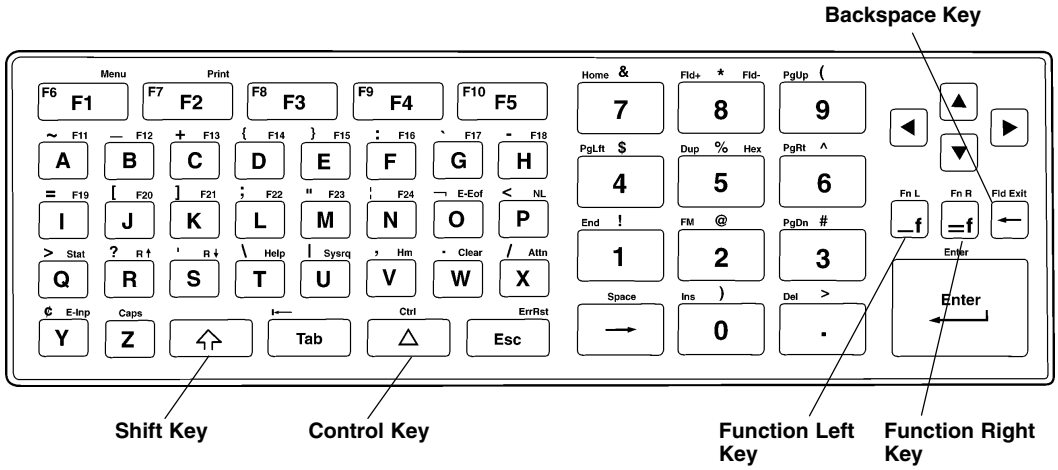


Figure 3-4
2455 Terminal Keyboard

For help with using the keyboard, refer to the *TRAKKER Antares 2455 Vehicle-Mount Terminal User's Manual* (P/N 067358).

2455 Cursor Keys

To Enter	Press the Keys
Window/viewport up	f ▲
Window/viewport down	f ▼
Window/viewport right	f ▶
Window/viewport left	f ◀

2455 Paging Keys

To Enter	Press the Keys
Page up	f 9
Page down	f 3
Page right	f 6
Page left	f 4

2455 Tab Keys

To Enter	Press the Keys
Back Tab	f Tab
Forward Tab	Tab

2455 AID-Generating Keys

To Enter	Press the Keys
Clear	f W
Enter/Rec Adv	↵
F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	f F1
F7	f F2
F8	f F3
F9	f F4
F10	f F5
F11	f A
F12	f B
F13	f C
F14	f D
F15	f E
F16	f F
F17	f G
F18	f H
F19	f I
F20	f J
F21	f K
F22	f L
F23	f M
F24	f N
Help (nonerror state)	f T
Print	f F2
Record Backspace (Home)	f V
Roll Down	f S
Roll Up	f R

2455 Field Exit Key

To Enter	Press the Key
Field Exit	FldExit

2455 Signal Keys

To Enter	Press the Keys
Attn	f X
Help (from error state)	f T

2455 Special Control Keys

To Enter	Press the Key(s)
Del	f .
Erase Input	f Y
Error Reset	f Esc
Hex	f 5
Home	f V
Insert	f 0
Shift Lock	f Z

2455 Special Host Key

To Enter	Press the Keys
Sys Req	f U

2455 5250 Additional Functions

To Enter	Press the Keys
¢ (cent sign)	f Y
↵ (New Line)	f P
¬ (Not symbol)	f O
Dup (duplicate enabled fields only)	f 5
Field–	f 8
Field+	f 8
Field Mark	f 2

2455 Auto-Login Restart

To enter Auto-Login Restart, press f F5 or scan the bar code in Appendix A.

248X Terminal

Figure 3-5 shows the keyboard for the 248X terminal.

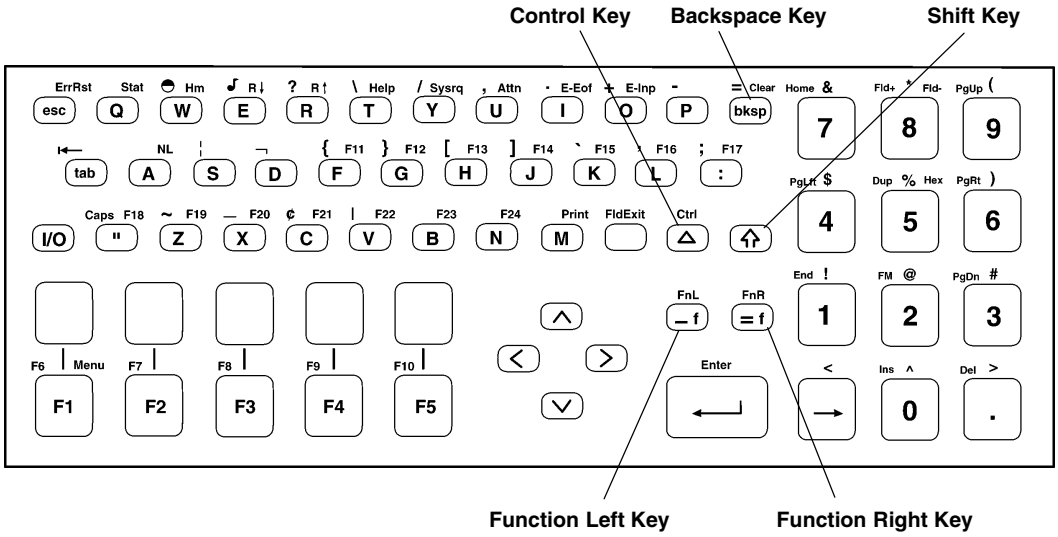


Figure 3-5
248X Terminal Keyboard

For help with using the keyboard, refer to the *TRAKKER Antares 248X Stationary Terminal User's Manual* (P/N 066960).

248X Cursor Keys

To Enter	Press the Keys
Window/viewport up	_f ^
Window/viewport down	_f v
Window/viewport right	_f >
Window/viewport left	_f <

248X Paging Keys

To Enter	Press the Keys
Page up	_f 9
Page down	_f 3
Page right	_f 6
Page left	_f 4

248X Tab Keys

To Enter	Press the Keys
Back Tab	f tab
Forward Tab	tab

248X AID-Generating Keys

To Enter	Press the Keys
Clear	f bksp
Enter/Rec Adv	↵
F1	F1
F2	F2
F3	F3
F4	F4
F5	F5
F6	f F1
F7	f F2
F8	f F3
F9	f F4
F10	f F5
F11	f F
F12	f G
F13	f H
F14	f J
F15	f K
F16	f L
F17	f :
F18	f "
F19	f Z
F20	f X
F21	f C
F22	f V
F23	f B
F24	f N
Help (nonerror state)	f T
Print	f M
Record Backspace (Home)	f W
Roll Down	f E
Roll Up	f R

248X Field Exit Key

To Enter	Press the Key
Field Exit	FldExit

248X Signal Keys

To Enter	Press the Keys
Attn	f U
Help (from error state)	f T

248X Special Control Keys

To Enter	Press the Key(s)
Del	f .
Erase Input	f O
Error Reset	f Esc
Hex	f 5
Home	f W
Insert	f 0
Shift Lock	f "

248X Special Host Key

To Enter	Press the Keys
Sys Req	f Y

248X 5250 Additional Functions

To Enter	Press the Keys
¢ (cent sign)	f C
↵ (New Line)	f A
¬ (Not symbol)	f D
Dup (duplicate enabled fields only)	f 5
Field–	f 8
Field+	f 8
Field Mark	f 2

248X Auto-Login Restart

To enter Auto-Login Restart, press f F5 or scan the bar code in Appendix A.

6400 Computer

Your 6400 computer has either a 51-key keyboard (Figure 3-6) or a 41-key keyboard (Figure 3-7).

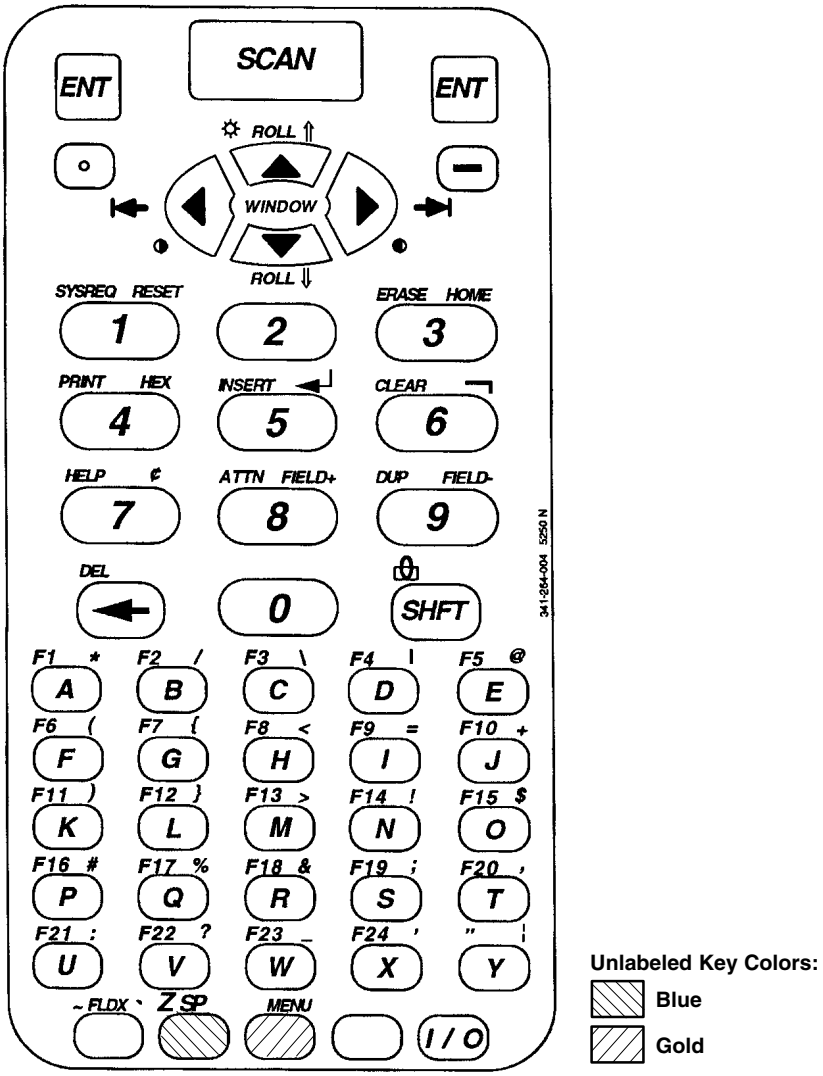


Figure 3-6
6400 Computer 51-Key Keyboard

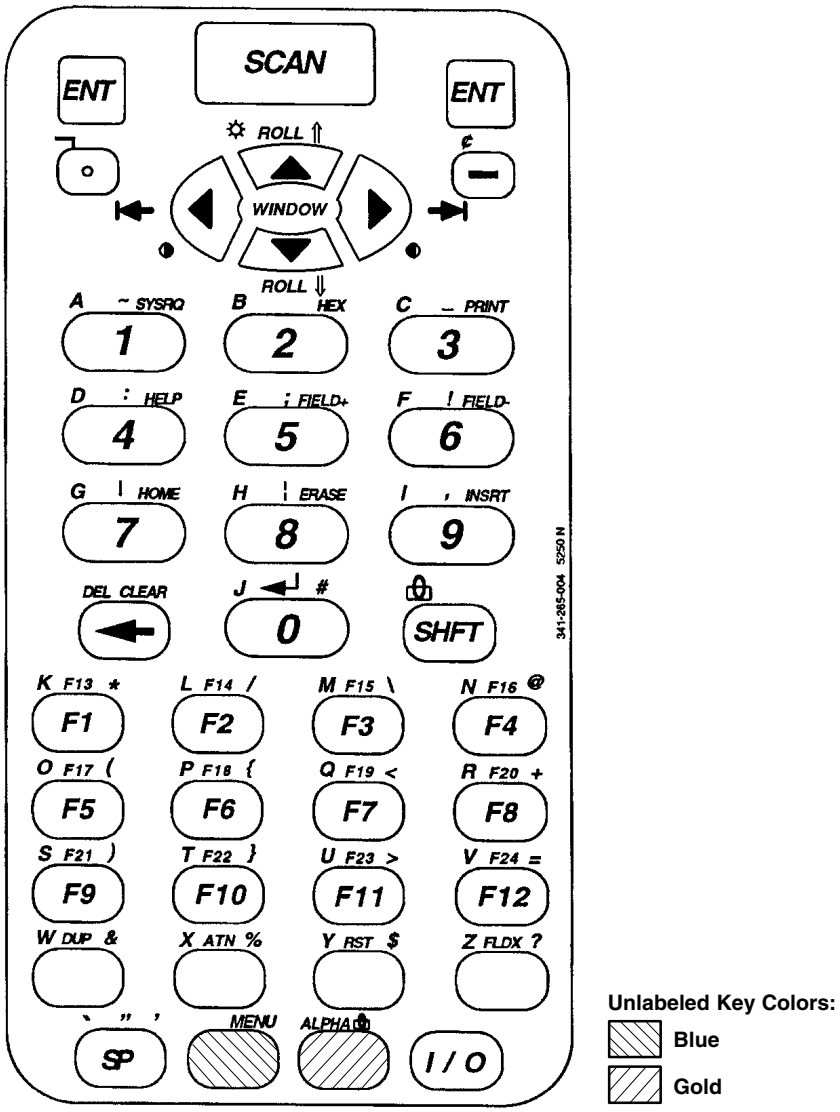


Figure 3-7
6400 Computer 41-Key Keyboard

The special characters and functions printed above the keys are color-coded to correspond with the matching shift keys. The shift keys are as follows.

[SHFT]	Press the green [SHFT] key plus a letter to type the letter in uppercase.
[GOLD]	The gold key puts the keyboard into gold shift mode. Press [GOLD] plus a keyboard key to type a character or do an operation printed in gold on the overlay.
[BLUE]	The blue key puts the keyboard into blue shift mode. Press [BLUE] plus a keyboard key to do an operation printed in blue on the overlay.

The 51-key keyboard has two white, unlabeled keys in the bottom row of the keyboard. Following are the keys' functions when they are unshifted (in the primary plane):

- The key with "FLDX" printed above it is the Field Exit key.
- The key with "SP" printed above it is the Space key.

The 41-key keyboard has four white, unlabeled keys near the bottom row of the keyboard. Following are the key's functions when they are primary plane:

- The key with "DUP" printed above it is the Duplicate key.
- The key with "ATN" printed above it is the Attention key.
- The key with "RST" printed above it is the Error Reset key.
- The key with "FLDX" printed above it is the Field Exit key.

For help with using the keyboard, refer to the *PEN*KEY Model 6400 User's Guide* (P/N 961-047-093).

Using the 41-Key Keyboard

The 41-key keyboard (Figure 3-7) has standard numeric keys, an [ENTER] key, and user-defined function keys in its primary plane. It has alphabetic keys in its secondary plane.

Because a 6400 computer with a 41-key keyboard does not have alphabetic keys, follow these procedures to change passwords and cold-start the computer:

- To enter the password for the Set-Up Parms TE configuration menu, press [SHFT]+[BLUE]+[3] (a "C") and then [SHFT]+[BLUE]+ [F8] (an "R"). Then press the correct numbers, which are 52401.
- To initiate the COLD START? menu option, press [BLUE]+ [F11]+[RST] to answer "yes."

You can use one of two methods to type letters on the 41-key keyboard: standard blue shift mode or alpha lock mode. When engaged, alpha lock switches the alphabetic keys with the function keys. That is, it moves lowercase alphabetic keys from their standard [BLUE] plane to the primary plane. It moves uppercase alphabetic keys from their standard [SHFT]+[BLUE] plane to the [SHFT] plane. Alpha lock provides a faster way to type a series of letters because it reduces the number of key presses.

▶ **NOTE:** *Alpha lock mode moves only lowercase alphabetic keys to the primary plane.*

To engage alpha lock mode press [BLUE]+[GOLD]. Then, to type a series of letters, press the correct key combination. The keyboard stays in alpha lock mode until you press [BLUE]+[GOLD] to unlock it.

6400 Cursor Keys

To Enter	Press the Keys
Window/viewport up	[GOLD]+[▲]
Window/viewport down	[GOLD]+[▼]
Window/viewport right	[GOLD]+[▶]
Window/viewport left	[GOLD]+[◀]

6400 Paging Keys

To Enter	Press the Keys
Page up	[BLUE]+[▲]
Page down	[BLUE]+[▼]
Page right	[BLUE]+[▶]
Page left	[BLUE]+[◀]

6400 Tab Keys

To Enter	Press the Keys
Back Tab	
Forward Tab	

6400 AID-Generating Keys

	Press the Key(s)	
To Enter	51-Key Keyboard	41-Key Keyboard (Standard Mode)
F1	[BLUE]+[A]	[F1]
F2	[BLUE]+[B]	[F2]
F3	[BLUE]+[C]	[F3]
F4	[BLUE]+[D]	[F4]
F5	[BLUE]+[E]	[F5]
F6	[BLUE]+[F]	[F6]
F7	[BLUE]+[G]	[F7]
F8	[BLUE]+[H]	[F8]
F9	[BLUE]+[I]	[F9]
F10	[BLUE]+[J]	[F10]
F11	[BLUE]+[K]	[F11]
F12	[BLUE]+[L]	[F12]
F13	[BLUE]+[M]	[SHFT]+[F1]
F14	[BLUE]+[N]	[SHFT]+[F2]
F15	[BLUE]+[O]	[SHFT]+[F3]

	Press the Key(s)	
To Enter	**51-Key Keyboard**	**41-Key Keyboard (Standard Mode)**
F16	[BLUE]+[P]	[SHFT]+[F4]
F17	[BLUE]+[Q]	[SHFT]+[F5]
F18	[BLUE]+[R]	[SHFT]+[F6]
F19	[BLUE]+[S]	[SHFT]+[F7]
F20	[BLUE]+[T]	[SHFT]+[F8]
F21	[BLUE]+[U]	[SHFT]+[F9]
F22	[BLUE]+[V]	[SHFT]+[F10]
F23	[BLUE]+[W]	[SHFT]+[F11]
F24	[BLUE]+[X]	[SHFT]+[F12]
Enter/Rec Adv	[ENTER]	[ENTER]
Help (nonerror state)	[BLUE]+[7]	[GOLD]+[4]
Print	[BLUE]+[4]	[GOLD]+[3]
Clear	[BLUE]+[6]	[GOLD]+[←]
Record Backspace (Home)	[GOLD]+[3]	[GOLD]+[7]
Roll Down	[GOLD]+[▼]	[GOLD]+[▼]
Roll Up	[GOLD]+[▲]	[GOLD]+[▲]

When alpha lock mode is engaged on the 41-key keyboard, it switches the function keys with the alphabetic keys. That is, function keys normally in the primary plane ([F1] through [F12]) move to the [BLUE] plane. Function keys normally in the [SHFT] plane ([F13] through [F24]) move to the [SHFT]+[BLUE] plane.

6400 Field Exit

To Enter	Press the Key
Field Exit	[FLDX]

6400 Signal Keys

	Press the Key(s)	
To Enter	**51-Key Keyboard**	**41-Key Keyboard**
Attn	[BLUE]+[8]	[ATN]
Help (from error state)	[BLUE]+[7]	[GOLD]+[4]

6400 Special Control Keys

	Press the Key(s)	
To Enter	**51-Key Keyboard**	**41-Key Keyboard**
Del	[BLUE]+[←]	[BLUE]+[←]
Erase Input	[BLUE]+[3]	[GOLD]+[8]
Error Reset	[GOLD]+[1]	[RST]
Hex	[GOLD]+[4]	[GOLD]+[2]
Home	[GOLD]+[3]	[GOLD]+[7]
Insert	[BLUE]+[5]	[GOLD]+[9]
Shift Lock	[BLUE]+[SHFT]	[BLUE]+[SHFT]

6400 Special Host Key

	Press the Key	
To Enter	**51-Key Keyboard**	**41-Key Keyboard**
Sys Req	[BLUE]+[1]	[GOLD]+[1]

6400 5250 Additional Functions

	Press the Key(s)	
To Enter	**51-Key Keyboard**	**41-Key Keyboard**
↵ (New Line)	[GOLD]+[5]	[SHFT]+[0]
Dup (duplicate enabled fields only)	[BLUE]+[9]	[DUP]
Field–	[GOLD]+[9]	[GOLD]+[6]
Field+	[GOLD]+[8]	[GOLD]+[5]
Field Mark	No key available. Scan the bar code in Appendix A.	

6400 Auto-Login Restart

To enter Auto-Login Restart, scan the bar code in Appendix A.

5055 Computer

Figure 3-8 shows the keyboard for the 5055 computer.

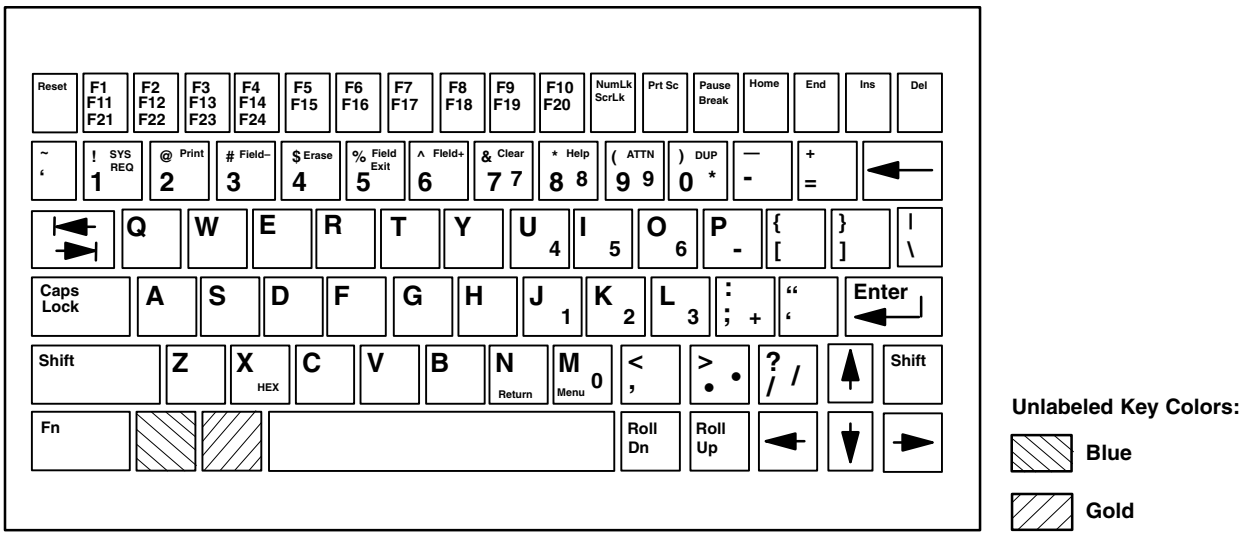


Figure 3-8
5055 Computer Keyboard

The special characters and functions printed above the keys are color-coded to correspond with the matching shift keys.

The shift keys are as follows.

[Shift]	Press [Shift] plus a letter to type the letter in uppercase.
[BLUE]	The blue (Ctrl) key puts the keyboard into blue shift [BLUE] mode. Press [BLUE] plus a keyboard key to do an operation printed in blue, or to send a control character.
[GOLD]	The gold (Alt) key puts the keyboard into gold shift [GOLD] mode. Press [GOLD] plus a keyboard key to do an operation printed in gold.
[NumLk]	The green (number lock) key puts the keyboard into [NumLk] mode. Press [NumLk] plus a keyboard key to type a number or character printed in green.

▶ **NOTE:** *These keys are on the keyboard but are not supported: Fn, Setup, Pause, Break, End, and ScrLk.*

For help with using the keyboard, refer to the *5055 Data Collection PC User's Guide* (P/N 961-054-017).

5055 Cursor Keys

To Enter	Press the Keys
Window/viewport up	[BLUE]+ ↑
Window/viewport down	[BLUE]+ ↓
Window/viewport right	[BLUE]+ →
Window/viewport left	[BLUE]+ ←

5055 Paging Keys

To	Press the Keys
Page up	[GOLD]+ ↑
Page down	[GOLD]+ ↓
Page right	[GOLD]+ →
Page left	[GOLD]+ ←

5055 Tab Keys

To	Press the Keys
Back Tab	⇤
Forward Tab	⇥

5055 AID-Generating Keys

To	Press the Keys
Clear	[GOLD]+[7]
Enter/Rec Adv	[Enter]
F1	[F1]
F2	[F2]
F3	[F3]
F4	[F4]
F5	[F5]
F6	[F6]
F7	[F7]
F8	[F8]
F9	[F9]
F10	[F10]
F11	[BLUE]+[F1]
F12	[BLUE]+[F2]
F13	[BLUE]+[F3]
F14	[BLUE]+[F4]
F15	[BLUE]+[F5]

To	Press the Keys
F16	[BLUE]+[F6]
F17	[BLUE]+[F7]
F18	[BLUE]+[F8]
F19	[BLUE]+[F9]
F20	[BLUE]+[F10]
F21	[GOLD]+[F1]
F22	[GOLD]+[F2]
F23	[GOLD]+[F3]
F24	[GOLD]+[F4]
Help (nonerror state)	[GOLD]+[8]
Print	[GOLD]+[2]
Record Backspace (Home)	[Home]
Roll Down	[Roll Dn]
Roll Up	[Roll Up]

5055 Field Exit Key

To Enter	Press the Keys
Field Exit	[GOLD]+[5]

5055 Signal Keys

To Enter	Press the Keys
Attn	[GOLD]+[9]
Help (from error state)	[GOLD]+[8]

5055 Special Control Keys

To Enter	Press the Keys
Del	[Del]
Erase Input	[GOLD]+[4]
Error Reset	[Reset]
Hex	[GOLD]+[Z]
Home	[Home]
Insert	[Ins]
Shift Lock	[Caps Lock]

5055 Special Host Key

To Enter	Press the Keys
Sys Req	[GOLD]+[1]

5055 5250 Additional Functions

To Enter	Press the Keys
¢ (cent sign)	Not supported.
↵ (New Line (return)	[GOLD]+[N]
¬ (Not symbol)	Not supported.
Dup (duplicate enabled fields only)	[GOLD]+[0]
Field–	[GOLD]+[3]
Field+	[GOLD]+[6]
Field Mark	No key available. Scan the bar code in Appendix A.

5055 Auto-Login Restart

To enter Auto-Login Restart, scan the bar code in Appendix A.

Section 4

Using the Trakker Antares' Terminal Emulation Menus

NOTE: *This section contains the TE configuration menus for 2415, 2425, 2455, and 248X terminals. For information about the configuration menus for the 6400 or 5055 computer, refer to the computer's user manual.*

You can configure several options for 5250 TE on your Trakker Antares® terminal, including:

- UDP Plus or TCP/IP communications
- 5250 options
- Main Menu password

This section lists ALL TE parameters. If a certain parameter does not apply to your terminal, the parameter will NOT appear in the TE configuration menus.

The CFGLIT.DAT file specifies the text of the TE configuration menus. This section assumes you are using the default settings in CFGLIT.DAT. To customize CFGLIT.DAT, see Section 5, "Customizing Your Configuration."

Navigating Through the Menus

The following paragraphs describe how to navigate through the TE configuration menus.

Using the Enter Key

Press the terminal's [Enter] key to return to a previous TE configuration menu. Press [Enter] several times to return to the Main Menu from a submenu. This key also accepts the displayed or keyed input.

Using the Numeric Keys

Several menus have numbered options. Press the corresponding numeric key to make a selection.

Pressing a number may bring up a submenu. Use the submenu to further modify the choice you made in the parent menu. After the modifications, you may return to the parent menu to make additional selections. (This depends on the menu and function.) Also, you may press a numeric key to exit a menu or cold start the terminal. These situations are covered later in this section.

