User's Manual

5020
Data Collection PC™

Intermec

A **UNOVA** Company

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Before You Begin

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

Warranty Information

To receive a copy of the standard warranty provision for this product, contact your local Intermec support services organization. In the U.S. call 1.800.755.5505, and in Canada call 1.800.688.7043. Otherwise, refer to the Worldwide Sales & Service list that ships with this manual for the address and telephone number of your Intermec sales organization.

Safety Summary

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

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

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

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

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

Warnings, Cautions, and Notes

The warnings, cautions, dangers, 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.

Danger
A danger warns you of possible eye damage caused by use of a Class IIIa laser product. Use of this symbol is mandated by CFR21 1040.

Danger
Un signe de danger vous avertit d'un risque d'endommagement de l'œil causé par l'utilisation d'un produit au laser de classe IIIa. CFR21 1040 oblige l'utilisation de ce symbole.

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, operate, configure, and maintain the 5020 Data Collection PC™.

This manual was written for analysts and programmers who operate, program, and connect the 5020 to a network or system. A basic understanding of Windows programming, and data communications is necessary.

Terminology

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

Term	Description
5020 PC 5020 device 5020	These terms indicate any 5020 Data Collection PC. More specific terms, such as "RF 5020," indicate a specific type of 5020 Data Collection PC.
Unit management	The term "unit management" indicates the remote Unit Management application.
Computer Host	The terms "computer" and "host" indicate a personal computer or other computer that communicates with the 5020.
Click	The term "click" indicates pushing the left mouse button to select or open an item in a Windows application.
DCS 300 and Model 200 Controller	The 5020 Data Collection PC will communicate with either the DCS 300 or the Model 200 Controller. The DCS 300 is a new data collection server that replaces the Model 200 Controller. The term DCS 300 is used throughout the manual. Unless otherwise noted, you can use either the DCS 300 or the Model 200 Controller.

Format Conventions for Input From a Keyboard or Keypad

This table describes the formatting conventions for input from computer keyboards and 5020 keypads:

Convention	Description
`Special` text	Shows the command as you should enter it into the 5020 PC. See "Format Conventions for Commands" later in this chapter.
Italic text	Indicates that you must replace the parameter with a value. See "Format Conventions for Commands" later in this chapter.
Ctrl	Bold text represents a key on your keypad. For example, **Tab** represents the Tab key and **M** represents the letter M key.
Ctrl-**Z**	When two keys are joined with a dash, press them simultaneously. For example, if you see the command **Ctrl**-**C**, press the two keys at the same time.

___

Format Conventions for Input From a Keyboard or Keypad (continued)

Convention	Description
⬚	Shows the key you must press on the 5020 PC. For example, "press ⬚" directs you to press the right Enter key on the 5020 keypad.
⟨Alt⟩ ⟨◉⟩ ⟨9⟩	Shows a series of 5020 keys you must press and release in the order shown. For example, "Press ⟨Alt⟩ ⟨◉⟩ ⟨9⟩ to access the Configure menu."

Format 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:


```
Part Number ———————————— Name

‖‖‖‖‖‖‖‖‖‖‖‖‖ ———————— Bar code (Code 39)
*1234* ———————————— Human-readable
                              interpretation
              5020U090.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 creating bar code labels with a bar code 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.

Format Conventions for Commands

This manual includes sample commands that are shown exactly as you should type them on your 5020 PC. The manual also describes the syntax for many commands, defining each parameter in the command. This example illustrates the format conventions used for commands:

- Scan a bar code label with this syntax:

  `+/$+command`

  where:

`+/`	is the syntax for the Enter Accumulate Mode command.
`$+`	is the syntax for the Change Configuration command.
command	is the syntax for the command you want to change.

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, or keyword.
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 5020 data collection PC in a data collection system. Please visit our Web site at www.intermec.com for a list of available manuals or to access many of our current manuals in PDF format. To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

1

Getting Started

This chapter introduces the Intermec 5020 Data Collection PC and explains how to get your new 5020 up and running.

What Is the 5020 Data Collection PC?

The 5020 Data Collection PC™ incorporates Intermec's high-performance wireless LAN technology, bar code scanning, and power management features into a hand-held computer. The 5020 is engineered to take full advantage of the Microsoft® Windows® CE operating system.

The 5020 supports standard programming tools, such as Visual Basic and Visual C++. From their desktops, support staff can use a Web browser to access the 5020 unit management software and to remotely configure 5020 PCs.
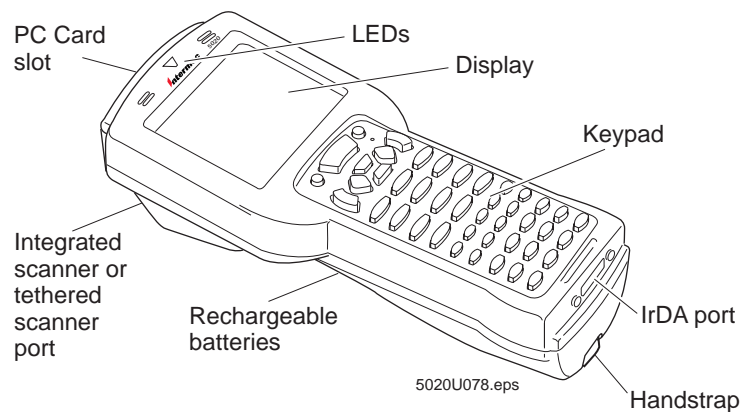
The 5020 is ergonomically designed for one-handed operation to make data collection easy and includes these features:

- 320 by 240 pixel gray scale display, angled for easy viewing.

- Integrated scanner or tethered scanner port.

- Keypad with 43 keys to support data collection. The 5020 ships with a keypad to match the language you ordered.

- PC Card slot for radio, serial communications, modem, Ethernet, or memory. The radio frequency (RF) version of the 5020 ships with the radio installed.

- Compact flash card slot for additional storage.

- Rechargeable lithium-ion main battery pack (sold separately) for power.

- Adjustable antenna for RF communications.

- IrDA (Infrared Data Association) port for serial or IrDA data communications.

Accessories

You can use these accessories (sold and ordered separately) with the 5020:
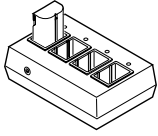
TZ2400 Battery Charger   The battery charger lets you charge up to four main battery packs at one time. The charger senses when a main battery pack is fully charged and does not overcharge it, ensuring long and consistent battery life.

D5020 IrDA and Serial Communications Docks   You can use the communications dock to transfer data to and from another device using IrDA or RS-232 serial communications. You can also use the dock to charge the 5020 batteries.
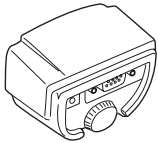
L5020 Serial Communications Adapter   Converts IrDA data to a wired RS-232 data stream. When the serial communications adapter is connected, it allows the 5020 to communicate with a host computer or other device using an RS-232 serial port. You can also connect a power supply (Part No. 065236) to the serial communications adapter to charge the 5020 batteries.

Holster   The holster is a convenient way for you to carry the 5020 on your belt when you are not using it. The holster attaches to your belt and holds the 5020 at your side.

Handle   The detachable handle provides trigger-activated scanning.

Cables   You may need to purchase cables for serial data communications between the 5020 and peripheral devices. For more information, see "Physical and Environmental Specifications" in Appendix A.

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

Models and Options

The 5020 family of Data Collection PCs includes these models:

Batch   The basic 5020 PC has a Type II PC card slot and supports the use of Type I and Type II 16-bit memory and input/output (I/O) cards.

RF   The RF version of the 5020 has a frequency hopping spread spectrum radio. See your Intermec sales representative for information about the availability of other radio options.

These options are available for the 5020:

- Integrated scanner (standard or long-range) or tethered scanner port

- Keypads to support western European languages

This manual tells you how to use the features and options available on all models of the 5020.

Equipment You Need to Get Started

To use the 5020, you need this equipment:

- Main battery pack (Part No. 068537)

- TZ2400 battery charger, L5020 serial adapter and power supply (Part No. 065236), or D5020 communications dock

Note: Intermec recommends that you keep at least two main battery packs on hand so that you can use one battery pack while the other is recharging. You should keep a main battery pack in the 5020 at all times to prevent the risk of data loss.

Getting the 5020 Up and Running

Now that you have the required equipment, follow these steps to start using your new 5020:

1. Unpack the 5020 and documentation.

2. Charge the main battery pack (sold separately).

3. Install a charged main battery pack. Wait for the 5020 to initialize after you install the charged main battery pack.

4. Charge the bridge battery. The bridge battery maintains the contents of RAM while the main battery pack is being replaced. For more information about the bridge battery, see "Understanding the Bridge Battery" in Chapter 2.

5. Turn on the 5020.

6. Set the time and date.

7. Verify that the 5020 is operating correctly.

These steps are described in detail in the next sections.

Note: If your 5020 uses RF communications, you will also need to configure network settings. For information on configuring your network settings, see Chapter 3, "Configuring the 5020."

Unpacking the 5020

When you remove the 5020 from its box, save the box and shipping material in case you need to ship or store the 5020. Check the contents of the box against the invoice for completeness and contact your local Intermec service representative if there is a problem.

5020 Data Collection PC

Information packet

5020U.027
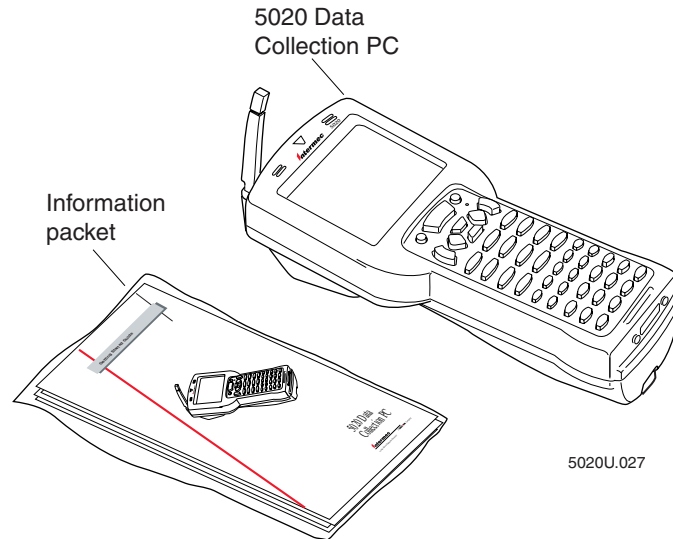
The following items ship with the 5020:

• Getting Started Guide

• Handstrap

• PC card extraction tabs (sheet of 4 tabs)

• Laser warning label set

- Authorized Service Location sheet
- Safety supplement

Charging the Main Battery Pack

The main power source for the 5020 is a 1500 mAh lithium-ion battery pack (Part No. 068537). Before you can use the 5020, you must fully charge the main battery pack. The 5020 will not operate without a main battery pack even when it is connected to an AC power source.

Warning
The lithium-ion battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F), or incinerate.

Avertissement
Le bloc-batterie au lithium utilisé dans cet appareil peut présenter un risque d'incendie ou de brûlure chimique en cas de mauvais traitement. Ne désassemblez pas, ne chauffez pas à une température supérieure à 100 °C (212 °F) et n'incinérez pas ce bloc-batterie.

To charge the main battery pack

- Place the main battery pack in an empty slot in the battery charger. The main battery pack is fully charged in about 3 hours. For help, see the documentation that came with your battery charger.

You can also use the D5020 communications dock or the L5020 serial communications adapter to trickle-charge the battery pack.. For help, see the *D5020 Communications Dock Getting Started Guide* (Part No. 068976) or the *L5020 Serial Communications Adapter Quick Reference Guide* (Part No. 068978).

DISPOSE OF USED MAIN BATTERY PACKS PROMPTLY. KEEP AWAY FROM CHILDREN. Contact your local Intermec sales representative for replacement main battery packs.

Warning
Replace the main battery pack with Part No. 068537 only. The use of any other battery pack may present a risk of fire or explosion.

Avertissement
Remplacez le bloc-batterie principal par la pièce réf. n° 068537 seulement. L'utilisation de tout autre bloc-batterie présente un risque d'incendie ou d'explosion.

Installing the Main Battery Pack

Install the fully charged main battery pack into the 5020.

To install the main battery pack

1. The 5020 ships with the handstrap installed. Push the top clip of the handstrap down and forward to unhook it from the dowel pin; then position the strap away from the battery compartment.

Dowel pin
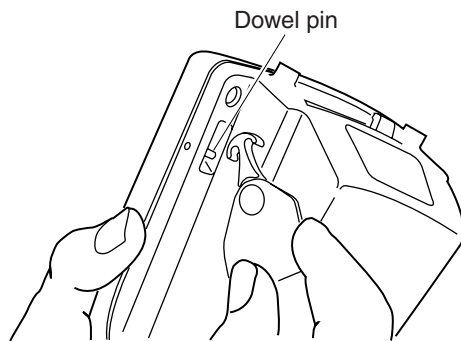
5020U066.eps

2. Open the battery door by pushing up on the battery door latch and sliding it toward the top end of the 5020. Lift up the top edge of the battery door to remove it.

Top

Battery door

Contacts
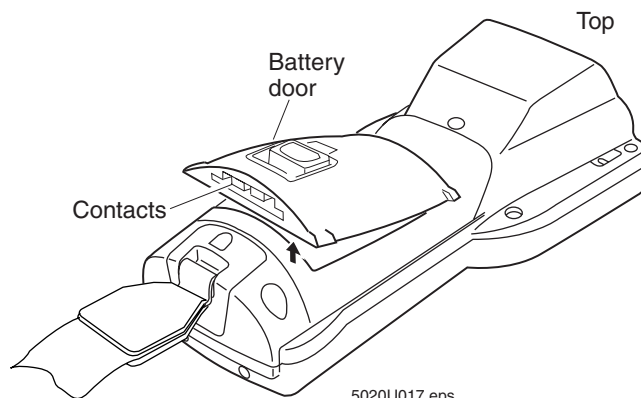
5020U017.eps

If you need to reattach the handstrap, attach the back clip of the handstrap to the aft bracket on the 5020. The back clip must be attached as shown, or the handstrap will come off.

Back clip

Aft bracket
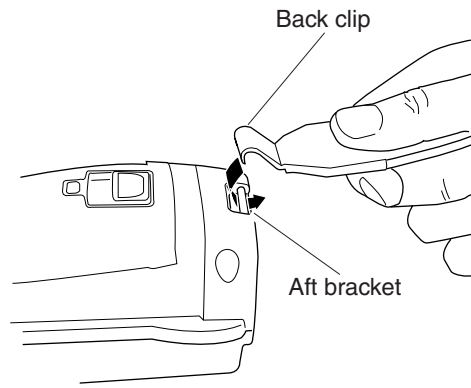
5020U067.eps

3. Place the main battery pack into the battery compartment with the contacts pointed toward the bottom of the 5020.

4. Push the main battery pack down until it locks into the connectors on the bottom of the battery compartment.
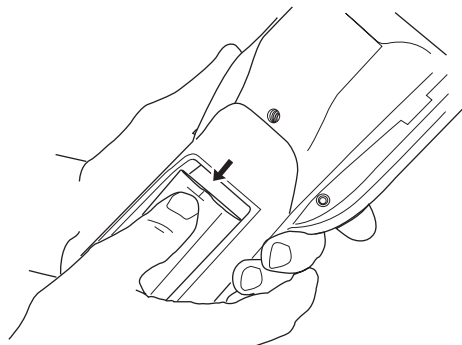
5020U018.eps

5. Insert the top edge of the battery door into the top of the battery compartment. Push the door down to close it over the battery compartment.

6. Push the battery door latch down and slide it toward the bottom end of the 5020 to lock the door in place.

   The 5020 initializes after you install a charged main battery pack. The green LED on the top of the 5020 flashes until initialization is complete.

7. Hook the top clip of the handstrap over the dowel pin on the top of the 5020 and set it in place.

Dowel pin
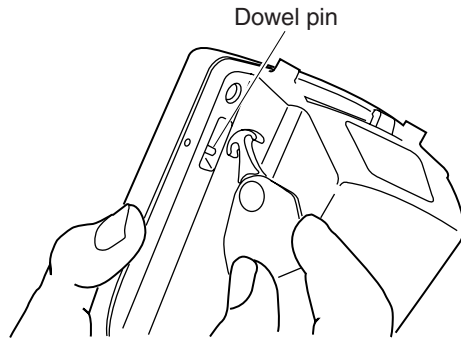
5020U066.eps

Note: The handstrap works best if it crosses the entire back of the hand and not just the fingers. You can hook the top end of the strap on either the left or right side of the 5020 so you can use either hand.

Charging the Bridge Battery

The 5020 comes with a rechargeable bridge battery that maintains the contents of RAM while the main battery pack is being replaced. For more information about the bridge battery, see "Understanding the Bridge Battery" in Chapter 2.

Caution
The 5020 is shipped with a discharged bridge battery. Do not rely on the bridge battery to maintain the contents of RAM until it has been fully charged.

Conseil
Le 5020 est livré avec une batterie en pont déchargée. Ne vous fiez pas à cette batterie pour conserver le contenu de la mémoire vive avant que la batterie soit entièrement chargée.

To charge the bridge battery

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

2. The bridge battery recharges from the main battery pack or from an AC power source. It takes 72 hours at room temperature to charge a discharged bridge battery. The bridge battery is partially charged and operational after 36 hours.

Note: You should always keep a charged main battery pack installed in the 5020 to maximize the life of the bridge battery.

Turning On the 5020

The 5020's Suspend/Resume key is the yellow ⌷⁄○ key in the lower right corner of the keypad.

Suspend/Resume
key
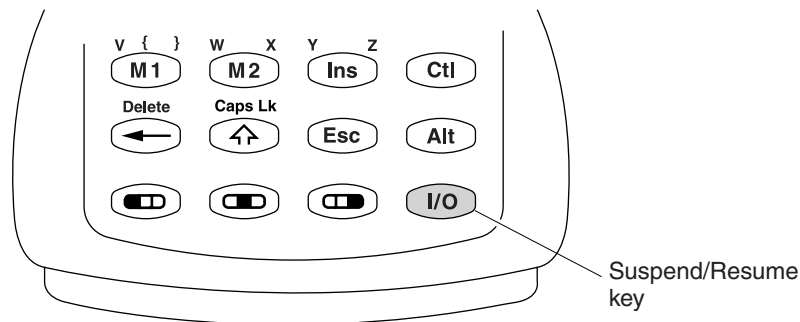
5020U072.eps

To turn on the 5020

- Press ⌷⁄○.

When you press ⌷⁄○ to turn off the 5020, the PC does not actually shut off but goes into a Suspend mode. This mode is referred to as "off" in the rest of this manual. In Suspend mode, the 5020 continues to power all memory and turns off the power to most of the hardware. When you press ⌷⁄○ to turn on the 5020, the 5020 resumes exactly where it was when you turned it off.

If you change the main battery pack while it is turned off, the 5020 resumes the next time you turn it on. The bridge battery saves the contents of memory while you change the main battery pack.

The 5020 automatically turns off after 5 minutes if there is no activity. Press ⌷⁄○ to turn it back on or change the Automatic Shutoff setting. For help with Automatic Shutoff, see Chapter 8, "Configuration Command Reference."

Setting the Time and Date

You need to set the time and date on the 5020.

To set the time and date

1. Press ⌷ to turn on the 5020.

2. Press ▭ ③ to open the Start menu.

3. Press ▲ to select Settings and press ◯.

4. Press ▶ to select the Date/Time icon and press ◯.
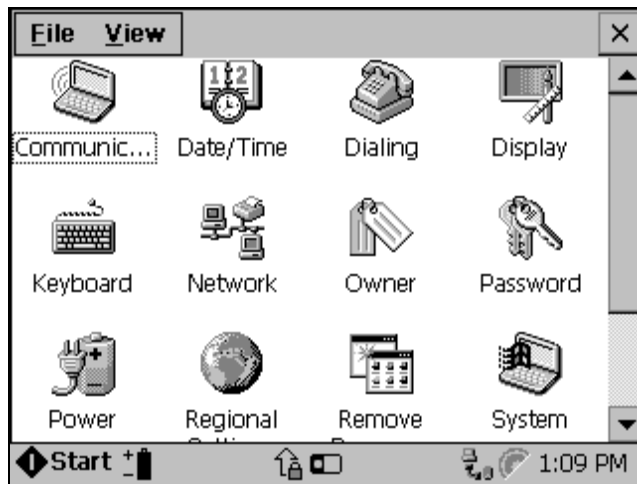
5. Press ▲ or ▼ to select the correct time zone.
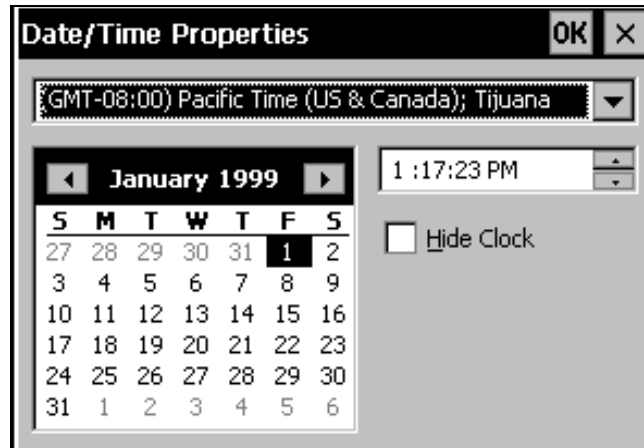
6. Press ⬚ (Tab) to move to the calendar. Use the cursor keys to select the correct month and day. You can also use ◻◻ ▼ to page down and select the correct month.

7. Press ⬚ to move to the Time field. Use the cursor keys to select the correct hour, minute, and second (HH:MM:SS) and AM/PM indicator. You can also enter hour, minutes, and seconds from the keypad by highlighting the number you want to change and typing a new number.

   If you don't want to display the time, press ⬚ to move to the Hide Clock options and press ▭ to select the Hide Clock check box.

8. Press ⬚ (Enter) to record your changes.

9. Press ◻◻ Alt 6 to select File from the Settings menu. Press ▼ to select Close and press ⬚.

Verifying That the 5020 Is Operating Correctly

Once you have installed a charged main battery pack and set the time and date, your 5020 is ready for operation. You can verify that the 5020 is operating correctly by scanning a bar code label.

To scan a bar code label

1. Press ▭ to turn on the 5020.

2. Press ⬭ ③ to open the Start menu.

```
Programs          ▶
Settings...
Run...
_____
Goto User Mode...
Suspend...
◆Start ⁺▮
```

3. Press ▼ to select Programs, press ▶ to select DCPC Demo, and press ⬭. The DCPC Demo screen appears.

```
DCPCDemo                        ✕

 Part no: ●|              |   ┌──────┐
                             │ Clear │
 Quantity: |              |   └──────┘
 Location: |              |   ┌──────┐
                             │ Next  │
   Name:   |              |   └──────┘
 Password: |              |   ┌──────┐
                             │ Exit  │
                             └──────┘
 Accepts letters and digits.

