User's Manual

TRAKKER Antares®
248X Stationary Terminal

Intermec

A **UNOVA** Company

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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 2480, 2481, 2485, or 2486 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, and operate the TRAKKER® Antares™ 2480, 2481, 2485, and 2486 stationary 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 TRAKKER Antares 2480, 2481, 2485, or 2486 (T248X) features, functions, and accessories. Explains the back panel connectors and how to use the terminal's keypad, screen, audio signals, power, memory, and drives.
2	Explains how to install the TRAKKER Antares 248X terminal in your serial, Ethernet, or RF network. Explains how to turn on the terminal and configure the network parameters to start using the terminal.
3	Explains how to configure your terminal.
4	Describes serial communications, Ethernet 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 TRAKKER Antares 2480, 2481, 2485, and 2486 programmable terminals and explains how to download and run applications. Also, explains how to use the screen mapping application.
6	Describes the commands that you can use to change the TRAKKER Antares terminal's operation or manage files.
A	Lists the TRAKKER Antares 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 a TRAKKER Antares 2480, 2481, 2485, or 2486 terminal.
D	Contains the specifications for the keypad function key labels, the terminal specifications to create your own mounting bracket, and the actual size mounting templates for Intermec's desk-mount bracket and wall-mount bracket.

Note: For information about using IBM 3270, IBM 5250, or VT/100/220/320 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.
T2480	The term "T2480" indicates the specific type of terminal, the TRAKKER Antares 2480 stationary terminal.
T2481	The term "T2481" indicates the specific type of terminal, the TRAKKER Antares 2481 stationary terminal.
T2485	The term "T2485" indicates the specific type of terminal, the TRAKKER Antares 2485 stationary terminal.
T2486	The term "T2486" indicates the specific type of terminal, the TRAKKER Antares 2486 stationary terminal.
T248X	The generic term "T248X" indicates any TRAKKER Antares stationary terminal. More specific terms, such as "TRAKKER Antares 2486 terminal" or "T2481," indicate a specific type of terminal.
Terminal	The generic term "terminal" indicates any TRAKKER Antares stationary terminal. More specific terms, such as "TRAKKER Antares 2485 terminal" or "T2480," indicate a specific type of terminal.
TRAKKER Antares terminal	The generic term "TRAKKER Antares terminal" indicates any TRAKKER Antares stationary terminal. More specific terms, such as "TRAKKER Antares 2480 terminal" or "T2485," indicate a specific type of terminal.
TRAKKER Antares	The term "TRAKKER Antares" identifies the product family of TRAKKER Antares stationary terminals.
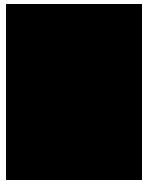
Conventions for Input From a Keypad or Keyboard

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 ⏎ 2 4 8	Shows a series of terminal keys you must press and release in the order shown. For example, "Press ⏼f ⏎ 2 4 8 to run the TRAKKER Antares 2400 Menu System."
⏼f – ⏎	Shows a series of terminal keys you must press simultaneously. Also, you must press and hold the keys in the order shown.

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:

Change Configuration ——— *Name*

|||||||||||||||| ———————— *Bar code (Code 39)*

$+ ————————— *Human-readable interpretation*

248XU.146

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 TRAKKER Antares 2480, 2481, 2485, and 2486 terminals display software screens and messages. Here are two examples:

```
┌─────────────────────────┐     ┌──────────────────────────┐
│     MAIN MENU           │     │                          │
│ Configuration Menu      │     │ File Name:               │
│ Diagnostics Menu        │     │                          │
│ System Menu             │     │                          │
│ About TRAKKER 2400      │     │                          │
│                         │     │                          │
│                         │     │                          │
│ ↑↓ Select item          │     │                          │
│ [Enter] Next screen     │     │                          │
│ [F1] Help               │     │                          │
│ [Esc] Exit              │     │                          │
└─────────────────────────┘     └──────────────────────────┘
```
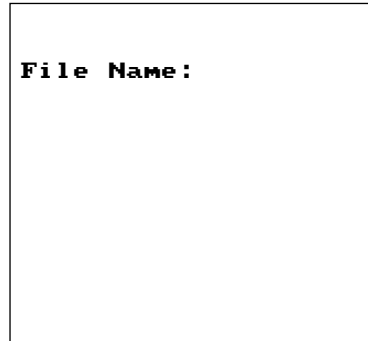
248XU.007

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 Model 200 Controller, 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.

Conventions for Commands (continued)

Convention	Description
[ ]	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 to refer to the manuals listed below for additional information about your TRAKKER Antares 2480, 2481, 2485, or 2486 terminal, accessories, or the 2.4 GHz radio frequency network. To order additional manuals, contact your local Intermec representative or distributor.

Manual	Intermec Part No.
0110/0111/0115 Access Point User's Manual	065053
9154 Line Controller System Manual	048517
9161B Programmer's/Operator's Guide	049574
The Bar Code Book	051241
Data Communications Reference Manual	044737
EZBuilder Getting Started Guide	066450
EZBuilder Tutorial	066449
Model 200 Controller System Manual	063439
Model 200 Controller Technical Reference Manual	064398
TRAKKER Antares 2420 and 2425 Hand-Held Terminal User's Manual	064024
TRAKKER Antares 248X Badge Scanner Instruction Sheet	066993
TRAKKER Antares 248X Desk-Mount Bracket Instruction Sheet	066995
TRAKKER Antares 248X Stationary Terminal Getting Started Guide	066961
TRAKKER Antares 248X Wall-Mount Bracket Instruction Sheet	066994
TRAKKER Antares Application Development Tools System Manual	064433
TRAKKER Antares Terminal Emulation User's Guide	066694

1

Introducing the TRAKKER Antares 248X Terminal

This chapter introduces the TRAKKER® Antares™ 2480, 2481, 2485, and 2486 stationary terminals. You will learn about the back panel connections and learn how to use the terminal's keypad, screen, audio signals, power, memory, and drives.

What Are the TRAKKER Antares 248X Terminals?

248XU.019
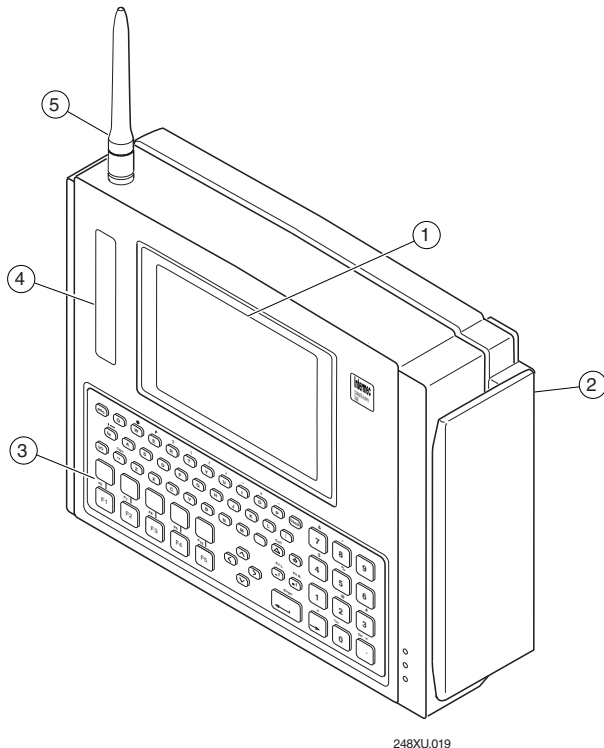
The TRAKKER Antares 248X terminals (T2480, T2481, T2485, and T2486) are fixed-position data collection terminals. You use these programmable terminals to run either client/server applications or terminal emulation.

You use the T2480 and T2481 terminals to collect and upload data to a host computer via serial or Ethernet communications. The T2485 and T2486 terminals transmit data via serial communications or radio frequency (RF) communications in Intermec's 2.4 GHz RF network.

The TRAKKER Antares 248X terminals are designed to make data collection easy and include these features:

① CGA-compatible screen with graphics LCD. On the T2480 and T2485, the terminal has a 4 line by 40 character screen. On the T2481 and T2486, the terminal has a 12 line by 40 character screen that is configurable up to 25 lines.

② Optional badge scanner (visible or infrared) for bar code data collection.

③ Alphanumeric (PC-style layout) or oversized function numeric keypad for data collection. The terminal ships with a keypad to match the application or language you ordered.

④ Status lights provide power, keypad, data, network, and scanning information.

⑤ Antenna on the T2485 and T2486 supports 2.4 GHz radio frequency communications.

Accessories for the Terminal

You can use these accessories (sold and ordered separately) with the TRAKKER Antares 2480, 2481, 2485, and 2486 terminals:
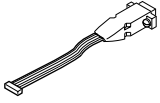
Adapter Cable   The adapter cable (Part No. 067185) allows you to use an additional serial port (COM4) on the optional enhanced input/output board. You can attach the adapter cable to the 12-pin COM4 connector and configure the terminal to use an additional serial communications port.

Note: See your Intermec sales representative for information about the availability of the adapter cable.
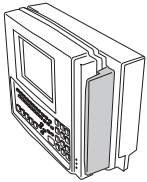
Badge Scanner   The badge scanner on your T248X terminal allows you to easily scan bar codes from badges or other cards. You can use either a visible or infrared badge scanner with the T248X.
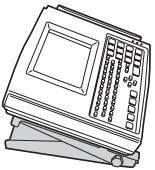
Desk-Mount Bracket   The desk-mount bracket attaches to your T248X terminal. The bracket can be either seated on or mounted to your desk or table-top.
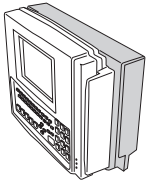
Wall-Mount Bracket   The wall-mount bracket attaches to your T248X terminal, enabling you to secure your terminal to a wall. The bracket opens so you can work on the back of the terminal without taking it out of the bracket.

Models and Options for the TRAKKER Antares Terminals

The TRAKKER Antares 248X family of terminals includes these models:
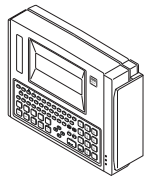
T2480   The T2480 is a programmable data collection terminal. The T2480 has a serial port to transmit data to and accept data from a host or PC via RS-232 serial communications. With the optional Ethernet card, the T2480 can also transmit and receive data via Ethernet communications. The T2480 has a 4 line by 40 character screen.
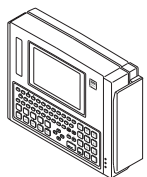
T2481   The T2481 has the same functionality as the T2480. The only difference between these two models is the screen size. The T2481 has a 12 line by 40 character screen that is configurable up to 25 lines.
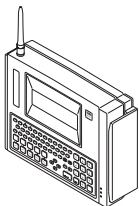
T2485   The T2485 is a programmable data collection terminal with the additional ability to communicate in Intermec's 2.4 GHz radio frequency (RF) network. The T2485 provides wireless communications to a host either through the access points and Model 200 Controller or directly through the access points. The T2485 has a 4 line by 40 character screen.
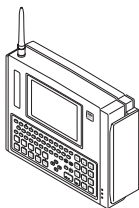
T2486   The T2486 has the same functionality as the T2485. The only difference between these two models is the screen size. The T2486 has a 12 line by 40 character screen that is configurable up to 25 lines.

Each T248X terminal ships with these standard features:

- 512K RAM reserved for applications

- 750K flash drive to store user applications and files

- Scanner port for an integrated badge scanner

- Scanner port to attach a wand, laser scanner, or CCD scanner

- Serial port for RS-232 communications between the terminal and host

- Alphanumeric, oversized function numeric, or terminal emulation keypad for data entry. The alphanumeric keypad is available in English, French, German, Italian, Portuguese, or Spanish.

These options are available for the T248X terminals:

- Enhanced input/output (I/O) board with these features:

  - Additional serial port (COM2) for RS-232/422/485 communications or multi-drop (CrossBar®) network connectivity

  - Additional serial port (COM4) for RS-232 communications

  - Four sense inputs to monitor events, four output relays to activate external devices (for example, open doors or gates), and connectors for an amplified external speaker

- Ethernet (10BaseT) connectivity for the T2480 and T2481

- Extended 2MB flash memory to either store double-byte fonts or to configure as a 2MB drive

These options are available for the T2480/1 terminals with Ethernet connectivity and the T2485/6 terminals:

- Extended SRAM storage drive (2MB or 4MB) to store files

- UDP Plus (Model 200 Controller network) or TCP/IP network protocol

- IBM 3270 terminal emulation application and keypad

- IBM 5250 terminal emulation application and keypad
- VT100/220/320 and ANSI terminal emulation application and keypad
- Screen mapping for 3270, 5250, or VT/ANSI (UDP Plus terminals only)

This manual tells you how to use the features and options available on all models of the TRAKKER Antares terminals.

How the Terminal Fits Into Your Network

The TRAKKER Antares 248X terminal has several communications and network options. The next illustration shows some examples of the different data collection networks in which you can use the terminal.

248XU.239
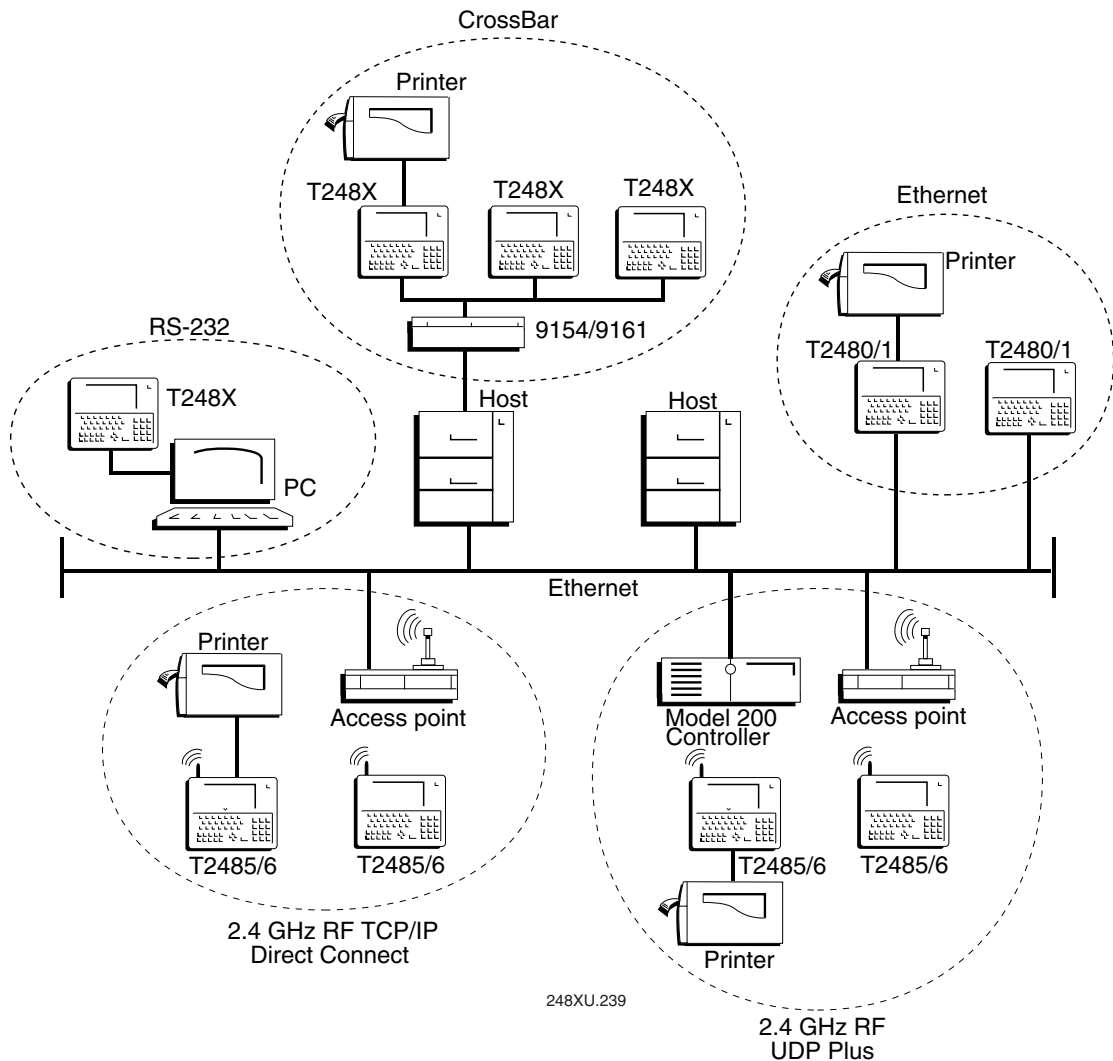
Getting Started

The steps to install your T248X depend on the options you purchased and the type of network or devices to which you want to connect the terminal. Use these next steps as a guide to learn about, install, and configure the terminal.

To install your T248X

1. Unpack the terminal and get familiar with the equipment. For help, use the remainder of Chapter 1 to learn about the keypad, screen, audio signals, batteries, and drives.

2. Learn about the back panel and connectors so you can install the terminal. For help, see "Understanding the Back Panel" later in this chapter.

3. Learn about using and installing the wall-mount and desk-mount brackets. For help, see Chapter 2, "Installing the Terminal."

4. Install the terminal by connecting power, input devices, and all wired network connections. For help, see Chapter 2, "Installing the Terminal."

5. Configure the terminal for your network. For help, see Chapter 2, "Installing the Terminal" and Chapter 3, "Configuring the Terminal."

Unpacking the Terminal

The TRAKKER Antares stationary terminal ships with:

248XU.249
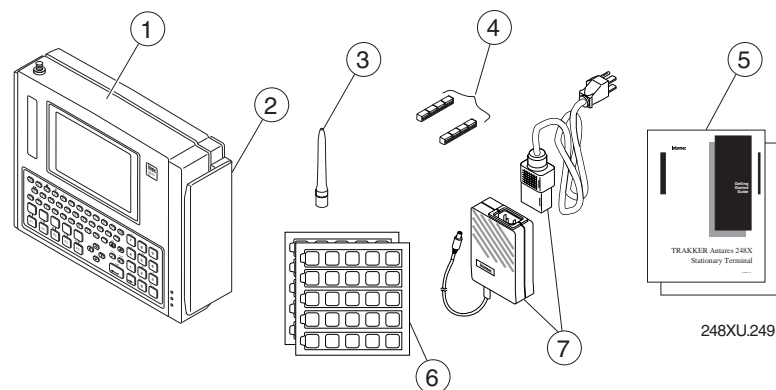
① TRAKKER Antares 2480, 2481, 2485, or 2486 stationary terminal

② Badge scanner, visible or infrared (optional)

③ Antenna for T2485 and T2486

④ Terminal blocks to connect sense inputs, output relays, and an amplified external speaker (ships only with the enhanced input/output board option)

(5) Getting started guide and safety supplement

(6) Labels for custom function key labels

(7) Intermec power supply and North American power cord

If you are using the terminal outside North America, you need to purchase the appropriate power cord for your local power supply.

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.

Understanding the Back Panel

To install the T248X, you must remove the back panel to connect power, input devices, and communications ports. The next illustration shows all the connectors on a T2480 or T2481 that has an enhanced input/output board and the Ethernet option.

248XU.237
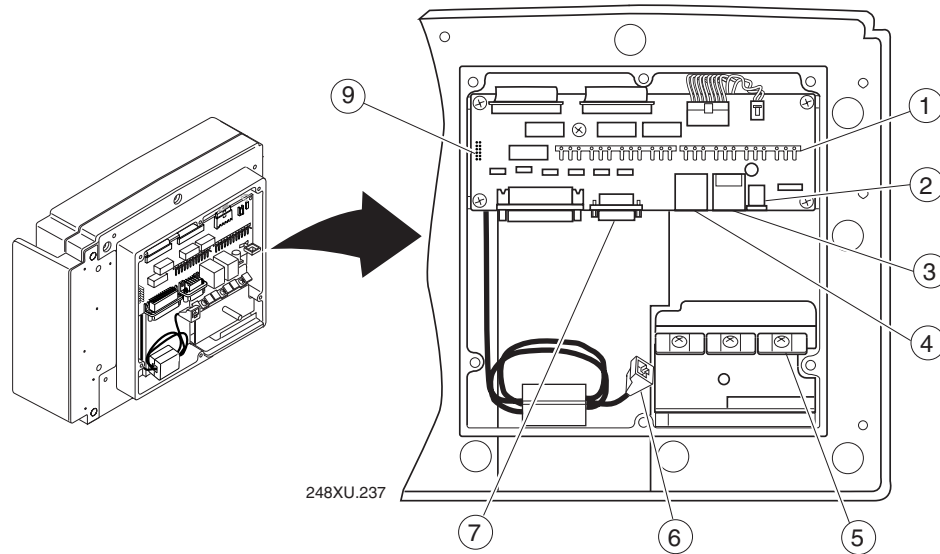
Each feature on the back panel is defined next.

(1) **Terminal block connectors** The terminal blocks (shipped with the terminal) let you connect four sense inputs, four output relays, or an amplified external speaker to the terminal. You use the sense inputs to monitor events, such as the opening or closing of a door. You use the output relays to actuate external devices, such as a door lock. The terminal block connectors are only available on a T248X with the option for the enhanced input/output board.

② **12V power supply connector**   The terminal operates using an external power supply. It has a backup battery that is designed to back up all memory and the real-time clock only in case of a power failure. You must have a power supply connected to operate the terminal.

③ **Badge scanner (6-pin) connector**   You can order the terminal with an integrated badge scanner already installed or order the badge scanner accessory to install at a later date. You can also attach an input device instead of the badge scanner.

④ **External scanner (Stewart 10-pin) connector**   You must use an interface cable to connect an input device to the terminal. You can attach these input devices:

- Intermec 1354 and 1355 badge scanners

- Intermec 1463A and 1463D CCD scanners

- Intermec 1516A, 1517A, 1517B, 1518, and 1519A laser scanners

- Intermec 1545 laser scanner

- Intermec 1550A laser scanner

- Intermec 126X, 127X, and 128X wands

Note: If you do not have a device installed on the badge scanner connector, you can use the Intermec 1464 CCD scanner, the Intermec 1550B laser scanner, and the Intermec 1551 laser scanner. To use the 1463A and 1463D CCD scanners together with a device installed on the badge scanner connector, you must configure the 1463A or 1463D Trigger mode to either Manual Trigger or Auto-Trigger.

⑤ **Cable restraint**   You use the cable restraint to secure the power supply cable, the sense inputs and output relays, and the Ethernet cable.

⑥ **Ethernet connector**   The optional 10BaseT Ethernet connector lets you connect the T2480 or T2481 directly to an Ethernet network.

⑦ **COM1**   You can communicate with other RS-232 devices, such as scales, PCs, and printers, through the COM1 serial port.

⑧ **COM2**   You can use the COM2 serial port for:

- RS-232, RS-422, or RS-485 serial communications

- Multi-drop (CrossBar) network connectivity

COM2 is only available on a T248X with the option for the enhanced input/output board.

⑨ **COM4**   You can attach an adapter cable accessory (Part No. 067185) to the 12-pin COM4 connector to use an additional serial port for RS-232 serial communications. For help ordering the adapter cable, contact your local Intermec service representative. COM4 is only available on a T248X with the option for the enhanced input/output board.

Using the Keypad

The TRAKKER Antares 248X terminal has these keypad options:

- English alphanumeric keypad
- Oversized function numeric keypad
- French alphanumeric keypad
- German alphanumeric keypad
- Italian alphanumeric keypad
- Portuguese alphanumeric keypad
- Spanish alphanumeric keypad
- IBM 3270 terminal emulation alphanumeric keypad
- IBM 5250 terminal emulation alphanumeric keypad
- VT100/220/320 and ANSI terminal emulation alphanumeric keypad
- Time and attendance keypad

Note: See your Intermec sales representative for information about the availability of the time and attendance keypad.

All alphanumeric keypads have 59 keys. Although the keypad is smaller than a desktop terminal keyboard, you use special keys on the T248X keypad to access all the keys and functions you need.

The oversized function numeric keypad has 35 keys. The number keys are larger to make it easier to enter a lot of numeric data and there are 10 separate function keys. There are no alphanumeric keys on the oversized function numeric keypad.

A terminal emulation (TE) keypad comes with the TE option you ordered for the T248X. 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. However, you can display any character in the terminal font set. For a list of characters, see Appendix C, "International Character Support."

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 keypad options.

Finding the Special Keys

Suspend/Resume key · Control key · Backspace key · Shift key · Function key label slot · Cursor keys · Enter key · Function Left key · Function Right key

248XU.004
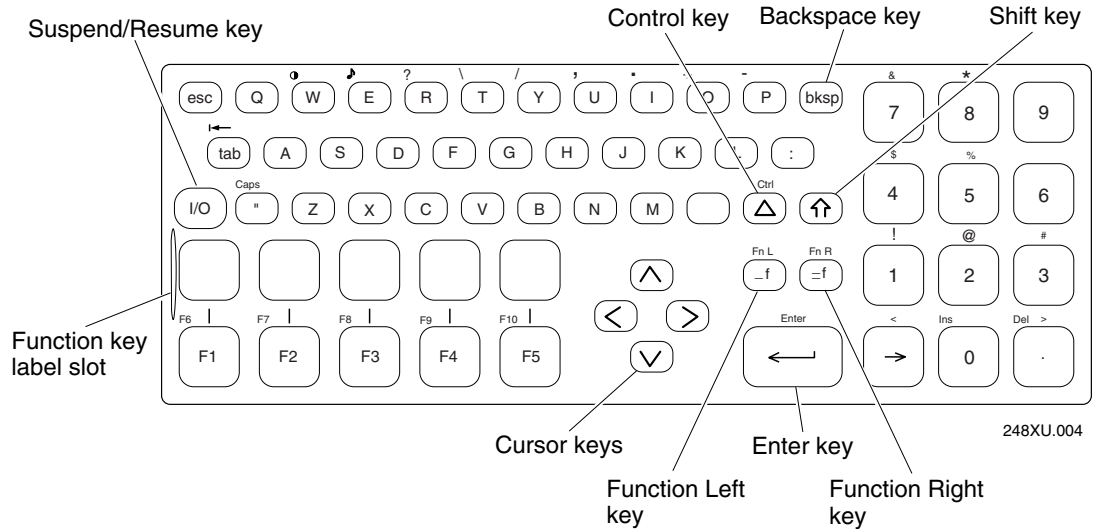
The special keys that you use to type characters or perform functions are explained in the next sections. You can also use the keypad to change the display contrast and the beep volume. For help, see "Adjusting the Contrast and Beep Volume From the Keypad" later in this chapter.

Typing the Characters Printed on the Keypad

The TRAKKER Antares 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 or centered above the key	Grey	Press the key.
Left side above the key	Orange	Press the orange ⌐f key, then the key.
Centered above a numeric 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) keypad

% ——————— To type the % character, press ⌃ 5 .

5 ——————— To type the number 5, press 5 .

248XU.123
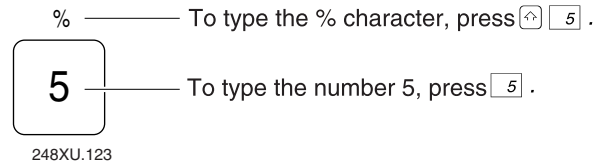
To type characters using the IBM 5250 terminal emulation keypad

To use the Fld+ function, press f 8 .

To type the asterisk (*) character, press ⌃ 8 .

Fld + * Fld-

To use the Fld- function, press -f 8 .

8 ——————— To type the number 8, press 8 .

248XU.124
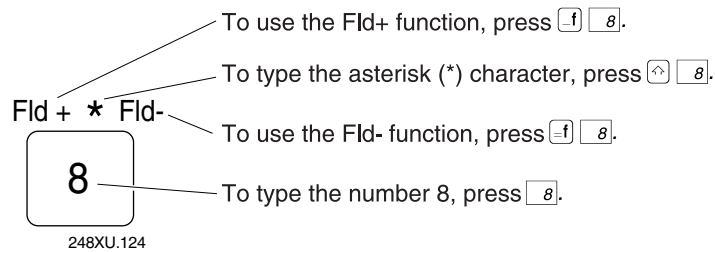
Using the Function Left/Right, Control, and Shift Keys

The TRAKKER Antares keypad does not have a physical key for every character and function available. You use the Function Left (FnL), Function Right (FnR), Control (Ctrl), 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 Modifier Key status light illuminates on the left side of 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 light is turned off.

Modifier Key
status light

248XU.031
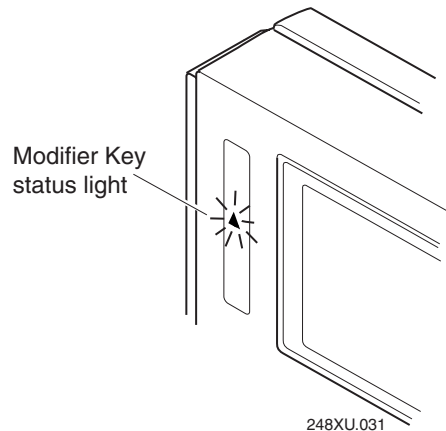
To flush the ⬚f⬚, ⬚f⬚, ⬚△⬚, or ⬚⌂⬚ key from the buffer without performing any action, just press the key again. The status light is turned off.

To use the FnL, FnR, Ctrl, and Shift keys

1. Press ⬚f⬚, ⬚f⬚, ⬚△⬚, or ⬚⌂⬚. The Modifier Key status light is turned on. For example, press ⬚⌂⬚.

2. Press the second key. For example, press ⬚A⬚ to type the uppercase letter A. The Modifier Key status light is turned off.

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.

Note: There is no Caps Lock feature on the oversized function numeric keypad.

To enable Caps Lock

1. Press ⬚f⬚. The Modifier Key status light turns on.

2. Press ⬚"⬚. The Caps Lock status light turns on.

   Note: On a German alphanumeric keypad, press ⬚Y⬚.

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.

Caps Lock status light

248XU.079
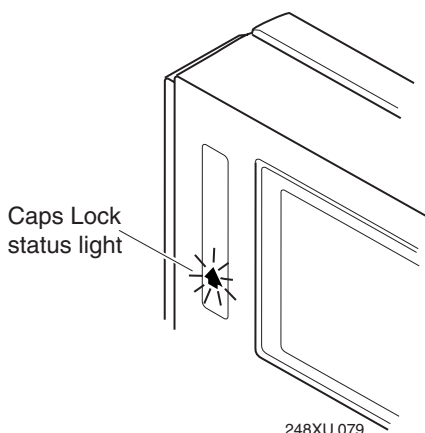
To type a lowercase letter with Caps Lock enabled

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

To disable Caps Lock

1. Press f . The Modifier Key status light turns on.

2. Press " . The Caps Lock status light turns off.

   Note: On a German alphanumeric keypad, press Y .

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.