Some menus require you to enter a number, but do not necessarily have simple choices such as 1, 2, 3, 4, etc. Instead, you may have to enter a number within a range of numbers.

Enabling or Disabling Options

You can enable or disable some numbered menu options. If the number for an option is highlighted (appears in reverse video), that option is ON or enabled. If an option is not highlighted, the option is disabled. After you enable or disable an option, you can make additional selections from the same menu.

Using the Y ("Yes") Key

Several displays provide warning that a certain action can cause your terminal to lose data stored in memory. Press the Y ("yes") key to indicate that you understand the consequences of your action and the terminal should proceed as instructed. Press any other key to exit the menu without executing your original choice.

Configuring TE Parameters

You can access the TE configuration menus when the initialization screen appears or once you establish a TE session. The TE initialization screen appears each time you reboot the terminal or restart your application.

▶ **NOTE:** *If you are using a terminal with TCP/IP, you cannot enter the TE configuration menus when the terminal is trying to connect to the host.*

To configure TE parameters:

At the initialization screen or anywhere in a TE session, access the Main Menu by pressing the keys in the following chart.

Terminal	Key Sequence
2415	f F1 (55-key keyboard)
	f 5 (37-key keyboard)
2425	f F1
2455 and 248X	f F1

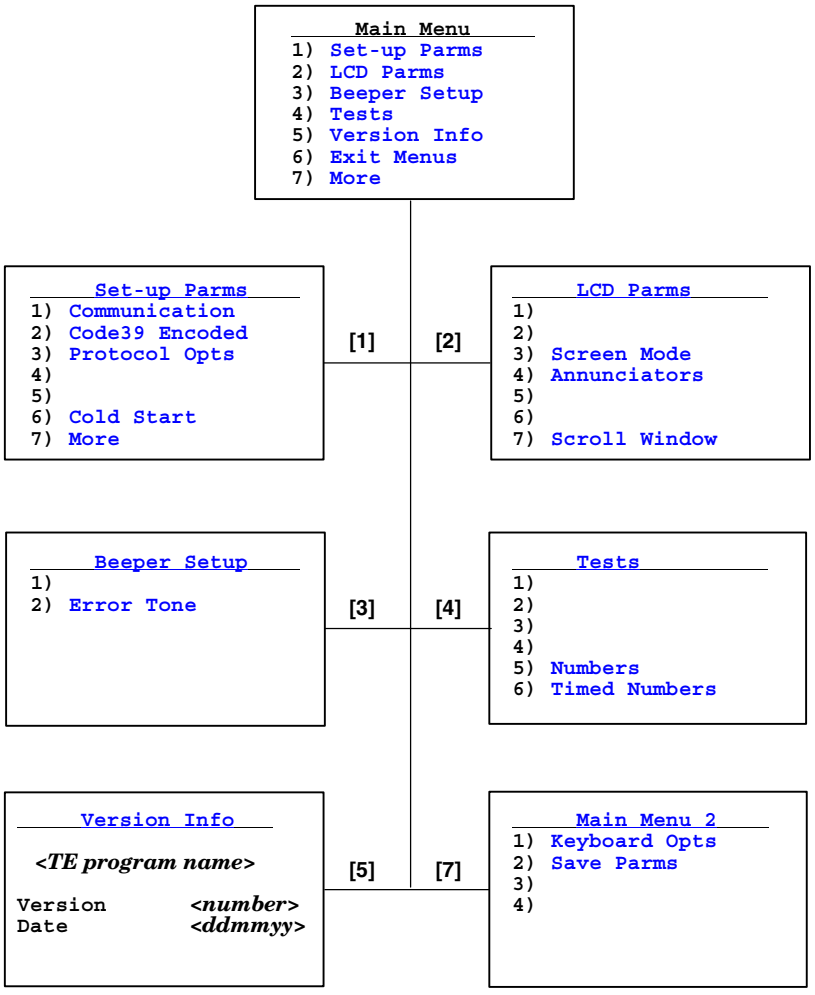
▶ **NOTE:** *You can also access the Main Menu by scanning the bar code label in Appendix A, "Bar Code Scanning."*

The Main Menu appears:

```
Main Menu
1) Set-up Parms
2) LCD Parms
3) Beeper Setup
4) Tests
5) Version Info
6) Exit Menus
7) More
```

The following figure shows the structure of the TE configuration menus.

▶ **NOTE:** *Some parameters for 2415, 2425, 2455, and 248X terminals are available through the TRAKKER Antares 2400 Menu System. They are not reproduced in the TE configuration menus. For more information about the menu system, refer to the terminal's user manual.*



Set-Up Parms Menu

The Set-up Parms menu (option 1 on the Main Menu) is password-protected to prevent unauthorized users from changing parameters. You can change the password by customizing the parameter's set-up file (CONFIG.DAT). For more information about changing the password, see Section 5, "Customizing Your Configuration."

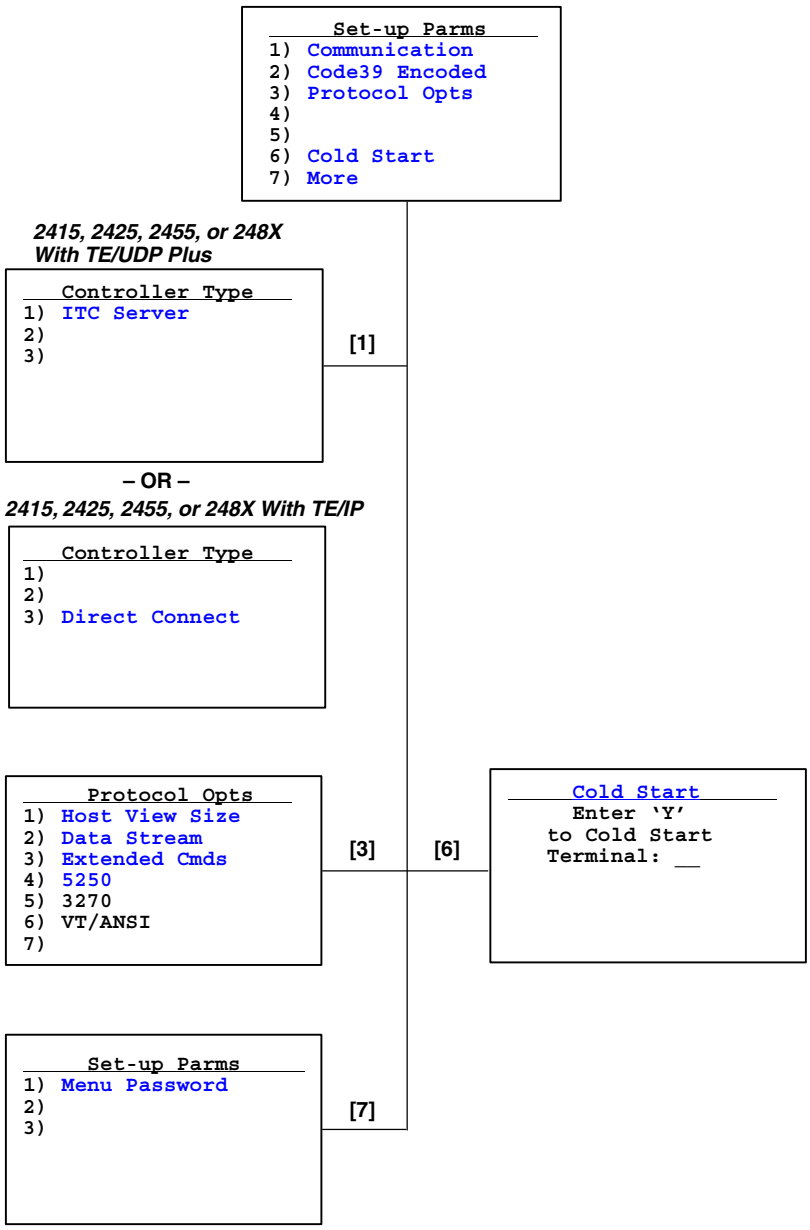
▶ **NOTE:** *You can also set the password for UDP Plus terminals from the DCS 300.*

To use the Set-up Parms menu:

1. Press [1] on the Main Menu.
2. At the Enter Password prompt, enter the password. (You should not press [Enter] here.) The default password is:

   `cr52401`

The following figure shows the Set-up Parms menus and submenus.

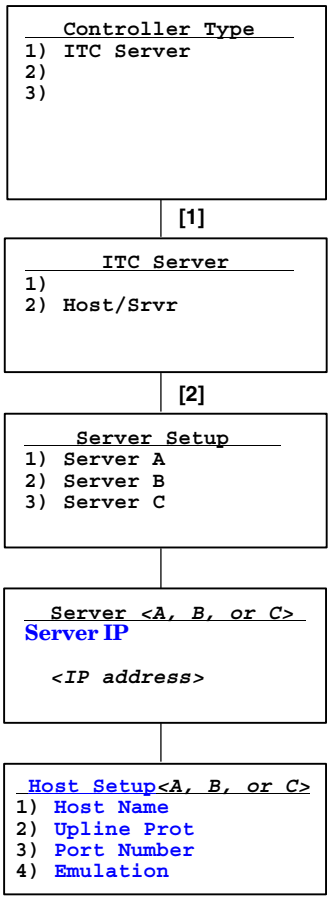


Communication

The communication option for the 2415, 2425, 2455, and 248X with UDP Plus is ITC Server. The communication option for TCP/IP is Direct Connect.

ITC Server

ITC Server options are as follows:



To set the options, select ITC Server, Host/Srvr Setup, and then the Server Setup option (Server A, B, or C).

Server IP <A, B, or C>

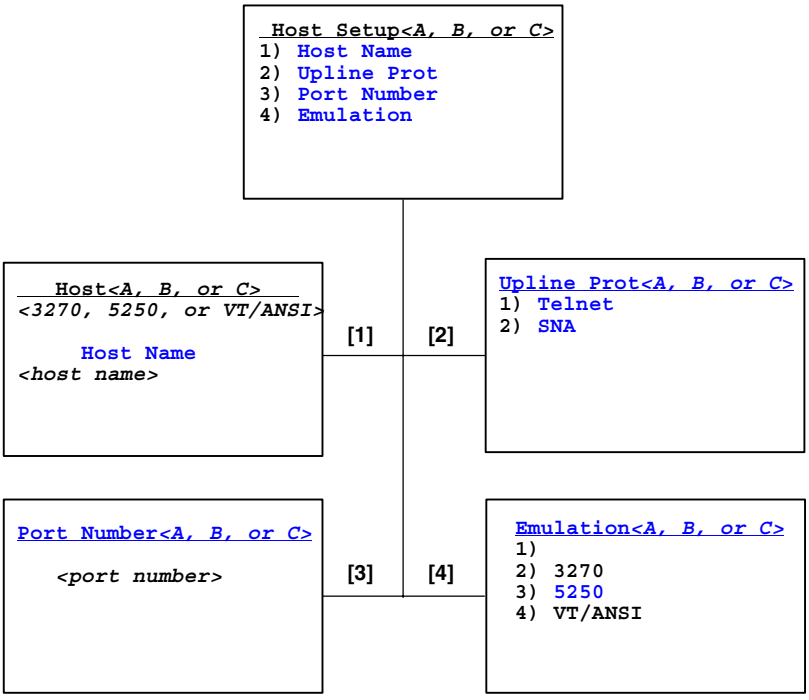
When the terminal boots, the TE program should enter the Server <A> IP address as follows:

- If a nonzero IP address exists for the Host A.Server IP parameter in CONFIG.DAT, the TE program automatically enters that address.
- If the Host A.Server IP parameter in CONFIG.DAT is blank or zero, the TE program automatically enters the IP address set for the DCS 300 in the terminal's firmware.

If you are using the Server <B> or Server <C> option as a fallback DCS 300, enter the server's IP address or DNS name.

Host Setup <A, B, or C>

Menu options are as follows:



Host Name

The host name can be 16 or fewer characters in length (with no spaces). It is case-sensitive and must match a host name in the list of available hosts defined on the DCS 300, or remain blank. The name can also be the IP address of the host to which you want to connect. Enter the IP address as four decimal numbers separated by periods.

If you have linked a terminal with a host name on the DCS 300, or configured a default host on this DCS 300, you do not need to enter a host name on this screen.

The terminal displays a list of available hosts if these conditions are met:

- The DCS 300 contains multiple hosts
- The terminal is not linked with a host name on the DCS 300
- The host name is blank

The user can then select the host from the list.

Upline Protocol

When enabled, upline protocol options do the following:

Telnet *(Default)*	Forces the DCS 300 to create a Telnet connection to the host.
SNA	Forces the DCS 300 to create an SNA connection to the host.

Port Number

This option overrides the port number set for the upline if you have entered a host name and selected Telnet as your upline protocol. The default port number is 0. The maximum port number is 65535.

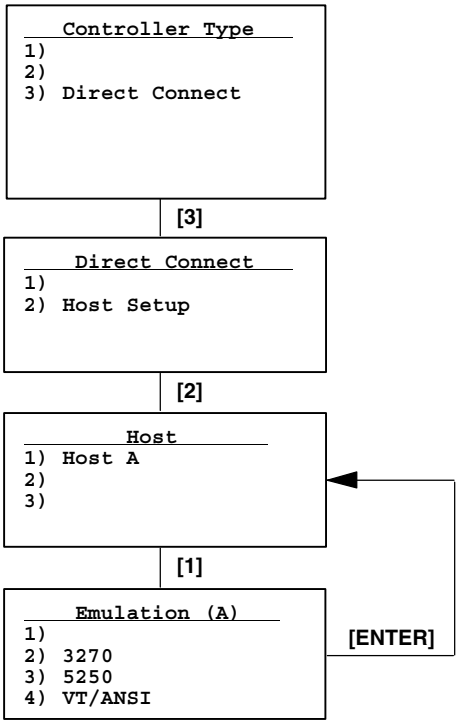
Emulation

Use this option to tell the terminal the type of each host computer. The default is 3270.

▶ **NOTE:** *You can also set the type through the Data Stream option on the Protocol Opts menu.*

Direct Connect

Direct Connect options are as follows:



To set the options, select Direct Connect, Host Setup, and then Host A. Use the Emulation (A) option to tell the terminal the type of each host computer. The default is 3270.

▶ **NOTE:** *You can also set the emulation type through the Data Stream option on the Protocol Opts menu.*

Code 39 Encoded

By default, Encoded Code 39 is disabled. When you enable this option, the key press sequences for Encoded Code 39 are used. For more information, see Appendix A, "Bar Code Scanning."

Protocol Opts Menu

Use the Protocol Opts menu to designate the type of terminal emulation the host supports. You can also use it to designate additional commands and command sets. The menu is as follows:

```
Protocol Opts
1) Host View Sze
2) Data Stream
3) Extended Cmds
4) 5250
5) 3270
6) VT/ANSI
7)
```

Host View Size

Use Host View Sze to set the format of display information sent from the host computer:

```
Host View Sze

Width

<width>
```

For 5250 TE, the size is 80.

Data Stream

Use this option to specify the data stream the host uses:

```
Data Stream
1)
2) 3270
3) 5250
4) VT/ANSI
```

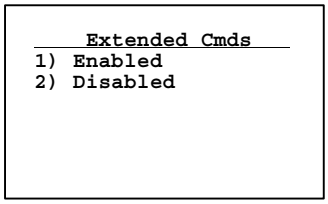
▶ **NOTE:** *You can also set the emulation type through the ITC Server or Direct Connect menu.*

For information about 3270 or VT/ANSI, refer to the following manuals:

- *TE 2000 3270 Terminal Emulation Programmer's Guide* (P/N 977-055-003)
- *TE 2000 VT/ANSI Terminal Emulation Programmer's Guide* (P/N 977-055-005)

Extended Commands

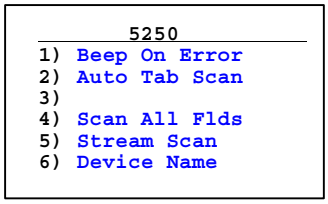
Use the Extended Commands option to enable or disable extended commands:



By default, extended commands are disabled. For more information about extended commands, see Section 7.

5250

Following are 5250 menu options:

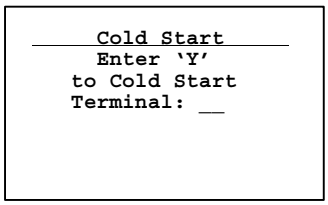


When enabled, options do the following:

Beep On Error *(Default: disabled)*	Causes the beeper to sound, but allows you to continue working. Normally, when an error occurs, the keyboard locks up and you must reset it either from the host or through the RESET key on the terminal.
Auto Tab Scan *(Default: disabled)*	Causes the cursor to tab forward to the next input field when a good scan is obtained.
Scan All Flds *(Default: disabled)*	Enables the scanner whenever the cursor is in an input field. When this option is disabled, the host computer must enable the scanner for each input field that requires scanned data. Enable the Scan All Flds option if the scanner needs to be enabled all the time.
Stream Scan *(Default: disabled)*	If this option is enabled, data remaining after the first field is filled is written to the next input field or fields. If a nonscannable field is encountered, remaining bar code data is ignored. When an auto-enter field is encountered, an [Enter] key is simulated when the field is full. Remaining bar code data is ignored. If this option is disabled, data remaining after the field is filled is ignored.
Device Name *(Default: null string)*	Enables you to enter the name of the host device you want to link with this terminal. The name can be up to 10 English uppercase characters including A–Z, 0–9, and these special characters: # $ _ @ Note that the first character in the name cannot be 0–9. This option supports RFC 1572 for a new environment variable. The AS/400 will see each terminal as a separate device name. Depending on the name, it can direct each device to a separate login screen.

Cold Start Option

Use the Cold Start option to reset all TE values to the stored configuration in CONFIG.DAT.



To cold start the terminal:

1. Press [Y]. The terminal reboots.
2. Open the TRAKKER Antares 2400 Menu System.
3. Use the File Manager option to restart the TE program. For help, refer to the terminal's user manual.

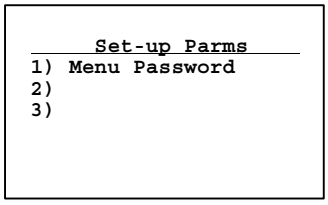
To return to the Set-up Parms menu without cold-starting the terminal, press an alphabetic key other than [Y].

More Menu

Use the Menu Password option to enable password protection for the TE configuration menus. When you enable the password, the terminal prompts the user for a password before it displays the Main Menu. The password is disabled by default.

To enable the Menu Password:

1. Press [7] (More) on the Set-up Parms menu. The following screen appears:



2. Press [1].
3. At the Enter Password prompt, type the following password: **3193693**
   This is a fixed password set by Intermec®.

▶ **NOTE:** *The Menu Password is now enabled, as indicated by the highlighted "1)."*

4. Press [ENTER] twice to return to the Main Menu.
5. Press [6] (Exit Menus) on the Main Menu to exit the TE configuration menus.

If the Menu Password is enabled when you try to enter the Main Menu, you are prompted for a password. If you enter an incorrect password, you exit to where the display was at previously. If you enter the correct password, the Main Menu appears. Note that if you select the Set-up Parms option on the Main Menu, you must still enter the password for Set-up Parms.

To disable the menu password, press [1] on the Set-up Parms More menu. The "1)" changes to normal video, which indicates that the Menu Password is disabled. You do not need the password to disable the Menu Password.

LCD Parms Menu

Use the LCD Parms menu (option 2 on the Main Menu) to configure liquid crystal display parameters for the terminal:

```
LCD Parms
1)
2)
3) Screen Mode
4) Annunciators
5)
6)
7) Scroll Window
```

Screen Mode

The terminal has several screen modes that present a window/viewport onto the IBM terminal's 80x24 display buffer. Screen modes govern which portion of the larger IBM terminal's screen the terminal initially presents, and how the window/viewport moves as the cursor moves.

Modes are as follows:

```
Screen Mode
1) Center Cursor
2) Corner Mode
3) Page Mode
4) Lazy Mode
5) Locked Mode
```

Center Cursor Mode

Center mode works best for applications that use the entire data stream's 80x24 logical display. In this mode, the cursor remains in the center of the terminal's window. As the cursor moves within the window, the terminal's display window moves to keep it centered. When the cursor moves off the right, left, top, or bottom edge of the IBM display station, the window remains fixed despite the cursor's movement.

Corner Mode

Corner mode is the default mode. It begins with the window in the upper left corner of the larger IBM display station. It keeps the cursor in the lower right corner of the display. Corner mode works best for applications that use the upper left corner of the logical screen. As the cursor moves off the right or bottom edge of the terminal's display, the window moves to show the cursor. You can move the cursor a predetermined number of key presses in all four directions.

Page Mode

Page mode provides predefined pages within the larger IBM display station. The size of these pages depends on the number of rows and columns selected for display. The terminal moves the window by a multiple of the page size. As the cursor moves off the edge of the terminal's display, the window changes to the next page.

Note that some "pages" in page mode overlap each other; the same information is shown on both pages. This overlap occurs because the 24-row by 80-column CRT screen cannot be divided equally.

Lazy Mode

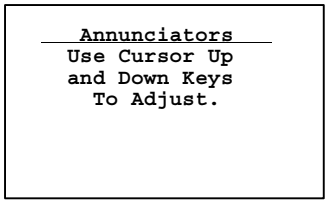
In lazy mode, the window does not move in respect to the 80x24 screen as long as the cursor stays inside the current display window (similar to page mode). When the cursor moves outside of the display window in lazy mode, however, the window moves as little as possible until the cursor is back inside the window.

Locked Mode

In Locked mode, the view window locks to the upper left-hand corner of the display. The screen does not window around, and only the area that has been selected to be the screen size is visible. Locked mode disables the windowing keys, or only allows you to window around the physical display size set in the configuration menus.

Annunciators

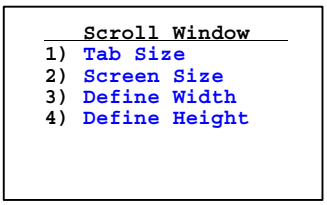
Use the Annunciators option to position the annunciators:



Press ▲ or ▼ to position the annunciators around each of the four display corners, once as a line and once as a box *(default: lower left corner)*. The position where they disappear is the "stealth" mode. In stealth mode, annunciators appear during normal operation, but disappear when you press a key.

Scroll Window

Use Scroll Window to define the size (tab size or screen size) of the cursor movement, or to customize the screen size:

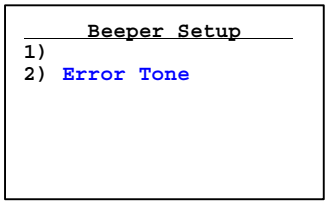


When enabled, menu options do the following:

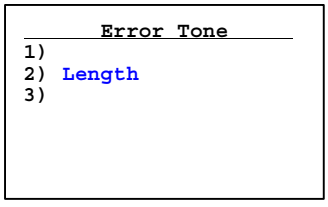
Tab Size (Default)	Moves the cursor by the amount configured for Define Width and Define Height.
Screen Size	Causes the cursor to move by the virtual screen size.
Define Width and Define Height *(Default for both: 8)*	Manually defines the x-axis and y-axis (up and down) movement of the cursor when you select Tab Size. The width is 0–80. The height is 0–24.

Beeper Setup Menu

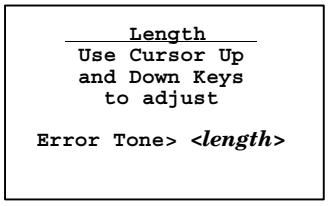
Use the Beeper Setup menu (option 3 on the Main Menu) to configure the error tone:



The error tone option is as follows:



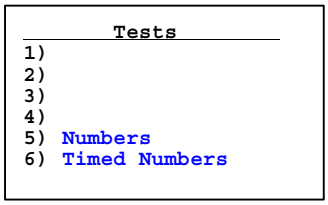
Press [2] to set the length:



The range is 1 through 10, which equates to a 50 ms to 500 ms beep for all errors. The default is 3 ms.

Tests Menu

Intermec Systems Engineers use this test to verify terminal operation during environmental stress tests. Tests are as follows:



Numbers

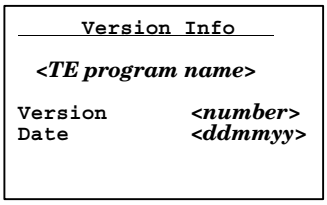
The Numbers test helps detect lockups during severe operating conditions. During the test, the terminal's display is filled with hexadecimal numbers that move across the screen horizontally and scroll vertically. Character movement indicates the processor is still running. To stop the test, press any key.

Timed Numbers

The Timed Numbers test is similar to the Numbers test, but it it also displays the number of seconds the test took. The test terminates when you press a key or when 65,536 numbers have been displayed.

Version Info Option

Use Version Info (option 5 on the Main Menu) to display the following information:



For TE program names, see Section 1, "Getting Started."

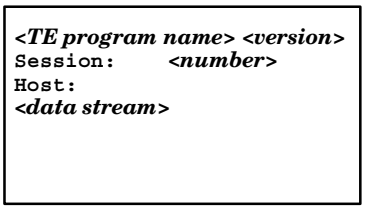
Exit Menus Option

Use Exit Menus (option 6 on the Main Menu) to exit the TE configuration menus. If you changed any parameter settings, the terminal displays the following message when you exit the menus:

SAVE PARMS?

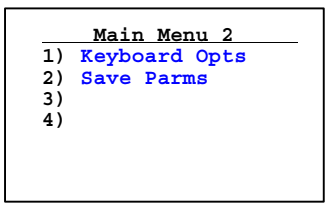
If you press [Y] ("yes"), you are prompted for a password. After you enter the correct password, your settings are saved to Flash, and the terminal may reboot. (Some changes automatically reboot the terminal.) If you press a key other than [Y], you exit the menus and the new settings are NOT saved. In this case, the new settings are lost when you reboot your terminal.

When you exit the TE configuration menus, the following information appears:



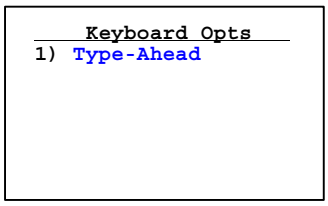
More Option (Main Menu 2)

Use More (option 7 on the Main Menu) to open the Main Menu 2:



Keyboard Opts

Use Keyboard Opts to set the type-ahead feature:



Type-ahead lets you enter information when the terminal cannot immediately send data to the host. Type-ahead stores keystrokes after the Input Inhibited annunciator (below) appears on the status line, and then saves them for the next input field.

X **Input Inhibited annunciator**

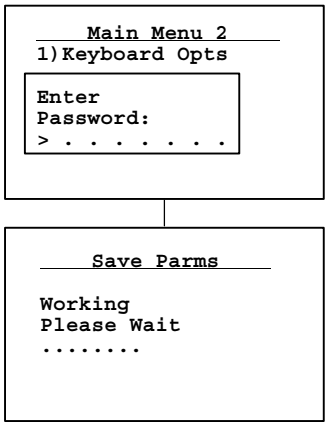
Type-ahead is enabled by default.

Save Parms

Use Save Parms to retain the changes you made to TE configuration settings. When you save the changes, they become the default settings for the terminal.

▶ **NOTE:** *Use this option sparingly. Each time you use it, additional memory space is occupied because changes saved previously are not erased. The memory cannot be recovered.*

Ensure the parameters are correct before you choose Save Parms. When you select Save Parms, you are prompted for a password:



The password is **CR52401**. After you enter the correct password, your changes are written to Flash.

Restarting Terminal Emulation

You need to restart your TE application if you are having problems or if you want to reconnect to the host with a new configuration. Restarting your TE application also clears the auto-login information, preventing another user from establishing a TE session using your login information.

You can restart your TE application by either scanning Reset Firmware or by using the Exit Menus option in the TE configuration menus (option 6 on the Main Menu). Both methods reset all terminal firmware and the application and run the application in a new session.