◆Start ⁺▮        ⇧🔒▭      ⯑▫🗗 3:21 PM
```
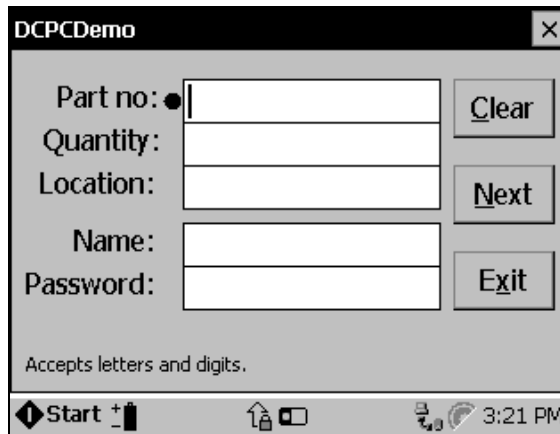
4. Scan the following bar code by pushing the Scan button on the keypad or pulling the trigger on the handle if the optional handle is installed. Direct the beam so that it falls across all bars in the bar code label.

Test Bar Code

12345

After the terminal successfully reads the label, you hear a high beep. When the bar code label is scanned successfully, the LED is lit in a green color. The LED turns off in less than 1 second unless you start scanning another label.

5. To check that the 5020 decoded the bar code correctly, make sure 12345 appears in the Part Number field.

6. Press ⬭ to move to the Exit button and then press ⬭ to exit DCPC Demo.

Learning About the Installed Software

The 5020 ships with the following software components installed.

Windows® CE 2.11   Windows CE is a compact, efficient, multiplatform operating system designed for devices with limited resources.

ADC Data Server   The ADC Data Server is the software interface to the 5020 bar code reader engine. It allows multiple applications to retrieve ADC data from the 5020 reader engine.

Configuration   The Configuration application enables you to view and change the configuration of the 5020. The remote unit management also provides a File Manager, Process Manager, Application Manager, and Event Viewer.

SNMP (Simple Network Management Protocol)   SNMP is an application-layer protocol designed to facilitate the exchange of management information between network devices. Use SNMP to control and configure the 5020 anywhere on an SNMP enabled network.

Radio Drivers   The radio drivers control the radio operation.

Language Components   The language components consist of U.S. language components and international language fonts. International language fonts support western European languages including Danish, Dutch, Finnish, French, German, Italian, Norwegian, Portuguese, Spanish, and Swedish.

Programming Environment Support   The 5020 contains software components that support the use of COM/Active X, Visual Basic, C Runtime Libraries, Active Template Library, and Microsoft Foundation Classes.

Intermec Software Development Kit (SDK) Library Functions   The library functions are software components that support the use of Intermec SDK. These components are required when applications use SDK functions.

HTTP Server   The server software enables you to connect the 5020 with the Internet. The HTTP Server supports server side scripting.

Desktop   The desktop provides the user interface to the 5020. Key features of the desktop include a Start button, Notification Tray (instead of a Task bar) that displays 5020 status icons, and control panel applets. You can use the control panel applets to customize your 5020 settings.

README.TXT   This file is included on the 5020 in Unicode text (.TXT) format. This document provides complementary or late-breaking information not contained in this manual.

What Is On the CD-ROMs?

The following software is provided on the two CD-ROMs that ship with this manual.

- Software Developer's Kit (SDK) and Support Files (Part No. 069511)

- CE Services (Part No. 470-004-126)

Intermec Software Development Kit (SDK) Library   A set of unique C++ language functions for programming the Intermec 5020 Data Collection PC.

SDK Visual Studio IDE Plug-In   A utility that provides 5020 development targets for the Visual C++ Integrated Development Environment (IDE). The SDK Visual Studio IDE Plug-In must be installed if you want to use the 5020 value added SDK features.

Java Plug-In   Java module that expands the functionality of your PC. Required when using a Web browser and the 5020 Unit Management application on your desktop PC. For more information on the Java plug-in and Unit Management, see Chapter 3, "Configuring the 5020."

CE Services   Used to establish a serial connection between a 5020 and a desktop PC.

Sample Applications   Sample data collection applications that you can install and run on your 5020.

Utilities   Contains OSDOWNLOADSERVER.EXE, a program that allows you to restore a corrupted 5020 operating system image using a D5020 communications dock or L5020 serial adapter.

MIB Definitions Subdirectory   The 5020 is an SNMP enabled device and supports proprietary Management Information Bases (MIBs). Six MIB files are provided on the SDK and Support Files CD-ROM. For more information on configuring the 5020 using SNMP, see Chapter 3, "Configuring the 5020."

Adobe Acrobat   The Acrobat Reader allows you to view, navigate, and print documents in the Adobe Portable Document Format (PDF).

Where Do You Go From Here?

Now that your new 5020 is up and running, you can use this manual to learn how to perform these tasks:

Task or Feature	See This Chapter
To learn how to use the keypad, desktop, batteries, internal flash, and PC Cards.	Chapter 2, "Learning How to Use the 5020"
To learn how to configure your 5020 using SNMP, bar codes, and unit manager software.	Chapter 3, "Configuring the 5020"
To learn how to configure your 5020 using the control panel applets.	Chapter 4, "Customizing the 5020 Using the Control Panel"
To learn how to use the CE Services and Remote Unit Management applications.	Chapter 5, "Managing Your 5020"
To learn about developing and installing applications on your 5020.	Chapter 6, "Developing and Installing Applications"
To find the commands that you can use while operating the 5020.	Chapter 7, "Reader Command Reference"
To find an explanation of all the configuration commands supported on the device.	Chapter 8, "Configuration Command Reference"
For help solving problems while using your 5020.	Chapter 9, "Troubleshooting"
For a list of physical and environmental specifications.	Appendix A, "5020 Specifications"
For a table of ASCII characters and their binary, hexadecimal, and Code 39 equivalents.	Appendix B, "Full ASCII Charts"
Explains how to extend and customize the remote Unit Management application. It includes 5020 registry definitions and examples.	Appendix C, "Extending Remote Unit Management"
Explains how to extend and customize the local and remote Configuration applications. It includes 5020 registry definitions and examples.	Appendix D, "Extending the Configuration Application"

2

Learning How to Use the 5020

This chapter describes and explains how to use the 5020 keypad, screen, audio signals, batteries, and laser scanner. It also explains how to use PC and compact flash cards and how to connect a tethered scanning device to a 5020.

Learning About the 5020 Features

This chapter explains the features of the 5020 Data Collection PC:

PC card slot
LEDs
Display
Keypad
Integrated scanner or tethered scanner port
Rechargeable batteries
IrDA port
Handstrap
5020U078.eps
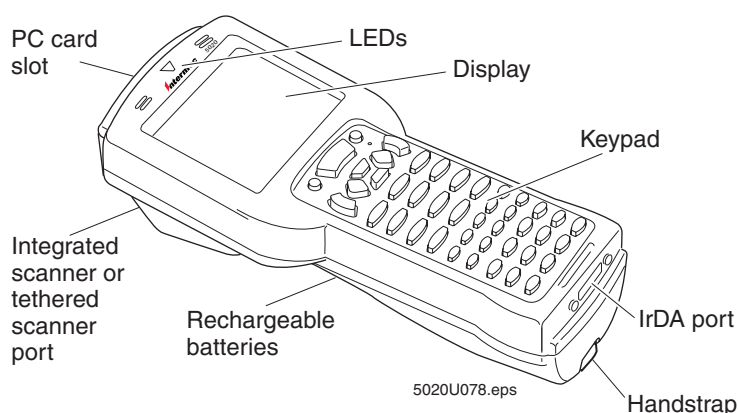
Keypad   There are four keypad overlay options:

- Simplified US/English

- Full US/English

- Euro1 overlay for the Romance languages

- Euro2 overlay for the Germanic languages

The standard 43-key elastomeric keypad has alphanumeric functions, full numeric keys, and 10 dedicated function keys.

Note: The Simplified and Full keypad overlays have the same functionality but a simplified character set is shown on the keypad overlay. The Full keypad overlay ships with this manual.

Monochrome display   The 5020 screen is a backlit 320 by 240 pixel gray scale display, angled for easy viewing.

Notification Tray   The Notification Tray is in the bottom portion of the 5020 screen. Icons appearing in the Notification Tray indicate the status of special keys, battery power status, RF, and network communication status.

PC and compact flash cards   You can use Type I and Type II Memory and I/O PC cards in your 5020. You can also use Type I compact flash cards for additional storage for your 5020.

Audio signals   The 5020 has internal speakers to sound audio signals as you scan bar code labels and enter data.

Rechargeable batteries   The 5020 uses a rechargeable lithium-ion main battery pack and a rechargeable manganese dioxide lithium coin cell bridge battery to maintain power while you change the main battery.

LEDs   The green light emitting diode (LED) is the good read LED and indicates that a bar code label has been scanned successfully. The red LED is under application control using the Intermec SDK (Software Development Kit) IBarCodeReaderControl function. For example, an application could use the red LED to indicate that the scanned data is valid. Refer to the SDK online help for a detailed description of the IBarCodeReaderControl function.

How to Use the 5020 Screen

You can use the 5020 screen to view data, run applications, monitor the 5020's status, and for many other functions. The screen is 320 by 240 pixels.
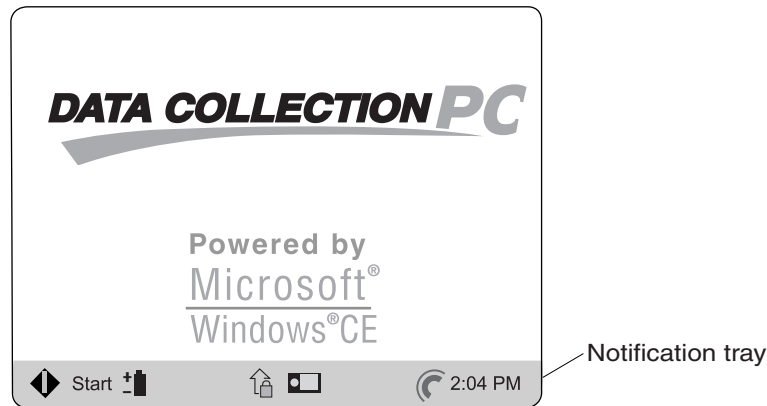
5020U091.eps

You can use these features of the screen:

*   Adjust the display's backlight, contrast, and audio signal volume from the keypad.

*   Use the 5020's icons to monitor the status of special keys, battery power, RF, and network communications.

Note: If you are using the 5020 in a cold environment, the liquid crystal display (LCD) may respond and display information more slowly than in a warm environment.

Understanding the Notification Tray Icons

You can use the 5020's icons to monitor the status of special keys, battery power, RF, and network communications. As you use the 5020, the icons are turned on and off in the bottom line of the screen to indicate the current status. This portion of the 5020 screen is referred to as the Notification Tray. Status icons appear in the System Icons area of the Notification Tray.

	Start ±▯	12:50 PM

Start button   System Icons   Application Icons   Time
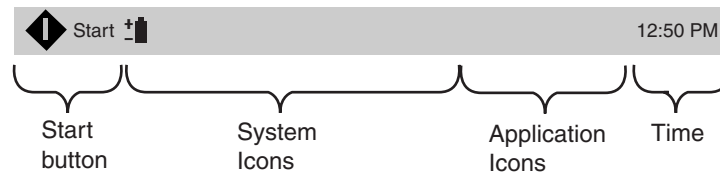
5020U050.eps

Icon   **Description**

Ctl **Ctl** This icon appears when you press ⌷. The key is enabled until you press another key. When you press a second key, the key combination is entered into the 5020 and the icon disappears.

Alt **Alt** This icon appears when you press ⌷. The key is enabled until you press another key. When you press a second key, the key combination is entered into the 5020 and the icon disappears.

⬆ **Shift** This icon appears when you press ⌷. The key is enabled until you press another key. When you press a second key, the key combination is entered into the 5020 and the icon disappears.

⬆🔒 **Caps Lock** This icon appears when you press ⌷ until the tone sounds to enable the Caps Lock feature and type all alphabetic characters as uppercase letters. Press ⌷ until the tone sounds to disable Caps Lock, and the icon disappears.

▭ **Left Modifier** This icon appears when you press ⌷.

- When pressed and released, the icon appears. After you press the next key, the icon disappears.

- When pressed and held for more than 1 second, the icon appears, and the 5020 beeps and is locked in Left Modifier mode. Following key presses display their left modifier characters. When the 5020 is locked in Left Modifier mode, pressing and holding the left modifier key for more than 1 second takes the 5020 out of Left Modifier mode and the icon disappears.

Understanding the Notification Tray Icons (continued)

Icon	Description

Center Modifier   This icon appears when you press ⬭.

- When pressed and released, the icon appears. After you press the next key, the icon disappears.

- When pressed and held for more than 1 second, the icon turns on, and the 5020 beeps and is locked in Center Modifier mode. Following key presses display their center modifier characters. When the 5020 is locked in Center Modifier mode, pressing and holding the center modifier key for more than 1 second takes the 5020 out of Center Modifier mode and the icon disappears.

Right Modifier   This icon appears when you press ⬭.

- When pressed and released, the icon appears. After you press the next key, the icon disappears.

- When pressed and held for more than 1 second, the icon turns on, and the 5020 beeps and is locked in Right Modifier mode. Following key presses display their right modifier characters. When the 5020 is locked in Right Modifier mode, pressing and holding the right modifier key for more than 1 second takes the 5020 out of Right Modifier mode and the icon disappears.

Full Charge   The main battery pack is at or near full charge. Battery is charged 75% to 100% of capacity.

Half Charge   The main battery pack is in the middle of the battery charge range.

Low Charge   The main battery pack is at a critically low level and needs to be charged.

Unknown Main Battery Status   Indicates the main battery pack is charging or the status is not known.

Radio connect   If the Radio Connect icon is not displayed, the 5020 is not connected to an access point. You may be out of range of an access point or the 5020 may not be configured correctly. If the Connect icon blinks, the 5020 is trying to connect to an access point. You may be out of range of an access point, you may be about to go out of range of an access point, or the access point may have recently been turned off.

Icon	Description
	Data buffered in The 5020 is in contact with a UDP Plus gateway and data is stored in the receiving buffer. If there is a connection problem, the icon flashes.
	Data buffered out The 5020 is in contact with a UDP Plus gateway and data is stored in the transmitting buffer. If there is a connection problem, the icon flashes.
	Data buffered in and out The 5020 is in contact with a UDP Plus gateway and data is stored in the receiving and transmitting buffer. If there is a connection problem, the icon flashes.
	No data The 5020 is in contact with a UDP Plus gateway and no data currently resides in the data buffer. If there is a connection problem, the icon flashes.
	Intrynsic HTTP Server This icon appears in the Application Icons area of the Notification Tray and indicates that the Intrynsic HTTP Server Loader is running.

Understanding the 5020's Audio Signals

The 5020 has internal speakers to sound audio signals or beep sequences as you use the 5020. For example, you hear a low beep tone each time you enter or scan a valid command.

You can change the beep volume to meet the needs of your working environment. For example, use a quiet beep in a library or a loud beep in a manufacturing plant. There are two ways to change the beep volume:

- Use the Backlight key (press ⬭ ⓘ) on the keypad. For help, see "Adjusting Settings Using the Backlight Key" later in this chapter.

- Use the Beep Volume command. For help, see "Beep (Speaker) Volume" in Chapter 8.

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

Beep Sequence	Description
Low beep	You entered a valid command or the data you entered was stored.
High beep	You entered valid data, the 5020 decoded a label, or the 5020 decoded the last row of a two-dimensional symbology.
Three low beeps	You entered or scanned an invalid command or data.

Beep Sequence	Description
Low beep (every 15 seconds)	The main battery pack is low. You need to replace or recharge the battery pack. For help, see "Learning About the 5020's Batteries," later in this chapter.
High beep, high beep, high beep, low beep	Reboot has finished.

Using the Keypad

The 5020 PC has four keypad overlay options:

- English alphanumeric keypad with minimum character set

- English alphanumeric keypad with full character set

- Euro1 overlay (Romance languages)

- Euro2 overlay (Germanic languages)

The alphanumeric keypad with the minimum character set is the standard keypad for the 5020. The minimum character set keypad has punctuation marks removed from the keypad overlay to simplify keypad navigation and operation. The full character set keypad includes the punctuation marks on the keypad overlay.

The Romance language keypad (Euro1) has keys to support British English, French, Italian, Portuguese, and Spanish. The Germanic language keypad (Euro2) has keys to support British English, Danish, Dutch, German, Finnish, Norwegian, and Swedish. You use special keys and key sequences to access the characters in each language.

English Keypads

Minimum   Full

5020U007.eps

International Keypads

The Euro1 and Euro2 keypads provide special keys to support Western European languages. The Euro1 keypad supports special characters for British English, French, Italian, Portuguese, and Spanish. The Euro2 keypad provides special characters for British English, Danish, Dutch, Finnish, German, Norwegian, and Swedish.

The Euro keypads allow you to access accented characters (**À Á Â Ã Ä Å)**. Accented characters are provided with floating accents as on many standard European keyboards. With floating accents, first you press the accent and then you press the letter to which the accent is to be associated. The resulting character is the accented character.

Note: No accent characters appear until you press the second key.

To type characters with an accent mark

1. Press ⬚. The Center Modifier icon appears in the Notification Tray.

2. Press the function key that the accent mark appears above.

To type	Press
` (grave)	F1
´ (acute)	F2
^ (circumflex)	F3
¨ (dieresis)	F4
° (ring above)	F5
~ (tilde)	F8

Euro1 and Euro2 Keypads
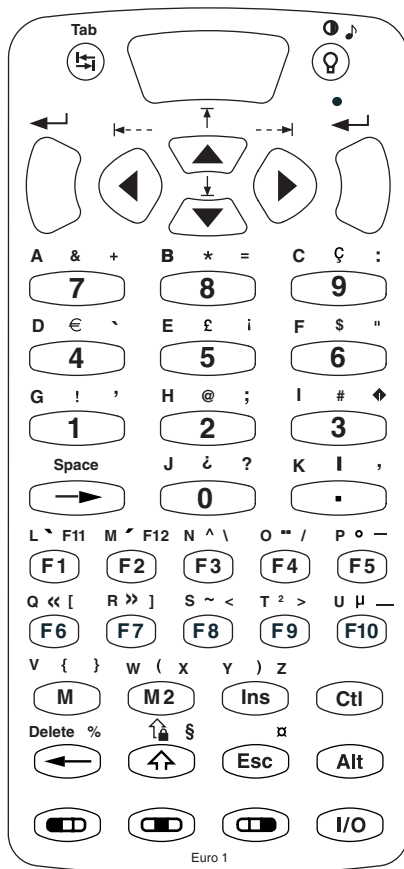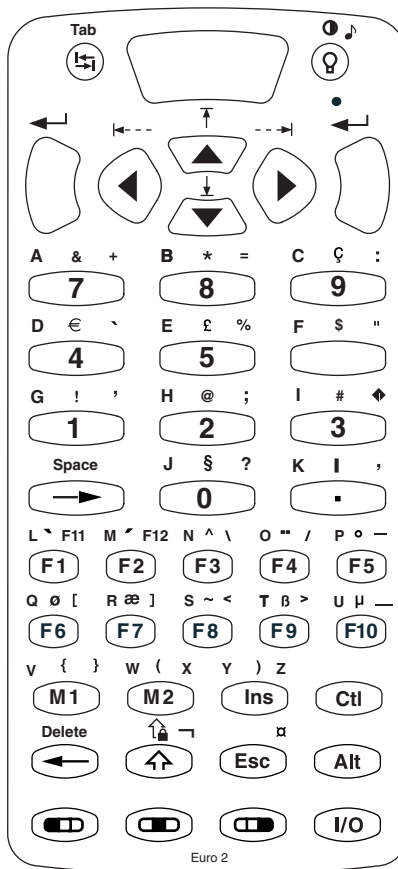
5020U032.eps

Finding the Special Keys

Before you use the 5020'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 four keypad options. The special keys that you use to type characters or perform functions are explained in the next sections.
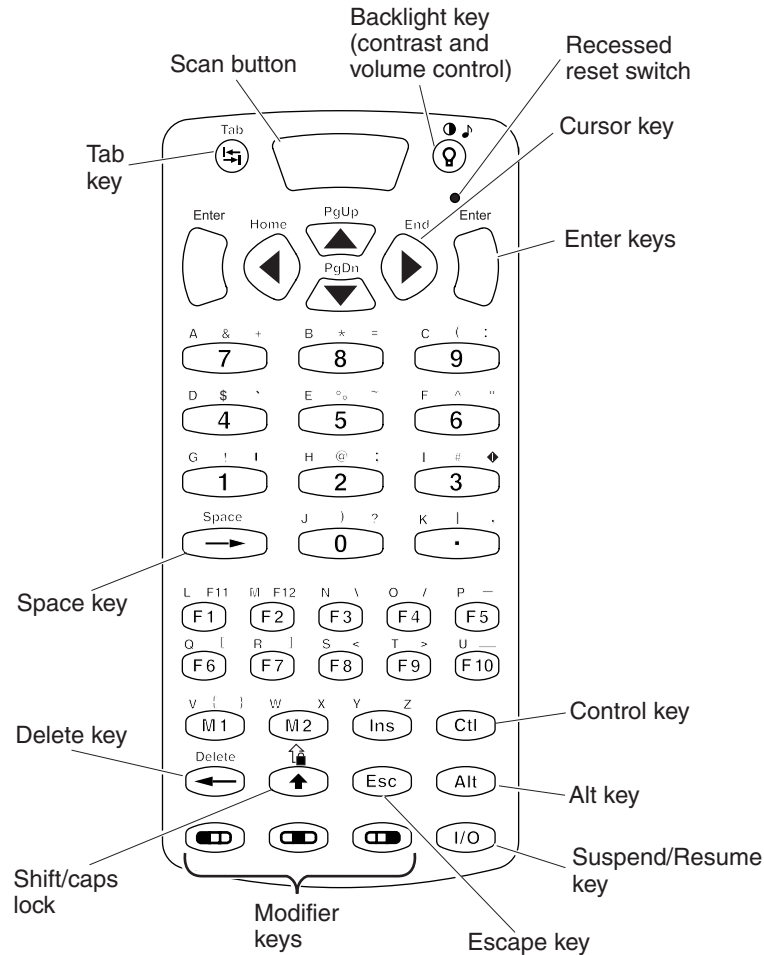
5020U006.eps

How to Type the Characters Printed on the Keypad

The 5020 keypad is easy to use. Characters, symbols, and functions are printed in four places on or above the keys. The keys are also color-coded to make it easier to remember key combinations.

Position on the Keypad	Color	To Type the Character
Printed on the key		Press the key.
Left side above the key	Orange	Press the orange 🔘 key, then the key.