Adjusting the Contrast and Beep Volume From the Keypad

There are two special features built into the terminal's keypad. You can use a key or key sequence to:

- Adjust the display contrast.

- Change the volume of the terminal's audio signals.

Note: When you use the keypad to change the display contrast or beep volume, the changes are not saved permanently in flash memory. You can save the changes in flash memory later. For help, see Chapter 3, "Configuring the Terminal."

To change the display contrast

- Look for the ◑ key or symbol on your keypad. Press the ◑ key or the key sequence to change the display contrast. Each time you press the keys to change the display contrast, it changes the contrast by one level.

Type of Keypad	Press the Key(s)
English, Italian, Portuguese, Spanish, IBM 3270, IBM 5250, and VT/ANSI	f W
German	f E
French	f Z
Oversized Function Numeric	◑

Adjusting the Contrast From the Keypad

242XU.049
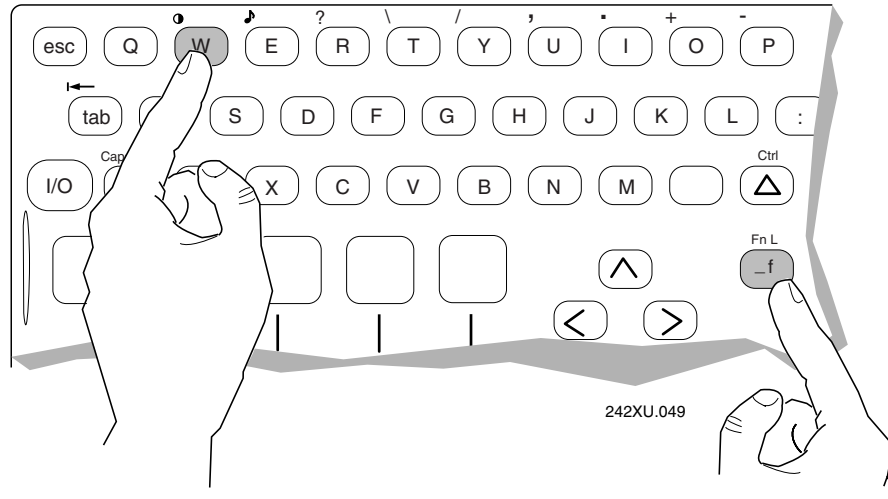
There are eight contrast levels that define the contrast (light or dark) of the characters against the background terminal screen. If the contrast is at the highest level (7), the characters are bright against a bright background. If you press the ◑ key or the contrast key sequence, the contrast changes to the lowest contrast level (0) and the characters are dark against a dark background.

To change the volume of the audio signals

- Look for the ♪ symbol on your keypad. Press the key sequence to change the volume of the terminal's audio signals. Each time you press the key sequence, it makes the beep and keyclick volume one level louder.

Type of Keypad	Press the Key(s)
English, IBM 3270, IBM 5250, and VT/ANSI	⏚f E
French, German, Italian, Portuguese, and Spanish	⏚f Q
Oversized Function Numeric	⏚f ◑

There are five volume levels including off. If the volume is at the loudest level and you press the key sequence, the beep and keyclick volume are turned off. If you press the key sequence again, the beep and keyclick volume changes to the quietest level.

Adjusting the Beep Volume From the Keypad

242XU.047
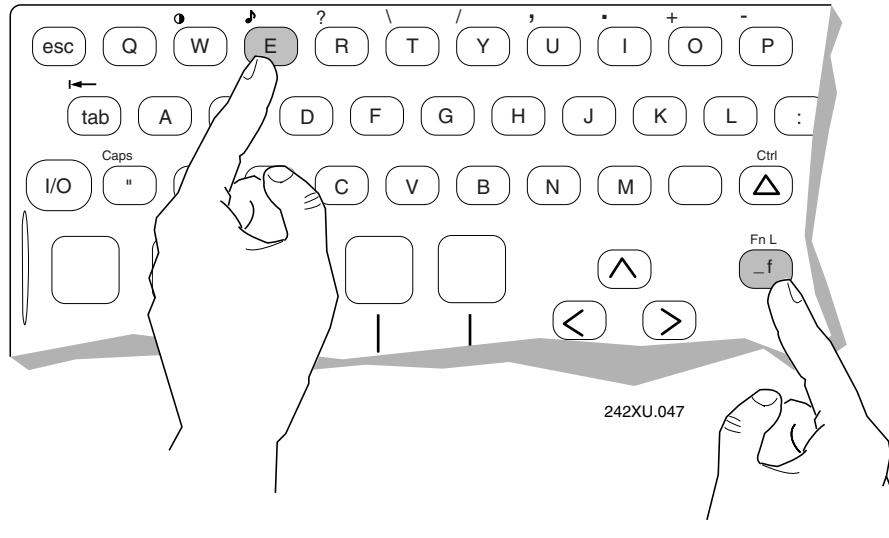
Using the Function Key Labels

Your terminal ships with strips of function key labels. You can use the labels to identify custom function keys. Write the name for each function key on a strip of five labels. Insert the strip into the slot above the function keys.

You can create your own pre-printed function key labels. For the exact function key label measurements, see Appendix D, "Keypad Labels and Terminal Mounting Templates."

Note: There are two sizes of function key labels. Use the labels that are slightly larger if you have a T248X with an oversized function numeric keypad. Use the smaller labels for an alphanumeric keypad.

248XU.247
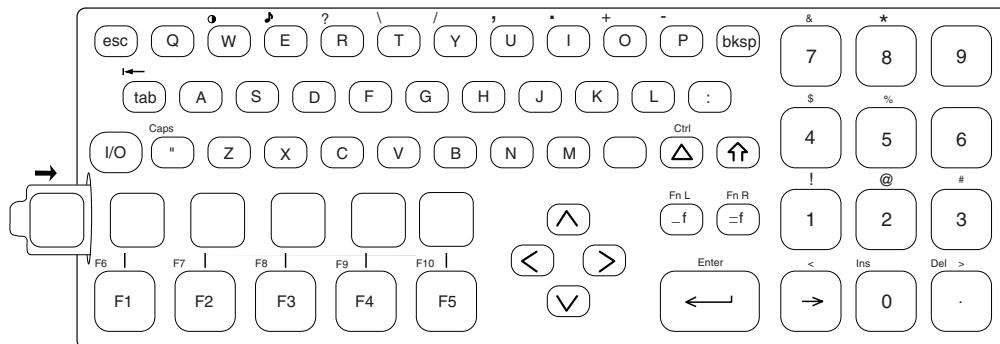
How to Use the Terminal's Screen

You can use the TRAKKER Antares 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 CGA compatible.

You can use these features of the screen:

• Use the status lights to monitor the status of backup battery power, RF and network communications, special keys, and bar code scanning.

• Choose a different font size, adjust the row spacing, or change the video mode.

• In an application, use the terminal's screen as a viewport to see a full-size terminal screen of 25 lines by 80 characters.

Each screen feature is explained in the next sections.

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.

Using the Status Lights

You can use the terminal's status lights to monitor the status of backup battery power, RF and network communications, special keys, and bar code scanning. The status lights only flash or turn on to indicate the current status. The Power status light is amber and all other lights are green. When you have the terminal turned off (Suspend mode), the status lights are also off.

▄▄	Power
✳	Network Connect
●	Network Transmit
▲	Modifier Key
♠	Caps Lock
✔	Good Read
■	User Defined

248XU.219

Using the Status Lights

Power   This status light remains off when you have power to the terminal, a charged backup battery, and the terminal is on. The light blinks when the backup battery has a low power charge or if you try to turn on the terminal with no external power supply connected to the terminal. The Power status light turns off once the backup battery charges. For help, see "Learning About the Power Supply and Backup Battery" later in this chapter.

Network Connect   This status light tells you if the T2480 or T2481 is connected to your Ethernet network or tells you if the T2485 and T2486 is connected via RF communications to your 2.4 GHz RF network. The Network Connect status light may be turned off, blinking, or turned on.

	Status Light Off	Status Light Blinks	Status Light On
T2480/1:			
Ethernet & TCP/IP	Not connected to the Ethernet network.	Not used.	Connected to the Ethernet network.
Ethernet & UDP Plus	Not connected to the Ethernet network.	Not connected to the Model 200 Controller.	Connected to the controller.
T2485/6:			
TCP/IP	Not connected to an access point.	Not used.	Connected to an access point.
UDP Plus	Not connected to an access point.	Not connected to the Model 200 Controller.	Connected to an access point and the controller.

When the Network Connect status light is turned off, you are either not connected to the network or the terminal is not configured. Make sure the Network Activate command is enabled and that the terminal is configured correctly for your network. If your T2485/6 is configured correctly, you may be out of range of an access point.

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

Network Transmit   This status light turns on when data is buffered in the RF or Ethernet network interface. The data is either waiting to be transmitted to the Model 200 Controller or host, or received data has not been accepted by the application on the T248X. When no data is being buffered in the interface, the Network Transmit status light is off.

▲ **Modifier Key**   This status light turns on when you press one of the four modifier keys: △, ⌂, ⌊f⌋, or ⌊-f⌋. The modifier 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 status light turns off.

♠ **Caps Lock**   This status light turns on when you press ⌊f⌋⌊"⌋ to enable the Caps Lock feature and type all alphabetic characters as uppercase letters. When you press ⌊f⌋⌊"⌋ to disable Caps Lock, the light turns off.

Note: On a German alphanumeric keypad, press ⌊f⌋⌊Y⌋.

✔ **Good Read**   This status light turns on when you successfully scan a bar code label with an input device (badge scanner, laser scanner) that is connected to the terminal. The status light turns off after 2 seconds.

■ **User Defined**   This status light is user defined. You can program this status light to turn on and off for any task or error within your application.

Customizing the Font Size and Screen Parameters

On each T248X, you can customize the font size, row spacing, and video mode to meet your needs. You can configure these options:

Font size   Set the font size to 8x8 (8 pixels by 8 pixels), 8x16, or 16x16. The default for the T248X terminals is the 8x16 font size (single-width and double-height characters).

Note: The 8x8 font size is not available on the T2480 and T2485.

Row spacing   Set the row spacing to a value from 0 to 8 on the T2481 and T2486 terminals. Row spacing lets you define the amount of additional space (scan lines) between the lines. The number of scan lines is two times the value you set for the row spacing. A scan line is a row of pixels. A value of 8 adds 16 blank scan lines to increase the space between lines. For the T2481 and T2486, the default is 0.

Note: The Row Spacing command is not available on the T2480 and T2485.

Video mode   Set the Video mode to original, normal, or reverse. The default is original and displays black characters on a white background. Original is the Video mode set at the Intermec factory. Normal mode displays black characters on a white background. Reverse mode displays white characters on a black background.

Depending on the T248X model you have, there are two default screen sizes:

- 4 lines by 40 characters for the T2480 and T2485
- 12 lines by 40 characters for the T2481 and T2486

Use this next table to determine the font size that meets your needs.

Model	Font Size	Row Spacing	Characters Displayed
T2480 and T2485	8x16 (default)	7 (default)	40 characters by 4 lines
	16x16	7 (default)	20 characters by 4 lines
T2481 and T2486	8x8	0	40 characters by 25 lines
		8	40 characters by 9 lines
	8x16 (default)	0 (default)	40 characters by 12 lines
		8	40 characters by 6 lines
	16x16	0	20 characters, 12 lines
		8	20 characters by 6 lines

Note: The row spacing cannot be changed on the T2480 and T2485.

Using the Screen As a Viewport

The TRAKKER Antares 248X terminal screen shows 4 lines by 40 characters up to a maximum of 25 lines by 80 characters of data at one time (depending on the model and configuration). 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. If your application supports viewporting, 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*.

Understanding the Terminal's Audio Signals

The TRAKKER Antares 248X terminal has an internal speaker to sound audio signals and 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 audio volume to meet the needs of your working environment. For example, use a quiet beep in a library or a loud beep in a manufacturing plant. There are three ways to change the audio volume:

- Use the keypad (press ⌨f ⌨E, ⌨f ⌨◑, or ⌨f ⌨Q depending on your keypad). For help, see "Adjusting the Contrast and Beep Volume From the Keypad" earlier in this chapter.
- Use the Beep Volume command.
- Use the TRAKKER Antares 2400 Menu System. For help, see Chapter 3, "Configuring the Terminal."

Note: If the Beep Volume is turned off, you will not hear any audio signals including the keyclick.

If you have a T248X with an enhanced input/output board, you can attach an amplified external speaker to amplify the terminal's audio signals. For help, see Chapter 2, "Installing the Terminal."

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 symbology.
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.
Click	When you press a key, the terminal sounds a click. You can disable the keyclick. The terminal also clicks while you are scanning a two-dimensional symbology (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 the next section, "Learning About the Power Supply and Backup Battery."

Learning About the Power Supply and Backup Battery

The TRAKKER Antares 248X terminal operates using an external power supply. It has a rechargeable NiCd (Nickel-Cadmium) backup battery that is designed to back up all memory and the real-time clock while AC power is not supplied. You must have a power supply connected to operate the terminal.

An Intermec power supply and North American power cord ship with the terminal. If you are using the terminal outside North America, you need to purchase the appropriate power cord for your local power supply.

Backup Battery

The backup battery is a rechargeable NiCd battery that is designed to back up all memory and the real-time clock while AC power is not supplied. The backup battery provides protection for power surges, sags, spikes, and dropouts.

Here are the features of the backup battery:

- During a power loss, the terminal uses backup battery power to continue operating for 3 seconds. If power is still not restored, the terminal saves all data and turns off. However, if the backup battery charge is low, the terminal cannot protect the data against a power loss and will turn off immediately.

- The backup battery is rechargeable. The power supply provides the power to charge 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 whenever the voltage level gets low.

- The backup battery will last for a minimum of three years before its capacity is reduced. Battery life depends on the age of the backup battery, your usage, and RF duty cycle factors. If you are using the terminal in extreme environments (very hot or very cold), battery life will be reduced and you may need to replace the backup battery more often.

- The backup battery will provide backup battery power for a minimum of 2 weeks with a fully-charged backup battery pack installed and no AC power. If you plan to store the terminal for a long period of time, save any data stored in RAM to another drive on the terminal.

  If the backup battery is still providing power when you reconnect the power supply and turn the terminal on, the terminal resumes exactly where it was when you turned it off, or restarts your application.

  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.

Charging the Backup Battery

The backup battery backs up all memory and the real-time clock in case of a power failure. The backup battery is shipped inside the terminal, but may not be fully charged when you initially unpack your terminal. You need to fully charge the backup battery after you first install it.

The terminal continuously monitors the backup battery voltage level and charges the backup battery whenever the voltage level gets low. If an external power supply is not connected or powered, the backup battery will not charge. If the Power status light blinks, the backup battery charge is low. You can operate the terminal while the backup battery is charging.

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

• The Power status light is blinking on the left side of the screen.

• Check the status of the backup battery using the Backup Battery/PIC Status diagnostic.

Note: The backup battery charger operates between 32°F and 104°F (0°C and 40°C). If you are continuously using the terminal in an environment that is outside this temperature range, the backup battery will not charge. You may need to protect the terminal and create an environment that is within the charging temperature range for a few hours every week to keep the backup battery charged.

To charge the backup battery

1. Make sure the power supply is connected to the terminal and a powered electrical outlet.

2. Let the power supply charge the backup battery for 24 hours to fully charge the backup battery.

Recognizing a Low or Discharged Backup Battery

If you see the Power status light blinking, the terminal is indicating that the backup battery power is low. Make sure the external power supply is connected to the terminal and a powered electrical outlet. The backup battery is fully charged within 24 hours.

If the Power status light continues to blink after 24 hours and the power supply is attached, the backup battery may be bad. Use the Battery/PIC Status diagnostic in the TRAKKER Antares 2400 Menu System to check the status of the backup battery. The Battery/PIC Monitor diagnostic screen displays the current status (good or bad), the voltage, the temperature, and the charging status of the backup battery.

If the backup battery status is bad or the backup battery will no longer hold a charge (Power status light is always blinking), you may need to replace the backup battery. You need to backup all your data stored in RAM. Any data stored in flash memory or on the SRAM drive will be saved. For help, contact your local Intermec Service Representative.

Note: The NiCd backup battery is NOT user-serviceable. You must return the TRAKKER Antares 248X terminal to Intermec to replace the 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.

Note: If you use the terminal in a very cold or very hot temperature environment, battery life will be reduced or the backup battery may not charge. For more information, see "Backup Battery" earlier in this chapter.

Defining the Terminal's Memory and Drives

The TRAKKER Antares 248X terminals come with the following memory and drives:

Drive C — 750K flash drive

Drive D — Optional 2MB flash memory

256K configurable RAM drive

Drive E — Optional 2MB or 4MB extended storage drive

Drive G

248XU.180
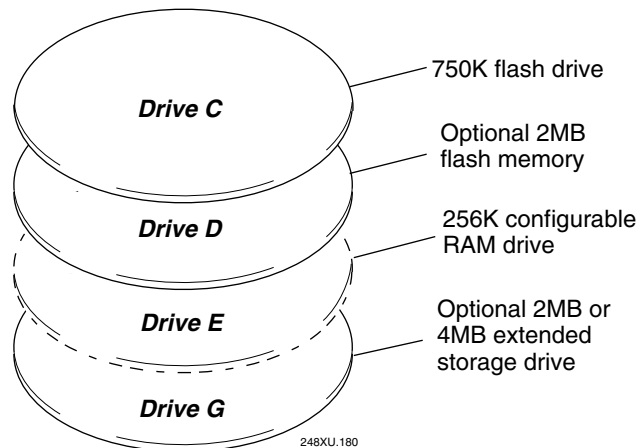
Drive C is a 750K flash drive on the T248X. You can store up to 32 files on drive C. Applications must be stored on drive C.

Drive D is an optional 2MB extended flash memory storage that can be used as a storage drive or 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. For help configuring the drive, see "Configuring Drives and Memory on the Terminal" in Chapter 3.

Note: You can only configure the 2MB 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.

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. 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. For help configuring the drive, see "Configuring Drives and Memory on the Terminal" in Chapter 3.

Drive G is an optional 2MB or 4MB extended storage drive that is available for a T2480/1 terminal with Ethernet connectivity or a T2485/6 terminal. 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 TRAKKER Antares terminals, applications are customer defined. You have 512K total RAM for the application execution space. You can configure up to 256K of the total 512K application execution space as a RAM drive. 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 automatically used as the Malloc/free dynamic memory pool.

For example, if the application size is 64K and drive E is configured as a 256K RAM drive, you are using 320K of the 512K application execution space. The application uses the remaining 192K of RAM as a Malloc/free dynamic memory pool. The application size is not necessarily the size of the *.BIN file. You can use the compiler map file output to determine the application size.

Where Do You Go From Here?

Now that you understand the features and capabilities of your new TRAKKER Antares terminal, you can use this manual to learn how to perform these tasks:

Task or Feature	See This Chapter
To learn how to install the terminal and connect it to your network	Chapter 2, "Installing the Terminal"
To learn how to change the terminal's configuration	Chapter 3, "Configuring the Terminal"
To learn how to use the terminal in your 2.4 GHz RF or wired data collection system and learn about network protocols	Chapter 4, "Operating the Terminal in a Network"
To learn how to download and run custom applications or screen mapping on your programmable terminal	Chapter 5, "Using Custom Applications and Screen Mapping"

2

Installing the Terminal

This chapter explains how to install the TRAKKER Antares 248X terminal in your serial, Ethernet, or RF network. You will also learn how to turn on the terminal and configure the network parameters to start using the terminal.

Preparing to Install the Terminal

Make sure you have the necessary equipment to install and connect the T248X to your network. The terminal ships with this equipment:

- T2480, T2481, T2485, or T2486 terminal

- Antenna (ships only with the T2485 and T2486)

- Terminal blocks (ships only with the enhanced input/output board option)

- Power supply

- North American power cord

Note: A badge scanner may already be installed on the terminal if you ordered this option.

In addition, you may need this equipment (not shipped with the T248X) to install the terminal:

- Power cord for terminals used outside of North America

- Mounting bracket (desk-mount or wall-mount)

- Input device (badge scanner, wand, laser scanner, CCD scanner)

- RS-232 or RS-232/422/485 serial communications cables

- Multi-drop cable

- Ethernet (10BaseT) cable

- Wiring for sense inputs, output relays, and external speakers

Before you install the terminal, you should:

1. Choose a location to mount the terminal.

2. Attach the antenna to the T2485 or T2486.

3. Find out about using the desk-mount and wall-mount brackets.

Each of these topics are covered in the next sections. You should also make sure you are familiar with the connectors and equipment inside the terminal's rear enclosure. For help, see "Understanding the Back Panel" in Chapter 1.

Choosing a Location

You can mount the T248X on a horizontal surface, such as a desktop or table-top, or on a vertical surface, such as a wall. The easiest way to mount the T248X is to use one of Intermec's mounting brackets:

• TRAKKER Antares 248X Desk-Mount Bracket (Part No. 066709)

• TRAKKER Antares 248X Wall-Mount Bracket (Part No. 066708)

For more information on the brackets, see "Using the Desk-Mount or Wall-Mount Bracket" later in this chapter.

Choose a mounting location for the T248X that provides

• easy access to the badge scanner or other input devices.

• easy access to the keypad.

• an unobstructed view of the screen.

• clearance for the cables.

• access to a powered AC electrical outlet.

• good communications for the antenna where the antenna is not too close to a metal wall.

To plan for and prepare a mounting location, use the actual size (1:1 scale) mounting templates provided in Appendix D, "Keypad Labels and Terminal Mounting Templates."

Attaching the Antenna

On the T2485 and T2486, the antenna is shipped separately. Remove the antenna from the shipping box and attach the antenna as shown.

Choose a location for the terminal where the antenna can be effective. Do not place the terminal where the antenna is too close to a metal wall or it will limit the communications range. You can also use an Intermec-approved accessory antenna to improve RF communications.

Note: See your Intermec sales representative for information about and a list of Intermec-approved accessory antennas for the T248X.
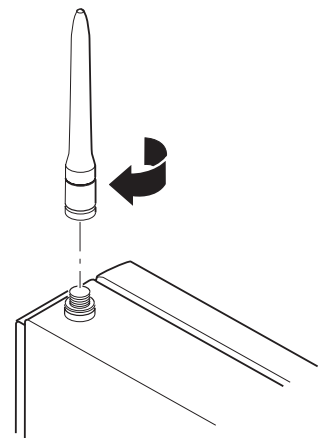
<div align="center">⚠ **CAUTION**</div>

Caution
Make sure all components with antennas are at least 1 foot (0.3 meters) 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 (0.3 mètres) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

Using the Desk-Mount or Wall-Mount Bracket

There are two accessories to help you mount the terminal:

• TRAKKER Antares 248X Desk-Mount Bracket (Part No. 066709)

• TRAKKER Antares 248X Wall-Mount Bracket (Part No. 066708)

To plan for and prepare a mounting location, use the actual size (1:1 scale) mounting templates provided in Appendix D, "Keypad Labels and Terminal Mounting Templates."

To install the desk-mount bracket

1. Connect power and all other devices through the back panel of the terminal.

2. Install the desk-mount bracket and the terminal. For help, see the accessory instruction sheet.

248XU.033
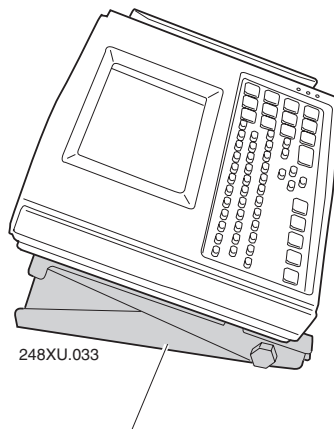
Desk-mount bracket

To install the wall-mount bracket

1. Install the wall-mount bracket and the terminal. For help, see the accessory instruction sheet.

2. Connect power and all other devices through the back panel of the terminal.

To mount the power supply

•   The T248X and the power supply are dust and moisture protected to IEC 60529/IP53 only when installed properly in the Intermec desk-mount or wall-mount bracket. The brackets use a power supply holder to effectively protect the power supply from dust and moisture. For help, see the accessory instruction sheets.

248XU.034
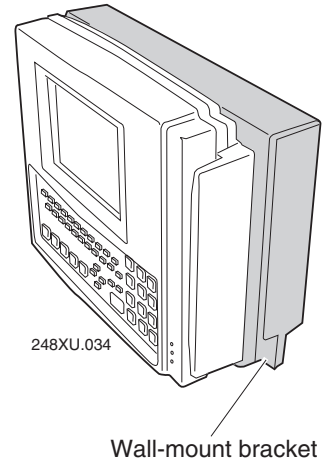
Wall-mount bracket

Intermec recommends that you use the desk or wall-mount bracket to mount the T248X and protect the power supply. You can use other mounting brackets or enclosures. However, without the Intermec desk or wall-mount bracket, the power supply is intended for indoor use only. Use of any other mounting brackets or enclosures will void the environmental protection ratings of the terminal.

WARNING

Warning
Installation of the power supply must be performed strictly in accordance with the procedures contained in the TRAKKER Antares 248X desk and wall-mount bracket instruction sheets. Failure to protect the power supply in areas of high dust and moisture may result in injury or death due to electric shock.

Avertissement
L'installation de la source d'alimentation doit être exécutée en respectant de façon stricte les procédures décrites dans les feuilles d'instruction du TRAKKER Antares 248X de bureau et monté au mur. L'échec de la protection de la source d'alimentation dans des zones de grande poussière et d'humidité peut entraîner des blessures ou la mort en raison d'un choc électrique.

Installing the Terminal and Connecting External Devices

The steps to install your T248X depend on the options you purchased and the type of network or devices to which you want to connect the terminal.

To install and configure your T248X

1. If you have a wall-mount bracket, install it and install the terminal in the wall-mount bracket. See page 2-5.

2. Connect the power supply and input devices to the T248X. See page 2-8.

3. Connect the T248X to serial devices or networks. See page 2-10.

4. Connect the T248X to an existing Intermec CrossBar network. See page 2-11.

5. Connect the T2480 or T2481 directly to an Ethernet network. See page 2-14.

6. Connect sense inputs, output relays, an unattended scanner, or an amplified external speaker to the T248X terminal blocks. See page 2-15.

7. Route all the cables and secure the back panel. See page 2-25.

8. If you have a desk-mount bracket, install it and install the terminal in the desk-mount bracket. See page 2-5.

9. Turn on the terminal and configure it for your serial, multi-drop, Ethernet, or RF network. See page 2-26.

These steps are described in detail in the next sections.

Connecting Power and Input Devices

You connect power and input devices through the rear enclosure of the
TRAKKER Antares 248X terminal.

To connect the power supply and input devices

1. Use a Phillips screwdriver to remove the six screws on the back panel.

Screw
(6 places)

248XU.203
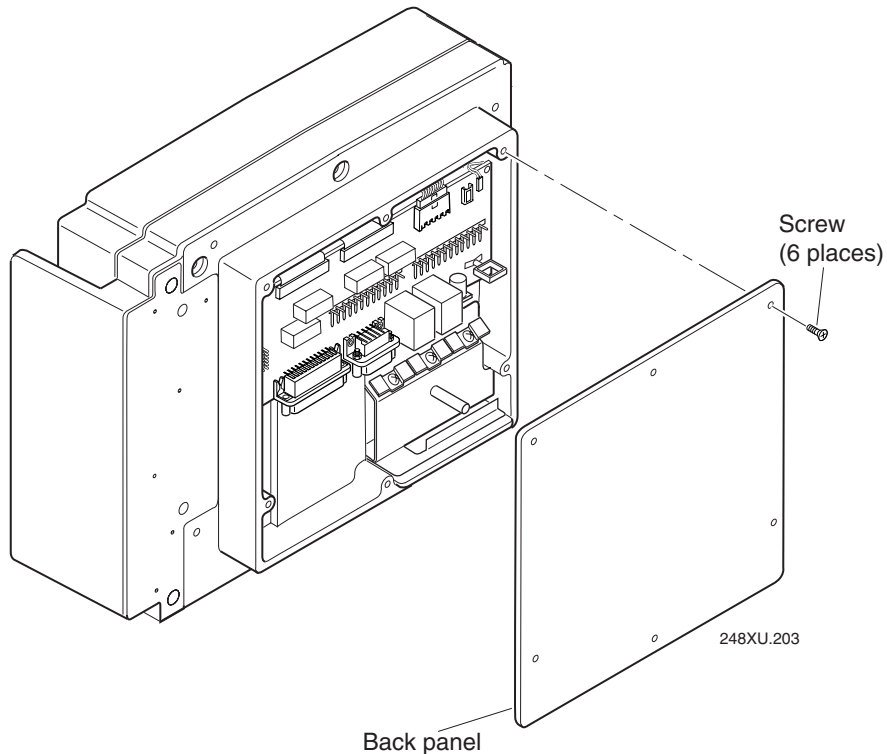
Back panel

2. Remove the back panel and place it on a clean surface.

3. Connect the power supply and input devices to the back of the terminal.

   • Connect the power supply plug to the 12V power supply connector.
     Next, connect the power cord from the power supply to a powered
     electrical outlet.

   • Connect the badge scanner 6-pin connector to the badge scanner
     connector.

   • Connect the Stewart 10-pin connector from the input device to the
     external scanner connector.

Connecting the Power Supply and Input Devices

External
scanner
connector

Badge
scanner
connector

12V power
supply connector

12V power
supply plug

Cable
restraint

Cable
restraint bar

To power
supply

Scissors
seal

248XU.233
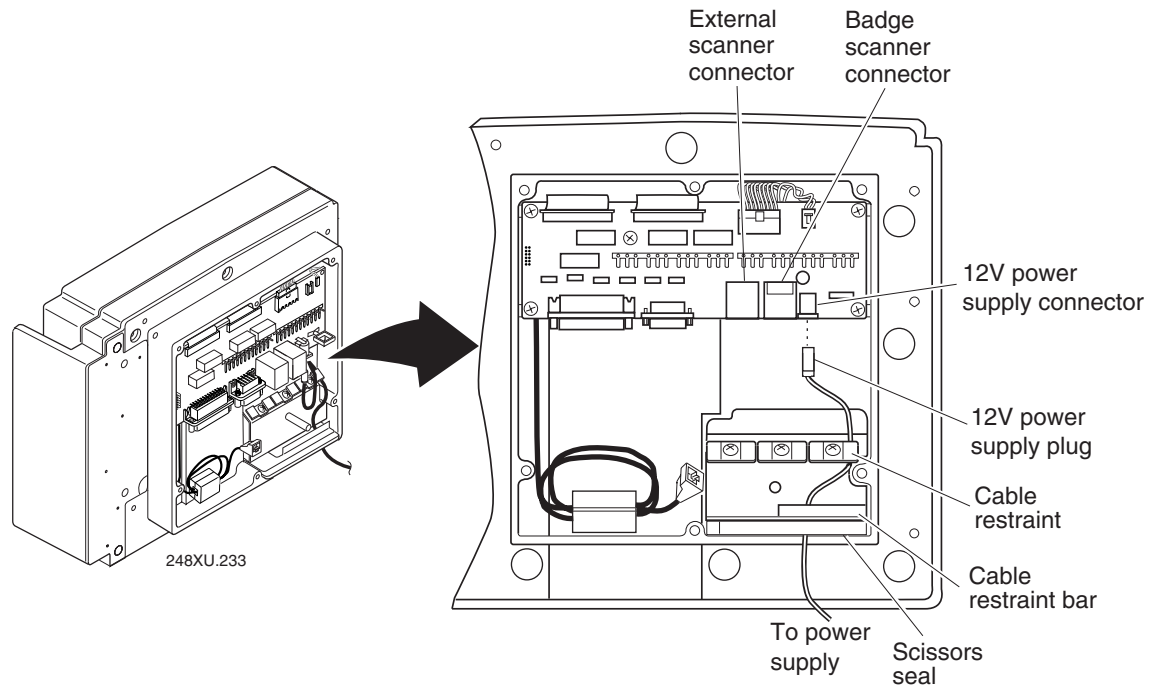
4. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the power supply cable under the cable restraint. Tighten the screw to secure the cable.