To restart TE:

Scan this bar code label:

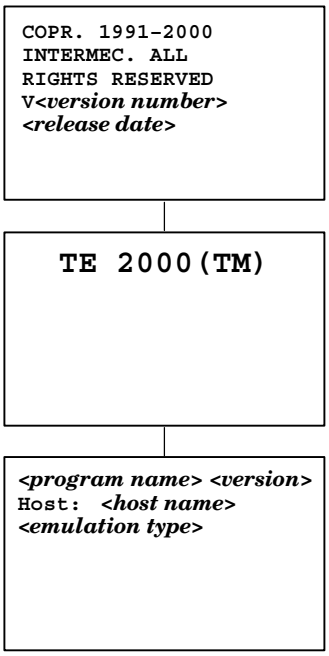
Reset Firmware

–.

The terminal restarts your TE application using the configuration saved in CONFIG.DAT.

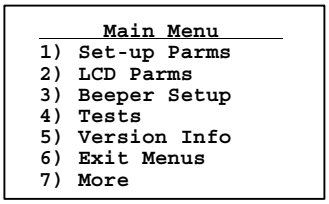
Or follow this procedure:

1. At the third initialization screen (below) or anywhere in a TE session, access the Main Menu by pressing the appropriate key combination (see page 4-2).



▶ **NOTE:** *If you are not connected to the DCS 300 or host, or have problems accessing the Main Menu, reset your terminal to go to the initialization screens.*

The Main Menu appears:



2. Select Exit Menus.

   The Exit Menus option quits the TE configuration menus and returns the terminal to the initialization screen. The terminal restarts your TE application using the configuration saved in CONFIG.DAT.

3. Start using the application or change the TE configuration.

Section 5

Customizing Your Configuration

This section describes the procedures you can use to customize the standard 5250 TE program by Intermec®. You customize the TE program by creating or modifying configuration files, and then downloading them to your terminal to do the following:

- Use the auto-login feature to send the same login information each time you login to the host. *Page 5-1*
- Display double-byte characters. *Page 5-9*
- Create a custom parameter set-up file to preset any of the configuration parameters you can set from the TE configuration menus. *Page 5-9*
- Change the text of TE configuration menus or system messages. *Page 5-32*
- Preinitialize the 5250 TE program. *Page 5-33*
- Remap characters. *Page 5-34*
- Customize EBCDIC to ASCII translation. *Page 5-35*
- Substitute national characters. *Page 5-39*

Using the Auto-Login Feature

Use the auto-login feature to send the same login information each time you login to the host. When you start the TE application, the terminal checks for an auto-login script file. If a script file exists, the terminal runs the login commands from the auto-login script file before the TE program starts.

To use the auto-login feature, you need to:

- Develop an auto-login script file.
- Load the auto-login script file on the terminal.

These steps are covered on the following pages along with a list of the necessary control characters and the procedure for disabling the auto-login feature.

Developing Auto-Login Script Files

A typical auto-login script file consists of Input and InputHidden commands followed by a HostName command, followed by a series of WaitFor and Send commands. A very simple script file may not have any input commands if all of the terminals are using the same account.

Commands

You can use several commands to create auto-login script files. All commands are case-sensitive. For example, WaitFor is a command, but Waitfor is not a valid command. For examples of script files, see "Sample Auto-Login Script Files" later in this section.

The following chart describes the commands.

Command	Description
Input	Input is called with two parameters. The first one is a character string enclosed in quotes that is used as a prompt to the user. The second one is a string variable name indicating where the text string will be stored.
InputHidden	Same as the Input script command except that user input is echoed as a string of asterisks.
HostName	HostName is followed by a character string enclosed in quotes. The character string can be a host name or an asterisk. The host name command acts as an IF clause. If the host name matches, the following section of the script file is executed up to the next host name command. If an asterisk is used, it matches any host name.
WaitFor	Wait for a list of up to 10 strings. The strings must be enclosed in quotes and must be separated by a comma. The strings cannot exceed 20 characters in length.
Send	This command sends a character string enclosed in quotes or a string variable to the host. The character string enclosed in quotes can have embedded IBM mnemonics in 5250 TE.
Pause "xxxxx"	Delays the terminal for x milliseconds.
PromptSessionStart	This command is a predefined variable. If this variable is defined and set to any value other than 0, the application prompts the user to press [Enter] before starting a Telnet session with the host. Do not put quotes around the variable.
Restart "x"	Restarts the autologin script file. The "x" is a dummy argument.
Keyboard "0"	Disables the keyboard. Key presses are ignored. For additional information, see Note below.
Keyboard "1"	Enables the keyboard. Key presses are processed. The keyboard is enabled by default. For additional information, see Note below.

▶ **NOTE:** *The Keyboard "0" or Keyboard "1" command must be input into the autologin script file after the PromptSessionStart command (if present) and the HostName command (if present). The keyboard command must also be turned on before another HostName command is found in the file.*

Search Strings

Some auto-login search string limitations are as follows:

- The searches are case sensitive.
- The maximum search string length is 20 characters.
- Each WaitFor command searches the entire screen from the top.

You can use line wrapping to look for unique strings.

If a screen from the host has multiples of the word you are looking for, you can use the preceding spaces to identify a unique string.

EXAMPLE: If the screen sent to the terminal is:

```
Linux rlogin 2.4.6
login
```

The autologin script would be:

```
PromptSessionStart=1
HostName “*”
#wait for host login screen and send login and password
WaitFor “ login”
Send “billy<ENTER>”
WaitFor “password”
Send “letmein<ENTER>”
```

In this example, you can search for the three leading spaces from the end of the previous line to make a unique search string.

Control Characters

You can include control characters in your auto-login script file. The control character must be enclosed by < > (angle brackets) in AUTOLOG.SCR. Table 5-1 lists control characters for 5250 TE.

Table 5-1
Control Characters for Auto-Login Script File

Control Character	Definition
<ATTN>	Attention
<CLEAR>	Clear
<CUR_DN>	Cursor Down
<CUR_LF>	Cursor Left
<CUR_RT>	Cursor Right
<CUR_UP>	Cursor Up
<DEL>	Delete
<ENTER>	Enter
<ERS_EOF>	Erase Input
<F1> – <F24>	Function keys
<HOME>	Home
<INS>	Insert
<LTAB>	Left Tab
<NEWLN>	New Line
<RESET>	Error Reset
<ROLL_DOWN>	Roll Down
<ROLL_UP>	Roll Up
<RTAB>	Right Tab
<SPACE>	Space

Loading the Auto-Login Script File

Follow these procedures to download an auto-login script file to your terminal. The method depends on the type of terminal you are using.

2415, 2425, 2455, or 248X Terminal

You can download more than one script file to a 2415, 2425, 2455, or 248X terminal, but name the file you want to use immediately as AUTOLOG.SCR and name any other script files with different names ending with .SCR. To learn more about transferring files, refer to your terminal's user manual.

To use the serial port to download the file:

1. Create your auto-login script file using any text editor. Or, copy and modify one of the sample script files later in this section.
2. Save the file you create as AUTOLOG.SCR.
3. Connect the terminal to the development personal computer or host. For help, refer to your terminal's user manual or your accessory documentation.
4. Download the AUTOLOG.SCR file to the terminal. You must load the AUTOLOG.SCR file into drive C, where the TE application is stored. For help, refer to your terminal's user manual.

To use RF communications to download the file:

1. Create your auto-login script file using any text editor, or copy and modify one of the sample script files later in this section.
2. Save the file you create as AUTOLOG.SCR.
3. Copy the AUTOLOG.SCR file to the DCS 300 in a UDP Plus network, or copy the AUTOLOG.SCR file to a host in a TCP/IP direct connect network.
4. Use the Download Server option on the DCS 300 to download the file to the terminal.

   Or, use your TFTP application on the host to download the file to the terminal.

When you reset your terminal, it clears the auto-login information, such as the password and user's name. You can cancel the auto-login process by pressing any key during the auto-login sequence. When a host session is broken, you can restart the auto-login sequence by rebooting your terminal.

6400 or 5055 Computer

1. Using any text editor, create the auto-login script file on a personal computer. Or, copy and modify one of the sample script files later in this section.
2. Save the file you create as AUTOLOG.SCR.
3. Use INTERLNK/INTERSVR communications to connect your terminal to a personal computer. For help, see "Downloading Files" later in this section.

   You must load AUTOLOG.SCR into drive C, where the TE application is stored.

Disabling the Auto-Login Feature

To disable auto-login, you must rename the AUTOLOG.SCR file. Renaming AUTOLOG.SCR forces your TE application to use the default login. Renaming also ensures that you can use the same auto-login script file later by changing the name back to AUTOLOG.SCR. If you want to enable a new script file, you can use the instructions in this section to rename a different script file to AUTOLOG.SCR.

Follow these procedures to disable or delete the auto-login script file. The method depends on the type of terminal you are using.

2415, 2425, 2455, or 248X Terminal

1. Press the appropriate key sequence or scan the following bar code to access the TRAKKER Antares® 2400 Menu System:

   Enter Test and Service Mode

   ..–.

   The Main Menu appears.
2. Choose System Menu and then choose File Manager.
3. Select drive C.
4. Press ▲ or ▼ to highlight AUTOLOG.SCR and press the [F7] key.
5. Type a new name for the auto-login script file and press [Enter] or choose OK.
6. Exit the TRAKKER Antares 2400 Menu System to return to your current TE session. Restart your TE application to use TE without the auto-login feature.

You can also rename the auto-login script file from your host. For help, refer to your terminal's user manual.

6400 or 5055 Computer

1. Exit your terminal emulation application.
2. Use INTERLNK/INTERSVR communications to connect your terminal to a personal computer. For help, see "Downloading Files" later in this section.
3. Go to the 6400 or 5055 computer's DOS prompt.
4. Rename AUTOLOG.SCR.

Sample Auto-Login Script Files

You can use these sample script files as they are or as the starting point for creating your own auto-login script files.

EXAMPLE 1: Auto-Login With All Terminals Using the Same Account

```
PromptSessionStart=1                    #Ask user to press <Enter> to start auto-login
HostName "*"                            #Use this to log into any host
Keyboard "0"                            #Disable the keyboard
WaitFor "login:"                        #Wait for the login prompt
Send "user_name<CR>"                    #Send the user name
WaitFor "Password:"                     #Wait for the password prompt
Send "users_password<CR>"               #Send the users password
Pause "1000"                            #Pause 1 second
Keyboard "1"                            #Enable the keyboard
Restart "1"                             #Restart the auto-login script file
```

In Example 1:

- The Hostname command matches the host the user accesses.
- The # symbol starts a comment that continues to the end of the line.
- The WaitFor command waits for a string to be displayed by the host. WaitFor takes up to 10 strings, 20 characters long. The strings must be enclosed in quotes and separated by a comma.
- The first Send command sends a fixed user name. The second Send command sends a fixed password.
- Angle brackets < and > can enclose uppercase mnemonics or hexadecimal values.

EXAMPLE 2: Auto-Login With Different User Names and Passwords

```
Input "Enter user name", username       #Prompt for user name
InputHidden "Enter password", password #Prompt for password
HostName "*"
WaitFor "login:"                        #Wait for the login prompt
Send user_name                          #Send the user name
Send "<CR>"                             #Send a carriage return
WaitFor "Password:"                     #Wait for the password prompt
Send password                           #Send the users password
Send "<CR>"                             #Send a carriage return
```

In Example 2:

- The Input and Send commands use input variables. Input commands require a prompt string followed by a comma and a variable name to store the string in.
- The InputHidden command will display "*" in place of any characters the user types. All input commands must be before the first HostName command.
- The Send command only accepts a single argument, so you need two Send commands to send the user name and a carriage return.

EXAMPLE 3: Auto-Login to an Application

```
Input "Enter user name", username          # prompt for user name
InputHidden "Enter Password", password     #Prompt for password
HostName "*"
WaitFor "login:"                           #Wait for the login prompt
Send username                              #Send the user name
WaitFor "<CR>"                             #Send a carriage return
WaitFor "Password:"                        #Wait for password prompt
Send password                              #Send the users password
Send "<CR>"                                #Send a carriage return
WaitFor "Main Menu"                        #Wait for the main menu
Send "3"
Send "<CR>"                                #Pick option 3 from the menu
WaitFor "Wip Menu"                         #Wait for work in process menu
Send "1"
Send "<CR>"                                #Pick option 1 from the menu
```

Example 3 modifies the script file in Example 2. The additional modification (which starts with `WaitFor "Main Menu"`) allows you to move automatically to an application after logging in.

EXAMPLE 4: Auto-Login With Variable Processing

```
Input "Enter user name", username          # Prompt for user name
InputHidden "Enter Password", password     #Prompt for password
HostName "BigHost"                         #Use this portion of script for BigHost
WaitFor "User:"                            #Wait for the user prompt
Send username                              #Send the user name
Send "<CR>"                                #Send a carriage return
WaitFor "Password:"                        #Wait for the password prompt
Send password                              #Send the users password
Send "<CR>"                                #Send a carriage return
HostName "*"                               #Match any other host name
WaitFor "login:"                           #Wait for the login prompt
Send username                              #Send the user name
WaitFor "<CR>"                             #Send a carriage return
WaitFor "Password:"                        #Wait for password prompt
Send password                              #Send the users password
Send "<CR>"                                #Send a carriage return
WaitFor "Main Menu"                        #Wait for the main  menu
Send "3"
Send "<CR>"                                #Pick option 3 from the menu
WaitFor "Wip Menu"                         #Wait for work in process menu
Send "1"
Send "<CR>"                                #Pick option 1 from the menu
```

Here, a section for the host name BigHost is added to the beginning of the script file. If you log into any host other than BigHost, the script file starts at the HostName "*" line. This allows for different processing on each host.

Auto-Login Restart

The Auto-Login Restart command starts the auto-login script file from the correct host name statement in the script file when a host session is broken. For this command to work, the WaitFor string must match the last data sent from the host. For example, if the WaitFor string is the login prompt "login:" with a space after the colon, the WaitFor string must include a space for the auto-login restart to work.

To use the Auto-Login Restart command, press the keys listed in Section 3, "Using the Terminal's Keyboard." Or, scan the bar code in Appendix A.

Displaying the Double-Byte Character Set

The 2415 terminal supports Double-Byte Character Sets. The sets available are Big 5 Chinese, Simplified Chinese, Japanese (Kanji), and Korean (Hangul).

The Double-Byte Character Set is preloaded on the 2415 terminal. To order a Double-Byte Character Set, contact your Intermec Sales Representative. If you order a set, follow the instructions in the terminal's user manual to install it.

To configure the terminal for the character set, set the terminal's screen size to 8x16.

Creating a Custom Parameter Set-Up File

You can create a custom 5250 TE set-up file to preset almost any parameter you can set from the TE configuration menus. These parameter settings become the default (cold start) configuration for the terminal.

Syntax

The parameter set-up file is an ASCII text file that contains one item per line. You can name the input file as you choose. When you use the CHECKCFG utility later to verify the file, you must change the output file name to CONFIG.DAT.

The syntax of a line is:

FieldName = Value;

- OR -

Qualifier.FieldName = Value;

- FieldName is the name of the parameter you want to modify.
- Value is the new value for the field.
- Qualifier and FieldName must be ASCII strings that match one of the configuration parameters.
- Value can be an ASCII string or a numeric value, depending on the type of the parameter FieldName specifies. The parameters along with their types and allowable values are listed under "Parameters and Qualifiers" later in this section.

A field may have zero or more qualifiers.

The set-up files ignores the following:

- Blank lines
- Leading white space (spaces and tabs)
- White space on either side of any delimiter (a period, an equal sign, or a semicolon)

In addition, the set-up file converts consecutive white space characters within strings to one space. For example, this line:

```
Screen     Mode       =     Page Mode    ;
```

is the same as:

```
Screen Mode=Page Mode;
```

You can set the Value field of any configuration parameter to "?", which indicates that the TE configuration program should prompt the user for the appropriate value. For example, this parameter causes the terminal to prompt the user to select a screen mode from the list of values:

```
Screen Mode = ?;
```

Following is a sample set-up file.

```
Program Name = CUSTOM;

Screen Mode = Page Mode;

Port Number = 1;

Data Stream = 5250;
Code 39.Encoded = Enabled;
Extended Cmds = Enabled;
```

Parameter Formats

Each parameter in the set-up file is followed by one of three different formats that indicates the type of parameter and the values it can contain. Formats are as follows:

- **Literal strings.** For example:

  [Session 1].Screen Mode
  Session 2.Screen Mode
  Center Cursor
  Corner Mode
  Page Mode
  Lazy Mode
  Locked Mode

  Screen Mode may be qualified by Session 1 or 2. It may take the value Center Cursor, Corner Mode, Page Mode, Lazy Mode, or Locked Mode. Session 1 is the default qualifier. These configuration lines are valid:

  ```
  Screen Mode = Lazy Mode;
  Session 1.Screen Mode = Lazy Mode;
  Session 2.Screen Mode = Lazy Mode;
  ```

- **Numeric parameters.** Numeric parameters have minimum and maximum values. Parameters can be either decimal or hexadecimal:
  - Decimal parameters consist of digits 0 through 9.
  - Hexadecimal parameters consist of 0x or 0X, followed by 1 to 4 digits of 0 through 9, a through f, or A through F. These are equivalent: 160, 0xA0, and 0Xa0.

  For example:

  [Session 1].[Host A].Port Number
  Session 2.Host A.Port Number
  [Session 1].Host B.Port Number
  Session 2.Host B.Port Number
  [Session 1].Host C.Port Number
  Session 2.Host C.Port Number
  Numeric, minimum = 0, maximum = 65535

  Port Number is a variable with a minimum value of 0 and a maximum of 65535. These lines are valid:

```
Port Number = 1;
Session 1.Host A.Port Number = 1;
Session 2.Host A.Port Number = 1;
```

- **String parameters.** String parameters are variables with minimum and maximum lengths. For example:

  Program Name
  String, minimum length = 8, maximum length = 8

  Program Name is unqualified. It must have eight characters. These configuration lines are valid:

```
Program Name = ABCDEFGH;
Program Name = FWP248H0;
```

Verifying Your Configuration

Use the CHECKCFG utility to verify that you properly configured your set-up file. CHECKCFG reads your configuration and reports any syntax errors. To get the utility, contact your Systems Engineer.

To verify your configuration:

Type:

checkcfg *<input config file>* cfglit.dat config.dat

- *<input config file>* is the name of your parameter set-up file.
- CFGLIT.DAT contains the strings that appear in the configuration menus, parameter files, and system messages.
- CONFIG.DAT is the name of the output file you will download to the terminal. This file must be named CONFIG.DAT.

You are ready to download CONFIG.DAT to the terminal when CHECKCFG reports no errors. For download instructions, see "Downloading Files" later in this section.

If CHECKCFG reports an error, use a text editor to open your set-up file and correct it. The following chart lists the system messages CHECKCFG may display.

Default String	Description	ID Number
`Can't open file`	CONFIG.DAT could not be located.	F000
`Bad option name`	The right side of an expression in CONFIG.DAT is an invalid name.	F001
`Syntax error`	CONFIG.DAT contains a syntax error.	F002
`Bad string length`	The right side of an expression in CONFIG.DAT is a string that is too long for the specified parameter.	F003
`Unknown type`	The parameter table in the configuration program contains a bad value. This error is for testing purposes only and should never occur.	F004
`Value out of range`	The right side of an expression in CONFIG.DAT is a number that is out of range for the specified parameter.	F005
`Bad value`	The right side of an expression in CONFIG.DAT is a string that is invalid for the specified parameter.	F006
`Expected numeric`	The right side of an expression in CONFIG.DAT should be a numeric value but contains nonnumeric data.	F007
`Missing '='`	A line in CONFIG.DAT does not contain the required "=" (equal sign).	F008
`Missing ';'`	A line in CONFIG.DAT is not terminated by a ";" (semicolon).	F009

Parameters and Qualifiers

Parameters in the set-up file apply to all model numbers unless otherwise noted here. The following pages list each parameter and its qualifiers. Some qualifiers have default values. If you want to use the default value, you can omit the qualifier from the parameter set-up file. Default qualifiers are listed between square brackets "[ ]" in this section.

The CFGLIT.DAT file specifies the text of set-up menus or system messages. Parameters and qualifier strings in the set-up file assume you are using the default CFGLIT.DAT file. To customize CFGLIT.DAT, see "Changing Text" later in this section.

▶ **NOTE:** *Only WTP terminals support dual sessions ("Session 2"). For a list of terminals with WTP, see "Program Names" in Section 1.*

Set-Up Parameters Options

- **Channel** *(900 MHz radio)*

  [Session 1].[Host A].Channel
  Session 2.Host A.Channel
  [Session 1].Host B.Channel
  Session 2.Host B.Channel
  [Session 1].Host C.Channel
  Session 2.Host C.Channel
  10
  25
  30
  25
  30
  35
  40

- **Data Stream**

  [Session 1].[Host A].Data Stream
  Session 2.Host A.Data Stream
  [Session 1].Host B.Data Stream
  Session 2.Host B.Data Stream
  [Session 1].Host C.Data Stream
  Session 2.Host C.Data Stream
  [Native] *6400 and 5055 computers with WTP*
  [3270] *2415, 2425, 2455, and 248X terminals; and 6400 and 5055 computers with IP*
  5250
  VT220

- **Frequency** (*S-UHF radio*)

  [Session 1].[Host A].Frequency
  Session 2.Host A.Frequency
  [Session 1].Host B.Frequency
  Session 2.Host B.Frequency
  [Session 1].Host C.Frequency
  Session 2.Host C.Frequency
  Numeric, minimum=0, maximum=0

- **Host Name** *(6400 and 5055 computers)*

  [Session 1].[Host A].Host
  Session 2.Host A.Host
  [Session 1].Host B.Host
  Session 2.Host B.Host
  [Session 1].Host C.Host
  [Session 1].Host C.Host
  String, minimum length = 0, maximum length = 16 [null string]

- **Lan ID**

  [Session 1].[Host A].Lan
  Session 2.Host A.Lan
  [Session 1].Host B.Lan
  Session 2.Host B.Lan
  [Session 1].Host C.Lan
  Session 2.Host C.Lan
  Numeric, minimum = 0, maximum = 254 [0] *900 MHz*
  Numeric, minimum = 0, maximum = 15 [0] *2.4 GHz OpenAir*

- **Mode**

  [Session 1].[Host A].Mode
  Session 2.Host A.Mode
  [Session 1].Host B.Mode
  Session 2.Host B.Mode
  [Session 1].Host C.Mode
  Session 2.Host C.Mode
  900 MHz radio:
  DS 225K
  DS 090K
  DS 450K
  S-UHF radio:
  Freq Agility
  Single Freq

- **Port Number**

  [Session 1].[Host A].Port Number
  Session 2.Host A.Port Number
  [Session 1].Host B.Port Number
  Session 2.Host B.Port Number
  [Session 1].Host C.Port Number
  Session 2.Host C.Port Number
  Numeric, minimum = 0, maximum = 65535 [0]

- **Radio Configuration Number**

  [Session 1].[Host A].Radio Config#
  Session 2.Host A.Radio Config#
  [Session 1].Host B.Radio Config#
  Session 2.Host B.Radio Config#
  [Session 1].Host C.Radio Config#
  Session 2.Host C.Radio Config#
  Numeric, minimum = 0, maximum = 255 [0]

- **Radio Number** (*same as unit number*)

  [Session 1].[Host A].Radio #
  Session 2.Host A.Radio #
  [Session 1].Host B.Radio #
  Session 2.Host B.Radio #
  [Session 1].Host C.Radio #
  Session 2.Host C.Radio #
  Numeric, minimum = 0, maximum = 127 [127]

- **Server IP**

  [Session 1].[Host A].Server IP
  Session 2.Host A.Server IP
  [Session 1].Host B.Server IP
  Session 2.Host B.Server IP
  [Session 1].Host C.Server IP
  Session 2.Host C.Server IP
  Numeric, minimum = 1, maximum = 16

- **SNA**

  [Session 1].SNA
  Session 2.SNA
  Enabled
  [Disabled]

- **Telnet**

  [Session 1].Telnet
  Session 2.Telnet
  [Enabled] *2415, 2425, 2455, and 248X terminals; and 6400 and 5055 computers with IP*
  [Disabled] *6400 and 5055 computers with WTP*

- **Terminal Type**

  [Session 1].[Host A].Terminal Type
  Session 2.Host A.Terminal Type
  [Session 1].Host B.Terminal Type
  Session 2.Host B.Terminal Type
  [Session 1].Host C.Terminal Type
  Session 2.Host C.Terminal Type
  Numeric, minimum = 0, maximum = 255

- **Unit Number** *(same as radio number)*

  [Session 1].[Host A].Unit #
  Session 2.Host A.Unit #
  [Session 1].Host B.Unit #
  Session 2.Host B.Unit #
  [Session 1].Host C.Unit #
  Session 2.Host C.Unit #
  Numeric, minimum = 0, maximum = 127 [127]

Bar Code Parameters

NOTE: *Bar code parameters apply to the 6400 and 5055 computers unless otherwise noted. 2415, 2425, 2455, and 248X terminals support only the "Code 39.Encoded" parameter.*

- **BC Type Character** *(not supported on the 5055 computer)*

  [Session 1].BC Type Char
  Session 2.BC Type Char
  Enabled
  [Disabled]

- **Concatenate**

  [Session 1].Concatenate
  Session 2].Concatenate
  Enabled
  [Disabled]

- **MOD 10 Check**

  [Session 1].MOD 10 Check
  Session 2.MOD 10 Check
  Enabled
  [Disabled]

- **Redundancy** *(not supported on the 5055 computer)*

  [Session 1].Redundancy
  Session 2.Redundancy
  Enabled
  [Disabled]

- **Scan All Fields**

  [Session 1].Scan All Flds
  Session 2.Scan All Flds
  Enabled
  [Disabled]

- **Scan Postamble Character**

  [Session 1].Scan PostChar
  Session 2.Scan PostChar
  Numeric, minimum = 0, maximum = 255 [space]

- **Scan Preamble Character**

  [Session 1].Scan PreChar
  Session 2.Scan PreChar
  Numeric, minimum = 0, maximum = 255 [space]

- **Scan Timeout** (*not supported on the 6400 and 5055 computers*)

  [Session 1].Scan Timeout
  Session 2.Scan Timeout
  Numeric, minimum = 1, maximum = 200 [30]

- **Scanner Type** *(6400 and 5055 computers support Laser only)*

  [Session 1].Scanner Type
  Session 2.Scanner Type
  [No Scanner]
  Wand
  Laser
  Wand Emulate
  Auto Detect

- **Stream Scan**

  [Session 1].Stream Scan
  Session 2.Stream Scan
  Enabled
  [Disabled]

Bar Code Symbologies

- **ABC Codabar**

  [Session 1].ABC Codabar
  Session 2.ABC Codabar
  Enabled
  [Disabled]

- **Codabar**

  [Session 1].Codabar
  Session 2.Codabar
  Enabled
  [Disabled]

- **Code 11** *(not supported on 6400 and 5055 computers)*

  [Session 1].Code 11
  Session 2.Code 11
  Enabled
  [Disabled]

- **Code 93**
  [Session 1].Code 93
  Session 2.Code 93
    Enabled
    [Disabled]
- **Code 39**
  [Session 1].Code 39
  Session 2.Code 39
    Enabled
    [Disabled]
- **Code 128**
  [Session 1].Code 128
  Session 2.Code 128
    Enabled
    [Disabled]
- **Computer Identics 2 of 5**
  [Session 1].CI 2of5
  Session 2.CI 2of5
    Enabled
    [Disabled]
- **EAN**
  [Session 1].EAN
  Session 2.EAN
    Enabled
    [Disabled]
- **Interleaved 2 of 5**
  [Session 1].Int 2of5
  Session 2.Int 2of5
    Enabled
    [Disabled]
- **Plessey** *(6400 computer does not support Plessey alpha characters)*
  [Session 1].Plessey
  Session 2.Plessey
    Enabled
    [Disabled]
- **Straight 2 of 5**
  [Session 1].Str 2of5
  Session 2.Str 2of5
    Enabled
    [Disabled]
- **UPC**
  [Session 1].UPC
  Session 2.UPC
    Enabled
    [Disabled]

