User's Manual

P/N 066960-004

Trakker Antares®
248X Stationary Terminal

Intermec

A UNOVA Company

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

Manual Change Record

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

Revision	Date	Description of Change
002	02/99	Removed the Terminal Emulation User's Guide (Part No. 066694-003) from this user's manual. You can now order this user's guide separately. Added the Important Terminal Emulation Information Sheet (Part No. 069993-001) to this user's manual.
003	06/00	Added the Important Data Collection Browser Information Sheet (Part No. 070012-002) to this user's manual
004	06/01	Divided the manual into a 248X user's manual and a Trakker Antares® 2400 Family System Manual. The user's manual contains information about how to operate the 248X, and the terminal system manual contains configuration and reader commands and other information that applies across the Trakker Antares 2400 Family. Removed Important Terminal Emulation Information Sheet (Part No. 069993-001) and Important Data Collection Browser Information Sheet (Part No. 070012-002), and added this information to the terminal system manual. Also added information about the DOS option to the terminal system manual. Added several new chapters including Troubleshooting and Diagnostics. Also added an Index. Explained the new features and changes for firmware versions 4.X through 6.20: • Changed all references from the Model 200 Controller to the DCS 30X, the new data collection server that replaces the Model 200 Controller. • Added keypad illustrations for the Time and Attendance, French, German, Italian, Portuguese, and Spanish keypads. • Added information about the IEEE 802.11b High Rate (HR) radio parameters. • Updated the instructions for screen mapping to match the DCS 300 enhancements for screen mapping. • Added information about using the auto-trigger feature. • Made minor corrections and changes throughout the manual to support firmware version 6.20.

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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 documentation roadmap for this manual 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.A. call 1-800-755-5505, and in Canada call 1-800-668-7043. 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, Cautions, and Notes

The warnings, cautions, and notes 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.

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

About This Manual

This manual contains all of the information necessary to install, configure, operate, troubleshoot, and maintain the Trakker Antares® 2480, 2481, 2485, and 2486 stationary terminals. Use this manual in conjunction with the *Trakker Antares 2400 Family System Manual* (Part No. 071389), which contains detailed information about configuring, operating, and programming all terminals in the 2400 Family.

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, troubleshoot, 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	Summary
1	Introduces the Trakker Antares 2480, 2481, 2485, and 2486 stationary terminals and their features. Also describes the back panel, power, memory, drives, and input devices.
2	Explains how to install the Trakker Antares 248X terminal in your serial, CrossBar, 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 radio frequency (RF) network. Also explains how to install and configure your terminal to communicate with other devices.
5	Lists solutions for the problems you may have while operating your Trakker Antares 248X terminal. Also, explains how to boot or reset the terminal.
A	Lists the Trakker Antares 248X terminal's specifications.
B	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.

For information about using IBM 3270, IBM 5250, or VT/100/220/320 and ANSI terminal emulation, see the appropriate TE manual:

- *Trakker Antares Terminal Emulation User's Guide* (Part No. 066694)
- *TE 2000 5250 Terminal Emulation Programmer's Guide* (Part No. 977-055-004)
- *TE 2000 3270 Terminal Emulation Programmer's Guide* (Part No. 977-055-003)
- *TE 2000 VT/ANSI Terminal Emulation Programmer's Guide* (Part No. 977-055-005).

For information about using dcBrowser, see the documentation that ships with your DCS 30X or dcBrowser gateway software.

Terminology

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

Term	Description
DCS 300 and Model 200 Controller	The DCS 300 is a data collection server that replaced the Model 200 Controller. The 2485/6 can communicate with either the DCS 300 or the Model 200 Controller. Unless otherwise noted, you can use either the DCS 300 or the Model 200 Controller.
DCS 30X	DCS 30X refers to the DCS 300, the DCS 301, and the DCS 302 data collection servers. The term DCS 30X is used throughout this manual. Unless otherwise noted, you can use either the DCS 300, the DCS 301, or the DCS 302.
Host	The term "host" refers to a personal computer or other computer that communicates with the terminal.
248X	The generic term "248X" indicates any Trakker Antares stationary terminal. More specific terms, such as "Trakker Antares 2486 terminal" or "2481," indicate a specific type of terminal.
Terminal	The generic term "terminal" indicates any Trakker Antares terminal. More specific terms, such as "Trakker Antares 2485 terminal" or "2480," indicate a specific type of terminal.
Trakker Antares	The term "Trakker Antares" identifies the product family of Trakker Antares hand-held, stationary, and vehicle-mount terminals.

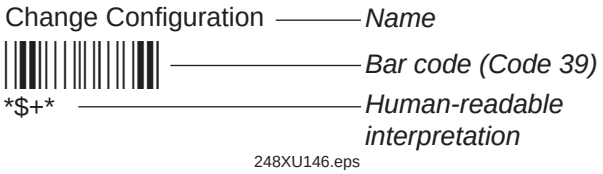
Conventions for Input From a Keypad or Keyboard

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 access 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:

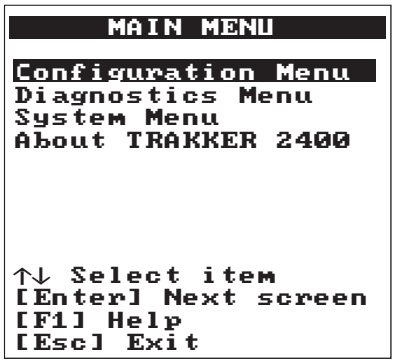


248XU146.eps

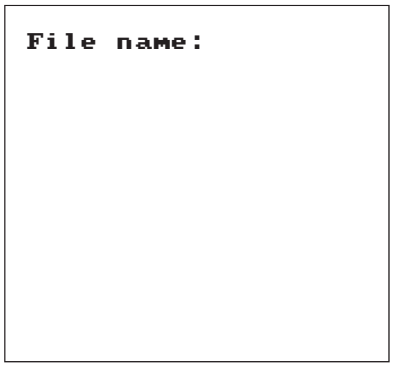
The asterisks (*) at the beginning and end of the human-readable interpretation are the start and stop codes for a Code 39 bar code label. If you are using a bar code printing utility, it may automatically supply the asterisks as the start and stop code, so that you only need to type the actual text 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:



248XU001.eps



248XU060.eps

The TRAKKER Antares 2400 Menu System software screens are 16 lines by 20 characters (like the Main Menu screen example shown here). These screens are centered and formatted to fit on the 2480, 2481, 2485, and 2486 screens.

Conventions for Commands

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

To send a configuration command from the DCS 30X, use this syntax:

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

where:

$+	is the Change Configuration command.
command	is a configuration command. For example, BV is the command to set the Beep Volume on the terminal. Enter the command BV0 to turn off the beep volume. You can include multiple configuration *command* parameters in the command to configure the terminal.

This table defines the conventions used in the example:

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

Other Intermec Manuals

You may need additional information when working with the 248X in a data collection system. Please visit our Web site at www.intermec.com to download many of our current manuals in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

1

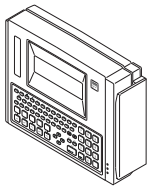
Learning About the Terminal

This chapter introduces the Trakker Antares 2480, 2481, 2485, and 2486 stationary terminals and their features. It also describes the back panel, power, memory, drives, and input devices.

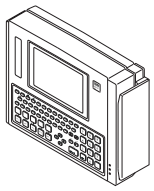
What Are the Trakker Antares 248X Terminals?

The Trakker Antares 248X terminals (2480, 2481, 2485, and 2486) are compact stationary data collection terminals that are designed for a range of applications including process tracking, labor collection, and time and attendance applications.

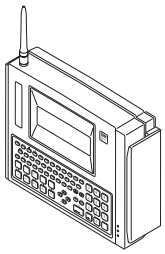
The Trakker Antares 248X family of terminals includes these models:



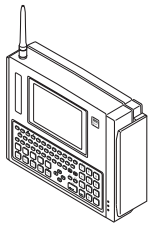
2480 The 2480 is a programmable data collection terminal. The 2480 has a serial port to transmit data to and accept data from a host or PC through RS-232 serial communications. With the optional Ethernet card, the 2480 can also transmit and receive data through Ethernet communications. The 2480 has a 4-line by 40-character screen.



2481 The 2481 has the same functionality as the 2480. The only difference between these two models is the screen size. The 2481 has a 12-line by 40-character screen that is configurable up to 25 lines.



2485 The 2485 is a programmable data collection terminal with the additional ability to communicate in the RF network. The 2485 provides wireless communications to a host either through the access points and DCS 30X or directly through the access points. The 2485 has a 4-line by 40-character screen.



2486 The 2486 has the same functionality as the 2485. The only difference between these two models is the screen size. The 2486 has a 12-line by 40-character screen that is configurable up to 25 lines.

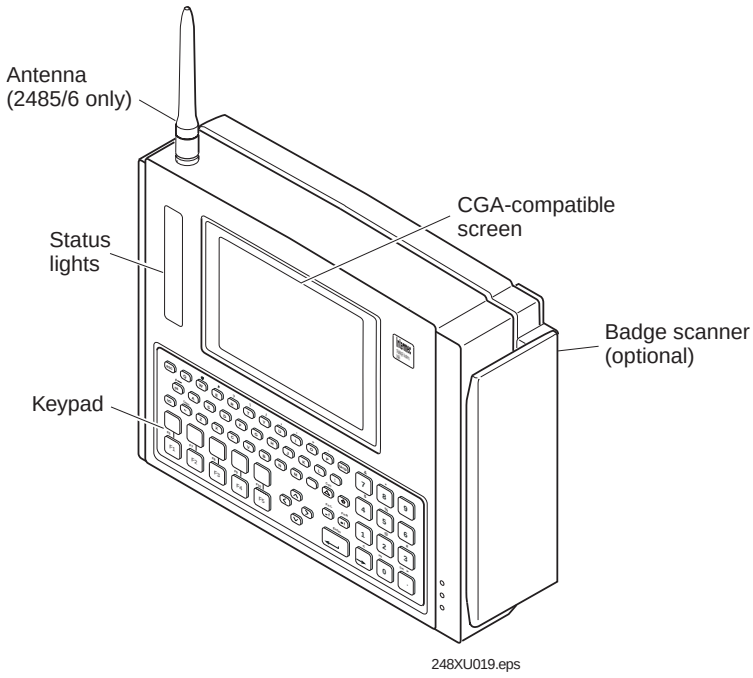
Trakker Antares 2485 and 2486 terminals with an IEEE 802.11b High Rate (HR) radio (with radio firmware 4.52/6.04 and higher) installed are Wi-Fi™ certified for interoperability with other 802.11b HR wireless LAN devices.

Learning About the Terminal's Features

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

- 512K RAM reserved for applications programmed in Microsoft C
- 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

CGA-compatible screen
The CGA-compatible screen contains a graphics LCD. The 2480 and 2485 terminals have a 4 line by 40 character screen while the 2481 and 2486 terminals have a 12 line by 40 character screen that is configurable up to 25 lines.



Badge scanner (optional)
The badge scanner is available for visible or infrared light and is a convenient method for collecting bar code data.

Keypad There are four keypad options for data collection: alphanumeric (PC-style layout), time and attendance, oversized function numeric, or terminal emulation keypad. The terminal ships with a keypad to match the application or language you ordered.

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

Antenna (2485/6 only) The 2485 and 2486 support radio frequency communications.

Options for the Terminals

These options are available for the 248X 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 2480/1
- 4MB flash memory option (additional 2MB flash to either store double-byte fonts or to configure as a 2MB drive)

These options are available for the 2480/1 terminals with Ethernet connectivity and the 2485/6 terminals:

- Extended SRAM storage drive (2MB or 4MB) to store files
- UDP Plus (DCS 30X 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
- Data Collection Browser™ (dcBrowser™) application
- (2485/6 terminals only) WLI-F 2.4 GHz OpenAir radio or IEEE 802.11b High Rate (HR) radio

This manual explains how to use the features and options available on all models of the Trakker Antares terminals.

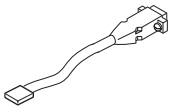
For additional help using terminal emulation, see the appropriate TE manual:

- *Trakker Antares Terminal Emulation User's Guide* (Part No. 066694)
- *TE 2000 5250 Terminal Emulation Programmer's Guide* (Part No. 977-055-004)
- *TE 2000 3270 Terminal Emulation Programmer's Guide* (Part No. 977-055-003)
- *TE 2000 VT/ANSI Terminal Emulation Programmer's Guide* (Part No. 977-055-005).

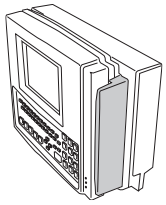
For additional help using dcBrowser, see the documentation that ships with your DCS 30X or dcBrowser gateway software.

Accessories for the Terminal

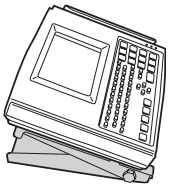
You can use these accessories (sold and ordered separately) with the Trakker Antares 2480, 2481, 2485, and 2486 terminals:



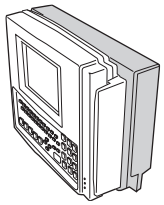
Adapter Cable The adapter cable (Part No. 067185) allows you to use an additional serial port (COM4) on the optional enhanced input/output board. You can attach the adapter cable to the 10-pin COM4 connector and configure the terminal to use an additional serial communications port.



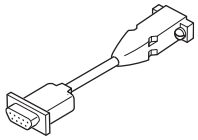
Badge Scanner The badge scanner on your 248X terminal allows you to easily scan bar codes from badges or other cards. You can use either a visible (Part No. 067102) or infrared light badge scanner (Part No. 067101) with the 248X.



Desk-Mount Bracket The desk-mount bracket (Part No. 066709) attaches to your 248X terminal. The bracket can be either seated on or mounted to your desk or tabletop.



Wall-Mount Bracket The wall-mount bracket (Part No. 066708) attaches to your 248X 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.



CrossBar Adapter The CrossBar adapter (Part No. 069447) connects the 9154 or 9161 to the Multi-Drop cable (Part No. 047653), which connects to the terminal in a CrossBar network. For help, see "Connecting to an Intermec CrossBar Network" in Chapter 2.

What's New?

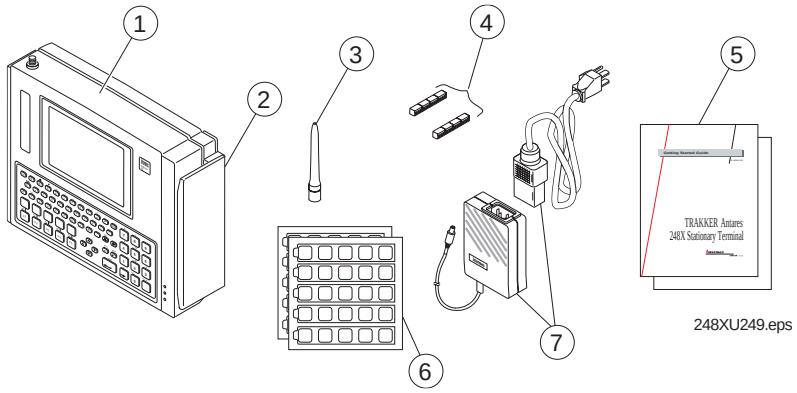
With this user's manual revision, several significant changes were made to support hardware and software for Trakker Antares 248X terminals:

- Divided the manual into a 248X user's manual and a Trakker Antares 2400 Family System Manual. The user's manual contains information about how to operate the 248X, and the terminal system manual contains configuration and reader commands and other information that applies across the Trakker Antares 2400 Family.
- Added several new chapters including Troubleshooting, Diagnostics, and an Index.

- Described new features and changes for firmware versions 4.X through 6.20:
  - Added keypad illustrations for the Time and Attendance keypad.
  - Included information about the IEEE 802.11b High Rate (HR) radio parameters.
  - Described how to use the DOS option in the system manual.
  - Added information about using the auto-trigger feature.
  - Included key firmware version 6.20 information such as DHCP and Symbology Identifiers to the system manual.

Unpacking the Terminal

The Trakker Antares stationary terminal shipping box contains:



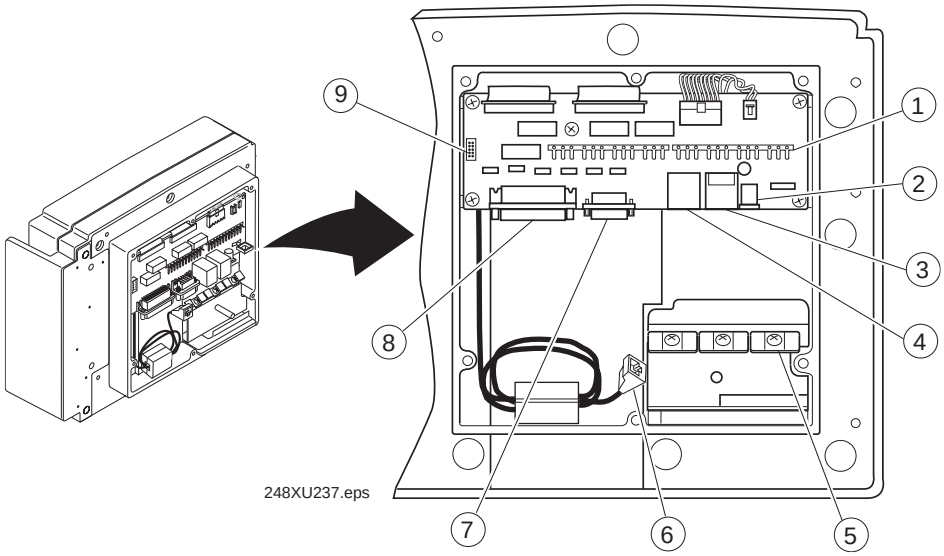
1. Trakker Antares 2480, 2481, 2485, or 2486 stationary terminal
2. Badge scanner, visible or infrared light (optional)
3. Antenna (2485/6 only)
4. Terminal blocks to connect sense inputs, output relays, and an amplified external speaker (enhanced input/output board option only)
5. Getting started guide 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.

Learning About the Back Panel

To install the 248X, you must remove the back panel to connect power, input devices, and communications ports. The next illustration shows all the connectors on a 2480 or 2481 with an enhanced input/output board and the Ethernet option.



1. **Terminal block connectors (248X with enhanced I/O board only)** 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 opening or closing a door. You use the output relays to actuate external devices, such as a door lock.
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. For a list of Intermec input devices, see Appendix A, "Specifications."
5. **Cable restraint** You use the cable restraint to secure the power supply cable, terminal block wires, and Ethernet cable.
6. **Ethernet connector** The optional 10BaseT Ethernet connector lets you connect the 2480/1 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 (248X with enhanced I/O board only)** You use the COM2 serial port for

- RS-232, RS-422, or RS-485 serial communications.
- Multi-Drop (CrossBar) network connectivity.

⑨ **COM4 (248X with enhanced I/O board only)** You can attach an adapter cable accessory (Part No. 067185) to the 10-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.

Learning About the Power Supply and Backup Battery

The Trakker Antares 248X terminal operates using an external power supply. It has a rechargeable Nickel-Cadmium (NiCad) 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.

Learning About the Backup Battery

The NiCad backup battery provides protection for power surges, sags, spikes, and dropouts. The backup battery includes these features:

- 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 3 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.

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

- 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 set to 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 is shipped inside the terminal, but it may not be fully charged when you initially unpack your terminal. 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.

You can operate the terminal while the backup battery is charging.

Note: The backup battery charger operates from 0°C to 40°C (32°F to 104°F). If you continuously use 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.

Recognizing a Low or Discharged Backup Battery

The terminal continuously monitors the backup battery voltage level and charges the backup battery whenever the voltage level gets low.

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

- Check to see if the Power status light on the left side of the screen is blinking. For help, see "Using the Status Lights" on page 1-21.
- Check the status of the backup battery using the Backup Battery/PIC Status diagnostic. For help, see "Battery/PIC Status" in Chapter 4 of the terminal system manual.

If the backup battery charge is low, you must charge the backup battery. For help, see the previous section, "Charging the Backup Battery."

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 "Learning About the Backup Battery" on page 1-9.

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.

Using the Terminal's Keypad

The Trakker Antares 248X terminal has the following keypad options:

Alphanumeric keypad The 59-key alphanumeric keypad is available in English, French, German, Italian, Portuguese, and Spanish. Although the keypad is smaller than a desktop terminal keyboard, you use special keys on the 248X keypad to access all the keys and functions you need. The French, German, Italian, Portuguese, and Spanish keypads are shown in Appendix B, "International Character Support."

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

Time and attendance keypad The time and attendance keypad has 35 keys and 10 separate function keys. The number keys are larger to make it easier to enter a lot of numeric data. There are no alphanumeric keys.

Terminal emulation alphanumeric keypad The terminal supports 3270 TE, 5250 TE, and VT100/220/320/340 and ANSI TE. When you order a TE 2000™ application, you also receive the appropriate TE keypad overlay. Each TE keypad is similar to the standard English alphanumeric keypad, but it contains additional keys that are available on an IBM 3270, IBM 5250, or VT/ANSI keyboard. For additional help using terminal emulation, see the appropriate TE manual.

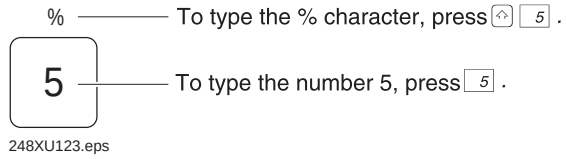
Typing the Characters Printed on the Keypad

The keypads are 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 ⎇ key, then the key.

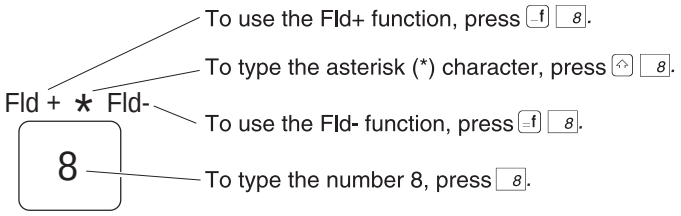
To learn how to type characters, use these illustrations and examples from the alphanumeric keypad and the IBM 5250 terminal emulation keypad.

Typing characters using the alphanumeric (English) keypad



248XU123.eps

Typing characters using the IBM 5250 terminal emulation keypad



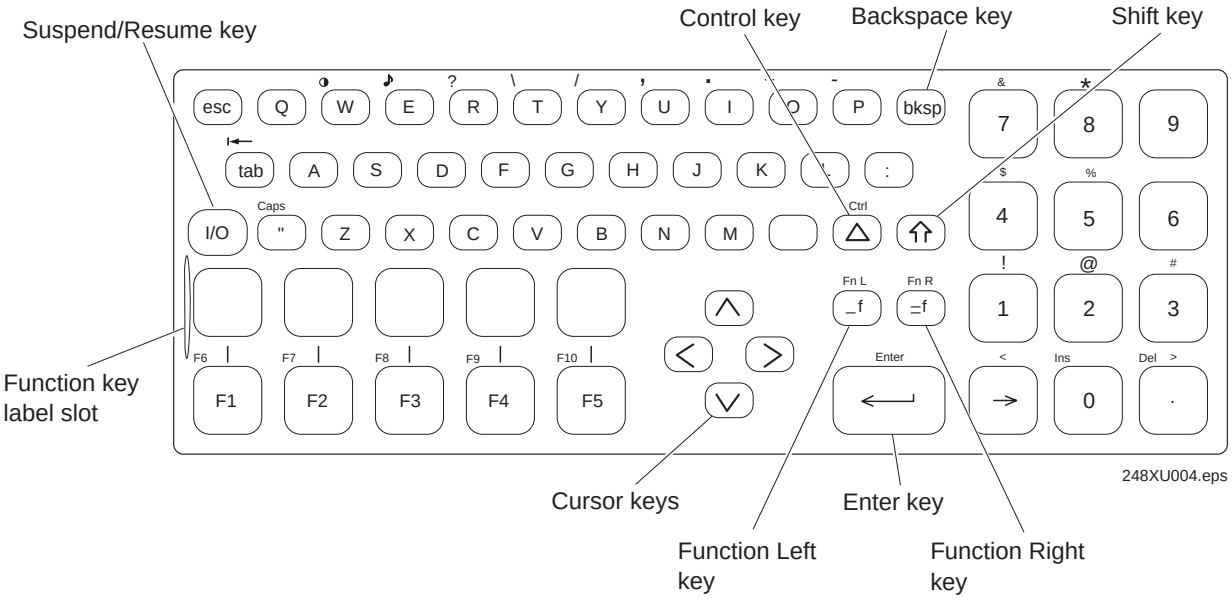
248XU124.eps

Finding the Special Keys

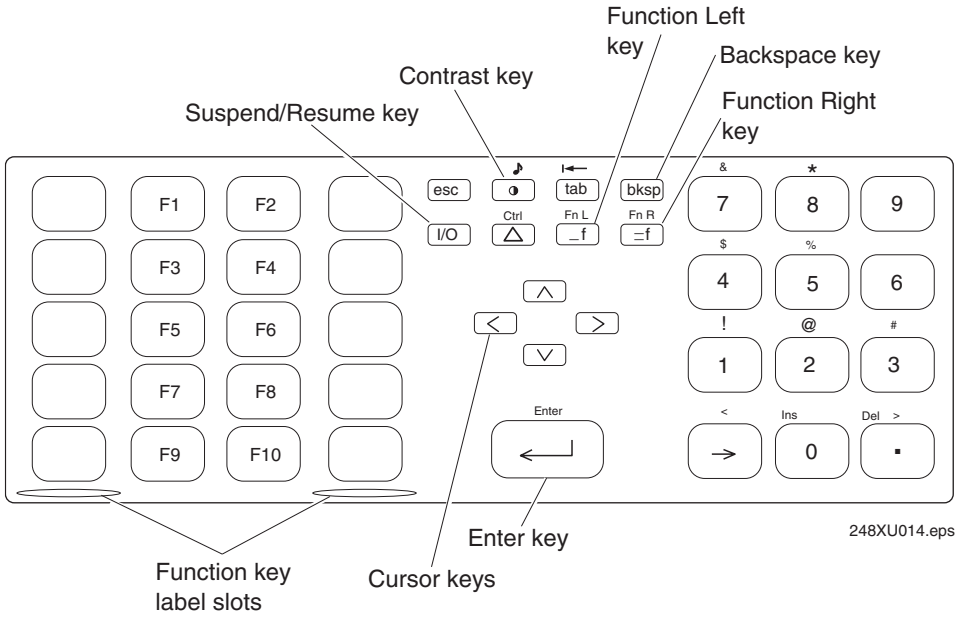
Before you use the terminal's keypad, make sure you can find all of the different types of keys on the keypad. You need to use these special keys on all keypad options.