5. Route all the cables under the cable restraint bar and through the scissors seal.

6. To install other devices, leave the back panel off and continue with the next instructions in this chapter.

    If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Connecting to Serial Devices and Networks

You use the terminal's serial ports to transfer data between the terminal and a serial device. Every T248X has one serial port (COM1) that supports RS-232 communications. You can use COM1 to connect to a serial device, such as a printer, scale, or PC.

The terminal has an option for an enhanced input/output board that provides two additional serial ports. COM2 supports RS-232/422/485 communications. You can use COM2 to connect to a serial device, a wired network, or an Intermec CrossBar network. COM4 supports RS-232 communications. You need the adapter cable accessory (Part No. 067185) to use COM4.

To connect the COM ports

1. Connect the 9-pin RS-232 connector from a serial device to the COM1 connector on the back of the terminal.
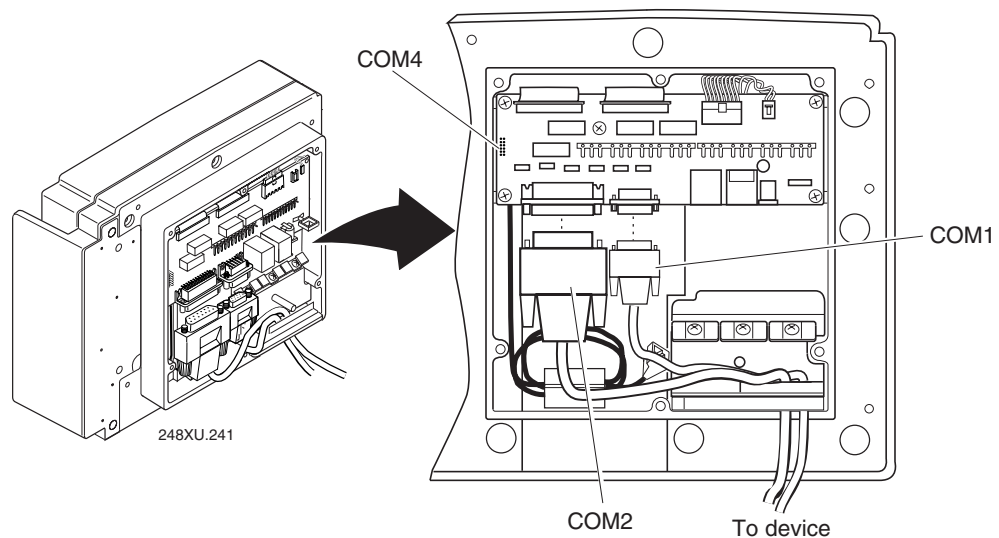
2. Connect the 25-pin serial or multi-drop connector from a serial device or network to the COM2 connector on the back of the terminal.

3. Connect the 9-pin RS-232 connector from a serial device to the COM4 adapter cable on the back of the terminal.

4. Route the cables under the cable restraint bar and through the scissors seal.

5. Plug the other end of the serial or multi-drop cable into the serial device or network.

6. To install other devices, leave the back panel off and continue with the next instructions in this chapter. If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Connecting to an Intermec CrossBar Network

If you have a T248X with an enhanced input/output board, you have a second serial port (COM2) that supports RS-232/422/485 communications. With COM2, you can install the T248X in an existing CrossBar network. The T248X can communicate with a 9154 or 9161 controller using Multi-Drop protocol.

One main difference between the T248X and the 9560 stationary terminal is the type of program or application you can run on the terminal. The T248X can run a C/C++ application while the 9560 terminal runs IRL programs. You need to prepare your IRL data collection program for the T248X by converting it to a Microsoft C/C++ application.

There are two options for converting an IRL program:

• Use an IRL-to-C conversion program. For help, contact your local Intermec service representative.

• Write a new C/C++ application. You can use either the TRAKKER Antares Programmer's Software Kit (PSK) (Part No. 065332) with Microsoft Visual C/C++ version 1.5X (Part No. 590224) or EZBuilder (Part No. 066381). For help, see "Creating Applications for the Terminal" in Chapter 5.

The application needs to send and receive data through COM2. Once your application is converted, you can download the application to the T248X and begin using it in your CrossBar network. Follow the next instructions to install and configure the terminal for a CrossBar network.

248XU.039
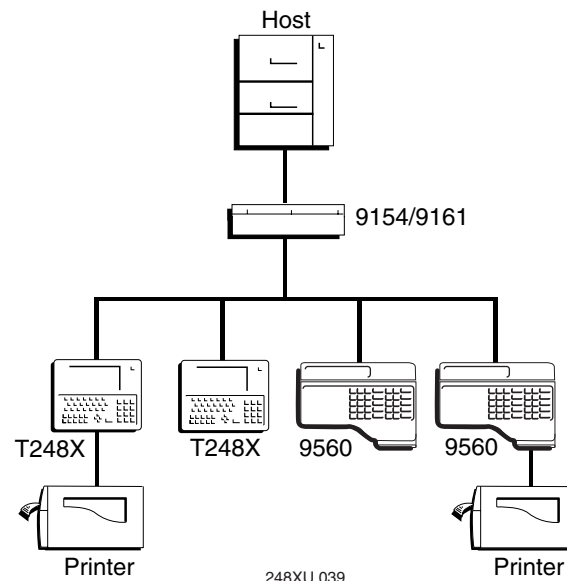
To install the T248X in an existing CrossBar network

1. Connect the 25-pin multi-drop connector from your 9154 or 9161 controller to the COM2 connector on the back of the terminal.

COM4

COM1

248XU.241

COM2   To device
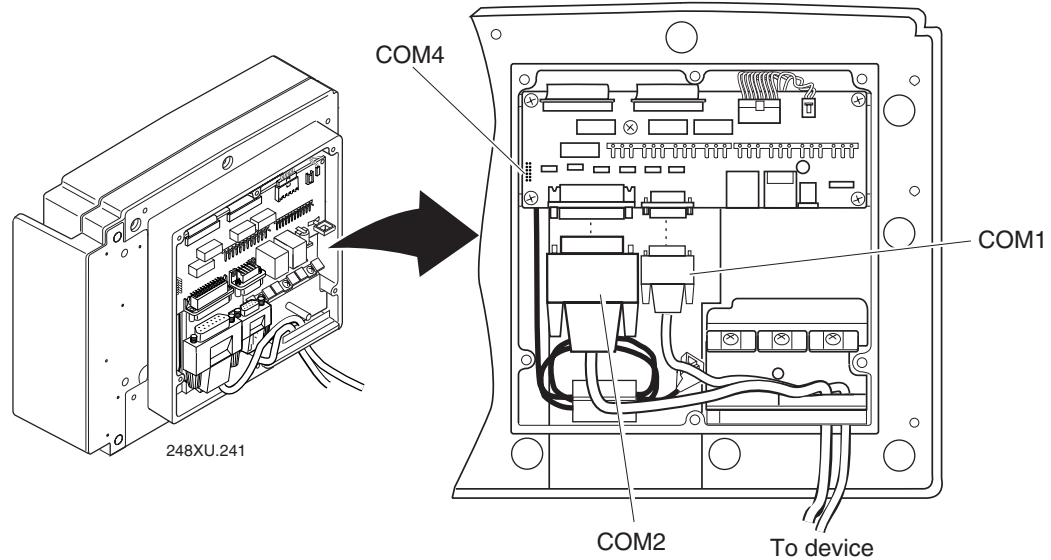
2. To download applications to the T248X, you need to connect the terminal to a PC using COM1 or COM4. Connect the 9-pin RS-232 connector from the PC to the COM1 connector or the COM4 adapter cable on the back of the terminal.

3. Route the cables under the cable restraint bar and through the scissors seal.

4. Plug the other end of the multi-drop cable into the 9154 or 9161 controller.

5. To install other devices, leave the back panel off and continue with the next instructions in this chapter.

   If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter. Next, continue with Step 6.

6. Turn on the terminal and configure the serial ports. For help, see "Configuring the Serial Port Parameters" later in this chapter.

   • Configure COM1 or COM4 serial port parameters to match your PC serial port.

   • Configure the COM2 serial port parameters. You need to set Multi-Drop protocol, the baud rate, and the multi-drop address that you assigned for the T248X.

7. Use the FileCopy utility that ships with the PSK and EZBuilder to download your C/C++ application (converted from IRL) from a PC to the T248X. For help, see Chapter 5, "Using Custom Applications and Screen Mapping."

8. Use the System Menu in the TRAKKER Antares 2400 Menu System to load and run an application. For help, see Chapter 5, "Using Custom Applications and Screen Mapping."

Once the T248X is installed, configured, and loaded with your C/C++ application, you can begin using the terminal in your CrossBar network. The T248X will run the C/C++ application and send data to the 9154 or 9161 controller. If you have existing terminals like the 9560 or 9512, these terminals will run the equivalent IRL program and send data to the controller.

Note: You can use COM1 or COM4 to connect to another RS-232 serial device once you have downloaded the application.

Connecting Directly to an Ethernet Network

The TRAKKER Antares 2480 and 2481 terminals have an option for an Ethernet (10BaseT) card. With this option, your terminal can communicate to a host or any device on an Ethernet network.

To connect to an Ethernet network

1. Configure your host computer and network. Assign an IP address for the T2480 or T2481.

2. Connect the Ethernet jack to the Ethernet connector on the back of the terminal.

248XU.245

Ethernet connector

To Ethernet network
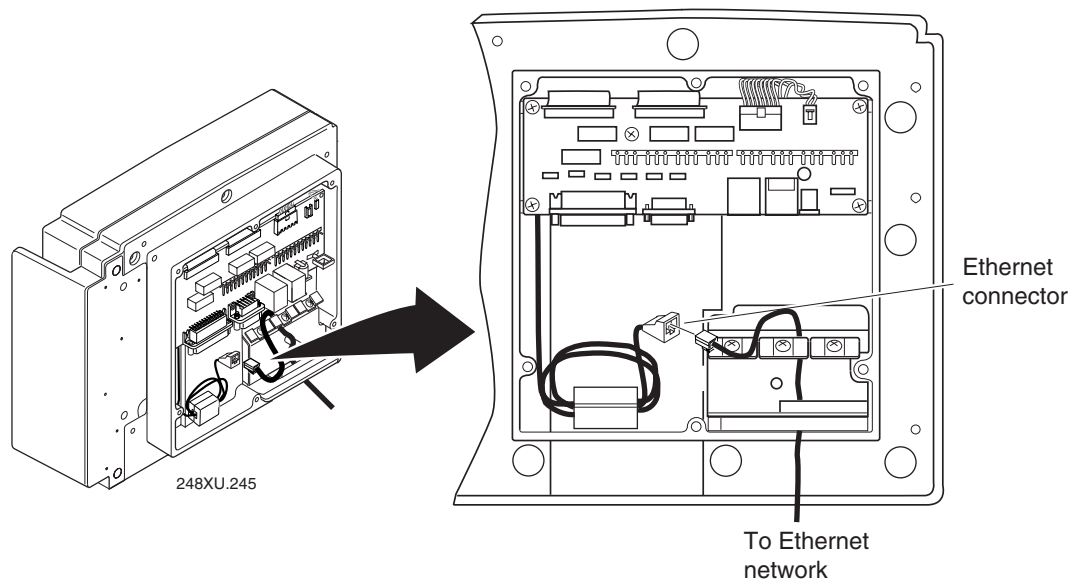
3. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the Ethernet cable under the cable restraint. Tighten the screw to secure the cable.

4. Route the cable under the cable restraint bar and through the scissors seal.

5. Plug the other end of the Ethernet cable into an Ethernet jack on your network.

6. To install other devices, leave the back panel off and continue with the next instructions in this chapter.

   If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Connecting External Devices to the Terminal Blocks

If you have a T248X with an enhanced input/output board, your terminal shipped with two terminal blocks. You use the terminal blocks to connect

- sense inputs (four) to monitor events, such as the opening of a door.

- output relays (four) to actuate external devices, such as a door lock.

- external speaker to amplify the terminal's audio signals.

You need to provide the wiring and electrical equipment to connect the terminal blocks to external devices. It is much easier to connect all your wiring to the terminal blocks before attaching them to the terminal block connectors on the back of the terminal.

The J12 and J13 terminal block connectors are located on the input/output board on the back of the terminal. Each relay on the terminal blocks is rated for 28V (AC or DC) maximum and 1A maximum. The next illustration and table shows the assignments for each block.
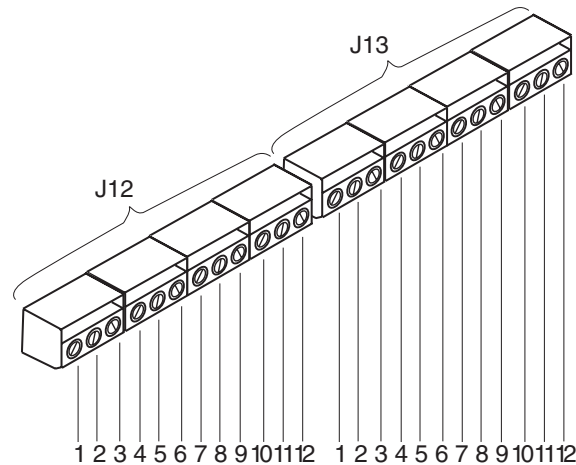
J12 Position	Type	Description
1	Output relay 1	Normally open contact
2	Output relay 1	Common
3	Output relay 1	Normally closed contact
4	Output relay 2	Normally open contact
5	Output relay 2	Common
6	Output relay 2	Normally closed contact
7	Output relay 3	Normally open contact
8	Output relay 3	Common
9	Output relay 3	Normally closed contact

Terminal Block Definitions (continued)

J12 Position	Type	Description
10	Output relay 4	Normally open contact
11	Output relay 4	Common
12	Output relay 4	Normally closed contact

J13 Position	Type	Description
1	Sense input 1	Optically isolated input A
2	Sense input 1	Optically isolated input B
3	Sense input 2	Optically isolated input A
4	Sense input 2	Optically isolated input B
5	Sense input 3	Optically isolated input A
6	Sense input 3	Optically isolated input B
7	Sense input 4	Optically isolated input A
8	Sense input 4	Optically isolated input B
9	Reserved	Reserved
10	Reserved	Reserved
11	External speaker	Speaker output
12	External speaker	Speaker ground

The next sections explain how to connect and use the terminal blocks.

Activating External Devices With the Output Relays

The T248X has four output relays to actuate external devices, such as a door lock or a turnstile lock. You need to supply the wiring and electrical equipment. Each relay contact is rated for 28V (AC or DC) maximum and 1A maximum.

You control the relays with an application that uses the IM_GET_RELAY and the IM_SET_RELAY functions in the TRAKKER Antares Programmer's Software Kit. If you remove power to the T248X, the relays turn off. The relays remain off until the T248X receives a command from the application. For help, see the *TRAKKER Antares Programmer's Software Kit Reference Manual*.

The output relays are grouped in sets of three. There are three positions for each output relay on the J12 terminal block. You connect the external device to the appropriate positions depending on the type of default contact state you want to set for the device as explained next.

To connect an output relay

1. Use a straight-slot screwdriver to loosen the screws on a set of three output relay positions on the J12 terminal block.

    For example, if you are connecting a single external device, you would loosen the screws for positions 1 and 2 or positions 1 and 3 on the J12 terminal block.
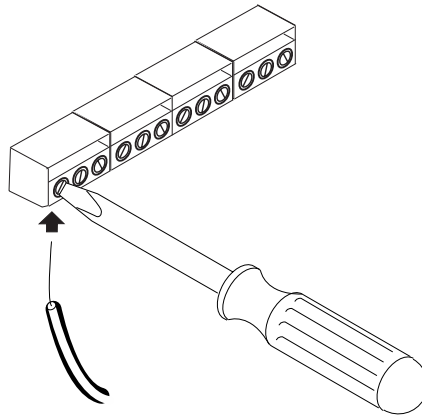
248XU.043

Note: If the terminal blocks are connected to the I/O board, you may need to remove them to connect the wires. For help, see "Removing the Terminal Blocks From the Input/Output Board" later in this section.

2. Insert the wires for the external device into the appropriate positions.

    a. If the device requires a normally open contact, connect the wires to positions 1 and 2, 4 and 5, 7 and 8, or 10 and 11 on the J12 terminal block.

    b. If the device requires a normally closed contact, connect the wires to positions 2 and 3, 5 and 6, 8 and 9, or 11 and 12 on the J12 terminal block.

3. Use a straight-slot screwdriver to tighten the screws and connect the wires.

Sample Output Relay Application
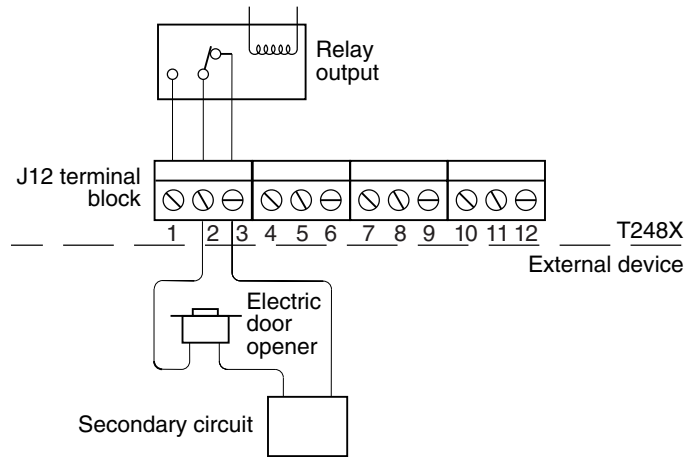
248XU.044

4. Position the terminal block above the J12 terminal block connector on the I/O board. Gently push the terminal block on to the connector until it snaps in place.

    Note: Do not attach the J13 terminal block if you still need to connect the sense inputs or an external speaker.
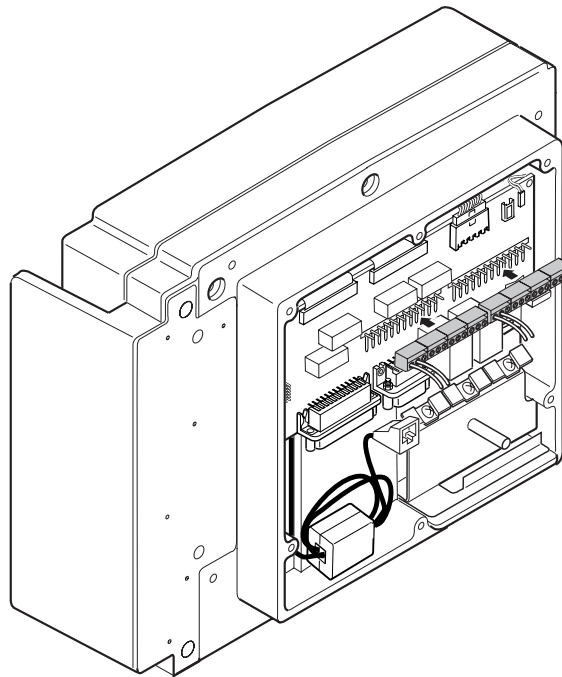
248XU.158

5. Route the wires through the snap-in plastic loop that is just to the right of the power supply connector.

6. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the wires under the cable restraint. Tighten the screw to secure the wires.

7. Route the wires under the cable restraint bar and through the scissors seal.

8. If you need to connect sense inputs or an external speaker, continue with the next instructions in this section.

   If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Monitoring Events With the Sense Inputs

The T248X has four sense inputs to monitor events, such as the opening of a door or the input from an unattended bar code scanner. You need to supply the wiring and electrical equipment. Each sense input monitors its line for an input signal at 5 to 28V (AC or DC) maximum. The terminal's current limiter circuitry limits the current to a nominal value of 900μA.

You monitor the sense inputs with an application that uses these two functions from the TRAKKER Antares Programmer's Software Kit:

• IM_GET_SENSOR_ALL

• IM_GET_SENSOR_INPUT

When a sense input detects a signal, the circuitry goes into a "set" state. The circuitry remains set until the terminal application reads the status of the sense inputs. When the T248X executes one of the functions listed earlier, it records the current status and resets the circuitry. For help, see the *TRAKKER Antares Programmer's Software Kit Reference Manual*.

The next illustration shows a typical connection to a sense input. In this example, a normally open door sense switch is wired in series with the sense input and a secondary power circuit. When the door switch is closed, the sense input detects the 5 to 28V output from the power circuit.

The sense input relays are grouped in pairs. There are two positions for each of the four sense inputs on the J13 terminal block. You connect the external device to the appropriate positions to monitor the device as explained next.

Note: Each sense input is optically isolated to protect the T248X from any damaging currents that may inadvertently enter though the input line.

Sample Sense Input Application

248XU.094
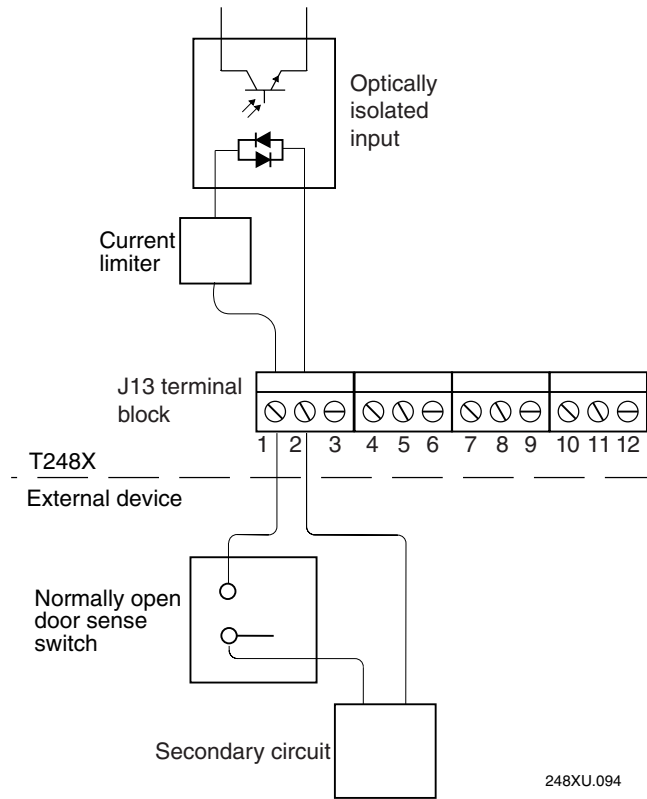
To connect a sense input relay

1. Use a straight-slot screwdriver to loosen the screws on a pair of sense input relay positions on the J13 terminal block.

248XU.043
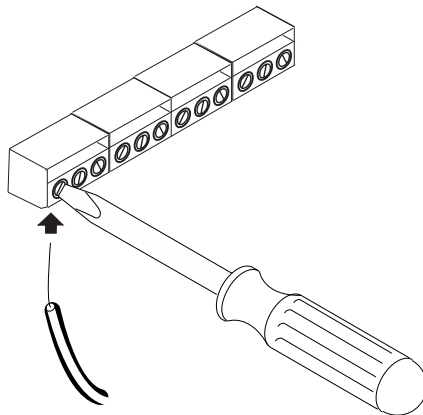
For example, if you are monitoring a bar code scanner on a conveyor line, you would loosen the screws for positions 1 and 2 on the J13 terminal block.

Note: If the terminal blocks are connected to the I/O board, you may need to remove them to connect the wires. For help, see "Removing the Terminal Blocks From the Input/Output Board" later in this section.

2. Insert the wires from the external device into the appropriate positions. The switch mechanism on each device should normally be open.

3. Use a straight-slot screwdriver to tighten the screws and connect the wires.

4. Position the terminal block above the J13 terminal block connector on the I/O board. Gently push the terminal block on to the connector until it snaps in place.
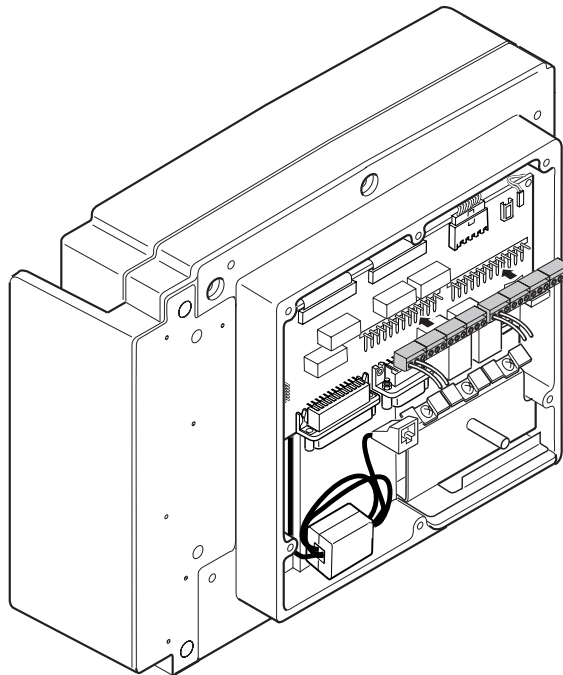
248XU.158

5. Route the wires through the snap-in plastic loop that is just to the right of the power supply connector.

6. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the wires under the cable restraint. Tighten the screw to secure the wires.

7. Route the wires under the cable restraint bar and through the scissors seal.

8. If you need to connect an external speaker, continue with the next instructions in this section. If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Attaching an External Speaker

The T248X terminal has a single internal speaker to sound both audio signals and beep sequences as you use the terminal. You can attach an amplified external speaker to hear the terminal's audio signals in a high noise work environment. The internal speaker continues to operate when an external speaker is connected.

You need to supply the wiring and the amplified external speaker. The terminal can drive an external speaker down to 100 ohms.

To attach an external speaker

1. Use a straight-slot screwdriver to loosen the screw on position 11 on the J13 terminal block.

248XU.154
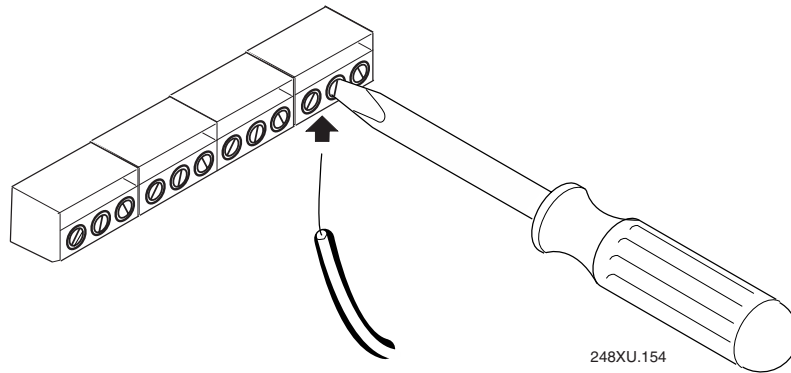
> *Note: You can connect your external speaker with or without the J13 terminal block attached to the I/O board.*

2. Insert the wire from your speaker into position 11 and then tighten the screw to connect the wire.

3. Use a straight-slot screwdriver to loosen the screw on position 12 on the J13 terminal block.

4. Insert the ground wire for the speaker into position 12 and then tighten the screw to connect the wire.

5. If the J13 terminal block is not attached to the I/O board, position the terminal block above the J13 terminal block connector on the I/O board. Gently push the terminal block on to the connector until it snaps in place.

Attaching the Terminal Blocks
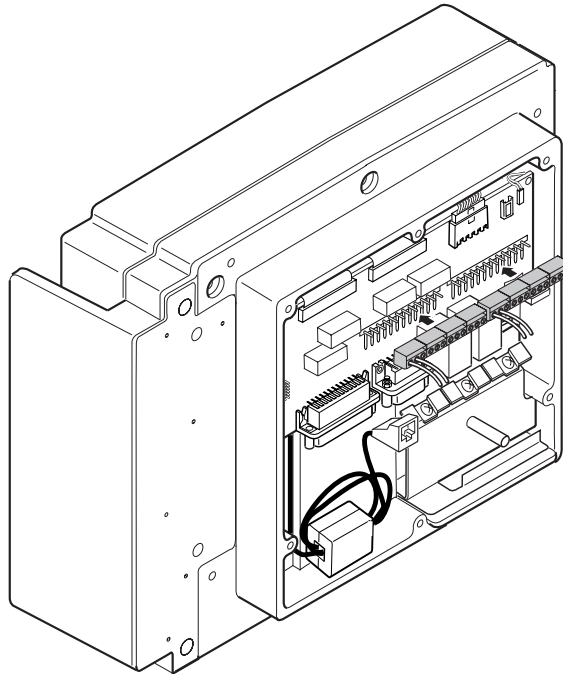
248XU.158

6. Route the wires through the snap-in plastic loop that is just to the right of the power supply connector.

7. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the speaker wires under the cable restraint. Tighten the screw to secure the cable.

8. Route the cable under the cable restraint bar and through the scissors seal.

9. If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" later in this chapter.

Removing the Terminal Blocks From the Input/Output Board

You may need to remove the terminal blocks to make wiring changes. It is easier to connect all your wiring to the terminal blocks before attaching them to the terminal block connectors on the back of the terminal. You need a pair of needle-nose pliers that have a threaded grip to remove a terminal block.

To remove the terminal blocks

1. Starting at one end, use the pliers to grip one section of a terminal block and gently wiggle the pliers up and down to loosen the block.