Generic Bar Code Options

▶ NOTE: *Generic bar code options must be qualified by one of the bar code symbology strings. For example: "Session 1.UPC.Max Length = 13;"*

▶ Drop Leading

[Session 1].UPC.Drop Leading
Session 2.UPC.Drop Leading
[Session 1].EAN.Drop Leading
Session 2.EAN.Drop Leading
[Session 1].Code 128.Drop Leading
Session 2.Code 128.Drop Leading
[Session 1].Code 39.Drop Leading
Session 2.Code 39.Drop Leading
[Session 1].Codabar.Drop Leading
Session 2.Codabar.Drop Leading
[Session 1].ABC Codabar.Drop Leading
Session 2.ABC Codabar.Drop Leading
[Session 1].Str 2of5.Drop Leading
Session 2.Str 2of5.Drop Leading
[Session 1].Int 2of5.Drop Leading
Session 2.Int 2of5.Drop Leading
[Session 1].CI 2of5.Drop Leading
Session 2.CI 2of5.Drop Leading
[Session 1].Code 11.Drop Leading
Session 2.Code 11.Drop Leading
[Session 1].Code 93.Drop Leading
Session 2.Code 93.Drop Leading
[Session 1].Plessey.Drop Leading
Session 2.Plessey.Drop Leading
Numeric, minimum = 0 [0], maximum = 15 [0]

▶ Drop Trailing

[Session 1].UPC.Drop Trailing
Session 2.UPC.Drop Trailing
[Session 1].EAN.Drop Trailing
Session 2.EAN.Drop Trailing
[Session 1].Code 128.Drop Trailing
Session 2.Code 128.Drop Trailing
[Session 1].Code 39.Drop Trailing
Session 2.Code 39.Drop Trailing
[Session 1].Codabar.Drop Trailing
Session 2.Codabar.Drop Trailing
[Session 1].ABC Codabar.Drop Trailing
Session 2.ABC Codabar.Drop Trailing
[Session 1].Str 2of5.Drop Trailing
Session 2.Str 2of5.Drop Trailing
[Session 1].Int 2of5.Drop Trailing
Session 2.Int 2of5.Drop Trailing
[Session 1].CI 2of5.Drop Trailing
Session 2.CI 2of5.Drop Trailing
[Session 1].Code 11.Drop Trailing
Session 2.Code 11.Drop Trailing
[Session 1].Code 93.Drop Trailing
Session 2.Code 93.Drop Trailing
[Session 1].Plessey.Drop Trailing
Session 2.Plessey.Drop Trailing
Numeric, minimum = 0 [0], maximum = 15 [0]

▸ Fix Length 1

[Session 1].UPC.Fix Length 1
Session 2.UPC.Fix Length 1
[Session 1].EAN.Fix Length 1
Session 2.EAN.Fix Length 1
[Session 1].Code 128.Fix Length 1
Session 2.Code 128.Fix Length 1
[Session 1].Code 39.Fix Length 1
Session 2.Code 39.Fix Length 1
[Session 1].Codabar.Fix Length 1
Session 2.Codabar.Fix Length 1
[Session 1].ABC Codabar.Fix Length 1
Session 2.ABC Codabar.Fix Length 1
[Session 1].Str 2of5.Fix Length 1
Session 2.Str 2of5.Fix Length 1
[Session 1].Int 2of5.Fix Length 1
Session 2.Int 2of5.Fix Length 1
[Session 1].CI 2of5.Fix Length 1
Session 2.CI 2of5.Fix Length 1
[Session 1].Code 11.Fix Length 1
Session 2.Code 11.Fix Length 1
[Session 1].Code 93.Fix Length 1
Session 2.Code 93.Fix Length 1
[Session 1].Plessey.Fix Length 1
Session 2.Plessey.Fix Length 1
Numeric, minimum = 0 [0], maximum = 99 [0]

▸ Fixed Length 2

[Session 1].UPC.Fix Length 2
Session 2.UPC.Fix Length 2
[Session 1].EAN.Fix Length 2
Session 2.EAN.Fix Length 2
[Session 1].Code 128.Fix Length 2
Session 2.Code 128.Fix Length 2
[Session 1].Code 39.Fix Length 2
Session 2.Code 39.Fix Length 2
[Session 1].Codabar.Fix Length 2
Session 2.Codabar.Fix Length 2
[Session 1].ABC Codabar.Fix Length 2
Session 2.ABC Codabar.Fix Length 2
[Session 1].Str 2of5.Fix Length 2
Session 2.Str 2of5.Fix Length 2
[Session 1].Int 2of5.Fix Length 2
Session 2.Int 2of5.Fix Length 2
[Session 1].CI 2of5.Fix Length 2
Session 2.CI 2of5.Fix Length 2
[Session 1].Code 11.Fix Length 2
Session 2.Code 11.Fix Length 2
[Session 1].Code 93.Fix Length 2
Session 2.Code 93.Fix Length 2
[Session 1].Plessey.Fix Length 2
Session 2.Plessey.Fix Length 2
Numeric, minimum = 0 [0], maximum = 99 [0]

▶ Fixed Length 3

[Session 1].UPC.Fix Length 3
Session 2.UPC.Fix Length 3
[Session 1].EAN.Fix Length 3
Session 2.EAN.Fix Length 3
[Session 1].Code 128.Fix Length 3
Session 2.Code 128.Fix Length 3
[Session 1].Code 39.Fix Length 3
Session 2.Code 39.Fix Length 3
[Session 1].Codabar.Fix Length 3
Session 2.Codabar.Fix Length 3
[Session 1].ABC Codabar.Fix Length 3
Session 2.ABC Codabar.Fix Length 3
[Session 1].Str 2of5.Fix Length 3
Session 2.Str 2of5.Fix Length 3
[Session 1].Int 2of5.Fix Length 3
Session 2.Int 2of5.Fix Length 3
[Session 1].CI 2of5.Fix Length 3
Session 2.CI 2of5.Fix Length 3
[Session 1].Code 11.Fix Length 3
Session 2.Code 11.Fix Length 3
[Session 1].Code 93.Fix Length 3
Session 2.Code 93.Fix Length 3
[Session 1].Plessey.Fix Length 3
Session 2.Plessey.Fix Length 3
Numeric, minimum = 0 [0], maximum = 99 [0]

▶ Fixed Length 4

[Session 1].UPC.Fix Length 4
Session 2.UPC.Fix Length 4
[Session 1].EAN.Fix Length 4
Session 2.EAN.Fix Length 4
[Session 1].Code 128.Fix Length 4
Session 2.Code 128.Fix Length 4
[Session 1].Code 39.Fix Length 4
Session 2.Code 39.Fix Length 4
[Session 1].Codabar.Fix Length 4
Session 2.Codabar.Fix Length 4
[Session 1].ABC Codabar.Fix Length 4
Session 2.ABC Codabar.Fix Length 4
[Session 1].Str 2of5.Fix Length 4
Session 2.Str 2of5.Fix Length 4
[Session 1].Int 2of5.Fix Length 4
Session 2.Int 2of5.Fix Length 4
[Session 1].CI 2of5.Fix Length 4
Session 2.CI 2of5.Fix Length 4
[Session 1].Code 11.Fix Length 4
Session 2.Code 11.Fix Length 4
[Session 1].Code 93.Fix Length 4
Session 2.Code 93.Fix Length 4
[Session 1].Plessey.Fix Length 4
Session 2.Plessey.Fix Length 4
Numeric, minimum = 0 [0], maximum = 99 [0]

▸ Maximum Length

[Session 1].UPC.Max Length
Session 2.UPC.Max Length
[Session 1].EAN.Max Length
Session 2.EAN.Max Length
[Session 1].Code 128.Max Length
Session 2.Code 128.Max Length
[Session 1].Code 39.Max Length
Session 2.Code 39.Max Length
[Session 1].Codabar.Max Length
Session 2.Codabar.Max Length
[Session 1].ABC Codabar.Max Length
Session 2.ABC Codabar.Max Length
[Session 1].Str 2of5.Max Length
Session 2.Str 2of5.Max Length
[Session 1].Int 2of5.Max Length
Session 2.Int 2of5.Max Length
[Session 1].CI 2of5.Max Length
Session 2.CI 2of5.Max Length
[Session 1].Code 11.Max Length
Session 2.Code 11.Max Length
[Session 1].Code 93.Max Length
Session 2.Code 93.Max Length
[Session 1].Plessey.Max Length
Session 2.Plessey.Max Length
Numeric, minimum = 0 [0], maximum = 99 [0]

▸ Minimum Length

[Session 1].UPC.Min Length
Session 2.UPC.Min Length
[Session 1].EAN.Min Length
Session 2.EAN.Min Length
[Session 1].Code 128.Min Length
Session 2.Code 128.Min Length
[Session 1].Code 39.Min Length
Session 2.Code 39.Min Length
[Session 1].Codabar.Min Length
Session 2.Codabar.Min Length
[Session 1].ABC Codabar.Min Length
Session 2.ABC Codabar.Min Length
[Session 1].Str 2of5.Min Length
Session 2.Str 2of5.Min Length
[Session 1].Int 2of5.Min Length
Session 2.Int 2of5.Min Length
[Session 1].CI 2of5.Min Length
Session 2.CI 2of5.Min Length
[Session 1].Code 11.Min Length
Session 2.Code 11.Min Length
[Session 1].Code 93.Min Length
Session 2.Code 93.Min Length
[Session 1].Plessey.Min Length
Session 2.Plessey.Min Length
Numeric, minimum = 0 [0], maximum = 99 [0]

UPC Options

- **Add-On 2**

  [Session 1].UPC.Add-On 2
  Session 2.UPC.Add-On 2
  Enabled
  [Disabled]

- **Add-On 5**

  [Session 1].UPC.Add-On 5
  Session 2.UPC.Add-On 5
  Enabled
  [Disabled]

- **Expand E to A**

  [Session 1].UPC.Expand E to A
  Session 2.UPC.Expand E to A
  Enabled
  [Disabled]

- **System 0 UPCE**

  [Session 1].UPC.Sys 0 UPCE
  Session 2.UPC.Sys 0 UPCE
  Enabled
  [Disabled]

- **System 1 UPCE** *(not supported on the 6400 computer)*

  [Session 1].UPC.Sys 1 UPCE
  Session 2.UPC.Sys 1 UPCE
  Enabled
  [Disabled]

EAN Options

- **Add-On 2**

  [Session 1].EAN.Add-On 2
  Session 2.EAN.Add-On 2
  Enabled
  [Disabled]

- **Add-On 5**

  [Session 1].EAN.Add-On 5
  Session 2.EAN.Add-On 5
  Enabled
  [Disabled]

- **Expand 8 to 13**

  [Session 1].EAN.Expand 8to13
  Session 2.EAN.Expand 8to13
  Enabled
  [Disabled]

Code 39 Options

- **Auto-Encoded**

  [Session 1].Code 39.Auto-Encoded
  Session 2.Code 39.Auto-Encoded
  Enabled
  [Disabled]

- **Check Digit**

  [Session 1].Code 39.Chk Digit
  Session 2.Code 39.Chk Digit
  Enabled
  [Disabled]

- **Data Decode**

  [Session 1].Code 39.Data decode
  Session 2.Code 39.Data decode
  Enabled
  [Disabled]

- **Element Decode**

  [Session 1].Code 39.Element decod
  Session 2.Code 39.Element decod
  Enabled
  [Disabled]

- **Encoded**

  [Session 1].Code 39.Encoded
  Session 2.Code 39.Encoded
  Enabled
  [Disabled]

- **Extended**

  [Session 1].Code 39.Extended
  Session 2.Code 39.Extended
  Enabled
  [Disabled]

- **Full ASCII**

  [Session 1].Code 39.Full ASCII
  Session 2.Code 39.Full ASCII
  Enabled
  [Disabled]

- **Quiet Zone**

  [Session 1].Code 39.Quiet zone
  Session 2.Code 39.Quiet zone
  Enabled
  [Disabled]

- **START Decode**

  [Session 1].Code 39.START decode
  Session 2.Code 39.START decode
  Enabled
  [Disabled]

Interleaved 2 of 5 Option

- **Interleaved 2 of 5 Chk Digit**

  [Session 1].Int 2of5.Chk Digit
  Session 2.Int 2of5.Chk Digit
  Enabled
  [Disabled]

Code 11 Options

- **Check Digit 1** (*not supported on the 6400 computer*)

  [Session 1].Code 11.Chk Dig 1
  Session 2.Code 11.Chk Dig 1
  Enabled
  [Disabled]

- **Check Digit 2** *(not supported on the 6400 computer)*

  [Session 1].Code 11.Chk Dig 2
  Session 2.Code 11.Chk Dig 2
  Enabled
  [Disabled]

Plessey Options

- **Allow Alpha**

  [Session 1].Plessey.Allow Alpha
  Session 2.Plessey.Allow Alpha
  Enabled
  [Disabled]

- **MOD 10 Check**

  [Session 1].Plessey.MOD10 Chk
  Session 2.Plessey.MOD10 Chk
  Enabled
  [Disabled]

- **MOD 11 Check**

  [Session 1].Plessey.MOD11 Chk
  Session 2.Plessey.MOD11 Chk
  Enabled
  [Disabled]

Code 128 Options

- **UCC/EAN**

  [Session 1].Code 128.UCC/EAN
  Session 2.Code 128.UCC/EAN
  Enabled
  [Disabled]

- **No UCC Type**

  [Session 1].Code 128.NO UCC Type
  Session 2.Code 128.NO UCC Type
  Enabled
  Disabled

- **UCC F1 Value**

  [Session 1].UPC.UCC F1 Value
  Session 2.UPC.UCC F1 Value
  [Session 1].EAN.UCC F1 Value
  Session 2.EAN.UCC F1 Value
  [Session 1].Code 128.UCC F1 Value
  Session 2.Code 128.UCC F1 Value
  [Session 1].Code 39.UCC F1 Value
  Session 2.Code 39.UCC F1 Value
  [Session 1].Codabar.UCC F1 Value
  Session 2.Codabar.UCC F1 Value
  [Session 1].ABC Codabar.UCC F1 Value
  Session 2.ABC Codabar.UCC F1 Value
  [Session 1].Str 2of5.UCC F1 Value
  Session 2.Str 2of5.UCC F1 Value
  [Session 1].Int 2of5.UCC F1 Value
  Session 2.Int 2of5.UCC F1 Value
  [Session 1].CI 2of5.UCC F1 Value
  Session 2.CI 2of5.UCC F1 Value
  [Session 1].Code 11.UCC F1 Value
  Session 2.Code 11.UCC F1 Value
  [Session 1].Code 93.UCC F1 Value
  Session 2.Code 93.UCC F1 Value
  [Session 1].Plessey.UCC F1 Value
  Session 2.Plessey.UCC F1 Value
  Numeric, minimum = 0 [0], maximum = 255

5250 Protocol Options

- **Auto Tab Scan**

  [Session 1].Auto Tab Scan
  Session 2.Auto Tab Scan
  Enabled
  [Disabled]

- **Beep On Error**

  [Session 1].Beep On Error
  Session 2.Beep On Error
  Enabled
  [Disabled]

- **Device Name**

  [Session 1].Device Name
  Session 2.Device Name
  String, minimum length = 0, maximum length = 10

- **Host View Columns**

  [Session 1].Host View Cols
  Session 2.Host View Cols
  Numeric, minimum = 1, maximum = 255 [24]

- **Host View Rows**

  [Session 1].Host View Rows
  Session 2.Host View Rows
  Numeric, minimum = 1, maximum = 255 [80]

- **Extended Commands**

  [Session 1].Extended Cmds
  Session 2.Extended Cmds
  Enabled
  [Disabled]

- **Scan All Fields**

  [Session 1].Scan All Flds
  Session 2.Scan All Flds
  Enabled
  [Disabled]

- **Stream Scan**

  [Session 1].Stream Scan
  Session 2.Stream Scan
  Enabled
  [Disabled]

Display Options

▶ **NOTE:** *Display options apply only to the 6400 and 5055 computers.*

- **Backlight State**

  [Session 1].Backlight State
  Session 2.Backlight State
  Enabled
  [Disabled]

- **Backlight Timer** *(6400 computer)*

  [Session 1].Backlight Timer
  Session 2.Backlight Timer
  Numeric, minimum = 0, maximum = 255 [0]

- **Cursor Mode**

  [Session 1].Cursor Mode
  Session 2.Cursor Mode
  Underln Blink
  Block Blink
  Underline
  [Block]

Radio Communications Options

▶ **NOTE:** *Radio Communications options do not apply to 2415, 2425, 2455, and 248X terminals. For these terminals, set the Security ID through the TRAKKER Antares 2400 Menu System.*

- **Baud Rate** *(UHF radio)*

  Radio Baud Rate
  4800
  4800/9600
  9600
  The default depends on the type of radio in the terminal.

- **Protocol** *(6400 and 5055 computers)*

  Radio Protocol
  SST
  SST-Diag Mode

- **Security ID** *(set the Security ID for 2415, 2425, 2455, and 248X terminals through the TRAKKER Antares 2400 Menu System)*

  [Session 1].Security ID
  Session 2.Security ID
  String, minimum length=0, maximum length=16 [null string]

More Options

- **Change Menu Password**

  *The password must be **enabled** and **set** for access to the Main Menu before you can change it. To set the password:*

  [Session 1].Change Menu Password
  Session 2.Change Menu Password
  String, minimum length = 1, maximum length = 10 [3193693]

  To enable the password, see "Main Menu password."

- **COM Select** *(5055 computer)*

  [Session 1].Com Select
  Session 2.Com Select
  [COM 1]
  COM 2

- **Main Menu Password**

  *The password must be **enabled** and **set** for access to the Main Menu. To enable or disable the password:*

  [Session 1].Menu Password
  Session 2.Menu Password
  Enabled
  [Disabled]

  To set the password, see "Change menu password".

- **Print Device** *(6400 computer)*

  [Session 1].Print Device
  Session 2.Print Device
  [RS232 Print]
  IRDA Print

LCD Options

- **Annunciator Format**

  [Session 1].Annun Format
  Session 2.Annun Format
  [Vertical] *2455 and 248X terminals, and 5055 computer*
  [Horizontal] *2415 and 2425 terminals, and 6400 computer*

- **Annunciator Position**

  [Session 1].Annun Position
  Session 2.Annun Position
  Upper Right
  Upper Left
  Lower Right
  [Lower Left]
  Stealth

- **Define Height (Scroll Window)**

  [Session 1].Define Height
  Session 2.Define Height
  Numeric, minimum = 1, maximum = 24 [8]

- **Define Width (Scroll Window)**

  [Session 1].Define Width
  Session 2.Define Width
  Numeric, minimum = 1, maximum = 80 [8]

- **Key Uppercase** *(6400 and 5055 computers)*

  [Session 1].Key Uppercase
  Session 2.Key Uppercase
  [Enabled]
  Disabled

- **Screen Mode**

  [Session 1].Screen Mode
  Session 2.Screen Mode
  Center Cursor
  [Corner Mode]
  Page Mode
  Lazy Mode
  Locked Mode

- **Screen Columns** *(6400 and 5055 computers)*

  [Session 1].Screen Cols
  Session 2.Screen Cols
  Numeric, minimum = 1, maximum = 255
  16
  17
  40
  [80] *5055 computer*
  [20] *6400 computer standard and wide displays*

- **Screen Rows** *(6400 and 5055 computers)*

  [Session 1].Screen Rows
  Session 2.Screen Rows
  Numeric, minimum = 1, maximum = 255
  8
  8
  10
  [25] *5055 computer*
  [18] *6400 computer standard display; [16] for wide display*

- **Scroll Window**

  [Session 1].Scroll Window
  Session 2.Scroll Window
  Scroll Setting
  Screen Size
  [Tab Size]

Beeper Setup Options

- **Beep Internal**

  [Session 1].Beep Internal
  Session 2.Beep Internal
  [Enabled]
  Disabled

- **Beeper (Error Tone) Frequency** *(6400 computer)*

  [Session 1].Beep Frequency
  Session 2.Beep Frequency
  Numeric, minimum = 0, maximum = 30 [6]

- **Beeper (Error Tone) Length**

  [Session 1].Beep Length
  Session 2.Beep Length
  Numeric, minimum= 1 , maximum= 10 [3]

- **Key Click Frequency** *(6400 computer)*

  [Session 1].KeyClick Freq
  Session 2.KeyClick Freq
  Numeric, minimum = 0, maximum = 30 [6]

- **Key Click Length** *(6400 and 5055 computers)*

  [Session 1].KeyClick Length
  Session 2.KeyClick Length
  Numeric, minimum = 1, maximum = 10 [6]

More (Main Menu 2) Options

- **Foreground Session** *(6400 and 5055 computers)*

  Foreground Sess
  [Session 1]
  Session 2

- **Set Hot Key** *(6400 and 5055 computers)*

  [Session 1].Set Hot Key
  Session 2.Set Hot Key
  F1
  through
  F24

- **Type-Ahead**

  [Session 1].Type-Ahead
  Session 2.Type-Ahead
  [Enabled]
  Disabled

Additional Parameters

The following parameters do not have equivalent TE configuration menu options.

- **Alternate Screen Columns** *(6400 and 5055 computers)*

  [Session 1].Alt Screen Cols
  Session 2.Alt Screen Cols
  Numeric, minimum = 1, maximum = 255
  17
  [40] *5055 computer*
  [20] *6400 computer*

- **Alternate Screen Rows** *(6400 and 5055 computers)*

  [Session 1].Alt Screen Rows
  Session 2.Alt Screen Rows
  Numeric, minimum = 1, maximum = 255
  8
  [12] *5055 computer*
  [18] *6400 computer standard display and [16] for wide display*

- **Contrast Mode**

  [Session 1].Contrast Mode
  Session 2.Contrast Mode
  Compensated
  Absolute

- **Program Name** *(appears on the initialization and version screens)*

  Program Name
  String, minimum length = 8, maximum length = 8 *[the default program names are the "FWP" names listed under "Program Names" in the Getting Started section]*

- **Program Version** *(appears on the initialization and version screens)*

  Program Version
  String, minimum length = 4, maximum length = 4 [?.??]

- **Set-Up Parms Menu Password** *(the password is case sensitive for 6400 and 5055 computers; it is case insensitive for 2415, 2425, 2455, and 248X terminals)*

  [Session 1].Password
  Session 2.Password
  String, minimum length = 1, maximum length = 10 [CR52401]

Changing Text

You can change the text of TE configuration menus, configuration parameters, or system messages by modifying file CFGLIT.DAT. This file contains the strings that appear in the configuration menus, parameter set-up files, and system messages.

An identification (ID) number identifies each literal string. To create your own literal file, you create a text file that associates these numbers with the actual literal strings. You then use MAKELIT.EXE to convert the text file to a format the configuration program can use.

Each line in the literal text file begins with the literal ID number. After the ID number, you type the quoted string that is used when that ID number is referenced. If you omit an ID number, its string appears as "Bad Literal File" when you run the program in the terminal.

Literal ID numbers are available upon request from Intermec. Contact your Intermec representative for more information about ID numbers.

You can create a sample file containing the default literal strings by using the MAKELIT.EXE program to "reverse engineer" the standard CFGLIT.DAT file. To do this, type the following command line to unpack CFGLIT.DAT into a file named CFGLIT.TXT:

```
makelit -r cfglit.dat cfglit.txt
```

The CFGLIT.TXT file this command creates contains all the default strings the configuration program uses.

One line in CFGLIT.TXT looks like this:

```
0x2f10 "RS232 PORT\nIN USE\n\nPLEASE WAIT!"
```

"0x2f10" is the literal ID number for the RS-232 port-in-use message that appears when a host computer sends an RS-232 command to the TE program. The text of the message follows the ID number in a quoted string. The embedded "\n" sequence within the quoted string indicates a "new line" character and outputs a carriage return/line feed.

To change the text of the message that appears, change the quoted string. For example, you could change the above line to look like this:

```
0x2f10 "Printing\nPlease Wait!"
```

When you have a text file with one line for every ID number, use MAKELIT.EXE to convert the file to an indexed literal file. If your text file is named CFGLIT.TXT, you would type the following command:

```
makelit cfglit.txt cfglit.dat
```

This command creates the new literal file CFGLIT.DAT. For instructions on how to download the file, see "Downloading Files" later in this section.

Preinitializing the 5250 TE Program

You can preinitialize the 5250 TE program. You must name the 5250 initialization file as 5250.INI. The file is processed when you reset or warm start the terminal. The file is processed as if the radio had received the data, and must be in the "on-air" format. For instructions on how to download the file, see "Downloading Files" later in this section.

Data is encoded in binary format. To create 5250.INI, you may need a HEX editor or other special program.

INTERMEC 5250 initialization files are composed of the following:

- A prefix of 0 to 255 bytes
- The body of the message, which may be empty or may contain either LU-LU or SS-LU data

Prefix bytes are described as follows:

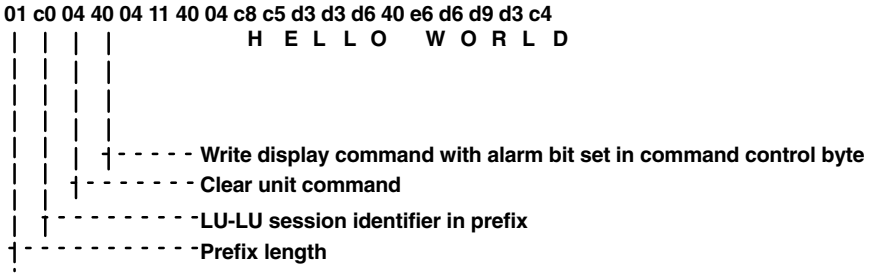
- The first byte of any INTERMEC 5250 data stream prefix contains the length of the prefix. This length may be 0 to indicate that there is no prefix information in the message.
- The second byte of the prefix is a value that indicates the session to which the body of the message belongs. It can be either 0xC0 for the LU-LU session (normal 5250 commands), or 0x40 for the SS-LU session (SS messages).

If no prefix is processed, the default session is LU-LU. Once a prefix has been received with a valid session identifier, that session becomes the default until another is received. After the session identifier, the prefix may contain a 5250 signal. The following signals are supported:

0xC9 0x00 0x00 0x00 0x01	Turns on the message waiting indicator
0xC9 0x00 0x00 0x00 0x05	Turns off the message waiting indicator

The body of the message can contain either an SS message, if the current session is SS-LU, or normal 5250 data stream commands if the current session is LU-LU. All data within the message body is encoded as EBCDIC. An SS message contains displayable data that is displayed on the 5250 error row in SS message state.

The following example shows how to display “HELLO WORLD” and beep the beeper from within a data stream initialization file. The line of hexadecimal digits represent the binary values that must be stored in the initialization files.



Remapping Characters

You can use display character translation files to remap characters as they are written to the display. The translation file name for 5250 TE must be 5250.XLT. For instructions on how to download the file to the terminal, see “Downloading Files” later in this section.

Display character translation files are binary files consisting of ordered pairs of eight bit values. Each pair of values remaps a displayable character to a different displayable character.

- The first byte of a pair is the ASCII value of the character to be replaced.
- The second byte of a pair is the ASCII value that replaces the first.

These translations are only made when a character is written to a display device. If the character is sent to the host (keystroke or scan data for example) or sent to an external device (such as a printer), it is sent as the original, untranslated value.