The special keys that you use to type characters or perform functions are explained in the next sections. Use the following illustrations to identify the special keys.

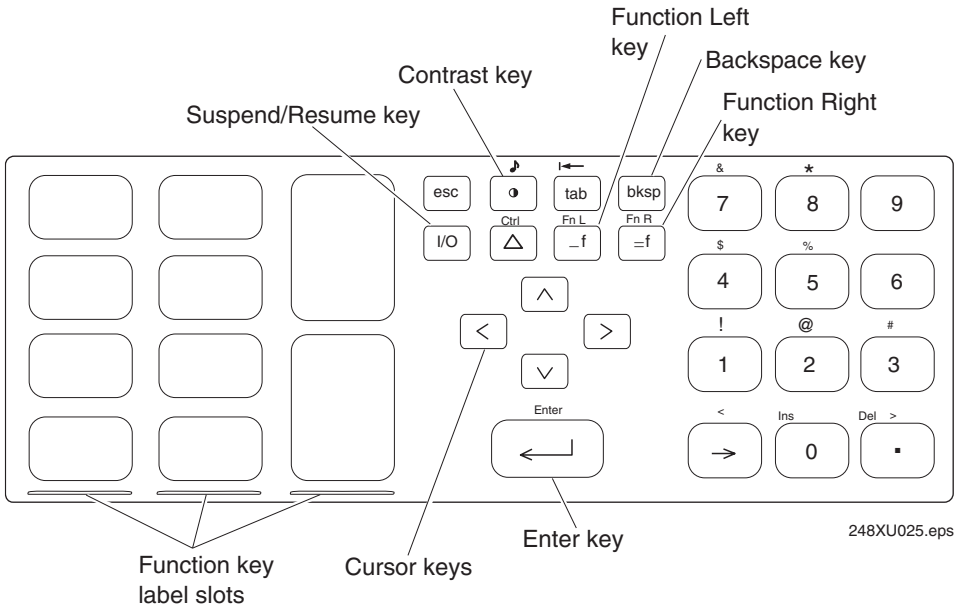
Finding the Special Keys on the English Alphanumeric Keypad



Finding the Special Keys on the Oversized Function Numeric Keypad



Finding the Special Keys on the Time and Attendance Keypad



Using the Suspend/Resume Key

The terminal's Suspend/Resume key is the ⅟₀ key on the keypad. When you press ⅟₀ to turn off the terminal, the terminal does not actually shut off, but goes into a Suspend mode. In Suspend mode, the terminal continues to power all memory and turns off the power to most of the hardware. This mode is referred to as "off" in the rest of this manual.

When you press ⅟₀ to turn on the terminal, the terminal either resumes exactly where it was when you turned it off, or the terminal boots and restarts your application. Resume is controlled through the Resume Execution command. For help, see "Resume Execution" in Chapter 6 of the terminal system manual.

Note: The terminal displays the boot menu the first time you turn in on. Press 1 to initialize the firmware and boot the terminal.

Using the Function Left, Function Right, Control, and Shift Keys

The 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 on the left side of the terminal's screen turns on 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. The Modifier Key status light turns off unless the second key that you pressed is another modifier key that is different from the first one that you pressed.

To flush the f, f, △, or ⇧ key from the buffer without performing any action, just press the key again. The Modifier Key status light turns off.

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

1. Press f, f, △, or ⇧. The Modifier Key status light turns on.
2. Press the second key. The Modifier Key status light turns off.

For example, to type the uppercase letter A, press ⇧. The Modifier Key status light turns on. Press A. The Modifier Key status light turns off, and an uppercase letter A appears on the screen.

Capitalizing All Characters

To type all alphabetic characters as uppercase letters, you can

- press ⇧ before every letter you type.
- enable the Caps Lock feature. For help, continue with the next procedure.
- use the Keypad Caps Lock configuration command. For help, see "Keypad Caps Lock" in Chapter 6 of the terminal system manual.

Note: The oversized function numeric keypad and the time and attendance keypad do not have a Caps Lock feature.

To enable Caps Lock

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

   If you have a German alphanumeric keypad, press Y.

   The Caps Lock status light turns on and the Modifier Key status light turns off.
3. Type an alphabetic character. The letter appears as an uppercase character on the terminal's screen. The Caps Lock feature remains on until you disable it.

To type a lowercase letter with Caps Lock enabled

- Press ⇧ and an alphabetic character.

To disable Caps Lock

1. Press [_f]. The Modifier Key status light turns on.
2. Press ["].

   If you have a German alphanumeric keypad, press [Y].

   The Caps Lock and Modifier Key status lights turn off.
3. Type an alphabetic character. The letter appears as a lowercase letter on the terminal's screen.

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.

For a detailed description of the Display Contrast and Beep Volume commands, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

Note: When you use the keypad to change the display contrast or beep and keyclick volume, the changes are not saved permanently in flash memory. You can save the changes in flash memory later. For help, see "Saving Configuration Changes in Flash Memory" in Chapter 3.

To change the display contrast

- Press the [◑] key or the appropriate key sequence to change the display contrast.

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, Time and Attendance	[◑]

Each time you press the keys to change the display contrast, it changes the contrast by one level. There are eight contrast levels. If the contrast is at the darkest level and you press the ◑ key or the appropriate key sequence, the contrast changes to the lightest contrast level. For help, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

To change the volume of the audio signals

- Press the appropriate key sequence to change the volume of the terminal's audio signals.

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, Time and Attendance	_f ◑

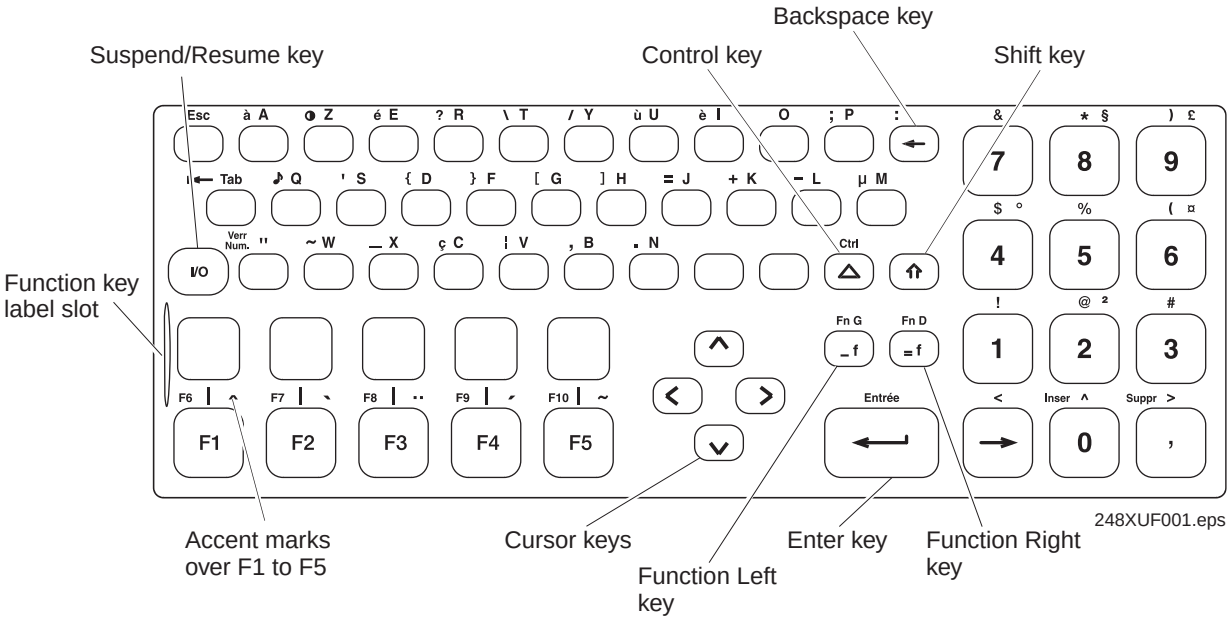
Each time you press the key sequence, it makes the beep volume and keypad volume one level louder. There are five volume levels including off. If the volume is at the loudest level and you press the appropriate key sequence, the beep and keyclick volume change to the lowest level, which is off. For help, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

Using the International Keypads

The 248X has an option for a French, German, Italian, Portuguese, or Spanish keypad. Like the alphanumeric keypad, you use the international keypad to enter all the characters printed on or above the keys. For help, see "Typing the Characters Printed on the Keypad" on page 1-12. You can also use the accent marks above the F1 through F5 keys to enter a character that does not have a key on the keypad. For example, you can type the character é.

Although the 248X with the English alphanumeric keypad does not show all the characters that are available on the French, German, Italian, Portuguese, and Spanish keypads, you can type the same characters on all keypads. The next illustration shows the 248X with the French keypad.

French Keypad



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

To type characters with an accent mark

1. Press [-f]. The Modifier Key status light turns on.
2. Press the function key that the accent mark appears above. For example, press [F3] to type the umlaut (¨).

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

To flush the accent mark from the keypad buffer without entering any key, press [-f] twice. The Modifier Key status light turns off.

3. There are three types of characters you can enter:
   - To accent a lowercase character, press the character. For example, press A to type the ä character.
   - To accent an uppercase character, press the ⇧ key. Next, press the character you want to accent. For example, press ⇧ and release the key, and then press A to type the Ä character.
   - To type the accent mark by itself, press the → key.

   The accented character or accent mark appears on the screen and the Modifier Key status light turns off.

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

Using the Function Key Labels

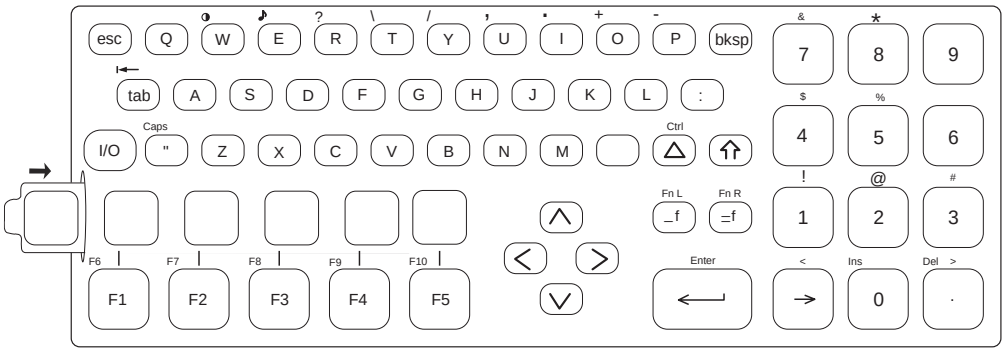
Your terminal ships with strips of function key labels. You can use the labels to identify custom function keys. Write the name for each function key on a strip of five labels. Insert the strip into the slot or slots on the keypad.

There are four sizes or types of function key labels:

- Strips of five small, square labels for alphanumeric keypads
- Strips of five medium-size labels for the oversized function numeric keypad
- Strips of five colored labels for the time and attendance keypad
- Strip of two labels marked IN and OUT for the time and attendance keypad

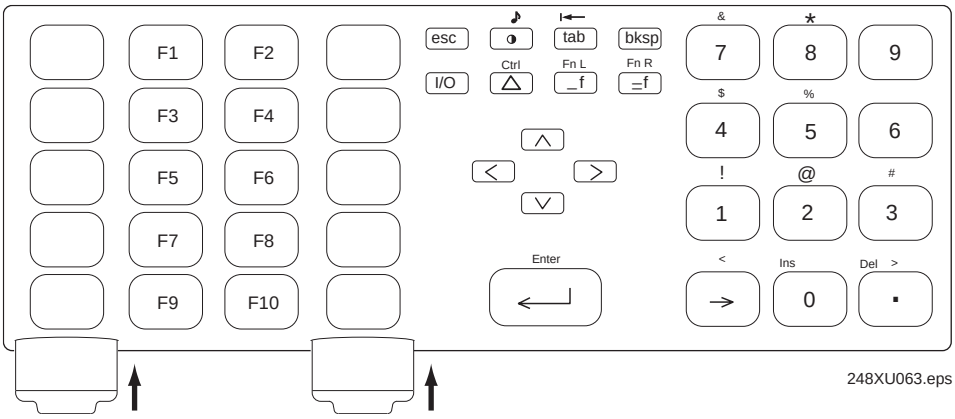
Use the labels that fit your keypad. You can create your own pre-printed function key labels. For the exact function key label measurements, see Appendix B, “Keypads and Terminal Mounting Templates.”

Inserting Function Key Labels into an Alphanumeric Keypad

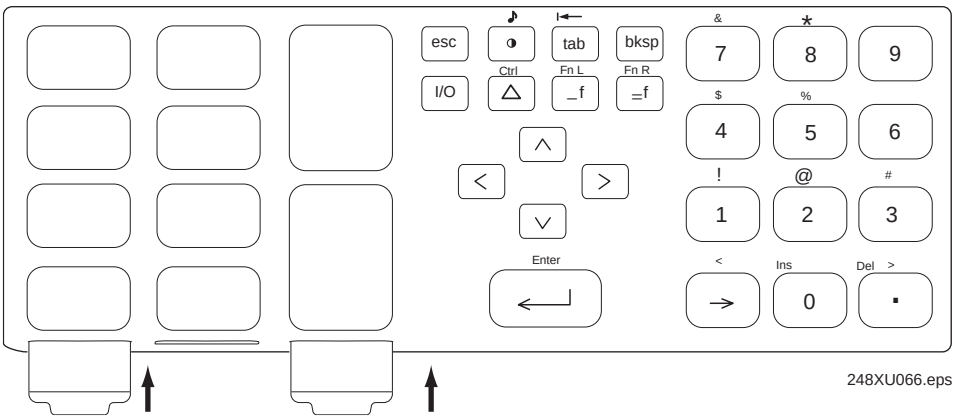


248XU247.eps

Inserting Function Key Labels into the Oversized Function Numeric Keypad



Inserting Function Key Labels into the Time and Attendance Keypad



Using the Terminal's Screen

You can use the terminal's screen to view data, run applications, monitor the terminal's status, and perform many other functions. The screen is a backlit LCD that is CGA-compatible.

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

You can change the following screen parameters to customize how data appears on the terminal screen:

- Display Contrast
- Display Font Grid Type

- Display Row Spacing
- Display Video Mode

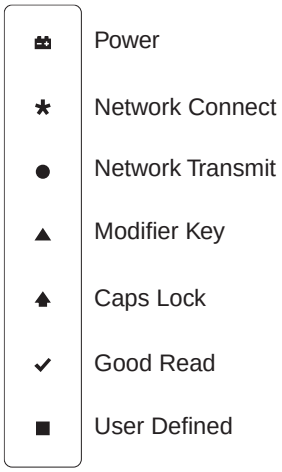
For more information, see Chapter 6, “Configuration Command Reference,” in the terminal system manual.

Depending on the model and configuration of the terminal, the screen displays 4 lines by 40 characters up to a maximum of 25 lines by 80 characters of data at one time. In terminal emulation (TE 2000) 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.

For additional help using terminal emulation, see the appropriate TE manual.

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.



248XU219.eps

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 is charged. For help, see “Learning About the Backup Battery” on page 1-9.

✱ **Network Connect** This status light tells you if the 2480/1 is connected to your Ethernet network or tells you if the 2485/6 is connected through RF communications to your RF network. The Network Connect status light may be turned off, blinking, or turned on.

	Status Light Off	Status Light Blinks	Status Light On
2480 and 2481:			
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 DCS 30X.	Connected to the DCS 30X.
2485 and 2486:			
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 DCS 30X.	Connected to an access point and the DCS 30X.

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 2485/6 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 DCS 30X or host, or received data has not been accepted by the application on the 248X. 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. You can also use the Status Lights Control reader command to turn this status light on and off. For help, see "Status Lights Control" in Chapter 5 of the terminal system manual.

▲ **Caps Lock** This status light turns on when you press [f] ["] to enable the Caps Lock feature. On a German alphanumeric keypad, you press [f] [Y]. When you press [f] ["] to disable Caps Lock, the light turns off. You can also use the Status Lights Control reader command to turn this status light on and off. For help, see "Status Lights Control" in Chapter 6 of the terminal system manual.

✔ **Good Read** This status light turns on when you successfully scan a bar code label with an input device, such as a badge scanner or a laser scanner, that is connected to the terminal. The status light turns off after 2 seconds. You can also use the Status Lights Control reader command to turn this status light on and off. For help, see "Status Lights Control" in Chapter 5 of the terminal system manual.

■ **User Defined** The function of this status light is defined by the user. You can program this status light to turn on and off for any task or error within your application. You can also use the Status Lights Control reader command to turn this status light on and off. For help, see "Status Lights Control" in Chapter 5 of the terminal system manual.

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, a low beep tone sounds 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" on page 1-16.
- Use the Beep Volume command. For help, see "Beep Volume" in Chapter 6 of the terminal system manual.
- 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 248X 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 audio signal you may hear.

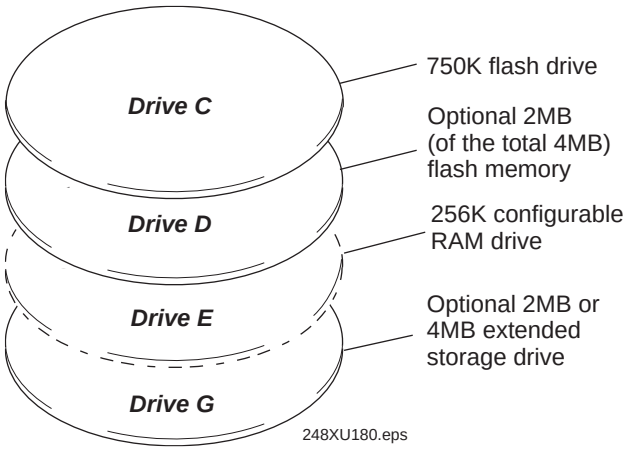
Beep Sequence	Description
Low beep	You entered a valid command or the data you entered was stored.
High beep	You entered valid data, the terminal decoded a label, or the terminal decoded the last row of a two-dimensional symbology.
Three low beeps	You entered or scanned an invalid command or data.

Audio Signals (continued)

Beep Sequence	Description
Four low beeps	When you boot the terminal, you hear four low beeps once the power-on self test (POST) has executed successfully.
Low beep, high beep, low beep, high beep	You hear this beep sequence when POST failed and did not execute successfully. For help, see "Problems While Operating the Terminal" in Chapter 5.
Click	When you press a key, the terminal sounds a click. You can disable the keyclick. For help, see "Keypad Clicker" in Chapter 6 of the terminal system manual.

Defining the Terminal's Memory and Drives

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



Drive C is a 2MB flash drive. You can use up to 750K of this flash drive to store up to 128 files on drive C. Applications must be stored on drive C. You use standard ANSI C library interface definitions to access the information on this drive.

Drive D is an optional 2MB of flash memory. If you order the 4MB flash memory option, you can configure 2MB as drive D. Use this flash drive to store large lookup tables and data files. You can store up to 128 files on drive D. You can also use the 4MB flash memory option to store double-byte fonts. To configure this flash memory, see "Configuring Drives and Memory on the Terminal" in Chapter 3.

Drive E is a configurable RAM drive (up to 256K). The contents of this drive are erased when you boot or reset the terminal or change the backup battery. You use standard ANSI C functions to access the files on this drive. You can store up to 128 files on drive E. By default, the RAM drive is not configured and the memory is available for programmable (Malloc) memory allocations. To configure the RAM 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 2480/1 terminals with Ethernet connectivity or 2485/6 terminals. Use this drive to store large lookup tables and data files. You can store up to 128 files on drive G.

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

On the terminals, applications are customer defined. You have 512K total RAM that you can use for the application execution space. You can also configure this RAM to be the RAM drive (up to 256K). The remaining RAM is the Malloc/free memory pool.

Application execution space	+	RAM drive (drive E)	+	Malloc/free memory pool	=	512K RAM

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 248X 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 Chapter 3, "Configuring the Terminal," or find the symbology in Chapter 6, "Configuration Command Reference," in the terminal system manual.

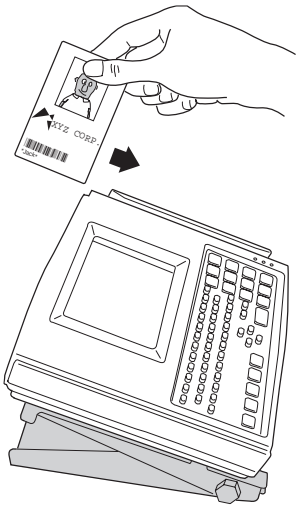
For help connecting an input device, see "Connecting Power and Input Devices" in Chapter 2, or see your badge scanner accessory instruction sheet.

Using the Badge Scanner

You can order the 248X 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. When the bar code is scanned successfully, the Good Read status light turns on for 2 seconds.



248XU021.eps

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

- at least 0.51 cm (0.2 in) tall with a center line 1.27 cm (0.5 in) 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. Because the external scanner port is a Stewart 10-pin connector, you must use an interface cable to connect an input device. For a list of Intermec input devices, see Appendix A, "Specifications."

Intermec is always testing and developing new input devices. For an updated list of Intermec-approved input devices for the 248X, see your Intermec sales representative.

After you attach the input device, you can use the scanning options that are described in the next section to customize bar code input.

To use the input device

1. Press ⏻ to turn on the terminal.
2. Scan the bar code.

   For help scanning with your input device, see the instructions 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." For help using the scanner configuration commands, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

You can use the following configuration command parameters to set scanning options:

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.

Using the Terminal for the First Time

Before you can use the terminal for the first time, you must perform certain steps, such as setting the time and date. You can find this information throughout this user's manual and the accompanying terminal system manual.

To use the terminal for the first time

1. Unpack the terminal and documentation. For a list of shipping box contents, see "Unpacking the Terminal" on page 1-7.
2. Install the terminal. For help, see Chapter 2, "Installing the Terminal."
3. Charge the backup battery. For help, see "Learning About the Power Supply and Backup Battery" on page 1-9.
4. Press [⏻] to turn on the terminal. For help, see "Using the Suspend/Resume Key" on page 1-14.
5. (Optional) Set the time and date. For help, see "Time and Date" in Chapter 6, "Configuration Command Reference," in the terminal system manual.
6. Configure the serial port parameters. For help, see "Using Serial Communications on the Terminal" in Chapter 4.
7. (2485/6 only) Configure the RF parameters. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4.
8. (2480/1 with Ethernet option only) Configure the Ethernet parameters. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4.
9. Enable the bar code symbologies that you want to be able to scan. For more information, see Chapter 6, "Configuration Command Reference," in the terminal system manual.
10. Exit the menu system and save your configuration changes to flash memory. For help, see "Exiting the Menu System" in Chapter 3.

When you are done with these steps, the default application or TE application that is loaded on your terminal will start. You are ready to use the terminal.

2

Installing the Terminal

This chapter describes how to use the terminals' features, such as the keypad, screen, and audio signals. It also describes the backup battery, memory and drives, and input devices.

