User's Manual Addendum

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Trakker Antares®
24XX Terminal

Intermec

A UNOVA Company

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4 Updates to Hardware and Software

1

What's New

This chapter describes the purpose and contents of this addendum. It also summarizes the enhancements and features of the firmware version 6.13 release.

How to Use This Addendum

Read this addendum before you begin using your Trakker Antares terminal.

The hardware and software on Trakker Antares terminals have been updated substantially to improve efficiency and ease of use. These changes are not yet reflected in the user's manual, but they are described here in detail.

The information in this addendum applies to the Trakker Antares 2420, 2425, 2455, 2460, and 2461 terminals. For more information about the topics covered in this addendum, refer to your user's manual.

Manual	Part Number with Addendum
Trakker Antares 2420 and 2425 Hand-Held Terminal User's Manual	064024-007
Trakker Antares 2455 Vehicle-Mount Terminal User's Manual	067358-004
Trakker Antares 246X Stationary Terminal User's Manual	068575-003

This addendum contains the latest information about Trakker Antares terminals with firmware version 6.13. If there are any conflicts between the information in the Trakker Antares user's manual and this addendum, use the information in this addendum.

To learn about your Trakker Antares terminal, use this addendum in conjunction with other Trakker Antares documentation.

What You Will Find in This Addendum

This table summarizes the information in each chapter.

Chapter	Summary
1	Describes the purpose and contents of this addendum. It also summarizes the enhancements and features of the firmware version 6.13 release.
2	Contains information about configuring the Trakker Antares terminal to use the IEEE 802.11B High Rate (HR) radio. This chapter only applies to the T2425 and the T2455.
3	Explains how to run and use ROM-DOS on Trakker Antares terminals that are running firmware version 6.12 or higher.
4	Describes changes that have been made to Trakker Antares software and hardware that are not yet reflected in the user's manual.

If You Do Not Have Firmware Version 6.13

If you have an earlier version of firmware, you can download version 6.13 at no charge from the Intermec Web site at www.intermec.com. For help, contact your local Intermec service representative. If you are not going to upgrade to version 6.13, use your Trakker Antares user's manual and disregard this addendum.

Summary of New Features in Firmware Version 6.13

With firmware version 6.13, several significant changes were made to Trakker Antares hardware and software. These changes include:

- You can now use and configure the IEEE 802.11B High Rate (HR) radio option.
- You can use ROM-DOS to install and run DOS applications on your terminal.
- If you are using 21XX Universal Access Points, you can now roam across subnetworks.
- You can configure additional network parameters through the network.
- You can create a custom logo that appears on the terminal screen each time the terminal boots.
- The Euro symbol (€) is now supported.
- There are now additional 95XX emulation features.
- You can now store up to 128 files on each drive.
- You can use new diagnostics.
- You can now configure the new beep duration command to create the impression of a higher beep volume.
- For the UPC/EAN configuration command, you can set expanding zeros for UPC-E, and you can also set new supplementals options.

This information supplements the information provided in your Trakker Antares user's manual. Please keep this addendum with your user's manual.

2

Configuring the 802.11B HR Radio

This chapter contains information about configuring the Trakker Antares terminal to use the 802.11B HR radio.

Summary of Radio Frequency Features

To communicate through the 2.4 GHz radio frequency (RF) network, all Trakker Antares RF terminals (T2425 or T2455) must contain one of the following types of radios:

- WLI-F 2.4 GHz OpenAir frequency hopping spread spectrum
- 2.4 GHz IEEE 802.11B high rate direct sequence spread spectrum

The radio in each of the terminals must be the same type of radio in the access points. Depending on the type of radio, you must set certain parameters to the same configuration on both the terminal and the access points.

OpenAir Radio

To use OpenAir radios in your network, you must set the following parameters:

- RF Domain
- RF Security Identification

The values for each of these parameters must be the same on the terminals and the access points. Each access point is configured with a different channel/subchannel combination.

Note: On the 21XX Universal Access Points, the RF Domain parameter is called the LAN ID (Domain) parameter.

Note: The RF Security Identification parameter is an optional parameter. You only have to set this parameter on the terminal if it is already set on the access points.

802.11B HR Radio

To use 802.11B HR radios in your network, you must set the following parameter:

- Network name

The value for this parameter must be the same value on the terminals and the access points. You can also set this parameter to “ANY” on the terminal, allowing the terminal to communicate with any access point that has the same radio and is within range. This parameter is case-sensitive.

802.11B HR Radio Configuration Commands

This section describes the following configuration commands for the 802.11B HR radio:

- AP Density
- Maximum Sleep Duration
- Medium Reservation
- Network Name
- Power Management
- Receive All Multicast
- Reservation Threshold
- Station Name
- Transmit Rate
- Transmit Rate Fallback
- WEP Encryption
- WEP Key 1
- WEP Key 2
- WEP Key 3
- WEP Key 4
- WEP Transmit Key

For more information about configuring these commands for your access points, see you access point manual.

Note: The Code 39 bar code labels in this chapter show an asterisk (*) at the beginning and end of the human-readable interpretation to represent the start and stop codes. If you are creating your own Code 39 bar code labels, your bar code printing utility may automatically supply the asterisks as the start and stop codes.

AP Density

Purpose: Controls the roaming sensitivity of the radios. You can use this parameter to virtually reduce the range of the radio. When you increase the AP density, you do not reduce the absolute range of the radio, but the roaming algorithms are modified to allow significant overlap of the radio coverage. Increasing the AP density lets you create a higher performance radio network, but you will need significantly more access points to cover a given area.

Syntax: LG*data*

Acceptable values for *data* are:

1 Low density
2 Medium density
3 High density

Default: Low density

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Low AP Density

$+LG1

Medium AP Density

$+LG2

High AP Density

$+LG3

Maximum Sleep Duration

Purpose: Specifies the maximum amount of time the radio is allowed to sleep.

Note: Before you set the maximum sleep duration, you must enable the Power Management command.

Syntax: LI*data*

Acceptable values for *data* are from 0 to 65535 ms.

Default: 100

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: To set the default maximum sleep duration, scan this bar code:

Default Maximum Sleep Duration

$+LI100

Or: To set the maximum sleep duration:

1. Scan this bar code:

   Enter Accumulate Mode / Set Maximum Sleep Duration

   +/$+LI

2. Scan a numeric value for *data* from these bar codes:

   0

   1

   2

   3

   4

   5

Maximum Sleep Duration (continued)

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Medium Reservation

Purpose: Determines if the terminal uses medium reservation. You should enable this parameter if your network has hidden stations. When you enable this parameter, you also need to set the Reservation Threshold command. You may want to disable this parameter to improve network response time if the terminal usually sends very small packets and the network does not have any hidden stations.

Syntax: LC*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Enabled

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Disable Medium Reservation

$+LC0

Enable Medium Reservation

$+LC1

Network Name

Purpose: Defines an RF network. To communicate, all access points and terminals in the network must have the same network name. If you set this parameter to "ANY," the terminal can associate with any access point, regardless of the access point network name. This parameter is case-sensitive.

You can roam between access points as long as all of the RF devices have the same network name. You can also create subnetworks in the same area by assigning different network names to terminals and access points.

Syntax: LA*data*

Acceptable values for *data* are up to 32 ASCII characters.

Default: INTERMEC (case-sensitive)

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Note: To set this command using bar code labels, you must also use the bar code labels in Appendix B of your user's manual. To use these labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in the "Configuration Command Reference" chapter in your user's manual.

Scan: To set the default network name, scan this bar code:

Default Network Name

$+LAINTERMEC

Or: To set the network name to "ANY," scan this bar code label:

Set Network Name to ANY

$+LAANY

Or: To set the network name to an ASCII character string:

1. Scan this bar code:

   Enter Accumulate Mode / Set Network Name

   +/$+LA

Network Name (continued)

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B of your user's manual. The network name can be from 1 to 32 characters.

3. Scan this bar code:

   Exit Accumulate Mode

   -/

Power Management

Purpose: Determines if power management is enabled for the radio. If you enable power management, the radio conserves power by sleeping between messages. Enabling power management decreases the performance of the RF network, but it increases the life of battery-powered devices.

Syntax: LH*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Enabled

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Disable Power Management

$+LH0

Enable Power Management

$+LH1

Receive All Multicast

Purpose: Determines if the terminal needs to receive all multicast messages. If you enable this parameter, the radio will stay awake to receive all multicast messages that are forwarded by the access point. If you disable this parameter, the radio sleeps more often and conserves battery power.

Note: Before you can set or clear the Receive All Multicast command, you must enable the Power Management command.

Syntax: LJ*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Enabled

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Disable Receive All Multicast

$+LJ0

Enable Receive All Multicast

$+LJ1

Reservation Threshold

Purpose: Specifies the maximum packet size that the terminal can send before it uses medium reservation. Packets that are greater than or equal to this packet size use the medium reservation mechanism to help prevent collisions with packets from other devices.

Note: Before you can set the reservation threshold, you must enable the Medium Reservation command.

Syntax: LD*data*

Acceptable values for *data* are from 0 to 2346.

Default: 500

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: To set the default reservation threshold, scan this bar code:

Default Reservation Threshold

$+LD500

Or: To set the reservation threshold:

1. Scan this bar code:

   Enter Accumulate Mode / Set Reservation Threshold

   +/$+LD

2. Scan a numeric value for *data* from these bar codes:

0 *1*

2 *3*

4 *5*

Reservation Threshold (continued)

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Station Name

Purpose: Identifies the terminal to the network. For example, you might want to define station names so that you can identify terminals when using site survey tools.

Syntax: LB*data*

Acceptable values for *data* are up to 32 ASCII characters.

Default: TRAKKER 2400

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Note: To set this command using bar code labels, you must also use the bar code labels in Appendix B of your user's manual. To use these labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in the "Configuration Command Reference" chapter in your user's manual.

Scan: To set the default station name, scan this bar code:

Default Station Name

$+LBTRAKKER 2400

Or: To set the station name to an ASCII character string:

1. Scan this bar code:

   Enter Accumulate Mode / Set Station Name

   +/$+LB

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B of your user's manual. The station name can be from 1 to 32 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

Transmit Rate

Purpose: Sets the bit rate for data transmission. A slower transmit rate provides a better range. You should configure the terminals that are on the perimeter of the access point coverage area to the slower transmit rate. A faster transmit rate provides better throughput. You should configure most of the terminals to the faster transmit range.

Syntax: LE*data*

Acceptable values for *data* are:

0	Maximum available
1	1 Mbps (Low)
2	2 Mbps (Standard)
5	5.5 Mbps (Medium)
11	11 Mbps (High)

Default: Maximum available

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Set Transmit Rate to Maximum Available

$+LE0

Set Transmit Rate to 1 Mbps

$+LE1

Set Transmit Rate to 2 Mbps

$+LE2

Set Transmit Rate to 5.5 Mbps

$+LE5

Set Transmit Rate to 11 Mbps

$+LE11

Transmit Rate Fallback

Purpose: Determines if the terminal will try slower rates than the specified transmit rate. A packet might be undeliverable to a device at a given rate due to interference or range limitations. If you enable this command, the terminal will attempt to deliver the packet at a slower rate, which might have greater range or increased interference tolerance.

Syntax: LF*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Enabled

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Disable Transmit Rate Fallback

$+LF0

Enable Transmit Rate Fallback

$+LF1

WEP Encryption

Purpose: Determines if you want the terminal to use the Wired Equivalent Privacy (WEP) algorithm for data encryption of wireless communications. WEP protects the transmitted data using a 64-bit seed key and the RC4 encryption algorithm. However, when WEP is enabled, it only protects the data packet information. It does not protect the physical layer header, so other devices on the network can listen to the control data needed to manage the network.

Syntax: LK*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: One of these bar codes:

Disable WEP Encryption

$+LK0

Enable WEP Encryption

$+LK1

WEP Key 1, WEP Key 2, WEP Key 3, WEP Key 4

Purpose: Sets the values for the WEP default keys. The terminal can receive a WEP encryption that uses any of these four WEP keys. The WEP keys must appear in the same order on both the access point and the terminal. You enter five ASCII characters, printable or nonprintable, or five hex pairs for the key.

If you enter fewer than five ASCII characters or hex pairs, the key is not saved. If you enter more than five ASCII characters or hex pairs, the key is truncated. You may not enter a character with a value of \x00.

Note: Before you can set the WEP encryption keys, you must enable the WEP Encryption command on both the access points and the terminals.

Syntax:

LM*data*	WEP Key 1
LN*data*	WEP Key 2
LO*data*	WEP Key 3
LP*data*	WEP Key 4

Acceptable values for *data* are five ASCII characters or five hex pairs. If you use nonprintable ASCII characters using the TRAKKER Antares 2400 Menu System, you must enter:

`\x`*nn*

where *nn* is the hexadecimal value of the nonprintable character.

Default: WEP Key 1 is set to 80211.

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Note: To set this command using bar code labels, you must also use the bar code labels in Appendix B of your user's manual. To use these labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in the "Configuration Command Reference" chapter in your user's manual.

Scan: To set the default for WEP key 1, scan this bar code:

Set WEP Key 1 to 80211

$+LM80211

WEP Key 1, WEP Key 2, WEP Key 3, WEP Key 4 (continued)

Or: To set a WEP key:

1. Scan this bar code:

   Enter Accumulate Mode

   +/

2. Scan one of these bar codes to set a WEP key:

   Set WEP Key 1

   $+LM

   Set WEP Key 2

   $+LN

   Set WEP Key 3

   $+LO

   Set WEP Key 4

   $+LP

3. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B of your user's manual. The WEP key should be five ASCII characters.

4. Scan this bar code:

   Exit Accumulate Mode

   -/

WEP Transmit Key

Purpose: Determines which of the four WEP keys the terminal uses to transmit data. You can set this parameter to a value from 1 to 4. The default value is 1, which means the terminal uses WEP key 1. The access point and the terminal must use the same WEP transmit key.

Note: Before you can set the WEP transmit key, you must enable the WEP Encryption command on both the access points and the terminals.

Syntax: LL*data*

Acceptable values for *data* are any number from 1 to 4.

Default: 1

Menu System: From the Main Menu, choose Configuration Menu, then Communications Menu, and then Radio.

Scan: To set the default WEP transmit key, scan this bar code:

Default WEP Transmit Key

$+LL1

Or: To set the WEP transmit key:

1. Scan this bar code:

   Enter Accumulate Mode / Set WEP Transmit Key

   +/$+LL

2. Scan a numeric value for *data* from these bar codes:

   1   *2*

   3   *4*

3. Scan this bar code:

   Exit Accumulate Mode

   -/

3

DOS on the Trakker Antares Terminal

This chapter explains how to use ROM-DOS on Trakker Antares terminals that are running firmware version 6.12 or higher.

Overview

This chapter covers the following topics:

- Using DOS on the Trakker Antares terminal
- Customizing DOS drives and commands
- Limitations of ROM-DOS
- Troubleshooting
- DOS architecture on the Trakker Antares terminal

Using DOS on the Trakker Antares Terminal

Trakker Antares terminals can run ROM-DOS, which is compatible with DOS version 6.22. ROM-DOS provides application compatibility at the DOS level and interface compatibility at the BIOS level. You can develop and test DOS applications on your desktop PC and then easily install the applications on your terminals.

There are two types of applications you can run on the terminal:

- Native Trakker Antares application (.BIN executable binary format)
- DOS application (.EXE executable format)

DOS applications and native Trakker Antares applications are mutually exclusive. You can either run a DOS .EXE application or a native Trakker Antares .BIN application. To use DOS applications, the Trakker Antares terminal must be running firmware version 6.12 or higher. If you are using an earlier version of firmware, you must upgrade the firmware. For help, contact your local Intermec service representative.

Note: When DOS is running, label or bar code data is always entered into the keyboard buffer in Wedge mode.

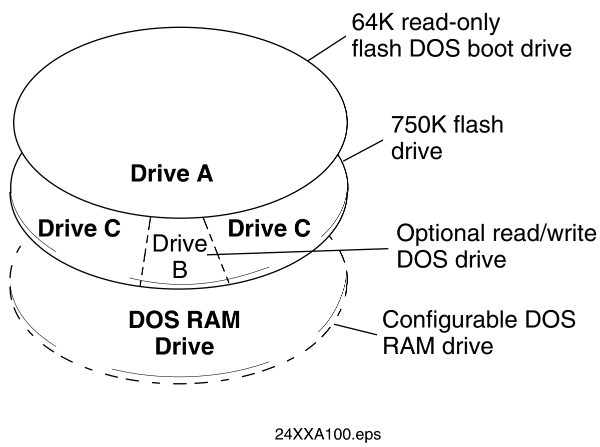
To run DOS applications on the terminal

1. Develop a DOS application.
2. Download the DOS application to the terminal.
3. Start DOS on the terminal.
4. Run the DOS application on the terminal and use ROM-DOS commands.

Each step is explained in this chapter. You will also learn how to customize the DOS drives and learn about the limitations of using ROM-DOS on the terminal.

Defining the Terminal's DOS Drives and Memory

The terminal comes with the files you need to run DOS and DOS .EXE applications on the terminal. On each DOS drive, filenames are customer defined using eight characters with a three-character extension. You cannot define any subdirectories.



Drive A This drive is a 64K block of flash memory that is a read-only DOS boot drive. You can configure drive A, but you cannot write to it within an application. Drive A is created and initialized once you run the DOS.BIN application.

Drive B This drive is an optional read/write DOS drive that resides as a subdirectory on drive C. Drive B is limited by the space available on drive C. You can configure drive B by modifying the DRIVEB.IMG file that defines the ROM-DOS commands available on the terminal. For help, see "Customizing Drive B" later in this chapter.

Drive C This drive is a 2MB flash drive. You can use up to 750K of this flash drive to store up to 128 files, which includes drive B. DOS .EXE applications must be stored on drive C. You use standard ANSI C library interface definitions to access the information on this drive.

The following DOS files are installed originally on drive C.

File	Definition
DOS.BIN	This application reboots and runs ROM-DOS on a Trakker Antares terminal so that you can run DOS .EXE applications.
ROM-DOS.IMG	This file is the image file for ROM-DOS version 6.22.
DRIVEB.IMG	This image file contains the contents of DOS drive B. You cannot reference drive B from a Trakker Antares .BIN application file. If you delete this file, you lose drive B and the ROM-DOS commands that are defined for drive B.

Note: If you do not want to use DOS on the Trakker Antares terminal, you can save space by deleting DOS.BIN, ROM-DOS.IMG, and DRIVEB.IMG from drive C.

DOS RAM Drive This drive is a configurable DOS RAM drive. The contents of this drive are erased when you boot or reset the terminal. You use standard ANSI C functions to access the files on this drive. If you configure a DOS RAM drive, DOS assigns drive C to the RAM drive and reassigns the remaining Trakker Antares drives. For example, the Trakker Antares drive C becomes drive D. For help creating a DOS RAM drive, see "Configuring a DOS RAM Drive" later in this chapter. By default, the RAM drive is not configured and the memory is available for programmable (Malloc) memory.

There are two types of RAM drives that are mutually exclusive depending on whether you run native Trakker Antares .BIN applications or DOS .EXE applications. You use the standard RAM drive E for .BIN applications or you use a DOS RAM drive for DOS .EXE applications. Before you start using DOS on the terminal, you must disable the standard RAM drive. For help, see "RAM Drive Size" in the "Configuration Command Reference" chapter in the user's manual.

DOS .EXE applications are customer defined. You have 380K total RAM that you can use for DOS .EXE application execution space. You can also configure a DOS RAM drive. If the RAM drive is configured, your application execution space is reduced by the amount of the RAM drive. The remaining RAM is the Malloc/free memory pool.

Developing DOS Applications

You can create applications for the terminal using the Trakker Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions.

To develop a DOS application

- On your PC, create the DOS .EXE application. Create the source code for your application by using an editor and then compile it.

Note: Intermec requires that you use the Trakker Antares PSK version 4.2 or higher to create DOS applications. To support DOS .EXE applications, some PSK library functions were moved from the IMT24LIB library to the LLIBCA library. The IMT24LIB library contains Intermec-specific functions. You can download the PSK from the Intermec Web site at www.intermec.com.

Downloading DOS Applications to the Terminal

Once you have developed your DOS .EXE application, you need to download the application from your PC to the terminal. DOS .EXE applications must be stored on drive C.

There are several ways to transfer files depending on the type of terminal. You can transfer the DOS .EXE applications and files by using serial or RF communications. For help, see Chapter 5 in the user's manual.

If you use terminal-and-stay-resident (TSR) programs in your DOS application, you also need to download and install the TSR files on the terminal. If your application uses a TSR on drive C, transfer the TSR to drive C along with the application. If your application uses a TSR on drive A, you need to recreate drive A to include the TSR. For help, see "Customizing Drive A" later in this chapter.

Starting DOS on the Terminal

Before you can run DOS applications on the Trakker Antares terminal, you need to start DOS. Once you have started DOS, you can switch between DOS and the TRAKKER Antares 2400 Menu System as needed.

You must run the file DOS.BIN to start DOS. There are two ways to start DOS:

- Use the Run Program reader command.
- Use the TRAKKER Antares 2400 Menu System.

The instructions in this section briefly explain both methods. For help using the TRAKKER Antares 2400 Menu System, see Chapter 3, "Configuring the Terminals" in the user's manual. For help using the Run Program reader command, see the "Reader Command Reference" chapter in the user's manual.

Note: If you run DOS on the terminal, you cannot use the standard RAM drive E for native Trakker Antares .BIN applications. Disable the RAM drive before you start DOS. For help, see "RAM Drive Size" in the "Configuration Command Reference" chapter in the user's manual.

To start DOS on the terminal

1. Press I/O to turn on the terminal.
2. Scan this full ASCII Code 39 bar code label:

   Run DOS.BIN

   //C:DOS.BIN

   Or:

   a. To access the TRAKKER Antares 2400 Menu System on T242X or T2455 terminals, press f ↵ 2 4 8 or scan the following bar code label:

   Test and Service Mode

   ..-.

   Note: If you have a Trakker Antares 242X, you must use the Left Enter key when entering the key sequence to access the TRAKKER Antares 2400 Menu System.

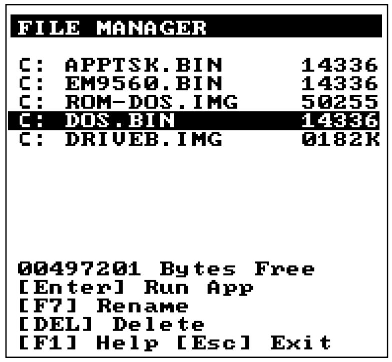
   The Main Menu appears.

   b. Choose System Menu and press ↵. The System Menu appears.

   c. Choose File Manager and press ↵. The File Manager screen appears prompting you to select a drive.

24XXA054.eps

d. Press ↵ to select drive C. The File Manager screen appears listing all the files stored on drive C.



24XXA222.eps

Note: Drive C may contain additional applications, such as custom applications or terminal emulation applications.

e. Choose C:DOS.BIN and then press ↵.

f. Exit the menu system. If you made any configuration changes while you were working in the menu system, you will be prompted to store your changes in flash memory.

The terminal boots, resets all firmware, and starts DOS. You see the A: prompt on the terminal screen. If you turn the terminal off and then back on, the terminal either resumes exactly where it was when you turned it off, or the terminal boots and restarts DOS. Resume is controlled through the Resume Execution command.

Running DOS Applications and Using ROM-DOS Commands

Once you have loaded your files and applications, you can run your DOS applications. With some limitations, you can use DOS on the terminal as you do on a PC. You can create bar code labels for applications or commands that you use frequently.

DOS applications and Trakker Antares applications are mutually exclusive. You can either run a DOS .EXE application or you can run a native Trakker Antares .BIN application.

Note: You cannot run a DOS .EXE application from the TRAKKER Antares 2400 Menu System.

To run a DOS application

1. If necessary, change to the drive where the application is stored. At the DOS prompt, enter the drive letter followed by a colon (:) and then press , or scan one of these full ASCII Code 39 bar code labels:

   A:

   A:<CR>

   B:

   B:<CR>

   C:

   C:<CR>

2. Enter the filename of the DOS application and then press , or scan a bar code label that you have created for the application. For example, if the DOS application filename is SHIPPING.EXE, you can create this full ASCII bar code label:

   SHIPPING.EXE

   SHIPPING.EXE<CR>

Note: You can encode a <CR> (Enter) into the bar code label. If you do not include the <CR> in the bar code, you must press after you scan a bar code label for a drive, command, or a DOS application.

Using ROM-DOS Commands

With some limitations you can use ROM-DOS commands on the terminal as you do on a PC.

To use ROM-DOS commands

- From the DOS prompt on the terminal, type a ROM-DOS command and then press to execute the command. For example, you can list the files on drive C by entering this command:

  ```
  dir
  ```

  You can also scan a bar code label that you have created for the ROM-DOS command. For example, you can scan this full ASCII bar code label to use the DIR command:

  DIR command

  DIR<CR>

The next table lists the ROM-DOS commands and the level of support that is provided on the Trakker Antares terminal. There are internal and external ROM-DOS commands. Internal commands such as CLS and DIR are built into the main body of ROM-DOS and are implemented within COMMAND.COM. When you load DOS into memory, all internal commands are available. The external ROM-DOS commands are defined on drive B. For help using ROM-DOS commands, see a DOS manual.

Note: You must use the ROM-DOS commands that are provided on the Trakker Antares terminal. The ROM-DOS commands are also available from the Intermec Web site at www.intermec.com. DOS commands or ROM-DOS commands copied from another computer will not run on a Trakker Antares terminal.

ROM-DOS Command	Supported?	External ROM-DOS Command on Default Drive B	Notes
ATTRIB	Yes	Yes	You can only use ATTRIB on DOS drives.
CD	Yes		
CHKDSK	Limited		You can only use CHKDSK on DOS drives.
CHOICE	Yes	Yes	
CLS	Yes		
COPY	Yes		
DATE	Yes		
DEL	Yes		
DELTREE	Yes	Yes	You can only use DELTREE on DOS drives.
DIR	Yes		
DISKCOMP	Limited		You can only use DISKCOMP on DOS drives.
DUMP	Yes	Yes	You can only use DUMP on DOS drives.
ECHO	Yes		
ERASE	Yes		
EXIT	Yes		
FIND	Yes	Yes	
FOR	Yes		
GOTO	Yes		
IF	Yes		

ROM-DOS Commands in Alphabetical Order

ROM-DOS Command	Supported?	External ROM-DOS Command on Default Drive B	Notes
LOADHIGH	No		
MEM	Yes	Yes	
MIRROR	Limited		You can only use MIRROR on DOS drives.
MODE	Limited	Yes	The MODE command is limited by the lack of PC-compatible hardware on the Trakker Antares terminal.
MORE	Yes	Yes	
MOVE	Yes	Yes	
PAUSE	Yes		
PM	Yes	Yes	PM.COM is a Trakker Antares command that enables or disables the power management scheme used by the BIOS get keyboard key function and the BIOS check keyboard key function. For help using PM.COM, see the next section.
PROMPT	Yes		
REM	Yes		
REMDISK	No		
REMSERVER	No		
REN	Yes		
RSZ	No		
SET	Yes		
SHIFT	Yes		
SORT	Yes	Yes	
Standard console redirection commands	Yes		
SUBST	Yes	Yes	
SYS	Limited		You can only use SYS on DOS drives.

ROM-DOS Commands in Alphabetical Order

ROM-DOS Command	Supported?	External ROM-DOS Command on Default Drive B	Notes
TIME	Yes		
TREE	Yes	Yes	
TYPE	Yes		
VDISK	Yes	Yes	Use VDISK to create a DOS RAM drive.
VER	Yes		
VERSION.SYS	Yes	Yes	
XCOPY	Yes	Yes	

Using the PM.COM Command

PM.COM is a Trakker Antares command that enables or disables the power management scheme used by the BIOS get keyboard key function and the BIOS check keyboard key function. When you enable power management (PM.COM), the BIOS progressively increases the wait interval when requesting key input from the keyboard. You can run PM.COM from AUTOEXEC.BAT or at the DOS prompt.

The syntax for PM.COM is:

```
PM data
```

Acceptable values for *data* are:

0 Disables BIOS power management
1 Enables BIOS power management

Stopping DOS and Running a .BIN Application

You stop or exit DOS by running a native Trakker Antares .BIN application. Once you run a .BIN application other than DOS.BIN, the terminal stops or exits DOS. There are two ways to run an application:

- Use the Run Program reader command.
- Use the TRAKKER Antares 2400 Menu System.

For help using the TRAKKER Antares 2400 Menu System, see Chapter 3, "Configuring the Terminal" in the user's manual. For help using the Run Program reader command, see the "Reader Command Reference" chapter in the user's manual.

Customizing DOS Drives and Commands

You can customize DOS on your Trakker Antares terminal by

- changing AUTOEXEC.BAT or CONFIG.SYS and customizing drive A.
- adding or removing external ROM-DOS commands that are available on drive B.
- creating a DOS application or TSR for drive C.

Intermec recommends that you create all the files on your PC and then download the files to your terminal. The next section explains the DOS software tools that you need to customize drive A and B.

Trakker Antares DOS Software Tools

You need the following DOS software tools to create and download files to drives A and B.

Software Tool	Definition
MAKE_A.BAT	Creates a file named DRIVEA.BIN that contains the drive A image. The maximum size of drive A is 64K.
MAKE_B.BAT	Creates a DRIVEB.IMG file that contains the external ROM-DOS commands for drive B. You can copy the DRIVEB.IMG file from the PC to drive C on the terminal.
PUT_A.BAT	Downloads the drive A image file (DRIVEA.BIN) from a PC to the terminal. This tool actually replaces all files on drive A.

The DOS software tools, ROM-DOS commands for drive B, and drive A files are available from the Intermec Web site at www.intermec.com. (Choose Support, then Product Support, and then Downloads.) For additional help, contact your local Intermec service representative.

Note: The self-extracting executable file that you download from the Intermec Web site includes the DOS software tools and support files; ROM-DOS commands; and drive A files. LISTFILE.DRV, PROMERGE.EXE, and ROMDISK.EXE are support files that are required to use MAKE_A.BAT, MAKE_B.BAT, and PUT_A.BAT.

Customizing Drive A

Drive A is a 64K block of flash memory that is a read-only DOS drive. You can configure drive A, but you cannot write to it when you run an application.

Original Contents of Drive A

The next table describes the files that are factory installed on drive A.

File	Definition
ANTIFS.EXE	Provides an Installable File System (IFS) for the Trakker Antares proprietary file system so that DOS can recognize and use drives C, D, and G. Removing the ANTIFS.EXE file from drive A may result in no drive C.
AUTOEXEC.BAT	Loads programs and defines paths. When you run DOS.BIN to start DOS, the AUTOEXEC.BAT file runs automatically.
COMMAND.COM	Supports internal ROM-DOS commands. It is required for user interface and batch file processing. COMMAND.COM is the default DOS command that displays the DOS prompt.
COMMAND.HLP	Provides help for ROM-DOS commands. You can type `/?` after most ROM-DOS commands to get help or information about a command.
CONFIG.SYS	Loads device drivers. For limitations, see "Limitations of ROM-DOS" later in this chapter.

The default AUTOEXEC.BAT file contains these lines:

Command Line	Definition
`@echo off`	The AUTOEXEC.BAT commands are not displayed on the terminal as they are executed.
`antifs.exe`	Installs the Installable File System (IFS) for the Trakker Antares proprietary file system so that DOS can recognize and use drives C, D, and G.
`set dircmd=/p/a/o:gn`	Directs the DIR command to list all files; include hidden files (/a) by pages (/p); group directories first (/o:g); and sort by filename (n).
`set path=a:\;b:\;c:\`	Directs DOS to look for commands and programs in the root directories of drives A, B, and C.
`cls`	Clears the screen.
`ver`	Displays the ROM-DOS version.
`If exist c:\user.bat c:\user`	If a file named USER.BAT is on drive C, the terminal runs that batch file. You can create a USER.BAT file that includes changes to modify drive A rather than having to recreate and reload the drive A image.

The default CONFIG.SYS file contains one command line:

Command Line	Definition
`rem device=b:\vdisk.sys`	You can use the VDISK.SYS command to create a virtual ROM-DOS RAM drive. The command is remarked out in the CONFIG.SYS file so that there is no RAM drive. For help, see "Configuring a DOS RAM Drive" later in this chapter.

Changing DOS Files on Drive A

The contents of drive A cannot be changed directly. The default AUTOEXEC.BAT file checks for a USER.BAT file on drive C that you can use to execute startup commands or files without changing drive A. To change or add files on drive A, you use the DOS software tools MAKE_A.BAT and PUT_A.BAT.

To add a file to drive A or change AUTOEXEC.BAT or CONFIG.SYS

1. On the PC, create a new directory or folder named DOSTOOLS and copy the DOS tools MAKE_A.BAT and PUT_A.BAT into this directory.

   You can download the DOS software tools and a copy of the original drive A files from the Intermec Web site. For help, see "Trakker Antares DOS Software Tools" earlier in this chapter.

2. In the DOSTOOLS directory, create a subdirectory named DRIVEA that contains all the drive A files. For example, the directory may contain ANTIFS.EXE, AUTOEXEC.BAT, COMMAND.COM, COMMAND.HLP, and CONFIG.SYS.

   Note: Make sure to include ALL drive A files on the DRIVEA subdirectory. The contents of this subdirectory will replace the contents of drive A.

3. Edit one of the existing drive A files such as the AUTOEXEC.BAT or CONFIG.SYS file. You can also create a new batch file or TSR to add to drive A and put the file in the DRIVEA subdirectory.

4. From the DOSTOOLS directory, type this command:

   ```
   MAKE_A.BAT
   ```

   The batch file creates the image file named DRIVEA.BIN that contains all the files in the subdirectory DRIVEA.

5. Connect the PC to the terminal through a serial connection.

6. Access the Loader Waiting screen on your T242X or T2455. If you have a 246X continue with step 7.

   a. Press [I/O] to turn on the terminal.

b. To access the TRAKKER Antares 2400 Menu System on T242X or T2455 terminals, press f ↵ 2 4 8 or scan the following bar code label:

Test and Service Mode

..-.

Note: If you have a Trakker Antares 242X, you must use the Left Enter key when entering the key sequence to access the TRAKKER Antares 2400 Menu System.

The Main Menu appears.

c. Choose System Menu and press ↵. The System Menu appears.

d. Choose Upgrade Firmware and press ↵. The Upgrade Firmware screen appears.

e. Choose OK to continue. The next screen appears prompting you to continue upgrading the firmware. In this case, you are not actually upgrading all the firmware. You will only be replacing the files on drive A.

f. Choose Yes to continue and upgrade drive A. The terminal reboots and then displays the Loader Waiting screen.

7. On your PC, open an MS-DOS window and change to the DOSTOOLS directory.

8. On your PC, type this command:

```
PUT_A.BAT
```

The Loader screen appears on the PC.

9. Access the Loader Waiting screen on your 246X.

a. Press the power key to turn on the terminal.

b. Press the power key for 3 to 5 seconds until you see the right most LED flash and the 246X turns off.

c. Press the power key again. The 246X will run POST and check for Loader Waiting, synchronizing with your PC.

The DRIVEA.IMG file is transferred to the terminal and used to replace the contents of drive A. Once the batch file is complete and drive A is replaced, the terminal boots and displays the DOS prompt.

Note: When you use PUT_A.BAT, you are replacing all files on drive A.

Customizing Drive B

Drive B is an optional read/write DOS drive. It contains an image of the external ROM-DOS commands that are available by default on the Trakker Antares terminal. Drive B resides as a subdirectory on drive C and is limited by the space available on drive C.

As with drive A, the contents of drive B cannot be changed directly. To make configuration changes, you must use the DOS software tool MAKE_B.BAT.

To change drive B, you must recreate the file DRIVEB.IMG. When you do, you are *replacing* all files on drive B.

The following files are the default files installed originally on drive B.

ATTRIB.COM
CHOICE.COM
DELTREE.EXE
DUMP.EXE
FIND.COM
MEM.EXE
MODE.COM
MORE.COM
MOVE.COM
PM.COM
SORT.COM
SUBST.EXE
TREE.COM
VDISK.SYS
VERSION.COM
XCOPY.COM

VDISK.SYS and PM.COM are ROM-DOS commands that were created for the Trakker Antares terminal. For help with VDISK.SYS, see “Configuring a DOS RAM Drive” later in this chapter. For help with PM.COM, see “Using the PM.COM Command” earlier in this chapter. For information on other ROM-DOS commands, see a DOS manual.

Note: Make sure that you only use ROM-DOS commands provided by Intermec, because some of the ROM-DOS commands have been modified specifically for the Trakker Antares terminal. You can download the ROM-DOS commands from the Intermec Web site. For help, see “Trakker Antares DOS Software Tools” earlier in this chapter.

To change the contents of drive B

1. On the PC, create a new directory or folder named DOSTOOLS and copy the DOS tool MAKE_B.BAT into this directory.
2. In the DOSTOOLS directory, create a subdirectory named DRIVEB that contains all the files (including any external ROM-DOS commands) that you want to use on the terminal’s drive B.

3. From the DOSTOOLS directory, type this command:

   ```
   MAKE_B.BAT
   ```

   The batch file creates the image file named DRIVEB.IMG that contains all the files in the subdirectory DRIVEB.

4. Transfer the DRIVEB.IMG file from the PC to drive C on the terminal. There are several ways to transfer files depending on the type of terminal. You can transfer files by using serial or RF communications. For help, see Chapter 5 in the user's manual.

Configuring a DOS RAM Drive

You have 380K total RAM that you can use for DOS .EXE application execution space. You can also configure a ROM-DOS RAM drive. If the RAM drive is configured, your application execution space is reduced by the amount of the RAM drive. The remaining RAM is the Malloc/free memory pool. The contents of this drive are erased when you boot or reset the terminal.

To configure a DOS RAM drive

1. On your PC, edit or create the CONFIG.SYS file.
2. Remove "rem" from the start of this line:

   ```
   rem device=b:\vdisk.sys
   ```

3. Add or set parameters for the DOS RAM drive using this syntax:

   ```
   device=vdisk [size [secs[dirs]]][/E]
   ```

   where:

   vdisk — VDISK is a device driver that partitions some of DOS memory as a RAM disk. Any data that is stored on the DOS RAM drive is lost when you reboot the Trakker Antares terminal. All data on the RAM drive is saved when you turn the terminal off and on (suspend and resume). The VDISK driver increases the resident size of DOS.

   size — Sets the size in bytes of the DOS RAM drive. The default size is 64K. The memory or size that you set is allocated from the DOS memory pool and it will decrease the amount of memory available for applications.

   secs — Sets the sector size in bytes. The default is 512 bytes per sector. You can set the sector size to: 128, 256, 512, or 1024. All other values are not valid and the sector size defaults to 512.

   dirs — Sets the number of root directory entries. The default is 64 directory entries. You can set the root directory entries to any number from 2 to 1024. If you enter an odd number, it is rounded up to the nearest multiple of 16 to fill the entire sector.

   /E — This parameter is not valid since the Trakker Antares terminal does not contain extended memory.

4. Copy the CONFIG.SYS file to the directory or folder that contains your DOS files for drive A.
5. Create a drive A image file to download to the terminal. For help, see “Customizing Drive A” earlier in this chapter.

Once you replace drive A and create the DOS RAM drive, DOS assigns drive C to the RAM drive and reassigns the remaining Trakker Antares drive letters. For example, the Trakker Antares drive C becomes drive D.

Limitations of ROM-DOS

The Trakker Antares terminal supports a limited set of DOS. Here are the limitations:

- Applications cannot interact directly with hardware nor memory locations such as timer ticks.
- **Ctrl-Alt-Del** is not supported. Use the Reset Firmware command or boot the terminal. For help, see “Booting and Resetting the Terminal” in Chapter 5 in the T242X and T2455 user’s manuals or in Chapter 6 in the 246X user’s manual.
- DOS batch file commands are all supported except LOADHIGH (no high memory is available).
- Some DOS processing commands are not supported because DOS=HIGH, DOS=UMB, DEVICEHIGH=*n*, and DOS switches are not supported.
- RAMDRIVE.SYS is not compatible with the Trakker Antares terminal. You can use VDISK.SYS as a replacement for this DOS driver. For help, see “Configuring a DOS RAM Drive” earlier in this chapter.

This table lists the BIOS interfaces that are supported and those that are not supported by ROM-DOS on the Trakker Antares terminal.

BIOS Interface	Supported?	Notes
INT 10H – Display Functions		
INT 10H function 0EH	Yes	
INT 10H functions 0H, 2H, 3H, 6H, 7H, 8H, 9H, 13H	Limited	These functions are limited by the lack of PC-compatible hardware on the Trakker Antares terminal.
INT 11H	Yes	
INT 12H	Yes	
INT 13	No	The Trakker Antares terminal contains flash memory rather than a disk drive.
INT 14H – Compatibility Functions		
INT 14H functions 01H–03H	Yes	

Limitations of ROM-DOS (continued)

BIOS Interface	Supported?	Notes
INT 14H functions 0H	Limited	This function is limited by the existing Trakker Antares system interface.
INT 15H function 4F	Yes	
INT 16H – Keypad Functions		
INT 16H functions 00H, 01H, 10H, 11H, 12H	Yes	
INT 17 – Time Functions		
INT 1AH functions 00H, 01H, 02H, 03H, 04H, 05H	Yes	
INT 1AH functions 06H, 07H	No	These functions are not supported due to the lack of PC-compatible hardware on the Trakker Antares terminal.

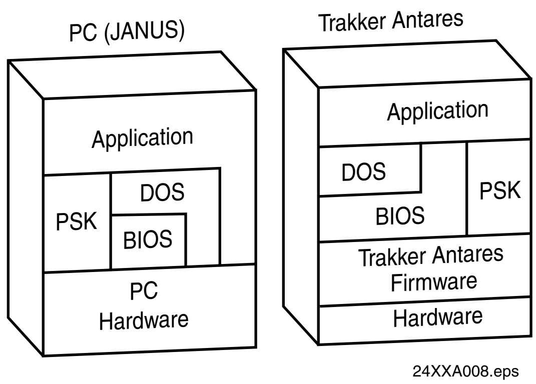
Troubleshooting

This table lists problems that may occur when you run DOS-based applications on the terminal.

Problem	Solution
There is not enough memory to load a program.	You need to free conventional memory.
You try to run a DOS application in the TRAKKER Antares 2400 Menu System and see this message: `Not a valid application.`	You tried to run a DOS .EXE application from the TRAKKER Antares 2400 Menu System. You can only run .BIN applications in the menu system. To run a DOS .EXE application, enter the filename at the DOS prompt. For help, see "Running DOS Applications and Using ROM-DOS Commands" earlier in this chapter.
A DOS command does not work.	For a list of commands, see "Using ROM-DOS Commands" earlier in this chapter.
The terminal does not boot after you modified the CONFIG.SYS file.	Correct the error in CONFIG.SYS and use the DOS software tools to recreate drive A with the corrected CONFIG.SYS file.

DOS Architecture on the Trakker Antares Terminal

The next diagram shows the Trakker Antares DOS architecture compared to the JANUS (PC) DOS architecture. Use the diagram to understand the limitations of DOS on the terminal.



4

Updates to Hardware and Software

This chapter describes changes that have been made to Trakker Antares hardware and software that are not yet reflected in the user's manual.

Overview

This chapter covers the following topics:

- Enhancements to terminal drives
- Handle accessory for the T242X hand-held terminal
- New information for networking
- Support for the Euro symbol
- New application support
- New diagnostics
- Configuration command updates
- Troubleshooting PSK and EZBuilder applications

Some of these updates and changes are specific to firmware version 6.13, and some also apply to earlier firmware releases.

The following information applies to any type of Trakker Antares terminal unless the description identifies a specific Trakker Antares model, such as the T2425.

Enhancements to Terminal Drives

The terminal comes with flash drive(s) and a configurable RAM drive. Depending on the terminal you have, you can also purchase optional drives. With version 6.13, you can now store up to 128 files on each drive.

Handle Accessory for the T242X Hand-Held Terminal

If you have a T242X hand-held terminal, you can use the handle accessory (Part No. 068393) to hold the terminal and scan labels. The following table lists the scan modules that are compatible with the handle accessory:

Scan Module	Part No.	Description
High Density	069226	This scan module is an integrated scanner that you can use to scan bar code labels that are too dense for a normal scan module.
High Visibility	069225	This scan module is an integrated scanner that you can use to scan bar code labels in brighter environments, such as in sunlight.
Long Range	069224	This scan module is an integrated scanner that you can use to scan bar code labels from up to 20 feet away depending on the bar code height and density.
Standard Range	069223	The standard range laser scan module is an integrated scanner that you can use to scan bar code labels from up to 30 inches away depending on the bar code height and density.

New Information for Networking

This section provides new information about operating terminals in a network.

Roaming Across Subnetworks

Access points act as bridges that provide communications between the wired network and the RF (UDP Plus or TCP/IP) networks.

With firmware version 6.13, if you are using 21XX Universal Access Points (UAPs), a terminal can roam across subnetworks. With earlier versions of firmware, a terminal can only communicate with the access points in the same subnetwork.

Configuring Through the Network

When you install the terminal in a network, you must configure a set of network parameters that control how the terminal communicates in the network.

With firmware version 6.13 installed, you can modify most RF network parameters through the network, except for the following parameters:

- Acknowledgement Delay Lower Limit
- Acknowledgement Delay Upper Limit
- Controller Connect Check Receive Timer
- Controller Connect Check Send Timer
- DHCP
- Maximum Retries
- Network Activate
- TCP Maximum Retries
- TCP/IP Maximum Transmit Timeout

You can still modify these parameters as indicated in the "Configuration Command Reference" chapter in your user's manual.

Changes to Master Polling Protocol

Master Polling Mode D protocol requires the terminal to ask the downline serial device for data it may have (polling) and to request to send data to the serial device (selecting). Because polling is not automatic, your application must periodically poll for data.

With firmware v4.x and earlier, you can define the following serial port parameters:

- Baud rate
- Flow control

The Trakker Antares 242X user's manual indicates that you can also define these parameters with later versions of firmware. However, with firmware v5.x and later, you can only define the following serial port parameter for Master Polling protocol:

- Baud rate

Support for the Euro Symbol

Trakker Antares terminals use an English and Western European font set that supports languages such as French, German, Italian, Portuguese, and Spanish. With firmware version 6.13 and later, the Euro symbol (€) has been added to this font set.

The following table contains more information about the Euro symbol. The terminal keys and the decimal, scan code, and hexadecimal values are the same for all keypads and overlays.

Character	Terminal Keys	Decimal	Scan Code	Hexadecimal
€	⇧ .	213	5C	D5

Note: The Euro symbol (€) replaces the previous symbol at decimal value 213.

New Application Support

This section describes changes and enhancements that have been made to applications.

Creating a Custom Logo

You can create a custom logo that appears on the terminal screen each time the terminal boots. This custom logo replaces the Intermec Trakker Antares logo and is displayed on the screen until the boot sequence is complete.

To use a custom logo

1. On your PC, create a custom logo in BMP format.
2. Save the custom logo as USERINIT.BMP.
3. Download USERINIT.BMP from your PC to the terminal flash drive C using the serial port, DCS 30X, or a host application.

Using the PSK or EZBuilder to Develop Applications

Intermec has two development tools, Trakker Antares PSK and EZBuilder, that you can use to create applications for the terminals.

Now you can download the latest version of the PSK at no charge from the Intermec Web site at www.intermec.com. This kit has a full set of programming tools to help you create applications for the terminal.

New Supported 95XX Emulation Features

The Trakker Antares 24XX terminals ship with the EM9560.BIN application. With this application, you can use the programmable terminal as a remote input/output terminal in which all prompts and commands are controlled by the host computer. With this application, the terminal is similar to a 95XX in Data Entry mode with no application running.

The following new 95XX features are supported by the EM9560.BIN application on the T24XX with firmware version 6.12 and higher:

- Buffered and transparent display modes are supported. The Display Setting configuration command (OD) is also supported.
- You can emulate Accumulate mode so that keypad data can be combined with scanned data.

Using Display Modes

With the EM9560.BIN application, you can use Buffered display mode and Transparent display mode. In Buffered mode, new data is placed on a new line, which keeps blocks of data separated. In Transparent mode, new data is placed at the current cursor position, which makes screen formatting by the host easier.

Run the EM9560.BIN application before you set the display mode emulation feature.

Syntax: DM*data*

Acceptable values for *data* are:

0 Buffered display mode
1 Transparent display mode

Default: Transparent display mode

Scan: One of these bar codes:

Buffered Display Mode

$+DM0

Transparent Display Mode

$+DM1

Other: To provide compatibility with the 95XX, you can also use this syntax:

OD*data*

where *data* is a 0 or 1.

Using Accumulate Mode

With the EM9560.BIN application, you can emulate Accumulate mode (Emulation mode) and combine keypad data with scanned data. Data that you accumulate appears on the bottom line of the terminal screen. You can edit this data using the reader commands for backspace and clear, or you can use the → key.

You scan a bar code to toggle between Emulation mode and native Trakker Antares mode. Run the EM9560.BIN application before you set the accumulate mode emulation feature.

Default: Native Trakker Antares mode

Note: To set this command using bar code labels, you must also use the bar code labels in Appendix B of your user's manual. To use these labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in the "Configuration Command Reference" chapter in your user's manual.

Scan: To toggle between Emulation mode and Native Trakker Antares mode, scan this bar code:

Toggle Emulation Mode / Native Trakker Antares Mode

ACCUMULATE

Or, to use Emulation mode:

1. Scan this bar code:

   Enter Accumulate Mode

   +/

2. Scan data from the "Full ASCII Bar Code Chart" in Appendix B in your user's manual, or type data using the keypad.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

New Diagnostics

You can run diagnostics on the terminal to help analyze hardware and firmware problems, fix application problems, and view system information. You use the TRAKKER Antares 2400 Menu System to run diagnostics.

The next sections describe the following new diagnostics for the T242X and T2455 terminals:

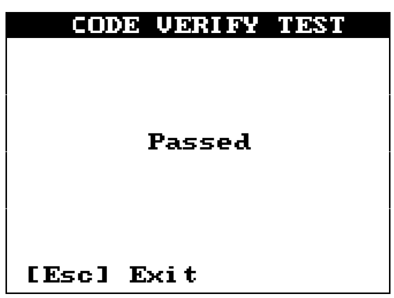
- Code Verify
- Font Test
- Keypad Table

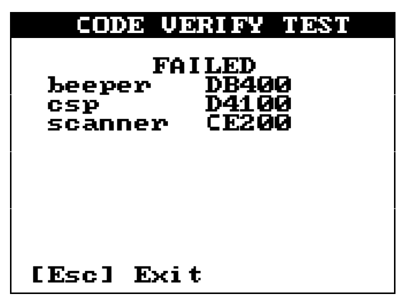
Code Verify

Purpose: A programmer or application developer can use this diagnostic to determine if the terminal's firmware has been overwritten.

Where Available: System Diagnostics menu

Sample Screen:





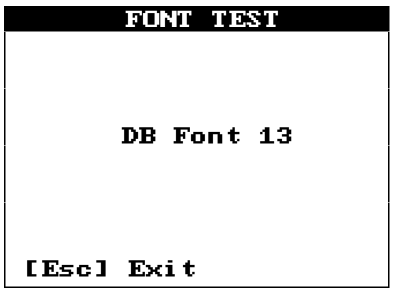
Definition: If this diagnostic passes, "Passed" appears on the screen. If this diagnostic fails, the name of the firmware driver that failed and its address appears on the screen. Note this information and contact your local Intermec service representative.

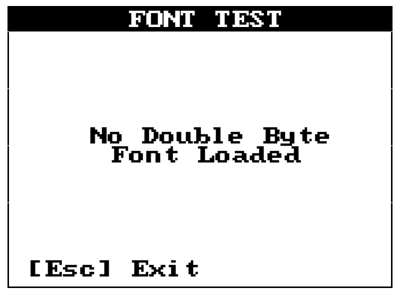
Font Test

Purpose: You can use this diagnostic to identify which double-byte font, if any, you have loaded on your terminal.

Where Available: Software Diagnostics menu

Sample Screen:





Definition: If you ordered the optional 4MB flash memory for your terminal, you can use the Trakker Antares Font Loader to download a double-byte font set to the terminal. See your local Intermec sales representative for information about ordering double-byte fonts.

Use this table to match the font number with the double-byte font that is loaded on your terminal.

Font Number	Double-Byte Font	File Name
1	Simplified Chinese, VT	24DBCSCT.fon
2	Japanese, 5250	24DBCSJL.fon
4	Korean, VT	24DBCSKT.fon
5	Korean, 5250	24DBCSKL.fon
8	Big 5 Chinese, VT	24DBCSTT.fon
9	Japanese, VT	24DBCSJT.fon
11	Big 5 Chinese, 5250	24DBCSTL.fon
13	Simplified Chinese, 5250	24DBCSCL.fon

Keypad Table

Purpose: Intermec service personnel use this diagnostic to identify the number of the keypad table that you have loaded on your terminal.

Where Available: Software Diagnostics menu

Sample Screen:

Definition: This table matches the hex code on the screen with a description of the keypad table that is loaded on your terminal.

Hex	Description	Hex	Description	Hex	Description
0x00	Terminal Emulation, T242X	0x0A	German QWERTY, T248X	0x14	Programmable/international, 55-key, 241X
0x01	Programmable, T242X	0x0B	Portuguese QWERTY, T248X	0x15	Terminal emulation, 55-key, 241X
0x02	English QWERTY (XT), T248X	0x0C	Terminal emulation with backspace key, T242X	0x16	Not used
0x03	5250 alphanumeric (XT), T248X	0x0D	Programmable with backspace key, T242X	0x17	Not used
0x04	3270 alphanumeric (XT), T248X	0x0E	English ABCD (AT), T2455	0x18	Programmable, 37-key, 241X
0x05	VT/ANSI alphanumeric (XT), T248X	0x0F	5250 alphanumeric (AT), T2455	0x19	Terminal emulation, 37-key, 241X
0x06	Function key with large numeric, 37-key, T248X	0x10	3270 alphanumeric (AT), T2455	0x1A	International, 37-key, 241X
0x07	French AZERTY, T248X	0x11	VT/ANSI alphanumeric (AT), T2455	0x1B	Programmable, function key with large numeric, 241X
0x08	Italian QWERTY, T248X	0x12	European (AT), T2455	0x1C	Terminal emulation, function key with large numeric, 241X
0x09	Spanish QWERTY, T248X	0x13	Compatible 1, VMT and LI (AT), 246X	0x1D	International, function key with large numeric, 241X

Configuration Command Updates

This section describes the following new and updated configuration commands:

- AP MAC Address
- Beep Duration
- Command Processing Update
- End of Message (EOM)
- Keypad Control
- Radio MAC Address
- UPC/EAN Update

AP MAC Address

Purpose: Returns the MAC address of the radio that is installed in the access point that the T2425 or T2455 is communicating with. You can only use this read-only command in an application to return the value (MAC address) to the application.

Syntax: RA

Default: None

Menu System: Not applicable

Scan: Not applicable

Beep Duration

Purpose: Sets the length of the terminal's audio signals. You can define a different duration for the high and the low beep tone. Use the beep duration with the beep volume to define beeps according to operator preference and work environment.

Syntax: BD*databeep*

Acceptable values for *data* are any number from 2 to 7999 ms.

Acceptable values for *beep* are:

H High
L Low

Default: 50 ms, high and low beep tones

Menu System: Not supported.

Scan: To set the default beep duration, scan this bar code:

Default Beep Duration

$+BD50HBD50L

Or: To set a beep duration:

1. Scan this bar code:

Enter Accumulate Mode / Set Beep Duration

+/$+BD

2. Scan a numeric value for *data* from these bar codes:

0 *1*

2 *3*

4 *5*

Beep Duration (continued)

6

7

8

9

3. Scan the beep tone for which you are setting the beep duration:

High

H

Low

L

4. Scan this bar code:

Exit Accumulate Mode

-/

Command Processing Update

The Trakker Antares 242X and 2455 user's manuals describe how to use command processing with accumulate mode to enable and disable the TRAKKER Antares 2400 Menu System. This section describes how to enable and disable the menu system without using accumulate mode.

Purpose: Command processing lets you disable or enable reader commands. For example, you can disable the Test and Service Mode reader command, to prevent access to the TRAKKER Antares 2400 Menu System using the keypad. If you disable this reader command, you can no longer access the TRAKKER Antares 2400 Menu System using the keypad.

Scan: To disable or enable the Menu System, scan one of these bar codes:

Disable Menu System

$+DC..-.0

Enable Menu System

$+DC..-.1

End of Message (EOM)

The Trakker Antares 242X user's manual provides information for the End of Message configuration command for the COM1 and COM4 ports. However, the manual does not provide information for the optional modem (COM3) on the T2420. This section provides complete information for all three ports.

Purpose: Attaches an EOM to the end of a data block to indicate the end of data transmission to and from a terminal. When EOM is disabled, the terminal communicates in Character mode. When EOM is enabled, the terminal communicates in Frame mode.

You must configure a value for EOM before you can set these other serial communications commands:

- Configuration Commands Via Serial Port
- Handshake
- LRC
- Start of Message (SOM)

EOM **cannot** equal the same value that is set for SOM. You **cannot** set EOM to any of these values:

- AFF (ACK)
- DLE
- NEG (NAK)
- Poll
- RES (EOT)
- REQ (ENQ)
- SEL
- XOFF
- XON

Syntax: Y*Zn.data*

where *n* is:

1	COM1 port
3	COM3 port
4	COM4 port

Acceptable values for *data* are one or two ASCII characters.

Default: \x03 (hexadecimal value for ETX)

Note: To set this command using bar code labels, you must also use the bar code labels in Appendix B of your user's manual. To use these labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in the "Configuration Command Reference" chapter in your user's manual.

Scan: To disable EOM, scan one of these bar codes:

Disable EOM for COM1

$+YZ1.

Disable EOM for COM3

$+YZ3.

Disable EOM for COM4

$+YZ4.

Or: To set EOM to one or two ASCII characters for one serial port:

1. Scan this bar code:

   Enter Accumulate Mode / Set EOM

   +/$+YZ

2. Scan one of these bar codes to set the COM port:

   COM1

   1.

   COM3

   3.

   COM4

   4.

3. Scan one or two bar codes for *data* from the “Full ASCII Bar Code Chart” in Appendix B of your user’s manual.
4. Scan this bar code:

   Exit Accumulate Mode

   -/

5. Repeat Steps 1 through 4 to set the EOM for another serial port.

Note: For COM1 only. To provide compatibility with earlier Trakker Antares firmware versions, you can also use this syntax:

PF*data*

where *data* is one or two ASCII characters.

Keypad Control

Purpose: Enables or disables the keypad. When you disable the keypad, you cannot use the keypad to enter information into the terminal.

Syntax: KE*data*

Acceptable values for *data* are:

0 Disable keypad
1 Enable keypad

Default: Enabled

Menu System: Not supported.

Scan: One of these bar codes:

Disable Keypad

$+KE0

Enable Keypad

$+KE1

Radio MAC Address

Purpose: Returns the MAC address of the radio that is installed in the T2425 or T2455 terminal. You can use this read-only command in an application to return the value (MAC address) to the application.

Syntax: RI

Default: None

Menu System: Not applicable

Scan: Not applicable

UPC/EAN Update

This section lists additional options for the second and fourth digits in the UPC/EAN configuration command.

Purpose: This CE command enables or disables the decoding of Universal Product Code (UPC)/European Article Numbering (EAN) symbology.

To define the UPC/EAN symbology, you set up to seven digits. The second digit now has an added option for expanding zeroes in UPC-E, and the fourth digit now has additional options for supplementals.

The supplemental portion of a UPC or EAN label is a weak symbology and can be missed by the scanner for several reasons. In situations where supplementals are known to be present, reading just the main symbol can be prevented until a valid supplemental is found. When using a laser scanner, performance degradation is not noticeable.

The fifth, sixth, and seventh digits are optional. To set the sixth digit, you must set the fifth digit. To set the seventh digit, you must set all seven digits.

Syntax: CE*data*

where *data* must be 4 to 7 digits selected from this list:

First digit:	0	UPC-A/EAN-13 disabled
	1	UPC-A/EAN-13 enabled
	2	UPC-A only enabled
Second digit:	0	UPC-E disabled
	1	UPC-E enabled
	2	Expanded zeroes
Third digit:	0	EAN-8 disabled
	1	EAN-8 enabled
Fourth digit:	0	Supplementals not allowed
	1	Supplementals allowed
	2	Supplementals required
	3	Two-digit supplementals required
	4	Five-digit supplementals required
Fifth digit:	0	Discard check digit
	1	Transmit check digit
Sixth digit:	0	Discard number system digit
	1	Transmit number system digit
Seventh digit:	0	Discard the leading zero for UPC-A
	1	Retain the leading zero for UPC-A

UPC/EAN (continued)

Default: 1111111

First digit:	UPC-A/EAN-13 enabled
Second digit:	UPC-E enabled
Third digit:	EAN-8 enabled
Fourth digit:	Supplementals allowed
Fifth digit:	Transmit check digit
Sixth digit:	Transmit number system digit
Seventh digit:	Retain leading zero for UPC-A

Scan: To disable UPC/EAN, scan this bar code:

Disable UPC/EAN

$+CE0000000

Or: To enable UPC/EAN:

1. Scan this bar code:

   Enter Accumulate Mode / Enable UPC/EAN

   +/$+CE

2. Scan one of these bar codes to set the first digit:

   Disable UPC/EAN-13

   0

   Enable UPC/EAN-13

   1

   Enable UPC-A Only

   2

UPC/EAN (continued)

3. Scan one of these bar codes to set the second digit:

Disable UPC-E
0

Enable UPC-E
1

Expand Zeroes
2

4. Scan one of these bar codes to set the third digit:

Disable EAN-8
0

Enable EAN-8
1

5. Scan one of these bar codes to set the fourth digit:

Supplementals Not Allowed
0

Supplementals Allowed
1

Supplementals Required
2

Two-Digit Supplementals Required
3

Five-Digit Supplementals Required
4

6. (Optional) Scan one of these bar codes to set the fifth digit:

Discard Check Digit
0

Transmit Check Digit
1

UPC/EAN (continued)

7. (Optional) Scan one of these bar codes to set the sixth digit:

Discard Number System Digit

0

Transmit Number System Digit

1

Note: If you discard the number system digit, one leading digit is discarded from UPC-A, UPC-E, and EAN-8, and two leading digits are discarded from EAN-13.

8. (Optional) Scan one of these bar codes to set the seventh digit:

Discard Leading Zero for UPC-A

0

Transmit Leading Zero for UPC-A

1

Note: This option applies only when you enable UPC-A/EAN-13.

9. Scan this bar code:

Exit Accumulate Mode

-/

Troubleshooting PSK and EZBuilder Applications

When you run PSK or EZBuilder applications and there is no RAM drive configured, you may see one of these messages:

```
SCREEN ERROR: 30
Code: 9
Hit any key To exit!

SCREEN ERROR: 31
Code: 3
Hit any key To exit!
```

To solve this problem, you must set the RAM Drive Size configuration command. For details about configuring RAM Drive Size, see your user's manual.

User’s Manual

P/N 064024-007

Trakker Antares® 2420 and 2425 Hand-Held Terminal

Intermec

A UNOVA Company

Intermec Technologies Corporation
6001 36th Avenue West
P.O. Box 4280
Everett, WA 98203-9280

U.S. service and technical support: 1.800.755.5505
U.S. media supplies ordering information: 1.800.227.9947

Canadian service and technical support: 1.800.688.7043
Canadian media supplies ordering information: 1.800.268.6936

Outside U.S. and Canada: Contact your local Intermec service supplier.

Manual Change Record

This page records the changes to this manual. The manual was originally released as version 001.

Version	Date	Description of Change
002	July 1997	This manual was changed to add information about the TRAKKER Antares 2420 terminal and to document the new firmware version. The new information includes: • The TRAKKER Antares 2420 terminal and features. • RS-232 serial communications on the TRAKKER Antares 2425 terminal. • TRAKKER Antares firmware version 2.10. • Multiple drives and applications on the TRAKKER Antares 2420 and 2425 terminals. • Western European keypad and character support on the TRAKKER Antares 2420 and 2425 terminals. All the functionality described in this manual applies to TRAKKER Antares terminals with firmware version 1.X and higher. However, this manual does describe features that are only available in TRAKKER Antares firmware version 2.0 and higher.
003	December 1997	This manual was changed to add information about the TCP/IP radio frequency network protocol option on the TRAKKER Antares 2425 terminal and to document the new firmware version. The new information includes: • TRAKKER Antares 2420 and 2425 firmware version 2.20. • The TCP/IP network protocol option on the TRAKKER Antares 2425 terminal that allows a direct connection from the access points to the host computer. • New terminal emulation features including auto-login, password security for the TE Configuration Menu, and international characters display support in TE applications. The manual was also reorganized to move all information about terminal emulation applications into a separate guide that ships with the manual. The *TRAKKER Antares Terminal Emulation User's Guide* now contains all the information you need to configure and use terminal emulation applications. All other information is covered in this user's manual.

Manual Change Record (continued)

004 July 1998 An addendum (Part No. 067224-001) was added to this manual. The addendum provides information for firmware version 3.2X:

- Configuring row spacing and video mode.
- The space/backspace key has been reversed. Press ← for backspace and press f ← for space.
- Four-digit date format.
- Configuring the optional 2MB flash memory.
- ISBT Code 128.
- Configuration commands to support COM4.
- Configuring the T2425 to work with DHCP.
- Receiving and transmitting files using YMODEM and XMODEM-1K.
- Information on the high density, long range, and high visibility scan modules.

005 February 1999 This manual was revised to incorporate the addendum and to document new information for firmware version 5.X:

- Information is included about using the APPTSK.BIN and EM9560.BIN applications that are preloaded on the terminals.
- You now use a programmable terminal instead of a screen mapping terminal to do screen mapping with the host through the DCS 300.
- Information is included about using the serial interface module for COM4.
- XON/XOFF is allowed in Frame mode.
- New Set Time and Date reader command for 95XX terminal compatibility.

006 August 1999 This manual was revised to remove the *TRAKKER Antares Terminal Emulation User's Guide,* Part No. 066694-003, and add the *Important Terminal Emulation Information* sheet, Part No. 069993-001. Also added the dcBrowser™ information sheet, Part No. 070012-001.

007 October 2000 This manual was revised to add the *Trakker Antares 24XX Terminal User's Manual Addendum*, Part No. 070451-001.

Contents

2 Learning How to Use the Terminal

3 Configuring the Terminal

4 Operating the Terminal in a Network

5

Using Custom Applications

6

Troubleshooting

6

Running Diagnostics

8

Reader Command Reference

9 Configuration Command Reference

A Terminal Specifications

B Full ASCII Charts

C International Character Support

D Using the Default Applications

Before You Begin

This section introduces you to standard warranty provisions, safety precautions, warnings and cautions, document formatting conventions, and sources of additional product information. A list of Intermec manuals is also provided to guide you in finding the appropriate information.

Warranty Information

To receive a copy of the standard warranty provision for this product, contact your local Intermec support services organization. In the U.S. call 1-800-755-5505, and in Canada call 1-800-688-7043. Otherwise, refer to the Worldwide Sales & Service list that ships with this manual for the address and telephone number of your Intermec sales organization.

Safety Summary

Your safety is extremely important. Read and follow all warnings and cautions in this book before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

Do not repair or adjust alone Do not repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

First aid Always obtain first aid or medical attention immediately after an injury. Never neglect an injury, no matter how slight it seems.

Resuscitation Begin resuscitation immediately if someone is injured and stops breathing. Any delay could result in death. To work on or near high voltage, you should be familiar with approved industrial first aid methods.

Energized equipment Never work on energized equipment unless authorized by a responsible authority. Energized electrical equipment is dangerous. Electrical shock from energized equipment can cause death. If you must perform authorized emergency work on energized equipment, be sure that you comply strictly with approved safety regulations.

Note: *For laser compliance and safety information, refer to the manual supplement that shipped with your TRAKKER® Antares™ 2420 or 2425 terminal.*

Warnings and Cautions

The warnings and cautions in this manual use the following format.

Warning
A warning alerts you of an operating procedure, practice, condition, or statement that must be strictly observed to avoid death or serious injury to the persons working on the equipment.

Avertissement
Un avertissement vous avertit d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour éviter l'occurrence de mort ou de blessures graves aux personnes manupulant l'équipement.

Caution
A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Conseil
Une précaution vous avertit d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour empêcher l'endommagement ou la destruction de l'équipement, ou l'altération ou la perte de données.

Notes: *Notes are statements that either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.*

About This Manual

This manual contains all of the information necessary to install, configure, operate, and troubleshoot the TRAKKER Antares 2420 and 2425 terminals.

This manual was written for two audiences:

- All users who need to know how to use the terminal to collect data.
- MIS personnel, operations personnel, analysts, and programmers who need to know how to install, configure, test, and use the terminal 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.

What You Will Find in This Manual

This table summarizes the information in each chapter and appendix.

Chapter	What You Will Find
1	Summarizes the terminal's features, functions, and accessories. Explains how to get your terminal started for the first time.
2	Describes and explains how to use your terminal's keypad, screen, audio signals, serial port, batteries, memory and drives, and scan modules.
3	Explains how to configure your terminal.
4	Describes serial communications and the 2.4 GHz radio frequency network and explains how to install and configure your terminal to communicate with other devices.
5	Introduces the programmable terminals and explains how to download and run applications. Also, explains how to use the screen mapping application.
6	Lists solutions for the problems you may have while operating your terminal. Also, explains how to boot or reset the terminal.
7	Explains how to use the terminal's built-in diagnostics to research and troubleshoot problems.
8	Describes the commands that you can use to change the terminal's operation or manage files.
9	Describes the commands that you can scan to configure the terminal.
A	Lists the terminal's specifications, configuration command names and syntax, and the terminal's default configuration settings.
B	Contains reference tables including the full ASCII table and full ASCII bar code chart.
C	Contains a reference table that lists the complete set of English and Western European characters that you can display on the terminal.
D	Contains information about the default applications (APPTSK.BIN and EM9560.BIN) that are shipped on the terminal.

Note: *For information about using IBM 3270, IBM 5250, or VT100/220/320 and ANSI terminal emulation applications, see the* TRAKKER Antares Terminal Emulation User's Guide *that ships with this manual.*

Terminology

You should be aware of how these terms are being used in this manual:

Term	Description
Host	The term "host" refers to a personal computer or other computer that communicates with the terminal.
DCS 300	The term "DCS 300" refers to the new data collection server that replaces the Model 200 Controller. Unless otherwise noted, you can use either the DCS 300 or the Model 200 Controller.
T2420	The term "T2420" indicates the specific type of terminal, the TRAKKER Antares 2420 terminal.
T2425	The term "T2425" indicates the specific type of terminal, the TRAKKER Antares 2425 terminal.
Terminal	The generic term "terminal" indicates any TRAKKER Antares terminal. More specific terms, such as "T2420," indicate a specific type of terminal.
TRAKKER Antares terminal	The generic term "TRAKKER Antares terminal" indicates any TRAKKER Antares terminal. More specific terms, such as "T2425," indicate a specific type of terminal.
TRAKKER Antares	The term "TRAKKER Antares" identifies the product family of TRAKKER Antares hand-held terminals.

For definitions of the technical terms used in this manual, see the glossary.

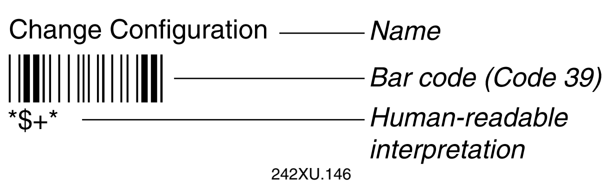
Conventions for Input From a Keypad or Keyboard

This table describes the formatting conventions for input from PC or host computer keyboards and terminal keypads:

Convention	How to Interpret the Convention
`Special text`	Shows the command as you should enter it into the terminal. See “Conventions for Commands” later in this chapter.
Italic text	Indicates that you must replace the parameter with a value. See “Conventions for Commands” later in this chapter.
Bold text	Indicates the keys you must press on a PC or host computer keyboard. For example, “press **Enter**” means you press the key labeled “Enter” on the PC or host computer keyboard.
↵	Shows the key you must press on the terminal. For example, “press ↵ ” directs you to press the Enter key on the terminal keypad.
f T 2 M	Shows a series of terminal keys you must press and release in the order shown. For example, “Press f T 2 M to run the TRAKKER Antares 2400 Menu System.”
f – ↵ – I/O	Shows a series of terminal keys you must press simultaneously. Also, you must press and hold the keys in the order shown. For example, “Press f – ↵ – I/O to reset the terminal.”

Conventions for Bar Codes

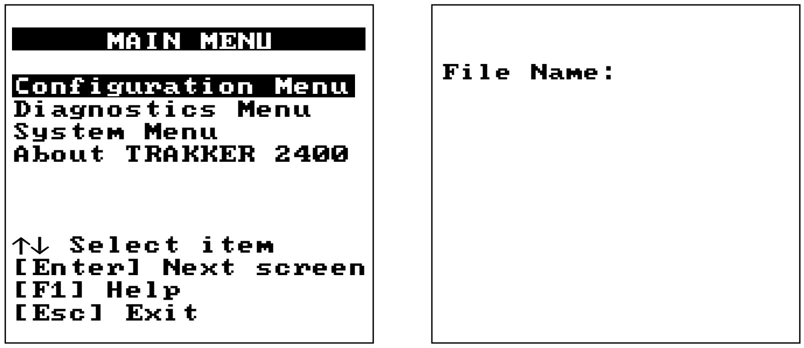
You can scan the bar codes listed in this manual to enter data or perform a command. The bar code labels in this manual are printed in the Code 39 symbology. Each bar code includes the name and human-readable interpretation. For example:



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 code, 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.

Conventions for Software Screens and Messages

This manual includes illustrations that represent how the terminals display software screens and messages. Here are two examples:



242XU.007

Conventions for Commands

This manual includes sample commands that are shown exactly as you should type them on your terminal or network device. The manual also describes the syntax for many commands, defining each parameter in the command. This example illustrates the format conventions used for commands:

To send a configuration command from the DCS 300, use this syntax:

`$+`*`command`*`[`*`command`*`]...[`*`command n`*`]`

where:

$+	is the Change Configuration command.
Command	is a configuration command. For example, BV is the command to set the Beep Volume on the terminal. Enter the command BV0 to turn off the beep volume.

You can include multiple configuration *command* parameters in the command to configure the terminal.

This table defines the conventions used in the example:

Convention	Description
`Special font`	Commands appear in this font. You enter the command exactly as it is shown.
Italic text	Italics indicate a variable, which you must replace with a real value, such as a number, filename, keyword, or command.
[ ]	Brackets enclose a parameter that you may omit from the command. Do not include the brackets in the command.
Required parameters	If a parameter is not enclosed in brackets [ ], the parameter is required. You **must** include the parameter in the command; otherwise, the command will not execute correctly.
where	This word introduces a list of the command's parameters and explains the values you can specify for them.