Suppose you want a terminal running 5250 emulation to replace the uppercase B with the Greek letter beta, and replace the uppercase Z with the Greek letter omega. Create a file named 5250.XLT that is four bytes long (two ordered pairs of two bytes each). The file should contain the following four bytes in this order:

0x42
0xE1
0x5A
0xEA

These represent the ASCII display character set values for B, beta, Z, and omega, respectively.

Customizing 5250 EBCDIC to ASCII Translation

The 5250 data stream translates all data from the host from 8-bit EBCDIC to 8-bit ASCII for processing in the terminal. Before the data is sent back to the host, it is again translated from ASCII to EBCDIC. The default translation is shown below.

You can customize the operation of the 5250 data stream by changing the default EBCDIC to ASCII translation table. You can replace the default table with one that is combined with the HEX file that you download to the terminal. You can use ASEBTBLD.EXE to create the file. You must name it ASCEBD.TBL.

Type the following:

asebtbld

to display this information:

```
ASEBTBLD ASCII-EBCDIC Translation Table Creation.
$Revision:  1.0   $
$Date:  03 Apr 1998 13:46:14  $
Copyright 1995, Norand Corporation.

Usage:  ASEBTBLD [<options>] <commands> <fname>
  <options>:
    -r<file>   Input file containing replacement table type,
               0x00-0xff table index, 0x00-0xff value.
    -v         Verbose — display processing steps.
  <fname>      Output file name, extension ignored.
```

ASEBTBLD creates <*fname*>.TBL from the default ASCII and EBCDIC tables using the replacement values specified in -r<*file*>. Typing the following:

asebtbld -rchanges.my ascebd

creates the file ASCEBD.TBL, with the replacement values specified in CHANGES.MY.

The replacement file is an ASCII text file formatted as follows:

```
------------------top of replacement file--------------------
/* Any line beginning with '/*' in column 1 is a comment.

/*A=ASCII=>
/*     EBCDIC
/* E=EBCDIC=>   0-based       hex
/*   ASCII      index value   Anything after value is a comment
/*-------       -------       ---------
     A    0x30   0xf0   ASCII   '0' returns EBCDIC '0'
     E    0xf0   0x30   EBCDIC  '0' returns ASCII '0'
     E    0xc9   0x3f   Unknown    EBCDIC 0xc9 returns ASCII '?'
/* Any number of blanks, tabs allowed before, between and
/* after values.

/* blank lines allowed
-----------------bottom of replacement file-------------------
```

ASEBTLD Default Values

ASEBTBLD creates the following default tables if no replacement file, or an empty replacement file, is specified.

ASCII to EBCDIC

0x00

0x00	0x01	0x02	0x03	0x37	0x2d	0x2e	0x2f
0x16	0x05	0x25	0x0b	0x0c	0x0d	0x4f	0x0f
0x10	0x11	0x12	0x13	0x3c	0x00	0x32	0x1c
0x18	0x19	0x3f	0x27	0x22	0x00	0x35	0x00

0x20

0x40	0x5a	0x7f	0x7b	0x5b	0x6c	0x50	0x7d
0x4d	0x5d	0x5c	0x4e	0x6b	0x60	0x4b	0x61
0xf0	0xf1	0xf2	0xf3	0xf4	0xf5	0xf6	0xf7
0xf8	0xf9	0x7a	0x5e	0x4c	0x7e	0x6e	0x6f

0x40

0x7c	0xc1	0xc2	0xc3	0xc4	0xc5	0xc6	0xc7
0xc8	0xc9	0xd1	0xd2	0xd3	0xd4	0xd5	0xd6
0xd7	0xd8	0xd9	0xe2	0xe3	0xe4	0xe5	0xe6
0xe7	0xe8	0xe9	0x5b	0xe0	0x5d	0x6a	0x6d

0x60

0x79	0x81	0x82	0x83	0x84	0x85	0x86	0x87
0x88	0x89	0x91	0x92	0x93	0x94	0x95	0x96
0x97	0x98	0x99	0xa2	0xa3	0xa4	0xa5	0xa6
0xa7	0xa8	0xa9	0xc0	0x6a	0xd0	0xa1	0x07

0x80

0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x4a	0x00	0x00	0x00	0x00

0xa0

0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x5f	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0xad	0x9d	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0xbc

0xc0

0xab	0x8c	0x8b	0x8d	0xbf	0x8e	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0xbb	0xac	0x00	0x00	0x00	0x00	0x00

0xe0

0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00

EBCDIC to ASCII

0x00

0x00	0x01	0x02	0x03	0x00	0x09	0x00	0x7F
0x00	0x00	0x00	0x0B	0x0C	0x0D	0x0E	0x0F
0x10	0x11	0x12	0x13	0x00	0x00	0x08	0x00
0x18	0x19	0x00	0x00	A_DUP	0x00	0x00	0x00

0x20

0x00	0x00	0x1C	0x00	0x00	0x0A	0x17	0x1B
0x00	0x00	0x00	0x00	0x00	0x05	0x06	0x07
0x00	0x00	0x16	0x00	0x00	0x1E	0x00	0x04
0x00	0x00	0x00	0x00	0x14	0x16	0x00	0x1A

0x40

0x20	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x9b	0x2E	0x3C	0x28	0x2B	0x0e
0x26	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x21	0x24	0x2A	0x29	0x3B	0xaa

0x60

0x2D	0x2F	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x7C	0x2C	0x25	0x5F	0x3E	0x3F
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x60	0x3A	0x23	0x40	0x27	0x3D	0x22

0x80

0x00	0x61	0x62	0x63	0x64	0x65	0x66	0x67
0x68	0x69	0x00	0xc2	0xc1	0xc3	0xc5	0x00
0x00	0x6A	0x6B	0x6C	0x6D	0x6E	0x6F	0x70
0x71	0x72	0x00	0x00	0x00	0xb4	0x00	0x00

0xa0

0x00	0x7E	0x73	0x74	0x75	0x76	0x77	0x78
0x79	0x7A	0x00	0xc0	0xda	0xb3	0x00	0x00
0x00	0x00	0x00	0x00	0x00	0x00	0x00	0x00
0x00	0x00	0x00	0xd9	0xbf	0x00	0x00	0xc4

0xc0

0x7B	0x41	0x42	0x43	0x44	0x45	0x46	0x47
0x48	0x49	0x00	0x00	0x00	0x00	0x00	0x00
0x7D	0x4A	0x4B	0x4C	0x4D	0x4E	0x4F	0x50
0x51	0x52	0x00	0x00	0x00	0x00	0x00	0x00

0xe0

0x5c	0x00	0x53	0x54	0x55	0x56	0x57	0x58
0x59	0x5A	0x00	0x00	0x00	0x00	0x00	0x00
0x30	0x31	0x32	0x33	0x34	0x35	0x36	0x37
0x38	0x39	0x00	0x00	x00	0x00	0x00	0x00

Substituting National Characters

This topic tells how to create a file that remaps one character in the terminal's Terminal Font Set for another character in the set. Use this information to provide characters on the terminal in the local language.

Intermec provides a table for converting from characters used in English (U.S.) to German, Danish, Finnish, Italian, Spanish, French, Belgian, and English (UK). The procedure for converting the characters appears first. Then two slightly longer procedures show how to remap any character to another. One procedure describes the steps with the symbol's EBCDIC value. The other one describes the steps without a value. Finally, examples show the remap files for German characters and a few English symbols.

For all procedures, you need the terminal's Terminal Font Set table. The table lists characters and their decimal and hexadecimal values. For the font set table for 2415, 2425, 2455, and 248X terminals, refer to the terminal's user manual. For the font set table for the 6400 or 5055 computer, see Appendix C.

Creating the File

Follow these steps to create a table that substitutes characters in the local language for characters normally used in U.S. English. These steps apply *if the EBCDIC value is one of the following:* 4A, 4F, 5A, 5B, 5F, 6A, 79, 7B, 7C, 7F, A1, C0, D0, E0.

1. Find the character to replace in Table 5-2 and determine its EBCDIC value.
2. Find the default translation value in Table 5-3 (2415, 2425, 2455, or 248X terminal) or Table 5-4 (6400 or 5055 computer).
3. Using the default value from step 2, search the terminal's Terminal Font Set for the character. If the default character is correct, you are done.

   If the default character is incorrect, go to step 4.
4. Search the terminal's Terminal Font Set for the character you want.
5. Create file 5250.XLT. Put the default value of the font character (found in step 2) as the first byte in the file. Put the replacement value (found in step 4) as the second byte in the file.
6. Repeat steps 1 through 5 until all replacement characters have been completed.
7. Download 5250.XLT to your terminal and restart the terminal emulation program for the changes to take effect. For downloading information, see "Downloading Files" later in this section.

Table 5-2
EBCDIC Values

EBCDIC Character Set	4A	4F	5A	5B	5F	6A	79	7B	7C	7F	A1	C0	D0	E0
English (US)	¢	|	!	$	¬	¦	‘	#	@	"	~	{	}	\
Austrian/German	Ä	!	Ü	$	^	ö	‘	#	§	"	b	ä	ü	Ö
Austrian/German (alternate)	ö	|	ü	Ü	¬	b		Ä	Ö	ä				
Danish/Norwegian	#	!	¤	Å	^	ø	‘	Æ	Ø	"	ü	æ	å	\
Danish/Norwegian (alternate)	ø	|	å	Å	¬	¦		Æ	Ø	æ				
Finnish/Swedish	§	!	¤	Å	^	ö	é	Ä	Ö	"	ü	ä	å	É
Finnish/Swedish (alternate)	ö	|	å	Å	¬	¦		Ä	Ö	ä				
French	°	!	§	$	^	ù	‘	£	à	"	· ·	é	è	ç
Italian	°	!	é	$	^	ò	ù	£	§	"	ì	à	è	ç
Portuguese	[	!	]	$	^	õ	‘	Ã	Õ	"	ç	ã	’	Ç
Spanish	[	|	]	Pts	¬	ñ	‘	Ñ	@	"	· ·	{	}	\
Spanish (alternate)	¢	|	!	Pts	¬	¦		Ñ	@	ñ				
English (UK)	$	|	!	£	—	¦	‘	#	@	"	–	{	}	\
Belgian	[	!	]	$	^	ù	‘	#	à	"	· ·	é	è	ç
Brazilian/ Portuguese	É	!	$	Ç	^	ç	ã	Õ	Ã	"	~	õ	é	\
Japanese (English)	£	|	!	¥	¬	¦	‘	#	@	"	–	{	}	$
Spanish Speaking	[	|	]	$	¬	ñ	‘	Ñ	@	"	· ·	{	}	\
Canadian (French)	à	!	’	$	^	ù	‘	#	@	"	· ·	é	è	↵
International	[	!	]	$	^	¦	‘	#	@	"	~	{	}	\

Table 5-3
ASCII Equivalents for EBCDIC Values (2415, 2425, 2455, or 248X Terminal)

	ASCII													
	4A	4F	5A	5B	5F	6A	79	7B	7C	7F	A1	C0	D0	E0
English (US)	BD	7C	21	24	AA	DD	60	23	40	22	7E	7B	7D	5C
German	8E	21	9A	24	5E	94	60	23	F5	22	E1	84	81	99
Danish/ Norwegian	23	21	0F	8F	5E	9B	60	92	90	22	81	91	86	5C
Finnish/ Swedish	F5	21	0F	8F	5E	94	82	8E	99	22	81	84	86	90
Italian	F8	21	82	24	5E	95	97	9C	F5	22	8D	85	8A	87
Spanish	5B	7C	5D	—	AA	A4	60	A5	40	22	F9	7B	7D	5C
French	F8	21	F5	24	5E	97	60	9C	85	22	F9	82	8A	87
Belgian	5B	21	5D	24	5E	97	60	23	85	22	F9	82	8A	87
English (UK)	24	7C	21	9C	AA	DD	60	23	40	22	16	7B	7D	5C

Table 5-4
ASCII Equivalents for EBCDIC Values (6400 or 5055 Computer)

	ASCII													
	4A	**4F**	**5A**	**5B**	**5F**	**6A**	**79**	**7B**	**7C**	**7F**	**A1**	**C0**	**D0**	**E0**
English (US)	9B	0E	21	24	AA	7C	60	23	40	22	7E	7B	7D	5C
German	8E	21	9A	24	5E	94	60	23	15	22	E1	84	81	99
Danish/ Norwegian	23	21	0F	8F	5E	ED	60	92	05	22	81	91	86	5C
Finnish/ Swedish	15	21	0F	8F	5E	7C	82	8E	99	22	81	84	86	90
Italian	F8	21	82	24	5E	95	97	9C	15	22	8D	85	8A	87
Spanish	5B	OE	5D	—	AA	A4	60	A5	40	22	06	7B	7D	5C
French	F8	21	15	24	5E	97	60	9C	85	22	06	82	8A	87
Belgian	5B	21	50	24	5E	97	60	23	85	22	06	82	8A	87
English (UK)	24	OE	21	9C	AA	7C	60	23	40	22	5F	7B	7D	5C

For characters other than those in Table 5-3, refer to the appropriate IBM character set. Languages and set numbers are in Table 5-5.

Table 5-5
IBM Character Sets

Number	Language	IBM Set
1	English (U.S.)	037–850
2	German	273–850
3	Danish/Norwegian	277–850
4	Swedish/Finnish	278–850
5	Italian	280–850
6	Spanish	284–850
7	French	297–850
8	Belgian	500–850

Examples

- The first example remaps three characters. It applies only to the 2415, 2425, 2455, or 248X terminal. It does not apply to the 6400 or 5055 computer because U.S. English values are correct in these terminals.
- The second example applies to the 2415, 2425, 2455, or 248X terminal. This example remaps 14 characters appropriate to U.S. English to 14 characters more appropriate to Austrian/German.
- The third example applies to the 6400 or 5055 computer. This example also remaps 14 characters appropriate to U.S. English to 14 characters more appropriate to Austrian/German.

EXAMPLE 1: ASCII hexadecimal file 5250.XLT remaps 3 characters

```
0x9B 0xBD
0x0E 0x7C
0x7C 0xDD
```

EBCDIC Hex Value	Original to be Replaced	Replacement for Display
4A	ø	¢
4F	≠	|
7C	|	¦

EXAMPLE 2: ASCII hexadecimal file 5250.XLT remaps for German (2415, 2425, 2455, or 284X terminal)

```
0x9B 0x8E
0x0E 0x21
0x21 0x9A
0x24 0x24
0xAA 0x5E
0x7C 0x94
0x60 0x60
0x23 0x23
0x40 0xF5
0x22 0x22
0x7E 0xE1
0x7B 0x84
0x7D 0x81
0x5C 0x99
```

EBCDIC Hex Value	Original to be Replaced	Replacement for Display
4A	¢	Ä
4F	|	!
5A	!	Ü
5B	$	$
5F	¬	^
6A	¦	ö
79	`	`
7B	#	#
7C	@	§
7F	"	"
A1	~	b
C0	{	ä
D0	}	ü
E0	\	Ö

EXAMPLE 3: ASCII hexadecimal file 5250.XLT remaps for German (6400 or 5055 computer)

```
0x9B 0x8E
0x0E 0x21
0x21 0x9A
0x24 0x24
0xAA 0x5E
0x7C 0x94
0x60 0x60
0x23 0x23
0x40 0x15
0x22 0x22
0x7E 0xE1
0x7B 0x84
0x7D 0x81
0x5C 0x99
```

EBCDIC Hex Value	Original to be Replaced	Replacement for Display
4A	¢	Ä
4F	|	!
5A	!	Ü
5B	$	$
5F	¬	^
6A	¦	ö
79	`	`
7B	#	#
7C	@	§
7F	"	"
A1	~	b
C0	{	ä
D0	}	ü
E0	\	Ö

Downloading Files

2415, 2425, 2455, or 248X Terminal

You can use one of several methods to download a file to a 2415, 2425, 2455, or 248X terminal, including:

- FileCopy through a serial connection from your Trakker Antares terminal to your personal computer

▶ NOTE: *You must use the latest version of the T24FCOPY FileCopy utility and do a Ymodem transfer of the data. Do not do an Xmodem transfer.*

- The Download Server feature on the DCS 300 to a Trakker Antares terminal loaded with UDP Plus protocol
- The Receive File reader command
- The TFTP application on a personal computer or host to a Trakker Antares terminal loaded with the TCP/IP protocol

To use these methods, refer to your terminal's user manual for help.

To restart your TE application, do one of the following:

- Scan this bar code label:

  Reset Firmware

  –.

  You can also send the Reset Firmware command over the network. For help, refer to your terminal's user manual.

- Use the TRAKKER Antares 2400 Menu System to configure the Resume Execution command to resume "not allowed." Choose Terminal Menu from the Configuration Menu and then choose Power Management. Each time you press ⏻ to turn on the Trakker Antares terminal, it boots and restarts your application. For more information, refer to your terminal's user manual.
- Access the TRAKKER Antares 2400 Menu System and select the TE application through the File Manager option. For help, refer to your terminal's user manual.

The Trakker Antares terminal restarts your TE application using the configuration saved in CONFIG.DAT.

6400 or 5055 Computer

Before you can download a file to a 6400 or 5055 computer, you must configure INTERLNK on a desktop or laptop PC. INTERLNK, a part of MS-DOS, is a device driver that connects your 6400 or 5055 computer and PC through their serial ports. This connection enables you to exchange files. It also enables you to edit the 6400 or 5055 computer's configuration files, such as CONFIG.DAT.

INTERSVR is the INTERLNK server and is a communications option on your 6400 or 5055 computer. INTERLNK and INTERSVR are provided with DOS and shipped with your 6400 or 5055 computer toolkit.

For complete installation instructions, refer to the README.TXT file provided with 6400 and 5055 computers.

Section 6

Display Data Stream

Overview

This section describes the following:

- The host 5250 display data stream commands the host application can send to terminals.
- The host 5250 data stream orders the host can send to terminals. Orders govern format and data expectations within the Write to Display command.
- Asynchronous 5250 prefixes.
- System messages and parameter errors that can appear in the terminal's display.

This section is not intended as a specific guide for programming, but a comparison with your existing system. The information helps identify differences between your screen-generating utilities and the features the terminals support.

Screen Design Aid

This section, along with your Screen Design Aid (SDA) documentation, can help you resolve occasional questions concerning discrepancies that may arise regarding attribute selection and the capabilities of the terminals. This section includes information you may not need, because you can use your SDA to do much, if not all, of the programming to handle commands and orders for the network. This information is provided to assure you have the most accurate and detailed information available and to describe variations from the 5250 data stream where they occur.

If you are comfortable using the SDA on your host computer, you can flip through this section to find out which commands and orders the terminals support. You can then read Section 7, which describes the extended commands you can use to do operations beyond the capability of the IBM Display Station.

Applications

If you need to write applications specifically for the terminal, it is recommended that you use the corner mode window onto the IBM Display Station and write programs using the portion of the display available without moving the window. This is the most efficient method for developing custom applications for the terminal.

Data Stream Command Structure

The 5250 command structure enables the terminal to display prompts and accept keyboard or scanner input. A second kind of command, called an order, works with the Write To Display command to define display characteristics, buffer sizes, and acceptable data types.

Display data stream commands form two categories: the input commands and the output commands. Table 6-1 lists input commands and hex codes.

Table 6-1
Input Commands and Hex Codes

Input Commands	Hex Code
Read Immediate	72
Read Modified Immediate Alternate	83
Read Input Fields	42
Read MDT Fields	52
Read MDT Alternate	82
Read Screen	62
Save Screen	02
Write Structured Field	Not supported.

Table 6-2 lists output commands and hex codes.

Table 6-2
Output Commands and Hex Codes

Output Commands	Hex Code
Clear Format Table	50
Clear Unit	40
Clear Unit Alternate	Not supported.
Restore Screen	12
Roll	23
Write Error Code	21
Write to Display	11

Input and output commands are described on the following pages. The *IBM 5250 Information Display System Functions Reference Manual* (IBM part number SA21-9247-6 provides more detailed descriptions than those presented in this programmer's guide).

Input Commands

Input commands consist of immediate and AID-associated Read commands. Immediate commands are executed when the controller receives the command. AID-associated commands are queued until the operator presses an AID-generating key such as Enter/Rec Adv. Other AID-generating keys are listed in the section for each terminal.

Read Immediate (Immediate) Command

Function. The Read Immediate command is similar to the Read Screen command, except the data comes from the format table rather than the display. The command sends back the contents of all the input fields on the display.

Restrictions. This command must be the last command in the chain and the controller must have change of direction (CD). The command is rejected if the terminal is in an error, system request, or SS message state.

▶ **NOTE:** *If the display supports a separate message line, and the message line is selected, the command is rejected only for the system request and SS message states. The command is processed with the display in error state.*

Format. The command takes the following form:

ESC	Read Immediate Command
Hex 04	Hex 72

Results. Information associated with this command returns to the user in the LU-LU nonexpedited flow. What the user receives when they issue this command depends on the condition of the master modified data tag (MDT) bit:

- If the MDT bit is not set, the user receives:
  Cursor Address AID Code
- If the master MDT bit is set, the user receives:
  Cursor Address AID Code Field Data

The field data consists of the contents of all input fields as they appear on the display, unless resequencing has been specified. Any attributes contained in a field are treated as data and returned as such. Field boundary attributes are not considered part of the field. All nulls are converted to blanks. If the specified field is a signed numeric field, the last character is not sent.

If that same field is negative, the zone position of the next-to-the-last character is changed to hex D. In each case, the returned cursor address indicates the current location of the cursor and the AID code is hex 00.

▶ **NOTE:** *Queued Read commands and pending AID codes are not cleared. The format table, display annunciators, insert mode keying history, and display contents are not affected.*

Read Modified Immediate Alternate Command

The Read Modified Immediate Alternate command enables the host to read data from modified input fields without depending on the operator to press an AID request key.

Format. The command takes the following form:

ESC	Read Modified Immediate Alternate Command
Hex 04	Hex 83

Results. This command is processed the same as the Read Immediate command, except for these differences in the format of data sent to host:

- Controller only returns data from those fields in the format table that have the MDT bit on.
- Data field is delimited by Set Buffer Address (SBA) orders in the same way as the response data field for the Read MDT Fields command.
- Leading and imbedded nulls within each field's data are not converted to blanks.
- Trailing nulls within each field's data are suppressed.

Read Input Fields Command

Function. The Read Input Fields command causes the terminal to wait for the operator to press an active AID-generating key, then sends the contents of all fields defined in the format table to the host.

Restrictions. The operator must press an AID-generating key to execute this command. Also, CD in the Request/Response Header (RH) must be on before the AID byte can be serviced.

This command is cleared if:

- The host system issues a session control request (such as Unbind).
- The host system issues a Clear Unit command and the controller executes it.
- The host system sends another Read command to the same LU and overlays this command.
- The Read command is executed.

Format. The command takes the following form:

ESC	Read Input Fields Command	CC Byte 1	CC Byte 2
Hex 04	Hex 42	Hex 00	Hex 13

Results. Information associated with this command returns to the user in the LU-LU nonexpedited flow. Note that the host system cannot receive this information until the operator presses an AID-generating key. What the user receives when they issue this command depends on the condition of the master MDT bit:

- If the master MDT bit is not set, the user receives:

  Cursor Address AID Code

  - Cursor Address: Position of the cursor when the AID-generating key was pressed.
  - AID Code: Code for the AID-generating key the operator used.

- The user receives the cursor address and AID code if any of the following keys are pressed:

  Clear
  Help
  Print
  Record Backspace in home position

- If the master MDT bit is on, the user receives:

  Cursor Address AID Code Field Data

  - Cursor Address: Position of the cursor when the AID-generating key was pressed.
  - AID Code: Code for the AID-generating key the operator used.
  - Field Data: Returned only when one of the following AID-generating keys is used:

    Roll Up
    Roll Down
    Enter/Rec Adv
    An unmasked function key

    When it is returned, the field data consists of the contents of all input fields as they appear on the display unless resequencing has been specified.

Any attributes in a field are treated as data and returned as such. Field attributes are not considered part of the field. All nulls are converted to blanks. All pending AID request bytes are cleared. If the specified field is signed numeric, the first character is not sent; if that same field is negative, the zone position of the next-to-the-last character is changed to hex D. Though data is not sent, the CC bytes are processed.

To determine the appropriate codes for the control character (CC) bytes, see Table 6-3 and Table 6-4 under the Write To Display topic (page 6-14).

Format of Returned Data. The format of the returned data is:

Bytes 1 and 2	Byte 3	Byte 4	Byte 5
Cursor address	AID code	Field data	Field data

Byte 6 and all that follow contain the remaining field data from the format table. The terminal returns complete contents of each field, with nulls converted to blanks.

Read MDT Fields Command

Function. The Read MDT Fields command causes the terminal to wait for the operator to press an active AID-generating key, then sends all fields that have their MDT bit set. The bit could have been set by the operator entering data in the field or by the Write to Display (WTD) command.

Restrictions. The operator must press an AID-generating key to execute this command. In addition, the CD in the RH for the requested LU must be on before any information can be sent back to the host system in response to the command. The command is cleared if:

- A session control request (such as Unbind) is issued by the host.
- A Clear Unit command is issued.
- The host system sends another Read command to the same LU and overlays this command.
- The Read command is serviced.

Format. The command take the following form:

ESC	Read MDT Command	CC Byte 1	CC Byte 2
Hex 04	Hex 52	00	13

Format of Returned Data. The format of the returned data is:

Byte 1 and 2	Byte 3	Byte 4	Byte 5	Byte 6
Cursor address	AID code	{SBA	Field address	Field data}

▶ NOTE: *The {} brackets around the last three fields indicate these fields may be repeated as a unit.*

The cursor address gives the cursor location on the display. The SBA fields are formatted as Set Buffer Address orders. The field address comes from the address portion of the order and gives the address of the modified field (excluding the attribute).

Results. The contents of each field that has an MDT bit on are returned to the host system in the order that the fields appear in the format table, if one of the following AID-generating keys is used:

Roll up/Page down
Roll down/Page up
Enter/Rec Adv
Unmasked function keys

If no MDT bits are on, or if the operator does not use one of the acceptable AID-generating keys (Clear, Help, Print, or Record Backspace), only the cursor and AID code are returned to the host system.

The host system can use field control words (FCWs) to rearrange the sequence in which the fields are returned. If data is returned, the following formatting is done. If the field is not a transparent data field, the following occurs:

- Trailing nulls are stripped. If the field consists of all nulls, only the Set Buffer Address, row, and column are returned.
- Leading and embedded nulls are converted to blanks.

If the field is signed numeric, the last character is not sent. If that same field is negative, the zone position of the next-to-the-last character is changed to hex D.

Hex 10 and hex 11 are control data. Avoid writing hex 10 and hex 11 to the display as data unless they are written in transparent data fields.

Read MDT Alternate Command

Read MDT Alternate is similar to the Read MDT Fields command with these exceptions:

- Leading and embedded nulls within the fields remain nulls. Trailing nulls are stripped.
- For fields that are nulls but have their MDT bit on, the controller returns an SBA order followed by the field's address.

Read Screen (Immediate) Command

Function. The Read Screen command sends the contents of the display to the host in the same order information appears on the screen. For example, row 1 goes first.

Restrictions. This command must be the last command in the SNA chain, and CD must be on. The terminal rejects the command when it is in the prehelp error, posthelp error, system request, or SS message state. During transmission the keyboard is locked, but pending AID requests or Read commands are retained.

▶ **NOTE:** *If the display supports a separate message line, and the message line is selected, the command is rejected only for the system request and SS message states. The command is processed with the display in error state.*

Format. The command takes the following form:

ESC	Read Screen Command
Hex 04	Hex 62

Results. The contents of the entire display, including the attributes, is sent to the host system just as it appears in the regeneration buffer (no formatting or conversion is done). Cursor address and AID are not returned. This command does not clear either pending Read commands or AID requests. The keyboard is temporarily locked. The following are unaltered:

- Annunciators
- Cursor location
- Modes
- Keying history
- Display contents
- Format table

Save Screen (Immediate) Command

Function. The Save Screen command sends the state of the terminal to the host. Information sent to the host includes:

- Format table
- Display buffer
- Keyboard state
- Cursor location
- Code returned in response to the Help key
- Any outstanding AID requests
- Any outstanding Read commands

Restrictions. This command must be the last command in the SNA chain and CD must be on. The command is rejected if the addressed LU is in either the system request or SS message state.