Preparing to Install the Terminal

Make sure you have the necessary equipment to install the 248X and connect it to your network. You need the following equipment that ships with the terminal:

- 2480, 2481, 2485, or 2486 terminal
- Antenna (ships only with the 2485/6)
- Terminal blocks (ship only with the enhanced input/output board option)
- Power supply
- North American power cord
- Badge scanner (only installed on the terminal if you ordered this option)

You may also need the following equipment (not shipped with the 248X) 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, or 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. Attach the antenna to the 2485/6.
2. Choose a location to mount the terminal.
3. Mount the terminal to a vertical or horizontal surface.

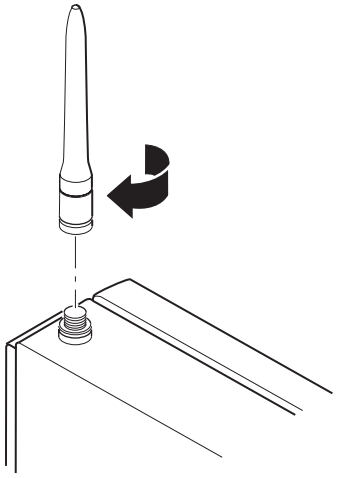
These topics are covered in the next sections. You should also make sure you are familiar with the connectors and equipment inside the terminal's rear enclosure. For help, see "Learning About the Back Panel" in Chapter 1.

Attaching the Antenna

On the 2485/6, the antenna is shipped separately. Remove the antenna from the shipping box and attach the antenna as shown.

You can use an Intermec-approved accessory antenna to improve RF communications. For more information, see your Intermec sales representative.

Note: See your Intermec sales representative for information about and a list of Intermec-approved accessory antennas for the 2485/6.



248XU211.eps

CAUTION

Caution
Make sure all components with antennas are at least 0.3 m (1 ft) 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.

Choosing a Location

You can mount the 248X on a horizontal surface, such as a desktop or table-top, or on a vertical surface, such as a wall. Choose a mounting location for the 248X that provides

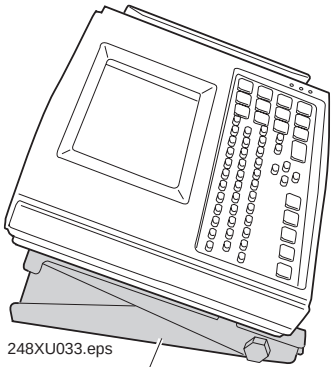
- easy access to the badge scanner or other input devices.
- easy access to the keypad.
- an unobstructed view of the screen.
- clearance for the cables.
- access to a powered AC electrical outlet.
- an effective communication range for the antenna. Do not place the terminal where the antenna is too close to a metal wall.

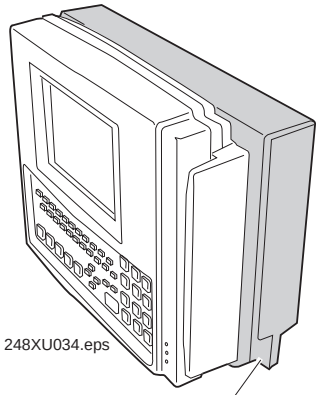
To plan for and prepare a mounting location, use the actual size (1:1 scale) mounting templates provided in Appendix B, "Keypads and Terminal Mounting Templates."

Mounting the Terminal

The easiest way to mount the 248X 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)





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.

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.

Learning About the Power Supply

The 248X 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.

Intermec recommends that you use the desk-mount or wall-mount bracket to mount the 248X and protect the power supply. You can use other mounting brackets or enclosures. However, without the Intermec desk-mount or wall-mount bracket, the power supply is only intended for indoor use. Use of any other mounting brackets or enclosures will void the environmental protection ratings of the terminal.

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

Once your terminal is mounted to a vertical or horizontal surface, you can connect your terminal to external devices and networks. The steps to connect your 248X depend on the options you purchased and the type of network or devices to which you want to connect the terminal.

To install your 248X

1. Connect the power supply and input devices to the 248X. See page 2-7.
2. Connect the 248X to serial devices or networks. See page 2-9.
3. Connect the 248X to an existing Intermec CrossBar network. See page 2-11.
4. Connect the 2480/1 directly to an Ethernet network. See page 2-14.
5. Connect sense inputs, output relays, an unattended scanner, or an amplified external speaker to the 248X terminal blocks. See page 2-15.
6. Route all the cables and secure the back panel. See page 2-28.

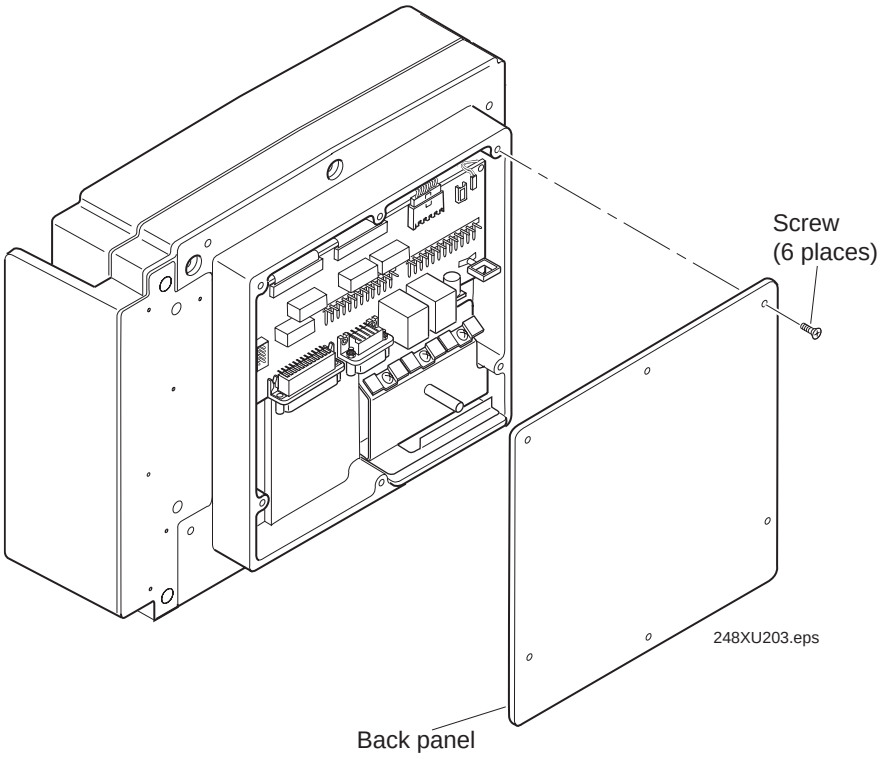
These steps are described in detail in the next sections.

Connecting Power and Input Devices

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

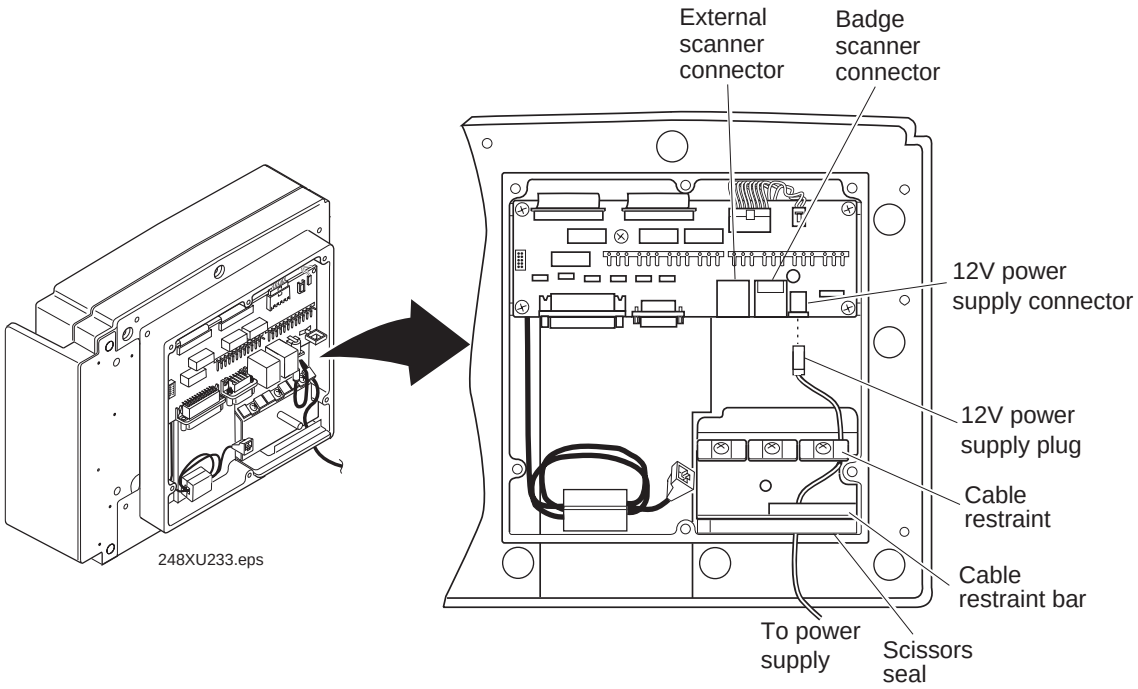
To connect the power supply and input devices

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



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



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.

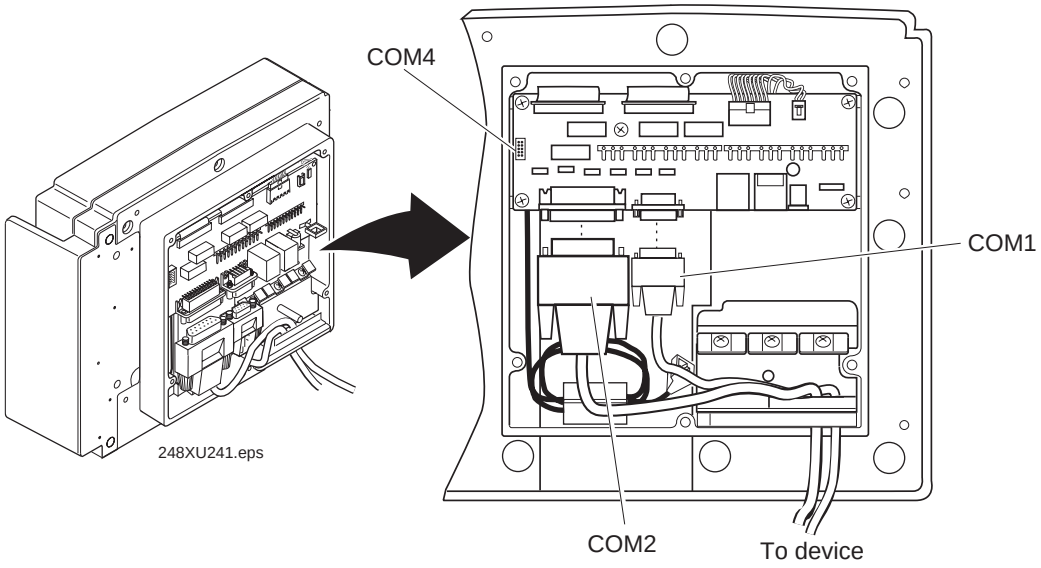
Connecting to Serial Devices and Networks

You can use the terminal's serial ports to transfer data between the terminal and a serial device. Every 248X 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.

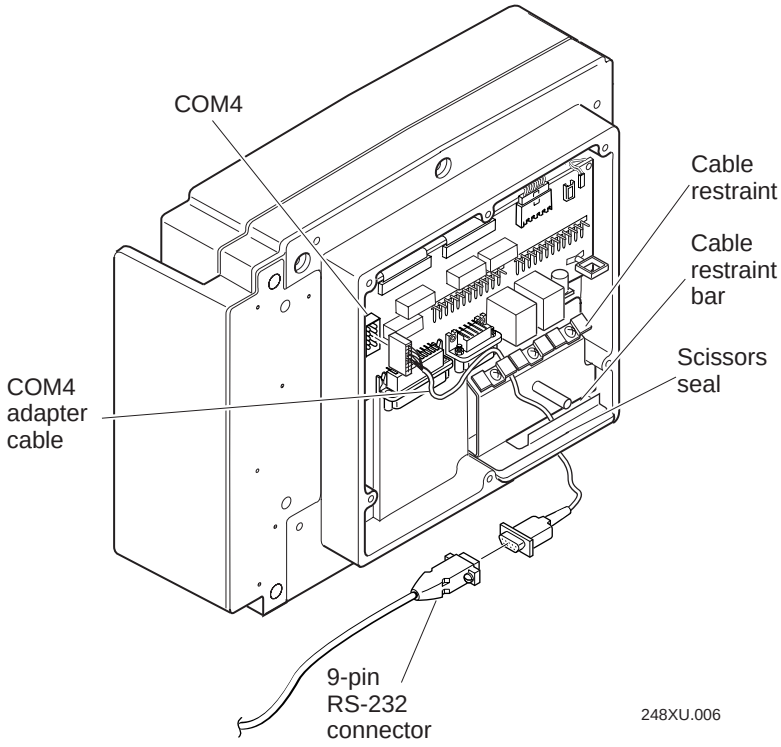
To connect the COM ports

1. Connect the 9-pin RS-232 connector from a serial device to the COM1 connector on the back of the terminal.



2. (Optional) 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. (Optional) Connect to COM4.
   a. Connect the COM4 adapter cable to the COM4 connector on the back of the terminal.
   b. Connect the 9-pin RS-232 connector from a serial device to the COM4 adapter cable.

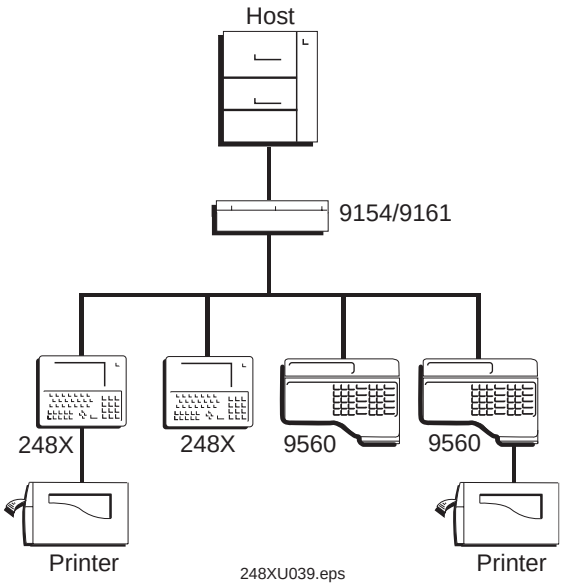


4. Route the cables under the cable restraint bar and through the scissors seal.
5. Plug the other end of the serial or Multi-Drop cable into the serial device or network.
6. To install other devices, leave the back panel off and continue with the next instructions in this chapter. If you are not installing 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 248X 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 248X in an existing CrossBar network. The 248X can communicate with a 9154 or 9161 controller using Multi-Drop protocol.

248X Terminals in an Intermec CrossBar Network



The main difference between 248X terminals and the 9560 terminals in a CrossBar network is that 248X terminals run C/C++ applications while 9560 terminals run IRL® programs. To run IRL data collections programs on your 248X, you must either convert the IRL programs to Microsoft C/C++ applications or write new C/C++ applications. For help, see “Converting IRL Programs Between the 95XX and Trakker Antares” in Chapter 3 of the terminal system manual.

The application needs to send and receive data through COM2. After your application is converted, you can download the application to the 248X and begin using it in your CrossBar network. Follow the next instructions to install and configure the terminal for a CrossBar network.

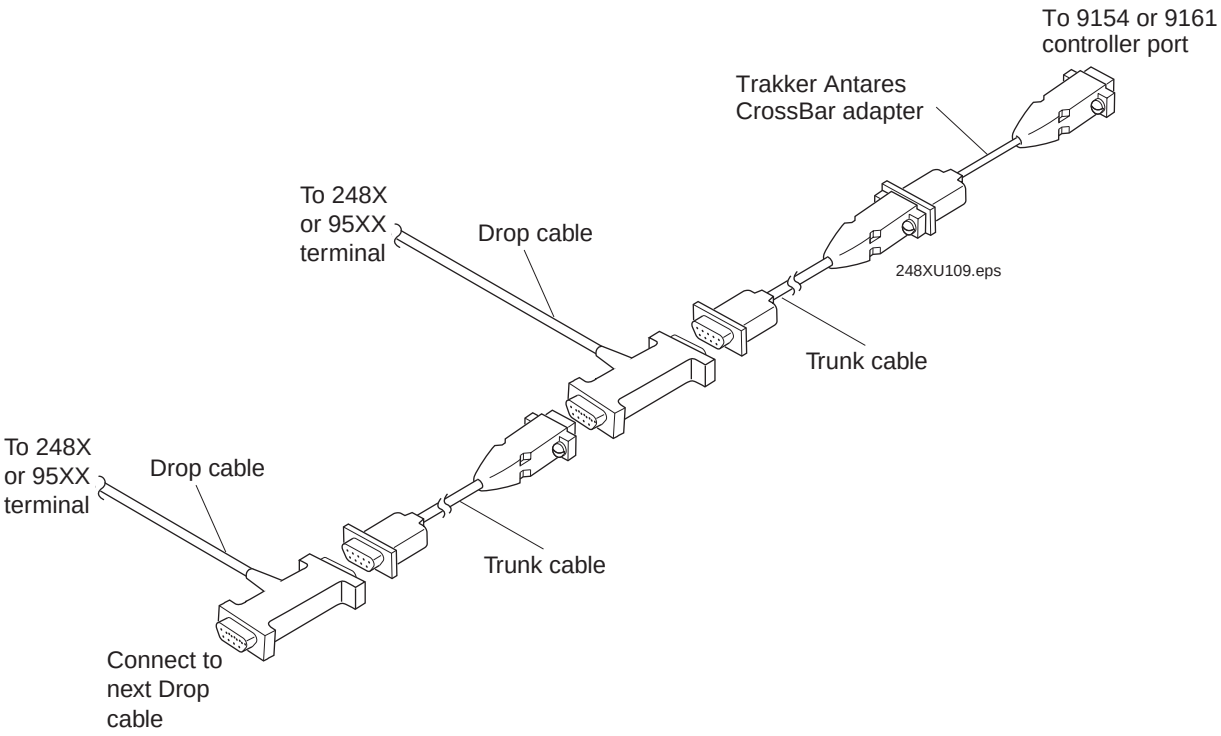
Installing the 248X in an Existing CrossBar Network

Make sure you have the following equipment before you begin:

- One Multi-Drop (or Drop) cable (Part No. 047653) for each 248X terminal.
- One Trakker Antares CrossBar adapter (Part No. 069447) for each 9154 or 9161 controller.

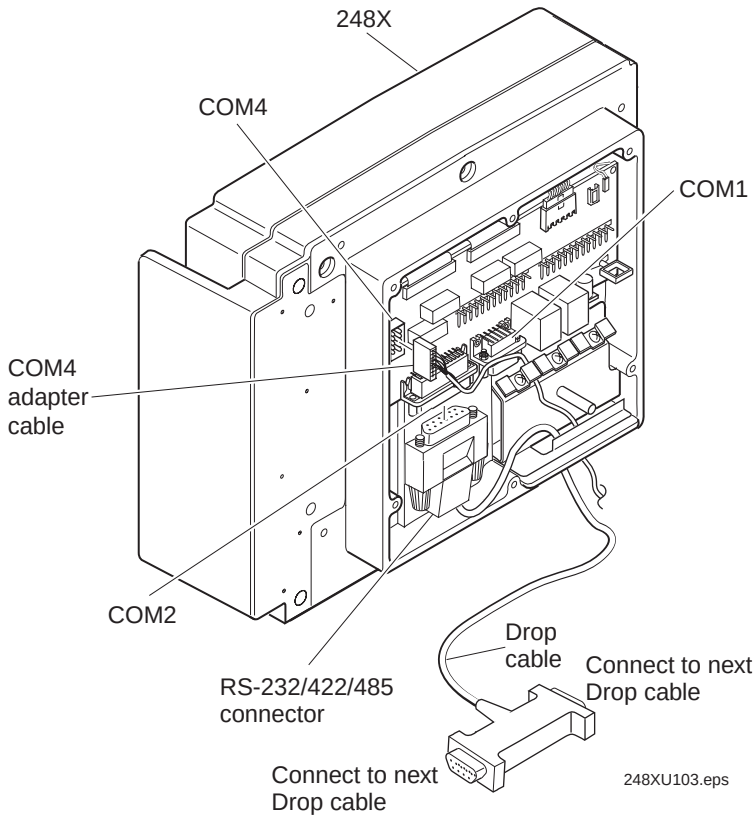
To install the Trakker Antares CrossBar adapter

1. On the 9154 or 9161 controller, disconnect the Multi-Drop network cable.
2. Connect the Multi-Drop network cable to one end of the Trakker Antares CrossBar adapter.
3. Connect the other end of the Trakker Antares CrossBar adapter to the 9154 or 9161 controller.



To install the 248X in the CrossBar network

1. Insert the 25-pin Multi-Drop connector of the Drop cable (Part No. 047653) into the COM2 port on the back of the terminal.



2. Use a small straight-slot screwdriver to tighten the two screws in the Multi-Drop connector.
3. Attach the 9-pin connectors on the other end of the Drop cable into your Multi-Drop network.
4. (Optional) If you want to connect the 248X to a PC, connect the 9-pin RS-232 connector from the PC to the COM1 connector or the COM4 adapter cable (sold separately) on the back of the terminal.
5. If you want to install other devices, leave the back panel off and continue with the following instructions.

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

Using the Terminal in a CrossBar Network

After the 248X is installed and configured, you can download an application to your terminal using

- COM1 or COM4 and RS-232 communications.
- COM2 through the CrossBar network.

For help, see "Using the Serial Port to Transfer Applications and Files" in Chapter 5.

Once your terminal is loaded with your C/C++ application, you can begin using the terminal in your CrossBar network. The 248X 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.

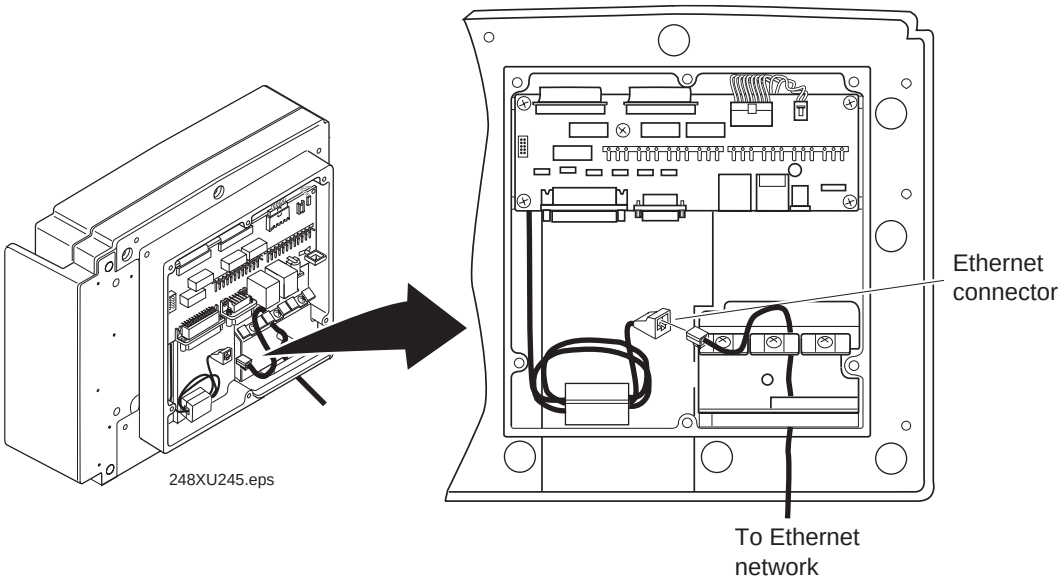
Note: You can use COM1 or COM4 to connect to another RS-232 serial device after you have downloaded the application.

Connecting Directly to an Ethernet Network

The Trakker Antares 2480/1 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 2480/1.
2. Connect the Ethernet jack to the Ethernet connector on the back of the terminal.



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.

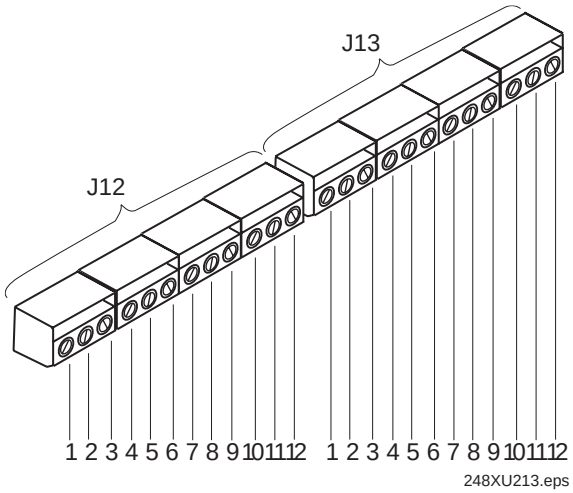
Connecting External Devices to the Terminal Blocks

If you have a 248X 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 show 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
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 following sections explain how to connect and use the terminal blocks.