248XU.040
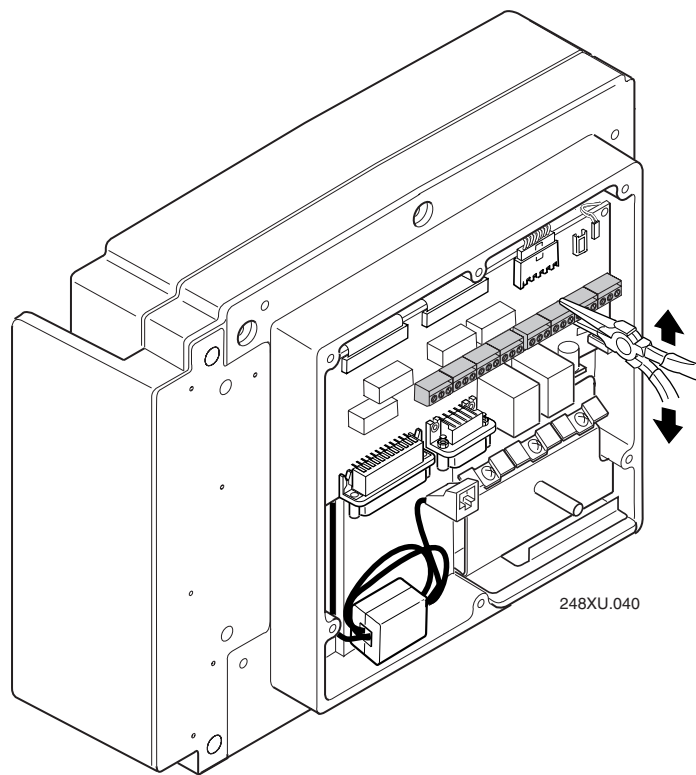
2. Move the pliers to the next section of the terminal block and gently wiggle the pliers up and down to loosen the block. Repeat the procedure until you have loosened all sections of the terminal blocks.

3. Use your hand to pull the terminal block off the connector.

4. If some of the sections of a terminal block have come apart, slide the sections back together to make one block with four sections.

5. Use the instructions earlier in this section to connect an external device and attach the terminal blocks to the input/output board.

Routing Cables and Securing the Back Panel

Once you have connected power, input devices, Ethernet, and external devices, you can secure all the cables and attach the back panel.

To route all cables and secure the back panel

1. Make sure the sense input wires, output relay wires, and external speaker wires are routed through the snap-in plastic loop that is just to the right of the power supply connector.

2. Make sure the power supply cable, Ethernet cable, sense input wires, output relay wires, and external speaker wires are secured in the cable restraint.

   To secure cables and wires in the cable restraint, use a Phillips screwdriver to loosen the screws on the cable restraint. Route the cables and wires under the cable restraint. Tighten the screw to secure the cable.

3. Route all cables under the cable restraint bar and through the scissors seal.

Plastic loop

Cable restraint

Cable restraint bar

Scissors seal

248XU.071
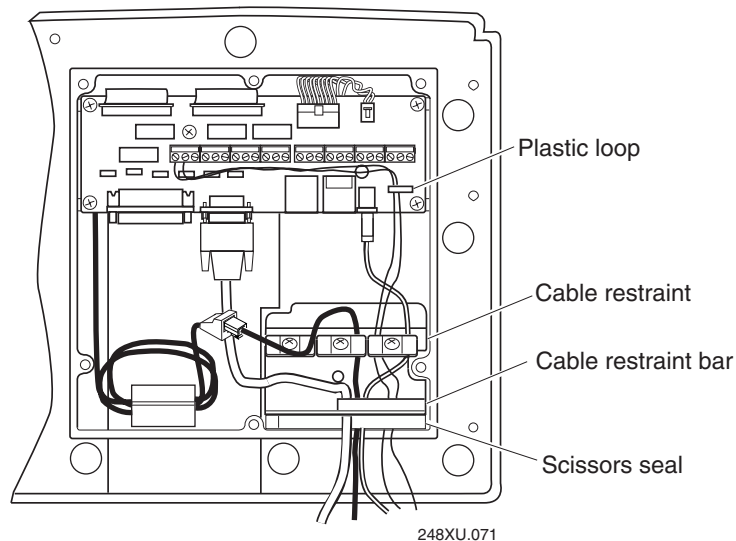
4. With the seal facing toward the terminal, place the back panel on the back of the terminal.

5. Use a Phillips screwdriver to tighten the six screws to 19 in-lb torque.

6. If you are using the desk-mount bracket, install the desk-mount bracket and install the terminal in the bracket.

   If you are using the wall-mount bracket, close and secure the bracket.

7. Turn on the terminal and configure the network parameters. Continue with the instructions in the next section.

Turning On the Terminal for the First Time

Once the power supply is connected and you have installed the terminal, you are ready to turn on the terminal.

To turn on the terminal

1. Press the ⌶/○ key on the keypad. The terminal runs POST (power-on self test) and then the Boot Menu appears.

```
        BOOT MENU
    1 - Boot System
    2 - Run Loader
    3 - Power Down


POWER DOWN IN 60 SEC
```
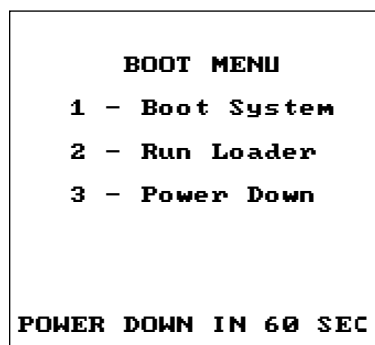
248XU.104

Note: If the backup battery charge is low and the terminal fails POST, a POST results screen appears. If the backup battery is the only failed test, press esc *to exit the screen. If any other test failed, contact your local service representative before using the terminal.*

2. Press [1] to boot the terminal and initialize the firmware. The TRAKKER Antares screen appears.

248XU.127

Next, either a sample application screen or a terminal emulation (TE) application welcome screen appears.

```
1996/01/01  12:00:00
No Radio in System.
```

```


        Intermec

    TRAKKER Antares
        3270
      Terminal
      Emulation
      Version 5.0
```

248XU.035

Note: On a T248X loaded with terminal emulation, you may need to press ⏎ to create the TE configuration file.

3. Charge the backup battery. Follow the instructions in the next section, "Charging the Backup Battery."

4. Configure the serial, Ethernet, or RF communications parameters so that you can begin using the terminal. Follow the instructions for "Configuring the Terminal to Communicate in Your Network" later in this section.

Charging the Backup Battery

The backup battery backs up all memory and the real-time clock in case of a power failure. The backup battery is shipped inside the terminal, but may not be fully charged. You need to fully charge the backup battery after you install the terminal.

To charge the backup battery

1. Make sure the power supply is connected to the terminal and a powered electrical outlet.

2. Let the power supply charge the backup battery for 24 hours to fully charge the backup battery.

Note: For more information about the backup battery, see "Backup Battery" in Chapter 1.

Configuring the Terminal to Communicate in Your Network

You need to configure the T248X to communicate with serial, Ethernet, or RF devices in your network. The parameters you configure depend on the options you purchased and the type of network or devices to which you want to connect the terminal.

Here are the parameters you need to set:

• Time and Date

• Serial port (COM1, COM2, COM4)

• Ethernet

• RF communications (T2485 and T2486)

The next sections list the parameters you need to configure and explain how to use the TRAKKER Antares 2400 Menu System to configure the terminal.

Setting the Time and Date

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

To set the time and date

1. Press ⎡f⎤⎡↵⎤ ⎡2⎤ ⎡4⎤ ⎡8⎤ or scan this bar code to access the TRAKKER Antares 2400 Menu System:

   Enter Test and Service Mode

   ‖‖‖‖ ‖‖ ‖‖‖‖‖ ‖‖‖ ‖‖‖

   ..-.

   The Main Menu appears.

   ```
   ┌──────────────────────────┐
   │        MAIN MENU         │
   │                          │
   │ Configuration Menu       │
   │ Diagnostics Menu         │
   │ System Menu              │
   │ About TRAKKER 2400       │
   │                          │
   │                          │
   │ ↑↓ Select item           │
   │ [Enter] Next screen      │
   │ [F1] Help                │
   │ [Esc] Exit               │
   └──────────────────────────┘
   ```
   248XU.001
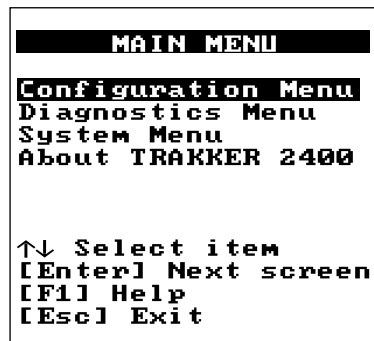
2. Press ⌄ to choose the System Menu and then press ⏎ . The System Menu appears.

```
      SYSTEM MENU
File Manager
Load Default Values
Set Time and Date
Store Configuration
Upgrade Firmware



↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
248XU.051

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

```
    TIME AND DATE
Current time is
 12:00:00
New time:
 12:39:00

Current date is
 1996/01/01
New date YYYY/MM/DD:


  OK        CANCEL
```
248XU.009
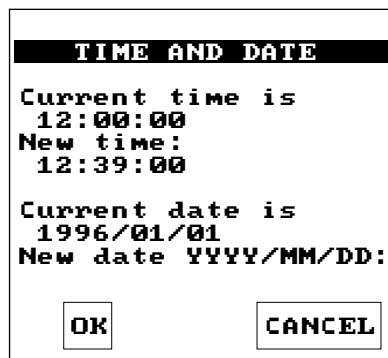
4. Type the current time in the format HH MM SS (hours, minutes, seconds) with a space character (→) between each field and then press ⌄. The program fills in the colon character in the time field.

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

   [1] [6] [→] [0] [5] [→] [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, 1998, type:

| 1 | 9 | 9 | 8 | → | 0 | 8 | → | 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 want to configure a serial port, continue with the next section, "Configuring the Serial Port Parameters."

    If you want to configure a T2480 or T2481 with Ethernet, follow the instructions for "Configuring the Ethernet Parameters" later in this chapter.

    If you have a T2485 or T2486, follow the instructions for "Configuring RF Communications" later in this chapter.

Configuring the Serial Port Parameters

You use the terminal's serial ports to transfer data between the terminal and a serial device. Every T248X has one serial port (COM1) that supports RS-232 communications. You can use COM1 to connect to a serial device, such as a printer, modem, or PC.

The terminal also has an option for two additional serial ports. COM2 supports RS-232/422/485 communications. You can use COM2 to connect to a serial device, a wired network, or an Intermec CrossBar network. COM4 supports RS-232 communications.

You must first select the communications protocol for each COM port. Depending on the protocol, you need to set some or all of 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
Commands via serial port	Enabled without TMF
Data bits	7
EOM (End of Message)	\x03 (hexadecimal ASCII value for ETX)
Flow control	None
Handshake	Disabled
LRC	Disabled
Parity	Even
Poll (Polling)	Disabled
Protocol	Configurable
SOM (Start of Message)	\x02 (hexadecimal ASCII 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. In a CrossBar network, you also need to configure your 9154 or 9161 controller to add the new multi-drop T248X device. For help, see your controller user's manual.

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

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 ↵ 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
```
248XU.217

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

T2485/6 Communications Menu   **T2480/1 Communications Menu**

```
COMMUNICATIONS MENU

Primary Network
Advanced Network
Radio
Serial Port [COM1]
Serial Port [COM2]
Serial Port [COM4]


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

```
COMMUNICATIONS MENU

Serial Port [COM1]
Serial Port [COM2]
Serial Port [COM4]




↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
248XU.036

Note: If you have a T2480/1 with the Ethernet option, the Communications Menu is just like the T2485/6 menu except that there is no Radio command.

3. Press ⊻ to choose a Serial Port (COM1, COM2, or COM4) and then press ⏎ . The Serial Port screen appears.

COM1 and COM2 Serial Port

```
 SERIAL PORT [COM1]

Protocol:
 Configurable
Baud Rate: 19200
Parity: Even
Data Bits: 7
Stop Bits: 1




↓ more
```

COM4 Serial Port

```
 SERIAL PORT [COM4]

Scanner Port:
 Scanner Enabled
Protocol:
 Configurable
Baud Rate: 19200
Parity: Even
Data Bits: 7
Stop Bits: 1


↓ more
```

242XU.156

4. You must first select the protocol for each COM port. When you select a protocol, the serial port parameters screen changes to display the parameters that you can set for each protocol.

    For COM1 and COM4, you can select one of these protocols:

    *   Configurable
    *   Polling Mode D
    *   Master Polling
    *   Binary

    Important: For COM4, you must set the Scanner Port field to Scanner Enabled. Scanner enabled lets you use COM4 and an input device connected to the external scanner connector at the same time.

    For COM2, you can select one of these protocols:

    *   Configurable
    *   Multi-drop (CrossBar network)
    *   Polling Mode D
    *   Master Polling
    *   Binary

    Press ⊳ to toggle through the protocol options and select a value. Press ⊻ to move to the next field. For more information about protocols, see Chapter 4, "Operating the Terminal in a Network."

5. In each field, press $\boxed{>}$ to toggle through the field options and select a value. Once the correct value is displayed, press $\boxed{\vee}$ to move to the next field. Or, enter a value in the 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 terminal's serial port.

6. Press $\boxed{↵}$ to save the changes and exit the Serial Port screen. The Communications Menu appears.

7. Repeat Steps 3 through 6 to configure another serial port.

8. Press $\boxed{esc}$ to exit the Communications Menu. The Configuration Menu appears.

9. Press $\boxed{esc}$ to exit the Configuration Menu.

10. Press $\boxed{↵}$ to choose Yes and save the new configuration in RAM. Once the changes are saved, the terminal uses the new configuration.

```
┌─────────────────────────┐
│      Save new           │
│   configuration         │
│      (in RAM)?          │
│                         │
│    ┌─────┐    ┌────┐     │
│    │ Yes │    │ No │     │
│    └─────┘    └────┘     │
│        ┌────────┐        │
│        │ CANCEL │        │
│        └────────┘        │
└─────────────────────────┘
```
248XU.059

11. Press $\boxed{esc}$ to exit the TRAKKER Antares 2400 Menu System.

12. Press $\boxed{↵}$ to choose Yes and store your changes permanently in flash memory.
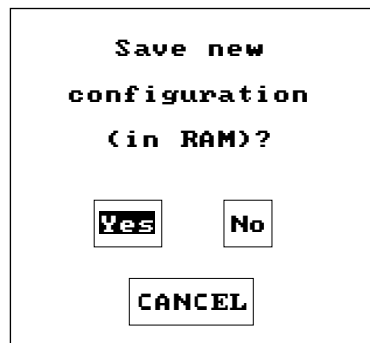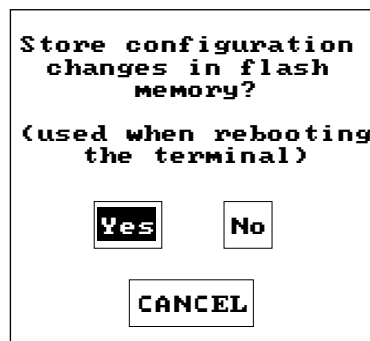
```
┌─────────────────────────┐
│ Store configuration     │
│   changes in flash      │
│        memory?          │
│ (used when rebooting    │
│     the terminal)       │
│                         │
│    ┌─────┐    ┌────┐     │
│    │ Yes │    │ No │     │
│    └─────┘    └────┘     │
│        ┌────────┐        │
│        │ CANCEL │        │
│        └────────┘        │
└─────────────────────────┘
```
248XU.054

13. Press ⏎ to choose OK and exit the TRAKKER Antares 2400 Menu System.

```
        Exiting
  TRAKKER Antares 2400
     Menu System




  OK            CANCEL
```

248XU.055

14. If you want to configure a T2480 or T2481 with Ethernet, follow the instructions for "Configuring the Ethernet Parameters" in the next section.

    If you have a T2485 or T2486, follow the instructions for "Configuring RF Communications" later in this chapter.

Configuring the Ethernet Parameters

The TRAKKER Antares 2480 and 2481 terminals have an option for an Ethernet (10BaseT) card. With this option, your terminal can communicate to a host or any device on an Ethernet network.

You need to configure these network parameters:

Network Parameter	Default Value
Network activate	Disabled
Controller IP address (UDP Plus)	0.0.0.0
Host IP address (TCP/IP)	0.0.0.0
Terminal IP address	0.0.0.0
Network port (UDP Plus)	5555
Network port (TCP/IP)	23

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 T2480 or T2481 is on a different IP subnetwork from the controller or host, you must also configure the default router and subnet mask.

To configure the T2480 or T2481 for an Ethernet network

1. Configure the Model 200 Controller (UDP Plus) or host (TCP/IP). For help with the controller, see the *Model 200 Controller System Manual* (Part No. 063439).

2. Configure the terminal. 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 � ⏎ 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
```
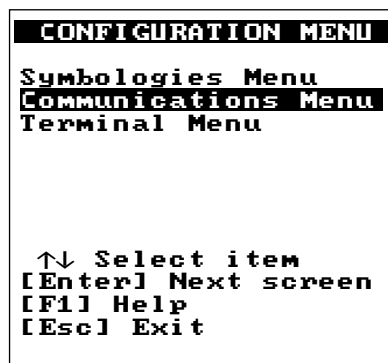
248XU.217

3. Press ⌄ to choose the Communications Menu and then press ⏎ . The Communications Menu appears.

4. Press ⏎ to choose the Primary Network command. The Primary Network screen appears.

UDP Plus Primary Network   **TCP/IP Primary Network**

```
  PRIMARY NETWORK
Activate:
  Disabled
Controller IP Addr:
  0.0.0.0
Terminal IP Address:
  0.0.0.0



 OK        CANCEL
```

```
  PRIMARY NETWORK
Activate:
  Disabled
Host IP Addr:
  0.0.0.0
Terminal IP Address:
  0.0.0.0



 OK        CANCEL
```
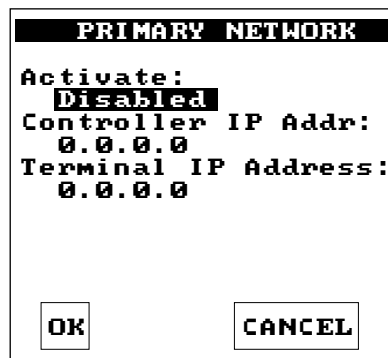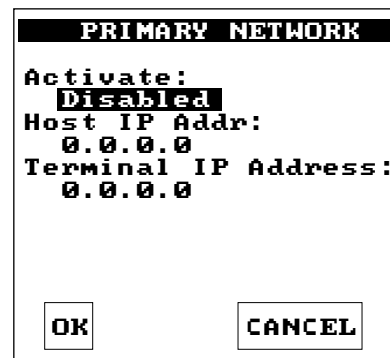
248XU.186

5. Press $\boxed{>}$ to set the Network Activate command to Ethernet. Press $\boxed{\vee}$ to move to the next field.

    Enter the Controller IP address for a UDP Plus network. Enter the Host IP address for a TCP/IP network. Enter the Terminal IP address.

    IP address fields consist 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 $\boxed{\vee}$.

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

    $\boxed{1}$ $\boxed{9}$ $\boxed{2}$ $\boxed{.}$ $\boxed{1}$ $\boxed{0}$ $\boxed{0}$ $\boxed{.}$ $\boxed{1}$ $\boxed{0}$ $\boxed{0}$ $\boxed{.}$ $\boxed{3}$

    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.

6. Press $\boxed{\hookleftarrow}$ to save the changes and exit the Primary Network screen.

7. For TCP/IP networks, press $\boxed{\wedge}$ to choose the Advanced Network command and then press $\boxed{\hookleftarrow}$. The Advanced Network screen appears.

    UDP Plus Advanced Network   **TCP/IP Advanced Network**
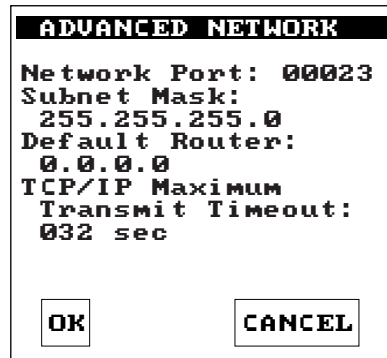
    ```
    ▐ADVANCED NETWORK▌          ▐ADVANCED NETWORK▌

    Loopback: Disabled          Network Port: 00023
    Network Port: 05555         Subnet Mask:
    Subnet Mask:                 255.255.255.0
     255.255.255.0              Default Router:
    Default Router:              0.0.0.0
    0.0.0.0                     TCP/IP Maximum
    Controllr Connect Chk        Transmit Timeout:
     Send Timer:0035 sec         032 sec
     Recv Timer:0060 sec
    Retries: 07                 ┌────┐      ┌──────┐
                                │ OK │      │CANCEL│
                                └────┘      └──────┘
    ↓ more
    ```

    248XU.192

    Note: For UDP Plus networks, the Network Port default is 5555, which matches the default value set on the Model 200 Controller.

8. In the Network Port field, type a number from 1 to 65535 and then press $\boxed{\hookleftarrow}$. 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.

    Note: If the terminal is on a different IP subnetwork from the Model 200 Controller 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."

9. Press |esc| to exit the Communications Menu. The Configuration Menu appears.

10. Press |esc| to exit the Configuration Menu.

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

12. Press |esc| to exit the TRAKKER Antares 2400 Menu System.

13. Press ⏎ to choose Yes and store your changes permanently in flash memory.

14. Press ⏎ to choose OK and exit the TRAKKER Antares 2400 Menu System. The T2480 or T2481 will now try to establish communications with the Model 200 Controller 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 status light remains on. You can begin using the terminal to collect data. Follow the instructions in the section on "Starting the Application and Using the Terminal" later in this chapter.

Configuring RF Communications

The TRAKKER Antares 2485 or 2486 terminal can communicate with a host computer in Intermec's 2.4 GHz RF network either through the Model 200 Controller or directly through the access points. The terminal uses one of these RF network protocol options to communicate with other devices:

• UDP Plus

• TCP/IP

Each T2485 or T2486 ships with only one of these RF network protocols. In a UDP Plus network, the terminal communicates through the Model 200 Controller 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, which is connected to the host on an Ethernet or token ring network.

___

Intermec's 2.4 GHz RF Networks

248XU.231
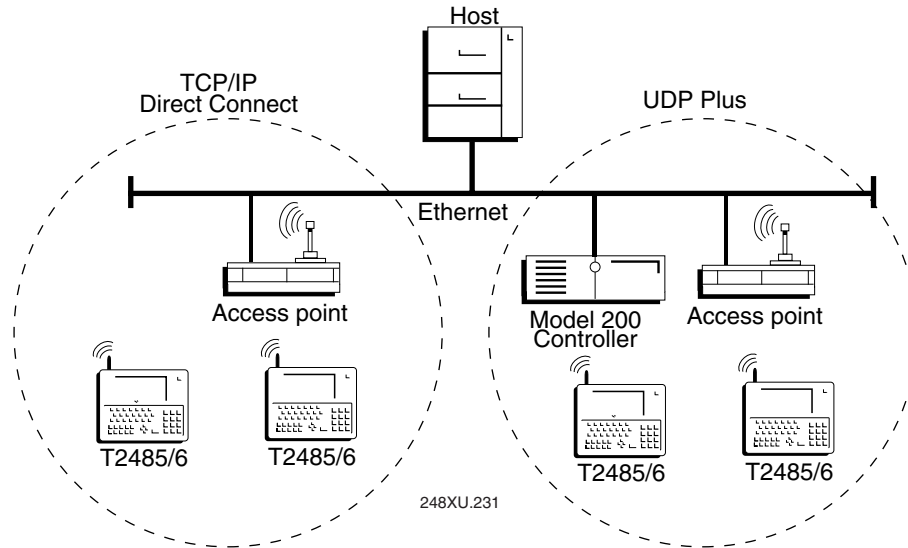
You need to configure these network parameters to begin using RF communications:

Network Parameter	Default Value
Network activate	Disabled
Controller IP address (UDP Plus)	0.0.0.0
Host IP address (TCP/IP)	0.0.0.0
Terminal IP address	0.0.0.0
RF domain	0
RF security identification (ID)	None (not set)
Network port (UDP Plus)	5555
Network port (TCP/IP)	23

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 T2485 or T2486 is on a different IP subnetwork from the controller or host, you must also configure the default router and subnet mask.

To configure the T2485 or T2486 to use RF communications

1. Configure the Model 200 Controller (UDP Plus) or host (TCP/IP). For help with the controller, see the *Model 200 Controller System Manual* (Part No. 063439).

2. Configure the access point. For help, see your access point user's manual.

3. Configure the terminal. 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
    ⏎ 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
```
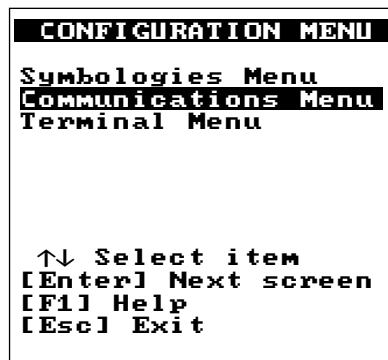
248XU.217

4. Press ⌄ to choose the Communications Menu and then press ⏎ . The Communications Menu appears.

5. Press ⏎ to choose the Primary Network command. The Primary Network screen appears.

UDP Plus Primary Network   **TCP/IP Primary Network**

```
  PRIMARY NETWORK           PRIMARY NETWORK

Activate:                 Activate:
  Disabled                  Disabled
Controller IP Addr:       Host IP Addr:
  0.0.0.0                   0.0.0.0
Terminal IP Address:      Terminal IP Address:
  0.0.0.0                   0.0.0.0



 OK        CANCEL          OK        CANCEL
```
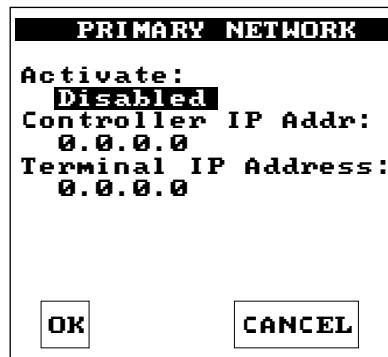
248XU.186

6. Press ⟩ to set the Network Activate command to 2.4 GHz RF. Press ⌄ to move to the next field.

   Enter the Controller IP address for a UDP Plus network. Enter the Host IP address for a TCP/IP network. Enter the Terminal IP address.

   IP address fields consist 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
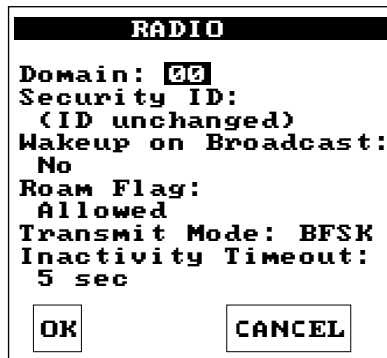
   ```
                RADIO
   Domain: 00
   Security ID:
    (ID unchanged)
   Wakeup on Broadcast:
    No
   Roam Flag:
    Allowed
   Transmit Mode: BFSK
   Inactivity Timeout:
    5 sec

    OK          CANCEL
   ```
   248XU.013

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.

   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.

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

   Note: If the terminal is on a different IP subnetwork from the Model 200 Controller 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."

10. For TCP/IP networks, press $\wedge$ to choose the Advanced Network command and then press [↵] . The Advanced Network screen appears.

UDP Plus Advanced Network

```
ADVANCED NETWORK
Loopback: Disabled
Network Port: 05555
Subnet Mask:
 255.255.255.0
Default Router:
0.0.0.0
Controllr Connect Chk
 Send Timer:0035 sec
 Recv Timer:0060 sec
Retries: 07

↓ more
```

TCP/IP Advanced Network

```
ADVANCED NETWORK
Network Port: 00023
Subnet Mask:
 255.255.255.0
Default Router:
 0.0.0.0
TCP/IP Maximum
 Transmit Timeout:
 032 sec


 OK     CANCEL
```

248XU.192

Note: For UDP Plus networks, the Network Port default is 5555, which matches the default value set on the Model 200 Controller.

11. 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.

12. Press [esc] to exit the Communications Menu. The Configuration Menu appears.

13. Press [esc] to exit the Configuration Menu.

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

15. Press [esc] to exit the TRAKKER Antares 2400 Menu System.

16. Press [↵] to choose Yes and store your changes permanently in flash memory.

17. Press [↵] to choose OK and exit the TRAKKER Antares 2400 Menu System. The T2485 or T2486 will now try to establish communications with the Model 200 Controller 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 status light remains on. You can begin using the terminal to collect data. Follow the instructions in the next section, "Starting the Application and Using the Terminal."

Note: *While the terminal is connecting to the controller 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.*

Starting the Application and Using the Terminal

Your T248X ships loaded with one of these applications:

• Sample application

• Terminal emulation application (IBM 3270, IBM 5250, or VT/ANSI)

• Screen mapping application.

To start the application and use the terminal

1. Press ⌊⅟₀⌋ 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 T248X.

Sample Application Screen

```
1998/01/08   08:10:50
```
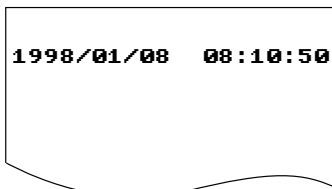
248XU.151

a. Use the sample application to scan bar code labels and test the T248X keypad.

b. Connect the T248X to a host computer using one of the COM ports or the Ethernet connector. For help, see "Installing the Terminal and Connecting External Devices" earlier in this chapter.

c. Download your data collection application to the T248X and run it. For help, see Chapter 5, "Using Custom Applications and Screen Mapping."

3270/5250 TE Sign-On Screen

```
            Sign on
User..............
Password..........
Program/procedure.
Menu..............
Current Library...
```
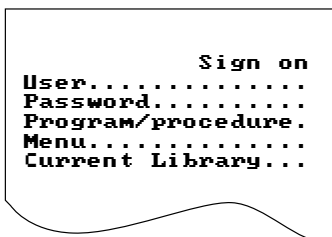
248XU.087

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 T248X to collect and transmit data.

Step 2: Using the Application (continued)

VT/ANSI TE Login Screen
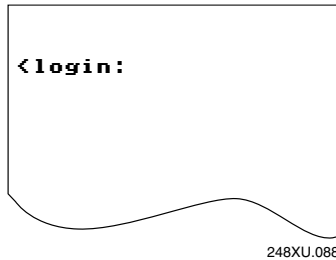
```
< login:
```

248XU.088

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 T248X to collect and transmit data.

Screen Mapping Application

```
File Name:
```

248XU.089
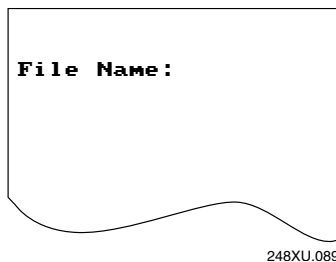
a. Download or request a template from the Model 200 Controller.

b. Download or request a validation file from the controller.

c. Start using the T248X to collect and transmit data.