Centered above the key	Lime	Press the lime 🔘 key, then the key.
Right side above the key	Green	Press the green 🔘 key, then the key.

Capitalizing All Characters

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

To enable Caps Lock

- Press ⬆ until the tone sounds or press 🔘 ⬆. The Caps Lock icon (⬆) appears in the Notification Tray. Caps Lock remains enabled until you disable it.

To type a lowercase letter with Caps Lock enabled

- Press ⬆ 🔘 and an alphabetic character key. For example, press ⬆ 🔘 6️⃣ to type a lowercase letter f.

To disable Caps Lock

- Press ⬆ until the tone sounds or press 🔘 ⬆. The Caps Lock icon disappears from the Notification Tray.

Note: You can also use the Keypad Caps Lock configuration command to enable or disable Caps Lock on the 5020. For help, see "Keypad Caps Lock" in Chapter 8.

How to Use the Cursor Keys

You can press keys to move the cursor around an application screen. The 5020's cursor keys work the same as cursor keys on a regular keyboard. You use the cursor keys to move the cursor up, down, right, or left on the screen.

Using the Cursor Keys

5020U070.eps
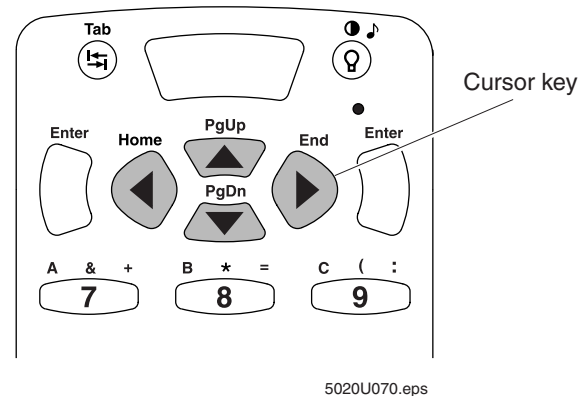
To Use This Cursor Key	Press	Description
Arrow up	▲	Moves the cursor up one row or line.
Arrow down	▼	Moves the cursor down one row or line.
Arrow right	▶	Moves the cursor one character to the right.
Arrow left	◀	Moves the cursor one character to the left.

Modifier Keys

The standard Windows modifier keys are ⬙, Alt, and Ctl. Three additional modifier keys (▭, ▭, ▭) have been added to the 5020 keypad. These unique modifier keys are located on the bottom row of the keypad and are used to type the corresponding color-coded characters and functions appearing on the keypad.

Using Modifier Keys

The 5020 keypad does not have a physical key for every character and function available. You use the left modifier (▭), center modifier (▭), and right modifier (▭) keys to access characters or perform functions that do not have a physical key on the keypad.

When you press ⬤ , ⬤ , or ⬤ , the modifier key is enabled until you press another key. The icon appears on the 5020 Notification Tray to remind you that the key is enabled. When you press another key, the key combination is entered into the 5020 and the icon disappears.

To make it easier to perform multi-key sequences with one hand, the six modifier keys are "sticky." To use the "sticky" feature, simply press and release the key. The key is in effect until you next tap a key to which it could apply. There are two rules used to determine when a sticky key is no longer in effect:

- A 5020 modifier key (⬤, ⬤, ⬤) is released after the next key is pressed and released, another modifier key is pressed, or the same modifier key is pressed again.

- A standard Windows modifier key (⬆, Alt, Ctl) is released after the next non-modifier key is pressed and released, or you tap the same modifier key again. The Alt and Ctl keys do not lock.

Locking or Unlocking a Modifier Key
The ⬤, ⬤, ⬤, and ⬆ key modifiers can also be locked. Press a key modifier for about a second to lock the key. A tone sounds, which indicates that the key is a candidate for locking. The lock occurs if no other keys are pressed during the time that the modifier key is held down. When a modifier key is locked, it affects all subsequent keystrokes until it is unlocked. To unlock a modifier key, press the modifier key until a tone sounds and then release the key or you can hold down one of the other modifiers until it locks, releasing the lock on the previously selected modifier.

Note: Only one 5020 modifier key may be locked at a time.

Overriding a Modifier Key
You can temporarily override a locked modifier key by tapping the key. The unlocked state is "sticky" until you press and release another key, or you tap the modifier key again. For example, if the shift key is locked (⬆) and you press the ⬆ key and then press an alpha key, a lower case letter appears, rather than the upper case letter that would have appeared with the ⬆ key enabled. Tapping a modifier can undo its lock for one character. After the temporary overriding is complete, the original, locked modifier is restored.

Note: ⬆, Alt, and Ctl are independent of one another. All three keys can be in effect at the same time.

Multi-Use Keys

Multi-use keys are common on a standard keypad. On a regular keypad you press the shift key together with the 1 key to get the '!' character. On the 5020 keypad, you use the modifiers keys (⬭, ⬭, ⬭) to type characters appearing above the base characters on the keypad. The characters are color coded to indicate which modifier key you need to press. If you don't select a modifier key, a pressed key results in the base character being transmitted.

Using the Shift and Caps Lock Keys

On the 5020 keypad, the shift (⬭) key can behave as both a standard shift key and as a Caps Lock key. That is why there are two Notification Tray icons for this key and only one for the other modifier keys.

Since these are two keys folded into one, both key modifiers, ⬭ and ⬆, could be in effect at the same time. In this case, alphabetic keys will appear as lower case (the shift cancels the caps lock), while other keys will appear as the upper level of a standard keypad.

Adjusting Settings Using the Backlight Key

The Backlight key is one of the special features built into the 5020's keypad. You can use the Backlight key to:

• Turn the backlight on and off on the 5020's screen.

• Adjust the display contrast.

• Change the beep volume of the 5020's audio signals.

For a detailed description of the backlight, contrast, and beep volume commands, see Chapter 8, "Configuration Command Reference."

Note: The Backlight key temporarily changes the backlight, contrast, or beep volume. These changes are saved until a cold boot is performed. When you perform a cold boot, 5020 configuration parameters are reset to the factory default values. For more information, see "Booting the 5020" in Chapter 9.

Using the Backlight Key to Adjust the Screen
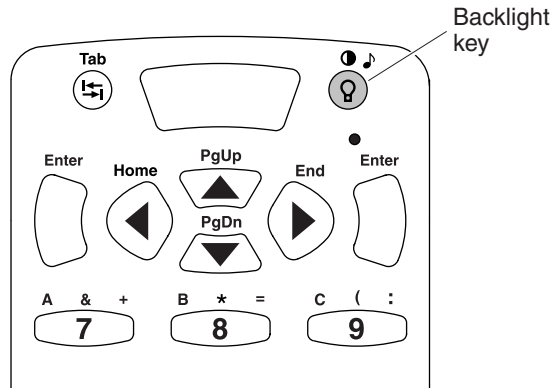
5020U071.eps

To turn the backlight on and off

- Press ⊙. Turn the backlight on to more easily see the 5020's screen in dimly-lit environments.

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

To change the display contrast

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

There are 64 contrast levels. If the contrast is at the darkest level and you press ▭ ⊙, the contrast changes to the lightest contrast level.

Note: You can hold down the contrast key for repeated contrast changes.

To change the volume of the audio signals

- To change the volume of the 5020's audio signals, press ▭ ⊙. Each time you press ▭ ⊙, it makes the volume one level louder.

There are six volume levels including an off setting. If the volume is at the loudest level and you press ▭ ⊙, the volume is turned off. If you press ▭ ⊙ again, the volume changes to the quietest level.

Keypad Navigation Shortcuts

You can use the following keypad shortcuts to navigate in the Windows CE environment.

Keypad Shortcuts

Shortcut	Function Performed
Alt Alt	Activate an application menu. You can then use your cursor keys to navigate within the application.
Alt Esc or Alt ⌨	Open the Task Manager so that you can switch between running programs. Make sure no Windows modifier keys are selected.
	Use the cursor keys (▲ ▼ ◄ ►) to switch between tasks and press ◯ to bring Windows focus to the chosen task. You can choose to Run, Switch To, or End a task using Task Manager.
◄, ►, ▲, or ▼	Select a file, folder, or function.
⇧ (◄, ►, ▲, or ▼)	Select adjacent files.
Ctl (◄, ►, ▲, or ▼) ➙	Select multiple files that are not adjacent. Use the ➙ key to select the next file you want to include.
▭ 3	Opens the Start menu.
⌨	Navigate in a dialog box.
Ctl ⌨ or ►	Change tabs in a dialog box.
⇧ Ctl ⌨ or ◄	Move backward between tabs in a dialog box.
◯ or ◯	Activate or open the selected item.
➙	Select or deselect check boxes.
Alt	Access and use application menus. For example, press Alt ▭ 6 to access the File menu.
Ctl Esc	Puts focus on the Start button. When focus is on the start button, you can use the cursor keys (◄►) to hover over icons for Tool Tips or press ◯ to go to the appropriate Control Panel applet. For example, if you select the battery icon and press ◯ you open the Power applet.
	If focus is already on the Start button or Notification Tray, the Ctl Esc shortcut puts focus on the desktop.

Locating the IrDA Port

Communications ports, also called COM ports, are locations from which data can be passed into and out of the 5020. You use serial communications through an IrDA port to communicate with other IrDA compliant devices.

You can also use the IrDA port to communicate with RS-232 devices, such as modems, PCs, and printers, using a D5020 serial communications dock or L5020 serial communications adapter.

IrDA port

5020U024.eps
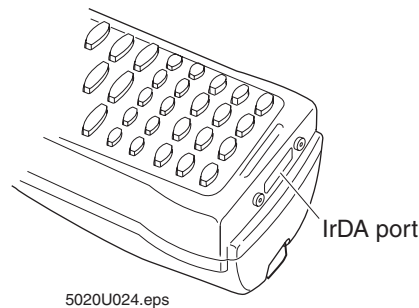
Learning About the 5020's Batteries

There are two rechargeable batteries in the 5020 PC:

Main Battery Pack   This lithium-ion battery provides the main power source to operate the 5020.

Bridge Battery   This manganese-dioxide lithium bridge battery backs up all memory and the real-time clock while you change the main battery pack.

Main Battery Pack

The main power source for the 5020 is a lithium-ion battery pack. Follow these tips to get the best battery performance and life possible:

- You should always keep a charged main battery pack installed in the 5020 to maximize the bridge battery's life.

- When you remove the main battery pack, insert another charged main battery pack in the 5020.

- Keep a spare charged main battery pack available so you can continue to operate the 5020 without interruption.

- If you use the 5020 for extended periods of time in a sub-freezing environment, you may need to change the main battery pack more often.

- If you have been using the 5020 in a cold temperature environment and need to replace or charge the main battery pack, let the main battery pack warm up for a half hour before you charge it.

- Store the battery chargers and spare main battery packs in a warm (office) environment to ensure the most efficient operation.

Replace the main battery pack with Intermec Part No. 068537 only. The use of any other battery pack may present a risk of fire or explosion. Contact your local Intermec sales representative for replacement battery packs. DISPOSE OF USED BATTERY PACKS PROMPTLY. KEEP AWAY FROM CHILDREN.

Warning
The lithium-ion battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F) or incinerate.

Avertissement
Le bloc-batterie au lithium utilisé dans cet appareil peut présenter un risque d'incendie ou de brûlure chimique en cas de mauvais traitement. Ne désassemblez pas, ne chauffez pas à une température supérieure à 100°C (212°F) et n'incinérez pas ce bloc-batterie.

Removing and Installing the Main Battery Pack

The main battery pack is the main power source for the 5020 and it charges the bridge battery when required. If the main battery pack charge goes low, you need to replace it or charge the main battery pack as soon as possible.

There are two ways to find out if the main battery pack is low:

- Check the battery state icon.

- Check power levels using the Power applet. Press ⌨Ctl ⌨Esc to put focus on the Notification Tray and press ⌨ or ▶ to the battery icon and press ⌨. This launches the Power applet and displays the current battery status.

Caution
Removing the battery pack while the 5020 is on may cause loss of data.

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

To remove the main battery pack

1.   Press ⬚⃞ to turn off the 5020.

2.   Push the top clip of the handstrap down and forward to unhook it from the dowel pin on the top of the 5020 and then lift it out.

Dowel pin
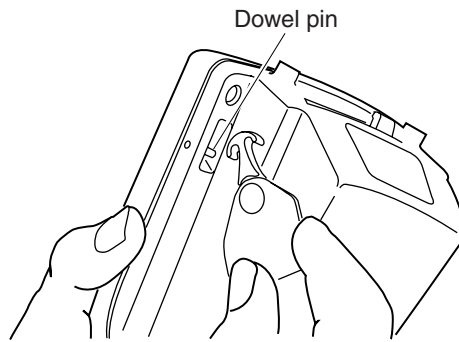
5020U066.eps

3.   Open the battery door by pushing up on the battery door latch and sliding it toward the top end of the 5020. Lift up the edge of the battery door to remove it.

Top

Battery
door latch

Contacts
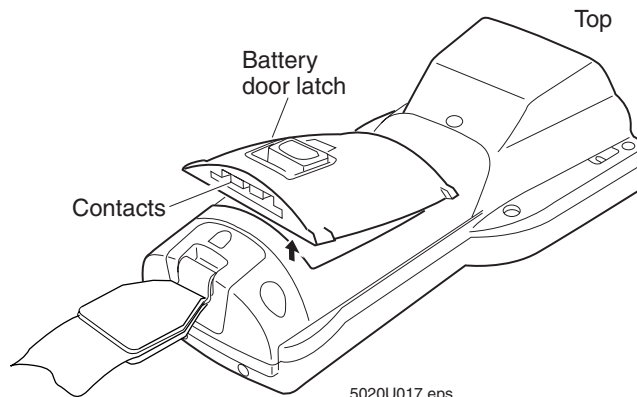
5020U017.eps

4. Push the main battery pack up until it unlocks from the connectors on the bottom of the battery compartment.
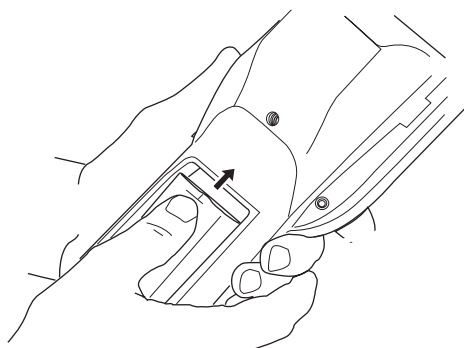
5020U018.eps

5. Tilt the 5020 to one side and let the main battery pack drop out of the compartment into your hand. Continue with the next instructions to install a charged main battery pack.
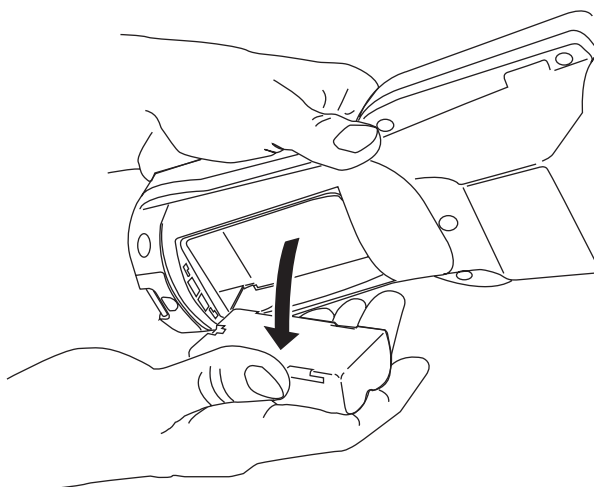
5020U.042

To install the main battery pack

1. Place the main battery pack into the upper (larger) half of the battery compartment.

2. Push the main battery pack down until it locks into the connectors on the bottom of the battery compartment.
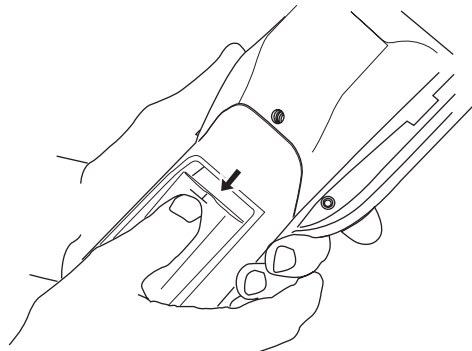
5020U003.eps

3. Insert the top edge of the battery door into the top of the battery compartment. Push the door down to close it over the battery compartment.

4. Push the battery door latch down and slide it toward the bottom end of the 5020 to lock the door in place.

5. Reattach the back clip of the handstrap to the aft bracket 5020 if it was removed. The back clip must be attached as shown, or the handstrap will come off.

Back clip

Aft bracket
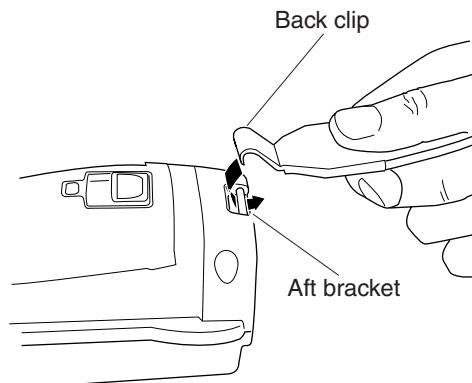
5020U067.eps

6. Place the top clip over the pin on the top of the 5020 and set it in place.

Dowel pin

5020U066.eps
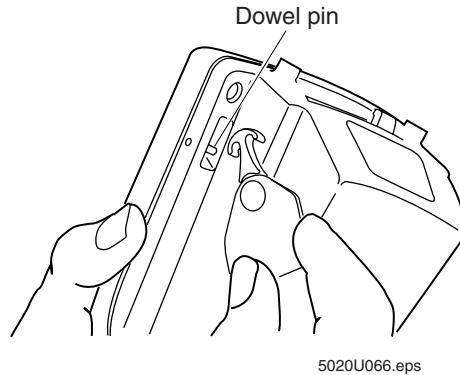
Charging the Main Battery Pack

You can recharge the main battery pack using any of these 5020 accessories:

*   TZ2400 Battery Charger

*   D5020 Communications Dock connected to an external power supply

*   L5020 Serial Adapter connected to an external power supply

Note: The battery charger operates between 0°C and 40°C (32°F and 104°F). If you are using the 5020 in an environment that is outside this temperature range, the main battery pack will not charge.

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

Tip: Keep a spare charged main battery pack on hand to operate the 5020 without interruption.

Understanding the Bridge Battery

The bridge battery is a 90 mAh manganese-dioxide lithium battery that is designed to back up all memory and the real-time clock while you remove a discharged main battery pack and insert a charged main battery pack. When you turn the 5020 back on, the 5020 resumes exactly where it was when you turned it off.

Note: The bridge battery should only be used to maintain the 5020 configuration while you are changing the main battery pack. It is not intended to retain data for extended periods of time.

The main battery pack or external AC power charges the bridge battery. You should keep a charged main battery pack installed in the 5020 to maximize the bridge battery's life. If you turn off the 5020 and do not use it, a fully charged main battery pack maintains data, the real time clock, and system context for a maximum of 1 month.

If you plan to store the 5020 for a long period of time, insert a fully charged main battery pack to maximize battery life. Store the 5020 in a warm (office) area to make sure the bridge battery continues to charge.

Note: The bridge battery is NOT user serviceable. You must return the 5020 to Intermec to replace the bridge battery. With correct usage, the bridge battery will last the estimated service life of the 5020 without having to be replaced. The bridge battery should only be used to maintain the 5020 configuration while you are changing the main battery pack. It is not intended to retain data for extended periods of time.

Charging the Bridge Battery

The main battery pack charges the bridge battery with the 5020 turned on or off. The 5020 continuously monitors the bridge battery voltage level and charges the bridge battery to maximum voltage whenever the voltage level gets low. If the main battery pack is low or discharged and you are not connected to AC power, it will not be able to charge the bridge battery. You can check the status of the bridge battery using the Power applet. For more information on the Power applet, see "Viewing Battery Status and Changing Power Suspend Time" in Chapter 4.

Note: The bridge battery charger operates between 0°C and 40°C (32°F and 104°F). If you are using the 5020 in an environment that is outside this temperature range, the bridge battery will not charge. Move the 5020 to a warmer environment to charge the bridge battery.

To fully charge a discharged bridge battery

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

2. The main battery pack charges the bridge battery. It will be fully charged in approximately 72 hours. After you finish charging the bridge battery, the main battery pack still has most of its power remaining.

Caution
There is a risk of data loss if the main battery pack is removed and the bridge battery is not fully charged. Do not rely on the bridge battery to maintain the contents of RAM until the bridge battery is fully charged.

Conseil
Vous risquez de perdre des données si le bloc-batterie principal est enlevé, alors que la batterie en pont n'est pas entièrement chargée. En effet, la batterie en pont ne peut pas conserver le contenu de la mémoire vive (RAM), tant qu'elle n'est pas entièrement chargée.

Checking the Power Remaining in the Batteries

Check power levels using the Power applet. Press Ctl Esc to put focus on the Notification Tray and press ⊟ or ▶ to move to the battery icon in the Notification Tray and press ⟮. This process launches the Power applet and displays current battery status.

Recognizing a Low or Discharged Main Battery Pack

The following low battery warnings indicate the 5020 has a low or discharged main battery pack.

Low Main Battery Warning

The 5020 beeps every 15 seconds, the Power applet starts, and the Main Battery Very Low dialog box is displayed.

Main Battery Very Low