Activating External Devices With the Output Relays

The 248X 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.

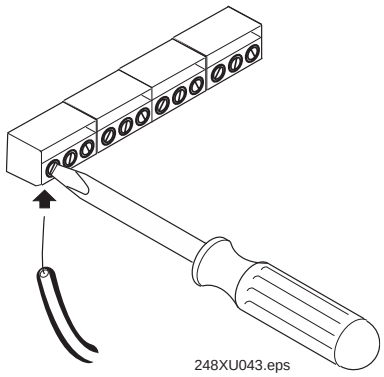
You control the relays with an application that uses the IM_GET_RELAY and the IM_SET_RELAY functions in the Trakker Antares Programmer's Software Kit. If you remove power to the 248X, the relays turn off. The relays remain off until the 248X receives a command from the application. For help, see the *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.

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.

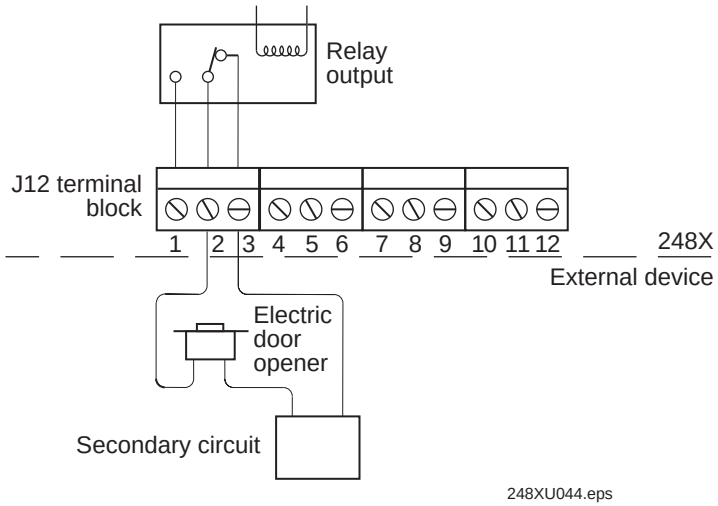
   For example, if you are connecting a single external device, you would loosen the screws for positions 1 and 2 or positions 1 and 3 on the J12 terminal block.



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 chapter.

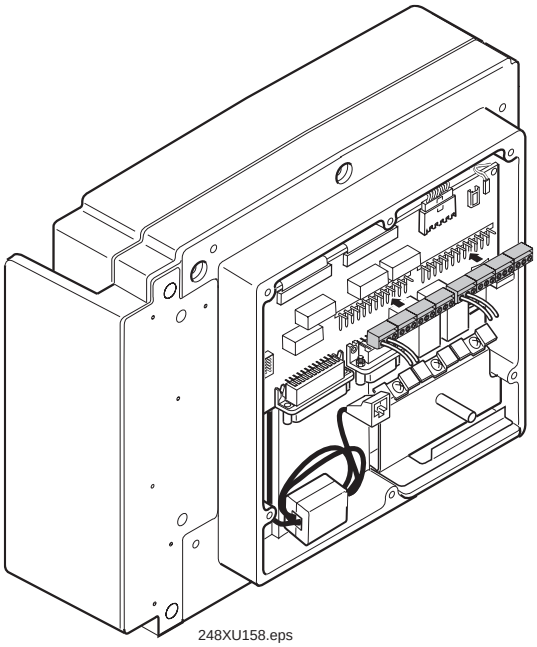
2. Insert the wires for the external device into the appropriate positions.
   a. If the device requires a normally open contact, connect the wires to positions 1 and 2, 4 and 5, 7 and 8, or 10 and 11 on the J12 terminal block.
   b. If the device requires a normally closed contact, connect the wires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



4. Position the terminal block above the J12 terminal block connector on the I/O board. Gently push the terminal block onto 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.



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 248X 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

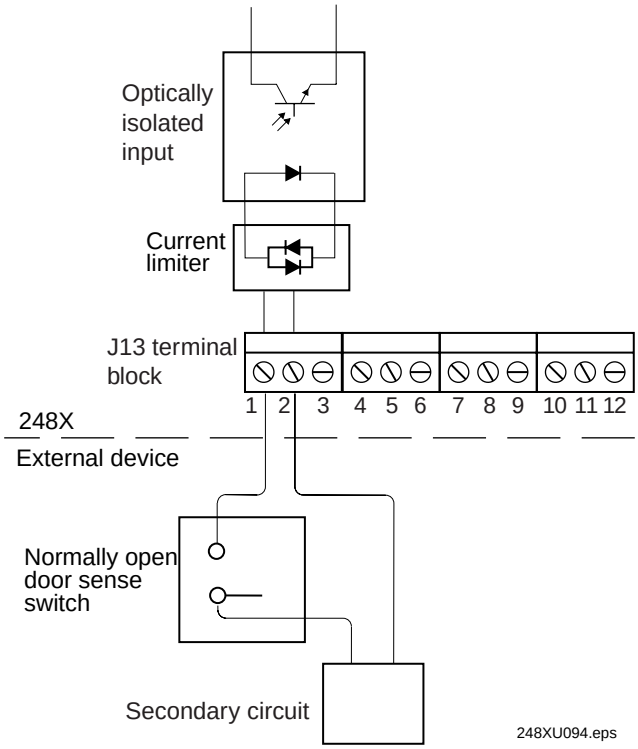
When a sense input detects a signal, the circuitry goes into a "set" state. The circuitry remains set until the terminal application reads the status of the sense inputs. When the 248X executes one of the functions listed earlier, it records the current status and resets the circuitry. For help, see 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.

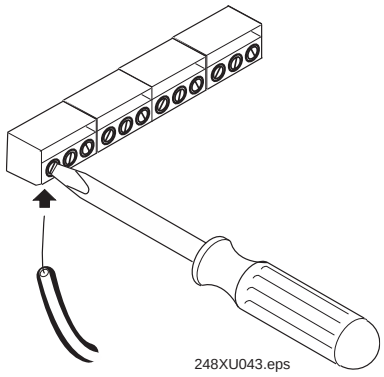
Note: Each sense input is optically isolated to protect the 248X from any damaging currents that may inadvertently enter through the input line.

Sample Sense Input Application



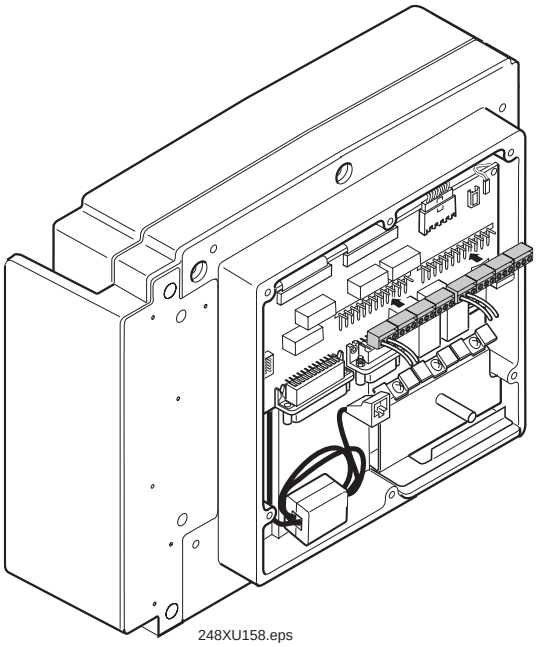
To connect a sense input relay

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



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 chapter.

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.



248XU158.eps

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 configure auto-triggering or connect an external speaker, continue with the next sections. If you are not installing any other devices, continue with the instructions for "Routing Cables and Securing the Back Panel" on page 2-28.

Using Auto-Triggering

You can configure the 248X to accept input from an unattended laser scanner. For example, you can mount a laser scanner beside a conveyor line. Boxes with bar code labels pass in front of the scanner. You can set the scanner to automatically scan when an external sensor senses a label. This action is called auto-triggering.

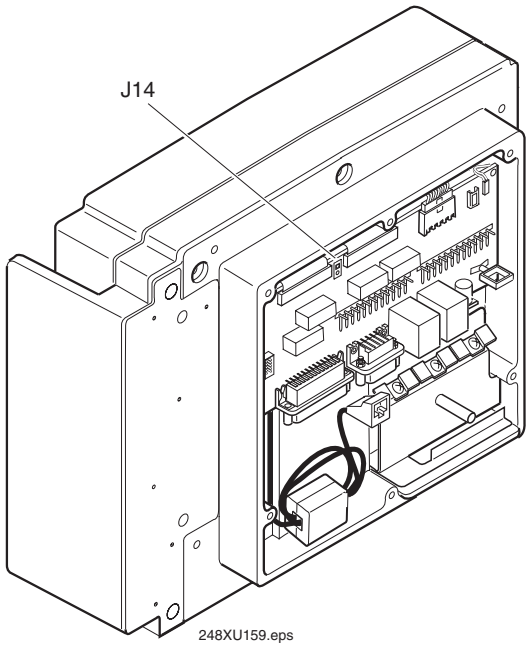
There are two methods to set auto-triggering on the 248X:

Physically set auto-triggering When you physically enable auto-triggering, an external sensor controls when the scanner turns on and off. You must supply an external scanner, external sensor and wiring, and a 2-pin shorting connector (Part No. 580213). You can also purchase the connector at a local electronics store. To physically enable auto-triggering on the 248X, continue with the next instructions.

Use software commands When you enable auto-triggering using software commands, you set a scanner timeout value to control when the scanner turns on and off. To enable auto-triggering on the 248X using software commands, see the instructions on page 2-24.

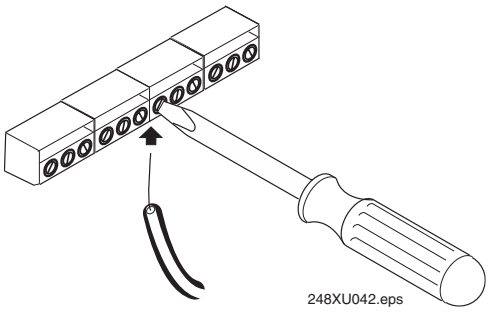
To physically enable auto-triggering

1. Short J14 with the 2-pin shorting connector.



2. Use a straight-slot screwdriver to loosen the screws on positions 7 and 8 (sense input 4) on the J13 terminal block.

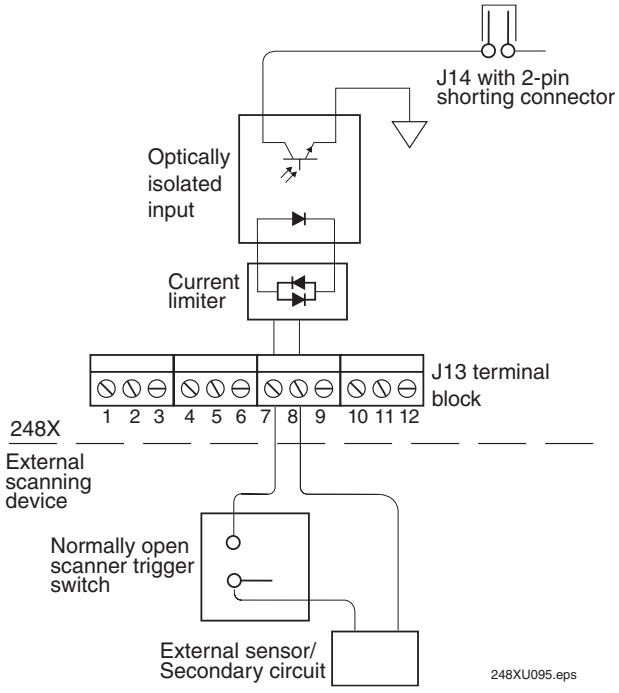
Note: If the terminal blocks are connected to the I/O board, you may need to remove them to connect the wires. For help, see "Removing the Terminal Blocks From the Input/Output Board" later in this chapter.



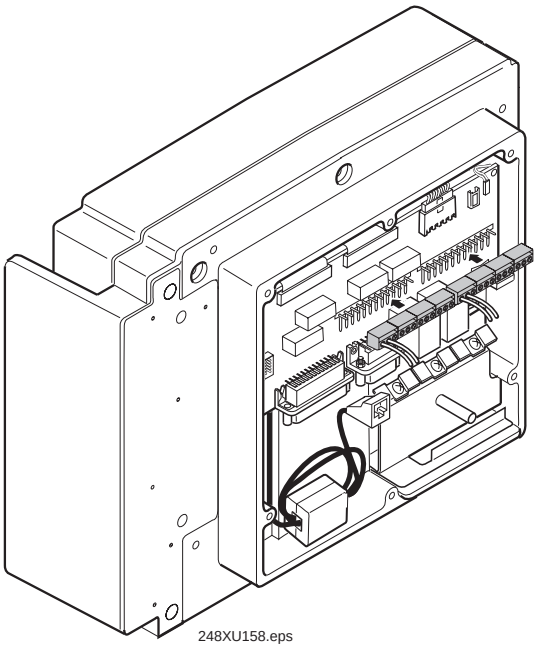
3. Insert the wires for the external sensor into positions 7 and 8. The switch mechanism on the external sensor should normally be open. The following illustration depicts the auto-triggering configuration.

Note: The connections on positions 7 and 8 are interchangeable.

Physical Configuration for Auto-Triggering



4. Tighten the screws to connect the wires.
5. 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.



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 wires under the cable restraint. Tighten the screw to secure the wires.
8. Route the wires under the cable restraint bar and through the scissors seal.
9. 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.

To enable auto-triggering with software commands

- Set the following scanner commands to the indicated values:

Command	Value
Scanner Mode	Automatic mode
Scanner Trigger	Edge triggering
Scanner Timeout	Desired timeout value

For help setting the scanner commands, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

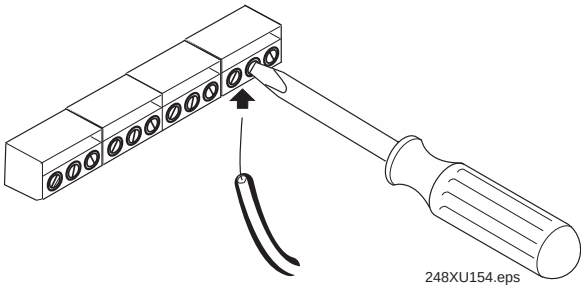
Attaching an External Speaker

The 248X 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.

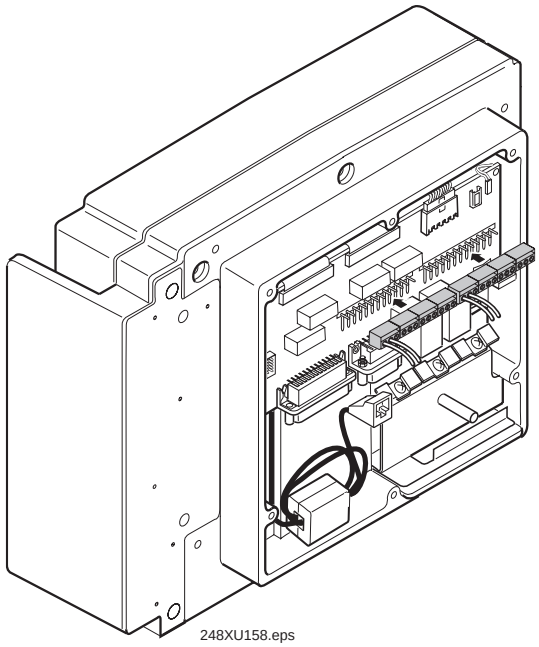
To attach an external speaker

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



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.



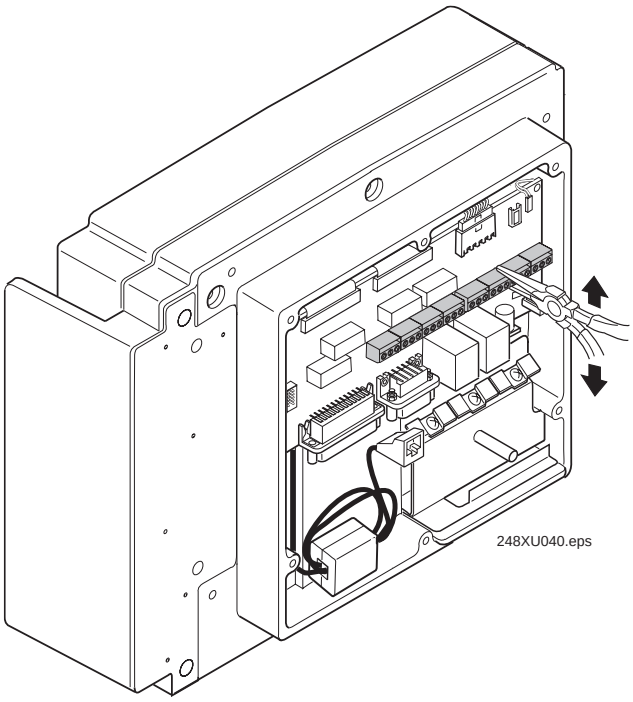
6. Route the wires through the snap-in plastic loop that is just to the right of the power supply connector.
7. Use a Phillips screwdriver to loosen one of the screws on the cable restraint. Route the speaker wires under the cable restraint. Tighten the screw to secure the cable.
8. Route the cable under 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.



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.

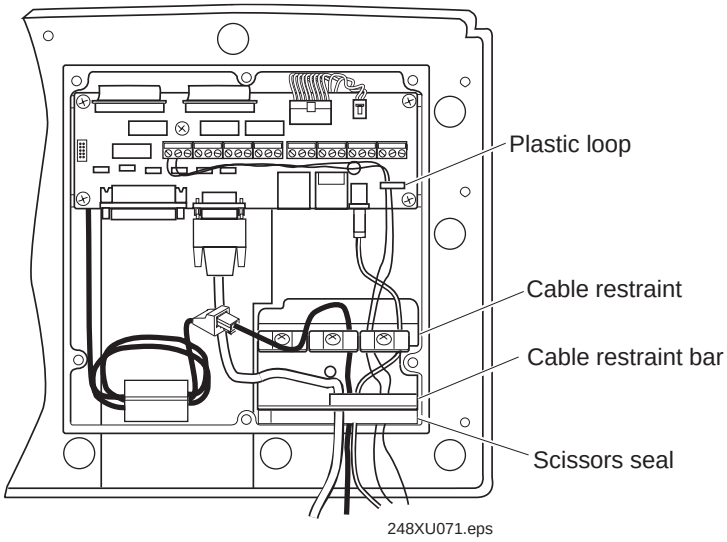
Routing Cables and Securing the Back Panel

After you connect 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 cable restraint secures the power supply cable, Ethernet cable, sense input wires, output relay wires, and external speaker wires.

   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.



4. With the seal facing toward the terminal, place the back panel on the back of the terminal.
5. Use a torque driver with a Phillips bit 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.

3

Configuring the Terminal

This chapter describes the different methods that you can use to configure the 248X and its memory and drives. It also explains how to transfer files and save configuration changes to flash memory.

How to Configure the Terminal

You can customize many operating characteristics of the 248X terminals, such as the volume of their audio signals and the bar code symbologies they decode. These characteristics are controlled by configuration parameters. The values you set for the configuration parameters determine how the terminal operates. To learn about each parameter, see Chapter 6, "Configuration Command Reference," in the terminal system manual. You can configure the terminals by using any of these methods:

Use 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. For help, see "Configuring the Terminal With the Menu System" on page 3-5.

Scan bar code labels You can change the terminal's configuration parameters 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 and the terminal system manual, or you can create your own bar code labels. For help, see "Configuring the Terminal by Scanning Bar Code Labels" in Chapter 2 of the terminal system manual.

Send commands through the serial port You can change the terminal's configuration parameters by sending commands from a host computer or PC that is connected to the terminal's serial port. For help, see "Configuring the Terminal Through the Serial Port" in Chapter 2 of the terminal system manual.

Send commands through the Ethernet or RF port You can change the terminal's configuration parameters by sending commands through the UDP Plus or TCP/IP network. This method lets you configure one or more terminals at the same time. For help, see "Configuring the Terminal Through the Network" in Chapter 2 of the terminal system manual.

About the Configurations

The terminal uses three configurations: current, active, and default. Having separate current and active configurations lets you control the active configuration while letting each operator make some changes to the current configuration, such as scanning a bar code to change the beep volume.

Current This configuration, also called the runtime configuration, uses the configuration that is saved in RAM. When you change a parameter by using the menu system, by scanning a bar code, by sending it from a host application, or by sending it from the DCS 30X, the terminal updates the current configuration. The changes to the current configuration are lost when you boot or reset the terminal.

Active When you update the flash memory, the terminal copies the current configuration to the active configuration. The active configuration is the configuration that the terminal uses when you boot or reset the terminal.

Default This configuration is the factory default configuration. To restore the default configuration, see "Restoring the Terminal's Default Configuration" in Chapter 2 of the terminal system manual.

Configuring the Terminal to Communicate in a Network

You need to configure the 248X to communicate with serial, RF, or Ethernet 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.

Configuring for Serial Communications

The Trakker Antares 248X terminals have one or more serial ports to transfer data to and from another device, such as a printer, modem, or PC, using serial communications. For help connecting the terminal to a serial device or network, see Chapter 2, "Installing the Terminal."

After you connect the 248X to a host computer or other serial device, you must first select the communications protocol for each COM port. For help, see "Choosing a Communications Protocol" in Chapter 4. Depending on the protocol, you need to set some or all of the serial port parameters to have the terminal communicate with a host computer or serial device in a wired network.

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 248X device. For help, see your controller user's manual.

Configuring for RF or Ethernet Communications

When you install the 248X terminal in an RF or Ethernet network, you must configure the network parameters that control how the terminal communicates in the network. For help connecting the terminal to an RF or Ethernet network, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4.

The set of network parameters you must configure depends on whether you install the terminal on the same subnetwork as the DCS 30X or host (TCP/IP), or whether you install the terminal on a different subnetwork. For help determining which network parameters you must configure, see "About the Network Parameters" in Chapter 4.

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.

When you are using the menu system, you may not see a parameter until you set a value for another key field. For example, EOM is a key field when you configure the Configurable protocol. That is, several fields are invalid (do not appear) until you enable EOM. You also may not see a parameter if your terminal does not support a particular feature.

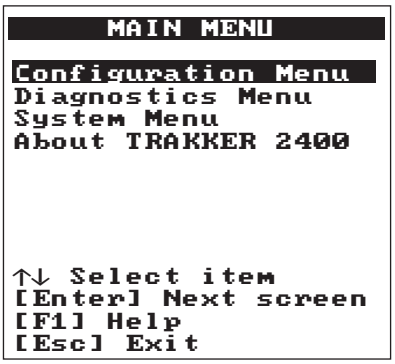
To access the TRAKKER Antares 2400 Menu System

- Press f ↵ 2 4 8 or scan this bar code:

Menu System

..-.