Turning the Terminal On and Off

The terminal's Suspend/Resume key is the ⏻ key on the left side of the keypad, as shown in this illustration.

Suspend/Resume key

248XU.038
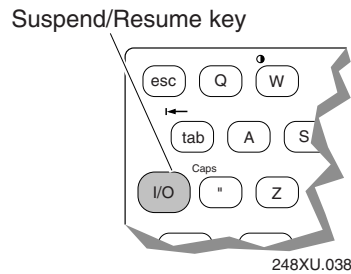
When you press ⏻ to turn off the terminal, the terminal does not actually shut off, but goes into a Suspend mode. This mode is referred to as "off" in the rest of this manual. In Suspend mode, the terminal continues to power all memory and turns off the power to most of the hardware.

When you press ⏻ 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 resumes your application.

You can configure the terminal to disable the ⏻ key. When the ⏻ key is disabled, you cannot turn off the terminal.

To enable or disable the ⏻ key

• Scan one of these bar code labels:

Enable the ⏻ Key

||||||||||||||||||||||||||||||||||

$+EF0

Disable the ⏻ Key

||||||||||||||||||||||||||||||||||

$+EF1

By default, the ⏻ key is enabled so you can turn the terminal on and off.

Using the Badge Scanner and Other Input Devices

You use the badge scanner and other bar code input devices that are connected to the TRAKKER Antares 248X terminals to scan and enter bar code data. The terminal decodes the bar code label and enters the data or command you scanned.

The T248X has two bar code input ports:

* Badge scanner (6-pin) connector

* External scanner (Stewart 10-pin) connector

Note: Although you can have two bar code input devices connected to the terminal at the same time, the terminal can only process data from one input device at a time.

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 "Scanning Bar Codes to Enable Symbologies" in Chapter 3.

The next sections cover these topics:

* Using the Badge Scanner

* Using a Wand, Laser Scanner, or CCD Scanner

* Scanning Options

For help connecting an input device, see "Connecting Power and Input Devices" earlier in this chapter, or see your badge scanner accessory instruction sheet.

Using the Badge Scanner

You can order the T248X with an infrared or visible light badge scanner. You can also order the badge scanner as an accessory and attach the scanner to your terminal. The badge scanner is always on and ready to read bar code data.

To use the badge scanner

1. Press ⌷∕○ to turn on the terminal.

2. Hold the bar-coded object such as an identification badge with the bar code facing toward the terminal.

3. Slide the bar-coded object through the badge scanner slot in either direction. Once the bar code is scanned successfully, the Good Read status light turns on for 2 seconds.

Using the Badge Scanner
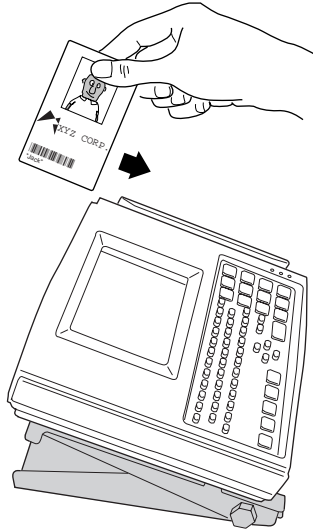
248XU.021

The scanning beam in the badge scanner must pass through the entire bar code. The beam path is 0.5 in (1.27 cm) from the bottom of the scanning slot. The bar code label must be

- at least 0.2 in (0.51 cm) tall with a center line 0.5 in (1.27 cm) from the edge.

- parallel to the edge of the card or object that passes through the scanner.

Note: You can also attach an input device to the 6-pin connector instead of the badge scanner.

Using a Wand, Laser Scanner, or CCD Scanner

You can attach a wand, laser scanner, or CCD scanner to the external scanner connector on the terminal. Since the external scanner port is a Stewart 10-pin connector, you must use an interface cable to connect an input device.

You can use these input devices with the terminal:

- Intermec 1354 and 1355 badge scanners

- Intermec 1463A and 1463D CCD scanners

- Intermec 1516A, 1517A, 1517B, 1518, and 1519A laser scanners

- Intermec 1545 laser scanner

- Intermec 1550A laser scanner

- Intermec 126X, 127X, and 128X wands

Note: *If you do not have a device installed on the badge scanner connector, you can use the Intermec 1464 CCD scanner, the Intermec 1550B laser scanner, and the Intermec 1551 laser scanner. To use the 1463A and 1463D CCD scanners together with a device installed on the badge scanner connector, you must configure the 1463A or 1463D Trigger mode to either Manual Trigger or Auto-Trigger.*

Using a Wand, Laser Scanner, or CCD Scanner

248XU.020
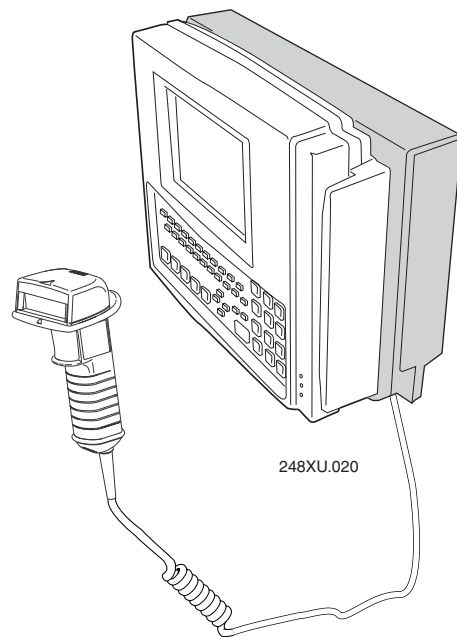
Once you have the input device attached, you can use the scanning options that are described in the next section to customize bar code input. You may also need to configure the Scanner Selection command to identify the type of input device. The terminal can optimize the scanning performance by using the scanner you define in the Scanner Selection command.

To use the input device

1. Press ⌐/○⌐ to turn on the terminal.

2. Scan the bar code. Once the bar code is scanned successfully, the Good Read status light turns on for 2 seconds.

   For help on scanning with your input device, see the instruction sheet for the input device.

Scanning Options

You can set several configuration command parameters to configure the external scanner (Stewart 10-pin) to meet your needs. There are several ways to set the scanner commands on the terminal. For help, see Chapter 3, "Configuring the Terminal."

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 activate a laser scanner that is connected to the scanner port. In One-Shot mode, the laser turns on and stays on until you release the scanner trigger, or a label is decoded. In Automatic mode, you can continuously scan bar code labels without having to release the 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 scanner port on the TRAKKER Antares terminal. The terminal can optimize the scanning performance by using the scanner you define in this command.

Scanner Timeout   Defines the maximum length of time the scanner stays on each time you activate a laser scanner that is connected to the scanner port.

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 trigger on a scanner that is connected to the scanner port. 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 248X 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 also configure the terminal from a remote device. You can configure the T2480/1 with the Ethernet option or T2485/6 from the Model 200 Controller or from an application on the host. You can configure any T248X by sending commands from an application through the serial port. For help, see Chapter 4, "Operating the Terminal in a Network."

Learning About Configuration Parameters

You can customize many operating characteristics of the TRAKKER Antares 248X 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.

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 128
- Code 16K
- Code 2 of 5
- Code 39

- Code 49
- Code 93
- 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 "Scanning Bar Codes to Enable Symbologies" later in this chapter.

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.

Specifying How the Terminal Will Communicate

The T2480 and T2481 use serial communications to send data to and from another serial device. With the Ethernet option, the T2480 and T2481 can communicate to a host or device on an Ethernet network.

The T2485 and T2486 use radio frequency (RF) communications to communicate with other devices in Intermec's 2.4 GHz RF network. You can also use the serial port(s) on the T2485 or T2486 to send and receive data. Before you can use the T248X in your wired or RF network, you must configure the serial port, Ethernet, or RF network parameters.

On the T2485 and T2486, you must set the RF network parameters, radio parameters, and address information before the terminal can communicate with other devices in your 2.4 GHz RF network. For example, you must set the Terminal IP Address so the T2485 or T2486 can communicate with other network devices.

To learn how to configure the terminal to fit into your wired, Ethernet, 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 data transactions by appending the time.

- modify bar code data by using a preamble and postamble.

- 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, font size, row spacing, and video mode.

- 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] [↵] [2] [4] [8] or scan this bar code:

  Enter Test and Service Mode

  ||||||||| ||||| ||||||| |||| |||

  ..-.

  Note: You can also press [f] [↵] [T] [2] [M] to access the TRAKKER Antares 2400 Menu System.

The Main Menu appears, displaying four menu options.

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 the backup battery and the system.

```
        MAIN MENU
Configuration Menu
Diagnostics Menu
System Menu
About TRAKKER 2400


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

248XU.001

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.
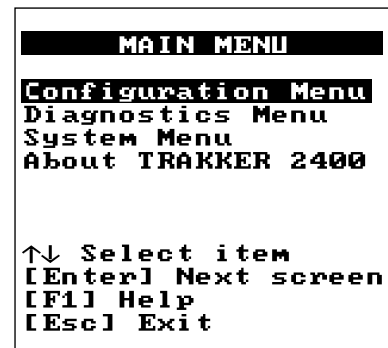
The TRAKKER Antares 2400 Menu System at a Glance

MAIN MENU
Configuration Menu
Diagnostics Menu
System Menu
About TRAKKER 2400

SYSTEM MENU
File Manager
Load Default Values
Set Time and Date
Store Configuration
Upgrade Firmware

DIAGNOSTICS MENU
Software Diagnostics
Hardware Diagnostics
System Diagnostics

SOFTWARE DIAGNOSTICS
Error Logger
Application Events
Task Status
Clear Task Profiles

HARDWARE DIAGNOSTICS
Hardware Config
Battery/PIC Status
Display Test
Keypad Test
Main Board Menu
Radio Test
Scanner Test

SYSTEM DIAGNOSTICS
Subsystem Versions
Access Point
App Efficiency
Serial Port Test
Malloc Info Menu

CONFIGURATION MENU
Symbologies Menu
Communications Menu
Terminal Menu

SYMBOLOGIES MENU
*Code 39
 Codabar
 Code 11
 Code 49
 Code 93
*Code 128
 Code 16K
 2of5 / I 2of5
 MSI
 Plessey
*UPC / EAN

CONFIGURATION MENU
Symbologies Menu
Communications Menu
Terminal Menu

COMMUNICATIONS MENU
Serial Port [COM1]
Serial Port [COM2]
Serial Port [COM4]

T2480/1
Without Ethernet

COMMUNICATIONS MENU
Primary Network
Advanced Network
Serial Port [COM1]
Serial Port [COM2]
Serial Port [COM4]

T2480/1
With Ethernet

COMMUNICATIONS MENU
Primary Network
Advanced Network
Radio
Serial Port [COM1]
Serial Port [COM2]
Serial Port [COM4]

T2485/6

CONFIGURATION MENU
Symbologies Menu
Communications Menu
Terminal Menu

TERMINAL MENU
Append Time
Beeper
Display
Keypad
Power Management
Preamble/Postamble
RAM Drive
Reader Command Menu
Scanner

248XU.178

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:

248XU.010

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. The options you see on the Communications Menu depend on the type of terminal and the features installed in the terminal. For example, the Radio menu is not needed on a T2480 or T2481. 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:

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.

248XU.051

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 2.

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 ⏎ to display the commands in the selected menu. In this example, you press ⌄⌄⏎ to display the System Menu:

```
      MAIN MENU
Configuration Menu
Diagnostics Menu
System Menu
About TRAKKER 2400


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

```
      SYSTEM MENU
File Manager
Load Default Values
Set Time and Date
Store Configuration
Upgrade Firmware


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

248XU.058

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 a 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 → keys. You can also use the Delete (⬆ .) and Insert (⬆ 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 fields for F1, F2, and F3 are entry fields. You type a value into the field for each function code.
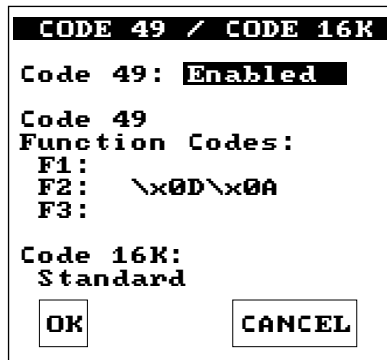
```
CODE 49 / CODE 16K

Code 49: Enabled

Code 49
Function Codes:
 F1:
 F2:    \x0D\x0A
 F3:

Code 16K:
 Standard
 OK        CANCEL
```
248XU.052

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

To mark or clear check boxes

• Press →. For example, to disable the Backspace reader command, choose the Backspace check box and press → to clear the check box.
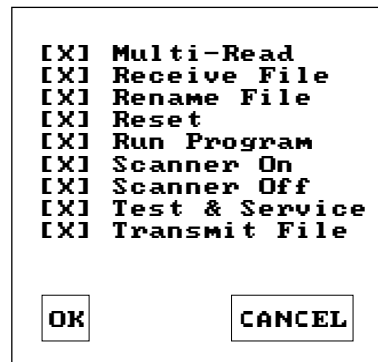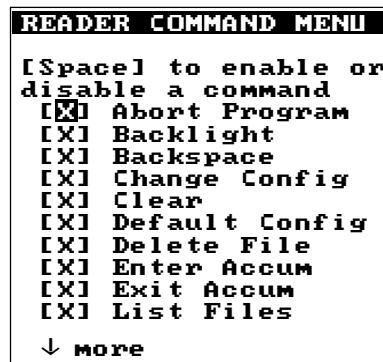
```
READER COMMAND MENU

[Space] to enable or
disable a command
 [X] Abort Program
 [X] Backlight
 [X] Backspace
 [X] Change Config
 [X] Clear
 [X] Default Config
 [X] Delete File
 [X] Enter Accum
 [X] Exit Accum
 [X] List Files

 ↓ more
```
```
 [X] Multi-Read
 [X] Receive File
 [X] Rename File
 [X] Reset
 [X] Run Program
 [X] Scanner On
 [X] Scanner Off
 [X] Test & Service
 [X] Transmit File


 OK        CANCEL
```
248XU.053

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.

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.


```
PREAMBLE / POSTAMBLE

Preamble:
 abc

Postamble:
 \x0D\x0A




 OK        CANCEL
```
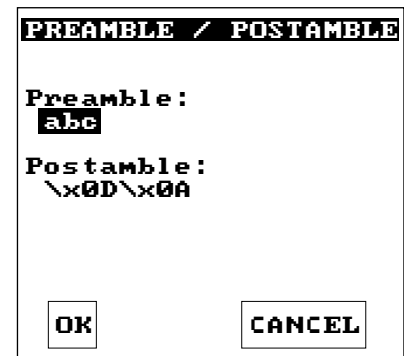
248XU.057

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.

   Note: On the oversized function numeric keypad, you can scan bar code labels to enter characters in the preamble or postamble field. For help, see Appendix B, "Full ASCII Charts."

   • 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.

    ```
         Save new
      configuration
        (in RAM)?

      Yes     No

        CANCEL
    ```

    248XU.059

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 ⎋. 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.

```
┌─────────────────────────────┐
│  Store configuration        │
│    changes in flash         │
│        memory?              │
│                             │
│  (used when rebooting       │
│     the terminal)           │
│                             │
│      ▓▓▓▓▓    ┌────┐         │
│      ▓Yes▓    │ No │         │
│      ▓▓▓▓▓    └────┘         │
│                             │
│         ┌────────┐          │
│         │ CANCEL │          │
│         └────────┘          │
└─────────────────────────────┘
```

248XU.054

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.

```
┌─────────────────────────────┐
│         Exiting             │
│                             │
│  TRAKKER Antares 2400       │
│                             │
│      Menu System            │
│                             │
│                             │
│                             │
│  ┌────┐      ┌────────┐     │
│  │ OK │      │ CANCEL │     │
│  └────┘      └────────┘     │
└─────────────────────────────┘
```

248XU.055

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 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 configuration 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

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

To configure these same four configuration commands, you can scan four separate bar code labels.

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, you must configure the terminal to use Code 39 in Full ASCII mode.

• 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. To save the changes in flash memory, scan this bar code label:

Save Configuration in Flash Memory

.+1

You can also use the TRAKKER Antares 2400 Menu System. For help, see "Saving Configuration Changes in Flash Memory" later in this chapter.

Scanning Bar Codes to Enable Symbologies

The TRAKKER Antares 248X terminals 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.

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

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*

Saving Configuration Changes in Flash Memory

The TRAKKER Antares terminals use two copies of the configuration:

Runtime or RAM configuration This 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 This 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
T248X from the network (Model 200 Controller 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 ⌨↵ ⌨2 ⌨4 ⌨8 or scan this bar code.

    Enter Test and Service Mode

    |||||||||||||||||||||||||||||||||||||

    ..-.

    The Main Menu appears.

2. Choose System Menu and press ⌨↵ . The System Menu appears.
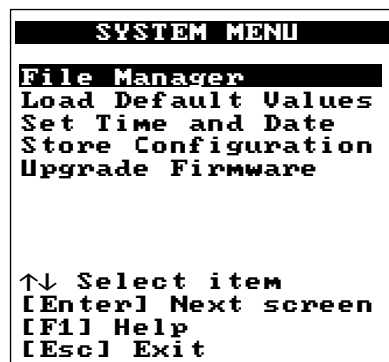
    ```
    ┌─────────────────────────┐
    │      SYSTEM MENU        │
    │ File Manager            │
    │ Load Default Values     │
    │ Set Time and Date       │
    │ Store Configuration     │
    │ Upgrade Firmware        │
    │                         │
    │                         │
    │ ↑↓ Select item          │
    │ [Enter] Next screen     │
    │ [F1] Help               │
    │ [Esc] Exit              │
    └─────────────────────────┘
    ```
    248XU.051

3. Choose the Store Configuration command and press ⌨↵ . The Store
    Configuration screen appears.

    ```
    ┌─────────────────────────┐
    │  STORE CONFIGURATION    │
    │ Store Configuration     │
    │  in Flash Memory        │
    │                         │
    │                         │
    │                         │
    │                         │
    │                         │
    │ ▐OK▌      │CANCEL│       │
    └─────────────────────────┘
    ```
    248XU.072

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
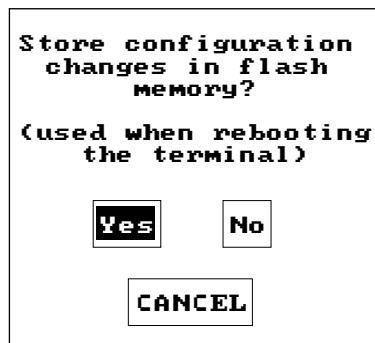   TRAKKER Antares 2400 Menu System.

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 T2485 and T2486 to reestablish communications with other devices in the 2.4 GHz RF network. You may also need to reset the serial port or Ethernet parameters to communicate with other devices in your wired network.

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⏥ ⏥↵⏥ ⏥2⏥ ⏥4⏥ ⏥8⏥ 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.

Load Default Values Screen

```
 LOAD DEFAULT VALUES
      Load default
     configuration
     values in RAM?

   (Overwrites current
      configuration)




   OK          CANCEL
```
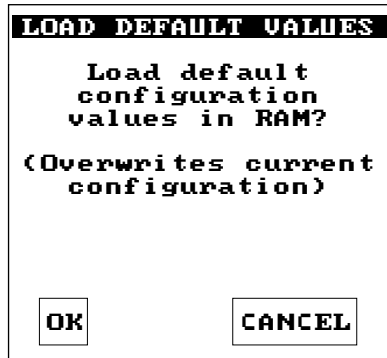
248XU.056

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.

Configuring Drives and Memory on the Terminal

The TRAKKER Antares 248X terminals come with a 750K flash drive (C) and 512K RAM reserved for applications. You can also order a T248X with an additional 2MB extended flash memory option. You can customize the terminal to your needs by configuring

*   up to 256K of the 512K RAM as a RAM drive.

*   the additional 2MB flash memory to either store double-byte fonts or as a 2MB drive.

The next sections explain how to customize the terminal by configuring RAM and configuring flash memory.

Configuring the RAM Drive

On the T248X, you have 512K total RAM for the application execution space. You can configure up to 256K of the total 512K application execution space as a RAM drive. If the RAM drive is configured, your application execution space is reduced by the amount of the RAM drive.

For example, if your application size is 64K and drive E is configured as a 256K RAM drive, you are using 320K of the 512K application execution space. The application uses the remaining 192K of RAM as a Malloc/free dynamic memory pool.

By default, the RAM drive is not configured and the memory is available for applications. You can configure the size of the RAM drive (E) and use drive E to temporarily store data and files (up to 32 files).

Important: After you disable or configure 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.

To configure the RAM drive

1. Press ⌐f⌐ ↵ ⌐2⌐ ⌐4⌐ ⌐8⌐ or scan this bar code to access the TRAKKER Antares 2400 Menu System:

    Enter Test and Service Mode

    ..-.

    The Main Menu appears.

    ```
             MAIN MENU

     Configuration Menu
     Diagnostics Menu
     System Menu
     About TRAKKER 2400


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

    248XU.001

2. Press ⌄ to choose the Configuration Menu and then press ⏎ . The
    Configuration Menu appears.
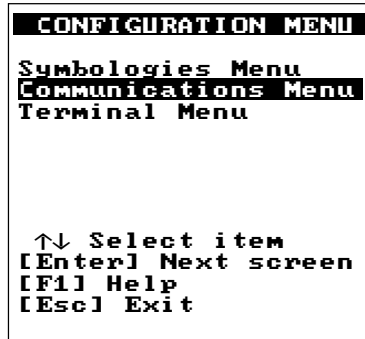
```
CONFIGURATION MENU

Symbologies Menu
Communications Menu
Terminal Menu




 ↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
248XU.010

3. Press ⌄ to choose the Terminal Menu and then press ⏎ . The Terminal
    Menu appears.
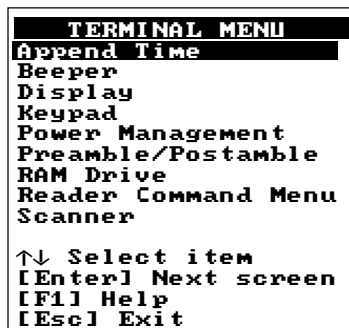
```
    TERMINAL MENU
Append Time
Beeper
Display
Keypad
Power Management
Preamble/Postamble
RAM Drive
Reader Command Menu
Scanner

↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
248XU.037

4. Press ⌄ to choose the RAM Drive command and then press ⏎ . The RAM
    Drive screen appears.

5. In the Size field, type the RAM drive size. Enter a value from 16 to 256 to
    configure RAM as drive E. If you do not want the terminal to create a RAM
    drive, enter a value of zero (0).

6. Press ⏎ to save the changes and exit the RAM Drive screen.

7. Press esc to exit the Terminal Menu. The Configuration Menu appears.

8. Press esc to exit the Configuration Menu.

9. Press ⏎ to choose Yes and save the new configuration in RAM.

10. Press esc to exit the TRAKKER Antares 2400 Menu System.

11. Press ⏎ to choose Yes and store your changes permanently in flash
    memory. The RAM drive change must be saved in flash memory for the
    change to take effect.

12. Press ⏎ to choose OK and exit the TRAKKER Antares 2400 Menu System.

13. Scan this bar code to reset the terminal:

Reset Firmware

||||||||||||||||||||||||

-.

You can also send the Reset Firmware command over the network. For help, see Chapter 6, "Reader Command Reference."

Or, if the Resume Execution command is configured to resume "not allowed," turn the terminal off and then back on to reset the terminal. Use the TRAKKER Antares 2400 Menu System to configure the Resume Execution command. Choose Terminal Menu from the Configuration Menu and then choose Power Management.

Configuring Flash Memory

If you have a T248X with the optional 2MB extended flash memory, you can use the flash memory either to store double-byte fonts or as a 2MB drive. By default, the 2MB flash memory is configured to store a double-byte font set (up to 2MB maximum).

If you are not using double-byte fonts, you can configure the 2MB flash memory as a storage drive (D). If you configure the flash memory as drive D, use this drive to store large lookup tables and data files (up to 32 files).

Note: You can only configure the 2MB 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.

To configure flash memory to store double-byte fonts

1. Scan this bar code:

Configure Flash Memory for Double-Byte Fonts

||||||||||||||||||||||||||||

$+FF0

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 2MB flash memory to store double-byte fonts:

Reset Firmware

```
||||| |||||| |||| |||||
```
-.

Note: When you boot or reset the terminal, all files on drive D are destroyed. Flash memory is now configured to store double-byte fonts.

4. Use the TRAKKER Antares Font Editor to download the double-byte font set to the terminal. See your local Intermec sales representative or visit the Intermec web site (www.intermec.com) for information about the TRAKKER Antares Font Editor.

To configure flash memory as drive D

1. Scan this bar code:

Configure Flash Memory as Drive D

```
||||||| | ||| || |||| |||| |||| |||| ||| |||
```
$+FF32

Note: A value of 32 configures drive D as a 2MB drive.

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 flash memory as drive D:

Reset Firmware

```
||||| |||||| |||| |||||
```
-.

Note: When you boot or reset the terminal, any fonts in flash memory are erased. Flash memory is now configured as drive D.

Upgrading the Firmware

The terminal firmware includes these items:

- TRAKKER Antares 2400 Menu System

- Terminal emulation, screen mapping, or sample application

- TE Configuration Menu (3270, 5250, VT/ANSI terminals only)

- Operating environment, firmware, and drivers

When a new release of the firmware is available, you can order a firmware upgrade kit. There is a kit for TCP/IP terminals and a separate kit for UDP Plus terminals. To order the TRAKKER Antares Firmware Upgrade Kit, contact your local Intermec service representative.

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 T248X from a host computer or PC using serial communications. For help connecting the terminal, see Chapter 2, "Installing the Terminal." 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 Model 200 Controller with v3.0 software and higher. For help, see the Model 200 Controller 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 TRAKKER Antares 2480 sample application is one firmware type.

4. On the TRAKKER Antares terminal, press ⌈f⌉ ⌊↵⌋ ⌊2⌋ ⌊4⌋ ⌊8⌋ or scan this bar code label:

   Enter Test and Service Mode

   ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

   ..-.

   The Main Menu appears.

5. Choose System Menu and press ⏎ . The System Menu appears.

```
  SYSTEM MENU
File Manager
Load Default Values
Set Time and Date
Store Configuration
Upgrade Firmware



↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
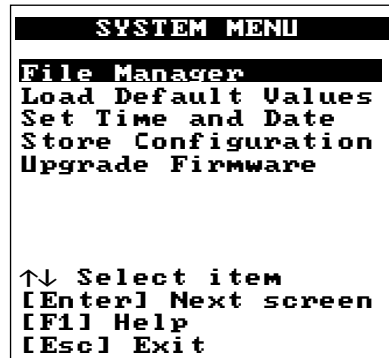
248XU.051

6. Choose Upgrade Firmware and press ⏎ . The Upgrade Firmware screen
    appears.

```
 UPGRADE FIRMWARE

Upgrade terminal
firmware?

Make sure the
terminal is
connected to a host
computer.



  OK        CANCEL
```

248XU.074

7. Choose OK to continue. The next screen appears.

```
Are you sure you
want to continue?

Selecting YES will
upgrade and replace
all of the
terminal's firmware.

Selecting NO will
exit without
upgrading firmware.

  YES      NO
```
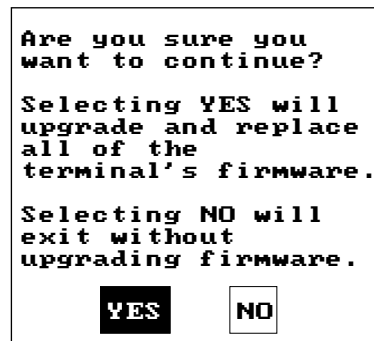
242XU.152

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* 1 *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 is lost. You can record the configuration on the following 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 ASCII *Full ASCII* Mixed-full ASCII	Symbologies Menu, Code 39 option
Code 49 (CJ)	*Disabled* Enabled	Symbologies Menu, Code 49 option

Bar Code Symbologies Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Code 49 (continued)		
• Function Code 1 (CK)	*None (disabled)* Any two ASCII characters	
• 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*	

___

Bar Code Symbologies Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
UPC/EAN (continued)		
• EAN-8	Disabled *Enabled*	
• Supplementals	*Yes* No	
• Check digit	Discard *Retain*	
• Number system digit	Discard *Retain*	
• UPC-A leading zero	Discard *Retain*	

___

RF and Ethernet Network Communications Table

Note: The network parameters are different for each type of 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* 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

RF and Ethernet Network Communications Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Maximum Retries (NR)	*7* 0 - 99	Communications Menu, Advanced Network option
Network Activate (NA)	*Disabled* 2.4 GHz RF (enabled) Ethernet	Communications Menu, Primary Network option
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)	*Disabled* Enabled	Communications Menu, Radio option
Subnet Mask (NS)	*255.255.255.0* The Subnet Mask field is four numbers separated by periods. Each number is from 0 to 255.	Communications Menu, Advanced Network option
TCP/IP Maximum Transmit Timeout (NH)	0 (No timeout) 30 - 120 seconds *32 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 options
Configuration Commands Via Serial Port (YT)	Disabled Enabled with TMF *Enabled without TMF*	Communications Menu, Serial Port options
Data Bits (YI)	*7* 8	Communications Menu, Serial Port options
EOM (YZ)	*\x03 (ETX)* Any two ASCII characters	Communications Menu, Serial Port options
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 options
Handshake (YJ)	*Disabled* Enabled	Communications Menu, Serial Port options
LRC (YF)	*Disabled* Enabled	Communications Menu, Serial Port options
Multi-Drop Address (YN)	*A* Any ASCII character	Communications Menu, Serial Port [COM2] options
Parity (YB)	None *Even* Odd	Communications Menu, Serial Port options
Poll (YR)	*Disabled* Enabled	Communications Menu, Serial Port options
Protocol (YU)	*Configurable* Polling Mode D Master Polling Binary Multi-drop (COM2 only)	Communications Menu, Serial Port options
SOM (YY)	*\x02 (STX)* Any ASCII character	Communications Menu, Serial Port options
Stop Bits (YC)	*1* 2	Communications Menu, Serial Port options

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 options

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 Contrast (DJ)	0 - 7 *3*	Terminal Menu, Display option
Display Font Type (DT)	8x8 (T2481 and T2486 only) *8x16* 16x16	Terminal Menu, Display option
Display Row Spacing (DL)	0 - 8 *0* (T2481 and T2486) *7* (T2480 and T2485)	Terminal Menu, Display option
Display Video Mode (DN)	*Original* Normal Inverse	Terminal Menu, Display option
Keypad Caps Lock (KA)	On *Off*	Terminal Menu, Keypad option
Keypad Clicker (KC)	Disabled *Enabled*	Terminal Menu, Keypad option

---

Terminal Operations Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Keypad Table (KT)	*Hardware default* English QWERTY IBM 5250 IBM 3270 ANSI/VT Function numeric French AZERTY Italian QWERTY Spanish QWERTY German QWERTZ Portuguese QWERTY	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 override Disable override	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
Resume Execution (ER)	Not Allowed *Allowed*	Terminal Menu, Power Management option

Terminal Operations Table (continued)

Parameter (Syntax)	Options	Location in Configuration Menu
Scan Ahead (SD)	*Disabled* Enabled	Terminal Menu, Scanner option
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)	*All compatible scanners* 146X CCD scanners 151X laser scanners 1545 laser scanner Symbol scanners 155X laser scanners	Terminal Menu, Scanner option
Scanner Timeout (SA)	*Disabled (0)* 1 - 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

4

Operating the Terminal in a Network

This chapter describes serial networks, the 2.4 GHz RF network, and the Ethernet network and explains how the TRAKKER Antares 248X terminal fits into your network. It also explains how to install and configure the terminal, use serial or network communications, configure the T248X over the network, and it provides technical details about network connectivity and protocols.