Other Intermec Manuals

You may need additional information when working with the T242X in a data collection system. Please visit our Web site at www.intermec.com to access many of our current manuals in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Manual	Intermec Part No.
EZBuilder Getting Started Guide	066450
EZBuilder Tutorial	066449
TRAKKER Antares 2400 Series Battery Pack Instruction Sheet	064216
TRAKKER Antares 2400 Series Belt Clip and Belt Instruction Sheet	064218
TRAKKER Antares 2400 Series Handstrap Instruction Sheet	064217
TRAKKER Antares 2400 Series Holster and Belt Instruction Sheet	064215
TRAKKER Antares 2400 Series Module for Cabled Scanners Instruction Sheet	064219
TRAKKER Antares 2400 Series Standard Range Scan Module Instruction Sheet	064220
TRAKKER Antares 2400 Series Vehicle-Mount Holder Instruction Sheet	064214
TRAKKER Antares 2420 and 2425 Hand-Held Terminal Getting Started Guide	064183
TRAKKER Antares 242X Serial Interface Module Instruction Sheet	067690
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
TRAKKER Antares TZ2400 Battery Charger Quick Reference Guide	064213

1

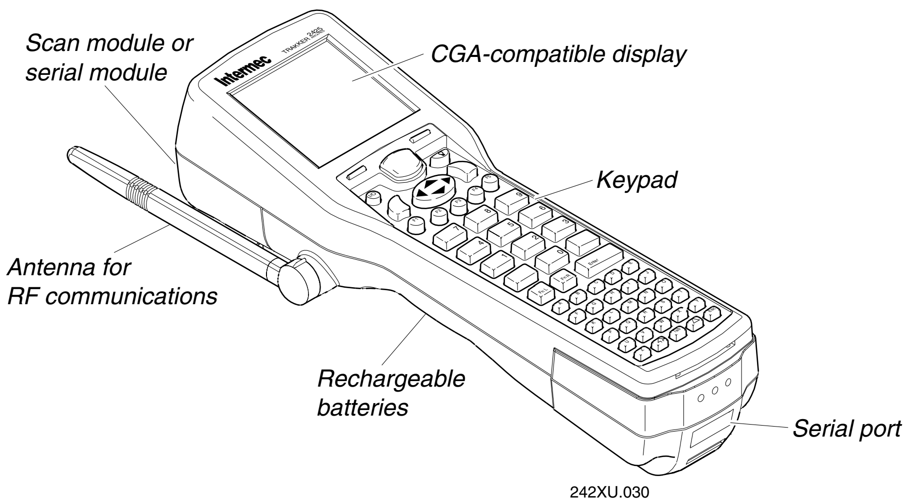
Getting Started

This chapter introduces the TRAKKER® Antares™ 2420 and 2425 terminals and explains how to get your new terminal working.

What Are the TRAKKER Antares Terminals?

The TRAKKER Antares 2420 and 2425 terminals are hand-held data collection terminals. You use these programmable terminals to run custom applications or terminal emulation applications.

You use the TRAKKER Antares 2420 (T2420) terminal to collect data and periodically upload the data to a host computer via serial (wired) communications. The TRAKKER Antares 2425 (T2425) terminal transmits data via serial communications or radio frequency (RF) communications in Intermec's 2.4 GHz RF network.

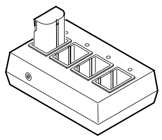


These terminals are ergonomically designed to make data collection easy and include these features:

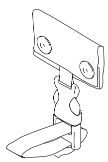
- Scan module accessory for bar code data collection or serial module for serial communications.
- CGA-compatible display, angled for easy viewing.
- Keypad with 56 keys to support data collection. The terminal ships with a keypad to match the application or language you ordered.
- Serial port to support RS-232 communications.
- Rechargeable lithium-ion battery pack (sold separately) for main power and rechargeable NiCad backup battery for memory backup.
- Adjustable antenna on the T2425 supports 2.4 GHz radio frequency communications.

Accessories for the Terminal

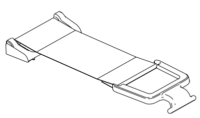
You can use these accessories (sold and ordered separately) with the terminals:



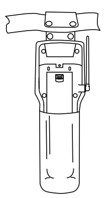
TZ2400 Battery Charger The charger lets you charge up to four lithium-ion battery packs at one time. The battery charger senses when a battery pack is fully charged and will not overcharge it, ensuring long and consistent battery pack life.



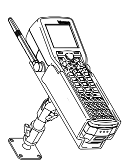
Belt Clip The belt clip lets you attach the terminal to your belt and have it hang at your side so you can have both hands free. The belt clip snaps around your belt and a Velcro strap holds the terminal to the belt clip.



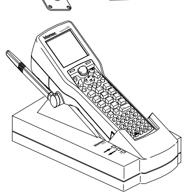
Handstrap The elastic handstrap attaches to the back of the terminal to let you hold the terminal easily and securely for long periods of use.



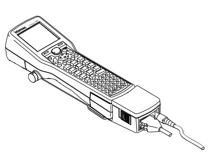
Holster The holster is a convenient way for you to carry the terminal on your belt when you are not using it. The holster attaches to your belt and holds the terminal at your side.



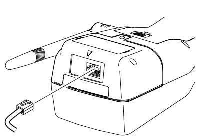
Vehicle-Mount Holder You can attach this holder to a vehicle, such as a forklift, so that you can securely store the terminal while the vehicle is moving.



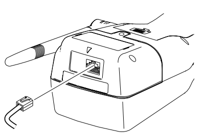
TD2400 Communications Dock When you place the terminal in the dock, it allows the terminal to communicate with a host computer or other device through the serial port. You must connect a power supply to the dock to operate the terminal and charge the batteries.



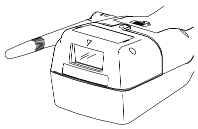
Optical Link Adapter When the optical link adapter is connected to the terminal, it allows the terminal to communicate with a host computer or other device through the serial port. You can also connect a power supply to the optical link adapter to charge the batteries.



Serial Interface Module When the serial interface module is connected to the terminal, it allows the terminal to communicate with a PC or printer through the serial port.



Module for Cabled Scanners This module has a scanner port that lets you attach a wand, laser scanner, or CCD scanner for bar code data collection.



Standard Range Scan Module The standard range laser scan module is an integrated scanner that lets you scan bar code labels from up to 30 inches away depending on the bar code height and density.

Long Range Scan Module This scan module is an integrated scanner that lets you scan bar code labels from up to 20 feet away depending on the bar code height and density.

High Visibility Scan Module This scan module is an integrated scanner that lets you scan bar code labels in brighter environments, such as in sunlight.

High Density Scan Module This scan module is an integrated scanner that lets you scan bar code labels that are too dense for a normal scan module.

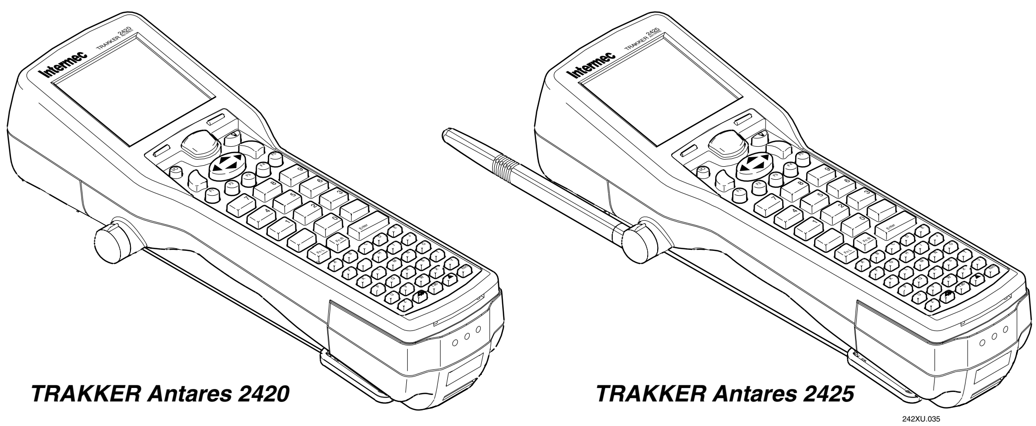
Note: *You also need a lithium-ion battery pack. See your Intermec sales representative for the battery packs that are currently available.*

Models and Options for the Terminals

The TRAKKER Antares family of terminals includes these models:

T2420 The T2420 is a programmable data collection terminal that has 512K of RAM reserved for custom applications. The terminal has a 750K flash drive to store applications and files. The T2420 has a serial port to transmit data to and accept data from a host or PC via RS-232 serial communications.

T2425 The T2425 has the additional ability to communicate in Intermec's 2.4 GHz radio frequency (RF) network. The T2425 provides real-time communications to a host either through the access points and DCS 300 or directly through the access points. The T2425 is a programmable terminal that can run custom applications or terminal emulation applications.



These options are available for the T2420:

- Modem
- Programmable terminal with alphanumeric keypad available to support English or Western European languages
- 4MB flash drive, 2MB used for files or double-byte fonts
- Extended storage drive, 2MB or 4MB, for custom applications and files

These options are available for the T2425:

- UDP Plus (DCS 300 network) or TCP/IP (direct connect)
- IBM 3270 terminal emulation application and keypad
- IBM 5250 terminal emulation application and keypad
- VT100/220/320 and ANSI terminal emulation application and keypad
- Programmable terminal with alphanumeric keypad available to support English or Western European languages
- 4MB flash drive, 2MB used for files or double-byte fonts

Equipment You Need to Get Started

To use the TRAKKER Antares 2420 terminal, you need this equipment:

- Lithium-ion battery pack
- Battery charger
- TRAKKER Antares Programmer's Software Kit or EZBuilder™ (to develop applications)
- Communications dock, optical link adapter, serial interface module, or modem
- RS-232 cable (3-wire or 5-wire null modem) to connect the terminal to a host or an RJ11 cable to connect the terminal to a phone connection

To use the TRAKKER Antares 2425 terminal, you need this equipment:

- Lithium-ion battery pack
- Battery charger
- Access point
- DCS 300 for T2425s that use the UDP Plus option
- TRAKKER Antares Programmer's Software Kit or EZBuilder (to develop applications)

To use the serial port on the T2425, you also need this equipment:

- Communications dock, optical link adapter, or serial interface module
- RS-232 cable (3-wire or 5-wire null modem) to connect the terminal to a host

Using the Terminal for the First Time

Follow these steps to start using your new terminal:

1. Unpack the terminal and documentation.
2. Charge the main battery pack (sold separately).
3. Connect the backup battery.
4. Install the charged main battery pack.
5. Charge the backup battery.
6. Turn on the terminal.
7. Set the time and date.
8. Configure the serial port parameters.
9. (T2425 only) Configure the T2425 and the RF network devices.
10. Start the application and use the terminal.

These steps are described in detail in the next sections.

Unpacking the Terminal

When you remove the terminal from its box, save the box and shipping material in case you need to ship or store the terminal. Check the contents of the box against the invoice for completeness and contact your local Intermec service representative if there is a problem.

Charging the Main Battery Pack

The terminal's main battery pack is a lithium-ion battery. You must fully charge the battery pack before you can use the terminal.

***Tip:** Keep a spare charged main battery pack on hand to operate the terminal without interruption.*

To charge the main battery pack

- Place the battery pack in an empty slot in the battery charger. The battery pack is fully charged in about two hours. For help, see the documentation that came with your battery charger.

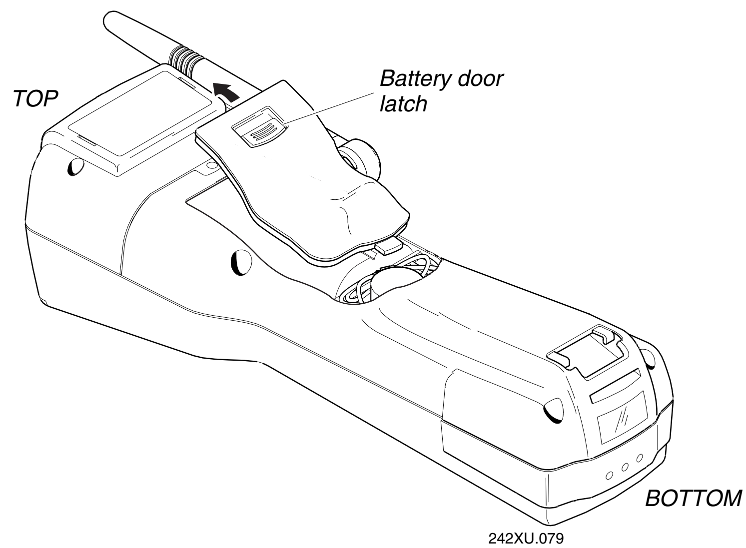
You can also use the communications dock or the optical link adapter to trickle-charge the battery pack. You must have a power supply connected to the dock or optical link adapter to charge the battery pack. For help, see the *TRAKKER Antares TD2400 Communications Dock Quick Reference Guide* or the *TRAKKER Antares Optical Link Adapter Quick Reference Guide.*

Connecting the Backup Battery

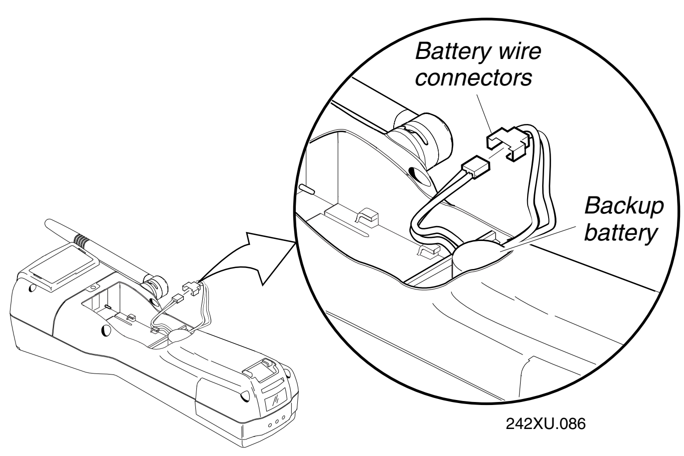
A NiCad battery backs up all memory and the real-time clock while you change the main battery pack. The backup battery is shipped inside the terminal, but it is not connected.

To connect the backup battery

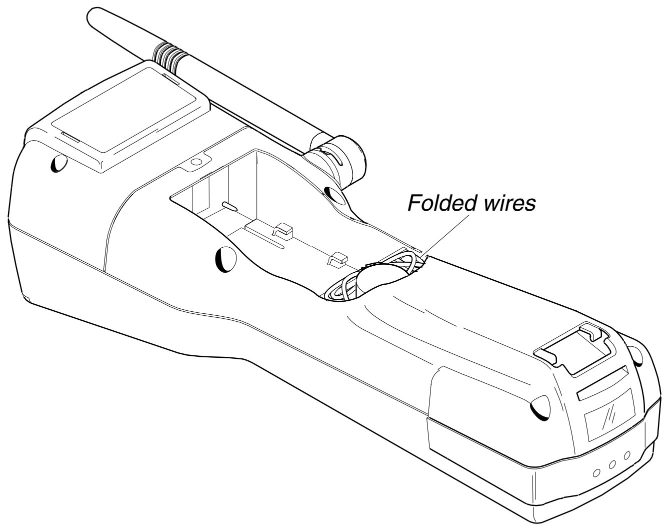
1. Open the battery door by pushing down on the battery door latch and sliding it toward the bottom end of the terminal. Lift up the top edge of the battery door to remove it.



2. Find the two connectors in the backup battery compartment. One connector is attached to the backup battery. The other connector is attached to the terminal. Firmly push the two battery wire connectors together until they lock. (The connectors are keyed so they cannot be connected incorrectly.)



3. Gently fold and push the backup battery wires into the open area of the backup battery compartment near the wall.



4. Leave the battery door off to continue with the next procedure, "Installing the Main Battery Pack."

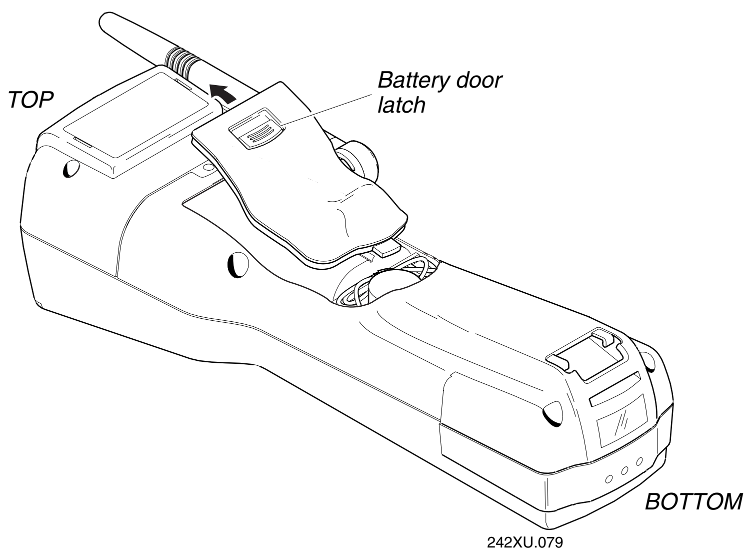
Installing the Main Battery Pack

Install the fully charged main (lithium-ion) battery pack into the terminal.

***Note:** You should always keep a charged main battery pack installed in the terminal to maximize the backup battery's life.*

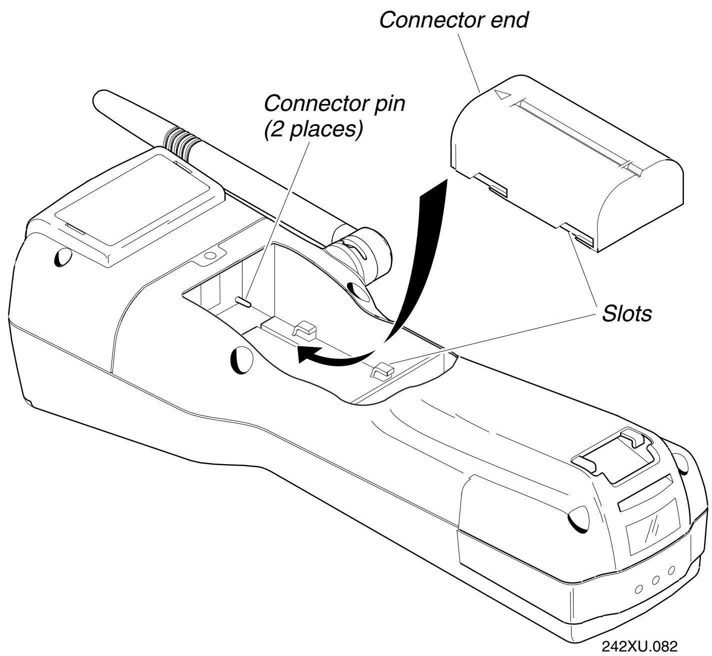
To install the main battery pack

1. If the battery door is not off, open the battery door by pushing down on the battery door latch and sliding it toward the bottom end of the terminal. Lift up the top edge of the battery door to remove it.

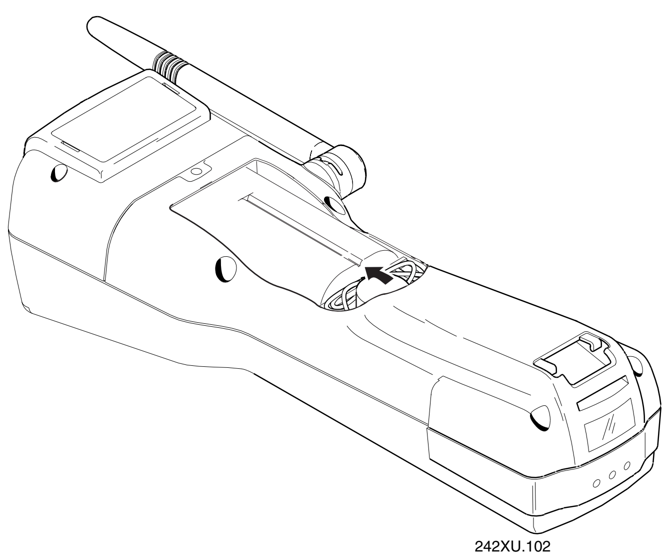


2. Hold the battery pack with the flat side facing down toward the inside of the battery compartment. The small arrow on the top of the battery pack must point toward the top (screen) end of the terminal.
3. Place the battery pack into the upper (larger) half of the battery compartment.

Inserting the Battery Pack

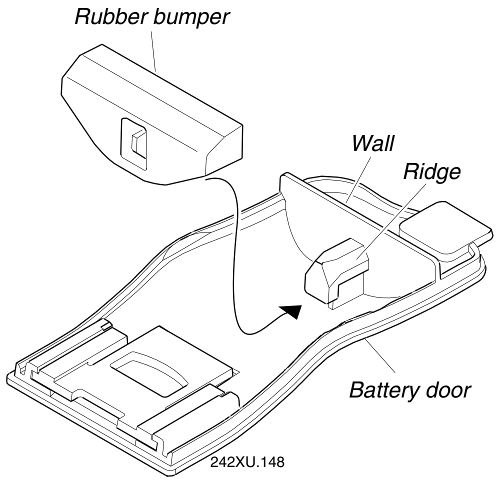


4. Hook the slots on the bottom of the battery pack into the slots on the bottom of the battery compartment.
5. Slide the battery pack toward the top end of the terminal until it fits and locks into the connectors inside the bottom case. The battery pack must be all the way forward to close the battery door.

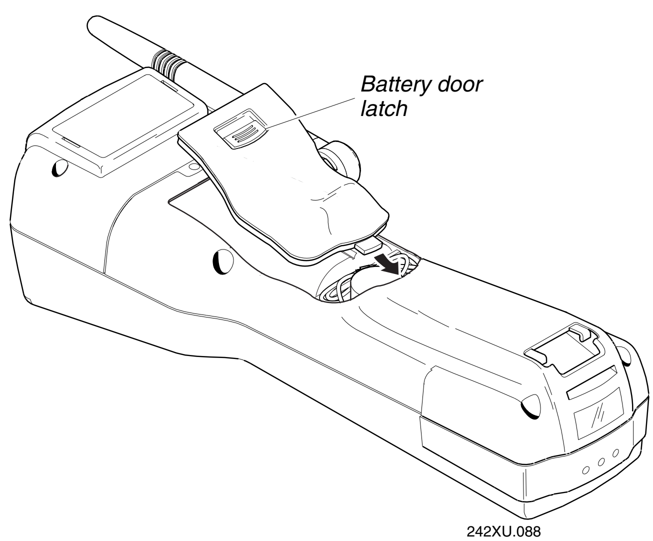


6. If you are using an Intermec-labeled battery pack (Part No. 063278), make sure you remove the rubber bumper from the inside of the battery door. Otherwise, you will not be able to close the battery door.

   If you are using a Sony-labeled battery pack, make sure the rubber bumper is installed over the ridge near the wall on the inside of the battery door. The rubber bumper on the battery door keeps the battery pack in place.



7. Hook the bottom edge of the battery door into the bottom case above the backup battery compartment. Push the door down to close it over the battery compartment. Push the battery door latch down and slide it toward the top end of the terminal to lock the door in place.



Charging the Backup Battery

You must fully charge the backup battery. The main battery pack charges the backup battery when required with the terminal turned on or off.

Note: *The backup battery charger operates between 32°F and 104°F (0°C and 40°C). If you are using the terminal in an environment that is outside this temperature range, the backup battery will not charge.*

To charge the backup battery

1. Install a fully charged main battery pack. For help, see "Installing the Main Battery Pack" earlier in this chapter.
2. Leave the terminal turned off and let the main battery pack charge the backup battery. The backup battery will be fully charged in approximately 18 hours. After you finish charging the backup battery, the main battery pack still has most of its power remaining.

Note: *The backup battery charges enough within 20 minutes to operate the terminal. However, the backup battery will only provide limited backup power if it is not fully charged.*

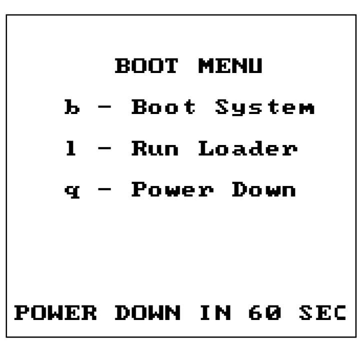
Turning On the Terminal for the First Time

Once the batteries are charged, you are ready to turn on the terminal.

Note: *You must have a scan module or a serial module attached to turn on the terminal.*

To turn on the terminal

1. Press the I/O key on the top left of the keypad. The terminal runs POST (power-on self test) and then the Boot Menu appears.



242XU.104

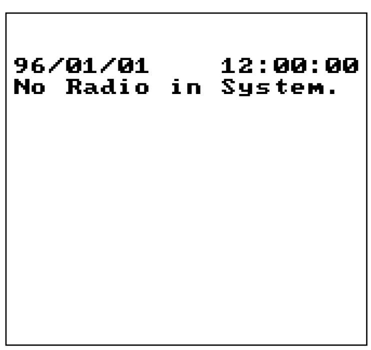
Note: ***If the Boot Menu screen does not appear, you may have a problem with the batteries. Make sure the main battery pack is fully charged and installed correctly. For help, see Chapter 6, "Troubleshooting."***

2. Press [B] to boot the terminal and initialize the firmware. The TRAKKER Antares screen appears.

242XU.121

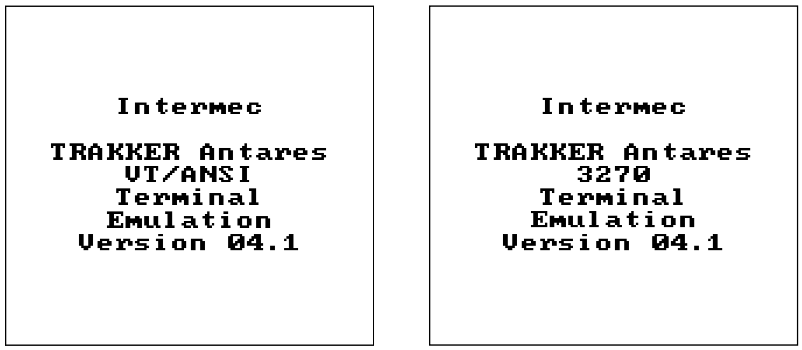
The next screen or messages you see depend on the type of application that is loaded on the terminal.

T2420 or T2425 Programmable Terminal The sample application screen appears with information about the radio. You create custom applications for the terminal using the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions. A T2420 does not have a radio (see the next illustration) and the radio is not initially enabled on the T2425.



242XU.176

T2425 With Terminal Emulation Application A warning screen about creating a TE configuration file may appear. Press to create the file and continue. A terminal emulation application welcome screen appears similar to the examples shown next.



242XU.070

Note: *At the TE welcome screen, you can press to access the TE Configuration Menu and configure your terminal emulation application. For help, see the* TRAKKER Antares Terminal Emulation User's Guide.

Next, the T2425 tries to connect to the DCS 300 or the host. You will see messages like:

```
Waiting for                   Unable to
connection to                 establish connection
controller...                 to host.
```

Since you have not configured the RF network parameters, the T2425 cannot start a terminal emulation session.

3. Configure the terminal now. Follow the instructions in the next section, "Setting the Time and Date."

Setting the Time and Date

You need to set the time and date on the terminal. Use the TRAKKER Antares 2400 Menu System to set the time and date.

To set the time and date

1. Press f T 2 M or press f 2 4 8 or scan this bar code label to access the TRAKKER Antares 2400 Menu System.

   Enter Test and Service Mode

   ..-.

   Note: *You must press the (Left Enter) key in this key sequence. The key is located just under the I/O key.*

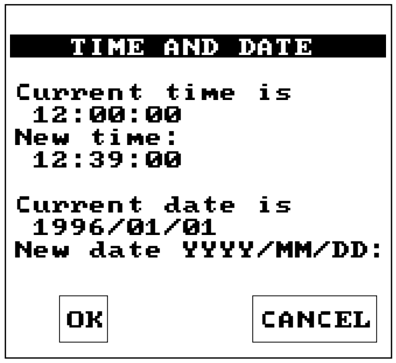
   The Main Menu appears.

242XU.001

2. Press ▼ to choose the System Menu and then press ↵. The System Menu appears.

242XU.051

3. Press ▼ to choose the Set Time and Date command and then press ↵ . The Time and Date screen appears.



242XU.009

4. Type the current time in the format HH MM SS (hours, minutes, seconds) with a space character between each field and then press ▼. The program fills in the colon character in the time field.

   For example, to enter the time 04:05:03 P.M., type:

   1 6 f ← 0 5 f ← 0 3 ▼

   Note: *The time is not actually updated until you exit the Time and Date screen. When you set the time, set the time ahead so that the correct time is saved when you exit the screen in Step 6.*

5. Type the current date in the format YYYY MM DD (year, month, day) with a space character between each field and then press ▼. The program fills in the slash character in the date field.

   For example, to enter the date August 9, 1997, type:

   1 9 9 7 f ← 0 8 f ← 0 9 ▼

6. Press ↵ to save the changes and exit the Time and Date screen.

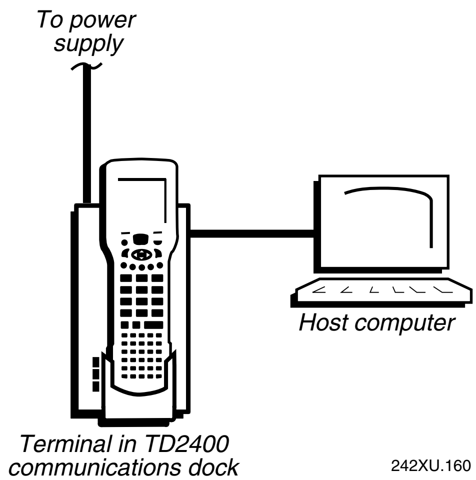
7. Press Esc to exit the System Menu. The Main Menu appears.

8. If you have a T2420 or you want to configure the serial port on a T2425, continue with the next section, "Configuring the Serial Port Parameters."

   If you have a T2425, follow the instructions for "Configuring the T2425 and the RF Network" later in this chapter.

Configuring the Serial Port Parameters

You use the terminal's serial port and a communications dock, optical link adapter, or serial interface module to transfer data in a wired network between the terminal and a host computer, printer, or other RS-232 serial device. If your T2420 has a modem, you can send files and data over a phone connection.



You need to set these serial port parameters to have the terminal communicate with a host computer or serial device in a wired network:

Serial Port Parameter	Default Value
Baud rate	19200
Data bits	7
EOM (End of Message)	\x03 (hexadecimal value for ETX)
Flow control	None
Handshake	Disabled
LRC	Disabled
Modem dial sequence (COM3 only)	No dial sequence
Modem initialization sequence (COM3 only)	Auto rate
Parity	Even
Poll (Polling)	Disabled
Serial port protocol	Configurable
SOM (Start of Message)	\x02 (hexadecimal value for STX)
Stop bits	1
Timeout delay	10 seconds

The values you set for the terminal's serial port must match the values set for the host's (or other device's) serial port. You use the TRAKKER Antares 2400 Menu System to set the parameters on the terminal. For a detailed definition of these parameters, see Chapter 9, "Configuration Command Reference."

To set the serial port parameters

1. From the Main Menu, press ▲ or ▼ to choose the Configuration Menu and then press [↵]. The Configuration Menu appears.

   Note: *If you are not in the TRAKKER Antares 2400 Menu System, press [f] [ ] [T] [2] [M] or press [f] [ ] [2] [4] [8] to access the Main Menu.*

```
CONFIGURATION MENU

Symbologies Menu
Communications Menu
Terminal Menu




 ↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```

242XU.010

2. Press ▼ to choose the Communications Menu and then press [↵]. The Communications Menu appears.

T2425 Communications Menu

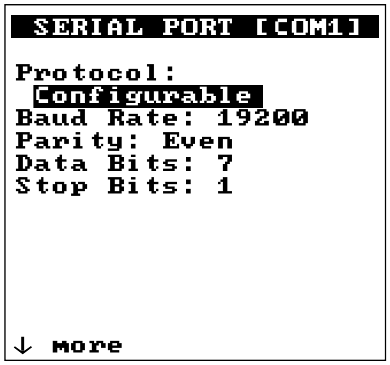
```
COMMUNICATIONS MENU

Primary Network
Advanced Network
Radio
Serial Port [COM1]
Serial Port [COM4]


↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```

T2420 Communications Menu

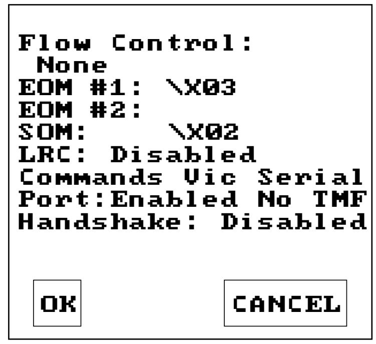
```
COMMUNICATIONS MENU

Serial Port [COM1]
Serial Port [COM4]





↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```

242XU.070

3. Press ▼ to choose Serial Port and then press ↵. The Serial Port screen appears.



242XU.156



242XU.157

4. In each field, press ▶ to toggle through the field options and select a value. Once the correct value is displayed, press ▼ to move to the next field.

   You must set each of the terminal's serial port parameters to match your host computer's or serial device's settings. Once they match, you can communicate through the communications dock or optical link adapter.

5. Press ↵ to save the changes and exit the Serial Port screen. The Communications Menu appears.

6. Press Esc to exit the Communications Menu. The Configuration Menu appears.

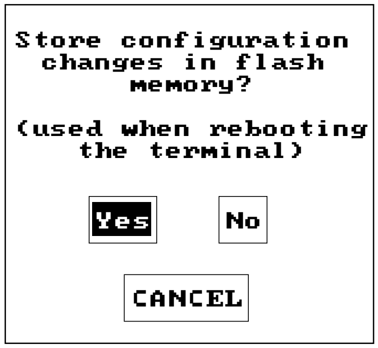
7. Press Esc to exit the Configuration Menu.

8. Press ↵ to choose Yes and save the new configuration in RAM. Once the changes are saved, the terminal uses the new configuration.

242XU.059

9. Press Esc to exit the TRAKKER Antares 2400 Menu System.

10. Press ↵ to choose Yes and store your changes permanently in flash memory.



242XU.054

11. Press ↵ to choose OK and exit the TRAKKER Antares 2400 Menu System.

242XU.055

12. If you have a T2420, continue with the section on "Starting the Application and Using the Terminal" later in this chapter.

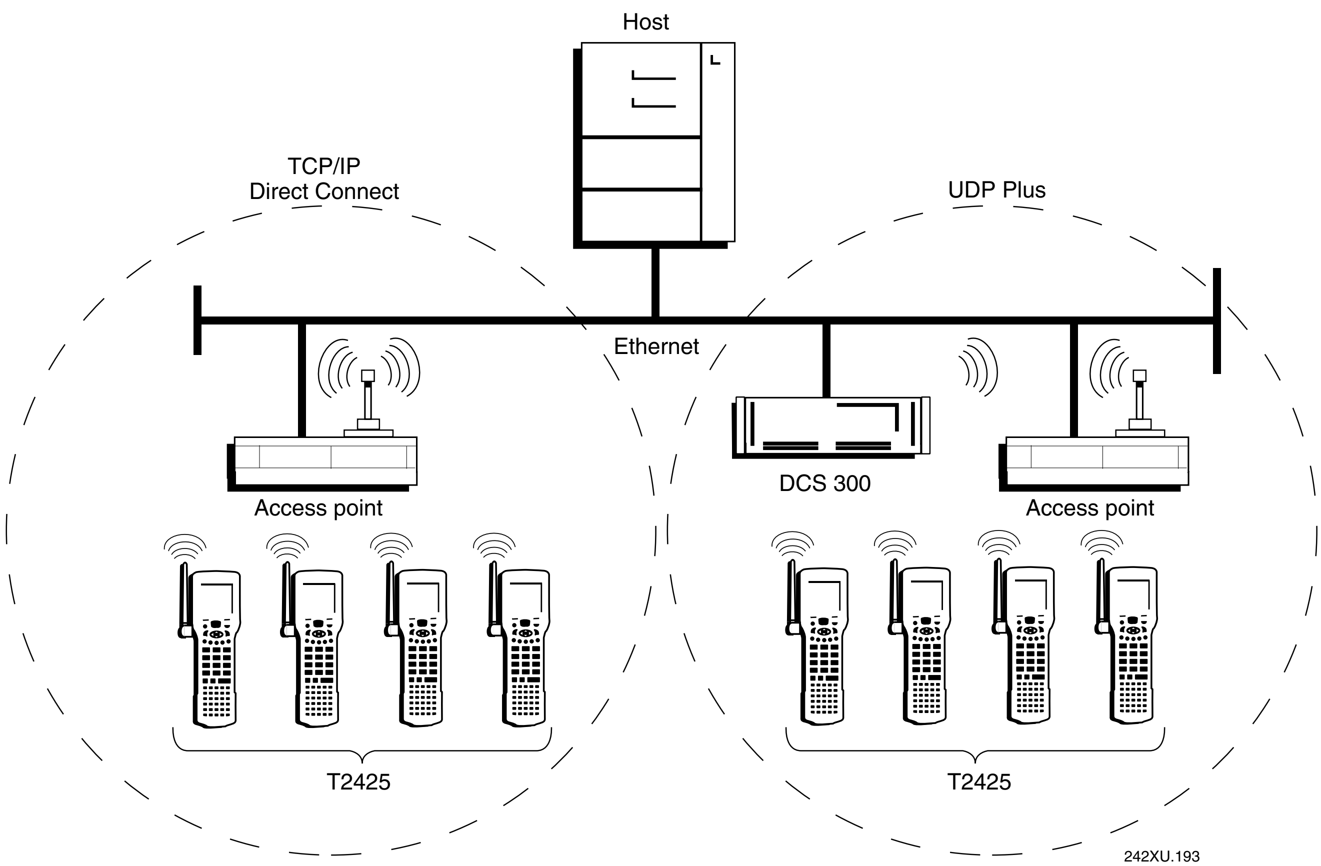
    If you have a T2425, continue with the next section, "Configuring the T2425 and the RF Network."

Configuring the T2425 and the RF Network

The T2425 can communicate with a host computer in Intermec's 2.4 GHz RF network either through the access points and the DCS 300 or directly through the access points. The terminal ships with one of these RF network protocol options:

- UDP Plus
- TCP/IP

In a UDP Plus network, the terminal communicates through the DCS 300 to a host on an Ethernet, token ring, twinaxial, coaxial, or SDLC network. In a TCP/IP network, the terminal communicates through the access point directly to a host on an Ethernet or token ring network.



Note: *All devices in the 2.4 GHz RF network must have an IP address. All access points that the T2425 may communicate with must be in the same IP subnetwork. For help, see Chapter 4, "Operating the Terminal in a Network."*

To use RF communications on the T2425, you need to:

1. Configure the DCS 300 (UDP Plus) or host (TCP/IP).
2. Configure the access point.
3. Configure the network parameters on the terminal.

Each step is described in the next sections.

Caution
Make sure all components with antennas are at least 1 feet (30 centimeters) apart when power is applied. Failure to comply could result in equipment damage.

Conseil
Assurez-vous que la distance entre tous les éléments avec antennes soit d'au moins un pied (centimètres) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

Configuring the DCS 300, Host, and Access Points

To use your T2425 in Intermec's UDP Plus network, you must first install and configure the DCS 300 and the access points. For help, see the *DCS 300 System Manual* and your access point user's manual.

To use your T2425 in a TCP/IP direct connect network, you must first install and configure the access points. For help, see your access point user's manual. You must also set up your host to communicate with the devices in the RF network.

Note: *You can use a T2425 communicating using UDP Plus and the DCS 300 in a pass-through network. You establish a direct TCP/IP socket connection from the T2425 to the host through the server. For more information, see the* DCS 300 System Manual.

Configuring the T2425 Network Parameters

You need to set these network parameters to begin using RF communications:

UDP Plus Network Parameters

Network Parameter	Default Value
Network activate	Disabled
Controller IP address	0.0.0.0
Terminal IP address	0.0.0.0
RF domain	0
RF security identification (ID)	None (not set)

TCP/IP Network Parameters

Network Parameter	Default Value
Network activate	Disabled
Host IP address	0.0.0.0
Terminal IP address	0.0.0.0
Network Port	23
RF domain	0
RF security identification (ID)	None (not set)

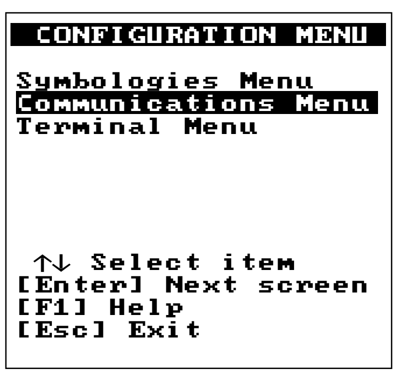
You use the TRAKKER Antares 2400 Menu System to set these parameters. For a detailed definition of these parameters, see Chapter 4, “Operating the Terminal in a Network.”

Note: *If the terminal is on a different IP subnetwork from the DCS 300 or host, you must also configure the default router and subnet mask. For help, see Chapter 4, “Operating the Terminal in a Network.”*

To set the network parameters

1. From the Main Menu, press ▲ or ▼ to choose the Configuration Menu and then press ↵ . The Configuration Menu appears.

   Note: *If you are not in the TRAKKER Antares 2400 Menu System, press f T 2 M or press f 2 4 8 to access the Main Menu.*



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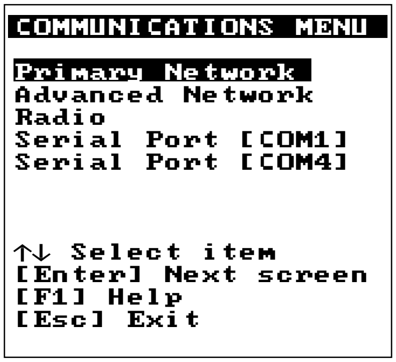
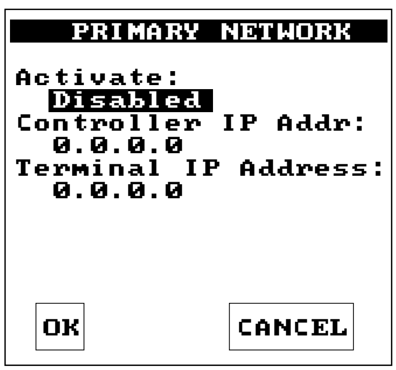
2. Press ▼ to choose the Communications Menu and then press ↵. The Communications Menu appears.



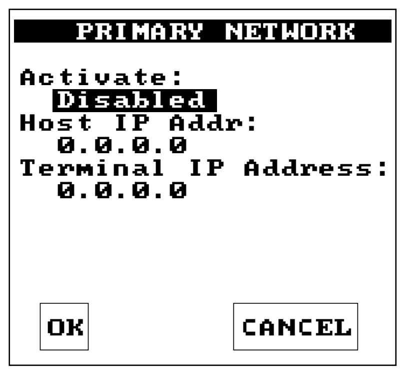
242XU.011

3. Press ↵ to choose the Primary Network command. The Primary Network screen appears.

UDP Plus Primary Network



TCP/IP Primary Network



242XU.186

4. In the Activate field, press ▶ to toggle the field and display the 2.4 GHz RF option and activate radio frequency network communications. Press ▼ to move to the next field.

5. In a UDP Plus network, you set the Controller IP Address. In a TCP/IP network, you set the Host IP Address.

   In the Controller IP Address or the Host IP Address field, type in the IP address for the DCS 300 or host in your network.

   The address field consists of four separate numbers. Each number in the field is separated by a period and can be a number from 0 to 255. Type the address in the format *nnn.nnn.nnn.nnn* and then press ▼.

For example, if your DCS 300 or host IP address is 192.100.100.2, type:

1 9 2 . 1 0 0 . 1 0 0 . 2

Note: *The network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

6. In the Terminal IP Address field, type in the terminal's IP address. The IP address must match the address that is set for the terminal on the DCS 300 or host.

   The address field consists of four separate numbers. Each number in the field is separated by a period and can be a number from 0 to 255. Type the address in the format *nnn.nnn.nnn.nnn* and then press ▼.

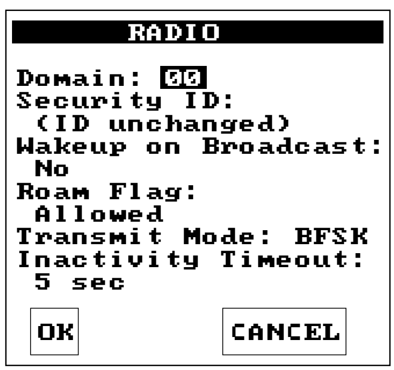
   For example, if your terminal IP address is 192.100.100.3, type:

   1 9 2 . 1 0 0 . 1 0 0 . 3

   Note: *The network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

7. Press ↵ to save the changes and exit the Primary Network screen.
8. Press ▼ to choose the Radio command and then press ↵. The Radio screen appears.

UDP Plus and TCP/IP Radio



242XU.120

9. In the Domain field, type a number from 0 to 15 and then press ▼. The domain must match the number set on the access point.
10. In the Security ID field, type the RF security identification and then press ▼. The Security ID is case-sensitive and can be up to 20 characters long. It must match the security ID set on the access point.

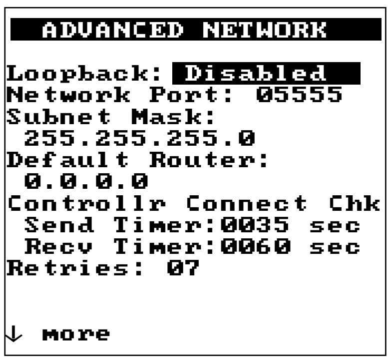
    Note: *If you have not changed the Security ID in the current session, the words (ID unchanged) display instead of the actual password. If you change the Security ID, you see the actual password until you save the changes.*

11. Press ↵ to save the changes and exit the Radio screen.

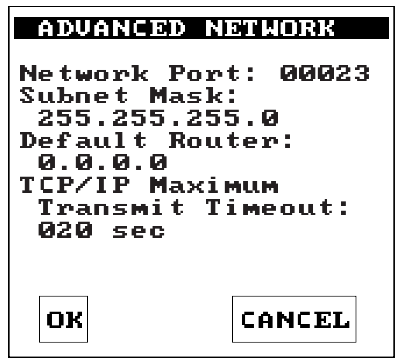
    Note: *If the terminal is on a different IP subnetwork from the DCS 300 or host, you must also configure the default router and subnet mask. Choose the Advanced Network command to set these parameters. For help, see Chapter 4, "Operating the Terminal in a Network."*

12. For TCP/IP networks, press ▲ to choose the Advanced Network command and then press ↵. The Advanced Network screen appears.

UDP Plus Advanced Network



TCP/IP Advanced Network

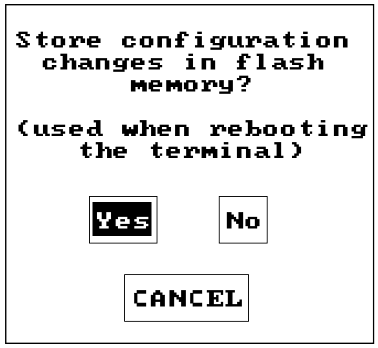


242XU.181

Note: *For UDP Plus networks, the Network Port default is 5555, which matches the default value set on the DCS 300.*

13. In the Network Port field, type a number from 1 to 65535 and then press ▼. The default value is 23, which enables VT/ANSI Telnet communications. If you are not using Telnet communications, enter the port number used by your application.
14. Press Esc to exit the Communications Menu. The Configuration Menu appears.
15. Press Esc to exit the Configuration Menu.
16. Press ↵ to choose Yes and save the new configuration in RAM. Once the changes are saved, the terminal uses the new configuration.
17. Press Esc to exit the TRAKKER Antares 2400 Menu System.

18. Press ↵ to choose Yes and store your changes permanently in flash memory.



242XU.054

19. Press ↵ to choose OK and exit the TRAKKER Antares 2400 Menu System.

242XU.055

The T2425 will try to establish communications with the DCS 300 or the host. For terminal emulation applications in a UDP Plus network, you need to configure the host name in the TE Configuration menu to establish communications. For help, see the *TRAKKER Antares Terminal Emulation User's Guide*.

Once the terminal connects, the login or initial screen for your application appears and the Connect icon stops blinking. You can begin using the terminal to collect data.

Note: *While the terminal is connecting to the DCS 300 or host, the terminal ignores any input from the keypad or scanner. Wait until the terminal is connected before you try to enter any data.*

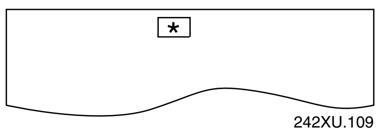
If the terminal will not connect, see Chapter 6, "Troubleshooting," or the *DCS 300 System Manual*.

Verifying That the T2425 Is Communicating Correctly

Once you have configured the terminal, your T2425 is ready for operation. To transmit and receive data, the T2425 must be communicating with the access point and DCS 300 or host. Use these instructions to make sure the T2425 is communicating correctly.

To verify that the T2425 is communicating correctly

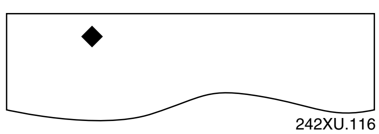
1. If the terminal is not on, press I/O to turn it on.
2. Look at the top line of the terminal's screen. If the Connect icon (shown in the illustration) appears and remains on solid, the terminal is communicating with the access point. In a UDP Plus network, a solid Connect icon also means that the terminal is communicating with the DCS 300. The terminal can send and receive data to the connected devices.



242XU.109

If you are having problems with network communications

- If the Connect icon blinks or is not on, you need to check the network IP addresses and configuration. Make sure the radio domain and radio security ID on the terminal match the values that are set on the access point.
- If the Radio icon (shown in the illustration) remains on solid, the Network Activate command is disabled, or there is a problem with the radio card and the radio is turned off.



242XU.116

Make sure the Network Activate command is enabled and all the network parameters are set correctly. For help, follow the instructions for "Configuring the T2425 and the RF Network" earlier in this chapter.

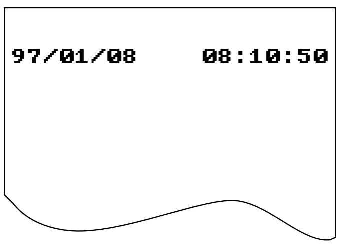
Starting the Application and Using the Terminal

Your T2420 ships loaded with a sample application. Your T2425 ships loaded with either the sample application or a terminal emulation application.

To start the application and use the terminal

1. Press I/O to turn on the terminal. The login or initial screen for your application appears.
2. Check the four application screens shown next in the left column. Find the application screen that matches the one on your terminal. Follow the instructions on the right of the screen to use the terminal.

Sample Application Screen



242XU.167

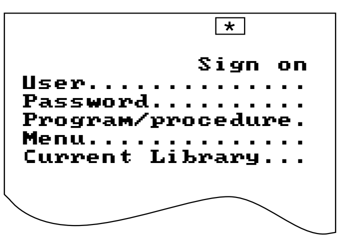
a. Use the sample application to scan bar code labels and test the terminal's keypad. For help, see Appendix D, "Using the Default Applications."

b. Connect the T2420 to a host computer using the communications dock, the optical link adapter, or the serial interface module. For help, see the accessory documentation.

c. Create custom applications for the terminal using the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions.

d. Download your custom application to the terminal and run it. For help, see Chapter 5, "Using Custom Applications."

3270/5250 TE Sign-On Screen



242XU.166

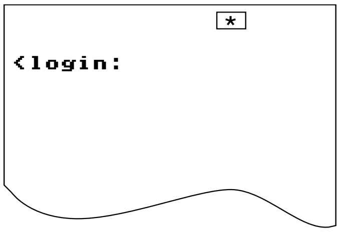
a. Configure the terminal emulation application (if necessary). For help, see the *TRAKKER Antares Terminal Emulation User's Guide*.

b. Login to a terminal emulation session.

c. Start using the T2425 to collect and transmit data.

Step 2: Using the Application (continued)

VT/ANSI TE Login Screen



242XU.163

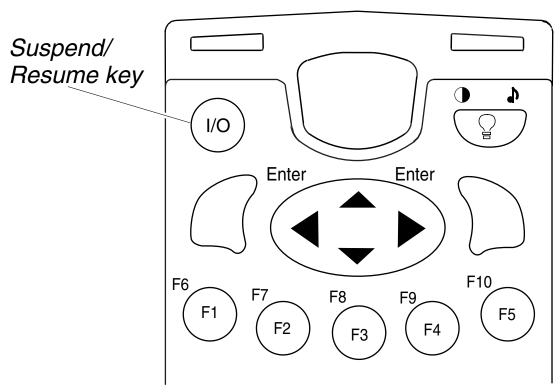
a. Configure the terminal emulation application (if necessary). For help, see the *TRAKKER Antares Terminal Emulation User's Guide*.

b. Log in to a terminal emulation session.

c. Start using the T2425 to collect and transmit data.

Turning the Terminal On and Off

The terminal's Suspend/Resume key is the (I/O) key in the upper left corner of the keypad, as shown in this illustration.



242XU.045

When you press (I/O) to turn off the terminal, the terminal does not actually shut off, but goes into a Suspend mode. This mode is referred to as "off" in the rest of this manual. In Suspend mode, the terminal continues to power all memory and turns off the power to most of the hardware.

When you press (I/O) to turn on the terminal, the terminal either resumes exactly where it was when you turned it off, or the terminal boots and restarts your application. Resume is controlled through a parameter or command called Resume Execution. By default, the terminal restarts your application. For help, see "Resume Execution" in Chapter 9.

If you change the main battery pack while the terminal is turned off, the terminal resumes or boots the next time the terminal is turned on. The backup battery saves all memory while you change the main battery pack.

Enabling Bar Code Symbologies

The terminal can decode several different types of bar code symbologies. Each symbology, such as Code 39, uses a different scheme for encoding data as bar code. You must configure the terminal to decode the bar code symbology used in your bar code labels.

Only enable the bar code symbologies that you need to scan. For more information about each symbology and the configuration options, see Chapter 9, "Configuration Command Reference."

The terminal can decode the bar code symbologies shown in the next table. You can scan the bar code labels in the table to enable a symbology.

Note: *Only three symbologies, Code 39, Code 128, and UPC/EAN, are enabled when you unpack the terminal.*

Bar Code Symbology	Enabled?	To Enable the Symbology
Codabar	No	Enable Standard Codabar, ABCD Start/Stop Code *$+CD21*
Code 11	No	Enable Code 11 With Two Check Digits *$+CG2*
Code 16K	No	Enable Standard Code 16K *$+CP1*
Code 2 of 5	No	Enable Code 2 of 5, 3 Bar Start/Stop, Label Length of 1 *$+CC001*
Interleaved 2 of 5 (I 2 of 5)	No	Enable I 2 of 5, Variable Length With a Check Digit *$+CA99*

Note: *You can enable either Code 2 of 5 or Interleaved 2 of 5. If you enable I 2 of 5, Code 2 of 5 is automatically disabled and vice versa.*

Bar Code Symbology Table (continued)

Bar Code Symbology	Enabled?	To Enable the Symbology
Code 39	**YES**	Enable Code 39 Full ASCII With No Check Digit *$+CB111*
Code 49	No	Enable Code 49 *$+CJ1*
Code 93	No	Enable Code 93 *$+CF1*
Code 128	**YES**	Enable Standard Code 128 *$+CH1*
MSI	No	Enable MSI Without Check Digits *$+CN10*
Plessey	No	Enable Plessey With Reverse Start Code *$+CI10*
UPC/EAN	**YES**	Enable UPC-A/EAN-13, UPC-E, EAN-8 *$+CE1111111*

What's New on the TRAKKER Antares Terminals

The firmware on the terminals has been updated and expanded. These new features for the terminals were added in the v5.X firmware release:

- Information is included about usng the APPTSK.BIN and EM9560.BIN applications that are preloaded on the terminals. The EM9560.BIN application leets you emulate specific features that are available on Intermec 95XX terminals. For help, see Appendix D, "Using the Default Applications."
- You now use a programmable terminal instead of a screen mapping terminal to do screen mapping with the host through the DCS 300.
- Information is included about using the serial interface module for COM4.
- Information is included about using the modem for COM3.
- XON/XOFF is allowed in Frame mode. For help, see "Flow Control" in Chapter 9.
- New Set Time and Date reader command for 95XX terminal compatibility. For help, see "Set Time and Date" in Chapter 8.

Where Do You Go From Here?

Now that your new terminal is working, you can use this manual to learn how to perform these tasks:

Task or Feature	See This Chapter
To learn how to use the terminal's keypad, screen, audio signals, batteries, and scan module	Chapter 2, "Learning How to Use the Terminal"
To learn how to change the terminal's configuration	Chapter 3, "Configuring the Terminal"
To add the terminal to your Intermec 2.4 GHz RF network or wired data collection system and learn how to communicate with other devices	Chapter 4, "Operating the Terminal in a Network"
To learn how to download and run custom applications on your programmable terminal	Chapter 5, "Using Custom Applications"
To learn how to reset the terminal, solve problems, and respond to error messages	Chapter 6, "Troubleshooting"
To learn how to run diagnostics and check the battery power remaining	Chapter 7, "Running Diagnostics"

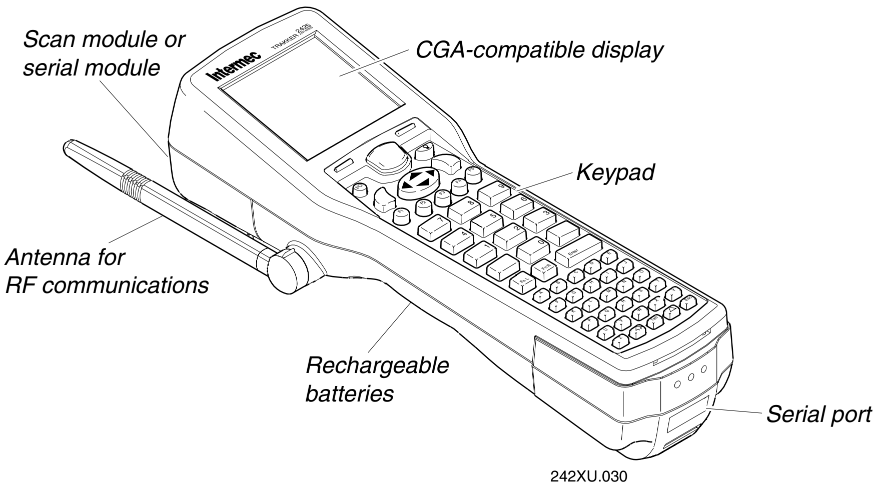
2

Learning How to Use the Terminal

This chapter describes and explains how to use the terminal's keypad, screen, audio signals, serial port, batteries, memory and drives, and scan modules.

TRAKKER Antares Terminal Features

This chapter explains these features on the terminals:



Keypad There are five keypad options: an English alphanumeric keypad, a Western European alphanumeric keypad, and three terminal emulation keypads. The terminal ships with a keypad that supports the type of application or terminal you ordered.

CGA-compatible display The terminal screen is a backlit LCD that is 16 lines by 20 characters. Depending on the application, you can use the viewport features to move around a full 25 line by 80 character screen.

Audio signals The terminal and scan module have a beeper and internal speakers to sound audio signals as you scan bar code labels and enter data.

Serial port The terminal has an optical serial port that you can use to transmit data to and from another serial device via RS-232 serial communications.

Rechargeable batteries The terminal uses a rechargeable lithium-ion main battery pack and a rechargeable NiCad backup battery to provide power.

Antenna for RF communications The T2425 uses radio frequency (RF) to communicate with access points.

Memory The terminal has a total of 1MB RAM for system memory, and 2MB flash memory to store firmware, configuration data, and custom applications.

Scan modules or serial modules The terminal ships with a scan module or a serial module. The scan module options are: a standard range scan module, a long range scan module, a high visibility scan module, a high density scan module, and a module for cabled scanners. The serial module options are: optical link adapter, communications dock, and a serial interface module.

Using the Keypad

The terminal has five keypad options:

- English alphanumeric keypad
- Western European alphanumeric keypad
- IBM 3270 terminal emulation keypad
- IBM 5250 terminal emulation keypad
- VT100/220/320 and ANSI terminal emulation keypad

All five alphanumeric keypads have 56 keys. Although the keypad is smaller than a desktop terminal keyboard, you use special keys on the T2420 and T2425 keypad to access all the keys and functions you need.

The Western European alphanumeric keypad has keys to support English and Western European languages, such as French, German, Italian, Portuguese, Spanish, and others. You use special keys and key sequences to access the characters in each language.

A terminal emulation (TE) keypad comes with the TE option you ordered for the T2425. Each TE keypad is similar to the standard alphanumeric keypad, but contains additional keys that are available on an IBM 3270 keyboard, IBM 5250 keyboard, or VT/ANSI keyboard.

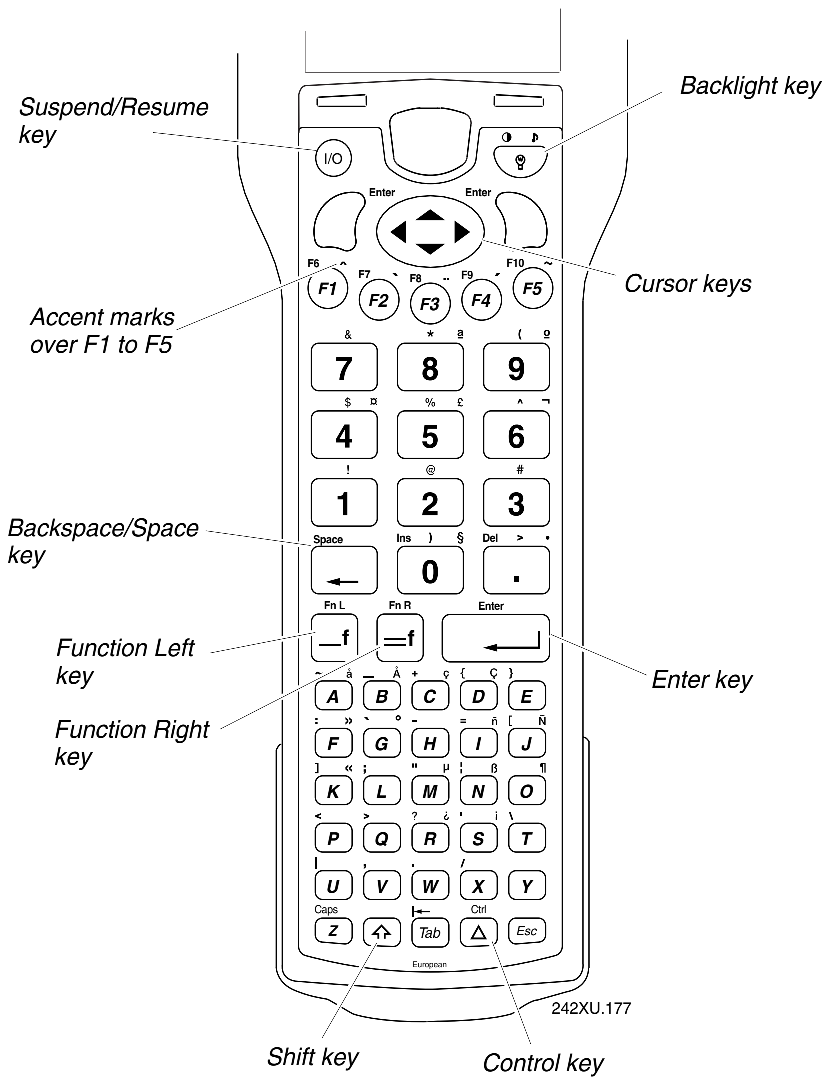
Note: *The terminal emulation keypads are currently available in English only.*

Finding the Special Keys

Before you use the terminal's keypad, make sure you can find all of the different types of keys on the keypad. You need to use these special keys on all five keypad options.

The special keys that you use to type characters or perform functions are explained in the next sections. You can use the Backlight key to turn on the backlight, change the display contrast, and change the beep volume. For help, see "Adjusting the Screen From the Keypad" later in this chapter.

Finding the Special Keys



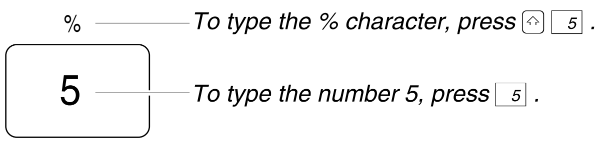
How to Type the Characters Printed on the Keypad

The terminal keypad is easy to use. Characters, symbols, and functions are printed in four places on or above the keys. The keys are also color-coded to make it easier to remember key combinations.

Position on the Keypad	Color	To Type the Character
Middle of the key	White	Press the key.
Left side above the key	Orange	Press the orange [f] key, then the key.
Centered above the key	Green	Press the green [⇧] key, then the key.
Right side above the key	Blue	Press the blue [f] key, then the key.

To learn how to type characters, use these illustrations and examples from the alphanumeric keypad and the IBM 5250 terminal emulation keypad.

To type characters using the alphanumeric (English or Western European) keypad



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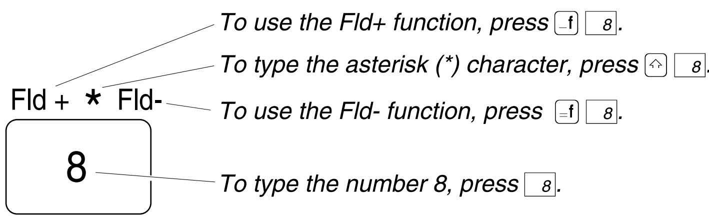
To type characters using the IBM 5250 terminal emulation keypad



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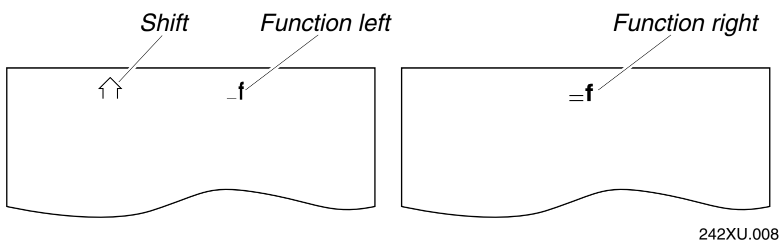
Using the Function Left/Right and Shift Keys

The terminal keypad does not have a physical key for every character and function available. You use the Function Left (FnL), Function Right (FnR), and Shift keys to access characters or perform functions that do not have a physical key on the keypad. You also use the Shift key to type uppercase alphabetic characters.

When you press [_f], [=f], or [⇧], the key is held in a buffer until you press another key. The icon appears on the terminal’s screen to remind you that the key is being held in the buffer. When you press another key, the key combination is entered into the terminal and the icon disappears.

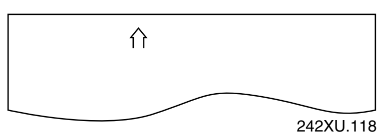


To flush the [_f], [=f], or [⇧] key from the buffer without performing any action, just press the key again. The icon disappears from the screen.

To use the FnL, FnR, and Shift keys

1. Press [_f], [=f], or [⇧]. The Function Left, Function Right, or Shift icon appears on the terminal’s screen.

   For example, press [⇧]. The Shift icon appears on the terminal screen.



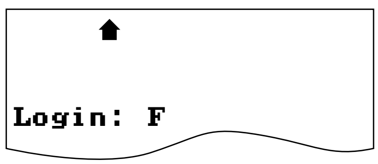
2. Press the second key. For example, press [A] to type the uppercase letter A. The Shift icon disappears from the terminal’s screen.

Capitalizing All Characters

To type all alphabetic characters as uppercase letters, you can press ⇧ before every letter you type, or you can enable the Caps Lock feature.

To enable Caps Lock

1. Press f. The Function Left icon appears on the terminal's screen.
2. Press Z. The Caps Lock icon appears on the terminal's screen.
3. Type an alphabetic character. The letter appears as an uppercase character on the terminal's screen. For example, press F to type an uppercase letter F. Caps Lock remains enabled until you disable it.



242XU.046

To type a lowercase letter with Caps Lock enabled

- Press ⇧ and an alphabetic character. For example, press ⇧ F to type a lowercase letter f.

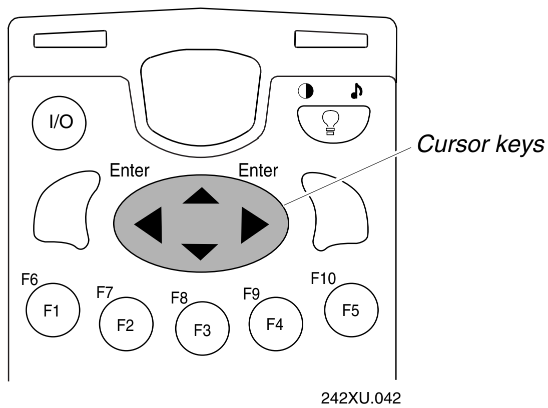
To disable Caps Lock

1. Press f. The Function Left icon appears on the terminal's screen.
2. Press Z. The Caps Lock icon disappears from the terminal's screen.
3. Type an alphabetic character. The letter appears as a lowercase letter on the terminal's screen.

Note: *You can also use the Keypad Caps Lock configuration command to enable or disable Caps Lock on the terminal. For help, see "Keypad Caps Lock" in Chapter 9.*

How to Use the Cursor Keys

You can press keys to move the cursor around an application screen. The terminal's cursor keys work the same as cursor keys on a regular keyboard. You use the oval-shaped cursor key to move the cursor up, down, right, or left on the screen.



To Use This Cursor Key	Press	Description
Arrow up	▲	Moves the cursor up one row or line.
Arrow down	▼	Moves the cursor down one row or line.
Arrow right	▶	Moves the cursor one character to the right.
Arrow left	◀	Moves the cursor one character to the left.

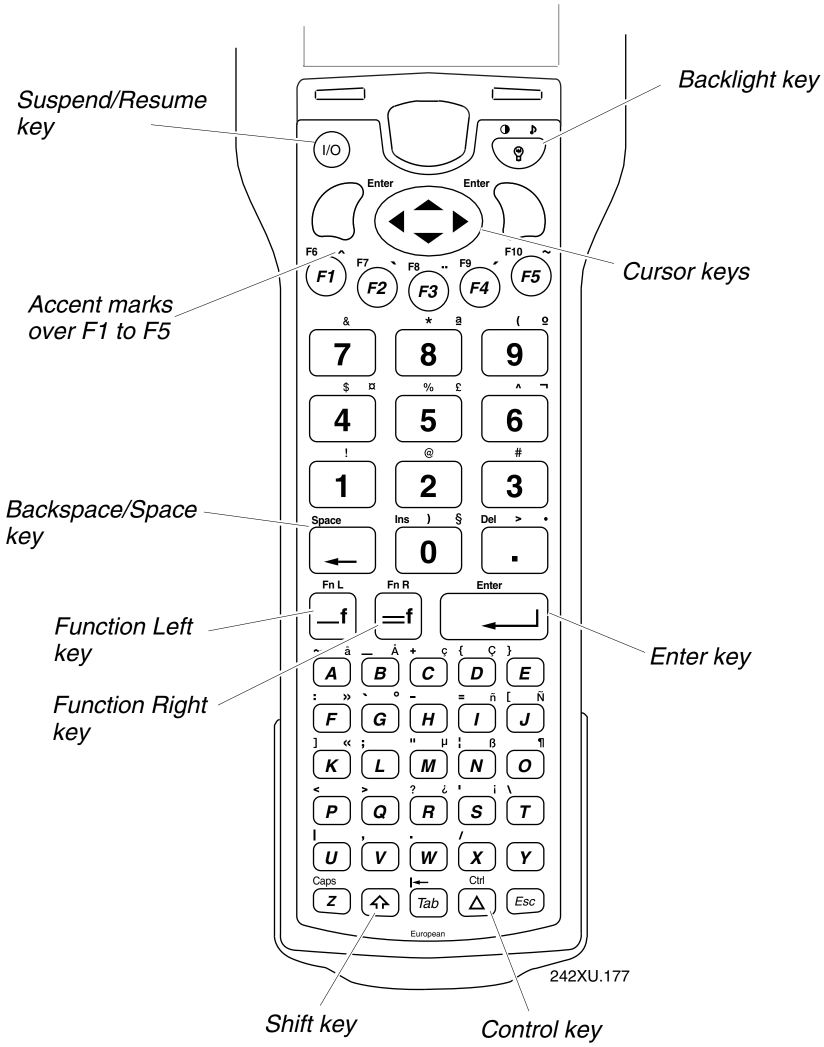
On the terminal emulation keypads, you can use the cursor keys to move around the terminal's screen if you are running a program or entering data in a screen. For help, see the *TRAKKER Antares Terminal Emulation User's Guide*.

Using the Western European Keypad

The programmable terminal (non-TE option) comes with either an English or Western European alphanumeric keypad. The Western European keypad supports English and most Western European languages, such as French, German, Italian, Portuguese, Spanish, and others. You use the keypad to enter all the characters printed on or above the keys. You can also use the accent marks above the F1 through F5 keys to enter a character in a Western European language. For example, you can type the character é.

Although the English alphanumeric keypad does not show all the characters that are available on the Western European keypad, you can type the same characters on either keypad. The next illustration shows the Western European keypad.

Western European Keypad



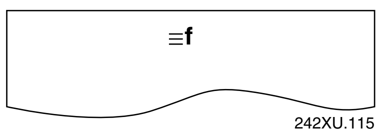
This section explains how to type characters that are not shown on the keypad. Use the previous sections in this chapter to learn about typing characters that are shown on the keypad; using the Function Left, Function Right, and Shift keys; or capitalizing all characters.

To type characters with an accent mark

1. Press [≡f]. The Function Right icon appears on the terminal's screen.
2. Press the function key that the accent mark appears above. For example, press (F3) to type the umlaut (¨).

To Type	Press
ˆ (circumflex)	(F1)
` (grave)	(F2)
¨ (umlaut)	(F3)
´ (acute)	(F4)
~ (tilde)	(F5)

A special Function Right icon appears with a third line to indicate that an accent mark is stored in the keypad buffer.



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To flush the accent mark from the keypad buffer without entering any key, press [≡f] twice. The icons disappear from the terminal's screen.

3. There are three types of characters you can enter:

   - To accent a lowercase character, press the character. For example, press [A] to type the ä character.
   - To accent an uppercase character, press the [⇧] key. Next, press the character you want to accent. For example, press [⇧] and release the key, and then press [A] to type the Ä character.
   - To type the accent mark by itself, press the [≡f][←] key.

   The accented character or accent mark appears on the screen and the special Function Right icon disappears.

If you try to accent a character and the resulting character is not supported on the terminal, the plain (unaccented) character displays on the terminal screen. For a complete list of the English and Western European characters available in the terminal font, see Appendix C, "International Character Support."

Quick Reference Keypad Chart

Use this keypad chart to enter any character or function on the alphanumeric (English or Western European) keypad. For help about additional functions that are available on a TE keypad, see the *TRAKKER Antares Terminal Emulation User’s Guide*.

To Enter	Press the Key(s)
0 to 9	[0] to [9]
a to z	[A] to [Z]
A to Z	[⇧] [A] to [⇧] [Z]
backlight on/off	[💡]
backtab	[_f] [Tab]
beep volume	[=f] [💡]
Bksp (backspace)	[←]
caps	[_f] [Z]
contrast	[_f] [💡]
ctrl	[△]
cursor down	▼
cursor left	◀
cursor right	▶
cursor up	▲
enter	[enter ↵]
escape	[Esc]
F1 to F5	(F1) to (F5)
F6 to F10	[_f] (F1) to [_f] (F5)
FnL (function left)	[_f]
FnR (function right)	[=f]
resume/suspend	(I/O)
shift	[⇧]
space	[_f] [←]
tab	[Tab]
viewport down	[_f] [3]
viewport end	[_f] [1]

To Enter	Press the Key(s)
viewport home	[_f] [7]
viewport left	[_f] [4]
viewport right	[_f] [6]
viewport up	[_f] [9]
. (period)	[.] or [_f] [W]
, (comma)	[_f] [V]
: (colon)	[_f] [F]
; (semicolon)	[_f] [L]
=	[_f] [I]
+	[_f] [C]
- (dash)	[_f] [H]
/ (slash)	[_f] [X]
\ (backslash)	[_f] [T]
?	[_f] [R]
<	[_f] [P]
>	[⇧] [.] or [_f] [Q]
! (exclamation point)	[⇧] [1]
@	[⇧] [2]
#	[⇧] [3]
$	[⇧] [4]
%	[⇧] [5]
&	[⇧] [7]
* (asterisk)	[⇧] [8]
(	[⇧] [9]
)	[⇧] [0]
_ (underline)	[_f] [B]

Quick Reference Keypad Chart (continued)

To Enter	Press the Key(s)	To Enter	Press the Key(s)
" (quotes)	[f] [M]	ç	[f] [C]
‘ (apostrophe)	[f] [S]	Ç	[f] [D]
[	[f] [J]	β	[f] [O]
]	[f] [K]	µ	[f] [M]
{	[f] [D]	å	[f] [A]
}	[f] [E]	a̲	[f] [8]
| (solid pipe)	[f] [U]	â	[f] (F1) [A]
¦ (broken pipe)	[f] [N]	à	[f] (F2) [A]
¿	[f] [R]	ä	[f] (F3) [A]
¬ (not symbol)	[f] [6]	á	[f] (F4) [A]
½	[f] [X]	ã	[f] (F5) [A]
¼	[f] [W]	ê	[f] (F1) [E]
¡	[f] [S]	è	[f] (F2) [E]
«	[f] [K]	ë	[f] (F3) [E]
»	[f] [F]	é	[f] (F4) [E]
¤	[f] [4]	î	[f] (F1) [I]
£	[f] [5]	ì	[f] (F2) [I]
¾	[f] [Y]	ï	[f] (F3) [I]
¶	[f] [O]	í	[f] (F4) [I]
§	[f] [0]	o̲	[f] [9]
° (degree)	[f] [G]	ô	[f] (F1) [O]
• (dot)	[f] [.]	ò	[f] (F2) [O]
¹ (superscript)	[f] [1]	ö	[f] (F3) [O]
³ (superscript)	[f] [3]	ó	[f] (F4) [O]
² (superscript)	[f] [2]	õ	[f] (F5) [O]
ˆ (circumflex)	[f] (F1) [→] or [⇧] [6]	û	[f] (F1) [U]
` (grave)	[f] (F2) [→] or [f] [G]	ù	[f] (F2) [U]
¨ (umlaut)	[f] (F3) [→]	ü	[f] (F3) [U]
´ (acute)	[f] (F4) [→]	ú	[f] (F4) [U]
~ (tilde)	[f] (F5) [→] or [f] [A]	ÿ	[f] (F3) [Y]

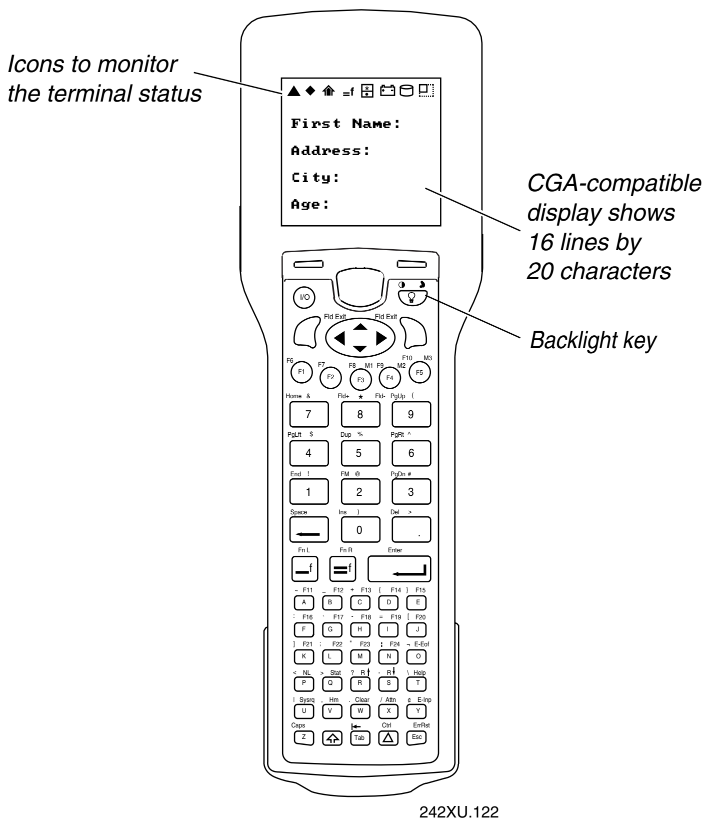
Quick Reference Keypad Chart (continued)

To Enter	Press the Key(s)
ý	f F4 Y
ñ	f I
Å	f B
Â	f F1 ⇧ A
À	f F2 ⇧ A
Ä	f F3 ⇧ A
Á	f F4 ⇧ A
Ã	f F5 ⇧ A
Ê	f F1 ⇧ E
È	f F2 ⇧ E
Ë	f F3 ⇧ E
É	f F4 ⇧ E
Î	f F1 ⇧ I
Ì	f F2 ⇧ I
Ï	f F3 ⇧ I
Í	f F4 ⇧ I
Ñ	f J
Ô	f F1 ⇧ O
Ò	f F2 ⇧ O
Ö	f F3 ⇧ O
Ó	f F4 ⇧ O
Õ	f F5 ⇧ O
Û	f F1 ⇧ U
Ù	f F2 ⇧ U
Ü	f F3 ⇧ U
Ú	f F4 ⇧ U
Ý	f F4 ⇧ Y

How to Use the Terminal’s Screen

You can use the terminal’s screen to view data, run applications, monitor the terminal’s status, and for many other functions. The terminal’s black and white screen is 16 lines by 20 characters and is CGA compatible.

Note: *If you are using the terminal in a cold environment, the LCD may respond and display information more slowly than in a warm environment.*



You can use these features of the screen:

- In an application, use the terminal’s screen as a viewport to see a full-size terminal screen of 25 lines by 80 characters.
- Adjust the display’s backlight, contrast, and audio signal volume from the keypad.
- Use the terminal’s icons to monitor the status of special keys, battery power, RF and network communications, and viewport movement.

Each screen feature is explained in the next sections.

Using the Screen As a Viewport

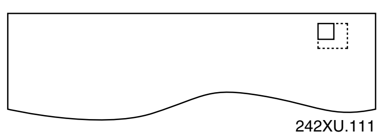
The terminal screen shows 16 lines by 20 characters of data at one time. In terminal emulation (TE) or custom applications, the terminal's screen may show only part of each 25 line by 80 character screen that appears on a full-size terminal. You can use the terminal screen as a viewport to move around and see the entire 25 x 80 screen.

The viewport lets you view screens and enter data by showing the part of the screen you are using. When you are using one of the Intermec TE applications, the viewport automatically moves to the cursor when there is data entry from the host computer or the terminal. You can configure the viewport for your TE applications to:

- Follow the cursor
- Center the viewport around the cursor

For help on configuring the TE viewport options, see the *TRAKKER Antares Terminal Emulation User's Guide*.

The first time you turn the terminal on, it displays the upper left corner of a full-size terminal screen. This is the viewport's home position. A screen or application that displays more than 16 lines by 20 characters of data at one time has data in the unseen area of the screen. When you move the cursor or viewport out of the home position (upper left corner), the Viewport icon displays until the viewport is returned to its home position.



242XU.111

Adjusting the Screen From the Keypad

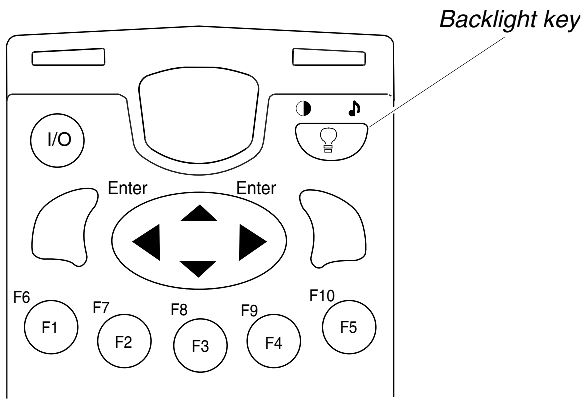
The Backlight key is one of the special features built into the terminal's keypad. You can use the Backlight key to:

- Turn the backlight on and off on the terminal's screen.
- Adjust the display contrast.
- Change the beep volume of the terminal's audio signals.

For a detailed description of the backlight, contrast, and beep volume commands, see Chapter 9, "Configuration Command Reference."

Note: *The Backlight key temporarily changes the backlight, contrast, or beep volume. These changes are not saved permanently in flash memory.*

Using the Backlight Key to Adjust the Screen



242XU.049

To turn the backlight on and off

- Press . Turn the backlight on to more easily see the terminal's screen in dimly-lit environments.

The backlight stays on for the length of time set in the Display Backlight Timeout command as long as there is no keypad or scanning activity or until you press again. For more information, see "Display Backlight Timeout" in Chapter 9.

Note: *You use the battery power at a faster rate with the backlight turned on.*

To change the display contrast

- Press . Each time you press , it makes the display contrast one level darker.

There are eight contrast levels. If the contrast is at the darkest level and you press , the contrast changes to the lightest contrast level.

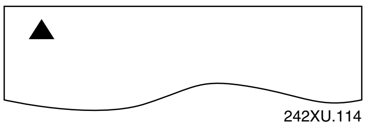
To change the beep volume of the audio signals

- To change the volume of the terminal's audio signals, press . Each time you press , it makes the beep volume one level louder.

When you change the beep volume, you also change the keyclick volume. The keyclick is the sound that you hear when you press a key on the terminal and the Keypad Clicker command is enabled. There are five beep volume levels including off. If the volume is at the loudest level and you press , the beep volume is turned off. If you press again, the volume changes to the quietest level.

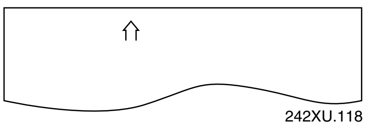
Understanding the Icons

You can use the terminal’s icons to monitor the status of special keys, battery power, saving data to flash memory, RF and network communications, and viewport movement. As you use the terminal, the icons are turned on and off in the top line of the terminal screen to indicate the current status.



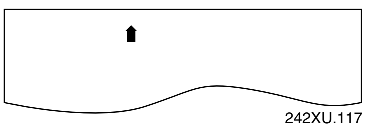
242XU.114

Ctrl This icon appears when you press △. The key is stored in the keypad buffer until you press another key. When you press a second key, the key combination is entered into the terminal and the icon disappears.



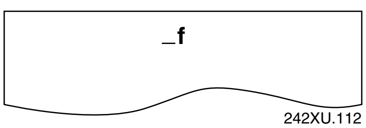
242XU.118

Shift This icon appears when you press ⇧. The key is stored in the keypad buffer until you press another key. When you press a second key, the key combination is entered into the terminal and the icon disappears.



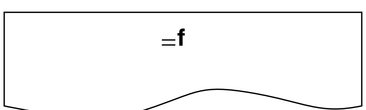
242XU.117

Caps Lock This icon appears when you press _f Z to enable the Caps Lock feature and type all alphabetic characters as uppercase letters. When you press _f Z to disable Caps Lock, the icon disappears.



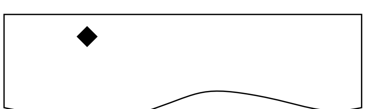
242XU.112

Function Left This icon appears when you press _f. The key is stored in the keypad buffer until you press another key. When you press a second key, the key combination is entered into the terminal and the icon disappears.



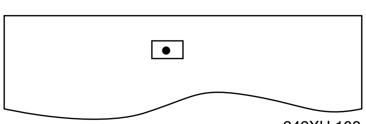
242XU.113

Function Right This icon appears when you press =f. The key is stored in the keypad buffer until you press another key. When you press a second key, the key combination is entered into the terminal and the icon disappears.



242XU.116

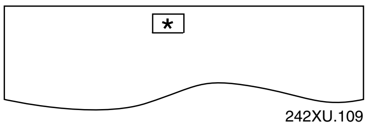
Radio This icon appears when the Network Activate command is disabled on a T2425, or there is a problem with the radio card and it is turned off. The Radio icon disappears when the network is enabled and the radio is on and transmitting. For help, see Chapter 4, “Operating the Terminal in a Network.”



242XU.108

Data This icon contains a period. It appears on the screen when data is buffered in the RF interface. The data is either waiting to be transmitted to the DCS 300 or host, or received data has not been accepted by the T2425’s application. When no data is being buffered in the RF interface, the Data icon is off.

Understanding the Icons (continued)

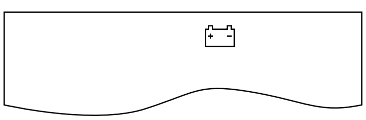


242XU.109

Connect This icon contains an asterisk and tells you if the T2425 is connected via RF communications to the DCS 300 and/or an access point.

- If the Connect icon is not displayed, the T2425 is not connected to an access point. You may be out of range of an access point or the terminal may not be configured correctly. If the Network Activate command is disabled, the Connect icon is not displayed, but the Radio icon does appear.
- If the Connect icon blinks, the T2425 is not connected to the DCS 300. You may be out of range of an access point, you may be about to go out of range of an access point, or the access point may have recently been turned off. The Connect icon does not blink in a TCP/IP network.
- If the Connect icon appears and remains on solid, the T2425 is connected and communicating with the access point (TCP/IP) or DCS 300 (UDP Plus).

In a UDP Plus network, the Connect icon is not instantaneously updated but does tell you the communications status the last time data was sent or received from the T2425. For help with network communications, see Chapter 4, “Operating the Terminal in a Network.”

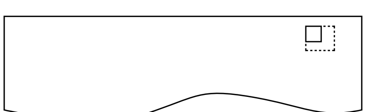


242XU.110

Battery This icon appears when one or both of the batteries have a low power charge. The Battery icon appears with the terminal turned on or off.

- The Battery icon turns on and remains on and the terminal beeps every 15 seconds when the main battery pack has about 5 to 45 minutes of power left.
- The Battery icon blinks when the backup battery charge is low.
- The Battery icon blinks and the terminal beeps every 15 seconds when both batteries are low.

The Battery icon disappears when you replace or charge the main battery pack, or charge the backup battery. For help, see “Learning About the Terminal’s Batteries” later in this chapter.



242XU.111

Viewport This icon appears when you move the viewport out of the upper left corner of the screen, which is the viewport’s home position. When you move the viewport back to the home position, the icon disappears.

Understanding the Terminal's Audio Signals

The terminal and scan module have a beeper and internal speakers to sound audio signals or beep sequences as you use the terminal. For example, you hear a low beep tone each time you enter or scan a valid command.

You can change the beep volume to meet the needs of your working environment. When you change the beep volume, you also change the keyclick volume. The keyclick is the sound that you hear when you press a key on the terminal and the Keypad Clicker command is enabled. For example, use a quiet beep in a library or a loud beep in a manufacturing plant.

There are two ways to change the beep volume:

- Use the Backlight key (press f) on the keypad. For help, see "Adjusting the Screen From the Keypad" earlier in this chapter.
- Use the Beep Volume command. For help, see "Beep Volume" in Chapter 9.

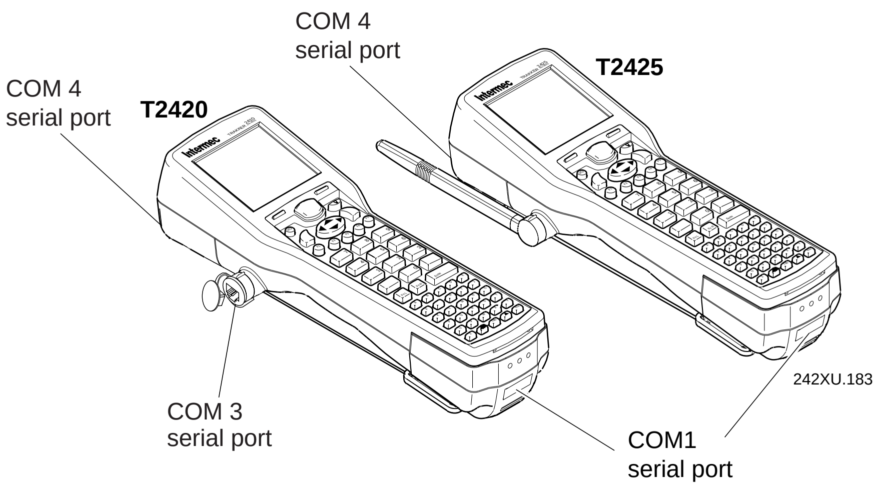
The next table explains the purpose of each beep sequence you may hear.

Beep Sequence	Description
Low beep	You entered a valid command or the data you entered was stored.
High beep	You entered valid data, the terminal decoded a label, or the terminal decoded the last row of a two-dimensional bar code.
Three low beeps	You entered or scanned an invalid command or data.
Four low beeps	When you boot the terminal, you hear four low beeps once the power-on self test (POST) has executed successfully.
Low beep, high beep, low beep, high beep	You hear this beep sequence when POST failed and did not execute successfully. For help, see "Problems While Operating the Terminal" in Chapter 6.
Click	When you press a key, the terminal sounds a click. You can disable the keyclick. For help, see "Keypad Clicker" in Chapter 9. The terminal also clicks while you are scanning a two-dimensional (Code 16K or Code 49) bar code label.
Low beep (every 15 seconds)	The main battery pack is low. You need to replace or recharge the battery pack. For help, see "Learning About the Terminal's Batteries," later in this chapter.

Locating the Serial Port

Communications ports, also called COM ports, are locations from which data can be passed into and out of the terminal. You use serial communications through a COM port, which means that data is transmitted over a single line from one device to another.

You can use the terminal's COM port to communicate with other devices.



You can communicate with other RS-232 devices, such as modems, PCs, and printers, through a COM port by:

- using a TRAKKER Antares TD2400 Communications Dock (COM1).
- using a TRAKKER Antares Optical Link Adapter (COM1).
- using a TRAKKER Antares 242X Serial Interface Module (COM4).

The T2420 also has a modem (COM3) as an option. You use an RJ11 cable to plug the modem directly into a phone connection.

For help, see Chapter 4, "Operating the Terminal in a Network."

Learning About the Terminal's Batteries

There are two rechargeable batteries in the terminal:

Main Battery Pack This lithium-ion battery provides the main power source to operate the terminal.

Backup Battery This NiCad (Nickel-Cadmium) battery backs up all memory and the real-time clock while you change the main battery pack.

Main Battery Pack

The main power source for the terminal is a lithium-ion battery pack. Follow these tips to get the best battery performance and life possible:

- You should always keep a charged main battery pack installed in the terminal to maximize the backup battery's life.
- When you remove a battery pack, insert another charged battery pack in the terminal so you can continue to operate the terminal without interruption.
- If you use the terminal for extended periods of time in a sub-freezing environment, you may need to change the battery pack more often.
- If you have been using the terminal in a cold temperature environment and need to replace or charge the battery pack, let the battery packs warm up for a half hour before you charge them.
- Store the battery chargers and spare battery packs in a warm (office) environment to ensure the most efficient operation.

Removing and Installing the Main Battery Pack

The battery pack is the main power source for the terminal and it charges the backup battery when required. If the main battery pack charge goes low, you need to replace it or charge the battery pack as soon as possible. There are two ways to find out if the battery pack is low:

- The Battery icon appears and remains on solid on the top line of the screen, and the terminal beeps once every 15 seconds.
- Check the status of the battery pack using the Battery Status diagnostic test. For help, see Chapter 7, "Running Diagnostics."

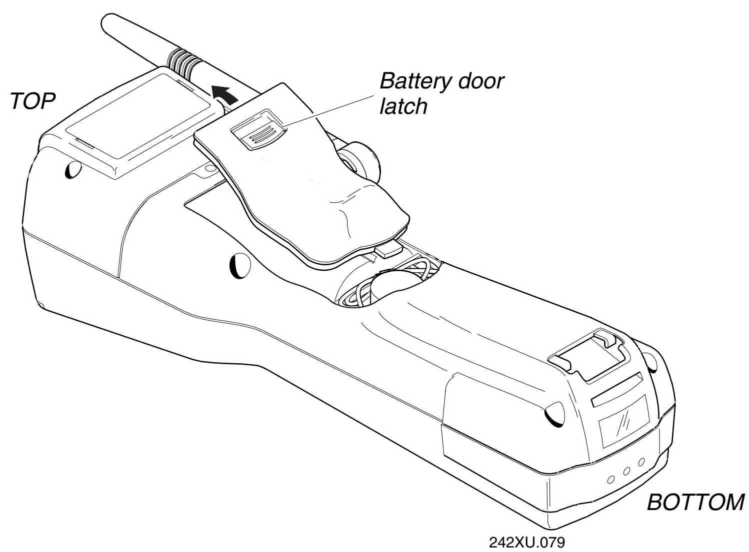
Caution
Removing the battery pack while the terminal is on may cause loss of data.

Conseil
Ne détachez pas le jeu de piles pendant que le lecteur est actif car cela pourrait entraîner la perte de données.

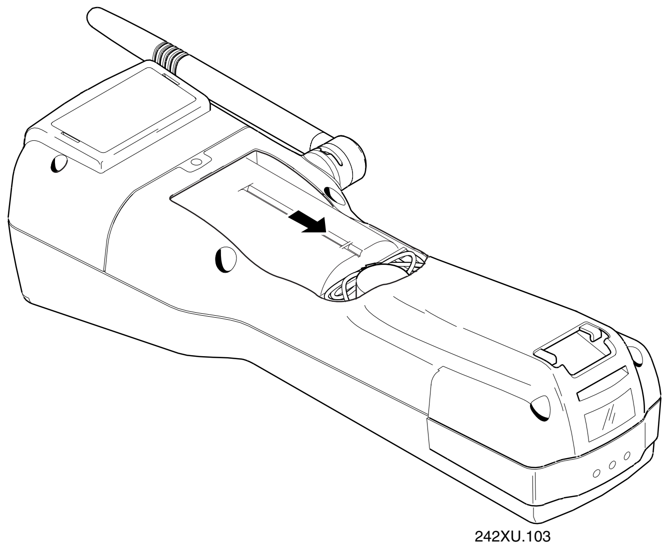
To remove the battery pack

1. Press I/O to turn off the terminal.
2. Open the battery door by pushing down on the battery door latch and sliding it toward the bottom end of the terminal. Lift up the top edge of the battery door to remove it.

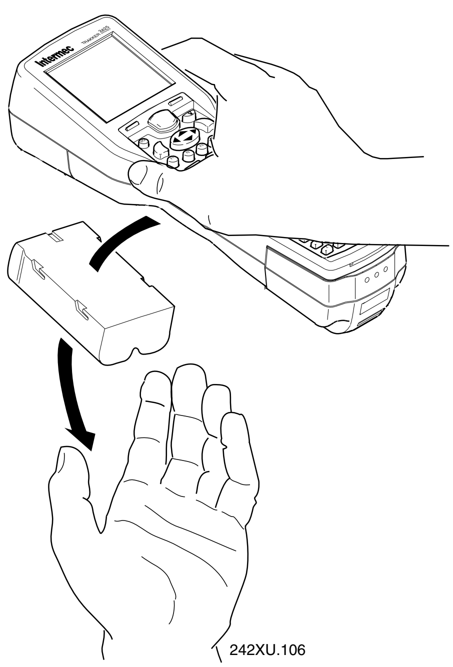
   Note: *If you have a handstrap installed, stretch the handstrap's elastic band to allow the T-bar to slide out of the T-bar opening on the bottom end of the terminal. Move the handstrap out of the way to open the battery door.*



3. Disconnect the battery pack from the connectors inside the bottom case by sliding the battery pack toward the bottom end of the terminal.

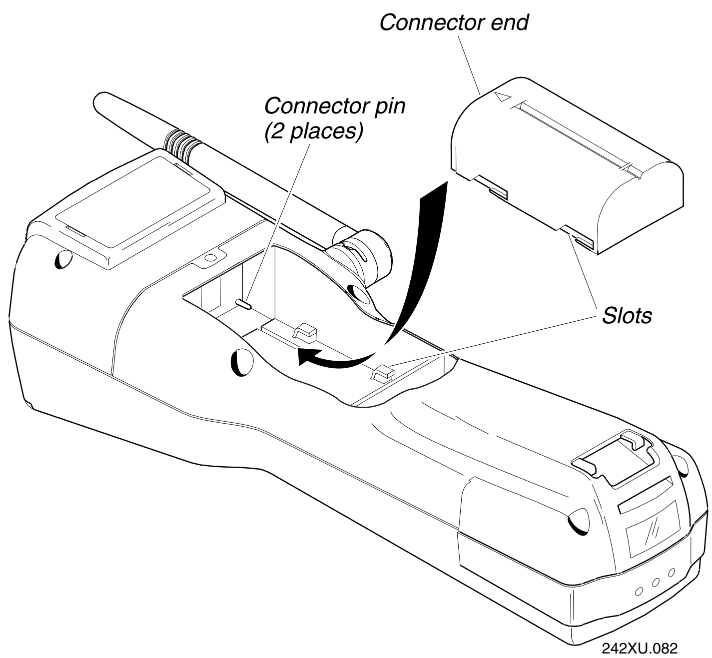


4. Tilt the terminal to one side and let the battery pack drop out of the compartment into your hand. Continue with the next instructions to install a charged battery pack.



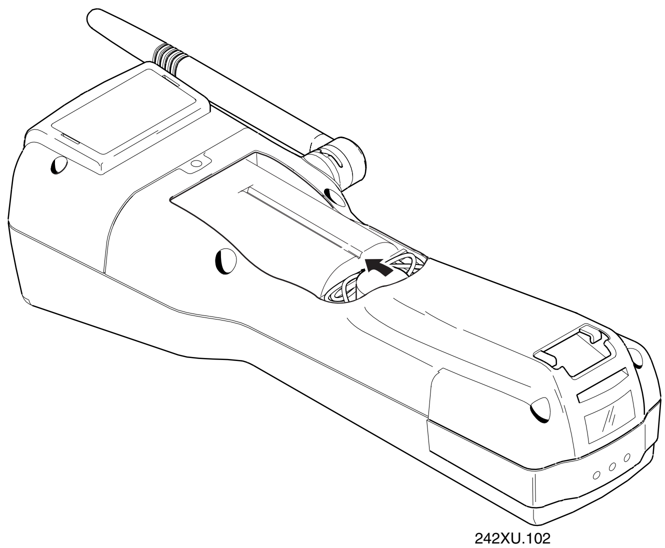
To install the battery pack

1. Hold the battery pack with the flat side facing down toward the inside of the battery compartment. The small arrow on the top of the battery pack must point toward the top (screen) end of the terminal.
2. Place the battery pack into the upper (larger) half of the battery compartment.



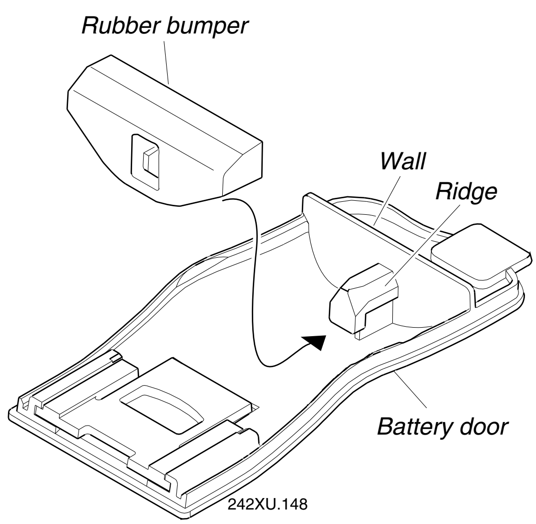
3. Hook the slots on the bottom of the battery pack into the slots on the bottom of the battery compartment.
4. Slide the battery pack toward the top end of the terminal until it fits and locks into the connectors inside the bottom case. The battery pack must be all of the way forward to close the battery door.

Installing the Battery Pack

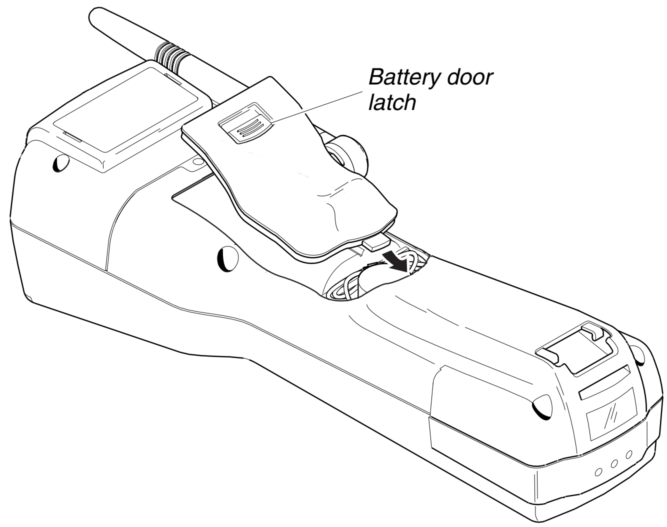


5. If you are using an Intermec-labeled battery pack (Part No. 063278), make sure you remove the rubber bumper from the inside of the battery door. Otherwise, you will not be able to close the door.

   If you are using a Sony-labeled battery pack, make sure the rubber bumper is installed over the ridge near the wall on the inside of the battery door. The rubber bumper on the battery door keeps the battery pack in place.



6. Hook the bottom edge of the battery door into the bottom case above the backup battery compartment. Push the door down to close it over the battery compartment. Push the battery door latch down and slide it toward the top end of the terminal to lock the door in place.



Charging the Main Battery Pack

You can recharge the main battery pack using any of these TRAKKER Antares accessories:

- Battery charger
- Communications dock connected to an external power supply
- Optical link adapter connected to an external power supply

The fastest way to charge the battery pack is to use the battery charger. The charger uses a charging method that maximizes battery life. For help about charging battery packs, see the accessory quick reference guides.

After you install a charged battery pack in the terminal, you can use the Battery Status diagnostic in the TRAKKER Antares 2400 Menu System to check the charge status of the batteries. For help, see Chapter 7, “Running Diagnostics.”

Backup Battery

The backup battery is a NiCad battery that is designed to back up all memory and the real-time clock while you remove a discharged main battery pack and insert a charged battery pack. You can remove and replace the backup battery if it will no longer hold a charge, or if the battery is dead.

The main battery pack charges the backup battery when required with the terminal turned on or off. You should keep a charged main battery pack installed in the terminal to maximize the backup battery's life.

If you turn off the terminal and do not use it, the backup battery will provide backup battery power for:

- A maximum of 1 month if a fully-charged main battery pack is installed.
- A maximum of 3 days if a main battery pack is not installed.

The backup battery power depends on how much power is left in the main battery pack and the backup battery when you turn off the terminal. If the backup battery is still providing backup power when you turn the terminal back on, the terminal resumes exactly where it was when you turned it off, or restarts your application.

If you plan to store the terminal for a long period of time, insert a fully charged main battery pack to maximize battery life. Store the terminal in a warm (office) area to make sure the backup battery continues to charge.

Note: *If the Resume Execution command is allowed, the terminal will resume the application when you turn on the terminal. Otherwise, the terminal boots and the application restarts. For help, see "Resume Execution" in Chapter 9.*

Charging the Backup Battery

The main battery pack charges the backup battery when required with the terminal turned on or off. The terminal continuously monitors the backup battery voltage level and charges the backup battery for a fixed duration of time whenever the voltage level gets low. If the main battery pack is low or discharged, it will not be able to charge the backup battery.

There are two ways to find out if the backup battery charge is low:

- The Battery icon is blinking on the top line of the screen.
- Check the status of the backup battery using the Battery Status diagnostic test. For help, see Chapter 7, "Running Diagnostics."

Note: *The backup battery charger operates between 32°F and 104°F (0°C and 40°C). If you are using the terminal in an environment that is outside this temperature range, the backup battery will not charge. Move the terminal to a warmer environment to charge the backup battery.*

To fully charge a discharged backup battery

1. Install a fully charged main battery pack. For help, see “Removing and Installing the Main Battery Pack” earlier in this chapter.
2. The main battery pack charges the backup battery. It will be fully charged in approximately 18 hours. After you finish charging the backup battery, the main battery pack still has most of its power remaining.

Note: *The backup battery charges enough to operate the terminal within 20 minutes. However, the backup battery will only provide limited backup power if it is not fully charged.*

Removing and Installing the Backup Battery

The backup battery should provide years of backup battery power and you will seldom need to replace it. You can remove and replace the backup battery if it will no longer hold a charge, or the battery is dead. Call your local Intermec service representative to order a new backup battery.

Caution
When you replace the backup battery, all data stored in RAM is lost.

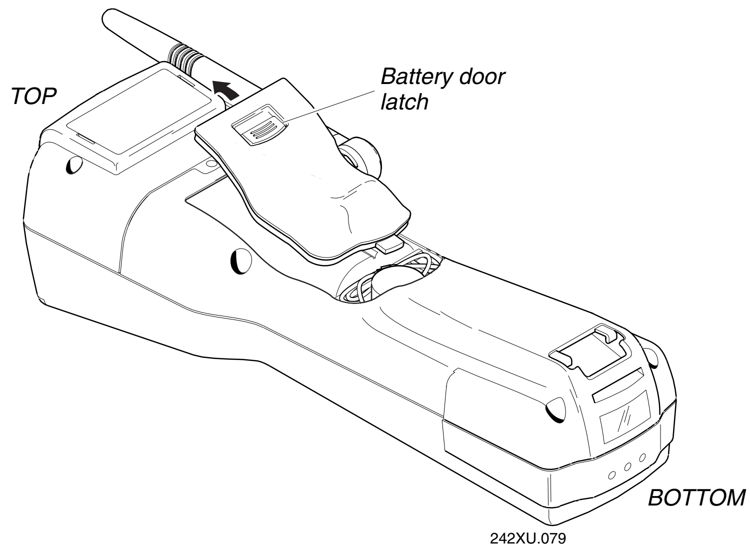
Conseil
Lors du remplacement de la batterie de secours, toutes les données stockées dans la mémoire vive (RAM) sont perdues.

To remove the backup battery

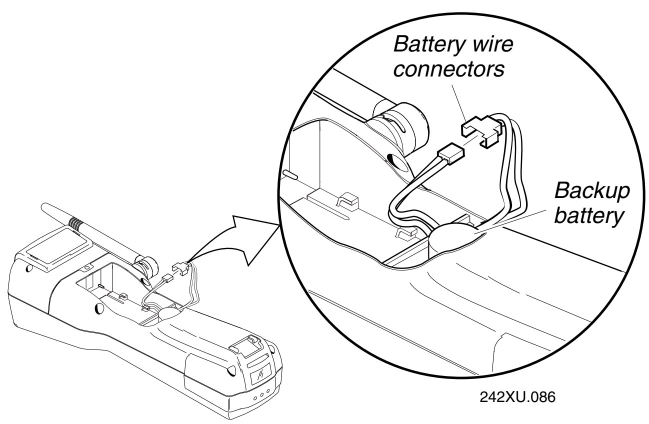
1. Save your data or last transaction and exit your application.
2. Press I/O to turn off the terminal.
3. Open the battery door by pushing down on the battery door latch and sliding it toward the bottom end of the terminal. Lift up the top edge of the battery door to remove it.

   Note: *If you have a handstrap installed, stretch the handstrap’s elastic band to allow the T-bar to slide out of the T-bar opening on the bottom end of the terminal. Move the handstrap out of the way to open the battery door.*

Opening the Battery Door

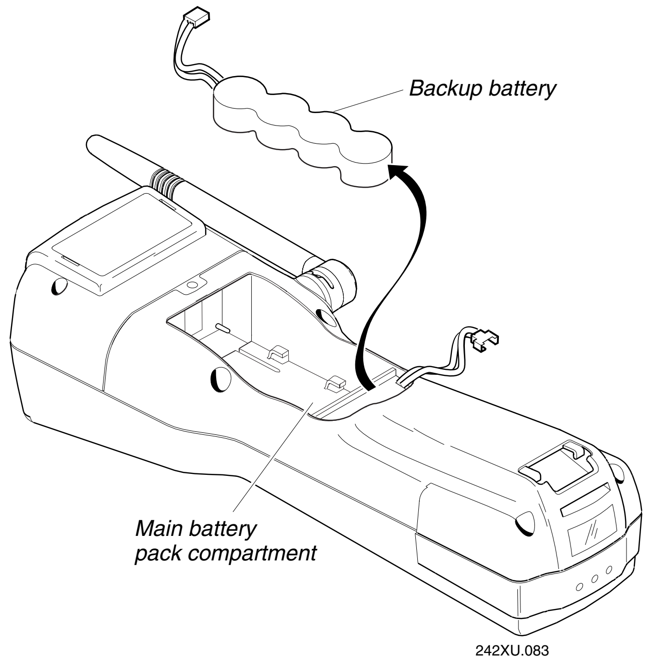


4. Remove the main battery pack. For help, see "Removing and Installing the Main Battery Pack" earlier in this chapter.
5. Hold each of the backup battery connectors and gently pull to disconnect the backup battery.



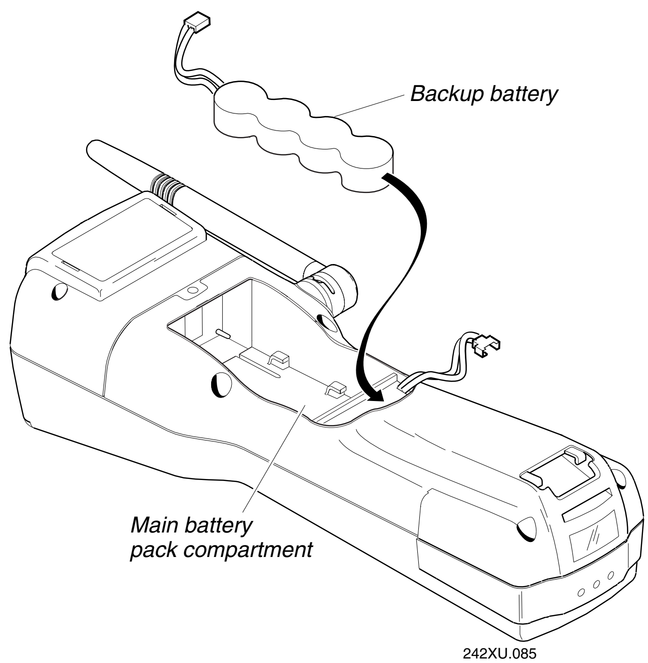
6. Holding the visible end of the backup battery, slide the battery up and out of the battery compartment. Continue with the next instructions to install the new backup battery.

Removing the Backup Battery

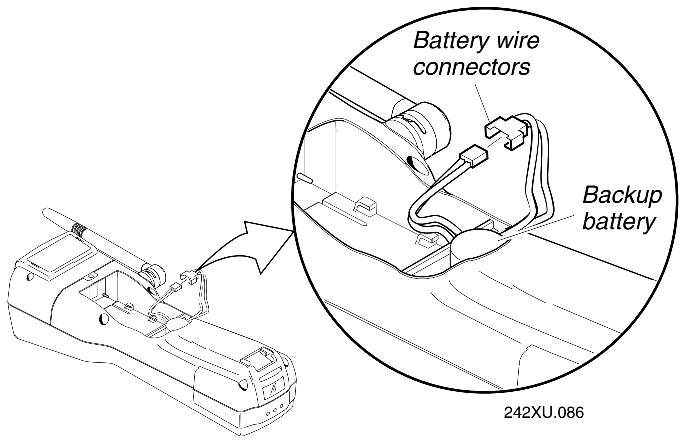


To install a backup battery

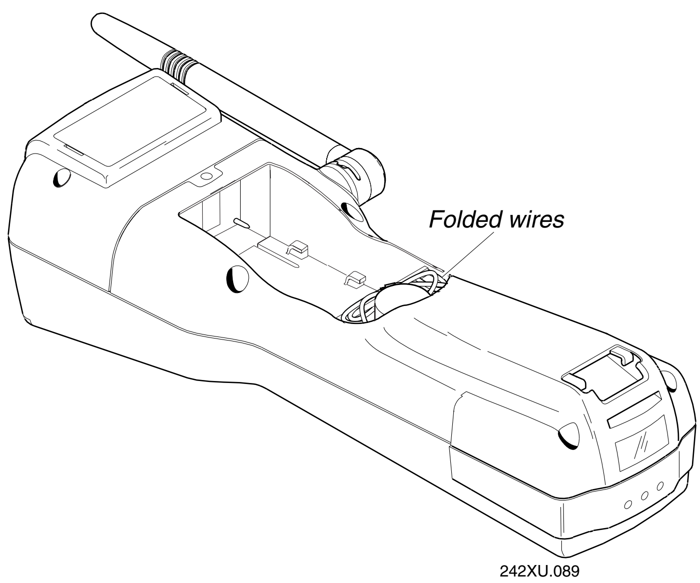
1. Slide the backup battery into the lower half of the battery compartment. The wired end of the backup battery should be visible in the compartment.



2. Find the two connectors in the backup battery compartment. One connector is attached to the backup battery. The other connector is attached to the terminal. Firmly push the two battery wire connectors together until they lock. (The connectors are keyed so they cannot be connected incorrectly.)

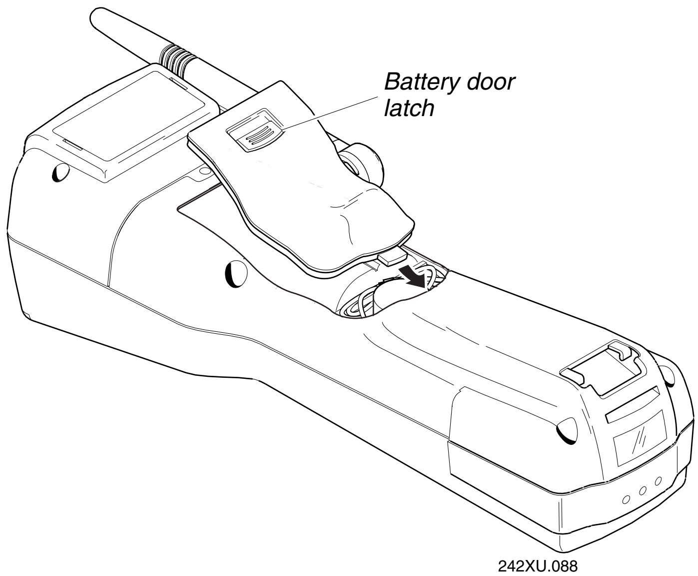


3. Gently fold and push the backup battery wires into the open area of the backup battery compartment near the wall.



4. Install a fully charged main battery pack. For help, see "Removing and Installing the Main Battery Pack" earlier in this chapter.

5. Hook the bottom edge of the battery door into the bottom case above the backup battery compartment. Push the door down to close it over the battery compartment. Push the battery door latch down and slide it toward the top end of the terminal to lock the door in place.



The main battery pack charges the backup battery. The backup battery will be fully charged in approximately 18 hours.

Note: *The backup battery charges enough to operate the terminal within 20 minutes. However, the backup battery will only provide limited backup power if it is not fully charged.*

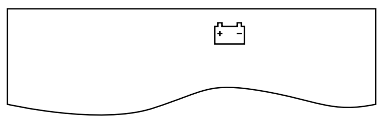
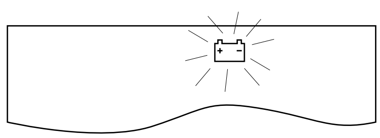
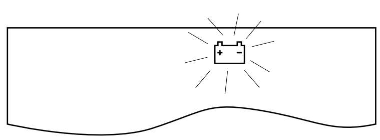
Disposing of the NiCad Backup Battery

The materials used in the construction of the TRAKKER Antares NiCad backup battery are recyclable. Intermec strongly urges that you recycle the backup batteries when they reach the end of their useful lives. Additionally, the Environmental Protection Agency has classified worn out or damaged NiCad batteries or battery packs to be hazardous waste. Several states have passed legislation that prohibits discarding these batteries into the municipal waste stream.

If you have any question on how to recycle or dispose of the NiCad backup batteries, contact your local, county, or state hazardous waste management office.

Recognizing a Low or Discharged Battery

If you see the Battery icon or hear a beep every 15 seconds, the terminal is indicating that the main battery pack or the backup battery power is almost exhausted. Use this table to find out which battery is low or discharged.

Low Battery Warning	What You Need to Do
 242XU.110 The Battery icon turns on and stays on, and the terminal beeps every 15 seconds.	Main battery pack is low (5 to 45 minutes of power left). Replace the battery pack with a spare charged battery pack, charge the battery pack, or attach an external power supply.
 242XU.126 The Battery icon blinks.	Backup battery is low. Keep a charged main battery pack installed in the terminal. Leave the terminal off and let the battery pack charge the backup battery. The backup battery charge will be fully charged in approximately 18 hours.
 242XU.126 The Battery icon blinks and the terminal beeps every 15 seconds.	The main battery pack and the backup battery charge are both low. Immediately, turn off the terminal. Replace the main battery pack with a spare charged battery pack. Leave the terminal off and let the battery pack charge the backup battery. The backup battery charge will be fully charged in approximately 18 hours. If the Battery icon continues to blink, you need to replace the backup battery.

Managing Your Battery Power

To maximize the life of the terminal's backup battery and main battery pack, use these power management features.

Tip: *Always keep a charged or partially charged main battery pack in the terminal.*

Situation	Ways to Save Battery Power
You are not using the terminal for 5 minutes or longer.	Press I/O to turn off the terminal and put it in Suspend mode. Suspend mode maximizes the life of the main battery pack's power. Make sure the battery pack is charged (not in a low battery state). Or, use the Automatic Shutoff feature. Automatic shutoff turns off the terminal (Suspend mode) when there is no activity on the terminal for the length of time you set. For help, see "Automatic Shutoff" in Chapter 9.
You are operating the terminal and the main battery pack charge becomes low. (The Battery icon remains on solid.)	Press I/O to put the terminal in Suspend mode. Remove the main battery pack and insert another charged battery pack. For help, see "Main Battery Pack" earlier in this chapter.
You are operating the terminal and the backup battery charge becomes low. (The Battery icon blinks.)	Press I/O to put the terminal in Suspend mode. Keep a charged main battery pack installed in the terminal. The battery pack will fully charge the backup battery in approximately 18 hours.

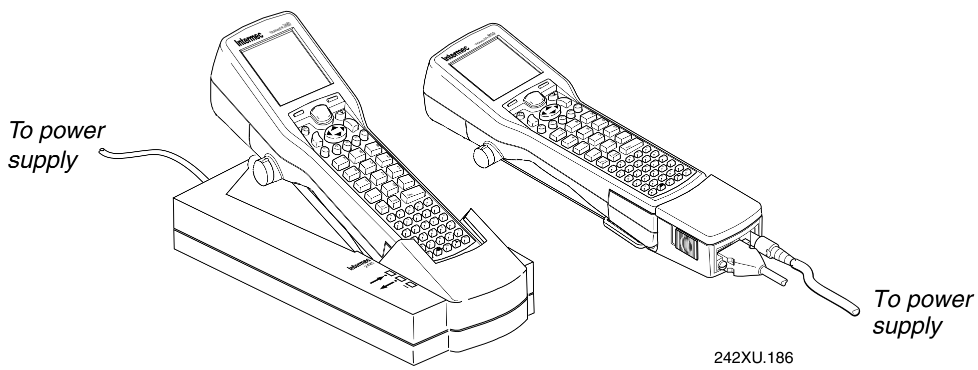
Note: *If you use the terminal in a cold temperature environment, battery life will be reduced. For more information, see "Guidelines for Managing Batteries" in Chapter 6.*

Using an External Power Supply

You can operate the terminal using an external power supply with these TRAKKER Antares accessories:

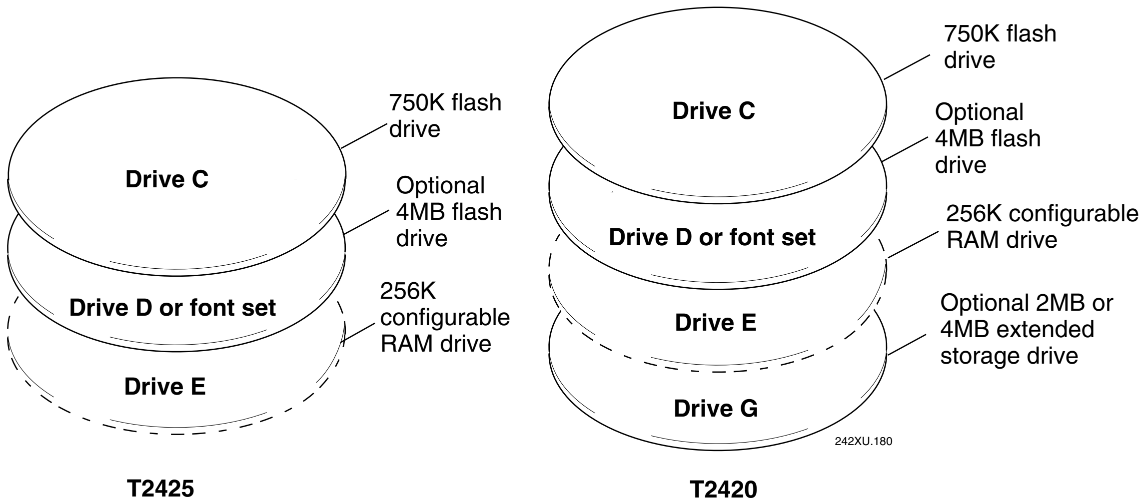
- Communications dock connected to a power supply
- Optical link adapter connected to a power supply

You can use the external power supply to operate the terminal and to charge the terminal's batteries at the same time. For help, see the accessory quick reference guides.



Defining the Terminal's Memory and Drives

The terminals come with these memory and drives:



Drive C is a 750K flash drive. You can store up to 32 files on drive C. Applications must be stored on drive C.

Drive D or font set is optional flash memory (4MB). You can store up to 32 files on 2MB of drive D or you can store up to 2MB of double-byte fonts. If you configure the flash memory as drive D, use this drive to store large lookup tables and data files. To configure this flash memory, see "Flash Memory Configuration" in Chapter 9.

Drive E is a configurable RAM drive (up to 256K). By default, the RAM drive is not configured and the memory is available for programmable (Malloc) memory allocations. To configure the RAM drive, see "RAM Drive Size" in Chapter 9. You can store up to 32 files on drive E. The contents of the RAM drive are erased when you boot or reset the terminal, or change the backup battery.

Drive G is an optional 2MB or 4MB extended storage drive that is only available on the T2420. You can store up to 32 files on drive G. Use this drive to store large lookup tables and data files.

Note: *On each drive, filenames are customer defined using eight characters with a three-character extension.*

On the terminals, applications are customer defined. You have 512K total RAM for the application execution space. If the RAM drive is configured, your application execution space is reduced by the amount of the RAM drive.

Application execution space	+	Drive E	=	512K RAM