The Main Menu appears, displaying four menu options:



248XU001.eps

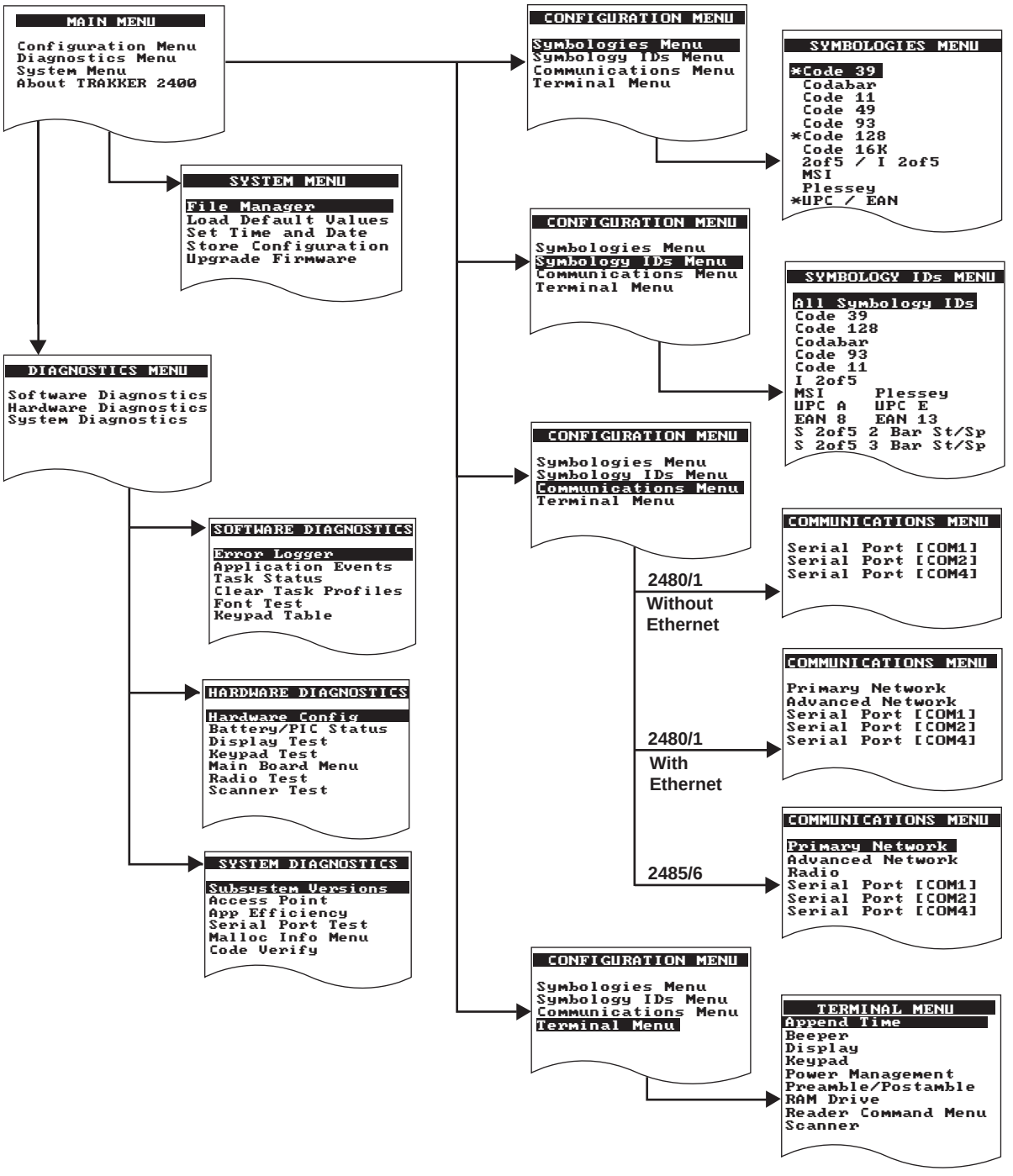
Configuration Menu Choose the Configuration Menu to configure bar code symbologies, network and communications parameters, serial port parameters, symbology identifiers, and the terminal's operating characteristics. In the Symbologies Menu, an asterisk (*) next to the symbology indicates that the symbology is active.

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 battery and system information. For help, see Chapter 4, "Running Diagnostics," in the terminal system manual.

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, radio, and RF protocol (UDP Plus or TCP/IP) that is 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



248XU178.eps

Accessing Online Help

The TRAKKER Antares 2400 Menu System provides online help for the menus and commands.

To access a help screen

- Press F1 to access a help screen.

To exit a help screen

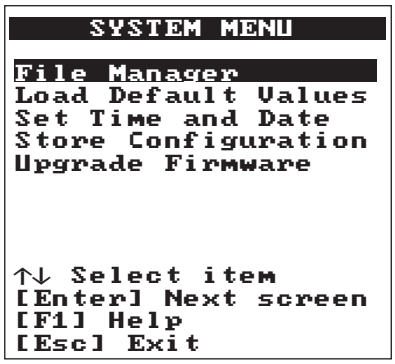
- Press esc to exit the help screen.

Selecting Menus and Commands

A menu consists of a list of secondary menu items or commands. From the Main Menu, you can press ^, v, or tab to select a menu, and then press ↵ .

For example, from the Main Menu, press v v ↵ to display the System Menu:

248XU001.eps



248XU051.eps

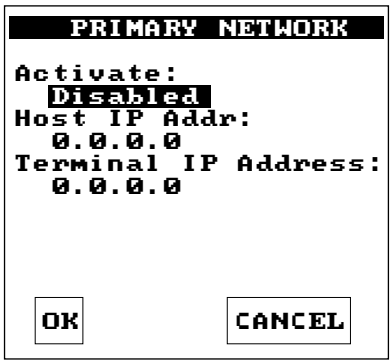
Filling In Fields

Screens contain fields into which you can enter data. In the TRAKKER Antares 2400 Menu System, this data configures the terminal. You can press ^ , v , or tab to choose a field on a screen and then enter data.

There are two types of fields: toggle fields and entry fields.

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

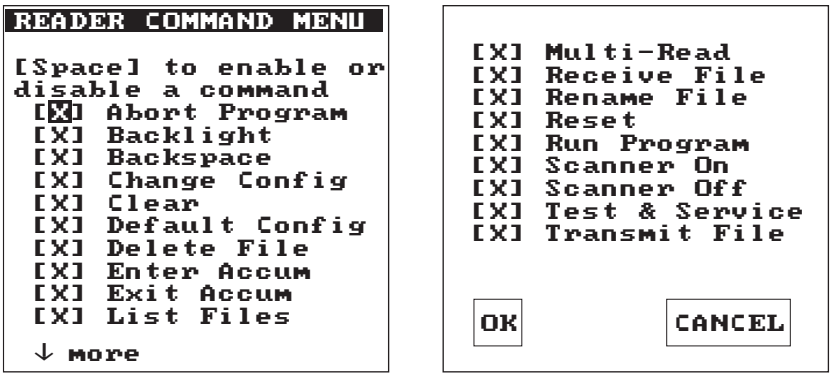
For example, the Primary Network screen has toggle and entry fields. The Activate field is a toggle field. Press → to toggle between Disabled and 802.11 DS. The Host IP Address and Terminal IP Address fields are entry fields. You type a value into the field for each IP address.



248XU.191

Marking Check Boxes

Screens may contain check boxes. Check boxes are used when you can select more than one option at a time. To mark or clear check boxes, press →. For example, press ^ or v or tab to choose the Backspace check box and press → to clear the check box. The Backspace command is now disabled.



248XU053.eps

Entering ASCII Control Characters

You can include ASCII control characters in a postamble or preamble by using the TRAKKER Antares 2400 Menu System. For a definition of the postamble or preamble, see Chapter 6, “Configuration Command Reference,” in the terminal system manual.

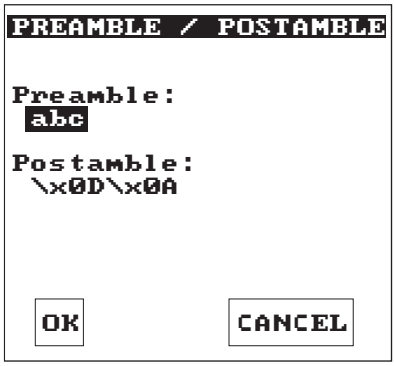
You can configure the postamble or preamble to be characters from the full or extended ASCII character sets. For example, the Field Exit code (Ü) for 5250 terminal emulation is an extended ASCII character that is often configured as the postamble.

Note: For help using the 5250 Field Exit code, see the appropriate TE manual

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 two-digit hexadecimal number for the character in the “Trakker Antares Terminal Font Set” in Appendix C of the terminal system manual. For example, Ü (the 5250 Field Exit code) has the hexadecimal value 9A.



248XU057.eps

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.
5. Move the cursor to the field for the preamble or postamble.

6. Type the control character, extended ASCII character, or escape character sequence in the preamble or postamble field.

   - To type a control character or extended ASCII character in the preamble or postamble field, use this syntax:

     `\x`*`hh`*

     where *hh* is the 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 (the 5250 Field Exit code) as the postamble, type:

     `\x9A`

   - To type an escape character (backslash) in the preamble or postamble field, you must type two backslashes. The application ignores the first backslash (\) character and saves the next character(s). For example:

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

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

   For help exiting the menu system, see the next two sections, "Exiting Screens and Saving Changes" and "Exiting the Menu System."

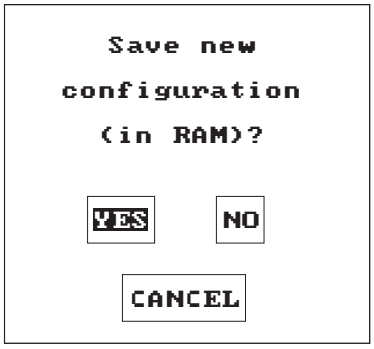
Exiting Screens and Saving Changes

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 ↵ . You can also press ↵ with the cursor positioned anywhere except on the Cancel button.
To exit a screen and discard the changes	Choose Cancel and press ↵ . You can also press esc with the cursor in any field.

Exiting the Menu System

1. Press esc until you exit the TRAKKER Antares 2400 Menu System. If you have made any changes to the current configuration, the next screen prompts you to save the configuration parameters that are currently enabled on the terminal to RAM.



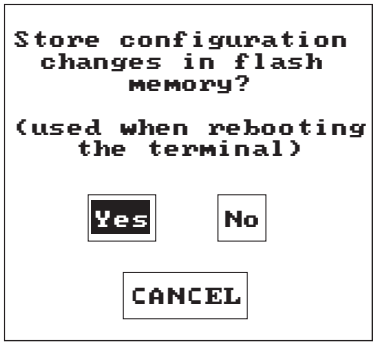
248XU059.eps

2. Choose Yes and press ↵ to save your changes in RAM and update the current configuration on the terminal. The Main Menu appears.

   Choose No and press ↵ to exit without changing the configuration. The Main Menu appears.

   Choose Cancel and press ↵ to return to the previous menu or screen.

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



248XU054.eps

Note: You can also save the current configuration in flash memory by choosing the Store Configuration command from the System Menu. For help, see “Saving Configuration Changes in Flash Memory” on page 3-12.

4. Choose Yes and press ↵ to save your changes in flash memory. The terminal saves the current configuration as the active configuration. The Exiting TRAKKER Antares 2400 Menu System screen appears.

   Choose No and press ↵ to exit without saving. The terminal continues to use your changes until you boot or reset the terminal. The Exiting TRAKKER Antares 2400 Menu System screen appears.

   Choose Cancel and press ↵ to return to the Main Menu.

248XU055.eps

5. 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.

Saving Configuration Changes in Flash Memory

If you configure the terminal by scanning bar code labels, using the serial port, or using the network, you may want to save the changes in flash memory by

- scanning the Save Configuration in Flash Memory reader command bar code label.
- sending the Save Configuration in Flash Memory reader command through the network.
- using the TRAKKER Antares 2400 Menu System.

To save configuration changes by scanning a bar code label

- Scan this bar code label:

Save Configuration in Flash Memory

.+1

To save configuration changes by sending a command through the network

- Send `.+1` as the last command from the host application or the DCS 30X.

To save configuration changes using the menu system

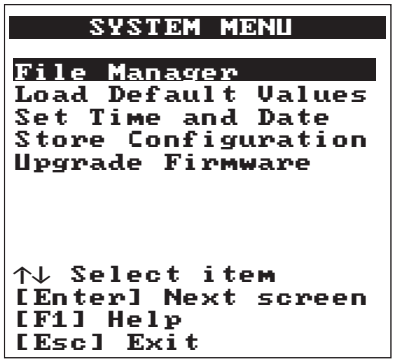
1. Press f ↵ 2 4 8 or scan this bar code.

Menu System

..-.

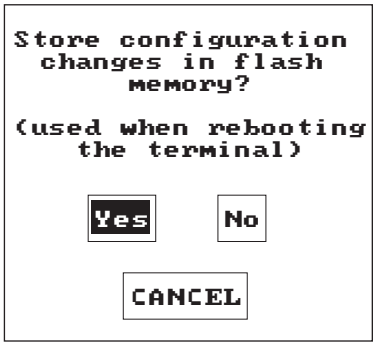
The Main Menu appears.

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



248XU051.eps

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



248XU054.eps

4. Choose Yes 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.

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 248X 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 to use as a 2MB drive.

Configuring the RAM Drive

The 248X has a total of 512K 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 128 files).

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. For help, see "Saving Configuration Changes in Flash Memory" on page 3-12.

Note: When you boot or reset the terminal, all files on the RAM drive are destroyed.

For help configuring the RAM drive, see "RAM Drive Size" in Chapter 6 of the terminal system manual.

Configuring Flash Memory

If you ordered the optional 4MB flash memory drive, you have an additional 2MB of extended flash memory. You can use this flash memory either to store double-byte fonts or to use as a 2MB drive. By default, the additional 2MB of 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 128 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.

For help configuring flash memory, see "Flash Memory Configuration" in Chapter 6 of the terminal system manual. For help loading double-byte fonts, see "Loading Double-Byte Fonts" in Chapter 2 of the terminal system manual.

4

Operating the Terminal in a Network

This chapter describes serial networks, the RF network, and the Ethernet network. It also explains how the Trakker Antares 248X terminal fits into a particular network. It describes how to install and configure the terminal and how to use serial or network communications.

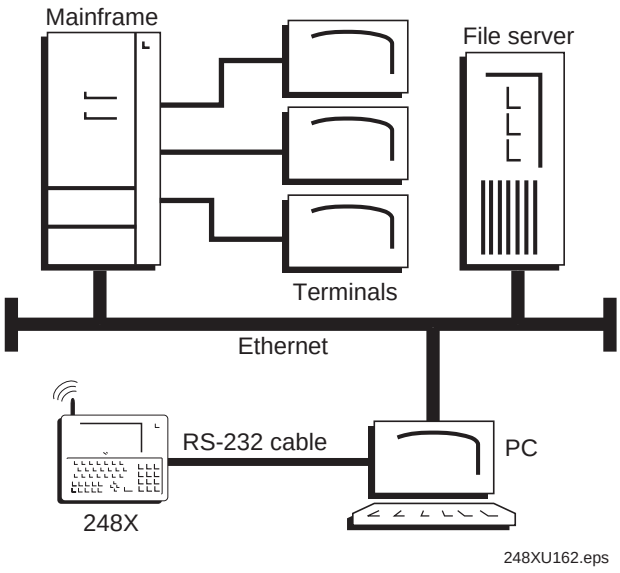
How the Terminals Fit Into Your Network

The Trakker Antares 2480, 2481, 2485, and 2486 terminals are versatile stationary terminals that you can easily add to your network or distributed data collection system.

You can use the 2480 or 2481 with an Ethernet card option as an end device in your Ethernet network. You can use the 2485 or 2486 as an end device in the RF network.

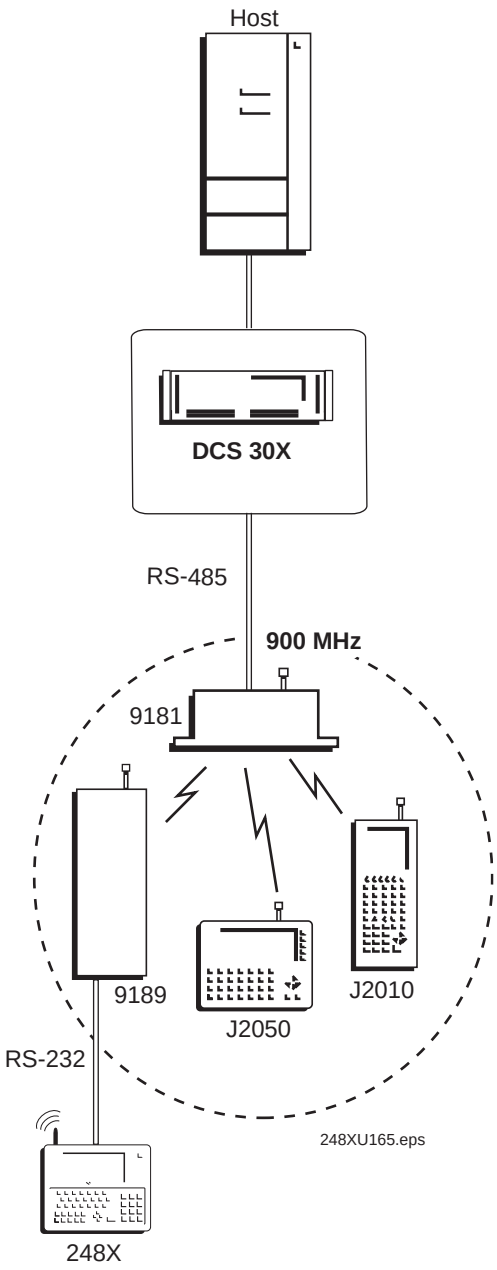
The terminals have a serial port to transmit data to and receive data from a host computer or PC through RS-232 serial communications.

248Xs in a Wired Network



900 MHz RF Network You can also use the serial port to connect to a 900 MHz network using the 9189 RF Gateway. The terminal communicates with the 900 MHz network using Polling Mode D protocol.

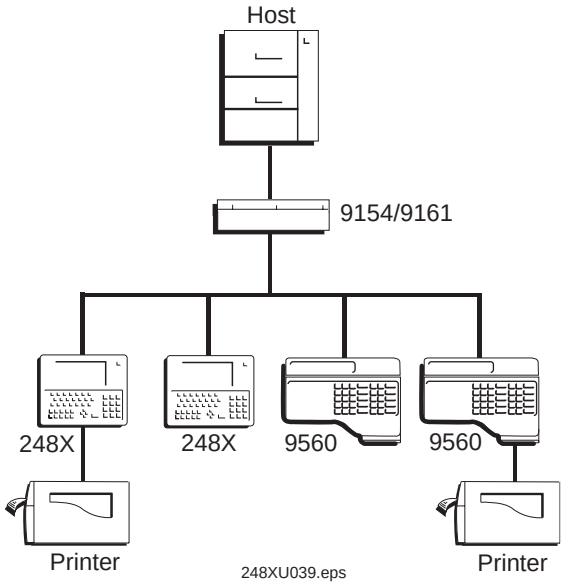
248Xs in a 900 MHz Network



Intermec CrossBar Network With the enhanced input/output board, the terminals have an additional serial port (COM2) that supports RS-232/422/485 communications. You can use COM2 to connect to a serial device such as a printer, a wired network, or an Intermec CrossBar network. In a CrossBar network, the 248X 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.

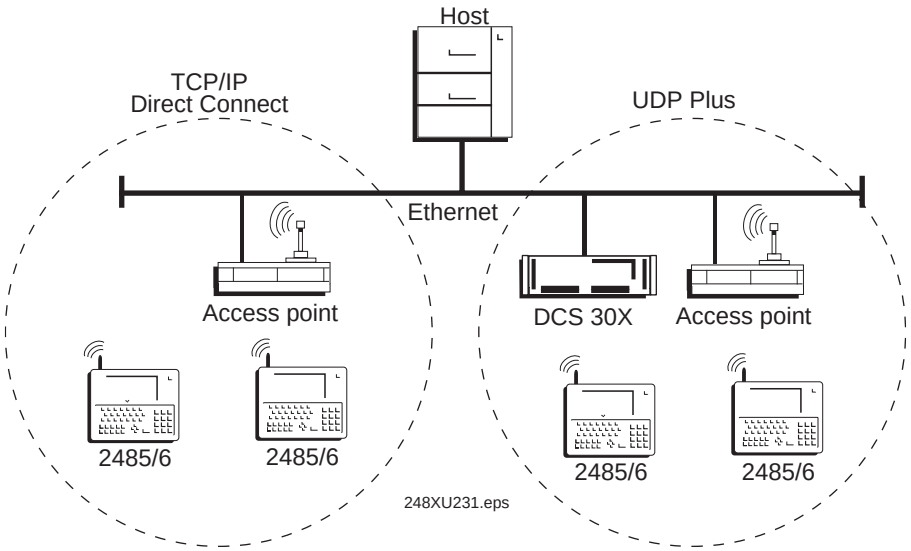
248Xs in an Intermec CrossBar Network



UDP Plus Network In a UDP Plus RF network, the 2485/6 communicates with a host computer through the DCS 30X. The DCS 30X translates UDP Plus packets on the RF network into TCP/IP packets on the wired network and vice versa. The access point acts as a bridge to allow communications between the wired network and the RF network.

TCP/IP Direct Connect Network In a TCP/IP network, the 2485/6 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 wired network and the RF network.

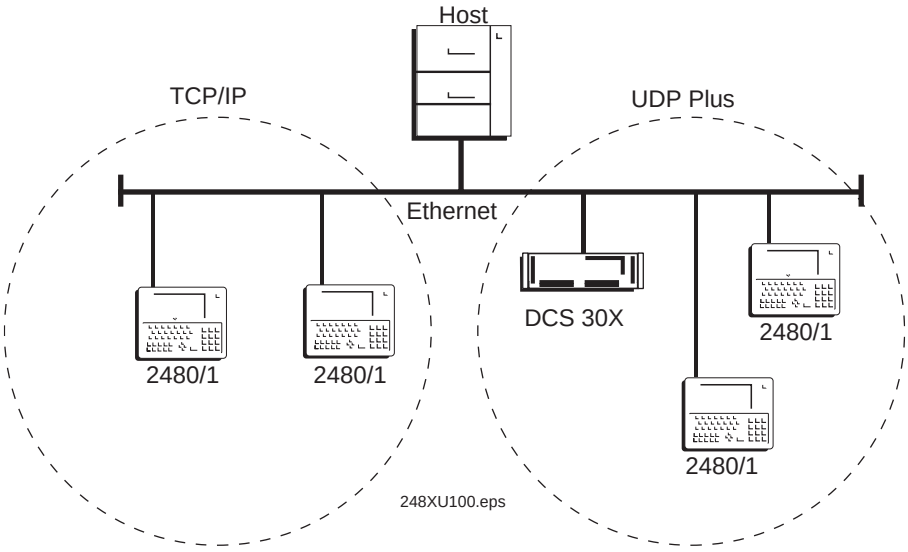
2485/6s in a UDP Plus Network or a TCP/IP Direct Connect Network



Ethernet UDP Plus Network In a UDP Plus Ethernet network, the 2480/1 with an Ethernet card communicates with a host computer through the DCS 30X using UDP Plus for the network protocol.

Ethernet TCP/IP Direct Connect Network In a TCP/IP Ethernet network, the 2480/1 with an Ethernet card communicates with a host computer directly using TCP/IP for the network protocol.

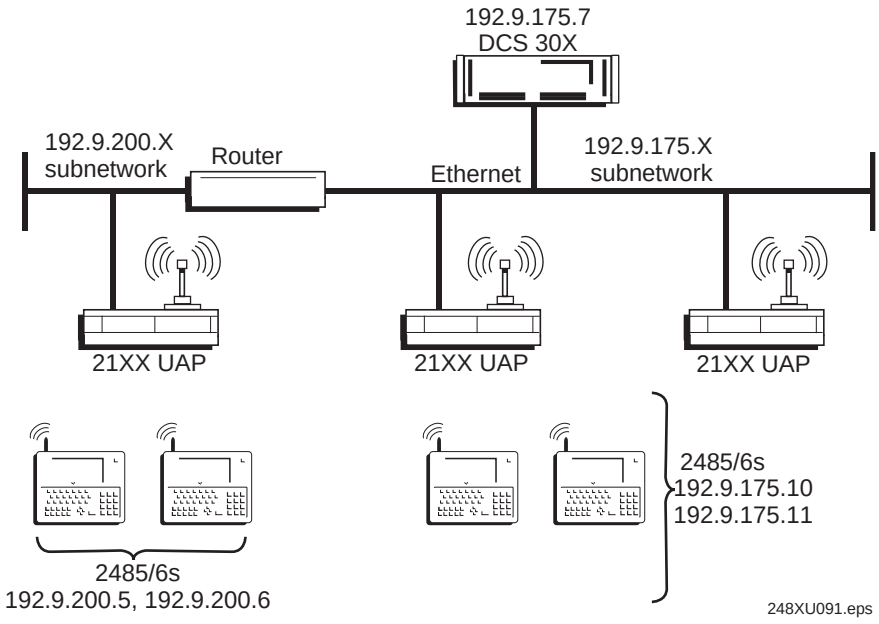
2480/1s in an Ethernet UDP Plus Network or an Ethernet TCP/IP Direct Connect Network



Multiple Subnetworks (UDP Plus) In a UDP Plus network, you can install the Trakker Antares 2485 or 2486 terminals, access points, and DCS 30X as shown in the next illustration. All the terminals and access points in this illustration communicate with the DCS 30X at IP address 192.9.175.7. If you are using UAPs, a terminal can roam across subnetworks.

If you are using the 011X Access Points, a terminal can only communicate with access points that are in the same subnetwork. In this illustration, if you substituted the 011X Access Points for the UAPs, the terminal at IP address 192.9.200.5 could not communicate with the DCS 30X on the 192.9.175.X subnetwork.