Using Serial Communications on the Terminal

The TRAKKER Antares 248X terminals have one or more serial ports to transfer data to and from another device via serial communications. Before you can use the serial port, you need to connect and configure the terminal.

The next sections cover these topics:

- How the T248X Fits Into Your Serial or CrossBar Network

- Identifying the COM Ports

- Choosing a Communications Protocol

- Configuring the Serial Port Parameters

- Configuring the Terminal Via the Serial Port

How the T248X Fits Into Your Serial or CrossBar Network

The TRAKKER Antares 248X terminal is a versatile terminal that you can easily add to your network or distributed data collection system. You can use the T2480, T2481, T2485, or T2486 as an end device in your wired network. Every terminal has one serial port (COM1) to transmit data to and from a PC via RS-232 serial communications.

248XU.162
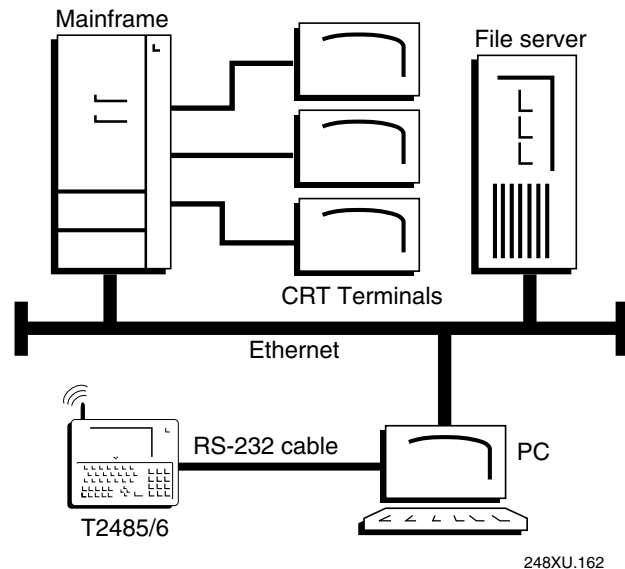
TRAKKER Antares Terminals in an Intermec CrossBar Network

248XU.039
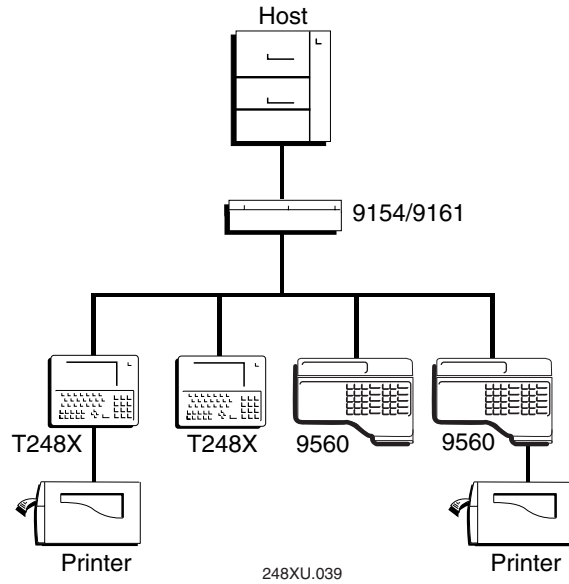
With the enhanced input/output board, the terminal has a additional serial port (COM2) that supports RS-232/422/485 communications. You can use COM2 to connect to a serial device (for example, a printer), a wired network, or an Intermec CrossBar network. In a CrossBar network, the T248X transfers data to the 9154 or 9161 controller using Multi-Drop protocol.

You can also attach an adapter cable accessory (Part No. 067185) to the enhanced input/output board to use an additional serial port (COM4) for RS-232 serial communications.

Identifying the COM Ports

Communications ports, also called COM ports, are locations from which data can be passed into and out of the terminal.

The illustration identifies the COM ports on the terminal. The next table explains the COM port designations to use when developing client/server applications.
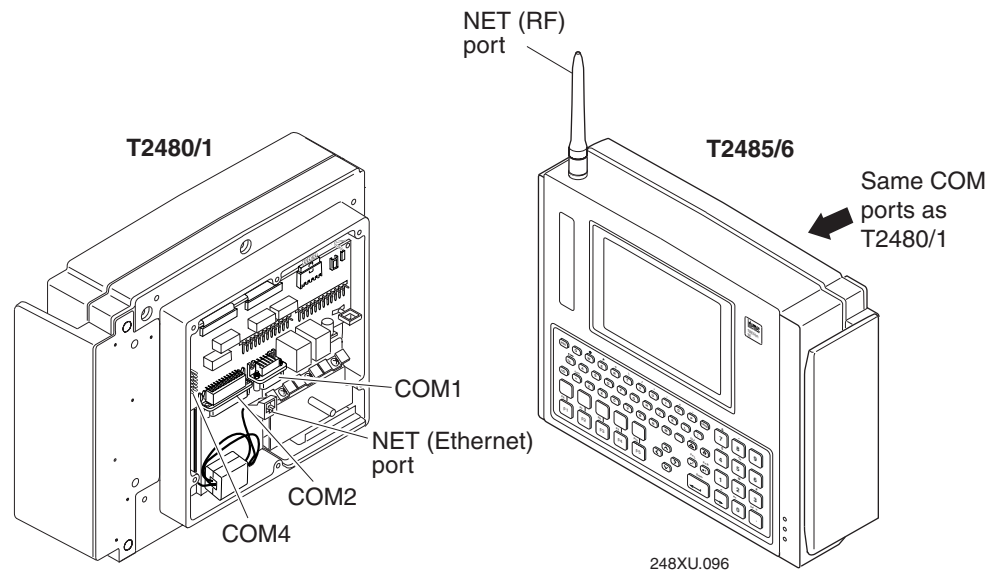
Port	COM Port Designation for Applications
COM1	Use for RS-232 serial port communications on the T2480, T2481, T2485, or T2486.
COM2	Use for RS-232/422/485 serial port communications on the T2480, T2481, T2485, or T2486 with an enhanced input/output board.
COM4	Use for RS-232 serial port communications on the T2480, T2481, T2485, or T2486 when an adapter cable is attached to the COM4 connector on an enhanced input/output board.
NET	Use for RF communications on the T2485 or T2486, or for Ethernet communications on the T2480 or T2481 with an Ethernet card. The TRAKKER Antares PSK functions use NET to designate the RF or Ethernet network port.

You can physically connect the T248X to another device (host computer, printer, controller, or other serial device) by using one of the serial COM ports. For help connecting to a serial port, see Chapter 2, "Installing the Terminal."

Choosing a Communications Protocol

Once the T248X 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 ports.

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. For help on protocols, see the *Data Communications Reference Manual*.

The terminal can communicate in these five protocols:

- Binary
- Configurable protocol
- Multi-Drop (COM2 only)
- Master Polling
- Polling Mode D

Each protocol is described next.

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. You can only enable flow control with XON/XOFF control when the terminal is communicating in Character mode. Flow control with CTS is allowed in either Character or Frame mode.

Multi-Drop Protocol

Multi-drop uses protocol sequences similar to Polling Mode D with the extension of device addressing, which allows up to 32 devices on one 4-wire RS-485 line. Multi-Drop protocol is typically used in CrossBar networks. Due to timeout parameters, the baud rate must be 2400 or higher. Multi-Drop protocol is only available for COM2.

When you configure COM2 for Multi-Drop protocol, the serial port is automatically configured to communicate via RS-422/485. If COM2 is not configured for Multi-Drop protocol, the port communicates via RS-232.

Here are the serial port parameters you can define:

- Baud rate

- Multi-drop device address

Master Polling Protocol

Master Polling Mode D protocol requires the TRAKKER Antares 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 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 interface.

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 2.

*   Scan the configuration command from a Code 39 or Code 93 bar code label.

*   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. 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 and Screen Mapping."

Configuring the Terminal Via the Serial Port

You can use an application on the PC or host to configure the TRAKKER Antares 248X terminal by sending commands through the serial port. For example, you may want to change the Beep Volume command and the Keypad Caps Lock 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 one of the serial ports.

Once the terminal is communicating, you can configure it. If you are using the Configurable protocol, you must enable Frame mode and the Configuration Commands Via Serial Port command to configure the terminal through the serial port. You cannot configure the terminal through the serial port if you are using Configurable protocol with no EOM or Binary protocol on that port.

Note: You can continue running an application on the TRAKKER Antares terminal while configuring the terminal from the host. If you send a configuration command that changes the serial port parameters, you may not be able to continue sending commands unless you also reconfigure your 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 you are using the Configurable protocol and 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.

[TMF field] (cont.)	`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 or you are using a protocol other than Configurable, do not include this field.

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 6, "Reader 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$+BV4KA1.+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.

KA1   enables the Keypad Caps Lock configuration command.

.+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$+BV4KA1.+1
```

where:

Cs   is a TMF Configuration Set response.

$+   is the Change Configuration reader command.

BV4   means the Beep Volume configuration command was changed to a value of 4, which is a very loud beep volume.

KA1   means the Keypad Caps Lock configuration command was enabled.

.+1   means the configuration changes were saved in flash memory.

Using RF or Ethernet Communications on the Terminal

Before you can begin using the TRAKKER Antares 248X terminal to collect data, you need to install and configure each device in the 2.4 GHz RF or Ethernet network by performing these steps:

1. Plan and prepare your network. Make sure you have unique IP addresses for all devices in the network. Make sure you have all the equipment required to use the:

    - T2480 or T2481 with an Ethernet card in the Ethernet network.
    - T2485 or T2486 in the RF network.

2. Configure the Model 200 Controller (T248X with UDP Plus).

3. Configure the access points.

4. Configure each T248X terminal.

Each step is described in detail in the next sections.

Caution
Make sure all components with antennas are at least 1 foot (0.3 meters) 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 (0.3 mètres) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

How the T248X Fits Into Your RF or Ethernet Network

The TRAKKER Antares 248X terminal is a versatile terminal that you can easily add to your network or distributed data collection system. You can use the T2480 or T2481 with an Ethernet card option as an end device in your Ethernet network. You can use the T2485 or T2486 as an end device in Intermec's 2.4 GHz RF network. The illustrations in this section show some examples of the types of network configurations in which you can use the terminal.

TRAKKER Antares 2485 and 2486 Terminals in a 2.4 GHz RF Network
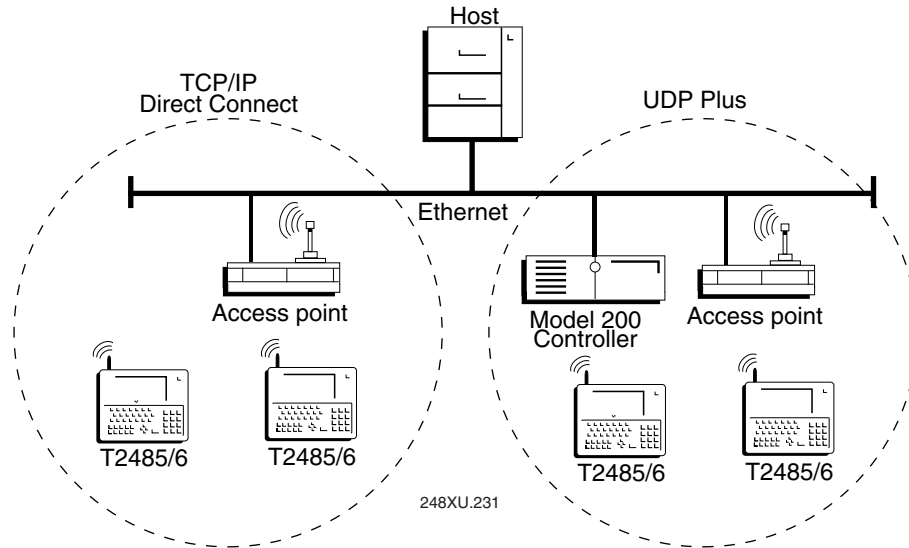
In a UDP Plus network, the T2485/6 communicates with a host computer through the Model 200 Controller using UDP Plus for the RF protocol. In a TCP/IP direct connect network, the T2485/6 communicates with a host computer directly using TCP/IP for the RF protocol. The access point acts as a bridge to allow communications between the Ethernet or token ring network and the wireless T2485/6 terminals.

TRAKKER Antares 2480 and 2481 Terminals in an Ethernet Network
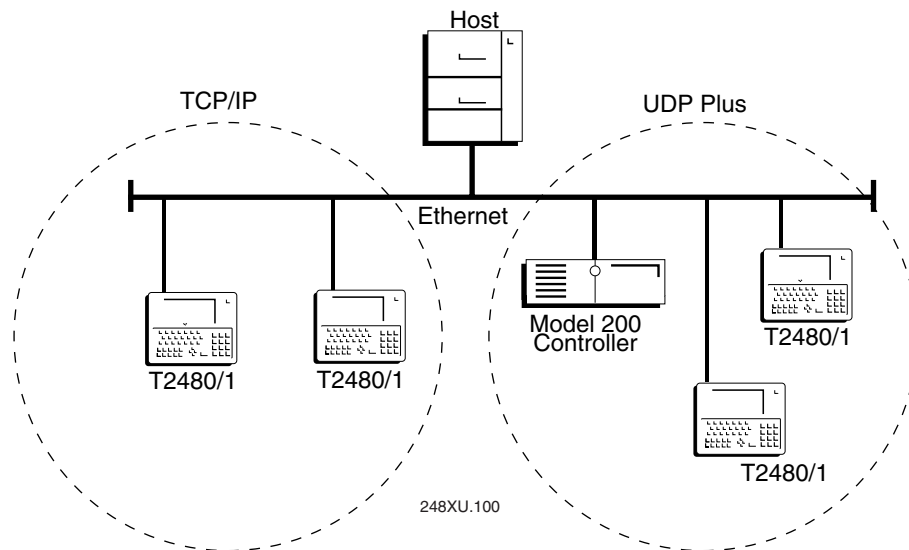
In a UDP Plus network, the T2480/1 with an Ethernet card communicates with a host computer through the Model 200 Controller using UDP Plus for the network protocol. In a TCP/IP network, the T2480/1 with an Ethernet card communicates with a host computer directly using TCP/IP for the network protocol.

TRAKKER Antares 2485 and 2486 Terminals in Multiple Subnetworks (UDP Plus)
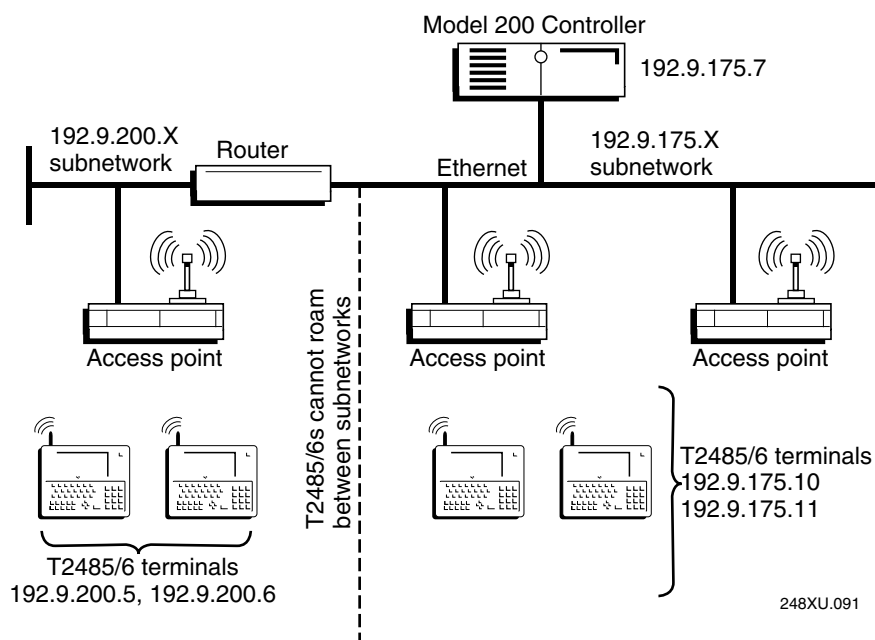
You can install the TRAKKER Antares 2485 or 2486 terminals, access points, and Model 200 Controller in your 2.4 GHz RF network as shown in the illustration. The T2485/6 terminals may only communicate with the access points that are in the same IP subnetwork. In this example, all the terminals and access points communicate with the controller at IP address 192.9.175.7 using UDP Plus for the RF protocol.

TRAKKER Antares 2485 and 2486 Terminals in Multiple Subnetworks (TCP/IP)

248XU.169
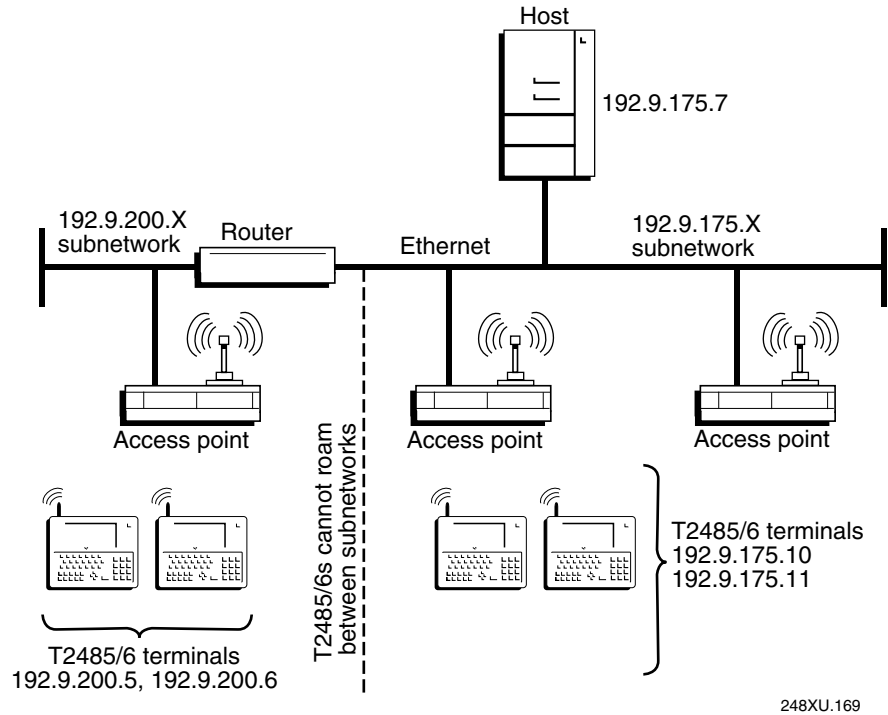
You can install the TRAKKER Antares 2485 or 2486 terminals and access points in your 2.4 GHz RF network as shown in the illustration. The T2485/6 terminals may only communicate with the access points that are in the same IP subnetwork. In this example, all the terminals and access points communicate with the host at IP address 192.9.175.7 using TCP/IP for the RF protocol.

TRAKKER Antares 248X Terminals Communicating Across Subnetworks (UDP Plus)

248XU.092
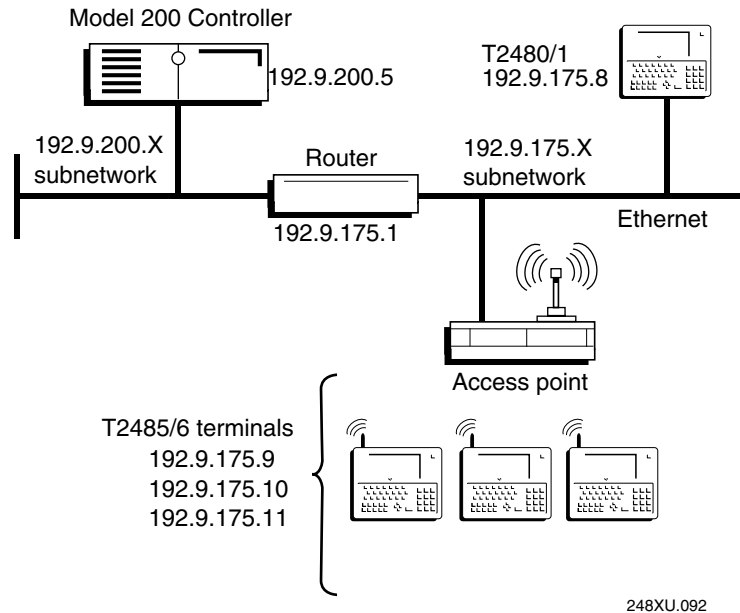
You can install the T248X terminals and access points in one IP subnetwork and install the Model 200 Controller in another IP subnetwork as shown in the illustration. If you have a T2480 or T2481 with an Ethernet card, you can install the T2480/1 in one IP subnetwork and install the controller in another IP subnetwork as shown in the illustration. 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 TRAKKER Antares 2485 or 2486 terminal may communicate with and roam between must be on the same IP subnetwork. The terminal cannot roam between IP subnetworks.

Planning the Network Connection

To use the T2480 or T2481 with an Ethernet card in the Ethernet network, you need these minimum requirements:

*   Model 200 Controller (only T2480 or T2481 with UDP Plus)
*   Ethernet jack or connector in your network

To use the T2485 or T2486 in the 2.4 GHz RF network, you need these minimum requirements:

*   Model 200 Controller (only T2485 or T2486 with UDP Plus)
*   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 2.4 GHz RF or Ethernet network. You must assign and set the IP address for each access point (RF) and each T248X terminal. For a T248X with UDP Plus, you must also assign an IP address to the Model 200 Controller.

Configuring the Model 200 Controller

The Model 200 Controller supports and manages communications with other devices in the 2.4 GHz RF network or Ethernet network. When you install and configure the controller, you identify the host computer(s) and TRAKKER Antares 248X terminals in your network. The terminals communicate through the controller with your host by using UDP Plus protocol. For help installing the controller, see the *Model 200 Controller System Manual* (Part No. 063439).

Note: You can use a T248X running TCP/IP protocol and the Model 200 Controller in a pass-through network. You establish a direct TCP/IP socket connection from the T248X to the host through the controller. For more information, see the Model 200 Controller System Manual.

To have the T248X communicate with the controller, you must configure these parameters on the controller:

*   Configure the UDP Plus network.
*   Assign an IP address to each T248X.
*   Enable all T248X terminals.

- Define the host environment parameters, which includes configuring for terminal emulation, screen mapping, or client/server applications.

- Define the host communications parameters, which includes the physical connection (network adapter cards) to the host.

To use the screen mapping application on the T248X, you must also configure the following:

- Create the script file using the Script Builder tool on the controller.

- Generate the template to download to the T248X.

Configuring the Access Point

The access point acts as a bridge to provide RF communications between the TRAKKER Antares 2485 or 2486 terminal and the Model 200 Controller or host. For help, see your access point user's manual.

Note: All access points that the TRAKKER Antares 2485 or 2486 terminal may communicate with and roam between must be in the same IP subnetwork.

To have the T2485 or T2486 communicate with the access point, you must know the value of these parameters on the access point:

- RF domain

- RF security identification (ID) (optional)

Configuring the T248X

When you install the TRAKKER Antares 248X terminal 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 2, "Installing the Terminal."

- Scan the configuration command from a Code 39 or Code 93 bar code label.

The set of network parameters you must configure depends on whether you install the terminal on the same IP subnetwork as the Model 200 Controller 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 Network Parameters

This section defines the network parameters you configure when installing the TRAKKER Antares 248X terminal in an RF or Ethernet network.

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 2.

Network Activate   On a T2480 or T2481 with an Ethernet card, the Network Activate command disables or enables Ethernet communications. On a T2485 or T2486, the Network Activate command disables or enables RF communications. If the Network Activate parameter is disabled, the network is disabled, no RF or Ethernet communications are provided. The radio is turned off on a T2485 or T2486. When the Network Activate parameter is enabled, the T248X will try to connect to the access point or Model 200 Controller.

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 Model 200 Controller 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 in your 2.4 GHz RF or Ethernet network.

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 T248X. The IP address you set on the terminal must match the address that is set for the terminal on the Model 200 Controller.

Network Port   Defines the network port that the TCP/IP or UDP Plus network protocol uses for communications in your 2.4 GHz RF network or your Ethernet network. In a UDP Plus network, the network port you set on the T248X must match the network port that is set on the Model 200 Controller. In a TCP/IP network, set the network port to the appropriate port for the application you are using on the T248X. The default network port of 23 enables VT/ANSI Telnet communications.

RF Domain   T2485 and T2486 only. 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)   T2485 and T2486 only. This optional parameter defines the password you can set for secured transmission and receipt of data between devices in the wireless network. To communicate, each access point and terminal must have matching security IDs. If the security ID is set on the access point, you must also set the security ID on each T2485 or T2486 that may communicate with the access point.

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 Model 200 Controller (UDP Plus) or host (TCP/IP) is on a different subnetwork than the T248X, you need to set the default router IP address. The terminal uses the router address to send packets across the network to the controller 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 controller (UDP Plus) or host (TCP/IP) and terminal are on different subnetworks. If the terminal is on a different IP subnetwork than the controller or host, then you must set the subnet mask and default router.

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.

Using the Status Lights to Monitor Network Communications

Once you have configured the devices in the 2.4 GHz RF or Ethernet network, you can begin using the application on the TRAKKER Antares 248X to collect and transmit data via network communications. If the T248X is communicating with your host computer, the terminal will connect and begin running the application that shipped on the terminal. You can begin using the terminal to collect data.

As you use the T248X terminal to collect data, status lights help you monitor RF and network communications on the terminal. Use the Network Connect and Transmit status lights to monitor communications between the T248X and other devices in the 2.4 GHz RF or Ethernet network.
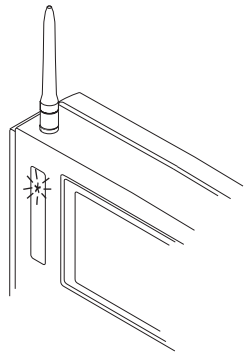
248XU.098

Using the Status Lights to Monitor Network Communications

You See These Lights	Status of Communications	What You Need to Do
Network Connect status light is turned off.	No communications. The T2480 or T2481 with an Ethernet card is not connected to the Ethernet network. The T2485 or T2486 is not connected to an access point.	You may need to enable the Network Activate command. Make sure the terminal is configured correctly to communicate in your network. For help, see "Configuring the T248X" earlier in this chapter. In an RF network, 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.

Using the Status Lights to Monitor Network Communications (continued)

You See These Lights	Status of Communications	What You Need to Do
The Network Connect status light blinks.	Partial communications. The T248X with UDP Plus is trying to establish communications with the Model 200 Controller, but it is not connected. *Note: The Network Connect status light does not blink on a T248X with the TCP/IP protocol.*	You may need to configure the terminal to communicate with other devices in the 2.4 GHz RF or Ethernet network. For help, see "Configuring the T248X" earlier in this chapter. If the T2485 or T2486 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 also need to configure the controller (UDP Plus) or host. Make sure the terminal is configured correctly and enabled. Make sure the controller is turned on and data collection is started.
The Network Connect status light remains on.	Normal communications. The T248X can communicate with the Model 200 Controller (UDP Plus or host (TCP/IP).	You can send and receive data between the terminal and the controller or host.
The Network Transmit status light remains on and the Network Connect status light is turned on.	Normal communications. The T248X is sending data or has received data for an application from the Model 200 Controller or host. The data is stored in the terminal's network buffer until the application is ready to process the data.	You can send and receive data between the terminal and the Model 200 Controller or host.

Using the T2485 or T2486 Between Access Points

The access point acts as a bridge to provide communications between the TRAKKER Antares 2485 and 2486 terminals and the Ethernet or token ring network. You may have multiple access points in your 2.4 GHz RF network to provide uninterrupted wireless communication at any location within your facility.

To use the terminal 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 T2485 or T2486 will always have a connection available.

- You configure each access point with the same RF domain number and security ID.

- You configure the T2485 or T2486 terminals with the same RF domain and security ID as the access points to which they may communicate.

- All access points that the T2485 or T2486 terminals may communicate with and roam between must be installed in the same IP subnetwork. The T2485 or T2486 cannot roam between IP subnetworks.

Once the network is configured, you can collect data anywhere within range of the access points in the wireless network. When you move out of range of one access point, the terminal 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 terminal's radio buffer. The Network Transmit status light turns on. 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 terminal 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. In a UDP Plus network, the session is maintained any time the terminal is out of range or in Suspend mode.

Configuring the T248X Over the Network

You can remotely configure a T2480/1 with an Ethernet card or a T2485/6 terminal by using one of these methods:

• Send a command from the Model 200 Controller (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 or Ethernet network parameters, such as terminal IP address, over the network. Once the terminal is communicating, you can configure bar code symbologies and send 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 T248X From the Controller

You can use the Model 200 Controller to configure one or more T248X terminals in your 2.4 GHz RF network or your Ethernet network. You can also send reader commands such as Delete File to one or more terminals. Your terminal must be configured with UDP Plus in order to communicate with the Model 200 Controller.

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 T248X from the Model 200 Controller, but you cannot get configuration data from the terminal.

To send commands from the controller

1. Using the Download Server feature on the controller, select the terminal or group to which you want to download the configuration commands. For help on configuring a group of terminals, see the *Model 200 Controller System Manual*.

    Note: You can continue running an application on the T248X while configuring the terminal from the controller.

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 6, "Reader 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 T248X, 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 T248X. 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 T248X From the Host

You can use an application on the host computer to configure one T2480/1 with an Ethernet card or one T2485/6. For example, you may want to change the Beep Volume command or the Keypad Caps Lock.

To send and receive configuration data or files, you need to write an application for the host that can communicate with the Model 200 Controller 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 2.4 GHz 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 T248X in a UDP Plus Network

You can use the host computer to configure one TRAKKER Antares 248X terminal in your 2.4 GHz RF network or your Ethernet network. For example, you may want to change the Beep Volume command and the Keypad Caps Lock command.

To send and receive configuration data, you need to write an application for the host that can communicate with the Model 200 Controller. For help, see the *Model 200 Controller Technical Reference Manual*. You use the Terminal Message Format (TMF) protocol to send and receive transactions between the host application and the terminal.

Note: You can continue running an application on the T248X while configuring the terminal.

To set up the Model 200 Controller

*   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 controller uses the transaction ID to route responses from the T248X back to the host application. $NGCFGRSP is a special transaction ID that the controller uses to forward configuration response data from a terminal.

    All configuration responses will be routed with the $NGCFGRSP transaction ID. The controller 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 T248X terminals.

To set up the host computer

*   Verify that you can communicate with the Model 200 Controller.

To set up the application

*   Prepare and write a host application that can communicate with the controller and send transactions to and receive transactions from the T248X 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 *Model 200 Controller 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 T248X to the host.

CS   Configuration Set request sent from the host application.

Cs   Configuration Set response sent from the T248X 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 6, "Reader Command Reference."

To see examples of the host application transactions, see "Example 1" and "Example 2" later in this section.

Configuring the T248X in a TCP/IP Direct Connect Network

You can use the host computer to configure one TRAKKER Antares 248X terminal in your 2.4 GHz RF network. For example, you may want to change the Beep Volume command and the Keypad Caps Lock command.

To send and receive configuration data, you need to write an application for the host that can communicate with a T2485 or T2486 directly via an access point or through the Ethernet network. You use the Terminal Message Format (TMF) protocol 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 T248X while configuring the terminal from the host.

To set up the host computer

• Verify that you can communicate with the TRAKKER Antares 248X terminal.

To set up the application

•   Prepare and write a host application that can communicate with the T248X. Configuration commands must be sent to network port 6000 on the terminal. Message transactions to and receive transactions from the T248X 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:

CG   Configuration Get request sent from the host application.

Cg   Configuration Get response sent from the T248X to the host.

CS   Configuration Set request sent from the host application.

Cs   Configuration Set response sent from the T248X 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 6, "Reader Command Reference."

Example 1
In the host application, you want to get the current values of two configuration commands from the T248X. Send this transaction from the host application:

CG$+NABV

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.

BV   is the Beep Volume configuration command.

The T248X returns this transaction to the host application.

`Cg$+NA1BV4`

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.

BV4   means the Beep Volume configuration command is currently set to a value of 4, which is a very loud beep volume.

Example 2

In the host application, you want to set the value for two configuration commands on the T248X. Send this transaction from the host application:

`CS$+BV3KA1`

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.

BV3   sets the Beep Volume configuration command to a value of 3, which is a very loud beep volume.

KA1   sets the Keypad Caps Lock configuration command to a value of 1, which enables the Keypad Caps Lock.

The T248X returns this transaction to the host application.

`Cs$+BV3KA1`

where:

Cs   is a TMF Configuration Set response.

$+   is the Change Configuration reader command.

BV3   means the Beep Volume configuration command has been changed to a value of 3, which is a loud beep volume.

KA1   means the Keypad Caps Lock configuration command has been changed to a value of 1, which enables the Keypad Caps Lock.

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 T2480/1 that has an Ethernet card or the T2485/6. You use the file management reader commands such as Receive File and Transmit File to transfer files between the T248X and the host. For help, see Chapter 6, "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 6, "Reader Command Reference."

Note: You can continue running an application on the T248X while configuring the terminal or transferring files from the host.

To use the built-in TFTP client on the T248X, 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.

• T248X 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 T248X 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 T248X 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 T248X, enter this command:

   ```
   CS.%R,c:inventry.bin,c:inventry.bin
   ```

   For command information, see Chapter 6, "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 T248X 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, or 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 T248X. 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.

To use the sample utility CLIENT.CPP

1. Make sure the TFTP server is running on the host and the T248X is communicating with the host.

2. In the hosts file on the host, add the terminal IP addresses and the target name, NCM. For example, to send files or data to the T248X with an IP address of 192.9.200.130, add this line to the hosts file:

   ```
   192.9.200.130 ncm
   ```

3. Start the CLIENT.EXE application on the host.

4. When the "Enter Command" prompt appears on the host, enter the two-character TMF code, CS (Configuration Set request) followed by the reader or configuration command.

   For example, to send the application INVENTRY.BIN from drive C on the host to drive C on the T248X, enter this command:

   ```
   CS.%R,c:inventry.bin,c:inventry.bin
   ```

   Or, to change the beep volume to very loud, enter this command:

   ```
   CS$+BV4
   ```

   For command information, see Chapter 6, "Reader Command Reference."

CLIENT.CPP Sample Application for a TCP/IP Direct Connect Network