Note: *The remaining RAM is the Malloc/free memory pool.*

Using the Scan Module

You use the scan module accessories with the terminals to scan and enter bar code data. The terminal decodes the bar code label and enters the data or command you scanned.

There are five types of scan modules available:

- Module for cabled scanners
- Standard range scan module
- Long range scan module
- High visibility scan module
- High density scan module

Note: *You must have a scan module or a serial module attached to use the terminal.*

The module for cabled scanners has a port to attach a wand, laser scanner, or CCD scanner. The standard range scan module has an integrated laser scanner. For more information about your scan module, see the instruction sheet that ships with the module.

When you unpack the terminal and begin using it, only three bar code symbologies are enabled: Code 39, Code 128, and UPC/EAN. If you are using bar code labels that are encoded in another symbology, you need to enable that symbology on the terminal. For help, see "Enabling Bar Code Symbologies" in Chapter 1, or find the symbology in Chapter 9, "Configuration Command Reference."

Note: *The Scan button on the terminal keypad does not activate the scanner device connected to the module for cabled scanners.*

The next sections cover these topics:

- Installing a Scan Module
- Using the Standard Range Scan Module
- Scanning Options

Installing a Scan Module

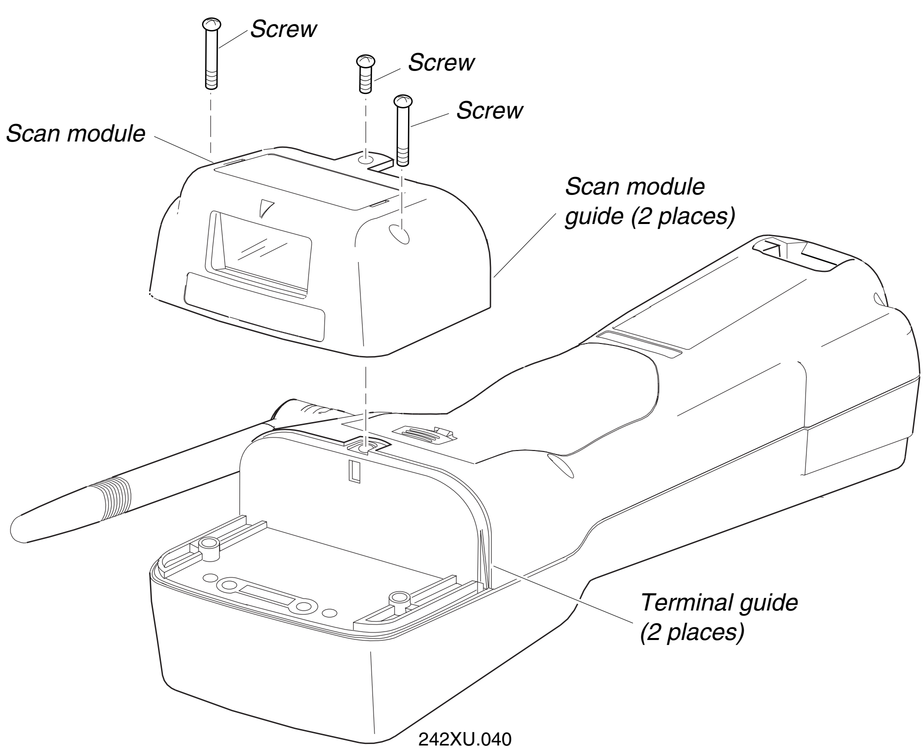
To use the terminal, you must have a scan module installed on the terminal. The scan module is installed at the Intermec factory.

You may want to change the scan module and install another type of scan module on the terminal. Use these instructions to remove and install the scan module.

Note: *Observe all static electricity (ESD) precautions before installing a module.*

To install a scan module

1. Make sure the terminal is off and then lay it face down on a clean and sturdy work surface.
2. Use a Phillips screwdriver and remove the three screws that secure the scan module to the terminal.
3. Remove the existing scan module from the terminal.
4. To install the module, align the module guides with the guides on the terminal. **Gently** press down on the module to seat the connector guide pins and the module connector into the connector on the terminal.



Note: *The module guide pins and connector should fit easily into the connector on the terminal. DO NOT force the module into the connector or you may damage the module connector, the terminal connector, or both.*

5. Insert the three screws into the module and tighten them to secure the scan module to the terminal.

Using the Standard Range Scan Module

The standard range laser scan module emits a beam of laser light that is visible on a bar code label as you scan it. The terminal decodes the bar code label and enters the data or command you scanned.

This section only explains the standard range scan module. For help using the other scan modules, see the instruction sheet that ships with the module.

Warning
Do not look directly into the window area or at a reflection of the laser beam while the laser is scanning. Long-term exposure to the laser beam can damage your vision.

Avertissement
Ne regardez pas directement la réflexion d'un rayon laser ou dans la fenêtre du laser lorsque celui-ci est en opération. Si vous regardez trop longtemps un rayon laser, cela peut endommager votre vue.

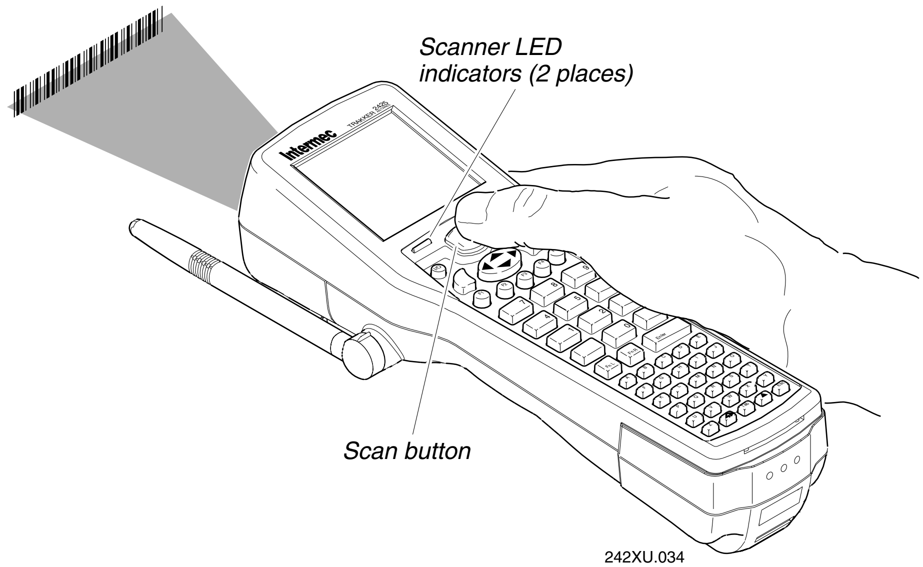
To scan a bar code label with the standard range scan module

1. Press (I/O) to turn on the terminal.
2. Hold the terminal at a slight angle a few inches from the bar code label. The laser scan window in the scan module must be pointing toward the label.
3. Push the Scan button on the keypad. Direct the beam so that it falls across all bars in the bar code label. After the terminal successfully reads the label, you hear a high beep. The scanner stays on or turns off depending on the scanning options you have configured.

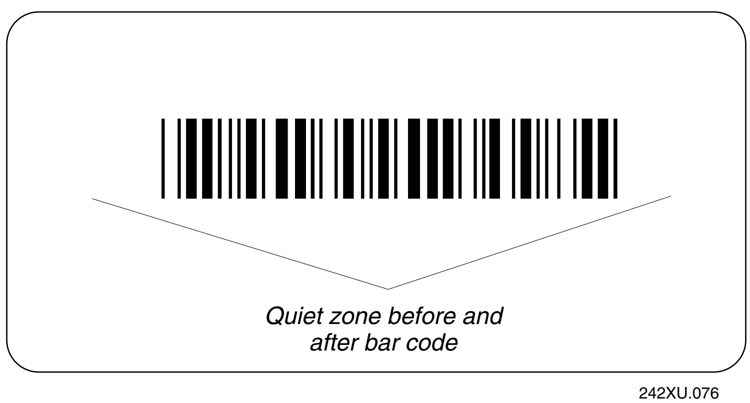
   When the scanner laser beam is on, both scanner light emitting diodes (LEDs) at the top of the keypad are lit in a yellow color. Once the bar code label is scanned successfully, the LEDs are lit in a green color. The LEDs turn off after 2 seconds unless you start scanning another label.

   Note: *Some of the scanning options described in the next section let you scan multiple bar code labels without having to press the Scan button each time. The yellow LEDs stay lit any time the scanner laser beam is on.*

4. Release the Scan button.



To successfully read a bar code label, the laser beam in the scan module must see all the bars in a label and a “quiet zone” at each end of the label. A quiet zone is a clean, non-printed space.



With the standard range scan module, you will have the best success if you hold the terminal so that the horizontal reading angle is near zero and the vertical reading angle is near 20 degrees. To get the best scan angle, hold the terminal so that the scan module is pointing toward the bar code label. Tilt the terminal up or down slightly (20 degrees). You can also watch the laser beam. The laser beam becomes the brightest at the best scan angle.

Optimum scan angles vary with the type and print quality of the bar code label, the distance of the scanner from the label, and the lighting in the area.

Note: *You should not scan the bar code label "straight on." In a 2-degree conical "dead zone" directly above the label, the laser beam may reflect back into the scanner window and prevent the terminal from reading the label. At certain angles and straight on, you may not see the laser beam.*

Scanning Options

You can set several configuration command parameters to configure the laser scanner to meet your needs. There are several ways to set the scanner commands on the terminal. For help, see Chapter 3, "Configuring the Terminal." For help using the scanner configuration commands, see Chapter 9, "Configuration Command Reference."

The parameters available are:

Decode Security Defines the security level to use when decoding bar codes. When you select a lower decode security level, the terminal can decode bar codes with poorer print quality.

Scan Ahead Allows you to scan a number of bar code labels at one time. The labels are held in a stack until the terminal can process the data.

Scanner Mode Defines how the scanner operates when you press the Scan button or activate a cabled laser scanner. In One-Shot mode, the laser turns on and stays on until you release the button or scanner trigger, or a label is decoded. In Automatic mode, you can continuously scan bar code labels without having to release the button or scanner trigger between labels.

Scanner Redundancy Defines the number of scans (voting) the scanner takes of the same label. When set, voting requires the terminal to decode the same bar code label multiple times during a single scanner event, and compare the decoded information for a match before signaling a good read.

Scanner Selection Identifies the type of scanner you have connected to the TRAKKER Antares terminal module for cabled scanners. The terminal can optimize the scanning performance by using the scanner you define in this command. If you have a long range or high density scan module, Scanner Selection lets you configure the spotting beam.

Scanner Timeout Defines the maximum length of time the scanner stays on each time you press the Scan button or activate the cabled laser scanner.

Scanner Trigger Allows you to set the triggering to level or edge triggering. With level triggering, you activate the scanner and the laser turns on and stays on until you release the Scan button or the trigger on a cabled scanner. In edge triggering, you activate the scanner and the laser turns on and stays on until you activate the scanner a second time, or the scanner timeout turns it off.

3

Configuring the Terminal

This chapter explains how to configure the terminal, discusses the terminal's configuration parameters, and tells you how to restore the default configuration. The table at the end of the chapter lists all the configuration parameters and their options.

How to Configure the Terminal

You can configure the TRAKKER Antares 2420 and 2425 terminals by using either of the methods described in detail in this chapter:

Using the TRAKKER Antares 2400 Menu System With menus and screens, the TRAKKER Antares 2400 Menu System lets you view the current configuration and modify configuration parameters.

Configuring the terminal by scanning bar codes You can change the terminal's current configuration by scanning Code 39 or Code 93 bar code labels that contain configuration commands. This method is a fast, easy way to change the terminal's configuration. You can scan the bar code labels in this manual, or you can create your own bar code labels.

Note: *You can configure the terminals by sending commands from an application through the serial port. You can also configure the T2425 through the network from a DCS 300 or from a host application. For help, see Chapter 4, "Operating the Terminal in a Network."*

Learning About Configuration Parameters

You can customize many operating characteristics of the terminals, such as the volume of its audio signals and the bar code symbologies it decodes. These characteristics are controlled by configuration parameters. The values you set for the configuration parameters determine how the terminal operates.

By customizing the terminal's configuration, you can set up the terminal to operate easily and efficiently within your data collection system.

Note: *To learn the purpose and syntax of each configuration parameter or command, see Chapter 9, "Configuration Command Reference."*

The configuration parameters can be organized into three groups, which are discussed in the next sections: bar code symbologies, communications, and general operation. When you configure the terminal, you are performing one or more of these tasks:

- Choosing the Symbologies the Terminal Decodes
- Specifying How the Terminal Will Communicate
- Controlling How the Terminal Will Operate

Choosing the Symbologies the Terminal Decodes

This list contains all the bar code symbologies the terminal can decode:

- Codabar
- Code 11
- Code 16K
- Code 2 of 5
- Code 39
- Code 49
- Code 93
- Code 128
- Interleaved 2 of 5 (I 2 of 5)
- MSI
- Plessey
- UPC/EAN

When the terminal ships, only these three symbologies are enabled:

- Code 39
- Code 128
- UPC/EAN

If you are using one of the other symbologies to encode your bar code labels, you need to configure the terminal and enable the symbology. To quickly enable symbologies, see "Enabling Bar Code Symbologies" in Chapter 1.

To ensure that the terminal can operate quickly and efficiently, you should enable only the bar code symbologies that you are going to scan. When you enable each bar code symbology, you may need to set a check digit, the length of the bar code label, or other options. For help, see the bar code symbology in Chapter 9, "Configuration Command Reference."

Specifying How the Terminal Will Communicate

The T2420 uses serial communications to send data to and from another serial device. The T2425 uses radio frequency (RF) communications to communicate with other devices in Intermec's 2.4 GHz RF network. You can also use the T2425's serial port to send and receive data. Before you can use the terminal in your wired or wireless network, you must configure the serial port and/or network parameters.

On the T2425, you must set the RF network parameters, radio parameters, and address information before the T2425 can communicate with other devices in the 2.4 GHz RF network.

To learn how to configure the terminal to fit into your wired or 2.4 GHz RF network, see Chapter 4, "Operating the Terminal in a Network."

Controlling How the Terminal Will Operate

The operating parameters let you adjust the way the terminal operates. By customizing the operating parameters, you can

- set the terminal to automatically shut off after a specified length of time.
- set the terminal to resume applications or restart applications.
- modify bar code data by appending the time.
- modify bar code data by using preambles and postambles.
- enable or disable specific reader commands.
- configure a RAM drive.
- change the volume of the audio signals (beeper and keypad clicker).
- control the display contrast, backlight timeout, and font size.
- enable or disable the keypad clicker and keypad caps lock.
- customize the way the scan module operates by selecting scan ahead data buffering, type of scanner device, decode security level, scanner timeout value, and trigger modes.

Configuring the Terminal With the Menu System

The TRAKKER Antares 2400 Menu System is a menu-driven application that lets you configure the terminal, manage files, view system information, and run diagnostics. You can access the TRAKKER Antares 2400 Menu System while running any application.

To access the TRAKKER Antares 2400 Menu System

- Press [f] [T] [2] [M] or press [f] [2] [4] [8] or scan this bar code:

  Note: *You must press the (Left Enter) key in this key sequence.*

  Enter Test and Service Mode

  ..-.

The Main Menu appears, displaying four menu options.

242XU.001

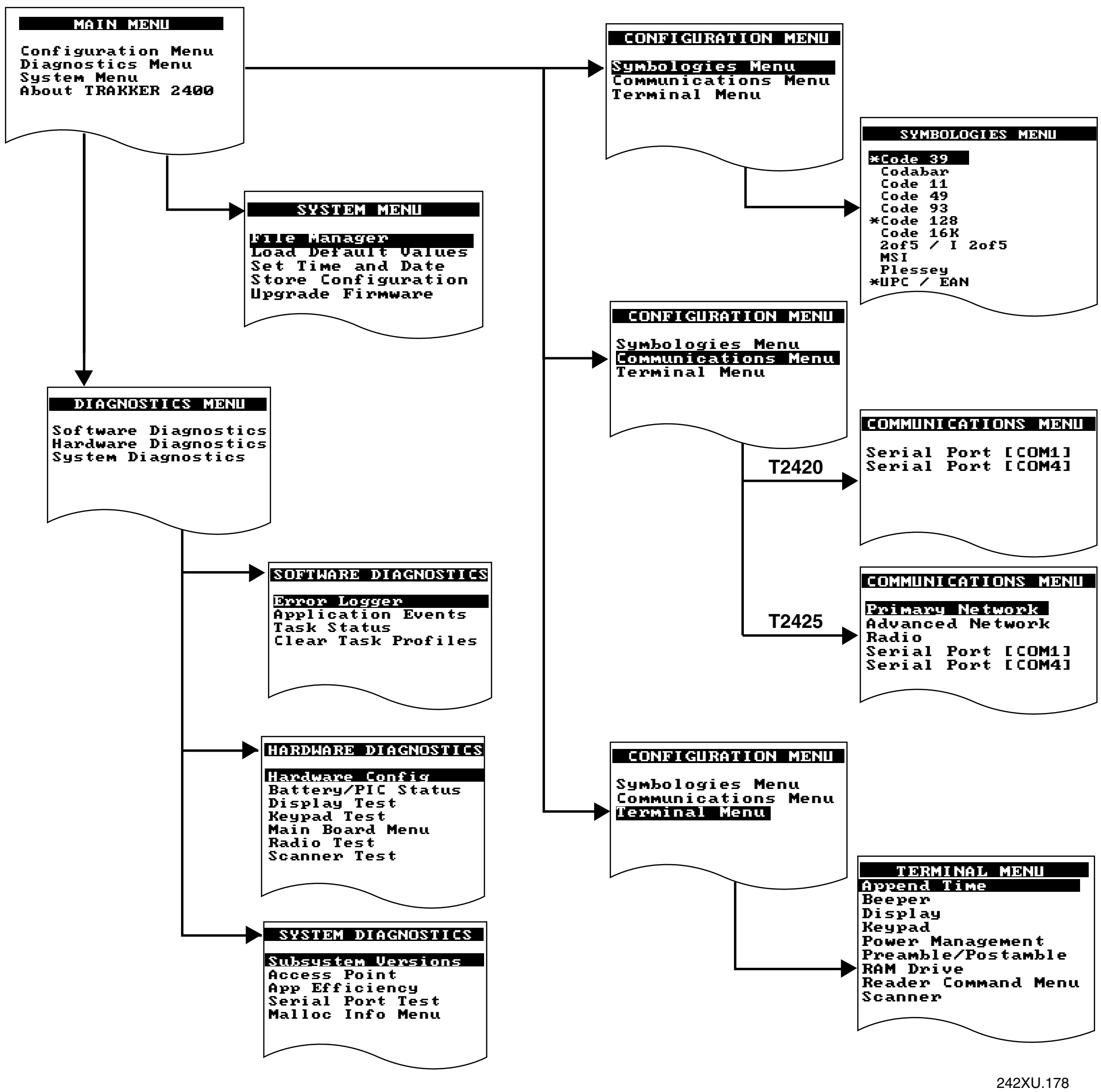
Configuration Menu Choose the Configuration Menu to configure bar code symbologies, network and communications parameters, serial port parameters, and the terminal's operating characteristics.

Diagnostics Menu Choose the Diagnostics Menu to run hardware, software, or system diagnostics to help analyze and fix problems on the terminal. You can also view information about batteries and the system. For help, see Chapter 7, "Running Diagnostics."

System Menu Choose the System Menu to manage files, load the default configuration, set the time and date, store the terminal's configuration in flash memory, and upgrade the firmware.

About TRAKKER 2400 Choose this option to see the part number, firmware version, and RF protocol (UDP Plus or TCP/IP) loaded on the terminal. You may need this information if you are working a problem with an Intermec representative.

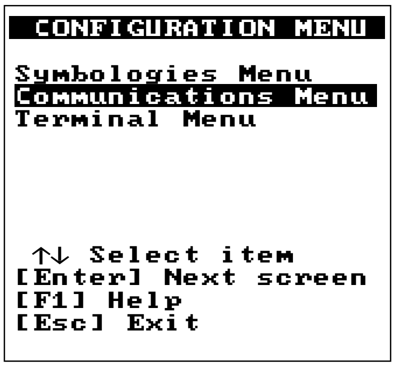
The TRAKKER Antares 2400 Menu System at a Glance



Exploring the Configuration and System Menus

When you access the TRAKKER Antares 2400 Menu System, the Main Menu appears. You use the Configuration Menu and the System Menu to configure the terminal.

The Configuration Menu contains these commands:



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Symbologies Menu Choose the Symbologies Menu to configure and activate the bar code symbologies the terminal can decode. An asterisk (*) on the Symbologies Menu indicates that the symbology is active. For help, see “Choosing the Symbologies the Terminal Decodes” earlier in this chapter.

Communications Menu Choose the Communications menu to configure the primary network parameters, the advanced network parameters, the radio parameters, or the serial port parameters. On a T2420, only the serial port option is visible since the terminal has no radio. For help, see Chapter 4, “Operating the Terminal in a Network.”

Terminal Menu Choose the Terminal Menu to configure the way the terminal, keypad, scanner, or screen operate. For help, see “Controlling How the Terminal Will Operate” earlier in this chapter.

The System Menu contains these commands:

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File Manager Lets you manage the files on each drive. You can run an application from drive C, delete a file from any drive, or rename a file on any drive. For help using the File Manager, see “Running the Application on the Terminal” in Chapter 5.

Load Default Values Lets you load the default configuration values. For help, see “Restoring the Terminal’s Default Configuration” later in this chapter.

Set Time and Date Lets you set the current time and date. For help, see “Setting the Time and Date” in Chapter 1.

Store Configuration Stores the current configuration in flash memory, including any changes you have made in the menu system. When you exit the TRAKKER Antares 2400 Menu System, you will also be prompted to save your changes. For help, see “Exiting the TRAKKER Antares 2400 Menu System” later in this chapter.

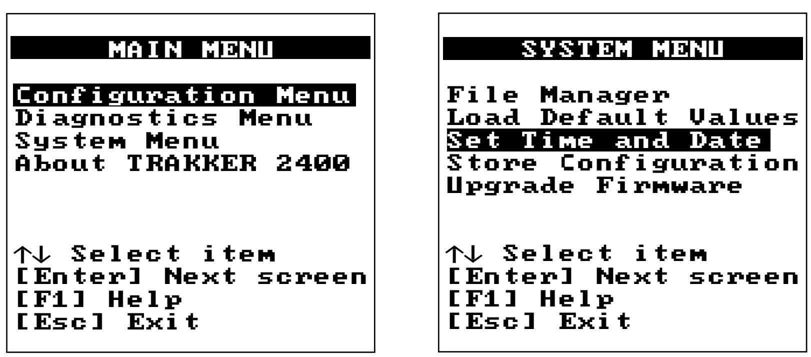
Upgrade Firmware Lets you upgrade the system firmware on the terminal. For help, see “Upgrading the Firmware” later in this chapter.

You can use the keystrokes described next to move around in the TRAKKER Antares 2400 Menu System, or you can scan bar code labels. For a list of bar code labels, see the “Full ASCII Bar Code Chart” in Appendix B.

Selecting Menus and Commands

Press ▲ or ▼ to choose a menu name from the Main Menu. Then press ↵, , or to display the commands in the selected menu. In this example, you press ▼▼↵ to display the System Menu:

Note: *In the menu system, the ↵, , and keys all work the same way.*



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Press ▲ or ▼ to choose a command or option from a menu, and then press ↵ to execute the command or option.

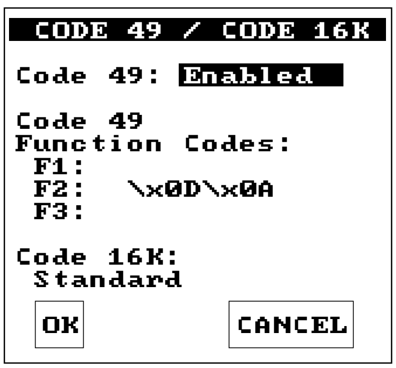
Note: *You can press F1 at any time to display an online help screen. Press Esc to exit a help screen.*

Filling In Fields and Marking Check Boxes

Screens list the options for each configuration parameter, diagnostic, or system option. Below each option name is either a toggle field or an entry field:

- In a toggle field, you press ◀ or ▶ to view the options for that field.
- In an entry field, you type a value into the field. To edit the data in an entry field, use the ← or f ← keys. You can also use the Delete (f .) and Insert (f 0) keys to edit an entry field.

For example, the Code 49/Code 16K screen has toggle and entry fields. The Code 49 field is a toggle field. Press ▶ to toggle between Enabled and Disabled. The Function Codes field for F1, F2, and F3 are entry fields. You type a value into the field for each function code.



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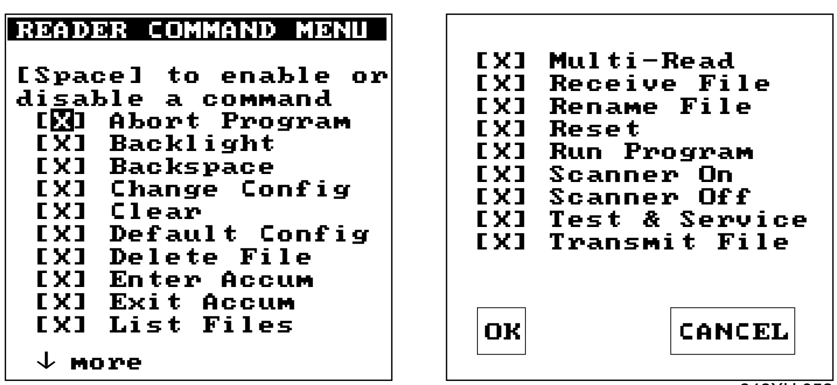
Some screens contain check boxes. Check boxes are used when you can select more than one option at one time.

To mark or clear check boxes

- Press ←. For example, to disable the Backlight reader command, choose the Backlight check box and press ← to clear the check box.



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To move to the next field

- Press ▼ or Tab.

To move to the previous field

- Press ▲.

Entering ASCII Control Characters

You can include ASCII control characters in a postamble or preamble by using the TRAKKER Antares 2400 Menu System. For a definition of the postamble or preamble, see Chapter 9, “Configuration Command Reference.”

You can configure the postamble or preamble to characters from the full or extended ASCII character sets. For example, the Field Exit code (Ü) for 5250 terminal emulation is an extended ASCII character that is often configured as the postamble. For a list of the full and extended ASCII characters, see Appendix B, “Full ASCII Charts,” or the *TRAKKER Antares Terminal Emulation User’s Guide*.

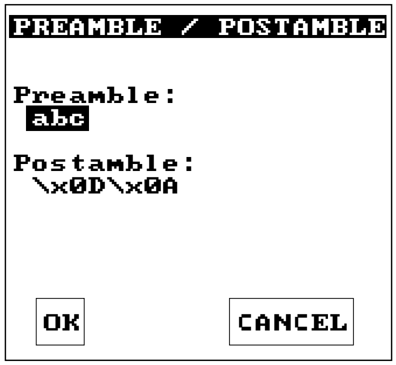
Note: *For more help on using the 5250 Field Exit code, see “Auto-Advancing Through Fields on 5250 TE Screens” in the* TRAKKER Antares Terminal Emulation User’s Guide.

To enter ASCII characters for a preamble or postamble

1. Decide which ASCII control character you want to set for the preamble or postamble. Look up the control character in the Full ASCII Table in Appendix B and find the two-digit hexadecimal number. For example, ETX in the Full ASCII Table is the hexadecimal value 03.

   To enter an extended ASCII character, look up the hexadecimal number for the character in the “TRAKKER Antares Terminal Font Set” in Appendix C. For example, 9A is the hexadecimal value for Ü, the 5250 Field Exit code.
2. Use the TRAKKER Antares 2400 Menu System to configure a preamble or postamble. From the Main Menu, choose Configuration Menu.
3. From the Configuration Menu, choose Terminal Menu.

4. From the Terminal Menu, choose Preamble/Postamble.



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5. Move the cursor to the field for the preamble or postamble.
6. Type the control character, extended ASCII character, or escape character sequence in the preamble or postamble field.
   - To type a control character or extended ASCII character in the preamble or postamble field, use this syntax:

     `\x`*`hh`*

     where *hh* is the one or two-digit hexadecimal number for the control character or extended ASCII character. For example, to enter ETX as a preamble, type:

     `\x03`

     To enter Ü (5250 Field Exit code) as the postamble, type:

     `\x9A`
   - To type an escape character (backslash) in the preamble or postamble field, use the next table. The application ignores the first backslash (\) character and saves the next character(s). For example:

Enter These Characters	Preamble/Postamble Saved
\\	\
\h	h
\x	x
\\k	\k
\	no data

7. Press ↵ or choose OK to save your changes and exit the screen.

8. Choose another menu from the Terminal Menu or press Esc to exit. The Configuration Menu appears.

For help exiting the menu system, see “Exiting the Configuration Menu” later in this chapter.

Exiting Screens and Saving Changes

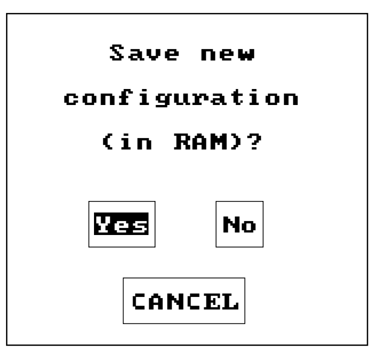
When you exit a screen, you can save or discard your changes:

Task	Description
To exit a screen and save the changes	Choose OK and press ↵. Or, press ↵ with the cursor in any field except the Cancel button.
To exit a screen and discard the changes	Choose Cancel and press ↵. Or, press Esc with the cursor in any field.

Exiting the Configuration Menu

1. Press Esc to exit the Configuration Menu. If you have made any changes to the current configuration, this screen prompts you to save the new configuration in RAM.

   The current configuration (also called the runtime configuration) is the set of parameters currently enabled on the terminal.



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2. Choose Yes and press ↵ to save your changes in RAM and update the current configuration on the terminal. Choose No and press ↵ to exit without changing the configuration. The Main Menu appears.
3. Choose another menu from the Main Menu or press Esc to exit the TRAKKER Antares 2400 Menu System.

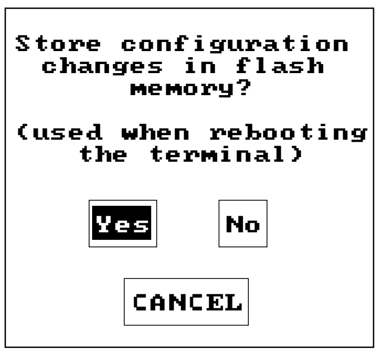
   For help exiting the menu system, see the next procedure for “Exiting the TRAKKER Antares 2400 Menu System.”

Exiting the TRAKKER Antares 2400 Menu System

1. From the Main Menu, press Esc. If you have made any changes, the next screen prompts you to store the changes in flash memory.

   You can also save the runtime configuration in flash memory by choosing the Store Configuration command from the System Menu. For help, see "Saving Configuration Changes in Flash Memory" later in this chapter.

   Note: *When you boot or reset the terminal, it uses the configuration you last saved in flash memory.*



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2. Choose Yes and press ↵ to save your changes in flash memory. Choose No and press ↵ to exit without saving. The Exiting TRAKKER Antares 2400 Menu System screen appears.

   Note: *If you changed the configuration, you were prompted to save your changes in RAM as you exited the Configuration Menu. If you want the configuration changes to be stored in flash memory, you need to choose Yes in this screen.*

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3. Choose OK and press ↵ to exit the TRAKKER Antares 2400 Menu System. Choose Cancel and press ↵ to return to the Main Menu.

After you exit the menu system, the terminal will resume the application you were running when you started the menu system.

Configuring the Terminal by Scanning Bar Codes

You can configure the terminal by scanning bar code labels that are listed in this manual or by creating your own Code 39 or Code 93 bar code labels.

Note: *If you are working in the TRAKKER Antares 2400 Menu System, you cannot scan configuration commands. Exit the menu system to scan configuration commands.*

For example, you can use the Beep Volume command to adjust the volume of the terminal's audio signals. You can scan this bar code label to set the beep volume to a quiet audio level:

Set Beep Volume to Quiet

$+BV1

To configure the terminal, you can scan four separate bar code labels or you can create bar code labels that contain more than one configuration command. For example, you can create one bar code label to configure the terminal for:

- One-Shot Scanner mode (SB0)
- Scanner Redundancy set to high (SR2)
- Beep Volume set to very loud (BV4)
- Disable Keypad Clicker (KC0)

One-Shot Scanner Mode, Set Scanner Redundancy to High, Set Beep Volume to Very Loud, Disable Keypad Clicker

$+SB0SR2BV4KC0

For a list of all the configuration commands, see Chapter 9, "Configuration Command Reference."

When you create a bar code label to set several configuration commands, follow these rules:

- The bar code label must be printed using Code 39 or Code 93 symbology.
- The bar code label must include the start and stop character. Most bar code printing utilities automatically include the start and stop character.
- The bar code label must start with $+ (Change Configuration command).
- Each configuration command must include the command syntax and the value for the command. For example, BV is the command syntax for Beep Volume and the value 4 sets the beep volume to very loud.
- If you set one configuration command to a string of ASCII characters and another configuration command follows, you must enclose the value in quotes. If you do not include the quotation marks, the terminal will interpret everything after the first command as data and will not find the second configuration command.

  For example, to set the preamble to BV, use $+ADBV (no quotes are needed). To set the preamble to BV and turn off the beep volume, use $+AD"BV"BV0, or change the order and use $+BV0ADBV. To clear the preamble and postamble from a single label, use $+AD""AE.

  Note: *To scan a Code 39 bar code label that includes quotes or periods, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in Chapter 9.*

- To include quotation marks when you set a value, the entire value must be enclosed in quotation marks. Type two sets of quotation marks ("") to include one quotation mark as the value for a command. For example, to set the preamble to ABC"D, use $+AD"ABC""D".

When you scan bar code labels, you change the terminal's current runtime configuration. The changes are not saved in the terminal's flash memory. For help, see the next section, "Saving Configuration Changes in Flash Memory."

Saving Configuration Changes in Flash Memory

The terminals use two copies of the configuration:

Runtime or RAM configuration is the current or active set of parameters and options enabled on the terminal. The configuration is stored in RAM and will be lost if you boot or reset the terminal.

Boot or flash configuration is the set of parameters and options last saved in flash memory. The configuration is stored in flash memory and will be saved and used if you boot or reset the terminal.

Here are the four ways you can configure the terminal and how the configuration is updated:

Configure the Terminal	Runtime or RAM Configuration Updated?	Boot or Flash Configuration Updated?
Using the TRAKKER Antares 2400 Menu System	Yes (see Note)	Yes (see Note)
Scanning bar code labels	Yes	No
From a host application through the serial port	Yes	No
T2425 from the network (DCS 300 or host)	Yes	No

Note: *You are prompted to save your changes in RAM and flash as you exit the Configuration Menu and the TRAKKER Antares 2400 Menu System. Your changes are saved if you choose Yes at each screen.*

If you configure the terminal by scanning bar code labels, through the serial port, or from the network, you may want to save the changes in flash memory using one of these methods:

- Scan or send the Save Configuration in Flash Memory reader command.
- Use the TRAKKER Antares 2400 Menu System.

To save configuration changes using the reader command

- Scan this bar code label:

Save Configuration in Flash Memory

.+1

Or, send the command `.+1` as the last command from the controller or host application. For help, see Chapter 4, "Operating the Terminal in a Network."

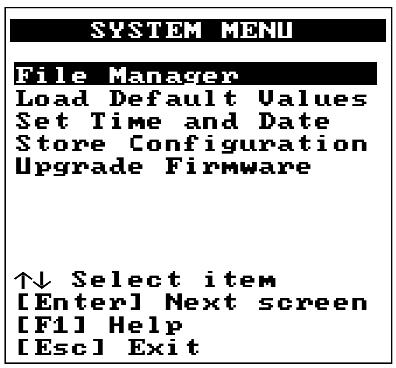
To save configuration changes using the menu system

1. Press [f] [ ] [T] [2] [M] or scan this bar code. The Main Menu appears.

   Enter Test and Service Mode

   ..-.

2. Choose System Menu and press [Enter]. The System Menu appears.



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3. Choose the Store Configuration command and press [Enter]. The Store Configuration screen appears.

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4. Choose OK to save the configuration in flash memory. To exit without saving the configuration, choose Cancel. The System Menu appears.
5. Press [Esc] to exit the System Menu. The Main Menu appears.
6. Choose another menu from the Main Menu or press [Esc] to exit the TRAKKER Antares 2400 Menu System.

Restoring the Terminal's Default Configuration

When you configure the terminal according to the instructions presented in this chapter, the parameters remain in effect until you reconfigure them. If you configure the terminal but do not save your changes in flash memory, the parameters will remain in effect until you boot or reset the terminal.

The default configuration for the terminal is listed in Appendix A. You can use the TRAKKER Antares 2400 Menu System or scan the Default Configuration bar code label to return the terminal to its default configuration.

Note: *If you restore the default configuration, you need to set the primary network communications parameters on the T2425 to reestablish communications with other devices in the 2.4 GHz RF network. You may also need to reset the serial port parameters to communicate with another device through the serial port.*

To restore the default configuration using the reader command

- Scan this bar code label:

  Default Configuration

  .+0

To restore the default configuration using the menu system

1. Press f T 2 M or scan this bar code:

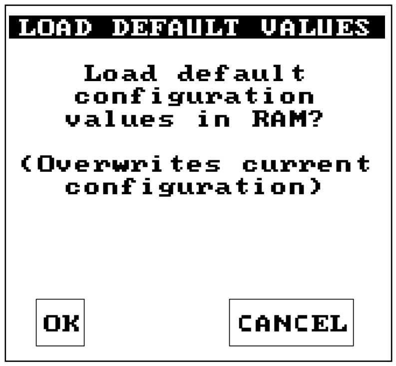
   Enter Test and Service Mode

   ..-.

   The Main Menu appears.

2. Choose System Menu and press ↵. The System Menu appears.

3. Choose the Load Default Values command and press ↵. The Load Default Values screen appears.



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4. Choose OK and press ↵ to load the default configuration values. The default values will override the current runtime configuration on the terminal.

   To exit without loading the default values, choose Cancel and press ↵. The System Menu appears.

5. Press Esc to exit the System Menu. The Main Menu appears.

6. Choose another menu from the Main Menu or press Esc to exit the TRAKKER Antares 2400 Menu System. For help exiting the menu system, see “Exiting the TRAKKER Antares 2400 Menu System” earlier in this chapter.

Upgrading the Firmware

The terminal firmware includes these items:

- TRAKKER Antares 2400 Menu System
- Terminal emulation or sample application
- TE Configuration Menu (3270, 5250, VT/ANSI terminals only)
- Operating environment, firmware, and drivers

You can upgrade a terminal to use the latest firmware version (2.x or higher) without making any hardware changes. There are two upgrade kits:

Firmware Upgrade Kit	Part Number	Description
TRAKKER Antares TCP/IP	066814S	Order this kit for terminals that communicate in a TCP/IP direct connect network or a TCP/IP pass-through network.
TRAKKER Antares UDP Plus	067119S	Order this kit for terminals that communicate with a DCS 300 in a UDP Plus network.

You can order either kit for the T2420. To order a firmware upgrade kit, contact your local Intermec service representative. Each kit comes with a utility and instructions to upgrade the firmware on the terminal. Once you upgrade to the new firmware, you can use all the features described in this manual.

Each kit comes with the new firmware version, the applications, the firmware upgrade utilities (DOS and Windows), and instructions about upgrading the terminal firmware.

You can upgrade the firmware on the T2420 or the T2425 from a host computer or PC using serial communications. You connect the terminal's serial port to the host or PC by using one of these accessories:

- Communications dock
- Optical link adapter
- Serial interface module

For help connecting the terminal, see "Using Serial Communications on the Terminals" in Chapter 4. Once the terminal is connected, you can upgrade the firmware.

Note: *You can also upgrade the firmware on one or more terminals using the Firmware Upgrade Utility on the DCS 300. For help, see the* DCS 300 System Manual.

To upgrade the firmware with the Windows utility

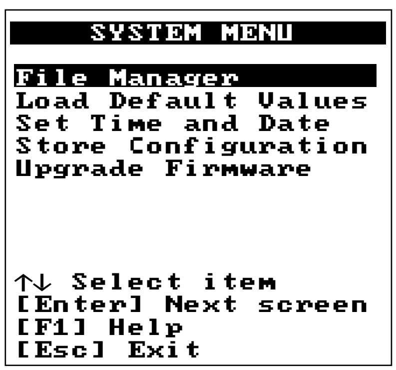
1. Connect the terminal to your PC.
2. From Program Manager, start the TRAKKER Antares Firmware Installation utility. The Firmware Installation utility screen appears.

   The Firmware Installation utility includes detailed online help. You click the Help button anytime to get more information.
3. Choose the COM port and the Firmware Type (application). For example, the T2420 sample application is one firmware type.
4. On the terminal, press [f] [T] [2] [M] or scan this bar code label:

   Enter Test and Service Mode

   ..-.

   The Main Menu appears.
5. Choose System Menu and press [Enter]. The System Menu appears.



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6. Choose Upgrade Firmware and press ↵ . The Upgrade Firmware screen appears.

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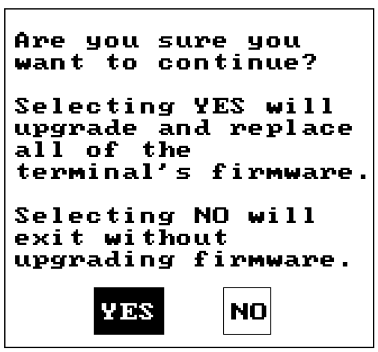
7. Choose OK to continue. The next screen appears.



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8. Choose Yes to continue and upgrade the firmware. The terminal reboots and then displays the Loader Waiting screen.

   To exit without upgrading the firmware, choose No.

   Note: *If you reach the Loader Waiting screen and cannot upgrade or continue, press* Esc *or* I/O *to exit without upgrading the firmware. The Boot Menu appears. Press* B *to boot the terminal and continue.*

9. On your PC, make sure you selected the COM port and Firmware Type, and then choose OK. The PC downloads the firmware and application. Once the download is complete, the terminal boots and runs the application. Repeat these instructions to upgrade the firmware on another terminal.

For help with the TRAKKER Antares firmware installation utilities, see the README.TXT instructions that ship with the utility or use the online help.

Recording Your Terminal's Configuration

The tables in this section list all the configuration parameters, their options, and where to find them in the Configuration Menu of the TRAKKER Antares 2400 Menu System. The default setting for each parameter is shown in ***bold italics***.

You should have an accurate record of the terminal's configuration settings in case the terminal's volatile memory and the configuration setup are lost. Record the configuration on these pages by circling the option you chose for each parameter or writing the value.

Bar Code Symbologies Table

Parameter (Syntax)	Options	Location in Configuration Menu
Codabar (CD)	***Disabled*** ABC Standard Concatenated	Symbologies Menu, Codabar option
• Start/Stop digit	Discard ***Retain ABCD*** Retain DC1-DC4	
Code 11 (CG)	***Disabled*** One check digit Two check digits	Symbologies Menu, Code 11 option
Code 16K (CP)	***Disabled*** Standard Function code 1	Symbologies Menu, Code 16K option
Code 2 of 5 (CC)	***Disabled*** 3 bar start/stop, label length 2 bar start/stop, label length	Symbologies Menu, 2 of 5, I2 of 5 option
Code 39 (CB)	Disabled ***No check digit*** Check digit HIBC AIAG check digit	Symbologies Menu, Code 39 option
• Check digit	Discard ***Retain***	
• ASCII	Non-full ***Full*** Mixed-full	Symbologies Menu, Code 39 option
Code 49 (CJ)	***Disabled*** Enabled	Symbologies Menu, Code 49 option
• Function Code 1 (CK)	***None (disabled)*** Any two ASCII characters	

Bar Code Symbologies Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Code 49 (*continued*) • Function Code 2 (CL)	***\x0D\x0A (CR LF)*** Any four ASCII characters	
• Function Code 3 (CM)	***None (disabled)*** Any two ASCII characters	
Code 93 (CF)	***Disabled*** Enabled	Symbologies Menu, Code 93 option
Code 128 (CH)	Disabled ***Standard*** UCC/EAN-128 ISBT	Symbologies Menu, Code 128 option
• ISBT symbology	***Disabled*** Enabled	
• ISBT concatenated	***Disabled*** Enabled	
Interleaved 2 of 5 (CA)	***Disabled*** Fixed length Variable length, no check digit Case Code, check digit Variable length, check digit	Symbologies Menu, 2 of 5, I2 of 5 option
MSI (CN)	***Disabled*** No check digit 1 modulus 10 check digits 2 modulus 10 check digits	Symbologies Menu, MSI option
• Check digits	***Discard*** Retain	Symbologies Menu, MSI option
Plessey (CI)	***Disabled*** Discard check digit Retain check digit	Symbologies Menu, Plessey option
UPC/EAN (CE)		Symbologies Menu, UPC/EAN option
• UPC-A/EAN-13 (Version A)	Disabled ***Enabled*** UPC-A only	
• UPC-E (Version E)	Disabled ***Enabled***	
• EAN-8	Disabled ***Enabled***	
• Supplementals	***Yes*** No	

Bar Code Symbologies Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
UPC/EAN (*continued*)		
• Check digit	Discard ***Retain***	
• Number system digit	Discard ***Retain***	
• UPC-A leading zero	Discard ***Retain***	

RF Network Communications Table (T2425 Only)

Note: *The RF network parameters are different for each type of RF network protocol, TCP/IP or UDP Plus, loaded on the terminal.*

Parameter (Syntax)	Options	Location in Configuration Menu
Acknowledgement Delay Lower Limit (NV)	***300 milliseconds*** 200 - 2000 milliseconds	Communications Menu, Advanced Network option
Acknowledgement Delay Upper Limit (NU)	***5000 milliseconds*** 2000 - 60000 milliseconds	Communications Menu, Advanced Network option
Controller Connect Check Receive Timer (NP)	***60 seconds*** 1 - 3600 seconds	Communications Menu, Advanced Network option
Controller Connect Check Send Timer (NQ)	***35 seconds*** 1 - 3600 seconds	Communications Menu, Advanced Network option
Controller IP Address (NC)	***0.0.0.0*** The IP address field is four numbers separated by periods.	Communications Menu, Primary Network option
Default Router (NX)	***0.0.0.0 (no default router)*** The Router field is four numbers separated by periods.	Communications Menu, Advanced Network option
Host IP Address (NC)	***0.0.0.0*** The IP address field is four numbers separated by periods.	Communications Menu, Primary Network option
Maximum Retries (NR)	***7*** 0 – 99	Communications Menu, Advanced Network option
Network Activate (NA)	***Disabled*** 2.4 GHz RF	Communications Menu, Primary Network option

RF Network Communications Table (T2425 Only) (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Network Loopback (NL)	***Disabled*** Enabled	Communications Menu, Advanced Network option
Network Port (NG)	***00023 (for TCP/IP)*** ***05555 (for UDP Plus)*** 1 – 65535	Communications Menu, Advanced Network option
RF Domain (RW)	***0*** 0 – 15	Communications Menu, Radio option
RF Inactivity Timeout (RY)	***5 seconds*** 0 - 255 seconds	Communications Menu, Radio option
RF Roaming Flag (RR)	***Allowed*** Not allowed	Communications Menu, Radio option
RF Security ID (RS)	***None (no characters)*** Any 20 ASCII characters	Communications Menu, Radio option
RF Transmit Mode (RT)	***BFSK*** QFSK Auto	Communications Menu, Radio option
RF Wakeup On Broadcast (RB)	***No*** Yes	Communications Menu, Radio option
Subnet Mask (NS)	***255.255.255.0*** The Subnet Mask field is four numbers separated by periods.	Communications Menu, Advanced Network option
TCP/IP Maximum Transmit Timeout (NH)	0 (No timeout) 0 - 128 seconds ***20 seconds***	Communications Menu, Advanced Network option
Terminal IP Address (ND)	***0.0.0.0*** The IP address field is four numbers separated by periods.	Communications Menu, Primary Network option

Serial Network Communications Table

Parameter (Syntax)	Options	Location in Configuration Menu
Baud Rate (YA)	1200 2400 4800 9600 ***19200*** 38400	Communications Menu, Serial Port option
Configuration Commands Via Serial Port (YT)	Disabled Enabled with TMF ***Enabled without TMF***	Communications Menu, Serial Port option
Data Bits (YI)	***7*** 8	Communications Menu, Serial Port option
EOM (YZ)	***\x03 (ETX)*** Any two ASCII characters	Communications Menu, Serial Port option
Flow Control (YL)	***None*** CTS checking XON/XOFF response XON/XOFF control XON/XOFF response & control CTS/RTS on DTE/DTE	Communications Menu, Serial Port option
Handshake (YJ)	***Disabled*** Enabled	Communications Menu, Serial Port option
LRC (YF)	***Disabled*** Enabled	Communications Menu, Serial Port option
Parity (YB)	None ***Even*** Odd	Communications Menu, Serial Port option
Poll (YR)	***Disabled*** Enabled	Communications Menu, Serial Port option
Protocol (YU)	***Configurable*** Polling Mode D Master Polling Binary	Communications Menu, Serial Port option
SOM (YY)	***\x02 (STX)*** Any ASCII character	Communications Menu, Serial Port option
Stop Bits (YC)	***1*** 2	Communications Menu, Serial Port option

Serial Network Communications Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Timeout Delay (YE)	5 milliseconds 100 milliseconds 500 milliseconds 2 seconds ***10 seconds*** 20 seconds 40 seconds 60 seconds	Communications Menu, Serial Port option

Terminal Operations Table

Parameter (Syntax)	Options	Location in Configuration Menu
Append Time (DE)	***Disabled*** Enabled	Terminal Menu, Append Time option
Automatic Shutoff (EZ)	***0 (disabled)*** 2 - 75 minutes	Terminal Menu, Power Management option
Beep Volume (BV)	Off Quiet Normal Loud ***Very loud***	Terminal Menu, Beeper option
Decode Security (CS)	Low ***Moderate*** High	Terminal Menu, Scanner option
Display Backlight Timeout (DF)	0 (disabled) ***10 seconds*** 0 – 60 seconds	Terminal Menu, Display option
Display Contrast (DJ)	***3*** 0 – 7	Terminal Menu, Display option
Display Font Type (DT)	***8x8*** 8x16 16x16	Terminal Menu, Display option
Display Row Spacing (DL)	***0 (one scan line)*** 0 – 8	Terminal Menu, Display option
Display Video Mode (DN)	***0 (original)*** 0 – 2	Terminal Menu, Display option
Keypad Caps Lock (KA)	On ***Off***	Terminal Menu, Keypad option

Terminal Operations Table

Parameter (Syntax)	Options	Location in Configuration Menu
Keypad Clicker (KC)	Disabled ***Enabled***	Terminal Menu, Keypad option
Keypad Type (KT)	***Hardware default*** Terminal emulation Programmable	Terminal Menu, Keypad option
Postamble (AE)	***None (no characters)*** Any 25 ASCII characters	Terminal Menu, Preamble/Postamble option
Preamble (AD)	***None (no characters)*** Any 25 ASCII characters	Terminal Menu, Preamble/Postamble option
RAM Drive Size (FR)	***0 (disabled)*** 16 - 256K	Terminal Menu, RAM Drive option
Reader Commands (DC)	Disable all reader commands ***Enable all reader commands*** Enable specific reader commands Override reader commands	Terminal Menu, Reader Commands option
• Enable/Disable specific reader commands	Abort Program Backlight Backspace Change Configuration Clear Default Configuration Delete File Enter Accumulate mode Exit Accumulate mode List Files Multiple-Read Labels Receive File Rename File Reset Run Program Scanner Trigger Off Scanner Trigger On Test & Service mode Transmit File	Terminal Menu, Reader Commands option, Enable single commands option
• Override specific reader commands that are disabled	***No*** Yes	Terminal Menu, Reader Commands option, Override reader commands option
Resume Execution (ER)	Not Allowed ***Allowed***	Terminal Menu, Power Management option
Scan Ahead (SD)	***Disabled*** Enabled	Terminal Menu, Scanner option

Terminal Operations Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Scanner Mode (SB)	***One-Shot mode*** Automatic mode	Terminal Menu, Scanner option
Scanner Redundancy (SR)	None ***Normal*** High	Terminal Menu, Scanner option
Scanner Selection (SS) (See the Note)	***All compatible scanners*** 146X CCD scanners 151X laser scanners 1545 laser scanner Symbol scanners 155X laser scanners Tethered Long Range Intg. Long Range No Aim Intg. Long Range Short Aim Intg. Long Range Long Aim	Terminal Menu, Scanner option
Scanner Timeout (SA)	***0 (disabled)*** 0 – 60 seconds	Terminal Menu, Scanner option
Scanner Trigger (SC)	***Level*** Edge	Terminal Menu, Scanner option
Time in Seconds (DA)	***Disabled*** Enabled	Terminal Menu, Append Time option

Note: *The Scanner Selection command is only used when you have a module for cabled scanners, a long range scan module, or a high density scan module installed.*

4

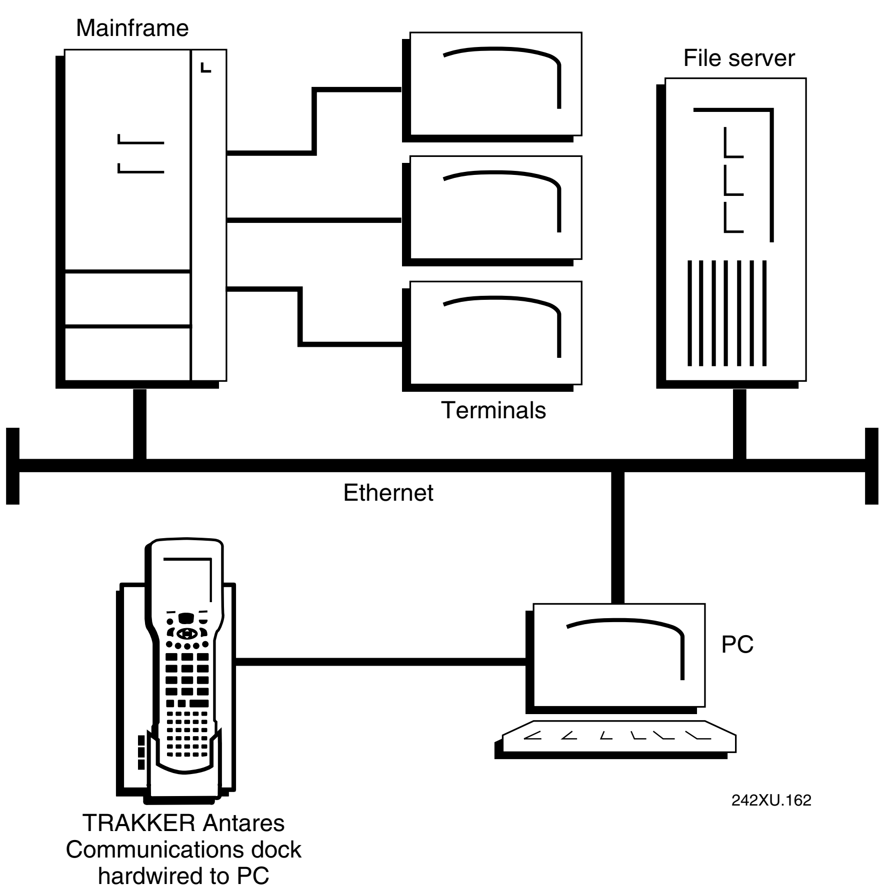
Operating the Terminal in a Network

This chapter describes a wired network and the Intermec 2.4 GHz RF network and explains how the TRAKKER Antares 2420 and 2425 terminals fit in your network. It also explains how to install and configure the terminal, use serial or RF communications, configure the T2425 over the network, and it provides technical details about network connectivity and protocols.

How the TRAKKER Antares Terminal Fits Into Your Network

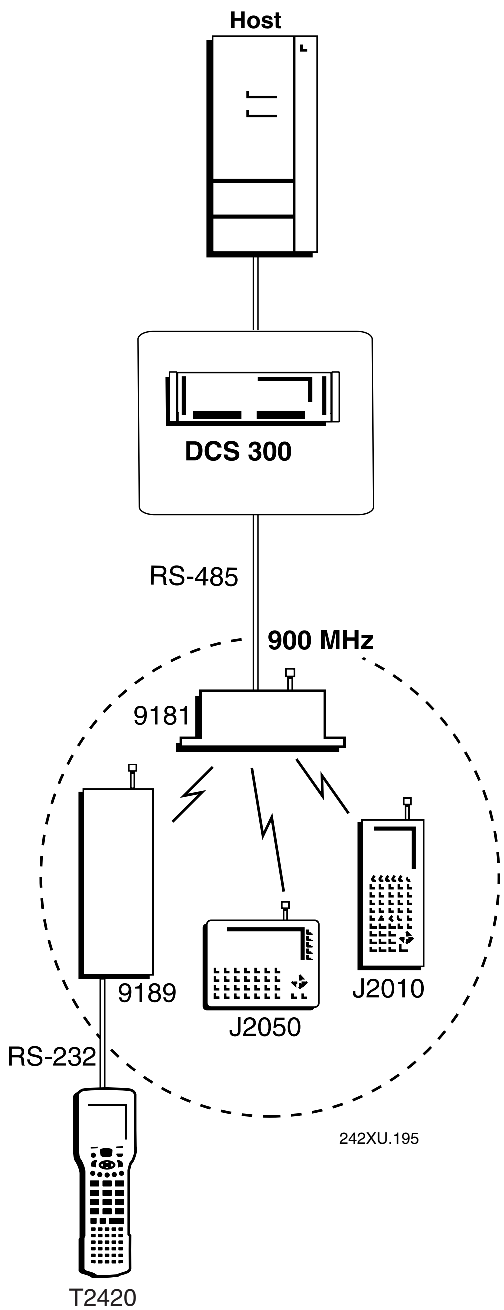
The TRAKKER Antares 2420 and 2425 terminals are versatile hand-held terminals that you can easily add to your network or distributed data collection system. You can use these terminals as end devices in your wired network. The terminals have a serial port to transmit data to and from a host computer via RS-232 serial communications. You can order the T2420 with a modem that you can use to connect the terminal over a phone line.

TRAKKER Antares Terminals in a Wired Network



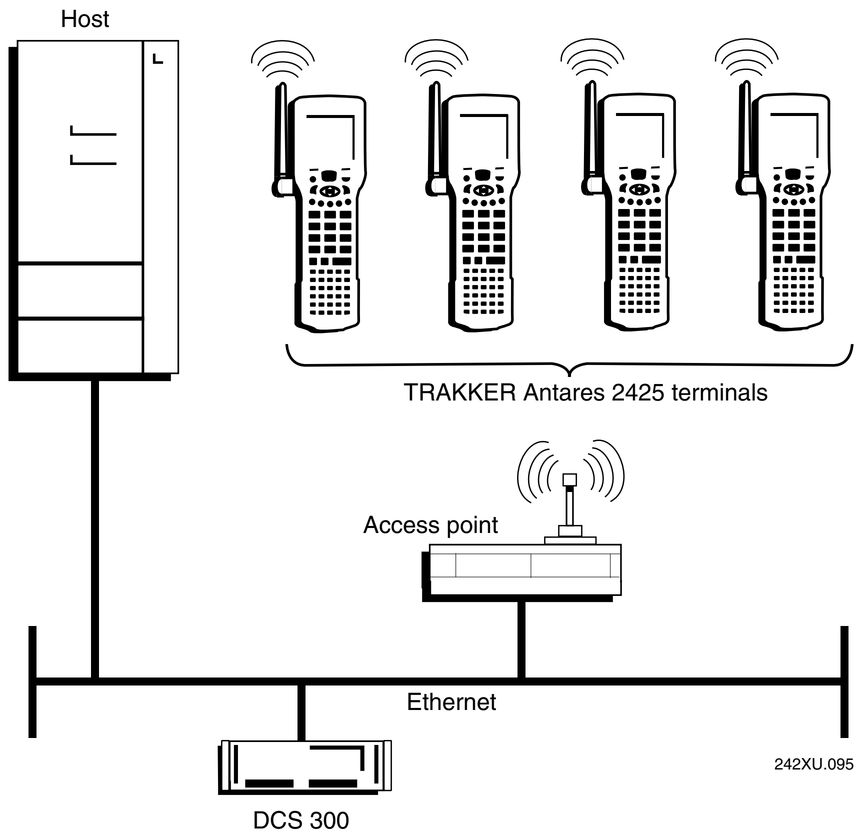
You can also use the serial port to connect to a 900 MHz RF network via the 9189 RF Gateway. The terminal communicates with the 900 MHz RF network using Polling Mode D protocol.

TRAKKER Antares Terminals in a 900 MHz RF Network



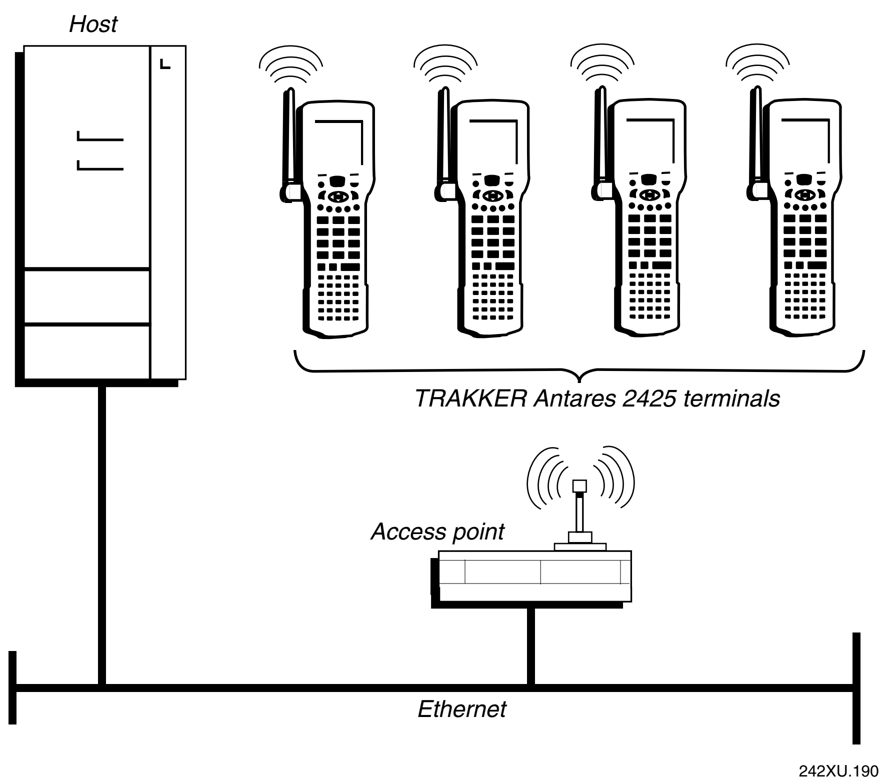
You can use the T2425s as end devices in your Intermec UDP Plus network. The T2425 communicates with a host computer through the DCS 300 using UDP Plus for the RF protocol. The access point acts as a bridge to allow communications between the Ethernet or token ring network and the T2425s.

T2425s in a UDP Plus Network



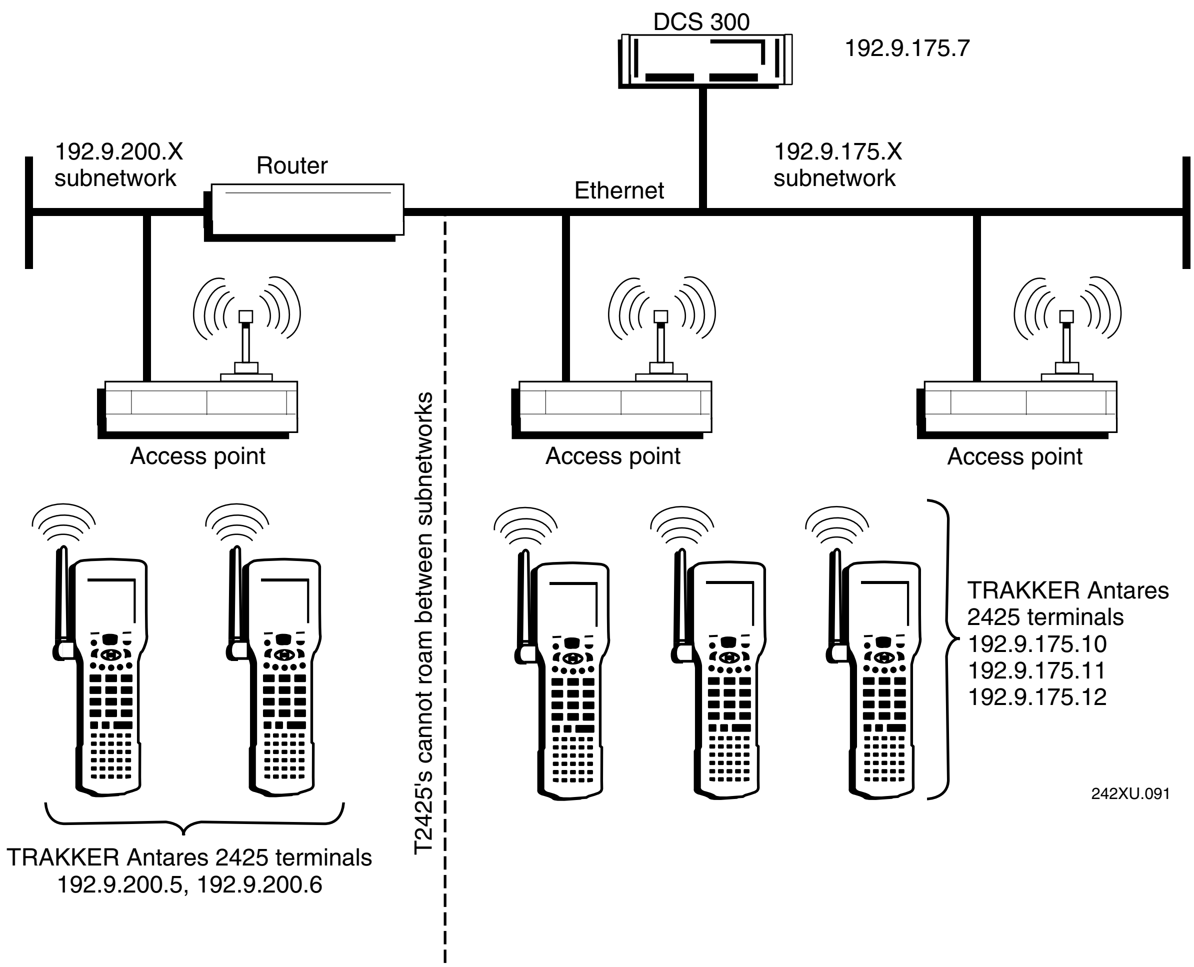
You can use the T2425s as end devices in your Intermec TCP/IP network. The T2425 communicates with a host computer directly using TCP/IP for the RF protocol. The access point acts as a bridge to allow communications between the Ethernet or token ring network and the T2425s.

T2425s in a TCP/IP Direct Connect Network



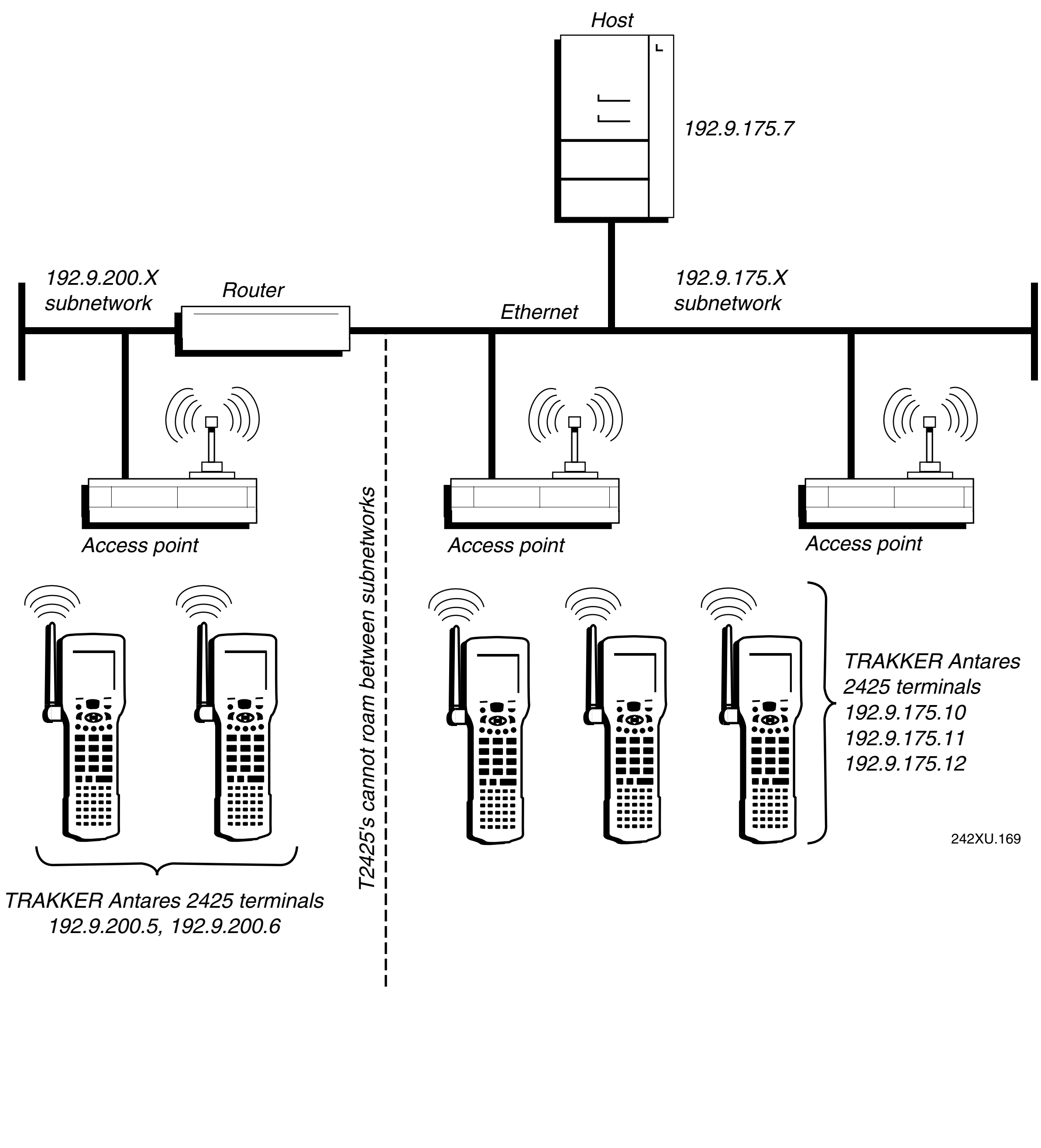
You can install the T2425s, access points, and DCS 300 in your Intermec UDP Plus network as shown in the next illustration. The T2425s may only communicate with the access points that are in the same IP subnetwork. All the terminals and access points in this illustration communicate with the DCS 300 at IP address 192.9.175.7 using UDP Plus for the RF protocol.

Installing T2425s in Multiple Subnetworks (UDP Plus)



You can install the T2425s and access points in your Intermec TCP/IP network as shown in the illustration below. The T2425s may only communicate with the access points that are in the same IP subnetwork. All the terminals and access points in this illustration communicate with the host at IP address 192.9.175.7 using TCP/IP for the RF protocol.

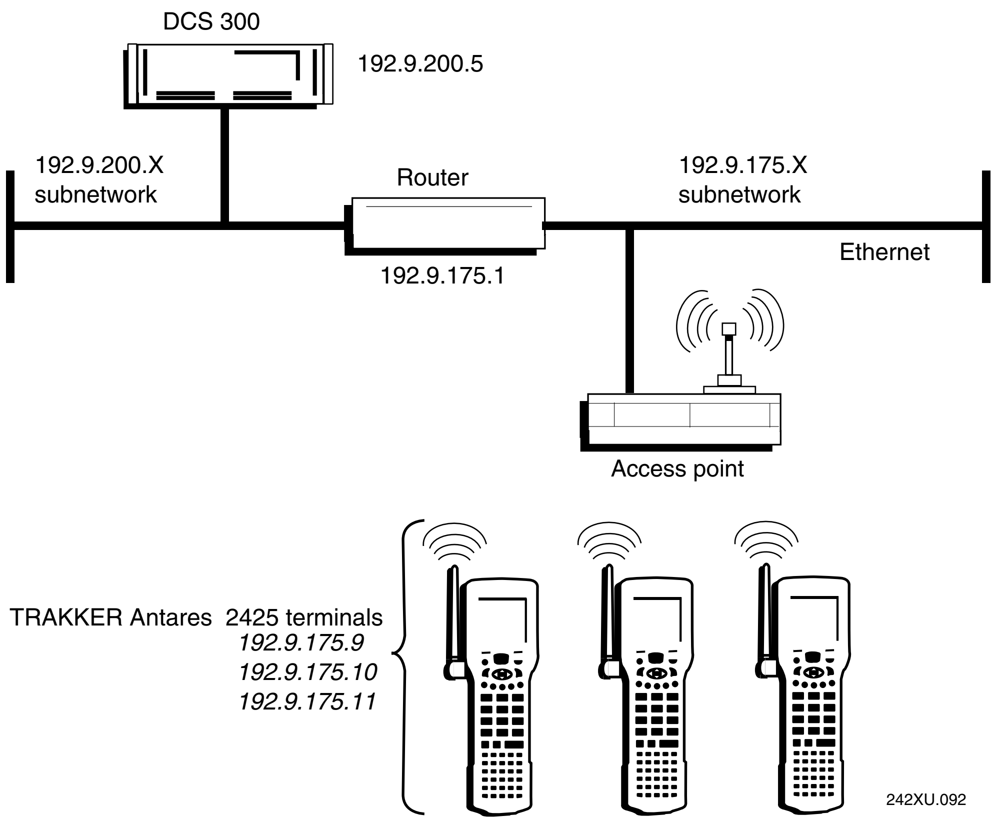
Installing T2425s in Multiple Subnetworks (TCP/IP)



You can install the T2425s and access points in one IP subnetwork and install the DCS 300 in another IP subnetwork as shown in the illustration below. In this network, you must configure additional network parameters (default router and subnet mask) as described later in this chapter.

Note: *All access points that the T2425 may communicate with and roam between must be on the same IP subnetwork. The terminal cannot roam between IP subnetworks.*

T2425s Communicating Across Subnetworks (UDP Plus)



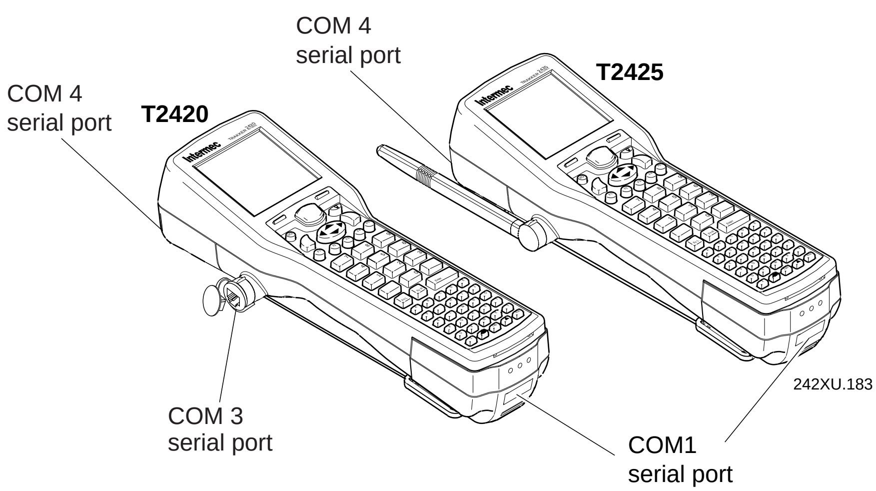
Using Serial Communications on the Terminals

The terminals have a serial port to transfer data to and from another device via RS-232 serial communications. You can order the T2420 with a modem that you can use to connect the terminal over a phone line. Before you can use the serial port, you need to connect and configure the terminal. The next sections cover these topics:

- Identifying the COM Ports
- Connecting the Terminal to Another Device
- Choosing a Communications Protocol
- Configuring the Serial Port Parameters
- Configuring the Terminal Via the Serial Port

Identifying the COM Ports

Communications ports, also called COM ports, are locations from which data can be passed into and out of the terminal. This illustration identifies the COM ports on the T2420 and the T2425. For help on the COM1 pin assignments, see "Pin Assignments for COM1" in Appendix A.

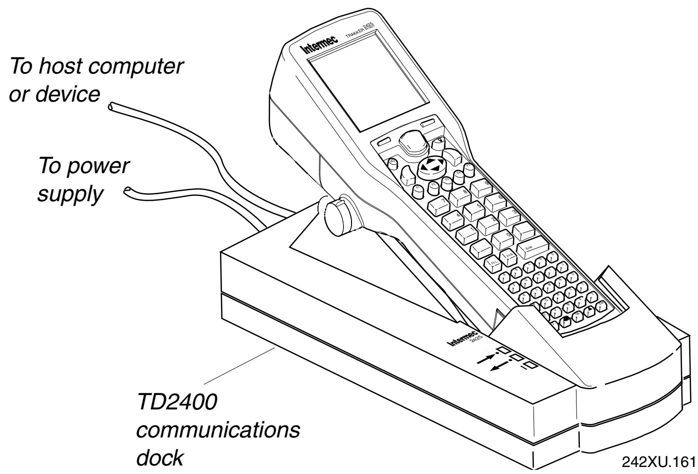


Port	COM Port Designation for Applications
COM1	Use for serial port communications on the terminal.
COM3	Use for modem communications on the T2420
COM4	Use for serial port communications with a PC or printer.
RF (NET)	Use for RF communications on the T2425. The TRAKKER Antares PSK functions use NET to designate the RF network port.

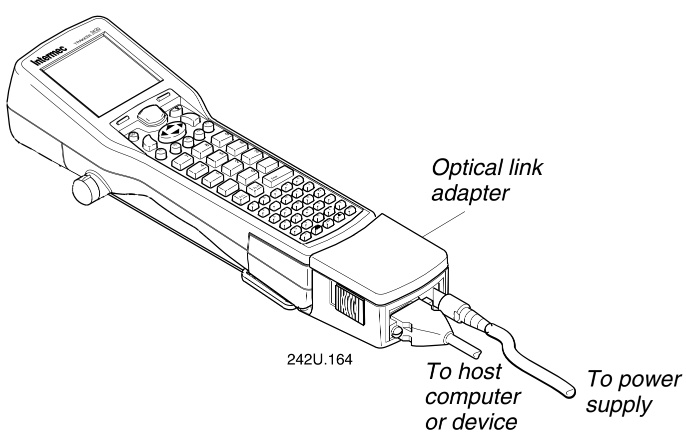
Connecting the Terminal to Another Device

You can physically connect the terminal to another device using one of these accessories.

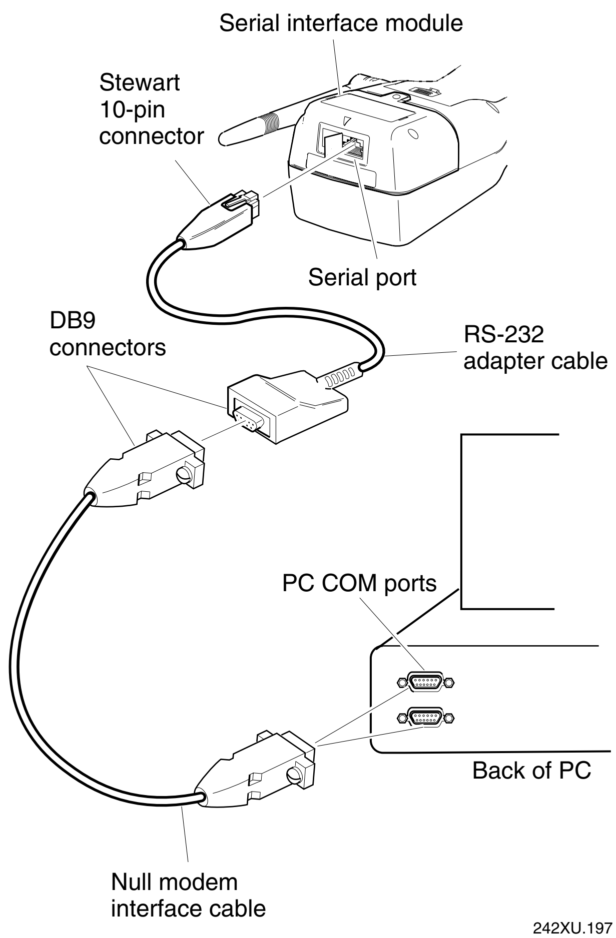
TRAKKER Antares TD2400 Communications Dock Connect the communications dock to a device (host computer, printer, or other serial device) using an RS-232 null-modem serial cable. Connect the power supply to the dock. Insert the terminal in the dock. You can transfer data between the terminal and the device connected to the dock. For help, see the *TRAKKER Antares TD2400 Communications Dock Quick Reference Guide*.



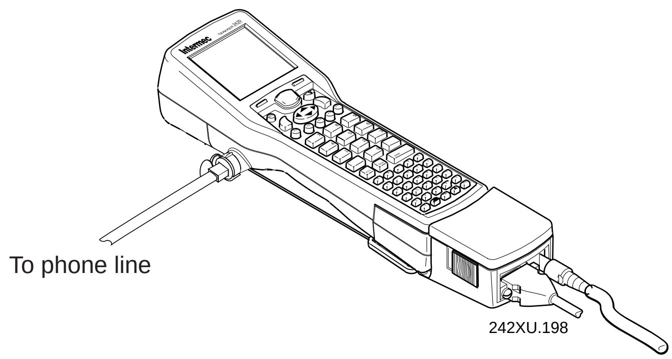
TRAKKER Antares Optical Link Adapter Connect the optical link adapter to a device (host computer, printer, or other serial device) using an RS-232 null-modem serial cable. Connect the power supply to the optical link adapter (optional). Connect the optical link adapter to the serial port on the end of the terminal. You can transfer data between the terminal and the device connected to the optical link adapter. For help, see the *TRAKKER Antares Optical Link Adapter Quick Reference Guide*.



TRAKKER Antares Serial Interface Module Replace the scan module on the terminal with the serial interface module. If you are using the RS-232 adapter cable, connect the Stewart 10-pin connector of the cable into the serial port on the serial interface module. Connect the DB9 connector on the adapter cable to the DB9 connector of the null modem interface cable. Plug the other end of the null modem interface cable into COM1 or COM2 on your PC or printer. You can transfer data between the terminal and the device connected to the serial interface module. For help, see the *TRAKKER Antares 242X Serial Interface Module Instruction Sheet*.



T2420 Modem Plug one end of an RJ11 cable into the connector on the T2420. Plug the other end of the cable into a phone jack. You can transfer data between the terminal and the device connected to the other end of the phone line.



Choosing a Communications Protocol

Once the terminal is connected to a host computer or other serial device, you are ready to configure the serial port parameters on the two devices. The terminal uses a communications protocol and XMODEM or YMODEM to handle data communications through the serial port.

You can configure a different communications protocol for each COM port. The terminal's built-in file operations use XMODEM or YMODEM for file transfer.

Communications protocols determine exactly how data is transmitted between the terminal and the connected device. Each protocol has parameters you can set, such as baud rate and parity. Both the terminal and the connected device must use the same protocol and parameter settings to communicate properly.

The terminal can communicate in these four protocols:

- Binary
- Configurable
- Master Polling
- Polling Mode D

Binary Protocol

Binary protocol has no protocol. Characters are sent and received without being altered. The Data Link Escape character (DLE) is **not** inserted before any character. DLE characters are not stripped out of the incoming data stream and no characters such as EOM or SOM are added.

Here are the serial port parameters you can define:

- Baud rate
- Data bits
- Parity
- Stop bits
- Flow control

Configurable Protocol

Configurable protocol is based on Intermec's Polling Mode D protocol except that you have the option to change some of the serial port protocol parameters or remove specific events from the protocol, such as Poll or handshake. Here are the serial port parameters you can define:

- Baud rate
- Data bits
- Parity
- Stop bits
- Configuration commands via serial port
- EOM (End of Message)
- Flow control
- Handshake (enabled or disabled)
- LRC
- Poll (Polling) (enabled or disabled)
- SOM (Start of Message)
- Timeout Delay

Configurable protocol uses EOM to determine the serial communications mode. When EOM is disabled, the terminal communicates in Character mode. When EOM is enabled, the terminal communicates in Frame mode. Once EOM is enabled, you can set a value for these serial port parameters:

- Configuration commands via serial port
- Handshake
- LRC
- SOM

Once Handshake is enabled, you can set a value for poll and the timeout delay.

Master Polling Protocol

Master Polling Mode D protocol requires the terminal to ask the downline serial device for data it may have (polling) and to request to send data to the serial device (selecting). There is no automatic polling, so your application must poll periodically for data.

Before each transmit operation, the terminal issues the SEL sequence for the device addressed and sends the data if an acknowledge is received. Before each receive operation, the terminal issues a poll sequence and waits for data or the RES character (no data is available to send). Here are the serial port parameters you can define:

- Baud rate
- Flow control

Polling Mode D Protocol

Polling Mode D protocol requires the host computer to ask the terminal for data it may have (polling) and to request to send data to the terminal (selecting). Polling Mode D uses an RS-232 or an RS-422 interface. Use this protocol if you want to connect to a 900 MHz RF network via the 9189 RF Gateway. Here are the serial port parameters you can define:

- Baud rate
- Flow control

Configuring the Serial Port Parameters

The values you set for the terminal serial port must match the values set for the serial port on the connected device. There are three ways to configure the terminal's serial port parameters:

- Use the TRAKKER Antares 2400 Menu System. For help on configuring the parameters, see "Configuring the Serial Port Parameters" in Chapter 1.
- Scan the configuration command from a Code 39 or Code 93 bar code label. The configuration commands are listed alphabetically by command name in Chapter 9, "Configuration Command Reference."
- Send a command from an application through the serial port on the host computer. For help, see the next section, "Configuring the Terminal Via the Serial Port."

If you are configuring the serial port parameters in the TRAKKER Antares 2400 Menu System, you may not see all of the serial port parameters until you set a value for another key field. For example, EOM is a key field when you configure the Configurable protocol. That is, several fields are invalid (do not appear) until you enable EOM.

If you are configuring the serial port parameters by scanning or sending configuration commands, the terminal will accept and set all serial port commands. However, the terminal only uses the parameters that are valid for the current protocol configuration. For example, if you are using configurable protocol on COM1, you can set a value for poll, but the terminal will not use it if handshake is not enabled.

Once the terminal is connected and configured, you can transfer data between the terminal and the device that is connected to the serial port. For help transferring files, see Chapter 5, "Using Custom Applications."

Configuring the Terminal Via the Serial Port

You can use an application on the host computer to configure the terminal by sending commands through the serial port. For example, you may want to change the Beep Volume command and the Display Backlight Timeout command.

To send and receive configuration data, you need to write an application for the host that can communicate with the terminal through the serial port. You must connect the terminal to the host by using the communications dock, optical link adapter, serial interface module, or modem.

Once the terminal is communicating, you can configure it. You must enable Frame mode and the Configuration Commands Via Serial Port command to configure the terminal through the serial port. For help, see Chapter 9, "Configuration Command Reference."

Note: *You can continue running an application on the terminal while configuring the terminal from the host.*

To set up the application

- Prepare and write a host application that can send transactions to and receive transactions from the terminal in this format:

[SOM]	*[TMF field]*	*Configuration command*	*EOM*

where:

[SOM] is the start of message field.

[TMF field] is only used if the Configuration Commands Via Serial Port are enabled with TMF (Terminal Message Format). It is a 2-byte field containing one of these values:

`CG` Configuration Get request sent from the host application.

`Cg` Configuration Get response sent from the terminal to the host.

`CS` Configuration Set request sent from the host application.

`Cs` Configuration Set response sent from the terminal to the host.

Note: *If the Configuration Commands Via Serial Port are enabled without TMF, leave this field blank.*

configuration command	is the reader or configuration command or commands you want to set on the terminal, or get the current value of from the terminal. To save configuration changes in flash memory, send the reader command `.+1` as the last command. For a list of commands, see Chapter 8, "Reader Command Reference," or Chapter 9, "Configuration Command Reference."
EOM	is the end of message field.

Note: *To send data to an application instead of sending configuration commands, use the letter* `A` *followed by a space in the TMF field. If the TMF field does not contain CG, Cg, CS, Cs, or A , the terminal ignores the transaction.*

Example with TMF

In the host application, you want to set the value for two configuration commands on the terminal. Send this transaction from the host application:

```
CS$+BV4DF30.+1
```

Note: *SOM and EOM are not shown in this example.*

where:

CS	is a TMF Configuration Set request.
$+	is the Change Configuration reader command.
BV4	sets the Beep Volume configuration command to a value of 4, which is a very loud beep volume.
DF30	sets the Display Backlight Timeout configuration command to a value of 30 seconds.
.+1	is the reader command that saves configuration changes to the terminal's flash memory.

The terminal returns this transaction to the host application.

```
Cs$+BV4DF30.+1
```

where:

Cs	is a TMF Configuration Set response.
$+	is the Change Configuration reader command.
BV4	means the Beep Volume configuration command has been changed to a value of 4, which is a very loud beep volume.
DF30	means the Display Backlight Timeout configuration command has been changed to a value of 30 seconds.
.+1	means the configuration changes have been saved in flash memory.

Using RF Communications on the T2425s

Before you can begin using the T2425 to collect data, you need to install and configure each device in the 2.4 GHz RF network by performing these steps:

1. Plan and prepare your network. Make sure you have all the equipment required to use the T2425 in the network. Make sure you have IP addresses for all devices in the network.
2. (UDP Plus network only) Configure the DCS 300.
3. Configure the access points.
4. Configure each terminal.

Each step is described in detail in the next sections.

Caution
Make sure all components with antennas are at least 1 feet (30 centimeters) apart when power is applied. Failure to comply could result in equipment damage.

Conseil
Assurez-vous que la distance entre tous les éléments avec antennes soit d'au moins un pied (30 centimètres) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

Planning the Network Connection

To use the T2425 in the RF network, you need these minimum requirements:

- (UDP Plus network) DCS 300
- Access point

When you first consider purchasing a wireless data collection system, an Intermec representative works with you to perform a site survey at your facility. The site survey analyzes the range of radio frequency devices in your facility and determines the placement of the access points. The site survey ensures that the coverage of each access point overlaps to provide uninterrupted wireless access at any location within the building. This manual assumes that a site survey is complete and the access points are installed in your facility.

You need to work with your network administrator to plan and assign the IP address for each device in the RF network. You must assign and set the IP address for each access point, and each terminal. For a T2425 with UDP Plus, you must also assign an IP address to the DCS 300.

Configuring the DCS 300

The DCS 300 supports and manages communications with other devices in the RF network. When you install and configure the DCS 300, you identify the host computer(s) and T2425s in your network. The terminals communicate through the server with your host by using UDP Plus protocol. For help installing the DCS 300, see the *DCS 300 System Manual* (Part No. 067296).

***Note:** You can use a T2425 running UDP Plus and the DCS 300 in a pass-through network. You establish a direct TCP/IP socket connection from the T2425 to the host through the server. For more information, see the* DCS 300 System Manual.

To have the T2425 communicate with the DCS 300, you must configure these parameters on the server:

- Configure the UDP Plus network.
- Assign an IP address to each T2425.
- Enable all T2425 terminals.
- Define the host environment parameters, which includes configuring for terminal emulation, screen mapping, or peer-to-peer applications.
- Define the host communications parameters, which includes the physical connection (network adapter cards) to the host.

To do screen mapping on the DCS 300, you must also

- create the script file using the Script Builder Tool on the server.
- create an application using EZBuilder and download it to the T2425.

Configuring the Access Point

The access point acts as a bridge to provide RF communications between the T2425 and the DCS 300 or host. For help, see your access point user's manual.

***Note:** All access points that the T2425 may communicate with and roam between must be in the same IP subnetwork.*

To have the T2425 communicate with the access point, you must know the value of these parameters on the access point:

- RF domain
- RF security identification (ID)

Configuring the T2425

When you install the T2425 in a network, you must configure a set of network parameters that control how the terminal communicates in the network.

There are two ways to configure the network parameters:

- Use the TRAKKER Antares 2400 Menu System. For help on configuring the network parameters, see Chapter 1, "Getting Started."
- Scan the configuration command from a Code 39 or Code 93 bar code label. The configuration commands are listed alphabetically by command name in Chapter 9, "Configuration Command Reference."

The set of network parameters you must configure depends on whether you install the terminal on the same IP subnetwork as the DCS 300 or host (TCP/IP), or on a different subnetwork. The next table lists the parameters you configure in each type of network:

Network Parameters	Same IP Subnetwork?	Different IP Subnetwork?
Time and date	X	X
Network activate	X	X
Controller IP address (UDP Plus)	X	X
Host IP address (TCP/IP)	X	X
Terminal IP address	X	X
Network port	X	X
RF domain	X	X
RF security ID	Optional	Optional
Default router		X
Subnet mask		X

The network parameters are defined in the next section.

Defining the RF Network Parameters

This section defines the network parameters you configure when installing the T2425 in an RF network. For each parameter's syntax and options, see Chapter 9, "Configuration Command Reference."

Time and Date When you turn on the terminal for the first time, you must set the current time and date. You also need to set the time and date any time you lose all power to the terminal. For help, see "Setting the Time and Date" in Chapter 1.

Network Activate Disables or enables RF communications. If the Network Activate parameter is disabled, the network is disabled, no RF communications are provided, and the radio is turned off. When the Network Activate parameter is enabled, the T2425 will attempt to connect to the DCS 300 or host.

Controller IP Address An IP address is a unique network level address you assign to each device in a TCP/IP network. The Controller IP Address identifies the IP address assigned to the DCS 300 in a UDP Plus network.

Host IP Address An IP address is a unique network level address you assign to each device in a TCP/IP direct connect network. The Host IP Address identifies the IP address assigned to the host.

Terminal IP Address An IP address is a unique network level address you assign to each device in a TCP/IP network. The Terminal IP Address identifies the IP address assigned to the T2425. The IP address you set on the terminal must match the address that is set for the terminal on the DCS 300 or host.

Network Port Defines the network port that the TCP/IP or UDP Plus network protocol uses for communications in your RF network. In a UDP Plus network, the network port you set on the T2425 must match the network port that is set on the DCS 300. In a TCP/IP network, set the network port to the appropriate port for the application you are using on the T2425. The default network port of 23 enables VT/ANSI Telnet communications.

RF Domain The domain defines a logical partition or subnetwork of the network. To establish communications, you must assign the same domain number to every RF device in a wireless network. The domain number you set on the terminal must match the domain that is set on each access point the terminal may communicate with. You can continue to collect data with the terminal as you roam between access points as long as all the devices have the same domain number.

RF Security Identification (ID) This parameter defines the password you can set for secured transmission and receipt of data between devices in the wireless network. If the security ID is set on the access point, you must also set the security ID on each T2425 that may communicate with the access point. To communicate, each access point and terminal must have matching security IDs.

Note: *The Network Activate command must be configured to 2.4 GHz RF network before you can save any changes to the RF security ID parameter.*

Default Router Provides a software and hardware connection between two or more networks that permits traffic to be routed from one network to another on the basis of the intended destinations of that traffic. When the DCS 300 (UDP Plus) or host (TCP/IP) is on a different subnetwork than the T2425, you need to set the default router IP address. The terminal uses the router address to send packets across the network to the DCS 300 or host. The default router must have an IP address on the same subnetwork as the terminal. The default of 0.0.0.0 means there is no default router.

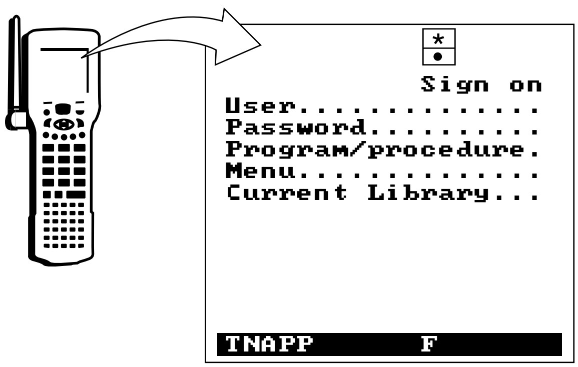
Subnet Mask The subnet mask is an internal TCP/IP protocol stack variable that is used in IP protocol to identify the subnetwork for an IP address. The IP protocol performs a bit-wise AND on the IP address and the subnet mask. Each address segment represents one byte, where 255 converts to FF hex. This computation is used to find out if the DCS 300 (UDP Plus) or host (TCP/IP) and terminal are on different subnetworks.

If the terminal is on a different IP subnetwork than the DCS 300 or host, then you must set the subnet mask and default router.

Using the Icons to Monitor RF Communications

Once you have configured the devices in the RF network, you can begin using the application on the T2425 to collect and transmit data via RF communications. If the T2425 is communicating with your host computer, the terminal will connect and begin running the application that shipped on the terminal.

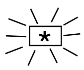
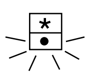
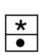
As you use the T2425 to collect data, icons are displayed to help you monitor RF and network communications on the terminal. Use the two icons shown in the illustration to monitor communications between the T2425 and other devices in the RF network.



242XU.093

You See These Icons	Status of Communications	What You Need to Do
◆ The Radio icon remains on.	No communications. The T2425 is not connected to an access point. The Network Activate command is disabled, or there is a problem with the radio card and it is turned off.	You need to enable the Network Activate command. For help, see “Network Activate” in Chapter 9.
No icons appear.	No communications. The T2425 is not connected to an access point.	Make sure the access points are turned on and operating. You may also be using the terminal out of the RF range of an access point. Try moving closer to an access point to re-establish communications. If the access point is on and you are in range, you may need to configure the terminal to communicate in the network. For help, see “Configuring the T2425” earlier in this chapter.

Using the Icons to Monitor RF Communications (continued)

You See These Icons	Status of Communications	What You Need to Do
 The Connect icon blinks.	Partial communications. The T2425 is trying to establish communications with the DCS 300 (UDP Plus) or is trying to connect to an access point.	You may need to configure the T2425 to communicate with other devices in the RF network. For help, see “Configuring the T2425” earlier in this chapter. If the T2425 is configured, you may be out of range of an access point, you may be about to go out of range of an access point, or the access point may have recently been turned off. You may need to configure the DCS 300 (UDP Plus) or host. Make sure the T2425 is configured correctly and enabled. Make sure the DCS 300 is turned on and data collection is started.
 The Connect icon remains on.	Normal communications. The T2425 can communicate with an access point and the DCS 300 (UDP Plus) or host.	You can send and receive data between the T2425 and the access point.
 The Connect icon remains on, and the Data icon blinks.	Normal communications. The T2425 is sending data to or receiving data from the DCS 300 or host.	You can send and receive data between the T2425 and the DCS 300 or host. ***Note:*** *You may not see the Data icon blink if communications are occurring instantaneously.*
 The Connect icon and Data icon remain on.	Normal communications. The T2425 has received data for an application from the DCS 300 or host. The data is stored in the terminal’s radio buffer until the application is ready to process the data.	You can send and receive data between the T2425 and the DCS 300 or host.

Using the T2425 Between Access Points

The access point acts as a bridge to provide communications between the T2425 and the Ethernet or token ring network. You may have multiple access points in your RF network to provide uninterrupted wireless communication at any location within your facility.

To use the T2425 between access points and continue sending and receiving data, you must follow these guidelines:

- The radio coverage of each access point must overlap to ensure that the roaming T2425 will always have a connection available.
- You configure each access point with the same RF domain number and security ID.
- You configure the T2425s with the same RF domain and security ID as the access points to which they may communicate.
- All access points that the T2425s may communicate with and roam between must be installed in the same IP subnetwork. The T2425 cannot roam between IP subnetworks.

Once the network is configured, you can collect data anywhere within range of the access points in the RF network. When you move out of range of one access point, the T2425 automatically polls the other access points in the same RF domain to continue the network connection.

If you are out of range of all access points in the network, the data is stored in the T2425's radio buffer. The Data icon appears on the screen and the Connect icon starts flashing or turns off. You can continue to collect data until the radio buffer is full. When the buffer is full, the application displays a communication timeout status. When you move back into range and network communications are re-established, the data in the radio buffer is transmitted to the access point and you can once again transmit data.

In a TCP/IP direct connect network with a T2425 running a terminal emulation application, the application may disconnect from the host if you remain out of communications range too long or if the host sends "Keep Alive" messages while the terminal is in Suspend mode. You may need to restart the application and log back into the host to re-establish a terminal emulation session. For help, see Chapter 6, "Troubleshooting." In a UDP Plus network, the session is maintained any time the terminal is out of range or in Suspend mode.

Configuring the T2425 Over the Network

You can remotely configure the T2425 by using one of these methods:

- Send a command from the DCS 300 (UDP Plus network only).
- Send a command from an application on the host computer (UDP Plus and TCP/IP networks).

You cannot configure any of the RF network parameters, such as terminal IP address, over the network. Once the T2425 is communicating, you can configure bar code symbologies and operating commands.

Note: *You can configure the terminal locally by using the TRAKKER Antares 2400 Menu System or by scanning a command from a Code 39 or Code 93 bar code label. For help, see Chapter 3, "Configuring the Terminal."*

Configuring the T2425 From the DCS 300

You can use the DCS 300 to configure one or more T2425s in your RF network. You can also send reader commands such as Backlight On to one or more terminals. Your terminal must be configured with UDP Plus in order to communicate with the DCS 300.

This method is very fast and efficient if you need to change the same configuration parameters for several terminals in one area. For example, you may want to set the Beep Volume to very loud and turn on Keypad Caps Lock for all the terminals in one area.

Note: *You can configure a T2425 from the DCS 300, but you cannot get configuration data from the terminal.*

To send commands from the DCS 300

1. Using the Download Server feature on the server, select the terminal or group to which you want to download the configuration commands. For help on configuring a group of terminals, see the *DCS 300 System Manual*.

   Note: *You can continue running an application on the T2425 while configuring the terminal from the server.*

2. Choose the Command option button.
3. Enter the reader or configuration command and choose Add. The command appears in the Files and Data box.

   For example, enter this command to set the Beep Volume to very loud:

   ```
   $+BV4
   ```

For a list of reader commands, see Chapter 8, "Reader Command Reference." For a list of configuration commands, see Chapter 9, "Configuration Command Reference."

Note: *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 on 5250 TE Screens" in the* TRAKKER Antares Terminal Emulation User's Guide.

4. Repeat Step 3 to add another reader or configuration command, or choose OK.
5. To save the configuration changes in flash memory on the T2425, enter this reader command as the last command and choose Add:

   ```
   .+1
   ```

   Otherwise, the commands only change the runtime configuration. You can also use the TRAKKER Antares 2400 Menu System to save configuration changes in flash memory on the T2425. For help, see "Saving Configuration Changes in Flash Memory" in Chapter 3.
6. Choose Download to download the commands and change the configuration of the terminals selected.

Configuring the T2425 From the Host

You can use an application on the host computer to configure one T2425. For example, you may want to change the Beep Volume command or the Display Backlight Timeout.

To send and receive configuration data or files, you need to write an application for the host that can communicate with the DCS 300 in a UDP Plus network or directly through the access point in a TCP/IP direct connect network. You use the Terminal Message Format (TMF) protocol in the RF network to send and receive transactions between the host application and the terminal.

UDP Plus is an Intermec value-added protocol. TCP/IP is an industry standard protocol. For help, see "About Network Connectivity and Protocols" later in this chapter.

Configuring the T2425 in a UDP Plus Network

You can use the host computer to configure one T2425 in your 2.4 GHz RF network. For example, you may want to change the Beep Volume command and the Display Backlight Timeout.

To send and receive configuration data, you need to write an application for the host that can communicate with the DCS 300. For help, see the *DCS 300 Technical Reference Manual*. You use the Terminal Message Format (TMF) protocol in the RF network to send and receive transactions between the host application and the terminal.

Note: *You can continue running an application on the T2425 while configuring the terminal.*

To set up the DCS 300

- Configure a peer-to-peer destination name for the host application. Create a transaction ID, $NGCFGRSP, that will be routed to this destination name. The DCS 300 uses the transaction ID to route responses from the T2425 back to the host application. $NGCFGRSP is a special transaction ID that the server uses to forward configuration response data from a terminal.

  All configuration responses will be routed with the $NGCFGRSP transaction ID. The DCS 300 cannot keep track of multiple applications sending reader or configuration commands. If you have two host applications sending reader or configuration commands, they must both be configured to receive the $NGCFGRSP transactions, and therefore both will receive all responses from all T2425s.

To set up the host computer

- Verify that you can communicate with the DCS 300.

To set up the application

- Prepare and write a host application that can communicate with the DCS 300 and send transactions to and receive transactions from the T2425 in this format:

transaction header	*TMF field*	*Configuration command*

where:

transaction header is a 96-byte field containing the message number, date and time, source application ID, destinations application ID, transaction ID, and other information. You must set the system message (SYS$MSG) flag to E in the transaction header. For help, see the *DCS 300 Technical Reference Manual*.

TMF field is a 2-byte field containing one of these values:

`CG` Configuration Get request sent from the host application.

`Cg` Configuration Get response sent from the T2425 to the host.

`CS` Configuration Set request sent from the host application.

`Cs` Configuration Set response sent from the T2425 to the host.

configuration command	is the reader or configuration command or commands you want to set on the terminal, or the current value you want to retrieve from the terminal. To save configuration changes in flash memory, send the reader command `.+1` as the last command. For a list of commands, see Chapter 8, "Reader Command Reference," or Chapter 9, "Configuration Command Reference."

To see examples of the host application transactions, see "Example 1" and "Example 2" later in this section.

Configuring the T2425 in a TCP/IP Direct Connect Network

You can use the host computer to configure one T2425 in your RF network. For example, you may want to change the Beep Volume command and the Display Backlight Timeout command.

To send and receive configuration data, you need to write an application for the host that can communicate with a T2425 directly via an access point. You use the Terminal Message Format (TMF) protocol in the RF network to send and receive transactions between the host application and the terminal. For more about developing an application, see "Transferring Files in a TCP/IP Direct Connect Network" later in this chapter.

Note: *You can continue running an application on the T2425 while configuring the terminal from the host.*

To set up the host computer

- Verify that you can communicate with the T2425.

To set up the application

- Prepare and write a host application that can communicate with the T2425. Configuration commands must be sent to network port 6000 on the terminal. Message transactions to and receive transactions from the T2425 on network port 6000 must conform to the following format:

TMF field	*Configuration command*

where:

TMF field	is a 2-byte field containing one of these values:

TMF field	`CG`	Configuration Get request sent from the host application.
	`Cg`	Configuration Get response sent from the T2425 to the host.
	`CS`	Configuration Set request sent from the host application.
	`Cs`	Configuration Set response sent from the T2425 to the host.
configuration command	is the reader or configuration command or commands you want to set on the terminal, or the current value you want to retrieve from the terminal. To save configuration changes in flash memory, send the reader command `.+1` as the last command. For a list of commands, see Chapter 8, "Reader Command Reference," or Chapter 9, "Configuration Command Reference."	

Example 1

In the host application, you want to get the current values of two configuration commands from the T2425. Send this transaction from the host application:

```
CG$+NADF
```

Note: *The transaction header is not shown in this example. You do not need a transaction header for a host application in a TCP/IP network.*

where:

CG	is a TMF Configuration Get request.
$+	is the Change Configuration reader command.
NA	is the Network Activate configuration command.
DF	is the Display Backlight Timeout configuration command.

The T2425 returns this transaction to the host application.