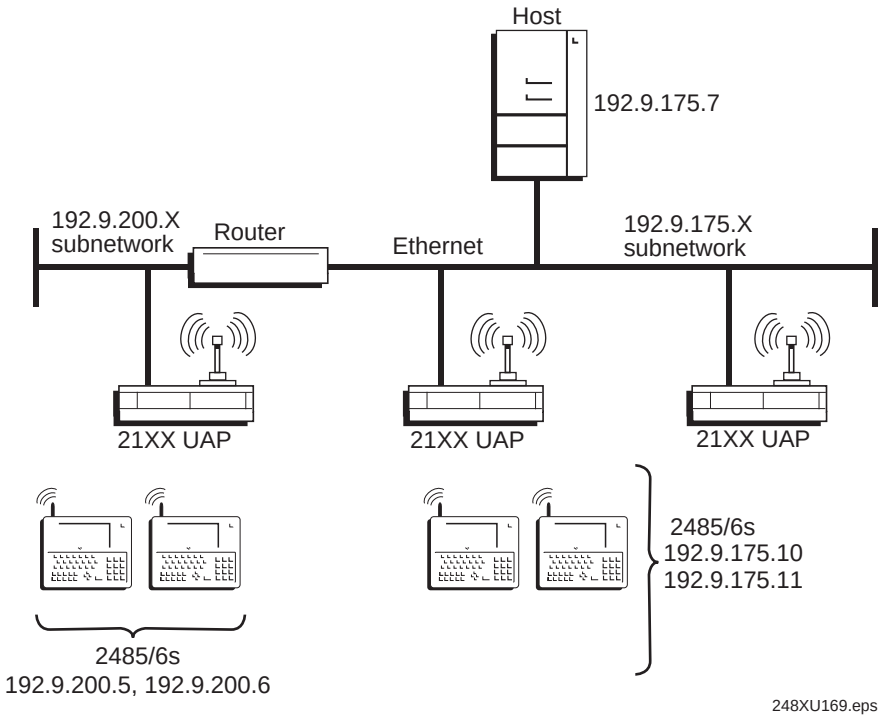
2485/6s in Multiple Subnetworks (UDP Plus)



Multiple Subnetworks (TCP/IP) In a TCP/IP network, you can install the Trakker Antares 2485/6 terminals and access points as shown in the next illustration. All the terminals and access points in this illustration communicate with the host at IP address 192.9.175.7. If you are using 21XX UAPs, a terminal can roam across subnetworks.

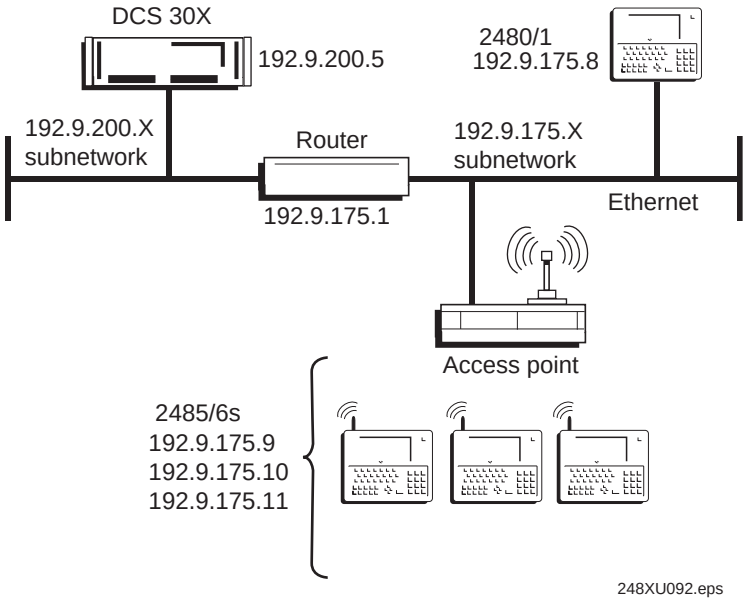
If you are using the 011X Access Points, a terminal can only communicate with access points that are in the same subnetwork. In this illustration, if you substituted the 011X Access Points for the UAPs, the terminal at IP address 192.9.200.5 could not communicate with the host on the 192.9.175.X subnetwork.

2485/6s in Multiple Subnetworks (TCP/IP)



Communicating Across Subnetworks (UDP Plus) You can install the 248X terminals and access points in one subnetwork and install the DCS 30X or host in another subnetwork. If you have a 2480/1 with an Ethernet card, you can install the 2480/1 in one subnetwork and install the DCS 30X in another subnetwork. In this network, you must configure additional network parameters (default router and subnet mask). The next illustration shows the DCS 30X in another subnetwork from the terminals.

248Xs Communicating Across Subnetworks (UDP Plus)



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 using serial communications. Before you can use the serial port, you must perform these steps:

1. Install the 248X and connect the terminal to a serial device or network. For help, see Chapter 2, "Installing the Terminal."
2. Choose a communications protocol. For help, see the next section, "Choosing a Communications Protocol."
3. Configure the serial port parameters for the particular communications protocol. For help, see Chapter 3, "Configuring the Terminal."

Choosing a Communications Protocol

After you connect the 248X 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 with protocols, see the *Data Communications Reference Manual*.

If you are using your 248X terminal in a CrossBar network with 95XX terminals, you must set up the 248X to match your 95XX configuration. For help, see "Compatibility With 95XX Communications Protocols" in Appendix A.

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

Binary Protocol

Binary protocol has no protocol. Characters are sent and received without being altered. The Data Link Escape character (DLE) is **not** inserted before any character. DLE characters are not stripped out of the incoming data stream and no characters such as EOM or SOM are added.

Here are the serial port parameters you can define:

- Baud rate
- Data bits
- Parity
- Stop bits
- Flow control

Configurable Protocol

Configurable protocol is based on Intermec's Polling Mode D protocol except that you have the option to change some of the serial port protocol parameters or remove specific events from the protocol, such as Poll or handshake.

Here are the serial port parameters you can define:

- Baud rate
- Data bits
- Parity
- Stop bits
- Flow control
- EOM (End of Message)
    - Configuration commands via serial port
    - LRC
    - SOM (Start of Message)
    - Handshake (enabled or disabled)
        - Poll (Polling) (enabled or disabled)
        - Timeout Delay

Configurable protocol uses EOM to determine the serial communications mode. When EOM is disabled, the terminal communicates in Character mode processing each character. Character mode supports both XON/XOFF and CTS/RTS flow control.

When EOM is enabled, the terminal communicates in Frame mode. When a terminal sends a packet, it adds protocol character. When a terminal receives a packet, it strips any protocol characters before it sends the information to the terminal application. Frame mode supports both XON/XOFF and CTS/RTS flow control. In Frame mode, you can also define these serial port parameters:

- Configuration commands via serial port
- Handshake
- LRC
- SOM

After you enable Handshake, you can define poll and timeout delay.

For firmware version 4.X and earlier, 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.

Master Polling Protocol

Master Polling Mode D protocol requires the terminal to ask the downline serial device for data it may have (polling) and to request to send data to the serial device (selecting). There is no automatic polling, so your application must poll periodically for data.

Before each transmit operation, the terminal issues the SEL sequence for the device addressed and sends the data if an acknowledge is received. Before each receive operation, the terminal issues a poll sequence and waits for data or the RES character (no data is available to send).

Here is the serial port parameter you can define:

- Baud rate

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 using RS-422/485. If COM2 is not configured for Multi-Drop protocol, the port communicates using RS-232.

Here are the serial port parameters you can define:

- Baud rate
- Multi-drop device address

Point-to-Point Protocol

Point-to-Point protocol is not directly supported on the terminals. However, you can simulate this protocol by setting the protocol to Configurable and configuring these parameters:

- Baud rate
- Data bits
- Parity
- Stop bits
- Flow control
- EOM (Set EOM1 to \x0D, which is <CR> and set EOM2 to \x0A, which is <LF>)
- LRC (Disable)
- Handshake (Disable)

If you use this protocol, you cannot configure values for intercharacter delay, turnaround delay, and timeout delay. This protocol supports CTS/RTS flow control only.

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). On the 248X, this protocol uses an RS-232 or RS-422 interface and implements the user interface through reader commands. Polling Mode D also supports XON/XOFF and CTS/RTS flow control.

You can use this protocol to connect to a 900 MHz RF network through the 9189 RF Gateway. Here are the serial port parameters you can define:

- Baud rate
- Flow control

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 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
   - 2480/1 with an Ethernet card in the Ethernet network.
   - 2485/6 in the RF network.
2. Configure the DCS 30X (248X with UDP Plus).

3. Configure the access points.
4. Configure each 248X terminal. For help, see "Configuring for RF or Ethernet Communications" in Chapter 3.

When you begin using the 248X, you must understand how to use the status lights to monitor communications. For help, see "Using the Status Lights to Monitor Network Communications" on page 4-18.

Caution
Make sure all components with antennas are at least 30 cm (1 ft) 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 30 centimètres (un pied) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

Planning the Network Connection

To use the 2480/1 with an Ethernet card in the Ethernet network, you need these minimum requirements:

- DCS 30X (2480/1 with UDP Plus only)
- Ethernet jack or connector in your network

To use the 2485/6 in the RF network, you need these minimum requirements:

- DCS 30X (2485/6 with UDP Plus only)
- 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, determines the placement of the access points, and ensures that 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 must work with your network administrator to plan and assign the IP address for each device in the RF or Ethernet network. You must assign and set the IP address for each access point (RF) and each 248X terminal. For a 248X with UDP Plus, you must also assign an IP address to the DCS 30X.

Configuring the DCS 30X

The DCS 30X supports and manages communications with other devices in the RF network or Ethernet network. When you install and configure the DCS 30X, you identify the host computers and Trakker Antares 248X terminals in your network. The terminals communicate using a reliable RF protocol (UDP Plus) to the DCS 30X. The DCS 30X translates UDP Plus to a reliable wired protocol (TCP/IP) and sends the data to the host. For more information, see the user's manual for the DCS 30X.

Note: You can use a 248X running TCP/IP and the DCS 30X in a pass-through network. You establish a direct TCP/IP socket connection from the 248X to the host through the server.

To have the 248X communicate with the DCS 30X, you must configure these parameters on the server:

- Define the host communications parameters, which includes the physical connection (network adapter cards) to the host.
- Configure the UDP Plus network.
- Assign an IP address to each 248X.
- Enable all 248X terminals.
- Define the host environment parameters, which includes configuring for terminal emulation, screen mapping, or client/server applications.

To use the screen mapping application on the 248X, you must also

- create the script file using the Script Builder tool on the server.
- generate the template to download to the 248X.

Screen mapping is only available for the DCS 300 v1.1 and higher. For help, see "Using Screen Mapping" in Chapter 3 of the terminal system manual.

To use dcBrowser, you do not define the host environment parameters. You need to

- create an HTML application.
- configure the dcBrowser gateway.

Configuring the Access Points

Access points act as bridges to provide communications between the Trakker Antares 2485/6 terminals and the Ethernet or token ring network. You may have multiple access points in your RF network to provide uninterrupted wireless communication at any location within your facility.

After you configure the network, 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 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.

To communicate through the network, all RF terminals must contain the same type of radio, either a WLI-F 2.4 GHz OpenAir or an IEEE 802.11b High Rate (HR) radio.

Depending on the radio in the terminal, you must set certain parameters to the same configuration on both the terminal and the access points.

OpenAir Radio

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

- Domain
- (Optional) Security identification (ID)

These parameters must be set to the same values on the terminals and the access points. Each access point is configured with a different channel/subchannel combination.

Note: On the access points, the Domain parameter is called the LAN ID (Domain) parameter.

802.11b HR Radio

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

- Network name
- (Optional) WEP Encryption

These parameters must be set to the same value on the terminals and the access points. You can also set the Network Name parameter to "ANY" on the terminal, allowing the terminal to communicate with any access point that has the same radio and is within range. The Network Name parameter is case-sensitive. For more information about the WEP Encryption parameter, see Chapter 6 in the terminal system manual.

Note: On the access points, the Network name parameter is called the SSID (Network name) parameter.

About the Network Parameters

When you install the 248X terminal in a network, you must configure the network parameters that control how the terminal communicates in the network.

The set of network parameters you must configure depends on whether you install the terminal on the same subnetwork as the DCS 30X or host (TCP/IP), or whether you install the terminal on a different subnetwork.

You must define the following network parameters:

- Network Activate
- (UDP Plus) Controller IP Address
- (TCP/IP) Host IP Address
- Terminal IP Address
- Network Port
- (DCS 30X or host on different subnetwork) Default Router
- (DCS 30X or host on different subnetwork) Subnet Mask

For help understanding these parameters and their syntax, see Chapter 6 in the terminal system manual. For more information about network connectivity and protocols, see "About Network Connectivity and Protocols" in Chapter 1 of the terminal system manual.

Using the Status Lights to Monitor Network Communications

After you configure the devices in the RF or Ethernet network, you can begin using the application on the 248X to collect and transmit data through network communications. If the terminal is communicating with your host computer, the terminal will connect and begin running the application that shipped on the terminal.

As you use the 248X to collect data, status lights help you monitor network communications on the terminal. To learn how to use the Network Connect and Transmit status lights to monitor communications between the 248X and other devices in the RF or Ethernet network, see "Using the Status Lights" in Chapter 1.

5

Troubleshooting and Maintaining the Terminal

This chapter lists problems you may encounter while using the terminal and provides some possible solutions. You will also find instructions that explain how to boot or reset the terminal and clean the terminal screen.

How to Use This Chapter

If you have any problems with the Trakker Antares 248X terminal, use this table as a guide to find the problem and solution in this chapter:

Problem	See This Section to Find a Solution	Page
Screen is blank, terminal is locked up, or message is displayed.	"Problems While Operating the Terminal"	5-4
Configuring the terminal	"Problems While Configuring the Terminal"	5-6
Running applications on the terminal	"Problems While Running Applications"	5-11
RF or Ethernet communications error	"Problems Communicating With RF or Ethernet Network Devices"	5-12
Serial port communications error	"Problems Transmitting Data Through the Serial Port"	5-13
DCS 30X application error	"Problems Transmitting Data Through the DCS 30X"	5-14
Scanning labels	"Problems Scanning Bar Code Labels"	5-15
Boot Menu appears or terminal is locked up.	"Booting the Terminal"	5-17
Terminal or application is locked up.	"Troubleshooting a Locked Up Application"	5-19
Terminal is not responding to the Reset Firmware command.	"Resetting the Terminal"	5-20
Terminal screen is dirty.	"Cleaning the Terminal Screen"	5-21

You can also use the error numbers and messages table and the terminal diagnostics to help analyze and solve problems. For help, see Chapter 4, "Running Diagnostics," in the terminal system manual.

If you have problems with the 3270, 5250, or VT/ANSI terminal emulation application, see the appropriate TE manual.

If you send the terminal in for service, it is your responsibility to save the terminal data and configuration. Intermec is responsible only for ensuring that the keypad and other hardware features match the original configuration when repairing or replacing your terminal.

Problems While Operating the Terminal

If you are operating the terminal and have trouble, check these possible problems and solutions.

Problem	Solution
You press ⏻ to turn on the terminal and the screen is blank and the Power status light is blinking. 	No external power supply is connected. Make sure that the power cable is plugged into the terminal and the outlet. For more help, see Chapter 2, "Installing the Terminal."
You press ⏻ to turn on the terminal and the screen is blank and the status lights are not on.	The internal temperature of the terminal may be too warm. If the internal temperature is over 65°C (149°F), the terminal will not operate. Let the terminal cool down so that the internal temperature drops below 65°C (149°F).
The terminal shuts off, and you cannot turn it on again.	The internal temperature of the terminal may be too warm. If the internal temperature is over 65°C (149°F), the terminal will not operate. Let the terminal cool down so that the internal temperature drops below 65°C (149°F).
You cannot scan bar code labels with a wand, badge scanner, laser scanner, or CCD scanner that is connected to the terminal.	See "Problems Scanning Bar Code Labels" on page 5-15.

Problems While Operating the Terminal (continued)

Problem	Solution
You scan a reader command, such as Change Configuration, and nothing happens.	The reader commands are disabled. Scan the Enable Override command shown here to temporarily enable all of the reader commands. You can also enable or disable reader commands with the TRAKKER Antares 2400 Menu System. For help, see "Command Processing" in Chapter 6 of the terminal system manual. When you are finished, remember to disable the override so that your data is not interpreted as a command. Enable Override  *$+DC3*
You scan a valid bar code label to enter data for your application. The data decoded by the terminal does not match the data encoded in the bar code label.	The terminal may have decoded the bar code label in a symbology other than the label's actual symbology. Try scanning the bar code label again. Make sure you scan the entire label. To operate the terminal quickly and efficiently, you should enable only the bar code symbologies that you are going to scan. If you enable multiple symbologies, the terminal may, on rare occasions, decode a bar code according to the wrong symbology and produce erroneous results.
You want to restore the terminal's default configuration to start over configuring the terminal.	Scan this bar code label: Default Configuration  *.+* Or, use the TRAKKER Antares 2400 Menu System. For help, see "Restoring the Terminal's Default Configuration" in Chapter 2 of the terminal system manual. After you load the default configuration, you may need to set the primary network communications parameters to communicate with other devices in the network.
The terminal appears to be locked up and you cannot enter data.	Try these possible solutions: • Wait at least 10 seconds and try again. If the terminal is still connecting to the DCS 30X or host, the terminal will ignore any input from the keypad or scanner. If the Network Connect status light appears and remains on, you can continue working. • Scan any bar code label to see if the terminal responds. • Follow the instructions in "Troubleshooting a Locked Up Application" on page 5-19. • If the terminal will not boot or reset, contact your local Intermec service representative for help.

Problems While Operating the Terminal (continued)

Problem	Solution
The terminal is booting and you see a message that POST failed.	The screen displays the system that failed POST. Report the error message to your supervisor. Press esc to exit the error message. The Boot Menu appears. Press 1 to boot the terminal. Your application appears on the screen. If the terminal still will not boot, contact your local Intermec service representative for help.
The terminal displays the Boot Menu.	The Boot Menu appears if you just upgraded the firmware on the terminal and POST failed. Press 1 to boot the terminal. Report the problem to your supervisor. For help with the Boot Menu, see "Booting the Terminal" on page 5-17.
The Power status light blinks and an external power supply is connected. 	The backup battery charge is low. Let the power supply charge the backup battery. The backup battery will be fully charged in approximately 24 hours. If you have been using the terminal in a cold temperature environment, move the terminal to a warmer environment to charge the backup battery. If the battery status on the Battery/PIC diagnostic screen is bad, or the battery is dead, you may need to replace the backup battery. The NiCad backup battery is not user-serviceable. You must return the Trakker Antares 248X terminal to Intermec to replace the backup battery. For help, contact your local Intermec service representative.

Problems While Configuring the Terminal

You can configure the terminal by using the TRAKKER Antares 2400 Menu System or by scanning configuration commands. If you have trouble configuring the terminal, check these possible problems and solutions.

Problem	Solution
On the 2485/6, you configure the security ID and the changes do not appear to be saved.	You can only set the security ID with the RF network enabled. The Network Activate configuration command must be configured to the RF network before you can save any changes to the security ID command.
You are configuring SOM or EOM in the Configuration Menu and cannot set two characters.	You may have a space in the SOM or EOM field. The space does not show, but it is a valid character. To clear a space from the field, put the cursor in the field and press ←. Now set the two-character value for SOM or EOM.

Problems While Configuring the Terminal (continued)

Problem	Solution
You scan a configuration command, such as Keypad Caps Lock, and nothing happens.	There are two possible solutions: • One or more reader commands, such as Change Configuration, may be disabled, so that you cannot change the configuration. Enable all of the reader commands and try again. • The terminal may be waiting for another command to complete the configuration change. If you started by scanning the Enter Accumulate command, you must finish the command by scanning the Exit Accumulate command. For help, see Chapter 6, "Configuration Command Reference," in the terminal system manual. Scan Enable Override to temporarily enable all of the reader commands. When you are finished, remember to disable the override so that your data is not interpreted as a command. Enable Override  *$+DC3*
You scan a configuration command, such as Keypad Caps Lock, and you hear three low beeps.	If you are working in the TRAKKER Antares 2400 Menu System, you cannot scan configuration commands. Use the Configuration Menu to change the terminal's configuration, or exit the menu system to scan configuration commands. Check the command you are trying to scan. Make sure the command is set correctly for the options and network communications you are using with the terminal. For help, see Chapter 6, "Configuration Command Reference," in the terminal system manual.
You are scanning a configuration command to set one of the serial port parameters and hear three low beeps. For example, you are trying to set EOM or SOM.	The order in which you scan serial port protocol configuration commands is important. Configurable Serial Port (CSP) 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. To use Frame mode, you need to set EOM first. Next, configure Handshake, Configuration Commands Via Serial Port, LRC, SOM, and then Poll. To use Character mode, you need to disable these same parameters in reverse order. For help, see "Using Serial Communications on the Terminal" in Chapter 4.

Problems While Configuring the Terminal (continued)

Problem	Solution
You scan a configuration command to set one of these parameters and hear three low beeps: • Controller IP Address (UDP Plus) or Host IP Address (TCP/IP) • Terminal IP Address • Default Router • Network Activate	If the Network Activate command is enabled (RF or Ethernet network enabled) and you are configuring the terminal, these addresses must define a valid network configuration. For example, an invalid network configuration would be a controller (or host) IP address set to 0.0.0.0 with the network enabled. To set these four parameters, follow these steps: 1. Disable the Network Activate (NA) configuration command. 2. Set the terminal IP address and the controller IP address or the host IP address. 3. Set the default router address (if necessary). 4. Enable the Network Activate command. You can change an IP address with the network enabled as long as it still defines a valid network configuration.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`SOM is set. You must also set EOM.`
`Configuration was not updated.`
	You must configure a value for EOM before you can set SOM or disable SOM. You need to change the value of SOM. Choose Serial Port from the Communications Menu.
	Configurable Serial Port (CSP) 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.
	To use Frame mode, you need to set EOM first. Next, configure Handshake, Configuration Commands Via Serial Port, LRC, SOM, and then Poll. To use Character mode, you need to disable these same parameters in reverse order.
	For help, see "Using Serial Communications on the Terminal" in Chapter 4.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`SOM cannot equal EOM.`
`Configuration was not updated.`
	SOM cannot equal the same value that is set for EOM. You cannot set SOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of SOM. Choose Serial Port from the Communications Menu.
	For help, see "Start of Message (SOM)" in Chapter 6, "Configuration Command Reference," in the terminal system manual.

Problems While Configuring the Terminal (continued)

Problem	Solution

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error.`
`EOM #1 cannot equal EOM #2. Configuration was not updated.`
	EOM can be one or two ASCII characters, but you cannot set the first and second character to the same character. Also, you cannot set EOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of EOM #1 or #2. Choose Serial Port from the Communications Menu.
	For help, see "End of Message (EOM)" in Chapter 6, "Configuration Command Reference," in the terminal system manual.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`Serial port configuration error. DLE, XON, XOFF are not valid values for either SOM or EOM.`
`Configuration was not updated.`
	You cannot set EOM or SOM to any of these values: AFF (ACK), DLE, NEG (NAK), Poll, RES (EOT), REQ (ENQ), SEL, XOFF, or XON. You need to change the value of EOM or SOM. Choose Serial Port from the Communications Menu.
	For help, see "End of Message (EOM)" or "Start of Message (SOM)" in Chapter 6, "Configuration Command Reference," in the terminal system manual.

You are configuring the serial port and see this error message when exiting the Configuration Menu:
`PG command failed.`
`Configuration was not updated.`
	PG is the Handshake configuration command. You need to change the value of Handshake or set other serial port parameters. Choose Serial Port from the Communications Menu.
	The order in which you set serial port protocol configuration commands is important. To use Frame mode, you need to set EOM first. Next, configure Handshake, LRC, SOM, and then Poll. To use Character mode, you need to disable these same parameters in reverse order.
	For help, see "Using Serial Communications on the Terminal" in Chapter 4.

You see this error message when exiting the Configuration Menu:
`Commandname`
`command failed.`
`Remainder of configuration not updated.`
	The two-character name (syntax) of the configuration command that failed is listed on the first line of the error message. For example, you may see this message:
	`SS`
	`command failed.`
	There may be a problem with the configuration due to a change made with the Scanner Selection (SS) command. Check the command listed in the message. To find the command, use the "Configuration Commands by Syntax" table in Appendix A. Make sure the command is set correctly for the options and network communications you are using with the terminal. For help, see Chapter 6, "Configuration Command Reference," in the terminal system manual.

Problems While Configuring the Terminal (continued)

Problem	Solution
You see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address or Controller (Host) IP address set to an invalid address of 0.x.x.x or 127.x.x.x. Configuration was not updated.`	The RF or Ethernet network is enabled and there is a problem with the network configuration. You need to change the terminal IP address or the controller IP address (host IP address for a TCP/IP network) or both. Choose Primary Network from the Communications Menu. The terminal IP address or the controller/host IP address is set to 0.x.x.x or 127.x.x.x. These are invalid addresses. Set a valid IP address for the terminal and DCS 30X or host. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP address assigned to the terminal and the controller or host.
You see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address and Default Router address set to the same address. Configuration was not updated.`	The RF or Ethernet network is enabled and there is a problem with the network configuration. You need to change the terminal IP address or the default router address or both. Choose Primary Network or Advanced Network from the Communications Menu. The terminal IP address and the default router address are both set to the same address. Set a valid IP address for the terminal and the default router. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP addresses for each RF network device.
You see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Default Router address is not on the terminal's network. Configuration was not updated.`	The RF or Ethernet network is enabled and there is a problem with the network configuration. You need to change the default router address. Choose Advanced Network from the Communications Menu. The terminal and DCS 30X (UDP Plus network) or host (TCP/IP network) are on different networks, and the terminal is not on the same network as the default router. When the terminal is on a different IP subnetwork from the DCS 30X or host, you must set the Default Router and Subnet Mask commands. Set a valid IP address for terminal, DCS 30X or host, and default router. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP addresses for each network device.