Format. The command takes the following form:

ESC	Save Screen Command
Hex 04	Hex 02

Format of Returned Data. The format of the returned data is:

Byte 1	Byte 2	Byte 3	Byte 4
Escape	Restore Screen	<terminal state>	<terminal state>

Byte 5 and all remaining bytes contain the save screen information.

Results. All data required for restoring the display are sent to the host system. It must not be modified by the host system if the result of the Restore Screen command is to have integrity.

Output Commands

Some output commands have associated data and control information (write characters and orders). The Write commands are executed immediately.

Clear Format Table Command

Function. The Clear Format Table command clears the format table without erasing data in the display buffer.

Restrictions. The terminal rejects the command when in an error, system request, or SS message state.

▶ **NOTE:** *If the display supports a separate message line, and the message line is selected, the command is rejected only for the system request and SS message states. The command is processed with the display in error state.*

Format. The command takes the following form:

ESC	Clear Format Table Command
Hex 04	Hex 50

Results. The following list describes what happens when this command is executed.

- The keyboard is locked.

  The keyboard clicker is turned off.
  The Input Inhibited annunciator is turned on.
  The insert mode is cleared (as is the annunciator).
- The format table is cleared. The format table header formats as follows:

Item	Value
Format ID	Hex 00
First field transmitted to host system	0 (Resequencing is disabled)
Error line	Bottom line of display

- The system insert cursor address is set to row 1, column 1. This clears a previous Insert Cursor order.
- Any pending AID request is cleared.
- All keying history is cleared.
- The master MDT bit is cleared.
- A blinking cursor caused by waiting for a required Field Exit key is reset.

▶ **NOTE:** *Operator-selected reverse image and the Message Waiting annunciator are not affected by this command.*

Clear Unit Command

Function. This command clears the display and format table.

Restrictions. The terminal rejects the command when it is in the SS message state.

Format. The command takes the following form:

ESC	Clear Unit Command
Hex 04	Hex 40

Results. When the terminal receives the Clear Unit command, the following occurs:

- The keyboard locks.

  The Input Inhibited annunciator is turned on.
  The error state (or system request state) is cleared.
  The shift, alternate, function, and insert modes are cleared.
- The format table is cleared. Because this is not format level 0, a default header is assumed.
- The MDT bit is cleared.
- All function keys are set up to return data.
- The display is cleared by writing nulls to the display buffer.
- A normal attribute is written byte to row 1, column 1 of the display.
- The cursor is placed at row 1, column 2; this makes the insert cursor address.
- Any AID requests and pending Read Input Fields or Read MDT Fields commands are cleared.

▶ **NOTE:** *Operated-selected reverse image and the Message Waiting annunciator are not affected by this command.*

Restore Screen Command

Function. The Restore Screen command restores all data stored by the last Save Screen command.

Restrictions. The terminal rejects this command when it is in a system request or SS message state.

Format. The command takes the following form:

ESC	Restore Screen Command	Data From Last Save Command
Hex 04	Hex 12	<saved data>

Results. The following describes what happens when this command is executed.

These are restored:

- Contents of the display.
- Contents of the format table.
- State of the keyboard, including the insert mode with the annunciators.
- Location of the cursor and the way it was displayed.
- System insert cursor address.
- State of the master MDT bit.
- Error code and any explanatory information provided by the host system in the Write Error Code command, if the terminal was in an error state. The error code and any information are returned via the operator's use of the Help key.
- Requirements to send LU-LU Lustat when error line is available.
- Any Read command that was pending at the time.
- Any AID requests that were outstanding at the time of the Save Screen command.

These conditions from the previous save are not restored:

- Condition of the Shift key and the associated annunciator.
- Status of the Message Waiting annunciator.
- The current status of the hex mode is reset.

The following conditions cause parameter errors:

- Invalid data is detected.
- The required amount of data is not received.

▶ **NOTE:** *A Clear Unit command is executed if an error is detected.*

Roll Command

Function. The Roll command causes the image presented in the terminal display to roll up or down across the larger image area available on the IBM Display Station.

Restrictions. The command is rejected if the display is in the prehelp error, posthelp error, system request, or SS message state.

▶ **NOTE:** *If the display supports a separate message line, and the message line is selected, the command is rejected only for system request and SS message states. The command is processed with the display in error state.*

Format. The command consists of 5 bytes in the following form:

			Row Number	
ESC	**Command**	**Direction**	**Top**	**Bottom**
Hex 04	Hex 23	Hex 08	Hex 01	Hex 23

Bits in the direction byte define the direction and number of lines to roll. See the following chart for the bit meanings. Bit 7 is the most significant bit.

Bit	Description
7	0 = Roll up 1 = Roll down
6 through 0	Number of lines to roll

The top row number tells the first line for inclusion in the roll. Bottom row number tells the last row number to include. Top and bottom row numbers together define the number of lines presented on the display for the roll.

Results. The following conditions govern the Roll command:

- Lines vacated due to the Roll are not cleared to nulls.
- Format table is not changed (could cause bizarre results).

▶ **NOTE:** *If display does not conform to the format table, roll should not be done.*

- Rolled over data is lost.
- The lines rolled out of the area are lost (cannot be rolled back onto the screen).
- The state of the keyboard is not affected.
- Pending AID bytes are not affected.
- The following conditions cause parameter errors:

  A top line of zero.
  A top line greater than or equal to the display length.
  A bottom line of zero.
  A bottom line greater than the display length.
  A top line greater than or equal to the bottom line.
  A roll area greater than the bottom line minus the top line.

A scroll distance of zero has no effect on the display.

Write Error Code Command

Function. The Write Error Code command forces the terminal into the prehelp state (the same state the terminal enters when the operator makes a keying error).

Restrictions. A Write Error Code clears any outstanding AID requests. The terminal rejects the Write Error Code command if it is in the prehelp, system request, or SS messages state.

Format. The command may take any of the following forms:

▶ **NOTE:** *Headings in brackets indicate you can omit the individual field. However, you may not omit both fields. You must provide either an Insert Cursor order or error message to avoid an error condition.*

ESC	Write Error Code Command	Insert Cursor Order
Hex 04	Hex 21	Position cursor

ESC	Write Error Code Command	Error Message
Hex 04	Hex 21	<message text>

ESC	Write Error Code Command	Insert Cursor Order	Error Message
Hex 04	Hex 21	Position cursor	<message text>

The Insert Cursor (IC) order may also be embedded in the error message.

Results. You can use the IC order to place the cursor at the beginning of the field where the error occurred. This helps the operator find the source of the error. The IC order does not affect where the error message is written.

The terminal writes only the first 78 bytes of the error message to the error line. If the error line is already used for error presentation, the terminal saves data on the error line and restores it after the operator presses the Reset key.

When the operator presses the Help key (prehelp error state only) in response to the error condition, characters from columns 2, 3, 4, and 5 of the error line are returned to the host system in a packed form and sent as a Signal command.

These characters form an index code that elicits a user-generated description of the error for the operator.

- Prehelp error state is selected for the keyboard.
- Input Inhibited annunciator is on.
- Insert mode and Insert annunciator are cleared.
- Command, dead key diacritic, and hex modes are cleared.
- Cursor is blinking.
- The line in the format table header defined as an error line is saved.
- Cursor moves to the location specified by the IC order. If no IC order is given, the cursor does not move.
- All characters (except IC order) found between the command byte and the end of the chain or next ESC are written on the error line. If the data exceeds 80 characters, an error occurs.

- All outstanding AID bytes are cleared.
- When the operator presses [HELP], the controller places a nonblink high intensity attribute in column 1 of the error line, replacing anything that was previously there.
- The locked state of the keyboard is cleared if the keyboard was locked and the terminal was not in a posthelp error state. This allows the operator to release the keyboard by pressing the Reset key.

The following conditions cause parameter errors:

- Neither an IC order nor data follows the command.
- Invalid IC order.
- More data than 80 bytes is specified.

Write to Display (WTD) Command

Function. The WTD command does the following:

- Modifies the format table and display buffer contents.
- Governs modified data tag (MDT) flags and Message Waiting annunciator.
- Nulls nonbypass fields.
- Controls keyboard lock and cursor blink.

Restrictions. This command is rejected if the display is in a prehelp error, posthelp error, system request, or SS message state.

If the display supports a separate message line, and the message line is selected, then only system request or SS message state result in a contention state error. If the error line is in use, however, and the WTD attempts to redefine the error line (using Start of Header byte 4), a negative response is generated.

Format. The WTD command takes either of the following forms.

ESC	WTD Command	CC Byte 1	CC Byte 2	Orders or Data
Hex 04	Hex 11	Hex 00	Hex 13	<orders>
Hex 04	Hex 11	Hex 00	Hex 13	<data>

Notes. CC Byte 1 and CC Byte 2 are the write control characters. CC Byte 1 may do the following:

- Clear the master MDT flag and reset the MDT flags.
- Null all appropriate nonbypass fields.

CC Byte 2 sets the following:

- Cursor blink
- Keyboard lock
- Alarm
- Message Waiting annunciator

Orders are described in detail later in this section. Any character that is not an order and not associated with an order is considered data, and is written on the screen at the current display address. The address is then incremented by 1 for each character written. These characters should be hex 00, hex 1C, or above hex 1F, so there is no conflict with the codes reserved for orders.

Results. If the WTD command changes the format table, the keyboard remains locked until specifically unlocked by CC Byte 1 or a subsequent WTD command.

See Table 6-3 to determine the appropriate command for your particular combination of needs. To select a command, check the body of the table for the row showing the desired combination of conditions. Then refer to the left-most column to find the corresponding hex code.

Table 6-3
Write to Display Control Byte 1

Hex Code	Reset Pending AID, and Lock Keyboard	Clear Master MDT and Reset MDT Flags		Null All Appropriate Nonbypass Fields	
		Nonbypass Fields	All	Field with MDT On	All
00					
20	•				
40	•	•			
60	•		•		
80	•			•	
A0	•	•			•
C0	•	•		•	
E0	•		•		•

Table 6-4 describes bit positions for CC byte 2. The most significant bit is 7; the least significant bit is 0.

Table 6-4
Write to Display Control Byte 2

Bit Position	Description
7	Always 00
6	0 = Cursor moves to default or IC order position when keyboard unlocks.* 1 = Cursor does not move when keyboard unlocks.
5	0 = No action, 1 = Reset blinking cursor
4	0 = No action, 1 = Set blinking cursor (if reset bit also = 1)
3	0 = No action, 1 = Unlock keyboard, reset pending AID bytes
2	0 = No action, 1 = Sound alarm
1	0 = No action, 1 = Reset Message Waiting annunciator
0	0 = No action, 1 = Set Message Waiting annunciator (even if bit 5 is set to 1)

* Exception: When a WTD is received when the keyboard is unlocked and the WTD does not modify the keyboard state.

The following conditions cause parameter errors:

- Invalid orders.
- No data, orders, or CC follow the command byte.

Orders

The following pages describe the host 5250 data stream orders the host can send to terminals on the network. Orders govern format and data expectations within the WTD command (page 6-14).

The host application can include terminal orders in the WTD command, either alone or intermixed with display data. The terminal executes orders sequentially. The terminal does **not** store orders in the display buffer with other data in the data stream.

Five buffer control orders position, define, and format data written into the buffer, erase selected unprotected data in the buffer, and reposition the cursor. A sixth order, Transparent Data, provides a way to write transparent data to the display. Table 6-5 lists orders and their hex codes.

Table 6-5
Write to Display Command Orders

Command	Hex Code
Insert Cursor	13
Move Cursor	14
Repeat to Address	02
Set Buffer Address	11
Start of Field	1D
Start of Header	01
Transparent Data	10

Insert Cursor (IC) Order

Function. The IC order:

- Sets the system insert cursor (IC) address to the location specified by the 2 bytes that follow the order when it is included in the WTD command, or
- Moves the cursor to the specified address without affecting the system IC address when it is included in the Write Error Code command. Byte 1 gives the row address and byte 2 gives the cursor address.

▶ **NOTE:** *If multiple IC orders appear in the Write data stream, the last one encountered is used in subsequent operations.*

Restrictions. A parameter error is posted when:

- There are fewer than 2 bytes following the order.
- The row address equals 0 or is greater than 24.
- The column address equals 0 or is greater than 80.

Format. The order takes the following form:

Insert Cursor Order	Row Address	Column Address
Hex 13	Hex 01	Hex 01

Results. When the order is used in the WTD command, the cursor is not immediately moved; the address is saved for later use. The cursor is moved when the entire WTD is completed.

When the order is used in the Write Error Code command, the cursor is moved to the address given in the IC order and does not affect the system IC address. The cursor exits the field regardless of the type and does not perform any field checks. For example, it does not check for a filled field for a field specified as mandatory fill.

You can use the IC order in the Write Error Code command to tell the terminal operator where an error has occurred. Maximum row and column addresses are determined by the character size selected through the terminal's TE configuration menus or firmware.

Move Cursor (MC) Order

The MC order enables the host to move the cursor to a specified position without modifying the home address, and without regard to the keyboard's state.

Format. The order takes the following form:

MC Order	Row Address	Column Address
Hex 14	1 byte	1 byte

If the WTD data stream contains multiple IC or MC orders, the last IC or MC order determines the cursor position. The IC order negates any previously coded MC orders and the MC order negates any previously coded IC orders, with the exception that the last IC order establishes home position. To set the home position and then move the cursor, code the IC order, and then the MC order.

WTD control character values do not affect the MC order, including the move cursor flag. See Table 6-4 on page 6-15 for more information.

Repeat to Address (RA) Order

Function. The RA order stores a specified alphanumeric or null character in all buffer locations starting at the current buffer address and ending on the specified stop address. This stop address and the character to repeat are identified by the 3 bytes immediately following the RA order in the Write data stream. You can use RA orders to fill an area of the display.

Restrictions. A parameter error is posted when:

- Fewer than 3 bytes follow the order.
- A row address equals 0 or is greater than 24.
- The specified ending address is less than the current display address.

▶NOTE: *Although any character can be repeated, avoid using hex 11 (Set Buffer Address order), because this value is used as the delimiter between the fields sent in response to the Read MDT Fields command.*

Results. The character is repeated from the current display address through the ending display address specified. The current display address is then updated to the value of the last position +1.

Set Buffer Address (SBA) Order

Function. The SBA order specifies a new buffer address from which operations are to start or continue. You can use the SBA order to:

- Write data into various areas of the buffer.
- Precede another order in the data stream to specify the starting address for a Repeat to Address.
- Specify the address at which an attribute byte is stored by a Start of Field order.

Restrictions. A parameter error is posted when:

- Fewer than 2 bytes follow the order.
- The row address is equal to 0 or greater than 24.
- The column size equals 0 or is greater than 80.

Default. When the SBA is not specified in the WTD command, the data starts at row 1, column 1. This is where the WTD command initialized it.

Format. The SBA order takes the following form:

SBA Order	Row Address	Column Address
Hex 11	Hex 01	Hex 01

Row addresses begin with 1, as do column addresses. However, the terminal accepts column address hex 00 and translates it to column 1.

Start of Field (SF) Order

Function. The SF order defines input and output fields. If an input field is being defined, it also resets any pending AID byte and locks the keyboard.

▶ **NOTE:** *Although this order can be used for output fields, it is not recommended because it degrades performance. Use the SBA order instead.*

Format. SF order takes the following form with minimal information:

SF Order	Attribute	Length
Hex 1D	Hex 01	Hex 0012

You may also include format and control information in the SF order. In these cases it takes one of the following forms:

▶ **NOTE:** *Brackets around "format" and "control" headings indicate these fields are optional.*

SF Order	[Format]	Attribute	Length
Hex 1D	Hex 4000	Hex 01	Hex 0012

SF Order	[Format]	[Control]]	Attribute	Length
Hex 1D	Hex 4000	Hex 8102	Hex 01	Hex 0012

You can only include the control word after you have provided a format word. You can also insert several control words between the format and attribute portions of the SF order, but these control words are not required.

Table 6-6 describes the format portion, Table 6-8 the control portion, and Table 6-9 the attribute portion of the SF order. The 2-byte Field Format Word (FFW) contains the information described in Table 6-8.

The two most significant bits (15 and 14) must always be hex 01. See Table 6-6 for descriptions of bits 13 through 0.

Table 6-6
Field Format Word for Start of Field Order

Bit 15 is the most significant bit.

Bit Number	Description
14–15	Always 01 (reserved)
13	0 = Nonbypass field 1 = Bypass field
12	0 = Duplication not allowed 1 = Duplication allowed
11	0 = Field has not been modified (MDT) bit 1 = Field has been modified
10–8	000 = Alpha shift 001 = Alpha only 010 = Numeric shift 011 = Numeric only 100 = Katakana shift (not supported) 101 = Digits only 110 = I/O (feature input field) 111 = Signed numeric
7	0 = Auto enter disabled 1 = Auto enter when field is exited
6	0 = Field Exit key is not required 1 = Field Exit key is required.
5	0 = Accept lower case letters 1 = Translate lower case to upper case
4	Reserved
3	0 = No mandatory entry 1 = Mandatory entry
2–0	000 = No adjustment 001 = Reserved 010 = Reserved 011 = Reserved 100 = Reserved 101 = Right adjust, zero fill 110 = Right adjust, blank fill 111 = Mandatory fill

FCWs (2 bytes each) are optional. The user program can use the WTD command to send FCWs to the controller. When FCWs are used, they should follow the FFW of the SF order. An FCW encountered during modification of an existing format table entry is ignored. The LU does not accept an FCS of hex FFxx.

Table 6-7 lists valid FCWs and functions supported by the terminals.

Table 6-7
Field Control Words

Value (Hex)	Function
80nn	Entry field resequencing. The "nn" specifies the next entry field in the sequence (hex 00 to 80).
8101	Magnetic stripe reader (MSR) entry field.
8103	MSR and selector light pen (SLP) entry field.
84nn	Transparency entry field. The "nn" is any two digits.
B140	Self-check modulus 11 entry field.
B1A0	Self-check modulus 10 entry field.

The first FCW of any type is used; subsequent FCWs of the same type are ignored. The controller does not check to see if the FCWs are formatted correctly or if the requested function is installed. During subsequent command and keystroke processing, the controller detects and reports these errors to the host if the FCW is required.

FCWs types are as follows.

- *Resequencing*. Resequencing enables the controller to send the input fields to the host in any specified order. Resequencing is done by chaining input fields with FCWs that specify the desired order of transmission. The resequencing FCW takes the following format:

Bits	Description
0–1	B 10
2–7	B 000000
8–15	The normal sequence position of the next field to be returned to the host. (The first field on the screen is number 1. Field numbers progress sequentially, left to right and top to bottom.)

Bit 3 of the Start of header (SOH) order contains the number of the field to be sent. If the first field identifier in the SOH is zero, resequencing does not occur. That is, all resequencing FCWs are ignored. Fields are sent to the host in the order defined in the format table. If resequencing occurs, the last field to be sent to the host must contain this FCW:

Bits	Description
0–1	B 10
2–7	B 000000
8–15	B 11111111

Notes. The following apply:

- If FCWs create a closed loop, the controller detects the error and stops the transmission.
- An FCW for each field is not required. An FCW pointing to the next sequential field is assumed if no resequencing FCW is specified. The last field in the format table must have a resequencing FCW.

- *MSR*. MSR enables the scanner for an input field.
- *SLP*. SLP is accepted, but ignored.
- *Transparency*. Transparency defines a field that can contain data of any value.
- *Self-Check*. Self-check on the controller provides additional integrity for data entry. All field types can be specified for self-checking. The following requirements must be met when specifying a field for self-checking:
  - An FCW must be defined for the field. Hex B1A0 selects Modulus 10 checking, and hex B140 selects Modulus 11.
  - Field lengths for checking are restricted to 33 positions. For signed numeric fields, only 32 positions can contain digits and the sign is not checked. If more than 33 characters are given a LUSTAT parameter error results.

  Self-check resolves fields and conditions as follows:

  - The function converts nonnumeric characters (including nulls and blanks) by using the four low-order bits from their EBCDIC representation when the low-order bits are in the range 0–9. For example, A in EBCDIC is C1, thus A = 1. R in EBCDIC is D9, thus R = 9.

    A "0" replaces all other characters with the four low-order bits in the range of A through F. For example, % is EBCDIC 6C, thus % = 0.

    Null and blank characters also convert to 0. All high-order nulls, zeros, and blanks in a field are converted to 0 and do not affect the value of the check number.
  - An all-null field checks correctly. This field can result when the operator unsuccessfully tried to enter digits into a field and checking fails. The controller enables the operator to exit the field from the first position by using the Field Exit key.

Following are field descriptions.

Field Type	Description
Alpha only	Accepts only the characters A–Z (uppercase and lowercase) and the , . – and blank space.
Alpha shift	Accepts all data keys. The shift keys are acknowledged.
Auto enter	When the operator uses [FIELD EXIT] key to leave this field or puts the last character in the field, the terminal treats the action as if the operator pressed [ENTER].
Bypass	Operator cannot put entries in this field. Attempts to enter data cause a keying error.
Digits only	Operator can only put the characters 0–9 in this field. The [DUP] key is allowed if enabled.
Duplication	Allows operator to use the [DUP] key. When the operator presses [DUP], the controller fills the field from the cursor to the end of the field with "1C." (Typically the host program uses this to place data from a previous record into the field when it receives the data.) An overstruck asterisk is displayed for the "1C" characters.
Field Exit key required	Operator can only exit the field by pressing a non-data key such as [FIELD EXIT] or other cursor-moving key.
I/O	Only the scanner can put data in this field.
Mandatory entry	The operator must put data in this field before pressing [ENTER] or another AID-generating key.
Mandatory fill	When the operator begins putting data into this field, they must completely fill it before exiting from it.
Modified	Marks this field as modified.
Numeric only	Accepts only the characters 0–9 and the symbols + , . – and blank. [FIELD+] exits the field with a positive number; [FIELD–] with a negative number. [FIELD EXIT] exits the field as entered with the sign specified by the host. The controller marks a minus field by changing the high nibble of the last byte to "B" unless a + , . – or blank is in that byte. These characters cause an error to occur.
Numeric shift	Accepts any data characters.
Right-adjust	When the operator exits the field, the controller shifts the contents to the right and fills on the left with zeros or blank spaces, as specified. Bits 13–15 can be 0. This allows the operator to make entries into any part of the field without any subsequent position adjustment. When the controller sends the field to the host, it also sends whatever is in the field (nulls if a Clear Unit command was received).
Self-check	Modulus 10 self-check fields perform a MOD 10 Check on the input. Modulus 11 self-check fields perform a MOD 11 Check on the input. The controller performs these checks when the operator exits the field. If the checks fail, an input error is indicated and the Input Inhibited annunciator is turned on. The operator must press the [RESET] key to clear the condition. The network checks data by doing the appropriate modus on the low four bits of the characters in the field. If the low four bits are within the range "A" through "F," zero is used in the modulus calculation.
Signed numeric	Only the characters 0–9 are allowed. The last byte of the field is reserved for the sign character. The operator cannot place data in this location. If the operator presses [FIELD–] to exit the field, the last character is set to "–" and the field is right adjusted. The high nibble of the last digit input is set to "B." If the operator uses [FIELD+] or [FIELD EXIT] to exit the field, the last character is set to blank and the field is right-adjusted. The "–" or "blank" is sent in response to Read Input Fields or Read MDT Fields commands.

Table 6-8 describes the control portions of the SF order.

Table 6-8
Start of Field Control Word

Hex Code	Description
80XX	Resequencing, “xx ” defines next field number
80FF	Resequencing, terminator
8101	Enable scanner (extended 5250); this is IBM’s MSR option
8102	Reserved (extended 5250)
B1A0	Modulus 10 self-check
B140	Modulus 11 self-check

Table 6-9 describes the attribute portions of the SF order.

Table 6-9
Start of Field Attributes

Hex Code	Description
20	Normal (dark characters on light background)
21	Reverse image (light characters on dark background)
24	Underscore
28	Blink (applies only to the 6400 computer)
2F	Nondisplay
30	Column separator

Results. The SF order does the following:

- The display address is set to the end-of-field address (as specified by the last SF order + 1). This does not happen if this is the first SF order or if an SBA order precedes it (the SBA points at the field starting attribute).
- The screen attribute in the SF order is written into the location defined by the display address.
- The start-of-field address is set to the display address +1.
- The end-of-field address is set to the display address + the field length specified by the SF order. The ending screen attribute is written to the end-of-field +1. This is a “20.”
- The display address is incremented by 1.
- If this is an input field (one in which a field format word has been specified), a format table entry consisting of the field format and the FCWs is generated. In addition, if the SF order is rejected, the keyboard is locked and any outstanding AID byte is cleared.

- The format table is modified if the display address +1 is equal to the starting address of an input field that was previously defined. This happens as follows:
  - The field format word of the previously defined field is overlaid with the new one.
  - All FCWs and length parameters that were specified are ignored. Two bytes, however, are still required for the length even though no value check is performed on them.
  - The field ending address is set equal to the field's original ending address.
  - The screen ending address is not rewritten.
  - The defined field is not null filled. If any data characters follow the length field, they are written into the defined field.

Start of Header (SOH) Order

Function. The SOH order notifies the terminal that the next byte in the Write data steam contains a header order. The order specifies header information for the format table. When the controller receives this order, it first clears the format table, then inserts the contents of the SOH order.

Restrictions. A parameter error is posted when the output data stream ends before the number of bytes needed have been sent or when the first byte of the order is not between 1 and 254.

Format. The SOH order takes the following form:

Function	Hex Code
Order	01
Length	07
Reserved	00
Reserved	00
Resequence	00
Error row	00
F keys	000000

Results. Because the length of this order varies, the first byte after the order code contains the number of bytes included. Length may range from 0 through 7 bytes.

A length of 7 bytes enables or disables selected function keys designated by the bits in bytes 5 through 7. When bits are enabled, function keys return AID codes with input data. When bits are inhibited, or length is less than 7, function keys return AID codes but without input data.

Table 6-10 shows the data-included switches for the function keys. In the table: 0 = enable, 1 = inhibit, and bit 0 is the most significant bit.

Table 6-10
Function Key Bit Switches

Byte 5		Byte 6		Byte 7	
Bit #	**Function Key**	**Bit #**	**Function Key**	**Bit #**	**Function Key**
0	F24	0	F16	0	F8
1	F23	1	F15	1	F7
2	F22	2	F14	2	F6
3	F21	3	F13	3	F5
4	F20	4	F12	4	F4
5	F19	5	F11	5	F3
6	F18	6	F10	6	F2
7	F17	7	F9	7	F1

You can use *resequencing* to point to a field, other than the first, as the field you want sent to the host in response to a Read Input Fields or Read MDT Fields command. If not zero, the FCW of the field is checked as each field is sent to see whether resequencing is enabled. If so, the FCW points to the next field to send. If the FCW has resequencing disabled (or no FCW exists for the field), the next defined field is sent and checked for resequencing.

Table 6-11
Resequencing

Bits	Description
0000 0000	Disable resequencing
XXXX XXXX	Number of first field to be transmitted to the host, in response to a Read Input Fields or Read MDT Fields command

The error row may vary from 0 to 24. Row “00” signifies the default row, which is the last line for most 5250 devices. You can use other values to override the default row.

Transparent Data (TD) Order

Function. The TD order lets you send data with any value to the terminal display.

Format. The order takes the following form:

TD Order	Length (2 Bytes)	Data
Hex 10	Hex 0020	<data>

The 2-byte length field after the order tells how many bytes of data follow.