Your main battery is very low. Please change or charge the main battery. Consult the users manual for instructions.

Warning; To avoid data loss, be sure to turn off your device before removing the battery.
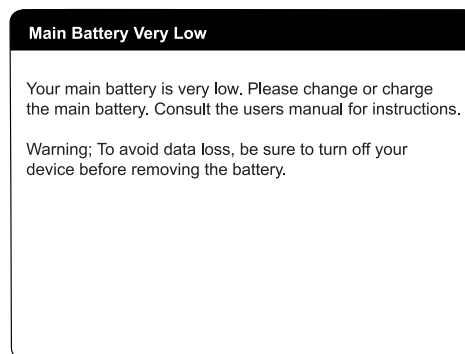
5020U013.eps

What You Need to Do

1. Press Esc to shut down the Power applet.

2. Exit any running applications.

3. Press I/O to suspend the 5020.

4. Replace the main battery pack with a spare charged battery pack, charge the main battery pack, or attach an external power supply.

Recognizing a Low or Discharged Bridge Battery

The following low battery warning indicates the 5020 has a low or discharged bridge battery.

Low Bridge Battery Warning

The Bridge Battery Very Low dialog box displays once every 15 minutes when the bridge battery charge falls below 25% of capacity.

Bridge Battery Very Low

Your bridge battery is very low or missing. Please apply AC power to recharge the battery. Consult the users manual for instructions.

WARNING: DO NOT REMOVE THE MAIN BATTERY PACK OR DATA LOSS MAY OCCUR.
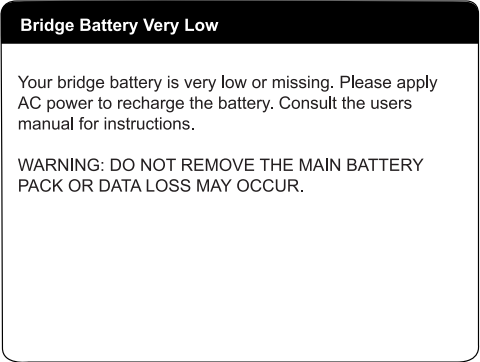
5020U012.eps

What You Need to Do

Press 〔〕 to close the dialog box.

Apply AC power to charge the bridge battery. The bridge battery will be fully charged in approximately 72 hours. Do not remove the main battery pack until the Power applet indicates the bridge battery has at least a 50% charge or data loss may occur.

You can remove the 5020 from AC power after the main battery pack is charged.

Managing Your Battery Power

To maximize the life of the 5020's bridge battery and main battery pack, use these power management features.

Situation	Ways to Save Battery Power
You are not using the 5020 for 5 minutes or longer.	Press ⌑ to turn off the 5020 and put it in Suspend mode. Suspend mode maximizes the life of the main battery pack's power. Make sure the main battery pack is charged (not in a low battery state). Or, use the Automatic Shutoff feature. Automatic shutoff turns off the 5020 (Suspend mode) when there is no activity on the 5020 for the length of time you set.
You are operating the 5020 and the main battery pack charge becomes low.	Press ⌑ to put the 5020 in Suspend mode. Remove the main battery pack and insert another charged battery pack. For help, see "Main Battery Pack" earlier in this chapter.
You turn on the 5020 and the bridge battery charge indicates low power.	Press ⌑ to put the 5020 in Suspend mode. Keep a charged main battery pack installed in the 5020. The battery pack fully charges the bridge battery in approximately 72 hours.

Situation	Ways to Save Battery Power
You want to suspend the 5020 for an extended period of time.	Press ⬭ to put the 5020 in Suspend mode. The 5020 should be stored at room temperature, with a fully charged main battery installed.

Tip: Keep a spare charged main battery pack on hand to operate the 5020 without interruption. Always keep a charged or partially charged main battery pack in the 5020.

Using an External Power Supply

You can operate the 5020 using an external power supply with the following accessories:

- TZ2400 Battery Charger

- D5020 Communications Dock connected to an external power supply

- L5020 Serial Adapter connected to an external power supply

You can use the external power supply to operate the 5020 and to charge the 5020's batteries at the same time. For help, see the accessory quick reference guides.

5020U004.eps
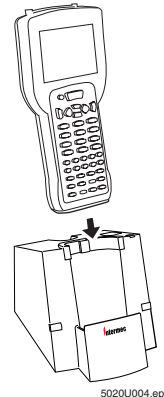
Using PC Cards

A PC Card slot is provided on the batch 5020. You can use 3.3V and 5V Type I and Type II Memory and I/O cards that comply with the PC Standard, February 1995, for 16-bit cards.

You can use the following types of PC Cards in your 5020:

- Type I SRAM Memory (storage card)

- Type II ATA Flash Memory (storage card)

- Type II Modem

- Type II Ethernet

You cannot use Type III cards in the 5020. See your Intermec sales representative for a complete list of supported PC Cards.

Note: A sheet of PC card extraction tabs ships with each 5020. Make sure you attach an extraction tab to the PC card before inserting the PC card in your 5020.

The PC card slot is located on the top of the 5020 just above the laser scanner window or tethered scanner port. You can use a Type I or Type II PC card in the slot.

Note: The Windows CE file system is sensitive to the order of storage card recognition when you change storage cards. When you are inserting or removing a storage PC card, follow the steps described in this section to avoid changing the designation of storage cards in the file system.

To insert a PC card

1. Press ⏻ to turn on the 5020.

2. Make sure an extraction tab is applied to the PC card.

3. Open the slot door on the top of the 5020. The slot door drops down to reveal the PC card slot.

Slot door

5020U041.eps
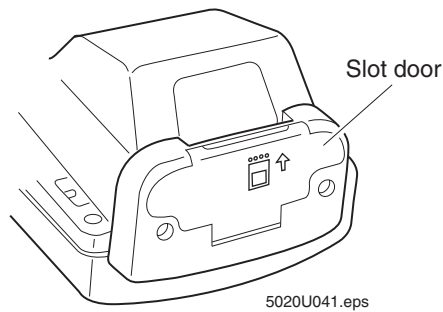
4. Insert the card in the slot connector end first with the single-walled notch on the left edge of the card.

Card latch

Extraction tab

Single notch

5020U044.eps
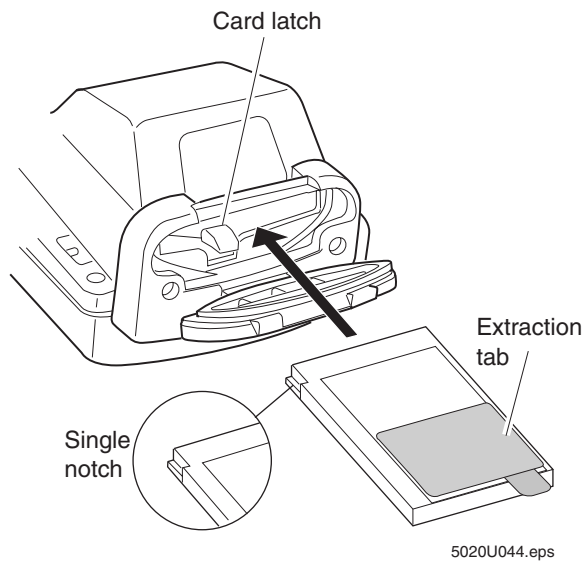
5. Push the card into the slot until it fits firmly in the connector and the card latch closes.

    Note: Do not force a PC card into the drive slot. If the card stops and the card latch won't close, remove the PC card and make sure you have the card oriented correctly. Then try to insert the card again.

6. Close the slot door by pressing firmly on the door until it snaps into place. When closed correctly, the slot door is flush with the hard plastic body of the 5020.

7. If you are inserting a new storage card, you will be prompted to format the card.

    The storage card in the PC card slot will be designated as "Storage Card" by the Windows CE file system if a compact flash card is not installed. If a compact flash card is installed, the storage card in the PC card slot will be designated as "Storage Card2."

8. If you are inserting a radio or Ethernet PC card, you will need to warm boot the 5020 for the card to be recognized. For help, see "Booting the 5020" in Chapter 9.

To remove a PC card

1. Open the slot door on the top of the 5020.

2. Press the card latch while firmly pulling on the extraction tab.

5020U092.eps
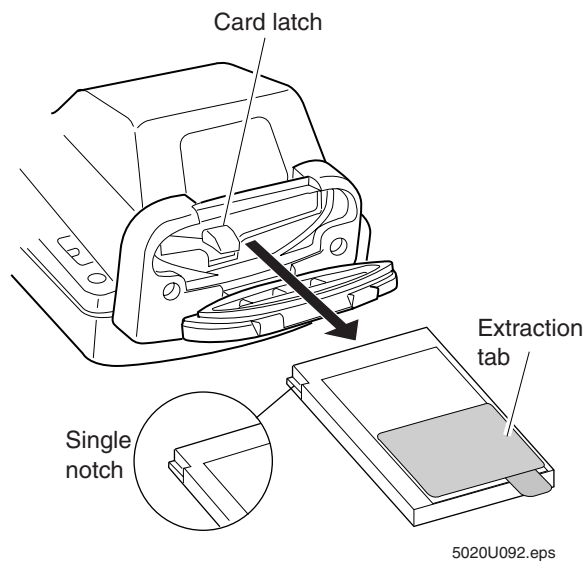
3. Pull the PC card out of the drive slot.

4. Close the slot door by pressing firmly on the door until it snaps into place. When closed correctly, the slot door is flush with the hard plastic body of the 5020.

Note: If you have storage cards installed in both the PC card slot and the compact flash card slot, remove the storage card before you warm or cold boot the 5020. Reinstall the storage card after the 5020 reboots. For help, see "Booting the 5020" in Chapter 9.

Accessing and Using the Compact Flash Card

You can use Type I compact flash cards (3.3 mm thick) to provide additional storage for your 5020. The compact flash slot is accessible through an access door located beneath the main battery pack.

You cannot use Type II cards in the 5020.

Note: The Windows CE file system is sensitive to the order of storage card recognition when you change storage cards. When you are inserting or removing a compact flash card, follow the steps described in this section to avoid changing the designation of storage cards in the file system.

To insert a compact flash card

1. Remove storage cards in either the PC card slot or the compact flash slot. For help, see "To remove a PC card" or "To remove a compact flash card" in this chapter.

2. Press ⌷ to turn on the 5020 with the cards removed and wait for the hourglass to disappear.

3. Press ⌷ to turn off the 5020.

4. Remove the handstrap and main battery pack. For help see "Removing and Installing the Main Battery Pack" earlier in this chapter.

5. Insert a small straight-slot screwdriver in the door slot and pry up to open the compact flash card door.

Compact
flash card
door

Door
slot

5020U036.eps
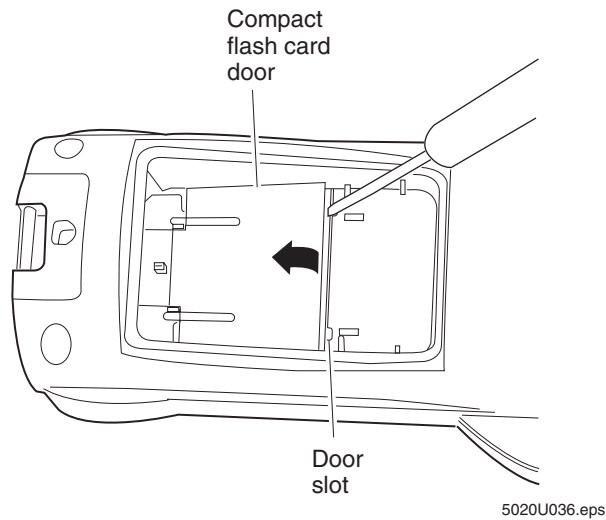
6. Lift and remove the compact flash card door from the battery compartment.

7. Insert the compact flash card under the release mechanism and slide forward until the card snaps into place. Make sure the compact flash card is oriented as shown below.

Compact flash
card ejector

Flash card

Flash card
back edge

5020U037.eps
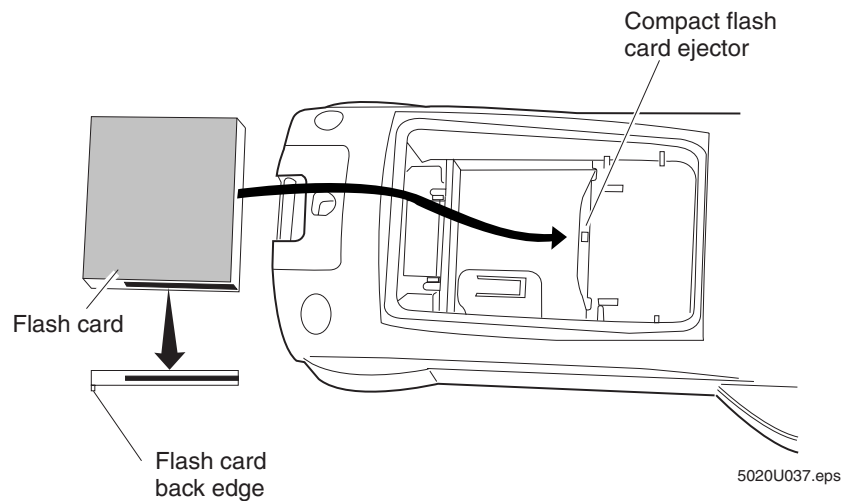
8. Replace the compact flash card door.

9. Reinstall the main battery pack and replace the battery door and handstrap. If you are inserting a new compact flash card, you will be prompted to format the card when you press ⌦ to resume the device. The compact flash card will be designated "Storage Card" in the Windows CE file system.

10. If there was a storage card in the PC card slot, reinsert it now. It will be designated "Storage Card2."

To remove a compact flash card

1. Press ⌦ to turn off the 5020.

2. If there is a storage card installed in the PC card slot, remove it now. For help, see "To remove a PC card" earlier in this chapter.

3. Remove the handstrap and main battery pack. For help see "Removing and Installing the Main Battery Pack" earlier in this chapter.

4. Use a small straight-slot screwdriver to pry up the compact flash card door and remove it from the battery compartment.

5. Pull back on the card latch.

6. Insert a small straight-slot screwdriver into the compact flash card ejector and push the release latch to remove the card from the internal connector.

Compact flash card ejector

Flash card

Card latch

5020U038.eps
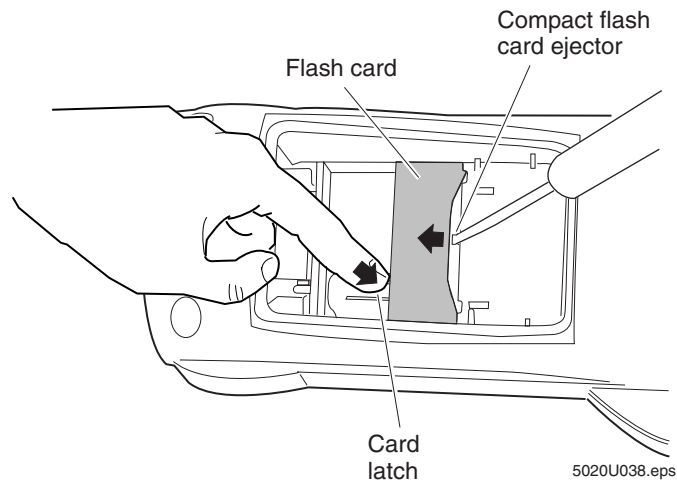
7. After the card is released, push the compact flash card ejector back into place and remove the compact flash card.

8. Reinstall the compact flash card door and main battery pack and replace the battery door and handstrap.

9. Press ⌦ to turn on the 5020 with no cards installed. If you removed a storage PC card, reinsert it now. It will be designated as "Storage Card" in the Windows CE file system.

Connecting a Tethered Scanning Device

Tethered scanners are supported on 5020s ordered with a 10-pin tethered scanner port in place of the integrated scanner. You can use the following types of devices with the 5020.

- 1515, 1545, and 1550 laser scanners.

- RS-232 Scanners and other RS-232 devices through a 9-pin adapter cable

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

To attach a tethered scanning device

1. Locate and open the scanner port door.
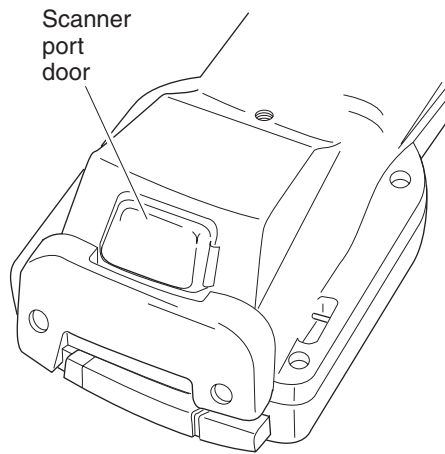
Scanner
port
door

5020U022.eps

2. Insert the 10-pin connector until the connector locks into place.

10-pin
connector

5020U023.eps
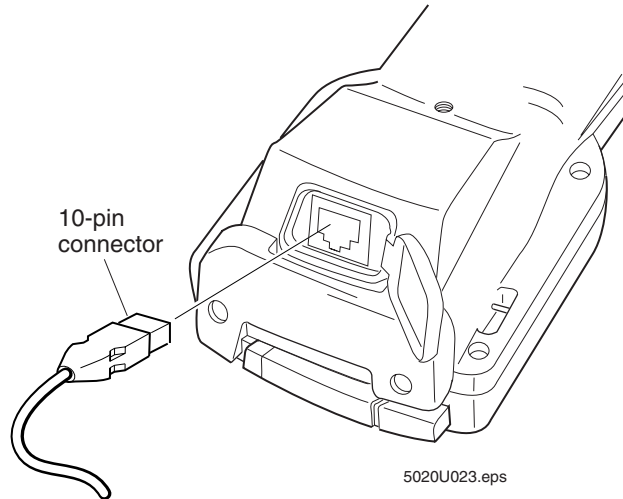
Scanning a Bar Code Label

The integrated laser scanner emits a beam of laser light that is visible on a bar code label as you scan it. The 5020 decodes the bar code label and enters the data or command you scanned.

Note: You can also use a variety of tethered scanning devices with the 5020. For more information on using tethered scanners, see " Connecting a Tethered Scanning Device" earlier in this chapter.

Refer to the 5020 Safety Supplement (Part No. 069395) for additional laser safety information.

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.

WARNING

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

To scan a bar code label

1. Press ⬭ to turn on the 5020.

2. Hold the 5020 at a slight angle a few inches from the bar code label. The laser scan window must be pointing toward the label.

3. Push the Scan button on the keypad or pull the trigger on the handle if the optional trigger handle is installed. Direct the beam so that it falls across all bars in the bar code label. After the 5020 successfully reads the label, you hear a high beep. The scanner stays on or turns off depending on the scanning options you have configured.

   When the bar code label is scanned successfully, the LED displays a green color. The LED turns off in less than 1 second unless you start scanning another label.

4. Release the Scan button or trigger.

Scan button

5020U029.eps
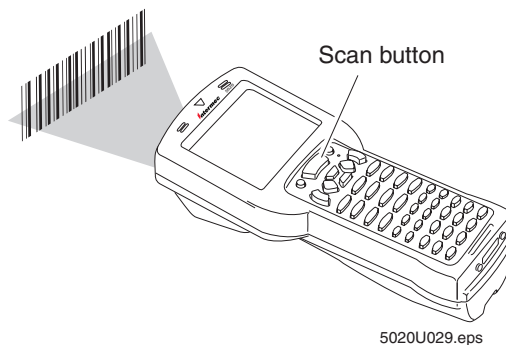
To successfully read a bar code label, the laser beam in the scan module must see all the bars in a label and a "quiet zone" at each end of the label. A quiet zone is a clean, non-printed space.

Quiet zone before and after bar code

5020U048.eps
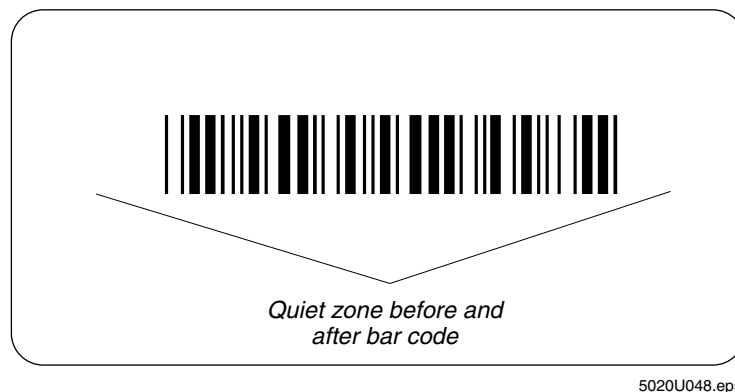
With the standard range scan module, you will have the best success if you hold the 5020 so that the horizontal reading angle is near zero and the vertical reading angle is near 20 degrees. To get the best scan angle, hold the 5020 so that the scan module is pointing toward the bar code label. Tilt the 5020 up or down slightly (20 degrees). You can also watch the laser beam. The laser beam becomes the brightest at the best scan angle.

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

Note: You should not scan the bar code label "straight on." In a 2-degree conical "dead zone" directly above the label, the laser beam may reflect back into the scanner window and prevent the 5020 from reading the label. At certain angles and straight on, you may not see the laser beam.

Scanning Options

You can set several configuration command parameters to configure the laser scanner to meet your needs. There are several ways to set the scanner commands on the 5020. For help, see Chapter 3, "Configuring the 5020." For help using the scanner configuration commands, see Chapter 8, "Configuration Command Reference."

The parameters available are:

Decode Security   Defines the security level to use when decoding bar codes. When you select a lower decode security level, the 5020 can decode bar codes with poorer print quality.

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

Redundancy   Defines the number of scans (voting) the scanner takes of the same label. When set, voting requires the 5020 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.

Selection   Identifies the type of tethered scanner you have connected. The 5020 can optimize the scanning performance by using the scanner you define in this command. If you have a long-range scan module, Scanner Selection allows you to configure the spotting beam.

Timeout Mode   Defines the maximum length of time the scanner stays on each time you press the Scan button or activate a tethered laser scanner.

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

Preamble   Sets the preamble that precedes any data you scan with the 5020. Common preambles include a data location number or an operator number.

Postamble   Sets the postamble that is appended to any data you scan with the 5020. Common postambles include cursor controls such as tabs or carriage return line feeds.

3

Configuring the 5020

This chapter explains how to configure the 5020 using several different methods. You will also learn how to configure your 5020 to operate in a network.

How to Configure the 5020

You can configure many operating characteristics of the 5020 Data Collection PC, such as the bar code symbologies it decodes or the network settings. These characteristics are controlled by configuration parameters. The values that you set for the configuration parameters determine how the computer operates.

There are four ways to configure the 5020:

Use Utilities on the 5020

Programs   ▶

Settings...

Run...

Goto User Mode...

Suspend...

🔷 **Start**

Use Configuration application.

Or, use Control Panel.
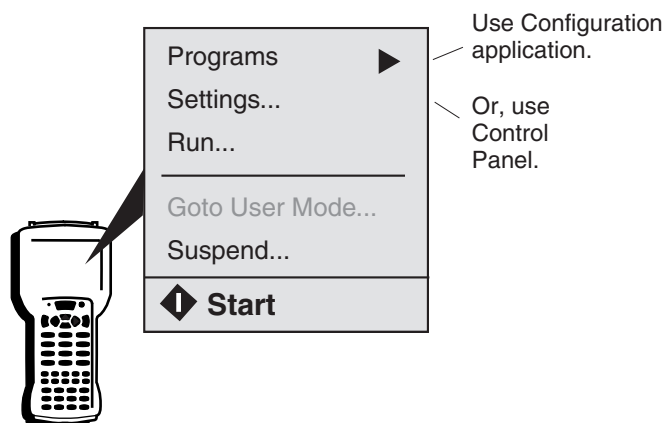
Scan Bar Codes

Use Web Browser

Use browser and Unit Management application.

Intermec

Intermec 5020 Configuration Management

TCP/IP Network (Ethernet or RF)

Use SNMP Commands

SNMP Management Station

TCP/IP Network (Ethernet or RF)
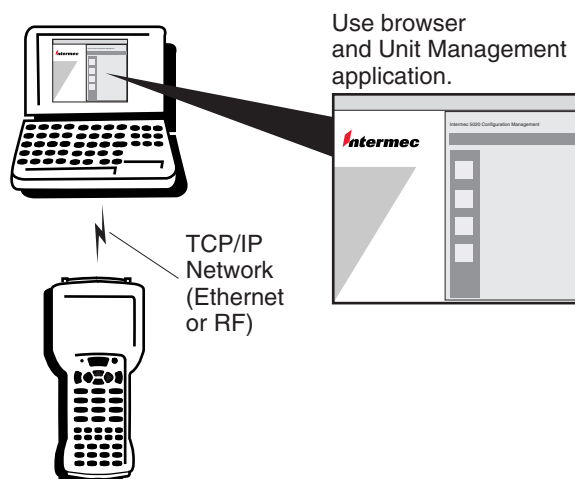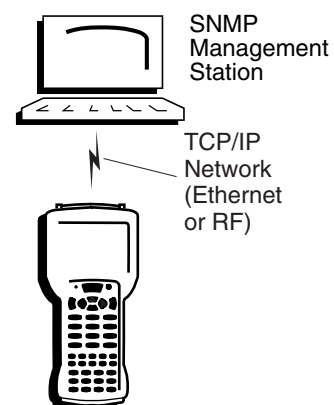
5020U077.eps

Use Utilities on the 5020   You can use the Intermec Configuration application or the Windows CE Control Panel applets on the 5020 to configure all parameters. For help with the Configuration application, see the next section. For help with the Control Panel, see Chapter 4, "Customizing the 5020 Using the Control Panel."

Use Web Browser   After the 5020 is communicating with a PC, you can use your Web browser and the remote Unit Management application to configure all parameters and manage your 5020. For help, see "Using a Web Browser and the Unit Management Application" later in this chapter.

Use SNMP Commands   After the 5020 is communicating in your network, you can use an SNMP management station to send SNMP commands to the 5020. For help, see "Configuring the 5020 by Using SNMP" later in this chapter.

Scan Bar Codes   You can scan bar code labels to configure the 5020. However, you can only configure a subset of the 5020 parameters by scanning bar code labels. For help and a list of parameters, see "Configuring the 5020 by Scanning Bar Code Labels" later in this chapter.

Using the Configuration Application on the 5020

The Configuration application lets you configure the 5020 and view system information. You can access the Configuration application while running any application. You can also extend and customize the Configuration application. For help, see Appendix D, "Extending the Configuration Application."

To access the Configuration application

1. Press ⬭ and then press ③ to open the Start menu.

2. Press ▲ to highlight Programs and then press ⬭ or ⬭. (You can press either Enter key, ⬭ or ⬭, on the 5020.)

3. Press ▶ and ▼ to highlight Configuration and then press ⬭.
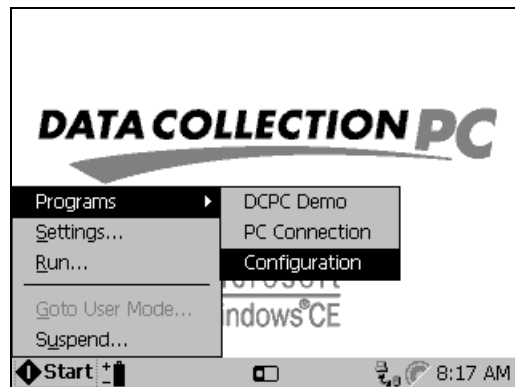
The Configuration main screen appears, displaying four menu options:
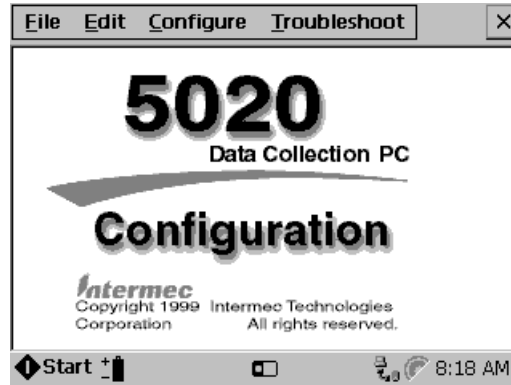
File   Choose the File menu to close a menu or screen, apply changes, refresh the screen to the previous settings, restore factory defaults, and exit the Configuration application. In addition to the File menu options, each configuration screen has buttons that you can use to apply changes, refresh the screen, and restore factory defaults.