```
Cg$+NA1DF60
```

where:

Cg	is a TMF Configuration Get response.
$+	is the Change Configuration reader command.
NA1	means the Network Activate configuration command is currently set to a value of 1, which means that the 2.4 GHz RF network is enabled.
DF60	means the Display Backlight Timeout configuration command is currently set to a value of 60 seconds.

Example 2

In the host application, you want to set the value for two configuration commands on the T2425. Send this transaction from the host application:

```
CS$+BV4DF30
```

Note: *The transaction header is not shown in this example. You do not need a transaction header for a host application in a TCP/IP network.*

where:

CS	is a TMF Configuration Set request.
$+	is the Change Configuration reader command.
BV4	sets the Beep Volume configuration command to a value of 4, which is a very loud beep volume.
DF30	sets the Display Backlight Timeout configuration command to a value of 30 seconds.

The T2425 returns this transaction to the host application.

```
Cs$+BV4DF30
```

where:

Cs	is a TMF Configuration Set response.
$+	is the Change Configuration reader command.
BV4	means the Beep Volume configuration command has been changed to a value of 4, which is a very loud beep volume.
DF30	means the Display Backlight Timeout configuration command has been changed to a value of 30 seconds.

Transferring Files in a TCP/IP Direct Connect Network

You can use an application on the host computer to transfer files and send data between the terminal and host in a TCP/IP direct connect network. To initiate file transfers from the host, you need to write a host application that can communicate directly with a T2425. You use the file management reader commands such as Receive File and Transmit File to transfer files between the T2425 and the host. For help, see Chapter 8, “Reader Command Reference.”

To initiate file transfers from the terminal, you do not need to develop a host application as described in this section. You can use the Receive File and Transmit File within a terminal application or by scanning bar code labels. For help, see Chapter 8, “Reader Command Reference.”

Note: *You can continue running an application on the T2425 while configuring the terminal or transferring files from the host.*

To use the built-in TFTP client on the T2425, you need the following:

- TFTP (Trivial File Transfer Protocol) server must be running on the host.
- TFTP server must be running on at least a Pentium processor or equivalent.
- T2425 must be communicating with the host that is running the TFTP server.
- The TFTP server or some other application on the host must be able to send the reader command on the network.

To transfer files or send configuration data from the host

1. Make sure the TFTP server is running on the host and the T2425 is communicating with the host.
2. Start the host application that can send reader commands to the terminal.
3. Send the two-character TMF code, CS (Configuration Set request) followed by the reader or configuration command. For help on TMF, see “Configuring the T2425 in a TCP/IP Direct Connect Network” earlier in this chapter.

   For example, to send the application INVENTRY.BIN from drive C on the host to drive C on the T2425, enter this command:

   ```
   CS.%R,c:inventry.bin,c:inventry.bin
   ```

   For command information, see Chapter 8, “Reader Command Reference.”

CLIENT.CPP is the source for a sample application you can run on the host. You can use CLIENT.CPP to send reader commands to the T2425 and receive the resulting messages.

The source code for the sample utilities CLIENT.CPP and the include file UTILS.H is shown on the next pages. You can build the application using Microsoft Visual C++ version 4.0 (or higher) and the Windows sockets library that is included with Microsoft Visual C++. You can also develop your own application to meet the needs of your host environment.

You run the resulting application (CLIENT.EXE) from the DOS command line. The application expects NCM to be defined as the TRAKKER Antares terminal IP address in the hosts file. Once running, the application prompts you to enter a reader command, which it then sends to the T2425. The application also displays any return messages. Reader commands are handled by the TRAKKER Antares operating system, so you can continue running an application while you use the CLIENT.EXE application to send commands.

CLIENT.CPP Sample Application for a TCP/IP Direct Connect Network

```
#include <windows.h>
#include <stdio.h>
#include "d:\class\Utils.h"

// our application uses a fixed port number
const unsigned short SERVER_PORT = 6000;
const unsigned short CLIENT_PORT = 6001;
// we will default to the local host machine
// unless argv[1] has a hostname
const char SERVER_HOSTNAME[] = "ncm";

int main(int argc, char *argv[])
{
// turn on the socket library for this process
    WSADATA wsad;
    int error = WSAStartup(MAKEWORD(1,1), &wsad);
    if (error != 0)
        ErrorMessage("WSAStartup", WSAGetLastError());

// create an unitialized connection-oriented socket
    SOCKET connection;
    connection = socket(PF_INET, SOCK_DGRAM, 0);
    if (connection == INVALID_SOCKET)
        ErrorMessage("socket", WSAGetLastError());

// lookup the IP address of the requested host
    HOSTENT *phostent = gethostbyname(argc == 2 ? argv[1] : SERVER_HOSTNAME);
    if (phostent == 0)
        ErrorMessage("gethostbyname", WSAGetLastError());

// define a SOCKADDR to contain the IP address of the
// server and the port number of our application
    SOCKADDR_IN serverAddress;
    memset(&serverAddress, 0, sizeof(serverAddress));
    serverAddress.sin_family = PF_INET;
    serverAddress.sin_port   = htons(SERVER_PORT);
    memcpy(&serverAddress.sin_addr, phostent->h_addr_list[0], phostent->h_length);
// Bind a well known port of 6000 to the socket
      SOCKADDR_IN clientAddress;
      memset(&clientAddress, 0, sizeof(clientAddress));
      clientAddress.sin_family = PF_INET;
      clientAddress.sin_port = htons(CLIENT_PORT);
      clientAddress.sin_addr.s_addr = htonl(INADDR_ANY);
      if(!(bind(connection, (LPSOCKADDR)&clientAddress, sizeof(clientAddress))
      ==0))
      {
          ErrorMessage("bind", WSAGetLastError());
      }
```

CLIENT.CPP Sample Application for a TCP/IP Direct Connect Network (continued)

```
// attempt to connect to the server
    error = connect(connection, (const SOCKADDR *)&serverAddress,
    sizeof(serverAddress));
    if (error != 0)
        ErrorMessage("connect", WSAGetLastError());

// check the local name for the socket
      SOCKADDR_IN localName;
      memset(&localName, 0, sizeof(localName));
      int localNameLength = sizeof(localName);
      error = getsockname(connection, (LPSOCKADDR)&localName, &localNameLength);
// run the user-interface
    char sz[1024];
      char rz[1024];
    BOOL bConnectionAlive = TRUE;
    printf("> ");
      int Scount, Rcount;
    int cbRecv, cbSend;
    Scount = Rcount = 0;
    int cbLen, rcLen;
    unsigned char *psend = (unsigned char *)sz;

// continue while not EOF on the console and the connection is alive
   while (bConnectionAlive)
   {
// send the string entered by the user
         printf("Enter Command:\n");
         printf("> ");
         gets(sz);
         if(sz[0] != 'q')
         {
               cbLen = strlen(sz);
               cbSend = send(connection, (const char *)psend, cbLen, 0);
               if (cbSend < 0)
               {
                    Scount++;
                    printf("send failed %d\n", Scount);
                    bConnectionAlive = FALSE;
                    ErrorMessage("send", WSAGetLastError());
               }
              Sleep(2000);
// receive the converted string from the server
               memset(&rz, 0, sizeof(rz));
               rcLen = sizeof(rz);
               cbRecv = recv(connection, rz, rcLen, 0);
               if (cbRecv < 0)
               {
```

CLIENT.CPP Sample Application for a TCP/IP Direct Connect Network (continued)

```
                    Rcount++;
                    printf("receive failed %d\n", Rcount);
                    ErrorMessage("receive", WSAGetLastError());
                    bConnectionAlive = FALSE;
               }
// printf the converted string
               printf("response:%s\n",rz);
               printf("\n> ");
               Sleep(1000);
         }
         else
              bConnectionAlive = FALSE;
    }

// release the resources held by the socket
    error = closesocket(connection);
    if (error != 0)
        ErrorMessage("closesocket", WSAGetLastError());

// release the resources held by the socket library
    error = WSACleanup();
    if (error != 0)
        ErrorMessage("WSACleanup", WSAGetLastError());
    return 0;
}
```

UTILS.H Utility (Used by CLIENT.CPP)

```
#include <windows.h>
inline void ErrorMessage(LPCTSTR szFn, DWORD dwError = GetLastError())
{
    TCHAR szTitle[1024];
    TCHAR szPrompt[1024];
    BOOL bRet = FormatMessage(FORMAT_MESSAGE_FROM_SYSTEM,
             0, dwError,
             0,
             szPrompt,
             sizeof(szPrompt),
             0);
    if (!bRet)
        lstrcpy(szPrompt, __TEXT("Unknown Error"));
    wsprintf(szTitle, __TEXT("%s failed with error code (0x%x)!"), szFn, dwError);
    int id = MessageBox(HWND_DESKTOP, szPrompt, szTitle,
MB_ABORTRETRYIGNORE|MB_SETFOREGROUND);
    if (id != IDIGNORE)
        ExitProcess(0);
}
```

About Network Connectivity and Protocols

The T2420 and T2425 are hand-held data collection terminals with network support. The terminals communicate with a host computer or other serial device through the terminal's RS-232 serial port. The T2425 also communicates with a host either through the DCS 300 or directly through the access points. The access point acts as a bridge between the Ethernet or token ring network and the RF network.

In a UDP Plus network, the terminal communicates through the DCS 300 to a host on an Ethernet, token ring, twinaxial, coaxial, or SDLC network. In a TCP/IP network, the terminal communicates through the access point to the host on an Ethernet or token ring network.

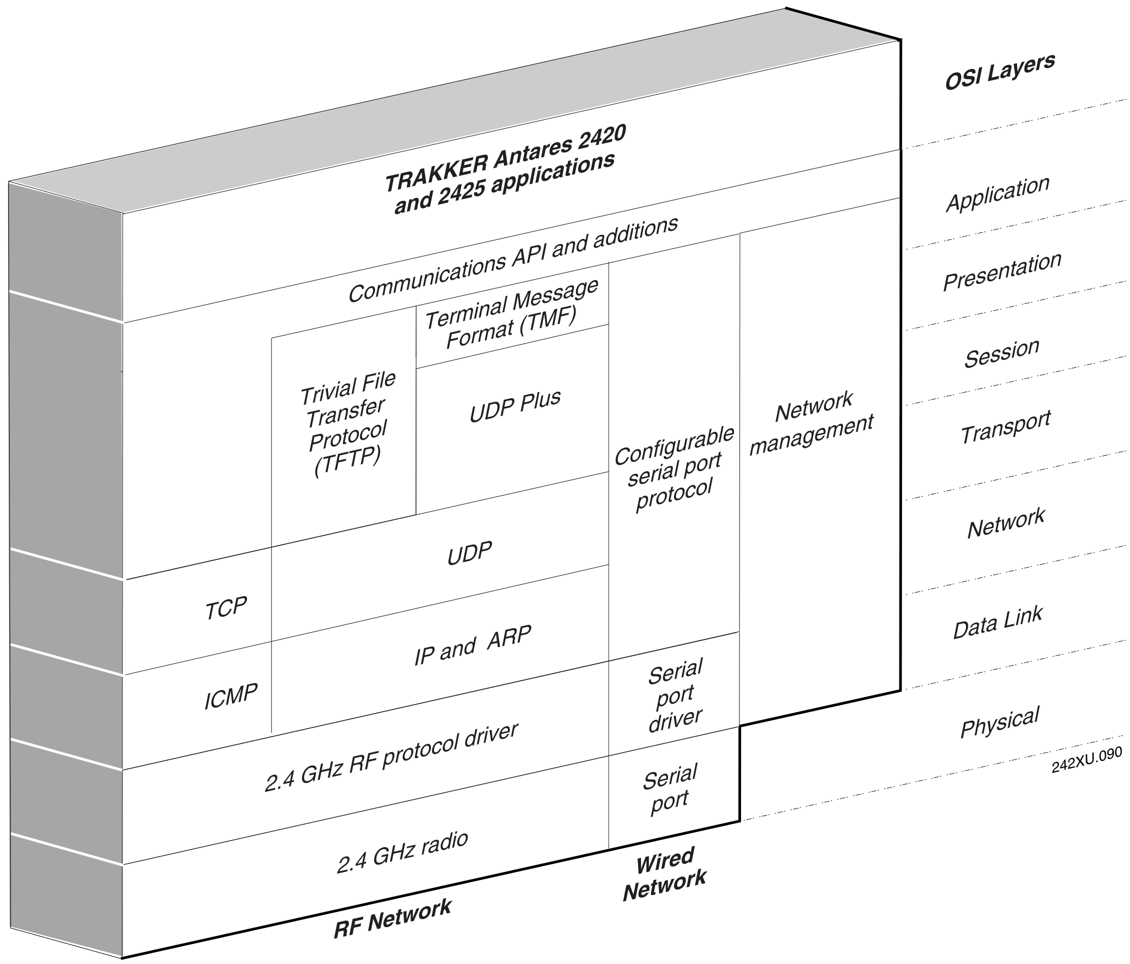
The communications protocol stack for the terminal is developed using the Open Systems Interconnection (OSI) seven layer model. The illustration on the next page shows how the 2.4 GHz RF network and RS-232 serial port map into the OSI model.

The terminal applications including terminal emulation and screen mapping are on top of the protocol stack. Intermec provides a terminal communications API (application program interface) to interface to the protocol stack. The API provides a common interface to these Intermec value-added protocols:

- Terminal Message Format (TMF) is an Intermec proprietary protocol that is used to route data and network management messages between applications on the terminal and peer tasks on the DCS 300 or host.
- UDP Plus is an Intermec protocol built on top of the User Datagram Protocol (UDP). It maximizes the performance of wireless (RF) and hardwired networks and provides robust data communications.
- Trivial File Transfer Protocol (TFTP) allows efficient file exchange between the terminal and the DCS 300 or host.
- Configurable Serial Port (CSP) protocol allows efficient file exchange between the terminal and the host through RS-232 serial communications. The terminal uses either the XMODEM or the YMODEM protocol to transfer files via reader commands.
- Network management provides network access to the terminal configuration, status, and statistics. Network management uses the Terminal Message Format to receive and send messages.

The remaining layers in the protocol stack are a series of standard protocols that interface with the drivers and hardware needed to support the 2.4 GHz RF network and RS-232 serial communications.

TRAKKER Antares Terminal Protocol Stack and the OSI Model



The terminals use these protocols:

Layer	Protocol	Description
Physical	2.4 GHz radio	Provides spread spectrum radio signal control.
	Serial Port	Provides serial communications.
Data Link	2.4 GHz RF protocol driver	Provides RF media access control. The default hardwired media access control (MAC) protocol used with TCP/IP supports the Ethernet II standard.
	Serial port driver	Provides serial communications control that uses CSP and the standard XMODEM or the YMODEM protocol for data transfer.
Network	IP and ARP	The Internet Protocol (IP) complies with the standard outlined in RFC 791. The Address Resolution Protocol (ARP) complies with the standard outlined in RFC 826.
	ICMP	The Internet Control Message Protocol (ICMP) complies with the standard outlined in RFC 826.
Transport	UDP	The User Datagram Protocol (UDP) complies with the standard outlined in RFC 768.
	TCP	Transmission Control Protocol (TCP) complies with the standard outlined in RFC 793.
Session and Presentation	UDP Plus	UDP Plus is an Intermec proprietary session layer protocol built on UDP. The UDP Plus session layer provides these services: • guaranteed delivery • duplicated message removal • link connection and status management • network error recovery • congestion control • device error detection
	TFTP	Trivial File Transfer Protocol (TFTP) allows efficient file exchange between the terminal and the DCS 300 or host. TFTP complies with the standard outlined in RFC 1350.
Presentation and Application	TMF	Terminal Message Format is an Intermec proprietary protocol that is used to route data, configuration, and network management messages between applications on the terminal and peer tasks on the DCS 300 or host.

5

Using Custom Applications

This chapter introduces the TRAKKER Antares 2420 and 2425 programmable terminals and explains how to download and run applications on the terminals. You will also find instructions on how to use the screen mapping application.

How To Download and Run Applications

Here's a brief summary of the steps you follow to download applications and files to the programmable terminals. To learn more about the programmable features, start with the next section, "About the TRAKKER Antares Programmable Terminals."

Use the serial port to download applications and files to the terminal

1. Create your applications using the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder. For help, see page 5-6.
2. Convert each application to a binary file using the PSK utility EXE2ABS.EXE. For help, see page 5-8. Or, use the EZBuilder option to convert each application to a binary file.
3. Connect the terminal to the development PC or host computer using the communications dock, optical link adapter, serial interface module, or modem. For help, see "Using Serial Communications on the Terminals" in Chapter 4 or your accessory documentation.
4. Use the FileCopy utility to download applications and files to the terminal. For help, see page 5-9.
5. Use the System Menu in the TRAKKER Antares 2400 Menu System to load and run an application. For help, see page 5-17.

Use the DCS 300 to download applications and files to the T2425

1. Create your applications using the TRAKKER Antares PSK or EZBuilder. For help, see page 5-6.
2. Convert each application to a binary file using the PSK utility EXE2ABS.EXE. For help, see page 5-8. Or, use the EZBuilder option to convert each application to a binary file.
3. Copy the applications and files to the DCS 300. For help, see page 5-12.
4. Use the Download Server feature on the DCS 300 to download applications and files to the T2425. For help, see page 5-14.
5. Use the System Menu in the TRAKKER Antares 2400 Menu System to load and run an application. For help, see page 5-17.

Use a host application to download applications and files to the T2425

1. Create your applications using the TRAKKER Antares PSK or EZBuilder. For help, see page 5-6.
2. Convert each application to a binary file using the PSK utility EXE2ABS.EXE. For help, see page 5-8. Or, use the EZBuilder option to convert each application to a binary file.
3. Copy the applications and files to the host.
4. Write an application for the host that can communicate with the T2425 directly via an access point. Use the host application to download applications and files to the T2425. For help, see "Transferring Files in a TCP/IP Direct Connect Network" in Chapter 4.

   Note: *The host must be running a TFTP server.*

5. Use the System Menu in the TRAKKER Antares 2400 Menu System to load and run an application. For help, see page 5-17. Or, use the host application to send the Run Program command.

About the TRAKKER Antares Programmable Terminals

The terminals ship loaded with a terminal emulation application or a sample application. You can develop your own data collection application for the terminal and then download the application to the terminal.

The main difference between the T2420 and T2425 is how you download files:

T2420 You download applications and files from a host computer to one terminal that is directly connected through the serial port.

T2425 You download applications and files from the DCS 300 (UDP Plus) or host (TCP/IP) to one or more terminals through the 2.4 GHz RF network. You can also download applications and files to one T2425 using the serial port.

The next table lists specifications and technical information you need to know to develop applications for the terminals.

TRAKKER Antares Programmable Terminal Specifications

Products:	T2420 T2425
Serial Communications:	RS-232 serial communications via the terminal serial port and optical link adapter, communications dock, or the serial interface module (T2420 option only) RJ11 serial communications via the modem
RF Communications:	2.4 GHz (to 2.4835 GHz) radio
RF Network support:	There are two options: • host connectivity through an access point and DCS 300 using UDP Plus • host connectivity through an access point using TCP/IP
Flash Drive C:	Approximately 750K for user, up to 32 files
Flash Drive D or font set (option)	Approximately 2MB (of the total 4MB) for use as an extended drive (up to 32 files) or as storage for a double-byte font set
RAM Drive E:	256K reserved for user application (configurable) , up to 32 files
Extended Drive G:	(T2420 option only) 2MB or 4MB extended drive, up to 32 files
Application:	Programmed in Microsoft C, customer defined, stored on drive C. Maximum size of a single application is 512K (less the size of the RAM drive, if configured)
Application name:	Customer defined, eight characters with three-character extension
Storing applications:	Multiple (maximum depends on the drive space)
Developing applications:	Using TRAKKER Antares Programmer’s Software Kit or EZBuilder
Downloading applications:	Via RS-232 serial communications from the PC or host computer Via modem from the PC or host computer Via RF to the T2425’s flash drive from the DCS 300 Via RF and TFTP to the terminal’s flash drive from a host application

Creating Applications for the Terminal

You create applications for the terminal using the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions. The terminal runs applications that are programmed in Microsoft C.

To start creating applications

1. Use the PSK or EZBuilder to develop your application.
2. Convert the application to a binary file.

Each step is described in the next sections. Once you have completed these steps, you can download the application to the terminals.

Using the PSK or EZBuilder to Develop Applications

Intermec has two development tools, PSK and EZBuilder, that you can use to create applications for the terminals.

The TRAKKER Antares Programmer's Software Kit (Part No. 065332) has a full set of programming tools to help you create applications for the terminal. The kit contains:

- Programmer's Software Kit (PSK)
- Application Simulator
- FileCopy utility
- Sample programs and Make files
- *TRAKKER Antares Application Development Tools System Manual (*Part No. 064433)

The PSK is a library of C functions that control the programmable terminals. You can program the terminal to display prompts and error messages, to collect and display data, and to transmit data to an upline DCS 300 or host computer. The PSK functions work with most standard Microsoft C functions. You can create complex applications that collect, store, manipulate, and transmit data to meet your system needs.

The Application Simulator is a terminate-and-stay resident (TSR) program that lets you debug and run TRAKKER Antares applications on a DOS or Windows PC. The Simulator captures the PSK and C functions and makes the PC mimic a terminal.

EZBuilder is a software code generator product that provides programmers and technically-oriented non-programmers with a quick and easy way to create applications for the terminal.

EZBuilder contains:

- EZBuilder software
- Microsoft Visual C++ version 1.5X
- Application Simulator
- PSK libraries
- FileCopy utility
- Sample EZBuilder programs
- *EZBuilder Getting Started Guide (*Part No. 066450)
- *EZBuilder Tutorial (*Part No. 066449)

EZBuilder is a software code generator. You enter simple commands to create menus, screens, and transactions and to define menu items, labels, and data fields. You can also set attributes, define function keys, and specify other processing, such as calculations, for the application. Once you have defined the application, EZBuilder generates the application program code. The Simulator Editor mimics a terminal and lets you test the application on your computer.

Converting Applications Between JANUS and TRAKKER Antares

You can develop applications that run on both the JANUS® devices and the TRAKKER Antares terminals. However, there are some differences that you need to plan for in your applications. The TRAKKER Antares terminal is an intelligent terminal. A JANUS device is a DOS-compatible computer. Because of these differences, there are some features and functions that are different between the JANUS PSK and the TRAKKER Antares PSK.

In general, a C/C++ application written for TRAKKER Antares terminals requires minor changes to run on a JANUS device. However, an application written for a JANUS device may require more changes to work properly on a TRAKKER Antares terminal. JANUS applications developed with the JANUS PSK and compiler libraries are relatively easy to convert to an application for the TRAKKER Antares terminals.

There are several methods you can use to convert applications to and from JANUS devices and TRAKKER Antares terminals. For help on converting applications, see the *TRAKKER Antares Programmer's Software Kit Reference Manual*.

Converting IRL Programs

The terminals support IRL (Intermec Reader Language) by using IRL to C conversion programs. You can convert IRL programs to Microsoft C/C++ applications that use the TRAKKER Antares PSK functions. For information about converting IRL programs, contact your local Intermec service representative.

Converting the Application to a Binary File

For your application to run on the terminal, it must be stored as an executable binary file (*.BIN) instead of an executable file (*.EXE). Use the EXE2ABS.EXE program that comes with the TRAKKER Antares PSK or EZBuilder to convert the file.

***Note:** The FileCopy utility or the EZBuilder "download" tool will automatically convert an executable file (*.EXE) to an executable binary file (*.BIN) when you download the file. If you download the applications using another method, you need to convert the application to a binary file.*

To convert an executable file to a binary file

1. Use the TRAKKER Antares PSK or EZBuilder to develop the application.
2. Convert the application from an executable file to a binary file by typing this command on your development PC:

   drive:\intermec\imt24\lib\exe2abs *filename*.exe

   The conversion application (EXE2ABS.EXE) creates an executable binary file named *FILENAME*.BIN.

   For example, if your application is named SHIPPING.EXE and the Intermec directory is on drive C, type this command on your PC:

   ```
   c:\intermec\imt24\lib\exe2abs shipping.exe
   ```

   The conversion application creates the SHIPPING.BIN file.
3. If you have a T2425 and plan to download applications and files from the DCS 300 or host, copy all the binary application files and any data files to a 3.5-inch disk.

Using the Serial Port to Transfer Applications and Files

You can download or upload applications and files between a PC or host computer and the terminal using serial communications. You connect the terminal's serial port to the host by using one of these accessories or options:

- Communications dock
- Optical link adapter
- Serial interface module
- (T2420 option only) Modem

For help connecting the terminal, see "Using Serial Communications on the Terminals" in Chapter 4. Once the terminal is connected, you can transfer files to or from a terminal. There are two ways to transfer files:

- Use the FileCopy utility that ships with the TRAKKER Antares Programmer's Software Kit (PSK) and EZBuilder.
- Use the Receive File or Transmit File reader commands. For help, see Chapter 8, "Reader Command Reference."

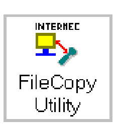
This section explains how to use the FileCopy utility to download or upload applications and files to or from the terminal.

To run an application on the terminal, it must be stored as an executable binary file (*.BIN). The FileCopy utility will automatically convert any *.EXE file to a binary file (*.BIN) before downloading the file. With the FileCopy utility, you can download either *.EXE or *.BIN application files.

Note: *If you have a T2425, you can download or upload files to or from the terminal using either the serial port or RF communications through the DCS 300 or host.*

To download or upload applications and files to or from the terminal

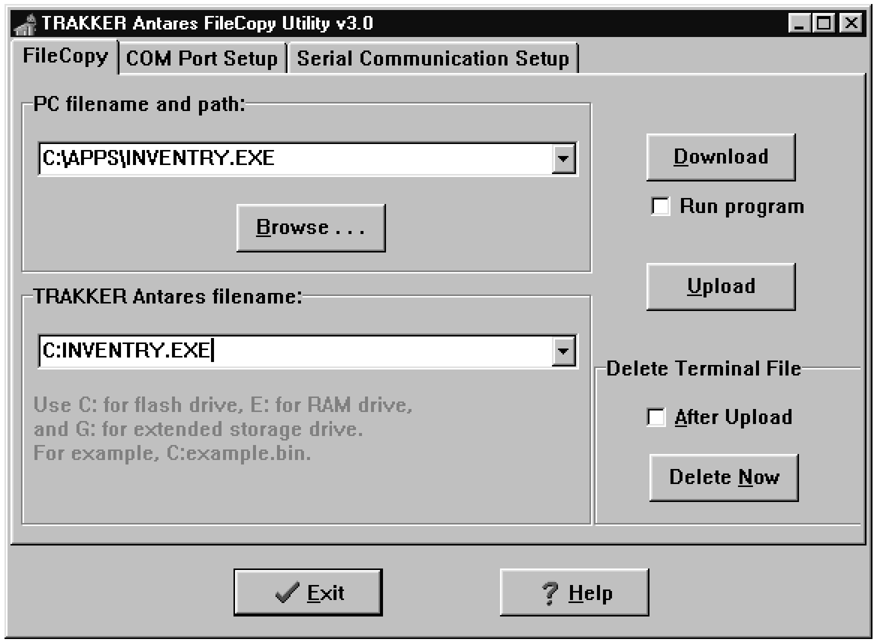
1. Connect the TRAKKER Antares terminal to your PC.
2. Start Microsoft Windows on your PC



3. From Program Manager, start FileCopy. The TRAKKER Antares FileCopy utility screen appears.

   FileCopy includes detailed online help. Click the Help button or press **F1** anytime to get more information.

TRAKKER Antares FileCopy Utility Dialog Box



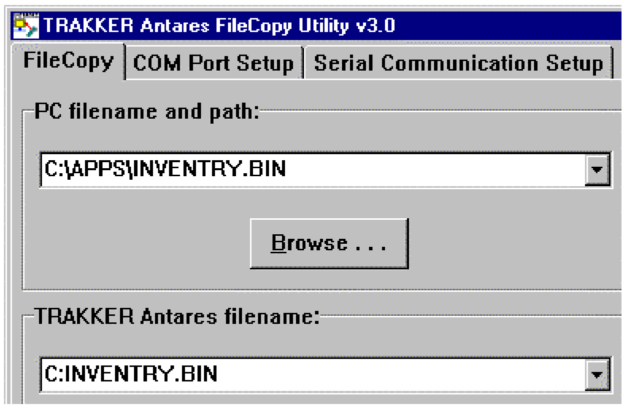
4. Check the serial port and serial communications parameters to verify that the settings for your PC match the values that are set for the terminal's serial port.
   a. Select the COM Port Setup tab to verify and configure the PC serial port parameters.
   b. Select the Serial Communications Setup tab to verify and configure the PC serial communications parameters.
   c. Use the TRAKKER Antares 2400 Menu System to configure the serial port parameters on the terminal. For help, see "Configuring the Serial Port Parameters" in Chapter 1.
5. Make sure that the terminal is running an application that will not be updated during the file transfer. If you are in the TRAKKER Antares 2400 Menu System, exit the menu system.

   You can run APPTSK.BIN application while transferring files. For help, see "Running the Application on the Terminal" later in this chapter.
6. Select the FileCopy tab to download or upload applications and files.
   a. In the PC filename and path field, type the path and filename (*FILENAME*.EXE or *FILENAME*.BIN) for the file on your PC. You can select a previously used filename from a list by clicking on the down arrow.

      To view a list of available files on your PC, click the Browse button.

b. In the TRAKKER Antares filename field, type the drive and filename on the terminal. You can select a previously used filename from a list by clicking on the down arrow.

   You can only download applications to drive C. On the T2420, you can download files to drive C, D (if available), E, or G (if available). On the T2425, you can download files to drive C, D (if available), or E.



7. If you are downloading an application and want to run it on the terminal immediately after it is downloaded, turn on the Run program check box.

Note: *You can also run the application at any time from the terminal. For help, see "Running the Application on the Terminal" later in this chapter.*

8. Click Download to copy the file from the PC to the terminal. If you turned on the Run program check box, the terminal boots, resets, and runs the application you downloaded. Otherwise, the current application continues to run on the terminal.

   Or, click Upload to copy the file from the terminal to the PC.

9. To download or upload another file, repeat Step 5 through Step 7.

10. Click Exit to close the FileCopy utility.

If you have problems downloading or uploading applications and files, see Chapter 6, "Troubleshooting."

Using the DCS 300 to Download Applications

You can download applications and files to a T2425 using either the serial port or RF communications. For help downloading via the serial port, see the previous section. The advantage to downloading files via RF communications is that you can download multiple files to one or more terminals.

You use RF communications to download applications from the DCS 300 to T2425s running UDP Plus or from the host to T2425s running TCP/IP. This section explains how to use the DCS 300 to download applications and files. For help downloading files in a TCP/IP network, see Chapter 4, "Operating the Terminal in a Network."

To download applications and files from the DCS 300

1. Copy the applications and files to the DCS 300.
2. Download the applications and files to the T2425.

Each step is described in the next sections. Before you start, make sure the T2425 is communicating with the DCS 300. If you need any help installing or configuring the network, see Chapter 4, "Operating the Terminal in a Network."

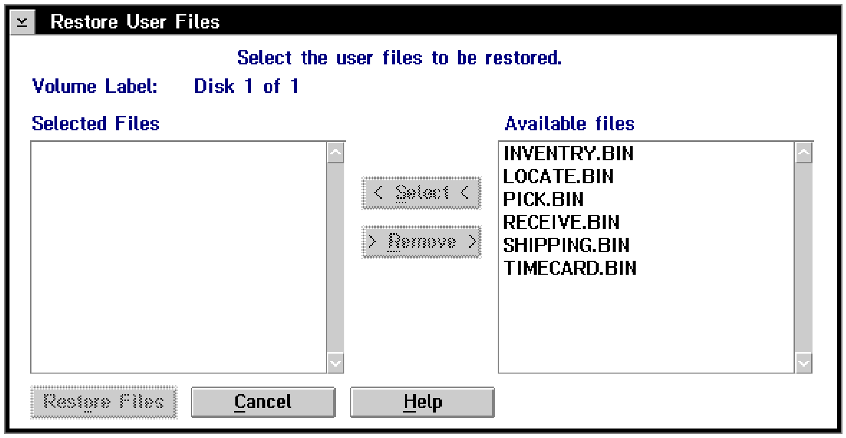
Copying Files to the DCS 300

You can use these instructions to copy binary applications and files from a 3.5-inch disk to the DCS 300.

To copy applications and files to the DCS 300

1. Insert the 3.5-inch disk that contains the files in the disk drive of the DCS 300.
2. From the main menu sidebar buttons, choose File Handling. The File Handling dialog box appears.
3. In the File Handling list box, select Restore User Files and choose OK. A message box appears telling you to insert the floppy disk in the disk drive of the DCS 300.
4. Choose OK. The Restore User Files dialog box appears. The files on the floppy disk appear in the Available Files list box.

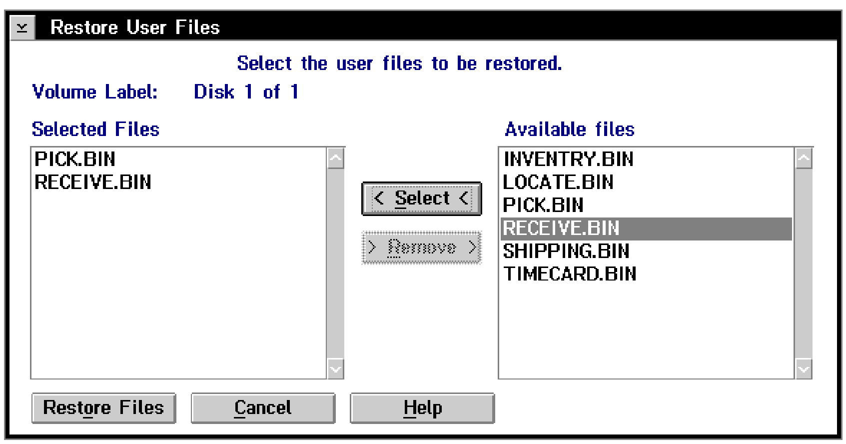
Restore User Files Dialog Box



5. In the Available Files list box, add all the files that you want to restore to the Selected Files list box.

   a. Select the file name.

   b. Choose Select. The file name appears in the Selected Files list box.



If the Selected Files list box shows any files that you do not want to restore, select the file name and choose Remove.

6. Choose Restore Files. The DCS 300 restores the files you selected to the Userdata directory.

7. Remove your disk from the disk drive.

Downloading Applications and Files to the T2425

Once the applications and files are stored on the DCS 300, you can download applications and files to a T2425 running UDP Plus.

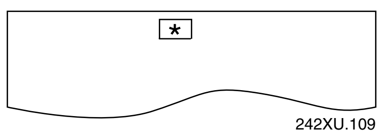
There are two ways to download files:

- Use the Download Server feature on the DCS 300.
- Use the Receive File or Transmit File reader commands. For help, see Chapter 8, "Reader Command Reference."

The instructions in this section explain how to use the Download Server feature on the DCS 300 to download applications and files to the terminal.

To prepare the terminal

1. Make sure the terminal is on and communicating with the DCS 300. Look at the top line of the terminal's screen. If the Connect icon appears and remains on solid, the terminal is communicating with an access point and DCS 300. For help, see Chapter 6, "Troubleshooting."

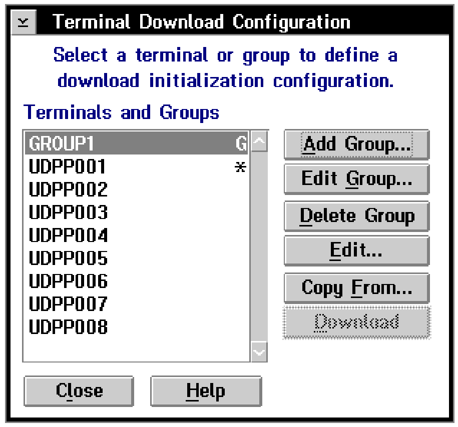


2. Make sure the main battery pack is fully charged.

To download applications and files to the T2425

1. If data collection is not started on the DCS 300, choose Start Data Collection from the main menu sidebar buttons.
2. From the main menu sidebar buttons, choose System Maintenance. The System Maintenance dialog box appears.
3. In the System Maintenance dialog box, select Configure Download Server and then choose Start. The Terminal Download Configuration dialog box appears.

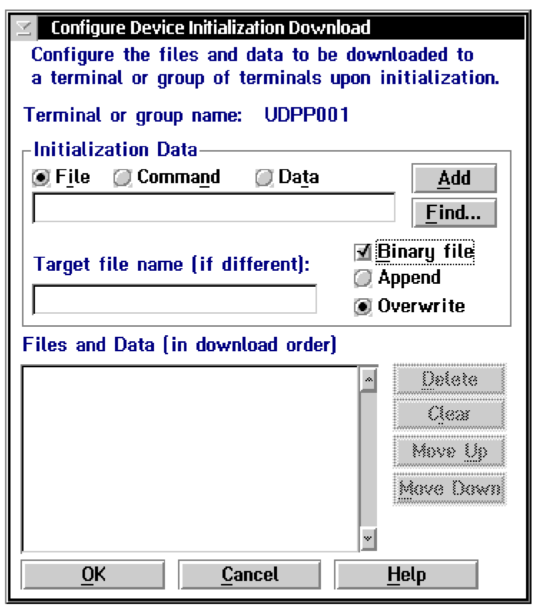
Terminal Download Configuration Dialog Box



4. From the Terminal Download Configuration dialog box in the Terminals and Groups list box, select a terminal or group of terminals to receive the binary applications and files.

   For help defining a group of terminals, see “Adding a Group in the Download Server” in Appendix B of the *DCS 300 System Manual*.

5. Choose Edit. The Configure Device Initialization Download dialog box appears.



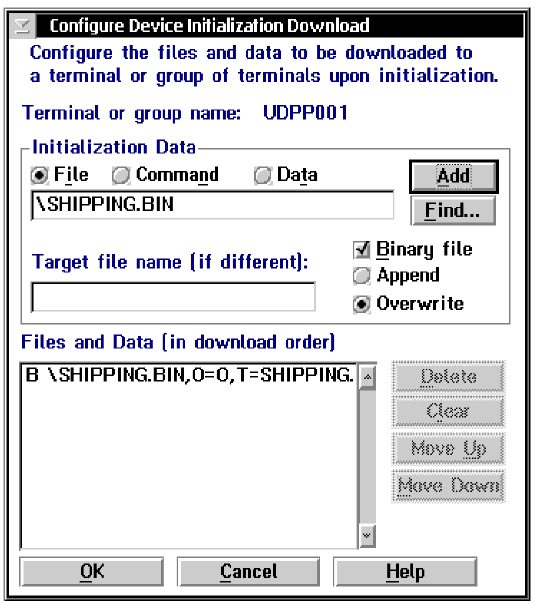
6. Verify that there are no files (or entries) listed in the Files and Data list box. If there are entries, then choose Clear to remove them.

7. In the Initialization Data box, choose File.
8. In the field, type:

   `\filename`

   where *filename* is the name of the executable binary application. Or choose Find, select your application, and choose OK.
9. Enable the Binary file check box.
10. Enable the Overwrite option button to overwrite an existing file with the same name.
11. In the Target file name field, type a name if you want to save the file under a different name on the terminal.

    Do NOT enter a slash or backslash character before the target filename.
12. Choose Add. The file appears in the Files and Data list box with a B for binary in the leftmost column.



13. Repeat Steps 7 through 12 to select another application.
14. You can also download files used by your application such as an employee list or a part number list.

    To download additional files, choose File in the Initialization Data box. Type in the filename including the backslash. Disable the Binary file check box and then choose Add.
15. Choose OK to save your changes and return to the Terminal Download Configuration dialog box.

16. In the Terminals and Groups list box, choose the terminal or group you configured if it is not already highlighted and marked with an asterisk.
17. Choose Download. A Download initiated message box appears.
18. Choose OK. The executable binary applications and files are downloaded to the terminal or group of terminals. If you are downloading the applications and files to many terminals or there is a lot of radio traffic in your 2.4 GHz RF network, the download may take longer. All files are downloaded and stored on the terminal's flash drive C.

To run an application, continue with the instructions in the next section. If you have problems downloading files, see Chapter 6, "Troubleshooting."

Running the Application on the Terminal

Once you have downloaded an application to the terminal, you are ready to run and use it. There are three ways to run an application:

- Use the FileCopy utility. For help, see "Using the Serial Port to Transfer Applications and Files" earlier in this chapter.
- Use the Run Program reader command. For help, see "Run Program" in Chapter 8.
- Use the TRAKKER Antares 2400 Menu System.

The instructions in this section explain how to use the TRAKKER Antares 2400 Menu System to load and run an application.

To run an application on the terminal

1. Press f T 2 M or scan this bar code label to access the TRAKKER Antares 2400 Menu System.

   Enter Test and Service Mode

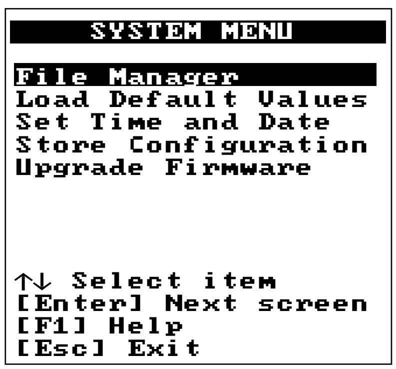
   ..-.

   Note: *You must press the (Left Enter) key in this key sequence.*

The Main Menu appears.

242XU.001

2. Choose System Menu and press ↵. The System Menu appears.

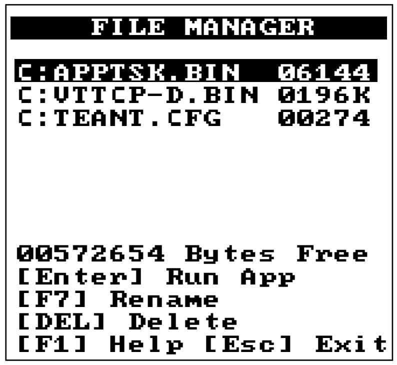


242XU.051

3. Choose File Manager and press ↵. The File Manager screen appears prompting you to select a drive.

242XU.025

4. Press ↵ to select drive C or type in the letter of the drive you want to manage and then press ↵. The File Manager screen appears listing all the files stored on the drive.



242XU.179

5. Press ▼ or ▲ to choose an application and then press ↵. The terminal boots, resets all firmware, and runs the application.

   If you also made configuration changes while you were working in the menu system, you will be prompted to store your changes in flash memory. Once you save or discard the changes, the terminal boots, resets all firmware, and runs the application.

   Note: *You can press* f F2 *to rename a file or* f . *to delete a file.*

You can begin using the application to collect data. Repeat the instructions in this section to run another application on the terminal. If you have problems running an application, see Chapter 6, “Troubleshooting.”

Using Screen Mapping (DCS 300 v1.1)

You can use screen mapping to send screen transactions from a T2425 through the DCS 300 to a host application. First, you create an application for your terminals. To create an application that runs on your terminals, you can use the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions. The terminal runs applications that are programmed in Microsoft C. For help, see "Creating Applications for the Terminal" earlier in this chapter.

Then on the DCS 300, you use the Script Builder Tool to create script files that map transaction fields from the terminal to host application fields. Using this tool, you can also create logon and logoff sequences in host screens, handle regions (such as error messages) on host screens, and send messages back to the source of the transaction, such as the terminal. For help, see the *DCS 300 System Manual*.

Make sure you have installed the terminal in your Intermec 2.4 GHz RF network. For help, see Chapter 1, "Getting Started." If you have completed these tasks, you can start running your application and screen mapping.

Note: *If you are running DCS 300 v1.0 software or you are using a Model 200 Controller, screen mapping was supported using terminal templates and a terminal template application. For help, contact Intermec Technical Support.*

6

Troubleshooting

This chapter lists the problems you may have while using the terminal and gives some possible solutions. You will also find instructions that explain how to replace the antenna and clean parts of the terminal.

How to Use This Chapter

If you have any problems with the TRAKKER Antares 2420 or 2425 terminal, use this table as a guide to find the problem and solution in this chapter:

Note: *If you have problems with the 3270, 5250, or VT/ANSI terminal emulation application, see the* TRAKKER Antares Terminal Emulation User's Guide.

Finding and Solving Problems

If you have a problem while configuring or using the terminal, use the tables in this section to find a solution. For easy reference, problems are grouped into these topics:

- Terminal Will Not Turn On
- Problems While Operating the Terminal
- Problems While Configuring the Terminal
- T2425 Will Not Communicate With RF Network Devices
- Problems Transmitting Data Through the Serial Port
- Problems Using the Screen Mapping Application
- Bar Code Labels Will Not Scan
- Guidelines for Managing Batteries

Note: *You can also use the diagnostics to help analyze and solve problems. For help, see Chapter 7, "Running Diagnostics."*

Caution
There are no user-serviceable parts inside the terminal. Opening the unit will void the warranty and may cause damage to the internal components.

Conseil
La terminal ne contient pas de pièces révisibles par l'utilisateur. Le fait d'ouvrir l'unité annule la garantie et peut endommager les pièces internes.

If you send the terminal in for service, it is your responsibility to save the terminal data and configuration. Intermec is responsible only for ensuring that the keypad and other hardware features match the original configuration when repairing or replacing your terminal.

Terminal Will Not Turn On

If you press (I/O) to turn on the terminal and nothing happens, check the terminal for these possible problems. For more help, see Chapter 1, "Getting Started."

Problem	Solution
A scan module or a serial module is not installed.	Make sure a scan module or a serial module is installed correctly. You must install a module before you can turn on the terminal.
A main battery pack is not installed. You see the Battery icon on the top line of the screen.	Remove the battery door on the terminal and make sure the main lithium-ion battery pack is installed correctly. Slide the battery pack toward the top of the terminal to lock the battery pack into the connectors.
The main battery pack is not charged. You see the Battery icon on the top line of the screen.	The main battery pack may be discharged. Replace the battery pack with a spare charged battery pack, or charge the battery pack and try again.

Problems While Operating the Terminal

If you are operating the terminal and have trouble, check these possible problems and solutions.

Problem	Solution
You scan a reader command, such as Backlight On, and nothing happens.	The reader commands are disabled. Scan the Enable Override command shown here to temporarily enable all of the reader commands. You can also enable or disable reader commands with the TRAKKER Antares 2400 Menu System. For help, see "Command Processing" in Chapter 9. When you are finished, remember to disable the override so that your data is not interpreted as a command. Enable Override *$+DC3*
You scan a valid bar code label to enter data for your application. The data decoded by the scan module does not match the data encoded in the bar code label.	The terminal may have decoded the bar code label in a symbology other than the label's actual symbology. Try scanning the bar code label again. Make sure you scan the entire label. To operate the terminal quickly and efficiently, you should enable only the bar code symbologies that you are going to scan. If you enable multiple symbologies, the terminal may on rare occasions decode a bar code according to the wrong symbology and produce erroneous results.

Problems While Operating the Terminal (continued)

Problem

You want to set the terminal back to the default configuration to start over configuring the terminal.

Solution

Scan this bar code label:

Default Configuration

.+

Or, use the TRAKKER Antares 2400 Menu System. For help, see "Restoring the Terminal's Default Configuration" in Chapter 3.

***Note:** After you load the default configuration on a T2425, you may need to set the primary network communications parameters to communicate with other devices in the 2.4 GHz RF network.*

Problem

You cannot scan bar code labels with a scan module or the module for cabled scanners.

Solution

See "Bar Code Labels Will Not Scan" later in this chapter.

Problem

The terminal appears to be locked up and you cannot enter data.

Solution

Try these possible solutions:

- (T2425 only) Wait at least 10 seconds and try again. If the T2425 is still connecting to the DCS 300 or host, the T2425 ignores any input from the keypad or scanner. Make sure the Connect icon appears and remains on before continuing.
- Scan any bar code label to see if the terminal responds.
- Press I/O to turn off the terminal. If it turns off, press I/O to turn on the terminal. You can continue working.
- If the terminal will not turn off, reset the terminal. Press and hold the f and ↵ keys, and then press I/O. The green Scanner LEDs light and the terminal turns off. Release the keys.

  Press I/O to turn on the terminal. It boots all the systems, clears RAM memory, and starts your application.

  ***Note:** If the terminal does not boot when you press I/O, the reset did not work. Press and hold the f and ↵ keys first, then press I/O.*
- Remove the main battery pack and disconnect the backup battery. Let the terminal sit for 1 minute. Install the battery pack and connect the backup battery. Press I/O to turn on the terminal.
- If you keep returning to the Boot Menu, try loading the firmware. For help, see "Upgrading the Firmware" in Chapter 3.
- If the terminal will not boot or reset, contact your local Intermec service representative for help.

Problems While Operating the Terminal (continued)

Problem	Solution
The terminal is booting and you see a message that POST failed.	The screen displays the system that failed POST. Report the error message to your supervisor. Press Esc to exit the error message. The Boot Menu appears. Press B to boot the terminal. Your application appears on the screen. If the terminal still will not boot, contact your local Intermec service representative for help.
The terminal displays the Boot Menu.	You will see the Boot Menu in these two situations: • You remove both batteries at the same time. Once you replace the batteries and turn on the terminal, the Boot Menu appears. Press B to boot the terminal and continue working. • You just finished upgrading the firmware on the terminal and POST failed. Press B to boot the terminal. Report the problem to your supervisor. For help on the Boot Menu, see “Booting and Resetting the Terminal” later in this chapter.
You insert a main battery pack and cannot shut the battery door.	If you are using an Intermec-labeled battery pack (Part No. 063278), make sure you remove the rubber bumper from the inside of the battery door. Try closing the battery door again. If you are using a Sony-labeled battery pack, make sure the rubber bumper is installed over the ridge near the wall on the inside of the battery door. Try closing the battery door again. The rubber bumper on the battery door keeps the battery pack in place.
You insert a main battery pack. The terminal will not turn on and the Battery icon is not displayed.	The main battery is completely discharged of power. The terminal does not even register enough power to identify a main battery pack and display the Battery icon. Replace the main battery pack with a spare charged battery pack, or charge the battery pack.
The Battery icon blinks on the top line of the terminal screen. **Note:** *The terminal is not beeping.*	The backup battery charge is low, or the backup battery is not connected. Make sure the backup battery wire connectors are firmly locked together. Check the wires leading into the backup battery and the bottom case for any damage or loose connections. Make sure a main battery pack is installed and connected. Turn off the terminal. Let the main battery pack charge the backup battery. The backup battery will be fully charged in approximately 18 hours. If you have been using the terminal in a cold temperature environment, move the terminal to a warmer environment to charge the backup battery. If the backup battery will not charge, you may need to replace it. For help, contact your local Intermec service representative.

Problems While Operating the Terminal (continued)

Problem	Solution
You see both these symptoms: • The Battery icon remains on solid. • The terminal beeps once every 15 seconds.	The main battery pack charge is low. You have a few minutes of power left. Replace the main battery pack with a spare charged battery pack, or charge the battery pack.
You see both these symptoms: • The Battery icon blinks. • The terminal beeps once every 15 seconds.	The main battery pack charge and the backup battery charge are both low. Immediately turn off the terminal. Replace the main battery pack with a spare charged battery pack. Let the main battery pack charge the backup battery. The backup battery will be fully charged in approximately 18 hours. If you have been using the terminal in a cold temperature environment, move the terminal to a warmer environment to charge the backup battery. If the backup battery will not charge, you may need to replace it. For help, contact your local Intermec service representative.

Problems While Configuring the Terminal

You can configure the terminal by using the TRAKKER Antares 2400 Menu System or by scanning configuration commands. If you have problems configuring the terminal, check these possible problems and solutions.

Problem	Solution
On the T2425, you configure the RF security ID and the changes do not appear to be saved.	You can only set the RF security ID with the 2.4 GHz RF network enabled. The Network Activate configuration command must be configured to 2.4 GHz RF network before you can save any changes to the RF security ID command.
On a T2425, you see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address or Controller (Host) IP address set to an invalid address of 0.x.x.x or 127.x.x.x. Configuration was not updated.`	The 2.4 GHz RF network is enabled and there is a problem with the network configuration. You need to change the terminal IP address and/or the controller IP address (host IP address for a TCP/IP network). Choose Primary Network from the Communications Menu. The terminal IP address or the controller/host IP address is set to 0.x.x.x or 127.x.x.x. These are invalid addresses. Set a valid IP address for the terminal and controller or host. For help, see "Using RF Communications on the T2425" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP address assigned to the terminal and the controller or host.

Problems While Configuring the Terminal (continued)

Problem	Solution
On a T2425, you see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address and Default Router address set to the same address. Configuration was not updated.`	The 2.4 GHz RF network is enabled and there is a problem with the network configuration. You need to change the terminal IP address and/or the default router address. Choose Primary Network or Advanced Network from the Communications Menu. The terminal IP address and the default router address are both set to the same address. Set a valid IP address for the terminal and the default router. For help, see "Using RF Communications on the T2425" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP addresses for each RF network device.
On a T2425, you see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address or Controller (Host) IP address set to the same address. Configuration was not updated.`	The 2.4 GHz RF network is enabled and there is a problem with the network configuration. You need to change the terminal IP address and/or the controller IP address (host IP address for a TCP/IP network). Choose Primary Network from the Communications Menu. The terminal IP address and the controller/host IP address are both set to the same address. Set a valid IP address for the terminal and DCS 300 or host. For help, see "Using RF Communications on the T2425" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP address assigned to the terminal and the controller or host.
On a T2425, you see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Default Router address is not on the terminal's network. Configuration was not updated.`	The 2.4 GHz RF network is enabled and there is a problem with the network configuration. You need to change the default router address. Choose Advanced Network from the Communications Menu. The terminal and DCS 300 (UDP Plus network) or host (TCP/IP network) are on different networks, and the terminal is not on the same network as the default router. When the terminal is on a different IP subnetwork from the DCS 300 or host, you must set the Default Router and Subnet Mask commands. Set a valid IP address for terminal, DCS 300 or host, and default router. For help, see "Using RF Communications on the T2425" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP addresses for each RF network device.

Problems While Configuring the Terminal (continued)

Problem	Solution

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`SOM is set. You must also set EOM.`
`Configuration was not updated.`
	You must configure a value for EOM before you can set SOM or disable SOM. You need to change the value of SOM. Choose Serial Port from the Communications Menu.
	The configurable serial protocol (CSP) uses EOM to determine the serial communications mode. When EOM is disabled, the terminal communicates in Character mode. When EOM is enabled, the terminal communicates in Frame mode. To use Frame mode, you need to set EOM first. Next, configure Handshake, Configuration Commands Via Serial Port, LRC, SOM, and then Poll.
	For help, see "Using Serial Communications on the Terminals" in Chapter 4.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`SOM cannot equal EOM.`
`Configuration was not updated.`
	SOM cannot equal the same value that is set for EOM. You cannot set SOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of SOM. Choose Serial Port from the Communications Menu.
	For help, see "Start of Message (SOM)" in Chapter 9.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`EOM #1 cannot equal EOM #2. Configuration was not updated.`
	EOM can be one or two ASCII characters, but you cannot set the first and second character to the same character. Also, you cannot set EOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of EOM #1 or #2. Choose Serial Port from the Communications Menu.
	For help, see "End of Message (EOM)" in Chapter 9.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error. DLE, XON, XOFF are not valid values for either SOM or EOM.`
`Configuration was not updated.`
	You cannot set EOM or SOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of EOM or SOM. Choose Serial Port from the Communications Menu.
	For help, see "End of Message (EOM)" or "Start of Message (SOM)" in Chapter 9.

Problems While Configuring the Terminal (continued)

Problem	Solution

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`PG command failed.`
`Configuration was not updated.`
	PG is the Handshake configuration command. You need to change the value of Handshake or set other serial port parameters. Choose Serial Port from the Communications Menu.
	The order in which you set serial port protocol configuration commands is important. To use Frame mode, you need to set EOM first. Next, configure Handshake, LRC, SOM, and then Poll. To use Character mode, you need to disable these same parameters in reverse order.
	For help, see "Using Serial Communications on the Terminals" in Chapter 4.

You are configuring SOM or EOM in the Configuration Menu and cannot set two characters.	You may have a space in the SOM or EOM field. The space does not show, but it is a valid character. To clear a space from the field, put the cursor in the field and press ← . Now set the two-character value for SOM or EOM.
You are scanning a configuration command to set one of the serial port parameters and hear three low beeps. For example, you are trying to set EOM or SOM.	The order in which you scan serial port protocol configuration commands is important. The configurable serial protocol (CSP) uses EOM to determine the serial communications mode. When EOM is disabled, the terminal communicates in Character mode. When EOM is enabled, the terminal communicates in Frame mode. To use Frame mode, you need to set EOM first. Next, configure Handshake, Configuration Commands Via Serial Port, LRC, SOM, and then Poll. To use Character mode, you need to disable these same parameters in reverse order. For help, see "Using Serial Communications on the Terminals" in Chapter 4.

You see this error message when exiting the Configuration Menu:
`Commandname`
`command failed.`
`Remainder of configuration not updated.`
	The two-character name (syntax) of the configuration command that failed is listed on the first line of the error message. For example, you may see this message:
	`SS`
	`command failed.`
	There may be a problem with the configuration due to a change made with the Scanner Selection (SS) command. Check the command listed in the message. To find the command, use the "Configuration Commands by Syntax" table in Appendix A. Make sure the command is set correctly for the options and network communications you are using with the terminal. For help, see Chapter 9, "Configuration Command Reference."

Problems While Configuring the Terminal (continued)

Problem	Solution
You scan a configuration command, such as Keypad Caps Lock, and you hear three low beeps.	If you are working in the TRAKKER Antares 2400 Menu System, you cannot scan configuration commands. Use the Configuration Menu to change the terminal's configuration, or exit the menu system to scan configuration commands.
You scan a configuration command, such as Keypad Caps Lock, and nothing happens.	There are two possible solutions: • You may have one or more reader commands disabled, such as Change Configuration, so that you cannot change the configuration. Enable all of the reader commands and try again. • The terminal may be waiting for another command to complete the configuration change. If you started by scanning the Enter Accumulate command, you must finish the command by scanning the Exit Accumulate command. For help, see Chapter 9, "Configuration Command Reference." Scan the Enable Override to temporarily enable all of the reader commands. When you are finished, remember to disable the override so that your data is not interpreted as a command. Enable Override *$+DC3*
On the T2425, you scan a configuration command to set one of these parameters and hear three low beeps: • Controller IP Address (UDP Plus) or Host IP Address (TCP/IP) • Terminal IP Address • Default Router • Network Activate	If the Network Activate command is enabled (2.4 GHz RF network enabled) and you are configuring the T2425, these addresses must define a valid network configuration. For example, an invalid network configuration would be a controller (or host) IP address set to 0.0.0.0 with the network enabled. To set these four parameters, follow these steps: 1. Disable the Network Activate (NA) configuration command. 2. Set the terminal IP address and the controller IP address or the host IP address. 3. Set the default router address (if necessary). 4. Enable the Network Activate command. You can change an IP address with the network enabled as long as it still defines a valid network configuration.

Problems While Configuring the Terminal (continued)

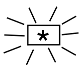
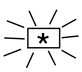
Problem	Solution
You scan or enter an option for the Scanner Selection configuration command and you hear three low beeps.	You may have scanned or entered a Scanner Selection command that does not apply to the type of scan module you have installed. Options SS0 through SS7 only configure the module for cabled scanners when installed. Options SS11 through SS13 only configure the long range or high density scan module when installed. Try scanning or entering the Scanner Selection command again and select an option the type of module you have installed. If you have a standard range scan module, you can scan options SS11 through SS13. However, since these commands configure the spotting beam for a long range or high density scan module, they do not change how the standard range scan module works.

T2425 Will Not Communicate With RF Network Devices

If you cannot get the T2425 to communicate with other devices in the 2.4 GHz RF network, check these possible problems.

Problem	Solution
The Radio icon on the terminal screen remains on. ◆	Either the Network Activate command is disabled or there is a problem with the radio card and it is turned off. Make sure the Network Activate command is enabled. Use the TRAKKER Antares 2400 Menu System or scan the Network Activate command to enable the 2.4 GHz RF network and turn on the radio. For help, see "Network Activate" in Chapter 9. If the network is enabled and the Radio icon remains on, there may be a problem with the radio card. For help, contact your local Intermec service representative.
The Connect icon is not lit on the terminal screen. The T2425 is not communicating with the access point.	The T2425 is not connected to the access point. Make sure the access point is turned on and operating. You may also be using the terminal out of the RF range of an access point. Try moving closer to an access point to re-establish communications. In a TCP/IP direct connect network, you cannot scan or enter data when the T2425 is not communicating with an access point or you may lose your TCP session. Try moving closer to an access point to re-establish communications. Make sure the T2425 is configured correctly for your network. To communicate with the access point, the RF domain and RF security ID on the terminal must match the values set for all access points the terminal may communicate with. For help, see "Using RF Communications on the T2425s" in Chapter 4.

T2425 Will Not Communicate With RF Network Devices (continued)

Problem	Solution
The Connect icon blinks on the terminal screen. 	In a UDP Plus network, the terminal is not connected to the DCS 300. You may need to check the T2425 configuration, or make sure the DCS 300 is running and that data collection is started. The terminal may be out of range of an access point or the access point may have recently been turned off. Make sure the access point is still turned on. Each device in the 2.4 GHz RF network must have a valid IP address. The IP addresses set on the terminal must match the addresses configured on the DCS 300 or host. For help, see “Using RF Communications on the T2425” in Chapter 4.
The T2425 is connected to the host computer and you move to a new site to collect data. The Connect icon was on and now begins to blink or turns off. 	You may have gone out of range of an access point. Try moving closer to an access point or to a different location to re-establish communications. Once you are in range again, the Connect icon will appear and remain on. Any data you collected while you were out of range will be transmitted over the network.

The Connect icon blinks on the terminal screen and you see this message:
`Unable to connect to controller. Error 102.`
`Unable to establish connection to host. Session ended.`
	The T2425 is connected to the access point, but is trying to establish communications with the DCS 300 and the host computer. Make sure the terminal is correctly configured for your network. Make sure the DCS 300 is configured and running. Make sure the host computer is configured and running.
	
	If you have configured the network correctly, try restarting the DCS 300 to establish communications. You can also try resetting the terminal. For help resetting the terminal, see “Booting and Resetting the Terminal” later in this chapter.

The Connect icon remains on, but the host computer is not receiving any data from the T2425. 	There may be a problem with the connection between the DCS 300 and the host computer. Check with your network administrator or use the *DCS 300 System Manual* to troubleshoot any potential problems on the controller. In a TCP/IP network, there may be a problem with the connection between the access point and the host computer. Check with your network administrator or use your access point user’s manual.
The Connect icon remains on, but you cannot establish a terminal emulation session with the host computer. 	There may be a problem with the host computer, a problem with the connection between the DCS 300 and the host computer, or a problem with the connection between the access point and the host (TCP/IP). Check with your network administrator to make sure the host is running and allowing users to login to the system.

T2425 Will Not Communicate With RF Network Devices (continued)

Problem	Solution
When you turn on the terminal after it was suspended for awhile (10-15 minutes or longer), the terminal can no longer send or receive messages over the network.	The host may have deactivated or lost your current terminal emulation session. In a TCP/IP direct connect network, you need to turn off the “Keep Alive” message (if possible) from the host so that the TCP session is maintained while a terminal is suspended.

Problems Transmitting Data Through the Serial Port

If you are having problems sending or receiving data through the serial port on the terminal, check these possible problems:

- Make sure the terminal is connected to the host computer or serial device through the TRAKKER Antares TD2400 Communications Dock, the TRAKKER Antares Optical Link Adapter, the TRAKKER Antares 242X serial interface module, or the modem.
- Make sure you are using a null-modem RS-232 cable to connect the communications dock, optical link adapter, or the serial interface module to the host or serial device.
- Make sure you are using an RJ11 cable to connect the T2420 modem to the phone jack.
- Make sure an external power supply is connected to the communications dock and there is power to the electrical outlet.
- Make sure an external power supply is connected to the optical link adapter or that you have a charged battery pack installed in the terminal.
- Make sure the terminal’s serial port parameters are configured to match the serial port configuration on the host computer or serial device. For example, make sure the baud rate is the same.

For help connecting and configuring the serial port, see “Using Serial Communications on the Terminals” in Chapter 4.

Problems Transmitting Data Through the DCS 300

If you have a problem while running the application on the terminal in a UDP Plus network, check these possible communications problems.

Problem	Solution
Transaction Buffer Full.	The buffer holding transactions to be sent to the controller is full. Stop collecting data with this terminal. Make sure the terminal is communicating with the DCS 300 and let the terminal send all the transactions in the buffer before you continue collecting data.
Sending Buffer Transactions.	This is an information message to tell you that buffered transactions are now being sent to the DCS 300. You can begin collecting data again once the message clears.
Transaction Aborted.	The transaction just sent to the DCS 300 was not received. Try sending the transaction again.
Transmit Error XX, press Enter.	There is an error transmitting data to the DCS 300. XX represents the status code error. Note the error code listed in the message and contact your local Intermec service representative for help. Press ↵ to continue.
Receive Error XX, press Enter.	There is an error receiving data from the DCS 300. XX represents the status code error. Note the error code listed in the message and contact your local Intermec service representative for help. Press ↵ to continue.
Shutting down.	The DCS 300 is shutting down. You may continue collecting data and buffer the transactions in the terminal until the DCS 300 starts again, or stop collecting data with the terminal.
Controller Shutdown.	The DCS 300 has shut down. You may continue collecting data and buffer the transactions in the terminal until the DCS 300 starts again, or stop collecting data with the terminal.

Bar Code Labels Will Not Scan

If you cannot scan bar code labels or you are having problems with the scan module, check these possible problems.

Problem	Solution
A scan module is not installed.	Make sure a scan module is installed correctly. You must install a module for cabled scanners, a standard range scan module, or a long range scan module, or a high density scan module before you can use the terminal.
The terminal is turned off.	Make sure the terminal is turned on. Press I/O to turn on the terminal.
You cannot see a red beam of light from the integrated scan module when you press the Scan button and aim the scanner at a bar code label.	There are two possible problems: • You may be too far away from the bar code label. Try moving closer to the bar code label and scan it again. • You may be scanning the bar code label "straight on." Try changing the scanning angle until the laser beam is the brightest. This is the best scanning angle. You can test the effective range of the scanner. Move within 2 feet of a wall and test the scanner. You need to be within the scanning range to scan bar code labels. For help on scanning distances, see "Physical and Environmental Specifications" in Appendix A.

Warning
Do not look directly into the window area or at a reflection of the laser beam while the laser is scanning. Long-term exposure to the laser beam can damage your vision.

Avertissement
Ne regardez pas directement la réflexion d'un rayon laser ou dans la fenêtre du laser lorsque celui-ci est en opération. Si vous regardez trop longtemps un rayon laser, cela peut endommager votre vue.

Problem	Solution
An input device is not attached to the module for cabled scanners.	Make sure an input device, such as a 1550 laser scanner, is attached correctly to the module for cabled scanners. You must install an input device before scanning bar code labels.
The integrated scan module does not read the bar code labels quickly, or the scanning beam seems to be faint or obscured.	The scan module window may be dirty. Clean the scanning window of the scan module with a solution of ammonia and water. Wipe dry. Do not allow abrasive material to touch the window.

Bar Code Labels Will Not Scan (continued)

Problem	Solution
You have an input device attached to the module for cabled scanners and cannot read any bar code labels.	You may not be using an input device that is supported with the module for cabled scanners. Make sure you are using one of the supported input devices: • Intermec 126X, 127X, and 128X wands • Intermec 146X CCD scanners • Intermec 151X, 1545, and 155X laser scanners • Compatible Symbol scanners (reverse polarity enabled) • Tethered long range scanner
The scan module or input device will not read the bar code label.	Try one of these solutions: • Make sure you aim the scanner beam so it crosses the entire bar code label in one pass. • The angle you are scanning the bar code label may not be working well, or you may be scanning the label "straight on." Try scanning the bar code label again, but vary the scanning angle. • The bar code label print quality may be poor or unreadable. To check the quality of the bar code label, try scanning a bar code label that you know scans. Compare the two bar code labels to see if the bar code quality is too low. You may need to replace the label that you cannot scan. • Make sure the bar code symbology you are scanning is enabled. Use the TRAKKER Antares 2400 Menu System to check the symbologies. On the Symbologies Menu, each symbology that is enabled has an asterisk (*) next to the name of the symbology. If your bar code symbology is disabled, enable it and then try scanning the bar code label again.
The input device connected to the module for cabled scanners does not appear to work well or read bar code labels very quickly.	Try setting the Scanner Selection command to the specific input device you have attached. Check the bar code symbologies you have enabled on the terminal. Enable only the symbologies that you are using.
When you press the Scan button, the scanner LEDs at the top of the keypad do not light up.	Move within 2 feet of a wall and press the Scan button again. Make sure the scan module emits the red laser beam. If the LEDs do not light, there may be a problem with them. For help, contact your local Intermec service representative. If the laser beam does not turn on, check the other problems in this section for a possible solution.

Bar Code Labels Will Not Scan (continued)

Problem	Solution
When you release the Scan button, the scanner LEDs at the top of the keypad do not turn off.	The scanner LEDs will remain on if you configure the terminal to use edge triggering. If you configure the terminal for level triggering and the scanner LEDs remain on, there may be a problem with the LEDs. Press the Scan button again without scanning a bar code label. If the LEDs are still on, contact your local Intermec service representative.

Guidelines for Managing Batteries

Follow these guidelines to manage the terminal batteries, prevent problems, and preserve battery power. For more help on charging or replacing batteries, see “Learning About the Terminal’s Batteries” in Chapter 2.

Main Battery Pack

- ALWAYS turn off the terminal BEFORE you remove the main battery pack.
- ALWAYS keep a charged or partially charged main battery pack in the terminal.
- Keep a spare, charged main battery pack on hand.
- If the Battery icon appears and remains on solid, you have a low main battery pack, replace or charge the battery pack as soon as possible.
- When you remove a low main battery pack from the terminal, recharge the battery pack you just removed.
- If the terminal turns off due to a low main battery pack, do not turn on the terminal. Replace or charge the main battery pack before you continue using the terminal.
- Use the battery charger to charge the main battery pack. Charge the main battery pack for a minimum of 2 hours to make sure the battery pack is fully charged.

Backup Battery

- If you have a low backup battery, turn off the terminal. Insert a fully charged main battery pack. The main battery pack will fully charge the backup battery in approximately 18 hours.
- ALWAYS turn off the terminal BEFORE you remove the backup battery.

Storing the Terminal

- If you are going to store the terminal for less than 2 weeks, keep both batteries installed in the terminal. Insert a fully charged main battery pack before you store the terminal.
- If you are going to store the terminal for more than 2 weeks, save your data and end your TE or screen mapping session to minimize the risk of data loss. Remove both the main battery pack and the backup battery from the terminal.

Guidelines for Managing Batteries (continued)

Cold Temperatures
(Using the terminal in sub-freezing environments)

- If you use the terminal in a cold temperature environment, battery life will be reduced. Battery life depends on temperature, battery model, input device, age of the battery pack, your usage, and duty cycle factors. If you use the terminal for extended periods of time in sub-freezing environments, you may need to change the main battery pack more often.
- Do not store the terminal in a cold temperature environment. When you are not using the terminal, keep it in a warmer area to make sure the battery chargers will continue operating.
- If the Battery icon blinks, the backup battery charge is low. Move the terminal to a warmer environment to charge the backup battery. The backup battery charger operates between 32°F and 104°F (0°C and 40°C). If you are using the terminal in an area outside this temperature range, the backup battery will not charge.
- Store the battery chargers and spare batteries in a warm (office) environment to ensure the most efficient operation.
- Charge the main battery pack in an area or room where the temperature is above freezing.
- If you have been using the terminal in a cold temperature environment and need to replace or charge either battery, let the batteries warm up for a half hour before you charge them.

Booting and Resetting the Terminal

You seldom need to boot or reset the terminal. When you boot the terminal, it runs through power-on self test (POST) to test each major subsystem. The terminal uses the configuration currently saved in flash memory. Once the terminal is finished booting, your application appears on the screen.

You only need to reset the terminal when the terminal or an application are locked up and will not respond to any key sequences. The terminal also boots and resets after a firmware upgrade or if you remove both batteries. The next instructions explain how you boot and reset the terminal.

Booting the Terminal

You can boot the terminal using these two methods:

- Configure the key to boot the terminal when you turn on the terminal.
- Use the Boot Menu.

Booting the Terminal on Resume

When you press to turn off the terminal, it turns off and goes into Suspend mode. When you press to turn on the terminal, it resumes or boots depending on the terminal configuration.

There are two ways to configure the key using the Resume Execution configuration command:

Resume Execution Not Allowed Configures the terminal to boot and restart your application each time you press to turn on the terminal. Use this option if you want to restart your application every time you turn on the terminal.

Resume Execution Allowed Configures the terminal to resume exactly where it was when you turned off the terminal. Use this option to resume working each time you turn on the terminal.

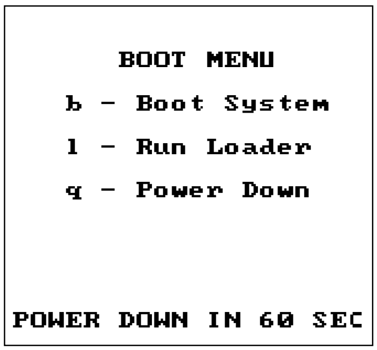
You can configure the Resume Execution command by using the TRAKKER Antares 2400 Menu System or by scanning these bar code labels. For help, see Chapter 3, “Configuring the Terminal,” or “Resume Execution” in Chapter 9.

Resume Execution Not Allowed	Resume Execution Allowed
$+ER0	*$+ER1*

Using the Boot Menu

The Boot menu appears after you:

- remove both batteries, install them again, and turn on the terminal.
- upgrade the firmware.
- reset the terminal.



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The Boot Menu contains these commands:

Boot System If you did remove the batteries, make sure you install a charged main battery pack or the terminal will not turn on. Press B to boot the terminal. Once the terminal is finished booting, your application appears on the screen.

Run Loader Press L to load the terminal firmware. To upgrade or load the firmware, you should use the Firmware Upgrade option in the TRAKKER Antares 2400 Menu System. For help, see "Upgrading the Firmware" in Chapter 3.

Power Down Press Q to turn off the terminal. When you turn on the terminal, the Boot Menu screen appears again if POST passes.

Resetting the Terminal

If the terminal or application is locked up and the terminal will not respond to any key sequences, you can reset the terminal. Before you reset the terminal, try the following in order:

- Press I/O to turn off the terminal.
- Scan the Reset Firmware label to restart the firmware and application.

  Reset

  -.

If the terminal or application still will not respond, reset the terminal.

To reset the terminal

- Scan the Boot Terminal label to reboot the terminal.

  Boot Terminal

  -.1

Or if the terminal will not scan you can perform this procedure:

1. Place the terminal on a flat surface.
2. Press (I/O) to turn off the terminal. If it will not turn off, continue with the next step.
3. Press and hold the [f] and [↵] keys at the same time and then press (I/O) while still pressing the other keys. The green scanner LEDs light and the terminal turns off. Release the keys.

   Tip: *It helps to press the left side of the* [↵] *key in this key sequence.*

4. Press (I/O) to turn on the terminal. The Boot Menu appears.