```cpp
#include <windows.h>
#include <stdio.h>
#include "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)

```cpp
// 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 TRAKKER Antares terminals are data collection terminals with network support. The T2480, T2481, T2485, and T2486 communicate with a host computer or other serial device through the terminal's serial ports. The T2480 and T2481 with an Ethernet card installed communicate with a host directly through the Ethernet network.

The T2485 and T2486 also communicate with a host in the 2.4 GHz RF network either through the Model 200 Controller or directly through the access points. The access point acts as a bridge between the Ethernet or token ring network and the wireless 2.4 GHz RF network.

In a UDP Plus network, the terminal communicates through the Model 200 Controller to a host on an Ethernet, token ring, twinaxial, coaxial, or SDLC network. In a TCP/IP network, the terminal communicates to the host on an Ethernet or token ring network.

The communications protocol stack for the TRAKKER Antares 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, the Ethernet network, and the serial ports 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 controller 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 Ethernet networks and provides robust data communications.

- Trivial File Transfer Protocol (TFTP) allows efficient file exchange between the terminal and the Model 200 Controller or host.

- Configurable Serial Port (CSP) protocol allows efficient file exchange between the T248X and the host through RS-232 and RS-232/422/485 serial communications. The terminal uses either the XMODEM or 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, the Ethernet network, and serial communications.

TRAKKER Antares Terminal Protocol Stack and the OSI Model
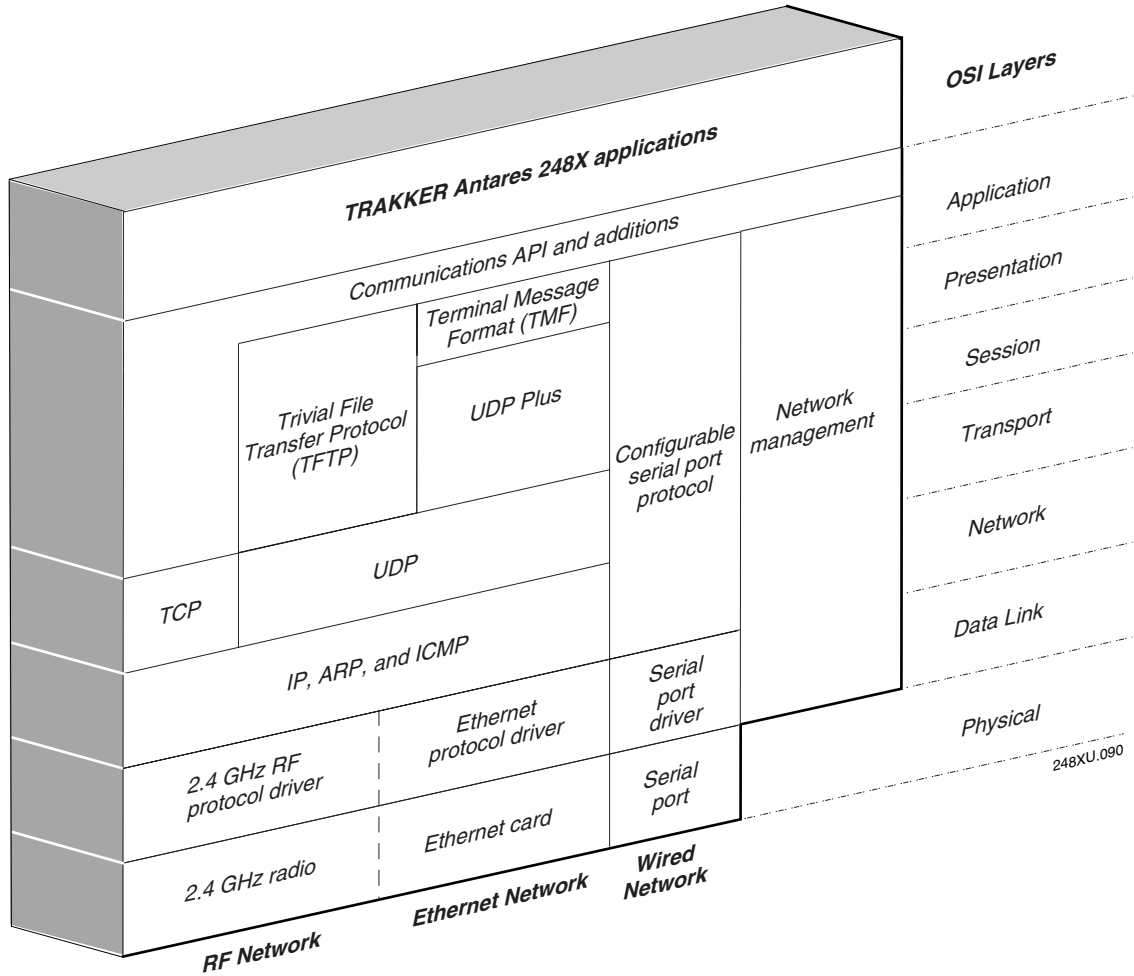
OSI Layers

TRAKKER Antares 248X applications

Communications API and additions

Application

Presentation

Terminal Message Format (TMF)

Trivial File Transfer Protocol (TFTP)

UDP Plus

Session

Network management

Transport

Configurable serial port protocol

Network

UDP

TCP

Data Link

IP, ARP, and ICMP

Serial port driver

Ethernet protocol driver

Physical

2.4 GHz RF protocol driver

248XU.090

Serial port

Ethernet card

2.4 GHz radio

Ethernet Network

Wired Network

RF Network

The TRAKKER Antares 248X terminals use these protocols:

Layer	Protocol	Description
Physical	2.4 GHz radio	Provides spread spectrum radio signal control.
	Ethernet card	Provides Ethernet communications.
	Serial Port	Provides RS-232 serial communications.
Data Link	2.4 GHz RF or Ethernet protocol driver	Provides RF or Ethernet media access control. The default hardwired media access control (MAC) protocol used with TCP/IP supports the Ethernet II standard.
	Serial port driver	Provides RS-232 (COM1 and COM4) or RS-232/422/485 (COM2) serial communications control that uses CSP and the standard XMODEM or YMODEM protocol for data transfer.
Network	IP, ARP, and ICMP	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.
		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 Model 200 Controller 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 controller or host.

5

Using Custom Applications and Screen Mapping

This chapter introduces the TRAKKER Antares 248X 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 TRAKKER Antares terminals. To learn more about the programmable features, start with the next section, "About the TRAKKER Antares Programmable Terminals."

Use a serial port to download applications and files to the T248X

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 T248X to the development PC or host computer using a serial port. For help, see Chapter 2, "Installing the Terminal."

4. Use the FileCopy utility to download applications and files to the T248X. 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 Model 200 Controller to download applications and files to the T248X

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 Model 200 Controller. For help, see page 5-12.

4. Use the Download Server feature on the Model 200 Controller to download applications and files to the T248X. 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 T248X

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 T248X directly via an access point or through the Ethernet network. Use the host application to download applications and files to the T248X. 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 TRAKKER Antares terminals ship loaded with a terminal emulation application, a screen mapping application, or a sample application. You can develop your own data collection application for the T248X and then download the application to the terminal.

You download files to the T2480, T2481, T2485, or T2486 using these methods:

T2480 and T2481 Without Ethernet   You can download applications and files from a host computer to one terminal that is directly connected through one of the serial ports.

T2480 and T2481 With Ethernet   You can download applications and files from the Model 200 Controller (UDP Plus protocol) or host (TCP/IP protocol) to one or more terminals. You can also download applications and files to one T2480 or T2481 using a serial port.

T2485 and T2486   You can download applications and files from the Model 200 Controller (UDP Plus protocol) or host (TCP/IP protocol) to one or more terminals using the 2.4 GHz RF network. You can also download applications and files to one T2485 or T2486 using a serial port.

The next table lists specifications and technical information you need to know to develop applications for the T248X terminals.

TRAKKER Antares Programmable Terminal Specifications

Products: TRAKKER Antares 2480, 2481, 2485, and 2486 terminals

Serial Communications: RS-232 serial communications via COM1 (all T248X terminals)

RS-232/422/485 serial communications via COM2 (T248X terminals with the enhanced input/output board option)

RS-232 serial communications via COM4 with an adapter cable accessory (Part No. 067185) (T248X terminals with the enhanced input/output board option)

RF Communications: 2.4 GHz (to 2.4835 GHz) radio

Network protocol: There are two options for the T2480/1 with Ethernet and the T2485/6:

- UDP Plus protocol provides host connectivity through the Model 200 Controller

- TCP/IP protocol provides host connectivity through the Ethernet network (T2480/1) or an access point (T2485/6)

Application: 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-232/422/485 serial communications from the PC or host computer

Via RF or Ethernet to the terminal's flash drive from the Model 200 Controller

Via RF or Ethernet and TFTP to the terminal's flash drive from a host application

Drives and File system: Drive C, approximately 750K flash for user, up to 32 files

Drive D, optional 2MB configurable flash memory storage, up to 32 files (configurable as a storage drive or a storage space for double-byte fonts)

Drive E, configurable (up to 256K) RAM disk, up to 32 files

Drive G, T248X optional 2MB or 4MB extended SRAM drive, up to 32 files (T2480/1 terminals with Ethernet connectivity or T2485/6 terminals)

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.

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 T248X 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 TRAKKER Antares 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. In addition to the PSK, you also need Microsoft Visual C/C++ version 1.5X (Part No. 590224).

The PSK kit contains:

• Programmer's software libraries

• Application Simulator

• FileCopy utility

• Sample programs and Make files

• *TRAKKER Antares Application Development Tools System Manual*

The PSK is a library of C functions that control the TRAKKER Antares 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 controller 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 TRAKKER Antares terminal.

EZBuilder (Part No. 066381) 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 TRAKKER Antares terminal.

EZBuilder contains:

- EZBuilder software

- Microsoft Visual C++ version 1.5X

- Application Simulator

- PSK libraries

- FileCopy utility

- Sample EZBuilder programs

- *EZBuilder Getting Started Guide*

- *EZBuilder Tutorial*

Using EZBuilder, 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 Application Simulator mimics a TRAKKER Antares 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 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 Between the 9560 and TRAKKER Antares

One main difference between the T248X and the 9560 stationary terminal is the type of program or application you can run on the terminal. The T248X can run a Microsoft C/C++ application while the 9560 terminal runs IRL (Intermec Reader Language) programs.

The TRAKKER Antares terminals support IRL 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.

You can also convert your IRL program by developing a new C/C++ application using the TRAKKER Antares Programmer's Software Kit (PSK) or EZBuilder and Microsoft C/C++ functions.

If you are using the T248X in a CrossBar network, the application needs to send and receive data through COM2. Once your application is converted, you can download the application to the T248X and begin using it in your network.

Converting the Application to a Binary File

For your application to run on the T248X, 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 T2480/1 with Ethernet or a T2485/6 and plan to download applications and files from the Model 200 Controller or host via the 2.4 GHz RF network or the Ethernet network, copy all the binary application files and any data files to a 3.5-inch disk. Continue with the instructions for "Using the Model 200 Controller to Download Applications" later in this chapter.

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 T248X using serial communications. You connect the terminal's serial port to the host by using:

• COM1

• COM2

• COM4 with the adapter cable accessory (Part No. 067185)

For help connecting the terminal, see Chapter 2, "Installing the Terminal." 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 6, "Reader Command Reference."

The instructions in this section explain 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 T2485 or T2486, you can download or upload files to or from the terminal using either the serial port or RF communications through the Model 200 Controller 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. You click the Help button or press **F1** anytime to get more information.

TRAKKER Antares FileCopy Utility Screen

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 select and configure the following:

        •   PC COM port

        •   TRAKKER Antares COM port

        •   Communications Protocol

        •   File Transfer protocol

        •   Baud rate, parity, data bits, and stop bits

    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 COM1, COM2, or COM4 serial port parameters on the terminal. For help, see "Configuring the Serial Port Parameters" in Chapter 2.

5. 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.

Applications must be stored on drive C. Depending on your T248X options and configuration, you can download other files to drive C, D (if available), E, or G (if available).
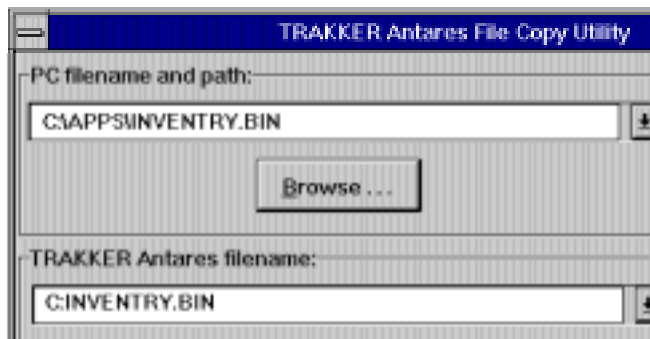
6. If you are downloading an application and want to run it on the terminal immediately after it is downloaded, enable the Run program check box.
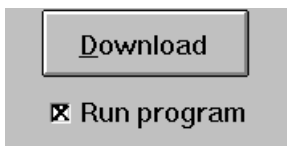
Note: You can also run the application at any time from the terminal. For help, see "Running the Application on the Terminal" later in this chapter.

7. Click Download to copy the file from the PC to the terminal. If you enabled 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.

8. To download or upload another file, repeat Step 5 through Step 7.

9. Click Exit to close the FileCopy utility.

Using the Model 200 Controller to Download Applications

You can download applications and files to a T248X using network communications. The advantage to downloading files via network (RF or Ethernet) communications is that you can download multiple files to one or more terminals.

You use RF or Ethernet communications to download applications from the Model 200 Controller to T248Xs running UDP Plus or from the host to T248Xs running TCP/IP. This section explains how to use the controller 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 Model 200 Controller

1. Copy the applications and files to the controller.

2. Download the applications and files to the T248X.

Each step is described in the next sections. Before you start, make sure the T2480/1 with Ethernet or the T2485/6 is communicating with the controller. If you need any help installing or configuring the network, see Chapter 4, "Operating the Terminal in a Network."

Copying Files to the Model 200 Controller

You can use these instructions to copy binary applications and files from a 3.5-inch disk to the Model 200 Controller.

To copy applications and files to the controller

1. Insert the 3.5-inch disk that contains the files in the disk drive of the controller.

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 Start. A message box appears telling you to insert the floppy disk in the disk drive of the controller.

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 controller restores the files you selected to the USERDATA directory.

7. Remove your disk from the disk drive.

Downloading Applications and Files to the T248X

Once the applications and files are stored on the Model 200 Controller, you can download applications and files to a T248X running UDP Plus.

There are two ways to download files:

- Use the Download Server feature on the controller.

- Use the Receive File or Transmit File reader commands. For help, see Chapter 6, "Reader Command Reference."

The instructions in this section explain how to use the Download Server feature on the controller to download applications and files to the terminal.

To prepare the terminal

- Make sure the terminal is on and communicating with the controller. Look at the status lights on the left side of the terminal's screen. If the Network Connect status light is turned on, the terminal is communicating with the controller.

To download applications and files to the T248X

1. If data collection is not started on the Model 200 Controller, 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.
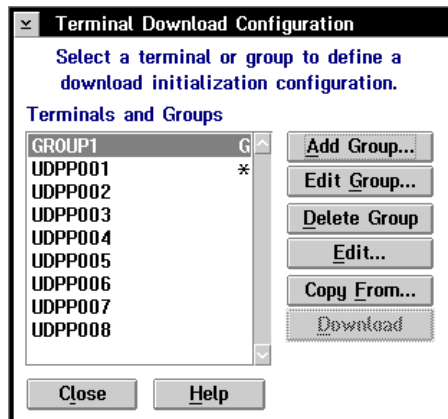
4. From the Terminal Download Configuration dialog box in the Terminals and Groups list box, select a terminal or group of terminals to receive the binary applications and files.

   For help defining a group of terminals, see "Adding a Group in the Download Server" in Appendix B of the *Model 200 Controller 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.

Configure Device Initialization Download Dialog Box

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 usually within a few seconds. 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.

19. Choose Close to close the dialog box and return to the System Maintenance dialog box.

To run an application, continue with the instructions in the next section.

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 6.

- 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` `↵` `2` `4` `8` or scan this bar code label to access the TRAKKER Antares 2400 Menu System.
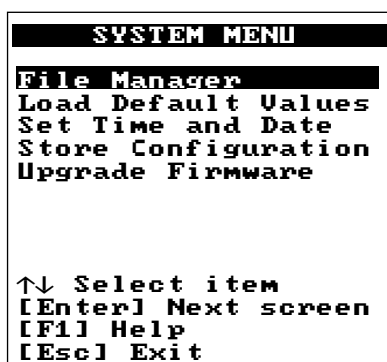
   Enter Test and Service Mode

   ..-.

   The Main Menu appears.

2. Choose System Menu and press `↵` . The System Menu appears.

```
       MAIN MENU
Configuration Menu
Diagnostics Menu
System Menu
About TRAKKER 2400


↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
248XU.001

```
       SYSTEM MENU
File Manager
Load Default Values
Set Time and Date
Store Configuration
Upgrade Firmware



↑↓ Select item
[Enter] Next screen
[F1] Help
[Esc] Exit
```
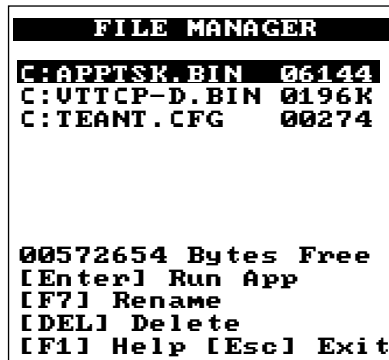248XU.051

3. Choose File Manager and press ⏎ . The File Manager screen appears prompting you to select a drive.

```
╔═══════════════════════╗
║      FILE MANAGER      ║
╠═══════════════════════╣
 Select drive: C



 OK          CANCEL
```

248XU.046

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.

```
      FILE MANAGER
 C:APPTSK.BIN  06144
 C:VTTCP-D.BIN 0196K
 C:TEANT.CFG   00274



 00572654 Bytes Free
 [Enter] Run App
 [F7] Rename
 [DEL] Delete
 [F1] Help [Esc] Exit
```

248XU.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.

Troubleshooting Applications

Once you download a new application to the terminal, you are ready to test it before you start collecting data. If the terminal or application appears to be locked up and you cannot enter data, try these steps in order.

To troubleshoot a locked-up terminal or application

1. Press [I/o] to turn off the terminal. If it turns off, press [I/o] to turn on the terminal. You can continue working.

2. Scan the Reset Firmware label to restart the firmware and application.

   Reset

   ‖‖‖‖‖‖‖‖‖‖‖‖‖

   -.

   You can also send the Reset Firmware command over the network. For help, see Chapter 6, "Reader Command Reference."

3. Use the TRAKKER Antares 2400 Menu System to configure the Resume Execution command to resume "not allowed." Choose Terminal Menu from the Configuration Menu and then choose Power Management. Each time you press [I/o] to turn on the terminal, the terminal boots and restarts your application.

4. If your terminal appears to boot but the application will not run or is locked up, press and hold the [tab] key immediately after you scan the Reset Firmware label or press [I/o] to turn on the terminal in Step 3. Continue to hold the [tab] key for at least 30 seconds after the TRAKKER Antares welcome screen has cleared.

   The terminal has booted without loading an application. Use the TRAKKER Antares 2400 Menu System to load another application or download a new version of the application before you run it again.

5. If the terminal will not turn off or does not respond to the Reset Firmware command, reset the terminal. Make sure you have tried Steps 1 and 2 before you reset the terminal.

Caution
If the terminal is turned on and you push the Reset button, you may lose data and you may have to reload the firmware.

Conseil
Si le terminal est allumé et que vous appuyez sur le bouton de remise à zéro, vous risquez de perdre des données et d'avoir à recharger le microprogramme.

  a. Press ⁱ/◦ to turn off the terminal. If it will not turn off, continue with the next step.

  b. Use a Phillips screwdriver to remove the six screws on the back panel.

  c. Remove the back panel.

  d. Press the Reset button. The T248X will briefly turn on and then turn off.

Reset button

248XU.045
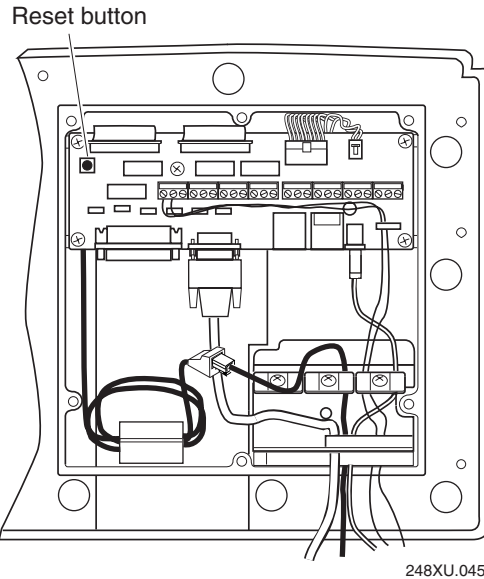
  e. Place the back panel on the back of the terminal.

  f. Use a Phillips screwdriver to attach the six screws.

  g. Press ⁱ/◦ to turn on the terminal. It boots all the systems and clears RAM memory. The Boot Menu appears.

  h. Press 1 to boot the terminal and start your application.

6. If you keep returning to the Boot Menu or the terminal will not boot, 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.

Using Screen Mapping

You can use screen mapping to send screen transactions from a TRAKKER Antares 248X terminal with UDP Plus through the Model 200 Controller to a host application.

On the controller, you create the terminal screens, group them into menus, and generate each menu into a terminal template that is downloaded to the terminal. Script files that you build on the controller allow the transaction fields from the terminal screens to be mapped to different host screen fields.

Make sure you have installed the T2485/6 in your 2.4 GHz RF network or the T2480/1 in your Ethernet network. For help, see Chapter 2, "Installing the Terminal." Before you can run screen mapping on your terminal, you need to generate a terminal template and script file on the controller. For help, see the *Model 200 Controller System Manual*. If you have completed these tasks, you can start the screen mapping application.

Note: Screen mapping is only available in a Model 200 Controller network.

Starting the Screen Mapping Application

There are two ways to load a template on the T248X:

- You can download the template from the controller. For help, see the *Model 200 Controller System Manual*.

- You can have the T248X request a template from the controller.

To request a template from the controller

1. Press the ⌷ key to turn on the terminal. The T248X screen prompts you to enter the name of the template you want to use:

```
┌───────────────────────────┐
│  File name:               │
│                           │
│                           │
│                           │
│                           │
│                           │
│                           │
│                           │
│                           │
│                           │
│                           │
└───────────────────────────┘
         248XU.060
```

2. Type a template name and press ⏎ . The terminal displays your template menu.
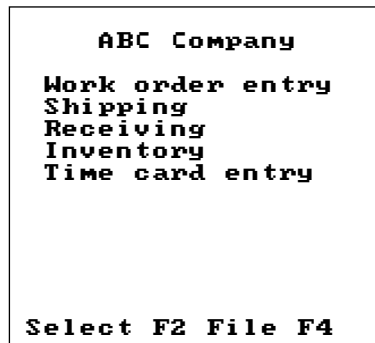
    Note: Make sure your template name has a .TPL file extension.

Running Screen Mapping on Your Terminal

Once you have selected a template, you need to select the screen where you want to enter data.

To enter data into a screen

1. From the template menu, use the ⌃ or ⌄ keys to highlight the screen you want to use. The next screen shows an example of a template menu.

```
        ABC Company

   Work order entry
   Shipping
   Receiving
   Inventory
   Time card entry




   Select F2 File F4
```

248XU.061

2. Press F2 to choose the screen. The screen you chose appears on the terminal screen and the screen name is in the title bar.

3. Type or scan data into the fields. Use the ⌃, ⌄, or ⏎ to accept the data for each field.

4. When you finish entering data into the fields:

    *   Press F1 to send the transaction to the controller.

    *   Press F3 to reset the screen and reposition the cursor to the first input field without sending the data.

    *   Press F5 to exit the screen without sending the data and return to the template screen menu.

Requesting a New Template

You can run one terminal template at a time on the TRAKKER Antares 248X terminal. If you want to change templates, you need to request a new one from the Model 200 Controller.

To request a new template from the controller

1. From the template menu, press F4 to download a new template.

2. Type the name of the template you want to use when the screen prompts you to enter a file name.

    Note: Make sure your template name has a .TPL file extension.

```
File name:
```

248XU.060

3. Press ↵ . The new template menu appears on your terminal.

Loading a Validation File

You can use a validation file to ensure that the information you enter in the input fields of your terminal screen is correct. There are two ways to load a validation file on the T248X:
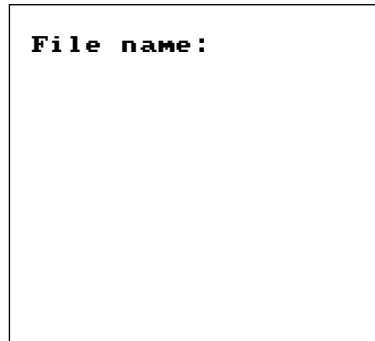
*   You can download the validation file from the Model 200 Controller. For help, see the *Model 200 Controller System Manual*.

*   You can use the T248X to request a validation file from the Model 200 Controller.

To request a validation file from the controller

1. From the template menu, press F4 to download a new file. The screen prompts you to enter a file name.

Requesting a Validation File

```
File name:
```

248XU.060

2. Type the name of the validation file you want to download.

    Note: Make sure that your filename contains a valid file extension. The filename cannot have the .TPL extension or the screen mapping application will try to load the validation file as a template.

3. Press ⏎ to download the validation file from the controller.

6

Reader Command Reference

This chapter describes the reader commands that you can use while operating the terminal. Reader commands, such as Change Configuration, allow you to 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 reset the terminal to the default configuration or change the configuration. 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, Ethernet, 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

The reader commands you can use to operate or change the terminal's configuration are listed in this section. The operating commands are listed in alphabetical order. You will find the purpose, syntax for commands sent from a network device, and bar code labels for these reader commands in this section.