Asynchronous 5250 Prefixes

Each asynchronous 5250 data stream command is preceded by a variable-length prefix. The first byte of the prefix contains the number of bytes in the prefix, not including the length byte. The length may be zero, which indicates an empty prefix.

The second byte of the prefix (if the length is nonzero) must be either hex 40 or C0.

- Hex 40 indicates that the data in the rest of the message is LU-LU (normal 5250 commands).
- C0 indicates that the rest of the message is SS-LU data (an SS message). SS messages cause the terminal to enter the SS message state, where the only allowable keystroke is Reset. The SS message is a one-line message that is displayed on the terminal's status line until the Reset key is pressed.

After hex 40 or C0, the 5250 prefix may contain one 5250 signal. A signal is a sequence of 5 bytes that tells the terminal to perform a special operation.

The terminal supports the Signal command formats in the following chart.

Hex Code	Description
C9 00 00 00 01	Signal operator (turns on the Message Waiting annunciator and sounds the audible alarm)
C9 00 00 00 05	Resets the Message Waiting annunciator

A parameter error is posted when less data is in the message than indicated by the length byte. This causes a parameter error of "21." If the terminal encounters data it does not understand, it ignores the rest of the prefix.

System Messages and Parameter Errors

The terminal's display reserves a line for status information. The status line can display system (nonlocal) information such as a message waiting from the host computer, help messages in response to the Help key, or the system request state of the terminal. You can program the location of the status line through the Start of Header order.

System codes can also appear on the status line. Table 6-12 lists the codes displayed when the stated condition occurs. Unless otherwise noted in the table, the terminal's Reset key restores the status line and returns to the keying mode in effect when the problem occurred.

Table 6-12
System Codes and Descriptions

Code	Description
0005	Attempt to enter data when not in a field.
0006	A key other than a data key or [ENTER] was pressed in the system request state.
0007	A mandatory entry field has not had data put into it.
0008	The field is alpha only, and an invalid key was pressed.
0009	The field is numeric only, and an invalid key was pressed.
0010	The field is signed numeric, and an invalid key was pressed.
0011	Data cannot be entered into the last byte of a signed numeric field.
0012	No room in field for insert. The field is full or on the last byte.
0013	Cannot leave field while in insert mode.
0014	Field is mandatory fill and cannot be exited until filled.
0015	MOD 10 or MOD 11 Check has failed on field.
0016	Field error: Cannot be used in field that is not signed numeric.
0017	Attempt to use [FIELD EXIT] key in unfilled, mandatory fill field.
0018	Only a nondata key can be used to exit this field; for example, [FIELD EXIT].
0019	[DUP] key not allowed in this field.
0020	Cannot use AID-generating key to exit signed numeric or right-adjusted field. Must use [FIELD EXIT].
0021	Cannot exit a mandatory enter field without entering data.
0023	Invalid hex value entered.
0026	The [FIELD–] key was pressed, but the last character of the field was not 0–9.
0099	An invalid key was pressed before the terminal was in session. Only [SYS REQ] is allowed.
C00	An invalid 5250 command was received. This sequence of bytes is sent to the host: 01 10 03 01 01.
PXX	System code where “XX” is the parameter error .

When a 5250 command contains invalid parameters, system code “PXX” appears on the bottom line of the display. The “XX” in the system code indicates the type of parameter error

The message sent to the host is: 01 10 05 01 XX, where “XX” is the same parameter error that was put in the terminal’s display.

The parameter errors are a subset of the 5250 data stream command set. Those errors supported by the terminals are listed in Table 6-13.

Table 6-13
Parameter Errors

Parameter Error	Description
P21	Premature end of data stream.
P22	A row or column specification is out of range.
P23	The ending address of the Repeat to Address order is less than the start address.
P25	A signed input field had a length of 1. It must be at least 2.
P26	An input field start address was less than a previously-defined input field start address.
P27	An invalid Restore Screen command was received.
P28	An attempt was made to define an input field past the end of the display.
P29	Format table overflow (too many input fields were defined).
P2A	An attempt was made to write data past the end of the display.
P2C	Invalid roll up or roll down parameters were received.
P30	An invalid attribute was received as part of a Start of Field order.
P87	A MOD 10 or MOD 11 input field was defined with a length greater than 33.

Section 7

Extended Commands

Overview

Extended commands govern abilities unique to terminals. You can use extended commands to transmit or receive data over the terminal's RS-232 port, send information to an RS-232 device (such as a printer or bar code printer), or collect data. The following chart lists the commands.

Name	Characters
Transmit and Receive On RS-232 Port	#F
Transmit Only On RS-232 Port	#P
Receive Only On RS-232 Port	#G
Set Parameters *(supported only on 6400 and 5055 computers)*	#H
Return Version	#V
Tone	#T
Scan	#S

To use extended commands, you must enable the extended command option through the TE configuration menus. See Section 4 for information about enabling the command on a 2415, 2425, 2455, or 248X terminal. For a 6400 or 5055 computer, refer to the computer's user manual.

Transmit and Receive On RS-232 Port (#F)

Use the Transmit and Receive On RS-232 Port extended command to transmit and receive data on the terminal's RS-232 port. The command uses "#F" characters to request communication on the port.

When constructing a Transmit and Receive command, the data to be sent should be placed at Line 2, Column 1. The data must be less than 1840 bytes in length (after "=yy" compression). The last character must be a "#" (pound). The terminal sends the data to the RS-232 port until it detects a "#" character.

Line 2, Column 1 begins the start of transmit data. The host application must set up the screen with a transmit field to locate the RS-232 port I/O data. The field can be anywhere on the screen, beginning at position 80. The host application must supply the receive field (for response from the RS-232 port to the host). The receive field can be anywhere on the screen except for the position allocated for the return status field.

The output stream appears in ASCII character format. For bytes that are not displayable ASCII characters, you may insert the characters "=yy," where "yy" is the hexadecimal representation of the output byte. For example, if your printer requires a carriage return, you would insert "=0D." You would insert "=0A" for a line feed. Appendix B contains other hexadecimal values.

Table 7-1 describes the line and columns where characters must appear, and their meanings.

Table 7-1
Transmit and Receive Characters

Line 1, Columns 2-24

Column	Description	Character
2	Extended command	#
3	Transmit and Receive On RS-232 Port command	F
4	Speed (bits per second)	1=1200 2=2400 3=4800 4=9600 5=19200 6=38400
5	Data parity	N=None 0 (zero)=None (Space)=None E=Even O=Odd
6	Data bits	7=Seven 8=Eight
7	Stop bits	1=One 2=Two
8	*For 6400 and 5055 computers:* CTS flow control	0=Disable 1=Enable
	For 2415, 2425, 2455, and 248X terminals: Reserved	(Space)

Line 1, Columns 2-24

Column	Description	Character
9	*For 6400 and 5055 computers:* DTR flow control	0=Disable 1=Enable
	For 2415, 2425, 2455, and 248X terminals: Reserved	(Space)
10	XON/XOFF flow control	0=Disable 1=Enable
11–12	Flow control timeout value	XX=Number of seconds
13	Return AID key	(Space)=AID key is Enter (default) X=AID key character. See Table 7-2 (page 7-4) for return AID key characters.
14–15	Maximum characters to receive	(Space)=Default dd *or* Xd…dX, where: dd=00–99. Default: 99. X=An uppercase literal d…d=Any number of decimal digits from 0–2000, inclusive. Default: 99.
16–17	Delimiter character	AA=Hexadecimal ASCII code that marks the end of data to be received. Range: 00–7E. Default of 00 implies no start character.
18–19	Number of delimiter characters	XX=Number of characters accepted before sending return code to host. Range: 00–99. Default of 00 implies no start character.
20–21	Start character	AA=Hexadecimal ASCII code. Range: 00–99. Default of 00 implies no start character.
22	Return start character to host	F=Return character (Space)=Do not return character
23	Flag parity errors	P=Flag (Space)=Do not flag
24–25	Receive timeout length	XX=Number of seconds the terminal waits for input from the RS-232 port before it sends a timeout error. Uses a default of 5 seconds when field is filled with spaces.

Flow Control

The Transmit command supports these types of flow control:

- RTS/CTS *(6400 or 5055 computer)*
- XON/XOFF

Use CTS and DSR flow control lines to show XON/XOFF conditions from the output device. Also use them to prevent output when the terminal has no output device. The DTR of the output device should connect to either the DSR or CTS lines.

XON/XOFF is the same XON/XOFF flow control most devices support. The timeout value tells the terminal how long to wait for the flow control handshake before returning a one byte error value.

Return AID Key Characters

Table 7-2 lists the extended command AID keys and characters returned to the host. For example, if you want an F1 AID key, you would use “A” as the character.

Table 7-2
Return AID Keys

AID Key	Character	AID Key	Character
Enter	(Space)	F10	J
Help	)	F11	K
Roll down/Page up	*	F12	L
Roll up/Page down	+	F13	M
Print	,	F14	N
Home	.	F15	O
Clear	7	F16	P
F1	A	F17	Q
F2	B	F18	R
F3	C	F19	S
F4	D	F20	T
F5	E	F21	U
F6	F	F22	V
F7	G	F23	W
F8	H	F24	X
F9	I		

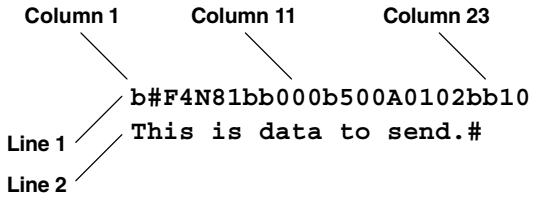
Return Codes for Transmit and Receive Command

Line 24, Column 1 has the return status field. The code returned in this position tells the host the status of the extended command. The following chart lists the codes.

Code	Description	Column
0	Good status, transaction complete.	(None)
1	Not enough memory. Or, incorrect setting for speed, number of data bits, number of stop bits, or flow control timeout.	4, 6, 7, 11–12
2	No delimiter (#) on data stream.	(None)
3	Timeout while using CTS flow control *(6400 or 5055 computer only)*.	(None)
4	Timeout while using DTR flow control *(6400 or 5055 computer only)*.	(None)
5	Timeout while using XON/XOFF flow control.	(None)
6	Improper return field.	(None)
7	Hexadecimal value is outside the range of 00–0F.	15–16, 19–20
8	Error in AID code.	(None)
9	Incorrect setting for maximum characters to receive.	13–14
A	Incorrect setting for delimiter character.	15–16
B	Incorrect setting for number of delimiter characters.	17–18
C	Incorrect setting for CTS, DTR, or XON/OFF flow control.	8, 9, 10
D	Incorrect setting for start character.	19–20
E	Incorrect setting for data parity.	5, 22
F	Timeout.	(None)
O	Overrun of UART receive register; an error from the RS-232 device.	(None)
P	Data parity or framing error.	(None)

Example of Transmit and Receive Command

The following example and chart show what would be sent to a 6400 or 5055 computer to cause data to be transmitted and received. A "b" indicates a space.



Column	Character	Description
1	(Space)	This column typically contains a space.
2	#	Extended command.
3	F	Transmit and Receive command.
4	4	9600 baud.
5	N	No parity.
6	8	Eight data bits.
7	1	One stop bit.
8	0	No CTS flow control.
9	0	No DTR flow control.
10	0	No XON/OFF flow control.
11–12	00	No flow control timeout value.
13	(Space)	AID key is Enter.
14–15	50	Receive a maximum of 50 characters.
16–17	0A	Delimiter character is 0A hexadecimal (line feed).
18–19	01	Data will be sent to host after one delimiter character has been received.
20–21	02	Start character is 02 hexadecimal (STX).
22	(Space)	Start character will not be returned.
23	(Space)	Do not flag parity errors.
24–25	10	Receive timeout length is 10 seconds.

Transmit Only On RS-232 Port (#P)

The Transmit Only On RS-232 Port extended command lets the terminal send information to a slaved RS-232 device, such as a receipt printer or bar code printer. The command uses the RS-232 communications port to send data to the device.

The terminal checks data from the host computer for a transmit sequence, then sends the requested data. The host computer signals the terminal for a transmit command by inserting the characters "#P" into the display at Line 1, Columns 2 and 3. Characteristics of the transmission immediately follow the #P command.

When constructing a Transmit Only command, the data to be sent should be placed at Line 2, Column 1. The data must be less than 1840 bytes in length (after "=yy" compression). The last character must be "#." The terminal sends the data to the RS-232 port until it detects a "#" character.

Line 2, Column 1 begins the start of transmit data. The host application must set up the screen with a transmit field to locate the RS-232 port I/O data. The field can be anywhere on the screen, beginning at position 80.

The output stream takes the form of ASCII characters. For nondisplayable ASCII characters, you may insert the characters "=yy," where "yy" is the hexadecimal representation of the output byte. For example, if your printer requires a carriage return, you would insert "=0D." You would insert "=0A" for a line feed. Appendix B contains other hexadecimal values.

Table 7-3 describes the line and columns where characters must appear, and their meanings. Note that the Line and column information refers to a 24-line by 80-column display station.

Table 7-3
Transmit Only Characters

Line 1, Columns 2-12

Column	Character	Description
2	Extended command	#
3	Transmit Only On RS-232 Port command	P
4	Speed (bits per second)	1=1200 2=2400 3=4800 4=9600 5=19200 6=38400
5	Data parity	N=None 0 (zero)=None (Space)=None O=Even E=Odd
6	Data bits	7=Seven 8=Eight
7	Stop bits	1=One 2=Two
8	*For 6400 or 5055 computers:* CTS flow control	0=Disable 1=Enable
	For 2415, 2425, 2455, or 248X terminals: Reserved	(Space)
8	*For 6400 or 5055 computers:* DTR flow control	0=Disable 1=Enable
	For 2415, 2425, 2455, or 248X terminals: Reserved	(Space)
10	XON/XOFF flow control	0=Disable 1=Enable
11–12	Flow control timeout value	XX=Number of seconds
13	Return AID key	(Space)=AID key is Enter (default) X=AID key character. See Table 7-2 (page 7-4) for return AID key characters.

Flow Control

Transmit Only supports RTS/CTS, DTR/DSR, and XON/XOFF. For descriptions, see page 7-4.

Return Codes for Transmit Only Command

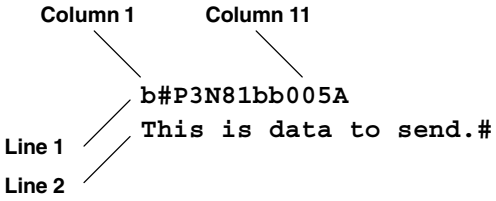
The terminal puts the return code response in an input field in the display buffer at Line 24, Column 1. It simulates the [ENTER] key to return the value to the host.

Use the Start Field order to return a code for this operation. The following chart lists return codes.

Code	Description	Column
0	Good status, transaction complete.	(None)
1	Not enough memory. Or, incorrect setting for speed, number of data bits, number of stopbits, or flow control timeout.	4, 6, 7, 11–12
2	No delimiter (#) on data stream.	(None)
3	Timeout while using CTS flow control *(6400 or 5055 computer only)*.	(None)
4	Timeout while using DTR flow control *(6400 or 5055 computer only)*.	(None)
5	Timeout while using XON/XOFF flow control.	(None)
6	Improper return field.	(None)
8	Error in AID code.	(None)
C	Incorrect setting for CTS, DTR, or XON/OFF flow control.	8, 9, 10
E	Incorrect setting for data parity.	5
O	Overrun of UART receive register.	(None)
P	Data parity or framing error.	(None)

Example of Transmit Only Command

The following example and chart show what would be sent to a 6400 or 5055 computer to cause data to be transmitted. A "b" indicates a space. Following the example is an explanation of Line 1.



Column	Character	Description
1	(Space)	This column typically contains a space.
2	#	Extended command.
3	P	Transmit Only command.
4	3	4800 baud.
5	N	No data parity.
6	8	Eight data bits.
7	1	One stop bit.
8	0	No CTS flow control.
9	0	No DTR flow control.
10	0	No XON/XOFF flow control.
11–12	05	Flow control timeout is 5 seconds.
13	A	AID key is [F1].

Receive Only On RS-232 Port (#G)

The Receive Only On RS-232 Port extended command provides a way to use the RS-232 port on the terminal to collect data. A scale is one example of a use for this command. The host computer sends "#G" characters to alert the terminal for activity on the port.

Line 2, Column 1 is the start of the area on the screen where an input field may be placed for receive data. The host application must supply the input field for the data received on the RS-232 port. The host can place the input field anywhere on the screen except the position for the return status field.

Table 7-4 describes the line and columns where characters must appear, and their meanings.

Table 7-4
Receive Only Characters

Line 1, Columns 2-24

Column	Description	Character
2	Extended command	#
3	Receive Only On RS-232 Port command	G
4	Speed (bits per second)	1=1200 2=2400 3=4800 4=9600 5=19200 6=38400
5	Data parity	N=None 0 (zero)=None (Space)=None O=Odd E=Even
6	Data bits	7=Seven 8=Eight
7	Stop bits	1=One 2=Two
8	Reserved	(Space)
9	Reserved	(Space)
10	Reserved	(Space)
11–12	Reserved	(Spaces)
13	Return AID key	(Space)=AID key is Enter (default). X=AID key character. See Table 7-2 (page 7-4) for return AID key characters.
14–15	Maximum characters to receive	(Space)=Default dd *or* Xd…dX, where: dd=00–99. Default: 99. X=An uppercase literal d…d=Any number of decimal digits from 0–2000, inclusive. Default: 99.
16–17	Delimiter character	AA=Hexadecimal ASCII code marking the end of valid data to be received. Range: 00–7E. Default: 00.
18–19	Number of delimiter characters	XX=Delimiter characters received before transmitting return code to host. Range: 00–99. Default: 00.
20–21	Start character	AA=Hexadecimal ASCII code for start character. Range: 00–99. Default of 00 implies no start character.
22	Return start character to host	F=Return character (Space)=Do not return character
23	Flag parity errors	P=Flag (Space)=Do not flag
24–25	Receive timeout length	XX=Number of seconds the terminal waits for input from the RS-232 port before it sends a timeout error. Uses a default of 5 seconds when this field is filled with spaces.

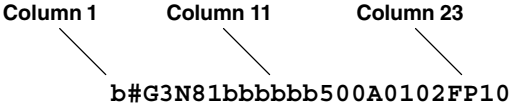
Return Codes for Receive Only Command

Line 24, Column 1 is the return status byte. The host application defines the 1-byte return status field location. Following are return status codes.

Code	Description	Column
0	Good status, transaction complete.	(None)
1	Not enough memory. Or, incorrect setting for speed, number of data bits, or number of stop bits.	4, 6, 7
2	No delimiter (#) on data stream.	(None)
6	Improper return field.	(None)
7	Hexadecimal value is outside the range of 00–0F.	15–16, 19–20
8	Error in AID code.	(None)
9	Incorrect setting for maximum characters to receive.	13–14
A	Incorrect setting for delimiter character.	15–16
B	Incorrect setting for number of delimiter characters.	17–18
D	Incorrect setting for start character.	19–20
E	Incorrect setting for data parity.	5, 22
F	Timeout.	(None)
O	Overrun of UART receive register.	(None)
P	Data parity or framing error.	(None)

Example of Receive Only Command

The following example and chart show what would be sent to the terminal to cause data to be received. A “b” indicates a space. The following chart describes the data.



Column	Character	Description
1	(Space)	This column typically contains a space.
2	#	Extended command.
3	G	Receive Only command.
4	3	4800 baud.
5	N	No data parity.
6	8	Eight data bits.
7	1	One stop bit.
8–12	(Spaces)	Reserved.
13	(Space)	AID key is Enter.
14–15	50	Receive a maximum of 50 characters.
16–17	0A	Delimiter character is 0A hexadecimal (line feed).
18–19	01	Data will be sent to host after one delimiter character has been received.
20–21	02	Start character is 02 hexadecimal (STX).
22	F	Start character will be returned to host.
23	P	Parity errors will be flagged
24–25	10	Receive timeout length is 5 seconds.

Set Parameters (#H)

▶ NOTE: *Only the 6400 and 5055 computers support the #H extended command.*

Use Set Parameters to set TE configuration parameters that you would otherwise set at the terminal. The parameters are part of the configuration menus.

Set most of the parameters once per terminal. You can set them when you install a network or when you add terminals to the network. Unless the terminal fails (perhaps a dead battery) or a user does something destructive (such as a RAM test), you probably will not need to set them again.

Table 7-5 lists columns in which characters must appear.

▶ NOTE: *Some parameters do not apply to all terminal models. Refer to the terminal's user manual for applicable parameters.*

Table 7-5
Set Parameters Characters

Line 1, Columns 2-36

Column	Description	Character
2	Extended command	#
3	Set Parameters command	H
4–6	Backlight timer	(Spaces)=No change from current setting 000=On continuously 001–255=Seconds to remain on
7–9	Reserved	(Spaces)
10	Cursor mode	(Space)=No change from current setting 1=Underline (default) 2=Underline blink 3=Block 4=Block blink
11	Screen mode	(Space)=No change from current setting 1=Center Cursor 2=Corner 3=Page
12	Reserved	(Space)
13	Stream Scan	(Space)=No change from current setting 0=Disable 1=Enable

Table 7-5 (Continued)
Set Parameters Characters

Line 1, Columns 2-36

Column	Description	Character
14	Scan All Fields	(Space)=No change from current setting 0=Disable 1=Enable
15	Operator error mode	(Space)=No change from current setting 0=Disable beep on keyboard error. Operator must press [RESET] after an error. 1=Enable beep on keyboard error. Sounds the error tone, then automatically resets the terminal so the operator can correct the error.
16–18	Beeper volume	(Spaces)=No change from current setting 000–255=Range of volume. Default: 255. The larger the number, the louder the volume.
19–21	Beeper frequency	(Spaces)=No change from current setting 000–030=Frequency range. The larger the number, the higher the frequency.
22–24	Beeper length	(Spaces)=No change from current setting 000–255=Duration in seconds
25–27	Primary screen size (rows)	(Spaces)=No change from current setting 000–255=Number of rows per display screen
28–30	Primary screen size (columns)	(Spaces)=No change from current setting 000–255=Number of columns per display screen
31–33	Reserved	(Spaces)
34–36	Reserved	(Spaces)

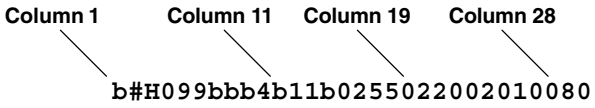
Return Codes for Set Parameters Command

The Set Parameters return code is the status sent to the host computer. The following chart lists return codes.

Code	Description	Column
0	Good status, transaction complete.	(None)
1	Reserved.	(None)
2	Backlight timer parameter invalid.	4–6
3	Sleep mode timer parameter invalid.	7–9
4	Cursor set parameter invalid.	10
5	Screen mode parameter invalid.	11
6	Reserved.	(None)
7	Remote display parameter invalid.	12
8	Beeper volume parameter invalid.	16–18
9	Beeper frequency parameter invalid.	19–21
A	Beeper length parameter invalid.	22–24
B	Stream scan parameter invalid.	13
C	Scan all fields parameter invalid.	14
D	Error mode parameter invalid.	15
E	Incorrect setting for number of rows.	25–27
F	Incorrect setting for number of columns.	28–30

Example of Set Parameters Command

The following example and chart show data for Set Parameters. A “b” indicates a space.



Column	Character	Description
1	(Space)	This column typically contains a space.
2	#	Extended command.
3	H	Set Parameters command.
4–6	099	Backlight stays on for 99 seconds.
7–9	(Spaces)	Reserved.
10	4	Cursor is in block blink mode.
11	(Space)	No change from current setting.
12	(Space)	Reserved.
13	1	Stream scanning is enabled.
14	(Space)	No change from current setting.
15	0	Beep is disabled on keyboard error.
16–18	255	Beeper volume is set at 255.
19–21	022	Beeper frequency setting is set at 22.
22–24	002	Beeper length is 2 seconds.
25–27	010	Number of rows in primary screen size is 10.
28–30	080	Number of columns in primary screen size is 10.

Return Version (#V)

The Return Version extended command returns the current TE program name and version to the host computer. Table 7-6 lists columns in which characters must appear.

Table 7-6
Return Version Characters

Line 1, Columns 2-3

Column	Description	Character
2	Extended command	#
3	Return Version command	V

The terminal returns data and the extended command's status to the host computer in the following format:

```
tttK//rrccfl <program name><version>#s
```

where:

- "ttt" is the terminal number.
- "rr" is the row.
- "cc" is the column.
- "fl" is the AID key return value.
- "s" is the status.

Tone (#T)

The Tone extended command causes the terminal to make a tone of a specified volume, frequency, and length (Table 7-7).

Table 7-7
Tone Options

Line 1, Columns 2-12

Column	Description	Character
2	Extended command	#
3	Tone command	T
4–6	Volume	(Spaces)=No change from current setting 000–255=Range. The larger the number, the louder the volume.
7–9	Frequency	(Spaces)=No change from current setting 000–030=Range. The larger the number, the higher the frequency.
10–12	Length	(Spaces)=No change from current setting 001–010=Duration in seconds. The larger the number, the longer the beep and the slower the keyboard response time.

The return code is the status sent to the host computer; the code indicates if the extended command was successful. The terminal returns data and the extended command's status to the host computer in the following format:

```
\\X<CR>
```

"X" is the return code listed in the following chart.

Code	Description	Column
0	Good status, transaction complete	(None)
8	Incorrect setting for volume	4–6
9	Incorrect setting for frequency	7–9
A	Incorrect setting for length	10–12

Scan (#S)

The Scan extended command allows host systems to have the same capabilities as terminals using the Native data stream to set bar code parameters and scan.

By inserting characters "#S" in the display buffer at Line 1, Columns 2 and 3, the host computer tells the terminal to expect a Scan extended command. Appropriate descriptive characteristics should follow the "#S" characters. The terminal returns a code that indicates if the command was successful. Then it simulates the [Enter] key to return a value to the host computer.

Due to possible system fragmentation of a data stream, the "#" in Line 1, Column 2 should be the last character placed on the screen. This will ensure that all data is present before the extended command is parsed (removed).

Table 7-8 lists the command.

Table 7-8
Scan Characters

Line 1, Columns 2-3

Column	Description	Character
2	Extended command	#
3	Scan command	S

CC Byte 1

Control Character Byte 1 (CC Byte 1) implementation differs among the types of terminals.

2415, 2425, 2455, or 248X Terminal

The dots in Table 7-9 show the Control Character (CC) Byte 1 options for scanning.

Table 7-9
CC Byte 1

Line 1, Column 4

CC Byte 1	Laser	Disable Scanner	No Change From Current Setting
0	•		
1	•		
2			
3	•		
4			
5	•		
6			
7	•		
8			
9	•		
A			
B	•		
C			
D	•		
E			
F		•	
(Space)			•

6400 or 5055 Computer

▶ **NOTE:** *The 6400 computer does not support HP Wand Select.*

Table 7-10
CC Byte 1

Line 1, Column 4

CC Byte 1	HP Wand Select	Redundancy	Laser	No Redundancy
0			•	•
1		•	•	
2		•		
3		•	•	
4	•			•
5	•	•	•	
6	•	•		
7	•	•	•	
8				•
9		•	•	
A		•		
B		•	•	
C	•			•
D	•	•	•	
E	•	•		
F	Disable scanner.			
(Space)	No change from current setting.			

CC Byte 2

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Table 7-11 shows the CC Byte 2 options the characters support.

Table 7-11
CC Byte 2

Line 1, Column 5

CC Byte 2	Scan Termination Character	Modulo 10 Check Digit
0	None	
1		•
2		
3		•
4	[Enter] key	
5		•
6		
7		•
8	[Tab] key	
9		•
A		
B		•
C		
D		•
E		
F		•

CC Byte 3

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Table 5-1 shows CC Byte 3 options.