Edit   The Edit menu options undo, cut, copy, and paste are reserved for future use.

Configure   Choose the Configure menu to configure Data Collection, Unit, Network, and SNMP parameters.

Troubleshoot   Choose this option to check the battery status and view terminal version information. You can check the battery status for the main battery pack and the bridge battery. The terminal version includes the model number, serial number, software version, PCB part number, RFID part number, and the last day serviced.

4. To select a menu, press ⌐Alt⌐ plus the application menu shortcut. For example, to select the Configure menu, press ⌐Alt⌐ ⌐●⌐ ⌐9⌐.

5. Use ▼ and ▲ to select a menu option and then press ◯. For help using the Configure menu, see the next section.

6. To exit the Configuration application, press ⌐Alt⌐ ⌐●⌐ ⌐6⌐. Press ▼ to highlight Exit and then press ◯.

Configuration Parameters at a Glance

File   Edit   Configure   Troubleshoot
Data Collection
Unit
Network
SNMP

Scanner
— Timeout
— Mode
— Trigger mode
— Redundancy
— Selection

Decode Options
— Decode security level
— Decode priority

Virtual Wedge
— Virtual Wedge
— Preamble
— Postamble
— Grid
— Code page

Symbologies
— Code 39
— Interleaved 2 of 5
— Code 2 of 5
— Codabar
— Code 93
— Code 11
— Code 49
— MSI
— Code 16K
— UPC/EAN
— Plessey
— Code 128

File   Edit   Configure   Troubleshoot
Data Collection
Unit
Network
SNMP

Protocols
— UDP Plus
— TFTP

Radio
— IP address
— Name servers
— TCP/IP extensions
— Radio
— DHCP status

Ethernet
— IP address
— Name servers
— DHCP status

Advanced
— Config manager enable
— Config subagent enable
— UDP Plus enable

File   Edit   Configure   Troubleshoot
Data Collection
Unit
Network
SNMP

Date/Time ——— Date and Time

Display
— Backlight timeout
— Backlight level

Keypad
— Key clicks
— Caps lock on

Power Management ——— Automatic shutoff

Serial Port ——— IrDA baud rate

Speaker
— Volume
— Low beep frequency
— High beep frequency
— Low beep duration
— High beep duration

File   Edit   Configure   Troubleshoot
Data Collection
Unit
Network
SNMP

Security
— Read only community string
— Read/write community string
— Read encryption
— Write encryption
— Encryption key

Traps
— Authentication
— Threshold

Identification
— Contact
— Name
— Location

5020U.035

Using the Configure Menu

Use the Configure menu to change the configuration settings of your 5020.

To configure the 5020

1. If the Configuration application is not open, press ⌷ ③. Choose Programs and then Configuration.

2. Press ⎇ ⌷ ⑨ to access the Configure menu. The Configure menu contains these options:
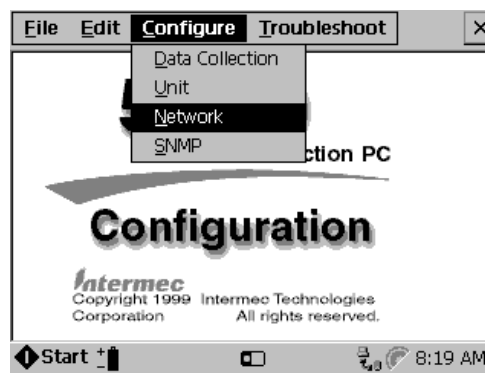
Data Collection   Choose the Data Collection menu to configure bar code symbologies, scanner parameters, decode options, and virtual wedge.

Unit   Choose the Unit menu to configure the display, keypad, speaker, serial port, and power management.

Network   Choose the Network menu to configure your network settings such as protocols and your radio.

SNMP   Choose the SNMP menu to configure SNMP parameters such as security, traps, and identification.

3. Use ▼ and ▲ to select Data Collection, Unit, Network, or SNMP and then press ⌷. The configuration screen appears. For example, the Network screen is shown here.
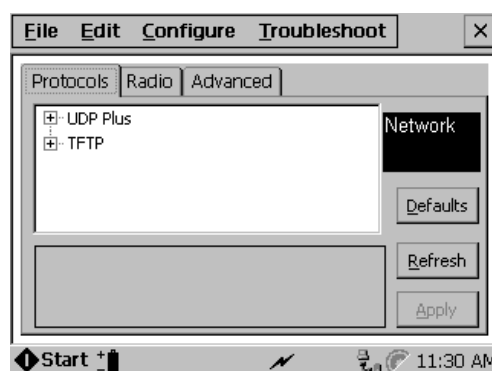
4. Use the ⬄ (Tab) key and the cursor keys to navigate in the configuration screen. Make the changes you need for each parameter. For help, see the next section.

5. To save your changes in each configuration screen, press ⬄ to select the Apply button and then press ⬄.

6. To exit the Configuration application, press (Alt) (⬤) (6). Press ▼ to highlight Exit and then press ⬄.

7. If you changed any network settings, press (I/O) twice to make the changes effective. If you changed the UDP Plus enable parameter, warm boot the 5020. For help booting the 5020, see Chapter 9, "Troubleshooting."

Navigating in the Configuration Application

Use the instructions in this section to learn how to navigate around the screens, change parameters, and apply changes. Use this next illustration to get familiar with the different areas and buttons on each configuration screen.

5020U096.eps
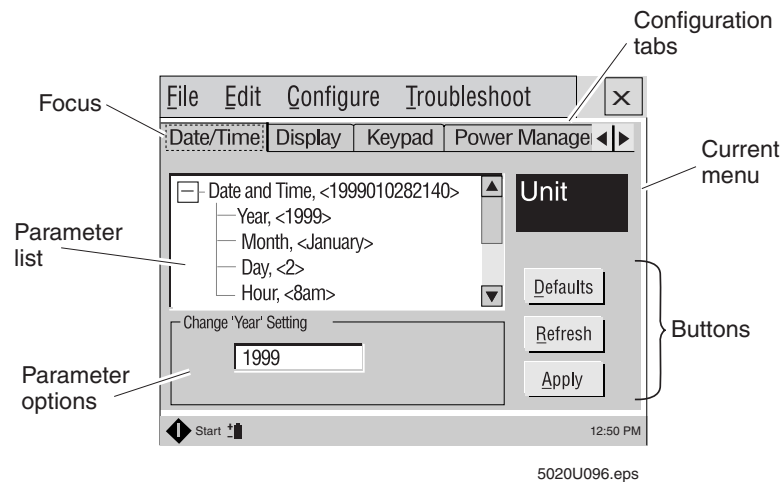
The focus in this illustration is the box around the Date/Time configuration tab and it indicates that the tab is the active section of the screen. When you move to the parameter list and parameter options area, the focus changes to highlight the parameter or option. When you move the focus to a button, the button box has a darker outline.

Here is a quick summary of the keys you use to navigate in the Configuration application. Detailed instructions are also listed next.

Press	To Do This
⬄	Move the focus from the configuration tab to the parameter list to the parameter options to the Buttons.
⬆⬄	Moves the focus in reverse order. For example, you can move from the parameter options back to the parameter list to change another parameter.

Press	To Do This
⌷Ctl⌷ ⌷	Select the next configuration tab. If the focus is on a configuration tab, you can also press ◀ or ▶ to select the next configuration tab.
▼ and ▲	Move up and down within the list of parameters, toggle through the options in a drop-down list, or move the focus through the options in an option button list.
▶	Expand a parameter list for a parameter that is marked with a plus sign ⊞.
◀	Close or collapse a parameter list for a parameter that is marked with a negative sign ⊟.
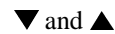
To select another configuration tab

- Press ⌷Ctl⌷ ⌷. Or, if the focus is on the configuration tab, press ◀ or ▶.

  For example, press ⌷Ctl⌷ ⌷ to move the focus from Date/Time to Display and show the Display parameters.

Note: In the Network menu, you always see the Protocols and Advanced configuration tabs. If you have a radio or Ethernet PC card installed in the 5020, you will also see a configuration tab for Radio or Ethernet. For help, see Chapter 9, "Troubleshooting."

To select a parameter

1. Press ⌷ until the first parameter in the parameter list area is highlighted.

2. Press ▲ or ▼ to select a parameter.

   For example, press ⌷ to move the focus from the Display tab to the first parameter, Backlight Timeout.
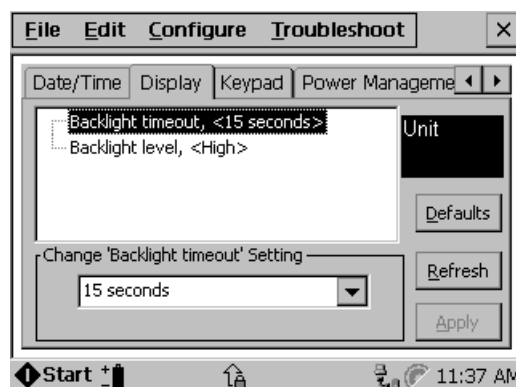
To expand a parameter list ⊞

1. Press ⊜ to move the focus to the parameter list area.

2. Press ▲ or ▼ to select a parameter that is marked with a plus sign ⊞.

3. Press ▶ to expand and display the list of parameters. For example, if the focus is on the parameter Obtain IP Address via DHCP, press ▶ to expand the parameter list.
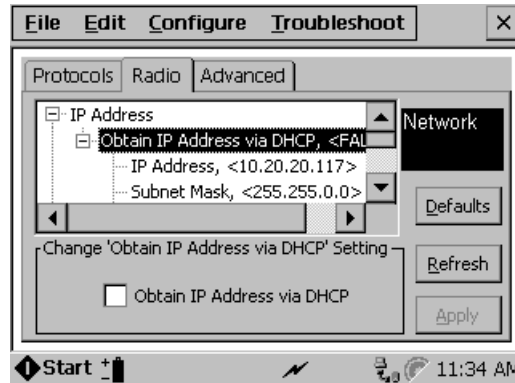
To close or collapse a parameter list ⊟

1. Press ▲ or ▼ to select a parameter that is marked with a negative sign ⊟.

2. Press ◀ to close the list of parameters. For example, if the focus is on the parameter Obtain IP Address via DHCP, press ◀ to close the parameter list.
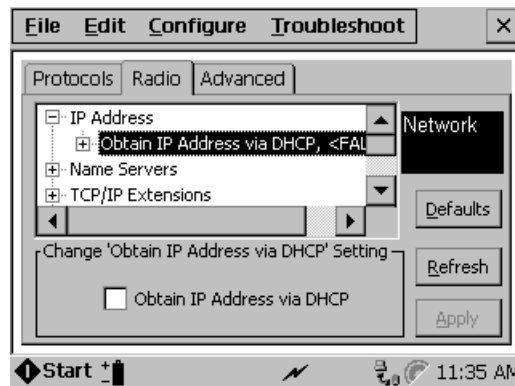
To change a parameter

1. Press ⊜ to move the focus to the parameter list area.

2. Press ▲ or ▼ to select a parameter. If necessary, press ▶ to expand a parameter list.

3. Press ⊜ to move the focus to the parameter options area.

4. Change the parameter. There are four types of entry fields:

- Drop-down list

  Press ▲ or ▼ to toggle through
  the options until the option you
  want is highlighted.
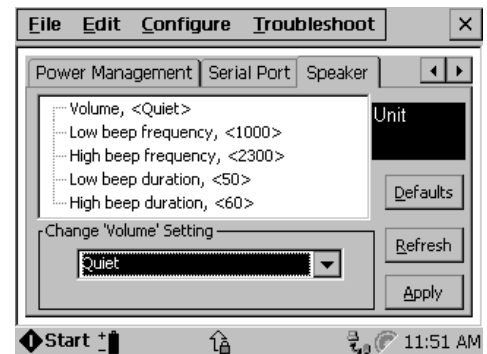
- Entry field or box

  Type or scan a value. If you are
  entering an IP address, use the ◄
  or ► cursor keys to move the
  cursor between segments of the
  IP address field. To edit the data
  in an entry field, use the cursor
  keys, ⟿, or ⟵.
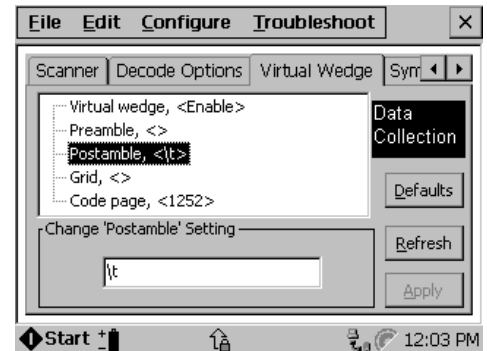
- Check box

  Press ⟿ to check or uncheck
  the option.
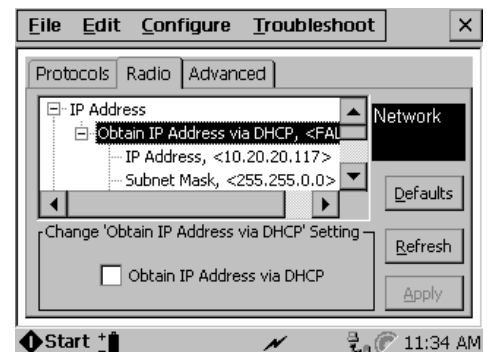
- Option button list

  Press ▲ or ▼ to move the focus
  to the option you want to select.
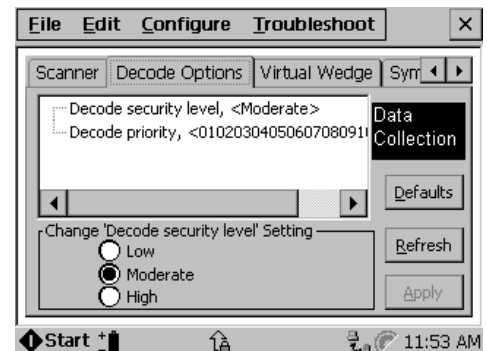
5. Repeat Steps 2 through 4 to change another parameter in the same configuration tab.

6. Press ⊖ to move the focus to the Apply button and then press ◌. A message box appears to confirm the changes.

7. Press ◌ to exit the message box.

Using the Refresh Button

You can refresh or reset any parameters until you press the Apply button to save the changes. A refresh discards all unapplied edits and resets the values to the previous saved value. A refresh also refetches and synchronizes the values for read-only parameters like DHCP status and access point name. After you apply changes, you cannot refresh the parameters to the previous settings. However, read-only parameters are always updated when you refresh.

To refresh changes

1. Press ⊖ to move the focus to the Refresh button or choose Refresh from the File menu.

2. Press ◌ to refresh the parameters in the current screen. A message box appears to confirm the refresh. For example, if the Scanner configuration screen is displayed and you choose refresh, the 5020 only refreshes the Scanner parameters.

3. Press ◌ to choose Yes or press ▶ to select No and then press ◌.

4. Press ⊖ to move the focus to the Apply button and then press ◌. A message box appears to confirm the changes.

5. Press ◌ to exit the message box.

Using the Defaults Button

You can set the parameters back to the factory default values. For a list of the default values, see Appendix A, "5020 Specifications."

To set the factory defaults

1. Press ⊖ to move the focus to the Defaults button or choose Restore Factory Defaults from the File menu.

2. Press ◌ to default the parameters in the current screen. A message box appears to confirm your choice. For example, if the Scanner configuration screen is displayed and you choose to restore the defaults, the 5020 only sets the Scanner parameters to the factory defaults.

3. Press ◌ to choose Yes or press ▶ to select No and then press ◌.

4. Press ⊖ to move the focus to the Apply button and then press ◌. A message box appears to confirm the changes.

5. Press ◌ to exit the message box.

Using a Web Browser and the Unit Management Application

Use a Web browser and the Unit Management application on your desktop PC to remotely configure individual 5020 PCs. To access Unit Management on your desktop PC, you need to connect the 5020 to an Ethernet or RF network. You can configure all your 5020s on the network from your PC, but you can only configure one at a time. If you have a desktop PC with Windows NT, you can use Unit Management to configure a 5020 through a serial connection.

To use the Configuration menu in the remote Unit Management application, you need the Java 1.2 plug-in. You can either automatically download the plug-in during the next procedure or install the plug-in from the Software Developer's Kit (SDK) and Support Files CD-ROM (Part No. 069511).

You can also extend and customize the remote Unit Management application. For help, see Appendix C, "Extending Remote Unit Management."

Note: The remote Unit Management application works best with Internet Explorer 4.0 or higher on Windows 95/98/NT. Netscape Navigator 4.0 or higher is also supported on Windows 95/98/NT. The remote Unit Management application will work on other platforms such as Unix or Macintosh using Netscape Navigator 4.0 or higher. However, the installation process and performance of the Java plug-in for Configuration varies by platform. You may experience some limitations due to browser implementation issues. For help with the Java plug-in on other platforms, see the Sun Microsystems Web page at www.java.sun.com/products/plugin.

To connect to the 5020 from your desktop PC

1. Configure the 5020 to communicate using Ethernet or RF communications. If you are not using a DHCP server, you must configure the IP address and other network parameters on the 5020. For an RF 5020, you must configure the domain and security ID. If you have a Windows NT PC and you want to use a serial connection, you may need to configure the serial port baud rate on the 5020.

   For help, see "Configuring for an RF or Ethernet Network" or "Configuring for Serial or IrDA Communications" later in this chapter.

2. Press ⌷⁄○ to turn on the 5020. The 5020 must remain on while you access it through the remote Unit Management application.

3. Use the D5020 dock or the L5020 adapter to connect the 5020 to AC power. Or, scan this bar code label to turn off the Automatic Shutoff feature:

Disable Automatic Shutoff

$+EZ0

Note: The 5020 must be turned on and must remain on while you manage it through the remote Unit Management application. If you have an RF 5020, it must be in range of an access point.

4. On your desktop PC, turn off the Active Desktop if you have it enabled. To turn it off, right-click on the desktop and choose Active Desktop.

   For a serial connection on a Windows NT PC, you need to look up the IP address for your PC's serial port. In the Programs/Administrative Tools menu, use Remote Access Administration. From the Server menu, choose Communication Ports and then select Serial/COM port. Choose the Port Status button. The IP address is in the Remote Workstation section.

5. On your desktop PC, launch version 4.0 or higher of Internet Explorer or Netscape Commander.

6. If you access the Internet by using a proxy server, add the IP address to the proxy server exceptions list for every 5020 you want to manage. Use the Internet options in your browser to change the proxy server settings.

7. In the browser Address field, type the 5020 IP address or the serial port IP address that you want to configure and then press Enter:

   xxx.xxx.xxx.xxx

   where *xxx.xxx.xxx.xxx* is the IP address of the 5020.

   The Unit Management login screen appears on your desktop PC.
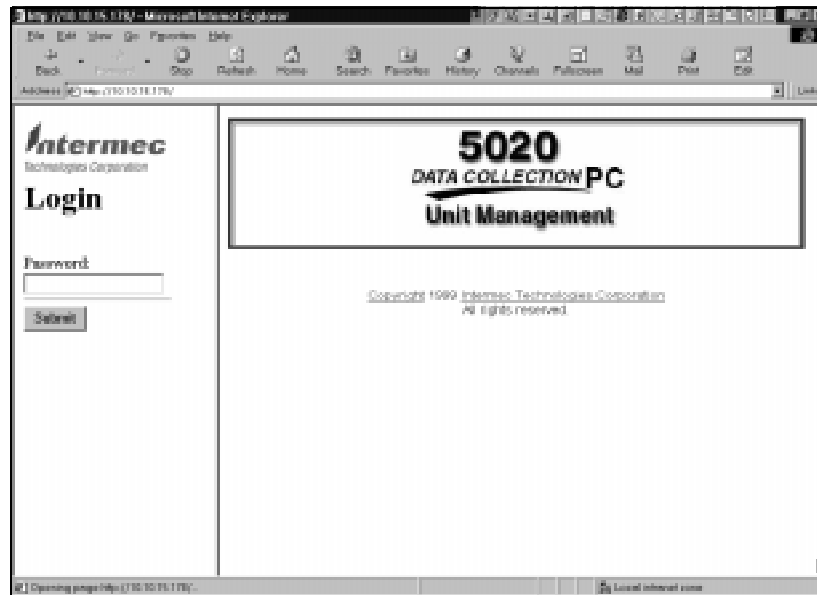
8. If security is enabled on the 5020, type the password and then click Submit. If security is not enabled, click Submit. The Unit Management opening screen appears.
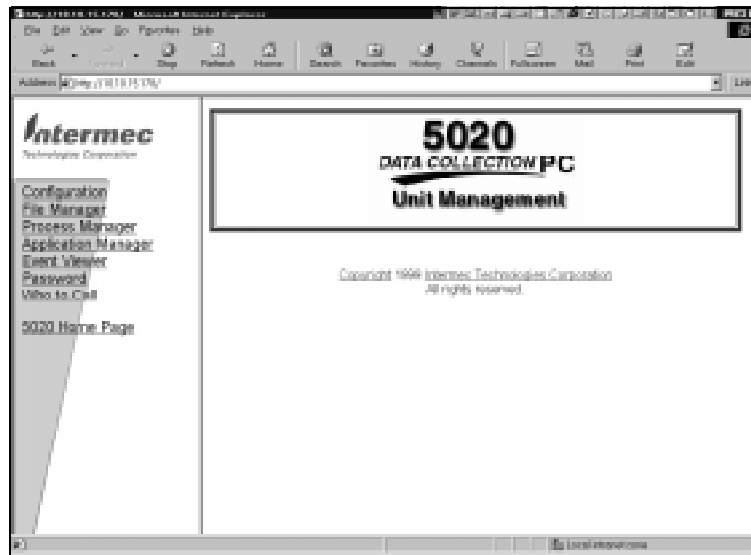
9. Click Configuration.

If the Java 1.2 plug-in is not installed on your PC, it automatically downloads now from the Sun Microsystems Web site. If you choose to download the plug-in, follow the instructions to download and install it. You can also cancel the download and install the plug-in from the SDK CD-ROM. Once the plug-in is installed on your PC, continue with the next step.

The Intermec 5020 Configuration Management screen appears displaying two menu options:
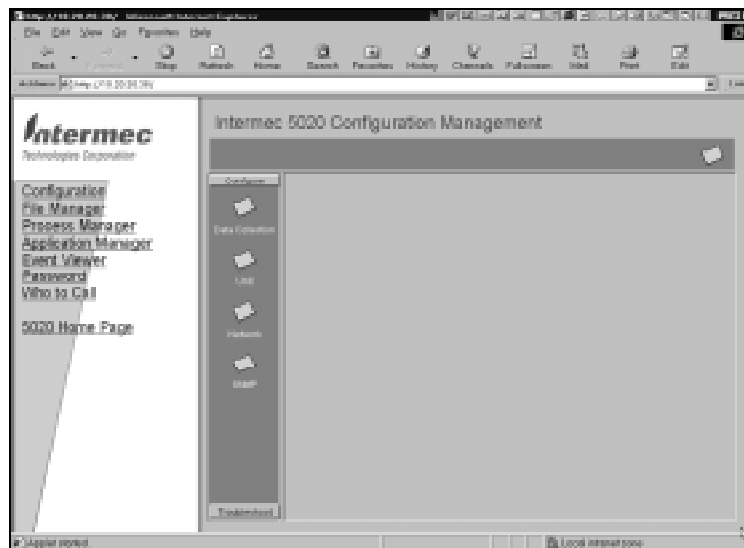
Configure   Choose one of the options to configure data collection, unit, network, and SNMP parameters. You can configure the same parameters using the remote Configuration Management screen as you do using the Configuration application on the 5020. For a list of parameters available in each menu, see the "Configuration Parameters at a Glance" illustration earlier in this chapter.

Troubleshoot   Choose this option to check the battery status and view terminal version information. You can check the battery status for the main battery pack and the bridge battery. The terminal version includes the model number, serial number, software version, PCB part number, RFID part number, and the last day serviced.

Note: Do not resize or refresh the Intermec 5020 Configuration Management windows until the web page is completely loaded. If you do resize the window, wait for the web page to refresh and finish loading before you resize or refresh again.

10.   Click Data Collection, Unit, Network, SNMP, or Troubleshoot. For example, click Unit.

Note: In the Network menu, you always see the Protocols and Advanced configuration tabs. If you have a radio or Ethernet PC card installed in the 5020, you will also see a configuration tab for Radio or Ethernet. For help, see Chapter 9, "Troubleshooting."

11.   Click the configuration tab. For example, click Display.

12.   Click the parameter you want to change. You may need to click ⊞ to expand a parameter list. The parameter options appear in the lower part of the screen.

13.   Change the parameter by clicking an option or check box, selecting from a drop-down list, or typing the new value in the entry field.

14.   To save your changes in each configuration screen, click the Apply button.

15.   Click Unit and then click Power Management. If necessary, reset the Automatic Shutoff to preserve battery power on the 5020. For help, see "Automatic Shutoff" in Chapter 8.

16.   To exit the Configuration Management screen, click another option from the Unit Management menu or exit your Web browser.

17.   If you changed any network settings, press ⌧ twice on the 5020 to have the changes take effect. If you changed the UDP Plus enable parameter, warm boot the 5020. For help booting the 5020, see Chapter 9, "Troubleshooting."

You can also use the Refresh and Defaults buttons in the Configuration Management screens. For help, see "Using the Refresh Button" and "Using the Defaults Button" earlier in this chapter.

Configuring the 5020 by Using SNMP

The 5020 is an SNMP-enabled device. You can use an SNMP management station to control and configure the 5020 anywhere on an SNMP enabled network.

The 5020 supports proprietary Management Information Bases (MIBs). You will find the MIB files for the 5020 in these two places:

- on the Software Developer's Kit (SDK) and Support Files CD-ROM (Part No. 069511) that shipped with this manual

- on www.intermec.com

There are six MIB files:

MIB File	Description
intermec.mib	Defines the root of the Intermec MIB tree.
itcadc.mib	Defines objects for Automated Data Collection. For example, bar code symbologies.
itcfile.mib	Defines objects for manipulating and viewing files. For example, TFTP Timeout.
itcnetwork.mib	Defines objects for Network parameters. For example, 5020 IP address.
itcsnmp.mib	Defines objects for Intermec SNMP parameters and security methods. For example, SNMP security IP address.
itcterminal.mib	Defines objects for terminal parameters. For example, keypad clicker.