Problems While Configuring the Terminal (continued)

Problem	Solution
You see this error message when exiting the Configuration Menu: `Network configuration error. Network is enabled. Terminal IP address or Controller (Host) IP address set to the same address. Configuration was not updated.`	The RF or Ethernet network is enabled and there is a problem with the network configuration. You need to change the terminal IP address or the controller IP address (host IP address for a TCP/IP network) or both. Choose Primary Network from the Communications Menu. The terminal IP address and the controller/host IP address are both set to the same address. Set a valid IP address for the terminal and DCS 30X or host. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4. If you cannot fix the addressing problem, check with your network administrator to get the IP address assigned to the terminal and the DCS 30X or host.

Problems While Running Applications

If you are running applications on the terminal and have trouble, check these possible problems and solutions.

Problem	Solution
There is not enough memory to load a program.	You need to free conventional memory.

You see one of these error messages while running a PSK or EZBuilder application:
`SCREEN ERROR: 30`
`Code: 9`
`Hit any key To exit!`
`SCREEN ERROR: 31`
`Code: 3`
`Hit any key To exit!`
	You must set the RAM Drive Size configuration command. For help, see "RAM Drive Size" in Chapter 6, "Configuration Command Reference," in the terminal system manual.

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

Problems Communicating With RF or Ethernet Network Devices

If the 2485/6 is not communicating with other devices in the RF or Ethernet network, check these possible problems.

Problem	Solution
When you turn on the terminal after it was suspended for 10-15 minutes or longer, the terminal can no longer send or receive messages over the network.	The host may have deactivated or lost your current terminal emulation session. In a TCP/IP direct connect network, you need to turn off the "Keep Alive" message (if possible) from the host so that the TCP session is maintained while a terminal is suspended.
The Network Connect status light is turned off. The 2480/1 with an Ethernet card is not communicating with the Ethernet network. The 2485/6 is not communicating with the access point.	Make sure the Network Activate command is enabled. Also, make sure the terminal is configured correctly for your network. In a TCP/IP direct connect network, you cannot scan or enter data when the 2485/6 is not communicating with an access point or you may lose your TCP session. Make sure the access point is turned on and operating. You may also be using the terminal out of the RF range of an access point. Try moving closer to an access point to re-establish communications.
The Network Connect status light blinks on the terminal screen. 	In a UDP Plus network, the terminal is not connected to the DCS 30X. You may need to check the terminal configuration or make sure the DCS 30X is running and that data collection is started. The 2485/6 may be out of range of an access point or the access point may have recently been turned off. Make sure the access point is still turned on. Each device in the network must have a valid IP address. The IP addresses set on the terminal must match the addresses configured on the DCS 30X or host. For help, see "Using RF or Ethernet Communications on the Terminal" in Chapter 4.

The Network Connect status light blinks on the terminal screen and you see this message:
`Unable to connect to controller. Error 102.`
`Unable to establish connection to host. Session ended.`
	The 2485/6 is connected to the access point but is trying to establish communications with the DCS 30X and the host computer. Make sure the terminal is correctly configured for your network. Make sure the DCS 30X is configured and running. Make sure the host computer is configured and running.
	If the network is configured correctly, try restarting the DCS 30X to establish communications. You can also reset the terminal. For help, see "Resetting the Terminal" on page 5-20.

The Network Connect status light remains on, but you cannot establish a terminal emulation session with the host computer. *	There may be a problem with the host computer, a problem with the connection between the DCS 30X and the host computer, or a problem with the connection between the access point and the host (TCP/IP). Check with your network administrator to make sure the host is running and allowing users to login to the system.

Problems Communicating With RF or Ethernet Network Devices (continued)

Problem	Solution
The Network Connect status light remains on, but the host computer is not receiving any data from the terminal. 	There may be a problem with the connection between the DCS 30X and the host computer. Check with your network administrator or use the terminal system manual for the DCS 30X to troubleshoot any potential problems with the server. In a TCP/IP network, there may be a problem with the connection between the access point and the host computer. Check with your network administrator or use your access point user's manual to trouble shoot any potential problems with the access point.
The 2485/6 is connected to the host computer and you move to a new site to collect data. The Network Connect status light was on and now begins to blink or turns off. 	You may have gone out of range of an access point. Try moving closer to an access point or to a different location to re-establish communications. Once you are in range again, the Connect icon will appear and remain on. Any data you collected while you were out of range will be transmitted over the network.

Problems Transmitting Data Through the Serial Port

If you are having problems sending or receiving data through the serial port on the terminal, check these possible problems:

- Make sure the terminal is connected to the host computer or serial device through COM1, COM2, or COM4.
- Make sure you are using the appropriate 248X cable to connect the terminal to the host or serial device. For COM2, you need a compatible 25-pin serial cable or the CrossBar adapter cable (Part No. 069447). For COM4, you need the adapter cable accessory (Part No. 067185).
- Make sure the terminal's serial port parameters are configured to match the serial port configuration on the host computer or serial device.

For help connecting and configuring the serial port, see "Using Serial Communications on the Terminal" in Chapter 4.

Problems Transmitting Data Through the DCS 30X

If you have a problem while running the application on the terminal in a UDP Plus network, check these possible communications problems.

Problem	Solution
Transaction Buffer Full.	The buffer holding transactions to be sent to the controller is full. Stop collecting data with this terminal. Make sure the terminal is communicating with the DCS 30X and let the terminal send all the transactions in the buffer before you continue collecting data.
Sending Buffer Transactions.	This is an information message to tell you that buffered transactions are now being sent to the DCS 30X. You can begin collecting data again once the message clears.
Transaction Aborted.	The transaction just sent to the DCS 30X was not received. Try sending the transaction again.
Transmit Error XX, press Enter.	There is an error transmitting data to the DCS 30X. XX represents the status code error. Note the error code listed in the message and contact your local Intermec service representative for help. Press ↵ to continue.
Receive Error XX, press Enter.	There is an error receiving data from the DCS 30X. XX represents the status code error. Note the error code listed in the message and contact your local Intermec service representative for help. Press ↵ to continue.
Shutting down.	The DCS 30X is shutting down. You may continue collecting data and buffer the transactions in the terminal until the DCS 30X starts again or stop collecting data with the terminal.
Controller Shutdown.	The DCS 30X has shut down. You may continue collecting data and buffer the transactions in the terminal until the DCS 30X starts again or stop collecting data with the terminal.

Problems Scanning Bar Code Labels

If you cannot scan bar code labels or you are having problems with the scanner, check these possible problems.

Problem	Solution
An input device is not attached to the terminal.	Make sure an input device, such as a 1550 laser scanner, is installed correctly. You must install an input device before scanning bar code labels. For help, see "Using the Badge Scanner and Other Input Devices" in Chapter 1.
The terminal is turned off.	Make sure the terminal is turned on. Press ⏻ to turn on the terminal.
You cannot see a red beam of light from the wand, laser scanner, or CCD scanner.	There are two possible problems: • You may be too far away from the bar code label. Try moving closer to the bar code label and scan it again. • You may be scanning the bar code label "straight on." Try changing the scanning angle until the laser beam is the brightest. This is the best scanning angle.
	 **Warning** ***Do not look directly into the window area or at a reflection of the laser beam while the laser is scanning. Long-term exposure to the laser beam can damage your vision.*** **Avertissement** ***Ne regardez pas directement la réflexion d'un rayon laser ou dans la fenêtre du laser lorsque celui-ci est en opération. Si vous regardez trop longtemps un rayon laser, cela peut endommager votre vue.***
You have an input device attached to the terminal and it cannot read any bar code labels.	You may not be using an input device that is supported by the 248X terminal. Make sure you are using one of the supported input devices listed in Appendix A.

Problems Scanning Bar Code Labels (continued)

Problem	Solution
The input device will not read the bar code label.	If you are using a wand, laser scanner, or CCD scanner, try one of these solutions: • Make sure you aim the scanner beam so it crosses the entire bar code label in one pass. • The angle you are scanning the bar code label may not be working well, or you may be scanning the label "straight on." Try scanning the bar code label again, but vary the scanning angle. If you are using the badge scanner, try one of these solutions: • The bar code label print quality may be poor or unreadable. To check the quality of the bar code label, try scanning a bar code label that you know scans. Compare the two bar code labels to see if the bar code quality is too low. You may need to replace the label that you cannot scan. • Make sure the bar code symbology you are scanning is enabled. Use the TRAKKER Antares 2400 Menu System to check the symbologies. On the Symbologies Menu, each symbology that is enabled has an asterisk (*) next to the name of the symbology. If your bar code symbology is disabled, enable it and then try scanning the bar code label again.
The input device connected to the module for cabled scanners does not appear to work well or read bar code labels very quickly.	Try setting the Scanner Selection command to the specific input device you have attached. For help, see "Scanner Selection" in Chapter 6, "Configuration Command Reference," in the terminal system manual. Check the bar code symbologies you have enabled on the terminal. Enable only the symbologies that you are using.
The input device does not read the bar code labels quickly, or the scanning beam seems to be faint or obscured.	The input device, such as a 1550 laser scanner, window may be dirty. Clean the scanning window of the scanner with a solution of ammonia and water. Wipe dry. Do not allow abrasive material to touch the window.
When you scan a bar code label using a wand or press the Scan trigger on a laser scanner or CCD scanner, the Good Read status light does not turn on.	Move within 2 feet of a wall and press the Scan trigger again. Make sure the scanner emits the red laser beam. If the status light does not turn on, there may be a problem with them. For help, contact your local Intermec service representative. If the laser beam does not turn on, check the other problems in this section for a possible solution.
When you release the Scan trigger on a laser scanner or CCD scanner, the Good Read status light does not turn off.	The status light remains on if you configure the terminal to use edge triggering. If you configure the terminal for level triggering and the Good Read status light remains on, there may be a problem with the status light. Press the Scan trigger again without scanning a bar code label. If the LEDs are still on, contact your local Intermec service representative.

Booting the Terminal

You seldom need to boot or reset the terminal. When you boot the terminal, it runs through power-on self test (POST) to test each major subsystem. The terminal uses the configuration currently saved in flash memory. Once the terminal is finished booting, your application appears on the screen.

You can boot the terminal using these two methods:

- Configure the I/O key to boot the terminal when you turn on the terminal.
- Use the Boot Menu.

Booting the Terminal on Resume

When you press I/O to turn off the terminal, it turns off and goes into Suspend mode. When you press I/O to turn on the terminal, it resumes or boots depending on the terminal configuration.

There are two ways to configure the I/O key using the Resume Execution configuration command:

Resume Execution Not Allowed Configures the terminal to boot and restart your application each time you press I/O to turn on the terminal. Use this option if you want to restart your application every time you turn on the terminal.

Resume Execution Allowed Configures the terminal to resume exactly where it was when you turned off the terminal. Use this option to resume working each time you turn on the terminal.

You can configure the Resume Execution command by using the TRAKKER Antares 2400 Menu System or by scanning these bar code labels. For help, see Chapter 3, “Configuring the Terminal,” or “Resume Execution” in Chapter 6 of the terminal system manual.

Resume Execution Not Allowed

$+ER0

Resume Execution Allowed

$+ER1

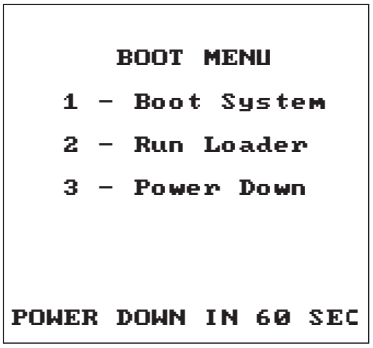
Using the Boot Menu

The Boot menu appears after you

- disconnect the power supply and the NiCad backup battery from the terminal, reconnect both the power supply and the NiCad backup battery, and turn on the terminal.

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

- upgrade the firmware.
- reset the terminal.



248XU104.eps

The Boot Menu contains these commands:

Boot System Press 1 to boot the terminal. Once the terminal is finished booting, your application appears on the screen.

Run Loader Press 2 to load the terminal firmware. To upgrade or load the firmware, you should use the Firmware Upgrade option in the TRAKKER Antares 2400 Menu System. For help, see "Upgrading the Firmware" in Chapter 2 of the terminal system manual.

Power Down Press 3 to turn off the terminal. When you turn on the terminal, the Boot Menu screen appears again if POST passes.

Troubleshooting a Locked Up Application

If the terminal or application appears to be locked up, try these steps in order.

To troubleshoot a locked-up terminal or application

1. Press ⏻ to turn off the terminal. If it turns off, press ⏻ to turn on the terminal and continue working.
2. If the terminal does not turn off, scan the Reset Firmware label to restart the firmware and application.

   Reset Firmware

   -.

   You can also send the Reset Firmware command over the network. For help, see Chapter 5, "Reader Command Reference," in the terminal system manual. If it works, you can continue working.

3. Scan the Boot Terminal label to reboot the terminal. If it works, you can continue working.

   Boot Terminal

   -.1

4. Configure the Resume Execution command to resume "not allowed." For help, see "Resume Execution" in Chapter 6 of the terminal system manual. Each time you press ⏻ to turn on the terminal, the terminal boots and restarts your application.
5. 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 after you press ⏻ 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.
6. If the terminal will not turn off or does not respond to the Reset Firmware command, reset the terminal as described in the next procedure. Make sure you have tried Steps 1 and 2 before you reset the terminal.

Resetting the Terminal

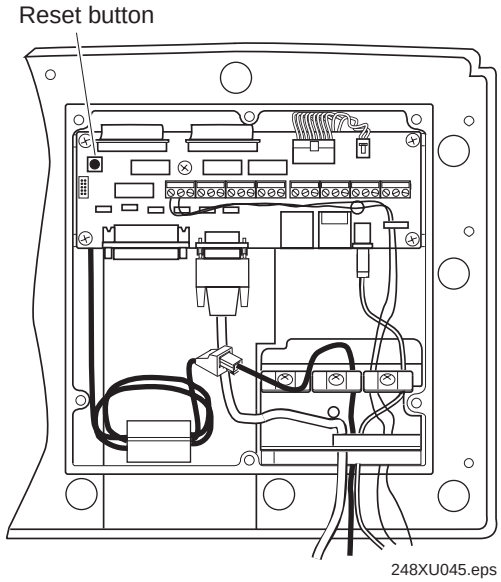
If you performed the steps in "Troubleshooting a Locked Up Application" and the terminal or application is locked up and the terminal will not respond to the Reset Firmware command, follow the steps in this section to reset the terminal.

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.

To reset the terminal

1. Press ⏻ to turn off the terminal. If it will not turn off, continue with the next step.
2. Use a Phillips screwdriver to remove the six screws on the back panel.
3. Remove the back panel.
4. Press the Reset button. The 248X will briefly turn on and then turn off.



5. Place the back panel on the back of the terminal.
6. Use a Phillips screwdriver to attach the six screws.
7. Press I/O to turn on the terminal. It boots all the systems and clears RAM memory. The Boot Menu appears.
8. Press 1 to boot the terminal and start your application.

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 2 of the terminal system manual.

If the terminal will not boot or reset, contact your local Intermec service representative for help.

Cleaning the Terminal Screen

The terminals are built for use in a rugged, industrial working environment. To keep the terminal in good working order, you need to clean the terminal screen. Clean this surface as often as needed or when it is dirty.

To clean the terminal screen

1. Press I/O to turn off the terminal.
2. Use a solution of ammonia and water.
3. Dip a clean towel or rag in the ammonia solution and wring out the excess solution. Wipe off the terminal screen. Do not allow any abrasive material to touch these surfaces.
4. Wipe dry.

Caution
There are no user-serviceable parts inside the terminal. Opening the unit will void the warranty and may cause damage to the internal components.

Conseil
La terminal ne contient pas de pièces révisibles par l'utilisateur. Le fait d'ouvrir l'unité annule la garantie et peut endommager les pièces internes.

A

Specifications

This appendix lists the terminal's physical and environmental specifications, pin assignments, and compatibility with 95xx communications protocols.

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
- Radio Specifications
- RF Communications
- Connectivity Options
- Wired Data Communications
- Multi-Drop Cable for CrossBar Networks
- Bar Code Symbologies
- Input Devices for the External Scanner Port

Terminal Dimensions

Length:	27.2 cm (10.7 in) 28.7 cm (11.3 in) with a badge scanner installed
Height:	24.4 cm (9.6 in)
Depth:	9.9 cm (3.9 in)
Weight:	4.3 kg (9.5 lb)

Power Specifications

Operating (with power supply):	95 to 250 VAC, 50 to 60 Hz, 125 mA
Memory Backup:	Rechargeable NiCad 700 mA battery pack

Electrical Specifications

Models:	2480, 2481, 2485, and 2486
Electrical rating:	⎓ 12V, 750 mA

Temperature and Environmental Specifications

Operating the terminal:	-20°C to +50°C	-4°F to +122°F
Storing the terminal:	-20°C to +60°C	-4°F to +140°F
Charging the backup battery:	0°C to +40°C	+32°F to +104°F
Relative humidity:	0 to 95% non-condensing	

Screen

- CGA-compatible, backlit LCD
- 4 lines by 40 characters for 2480 and 2485
- 12 lines by 40 characters for 2481 and 2486, 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

Application Options

- Programmable terminal
- TE 2000
- IBM 3270 terminal emulation
- IBM 5250 terminal emulation
- VT100/220/320 and ANSI terminal emulation
- Data Collection Browser (dcBrowser)
- 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
- 4MB flash memory option (additional 2MB flash for double-byte fonts or drive D)
- Extended memory option on the 2480/1 with Ethernet connectivity or the 2485/6 for an additional 2MB or 4MB SRAM storage drive

802.11b HR Radio Specifications

Radio type	Direct sequence, spread spectrum
Channels	11 (North America), 13 (Europe), 4 (France), 1 (Japan)
Data rate	11 Mbps (High), 5.5 Mbps (Medium), 2 Mbps (Standard), 1 Mbps (Low) with automatic fallback for increased range
Range (11 Mbps)	160 m (525 ft) open environment 50 m (165 ft) semi-open environment 24 m (80 ft) closed environment
Frequency band	2.4 to 2.5 GHz world-wide

OpenAir Radio Specifications

Radio type	Frequency hopping, spread spectrum
Channels	15
Data rate	1.6 Mbps, .8 Mbps fallback
Range	Up to 150 m (500 ft) indoors Up to 300 m (1,000 ft) outdoors
Frequency band	2.4 to 2.5 GHz world-wide

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: Binary, Configurable Serial Protocol, Master Polling, Multi-Drop, and Polling Mode D

CrossBar Networks

- CrossBar adapter (Part No. 069447)
- Multi-Drop cable (Part No. 047653)

Bar Code Symbologies

- Codabar
- Code One
- Code 11
- Code 2 of 5
- Code 39
- Code 93
- Code 128
- Interleaved 2 of 5
- MSI
- PDF 417
- Plessey
- UPC/EAN

Note: The Code One and PDF 417 symbologies are supported when you use the module for cabled scanners with the JANUS 7010 hand-held imager. You configure Code One and PDF 417 on the J7010 imager. For help, see the *JANUS 7010 Hand-Held Imager User's Manual* (Part No. 060523).

Input Devices for the External Scanner Port

You must use an interface cable to connect an input device to the scanner connector. For help, contact your local Intermec service representative.

You can attach these Intermec input devices to the external scanner connector:

- 126X, 127X, and 128X wands
- 1354 and 1355 badge scanners
- 1516, 1517, 1518, 1519, and 1545 laser scanners
- 1550A and 1551A laser scanners
- 1550B laser scanner with software revision 1.9 or later
- 1551B laser scanner with software revision 1.1 or later
- 1552 cordless laser scanner with 9745 base station
- 1463 CCD scanner

Note: If you have a device installed on the badge scanner connector, you must configure the 1463 Trigger mode to either Manual Trigger or Auto-Trigger.

- 1464 CCD scanner (only if you do not have a device installed on the badge scanner connector)

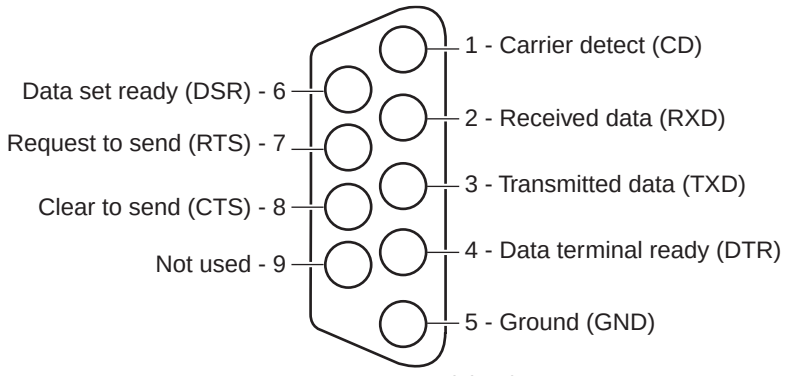
Intermec is always testing and developing new input devices. For an updated list of Intermec-approved input devices for the 248X, see your Intermec sales representative.

Pin Assignments

You can use these serial port pin assignments to make your own serial cables or troubleshoot problems.

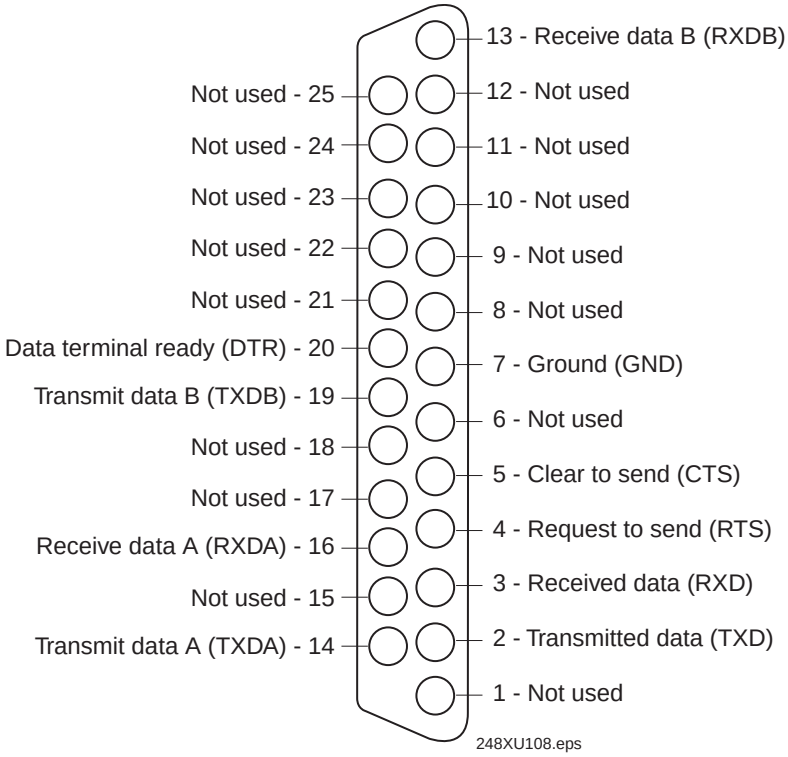
Pin Assignments for COM1

The following illustration shows the type of connector used for the COM1 port.



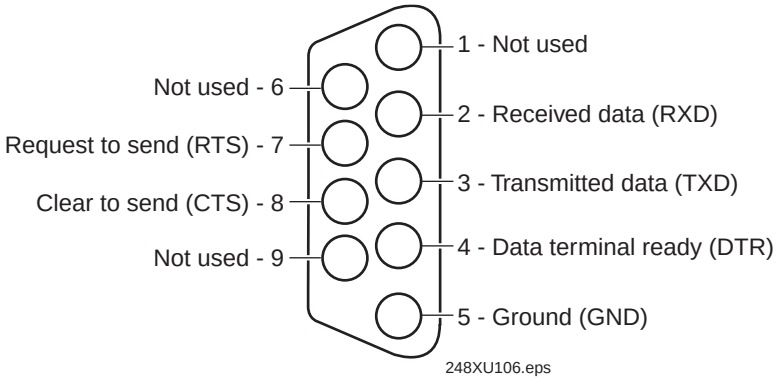
Pin Assignments for COM2

The following illustration shows the type of connector used for the COM2 port.