```
      BOOT MENU
   b - Boot System
   l - Run Loader
   q - Power Down



POWER DOWN IN 60 SEC
```

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   Note: *If the terminal returns to the exact same screen, the reset sequence did not work. Repeat Step 1. Make sure you press and hold the* [f] *and* [↵] *keys, and then press the* (I/O) *key.*

5. Press [B] to boot the terminal. Once the terminal has finished booting, your application appears.

If the terminal still will not reset or boot, try loading the firmware. For help, contact your local Intermec service representative.

Maintaining and Cleaning the Terminal

The terminals are built for use in a rugged, industrial working environment. You may need to perform these minor maintenance tasks to keep the terminal in good working order:

- Replace the antenna on the T2425.
- Clean the screen.
- Clean the scan module window.

The antenna is one of the few exposed parts that may be damaged while you use the T2425. You can order and replace the antenna using the instructions in this section. If you do have problems with other mechanical parts, contact your local Intermec service representative for help.

Clean the scan module window and terminal screen as often as needed for the environment in which you are using the terminal. Each procedure is described in detail in this section.

To order replacement parts, contact your local Intermec service representative or contact Intermec at:

Intermec Corporation
6001 36th Ave. West
P.O. Box 4280
Everett, Washington 98203-9280

Telephone: 1-425-348-2600

Replacing the Antenna

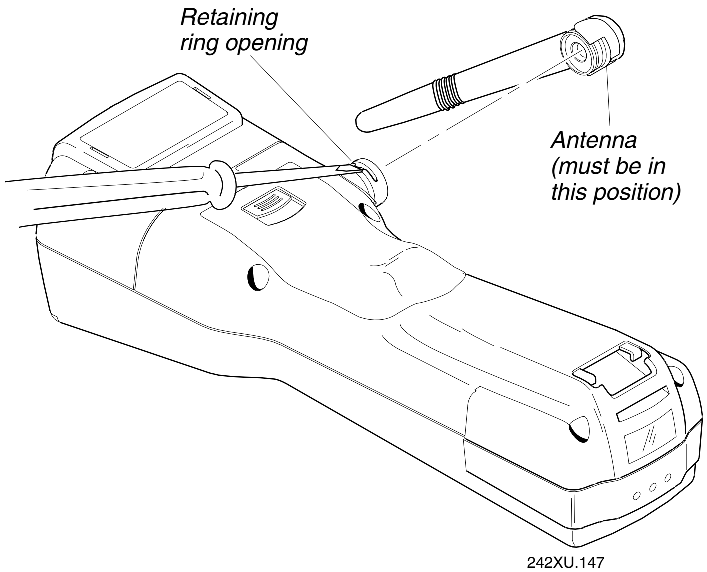
If your antenna on the T2425 is damaged, you can replace it. To replace the antenna, you need these items:

- 2.4 GHz SMB antenna (Part No. 063825)
- Retaining ring (Part No. 064101)
- Small straight-slot screwdriver

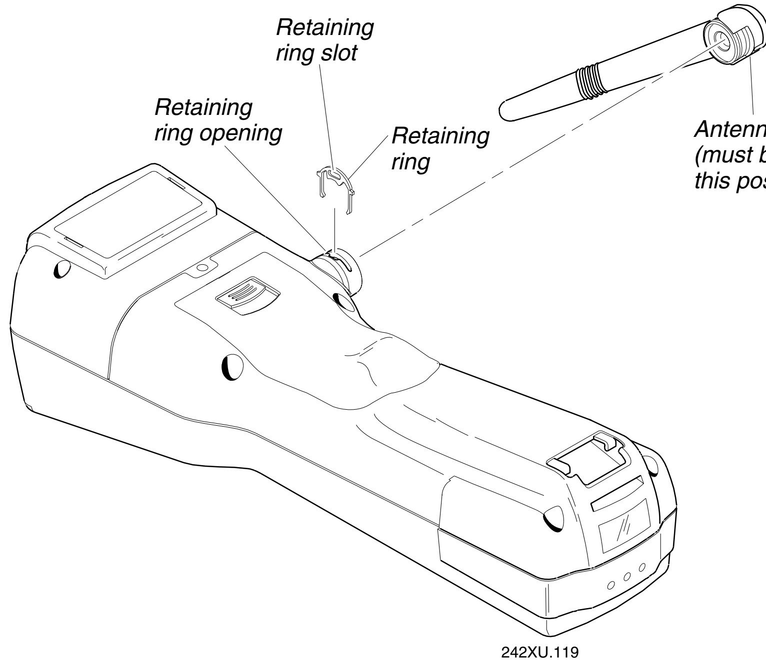
To replace the antenna

1. Rotate the antenna to line up the alignment marks on the connector end of the antenna with the alignment marks on the T2425 antenna connector.
2. Insert the straight-slot screwdriver into the retaining ring opening so that the screwdriver is in the retaining ring slot.

Removing the Antenna



3. Pry the retaining ring up out of the opening and remove it.
4. Gently pull the antenna off the antenna connector on the T2425.
5. Line up the alignment marks on the connector end of the antenna with the alignment marks on the terminal antenna connector.



6. Push the new antenna onto the antenna connector until it fits flush and the opening for the retaining ring is visible.
7. Insert the retaining ring into the opening.
8. Push the retaining ring down until it is locked in place.
9. Turn the T2425 over and adjust the angle of the antenna as needed.

Cleaning the Scan Module Window and Terminal Screen

To keep the terminal in good working order, you need to clean the scan module window and terminal screen. Clean these surfaces as often as needed or when they are dirty.

To clean the scan module window and terminal screen

1. Press I/O to turn off the terminal.
2. Use a solution of ammonia and water.
3. Dip a clean towel or rag in the ammonia solution and wring out the excess solution. Wipe off the scan module window and terminal screen. Do not allow any abrasive material to touch these surfaces.
4. Wipe dry.

7

Running Diagnostics

This chapter explains how to run diagnostics on the terminal to help analyze hardware, application, and firmware problems.

What Diagnostics Are Available?

You can run diagnostics on the terminal to help analyze hardware and firmware problems, fix application problems, and view system information. You use the TRAKKER Antares 2400 Menu System to run diagnostics.

Use this table to determine the diagnostic you want to run on the terminal.

Diagnostic Test	Description
Access Point	(T2425 only) Lists information about the access point the T2425 is communicating with across the network.
Application Efficiency	Displays the application efficiency percentage to help determine the impact that the application has on the terminal's battery power.
Application Events	Shows the current status of each application event to help debug applications.
Battery/PIC Status	Shows the power remaining in the main battery pack and the power status for the backup battery. It also shows the voltage, temperature, and charging status for the main battery pack and the backup battery.
Beeper Test	Sounds a series of beeps to test the beeper by using a range of beep volumes and beep frequencies.
Clear Task Profiles	Clears the Task Status counters so that you can begin accumulating new task statistics for the Task Status screen and the Application Efficiency screen.
Destructive RAM Test	Extensively tests the RAM.
Display Test	Tests and turns on the pixels on the screen to make sure all areas of the screen are working correctly.
Error Logger	Lists any errors that the firmware did not expect.
Hardware Configuration	Lists the terminal's hardware components that were installed at the Intermec factory, including the RF country code.
Keypad Test	Shows the hexadecimal, decimal, and scan code value for any key or key combination on the keypad.

Diagnostic Tests (continued)

Diagnostic Test	Description
Malloc Application Information	Shows how memory is allocated and used by the current application.
Malloc Firmware Information	Shows how memory is allocated and used in the terminal firmware.
Radio Test	(T2425 only) Tests the radio to make sure it is working.
Serial Loopback	Verifies that the hardware for the RS-232 serial port is functioning correctly.
Scanner Test	Tests the laser scanner to make sure it is working.
Serial Port Test	Tests serial communications between the terminal and the host computer or serial device.
Subsystem Versions	Lists the version of each major firmware subsystem loaded on the terminal.
Task Status	Shows the task name, stack, the percentage of time each subsystem has been running, and the stack usage.

Running Diagnostics From the Menu System

The TRAKKER Antares 2400 Menu System is a menu-driven application that lets you configure the terminal, view system information, and run diagnostics. You can access the TRAKKER Antares 2400 Menu System and run diagnostics while running any application.

To run diagnostics from the TRAKKER Antares 2400 Menu System

1. Press f T 2 M or scan this bar code:

   Note: *You must press the (Left Enter) key in this key sequence.*

   Enter Test and Service Mode

   ..-.

The Main Menu appears.

242XU.001

2. Press ▼ to choose the Diagnostics Menu and press ↵. The Diagnostics Menu appears.

242XU.050

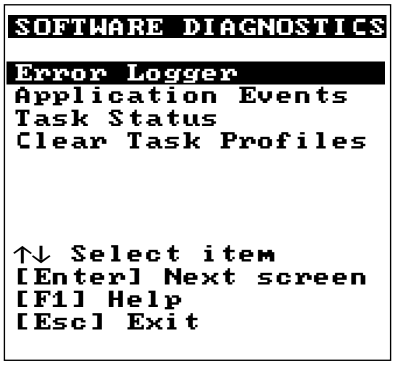
The Diagnostics Menu contains these commands:

Software Diagnostics Lets you run software diagnostics to help analyze software problems on the terminal. For example, you can view the Error Logger file to view system errors.

Hardware Diagnostics Lets you run hardware diagnostics to help analyze hardware problems on the terminal. For example, you can check the power remaining and the condition of the batteries.

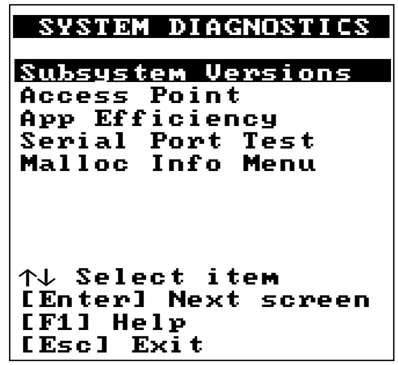
System Diagnostics Lets you run system diagnostics to help analyze network, system, or application problems on the terminal. For example, you can run diagnostics to check the communications between the T2425 and the access point.

3. Press ▲ or ▼ to choose Software Diagnostics, Hardware Diagnostics, or System Diagnostics and press [Enter]. One of these menus appears.



242XU.065

242XU.067



242XU.069

Note: *The Radio Test and Access Point diagnostics are only available for a T2425. You will not see these options on a T2420 since it does not have a radio.*

4. Press ▲ or ▼ to choose the diagnostic test you want to run and press [Enter]. The diagnostic screen appears. Use the information on the screen or follow the instructions to run the diagnostic test. For help, see "Defining the Diagnostics Screens" later in this chapter.
5. Press [Esc] to exit each diagnostic screen and to exit the diagnostics menus.
6. Choose another menu from the Main Menu or press [Esc] to exit the TRAKKER Antares 2400 Menu System. If you have made any changes, a screen prompts you to store the changes in flash memory. For help, see "Exiting the TRAKKER Antares 2400 Menu System" in Chapter 3.

After you exit the menu system, the terminal will resume the application you were running when you started the menu system.

Defining the Diagnostics Screens

You can find the following information about each diagnostic test:

- Description and purpose
- Menu where the diagnostic is available
- Sample diagnostic screen
- Definition and explanation of the diagnostic screen

The diagnostics are grouped into three categories:

- Software diagnostics
- Hardware diagnostics
- System diagnostics

Within each category, the diagnostics are listed alphabetically by name.

Defining the Software Diagnostics Screens

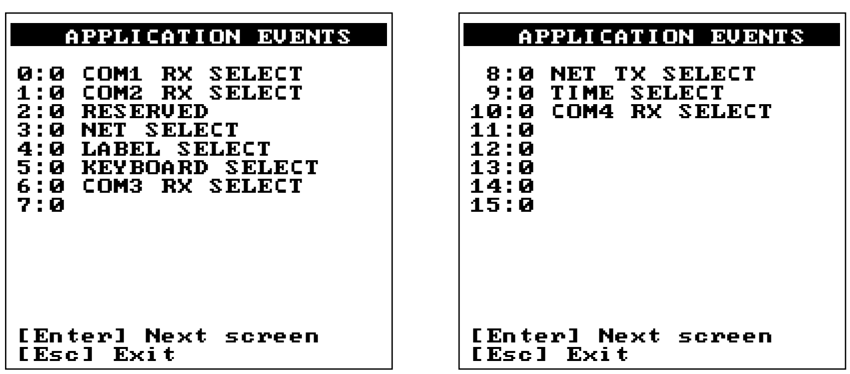
Each software diagnostic screen is defined in this section.

Application Events

Purpose: A programmer can use the current status of each event to help debug applications running on the terminal.

Where Available: Software Diagnostics menu.

Sample Screen:



242XU.062

Definition: The terminal uses an event-driven architecture. All inputs to the terminal, such as keypad or from the network, arrive in the form of an event. You can check the status of each event using the Application Events screen. When an event is serviced by the application, the event is cleared.

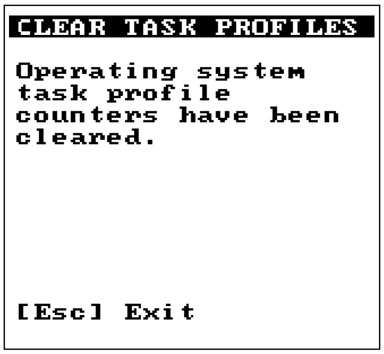
0 means the event is cleared. 1 means the event has occurred (or is set).

Clear Task Profiles

Purpose: Clears the task profile counters so that you can begin accumulating statistics on the firmware subsystem tasks from a known point in time.

Where Available: Software Diagnostics menu

Sample Screen:



242XU.132

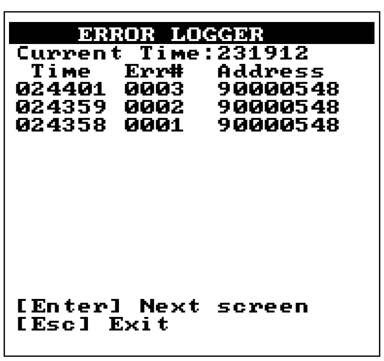
Definition: When you select the Clear Task Profiles option, the terminal clears the %Time field on the Task Status screen. It also resets all counters that are used to calculate the Application Efficiency screen.

Error Logger

Purpose: You can use the Error Logger screen to display any errors that the system detected while you were using the terminal. For help solving an error, contact your local Intermec service representative.

Where Available: Software Diagnostics menu

Sample Screen:



242XU.134

Definition: The Error Logger screen shows the last 30 errors. Press ↵ to see the next screen of errors. The first column displays the time in HHMMSS. The second column displays the error number. The third column displays the internal firmware address, which helps identify why the error occurred.

Task Status

Purpose: A programmer can use the Task Status screens to view the task name, stack, and the percentage of time a task has been running. You can also use the Task Status screen to determine the type of RF network protocol, TCP/IP or UDP Plus, loaded on the terminal.

Where Available: Software Diagnostics menu

Sample Screen:

```
       TASK STATUS

SLOT   ADDRESS      %TIME
 0:   ----:----     00.5%
 1:   SM            00.1%
 2:   UDP+          00.7%
 3:   ----:----     --.-%
 4:   Label Task    00.0%
 5:   Serial Port   00.0%
 6:   Menu System   02.0%
 7:   PM            00.0%
 8:   APP           00.0%
 9:   ID            95.6%
10:   ----:----     --.-%

[Enter] Next screen
[Esc] Exit
```

```
       TASK STATUS

SLOT   STACK        UNUSED
 0:   ----:----     ----
 1:   1B8F:0010     0381
 2:   1A48:0010     0010
 3:   ----:----     ----
 4:   19F6:0010     029C
 5:   19B5:0010     0339
 6:   1944:0010     03A5
 7:   18E3:0010     0394
 8:   18C2:0010     011C
 9:   18A1:0010     0110
10:   ----:----     ----

[Enter] Next screen
[Esc] Exit
```

242XU.131

Definition: The %Time field measures the relative amount of time that a given software task or component is active. For example, Idle Task (ID) in the Power Management software is a component. The %Time that Idle Task is active is directly proportional to battery life.

The ID (idle) address should have the largest %Time field. If any other address (task) is large, you probably have a problem.

You can also check the task list to determine the RF network protocol loaded on the terminal. Check the list of task names for UDP+ or TCP/IP. A task name of UDP+ means the terminal uses UDP Plus for RF communications. A task name of TCP/IP means the terminal uses TCP/IP for RF communications.

To refresh the statistics and start from a known point in time, use the Clear Task Profiles diagnostic option to clear the task status counters.

Defining the Hardware Diagnostics Screens

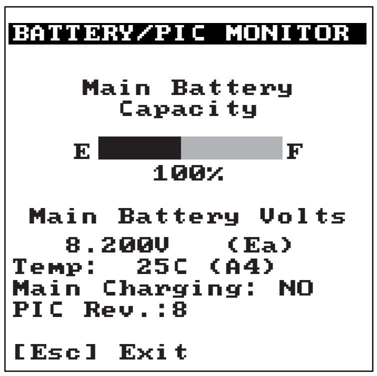
Each hardware diagnostic screen is defined in this section.

Battery/PIC Status

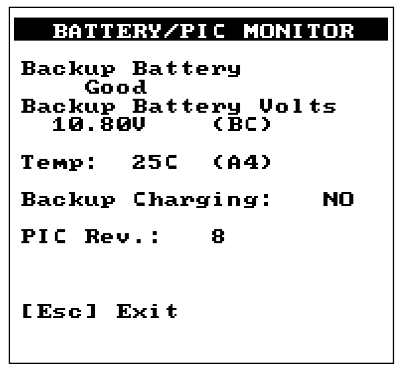
Purpose: Use the Battery/PIC status screens to get information about the main (lithium-ion) battery pack and the backup (NiCad) battery.

Where Available: Hardware Diagnostics menu, Battery/PIC Status and then choose either Main Battery/PIC or Backup Battery/PIC

Sample Screen:



242XU.080



242XU.194

Definition: Main Battery Capacity tells you the percentage of battery power remaining in the battery pack. You can continue using the battery pack until the Battery icon appears on the screen to indicate a low battery.

The backup battery test shows that the backup battery power is either GOOD or LOW. If the status is LOW, turn off the terminal. Let the main battery pack charge the backup battery. The backup battery will be fully charged in approximately 18 hours.

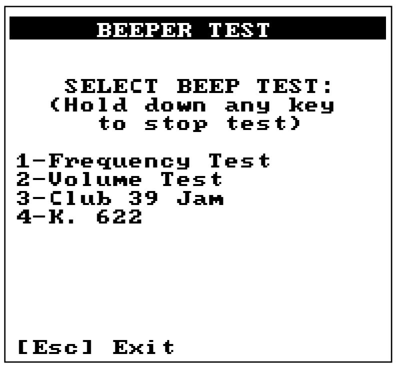
You can also use these screens to find out the current volts, temperature and charging status. For both screens, the PIC Rev field is the firmware version that is running on the battery monitory processor. The number in parentheses after the volts and temperature is the hexadecimal value returned from the processor.

Beeper Test

Purpose: You can test the terminal beeper to make sure the entire beep volume range and beep frequency range are available and working correctly. The Beeper Test can also help you distinguish the different beep volumes to choose a level that you can hear in your working environment.

Where Available: Choose the Main Board Menu from the Hardware Diagnostics menu.

Sample Screen:



242XU.145

Definition: Press 1 to test the beep frequency range. The terminal will sound a series of beeps starting from a low frequency beep through the range to a high frequency beep, and then back to a low frequency beep.

Press 2 to test the beep volume. The terminal sounds a series of beeps from a quiet beep to a very loud beep.

Tests 3 and 4 also test the beep volume and frequency by playing a short tune. If you do not hear any beeps during any of these tests, you may have a problem with the beeper or internal speakers. For help, contact your local Intermec service representative.

Destructive RAM Test

Purpose: Use the Destructive RAM Test if you have any problems storing files on the RAM drive or running an application that uses RAM memory.

Where Available: Choose the Main Board Menu from the Hardware Diagnostics menu.

Sample Screen:

```
DESTRUCTIVE RAM TEST

The following test
will cause the unit
to reboot, causing
loss of all RAM
resident data.

PROCEED?

PRESS 'Y' to
proceed...


[Esc] Exit
```

```
Memory Test Passed

Pass #: 00037

      Press a key
     to Reboot Unit
```

242XU.143

Definition: Before you run this test, save your data. If you are running a TE application, end your current TE session. Press Y to start the test. All data in RAM will be lost. The terminal starts the RAM test and clears the screen. You hear a beep after a successful test of each 64K block of data. After 15 beeps, a test pass is complete and the results appear. The sample screen shows a successful test pass.

To run another test pass, do not press a key and the next test begins after a 5 second pause. You may let the test continue and test the RAM several times to get a test over time. To exit the test, press ↵ once a test pass is complete. The terminal reboots and restarts your application.

If an error is found, the Destructive RAM Test stops and displays the error address, the data written to RAM, and the data read from RAM. Note this information and contact your local Intermec service representative.

CAUTION

Caution
If the Destructive RAM Test fails, stop using the terminal. Contact your local Intermec service representative.

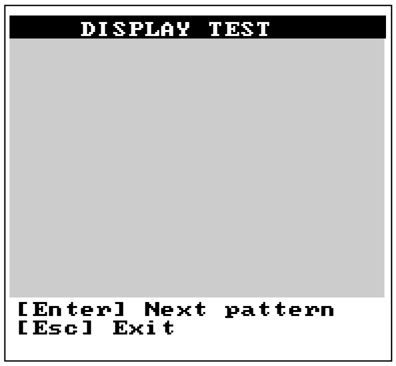
Conseil
Si le test Destructive RAM échoue, veuillez ne plus utiliser le terminal. Contactez le représentant du service clientèle Intermec de votre région.

Display Test

Purpose: Use the Display Test to make sure that every pixel on the terminal screen is working correctly. For example, you may want to test the screen if you do not see complete characters on the screen.

Where Available: Hardware Diagnostics menu

Sample Screen:



242XU.135

Definition: Press ↵ to display each of the four patterns. After 5 seconds, the entire screen is filled with the current test pattern. Press ↵ to display the next pattern. The first two patterns appear as a shaded pattern and turn off every other pixel. The third pattern turns on every pixel and appears as a black square. The fourth pattern turns off every pixel and appears as a clear square.

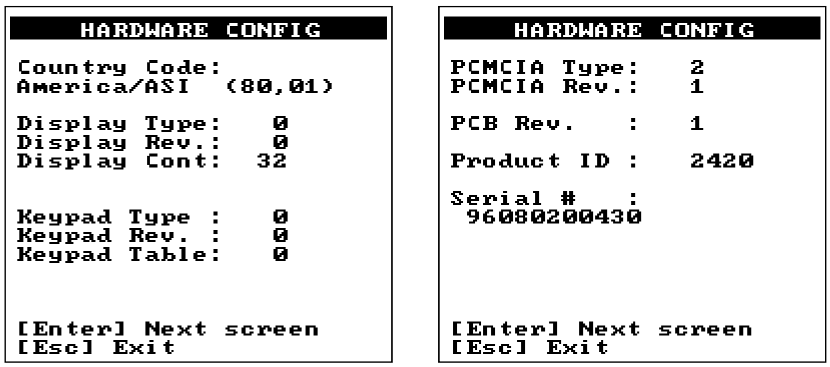
If any of these patterns do not display correctly, you may have a problem with the LCD. For help, contact your local Intermec service representative.

Hardware Configuration

Purpose: If you are discussing a problem with Intermec, you can use the Hardware Configuration screen to tell the Intermec representative the exact version of hardware that was installed on the terminal at the Intermec factory. You can also use this screen to see the radio frequency and country code that are configured on the T2425.

Where Available: Hardware Diagnostics menu

Sample Screen:



242XU.142

Definition: Press ↵ to display the next screen of hardware information. If you are having a specific problem with one system, such as the radio, note the hardware versions on the terminal before contacting your local Intermec service representative.

The country code information on the Hardware Configuration screen is only valid when the radio (Network Activate command) is enabled. If the radio is disabled, the country code information is not valid. For help, see "Network Activate" in Chapter 9.

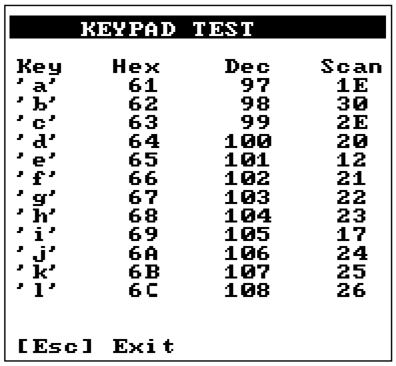
Note: *The country code information does not apply to the T2420 since it does not have a radio.*

Keypad Test

Purpose: An application programmer can use the Keypad Test screen to quickly find the hexadecimal key code value, the decimal key code value, and the scan code for any key on the keypad. You can also use the test to make sure the keypad is operating correctly.

Where Available: Hardware Diagnostics menu

Sample Screen:



242XU.133

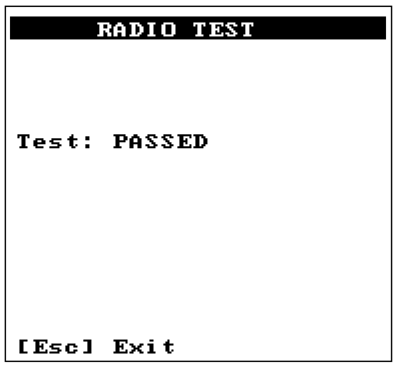
Definition: Press any key or key combination on the keypad to display the hexadecimal, decimal, and scan code value of the key. When you press Esc, the terminal pauses for a few seconds to display the values before you exit the screen. For a complete list of key codes, see the "TRAKKER Antares Terminal Font Set" in Appendix C or refer to the *TRAKKER Antares Application Development Tools System Manual (*Part No. 064433).

Radio Test

Purpose: Use the Radio Test screen on a T2425 to verify that you have a working radio.

Where Available: Hardware Diagnostics menu

Sample Screen:



242XU.138

Definition: Before you start the test, make sure the radio (Network Activate command) is enabled. If the radio is disabled, the test results on the Radio Test screen are not valid. For help, see “Network Activate” in Chapter 9.

Press ↵ to start the radio test. The results of the test display on the screen once the test is complete. If SUCCESS or PASSED display, the radio is working correctly. If FAILED displays, note the error number. You may have a problem with the radio inside the T2425. For help, contact your local Intermec service representative.

CAUTION

Caution
If the Radio Test fails, stop using the terminal. Contact your local Intermec service representative.

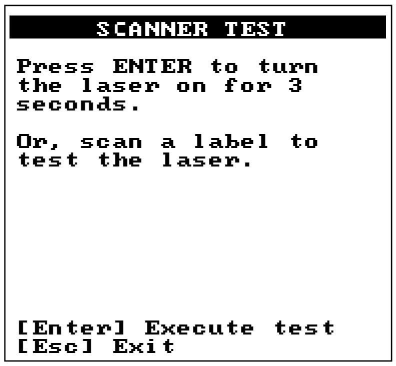
Conseil
Si le test Radio échoue, veuillez ne plus utiliser le terminal. Contactez le représentant du service clientèle Intermec de votre région.

Scanner Test

Purpose: Use the Scanner Test to make sure the laser scanner, Scan button, or scanner trigger are operating correctly. You can test the integrated laser scan module or the scanner attached to the module for cabled scanners.

Where Available: Hardware Diagnostics menu

Sample Screen:



242XU.137

Definition: To start the test, press ↵ . If the laser scanner turns on, the scanner is working correctly. If the laser scanner does not turn on, you may have a problem with the scan module or the laser scanner attached to the module for cabled scanners. If you are using a module for cabled scanners, make sure you are using a laser scanner that is supported on the terminal. Also, check to make sure the laser scanner is attached to the module for cabled scanners.

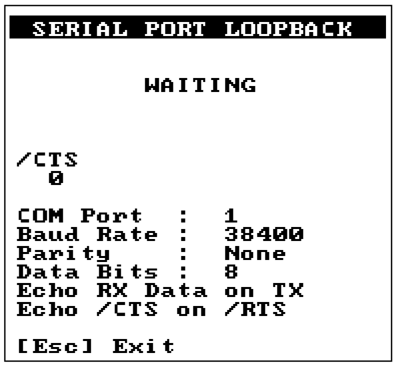
If the laser scanner did turn on in the first test, try scanning a bar code label. To scan a label, press the Scan button on the terminal or pull the trigger on a laser scanner attached to the module for cabled scanners. If the laser scanner turns on, the Scan button or laser scanner trigger is working correctly. If the laser scanner does not turn on, you may have a problem with the Scan button on the terminal or the laser scanner trigger on the attached laser scanner. For help with scanner problems, contact your local Intermec service representative.

Serial Loopback Test

Purpose: Use the Serial Port Loopback test to verify that the hardware for the RS-232 serial port is functioning correctly. To run this diagnostic test, you must connect the terminal to a host computer or other serial device via the communications dock or optical link adapter.

Where Available: Choose the Main Board Menu from the Hardware Diagnostics menu.

Sample Screen:



242XU.144

Definition: The serial port test begins immediately. If the serial port hardware is functioning correctly, the terminal displays WAITING and then RECEIVING. The Serial Port Loopback test uses the serial communications settings that are listed on the bottom half of the screen.

On the host, you can use a serial communications package to send data to the terminal. If the terminal is communicating with the host, the data is echoed back. If there is a problem, an error message appears on the terminal screen. The status information on the screen is updated every 500 ms. For help with serial port errors, contact your local Intermec service representative.

Defining the System Diagnostics Screens

Each system diagnostic screen is defined in this section.

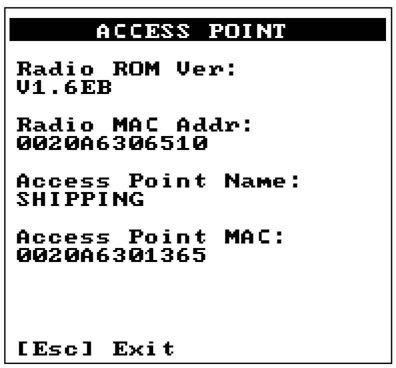
Access Point

Purpose: Use the Access Point screen to get version and address information about the access point the terminal is communicating with across the 2.4 GHz RF network.

Note: *The Access Point diagnostic applies only to the T2425.*

Where Available: System Diagnostics menu

Sample Screen:



242XU.139

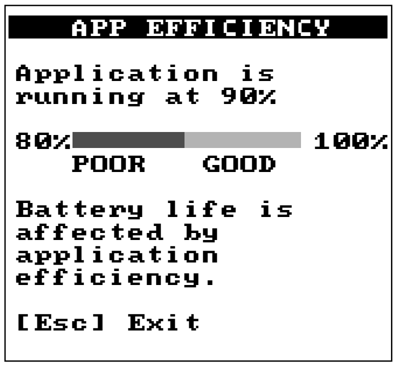
Definition: The screen displays the radio ROM firmware version, radio MAC (machine) address, the access point name, and the access point MAC. If you have a problem with the radio or the connection to the access point, use the information on this screen to troubleshoot your network configuration.

Application Efficiency

Purpose: Use the Application Efficiency screen to find out if your application is making the best use of and maximizing battery life on the terminal.

Where Available: System Diagnostics menu

Sample Screen:



242XU.064

Definition: The screen displays the application efficiency percentage. The closer the percentage is to 100%, the more efficient the application is at using battery power. The terminal automatically goes into an internal Standby mode to draw power at a lower level when less power is required. An efficient application uses the TRAKKER Antares PSK (Programmer's Software Kit) functions to wait for events to occur and it does not poll in an infinite loop. When programmed correctly with the PSK or EZBuilder, the application does not prevent the terminal from going into Standby mode and uses the terminal's battery power as efficiently as possible.

Malloc Application Information

Purpose: A programmer or application developer can use the Malloc Application Information screen to see how memory is allocated and used by the current application.

Where Available: Choose the Malloc Info Menu from the System Diagnostics menu.

Sample Screen:

242XU.171

Definition: The screen displays the memory allocation used by the application. You can view the total free memory, the largest block of free memory, number of memory fragments, and the total number of allocated blocks of memory. You can use this diagnostic screen to troubleshoot a memory leak where the application is mallocing memory, but not freeing memory.

Malloc Firmware Information

Purpose: A programmer or application developer can use the Malloc Firmware Information screen to see how memory is allocated and used in the terminal firmware. The firmware includes the operating environment, firmware, drivers, and TRAKKER Antares 2400 Menu System.

Where Available: Choose the Malloc Info Menu from the System Diagnostics menu.

Sample Screen:

242XU.172

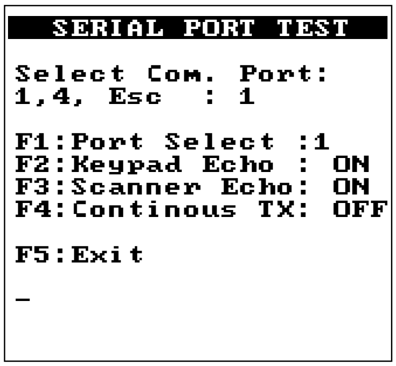
Definition: The screen displays the memory allocation for the terminal firmware. You can view the total free memory, the largest block of free memory, number of memory fragments, and the total number of allocated blocks of memory.

Serial Port Test

Purpose: Use the Serial Port Test screen to test or troubleshoot serial communications between the terminal and the host computer or serial device. To run this diagnostic test, you must connect the terminal to a host or other serial device via the communications dock or optical link adapter.

Where Available: System Diagnostics menu

Sample Screen:



242XU.170

Definition: Press 1 to test the RS-232 serial communications port. The screen displays the function key options you can use in this diagnostic screen. You may see the message “Port Not Available” if your application is currently using the serial port. You need to run an application that does not use the serial port for this diagnostic test.

F1 Selects the serial port.

F2 Toggles the keypad echo on and off. If you turn the keypad echo on, characters you type on the keypad are displayed on the bottom line of the screen and transmitted to the host.

F3 Toggles the scanner echo on and off. If you turn the scanner echo on, the bar code label you scan is displayed on the bottom line of the screen and transmitted to the host.

F4 Toggles the Continuous Transmit mode on and off. If you turn continuous transmit on, the terminal continuously sends out a string of 10 characters.

F5 Exits the Serial Port Test diagnostic screen.

On the host, you use an RS-232 serial communications package to receive data from the terminal. To test serial communications, enter or scan data on the terminal. If the terminal is communicating with the host, you will see the data. If there is a problem, check the serial port parameters and make sure they match the host settings. For help with serial port errors, see Chapter 6, “Troubleshooting,” or contact your local Intermec service representative.

Subsystem Versions

Purpose: If you are discussing a problem with Intermec, you can use the Subsystem Versions screen to tell the Intermec representative the exact version of firmware subsystems loaded on the terminal.

Where Available: System Diagnostics menu

Sample Screen:

```
      SUBSYSTEM VERSIONS

   Name            Version
Network             020007
RF Driver           020007
Decodes             020005
Scanner             020003
Label Task          020004
Rdr Cmd Proc        020007
Term Serv           020006
Serial Port         020007
Menu System         020006
Keypad              020004


[Enter] Next screen
[Esc] Exit
```

242XU.136

Definition: Press ↵ to display the next screen of subsystem information. If you are having a specific problem with one system, note the version loaded on the terminal before contacting your local Intermec service representative.

Note: *RF driver, network, or radio subsystem information does not apply to the T2420 since it does not have a radio.*

8

Reader Command Reference

This chapter describes the reader commands that you can use while operating the terminal. Reader commands, such as Backlight On, let you perform a task on the terminal.

Using Reader Commands

A reader command causes the terminal to perform a task. Some reader commands temporarily override the configuration settings and some actually change the configuration settings.

For example, you can turn the backlight on to easily view the terminal's screen when you are working in a dimly lit environment. You can execute reader commands by

- scanning a command from a Code 39 or Code 93 bar code label.
- pressing keys on the keypad or choosing a command from the TRAKKER Antares 2400 Menu System.
- sending a command from a device on the serial or RF network.

There are three general types of reader commands:

- Accumulate mode commands
- Operating commands
- File management commands

The reader commands are listed in alphabetical order within these three categories. You will find the purpose, command syntax, and bar code labels for each reader command in this chapter.

Note: *The Code 39 bar code labels in this chapter show an asterisk (*) at the beginning and end of the human-readable interpretation to represent the start and stop codes. If you are creating your own Code 39 bar code labels, your bar code printing utility may automatically supply the asterisks as the start/stop code.*

Using Accumulate Mode

You can use Accumulate mode to collect data from a series of bar code labels and enter them as a single label. When you put the terminal in Accumulate mode, the terminal will collect all scanned bar code labels in the terminal's buffer until you scan either the Enter or Exit Accumulate mode command.

As you accumulate the data from bar code labels, the data is visible on the bottom line of the screen. You can edit the accumulated data with the Backspace, Clear, and Enter commands.

Backspace This command deletes the last character from the current data record you are accumulating.

Clear This command deletes the entire data record you are accumulating.

Enter This command will enter data as a record and leaves the terminal in Accumulate mode.

Note: *If you are not in Accumulate mode, the Backspace, Clear, and Enter commands have no effect and you will hear an error beep.*

When you exit Accumulate mode, the accumulated data is "entered" as a data record. Up to 250 characters can be held in the buffer. If the data record count exceeds 250 characters, the data is truncated. If you reset the terminal (software or hardware reset), you exit Accumulate mode, the entire buffer is cleared, and all data accumulated is lost.

To use Accumulate mode

The syntax to use the Enter Accumulate command is:

`+/data`

where:

`+/` is the syntax for the Enter Accumulate mode command.

data is the optional data you want to enter. *Data* can be a reader command that is executed when you exit Accumulate mode.

1. Scan this bar code label to Enter Accumulate mode:

   Enter Accumulate Mode

   +/

2. Scan the bar code label(s) for the data you want to enter. You can scan labels from the “Full ASCII Bar Code Chart” in Appendix B.

   For example, scan this label to change the terminal’s configuration and set the preamble to the characters ABC.

   Change Configuration / Set Preamble to ABC

   $+ADABC

   Or, to edit the accumulated data, scan one of these bar code labels:

Backspace	Clear	Enter
-+	*- -*	**

   Note: *You can create one bar code label by combining Steps 1 and 2 above. Most of the examples in this manual use one bar code label.*

3. Scan this bar code label to exit Accumulate mode and enter the data record.

   Exit Accumulate Mode

   -/

Enter Accumulate Mode

Purpose: Enters Accumulate mode. You can accumulate data from a series of bar code labels and enter them as a single label.

From Network: Not supported

Keypad: Not supported

Scan: Enter Accumulate Mode

+/

Backspace

Purpose: Deletes the last character from the current data record being accumulated. If there is no data in the buffer, the command has no effect.

From Network: Not supported

Keypad: Not supported

Scan: Backspace

-+

Clear

Purpose: Deletes the entire data record you are accumulating. If there is no data in the buffer, the command has no effect.

From Network: Not supported

Keypad: Not supported

Scan: Clear

- -

Enter

Purpose: Enters the current data record and remains in Accumulate mode. If no data exists, a null string is entered.

From Network: Not supported

Keypad: Not supported

Scan: Enter

**

Exit Accumulate Mode

Purpose: Exits Accumulate mode and transmits the current data record. If no data has been accumulated, an empty data record is entered.

From Network: Not supported

Keypad: Not supported

Scan: Exit Accumulate Mode

-/

Operating Reader Commands

This section explains the reader commands that you can use to operate or change the terminal's configuration. For each command, you will find the purpose, syntax for commands sent from a network device, and bar code labels. The operating commands are listed in alphabetical order.

- Backlight On and Off
- Change Configuration
- Default Configuration
- Multiple-Read Labels
- Reset Firmware
- Save Configuration in Flash Memory
- Scanner Trigger On and Off
- Set Time and Date
- Test and Service Mode

Backlight On and Off

Purpose: Turns the backlight on to easily view the terminal screen in dimly lit environments.

From Network: `%.1`

Keypad: Press to turn the backlight on or off.

Scan: Backlight On

%.1

Purpose: Turns the backlight off.

From Network: `%.0`

Keypad: Press to turn the backlight on or off.

Scan: Backlight Off

%.0

Note: *You can use the command %. to toggle the backlight on and off.*

Boot Terminal

Purpose: Boots the terminal. The terminal runs through power-on self test (POST) to test each major subsystem. The terminal uses the configuration currently saved in flash memory to boot and then your application appears on the screen.

Use this command when you upgrade the firmware on the terminal or if your terminal locks up and will not respond.

From Network: `-.1`

Scan: Boot Terminal

-.1

Change Configuration

Purpose: This command must precede any configuration command. If you enter a valid string, the terminal configuration is modified and the terminal sounds a high beep. For help on the configuration commands, see Chapter 9, “Configuration Command Reference.”

From Network: `$+`*`command[command]...[command n]`*

where *command* is a configuration command with the value you want to set.

Keypad: Press f T 2 M to access the TRAKKER Antares 2400 Menu System. From the Main Menu, choose the Configuration Menu to change the terminal’s configuration.

Example: Change Configuration / Turn Off Beep Volume

$+BV0

The Change Configuration command is followed by the configuration command to turn off the beep volume (BV0).

Default Configuration

Purpose: Sets the terminal to its default configuration, resets the firmware, boots the terminal, and runs your application. The default configuration for the terminal is listed in Appendix A. For help, see “Restoring the Terminal’s Default Configuration” in Chapter 3.

When you use the Default Configuration command, the default configuration is saved in RAM and flash memory. The runtime and boot configuration are changed to the default configuration.

Note: *In the default configuration, the Primary Network parameters are set to the default values. The T2425 will no longer have a valid IP address and cannot communicate with other devices. You need to configure the T2425 again. For help, see Chapter 4, “Operating the Terminal in a Network.”*

From Network: `.+0`

Keypad: In the TRAKKER Antares 2400 Menu System, choose System Menu and then choose Load Default Values.

Scan: Default Configuration

.+0

Multiple-Read Labels

Purpose: A multiple-read label is a Code 39 or Code 93 bar code label that has a space as the first character after the start code. The terminal stores a multiple-read label in the buffer until you execute a command to transmit the label or scan a regular label. A regular bar code label is executed as soon as you scan it.

If you use a configuration command or the TRAKKER Antares 2400 Menu System to disable multiple-read labels, the terminal processes the bar code label as a regular label and reads and decodes the space as data.

From Network: Not supported

Keypad: Not supported

Label Syntax: <Start Code><SP>*data*<Stop Code>

where <SP> is the ASCII space character and *data* is the content of the label.

Example: Multiple-Read Bar Code Label

* A*

After you scan a multiple-read bar code label, the accumulated data appears on the bottom line of the terminal screen. You can use the Accumulate mode commands, such as Backspace or Clear, to accumulate data. Once you scan a non-multiple-read label, the data is entered.

Reset Firmware

Purpose: Resets all firmware on the terminal, resets the application, and runs the application. You can use the Reset command to restart your application if you are having problems.

Note: *You can also try resetting the hardware if your application or terminal is locked up and the terminal will not respond to any other commands. For help, see "Booting and Resetting the Terminal" in Chapter 6.*

From Network: `-.`

Keypad: Not supported

Scan: Reset Firmware

-.

Save Configuration in Flash Memory

Purpose: Saves the current runtime terminal configuration in flash memory. If you configure the terminal by scanning bar code labels or commands sent from a network device, your configuration changes are only saved in RAM. You can use this reader command to save the changes to flash memory so that they are set the next time you boot or reset the terminal.

From Network: `.+1`

Keypad: In the TRAKKER Antares 2400 Menu System, choose System Menu and then choose Store Configuration.

Scan: Save Configuration in Flash Memory

.+1

Scanner Trigger On and Off

The Scanner Trigger On and Off commands are the same as pushing and releasing the Scan button on the keypad. The Scan button and scanner trigger commands control the integrated scanner on a laser scan module.

Note: *The Scanner Trigger On and Off commands do not activate the scanner device connected to the module for cabled scanners.*

After a Scanner Trigger On command, the scanner operates differently depending on the Scanner mode and scanner trigger configuration settings:

- If you configure the terminal to use One-Shot Scanner mode and level triggering, the scanner automatically turns off after a good read of a bar code label, or after the scanner timeout period elapses.
- If you configure the terminal to use Automatic Scanner mode and level triggering, the scanner remains on after a good read of a bar code label. You can use the Scanner Trigger Off command to turn off the scanner, or set the Scanner Timeout command to automatically turn off the scanner after it stays on for the period of time set.

For help on configuring the Scanner Mode or Scanner Trigger commands, see Chapter 9, "Configuration Command Reference."

Note: *Intermec does not recommend that you use a Scanner Trigger On or Off command with the Scanner Trigger command set to edge triggering.*

Purpose: The Scanner Trigger On command is the same as pushing the Scan button.

From Network: `/.`

Keypad: Not supported

Scan: Not supported

Purpose: The Scanner Trigger Off command is the same as releasing the Scan button. Its effect depends on the Scanner mode and Scanner Trigger mode configuration settings as described earlier.

From Network: `/%`

Keypad: Not supported

Scan: Not supported

Set Time and Date

Purpose: Sets the time and date on the terminal. When the terminal receives the time broadcast command from the 9154 or 9161 controller, the command sets the clock on the terminal. You can configure the clock with seconds or without seconds.

Use this command **only** for backward compatibility with the 95XX terminal. If you do not need backward compatibility, use the Time and Date configuration command. For help, see “Time and Date” in Chapter 9.

Note: *The Set Time and Date command was called Enable Clock for the 95XX terminals.*

From Network: */+data*

Acceptable formats for data to set the times and date are:

yy/mm/dd:hh:mm:ss
yy/mm/dd:hh:mm
hh:mm:ss
hh:mm

Year values (*yy*) from 00 to 95 are interpreted as 2000 through 2095. Year values from 96 to 99 are interpreted as 1996 through 1999.

Keyboard: Not supported.

Label Syntax: You can create your own bar code labels to set the time and date by creating a bar code in this command format:

/+data

where *data* is one of the formats listed above.

Test and Service Mode

Purpose: Starts the TRAKKER Antares 2400 Menu System. From the Main Menu, the Diagnostics Menu is the Test and Service mode you can use to run software, hardware, and system diagnostics on the terminal. For help, see Chapter 7, “Running Diagnostics.”

From Network: Not supported

Keypad: f T 2 M or f 2 4 8

Scan: Test and Service Mode

..-.

File Management Reader Commands

This section lists the reader commands that you can use to manage files and applications. You will find the purpose, syntax for commands sent from a network device, and bar code labels for these reader commands in this section. The file management commands are listed in alphabetical order.

- Abort Program
- Delete File
- Receive File
- Rename File
- Run Program
- Transmit File

Abort Program

Purpose: Aborts or exits the application that is running. The terminal exits the current application and starts running the default sample application (APPTSK.BIN).

From Network: `/$`

Keypad: Not supported

Scan: Abort Program

/$

Delete File

Purpose: Deletes a file from a drive on the terminal.

From Network: `..--`*`drive:filename`*

where:

`..--`	is the command to delete a file.
drive:	indicates the drive where you want to delete a file. You must include the colon (:) after the drive letter.
filename	is the file you want to delete.

Keypad: In the TRAKKER Antares 2400 Menu System, choose System Menu, and then choose File Manager. Next, choose the drive where you want to delete files.

Scan:

1. Scan this bar code label:

   Enter Accumulate Mode / Delete File

   +/..--

2. Scan the bar code label(s) for the file you want to delete. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

   `drive:filename`

3. Scan this bar code label to exit Accumulate mode and delete the file.

   Exit Accumulate Mode

   -/

Or: You can create your own bar code labels to delete files by creating a bar code in this command format:

`..--`*`drive:filename`*

Example: To delete the file SHIPPING.BIN from drive C, use this command:

```
..--c:shipping.bin
```

Receive File

There are two ways to receive files on the terminals:

- Use the serial port to receive files on the terminal.
- Use RF communications to receive files on the T2425.

For help connecting the terminal to a host computer or the DCS 300, see Chapter 4, "Operating the Terminal in a Network."

Receive File Through the Serial Port

Purpose: Receives a file from the host computer through the serial port and saves it on the terminal. You must have the terminal connected to the host through a serial port. For help, see Chapter 4, "Operating the Terminal in a Network."

On the host, you need to transmit the file using a serial communications package (i.e., Windows 3.1 Terminal, Win95 Hyperterminal, Crosstalk, or Procomm) that supports one of these protocols:

- XMODEM
- XMODEM-1K
- YMODEM

XMODEM-1K is a version of XMODEM that supports 1024-byte blocks as well as the standard 128-byte XMODEM data blocks, which increases the throughput. YMODEM has the additional ability to transfer a file name with the file's data and it preserves the length of the file without padding. With YMODEM, you can also receive a batch of files on the terminal.

Note: *Terminal filenames are up to eight characters with a three-character extension. Files you transfer from the host must use the TRAKKER Antares naming conventions.*

From Network:	`.%X`*`n,drive:filename`*	Receives a file using XMODEM protocol
	`.%K`*`n,drive:filename`*	Receives a file using XMODEM-1K protocol
	`.%Y`*`n,drive:filename`*	Receives a file using YMODEM protocol
Or:	`.%Y`*`n,drive:`*	Receives a batch of files using YMODEM

where:

`.%X`	is the command to receive a file using XMODEM protocol.
`.%K`	is the command to receive a file using XMODEM-1K protocol.
`.%Y`	is the command to receive a file using YMODEM protocol.
`n`	indicates the terminal's serial port: 1 or 4.

drive:	indicates the drive on the terminal where you want to receive and store the file. You must include the colon (:) after the drive letter.
filename	is the file you want to receive and save on the terminal.

Keypad: Not supported

Scan:

1. Scan this bar code label:

   Enter Accumulate Mode / Receive File

   +/.%

2. Scan the bar code label for the communications protocol you want to use.

XMODEM	XMODEM-1K	YMODEM
X	*K*	*Y*

3. Scan the bar code label for the terminal COM port you are using to receive the file. The label also includes the required comma.

COM1	COM4
1,	*4,*

4. Scan the bar code label(s) for the file you want to receive. You can scan labels from the “Full ASCII Bar Code Chart” in Appendix B. The label must use this format:

   drive:filename

5. Scan this bar code label to exit Accumulate mode and receive the file.

   Exit Accumulate Mode

   -/

Or: You can create your own bar code labels to receive files by creating a bar code in this command format:

.%X*n*,*drive:filename*	(for XMODEM)
.%K*n*,*drive:filename*	(for XMODEM-1K)
.%Y*n*,*drive:filename*	(for YMODEM)

Receive File Through the Serial Port (continued)

Example: To receive the file SHIPPING.BIN on the terminal's drive C by using the XMODEM protocol through COM1, use this command:

```
.%X1,c:shipping.bin
```

Batch Transfer: To transfer a batch of files to the terminal by using the YMODEM protocol, use your serial communications package to start the transfer. You usually select a batch of files using a wild card file specification. The host must send only the filename and extension, not the drive and directory path in the data stream.

Next, use this command to receive the files on the T2420 or T2425:

`.%Y`*`n,drive:`*

For example, to receive the files through COM1 to drive C on the terminal, use this command:

```
.%Y1,c:
```

All files that match the wild card specification are transferred from the host and received to drive C on the terminal. If any file does not transfer, the remainder of the batch transfer is aborted.

Receive File Via RF Communications

Purpose: Receives a file from the DCS 300 or host and saves it on the T2425.

From Network: `.%R,`*`fromfilename,drive:tofilename`*

where:

`.%R` is the command to receive a file that is transmitted over the RF network. The "R" indicates a file transmitted via RF communications to the T2425.

fromfilename is the name of the file you are transmitting from the DCS 300 or host to the T2425. On the DCS 300, the file must be sent from the D:\USERDATA directory. To receive a file from the host, you need to identify the path and filename.

Note: *Do not specify the DCS 300 pathname D:\USERDATA in the* fromfilename *field.*

drive: indicates the drive on the T2425 where you want to receive and store the file. You must include the colon (:) after the drive letter.

tofilename is the name of the file you want to save on the T2425.

Keypad: Not supported

Scan: 1. Scan this bar code label:

Enter Accumulate Mode / Receive File

+/.%R,

2. Scan the bar code label(s) for the file you want to receive. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

fromfilename,drive:tofilename

3. Scan this bar code label to exit Accumulate mode and receive the file.

Exit Accumulate Mode

-/

Or: You can create your own bar code labels to receive files by creating a bar code in this command format:

`.%R,`*`fromfilename,drive:tofilename`*

Example: To receive the file SHIPPING.BIN on the terminal's drive C, use this command:

`.%R,shipping.bin,c:shipping.bin`

Rename File

Purpose: Renames a file stored on the terminal.

From Network: `...-`*`drive:oldfilename,drive:newfilename`*

where:

`...-`	is the command to rename a file.
drive:	indicates the drive where the *oldfilename* is stored. You must include the colon (:) after the drive letter.
oldfilename	is the name of the file you want to rename.
drive:	indicates the drive where the *newfilename* is stored. You must include the colon (:) after the drive letter. The drive letter **MUST** match the drive letter you entered for the *oldfilename*.
newfilename	is the new name of the file.

Keypad: In the TRAKKER Antares 2400 Menu System, choose System Menu and then choose File Manager. Next, choose the drive where you want to rename files.

Scan:

1. Scan this bar code label:

   Enter Accumulate Mode / Rename File

   +/...-

2. Scan the bar code label(s) for the file you want to rename. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

   `drive:oldfilename,drive:newfilename`

3. Scan this bar code label to exit Accumulate mode and rename the file.

   Exit Accumulate Mode

   -/

Or: You can create your own bar code labels to rename files by creating a bar code in this command format:

`...-`*`drive:oldfilename,drive:newfilename`*

Example: To rename the file SHIPPING.BIN on drive C to DOCK1.BIN, use this command:

```
...-c:shipping.bin,c:dock1.bin
```

Run Program

Purpose: Runs the specified program or application that is stored on the terminal. For help, see Chapter 5, "Using Custom Applications."

Note: *You cannot store and run applications from the RAM drive (E).*

From Network: `//drive:filename`

where:

`//`	is the command to run an application.
drive:	indicates the drive where the application is stored. You must include the colon (:) after the drive letter.
filename	is the application you want to run.

Keypad: In the TRAKKER Antares 2400 Menu System, choose System Menu and then choose File Manager. Next, choose the drive where the application is stored.

Scan:

1. Scan this bar code label:

   Enter Accumulate Mode / Run Program

   +///

2. Scan the bar code label(s) for the application you want to run. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

   `drive:filename`

3. Scan this bar code label to exit Accumulate mode and run the application.

   Exit Accumulate Mode

   -/

Or: You can create your own bar code labels to run applications by creating a bar code in this command format:

`//drive:filename`

Example: To run the application SHIPPING.BIN, use this command:

`//c:shipping.bin`

Transmit File

There are two ways to transmit files from the terminals:

- Use the serial port to transmit files from the terminal.
- Use RF communications to transmit files from the T2425.

For help connecting the terminal to a host computer or the DCS 300, see Chapter 4, "Operating the Terminal in a Network."

Transmit File Through the Serial Port

Purpose: Transmits a file from the terminal through the serial port and saves it on the host computer. You must have the terminal connected to the host through a serial port. For help, see Chapter 4, "Operating the Terminal in a Network."

On the host, you need to receive the file using a serial communications package (i.e., Windows 3.1 Terminal, Win95 Hyperterminal, Crosstalk, or Procomm) that supports one of these protocols:

- XMODEM
- XMODEM-1K
- YMODEM

XMODEM-1K is a version of XMODEM that supports 1024-byte blocks as well as the standard 128-byte XMODEM data blocks, which increases the throughput. YMODEM has the additional ability to transfer a file name with the file's data and it preserves the length of the file without padding.

Note: *Terminal filenames are up to eight characters with a three-character extension.*

From Network:

`%%X`*`n,drive:filename`*	Transmits a file using XMODEM protocol
`%%K`*`n,drive:filename`*	Transmits a file using XMODEM-1K protocol
`%%Y`*`n,drive:filename`*	Transmits a file using YMODEM protocol

where:

`%%X`	is the command to transmit a file using XMODEM protocol.
`%%K`	is the command to transmit a file using XMODEM-1K protocol.
`%%Y`	is the command to transmit a file using YMODEM protocol.
`n`	indicates the terminal's serial port: 1 or 4.
`drive:`	indicates the drive where the file is stored on the terminal. You must include the colon (:) after the drive letter.
`filename`	is the file you want to transmit.

Keypad: Not supported

Scan: 1. Scan this bar code label:

Enter Accumulate Mode / Transmit File

+/%%

2. Scan the bar code label for the communications protocol you want to use.

XMODEM

X

XMODEM-1K

K

YMODEM

Y

3. Scan the bar code label for the terminal COM port you are using to transmit the file. The label also includes the required comma.

COM1

1,

COM4

4,

4. Scan the bar code label(s) for the file you want to transmit. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

   drive:filename

5. Scan this bar code label to exit Accumulate mode and transmit the file.

Exit Accumulate Mode

-/

Or: You can create your own bar code labels to transmit files by creating a bar code in this command format:

`%%X`*n,drive:filename*	(for XMODEM)
`%%K`*n,drive:filename*	(for XMODEM-1K)
`%%Y`*n,drive:filename*	(for YMODEM)

Example: To transmit the file SHIPPING.DAT from drive C through COM1 to the host via XMODEM protocol, use this command:

```
%%X1,c:shipping.dat
```

Transmit File Via RF Communications

Purpose: Transmits a file from the T2425 and saves it on the DCS 300 or host.

From Network: `%%R,`*`drive:fromfilename,tofilename`*

where:

`%%R` is the command to transmit a file over the RF network. The "R" indicates a file transmitted via RF communications from the T2425 to the DCS 300 or host.

drive: indicates the drive where the file is stored on the T2425. You must include the colon (:) after the drive letter.

fromfilename is the name of the file you are transmitting from the T2425 to the DCS 300 or host.

tofilename is the name of the file that will be saved on the DCS 300 or host. On the DCS 300, the file is saved on the D:\USERDATA directory. To transmit a file to the host, you need to identify the path and filename where you want to save the file.

Note: *Do not specify the pathname D:\USERDATA in the* tofilename *field.*

Keypad: Not supported

Scan:

1. Scan this bar code label:

   Enter Accumulate Mode / Transmit File

   +/%%R,

2. Scan the bar code label(s) for the file you want to transmit. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B. The label must use this format:

   `drive:fromfilename,tofilename`

3. Scan this bar code label to exit Accumulate mode and transmit the file.

   Exit Accumulate Mode

   -/

Or: You can create your own bar code labels to transmit files by creating a bar code in this command format:

`%%R,`*`drive:fromfilename,tofilename`*

Example: To transmit the file SHIPPING.DAT from drive C to the DCS 300 or host, use this command:

```
%%R,c:shipping.dat,shipping.dat
```

9

Configuration Command Reference

This chapter is an alphabetical list of all the configuration commands supported on the terminal.

Using Configuration Commands

A configuration command changes the way the terminal operates. For example, you can change the Beep Volume command and make the terminal beep very loudly in a noisy environment. You can execute configuration commands by

- scanning a command from a Code 39 or Code 93 bar code label. These labels are provided in this chapter. For more help, see Chapter 3, "Configuring the Terminal."
- choosing a command from the TRAKKER Antares 2400 Menu System. For help using the menu system, see Chapter 3, "Configuring the Terminal."
- sending a command from a device on the serial or RF network. For help, see "Using Serial Communications on the Terminals" and "Using RF Communications on the T2425s" in Chapter 4.

You can find the following information about each configuration command in this chapter:

- Command description and purpose
- Command syntax and options
- Default setting
- Bar code labels you can scan to set or change each command

The configuration commands are listed alphabetically by command name. For a list of bar code symbology, operations, serial network communications, or RF network communications commands, use the next table, "Configuration Commands Listed by Category." If you want to look up a command by its syntax, see the "Configuration Commands by Syntax" list in Appendix A.

Note: *The Code 39 bar code labels in this chapter show an asterisk (*) at the beginning and end of the human-readable interpretation to represent the start and stop codes. If you are creating your own Code 39 bar code labels, your bar code printing utility may automatically supply the asterisks as the start/stop code.*

Configuration Commands Listed by Category

This chapter lists the configuration commands in alphabetical order. Use this next list to find the configuration commands you may need to set for bar code symbologies, operations, serial network communications, or RF network communications.

Bar Code Symbologies

Operations

Configuration Commands Listed by Category (continued)

RF Network Communications

Serial Network Communications

Entering Variable Data in a Configuration Command

You can enter variable data for many of the configuration commands. For example, you can set a preamble that is up to 25 ASCII characters long. You need to follow these general instructions to enter variable data.

To enter variable data in a configuration command

1. Scan a bar code label with this syntax:

   `+/$+`*`command`*

   where:

+/	is the syntax for the Enter Accumulate Mode command.
$+	is the syntax for the Change Configuration command.
command	is the syntax for the command you want to change.

   For example, the command syntax for a preamble is AD*data*. To change or set a preamble, scan this bar code:

   Enter Accumulate Mode / Change Configuration / Set Preamble

   +/$+AD

2. Scan a bar code label from the "Full ASCII Bar Code Chart" in Appendix B. To set the preamble to the character T, scan this label:

   T

   T

   Note: *To use the bar code labels in Appendix B, you may need to configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" later in this chapter.*

3. Scan the Exit Accumulate Mode bar code label to update the terminal's configuration:

   Exit Accumulate Mode

   -/

Acknowledgement Delay Lower Limit

Purpose: When the T2425 sends a message to the DCS 300, the terminal waits to receive a response acknowledging the message. If no response is received within the Acknowledgement Delay Lower Limit time, the terminal sends the message again at the time interval set for the lower limit. The terminal will continue to send the data at increasingly longer intervals until it reaches the Acknowledgement Delay Upper Limit time. The terminal continues sending the message at the time interval set for the upper limit until a response is received or a timeout error occurs.

Syntax: NV*data*

Acceptable values for *data* are any number from 200 to 2000 ms.

Default: 300 ms

Scan: To set the default acknowledgement delay lower limit, scan this bar code:

Default Acknowledgement Delay Lower Limit

$+NV300

Or: To set the acknowledgement delay lower limit:

1. Scan this bar code:

   Enter Accumulate Mode / Set Acknowledgement Delay Lower Limit

   +/$+NV

2. Scan a numeric value for *data* from these bar codes:

0	*1*
2	*3*
4	*5*
6	*7*

Acknowledgement Delay Lower Limit (continued)

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Acknowledgement Delay Upper Limit

Purpose: When the T2425 sends a message to the DCS 300, the terminal waits to receive a response acknowledging the message. If no response is received within the Acknowledgement Delay Lower Limit time, the terminal sends the message again at the time interval set for the lower limit. The terminal will continue to send the data at increasingly longer intervals until it reaches the Acknowledgement Delay Upper Limit time. The terminal continues sending the message at the time interval set for the upper limit until a response is received or a timeout error occurs.

Syntax: NU*data*

Acceptable values for *data* are any number from 2000 to 60000 ms.

Default: 5000 ms

Scan: To set the default acknowledgement delay upper limit, scan this bar code:

Default Acknowledgement Delay Upper Limit

$+NU5000

Or: To set the acknowledgement delay upper limit:

1. Scan this bar code:

   Enter Accumulate Mode / Set Acknowledgement Delay Upper Limit

   +/$+NU

2. Scan a numeric value for *data* from these bar codes:

0	*1*
2	*3*
4	*5*
6	*7*

Acknowledgement Delay Upper Limit (continued)

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Append Time

Purpose: Appends the time to bar code labels that are scanned on the terminal. You can also use the Time in Seconds command to append the time in hours and minutes only, or hours, minutes, and seconds. The time is appended to the data in the form HH:MM:SS. For help, see "Time in Seconds" later in this chapter.

Syntax: DE*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Scan: One of these bar codes:

Disable Append Time

$+DE0

Enable Append Time

$+DE1

Automatic Shutoff

Purpose: Defines the maximum length of time the terminal remains on when there is no activity. When you do not use the terminal for the length of time set with this command, the terminal automatically turns off as if you had pressed I/O to turn it off.

When you press I/O to turn on the terminal, the terminal either resumes exactly where it was when you turned it off or the terminal boots and restarts your application. Resume is controlled through the Resume Execution command. For help, see "Resume Execution" later in this chapter.

Power Management Tip: *You should use the Automatic Shutoff feature to preserve the main battery pack's power.*

Syntax: EZ*data*

Acceptable values for *data* are:

0	Disabled (always on)
02-75	Shutoff time in minutes

Default: Disabled

Scan: To disable automatic shutoff, scan this bar code:

Disable Automatic Shutoff

$+EZ0

Or: To set a timeout:

1. Scan this bar code:

   Enter Accumulate Mode / Set Automatic Shutoff

   +/$+EZ

Automatic Shutoff (continued)

2. Scan a numeric value for *data* from these bar codes:

0

1

2

3

4

5

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Baud Rate

Purpose: Sets the baud rate for the serial port on the terminal. The baud rate must match the baud rate of the device (i.e., the host computer) that the terminal is communicating with through the serial port.

Syntax: YA*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

3 1200 baud
4 2400 baud
5 4800 baud
6 9600 baud
7 19200 baud
8 38400 baud

Note: *For COM3 ports, the maximum baud rate is actually 33600 baud.*

Default: 19200

Scan: To set the default baud rate for each serial port, scan these bar codes:

Default Baud Rate for COM1

$+YA1.7

Default Baud Rate for COM3

$+YA3.7

Default Baud Rate for COM4

$+YA4.7

Or: To set the baud rate for one serial port:

1. Scan this bar code:

Enter Accumulate Mode/Set Baud Rate

+/$+YA

Baud Rate (continued)

2. Scan the serial port from these bar codes:

COM1

1.

COM3

3.

COM4

4.

3. Scan the baud rate from these bar codes:

1200 Baud

3

2400 Baud

4

4800 Baud

5

9600 Baud

6

19200 Baud

7

38400 Baud

8

4. Scan this bar code:

Exit Accumulate Mode

-/

5. Repeat Steps 1 through 4 to se the baud rate for another serial port.

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IA*data*

where *data* is a value from 3 to 8.

Beep Volume

Purpose: Adjusts the volume of the terminal's audio signals. For a list of all the beep sounds and audio signals, see "Understanding the Terminal's Audio Signals" in Chapter 2. Set the beep and keyclick volume according to operator preference and work environment.

Note: *If the Beep Volume command is set to off, you will not hear any audio signals including the keyclick.*

Syntax: BV*data*

Acceptable values for *data* are:

0 Off
1 Quiet
2 Normal
3 Loud
4 Very loud
8 Lower volume
9 Raise volume

Default: Very loud

Scan: One of these bar codes:

Beep Volume Off
$+BV0

Beep Volume Quiet
$+BV1

Beep Volume Normal
$+BV2

Beep Volume Loud
$+BV3

Beep Volume Very Loud
$+BV4

Or: Scan one of these bar codes repeatedly to achieve the desired volume:

Raise Beep Volume
$+BV9

Lower Beep Volume
$+BV8

Codabar

Purpose: Enables or disables decoding of Codabar symbology. Codabar is a self-checking, discrete symbology. The American Blood Commission (ABC) Codabar requires that you retain and transmit the start/stop code digits when processing a Codabar symbol. As a result, configuration CD10 is an illegal configuration**.**

Syntax: CD*data*

Acceptable values for *data* must be two digits, corresponding to:

Digit	Value	Description
First	0	Disabled
	1	ABC
	2	Standard
	3	Concatenated
Second	0	Discard Start/Stop
	1	Transmit ABCD Start/Stop
	2	Transmit DC1-DC4 Start/Stop

Default: Disabled

Scan: One of these bar codes**:**

Disabled, Discard Start/Stop

$+CD00

ABC, Transmit ABCD Start/Stop

$+CD11

ABC, Transmit DC1-DC4 Start/Stop

$+CD12

Standard, Discard Start/Stop

$+CD20

Standard, Transmit ABCD Start/Stop

$+CD21

Standard, Transmit DC1-DC4 Start/Stop

$+CD22

Concatenated, Discard Start/Stop

$+CD30

Concatenated, Transmit ABCD Start/Stop

$+CD31

Concatenated, Transmit DC1-DC4 Start/Stop

$+CD32

Code 11

Purpose: Enables or disables decoding of Code 11 symbology. Code 11 is a very high density, discrete numeric bar code. It is most extensively used in labeling telecommunications components and equipment.

Syntax: CG*data*

Acceptable values for *data* are:

0 Disabled
1 Code 11 enabled with one check digit
2 Code 11 enabled with two check digits

Default: Disabled

Scan: One of these bar codes:

Disable Code 11

$+CG0

Code 11 Enabled With One Check Digit

$+CG1

Code 11 Enabled With Two Check Digits

$+CG2

Code 16K

Purpose: Enables or disables decoding of Code 16K symbology. Code 16K is a two-dimensional (stacked rows), high density bar code. It is based on Code 128 and is used widely to label unit-dose packaging for the healthcare industry.

Syntax: CP*data*

Acceptable values for *data* are:

0 Disabled
1 Standard Code 16K enabled
2 Code 16K enabled with Function Code 1

When you enable Code 16K with Function Code 1, the terminal decodes the bar code label and checks for a Function Code 1 in the first data character position. If a Function Code 1 is the first character, the terminal substitutes this Code 16K symbology identifier string for the Function Code 1 character.

`]K1`

Default: Disabled

Scan: One of these bar codes:

Disable Code 16K

$+CP0

Standard Code 16K Enabled

$+CP1

Code 16K Enabled With Function Code 1

$+CP2

Code 2 of 5

Purpose: Enables or disables decoding of Code 2 of 5 symbology. Code 2 of 5 uses the bars to encode information and the spaces to separate the individual bars. This code is discrete and self-checking. You can only enable Code 2 of 5 if the Interleaved 2 of 5 (I 2 of 5) code is disabled. If you enable I 2 of 5, Code 2 of 5 is automatically disabled.

Syntax: CC*data*

where *data* consists of three digits as follows:

First digit:	0	Code 2 of 5, 3 Bar Start/Stop
	1	Code 2 of 5, 2 Bar Start/Stop
Second and third digits:	00	Disable Code 2 of 5
	01-32	Label Length

Default: Disabled

Scan: To disable Code 2 of 5, scan this bar code:

Disable Code 2 of 5

$+CC000

Or: To enable Code 2 of 5:

1. Scan one of these bar codes:

   Code 2 of 5, 3 Bar Start/Stop

   +/$+CC0

   Code 2 of 5, 2 Bar Start/Stop

   +/$+CC1

Code 2 of 5 (continued)

2. Scan a two-digit numeric value to set the label length (01-32) from these bar codes.

0

1

2

3

4

5

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Code 39

Purpose: Enables or disables decoding of Code 39 symbology. Code 39 is discrete, variable length, and self-checking. The character set is uppercase A to Z, 0 to 9, dollar sign ($), period (.), slash (/), percent (%), space ( ), plus (+), and minus (-).

There are three types of ASCII the terminal decodes:

- Code 39 non-full ASCII
- Code 39 full ASCII
- Code 39 mixed-full ASCII

Code 39 non-full ASCII Non-full ASCII uses a one-character encoding scheme. For example, you encode the data “SAMPLE” as follows:

SAMPLE

This label decodes as *SAMPLE*.

Code 39 full ASCII Full ASCII uses a two-character encoding scheme to extend the character set to 128 characters. You use the dollar sign ($), slash (/), percent (%), or plus (+) followed by an uppercase letter to represent one of the characters in the extended set. You must encode lowercase letters as a plus sign (+) followed by their uppercase equivalents. For a list of ASCII characters and their Code 39 representations, see the “Full ASCII Table” in Appendix B.

Use Code 39 full ASCII to enter ASCII control characters or lowercase characters as data. You should also enable Code 39 full ASCII to use ASCII command characters.

For example, you encode the data “sample” in Code 39 full ASCII as follows:

+S+A+M+P+L+E

In Code 39 non-full ASCII, this label decodes as *+S+A+M+P+L+E*. In Code 39 full ASCII, this label decodes as *sample*.

Code 39 mixed-full ASCII Use mixed-full ASCII when printers encode the same label two different ways. For example, if you have a bar code with the data $%a, some printers encode the data as follows:

/D/E+A

In the Full ASCII Table in Appendix B, /D represents $ and /E represents %. If you configure the terminal for Code 39 full ASCII, the terminal decodes the data as $%a because there are three valid full ASCII character pairs to represent the data.

Code 39 (continued)

Other printers encode the data $%a as:

$%+A

The $ and % are valid Code 39 characters in the non-full ASCII character set. However, the terminal will not decode this label if it is configured for full ASCII, because the data is not represented by valid full ASCII character pairs. To decode the label correctly, you need to configure the terminal for mixed-full ASCII.

When you configure the terminal for Code 39 mixed-full ASCII, the terminal will decode both of the labels above as $%a.

Mixed-full ASCII interprets any valid full ASCII character pairs that appear in the label, but does not require that all data be encoded with a valid full ASCII character pair. If you are uncertain how your labels are encoded, configure the terminal for mixed-full ASCII, which decodes all valid Code 39 labels.

If you configure the terminal for Code 39 full ASCII, you should check for Code 39 mixed-full ASCII. Mixed-full ASCII does not apply when you configure the terminal for non-full ASCII.

Note: *The interpretive text shown under bar code labels does not always accurately reflect the data that is encoded in the label. The interpretive text represents how the label should be decoded.*

Use this table to help configure your terminal.

Code 39 Option	Bar Code Label	Decodes
Non-full ASCII	$%+A /D/E+A	$%+A /D/E+A
Full ASCII	$%+A /D/E+A	No decode $%a
Mixed-full ASCII	$%+A /D/E+A	$%a $%a

Syntax: CB*data*

Acceptable values for *data* must be three digits, corresponding to:

First digit:	0	Disabled
	1	Enabled with no check digit
	2	Enabled with check digit
	3	HIBC (Health Industry Bar Code)
	4	With AIAG check digit

Second digit:	0	Discard check digit
	1	Transmit check digit
Third digit:	0	Code 39 non-full ASCII
	1	Code 39 full ASCII
	2	Code 39 mixed-full ASCII

Note: *Selecting HIBC Code 39 automatically sets the configuration to non-full ASCII with the check digit transmitted.*

Default: Enable Code 39 Full ASCII with no check digit (111)

Scan: To disable Code 39:

Disable Code 39

$+CB0

Or: To enable Code 39:

1. Scan this bar code:

Enter Accumulate Mode / Enable Code 39

+/$+CB

2. Scan one of these bar codes to set the first digit:

Without a Check Digit

1

With a Check Digit

2

HIBC Code 39

3

With AIAG Check Digit

4

3. Scan one of these bar codes to set the second digit:

Discard Check Digit

0

Transmit Check Digit

1

Code 39 (continued)

4. Scan one of these bar codes to set the third digit:

Code 39 Non-Full ASCII

0

Code 39 Full ASCII

1

Code 39 Mixed-Full ASCII

2

5. Scan this bar code:

Exit Accumulate Mode

-/

Code 49

Purpose: Enables or disables decoding of Code 49 symbology. Code 49 is a multirow symbology for high data density. The last character in each row is used for row checking and the last two characters of the symbol are used for overall checking.

Function codes designate where to place the predefined data string in a Code 49 label. Whenever a terminal encounters a function code, it replaces the function code with the defined string before transmitting the data to the DCS 300. A single Code 49 symbol may contain several different variable length data fields. Function Code 1 (F1) identifies a data system. Function Code 2 (F2) indicates the end of a data field**.**

Syntax:

CJ*data*	Code 49
CK*data*	Function Code 1
CL*data*	Function Code 2
CM*data*	Function Code 3

Acceptable values for *data* are:

Code 49 (CJ):	0	Disabled
	1	Enabled

Function Code 1 (CK): Any two ASCII characters.

Function Code 2 (CL): Any four ASCII characters

Function Code 3 (CM): Any two ASCII characters

Default: Disabled

Scan: One of these bar codes:

Disable Code 49

$+CJ0

Enable Code 49

$+CJ1

Scan: To disable any of the function codes, scan one of these bar codes:

Disable Function Code 1

$+CK

Disable Function Code 2

$+CL

Disable Function Code 3

$+CM

Code 49 (continued)

Or: To set one of the function codes to a character string:

1. Scan one of these bar codes:

   Enter Accumulate Mode / Set Function Code 1

   +/$+CK

   Enter Accumulate Mode / Set Function Code 2

   +/$+CL

   Enter Accumulate Mode / Set Function Code 3

   +/$+CM

2. Scan any character from the "Full ASCII Bar Code Chart" in Appendix B. You can define two characters each for Function Codes 1 and 3, and four characters for Function Code 2.

3. Scan this bar code:

   Exit Accumulate Mode

   -/

Code 93

Purpose: Enables or disables decoding of Code 93 symbology. Code 93 is a variable length, continuous symbology that uses four element widths.

Syntax: CF*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Scan: One of these bar codes:

Disable Code 93

$+CF0

Enable Code 93

$+CF1

Code 128

Purpose: Enables or disables decoding of Code 128 symbology. Code 128 is a very high density alphanumeric symbology that supports the extended ASCII character set. It is a variable length, continuous code that uses multiple element widths.

Syntax: CH*data*

Acceptable values for *data* are:

0 Disabled
1 Standard Code 128
2 UCC/EAN Code 128
8 ISBT Code 128

Note: *For help configuring ISBT Code 128, see the next section.*

Default: Standard

Scan: One of these bar codes:

Disable Code 128

$+CH0

Enable Standard Code 128

$+CH1

Enable UCC/EAN Code 128

$+CH2

Enable ISBT Code 128

$+CH8

Notes: If you configure Standard Code 128, the terminal will not decode Function Code 1 characters in the first position of a bar code label. Any subsequent Function Code 1 characters are translated to the ASCII GS character as a separator for variable length fields.

If you configure UCC/EAN Code 128, the terminal will decode a bar code label as Standard Code 128 unless one of the first two characters are a start character and a Function Code 1. In this case, the bar code label is processed as described next:

1. The Function Code 1 character is not transmitted.
2. The three symbology ID characters,]C1, are transmitted.
3. The remaining Code 128 characters are decoded as Standard Code 128.

ISBT Code 128

Purpose: Enables and configures decoding of ISBT Code 128 symbology. ISBT Code 128 is the global bar code labeling standard for the blood banking industry. It is used to support the world-wide distribution, tracking, and handling of blood bags and blood components.

For more information on ISBT Code 128, see the *ISBT 128 Bar Code Symbology and Application Specification for Labeling of Whole Blood and Blood Components* prepared by the International Council for Commonality in Blood Banking Automation.

Syntax: CH8*data*

where *data* can be up to 10 digits selected from this list:

Digits	Values	Description
1	0	Symbology identifier (ID) disabled.
	1	Symbology ID enabled. Output of]C0 indicates a single ISBT Code 128 bar code was read. Output of]C4 indicates that a pair of ISBT Code 128 bar codes was read.
2	0	Concatenation disabled.
	1	Restricted concatenation enabled.
3-4	See List*	Left Data ID to be matched for restricted concatenation.
		* List of valid combinations are:
		=% Blood Groups and Rh
		=> Expiration Date
		&> Expiration Date and Time
		=* Collection Date
		&* Collection Date and Time
		=< ISBT Product Code
		=) Manufacturer ID
		&) Manufacturer Lot Number
		=& Concatenation Bar Code
		&< National Product Code
		&(National Special Test
		&! Unit Exclusion Status
		&; National Special Donor
		=*n* Donation ID Number where *n* is a value from 0 to 9 or uppercase A through Z
		&*n* National Use Bar Code where *n* is a value from lowercase a through z
5-6	See List*	Right Data ID to be matched for restricted concatenation. See the list of valid combinations for digits 3 and 4.

ISBT Code 128 (continued)

Digits	Values	Description
7-9	000-999	Bar code concatenation control parameters. If digit 10 is "d," digits 7 and 8 refer to the nominal distance in millimeters between the stop characters of two bar code labels that can be concatenated, and digit 9 is the bar code label positioning tolerance. If the distance between the two bar code labels is outside this limit (assuming standard ISBT bar code print size), the bar code labels will not be concatenated. If digit 10 is "t," digits 7, 8, and 9 are the decode time limit in milliseconds. If both bar code labels are not decoded in the same beam sweep within this time, the bar code labels are not concatenated. This time parameter is only accurate to a 25-millisecond resolution.
10	d or t	Identifies the concatenation control as either the distance "d" between bar code labels or the time "t" in which concatenated bar code labels must be decoded. See description for Digits 7-9.

Note: *The Left Data ID and Right Data ID are used only with the restricted concatenation option. For example, the terminal will concatenate only those bar code labels with data identifiers that match the configured data identifiers. The spacing between bar codes that can be concatenated must be between two and five character widths.*

Default: Digit 1: Symbology ID disabled
Digit 2: Concatenation disabled

Scan: This bar code to enable ISBT Code 128

Enable ISBT Code 128

$+CH8

Note: *To scan the following bar codes, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.*

Or: To configure ISBT Code 128:

1. Scan this bar code:

Enter Accumulate Mode/Enable ISBT Code 128

+/$+CH8

2. Scan one of these bar codes to disable or enable symbology ID:

Symbology ID Disabled

0

Symbology ID Enabled

1

Note: *Steps 3 through 9 are optional.*

3. Scan one of these bar codes to disable or enable concatenation:

Disable Concatenation

0

Enable Concatenation

1

If you disabled concatenation, go to Step 10.

4. Scan one of these bar codes to set the Left Data ID:

Blood Groups and Rh

=%

Expiration Date

=>

Expiration Date and Time

&>

Collection Date

*=**

Collection Date and Time

*&**

ISBT Product Code

=<

Manufacturer ID

=)

Manufacturer Lot Number

&)

Concatenation Bar Code

=&

National Product Code

&<

National Special Test

&(

Unit Exclusion Status

&!

ISBT Code 128 (continued)

National Special Donor

&;

Donation ID Number (See Note)

=

National Use Bar Code (See Note)

&

Note: *If you scan the Donation ID Number or National Use Bar Code, go to Step 5.*

5. For the Donation ID Number or the National Use Bar Code, scan an alphanumeric bar code from Appendix B.
   - For the Donation ID Number, scan a value from 0 through 9 or uppercase A through Z.
   - For the National Use Bar Code, scan a value from lowercase a through z.
6. Scan one of these bar codes to set the Right Data ID:

Blood Groups and Rh

=%

Expiration Date

=>

Expiration Date and Time

&>

Collection Date

*=**

Collection Date and Time

*&**

ISBT Product Code

=<

Manufacturer ID

=)

Manufacturer Lot Number

&)

Concatenation Bar Code

=&

National Product Code

&<

National Special Test

&(

Unit Exclusion Status

&!

National Special Donor

&;

Donation ID Number (See Note)

=

National Use Bar Code (See Note)

&

Note: *If you scan the Donation ID Number or National Use Bar Code, go to Step 7.*

7. For the Donation ID Number or the National Use Bar Code, scan an alphanumeric bar code from Appendix B.
   - For the Donation ID Number, scan a value from 0 through 9 or uppercase A through Z.
   - For the National Use Bar Code, scan a value from lowercase a through z.
8. Skip to Step 10 if you want to keep the default concatenation control parameters.
   - The default concatenation distance is 16 mm ± 0 mm.
   - The default concatenation decode time limit is 160 ms.

   To set the concatenation decode time limit, scan these bar codes to set the time from 001 to 999 ms. To set the concatenation distance, scan these bar codes to set the distance from 00 to 99 mm and the tolerance from ± 1 to 9 mm.

0

1

2

3

4

5

6

7

8

9

ISBT Code 128 (continued)

9. Scan one of these bar codes to set distance or time:

Distance	Time
d	*t*

10. Scan this bar code to exit accumulate mode:

Exit Accumulate Mode

-/

Command Processing

Purpose: Command processing lets you disable or enable reader commands. For example, you can disable the Backlight command. There are two ways to enable or disable reader commands:

- Use the Command Processing configuration command described here.
- Use the Reader Command Menu option in the Configuration Menu of the TRAKKER Antares 2400 Menu System.

You may want to disable reader commands to prevent a user from accidentally entering a command, or to use data that would otherwise be treated as a command. Any Code 39 or Code 93 bar code label that contains the 2-character to 4-character commands for Command Processing is treated as a reader command unless the command is disabled.

If you want to disable or enable several commands, it is easier to use the menu system. For help, see Chapter 3, "Configuring the Terminal." For a description of each reader command that you can enable or disable with Command Processing, see Chapter 8, "Reader Command Reference."

Syntax: DC*data*

Acceptable values for *data* are**:**

0	Disable all reader commands
1	Enable all reader commands
2	Disable override
3	Enable override
*command*0	Disable reader command
*command*1	Enable reader command

The override option is a temporary setting that lets you enable all the reader commands for as long as you need them. When you want to return to the previous configuration, you disable the override.

Note: *The Enable Override option is the only bar code label you can scan to enable reader commands if you have disabled all reader commands (DC0). You can also enable reader commands in the TRAKKER Antares 2400 Menu System.*

Default: All reader commands enabled

Scan: To enable all the reader commands or override the current settings, scan one of these bar codes:

Disable All Reader Commands

$+DC0

Enable All Reader Commands

$+DC1

Disable Override

$+DC2

Enable Override

$+DC3

Or: To disable or enable specific reader commands, perform these steps:

1. Scan this bar code:

   Enter Accumulate Mode / Command Processing

   +/$+DC

2. Scan the bar code to disable or enable one reader command.

   Note: *If there are two bar codes for a reader command, you must scan them in order, left to right. Accumulate mode commands are separated into two bar codes so that the command can be accumulated rather than executed as a command.*

Abort Program

/$

Backlight

%.

Backspace

-

(continued)

+

Command Processing (continued)

Change Configuration

$+

Clear

-

(continued)

-

Default/Save Configuration

.+

Delete File

..--

Enter Accumulate Mode

+

(continued)

/

Exit Accumulate Mode

-

(continued)

/

Receive File

.%

Rename File

...-

Reset Firmware

-.

Run Program

//

Scanner Trigger Off

/%

Scanner Trigger On

/.

Set Time and Date

/+

Test and Service Mode

..-.

Transmit File

%%

3. Scan one of these bar codes:

Disable the Command

0

Enable the Command

1

4. Repeat Steps 2 and 3 to disable or enable another reader command.

Note: *You can accumulate up to 250 characters in the buffer. If the data accumulated exceeds 250 characters, you will hear an error beep and the terminal will reject the last bar code read.*

5. Scan this bar code:

Exit Accumulate Mode

-/

Or: To disable or enable the ability to scan multiple-read labels, scan one of these bar codes:

Disable Multiple-Read Labels

$+DC 0

Enable Multiple-Read Labels

$+DC 1

Configuration Commands Via Serial Port

Purpose: Lets you control the data the terminal receives through the serial port. You can set this command to execute reader and configuration commands received through the serial port, or treat all data as data without checking for special command syntax. There are three options:

Disabled All data received through the serial port is treated as data. The terminal will not execute reader or configuration commands sent or encoded in the data.

Enabled with TMF If the data is sent with the TMF (Terminal Message Format) header, the terminal will check for and execute reader or configuration commands received through the serial port. With TMF, you can execute reader and configuration commands, or send and receive data about the current terminal configuration.

Enabled without TMF The terminal will check for and execute all reader and configuration commands (i.e., Receive File reader command or Beep Volume change configuration command).

Note: *Before you can enable Configuration Commands Via Serial Port with or without TMF, you must enable the EOM command.*

Syntax: YT*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 Disabled
1 Enabled with TMF
2 Enabled without TMF

Default: Enabled without TMF

Scan: One of these bar codes:

COM1 Commands Via Serial Port Disabled

$+YT1.0

COM1 Commands Via Serial Port Enabled With TMF

$+YT1.1

COM1 Commands Via Serial Port Enabled Without TMF

$+YT1.2

COM3 Commands Via Serial Port Disabled

$+YT3.0

COM3 Commands Via Serial Port Enabled With TMF

$+YT3.1

COM3 Commands Via Serial Port Enabled Without TMF

$+YT3.2

COM4 Commands Via Serial Port Disabled

$+YT4.0

COM4 Commands Via Serial Port Enabled With TMF

$+YT4.1

COM4 Commands Via Serial Port Enabled Without TMF

$+YT4.2

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IT*data*

where *data* is a value from 0 to 2.

Controller Connect Check Receive Timer

Purpose: During periods of inactivity on the T2425, the terminal still sends messages to the DCS 300 to check the RF connection. If no message is received within the time set for the Controller Connect Check Receive Timer, the terminal is no longer connected to the DCS 300 and the Connect icon blinks. The timer countdown resets each time a valid message is received.

Power Management Tip: *Intermec strongly recommends that you use the optimum setting of 60 seconds to preserve the main battery pack's power.*

Syntax: NP*data*

Acceptable values for *data* are any number from 1 to 3600 seconds (60 minutes).

Default: 60 seconds

Scan: To set the default controller connect check receive timer, scan this bar code:

Default Controller Connect Check Receive Timer

$+NP60

Or: To set the controller connect check receive timer:

1. Scan this bar code:

   Enter Accumulate Mode / Set Controller Connect Check Receive Timer

   +/$+NP

2. Scan a numeric value for *data* from these bar codes:

0 *1*

2 *3*

4 *5*

6 *7*

8 *9*

3. Scan this bar code:

Exit Accumulate Mode

-/

Controller Connect Check Send Timer

Purpose: During periods of inactivity on the T2425, the terminal still sends messages to the DCS 300 to check the RF connection. The terminal sends a message at the time interval set for the Controller Connect Check Send Timer. The timer countdown resets each time a valid message is sent or received.

Power Management Tip: *Intermec strongly recommends that you use the optimum setting of 35 seconds to preserve the main battery pack's power.*

Syntax: NQ*data*

Acceptable values for *data* are any number from 1 to 3600 seconds (60 minutes).

Default: 35 seconds

Scan: To set the default controller connect check send timer, scan this bar code:

Default Controller Connect Check Send Timer

$+NQ35

Or: To set the controller connect check send timer:

1. Scan this bar code:

Enter Accumulate Mode / Set Controller Connect Check Send Timer

+/$+NQ

Controller Connect Check Send Timer (continued)

2. Scan a numeric value for data from these bar codes:

0	*1*
2	*3*
4	*5*
6	*7*
8	*9*

3. Scan this bar code:

Exit Accumulate Mode

-/

Controller IP Address

Purpose: Defines the IP address assigned to the DCS 300 in your network. An IP address is a network level address you assign to each device in a TCP/IP network. The controller IP address you set on the T2425 must match the address that is set on the DCS 300.

If you plan to enable DHCP (Dynamic Host configuration Protocol), you can set the controller IP address to any valid IP address. The terminal will locate and reset the IP address after you enable DHCP. For help, see “Dynamic Host Configuration Protocol” later in this chapter.

Syntax: NC*n.n.n.n*

where each *n* address segment is a number from 0 to 255. The controller IP address field consists of four separate numbers, each separated by a period.

Note: *The RF network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

Default: 0.0.0.0

Scan: To set the default controller IP address, scan this bar code:

Default Controller IP Address

$+NC0.0.0.0

Or: To set the controller IP address:

1. Scan this bar code:

   Enter Accumulate Mode / Set Controller IP Address

   +/$+NC

Controller IP Address (continued)

2. Scan a numeric value from 0 to 255 to set an *n* field of the controller IP address from these bar codes.

   0　　*1*

   2　　*3*

   4　　*5*

   6　　*7*

   8　　*9*

3. Scan this bar code:

   . (Period)

   .

4. Repeat Steps 2 and 3 to set the next three numbers in the controller IP address field. After you scan the last address segment, go to Step 5. Do **not** scan the period after the last address segment.

5. Scan this bar code:

   Exit Accumulate Mode

   -/

Data Bits

Purpose: Sets the number of data bits the terminal uses when communicating with another device (i.e., host computer) through the serial port.

Syntax: YI*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

7 7 data bits
8 8 data bits

Default: 7

Scan: One of these bar codes:

7 Data Bits for COM1

$+YI1.7

8 Data Bits for COM1

$+YI1.8

7 Data Bits for COM3

$+YI3.7

8 Data Bits for COM3

$+YI3.8

7 Data Bits for COM4

$+YI4.7

8 Data Bits for COM4

$+YI4.8

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

II*data*

where *data* is a value or 7 or 8.

Decode Security

Purpose: Defines the security level to use when decoding bar codes. When you select a lower decode security level, the terminal can decode bar codes with poorer print quality.

Note: *Only use the low parameter as a temporary solution until you can improve the bar code label print quality.*

Syntax: CS*data*

Acceptable values for *data* are:

0 Low
1 Moderate
2 High

Default: Moderate

Scan: One of these bar codes:

Low Decode Security

$+CS0

Moderate Decode Security

$+CS1

High Decode Security

$+CS2

Default Router

Purpose: Defines the IP address assigned to the default router in your 2.4 GHz RF network. The router provides a software and hardware connection between two or more networks that permits traffic to be routed from one network to another on the basis of the intended destinations of that traffic.

When the DCS 300 or host (TCP/IP network) is on a different subnetwork than the T2425, you need to set the IP address assigned to the default router. The terminal uses the router address to send packets across the network to the DCS 300. The default of 0.0.0.0 means there is no default router.

Syntax: NX*n.n.n.n*

where each *n* address segment is a number from 0 to 255. The default router address field consists of four separate numbers, each separated by a period.

Note: *The RF network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

Default: No default router

Scan: To set the default value for the default router, scan this bar code:

No Default Router

$+NX0.0.0.0

Or: To set the default router address:

1. Scan this bar code:

   Enter Accumulate Mode / Set Default Router

   +/$+NX

Default Router (continued)

2. Scan a numeric value from 0 to 255 to set an *n* field of the default router address from these bar codes.

   0 *1*

   2 *3*

   4 *5*

   6 *7*

   8 *9*

3. Scan this bar code:

   . (Period)

   .

4. Repeat Steps 2 and 3 to set the next three numbers in the default router address field. After you scan the last address segment, go to Step 5. Do **not** scan the period after the last address segment.

5. Scan this bar code:

   Exit Accumulate Mode

   -/

Display Backlight Timeout

Purpose: Defines the amount of time the backlight stays on as long as there is no keypad or scanning activity on the terminal. The backlight timeout resets each time there is activity. This setting significantly affects the terminal's battery life. If you set a longer backlight timeout value, you will use the power in the main battery pack at a faster rate.

Syntax: DF*data*

Acceptable values for *data* are:

00	Disabled
01-60	Timeout in seconds

Default: 10 seconds

Scan: To disable the backlight timeout, scan this bar code:

Disable Backlight Timeout

$+DF00

Or: To set the backlight timeout:

1. Scan this bar code:

   Enter Accumulate Mode / Set Backlight Timeout

   +/$+DF

2. Scan a two-digit numeric value for *data* from these bar codes.

0	*1*
2	*3*
4	*5*
6	*7*
8	*9*

Display Backlight Timeout (continued)

3. Scan this bar code:

Exit Accumulate Mode

-/

Display Contrast

Purpose: Defines the contrast (low or high) of the characters against the terminal screen. When the contrast is set to 0, the characters are bright against a bright background. When the contrast is set to 7, the characters are dark against a dark background.

Syntax: DJ*data*

Acceptable values for *data* are 0 (low) to 7 (high).

Default: 3

Scan: One of these bar codes:

0 - Light Display Contrast

$+DJ0

1

$+DJ1

2

$+DJ2

3 - Maximum Display Contrast

$+DJ3

4

$+DJ4

5

$+DJ5

6

$+DJ6

7 - Dark Display Contrast

$+DJ7

Or: Scan one of these bar codes repeatedly to change the display contrast:

Lighter Display Contrast

$+DJ8

Darker Display Contrast

$+DJ9

Display Font Type

Purpose: Selects the type or size of font that is used on the terminal screen. You can set a regular size font (8x8), a font with double-height characters (8x16), or a font with double-width and double-height characters (16x16).

Syntax: DT*data*

Acceptable values for *data* are:

0 8 pixels by 8 pixels (8x8) font
1 8 pixels wide by 16 pixels high (8x16) font
2 16 pixels wide by 16 pixels high (16x16) font

Default: 8x8

Scan: One of these bar codes:

Set Display Font Type to 8x8

$+DT0

Set Display Font Type to 8x16

$+DT1

Set Display Font Type to 16x16

$+DT2

Display Row Spacing

Purpose: Sets the row spacing on the terminals. Row spacing lets you define the amount of additional space (scan lines) between the lines on the screen. The number of scan lines is two times the value you set for the row spacing. A scan line is a row of pixels. For example, a row spacing of 8 adds 16 blank scan lines between lines on the screen

Syntax: DL*data*

Acceptable values for *data* are any number from 0 to 8.

Default: 0

Scan: One of these bar codes:

Set Row Spacing to 0

$+DL0

Set Row Spacing to 1

$+DL1

Set Row Spacing to 2

$+DL2

Set Row Spacing to 3

$+DL3

Set Row Spacing to 4

$+DL4

Set Row Spacing to 5

$+DL5

Set Row Spacing to 6

$+DL6

Set Row Spacing to 7

$+DL7

Set Row Spacing to 8

$+DL8

Display Video Mode

Purpose: Sets the Display Video mode that is used on the terminal screen. You can set the Display Video mode to original, normal, or inverse. Original displays black characters on a white background. Normal displays black characters on a white background. Inverse displays white characters on a black background.

Syntax: DN*data*

Acceptable values for *data* are:

0 Original
1 Normal
2 Inverse

Default: Original

Scan: One of these bar codes:

Original Display Video Mode

$+DN0

Normal Display Video Mode

$+DN1

Inverse Display Video Mode

$+DN2

Dynamic Host Configuration Protocol (DHCP)

Purpose: If your DCS 300 is operating as a DHCP client, its IP address will change each time it is turned on. By enabling DHCP on the T2425, the terminal can locate and use the DCS 300's new IP address. The terminal's IP address stays constant and must be assigned to the terminal by your system administrator.

Before you can enable DHCP on the T2425, you need to configure the network parameters for the T2425, including the Controller IP Address. The IP address does not need to be the actual IP address for the DCS 300, since the T2425 will locate and reset the IP address after you enable DHCP.

Note: *DHCP is supported in the TRAKKER Antares firmware version 3.20 or later.*

Syntax: NI*data*

Acceptable values for *data* are:

0 Disable DHCP
1 Enable DHCP

Default: Disabled

Scan: 1. One of these bar codes to disable or enable DHCP:

Disable DHCP

$+NI0

Enable DHCP

$+NI1

2. To save the changes in flash memory, scan this bar code:

Save Configuration in Flash Memory

.+1

End of Message (EOM)

Purpose: Attaches an EOM to the end of a data block to indicate the end of data transmission to and from a terminal. When EOM is disabled, the terminal communicates in Character mode. When EOM is enabled, the terminal communicates in Frame mode.

You must configure a value for EOM before you can set these other serial communications commands:

- Configuration Commands Via Serial Port
- Handshake
- LRC
- Start of Message (SOM)

EOM **cannot** equal the same value that is set for SOM. You **cannot** set EOM to any of these values:

- AFF (ACK)
- DLE
- NEG (NAK)
- Poll
- RES (EOT)
- REQ (ENQ)
- SEL
- XOFF
- XON

Syntax: YZ*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are one or two ASCII characters.

Default: \x03 (hexadecimal value for ETX)

Scan: To disable EOM, scan one of these bar codes:

Disable EOM for COM1

$+YZ1.

Disable EOM for COM4

$+YZ4.

End of Message (continued)

Or: To set EOM to one or two ASCII characters for one serial port:

1. Scan this bar code:

   Enter Accumulate Mode / Set EOM

   +/$+YZ

2. Scan one of these bar codes to set the COM port:

   COM1

   1.

   COM4

   4.

3. Scan one or two bar codes for *data* from the “Full ASCII Bar Code Chart” in Appendix B.
4. Scan this bar code:

   Exit Accumulate Mode

   -/

5. Repeat Steps 1 through 4 to set the EOM for another serial port.

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

PF*data*

where *data* is one or two ASCII characters.

Flash Memory Configuration

Purpose: Configures the use of the optional 2MB flash memory. If you have a terminal with the 4MB flash memory option, you can configure the extra 2MB of flash memory either as a drive D or as a storage space for double-byte fonts. You can store up to 32 files on drive D or store a 2MB double-byte font set. If you configure the flash memory as drive D, use this drive to store large lookup tables and data files.

Note: *You can only configure 2MB of the 4MB of flash memory as a drive or to store fonts. You cannot use the space for both. If you configure drive D, you cannot store a font in flash memory.*

Syntax: FF*data*

Acceptable values for data are:

0 Configure flash memory for double-byte fonts
32 Configure flash memory as drive D

Default: Configure flash memory for double-byte fonts

Scan:

1. Scan one of these bar codes:

   Configure Flash Memory for Double-Byte Fonts

   $+FF0

   Configure Flash Memory as Drive D

   $+FF32

2. Scan this bar code to save the configuration change in flash memory:

   Save Configuration in Flash Memory

   .+1

3. Scan this bar code to boot the terminal and use the flash memory to store double-byte fonts or as drive D:

   Reset Firmware

   -.

Note: *When you boot or reset the terminal, any fonts or files in flash memory are erased.*

4. If you configured the flash memory to store double-byte fonts, use the TRAKKER Antares Font Editor to download the double-byte font set to the terminal. See your local Intermec sales representative for information about the TRAKKER Antares Font Editor.

Flow Control

Purpose: Regulates the data transmission through the serial port. The terminal is a DTE (Data Terminal Equipment) device. There are several flow control options:

- CTS checking where Clear To Send (CTS) is a hardware signal flow control. The terminal sets and clears Request To Send (RTS) when it is ready to receive. The terminal checks CTS when it tries to transmit data.
- XON/XOFF response causes the terminal to respond to XON/XOFF characters received while transmitting.
- XON/XOFF control specifies that the terminal transmits XON/XOFF characters to control the incoming data flow.
- XON/XOFF response and control specify that the terminal responds to and transmits XON/XOFF characters.
- CTS/RTS for DTE-DTE allows for peer connections. Each terminal's RTS output pin is connected to the CTS input pin of the other terminal. Each terminal sets RTS whenever it is ready to receive data and waits for CTS to be set before sending data.

Note: *For TRAKKER Antares firmware version 4.X and earlier, you must disable the EOM command (use Character mode) to enable Flow Control with the XON/XOFF options.*

Syntax: YL*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 No flow control
1 CTS checking
2 XON/XOFF response
3 XON/XOFF control
4 XON/XOFF response and control
5 CTS/RTS for DTE-DTE

Default: No flow control

Scan: To set the default flow control for each serial port, scan one of these bar codes:

No Flow Control for COM1
$+YL1.0

No Flow Control for COM3
$+YL3.0

No Flow Control for COM4
$+YL4.0

Or: To set the flow control for one serial port:

1. Scan this bar code:

   Enter Accumulate Mode / Set Flow Control
   +/$+YL

2. Scan one of these bar codes to set the COM port:

   COM1
   1.

   COM3
   3.

   COM4
   4.

Flow Control (continued)

3. Scan the flow control setting:

No Flow Control *0*	CTS Checking *1*
XON/XOFF Response *2*	XON/XOFF Control *3*
XON/XOFF Response and Control *4*	CTS/RTS for DTE-DTE *5*

4. Scan this bar code:

Exit Accumulate Mode

-/

5. Repeat Steps 1 through 4 to set the flow control for another serial port.

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IL*data*

where *data* is a numeric value from 0 to 5.

Handshake

Purpose: Enables or disables the handshake event that is an affirmative acknowledge to a message received through the serial port.

Note: *Before you can enable Handshake, you must configure the EOM command. Handshake is also referred to as AFF (affirmative acknowledge) on other Intermec devices.*

Syntax: YJ*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

Disabled	No ACK or NAK transmitted
Enabled	Set to ACK (hexadecimal value of \x06)

Default: Disabled

Scan: One of these bar codes:

Note: *To scan these bar code labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.*

Disable Handshake for COM1
$+YJ1.

Enable Handshake (Set to ACK) for COM1
$+YJ1.$F

Disable Handshake for COM3
$+YJ3.

Enable Handshake (Set to ACK) for COM3
$+YJ3.$F

Disable Handshake for COM4
$+YJ4.

Enable Handshake (Set to ACK) for COM4
$+YJ4.$F

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

PG*data*

where *data* is disabled or enabled (set to ACK).

Host IP Address

Purpose: Defines the IP address assigned to the host computer in your 2.4 GHz RF network. An IP address is a unique network level address you assign to each device in a TCP/IP direct connect network. The host IP address you set on the T2425 must match the address that is set on the host.

Syntax: NC*n.n.n.n*

where each *n* address segment is a number from 0 to 255. The host IP address field consists of four separate numbers, each separated by a period.

Note: *The RF network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

Default: 0.0.0.0

Scan: To set the default host IP address, scan this bar code:

Default Host IP Address

$+NC0.0.0.0

Or: To set the host IP address:

1. Scan this bar code:

   Enter Accumulate Mode / Set Host IP Address

   +/$+NC

2. Scan a numeric value from 0 to 255 to set an *n* field of the host IP address from these bar codes.

   0 *1*

   2 *3*

   4 *5*

   6 *7*

8 *9*

3. Scan this bar code:

. (Period)

.

4. Repeat Steps 2 and 3 to set the next three numbers in the host IP address field. After you scan the last address segment, go to Step 5. Do **not** scan the period after the last address segment.
5. Scan this bar code:

Exit Accumulate Mode

-/

Interleaved 2 of 5

Purpose: Enables or disables decoding of Interleaved 2 of 5 (I 2 of 5) symbology. I 2 of 5 is a high-density, self-checking, continuous numeric symbology. It is mainly used in inventory distribution and the automobile industry.

Enabling I 2 of 5 automatically disables Code 2 of 5.

Syntax: CA*data*

Acceptable values for *data* are:

0	Disabled
2-32	Fixed length (even number only)
97	Variable length without a check digit
98	Case code (6 or 14) with a check digit
99	Variable length with a check digit

CAUTION

Caution
Using the variable length without a check digit configuration option can cause substitution errors.

Conseil
Des erreurs de substitution peuvent survenir si vous utilisez la longueur variable sans option de vérification de configuration de chiffres.

Default: Disabled

Scan: One of these bar codes:

Disable Interleaved 2 of 5

$+CA0

Enable Variable Length Without a Check Digit

$+CA97

Enable Variable Length With a Check Digit

$+CA99

Enable Case Code With a Check Digit

$+CA98

Or: To set Interleaved 2 of 5 to a fixed length:

1. Scan this bar code:

   Enter Accumulate Mode / Set Fixed Length

   +/$+CA

2. Scan a numeric value for *data* from these bar codes. (Use even numbers 2-32 only.)

   0

   1

   2

   3

   4

   6

   8

3. Scan this bar code:

   Exit Accumulate Mode

   -/

Keypad Caps Lock

Purpose: Turns the caps lock on and off. With the caps lock turned on, all alphabetic characters you type on the keypad will be uppercase or capital letters.

Syntax: KA*data*

Acceptable values for *data* are:

0 Caps lock off
1 Caps lock on

Default: Caps lock off

Scan: One of these bar codes:

Caps Lock Off

$+KA0

Caps Lock On

$+KA1

Keypad Clicker

Purpose: Enables or disables the keypad clicker. The terminal sounds a click each time you press a key or decode a row of a two-dimensional symbology.

Note: *If the Beep Volume command is set to off, you will not hear any audio signals including the keyclick.*

Syntax: KC*data*

Acceptable values for *data* are:

0 Disable keypad clicker
1 Enable keypad clicker

Default: Enabled

Scan: One of these bar codes:

Disable Keypad Clicker

$+KC0

Enable Keypad Clicker

$+KC1

Keypad Type

Purpose: The keypad type is initially configured in the terminal's firmware at the Intermec factory. If you change the keypad overlay, you must configure the keypad type to match the new keypad overlay.

After you change the keypad type, you must save the configuration in flash memory and boot the terminal for the change to take effect.

***Note:** With the programmable keypad, you can access all the characters in the "TRAKKER Antares Terminal Font Set" in Appendix C.*

see "TRAKKER Antares Terminal Font Set" in Appendix C

Syntax: KT*data*

Acceptable values for *data* are:

0 Hardware (factory) default
1 Terminal emulation keypad
2 Programmable (English or European) keypad

Default: Hardware default

Scan:

1. Scan one of these bar codes:

   Set Keypad Type to Hardware Default

   $+KT0

   Set Keypad Type to TE Keypad

   $+KT1

   Set Keypad Type to Programmable Keypad

   $+KT2

2. Scan this bar code to save the configuration change in flash memory:

   Save Configuration in Flash Memory

   .+1

3. Scan this bar code to boot the terminal and use the new keypad type:

   Reset Firmware

   -.

LRC (Longitudinal Redundancy Check)

Purpose: The Longitudinal Redundancy Check (LRC) character is an error-checking character that you can append to transmitted and received blocks of data.

Note: *Before you can enable LRC, you must enable the EOM command.*

Syntax: YF*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 LRC disabled
1 LRC enabled

Default: Disabled

Scan: One of these bar codes:

Disable LRC for COM1

$+YF1.0

Enable LRC for COM1

$+YF1.1

Disable LRC for COM3

$+YF3.0

Enable LRC for COM3

$+YF3.1

Disable LRC for COM4

$+YF4.0

Enable LRC for COM4

$+YF4.1

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IF*data*

where *data* is a value of 0 or 1.

Maximum Retries

Purpose: Defines the number of times the T2425 will attempt to send a disconnect request message to the DCS 300. The T2425 sends connect and disconnect request messages to the DCS 300 when you turn the terminal on and off.

Tip: *Intermec strongly recommends that you use the optimum setting of 7 retries.*

Syntax: NR*data*

Acceptable values for *data* are:

0	T2425 retries indefinitely
1-99	Number of retries

Default: 7

Scan: To set the default number of maximum retries, scan this bar code:

Default Maximum Retries

$+NR7

Or: To set the maximum retries:

1. Scan this bar code:

   Enter Accumulate Mode / Set Maximum Retries

   +/$+NR

2. Scan a numeric value for *data* from these bar codes:

0

1

2

3

4

5

6

7

Maximum Retries (continued)

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Modem Dial Sequence

Purpose: Defines the dialing sequence that is used when the terminal establishes a modem connection.

Syntax: YD3.*data*

where *data* can be up to 25 characters from this table.

Character	Description
0-9	DTMF digits 0 through 9
A-D	DTMF letters A through D
*	The star digit (tone dialing only)
#	The gate digit (tone dialing only)
W	Wait for dial tone
@	Wait for silence
&	Wait for credit card dialing tone
,	Pause
(	Ignored. You can use this character to format the dial sequence.
)	Ignored. You can use this character to format the dial sequence.
-	Ignored. You can use this character to format the dial sequence.
.	Ignored. You can use this character to format the dial sequence.
<space>	Ignored. You can use this character to format the dial sequence.

Default: 0 (no dial sequence)

Scan: To set the default modem dial sequence, scan this bar code:

Default Modem Dial Sequence

$+YD3

Or: To set the modem dial sequence for COM3:

1. Scan this bar code:

   Enter Accumulate Mode / Set Modem Dial Sequence

   +/$+YD3

Modem Dial Sequence (continued)

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The modem dial sequence can be from 1 to 25 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

Modem Initialization Sequence

Purpose: Defines an initialization string that the terminal sends to the modem before the modem dial sequence.

Syntax: YM3.*data*

where *data* can be up to 25 characters from this table.

Character	Description
0-9	DTMF digits 0 through 9
A-D	DTMF letters A through D
*	The star digit (tone dialing only)
#	The gate digit (tone dialing only)
W	Wait for dial tone
@	Wait for silence
&	Wait for credit card dialing tone
,	Pause
(	Ignored. You can use this character to format the dial sequence.
)	Ignored. You can use this character to format the dial sequence.
-	Ignored. You can use this character to format the dial sequence.
.	Ignored. You can use this character to format the dial sequence.
<space>	Ignored. You can use this character to format the dial sequence.

Default: 0 (auto rate)

Scan: To set the default modem initialization sequence, scan this bar code:

Default Modem Initialization Sequence

$+YM3

Or: To set the modem dial sequence for COM3:

1. Scan this bar code:

   Enter Accumulate Mode / Set Modem Initialization Sequence

   +/$+YM3

Modem Initialization Sequence (continued)

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The modem dial sequence can be from 1 to 25 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

MSI

Purpose: Enables or disables decoding of MSI symbology. MSI code is similar to Plessey code in that it includes a start pattern, data characters, 1 or 2 check digits, and a stop pattern.

Syntax: CN*data*

Acceptable values for *data* are:

First digit:	0	Disabled
	1	No check digits
	2	1 modulus 10 check digit
	3	2 modulus 10 check digit
Second digit:	0	Discard check digit
	1	Transmit check digit

Default: Disabled

Scan: One of these bar codes:

Disable MSI

$+CN00

MSI Without Check Digits

$+CN10

MSI With 1 Modulus 10 Check Digit, Discard Check Digit

$+CN20

MSI With 1 Modulus 10 Check Digit, Transmit Check Digit

$+CN21

MSI With 2 Modulus 10 Check Digits, Discard Check Digits

$+CN30

MSI With 2 Modulus 10 Check Digits, Transmit Check Digits

$+CN31

Network Activate

Purpose: Enables or disables network communications between the T2425 and other devices in the 2.4 GHz RF network. When you enable this parameter, the terminal attempts to establish communications with the DCS 300 or host computer. When you disable this parameter, the network is disabled, no RF communications are provided, and the radio is turned off.

Note: *You must enable the Network Activate parameter to use the T2425 for RF data collection.*

Syntax: NA*data*

Acceptable values for *data* are:

0 Disabled
1 2.4 GHz RF network (enabled)

Default: Disabled

Scan: One of these bar codes:

Disable Network Activate

$+NA0

Enable 2.4 GHz RF Network

$+NA1

Network Loopback

Purpose: Transmits all messages received from the DCS 300 back to the DCS 300. Messages received by the radio are not passed on to the T2425 applications unless they are configuration commands. Messages continue to be looped back to the DCS 300 as long as this feature is enabled. Messages originating from the T2425 are still transmitted to the DCS 300.

Use the Network Loopback parameter to troubleshoot RF communications problems.

Syntax: NL*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Scan: One of these bar codes:

Disable Network Loopback

$+NL0

Enable Network Loopback

$+NL1

Network Port

Purpose: Defines the network port that the TCP/IP or UDP Plus network protocol uses for communications in your 2.4 GHz RF network. In a TCP/IP network, set the network port to the appropriate port for the application you are using on the T2425. The default network port of 23 enables VT/ANSI Telnet communications. In a UDP Plus network, the network port you set on the T2425 must match the network port that is set on the DCS 300.

Syntax: NG*data*

Acceptable values for *data* are any number from 1 to 65535.

Default:

00023	T2425 with TCP/IP
05555	T2425 with UDP Plus

Scan: To set the default network port for a T2425 with TCP/IP, scan this bar code:

Default TCP/IP Network Port

$+NG23

To set the default network port for a T2425 with UDP Plus, scan this bar code:

Default UDP Plus Network Port

$+NG5555

Or: To set the network port:

1. Scan this bar code:

   Enter Accumulate Mode / Set Network Port

   +/$+NG

2. Scan a numeric value for *data* from these bar codes:

   0　*1*

   2　*3*

4

5

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Parity

Purpose: Sets the parity for the serial port. The terminal uses parity for error checking in data transmissions.

Syntax: YB*n*.*data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 No parity
1 Even parity
2 Odd parity

Default: Even

Scan: One of these bar codes:

No Parity for COM1

$+YB1.0

Even Parity for COM1

$+YB1.1

Odd Parity for COM1

$+YB1.2

No Parity for COM3

$+YB3.0

Even Parity for COM3

$+YB3.1

Odd Parity for COM3

$+YB3.2

No Parity for COM4

$+YB4.0

Even Parity for COM4

$+YB4.1

Odd Parity for COM4

$+YB4.2

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IB*data*

where *data* is a value from 0 to 2.

Plessey

Purpose: Enables or disables decoding of Plessey symbology. Plessey code is pulse-width modulated like most other bar codes. It includes a start character, data characters, an eight-bit cyclic check digit, a termination bar, and usually a reverse start character. The code is continuous and not self-checking. You need to configure two parameters for Plessey code: Start Code and Check Digit.

Syntax: CI*data*

Acceptable values for *data* are:

00 Disabled
10 Plessey with reverse start code
30 Transmit check digit
31 Discard check digit

Default: Disabled

Scan: To disable Plessey:

Disable Plessey

$+CI00

Or: To set Plessey, complete these steps:

1. Scan this bar code:

Plessey With Reverse Start Code

$+CI10

2. Scan one of these bar codes to transmit or retain the check digit:

Transmit Check Digit

$+CI30

Discard Check Digit

$+CI31

Poll (Polling)

Purpose: Solicits or requests data from a polled device.

Note: *Before you can enable Poll, you must configure the EOM and Handshake commands.*

Syntax: YR*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

Disabled	No polling
Enabled	Set to FS (hexadecimal value of \x1C)

Default: Disabled

Scan: To disable poll, scan one of these bar codes:

Note: *To scan these bar code labels, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.*

Disable Poll for COM1

$+YR1.

Enable Poll (Set to FS) for COM1

$+YR1.%B

Disable Poll for COM3

$+YR3.

Enable Poll (Set to FS) for COM3

$+YR3.%B

Disable Poll for COM4

$+YR4.

Enable Poll (Set to FS) for COM4

$+YR4.%B

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

HB*data*

where *data* is disabled or enabled (set to FS).

Postamble

Purpose: Sets the postamble that is appended to any data you scan with the terminal. Common postambles include cursor controls such as a tab or a carriage return line feed.

You can set the postamble to use characters from the extended ASCII character set such as the Field Exit code for 5250 TE. However, you cannot scan in extended ASCII characters in the Postamble command. You need to use the TRAKKER Antares 2400 Menu System. For help, see "Entering ASCII Control Characters" in Chapter 3.

Syntax: AE*data*

Acceptable values for *data* are up to 25 ASCII characters. If you enter the AE command without *data*, the postamble is disabled. If you are entering quotation marks as data or grouping configuration commands, you need to enclose the *data* within quotation marks (see the example).

Default: No characters (disabled)

Scan: To disable the postamble, scan this bar code:

Disable Postamble

$+AE

Or: To set the postamble to an ASCII character string:

1. Scan this bar code:

   Enter Accumulate Mode / Set Postamble

   +/$+AE

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The postamble can be from 1 to 25 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

Example: You want to set a postamble that includes quotation marks. To scan a bar code label that includes quotation marks, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see “Code 39” earlier in this chapter.

Enter the postamble by scanning this full ASCII bar code label:

Set Postamble to “B”

$+AE"""B"""

You must enclose the data within quotation marks and precede each quotation mark with another quotation mark so that the quotation marks are not treated as the end of the data.

Preamble

Purpose: Sets the preamble that precedes any data you scan with the terminal. Common preambles include a data location number or an operator number.

You can set the preamble to use characters from the extended ASCII character set. However, you cannot scan in extended ASCII characters in the Preamble command. You need to use the TRAKKER Antares 2400 Menu System. For help, see “Entering ASCII Control Characters” in Chapter 3.

Syntax: AD*data*

Acceptable values for *data* are up to 25 ASCII characters. When you enter the AD command without *data*, the preamble is disabled. If you are entering quotation marks as data or grouping configuration commands, you need to enclose the *data* within quotation marks (see the example).

Default: No characters (disabled)

Scan: To disable the preamble, scan this bar code:

Disable Preamble

$+AD

Or: To set the preamble to an ASCII character string:

1. Scan this bar code:

   Enter Accumulate Mode / Set Preamble

   +/$+AD

Preamble (continued)

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The preamble can be from 1 to 25 characters.

   Note: *To scan a bar code label that includes quotes, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.*

3. Scan this bar code:

   Exit Accumulate Mode

   -/

Example: You want to set a preamble that includes quotation marks. To scan a bar code label that includes quotation marks, you must configure the terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.

Enter the preamble by scanning this full ASCII bar code label:

Set Preamble to "B"

$+AD"""B"""

You must enclose the data within quotation marks and precede each quotation mark with another quotation mark so that the quotation marks are not treated as the end of the data.

RAM Drive Size

Purpose: Configures the size and use of the RAM drive (E). You can disable the RAM drive and use the additional 256K for programmable (Malloc) memory allocations or configure the RAM drive to temporarily store data and files.

After you set the RAM drive, you must save the configuration in flash memory and boot the terminal for the change to take effect.

Note: *When you boot or reset the terminal, all files on the RAM drive are destroyed.*

Syntax: FR*data*

Acceptable values for *data* are:

0	Disabled, no RAM drive
16-256	RAM drive size in kilobytes (K)

Default: Disabled, no RAM drive

Scan: To disable the RAM drive, scan this bar code:

Disable RAM Drive

$+FR0

Or: To set the RAM drive size:

1. Scan this bar code:

   Enter Accumulate Mode / Set RAM Drive Size

   +/$+FR

RAM Drive Size (continued)

2. Scan a numeric value for *data* from these bar codes:

0	*1*
2	*3*
4	*5*
6	*7*
8	*9*

3. Scan this bar code:

Exit Accumulate Mode

-/

4. Scan this bar code to save the configuration change in flash memory:

Save Configuration in Flash Memory

.+1

5. Scan this bar code to boot the terminal and use the RAM drive:

Reset Firmware

-.

Resume Execution

Purpose: Defines the way in which the terminal resumes when you press I/O to turn on the terminal. If you set this parameter to resume execution not allowed and you press I/O to turn on the terminal, the terminal will boot and restart the application that was running when you turned off the terminal. If you set this parameter to resume execution allowed and press I/O to turn on the terminal, the terminal resumes exactly where it was when you turned off the terminal.

Syntax: ER*data*

Acceptable values for *data* are:

0 Not allowed
1 Allowed

Default: Allowed

Scan: One of these bar codes:

Resume Execution Not Allowed

$+ER0

Resume Execution Allowed

$+ER1

RF Domain

Purpose: Defines a logical partition or subnetwork of the network. To establish communications, you must assign the same domain number to every RF device in a wireless network. The domain number you set on the T2425 must match the domain that is set on each access point the T2425 may communicate with. You can continue to collect data with the T2425 as you roam in between access points as long as all the devices have the same domain number.

Syntax: RW*data*

Acceptable values for *data* are any number from 0 to 15.

Default: 0

Scan:

1. Scan this bar code:

   Enter Accumulate Mode / Set RF Domain

   +/$+RW

2. Scan a numeric value for *data* from these bar codes:

   0 *1*

   2 *3*

   4 *5*

   6 *7*

   8 *9*

3. Scan this bar code:

   Exit Accumulate Mode

   -/

RF Inactivity Timeout

Purpose: Defines the amount of time the radio on the T2425 waits to go into a low power state. If no data is sent or received within the RF inactivity timeout period set, the radio goes into a low power state to conserve battery power. If you set a high value, the radio stays on longer at a higher power rate and uses battery power at a faster rate.

Power Management Tip: *Intermec strongly recommends that you use the optimum RF inactivity timeout of 5 seconds to preserve the main battery pack's power.*

Syntax: RY*data*

Acceptable values for *data* are:

0	Radio never turns off
1-51	RF inactivity timeout in seconds multiplied by a value of 5

where *data*=1 sets a timeout delay of 5 seconds, *data*=2 sets a timeout delay of 10 seconds, and so on, up to *data*=51 for a timeout delay of 255 seconds.

Default: 5 seconds

Scan: To set the default RF inactivity timeout to 5 seconds, scan this bar code:

Default RF Inactivity Timeout

$+RY1

Or: To set the RF inactivity timeout:

1. Scan this bar code:

   Enter Accumulate Mode / Set RF Inactivity Timeout

   +/$+RY

2. Scan a numeric value for *data* from these bar codes:

0

1

2

3

4

5

RF Inactivity Timeout (continued)

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

RF Roaming Flag

Purpose: Determines whether or not the T2425 radio can roam between access points. All access points are master stations and each master has a unique channel. If you have five access points in one domain, the T2425 will connect to one access point when you turn it on. This access point becomes the master station for the T2425. When you set the RF roaming flag to "Not Allowed," the T2425 will only communicate with the master station (access point) to which it first connects. If you allow roaming, the T2425 can communicate with any access point in the same domain.

Syntax: RR*data*

Acceptable values for *data* are:

0 Allowed
1 Not allowed

Default: Allowed

Scan: One of these bar codes:

RF Roaming Allowed

$+RR0

RF Roaming Not Allowed

$+RR1

RF Security Identification

Purpose: Defines the password you can set for secured transmission and receipt of data between devices in the 2.4 GHz RF network. To communicate, all access points and T2425 terminals in the subnetwork must have matching security IDs.

Syntax: RS*data*

Acceptable values for *data* are up to 20 ASCII characters. When you enter the RS command without *data*, the RF security ID is disabled or set to no characters (blank).

Note: *You can only set the RF security ID with the 2.4 GHz RF network enabled. The Network Activate configuration command must be configured to 2.4 GHz RF Network before you can save any changes to the RF security ID command.*

Default: No characters or blank (disabled)

Scan: To disable or set the RF security ID to no characters, scan this bar code label:

Disable RF Security ID

$+RS

Or: To set the RF security ID to an ASCII character string:

1. Scan this bar code:

   Enter Accumulate Mode / Set RF Security ID

   +/$+RS

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The RF security ID can be from 1 to 20 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

Notes: If you view the RF security ID in the TRAKKER Antares 2400 Menu System, the actual security ID does not display on the screen. The words (ID unchanged) indicate that the password has not been changed in the current menu session. If you change the security ID, you see the new password until you exit the Configuration Menu and update the runtime configuration.

RF Transmit Mode

Purpose: Defines the transmit mode that the T2425 radio uses. There are three modes:

BFSK Binary Frequency Shift Key. A broadcasting method the radio uses that lengthens the range, but halves the throughput. This method is switched when the RF protocol on the terminal determines that communications are degrading.

QFSK Quad Frequency Shift Key. A broadcasting method the radio uses that shortens the range, but doubles the throughput. QFSK is the method used under standard radio conditions.

Auto The terminal radio automatically switches modes between BFSK and QFSK as needed.

Note: *Even if you set this configuration command, the T2425 radio will reset the parameter as needed to maximize the broadcasting range and throughput.*

Syntax: RT*data*

Acceptable values for *data* are:

0 BFSK (Binary Frequency Shift Key)
1 QFSK (Quad Frequency Shift Key)
3 Auto

Default: BFSK

Scan: One of these bar codes:

Set RF Transmit Mode to BFSK

$+RT0

Set RF Transmit Mode to QFSK

$+RT1

Set RF Transmit Mode to Auto

$+RT3

RF Wakeup On Broadcast

Purpose: Determines if the T2425 can receive broadcast messages sent from the network. If the wakeup on broadcast is enabled, the T2425 radio will turn on to receive broadcast messages. If this command is disabled, the terminal radio will ignore broadcast messages.

Power Management Tip: *If your network has many broadcast messages, you may want to disable the wakeup on broadcast command to preserve the main battery pack's power.*

Syntax: RB*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Scan: One of these bar codes:

Disable RF Wakeup On Broadcast

$+RB0

Enable RF Wakeup On Broadcast

$+RB1

Scan Ahead

Purpose: Enables or disables scan ahead. If you enable this parameter, you can scan a number of labels that are held in a stack until the terminal can process the data. If you disable this parameter, the terminal processes each label you scan before you can scan the next label.

Syntax: SD*data*

Acceptable values for *data* are:

0 Disabled (scan one label at a time)
1 Enabled (scan many labels at a time)

Default: Disabled

Scan: One of these bar codes:

Disable Scan Ahead

$+SD0

Enable Scan Ahead

$+SD1

Scanner Mode

Purpose: Defines how the scanner operates when you press the Scan button or activate a cabled laser scanner. There are two types of modes:

- In One-Shot mode, you must press the Scan button or activate the cabled laser scanner each time you want to scan a bar code. Once you scan a bar code, the scanner turns off.
- In Automatic (Auto-trigger) mode, you press the Scan button once or activate the cabled laser scanner once to scan a series of bar codes. When you release the button or trigger, the scanner turns off. To scan the same bar code more than once, you must release the Scan button or trigger, or scan a different bar code before attempting a second scan.

Syntax: SB*data*

Acceptable values for *data* are:

0 One-Shot mode
1 Automatic mode

Default: One-Shot mode

Scan: One of these bar codes:

Enable One-Shot Mode

$+SB0

Enable Automatic Mode

$+SB1

Scanner Redundancy

Purpose: Defines the number of scans (voting) the scanner takes of the same label that must decode correctly for a good read of the label. Voting requires the terminal to decode the same bar code multiple times during a single scanner event, and to compare the decoded information a specific number of times before signaling a good read. There are three options:

None Allows the terminal to accept the first good read, which speeds up terminal performance. This setting is recommended when scanning good quality bar code labels.

Normal The terminal decodes the bar code a minimum number of times in each scanner event. The number of comparisons that are made depends on each bar code symbology.

High The terminal scans and decodes the bar code a maximum number of times in each scanner event. The specific number of comparisons depends on each bar code symbology. The high setting is recommended when scanning poor quality labels that may cause substitution errors.

For example, when you scan Code 39 labels and the scanner redundancy is set to normal, two successive matching decodes in a single scanner event are required. When scanner redundancy is set to high, three successive matching decodes in a single scanner event are required.

Syntax: SR*data*

Acceptable values for *data* are:

0 None
1 Normal
2 High

Default: Normal

Scan: One of these bar codes:

Scanner Redundancy None

$+SR0

Scanner Redundancy Normal

$+SR1

Scanner Redundancy High

$+SR2

Scanner Selection

Purpose: Identifies the type of scanner you have connected to the TRAKKER Antares terminal module for cabled scanners. The terminal can optimize the scanning performance by using the scanner you define in this command. When you select a specific scanner, other scanners may not function properly. Your terminal may not work if you connect an incompatible scanner.

Note: *The Scanner Selection configuration command is only used when a module for cabled scanners, long range scan module, or a high visibility scan module is installed on the terminal.*

The Scanner Selection command also configures the spotting beam when you have a long range or high visibility scan module on the terminal. There are three options:

- No aim means the spotting beam is turned off. When you press the Scan button, the laser scanner starts scanning immediately.
- Short aim means the spotting beam appears for 400 ms to help you aim the laser scanner before it starts scanning.
- Long aim means the spotting beam appears for 1 second to help you aim the laser scanner before it starts scanning.

Syntax: SS*data*

Acceptable values for *data* are:

0	All compatible scanners (including wands)
1	146x CCD scanners
3	151x laser scanners
4	1545 laser scanner
5	Compatible Symbol scanners (with reverse polarity enabled)
6	155x laser scanners
7	Tethered long range scanner
11	Integrated scan module: standard, long range, high density, or high visibility (long range or high visibility with no aim)
12	Integrated long range or high visibility scan module with short aim
13	Integrated long range or high visibility scan module with long aim

Note: *SS0 through SS7 work only when a module for cabled scanners is installed on the terminal. SS12 through SS13 work only when a long range or high visibility scan module is installed. SS11 configures the standard range and high density scan modules.*

Default: All compatible scanners

Scan: One of these bar codes:

All Compatible Scanners

$+SS0

146X CCD Scanners

$+SS1

151X Laser Scanners

$+SS3

1545 Laser Scanner

$+SS4

Compatible Symbol Scanners

$+SS5

155X Laser Scanners

$+SS6

Tethered Long Range Scanner

$+SS7

Integrated Scan Module (No Aim)

$+SS11

Integrated Scan Module (Short Aim)

$+SS12

Integrated Scan Module (Long Aim)

$+SS13

Scanner Timeout

Purpose: Defines the maximum length of time the scanner stays after you press the Scan button or activate a cabled laser scanner.

Syntax: SA*data*

Acceptable values for *data* are:

0	Disabled
1-60	Shutoff time in seconds

Default: Disabled (no timeout)

Scan: To disable the scanner timeout, scan this bar code label:

Disable Scanner Timeout

$+SA0

Or: To set the scanner timeout:

1. Scan this bar code:

   Enter Accumulate Mode / Set Scanner Timeout

   +/$+SA

2. Scan a numeric value for *data* from these bar codes:

   0 *1*

   2 *3*

   4 *5*

   6 *7*

   8 *9*

3. Scan this bar code:

Exit Accumulate Mode

-/

Scanner Trigger

Purpose: Scanner trigger lets you set level triggering or edge triggering.

- With level triggering, you activate the scanner and the laser turns on and stays on until you release the button or the trigger on a cabled scanner.
- In edge triggering, you activate the scanner and the laser turns on and stays on. When you activate the scanner a second time, the laser turns off. Simply releasing the button or the trigger does not turn the laser off. If the laser is left on, the scanner timeout turns the laser off.

Syntax: SC*data*

Acceptable values for *data* are:

0 Level triggering
1 Edge triggering

Default: Level triggering

Scan: One of these bar codes:

Enable Level Triggering

$+SC0

Enable Edge Triggering

$+SC1

Serial Port Protocol

Purpose: Lets you set the protocol that the serial port uses to communicate with the connected device. Communications protocols determine exactly how data is transmitted between the terminal and the serial device. Each protocol has parameters that you can set, such as baud rate and parity. Both the terminal and the serial device must use the same protocol and parameter settings to communicate properly.

The terminal can communicate in these four protocols:

- Binary
- Configurable
- Master Polling
- Polling Mode D

Each protocol is described in Chapter 4, "Operating the Terminal in a Network."

Syntax: YU*n*.*data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 Configurable
2 Polling mode D
8 Master polling mode D
12 Binary

Default: Configurable

Scan: To set the default serial port protocol, scan one of these bar codes:

Configurable Protocol for COM1

$+YU1.0

Configurable Protocol for COM3

$+YU3.0

Configurable Protocol for COM4

$+YU4:0

Or: To set the serial port protocol for one serial port:

1. Scan this bar code:

   Enter Accumulate Mode / Set Serial Port Protocol

   +/$+YU

2. Scan one of these bar codes to set the COM port:

   COM1

   1.

   COM3

   3.

   COM4

   4.

3. Scan the protocol setting:

   Configurable

   0

   Polling Mode D

   2

   Master Polling

   8

   Binary

   12

4. Scan this bar code:

   Exit Accumulate Mode

   -/

5. Repeat Steps 1 through 4 to set the serial port protocol for another serial port.

Start of Message (SOM)

Purpose: SOM is the first character in a message sent to or received from the host computer through one of the terminal's serial ports. SOM **cannot** equal the same value that is set for EOM. You **cannot** set SOM to any of these values:

- AFF (ACK)
- DLE
- NEG (NAK)
- Poll
- RES (EOT)
- REQ (ENQ)
- SEL
- XOFF
- XON

Note: *Before you can enable SOM, you must enable the EOM command.*

Syntax: YY*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

An acceptable value for *data* is any ASCII character**.**

Default: \x02 (hexadecimal value for STX)

Scan: To disable SOM, scan one of these bar codes:

Disable SOM for COM1

$+YY1.

Disable SOM for COM3

$+YY3.

Disable SOM for COM4

$+YY4.

Or: To set SOM to an ASCII character for one serial port:

1. Scan this bar code:

Enter Accumulate Mode / Set SOM

+/$+YY

2. Scan the serial port from these bar codes:

COM1

1.

COM3

3.

COM4

4.

3. Scan a bar code for *data* from the “Full ASCII Bar Code Chart” in Appendix B.
4. Scan this bar code:

Exit Accumulate Mode

-/

5. Repeat Steps 1 through 4 to set SOM for another serial port.

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

PE*data*

where *data* is an ASCII character.

Stop Bits

Purpose: Sets the number of stop bits on the serial port.

Syntax: YC*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

1 1 stop bit
2 2 stop bits

Default: 1

Scan: One of these bar codes:

1 Stop Bit for COM1

$+YC1.1

2 Stop Bits for COM1

$+YC1.2

1 Stop Bit for COM3

$+YC3.1

2 Stop Bits for COM3

$+YC3.2

1 Stop Bit for COM4

$+YC4.1

2 Stop Bits for COM4

$+YC4.2

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IC*data*

where *data* is value of 1 or 2.

Subnet Mask

Purpose: Defines the subnet mask, an internal TCP/IP protocol stack variable that is used to separate the subnetwork address from the local IP address. The TCP/IP protocol stack performs a bit-wise AND on the IP address and the subnet mask. Each address segment represents one byte, where 255 converts to FF hex.

This computation is used to find out if the DCS 300 (UDP Plus) or host (TCP/IP) and terminal are on different subnetworks. If the terminal is on a different IP subnetwork than the DCS 300 or host, you must set the subnet mask.

For example, if the IP address is 192.009.150.184 and the subnet mask is 255.255.255.0, the subnetwork address is 192.009.150.0.

Syntax: NS*n.n.n.n*

where each *n* address segment is a number from 0 to 255. The subnet mask field consists of four separate numbers, each separated by a period.

Default: 255.255.255.0

Scan: To set the default subnet mask address, scan this bar code:

Default Subnet Mask

$+NS255.255.255.0

Or: To set the subnet mask:

1. Scan this bar code:

   Enter Accumulate Mode / Set Subnet Mask

   +/$+NS

2. Scan a numeric value from 0 to 255 to set an *n* field of the subnet mask address from these bar codes.

   0

   1

   2

   3

   4

   5

Subnet Mask (continued)

6

7

8

9

3. Scan this bar code:

. (Period)

.

4. Repeat Steps 2 and 3 to set the next three numbers in the subnet mask address field. After you scan the last address segment, go to Step 5. Do **not** scan the period after the last address segment.

5. Scan this bar code:

Exit Accumulate Mode

-/

Suspend/Resume Control

Purpose: Controls the operation of the I/O key (suspend/resume). You can enable or disable the I/O key. When the I/O key is disabled, you cannot turn off the terminal. By default the I/O key is enabled so that you can turn the terminal on and off.

Syntax: EF*data*

Acceptable values for *data* are:

0 Enabled
1 Disabled

Default: Enabled

Scan: One of these bar codes:

Enable I/O Key

$+EF0

Disable I/O Key

$+EF1

TCP Maximum Retries

Purpose: Defines the maximum number of times that TCP will attempt to transmit data before giving up and terminating the TCP connection.

Syntax: NJ*data*

Acceptable values for *data* are any number from 5 to 50.

Default: 12

Scan: To set the default TCP maximum retries, scan this bar code:

Default TCP Maximum Retries

$+NJ12

Or: To set the TCP maximum retries:

1. Scan this bar code:

   Enter Accumulate Mode / Set TCP Maximum Retries

   +/$+NJ

2. Scan a numeric value for data from these bar codes:

0	*1*
2	*3*
4	*5*
6	*7*
8	*9*

TCP Maximum Retries (continued)

3. Scan this bar code:

   Exit Accumulate Mode

   -/

TCP/IP Maximum Transmit Timeout

Purpose: Defines the maximum timeout that TCP will allow between retries of a transmission in a TCP/IP direct connect network before it gives up. For example, 20 means that the timeout between retries is never longer than 20 seconds. Intermec has determined that the optimum setting is 20 seconds.

Syntax: NH*data*

Acceptable values for *data* are:

0	No timeout
1-128	Transmit timeout in seconds

Default: 20 seconds

Scan: To set the default TCP/IP Maximum Transmit Timeout, scan this bar code:

Default TCP/IP Maximum Transmit Timeout

$+NH20

Or: To set the TCP/IP maximum transmit timeout:

1. Scan this bar code:

   Enter Accumulate Mode / Set TCP/IP Maximum Transmit Timeout

   +/$+NH

2. Scan a numeric value for *data* from these bar codes:

0 *1*

2 *3*

4 *5*

6 *7*

8 *9*

3. Scan this bar code:

Exit Accumulate Mode

-/

Terminal IP Address

Purpose: Defines the IP address assigned to the T2425 in your 2.4 GHz RF network. An IP address is a unique network level address you assign to each device in a TCP/IP network. The IP address you set on the T2425 must match the address that is set on the DCS 300 or host computer.

Syntax: ND*n.n.n.n*

where each *n* address segment is a number from 0 to 255. The terminal IP address field consists of four separate numbers, each separated by a period.

Note: *The RF network cannot be activated if the first address segment in the IP address is set to 0, 127, or a number greater than 223.*

Default: 0.0.0.0

Scan: To set the default terminal IP address, scan this bar code:

Default Terminal IP Address

$+ND0.0.0.0

Or: To set the terminal IP address:

1. Scan this bar code:

   Enter Accumulate Mode / Set Terminal IP Address

   +/$+ND

2. Scan a numeric value from 0 to 255 to set an *n* field of the terminal IP address from these bar codes.

   0 *1*

   2 *3*

   4 *5*

6

7

8

9

3. Scan this bar code:

. (Period)

.

4. Repeat Steps 2 and 3 to set the next three numbers in the terminal IP address field. After you scan the last address segment, go to Step 5. Do **not** scan the period after the last address segment.
5. Scan this bar code:

Exit Accumulate Mode

-/

Time and Date

Purpose: Sets the time and date on the terminal.

Syntax: DB*data*

Acceptable values for *data* are 12 digits corresponding to:

yy	00-99	Year
mm	01-12	Month of the year
dd	01-31	Day of the month
hh	00-23	Hour
mm	00-59	Minutes
ss	00-59	Seconds

Year values (*yy*) from 00 to 95 are interpreted as 2000 through 2095. Year values from 96 to 99 are interpreted as 1996 through 1999.

Default: 960101120000

Scan: To set the time and date:

1. Scan this bar code:

Enter Accumulate Mode / Set Time and Date

+/$+DB

2. Scan a numeric value for each digit from these bar codes:

0

1

2

3

4

5

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Time in Seconds

Purpose: If you enable the Append Time command, you can enable the Time in Seconds command to append the seconds to each bar code label that is scanned on the terminal. To append the time in hours and minutes, disable the Time in Seconds command.

Syntax: DA*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Default: Disabled

Scan: One of these bar codes:

Disable Time in Seconds

$+DA0

Enable Time in Seconds

$+DA1

Timeout Delay

Purpose: If handshaking is enabled, the terminal expects a response to each message that is sent to the host through the serial port. The timeout delay is the amount of time the terminal waits to receive a response. When the timeout expires, the terminal tries sending the message again. If no response is received after the terminal tries to send the message three times, a timeout error occurs. In polling mode D, the terminal sends another poll sequence when it resends the message.

Note: *Before you can enable Timeout Delay, you must configure the EOM and Handshake commands.*

Syntax: YE*n.data*

where *n* is:

1 COM1 port
3 COM3 port
4 COM4 port

Acceptable values for *data* are:

0 5 ms
1 100 ms
2 500 ms
3 2 sec
4 10 sec
5 20 sec
6 40 sec
7 60 sec

Default: 10 seconds

Scan: To set the default timeout delay, scan one of these bar codes:

Timeout Delay 10 sec for COM1
$+YE1.4

Timeout Delay 10 sec for COM1
$+YE3.4

Timeout Delay 10 sec for COM4
$+YE4.4

Or: To set the timeout delay for one serial port:

1. Scan this bar code:

   Enter Accumulate Mode / Set Timeout Delay
   +/$+YE

2. Scan the serial port from these bar codes:

   COM1
   1.

   COM3
   3.

   COM4
   4.

3. Scan the timeout delay from these bar codes:

   Timeout Delay 5 ms
   0

   Timeout Delay 100 ms
   1

   Timeout Delay 500 ms
   2

   Timeout Delay 2 sec
   3

   Timeout Delay 10 sec
   4

   Timeout Delay 20 sec
   5

   Timeout Delay 40 sec
   6

   Timeout Delay 60 sec
   7

4. Scan this bar code:

   Exit Accumulate Mode
   -/

5. Repeat Steps 1 through 4 to set the timeout delay for another serial port.

Timeout Delay (continued)

Notes: For COM1 only. To provide compatibility with earlier TRAKKER Antares firmware versions, you can also use this syntax:

IE*data*

where *data* is value from 0 to 7.

UPC/EAN

Purpose: Enables or disables the decoding of Universal Product Code (UPC)/European Article Numbering (EAN) symbology. UPC/EAN are fixed length, numeric, continuous symbologies that use four element widths. A terminal that is configured to decode EAN bar codes can decode UPC, but the reverse is not true. UPC code is a subset of EAN code.

To define the UPC/EAN symbology, you set up to seven digits. The fifth, sixth, and seventh digits are optional. To set the sixth digit, you must set the fifth digit. To set the seventh digit, you must set all seven digits.

Syntax: CE*data*

where *data* must be 4 to 7 digits selected from this list:

First digit:	0	UPC-A/EAN-13 disabled
	1	UPC-A/EAN-13 enabled
	2	UPC-A only enabled
Second digit:	0	UPC-E disabled
	1	UPC-E enabled
Third digit:	0	EAN-8 disabled
	1	EAN-8 enabled
Fourth digit:	0	Supplementals are not allowed
	1	Supplementals are allowed
Fifth digit:	0	Discard check digit
	1	Transmit check digit
Sixth digit:	0	Discard number system digit
	1	Transmit number system digit
Seventh digit:	0	Discard the leading zero for UPC-A
	1	Retain the leading zero for UPC-A

Default: 1111111

First digit:	UPC-A/EAN-13 enabled
Second digit:	UPC-E enabled
Third digit:	EAN-8 enabled
Fourth digit:	Supplementals allowed
Fifth digit:	Transmit check digit
Sixth digit:	Transmit number system digit
Seventh digit:	Retain leading zero for UPC-A

Scan: To disable UPC/EAN, scan this bar code:

Disable UPC/EAN

$+CE0000000

Or: To enable UPC/EAN:

1. Scan this bar code:

   Enter Accumulate Mode / Enable UPC/EAN

   +/$+CE

2. Scan one of these bar codes to set the first digit:

   Disable UPC/EAN-13

   0

   Enable UPC/EAN-13

   1

   Enable UPC-A Only

   2

3. Scan one of these bar codes to set the second digit:

   Disable UPC-E

   0

   Enable UPC-E

   1

4. Scan one of these bar codes to set the third digit:

   Disable EAN-8

   0

   Enable EAN-8

   1

UPC/EAN (continued)

5. Scan one of these bar codes to set the fourth digit:

Supplementals Not Allowed	Supplementals Allowed
0	*1*

6. (Optional) Scan one of these bar codes to set the fifth digit:

Discard Check Digit	Transmit Check Digit
0	*1*

7. (Optional) Scan one of these bar codes to set the sixth digit:

Discard Number System Digit	Transmit Number System Digit
0	*1*

Note: *If you discard the number system digit, one leading digit is discarded from UPC-A, UPC-E, and EAN-8, and two leading digits are discarded from EAN-13.*

8. (Optional) Scan one of these bar codes to set the seventh digit:

Discard Leading Zero for UPC-A	Transmit Leading Zero for UPC-A
0	*1*

Note: *This option applies only when you enable UPC-A/EAN-13.*

9. Scan this bar code:

Exit Accumulate Mode

-/

A

Terminal Specifications

This appendix lists the terminal's physical and environmental specifications, lists the default configuration, and provides a configuration command reference list in alphabetical order by command syntax.

Physical and Environmental Specifications

This section lists the physical and environmental specifications for the TRAKKER Antares 2420 and 2425 terminals.

Note: *For programming and file system specifications, see Chapter 5, "Using Custom Applications."*

Terminal Dimensions

Length:	10.6 in (26.9 cm)
Height:	2.8 in (7.1 cm) at scan module 2.3 in (5.8 cm) at grip
Width:	3.2 in (8.1 cm) at scan module 2.5 in (6.35 cm) at grip
Weight:	
T2420	22 oz (623.7 g)
T2425	27 oz (765.45 g)

Note: *The weight includes the main battery pack and the backup battery.*

Power Specifications

Operating	Rechargeable lithium-ion 1350 mAh battery pack
Memory Backup	Rechargeable NiCad 110 mAh battery

Electrical Specifications

Electrical Rating	⎓ 7,2V 500mA

Temperature Specifications

You need to operate and store the terminal within the temperature ranges listed in this table.

Note: *For information about using the terminal in cold temperature environments, see "Guidelines for Managing Batteries" in Chapter 6.*

Type of Operation	Fahrenheit Temperature Range	Celsius Temperature Range
Charging the battery pack	+32°F to +104°F	0°C to +40°C
Operating the terminal	-4°F to +122°F	-20°C to +50°C
Storing the terminal (with or without batteries installed)	-4°F to +140°F	-20°C to +60°C

Relative Humidity Specifications

0% to 95% noncondensing humidity

Screen

- CGA compatible
- 16 lines x 20 columns (128 x 160 dot matrix), backlit LCD
- 25 lines by 80 columns, virtual display with viewport feature

Keypad Options

- Full alphanumeric keypad with 56 keys, available as an English keypad or a multilingual European language keypad
- Terminal emulation keypads for IBM 3270, IBM 5250, and VT/ANSI

  Note: *Terminal emulation keypads are available only in English. However, TE applications can display characters in the Western European languages. For help, see the* TRAKKER Antares Terminal Emulation User's Guide.

Application Options

- Programmable terminal
- IBM 3270 terminal emulation
- IBM 5250 terminal emulation
- VT100/220/320 and ANSI terminal emulation

Memory

- 2MB programmable flash memory, 750K available
- 1MB battery-backed RAM, 512K available
- (Option) 4MB flash memory (additional 2MB flash for double-byte fonts or drive D)
- (T2420 option) 2MB or 4MB extended storage drive

Radio Frequency Communications

- 2.4 GHz (to 2.4835 GHz) radio
- Frequency hopping spread spectrum radio
- 100 mW maximum output power
- 1.6 Mbits per second data speed
- Coverage ≥ 240 feet (80 meters)

RF Network Support Options

- Connectivity to a host on an Ethernet, token ring, twinaxial, coaxial, or SDLC network through an access point and DCS 300 using UDP Plus
- Connectivity to a host on an Ethernet or token ring network through an access point using TCP/IP

Serial Communications

- Optical serial communications port interface
- RS-232C, up to 38400 baud
- XMODEM protocol for data transfer
- Supports Configurable Serial Protocol and XON/XOFF

Cables for Serial Communications

To connect the terminal to a host computer or other device, use these cables with the TRAKKER Antares Optical Link Adapter or the TRAKKER Antares TD2400 Communications Dock.

Cable	PC Connector	Part Number
5-wire, null modem	9-pin	059167
3-wire, null modem	25-pin	047569

Pin Assignments for COM1

You should use a PC/AT compatible 8-pin D-Sub connector for the RS-232 serial cable.

Pin	Signal	Direction From Terminal
1	Carrier Detect (CD)	Incoming
2	Received Data (RX)	Incoming
3	Transmitted Data (TX)	Outgoing
4	Data Terminal Ready (DTR)	Outgoing
5	Ground (GND)	
6	Data Set Ready (DSR)	Incoming
7	Request to Send (RTS)	Outgoing
8	Clear to Send (CTS)	Incoming
9	Not Supported (NC)	Incoming

Modem Communications

- Direct RJ11 phone connection, up to 33600 baud
- Supports Configurable Serial Protocol
- XMODEM or YMODEM protocol for data transfer

Bar Code Symbologies

- Codabar
- Code One
- Code 11
- Code 16K
- Code 2 of 5
- Code 39
- Code 49
- Code 93
- Code 128
- Interleaved 2 of 5
- MSI
- PDF 417
- Plessey
- UPC/EAN

Scan Module Options

There are five scan module accessory options:

- Standard range scan module with integrated visible laser diode (670 nm)
- Long range scan module with integrated visible laser diode (650 nm)
- High visibility scan module
- High density scan module
- Module for cabled scanners

Standard Range Scan Module Optical Parameters

Bar Code Specification	Depth of Field / Scanning Range	
5.0 mil code	5 to 7 inches	12.7 to 17.8 cm
7.5 mil code	5 to 11 inches	12.7 to 27.9 cm
10 mil code	4 to 15 inches	10.2 to 38.1 cm
15 mil code	4 to 21 inches	10.2 to 53.3 cm
20 mil code	4 to 24 inches	10.2 to 61 cm
40 mil code	5 to 28 inches	12.7 to 71.1 cm
55 mil code	6 to 30 inches	15.2 to 76.2 cm
55 mil code, retroreflective	2 to 7 feet	61 cm to 2.1 m
100 mil code, retroreflective	3 to 13 feet	91.4 cm to 3.96 m

Long Range Scan Module Optical Parameters

Bar Code Specification	Depth of Field/Scanning Range	
10 mil code	11.6 to 19.6 inches	29.5 to 49.8 cm
15 mil code	8.6 to 33.6 inches	21.8 to 85.3 cm
20 mil code	8.6 to 38.6 inches	21.8 to 98.0 cm
40 mil code	9.6* inches to 6.3 feet	24.4* cm to 1.92 m
55 mil code	9.6* inches to 6.7 feet	24.4* cm to 2.04 m
70 mil code, retroreflective	6.3 to 13.5 feet	1.92 to 4.10 m
100 mil code, retroreflective	7 to 17.5 feet	2.12 to 5.32 m

**Near fields are governed by the width of the bar code. This number is based on a single digit Code 39 label.*

High Visibility Scan Module Optical Parameters

Bar Code Specification	Depth of Field/Scanning Range	
5 mil code	3.5 to 5.0 inches	8.8 to 12.5 cm
7.5 mil code	2.5 to 8.0 inches	6.2 to 20.0 cm
10 mil code	2.4 to 9.6 inches	6.0 to 24.0 cm
15 mil code	2.1 to 14.6 inches	5.3 to 36.5 cm
20 mil code	2.6 to 19.6 inches	6.5 to 49.0 cm
40 mil code	4.6 to 31.6 inches	11.5 to 79.0 cm
55 mil code	7.1 to 35.6 inches	17.7 to 89.0 cm

High Density Scan Module Optical Parameters

Bar Code Specification	Depth of Field/Scanning Range	
2 mil code	1.5 to 2.4 inches	3.9 to 6.1 cm
3 mil code	2.1 to 3.3 inches	5.3 to 8.5 cm
4 mil code	2.3 to 4.0 inches	5.8 to 10.2 cm
5 mil code	2.1 to 5.3 inches	5.3 to 13.5 cm
7.5 mil code	2.1 to 5.3 inches	5.3 to 13.6 cm
13 mil code	2.1 to 6.4 inches	5.3 to 16.3 cm

Input Devices for the Module for Cabled Scanners

You can attach these input devices to the module for cabled scanners:

- Intermec 146X CCD scanners
- Intermec 151X, 1545, and 155X laser scanners
- Intermec 126X, 127X, and 128X wands
- Tethered long range scanner
- Compatible Symbol scanners (with reverse polarity enabled)

Default Configuration

The next tables show the terminal's default configuration. You can use the TRAKKER Antares 2400 Menu System to set the terminal to the default configuration. For help, see "Restoring the Terminal's Default Configuration" in Chapter 3.

Default Configuration for Bar Code Symbologies

Parameter	Default
Codabar	Disabled
Code 11	Disabled
Code 16K	Disabled
Code 2 of 5	Disabled
Code 39	Enabled, full ASCII Code 39 enabled with no check digit
Code 49	Disabled
Code 93	Disabled
Code 128	Enabled, standard
Interleaved 2 of 5	Disabled
ISBT Code 128	Enabled, symbology ID disabled, concatenation disabled
MSI	Disabled
Plessey	Disabled
UPC/EAN	Enabled, UPC-A/EAN-13 enabled, UPC-E and EAN-8 enabled, supplementals allowed, transmit check digit, transmit number system digit, and retain leading zero for UPC-A

Default Configuration for Operations

Parameter	Default
Append Time	Disabled
Automatic Shutoff	Disabled
Beep Volume	Very Loud
Command Processing	All reader commands enabled
Decode Security	Moderate
Display Backlight Timeout	10 seconds
Display Contrast	3 (maximum contrast)
Display Font Type	8x8 font (8 pixels wide by 8 pixels high)
Display Row Spacing	0 (one scan line)
Display Video Mode	Original
Flash Memory Configuration	Configure for double-byte fonts
Keypad Caps Lock	Caps lock off
Keypad Clicker	Enabled
Keypad Type	Hardware default
Postamble	No characters (disabled)
Preamble	No characters (disabled)
RAM Drive Size	No RAM drive
Resume Execution	Allowed
Scan Ahead	Disabled
Scanner Mode	One-Shot mode
Scanner Redundancy	Normal
Scanner Selection	All compatible scanners (see Note below)
Scanner Timeout	Disabled (no timeout)
Scanner Trigger	Level triggering
Suspend/Resume Control	Enabled
Time and Date	960101120000
Time in Seconds	Disabled

Note: *The Scanner Selection command is only used when you have a module for cabled scanners, a long range scan module, or a high density scan module installed.*

Default Configuration for RF Network Communications (T2425 Only)

Parameter	Default
Acknowledgement Delay Lower Limit	300 ms
Acknowledgement Delay Upper Limit	5000 ms
Controller Connect Check Receive Timer	60 seconds
Controller Connect Check Send Timer	35 seconds
Controller IP Address	0.0.0.0
Default Router	0.0.0.0
Dynamic Host Configuration Protocol	Disabled
Host IP Address	0.0.0.0
Maximum Retries	7
Network Activate	Disabled
Network Loopback	Disabled
Network Port	23 (Telnet) for a TCP/IP network 5555 for a UDP Plus network
RF Domain	0
RF Inactivity Timeout	5 seconds
RF Roaming Flag	Allowed
RF Security Identification (ID)	No characters
RF Transmit Mode	BFSK
RF Wakeup On Broadcast	Disabled
Subnet Mask	255.255.255.0
TCP Maximum Retries	12
TCP/IP Maximum Transmit Timeout	20 seconds
Terminal IP Address	0.0.0.0

Default Configuration for Serial (RS-232) Network Communications

Parameter	Default
Baud Rate	19200
Configuration Commands Via Serial Port	Enabled without TMF
Data Bits	7
End of Message (EOM)	\x03 (hexadecimal value for ETX)
Flow Control	None
Handshake	Disabled
LRC (Longitudinal Redundancy Check)	Disabled
Modem Dial Sequence	None
Modem Initialization Sequence	Auto rate
Parity	Even
Poll (Polling)	Disabled
Serial Port Protocol	Configurable
Start of Message (SOM)	\x02 (hexadecimal value for STX)
Stop Bits	1
Timeout Delay	10 seconds

Configuration Commands by Syntax

The next table lists all of the configuration commands that are available on the TRAKKER Antares 2420 and 2425 terminals. The configuration commands are listed in alphabetic order by syntax.

Syntax	Command
AD*data*	Preamble
AE*data*	Postamble
BV*data*	Beep Volume
CA*data*	Interleaved 2 of 5 Code (I 2 of 5)
CB*data*	Code 39
CC*data*	Code 2 of 5 (2 of 5)
CD*data*	Codabar
CE*data*	UPC/EAN
CF*data*	Code 93
CG*data*	Code 11
CH*data*	Code 128
CH8*data*	ISBT Code 128
CI*data*	Plessey
CJ*data*	Code 49
CK*data*	Code 49 Function Code 1
CL*data*	Code 49 Function Code 2
CM*data*	Code 49 Function Code 3
CN*data*	MSI
CP*data*	Code 16K
CS*data*	Decode Security
DA*data*	Time in Seconds
DB*data*	Time and Date
DC*data*	Command Processing
DE*data*	Append Time
DF*data*	Display Backlight Timeout
DJ*data*	Display Contrast
DL*data*	Display Row Spacing
DN*data*	Display Video Mode

Configuration Commands by Syntax (continued)

Syntax	Command
DT*data*	Display Font Type
EF*data*	Suspend/Resume Control
ER*data*	Resume Execution
EZ*data*	Automatic Shutoff
FFdata	Flash Memory Configuration
FR*data*	RAM Drive Size
KA*data*	Keypad Caps Lock
KC*data*	Keypad Clicker
KT*data*	Keypad Type
NA*data*	Network Activate
NC*data*	Controller IP Address (UDP Plus network)
NC*data*	Host IP Address (TCP/IP network)
ND*data*	Terminal IP Address
NG*data*	Network Port
NH*data*	TCP/IP Maximum Transmit Timeout
NI*data*	Dynamic Host Configuration Protocol (DHCP)
NJ*data*	TCP Maximum Retries
NL*data*	Network Loopback
NP*data*	Controller Connect Check Receive Timer
NQ*data*	Controller Connect Check Send Timer
NR*data*	Maximum Retries
NS*data*	Subnet Mask
NU*data*	Acknowledgement Delay Upper Limit
NV*data*	Acknowledgement Delay Lower Limit
NX*data*	Default Router
RB*data*	RF Wakeup On Broadcast
RR*data*	RF Roaming Flag
RS*data*	RF Security Identification
RT*data*	RF Transmit Mode
RW*data*	RF Domain

Configuration Commands by Syntax (continued)

Syntax	Command
RY*data*	RF Inactivity Timeout
SA*data*	Scanner Timeout
SB*data*	Scanner Mode
SC*data*	Scanner Trigger
SD*data*	Scan Ahead
SR*data*	Scanner Redundancy
SS*data*	Scanner Selection
YA*n.data*	Baud Rate
YB*n.data*	Parity
YC*n.data*	Stop Bits
YD*n.data*	Modem Dial Sequence
YE*n.data*	Timeout Delay
YF*n.data*	LRC (Longitudinal Redundancy Check)
YI*n.data*	Data Bits
YJ*n.data*	Handshake (also know as AFF)
YL*n.data*	Flow Control
YM*n.data*	Modem Initialization Sequence
YR*n.data*	Poll (Polling)
YT*n.data*	Configuration Commands Via Serial Port
YU*n.data*	Serial Port Protocol
YY*n.data*	Start of Message (SOM)
YZ*n.data*	End of Message (EOM)

B

Full ASCII Charts

This appendix contains a full ASCII chart and charts of Code 39 bar code labels that you can scan with the TRAKKER Antares 2420 and 2425 terminals.

Full ASCII Table

This table lists the ASCII characters and their binary, hexadecimal, and Code 39 equivalents.

Full ASCII Table

Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]	Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]
00000000	00	00	%U	NUL	00100000	20	32	SP	SP[3]
00000001	01	01	$A	SOH	00100001	21	33	/A	!
00000010	02	02	$B	STX	00100010	22	34	/B	"
00000011	03	03	$C	ETX	00100011	23	35	/C	#
00000100	04	04	$D	EOT	00100100	24	36	/D	$
00000101	05	05	$E	ENQ	00100101	25	37	/E	%
00000110	06	06	$F	ACK	00100110	26	38	/F	&
00000111	07	07	$G	BEL	00100111	27	39	/G	'
00001000	08	08	$H	BS	00101000	28	40	/H	(
00001001	09	09	$I	HT	00101001	29	41	/I	)
00001010	0A	10	$J	LF	00101010	2A	42	/J	*
00001011	0B	11	$K	VT	00101011	2B	43	/K	+
00001100	0C	12	$L	FF	00101100	2C	44	/L	,
00001101	0D	13	$M	CR	00101101	2D	45	/M	-
00001110	0E	14	$N	SO	00101110	2E	46	/N	.
00001111	0F	15	$O	SI	00101111	2F	47	/O	/
00010000	10	16	$P	DLE	00110000	30	48	/P[4]	0
00010001	11	17	$Q	DC1	00110001	31	49	/Q	1
00010010	12	18	$R	DC2	00110010	32	50	/R	2
00010011	13	19	$S	DC3	00110011	33	51	/S	3
00010100	14	20	$T	DC4	00110100	34	52	/T	4
00010101	15	21	$U	NAK	00110101	35	53	/U	5
00010110	16	22	$V	SYN	00110110	36	54	/V	6
00010111	17	23	$W	ETB	00110111	37	55	/W	7
00011000	18	24	$X	CAN	00111000	38	56	/X	8
00011001	19	25	$Y	EM	00111001	39	57	/Y	9
00011010	1A	26	$Z	SUB	00111010	3A	58	/Z	:
00011011	1B	27	%A	ESC	00111011	3B	59	%F	;
00011100	1C	28	%B	FS	00111100	3C	60	%G	<
00011101	1D	29	%C	GS	00111101	3D	61	%H	=
00011110	1E	30	%D	RS	00111110	3E	62	%I	>
00011111	1F	31	%E	US	00111111	3F	63	%J	?

Full ASCII Table (continued)

Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]	Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]
01000000	40	64	%V	@	01100000	60	96	%W	`
01000001	41	65	A	A	01100001	61	97	+A	a
01000010	42	66	B	B	01100010	62	98	+B	b
01000011	43	67	C	C	01100011	63	99	+C	c
01000100	44	68	D	D	01100100	64	100	+D	d
01000101	45	69	E	E	01100101	65	101	+E	e
01000110	46	70	F	F	01100110	66	102	+F	f
01000111	47	71	G	G	01100111	67	103	+G	g
01001000	48	72	H	H	01101000	68	104	+H	h
01001001	49	73	I	I	01101001	69	105	+I	i
01001010	4A	74	J	J	01101010	6A	106	+J	j
01001011	4B	75	K	K	01101011	6B	107	+K	k
01001100	4C	76	L	L	01101100	6C	108	+L	l
01001101	4D	77	M	M	01101101	6D	109	+M	m
01001110	4E	78	N	N	01101110	6E	110	+N	n
01001111	4F	79	O	O	01101111	6F	111	+O	o
01010000	50	80	P	P	01110000	70	112	+P	p
01010001	51	81	Q	Q	01110001	71	113	+Q	q
01010010	52	82	R	R	01110010	72	114	+R	r
01010011	53	83	S	S	01110011	73	115	+S	s
01010100	54	84	T	T	01110100	74	116	+T	t
01010101	55	85	U	U	01110101	75	117	+U	u
01010110	56	86	V	V	01110110	76	118	+V	v
01010111	57	87	W	W	01110111	77	119	+W	w
01011000	58	88	X	X	01111000	78	120	+X	x
01011001	59	89	Y	Y	01111001	79	121	+Y	y
01011010	5A	90	Z	Z	01111010	7A	122	+Z	z
01011011	5B	91	%K	[	01111011	7B	123	%P	{
01011100	5C	92	%L	\	01111100	7C	124	%Q	|
01011101	5D	93	%M	]	01111101	7D	125	%R	}
01011110	5E	94	%N	^	01111110	7E	126	%S	~
01011111	5F	95	%O	_	01111111	7F	127	%T[5]	n[6]

Notes for the Full ASCII Table

0	Bit positions are 76543210.
1	This column lists the hexadecimal value.
2	This column lists the ASCII character.
3	SP is the SPACE character.
4	The Code 39 characters /P through /Y may be interchanged with the numbers 0 through 9.
5	%T may be interchanged with %X or %Y or %Z.
6	n is the Delete character.

Full ASCII Control Characters Table

Control Character	Definition	Control Character	Definition
NUL	Null or all zeroes	DC1	Device Control 1 (XON)
SOH	Start of Heading	DC2	Device Control 2
STX	Start of Text	DC3	Device Control 3 (XOFF)
ETX	End of Text	DC4	Device Control
EOT	End of Transmission	NAK	Negative Acknowledge
ENQ	Enquiry	SYN	Synchronous Idle
ACK	Acknowledgment	ETB	End Transmission Block
BEL	Bell	CAN	Cancel
BS	Backspace	EM	End of Medium
HT	Horizontal Tab	SUB	Substitute
LF	Line Feed	ESC	Escape
VT	Vertical Tab	FS	File Separator
FF	Form Feed	GS	Group Separator
CR	Carriage Return	RS	Record Separator
SO	Shift Out	US	Unit Separator
SI	Shift In	SP	Space
DLE	Data Link Escape	DEL	Delete

Full ASCII Bar Code Chart

The charts in this section list the Code 39 bar code label for each ASCII character. To use these bar code labels, you must configure the TRAKKER Antares 2420 or 2425 terminal to use Code 39 in Full ASCII mode. For help, see "Code 39" in Chapter 9.

Control Characters

NUL
%U

SOH
$A

STX
$B

ETX
$C

EOT
$D

ENQ
$E

ACK
$F

BEL
$G

BS
$H

HT
$I

LF
$J

VT
$K

FF
$L

CR
$M

SO
$N

SI
$O

DLE
$P

DC1
$Q

DC2
$R

DC3
$S

DC4
$T

NAK
$U

SYN
$V

ETB
$W

Control Characters (continued)

CAN *$X*	EM *$Y*	SUB *$Z*
ESC *%A*	FS *%B*	GS *%C*
RS *%D*	US *%E*	DEL *%T*

Symbols and Punctuation Marks

! (exclamation point) */A*	" (quotation marks) */B*	# */C*
$ */D*	% */E*	& */F*
' (apostrophe) */G*	(*/H*	) */I*
* (asterisk) */J*	+ */K*	- (dash) */M*
/ */O*	= *%H*	. (period) */N*
, (comma) */L*	: (colon) */Z*	; (semicolon) *%F*

Symbols and Punctuation Marks (continued)

? *%J*	< *%G*	> *%I*
@ *%V*	[*%K*	] *%M*
~ (tilde) *%S*	^ *%N*	_ (underline) *%O*
\ *%L*	` (left single quote) *%W*	¦ (pipe) *%Q*
{ *%P*	} *%R*	Space * *

Numbers

0 *0*	1 *1*	2 *2*
3 *3*	4 *4*	5 *5*
6 *6*	7 *7*	8 *8*
9 *9*		

Uppercase Letters

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*	

Lowercase Letters

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

C

International Character Support

This appendix lists the complete set of English and Western European characters you can display on a TRAKKER Antares 2420 or 2425 terminal.

TRAKKER Antares Terminal Font Set

The TRAKKER Antares terminal uses 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 keypad, you can also enter many of the characters. For help and a complete keypad chart, see “Using the Keypad” in Chapter 2.

The next table lists the characters that you can display on the terminal and lists the decimal and hexadecimal index values.

Note: *The terminal character set is similar to Microsoft’s DOS Code Page 850 with the exception of decimal characters 1 through 6 and 10 through 13. These characters were replaced to provide additional line draw capability.*

Character	Decimal	Hexadecimal
Space	0	00
╧	1	01
╨	2	02
╤	3	03
╥	4	04
╙	5	05
╘	6	06
•	7	07
◘	8	08
○	9	09
◙	10	0A
╒	11	0B
╓	12	0C
╫	13	0D
╪	14	0E
☼	15	0F
►	16	10

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
◄	17	11
↕	18	12
‼	19	13
¶	20	14
§	21	15
▬	22	16
↨	23	17
↑	24	18
↓	25	19
→	26	1A
←	27	1B
∟	28	1C
↔	29	1D
▲	30	1E
▼	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

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
. (period)	46	2E
/	47	2F
0	48	30
1	49	31
2	50	32
3	51	33
4	52	34
5	53	35
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

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
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
[	91	5B
\	92	5C
]	93	5D
^	94	5E
_ (underline)	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

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
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
| (solid pipe)	124	7C
}	125	7D
~	126	7E
⌂	127	7F
Ç	128	80
ü	129	81
é	130	82
â	131	83
ä	132	84

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
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
ø	155	9B
£	156	9C
Ø	157	9D
×	158	9E
ƒ	159	9F
á	160	A0
í	161	A1

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
ó	162	A2
ú	163	A3
ñ	164	A4
Ñ	165	A5
ª	166	A6
º	167	A7
¿	168	A8
®	169	A9
¬ (not symbol)	170	AA
½	171	AB
¼	172	AC
¡	173	AD
«	174	AE
»	175	AF
░	176	B0
▒	177	B1
▓	178	B2
│	179	B3
┤	180	B4
Á	181	B5
Â	182	B6
À	183	B7
©	184	B8
╣	185	B9
║	186	BA
╗	187	BB
╝	188	BC
¢	189	BD
¥	190	BE

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
┐	191	BF
└	192	C0
┴	193	C1
┬	194	C2
├	195	C3
─	196	C4
┼	197	C5
ã	198	C6
Ã	199	C7
╚	200	C8
╔	201	C9
╩	202	CA
╦	203	CB
╠	204	CC
═	205	CD
╬	206	CE
¤	207	CF
ð	208	D0
Ð	209	D1
Ê	210	D2
Ë	211	D3
È	212	D4
ı	213	D5
Í	214	D6
Î	215	D7
Ï	216	D8
┘	217	D9
┌	218	DA
█	219	DB

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
■	220	DC
¦ (broken pipe)	221	DD
Ì	222	DE
■	223	DF
Ó	224	E0
β	225	E1
Ô	226	E2
Ò	227	E3
õ	228	E4
Õ	229	E5
μ	230	E6
Þ	231	E7
þ	232	E8
Ú	233	E9
Û	234	EA
Ù	235	EB
ý	236	EC
Ý	237	ED
¯	238	EE
´	239	EF
-	240	F0
±	241	F1
=	242	F2
¾	243	F3
¶	244	F4
§	245	F5
÷	246	F6
¸	247	F7
° (degree)	248	F8

English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
¨	249	F9
• (dot)	250	FA
¹ (superscript)	251	FB
³ (superscript)	252	FC
² (superscript)	253	FD
■	254	FE
Space	255	FF

D

Using the Default Applications

This appendix defines the APPTSK.BIN and EM9560.BIN applications that are shipped on the TRAKKER Antares 2420 and 2425 terminals and explains how to use each application.

About the Applications Shipped on the Terminal

The TRAKKER Antares 2420 and 2425 terminals ship loaded with at least these two applications:

- APPTSK.BIN
- EM9560.BIN

Both applications are stored on drive C. In addition to these two applications, your terminal may have a 3270, 5250, or VT/ANSI terminal emulation application stored on drive C. This section explains how to use the APPTSK.BIN and EM9560.BIN applications. For help with your terminal emulation applications, see the *TRAKKER Antares Terminal Emulation User's Guide*.

Defining APPTSK.BIN and EM9560.BIN

You can run and use APPTSK.BIN or EM9560.BIN at any time. The two applications are defined as follows:

APPTSK.BIN This application is the default application on all terminals. In some error conditions or if you exit an application, the terminal resets and runs APPTSK.BIN. You can use APPTSK.BIN to scan, enter, transmit, and display data.

EM9560.BIN This application emulates a subset of the functionality available on the Intermec 95XX terminals, such as the 9512 and 9560. You can use EM9560.BIN to scan, enter, transmit, and display data.

APPTSK.BIN and EM9560.BIN include these features:

- Works with any protocol that is supported on the terminal. Both the terminal and the device you are communicating with must use the same protocol (serial or RF) and parameter settings.
- Displays the time and date, which can be toggled on and off.
- Sends scanned or keyboard data out all serial or RF ports.
- Buffers the keyboard data until you press Enter.
- Receives data from any serial or RF port, displays the data on the terminal screen, and parses the data for commands.
- Receives data through any serial port and transmits it out the RF port.
- Receives data through the RF port and transmits it out all serial ports.

The main difference between the two applications is that you can use the EM9560.BIN application to emulate specific functions of the 95XXs.

Defining the Emulation Features of EM9560.BIN

The T242X is a programmable terminal that runs C/C++ applications. With the EM9560.BIN application, you can use the terminal as a remote input/output terminal in which all prompts and commands are controlled by the host computer. With this application, the terminal is similar to a 95XX in Data Entry mode with no application running.

Note: *For the 95XXs, Data Entry mode with no application running is also referred to as an unprogrammed state or 95XX dumb terminal mode.*

The EM9560.BIN application lets you use the terminal to emulate these specific 95XX features:

- An Enter key without any preceding data transmits an empty data packet.
- The T242X display is similar to but not identical to the 9560 buffered display mode.
- All function keys transmit the corresponding characters `F1`, `F2`, and so on.
- When Code 128 is configured for Standard Code 128 symbology and you scan a UCC/EAN label, the terminal will discard the Function 1 characters. Although this does not meet the industry standard for Code 128, it does emulate the 95XX, which was manufactured before the current standard was established. Other Code 128 configurations work as defined in this user's manual.
- The Set Time and Date reader (data entry) command is supported. When the terminal receives a time broadcast command (/+) from the 9154 or 9161 controller, the command sets the clock on the terminal.

  Note: *With Version 5.X firmware or later, the Set Time and Date reader command is supported through the firmware and not just in the EM9560.BIN application.*

- The High Beep reader command is supported. When a backslash character (\) is sent to the terminal through any serial or network port, the terminal sounds a high beep.
- The Low Beep reader command is supported. When the BEL character is sent to the terminal through any serial or network port, the terminal sounds a low beep.
- When control codes (ANSI escape sequences) are sent to the terminal through any serial or network port, the terminal formats the display. For a list of control codes, see "Using Display Control Codes" later in this appendix.
- Preamble A, Preamble B, and Postamble C are supported through the AA, AB, and AC configuration commands or through the reader commands +., ++, and +%. For help, see "Setting Preambles and Postambles" later in this appendix.
- Full ASCII mode for Code 39 can be configured through the CB or RB configuration commands or through the reader commands +$ and -$. For help, see "Full ASCII Mode for Code 39" later in this appendix.
- The Exit Configuration Mode, Save Settings configuration command ($-) is not required, but bar code labels with this command scan correctly.

Using Display Control Codes

You can use control codes to position the cursor or to format the terminal display. The EM9560.BIN application recognizes the display control codes listed next.

Command	Control Code	Description or Action
Backspace	`BS (08 Hex)`	Moves the cursor one position to the left until the cursor reaches the first column. If the cursor is in the first column of any row except the first row, a Backspace command moves the cursor to the last column of the previous row.
Cursor Position	`ESC[`*n*`;`*v*`H`	Moves the cursor to the position specified by the *n* and *v* parameters where: *n* specifies the row or line number. *v* specifies the column number. If you enter zero or no parameter, *n* and *v* are set to one. If *n* or *v* exceeds the maximum row or column number on the display, the parameters are set to the screen's maximum.
Erase Display	`ESC[2J`	Erases the entire display and returns the cursor to the home position (row 1, column 1). This command also erases the entire virtual display image (buffer with up to four rows of the most recently displayed data).
Home	`CR (0D Hex)`	Returns the cursor to the first column of the current row.
Next Line	`LF (0A Hex)`	Moves the cursor down one row in the current column position. If the cursor is already in the last row, a new line is added.
Restore Cursor Position	`ESC[u`	Restores the cursor position saved with a Save Cursor Position command. Each Restore Cursor Position command must be paired with a preceding Save Cursor Position command. If a Save Cursor Position command has not been previously entered, the cursor position will not change.
Save Cursor Position	`ESC[s`	Saves the current cursor position. Successive Save Cursor Position commands overwrite the previous position that was saved.

Setting Preambles and Postambles

With the EM9560.BIN application, you can set Preamble A, Preamble B, and Postamble C on the T242X and make the terminal compatible with the 95XXs. The preambles are prepended and the postamble is appended to the data that is transmitted through all the serial ports.

Preamble A, Preamble B, and Postamble C can each be up to 25 ASCII characters in length. If you enter a preamble or postamble command without entering data, the preamble or postamble buffer is cleared.

Syntax:	Preamble A	AA*data*	or	+.*data*
	Preamble B	AB*data*	or	++*data*
	Postamble C	AC*data*	or	+%*data*

Scan: To set the preamble or postamble using the AA, AB, or AC configuration commands:

1. Scan one of these bar code labels:

   Enter Accumulate Mode / Set Preamble A

   +/$+AA

   Enter Accumulate Mode / Set Preamble B

   +/$+AB

   Enter Accumulate Mode / Set Postamble C

   +/$+AC

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The preamble or postamble can be from 1 to 25 characters.

3. Scan this bar code:

   Exit Accumulate Mode

   -/

4. Repeat Steps 1 to 3 to set another preamble or postamble.

Or: To set the preamble or postamble using the +., ++, or +% reader commands:

1. Scan one of these bar code labels:

   Enter Accumulate Mode / Set Preamble A

   +/+.

   Enter Accumulate Mode / Set Preamble B

   +/++

   Enter Accumulate Mode / Set Postamble C

   +/+%

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The preamble or postamble can be from 1 to 25 characters.
3. Scan this bar code:

   Exit Accumulate Mode

   -/

4. Repeat Steps 1 to 3 to set another preamble or postamble.

Full ASCII Mode for Code 39

With the EM9560.BIN application, you can configure Full ASCII mode for Code 39 using any of these commands:

- Code 39 configuration command (CB)
- Full ASCII configuration command (RB)
- Enter Full ASCII Mode reader command (+$) and the Exit Full ASCII Mode reader command (-$)

The last two commands are compatible with the 95XXs. Each command is described next. For help with the Code 39 configuration command (CB), see Chapter 9, "Configuration Command Reference."

Note: *Use the CB configuration command unless your terminals need to be compatible with the 95XXs in your data collection network.*

Command: Full ASCII configuration command (RB)

Purpose: Configures the terminal to use Code 39 Full ASCII mode (enabled) or Code 39 Non-Full ASCII mode (disabled). For a list of ASCII characters, see the "Full ASCII Table" in Appendix B.

Syntax: RB*data*

Acceptable values for *data* are:

0 Disabled
1 Enabled

Scan: One of these bar code labels:

Disable Full ASCII Mode

$+RB0

Enable Full ASCII Mode

$+RB1

Command: Enter Full ASCII Mode reader command

Purpose: Enables Code 39 Full ASCII mode so the terminal decodes Code 39 bar code labels by using a two-character encoding scheme to extend the character set to 128 characters. For a list of ASCII characters, see the "Full ASCII Table" in Appendix B.

Syntax: +$

Scan: Full ASCII

+$

Command: Exit Full ASCII Mode reader command

Purpose: Exits Code 39 Full ASCII mode and puts the terminal in Code 39 Non-Full ASCII mode (one-character encoding scheme).

Syntax: -$

Scan: Exit Full ASCII

-$

Unsupported 95XX Features

These 95XX features are **not** supported by the EM9560.BIN application on the T242X.

- Display Setting configuration command (OD) (buffered or transparent display).
- Command Override reader (data entry) command (DLE).
- Right Host Message reader command (HT).
- Preamble A Required configuration command (OA).
- Computer Response Required Mode (CRRM) configuration command (PB), Enter CRRM reader command (./), and Exit CRRM reader command (.-).
- Resume IRL configuration command (XG).
- Separate transmit and receive EOM characters (PI and PJ). The configurable EOM (PF, YZ) is used for both transmit and receive EOM.
- Capacity reader command (%$).
- Forward and Review reader commands (%+ and %/).
- Download Program command from the 9154 or 9161 controller. Use the Transmit File reader command. For help, see Chapter 8, “Reader Command Reference.”

Note: *Although these 95XX features are* ***not*** *supported, the T242X does have many additional features (RF communications) that are not available on the 95XXs.*

Running APPTSK.BIN and EM9560.BIN

There are two ways to run APPTSK.BIN or EM9560.BIN:

- Use the Run Program reader command.
- Use the TRAKKER Antares 2400 Menu System.

The instructions in this section explain how to use the Run Program reader command. For help using the TRAKKER Antares 2400 Menu System to run an application, see Chapter 5, “Using Custom Applications.”

To run APPTSK.BIN or EM9560.BIN on the terminal

1. Scan one of these bar code labels:

   Run APPTSK.BIN

   /C:APPTSK.BIN

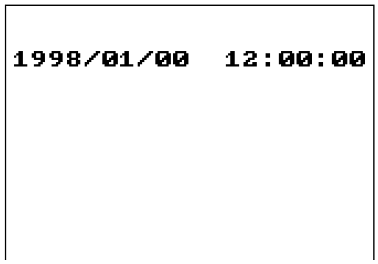
   Run EM9560.BIN

   /C:EM9560.BIN

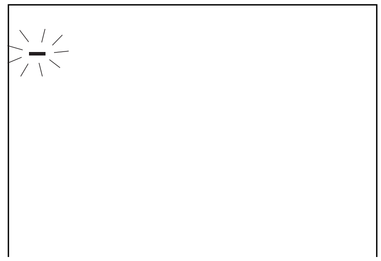
Running APPTSK.BIN and EM9560.BIN (continued)

The terminal boots, resets all firmware, and runs the application. The initial screen for the application appears. You see one of these screens:

APPTSK.BIN Screen



EM9560.BIN Screen



2. Scan this bar code label to toggle the clock display on or off.

   Toggle Clock Display

   CLOCKDISPLAY

3. Use the application to scan bar code labels, enter data through the keyboard, and transmit data. The next section lists some examples of how you can use the applications.

Example 1

Use the application to troubleshoot and test communications before loading and running your data collection application. Connect the terminal to your network. Type data ("Hello World") on the TRAKKER Antares terminal keyboard or scan a bar code label. The data is sent out all serial and network ports and should be received by the host if your terminal is installed and configured correctly. Send data from the host and verify that the data displays on the terminal screen.

Example 2

Connect a serial input device, such as a 2D scanner, to a serial port on the TRAKKER Antares terminal. Data from the input device is displayed on the terminal screen and transmitted out the network (RF) port.

Example 3

Connect the TD2400 communications dock to a serial port on the T2485. Use a T2420 to collect data. Use the TD2400 communications dock to upload data from the T2420 to the T2485. Data is transmitted to the T2485 and out the RF port to the connected network devices.

Example 4

Use the T248X as a gateway between the CrossBar network and the Ethernet or RF network. Connect the T248X as a downline device in your CrossBar network. Connect the T2480/1 with the Ethernet option to your Ethernet network, or connect the T2485/6 to your RF network. While running the APPTSK.BIN or EM9560.BIN application, you can send data from the Ethernet or RF network through the T248X to the 9154 or 9161 and vice versa.

Example 5

Connect the COM1 serial port to the COM2 serial port on a T246X or T248X terminal. Use the terminal to configure itself by typing and entering configuration commands on the keypad or keyboard.

Example 6

Connect the serial port on the T248X to the serial port on the T246X terminal. Use the T248X to configure the T246X by typing and entering configuration commands on the T248X keypad.

G

Glossary

10BaseT, 10Base2, or 10Base5

An implementation of Ethernet IEEE (Institute of Electrical and Electronic Engineers) standards to describe the primary characteristics of the cabling system. The 10 signifies 10 Mbps. Base indicates that the type of signaling used is baseband. The T at the end means that twisted-pair cable is used. The number (2, 5, or 10) at the end indicates the maximum cable length in hundreds of meters.

3270 or 5250 terminal emulation

An application that allows Intermec devices to emulate an IBM 3270 or 5250 terminal.

access point

A wireless bridge that allows RF packets to go from the Intermec 2.4 GHz RF network to the Ethernet or token ring network.

Accumulate mode

Operating mode in which the terminal stores scanned information in the terminal's data buffer until the terminal receives an Enter command.

AFF

Affirmative Acknowledge character. See handshake.

AID

Attention Identifier character. A character in a data stream indicating that the user has pressed a key, such as Enter, requesting an action by the system.

alphanumeric

Character set containing letters, numbers, and other characters, such as punctuation marks.

alphanumeric keypad

The alphanumeric keypad on the terminal has 56 keys to type alphabetic and numeric characters. Although the keypad is smaller than a desktop terminal keyboard, you use special keys on the terminal's keypad and press key combinations to access all the keys and functions.

ANSI

American National Standards Institute. A non-governmental organization responsible for establishing many standards, including a number of data communications and terminal standards.

API
Application programming interface. A well-defined interface to routines that an application can use to request and perform system-level tasks.

application
A software program or program package that makes calls to the operating system and manipulates data files allowing a user to perform a specific job.

ASCII
American Standard Code for Information Interchange. A standard 7-bit code usually transmitted with a parity bit for a total of 8 bits per character. Contrast with "EBCDIC."

ASCII control character
One of the first 32 characters (0 through 31 in decimal representation) in the ASCII character set. Each of these characters has a standard control function, such as backspace or carriage return.

audio signals
The terminal has a beeper and a clicker that produce audio signals to indicate terminal status. You can change the beep volume and enable or disable the keypad clicker with configuration commands.

Automatic mode
See Scanner mode.

automatic shutoff
A terminal configuration feature that defines the maximum time the terminal stays on when there is no activity. At automatic shutoff, the contents of terminal memory are saved and the terminal resumes when it is turned on again.

backlight
A light built into the terminal screen to make it easier to view the screen in dimly lit environments.

backup battery
See NiCad backup battery.

bandwidth
The size in hertz of the frequency range that a signal transmission occupies. Typical narrow band signals occupy a 25 KHz bandwidth. The 2.4 GHz radio frequency signal occupies a 1 MHz bandwidth.

bar code density
Number of data characters that can be represented in a linear unit of measure. Bar code density is often expressed in characters per inch.

bar code label
A label that contains a bar code symbol.

bar code symbology
A scheme for encoding data as bar code. Code 39, Codabar, UPC/EAN, and Interleaved 2 of 5 are examples of different symbologies.

battery pack
See lithium-ion battery pack.

baud rate
The number of discreet conditions or signal events per second. In RS-232 and RS-422/485 systems, baud rate is the same as bits per second (bps).

binary file
A file that contains a sequence of 8-bit data characters or executable code. Compare to ASCII text file. Binary files require special software for transmission.

boot
Usually means to invoke a bootstrap process, which involves building up a system from some simple preliminary instructions or information. A boot invokes the BIOS boot sequence, clears all memory, and performs a complete power-on self test (POST) to ensure that the hardware and peripherals are operational. A boot initializes the system hardware for use by the system firmware and loads the default configuration currently stored in flash memory.

bridge
An internetworking device that incorporates the physical and data link layers of the OSI model and allows you to connect networks or subnetworks with similar architectures.

broadcast
A type of transmission in which a message sent from the host is received by many devices on the system.

cabled scanner
A wand, laser scanner, or other device that scans bar code information. A cabled scanner is connected to a bar code reader or terminal with a cable rather than being built into (integrated in) the reader or terminal.

CCD scanner
Charge-coupled device. A CCD scanner contains no moving parts and uses a light source to illuminate the entire symbol. A symbol is scanned electronically using the digitized image of a line through the symbol provided by the linear photodiode array.

CGA
Color/graphics adapter. CGA is a video adapter board.

channel
The path for transmitting data from a device to the host computer. In RF networks, it is the frequency hopping sequence the radio card follows. The 2.4 GHz bandwidth can be divided into 15 channels.

check character
A character included within a message that performs a check to ensure the accuracy of the message.

check digit
A character included in a bar code whose value is used to do a mathematical check on the value of the decoded bar code to retain accuracy.

checksum
A calculated value that is used to test data integrity. Errors can occur when data is transmitted or when it is written to disk. One means of detecting such errors is the use of a checksum. A value is calculated for a given chunk of data by sequentially combining all the bytes of data with a series of arithmetic or logical operations. After the data is transmitted or stored, a new checksum is calculated and compared with the original one. If the checksums match, the transmission or storage was probably error free. If they do not match, an error occurred.

coaxial
A type of cable used to connect the DCS 300 directly to an IBM host. Coaxial cable consists of an outer layer of insulation, an outer conductor, another insulating layer, and a central conductor.

Codabar
A self-checking, discrete bar code symbology that has these 16 characters in its set: 0 to 9, dollar sign ($), colon (:), slash (/), period (.), plus (+), and minus (-). Codabar is commonly used in libraries, blood banks, and air-parcel express applications. The American Blood Commission (ABC) Codabar requires that you retain the start/stop code digits when processing a Codabar symbol. The maximum density for a Codabar symbol is 12.8 characters per inch.

Code 11

A very high density, discrete, numeric bar code developed by Intermec. The character set includes the numbers 0 through 9 and the dash character (-). Each character is represented by a standalone group of three bars with two included spaces. This code is not self-checking. One or two check digits provide data security. Code 11 is most extensively used in labeling telecommunications components and equipment. Its maximum density is 15 characters per inch.

Code 16K

A two-dimensional (stacked rows), ultra-high density bar code symbology. It is based on Code 128 and is used widely to label unit-dose packaging for the healthcare industry.

Code 2 of 5 (2 of 5)

A discrete, self-checking code for encoding numeric data only. The bars encode information and the spaces separate individual bars. It can achieve densities of 15 characters per inch.

Code 39

A discrete, variable length, and self-checking bar code symbology. The character set is uppercase A to Z, 0 to 9, dollar sign ($), period (.), slash (/), percent (%), space ( ), plus (+), and minus (-). Code 39 can be extended to the full 128 ASCII character set by use of a two-character encoding scheme (see full ASCII). Its maximum density is 9.8 characters per inch.

Code 49

A multirow symbology for high data density. The last character in each row is used for row checking and the last two characters of the symbol are used for overall checking. The character set includes all 128 ASCII characters. Its maximum density is 93.3 alphanumeric characters per inch or 154.3 numeric characters per inch.

Code 93

A variable length, continuous bar code symbology using four element widths. It can be used interchangeably with Code 39 when higher density printing is required. The character set is the same as Code 39. Its maximum density is 14.8 characters per inch.

Code 128

A very high density alphanumeric symbology that supports the extended ASCII character set. It is a variable length, continuous code that uses multiple element widths. Code 128's high density makes it useful when printing data in a limited space. Its maximum density is 12.1 alphanumeric characters per inch or 24.2 numeric characters per inch.

Code One
A two-dimensional matrix symbology that is useful for applications such as small parts labels that do not have sufficient space for linear bar codes. In addition to data storage and error correction symbols, each Code One symbol contains a set of horizontal lines in the center, called a finder pattern, that helps bar code scanners quickly locate and identify each symbol. Code One symbols also contain vertical reference bars to help bar code scanners locate the relative positions of each data bit.

COM port
Commonly used short form of communications port. Locations from which data can be passed into and out of the terminal. COM ports offer serial communications, which means that data is transmitted one bit at a time over a single line from one computer to another.

communications protocol
A set of rules or standards designed to enable computers to connect with each other and exchange data. An example of a communications protocol is configurable serial protocol.

configuration
The selected parameters that determine the operating characteristics of an electronic device.

configuration command
A configuration command changes the way the terminal operates. You can enter a configuration command by typing on the keypad, by scanning a bar code label, or by sending a command from a device on the 2.4 GHz network.

controller IP address
Identifies the IP address assigned to the DCS 300 in the Intermec data collection network.

data bits
The number of bits the terminal uses when communicating with another device (i.e., host computer). Generally set at seven or eight.

data collection device
A device used with a scanner that collects data by scanning bar codes and sending this data to a host computer.

data transmission
An event in which a block of data is transmitted from one device to another.

DCS 300
A data collection server that connects Intermec's wired and wireless products to your local area network or directly to a host computer. Earlier versions of this product were called the Model 200 Controller.

default configuration
The values set for each configuration parameter when the terminal is shipped.

default router
A router is a software and hardware connection between two or more subnetworks that permits traffic to be routed from one network to another based on the intended destinations of that traffic.

device
Any physical item that is attached to a computer. A terminal, a printer, a reader, and a controller are all devices.

direct sequencing
A radio frequency spread spectrum technique by which the transmitted signal is spread over a particular frequency range.

domain
The area within a LAN that defines a region administered by a controller or server. The domain is also called a subnetwork.

DOS code pages
A code page is a table that relates binary character codes used by a program to keys on the keypad or to characters on the screen. All international keypads are translated using an installed DOS code page that contains the standard ASCII character set and a set of national language characters specific to the language the code page supports.

downline
A device that is at the terminal end of a connection to the computer is referred to as being downline. When devices are connected to a computer, they are connected in a "line." Downline is a direction relative to the computer. Contrast with "upline."

If more than one computer is connected in a line, the upline computers usually handle data processing and the downline computers usually handle data collection and sometimes data "preprocessing."

drive
An electromechanical device that reads from and writes to disks. The three types of common disk drives are floppy disk drives, hard disk drives, and PC card drives.

driver

Software or firmware that translates operating system requests (such as input/output requests) into a format that is recognizable by specific hardware, such as adapters.

EAN

European Article Numbering. International standard bar code for retail food packages corresponding to the Universal Product Code (UPC) in the United States. A terminal that is configured to decode EAN bar codes can decode UPC, but the reverse is not true. UPC code is a subset of EAN code.

EBCDIC

Extended Binary Coded Decimal Interchange Code. EBCDIC is a standard eight bit code developed by IBM. Contrast with "ASCII."

end device

The device in the data collection system that you use to collect and enter data.

edge triggering

A scanner trigger configuration that makes the laser turn on after you activate the scanner and stay on until you activate the scanner a second time. Simply releasing the Scan button or trigger on a cabled scanner does not turn the laser off. If the laser is left on, the scanner timeout turns the laser off. Contrast with "level triggering."

EOF

End of File character. Attached to the last record transmitted in a block of records and after the End of Record (EOR), if the EOF character field is enabled.

EOM

End of Message character. Sent at the end of terminal and host messages. The transmitted and received EOM characters can be defined separately.

error message

A message from a device or program advising the user of an error that requires intervention to solve. For example, if you receive the error message "Unable to establish connection to host. Session ended." when you turn on the terminal, you may need to configure the terminal.

ESD
Electrostatic discharge. Transient, rapid transfer of charge between bodies at different electrostatic potentials:

- caused by direct contact.
- caused by arc-over of near proximity.
- induced by an electrostatic field.

Ethernet
A type of LAN that allows the transmission of computer data, audio data, and video data at 10 Mbps across a linear bus topology. Ethernet uses the access method known as Carrier Sense Multiple Access with Collision Detection (CSMA/CD). See the IEEE 802.3 standard for the specifications.

firmware
Software routines stored in read only memory (ROM). Unlike random access memory (RAM), ROM stays intact even without electrical power. The TRAKKER Antares 2400 Menu System; applications; TE Configuration Menu (if a TE terminal); and operating environment, firmware, and drivers are stored in firmware. Contrast with “software.”

fixed length
Characteristic of a bar code symbology in which the number of characters per symbol is predetermined. Opposite of variable length.

flash memory
A type of nonvolatile memory. Flash memory must be erased in blocks and is commonly used as a supplement to or replacement for hard disks in portable computers and data collection devices.

flow control
A method for controlling the flow of data between the terminal and the serial port. It stops the transmitting device from sending data when the receiving device buffer fills up and starts it again when the buffer empties. Flow control can be done through software (XON/XOFF) or hardware (CTS/RTS).

frequency hopping
A spread spectrum technique by which the band is divided into a number of channels and the transmissions hop from channel to channel in a predetermined sequence.

FTP
File Transfer Protocol. The Internet standard high-level protocol for transferring files from one device to another over TCP/IP networks. FTP uses TCP to deliver its data. Contrast with “TFTP.”

full ASCII
An operating mode that sets the terminal to properly decode Code 39 or Code 93 labels containing data that includes any of the 128 ASCII characters.

Function Left key
The Function Left key is a special key on the keypad. You use the [f] key to type characters or perform functions that are printed on the left side above the key. When you press [f], the key is held in a buffer and the Function Left key icon appears on the terminal's screen. Once you press a key other than [f], the key combination is entered into the terminal and the icon disappears from the screen.

Function Right key
The Function Right key is a special key on the keypad. You use the [f] key to type characters or perform functions that are printed on the right side above the key. When you press [f], the key is held in a buffer and the Function Right key icon appears on the terminal's screen. Once you press a key other than [f], the key combination is entered into the terminal and the icon disappears from the screen.

handshake event
A communications event that signifies the completion of a data block transmission. The exchange signifies either an affirmative acknowledge (AFF) or a negative acknowledge (NEG). The handshake event is enabled by defining the AFF character to be other than NULL. Some computers use the characters XON and XOFF as handshaking characters.

HIBC
Health Industry Bar Code standard. A modified version of Code 39 that has 43 characters, uses the modulus 43 check character, and reserves some character combinations for special usage.

home
The viewport's home position is the upper left corner of the TE or application screen.

host application
An application running remotely on a host computer.

host busy
The condition in which the host computer is processing a request and has not responded, or has not updated the screen. On a 3270 terminal, the OIA shows X-SYSTEM, X-CLOCK, or X-[]. On a 5250 terminal, the OIA shows "II" (Input Inhibited).

host computer
If several computers are connected on a network, the controlling computer is the host computer. A host computer can be a desktop, laptop, or notebook PC.

human-readable
A character printed in a font that can be read by a human, as opposed to bar code symbology that can only be read by a machine.

input device
A wand, laser scanner, or other device that scans bar code information into the terminal.

Interleaved 2 of 5 code (I 2 of 5)
A high-density, self-checking, continuous numeric bar code symbology. A bar code developed by Intermec that encodes the digits 0 through 9. The name Interleaved 2 of 5 is derived from the method used to encode two characters. In this symbol, two characters are paired, using bars to represent the first character and interleaved spaces to represent the second character. Each character has two wide elements and three narrow elements for a total of five elements. Its maximum density is 7.8 characters per inch. I 2 of 5 is mainly used in inventory distribution and the automobile industry.

IP
Internet protocol. This is the protocol for the network layer in TCP/IP protocol. It acts as a router for frames and is also responsible for frame addressing. IP verifies it has all the frames to pass to the TCP layer and that they are in the correct order.

IP address
An internal TCP/IP protocol stack variable. This address is a network layer address that is assigned to each device in a TCP/IP network.

keypad buffer
An area of memory that saves a limited number of operator keystrokes.

keypad clicker
A feature that makes the terminal produce an audible click every time you press a key. This feature can be enabled or disabled with the Keypad Clicker configuration command.

LAN
Local area network. A group of intelligent workstations that are hooked together to allow them to share data, printers, and other devices. LANs are usually used over a small geographic area.

laser scanner
An optical bar code reading device that uses a low energy laser light beam to examine a spatial pattern, one part after another. It then generates analog or digital signals corresponding to the pattern. Laser scanners are often used in mark sensing, pattern recognition, character recognition, and bar code recognition. The laser scanner converts bar code symbols to electrical signals for input to a bar code reader decoder for processing and subsequent output through a data communications interface.

LCD
Liquid crystal display. A display comprised of groups of transparent anisotropic liquid segments that are switched between two transparent electrodes. Application of an electric field across a segment changes the reflectivity of the liquid and it becomes opaque.

LED
Light emitting diode. A semiconductor that produces light at a wavelength determined by its chemical composition. LEDs are often used as the light source in bar code readers and terminals.

level triggering
A scanner trigger configuration that makes the laser turn on after you activate the scanner and stay on until you release the Scan button or the trigger on a cabled scanner. Contrast with "edge triggering."

lithium-ion battery pack
Provides the main power source to operate the terminal. The lithium-ion battery pack is rechargeable and charges the backup battery when required.

local editing error
An error that occurs when a user performs an operation in a field that is not supported by the field's properties or definition. No data is sent when a local editing error occurs. For example, a local editing error occurs when a user enters characters in a numeric-only field.

logical partition
A logically distinct portion of memory or a storage device that functions as though it were a physically separate unit.

LRC
Longitudinal Redundancy Check character. This character is an error-checking character that is optionally appended to transmitted blocks of data and optionally checked on received blocks of data.

malloc

The C library function that lets you allocate memory dynamically (while the application is running). If you disable the RAM drive on the terminal, you can use the additional 256K for programmable memory allocation.

Modulus 43 check character

Check character derivation method for Code 39.

MSI code

MSI code includes a start pattern, data characters, one or two check digits, and a stop pattern. It is fixed length, continuous, and non self-checking. This code is used to mark retail shelves for inventory reordering. The character set is 0 to 9 plus additional symbols. Similar to “Plessey code.”

multiple-read label

A bar code label that has a space as the first character after the start code. The terminal stores a multiple-read label in the buffer until you execute a command to transmit the label or scan a regular label. Contrast with “regular label.”

NAU

Network addressable unit. A network address that allows a device to communicate with IBM hosts in a 3270 network.

NEG

Negative Acknowledge character. See handshake.

network

A collection of devices that can store and manipulate electronic data, interconnected in such a way that their users can store, retrieve, and share information with each other.

network administrator

The person who is responsible for the installation, management, and control of a network.

network interface card (NIC)

An adapter card that is installed in the DCS 300 that allows it to connect to a wired network (for example, Ethernet, token ring, twinaxial). The card contains both the hardware to accommodate the cables and the software to use the network’s protocols. The NIC is also called a network adapter card.

network node

An end point in a network to which or from which data can be routed. Usually this is a workstation or host computer.

NiCad backup battery

The terminal contains a rechargeable NiCad backup battery that is designed to back up all memory and the real-time clock while you change the lithium-ion main battery pack. The NiCad battery will provide backup battery power for a maximum of 1 month if a fully-charged main battery pack is installed, or for a maximum of 3 days if a main battery pack is not installed.

null modem cable

A cable that connects two computers and allows transmission of data between them without requiring a modem.

number pad

A set of keys on the terminal that allows you to move the cursor around the screen and to type numbers and mathematical symbols. The terminal's number pad is designed to work like the number pad on a regular PC keyboard.

One-Shot mode

See Scanner mode.

OSI model

Open Systems Interconnection reference model. A model for network communications consisting of seven layers that describe what happens when computers communicate with one another. The OSI model was developed by the International Standards Organization (ISO) to provide worldwide standards for computer communications.

packet

The unit of information that the network uses to communicate. A packet includes a single network message with its associated header, addressing information, data, and optional trailer. A packet can also be called a frame or datagram.

parameter

See configuration command.

parity

A system for encoding characters with odd or even bar code patterns. Parity provides a self-checking feature in bar codes and other data transmission techniques. Even parity characters have an odd number of binary ones in their structure.

partition

See logical partition.

PDF 417
A two-dimensional stacked symbology. Each row in the symbol includes start/stop characters, row identifiers, and symbol characters, which consist of four bars and four spaces each and contain the actual data. PDF 417 provides an extensive error detection and correction option that can recover up to 510 characters lost due to a damaged label or to an error in scanning.

peer-to-peer network
A type of LAN whose workstations are capable of being both clients and servers.

PIC
Peripheral interface controller. The PIC processor is an internal processor that manages the terminal's batteries.

pixel
Pixel element. One spot in a rectilinear grid of thousands of such spots that are individually "painted" to form an image produced on the screen by a computer or on paper by a printer. A pixel is the smallest element that display software can manipulate in creating letters, numbers, or graphics.

Plessey code
A fixed length, continuous, and non self-checking bar code symbology. Plessey code is pulse-width modulated. It includes a start character, data characters, an eight-bit cyclic check digit, a termination bar, and usually a reverse start character. Similar to "MSI code."

Poll
Poll character. Sent by the host to request terminal data.

port
For hardware, a connecting component that allows a microprocessor to communicate with a peripheral device. For software, a memory address that identifies the physical circuit used to transfer information between a microprocessor and a peripheral device.

POST
Power-on self test. This test runs when you boot the terminal. The test ensures that the terminal's hardware and peripherals are operational.

postamble
A field of data that is sent after the data in a message. It is typically used to tag transactions from the bar code reader or terminal for rapid processing by the host, and it expands the data field (record) length. Similar to the "preamble."

power management
Software and procedures that extend the life of a terminal’s lithium-ion main battery pack and NiCad backup battery.

preamble
Predefined data that is automatically appended to the beginning of entered data. Similar to the “postamble.”

protected field
In word processing, preset data or an area that cannot be changed or overridden by an operator without altering the program. On a display device, a display field in which a user cannot enter, modify, or erase data. Contrast with “unprotected field.”

protocol character
See ASCII control character.

protocol stack
A group of drivers that work together to span the layers in the network protocol hierarchy.

PSK
TRAKKER Antares Programmer’s Software Kit. A library of software functions for creating applications on the TRAKKER Antares 2420 and 2425 terminals.

radio frequency (RF)
A frequency at which coherent electromagnetic radiation of energy is useful for communications purposes; roughly the range from 10 KHz to 300 GHz.

RAM
Random access memory. Memory that can be written into, or read, by locating any data address.

RAM drive
A configurable disk drive that exists only in your terminal’s extended memory. You create, read, write, and delete files on a RAM drive the same way you can on a hard disk drive. You can disable the RAM drive and use the additional 256K for programmable (Malloc) memory allocations, or configure the RAM drive to temporarily store data and files. The contents are destroyed when you boot or reset the terminal.

reader command
A reader command causes the terminal to perform a task. You can enter a reader command by typing on the keypad, by scanning a bar code label, or by sending a command from a device on the 2.4 GHz network.

regular label

A bar code label that takes the form of <start code data stop code>. A regular bar code label is executed when you scan it. Contrast with “multiple-read label.”

resume

When you press I/O to turn the terminal on, the terminal either resumes exactly where it was when you turned it off, or the terminal boots and restarts your application. Resume is controlled through the Resume Execution configuration command. Contrast with “Suspend mode.”

RF data collection system

Radio frequency data collection system in which the individual components communicate with each other by radio signals.

RF security identification (ID)

Defines the password for secured transmission and receipt of data between devices in the wireless network. To communicate, each access point and T2425 must have matching security IDs.

ROM

Read only memory. Usually a small memory that contains often-used instructions, such as microprograms or system software. ROM is programmed during memory fabrication and cannot be reprogrammed.

RS-232

Widely recognized protocol standard for serial binary data interchange. The standard covers the physical, electrical, and functional characteristics of the interface.

RS-232 is the standard American format for serial data transmission by cable (that is, from a computer terminal to a modem). RS-232 transmission uses a distinctive 25-pin connector, although in most cases not all the conductors are used. See serial.

scanner devices

Typically, a light-emitting device that reads a coded language. This type of device includes wands and laser scanners.

Scanner mode

Defines how the scanner operates when the trigger is pulled. There are two types of modes: One-Shot or Automatic. One-Shot mode requires you to activate the scanner each time you want to scan a bar code. Once you scan a bar code, the scanner turns off. Automatic mode allows you to activate the scanner once and scan a series of bar codes. When you release the Scan button or trigger on a cabled scanner, the scanner turns off. To scan the same bar code more than once, you must release the button or trigger, or scan a different bar code before attempting a second scan.

scanner timeout

Maximum time the scanner stays after you press the Scan button or activate a cabled laser scanner.

screen mapping

An application that that allows you to map data fields from a smaller reader or terminal screen to larger 3270, 5250, or VT/ANSI screens. This image can be stored in the host, in the DCS 300, or on the local device.

script file

A file that resides on the DCS 300 and provides instructions for navigating around host application screens. It also provides instructions for mapping transaction fields from the T2425 to the host application screens.

serial

A communications scheme in which the bits of a byte are transferred one at a time. Often serial transmission is used to link host computers to terminals and PCs to printers.

serial port

The terminal's COM1 is an optical serial port. You can communicate through COM1 using a communications dock or optical link adapter. The terminal's COM4 is a serial interface module that replaces the scan module.

server

A computer that is configured to provide services to the network.

session

A single runtime copy of a 3270 or 5250 terminal emulator, through which a host application can be accessed.

SNA (System Network Architecture)

The IBM architecture for supporting computer communications between dissimilar systems.

software

Coded instructions that direct the operation of a computer. A set of such instructions for accomplishing a particular task is referred to as a program. Contrast with "firmware."

SOM

Start of Message character. The first character in messages sent to or received from the host.

spread spectrum
A radio data transmission modulation technique by which the transmitted signal is spread over a bandwidth wider than the information bandwidth.

start/stop code (or character)
A special bar code character that provides the scanner with start and stop reading instructions as well as a scanning direction indicator. The start character is normally at the left hand end of a horizontally oriented symbol (bar code label). The stop character is normally at the right hand end of a horizontally oriented symbol. For Code 39, the asterisk (*) character is used.

stop bits
A bit that signals the end of a character. One of the serial communications parameters.

store and forward
A method where messages are temporarily stored in the DCS 300 before they are transmitted to their destination. It is used when the upline network or host application is temporarily stopped.

subnet mask
An internal TCP/IP protocol stack variable. This mask is used in the IP protocol to separate the subnet address from the local IP address. The IP protocol performs a bit-wise AND on the IP address and the subnet mask. Each address segment represents one byte, where 255 converts to FF hex. This computation is used to find out if the DCS 300 or host and T2425 are on different subnetworks.

For example, if the terminal IP address is 192.9.150.184 and the subnet mask is 255.255.255.0, the terminal is on the subnetwork 192.9.150.0.

subnetwork
See domain.

Suspend mode
The mode the terminal enters when you press I/O to turn off the terminal. In Suspend mode, the terminal saves all memory and turns off the power to most of the hardware. Contrast with “resume.”

symbology
See bar code symbology.

TCP

Transmission control protocol. This is the protocol for the transport layer in the TCP/IP protocol. It provides a method for reliable, error-free, full-duplex communications between sender and receiver nodes. TCP takes long messages from higher layers and breaks them up before passing them to IP for transmission. TCP makes sure that the messages are in sequence when it receives them, and it retries failed transmissions.

TE Configuration Menu

A menu-driven application that lets you configure 3270, 5250, or VT/ANSI terminal emulation parameters. You can access the TE Configuration Menu at any time during a terminal emulation session.

Telnet

The TCP/IP remote terminal protocol for connection to a login server.

terminal emulation (TE)

A device that is running terminal emulation looks like the terminal. For example, it uses no CPU, no RAM, and no hard disk. Two general classifications are devices running in Character mode and those running in Block mode. Character mode devices emulate VT terminals where a character travels all the way from the host to a device and back. Block mode devices emulate 3270 or 5250 terminals where entire screens are sent to a device, the user fills in all the data fields on the device, and sends the entire screen back to the host.

terminal IP address

Identifies the IP address assigned to the T2425. The IP address you set on the terminal must match the address that is set on the DCS 300 or host.

TFTP

Trivial File Transfer Protocol. An abbreviated version of FTP that requires limited interaction or instruction. Often used by devices without consoles to automate file transfers of configuration data. TFTP allows file exchange between the terminal and other network devices. Contrast with "FTP."

TFTP server

Trivial File Transfer Protocol server. A server that uses TFTP for file transfer to and from a remote system or device in situations when FTP may not be available (for example, to transfer files in a TCP/IP direct connect network).

timeout

A defined time allowed for an event after which an alternate action is taken.

token ring
A type of LAN that transfers data at either 4 or 16 Mbps. It is a network transport technology in which a token is passed around a ring topology.

TRAKKER Antares 2400 Menu System
A menu-driven application that lets you configure the terminal, view system information, and run diagnostics. You can access the TRAKKER Antares 2400 Menu System while running any application.

transaction
A transaction is made up of a header and a group of fields. For example, a work order transaction might have a transaction type and three fields consisting of a work order number, part number, and due date.

twinaxial
A type of cable used to connect the DCS 300 directly to an IBM host. Twinaxial cables consist of an outer layer of insulation, an outer conductor, another insulating layer, and two side-by-side center conductors.

UDP
User datagram protocol. UDP protocol is an alternative to TCP. This protocol is the Internet standard for wireless devices. You can use UDP when you do not need a guaranteed delivery. You can also use UDP when you do not require all the services of TCP.

UDP Plus
This Intermec-designed protocol is based on UDP. UDP Plus improves the performance of devices in a mobile wireless environment. Intermec uses this protocol to communicate between the DCS 300 and T2425s.

unprotected field
A displayed field in which a user can enter, modify, or delete data. Contrast with “protected field.”

UPC/EAN code
A fixed length, numeric, continuous bar code symbology that uses four element widths. A terminal that is configured to decode EAN bar codes can decode UPC, but the reverse is not true. UPC code is a subset of EAN code. It is a numeric, 12-digit bar code symbology used extensively in retail, particularly the grocery industry. The character set is 0 to 9. Its maximum character density is 13.8 numeric characters per inch.

upline

A device that is at the computer end of a connection between a computer and a device is referred to as being upline. When devices are connected to a computer, they are connected in a "line." Upline is a direction relative to the device, in contrast to "downline."

If more than one computer is connected in a line, the upline computers usually handle data processing and the downline computers usually handle data collection and sometimes data "preprocessing."

validation file

An ASCII file that has one entry per line. A validation file is used to ensure that the information entered in the input fields of a screen mapping screen are correct. The file is read sequentially and the last line in the ASCII file must be <EOF>.

variable length

A type of symbology in which the number of characters per symbol is not restricted. Opposite of "fixed length."

viewport

A method for viewing a full size terminal screen (25 lines x 80 characters) with the terminal's 16 x 20 screen. You will only see 16 lines and 20 characters of data at one time. Use the terminal's screen as a viewport to move around and see the entire screen.

volatile

Refers to memory that is not saved when power is lost or turned off.

VT/ANSI terminal emulation

A straight-through terminal emulation that causes Intermec downline devices running terminal emulation to emulate a VT100, VT220, and VT320, or ANSI terminal.

XON/XOFF

A type of software flow control for communications between digital devices. It stops the host from sending data when the device buffer fills up (XOFF) and starts it again when the buffer empties (XON).

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