In addition to the MIB files, Intermec provides SNMP support for MIB II through seven read-only MIB II (RFC1213-MIB) OIDs. You can only query these seven OIDs through an SNMP management station. The OIDs are not available in the Configuration application nor the remote Unit Management application.

The seven read-only MIB II OIDs are listed and defined in the next table.

MIB II Item	OID	Group or Table	Description
ifNumber	1.3.6.1.2.1.2.1.0	Interfaces group	Indicates the number of adapters present in the system. For the 5020, if one adapter is present in the system, then ifNumber = 1 and ifIndex = 1.
ifIndex	1.3.6.1.2.1.2.2.1.1.ifIndex	Interfaces table (ifTable)	A unique value for each interface. The value ranges between 1 and the value of ifNumber.
ifDescr	1.3.6.1.2.1.2.2.1.2.ifIndex	Interfaces table (ifTable)	A textual string containing information about the interface.

Read-Only MIB II OIDs (continued)

MIB II Item	OID	Group or Table	Description
ifType	1.3.6.1.2.1.2.2.1.3.ifIndex	Interfaces table (ifTable)	An integer containing information about the type of the interface. It is equal to 1 for Other.
ipAdEntAddr	1.3.6.1.2.1.4.20.1.1.IpAddress	IP address table (ipAddrTable)	The IP address to which this entry's addressing information pertains (same as 5020 IP address). Where IpAddress is the user's entered valid non-zero IP address of the 5020, for example, 10.20.10.152.
ipAdEntIfIndex	1.3.6.1.2.1.4.20.1.2.IpAddress	IP address table (ipAddrTable)	The index value that uniquely identifies the interface to which this entry is applicable (same as ifIndex).
ipAdEntNetMask	1.3.6.1.2.1.4.20.1.3.IpAddress	IP address table (ipAddrTable)	The subnet mask associated with the IP address of this entry (same as Subnet Mask).

The community string allows an SNMP manager to manage the 5020 with a specified privilege level. The default read only community string is "public." The default read/write community string is "private."

To configure the 5020 using SNMP

1. Use the Configuration application or the Unit Management application to configure your 5020s for RF or Ethernet communications.

2. Determine the OID (Object Identifier) for the parameter that you want to change. The Intermec base OID is:

   1.3.6.1.4.1.1963

3. Use your SNMP management station to get and set variables that are defined in the Intermec MIBs.

You can set the traps, identification, or security configuration parameters for SNMP. For help, see Chapter 8, "Configuration Command Reference."

Configuring the 5020 by Scanning Bar Code Labels

You can configure the 5020 by scanning bar code labels listed in this manual or by creating your own Code 39 or Code 93 bar code labels. For a list of configuration bar codes, see Chapter 8, "Configuration Command Reference."

Here are the commands that you can configure using bar code labels:

- Automatic Shutoff
- Beep Duration
- Beep Frequency
- Beep (Speaker) Volume
- Codabar
- Code 11
- Code 16K
- Code 2 of 5
- Code 39
- Code 49
- Code 93
- Code 128
- Decode Priority
- Decode Security

- Display Backlight Timeout
- Interleaved 2 of 5
- Keypad Caps Lock
- Keypad Clicker
- MSI
- Plessey
- Postamble
- Preamble
- Scanner Mode
- Scanner Redundancy
- Scanner Selection
- Scanner Timeout
- Scanner Trigger
- UPC/EAN

You need to configure all other commands using the Configuration application, the Unit Management application, or SNMP.

For example, you can use the Beep (Speaker) Volume configuration command to adjust the volume of the computer's audio signals. You can scan this bar code label to set the speaker volume to a very quiet audio level:

Set Beep Volume to Very Quiet

$+BV1

When you scan bar code configuration commands, the 5020 sounds an audio signal unless the beep volume is turned off. There are two beep sequences:

- Low beep, low beep, high beep, high beep means you scanned a valid configuration command.
- Three low beeps means you scanned an invalid configuration command.

You can create bar code labels that contain more than one configuration command. For example, you can create one bar code label to configure the computer for:

- One-Shot Scanner mode (SB0)

- Scanner Redundancy set to high (SR2)

One-Shot Scanner Mode, Set Scanner Redundancy to High

$+SB0SR2

When you create bar code labels to set one or more configuration commands, follow these rules:

- The bar code label must be printed using Code 39 or Code 93 symbology.

- The bar code label must include the start and stop character. Most bar code printing utilities automatically include the start and stop character.

- The bar code label must start with $+ (Change Configuration command).

- Each configuration command must include the command syntax and the value for the command. For example, BV is the command syntax for Beep Volume and the value 4 sets the speaker volume to loud.

- Each configuration command in a concatenated bar code label must begin with the same character. For example, SB and SR can be set in a single bar code label.

- If you set one configuration command to a string of ASCII characters and another configuration command follows, you must enclose the value in quotes. If you do not include the quotation marks, the computer will interpret everything after the first command as data and will not find the second configuration command.

  For example, to set the preamble to BV, use $+ADBV (no quotes are needed). To set the preamble to BV and turn off the beep volume, use $+AD"BV"BV0, or change the order and use $+BV0ADBV. To clear the preamble and postamble from a single label, use $+AD""AE.

- To include quotation marks when you set a value, the entire value must be enclosed in quotation marks. Type two sets of quotation marks ("") to include one quotation mark as the value for a command. For example, to set the preamble to ABC"D, use $+AD"ABC""D".

Configuring the 5020 to Operate in a Network

The 5020 Data Collection PC is a versatile hand-held device that you can easily add to your network. You can use the 5020 as an end device in your wired or 2.4 GHz RF network.

There are several ways to connect the 5020 to your network:

- On an RF 5020, use the radio to communicate with other RF devices in your network.

- On a batch 5020, use an Ethernet PC card (purchased separately) to communicate with other devices in your network.

- Use the IrDA port or a serial PC card (purchased separately) to transfer data between the 5020 and a host computer.

To configure your 5020 for an RF or Ethernet network, start with the instructions in the next section. To configure and use your IrDA port, see "Configuring for Serial or IrDA Communications" later in this chapter.

Configuring for an RF or Ethernet Network

The 5020 communicates over an RF or Ethernet network using either of these network protocol options:

- TCP/IP

- UDP Plus

The 5020 ships with TCP/IP protocol enabled. In a TCP/IP network, the 5020 communicates directly through the access points or through the Ethernet network to the host or server.

UDP Plus is an Intermec protocol built on top of the User Datagram Protocol (UDP). It maximizes the performance of wireless (RF) networks and provides robust data communications. In a UDP Plus network, the 5020 communicates through the DCS 300 to the host or server. If you have a DCS 300 network, you must enable UDP Plus on the 5020 PC.
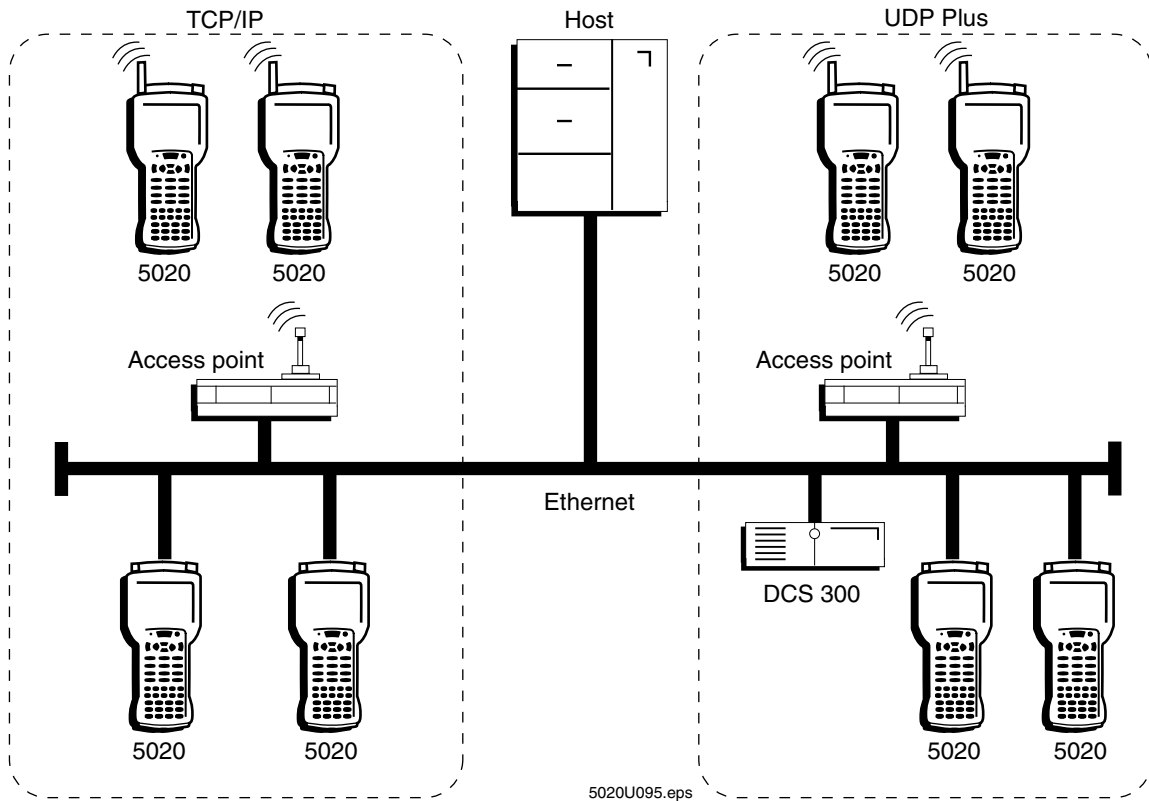
The next sections explain how to configure the network parameters (RF or Ethernet), radio parameters, and UDP Plus network parameters.

Configuring the Network Parameters

The network parameters you need to set depend on your network environment. If you are using a DHCP (Dynamic Host Control Protocol) server, the 5020 broadcasts a message to the server and the DHCP server assigns these network parameters:

- IP address
- Subnet mask
- Default router
- Primary and secondary DNS servers
- Primary and secondary WINS servers

DHCP is automatically enabled on the 5020. If you are not using a DHCP server, you need to disable DHCP and set the parameters listed above. You only need to set the DNS and WINS servers if they are required for your network communications.

If you are on a network that uses a WINS server or you want to use universal naming conventions (UNC) such as \\computer_name\share_name\filename, you need to set the device name. Follow the next instructions to configure the network parameters and then set the device name. For help with the device name, see "Set Communications Properties" in Chapter 4.

To configure the network parameters on the 5020

1. If you have a batch 5020, install an Ethernet PC card. For help, see "Using PC Cards" in Chapter 2.

2. Use the Configuration application to configure the 5020. To open the Configuration application, press ⬛ ③. Choose Programs and then Configuration.

   If you are using a DHCP server, you may not need to configure any additional parameters. Follow the next instructions to view the network parameters and check the DHCP status.

3. Press Alt ⬛ ⑨ to access the Configure menu.

4. Press ▼ to select Network and then press ⏎. The Network configuration screen appears.
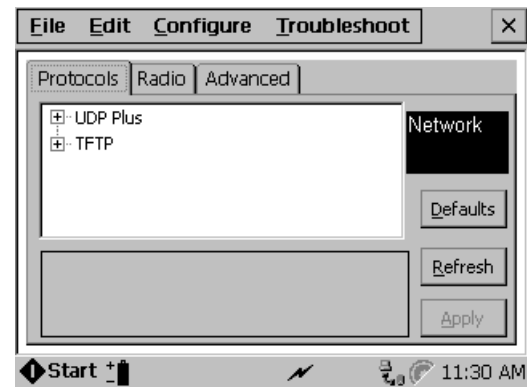
5. For an RF 5020, press ▶ to select the Radio tab. For a batch 5020 with an Ethernet PC card, press ▶ twice to select the Ethernet tab. Use the illustrations on the next page to find the Radio or Ethernet parameters. For a definition of each parameter, see Chapter 8, "Configuration Command Reference."

6. Choose IP address to set DHCP, IP address, subnet mask, and default router. If you are not using a DHCP server, you must uncheck or disable the Obtain IP Address via DHCP parameter and then set the IP address and other network parameters.

   If you are using a DHCP server, choose DHCP Status to check the IP and server assignments for the 5020. Select the Refresh button to see the current assignments. If you have an RF 5020, you may not see any data until you set the radio parameters in the next section.

   Use the ⊞ (Tab) key and the cursor keys to navigate in the configuration screen. Make the changes you need for each parameter. For help, see "Navigating in the Configuration Application" earlier in this chapter.

Radio and Ethernet Parameters

5020U074.eps

5020U075.eps
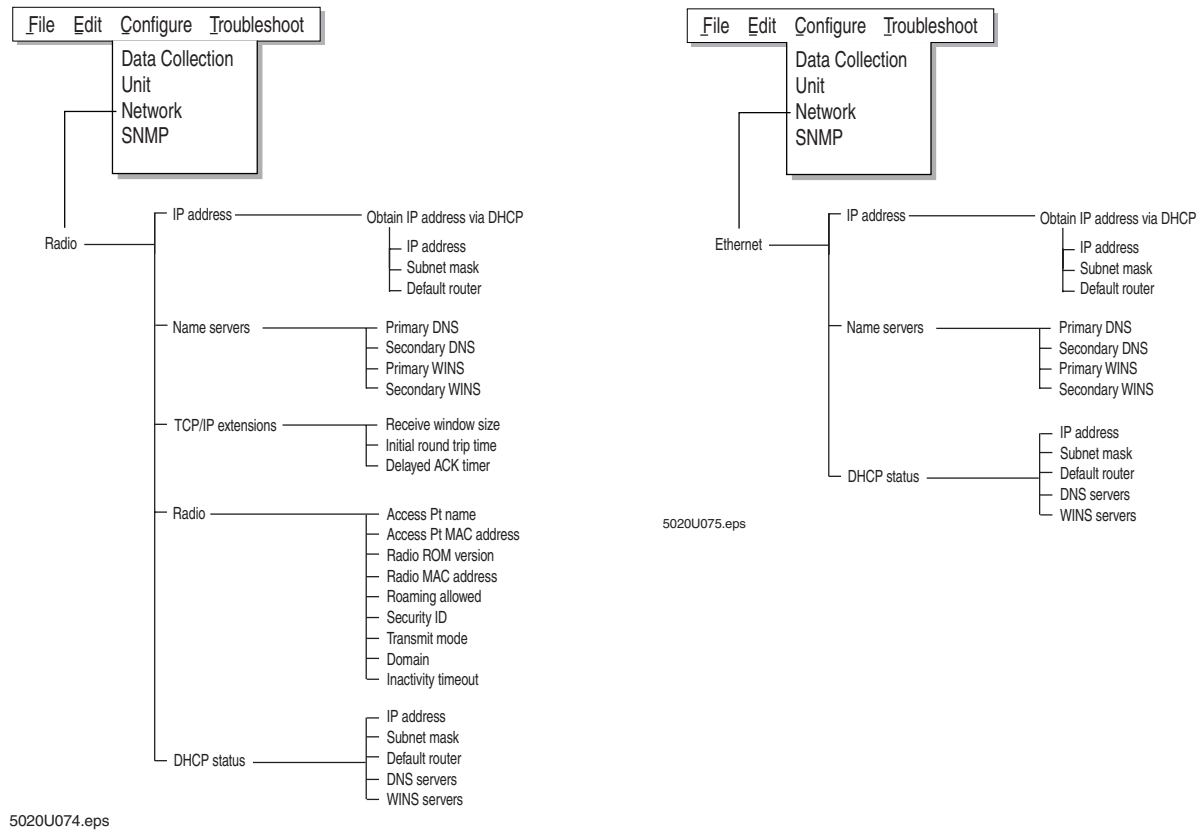
7. To save your changes, press ⊜ to select the Apply button and then press ◯.

8. Choose Name Servers to set the Primary and Secondary DNS and WINS servers. Make the changes you need for each parameter.

9. To save your changes, press ⊜ to select the Apply button and then press ◯.

10. Use the next table to continue configuring your 5020.

Type of 5020	Protocol	What to do next
RF 5020	TCP/IP	Skip the next steps and continue with the next section, "Configuring the Radio Parameters."
	UDP Plus	Skip the next steps and continue with the next section, "Configuring the Radio Parameters." Then, use "Configuring UDP Plus Protocol for a DCS 300 Network" later in this chapter.
Ethernet PC Card	TCP/IP	Continue with Step 11.
	UDP Plus	Skip the next steps and continue with "Configuring UDP Plus Protocol for a DCS 300 Network" later in this chapter.

11. To exit the Configuration application, press ⌐Alt⌐ ⌐■⌐ ⌐6⌐ .

12. Press ▼ to highlight Exit and then press ⌐).

13. Press ⌐I/O⌐ twice to make the changes effective.

Configuring the Radio Parameters

To use the RF 5020 in the RF network, you need to:

• configure the 5020 OpenAir radio parameters.

• configure your access point(s).

The access point acts as a bridge to provide RF communications between the 5020 and the DCS 300 or host. When you first consider purchasing an RF 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 the coverage of each access point overlaps to provide uninterrupted RF access at any location within the building. This manual assumes that a site survey is complete and the access points are installed.

⚠ **CAUTION**

Caution
Make sure all components with antennas are at least 30 centimeters (1 foot) 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.

You must configure the network parameters and the radio parameters on the 5020. For help with the network parameters, see the previous section.

To configure the radio parameters

1. On the access point, check the configuration and write down the value of the domain and security ID. For help, see your access point user's manual.

   If the host computer communicates with the 5020 through 011X access points, you may need to add the 5020 IP address and MAC address as a static entry in the host's ARP table. For help, see "Problems While Operating the 5020" in Chapter 9.

2. If the Configuration application is not open, press ⌐■⌐ ⌐3⌐. Choose Programs and then Configuration.

3. Press ⌐Alt⌐ ⌐■⌐ ⌐9⌐ to access the Configure menu.

4. Press ▼ to select Network and then press ⌐). The Network configuration screen appears.

Network Configuration Screen
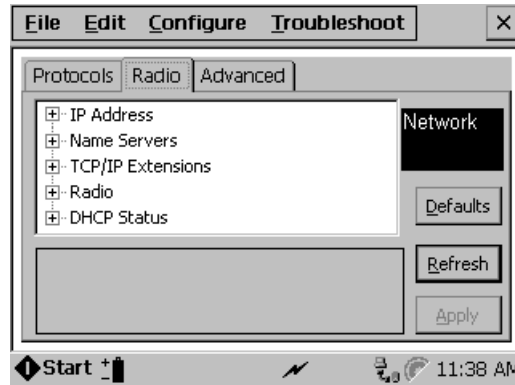
5. Press ▶ to select the Radio tab. Use the next illustration to find the Radio parameters. For a definition of each parameter, see Chapter 8, "Configuration Command Reference."

5020U074.eps
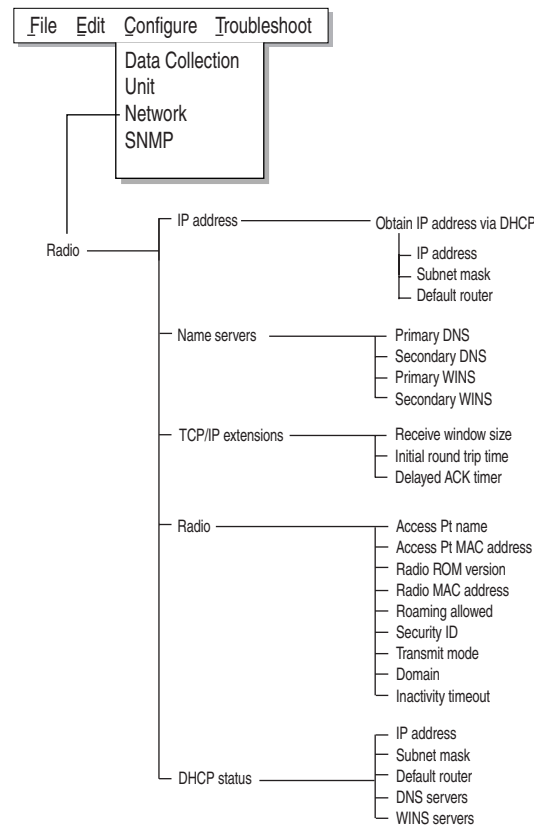
6. Choose Radio to set the domain and security ID. The values on the 5020 must match the values on the access points to communicate.

    Use the ⊟ (Tab) key and the cursor keys to navigate in the configuration screen. Make the changes you need for each parameter. For help, see "Navigating in the Configuration Application" earlier in this chapter.

7. To save your changes, press ⊟ to select the Apply button and then press ◌.

8. If you are using UDP Plus protocol, skip the next steps and continue with the instructions in the next section.

    If you are using TCP/IP protocol, press ⎇ ▭ 6 to exit the Configuration application.

9. Press ▼ to highlight Exit and then press ◌.

10. Press ⎁ twice to make the changes effective.

After you have configured the 5020 for RF communications, a ✔ icon appears and remains on in the Notification Tray indicating that the 5020 is communicating with an access point. If you do not see a ✔ icon or it is blinking, see Chapter 9, "Troubleshooting," for help.

Configuring UDP Plus Protocol for a DCS 300 Network

The DCS 300 server supports and manages communications with other devices in the RF or Ethernet network. When you install and configure the DCS 300, you identify the host computer(s) and 5020 PCs in your network. The 5020s communicate through the DCS 300 with your host by using UDP Plus protocol. For help installing the DCS 300, see the *DCS 300 System Manual* (Part No. 067296).
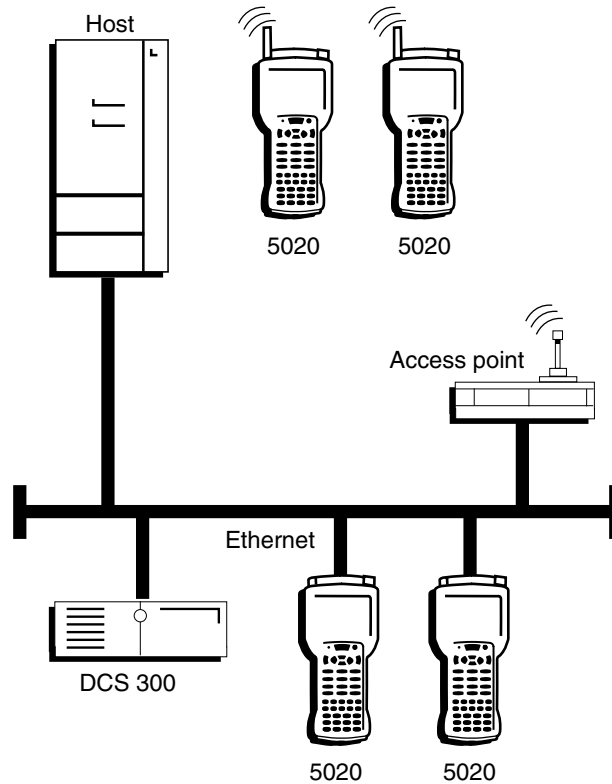
5020U081.eps

For the 5020 to communicate with the server, you must perform these tasks on the DCS 300:

- Configure the UDP Plus network.

- Assign an IP address to each 5020, or if you are using a DHCP server, set up the DNS Configuration dialog box on the DCS 300.

- Enable all 5020s.

- Define the host environment parameters.

- Define the host communications parameters.

Next, you need to configure UDP Plus on the 5020. If you have not configured the network parameters, start with the instructions for "Configuring the Network Parameters" earlier in this chapter.

To configure UDP Plus on the 5020

1. If the Configuration application is not open, press ⬤ ③. Choose Programs and then Configuration.

2. Press ⟨Alt⟩ ⬤ ⑨ to access the Configure menu.

3. Press ▼ to select Network and then press ⟨⟩. The Network configuration screen appears.
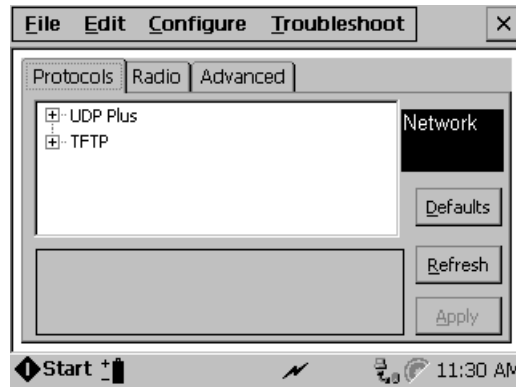
4. Press ⟨⟩ to select UDP Plus.

5. Press ▶ to expand the UDP Plus parameter list. Use the next illustration to find the UDP Plus parameters. For a definition of each parameter, see Chapter 8, "Configuration Command Reference."
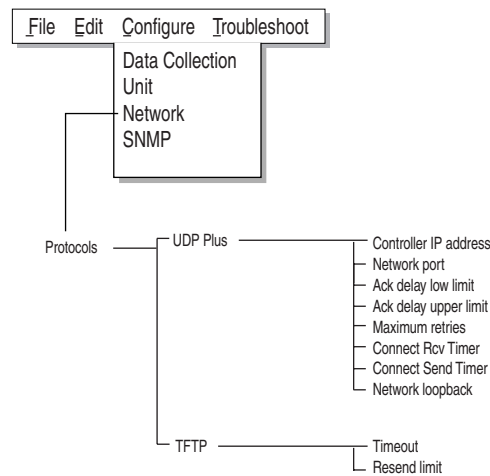
5020U073.eps

6. Choose Controller IP Address and set the IP address of the DCS 300. You can set other UDP Plus parameters as needed.

   Use the ⬚ (Tab) key and the cursor keys to navigate in the configuration screen. For help, see "Navigating in the Configuration Application" earlier in this chapter.

7. To save your changes, press ⬚ to select the Apply button and then press ⬚.

8. Press ⬚ ⬚ three times to select Advanced. The Advanced configuration screen appears.

9. Press ⬚ and then ▼ to select the UDP Plus Enable parameter.
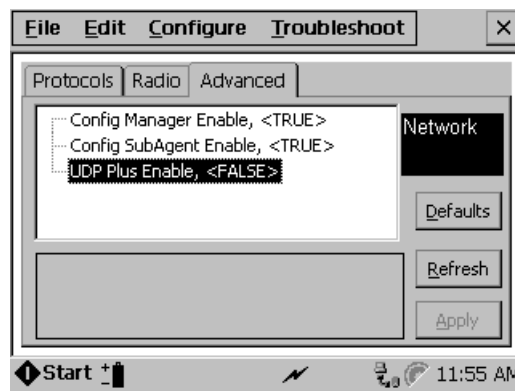
10. Press ⬚ to move to the UDP Plus enable check box and then press ⬚ to enable UDP Plus.

11. To save your changes, press ⬚ to select the Apply button and then press ⬚.

12. Press ⬚ ⬚ ⬚ to exit the Configuration application.

13. Press ▼ to highlight Exit and then press ⬚.

14. Warm boot the 5020 to enable UDP Plus protocol. For help, see "Booting the 5020" in Chapter 9.

After you have configured the 5020 for a UDP Plus network, a ✚ icon appears and remains on in the Notification Tray indicating that the 5020 is communicating with the DCS 300. If you do not see a ✚ icon or it is blinking, see Chapter 9, "Troubleshooting," for help.

Configuring for Serial or IrDA Communications

The 5020 has an IrDA port to transmit data to and from a host computer via IrDA communications. To convert the IrDA port to an RS-232 serial port, you need an L5020 serial communications adapter, a D5020 communications dock, or a serial input/output (I/O) PC card.

5020 Data Collection PC in a Wired Network

Host

File server

Terminals

Ethernet

PC

5020U080.eps

5020 in a D5020
communications
dock hardwired to PC
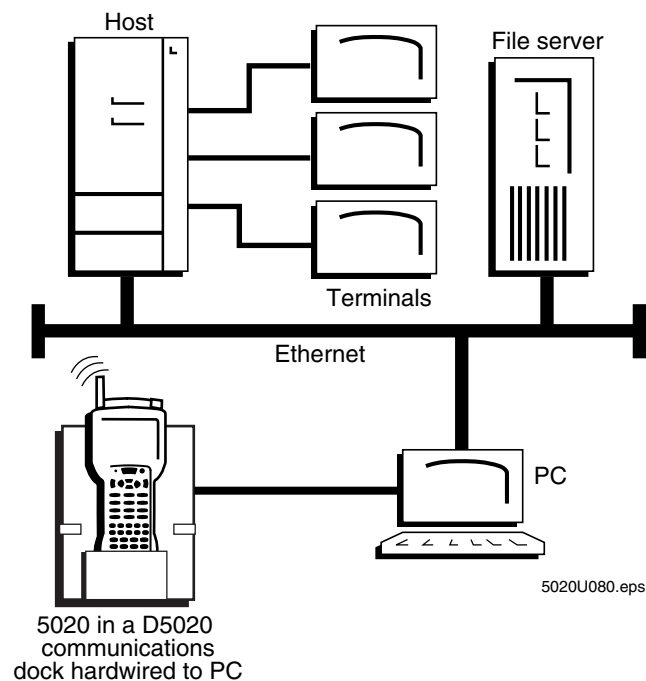
Before you can use the 5020 for serial or IrDA communications, you need to connect and configure the device. The next sections cover these topics:

- Connecting the 5020 to Another Device

- Configuring the Baud Rate

Once the 5020 is connected, you use Windows CE Services to establish a serial connection between your desktop PC and a 5020 for browsing and file transfers. For help, see Chapter 5, "Managing Your 5020."

Connecting to Another Device