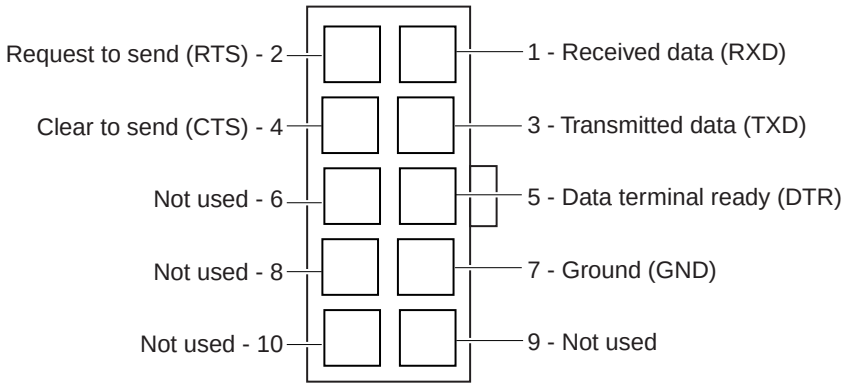
Pin Assignments for COM4

The following illustration shows the type of connector used for the COM4 port.



Pin Assignments for the COM4 Adapter Cable

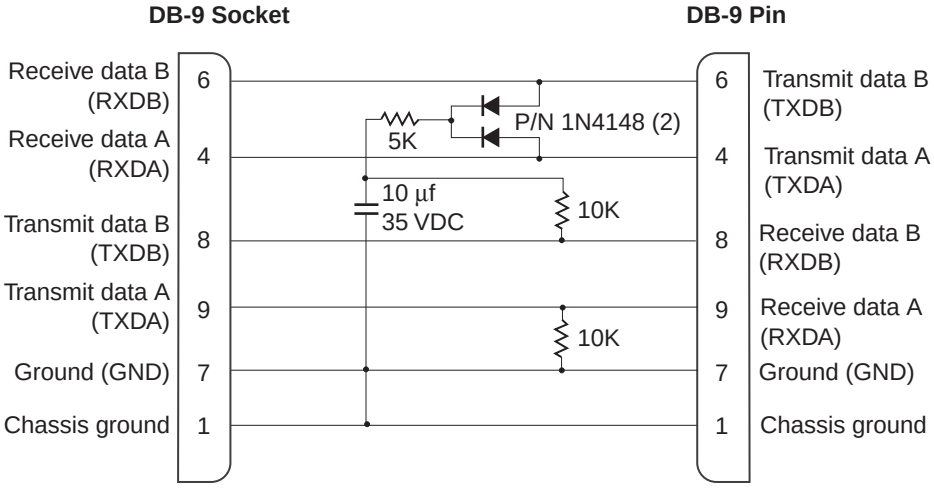
The following illustration shows the pinout assignments for the 10-pin connector (terminal connection) on the COM4 adapter cable.



248XU.105

Pin Assignments for the CrossBar Adapter

The following illustration shows the pinout assignments for the Trakker Antares CrossBar adapter (Part No. 069447).



248XU101.eps

Compatibility With 95XX Communications Protocols

The 95XX terminals and the 248X terminals use very similar protocols. If you are using your 248X terminal in a CrossBar network with 95XX terminals, use the following table to convert communications protocols and set up the 248X to match your 95XX configuration.

95XX Protocol	248X Protocol
User-Defined	Configurable (See Note 1)
Point-to-Point	Configurable (See Note 1)
Polling Mode D	Polling Mode D
Multi-Drop	Multi-Drop (COM2 only)
User-Defined Multi-Drop	Multi-Drop (COM2 only) (See Note 2)

Note 1: Configurable protocol is a subset of the 95XX User-Defined or Point-to-Point protocol; however, it does not support all of the features of User-Defined or Point-to-Point protocol. You may need to reconfigure your host to match the capability of the Configurable protocol on the 248X.

Note 2: You can configure User-Defined Multi-Drop protocol on the 95XX so that it is compatible with standard Multi-Drop protocol on the 248X.

To operate the 248X in a CrossBar network, you must convert your IRL applications to Microsoft Visual C\C++ applications. For help, see "Converting IRL Programs Between the 95XX and Trakker Antares" in Chapter 3 of the terminal system manual.

B

Keypads and Terminal Mounting Templates

This appendix contains the specifications for the function key labels. It also contains 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 section contains the following specifications and templates:

- Function key label specifications for the oversized function numeric keypad
- Function key label specifications for the alphanumeric keypads
- Function key label specifications for the time and attendance keypads
- Trakker Antares 248X terminal mounting specifications
- Desk-mount bracket template (scale 1:1)
- Wall-mount bracket template (scale 1:1)

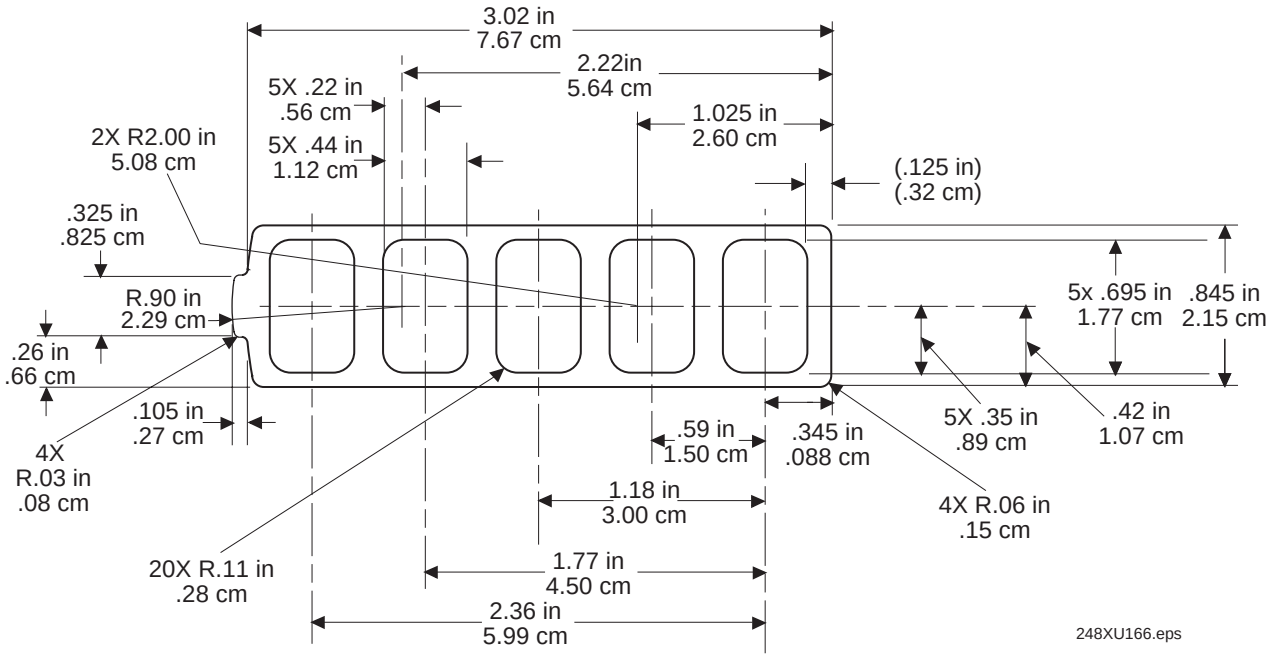
Function Key Label Specifications Use the label specifications to create your own pre-printed function key labels. You can use the illustration to work with a vendor to create function key labels. Please note that there are two sizes of function key labels. The labels for a 248X with an oversized function numeric keypad are slightly larger.

248X 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.

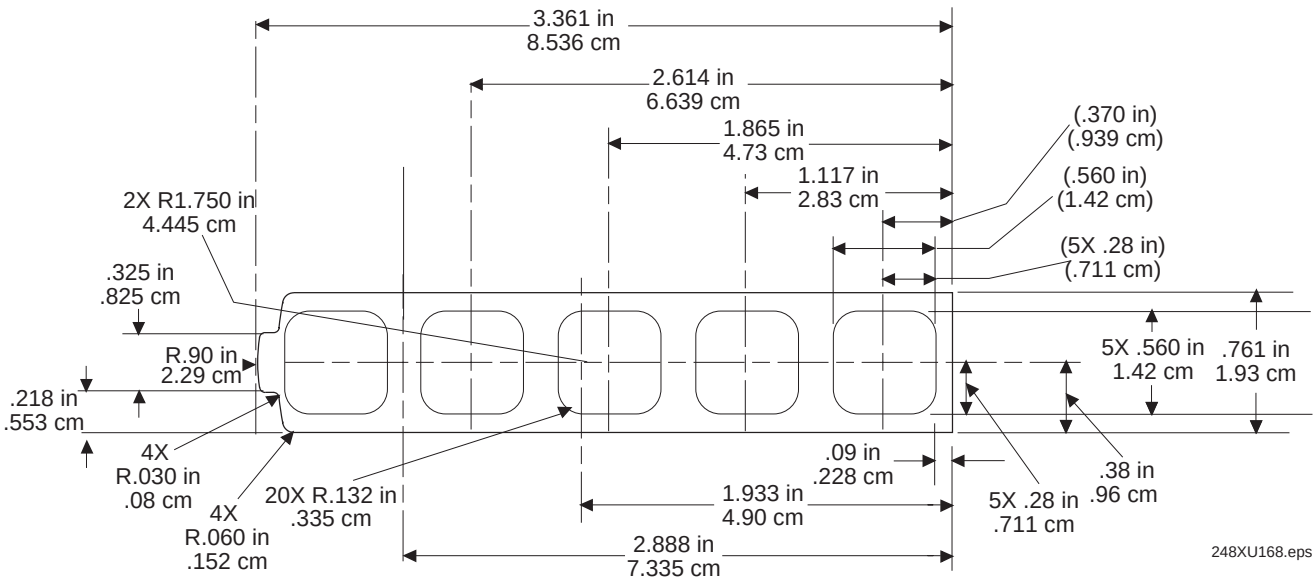
Desk-Mount and Wall-Mount Bracket Templates Use these actual size (scale 1:1) mounting templates to plan for and prepare a mounting location. Remove the templates from the manual and use them to mark the mounting holes for each bracket.

Function Key Label Specifications for the Oversized Function Numeric Keypad



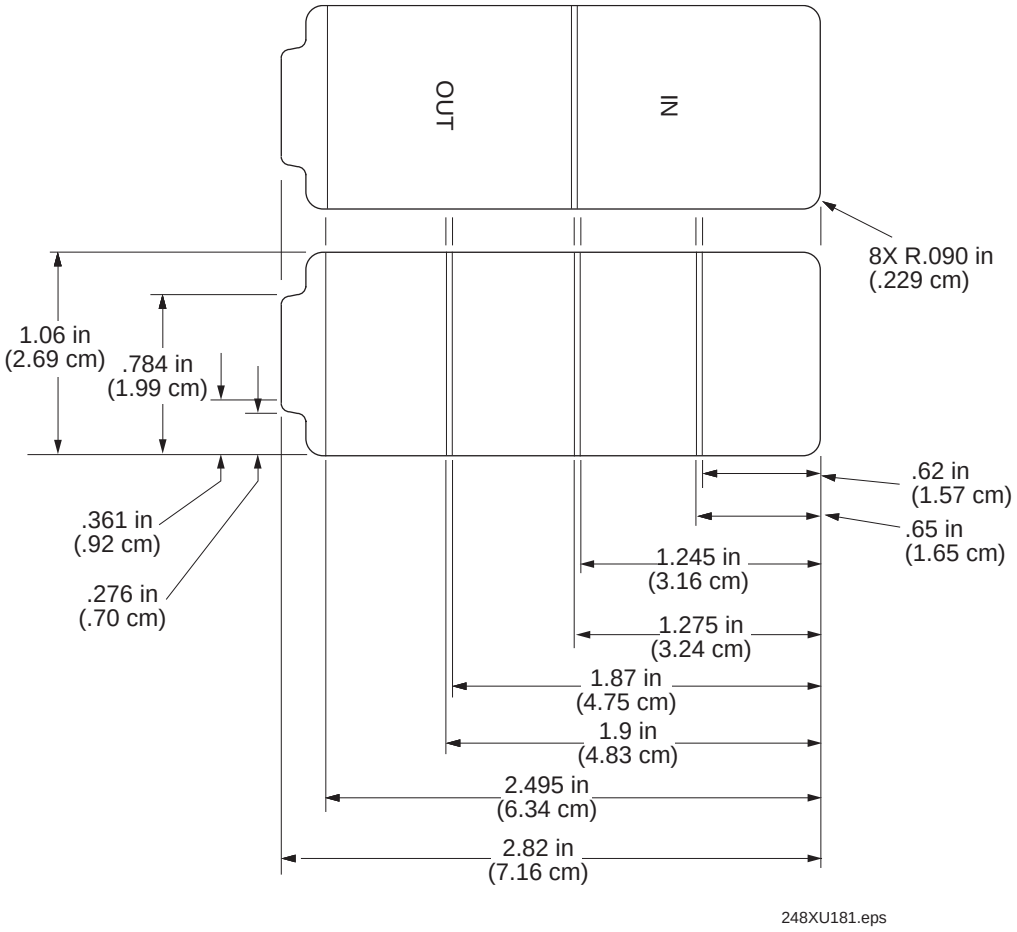
Note: The function key label illustration is not shown to scale.

Function Key Label Specifications for the Alphanumeric Keypads



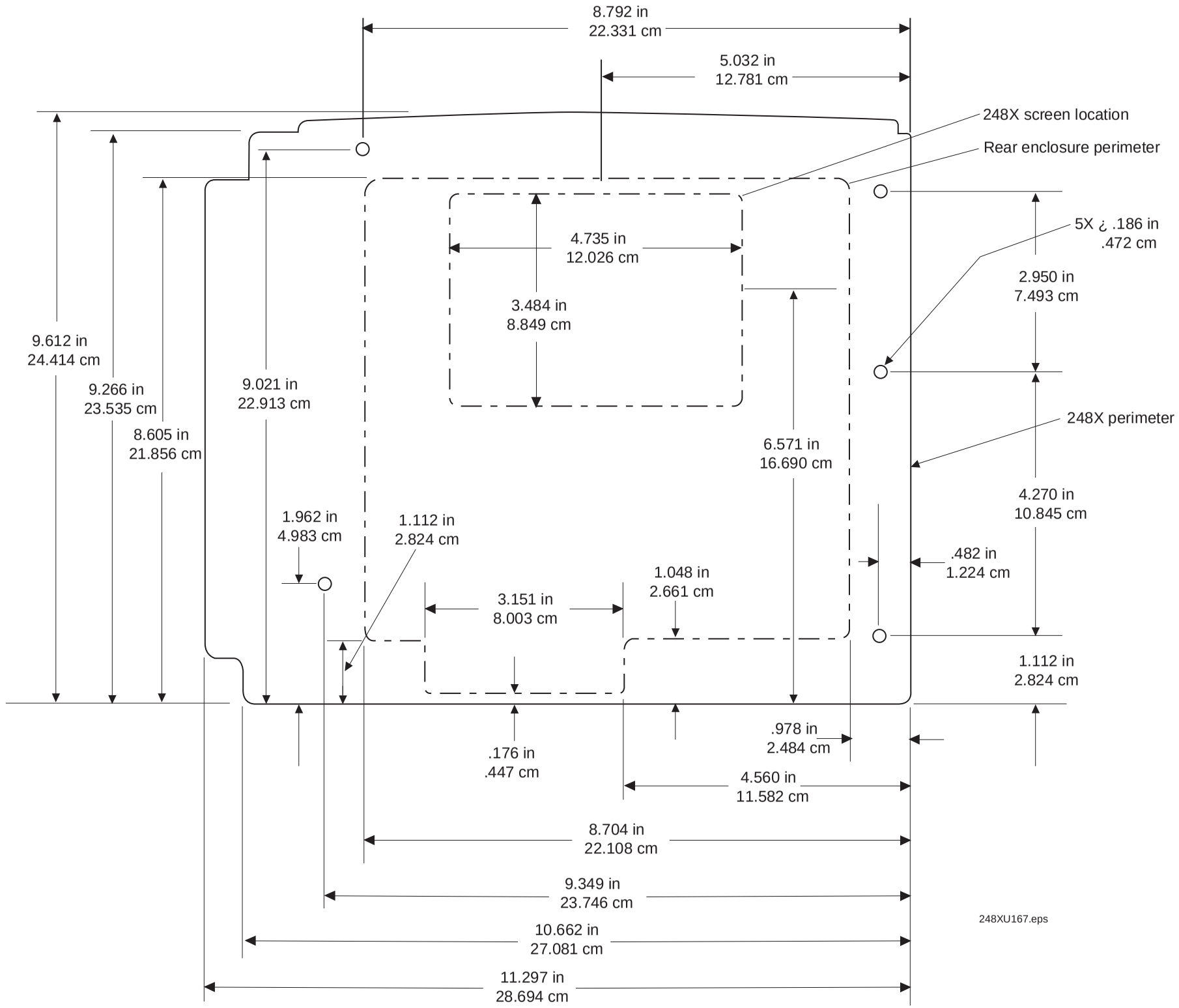
Note: The function key label illustration is not shown to scale.

Function Key Label Specifications for the Time and Attendance Keypad



Note: The function key label illustration is not shown to scale.

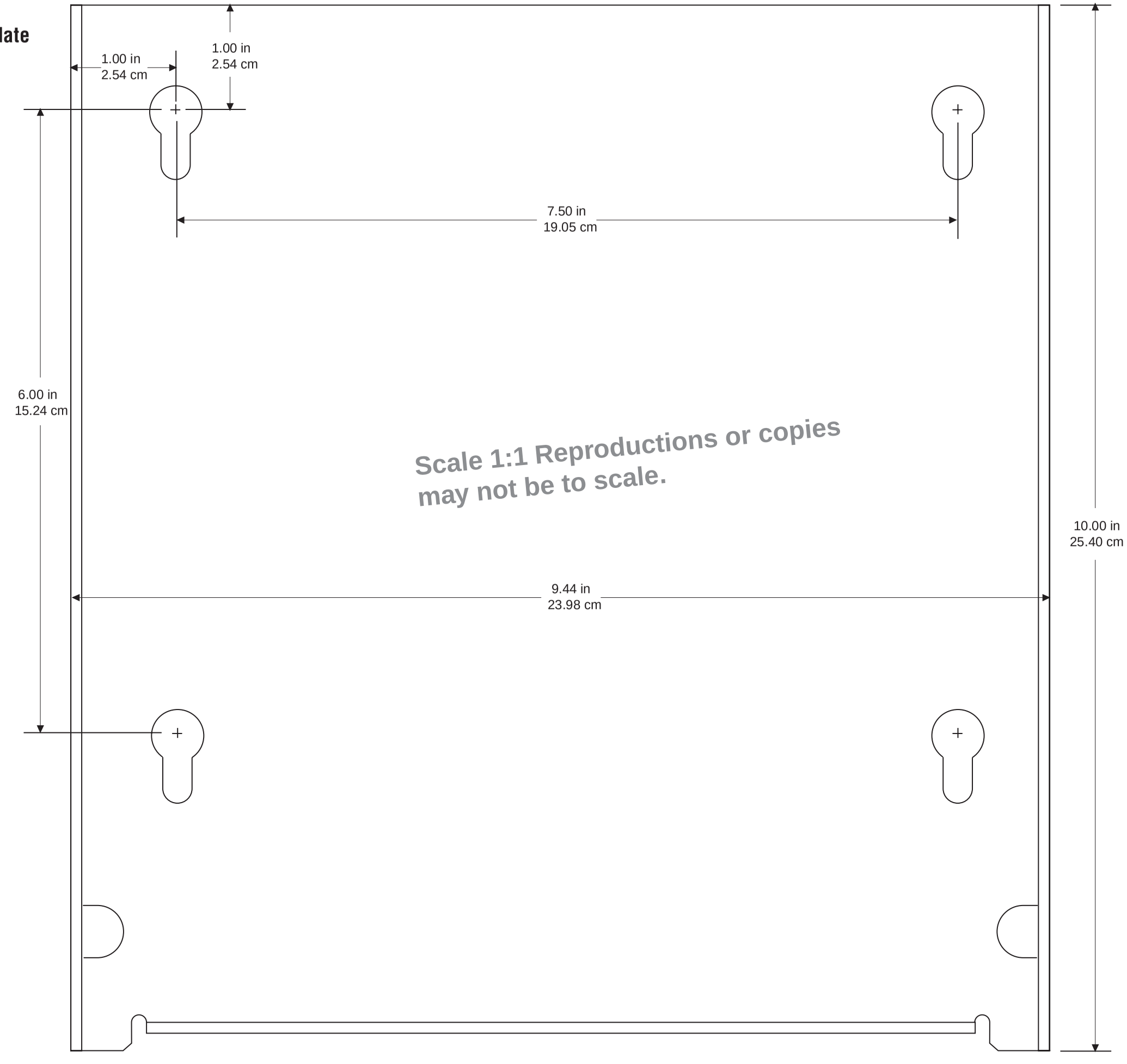
Trakker Antares 248X Terminal Mounting Specifications (Rear View)



Important: The depth of the 248X is 9.9 cm (3.9 in).

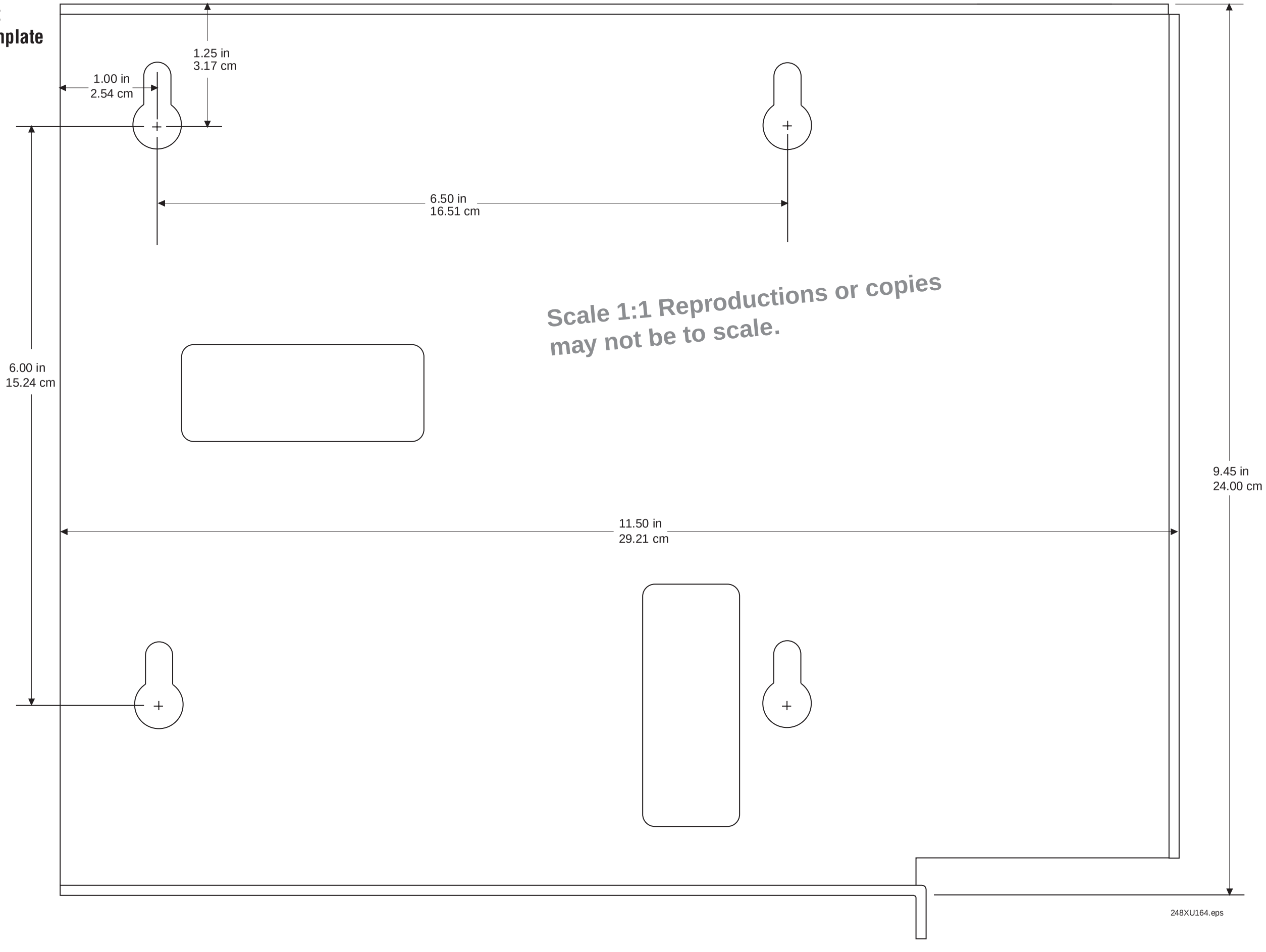
Note: The terminal illustration is not shown to scale.

Desk-Mount Bracket Template



248XU163.eps

Wall-Mount Bracket Template



Scale 1:1 Reproductions or copies may not be to scale.

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