- Change Configuration
- Default Configuration
- Multiple-Read Labels
- Reset Firmware
- Save Configuration in Flash Memory
- Scanner Trigger On and Off
- Test and Service Mode

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.

From Network: `$+command[command]...[command n]`

where *command* is a configuration command with the value you want to set.

Keypad: Press ⌑f⌑ ⌑↵⌑ ⌑2⌑ ⌑4⌑ ⌑8⌑ 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 T248X will no longer have a valid IP address and cannot communicate with other devices. You need to configure the T248X 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.

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 pulling and releasing the scanner trigger. This command is valid on a T248X only when you have an Intermec 1545 laser scanner attached to the external scanner port.

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.

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 pulling the trigger on the 1545 laser scanner.

From Network: / .

Keypad: Not supported

Scan: Not supported

Purpose: The Scanner Trigger Off command is the same as releasing the trigger on the 1545 laser scanner. Its effect depends on the Scanner mode and Scanner Trigger mode configuration settings as described earlier.
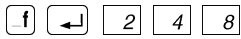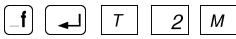
From Network: / %

Keypad: Not supported

Scan: Not supported

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.

From Network: Not supported

Keypad: `f` `↵` `2` `4` `8` or `f` `↵` `T` `2` `M`

Scan: Test and Service Mode

‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

..-.

File Management Reader Commands

The reader commands you can use to manage files and applications are listed in this section. The file management commands are listed in alphabetical order. You will find the purpose, syntax for commands sent from a network device, and bar code labels for these reader commands in this section.

- 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 TRAKKER Antares terminals:

- Use the serial port to receive files on the T248X

- Use network communications to receive files on the T2480/1 with Ethernet or the T2485/6

For help connecting the terminal to a host computer or the Model 200 Controller, 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 T248X terminal. You must have the terminal connected to the host through a serial port. For help, see Chapter 2, "Installing the Terminal."

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 T248X.

Note: T248X filenames are up to eight characters with a three-character extension. Files you transfer from the host need to use the TRAKKER Antares naming conventions.

From Network: `.%Xn,drive:filename`   Receives a file using XMODEM protocol

`.%Kn,drive:filename`   Receives a file using XMODEM-1K protocol

`.%Yn,drive:filename`   Receives a file using YMODEM protocol

Or: `.%Yn,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, 2, or 4.

Receive File Through the Serial Port (continued)

      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   *X*   *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   COM2   COM4

1,   *2,*   *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:

    `.%Xn,drive:filename`   (for XMODEM)

    `.%Kn,drive:filename`   (for XMODEM-1K)

    `.%Yn,drive:filename`   (for YMODEM)

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 T248X 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 T248X:

`.%Y`*n*`,`*drive:*

For example, to receive the files through COM1 to drive G on the T248X, use this command:

`.%Y1,g:`

All files that match the wild card specification are transferred from the host and received to drive G on the T248X. If any file does not transfer, the remainder of the batch transfer is aborted.

Receive File Via Network Communications

Purpose: Receives a file from the Model 200 Controller or host and saves it on the T2480/1 with Ethernet or the T2485/6.

From Network: `.%R,`*fromfilename,drive:tofilename*

where:

`.%R`	is the command to receive a file that is transmitted over the RF or Ethernet network to the T248X.
fromfilename	is the name of the file you are transmitting from the Model 200 Controller or host to the T248X. On the controller, 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 controller pathname D:\USERDATA in the fromfilename *field.*
drive:	indicates the drive on the T248X 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 T248X.

Keypad: Not supported

Receive File Via Network Communications (continued)

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 and Screen Mapping."

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 TRAKKER Antares terminals:

- Use the serial port to transmit files from the T248X

- Use network communications to transmit files from the T2480/1 with Ethernet or the T2485/6

For help connecting the terminal to a host computer or the Model 200 Controller, see Chapter 4, "Operating the Terminal in a Network."

Transmit File Through the Serial Port

Purpose: Transmits a file from the T248X 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 2, "Installing the Terminal."

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: T248X 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, 2, 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.

___

Transmit File Through the Serial Port (continued)

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   XMODEM-1K   YMODEM

|||||||||||||||||| ||||||||||||||| |||||||||||||||

X   *X*   *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   COM2   COM4

||||||||||||||||||||| ||||||||||||||||||||| |||||||||||||||||||||

1,   *2,*   *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 Network Communications

Purpose: Transmits a file from the T2480/1 with Ethernet or the T2485/6 and saves it on the Model 200 Controller or host.

From Network: `%%R,drive:fromfilename,tofilename`

where:

`%%R`   is the command to transmit a file over the RF or Ethernet network from the T248X to the controller or host.

drive: indicates the drive where the file is stored on the T248X. You must include the colon (:) after the drive letter.

fromfilename   is the name of the file you are transmitting from the T248X to the controller or host.

tofilename   is the name of the file that will be saved on the controller or host. On the controller, 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`

Transmit File Via Network Communications (continued)

Example: To transmit the file SHIPPING.DAT from drive C to the controller or host, use this command:

```
%%R,c:shipping.dat,shipping.dat
```

A
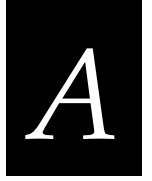
Terminal Specifications

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

You can use the tables in this section to find technical information about these features and options:

- Terminal Dimensions
- Power Specifications
- Electrical Specifications
- Temperature and Environmental Specifications
- Screen
- Keypad Options
- Application Options
- Memory
- RF Communications
- RF Network Support Options
- Wired Data Communications
- Bar Code Symbologies
- Input Devices for the External Scanner Port

Note: For programming and file system specifications, see Chapter 5, "Using Custom Applications and Screen Mapping."

Specifications

Terminal Dimensions

Length: 10.7 in (27.2 cm)
            11.3 in (28.7 cm) with a badge scanner installed

Height: 9.6 in (24.4 cm)

Depth: 3.9 in (9.9 cm)

Weight: 9.5 lbs (4.3 kg)

Power Specifications

Operating (with power supply):   95 to 250 VAC, 50 to 60 Hz, 125 mA

Memory Backup: Rechargeable NiCd 700 mA battery pack

Electrical Specifications

Models: T2480, T2481, T2485, and T2486

Electrical rating: --- 12V, 750 mA

Temperature and Environmental Specifications

Operating the terminal: -4°F to +122°F   -20°C to +50°C

Storing the terminal: -4°F to +140°F   -20°C to +60°C

Charging the backup battery: +32°F to +104°F   0°C to +40°C

Relative humidity: 0 to 95% non-condensing

Screen

- CGA-compatible, backlit LCD
- 4 lines by 40 characters for T2480 and T2485
- 12 lines by 40 characters for T2481 and T2486, display up to 25 lines

Keypad Options

- Alphanumeric keypad with 59 keys, 5 separate function keys, PC-style layout, available in English, French, German, Italian, Portuguese, or Spanish
- Oversized function numeric keypad with 35 keys, 10 separate function keys
- Terminal emulation keypads for IBM 3270, IBM 5250, and VT/ANSI
- Time and attendance keypad

    Note: See your Intermec sales representative for information about the availability of the time and attendance keypad.
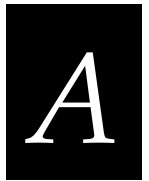
Application Options

- Programmable terminal
- IBM 3270 terminal emulation
- IBM 5250 terminal emulation
- VT100/220/320 and ANSI terminal emulation
- Screen mapping for 3270, 5250, or VT/ANSI (UDP Plus terminals only)

Memory

- 2MB programmable flash memory, 750K available for use
- 1MB battery-backed RAM, 512K available for user
- Extended memory option for an additional 2MB flash
- Extended memory option for an additional 2MB or 4MB SRAM storage drive

RF Communications

- 2.4 GHz (to 2.4835 GHz) radio (frequency range varies by country)
- WLI Forum OpenAir™ compatible frequency hopping spread spectrum radio
- 100 mW maximum output power
- 1.6 Mbits per second data speed, 800 Kbps fallback rate for extended range
- Coverage ≥ 240 feet (80 meters)
- RF network protocol options: TCP/IP or UDP Plus

RF Network Support Options

- Connectivity to a host on an Ethernet, token ring, twinaxial, coaxial, or SDLC network through an access point and Model 200 Controller using UDP Plus protocol
- Connectivity to a host on an Ethernet or token ring network through an access point using TCP/IP protocol

Wired Data Communications

- RS-232C serial port (COM1)
- RS-232C/422/485 serial port (COM2) with enhanced input/output board
- RS-232C serial port (COM4) with adapter cable accessory (Part No. 067185)
- Ethernet (10BaseT)
- Ethernet network protocol options: TCP/IP or UDP Plus
- XMODEM/YMODEM protocol for data transfer
- Protocols: Configurable Serial Protocol, Multi-Drop, Polling Mode D, Master Polling, Binary

Bar Code Symbologies

• Codabar	• Code 93
• Code One	• Code 128
• Code 11	• Interleaved 2 of 5
• Code 16K	• MSI
• Code 2 of 5	• PDF 417
• Code 39	• Plessey
• Code 49	• UPC/EAN

Input Devices for the External Scanner Port

You can attach these input devices to the external scanner connector:

- Intermec 1354 and 1355 badge scanners
- Intermec 1463A and 1463D CCD scanners
- Intermec 1516A, 1517A, 1517B, 1518, and 1519A laser scanners
- Intermec 1545 laser scanner
- Intermec 1550A laser scanner
- Intermec 126X, 127X, and 128X wands

You must use an interface cable to connect the input device to the scanner connector. For help, contact your local Intermec service representative.

Note: If you do not have a device installed on the badge scanner connector, you can use the Intermec 1464 CCD scanner, the Intermec 1550B laser scanner, and the Intermec 1551 laser scanner. To use the 1463A and 1463D CCD scanners together with a device installed on the badge scanner connector, you must configure the 1463A or 1463D Trigger mode to either Manual Trigger or Auto-Trigger.

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	Full ASCII Code 39 enabled with no check digit
Code 49	Disabled
Code 93	Disabled
Code 128	Standard
Interleaved 2 of 5	Disabled
MSI	Disabled
Plessey	Disabled
UPC/EAN	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	0 minutes (disabled)
Beep Volume	Normal
Command Processing	All reader commands enabled
Decode Security	Moderate
Display Contrast	3 (maximum contrast)
Display Font Type	8x16 font
Display Row Spacing	0 (T2481 and T2486 only)
Display Video Mode	Original
Keypad Caps Lock	Caps lock off
Keypad Clicker	Enabled
Keypad Type	Hardware default
Postamble	No characters (disabled)
Preamble	No characters (disabled)
RAM Drive Size	0 (no RAM drive)
Resume Execution	Allowed
Scan Ahead	Disabled
Scanner Mode	One-Shot mode
Scanner Redundancy	Normal
Scanner Selection	All compatible scanners
Scanner Timeout	Disabled (no timeout)
Scanner Trigger	Level triggering
Time and Date	9601071200000
Time in Seconds	Disabled

Default Configuration for RF and Ethernet Network Communications

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
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)	None
RF Transmit Mode	BFSK
RF Wakeup On Broadcast	No (disabled)
Subnet Mask	255.255.255.0
TCP/IP Maximum Transmit Timeout	32 seconds
Terminal IP Address	0.0.0.0

Default Configuration for Serial 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
Multi-Drop Address	A
Parity	Even
Poll (Polling)	Disabled
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 248X 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
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
DJ*data*	Display Contrast
DL*data*	Display Row Spacing
DN*data*	Display Video Mode
DT*data*	Display Font Type

Configuration Commands by Syntax (continued)

Syntax	Command
ER*data*	Resume Execution
EZ*data*	Automatic Shutoff
FF*data*	Flash Memory Configuration
FR*data*	RAM Drive Size
HB*data*	Poll (Polling) (COM1 only)
IA*data*	Baud Rate (COM1 only)
IB*data*	Parity (COM1 only)
IC*data*	Stop Bits (COM1 only)
IE*data*	Timeout Delay (COM1 only)
IF*data*	LRC (Longitudinal Redundancy Check) (COM1 only)
II*data*	Data Bits (COM1 only)
IL*data*	Flow Control (COM1 only)
IT*data*	Configuration Commands Via Serial Port (COM1 only)
KA*data*	Keypad Caps Lock
KC*data*	Keypad Clicker
KT*data*	Keypad Table
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
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

Configuration Commands by Syntax (continued)

Syntax	Command
NX*data*	Default Router
PE*data*	Start of Message (SOM) (COM1 only)
PF*data*	End of Message (EOM) (COM1 only)
PG*data*	Handshake (COM1 only)
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
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*data*	Baud Rate
YB*data*	Parity
YC*data*	Stop Bits
YE*data*	Timeout Delay
YF*data*	LRC (Longitudinal Redundancy Check)
YI*data*	Data Bits
YJ*data*	Handshake (also known as AFF)
YL*data*	Flow Control
YN*data*	Multi-Drop Address
YR*data*	Poll (Polling)
YT*data*	Configuration Commands Via Serial Port
YU*data*	Serial Port Protocol
YY*data*	Start of Message (SOM)
YZ*data*	End of Message (EOM)

B
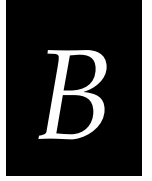
Full ASCII Charts

This appendix contains a full ASCII chart and charts of Code 39 bar code labels that
you can scan with an input device connected to the TRAKKER Antares 248X 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	00111111	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 248X terminal to use Code 39 in Full ASCII mode.

Control Characters

NUL	SOH	STX
%U	*%A*	*$B*

ETX	EOT	ENQ
$C	*$D*	*$E*

ACK	BEL	BS
$F	*$G*	*$H*

HT	LF	VT
$I	*$J*	*$K*

FF	CR	SO
$L	*$M*	*$N*

SI	DLE	DC1
$O	*$P*	*$Q*

DC2	DC3	DC4
$R	*$S*	*$T*

NAK	SYN	ETB
$U	*$V*	*$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
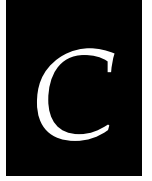
International Character Support
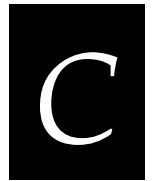
This appendix lists the complete set of English and Western European characters you can display on a TRAKKER Antares 248X terminal.

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, see "Using the Keypad" in Chapter 1.

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
o	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
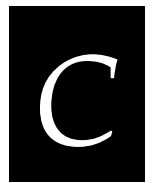
English and Western European Character Set (continued)

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
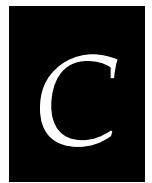
English and Western European Character Set (continued)

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
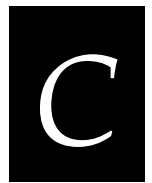
English and Western European Character Set (continued)

Character	Decimal	Hexadecimal
ó	162	A2
ú	163	A3
ñ	164	A4
Ñ̃	165	A5
a̲	166	A6
o̲	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

Keypad Labels and Terminal Mounting Templates
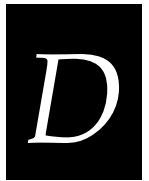
This appendix contains the specifications for the function key labels, the terminal specifications to create your own mounting bracket, and the actual size mounting templates for the desk-mount bracket and the wall-mount bracket.

Using the Label Specifications and Mounting Templates

This appendix contains:

- Function key label specifications for the oversized function numeric keypad

- Function key label specifications for the alphanumeric keypads

- TRAKKER Antares 248X terminal mounting specifications

- Desk-mount bracket template (scale 1:1)

- Wall-mount bracket template (scale 1:1)

Function Key Label Specifications   Use the label specifications to create your own pre-printed function key labels. You can use the illustration to work with a vendor to create function key labels. Please note that there are two sizes of function key labels. The labels for a T248X with an oversized function numeric keypad are slightly larger.

T248X Terminal Mounting Specifications   Use the dimensions provided in the illustration to create your own mounting bracket or enclosure.

Note: Without the Intermec desk or wall-mount bracket, the power supply is intended for indoor use only. Use of any other mounting brackets or enclosures will void the environmental protection ratings of the terminal.

Desk-Mount and Wall-Mount Bracket Templates   Use these actual size (scale 1:1) mounting templates to plan for and prepare a mounting location. Remove the templates from the manual and use them to mark the mounting holes for each bracket.

Function Key Label Specifications for the Oversized Function Numeric Keypad
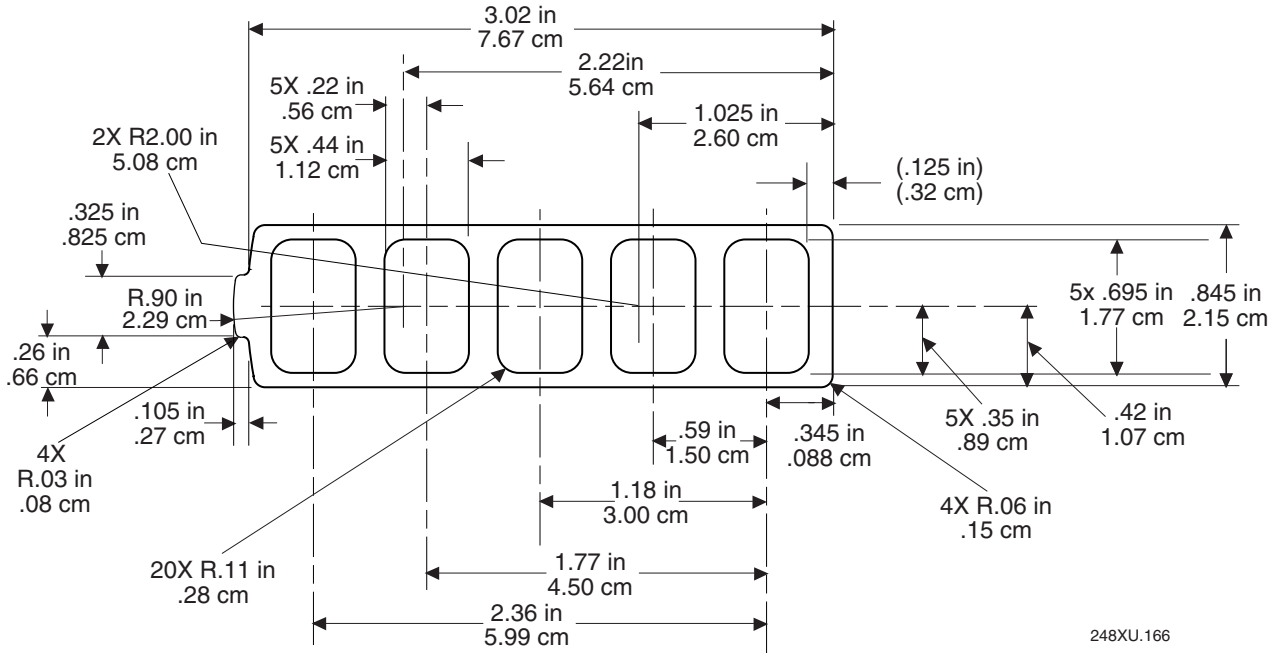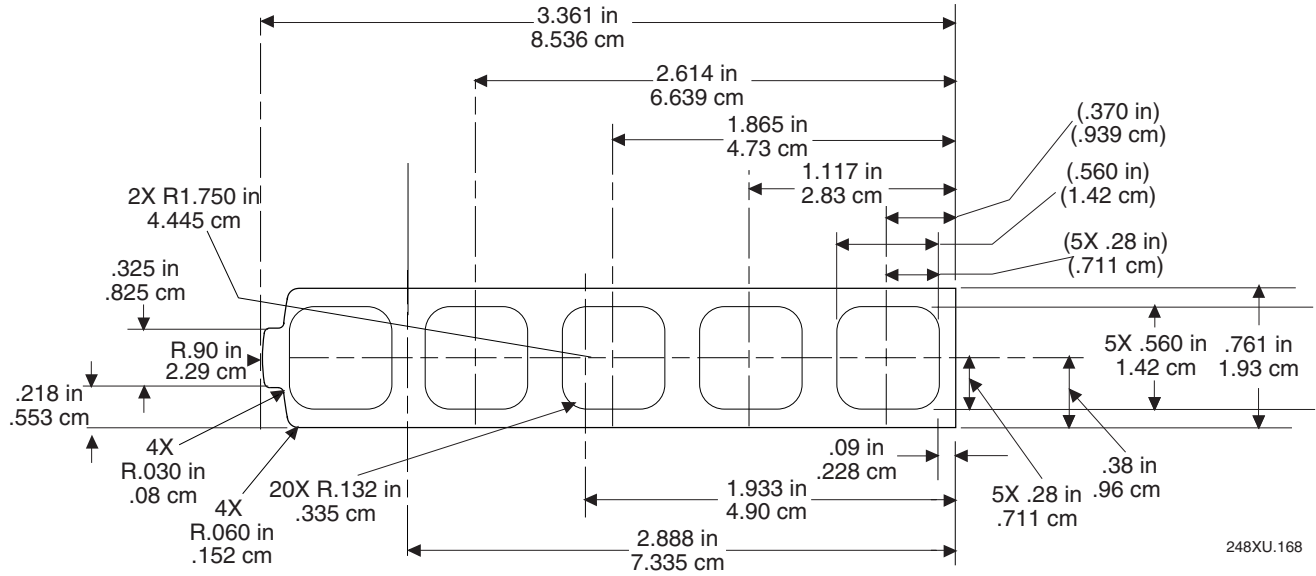

248XU.166

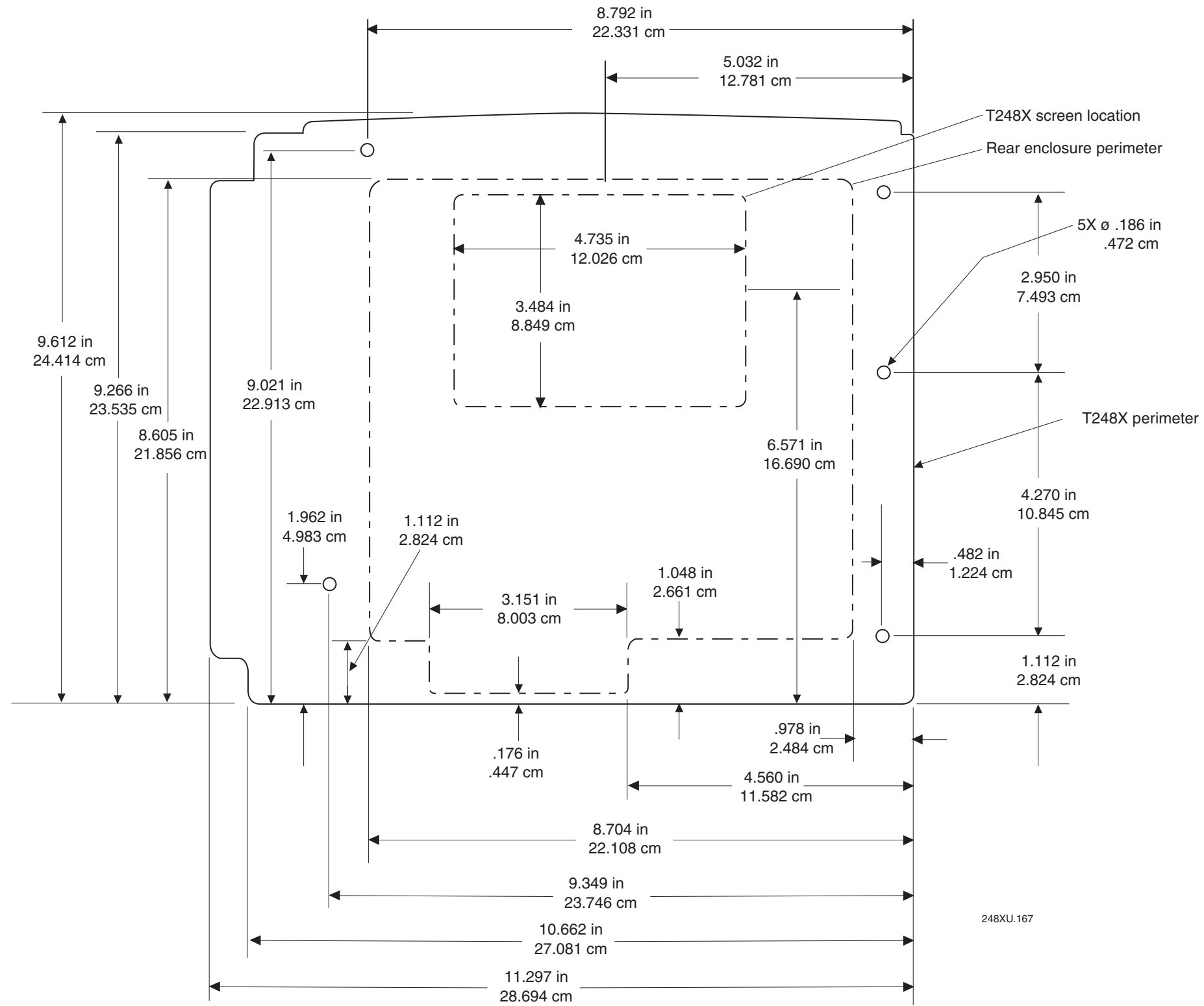*Note: The function key label illustration is not shown to scale.*

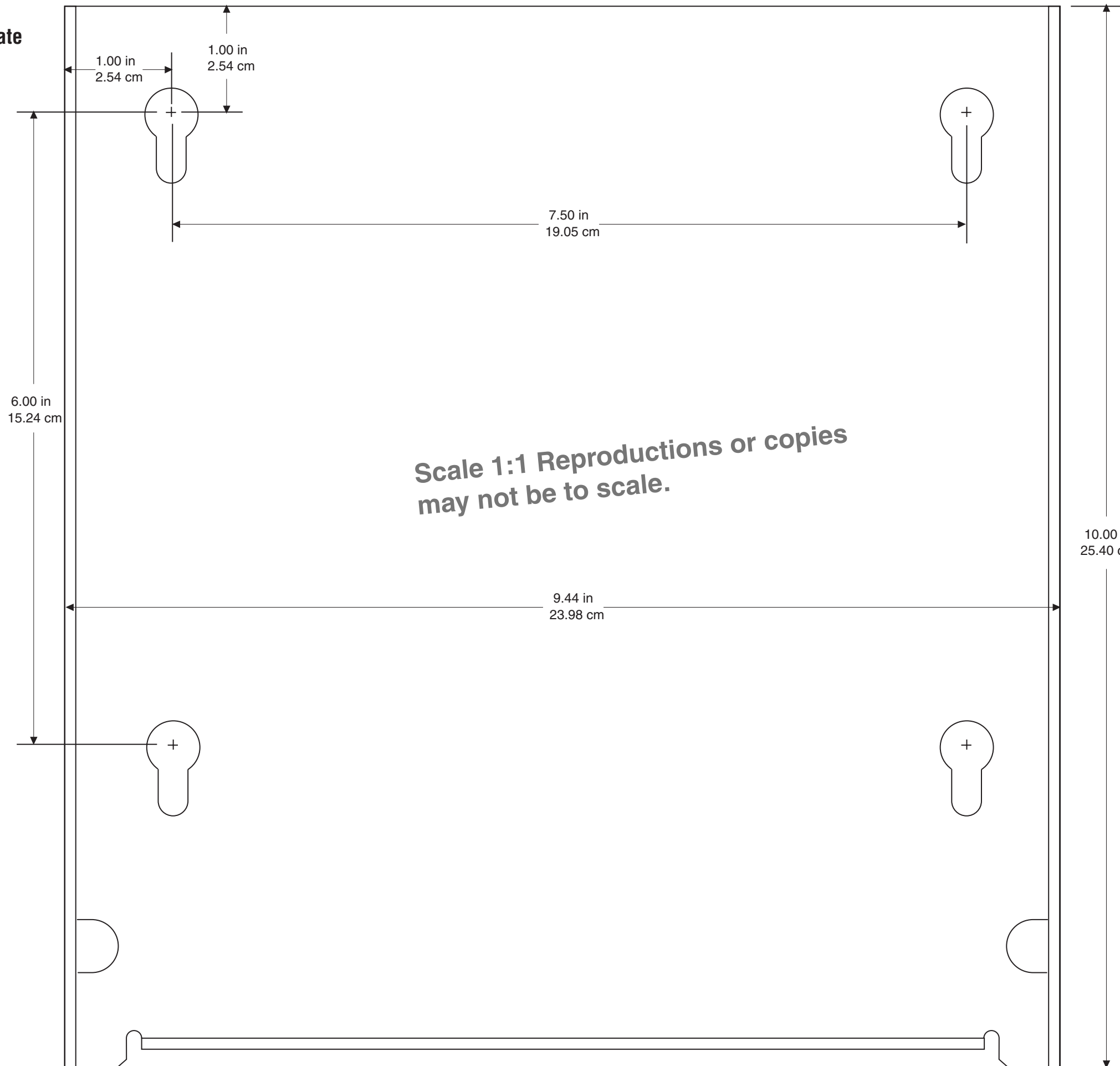**Function Key Label Specifications for the Alphanumeric Keypads**

248XU.168

Note: The function key label illustration is not shown to scale.

TRAKKER Antares 248X Terminal Mounting Specifications (Rear View)

8.792 in
22.331 cm

5.032 in
12.781 cm

T248X screen location

Rear enclosure perimeter

5X ø .186 in
.472 cm

2.950 in
7.493 cm

4.735 in
12.026 cm

3.484 in
8.849 cm

9.612 in
24.414 cm

9.266 in
23.535 cm

9.021 in
22.913 cm

T248X perimeter

6.571 in
16.690 cm

8.605 in
21.856 cm

4.270 in
10.845 cm

1.962 in
4.983 cm

1.112 in
2.824 cm

1.048 in
2.661 cm

.482 in
1.224 cm

3.151 in
8.003 cm

1.112 in
2.824 cm

.978 in
2.484 cm

.176 in
.447 cm

4.560 in
11.582 cm

8.704 in
22.108 cm

9.349 in
23.746 cm

248XU.167

10.662 in
27.081 cm

11.297 in
28.694 cm

Important: The depth of the T248X is 3.9 in (9.9 cm).

**Desk-Mount
Bracket Template**

1.00 in
2.54 cm

1.00 in
2.54 cm

7.50 in
19.05 cm

6.00 in
15.24 cm

Scale 1:1 Reproductions or copies
may not be to scale.

10.00 in
25.40 cm

9.44 in
23.98 cm

248XU.163

**Wall-Mount
Bracket Template**

1.25 in
3.17 cm

1.00 in
2.54 cm

6.50 in
16.51 cm

Scale 1:1 Reproductions or copies
may not be to scale.

6.00 in
15.24 cm

9.45 in
24.00 cm

11.50 in
29.21 cm

248XU.164