You can physically connect the 5020 to another device using one of the methods described next.

D5020 IrDA and Serial Communications Dock   Either connect the serial communications dock to a device (host computer, printer, or other serial device) using an RS-232 null-modem serial cable (Part No. 061953) or connect the IrDA dock to an IrDA transceiver using the IrDA port. Connect the power supply to the dock and then insert the 5020 into the dock. You can transfer data between the 5020 and the device connected to the dock. For help, see the *D5020 Communications Dock Getting Started Guide* (Part No. 068976).

5020U026.eps
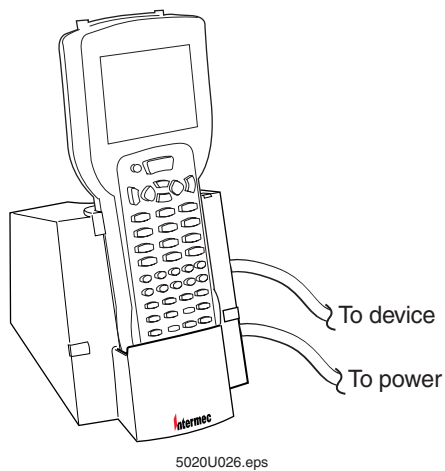
L5020 Serial Communications Adapter   Connect the serial adapter to a device (host computer, printer, or other serial device) using an RS-232 null-modem serial cable (Part No. 061953). Connect the power supply to the serial adapter. Install the serial adapter onto the IrDA port on the 5020. You can transfer data between the 5020 and the device connected to the serial adapter. For help, see the *L5020 Serial Communications Adapter Quick Reference Guide* (Part No. 068978).

5020U049.eps
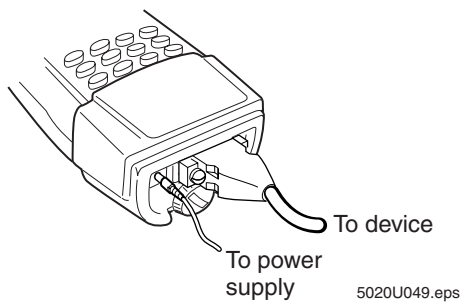
Serial I/O PC Card Install a serial I/O PC card in the 5020 and connect the cable from the serial PC card to a device (host computer, printer, or other serial device). You can transfer data between the 5020 and the device connected to the serial PC card. Check the documentation that ships with your serial PC card. You may need to configure the 5020 baud rate (default of 115200) to match the serial PC card. For help with PC cards, see "Using PC Cards" in Chapter 2.

5020U079.eps

To device
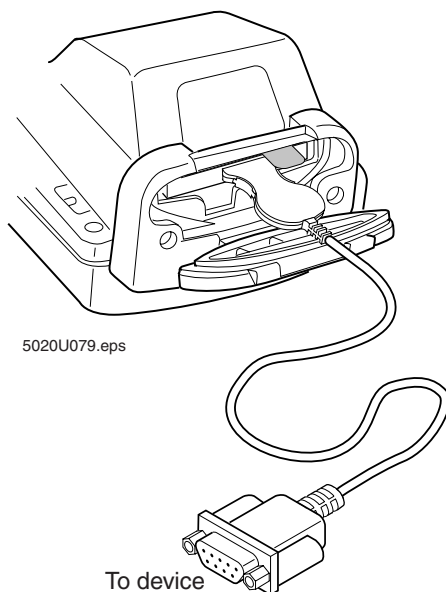
5020-to-5020 (or IrDA Port) Align two IrDA ports for direct communications. Line up the IrDA port on the 5020 with the IrDA port on another 5020 or on a PC. The two IrDA ports must be within about 30.48 centimeters (1 foot) of each other. You do not need to set the IrDA baud rate because the two computers will auto-negotiate and choose the highest possible speed.

IrDA
communications

5020U076.eps
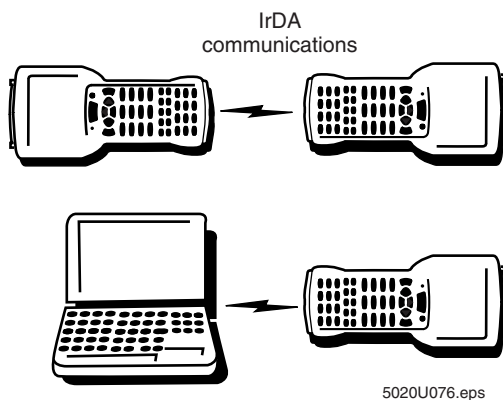
Configuring the Baud Rate

The baud rate you set for the 5020 IrDA port must match the baud rate set for the serial port on the connected device. Configure the baud rate using the Configuration application, the Unit Management application, or SNMP. You must connect the 5020 to a D5020 communications dock or an L5020 serial communications adapter to set the IrDA baud rate.

To configure the baud rate

1. If the Configuration application is not open, press ⊂⊃ ⊂3⊃. Choose Programs and then Configuration.

2. Press ⊂Alt⊃ ⊂⊃ ⊂9⊃ to access the Configure menu.

3. Press ▼ to select Unit and then press ⊂⊃. The Unit configuration screen appears.

4. Press ▶ to select the Serial Port configuration tab and then press ⊚ to select the IrDA baud rate.
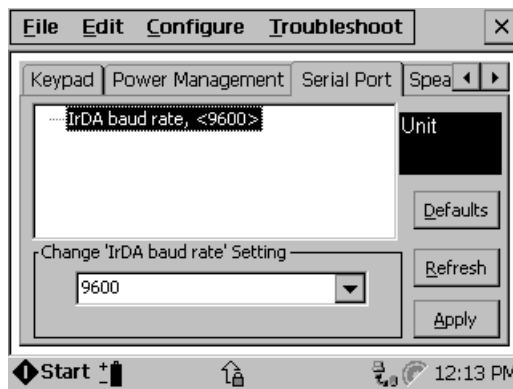
5. Press ⊚ and use the cursor keys to select the baud rate.

6. To save your changes, press ⊚ to select the Apply button and then press ⊂⊃.

7. Press ⊂Alt⊃ ⊂⊃ ⊂6⊃ to exit the Configuration application.

8. Press ▼ to highlight Exit and then press ⊂⊃.

9. Press ⊂I/O⊃ twice to have the changes take effect.

Once the 5020 is connected and configured, you are ready to connect and transfer data between the 5020 and the device that is connected to the IrDA or RS-232 serial port. You use Windows CE Services to establish a serial connection. For help, see Chapter 5, "Managing Your 5020."

4

Customizing the 5020 Using the Control Panel

This chapter describes how you can use the Control Panel applets to customize the look and operation of your 5020.

Understanding the Control Panel

You can set many properties of the 5020 to suit the needs of your environment. Use the Control Panel to customize properties on your 5020 that you cannot change with the Configuration application, Unit Manager, SNMP, or bar code labels. Use this chapter to understand how to:

- set communications properties.

- set the time and date.

- create dialing properties.

- view or modify the desktop display properties.

- adjust the backlight shutoff period.

- adjust the keyboard properties.

- set owner information.

- set a password.

- view battery status and change power suspend time.

- enter regional settings.

- remove application programs.

- view system information.

- adjust memory allocation.

- adjust volume and sounds.

For help on navigating through the screens, see "Using the Keypad" in Chapter 2.

Note: After a cold boot, all Control Panel settings are reset to the factory default values.

To open the control panel

1. Press ⬭ and then press ③.

2. Press ▼ to highlight Settings and then press ⃝.

   The Control Panel appears:
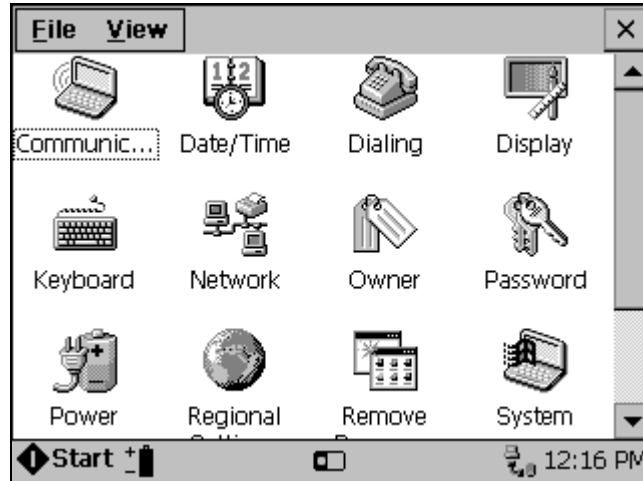
Set Communications Properties

You can use the Communications applet to:

- configure a device name on the 5020.

- select a serial or IrDA connection between a 5020 and another computer.

If you are on a network that uses a WINS server or you want to use universal naming conventions (UNC) such as \\computer_name\share_name\filename, you need to set the device name so that each device in your network has a unique device name. The device name is also known as the NetBIOS name or UNC computer name.

Follow the next instructions to configure the device name. For help with configuring network parameters, see "Configuring the 5020 to Operate in a Network" in Chapter 3.

To configure the device name

1. In the Control Panel, use the cursor keys to highlight the Communications icon.

2. Press ⃝. The Communications Properties dialog box appears and the Identification tab is appears.

Communications Properties Dialog Box
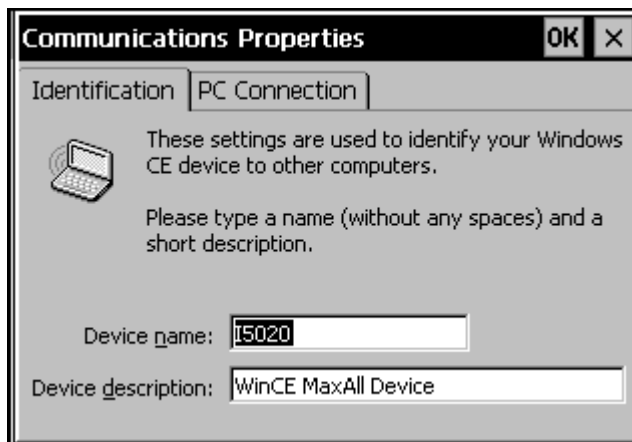
3. Type a device name (without any spaces) that is up to 15 characters long.

4. Press ⬡ to go to the device description field.

5. Type a short description for the device that is up to 50 characters long. The description is an optional field which is not used.

6. Press ◯ to exit and temporarily save your changes.

7. To save the device name permanently so that it will be restored after a cold boot, you need to use the Configuration application to change a network parameter. Press ▭ ③ to open the Start menu.

8. Choose Programs and then Configuration.

9. Press ⬚Alt ▭ ⑨ to access the Configure menu.

10. Select Network and then press ◯. The Network configuration screen appears.
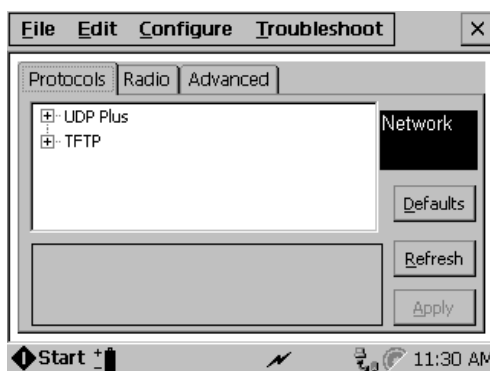
11. Use the ⬒ (Tab) key and the cursor keys to navigate in the configuration screen. Change one network parameter. For example, change the TFTP timeout and increase the value by one.

12. Press ⬒ to select the Apply button and then press ⬭.

13. Exit the Configuration application.

14. Press ⬭ twice to make the changes effective. The device name is now saved in permanent memory and will be restored after a cold boot.

To establish a serial or IrDA link between a 5020 and another computer, you need to use Windows CE Services and a serial I/O PC card, a D5020 Communications Dock, or an L5020 Serial Communications Adapter. For a serial connection, you install a serial I/O PC card in the 5020 and use the Remnet program to create and configure a custom serial connection. For an IrDA connection, you use the D5020 or L5020.

By default, the 5020 uses an IrDA port connection. You use the PC Connection tab in the Communications applet to select a serial connection or to switch back to an IrDA port connection. For help, see "Using Windows CE Services" in Chapter 5.

To select a PC connection

1. In the Control Panel, use the cursor keys to highlight the Communications icon.

2. Press ⬭. The Communications Properties dialog box appears.

3. Press ⬒ to select the PC Connection tab and press ⬭.

4.   Press ⑤ to select the Change button and press ◯.

Change Connection |OK| |×|

Connect to desktop computer using:

|IrDA Port   ▼|

Warning: Changing this setting may result in an
          inability to connect with your desktop
          computer.
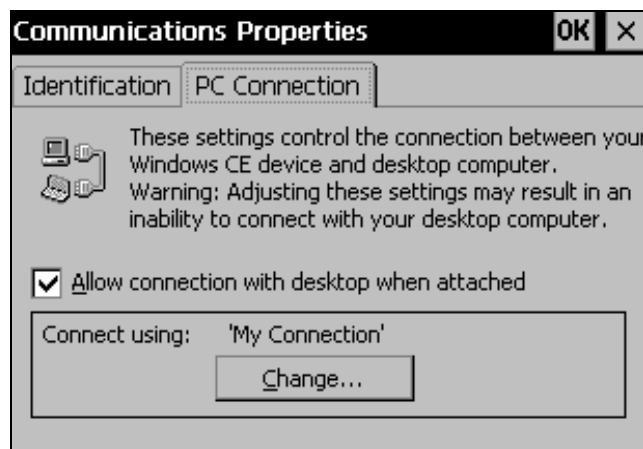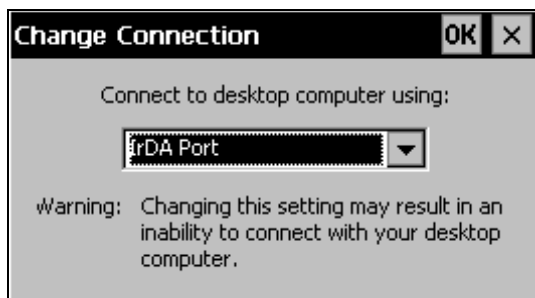
5.   Press ▼ to select a connection (IrDA port or a serial connection such as "My
     Connection") and press ◯.

Change Connection |OK| |×|

Connect to desktop computer using:

|My Connection   ▼|

IrDA Port

Warning: My Connection   ult in an
         inability to connect with your desktop
         computer.
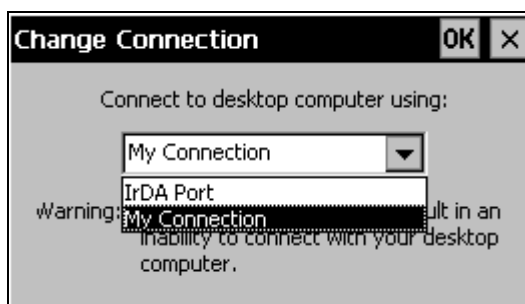
6.   Press ◯ again to return to the PC Connection tab.
7.   Press ⑤ to move the focus from the Change button.
8.   Press ◯ to make your change and exit.

Setting the Time and Date

Use the Date/Time applet to set the time and date on the 5020. The changes you make in
the Date/Time applet affect the system clock of your 5020.

To set the time and date

1.   In the Control Panel, use the cursor keys to highlight the Date/Time icon.

2.   Press Ⓞ. The Date/Time Properties dialog box appears.
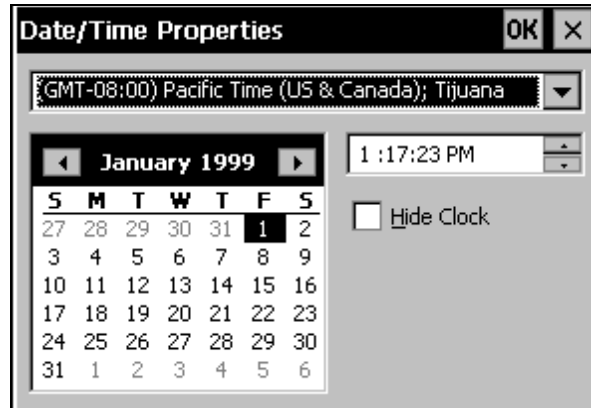
3.   Press ▲ or ▼ to select your time zone from the list box.

4.   Press Ⓢ to go to the calendar. Use the cursor keys to select the month, date, and year. You can also use ▭ ▼ to page down and select the correct month and year.

5.   Press Ⓢ to go to the time box.

    •   Press ▲ or ▼ to change a value.

    •   Press ▶ or ◀ to move between hour, minutes, and seconds.

    You can also enter hour, minutes, and seconds directly if the field is selected.

6.   If you do not want the time to display in your Notification Bar, press Ⓢ to go to the Hide Clock check box and then press ▭. You can also select the Hide Clock check box and create more space for application icons on the Notification Tray.

7.   Press Ⓞ to exit and save your changes.

Note: After a cold boot the date is reset to January 1, 1999, and the time is reset to 12:00 A.M.

Create Dialing Properties

You can use the Dialing applet to configure the 5020 so that you can connect it to other computers via a modem. You also need to use a modem PC card in the batch 5020. For help with PC cards, see Chapter 2, "Learning How to Use the 5020."

To create a new location

1. In the Control Panel, use the cursor keys to highlight the Dialing icon.

2. Press ◯. The Dialing Properties dialog box appears.

3. Press ⤺ to highlight the Dialing Patterns button and press ◯. You can now enter various dialing patterns.
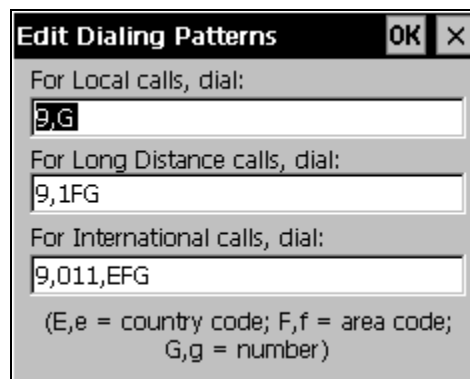
4. Press ◯ to exit and save your changes.

View or Modify the Desktop Display

You can use the Display Properties applet to select an image to display on the 5020 desktop and to adjust the automatic backlight shutoff feature.

To view or modify display properties

1. In the Control Panel, use the cursor keys to highlight the Display icon.

2. Press ◯. The Display Properties dialog box appears.
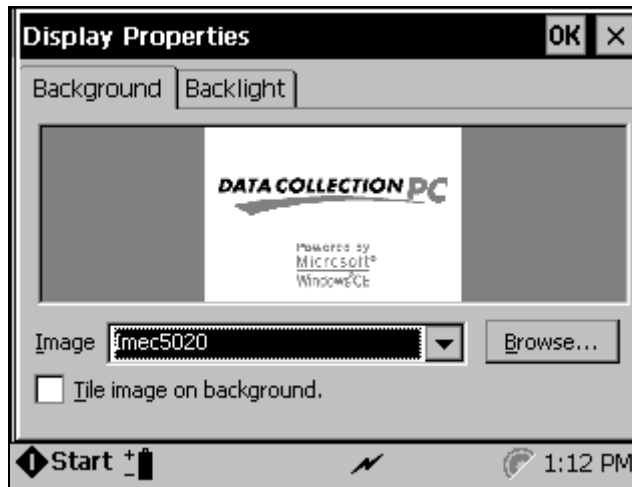
3. Use the cursor keys to select a background image from the list, or press ⊜ to highlight the Browse button and press ◯ to locate the image you want to use. Windows CE uses bitmap (BMP) files for the desktop image.

4. Press ◯ to exit and save your changes.

Adjusting the Backlight Shutoff

You can adjust the automatic backlight shutoff time to save battery life. The default backlight shutoff time is 15 seconds.

To view or modify the backlight shutoff time

1. In the Control Panel, use the cursor keys to highlight the Display icon.
2. Press ⬭. The Display Properties dialog box displays the Background table.
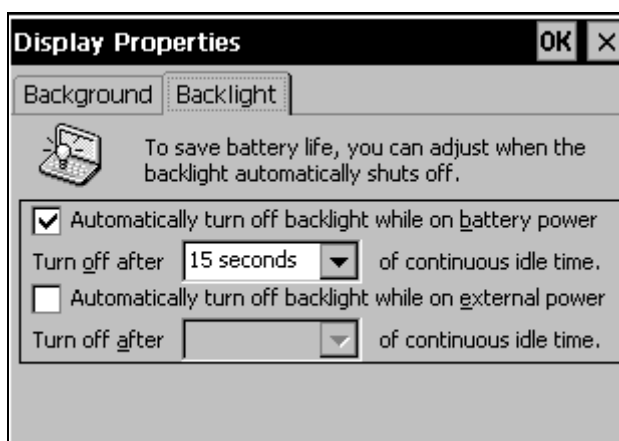
3. Press ▶ to select the Backlight tab.
4. Press ⬭ ⬭ to enable or disable the automatic shutoff feature. If automatic shutoff is enabled, you can ⬭ to the Turn off after box and press ▲ or ▼ to select a time from the list.
5. Press ⬭ ⬭ to enable or disable the automatic shutoff while on external power feature. If automatic shutoff is enabled, you can ⬭ to the Turn off after box and press ▲ or ▼ to select a time from the list.
6. Press ⬭ to exit and save your changes.

Adjusting the Keypad Properties

You can set the character repeat rate and delay for your keypad using the Control Panel.

To change the character delay and repeat rates

1. In the Control Panel, use the cursor keys to highlight the Keyboard icon.

2. Press ⬭. The Keyboard Properties dialog box appears.
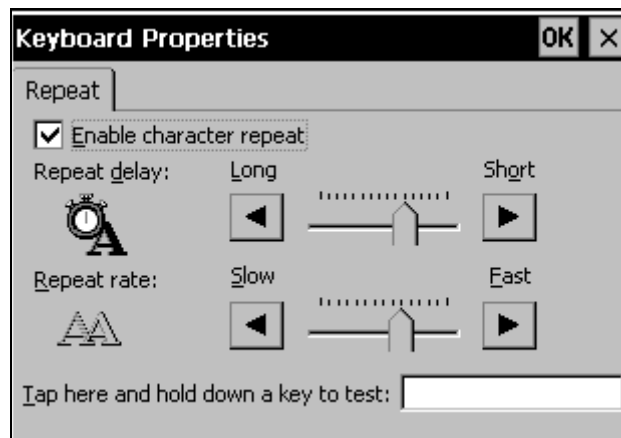
3. Press ⬭ until you highlight the slider for repeat delay or repeat rate.

4. Press ▲ or ▼ to move the sliders that adjust the repeat delay or repeat rate.

5. Press ⬭ to exit and save your changes.
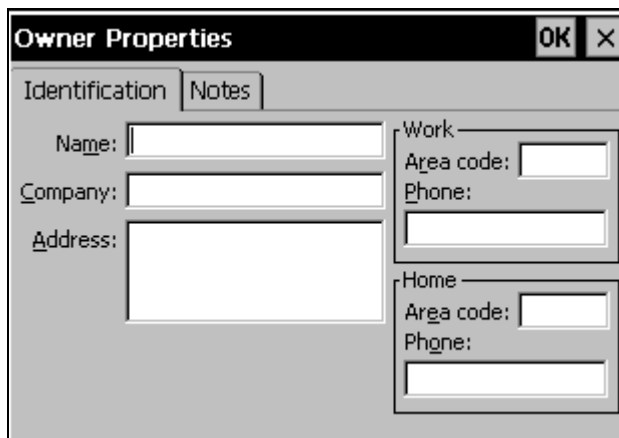
Enter Owner Information

You can record owner information about your 5020 device using the Owner Properties applet. Name and company information entered using the Owner Properties applet appear in the General tab of the System Properties dialog box.

To enter owner information
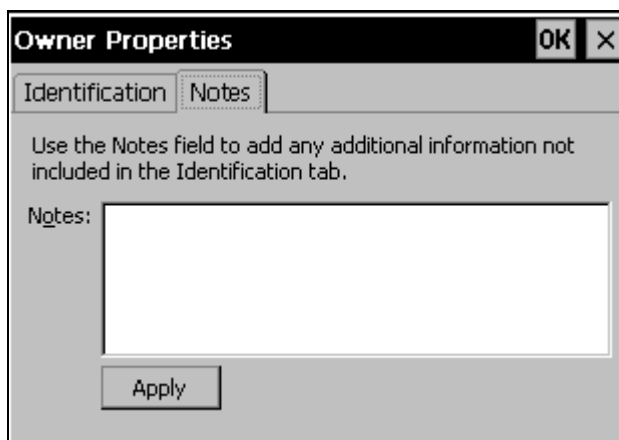
1. In the Control Panel, use the cursor keys to highlight the Owner icon.

2. Press ⬭. The Owner Properties dialog box appears.

Owner Properties Dialog Box

3. Press ⑤ and type a name in the Name text box.

4. Press ⑤ and type a company name in the Company text box.

5. Press ⑤ and type an address in the Address text box.

6. Press ⑤ and type a work area code in the Area Code text box. Tab again and enter the work phone number.

7. Press ⑤ and type a home area code in the Home Code text box. Tab again and enter the home phone number.

8. Select the Notes tab and press ⬭.

9. Press ⑤ to move to the Notes field and type any additional owner information.

10. Press ⑤ to return focus to the Notes tab.

11. Press ⬭ to exit and save your changes.

Setting a Password

You can prevent unauthorized people from gaining access to information on the 5020 by setting a password. You must enter the password to gain access to features that you do not want the user to change.

To set a password

1. In the Control Panel, use the cursor keys to highlight the Password icon.

2. Press ⬭. The Password Properties dialog box appears.

3. Type a password in the Password text box.

4. Press ⬭ and retype the password in the Confirm password text box.

5. Press ⬭ to move to the System Security box.

6. Press ⬭ to Enable Security.

7. Press ⬭ to exit and save your changes.

You need to warm boot the 5020 or select Go to User Mode from the Start Menu for your changes to take effect. For more on warm booting the 5020, see "Warm Booting the 5020" in Chapter 9. The Start menu options are then changed. You will now see that Go to Admin Mode has replaced Go to User Mode and that you cannot change the settings or run applications not listed in Programs.

Note: After a cold boot, password settings are reset to no password.

Viewing Battery Status and Changing Power Suspend Time

Use the Power applet to view battery status and change the power suspend time on your 5020. While on battery power, your 5020 automatically suspends power if there has been a period of continuous inactivity. The factory default setting is to suspend after 5 minutes of inactivity. To save battery power, you can adjust this setting.

To view the battery status

1. In the Control Panel, use the cursor keys to highlight the Power icon.

2. Press ◯. The Power Properties dialog displays the status of your main battery and bridge battery.
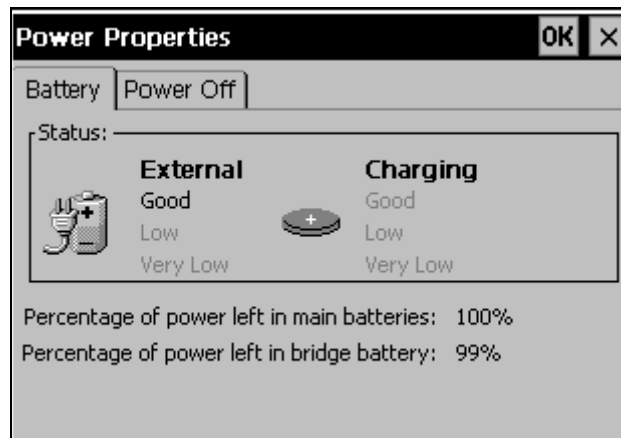
If you are connected to an external power supply, the status of the main battery will show that it is charging.

To change the power suspend time

1. In the Control Panel, use the cursor keys to highlight the Power icon.

2. Press ◯.

3. Press ⟳ to select the Battery tab.

4. Press ▶ to select the Power Off tab. The Power Off dialog box appears.

Power Properties Dialog Box

Power Properties   OK ×

Battery | Power Off

Save battery power and prevent unauthorized use (in conjunction with a password) by having your device turn off when not in use.

On <u>b</u>attery power suspend after [1 Minute ▼] of continuous idle time.

☐ Enable suspend while on <u>e</u>xternal power
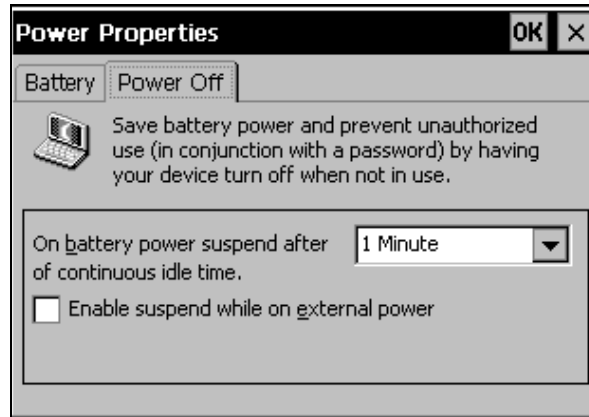
5. Press ⊜ to go to the On battery power suspend after box. Press ▼ or ▲ to select a time from the list.

6. If you want to enable suspend while running on external power, press ⊜ to move to the Enable suspend while on external power supply check box and then press ⊖.

7. Press ⊜ to go to the Suspend after box. Press ▼ or ▲ to select a time from the list.

8. Press ◯ to exit and save your changes.

Enter Regional Settings

You can use the Regional Settings applet to customize the 5020 to display unique regional settings for numbers, currency, time, and date.

To enter regional settings

1. In the Control Panel, use the cursor keys to highlight the Regional Settings icon.

2. Press ◯. The Regional Settings Properties dialog box appears.

Regional Settings Properties OK ×

Region | Number | Currency | Time | Date

Region:
[English (United States) ▼]

Appearance ──────

Time:	1:28:23 PM
Short date:	1/1/99
Long date:	Friday, January 01, 1999
Positive numbers:	123,456,789.00
Negative	-123,456,789.00
Positive currency:	$123,456,789.00
Negative	($123,456,789.00)
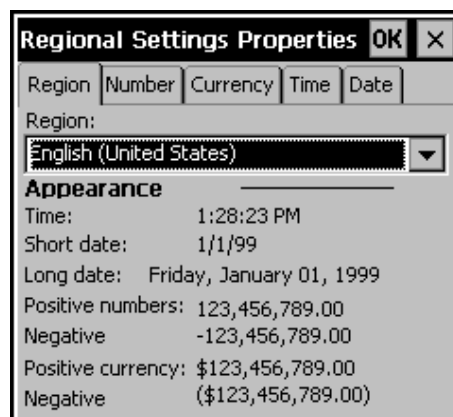
3. Press a cursor key to select a region. The default regional settings are displayed.

4. Press ⬭ to exit and save your changes.

You can also use the Number, Currency, Time, and Date tabs in the Regional Settings Properties dialog box to further customize those settings.

Removing Application Programs

You can easily remove application programs from the 5020. You might need to remove application programs to load another program onto the 5020 or to create more program storage space. For information on installing applications, see "Developing and Installing Applications" in Chapter 6.

To remove application programs

1. In the Control Panel, use the cursor keys to highlight the Remove Programs icon.

2. Press ⬭. The Remove Programs Properties dialog box appears.