Table 7-12
CC Byte 3

Line 1, Column 6

CC Byte 3	Enable Stream Scanning	Reserved	Return Bar Code Type	Bar Code Concatenated
0				
1				•
2			•	
3			•	•
4		•		
5		•		•
6		•	•	
7		•	•	•
8	•			
9	•			•
A	•		•	
B	•		•	•
C	•	•		
D	•	•		•
E	•	•	•	
F	•	•	•	•
(Space)	No change from current setting			

Bar Code Length

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Bar Code Length sets the minimum and maximum character lengths for all types of bar codes scanned (Table 7-13). Setting the minimum and maximum values to their optimum can increase scanning performance. If the terminal scans bar codes that are outside the minimum and maximum value, the terminal ignores the bar code.

Table 7-13
Bar Code Length

Line 1, Columns 7-10

Column	Character and Description
7–8	XX=Bar code length. Maximum length: 99. (Spaces)=No change from current setting
9–10	XX=Bar code length. Minimum length: 00. (Spaces)=No change from current setting

UPC

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals. The 6400 computer does not support UPC-E Number System 1.*

Use the UPC command to select the combinations of characters listed in Table 7-14.

Table 7-14
UPC Bar Code Characters

	Options				
Character	**UPC-E # System 1**	**Expand UPC-E to UPC-A**	**UPC-E # System 0**	**Add-ons**	**UPC-A**
0	Disables all.				
1				•	•
2			•		•
3			•	•	•
4		•			•
5		•		•	•
6		•	•		•
7		•	•	•	•
8	•				•
9	•			•	•
10	•		•		•
11	•		•	•	•
12	•	•			•
13	•	•		•	•
14	•	•	•		•
15	•	•	•	•	•
(Space)	No change from current setting				

EAN Algorithms

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Use EAN Algorithms to select combinations of EAN options (Table 7-15).

Table 7-15
EAN Algorithms

Line 1, Column 12

Character	Description
0	EAN disabled
1	EAN with Add-ons enabled
2	EAN enabled
3	EAN and EAN with Add-ons enabled
(Space)	No change from current setting

Code 39

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Code 39 (Table 7-16) sets the scanner to read simple Code 39 bar codes that do not include extended or encoded sequences.

Table 7-16
Code 39 Algorithms Characters

Line 1, Column 13

Character	Description
0	Code 39 disabled
1	Encoded Code 39 enabled
2	Extended Code 39 enabled
3	Code 39 enabled
(Space)	No change from current setting

Extended Code 39 is a superset of Code 39 and scans all regular Code 39 bar codes. You cannot select both Code 39 and Extended Code 39. Encoded Code 39 combines key presses with normal bar code data.

Appendix A contains Encoded Code 39 sequences.

Plessey

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals. The 6400 computer does not support Plessey alpha characters.*

If the Plessey bar code scanning algorithm is enabled, set its check digits (Table 7-17) according to your requirements. Refer to the manufacturer's bar code specifications for more information on check digits.

Table 7-17
Plessey Characters

Line 1, Column 14

Character	Description
0	Plessey disabled
1	Plessey enabled
(Space)	No change from current setting

The dots in Table 7-18 indicate the Plessey check digits the characters support.

Table 7-18
Plessey Check Digit Characters

Line 1, Column 15

Character	Keep 2nd Digit Check	Do Not Validate 1st Check Digit	Keep 1st Check Digit	Mod 10 1st Check Digit	Mod 11 1st Check Digit
0					•
1				•	
2			•		•
3			•	•	
4		•			•
5		•		•	
6		•	•		•
7		•	•	•	
8			•		•
9			•	•	
A	•		•		•
B	•		•	•	
C		•	•		•
D		•	•	•	
E	•	•	•		•
F	•	•	•	•	
(Space)	No change from current setting				

Codabar

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

The Codabar options (Codabar and ABC Codabar) are mutually exclusive coding algorithms and cannot be selected at the same time.

Table 7-19
Codabar Characters

Line 1, Column 16

Character	Description
0	Codabar disabled
1	Codabar enabled
2	ABC Codabar enabled
(Space)	No change from current setting

Code 11

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals. Not supported on the 6400 and 5055 computers.*

Table 7-20 lists Code 11 characters.

Table 7-20
Code 11 Characters

Line 1, Column 17

Character	Description
0	Code 11 disabled
1	Code 11 enabled
(Space)	No change from current setting

Code 93

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Code 93 and Code 128 options can be enabled.

Table 7-21
Code 93 Characters

Line 1, Column 18

Character	Description
0	Code 93 disabled
1	Code 93 enabled
(Space)	No change from current setting

Code 128

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

Table 7-22 lists Code 128 characters.

Table 7-22
Code 128 Characters

Line 1, Column 19

Character	Description
0	Code 128 disabled
1	Code 128 enabled
(Space)	No change from current setting

Straight or Computer Identics 2of5

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

If the Straight or Computer Identics bar code is enabled, select the maximum and minimum lengths and the 1st and 2nd fixed bar code lengths according to your requirements (Table 7-23).

Table 7-23
2 of 5 Characters

Line 1, Column 20-28

Column	Character
20	0=Straight and Computer Identics 2 of 5 disabled 1=Computer Identics 2 of 5 enabled 2=Straight 2 of 5 enabled (Space)=No change from current setting
23–24	XX=Minimum length Straight or Computer Identics 2 of 5. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting
25–26	XX=1st fixed bar code length for Straight or Computer Identics 2 of 5. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting
27–28	XX=2nd fixed bar code length for Straight or Computer Identics 2 of 5. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting

Interleaved 2 of 5

▶ **NOTE:** *Not available for 2415, 2425, 2455, and 248X terminals.*

If Interleaved 2 of 5 is enabled, select the maximum and minimum lengths and the 1st and 2nd fixed bar code lengths according to your requirements (Table 7-24).

Table 7-24
Interleaved 2 of 5 Characters

Line 1, Column 29-37

Column	Character
29	0=Interleaved 2 of 5 disabled 1=Interleaved 2 of 5 enabled (Space)=No change from current setting
30–31	XX=Maximum length Interleaved 2 of 5. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting
32–33	XX=Minimum length Interleaved 2 of 5. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting
34–35	XX=1st fixed length for Interleaved 2 of 5 Bar Code. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting
36–37	XX=2nd fixed length for Interleaved 2 of 5 Bar Code. Refer to the manufacturer's bar code specifications for more information. (Spaces)=No change from current setting

Return Codes for Scan Command

The Scan command's return code is the status sent to the host computer; the code indicates if the extended command was successful. The terminal returns data and the extended command's status to the host computer in the following format:

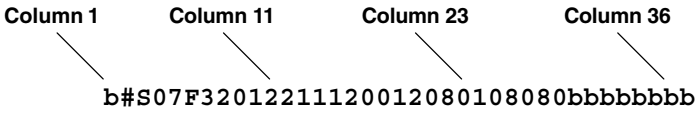
\\X<CR>

where "X" is the return code listed in the following chart. The terminal simulates the [ENTER] key to return a value to the host computer. If a hexadecimal number is entered wrong, the return code defaults to "0."

Code	Description
0	Good status, transaction complete
1	Bad status, transaction incomplete

Example of Scan Command

The following example and chart show data for the Scan command. A “b” indicates a space.



Column	Character	Description
1	(Space)	This column typically contains a space.
2	#	Extended command.
3	S	Scan command.
4	0	No Control Byte 1 options are returned.
5	7	[ENTER] key terminates all scans, 12-volt laser is enabled, Modulo 10 Check Digit.
6	F	Barcode type is returned and concatenated.
7–8	32	Maximum length is 32 characters.
9–10	01	Minimum length is 1 character.
11	2	Decode UPC System 0.
12	2	EAN is enabled.
13	1	Encoded code 39 is enabled.
14	1	Plessey is enabled.
15	1	Mod 10 first digit is checked.
16	2	ABC Codabar is enabled.
17	0	Code 11 is disabled.
18	0	Code 93 is disabled.
19	1	Code 128 is enabled.
20	2	Straight 2 of 5 is enabled.
21–22	08	Straight 2 of 5 maximum length is 8.
23–24	01	Straight 2 of 5 minimum length is 1.
25–26	08	Straight 2 of 5 1st fixed length is 8.
27–28	08	Straight 2 of 5 2nd fixed length is 8.
29	0	Interleaved 2 of 5 is disabled.
30–31	(Spaces)	No change from current setting.
32–33	(Spaces)	No change from current setting.
34–35	(Spaces)	No change from current setting.
36–37	(Spaces)	No change from current setting.

Appendix A
Bar Code Scanning

This appendix lists bar code labels for 5250 TE commands and functions. It also contains Encoded Code 39 key press sequences.

▶ NOTE: *To scan the bar code labels, you must configure the terminal to use Code 39 in Full ASCII mode (the default mode of operation).*

- *For the 2415, 2425, 2455, or 248X terminal, configure the mode through the TRAKKER Antares® 2400 Menu System. For help, refer to the terminal's user manual.*
- *For the 6400 or 5055 computer, configure the mode through the terminal emulation configuration menus. For help, refer to the computer's user manual.*

Cursor Keys

Window/Viewport up (up one line)

%UP

Window/Viewport down (down one line)

%DN

Window/Viewport right (right one character)

%RT

Window/Viewport left (left one character)

%LF

Paging Keys

Page up

%PGUP

Page down

%PGDN

Page right

%PGRT

Page left

%PGLT

Tab Keys

Back Tab

%BTAB

Forward Tab

%TAB

AID-Generating Keys

Clear

%CLR

Enter/Rec Adv

%CR

F1

%F1

F2

%F2

F3

%F3

F4

%F4

F5

%F5

F6

%F6

F7

%F7

F8

%F8

F9

%F9

F10

%F10

F11

%F11

F12

%F12

F13

%F13

F14

%F14

F15

%F15

F16

%F16

F17

%F17

F18

%F18

F19

%F19

F20

%F20

F21

%F21

F22

%F22

F23

%F23

F24

%F24

Help (nonerror state)

%HELP

Print

%PRINT

Record Backspace (Home)

%Hm

Roll Down

%RODN

Roll Up

%ROUP

Field Exit Key

Field Exit

%FLDX

Signal Keys

Attn

%ATTN

Help (from error state)

%HELP

Special Control Keys

Delete (Del)

%DEL

Erase Input

%EINP

Error Reset

%ERR

Hex

%HEX

Home

%Hm

Insert

%INS

Special Host Key

Sys Req

%SYSR

5250 Additional Functions

¬ (Not symbol)

%NOT

¢ (cent sign)

%CENT

Dup (duplicate enabled fields only)

%DUP

Field–

%FLD–

Field+

%FLD+

Field Mark

%FM

New Line

%NL

TE configuration menus

%TECFG

Auto-Login Restart

Auto-Login Restart

%ALRS

Encoded Code 39

Table A-1 lists escape characters and key press sequences for Encoded Code 39. The "(t)" in the table indicates a terminating key. Any bar code data following this key code is ignored. The "t" sequences, therefore, should be located only at the end of the bar code. If you attempt to use a reserved sequence (termed "reserved" in the table) the terminal will beep and the data stream will be flushed.

Table A-1
Key Press Sequences for Encoded Code 39

Sequence	Key
$A	New Line
$B	Del
$C	Forward Tab
$D	Forward Tab
$E	Back Tab
$F	Roll ↑ (Roll up/Page down)
$G	Roll ↓ (Roll down/Page up)
$H	Backspace
$I	Field+
$J	Field–
$K	Insert
$L	Home
$M	Enter/Rec Adv (t)
$N	Field Exit
$O	Erase Input
$P	Attn
$Q	F1 (t)
$R	F2 (t)
$S	F3 (t)
$T	F4 (t)
$U	F5 (t)
$V	F6 (t)
$W	F7 (t)
$X	F8 (t)
$Y	F9 (t)
$Z	F10 (t)

Table A-1 (Continued)
Key Press Sequences for Encoded Code 39

Sequence	Key
%A	Clear
%B	F11 (t)
%C	F12 (t)
%D	Error Reset
%E	Help
%F	; (semicolon)
%G	< (less than)
%H	= (equal)
%I	> (greater than)
%J	? (question mark)
%K	¬ (not symbol)
%L	\ (backslash)
%M	¢ (cent)
%N	| (piping symbol)
%O	_ (underscore)
%P	{ (left brace)
%Q	¦ (vertical bar)
%R	} (right brace)
%S	~ (tilde)
%T	Del
%U	Dup
%V	@ (at)
%W	‘ (grave accent)
%X	Sys Req
%Y	Print
%Z	F13 (t)

Table A-1 (Continued)
Key Press Sequences for Encoded Code 39

Sequence	Key
+A	a
+B	b
+C	c
+D	d
+E	e
+F	f
+G	g
+H	h
+I	i
+J	j
+K	k
+L	l
+M	m
+N	n
+O	o
+P	p
+Q	q
+R	r
+S	s
+T	t
+U	u
+V	v
+W	w
+X	x
+Y	y
+Z	z

Table A-1 (Continued)
Key Press Sequences for Encoded Code 39

Sequence	Key
/A	! (exclamation mark)
/B	” (double quote)
/C	$ (dollar)
/D	# (pound)
/E	% (percent)
/F	& (ampersand)
/G	’ (single quote)
/H	((left parenthesis)
/I	) (right parenthesis)
/J	* (asterisk)
/K	+ (plus)
/L	, (comma)
/M	– (minus)
/N	F14 (t)
/O	/ (forward slash)
/P	F15 (t)
/Q	F16 (t)
/R	F17 (t)
/S	F18 (t)
/T	F19 (t)
/U	F20 (t)
/V	F21 (t)
/W	F22 (t)
/X	F23 (t)
/Y	F24 (t)
/Z	: (colon)

Terminating Keys

Terminating keys are the nonprintable ASCII sequences and action keys. When the terminal encounters them in a bar code, an action is taken, and the terminal sends the data in the buffer to the host computer. Terminating keys should appear only at the end of the bar code. If they are located in the middle of a bar code, they are executed normally, but the data following them in the bar code is ignored.

Terminating keys cause a terminal-to-base station transmission. The terminal ignores data in the bar code buffer following these keys once a transmission takes place.

For example, the terminal interprets this sequence:

123$V456

as

123F6

The terminal will not send “456” to the host computer, because it follows terminating key F6.

ASCII sequences can be used any time before a terminating key. For example, the terminal interprets

+H+E+L+L+O$M

as

hello<Enter>

Concatenation

When Encoded Code 39 is enabled, all bar codes are concatenated. This allows several separate bar code scans to be strung together into one input field. This feature is especially useful when using separate Encoded Code 39 bar codes to replace operator key presses.

For example, if the bar code “1234” is scanned followed by the scanning of a separate “$C” bar code, the terminal keeps the “1234” in the starting field and tabs to the next unprotected field. If concatenation was not automatically enabled, the “1234” bar code would be cleared out due to the second scan. Then the terminal would tab to the next unprotected field.

Enabling Encoded Code 39 also allows scanning to occur when the cursor is in a protected field. This feature is provided to allow scanning of cursor movement functions (such as Forward Tab and Back Tab) while in a protected location on the screen. Scanning alphanumeric codes in a protected field causes an error tone for each character scanned.

Escape Characters

The four escape characters in Table A-1 yield a 5250 data stream key press equivalent when followed by another character. The escape characters are:

$ (dollar)
% (percent)
+ (plus)
/ (forward slash)

For example:

- If a bar code contains the sequence "%M" somewhere within it, the terminal converts this sequence to an [ENTER] key and processes it as soon as encountered in the scanning buffer.
- "+B" is converted to the lower case "b."
- "%B" is converted to an F11 key press.

If you want the Encoded Code 39 option but the bar codes to be scanned already contain the "$," "%," "+," or "/," character, then each place where these characters occur must be expanded to a special "/" sequence:

- Every bar code where the "$" is maintained must be expanded to a "/C" sequence.
- Percent signs (%) must be expanded to "/E".
- Forward slashes (/) must be expanded to the letter "/O".
- Plus signs (+) must be expanded to "/K".

Appendix B

Conversion Tables

Decimal to Hexadecimal

Following are decimal and hexadecimal values for nondisplayable ASCII and displayable graphic characters.

Decimal	Hex	Char.	Decimal	Hex	Char.	Decimal	Hex	Char.
0	00	NUL	38	26	&	76	4C	L
1	01	SOH	39	27	’	77	4D	M
2	02	STX	40	28	(	78	4E	N
3	03	ETX	41	29	)	79	4F	O
4	04	EOT	42	2A	*	80	50	P
5	05	ENQ	43	2B	+	81	51	Q
6	06	ACK	44	2C	,	82	52	R
7	07	BEL	45	2D	–	83	53	S
8	08	BS	46	2E	.	84	54	T
9	09	HT	47	2F	/	85	55	U
10	0A	LF	48	30	0	86	56	V
11	0B	VT	49	311	1	87	57	W
12	0C	FF	50	32	2	88	58	X
13	0D	CR	51	33	3	89	59	Y
14	0E	SO	52	34	4	90	5A	Z
15	0F	SI	53	35	5	91	5B	[
16	10	DLE	54	36	6	92	5C	\
17	11	DC1	55	37	7	93	5D	]
18	12	DC2	56	38	8	94	5E	^
19	13	DC3	57	39	9	95	5F	_
20	14	DC4	58	3A	:	96	60	‘
21	15	NAK	59	3B	;	97	61	a
22	16	SYN	60	3C	<	98	62	b
23	17	ETB	61	3D	=	99	63	c
24	18	CAN	62	3E	>	100	64	d
25	19	EM	63	3F	?	101	65	e
26	1A	SUB	64	40	@	102	66	f
27	1B	ESC	65	41	A	103	67	g
28	1C	FS	66	42	B	104	68	h
29	1D	GS	67	43	C	105	69	i
30	1E	RS	68	44	D	106	6A	j
31	1F	US	69	45	E	107	6B	k
32	20	DP	70	46	F	108	6C	l
33	21	!	71	47	G	109	6D	m
34	22	”	72	48	H	110	6E	n
35	23	#	73	49	I	111	6F	o
36	24	$	74	4A	J	112	70	p
37	25	%	75	4B	K	113	71	q

Decimal	Hex	Char.	Decimal	Hex	Char.	Decimal	Hex	Char.
114	72	r	173	AD		232	E8	è
115	74	s	174	AE		233	E9	é
116	74	t	175	AF		234	EA	ê
117	75	u	176	B0	°	235	EB	ë
118	76	v	177	B1	±	236	EC	ì
119	77	w	178	B2	²	237	ED	í
120	78	x	179	B3	³	238	EE	î
121	79	y	180	B4		239	EF	ï
122	7A	z	181	B5	µ	240	F0	
123	7B	{	182	B6	¶	241	F1	ñ
124	7C	|	183	B7	·	242	F2	ò
125	7D	}	184	B8		243	F3	ó
126	7E	~	185	B9	¹	244	F4	ô
127	7F	DEL	186	BA	º	245	F5	õ
128	80		187	BB	»	246	F6	ö
129	81		188	BC	¼	247	F7	Œ
130	82		189	BD	½	248	F8	ø
131	83		190	BE		249	F9	ù
132	84	IND	191	BF	¿	250	FA	ú
133	85	NEL	192	C0	À	251	FB	û
134	86	SSA	193	C1	Á	252	FC	ü
135	87	ESA	194	C2	Â	253	FD	ÿ
136	88	HTS	195	C3	Ã	254	FE	
137	89	HTJ	196	C4	Ä	255	FF	
138	8A	VTS	197	C5	Å			
139	8B	PLD	198	C6	Æ			
140	8C	PLU	199	C7	Ç			
141	8D	RI	200	C8	È			
142	8E	SS2	201	C9	É			
143	8F	SS3	202	CA	Ê			
144	90	DCS	203	CB	Ë			
145	91	PU1	204	CC	Ì			
146	92	PU2	205	CD	Í			
147	93	STS	206	CE	Î			
148	94	CCH	207	CF	Ï			
149	95	MW	208	D0				
150	96	SPA	209	D1	Ñ			
151	97	EPA	210	D2	Ò			
152	98		211	D3	Ó			
153	99		212	D4	Ô			
154	9A		213	D5	Õ			
155	9B	CSI	214	D6	Ö			
156	9C	ST	215	D7	Œ			
157	9D	OSC	216	D8	Ø			
158	9E	PM	217	D9	ù			
159	9F	APC	218	DA	ú			
160	A0		219	DB	û			
161	A1	¡	220	DC	Ü			
162	A2	¢	221	DD	ÿ			
163	A3	£	222	DE				
164	A4		223	DF	ß			
165	A5	¥	224	E0	à			
166	A6	¦	225	E1	á			
167	A7	§	226	E2	â			
168	A8	¤	227	E3	ã			
169	A9	©	228	E4	ä			
170	AA	ª	229	E5	å			
171	AB	«	230	E6	æ			
172	AC		231	E7	ç			

Binary to EBCDIC

Following are binary to EBCDIC conversion values.

Bits 0-5	EBCDIC Code	Display Graphic	Bits 0-5	EBCDIC Code	Display Graphic
00 0000	40	<space>	10 0000	60	—
00 0001	C1	A	10 0001	61	/
00 0010	C2	B	10 0010	E2	S
00 0011	C3	C	10 0011	E3	T
00 0100	C4	D	10 0100	E4	U
00 0101	C5	E	10 0101	E5	V
00 0110	C6	F	10 0110	E6	W
00 0111	C7	G	10 0111	E7	X
00 1000	C8	H	10 1000	E8	Y
00 1001	C9	I	10 1001	E9	Z
00 1010	4A	¢	10 1010	6A	EBCDIC
00 1011	4B	.	10 1011	6B	,
00 1100	4C	<	10 1100	6C	%
00 1101	4D	(	10 1101	6D	-
00 1110	4E	+	10 1110	6E	>
00 1111	4F	|	10 1111	6F	?
01 0000	50	&	11 0000	F0	0
01 0001	D1	J	11 0001	F1	1
01 0010	D2	K	11 0010	F2	2
01 0011	D3	L	11 0011	F3	3
01 0100	D4	M	11 0100	F4	4
01 0101	D5	N	11 0101	F5	5
01 0110	D6	O	11 0110	F6	6
01 0111	D7	P	11 0111	F7	7
01 1000	D8	Q	11 1000	F8	8
01 1001	D9	R	11 1001	F9	9
01 1010	5A	!	11 1010	7A	:
01 1011	5B	$	11 1011	7B	#
01 1100	5C	*	11 1100	7C	@
01 1101	5D	)	11 1101	7D	’
01 1110	5E	;	11 1110	7E	=
01 1111	5F	¬	11 1111	7F	”

Appendix C

Terminal Font Set Table

NOTE: *The Terminal Font Set table in this appendix applies to a 6400 or 5055 computer. For the Terminal Font Set table for a 2415, 2425, 2455, or 248X terminal, refer to the terminal's user manual.*

6400 and 5055 computers use a font set that supports English and Western European languages, such as French, German, Italian, Portuguese, Spanish, and others. You can develop applications that display any character in the terminal font set. Depending on the type of keyboard, you can also enter many of the characters. For help, see Section 3, "Using the Terminal's Keyboard."

Table C-1 lists the characters you can display on the terminal. It also lists the decimal and hexadecimal index values.

Table C-1
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
Space	0	00
Ã	1	01
ã	2	02
Õ	3	03
õ	4	04
∅	5	05
¨	6	06
—	7	07
↳	8	08
⇶	9	09
∩	10	0A
☰	11	0B
Ψ	12	0C
Δ	13	0D
|	14	0E
¤	15	0F

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
▶	16	10
◀	17	11
("communications loss" annunciator)	18	12
(5250 dup character)	19	13
x ("input inhibited" annunciator)	20	14
§	21	15
("message waiting" annunciator)	22	16
("radio" annunciator)	23	17
Unused	24	18
Unused	25	19
→ ("transmit" annunciator)	26	1A
← ("receive" annunciator)	27	1B
("battery" annunciator)	28	1C
Space	29	1D
▲	30	1E
Ý	31	1F
Space	32	20
!	33	21
‼	34	22
#	35	23
$	36	24
%	37	25
&	38	26
’	39	27
(	40	28
)	41	29
*	42	2A
+	43	2B
, (comma)	44	2C
- (dash)	45	2D
. (period)	46	2E
/	47	2F
0	48	30
1	49	31
2	50	32
3	51	33
4	52	34
5	53	35

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
6	54	36
7	55	37
8	56	38
9	57	39
:	58	3A
;	59	3B
<	60	3C
=	61	3D
>	62	3E
?	63	3F
@	64	40
A	65	41
B	66	42
C	67	43
D	68	44
E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
K	75	4B
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
[	91	5B
\	92	5C
]	93	5D
^	94	5E
_	95	5F
‘	96	60
a	97	61
b	98	62
c	99	63
d	100	64
e	101	65
f	102	66
g	103	67
h	104	68
i	105	69
j	106	6A
k	107	6B
l	108	6C
m	109	6D
n	110	6E
o	111	6F
p	112	70
q	113	71
r	114	72
s	115	73
t	116	74
u	117	75
v	118	76
w	119	77
x	120	78
y	121	79
z	122	7A
{	123	7B
¦	124	7C
}	125	7D
~	126	7E

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
⌂	127	7F
Ç	128	80
ü	129	81
é	130	82
â	131	83
ä	132	84
à	133	85
å	134	86
ç	135	87
ê	136	88
ë	137	89
è	138	8A
ï	139	8B
î	140	8C
ì	141	8D
Ä	142	8E
Å	143	8F
É	144	90
æ	145	91
Æ	146	92
ô	147	93
ö	148	94
ò	149	95
û	150	96
ù	151	97
ÿ	152	98
Ö	153	99
Ü	154	9A
¢	155	9B
£	156	9C
¥	157	9D
₨	158	9E
f	159	9F
á	160	A0
í	161	A1

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
ó	162	A2
ú	163	A3
ñ	164	A4
Ñ	165	A5
ª	166	A6
º	167	A7
¿	168	A8
⌐ (not symbol)	169	A9
¬	170	AA
½	171	AB
¼	172	AC
¡	173	AD
«	174	AE
»	175	AF
░	176	B0
▒	177	B1
▓	178	B2
│	179	B3
┤	180	B4
╡	181	B5
╢	182	B6
╖	183	B7
╕	184	B8
╣	185	B9
║	186	BA
╗	187	BB
╝	188	BC
╜	189	BD
╛	190	BE
┐	191	BF
└	192	C0
┴	193	C1
┬	194	C2
├	195	C3
─	196	C4
┼	197	C5

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
╞	198	C6
╟	199	C7
╚	200	C8
╦	210	C9
╩	202	CA
╠	203	CB
═	204	CC
╬	205	CD
╧	206	CE
╨	207	CF
╤	208	D0
╥	209	D1
╙	210	D2
╘	211	D3
╒	212	D4
╓	213	D5
╫	214	D6
╪	215	D7
┘	216	D8
┌	217	D9
▀	218	DA
▄	219	DB
▌	220	DC
▐	221	DD
▬	222	DE
α	223	DF
ß	224	E0
Γ	225	E1
π	226	E2
Σ	227	E3
σ	228	E4
µ	229	E5
τ	230	E6

Table C-1 (continued)
Terminal Font Set (6400 or 5055 Computer)

Character	Decimal	Hexadecimal
γ	231	E7
σ	232	E8
θ	233	E9
Ω	234	EA
δ	235	EB
∞	236	EC
ø	237	ED
∈	238	EE
∩	239	EF
≡	240	F0
±	241	F1
≥	242	F2
≤	243	F3
⌠	244	F4
⌡	245	F5
÷	246	F6
≈	247	F7
°	248	F8
○	249	F9
■	250	FA
√	251	FB
n	252	FC
2	253	FD
■	254	FE
Space	255	FF

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