```
┌─────────────────────────────────────────────┐
│ Remove Programs Properties            [×]    │
├─────────────────────────────────────────────┤
│ Select the program to uninstall. It will be  │
│ removed from the system according to         │
│ instructions in the program's INF file.      │
│                                              │
│ ┌─────────────────────────────────────────┐ │
│ │                                         │ │
│ │                                         │ │
│ │                                         │ │
│ │                                         │ │
│ └─────────────────────────────────────────┘ │
│                                              │
│   ┌───────────┐        ┌───────────┐         │
│   │  Remove   │        │  Cancel   │         │
│   └───────────┘        └───────────┘         │
└─────────────────────────────────────────────┘
```
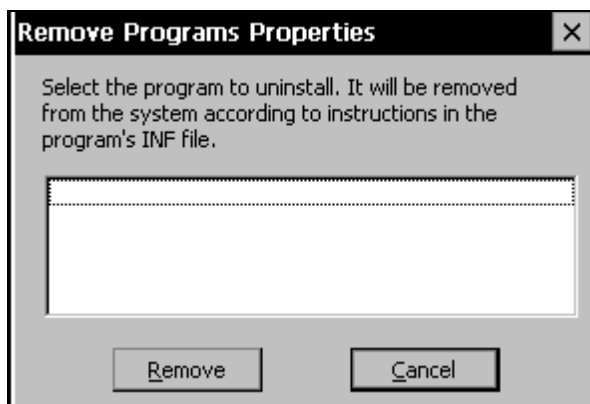
3. Press ▲ or ▼ to select the program that you want to remove.

4. Press ⮐ to select the Remove button.

5. Press ⬭ to exit and save your changes.

Viewing System Information

You can view the system information for information such as how much memory is installed in your 5020, what version of Windows CE you are using, and what Intermec software build you are using.

To view the system information

1. In the Control Panel, use the cursor keys to highlight the System icon.

2. Press ⬗. The System Properties dialog box displays the General tab.

3. Press ⬗ to exit and save your changes.

Adjusting Memory Allocation

Memory allocation is divided between storage memory and program memory. If you do not have enough space for a file, you should increase the amount of storage memory. If your 5020 is running slowly, try increasing the amount of program memory.

To adjust the memory allocation

1. In the Control Panel, use the cursor keys to highlight the System icon.

2. Press ⬗. The System Properties dialog box displays the General tab.

System Properties OK ✕

General | Memory

Move slider to the left for more memory to run programs.
Move slider to the right for more storage room. Only unused
RAM can be adjusted.

Storage Memory   **Program Memory**

Allocated 2870KB   **Allocated** 4708KB
In Use 408KB   **In Use** 2840KB
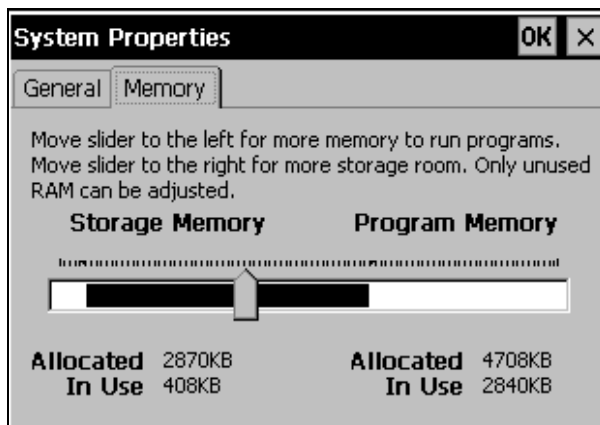
3. Press ▶ to select the Memory tab.

4. Press ⊖ to select the Storage Memory/Program Memory slider.

5. Press the cursor keys to move the slider.

6. Press ◯ to exit and save your changes.

Changing the Volume and Enabling Sounds

You can set the volume at which your 5020 plays sounds. You can also turn sounds off
for events, applications, and notifications.

To change the volume and enable sounds

1. In the Control Panel, use the cursor keys to highlight the Volume icon.

2. Press ◯. The Volume & Sounds Properties dialog box appears.

Volume & Sounds Properties OK ✕

Volume | Sounds

Enable sounds for:
☐ Events (warnings, beeps and system events)
☑ Applications (program specific and all other sounds)
☑ Notifications (alarms, appointments and reminders)

▲ Loud   Enable clicks and taps for:
                ☑ Key clicks: ⦿ Loud   ◯ Soft
▼ Quiet
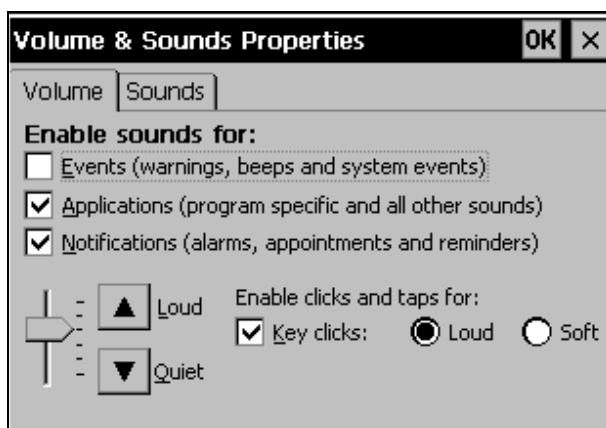
3. Press ⑤ to access the Enable sounds for check boxes. Press ⊂⊃ to select or clear the check boxes to turn sounds on or off.

4. Press ⑤ to select the volume slider. Press ▼ or ▲ to change the volume.

5. Press ⑤ to select the Key clicks check box. Press ⊂⊃ to select or clear the check box.

6. Press ( ) to exit and save your changes.

You can also use the Sounds tab to select unique sounds for various system events. Windows CE supports 8-bit, 11 KHz, mono wave (WAV) files that you can transfer from your desktop to the 5020 to use for these events.

5
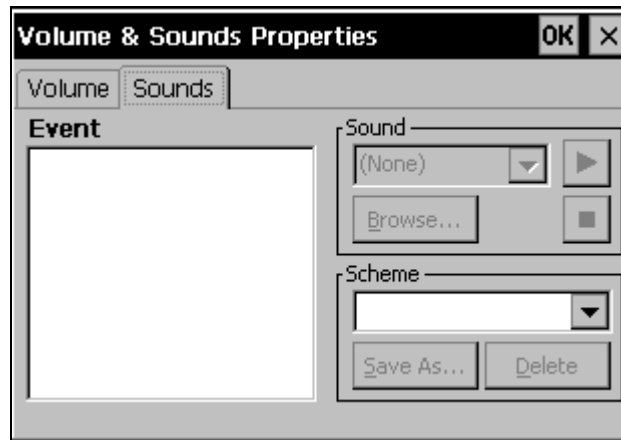
Managing Your 5020

Use this chapter to understand how to manage files, processes, applications, and security on your 5020 using the Unit Management applications from your desktop PC. It also describes Windows CE Services, which allows you to establish a serial connection between your desktop PC and a 5020.

How to Manage Information on Your 5020

You can manage information on your 5020 with these Unit Management applications:

- File Manager

- Process Manager

- Application Manager

- Event Viewer

- Password

You can also use Windows CE Services to establish a serial connection between your desktop PC and a 5020 device. Windows CE Services allows you to:

- Move files between the 5020 and your desktop PC.

- Keep the data on your 5020 safe by backing it up on your desktop PC.

Using a Web Browser and the Unit Management Application

Use a Web browser and the Unit Management application on your desktop PC to remotely manage information on 5020 PCs. To access Unit Management on your desktop PC, you need to connect the 5020 to an Ethernet or RF network. You can configure all your 5020s on the network from your PC, but you can only configure one at a time. If you have a desktop PC with Windows NT, you can use the Unit Management application to configure a 5020 through a serial connection.

The following sections explain how to use the Unit Management applications to manage information, processes, and security on your 5020 PCs. For help using the Configuration Application, see Chapter 3, "Configuring the 5020."

Note: The remote Unit Management application works best with Internet Explorer 4.0 or higher on Windows 95/98/NT. Netscape Navigator 4.0 or higher is also supported on Windows 95/98/NT. The remote Unit Management application will work on other platforms such as Unix or Macintosh using Netscape Navigator 4.0 or higher. However, the installation process and performance of the Java plug-in for Configuration varies by platform. You may experience some limitations due to browser implementation issues. For help with the Java plug-in on other platforms, see the Sun Microsystems Web page at www.java.sun.com/products/plugin.

To manage a remote 5020 from your desktop

1. Configure the 5020 to communicate using Ethernet or RF communications. If you are not using a DHCP server, you must configure the IP address and other network parameters on the 5020. For an RF 5020, you must configure the domain and security ID. If you have a Windows NT PC and you want to use a serial connection, you may need to configure the serial port baud rate on the 5020.

2. Press ⌷⁄○ to turn on the 5020. The 5020 must remain on while you access it through the remote Unit Management application.

3. Use the D5020 dock or the L5020 adapter to connect the 5020 to AC power. Or, scan this bar code label to turn off the Automatic Shutoff feature:

Disable Automatic Shutoff

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

$+EZ0

Note: The 5020 must be turned on and must remain on while you manage it through the remote Unit Management application. If you have an RF 5020, it must be in range of an access point.

4. On your desktop PC, turn off the Active Desktop if you have it enabled. To turn it off, right-click on the desktop and choose Active Desktop.

    For a serial connection on a Windows NT PC, you need to look up the IP address for your PC's serial port. In the Programs/Administrative Tools menu, use Remote Access Administration. From the Server menu, choose Communication Ports and then select Serial/COM port. Choose the Port Status button. The IP address is in the Remote Workstation section.

5. On your desktop PC, launch version 4.0 or higher of Internet Explorer or Netscape Commander.

6. If you access the Internet by using a proxy server, add the IP address to the proxy server exceptions list for every 5020 you want to manage. Use the Internet options in your browser to change the proxy server settings.

7. In the browser Address field, type the 5020 IP address or the serial port IP address that you want to configure and then press ⌷:

    xxx.xxx.xxx.xxx

    where *xxx.xxx.xxx.xxx* is the IP address of the 5020.

The Unit Management login screen appears on your desktop PC.
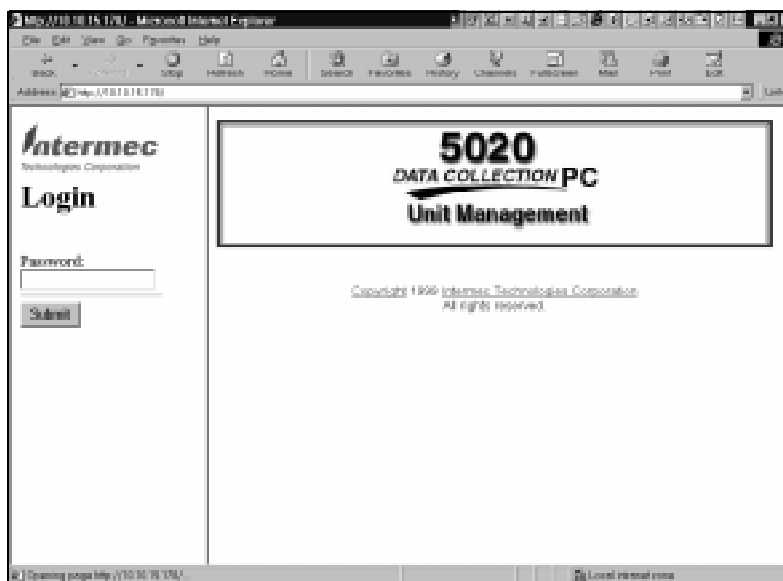
8. If security is enabled on the 5020, type the password and then click Submit. If security is not enabled, click Submit. The Unit Management opening screen appears.
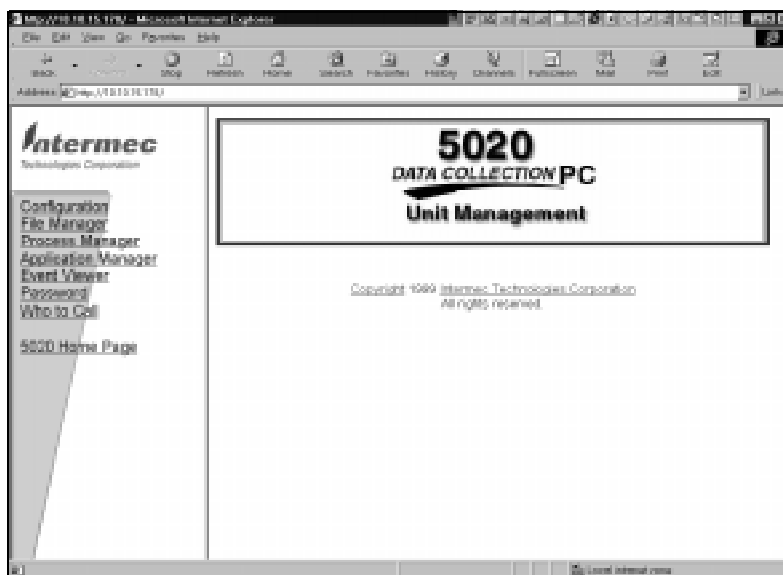
9. Choose the Unit Management application that you want to use. For help using the Configuration Application, see Chapter 3, "Configuring the 5020."

Using File Manager

File Manager is a Unit Management application that you can use to copy, delete, rename, and move files on a 5020. Use File Manager to

- create a directory.

- remove a directory.

- upload a file to a directory.

- copy a file.

- move a file to another directory.

- rename a file.

- change the attributes of a file.

- run an executable file on the 5020.

- delete a file.

To run File Manager on your desktop PC

1. Click File Manager. The initial File Manager screen appears on your desktop.
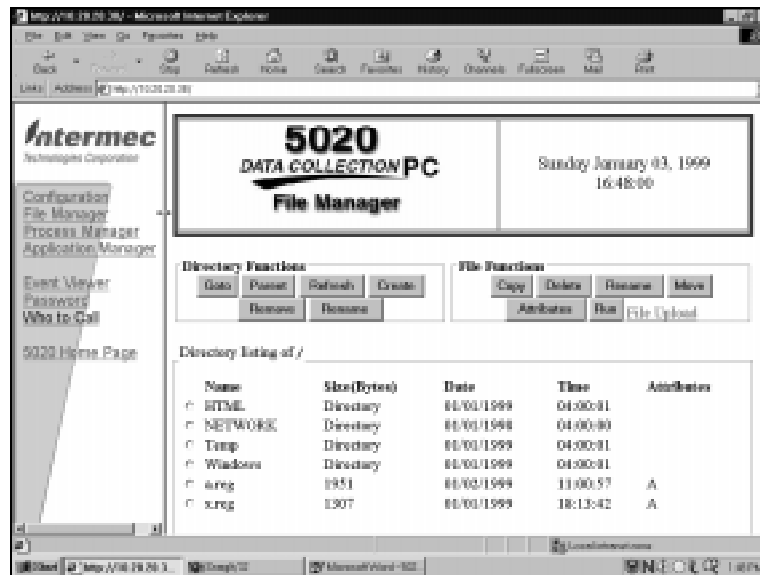
2. Choose the function you want to perform. Each function is explained in the sections that follow.

Creating and Removing Directories

You can use File Manager to create and remove directories on a remote 5020. You must delete or move all the files and directories contained in a directory before you delete it.

To create a directory

1. Click the Goto or Parent button to navigate to the location where you want to create the new directory.

2. Click the Create button.

3. Enter a name for the new directory.
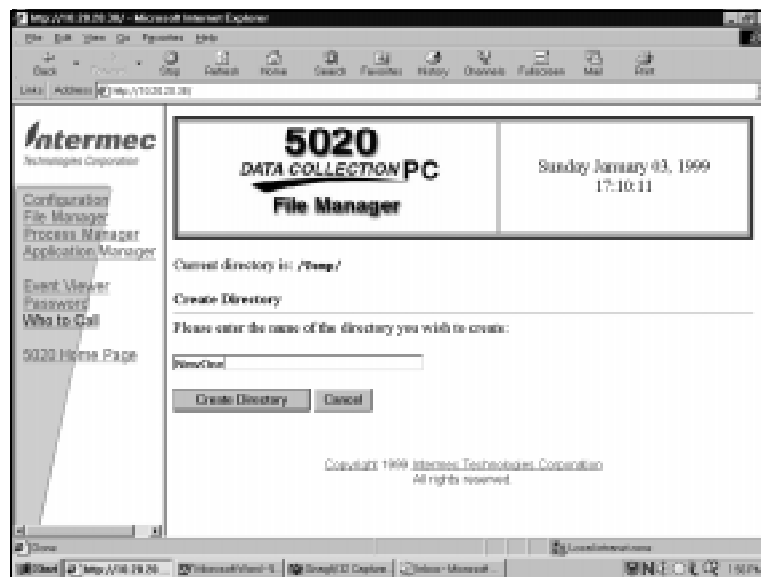
4. Click the Create Directory button to add the new directory or click Cancel to end the request.

5. The screen showing the parent directory is refreshed. If the operation was successful, the new directory appears on the screen with a conformation message.
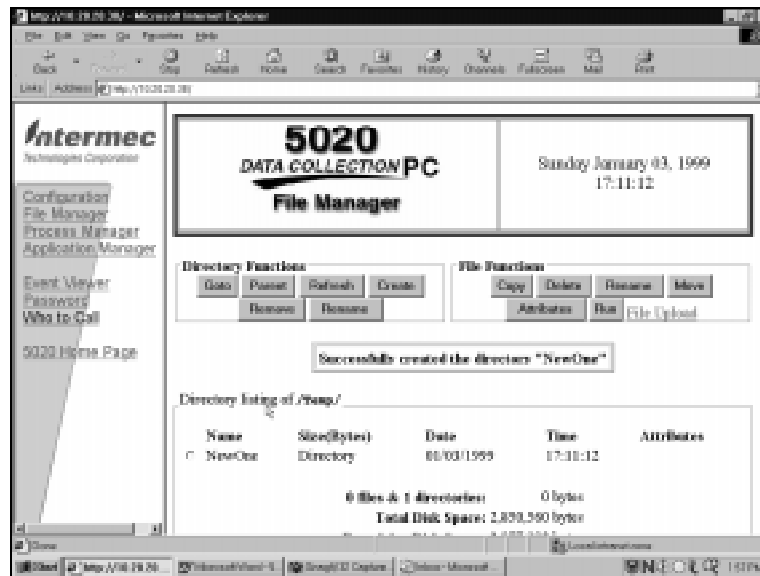
To delete a directory

1. Click the Goto or Parent button to navigate to the parent directory or the directory you want to remove.

2. Click on the option button beside the directory you want to remove.
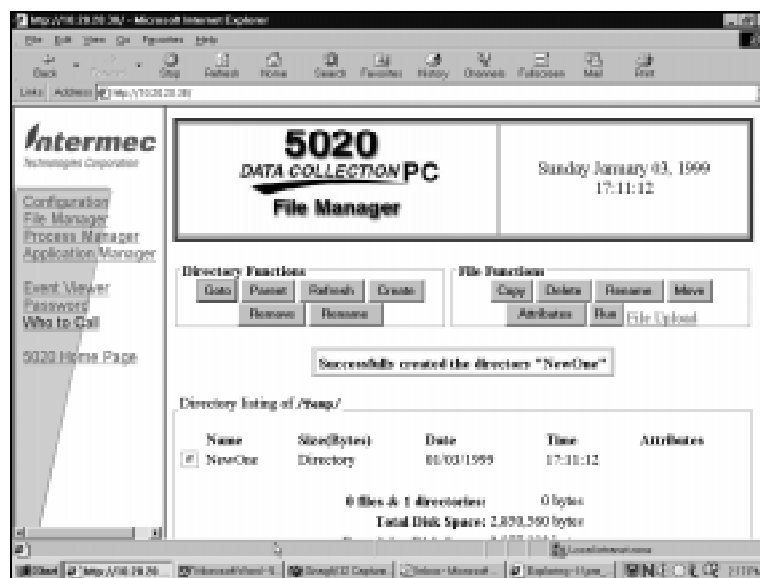
3. Click the Remove button. The directory you selected appears on a new screen along with a message asking you to confirm the deletion.
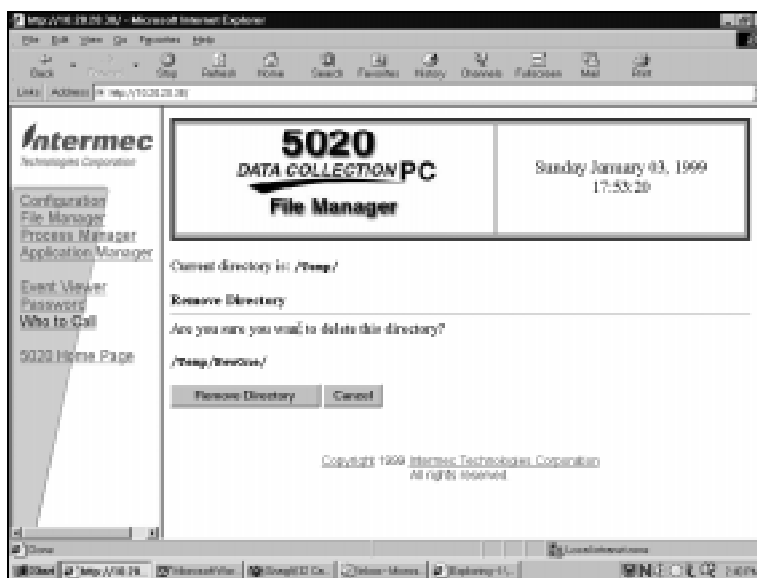
4. Click the Remove Directory button to remove the directory or click Cancel to end the request.

5. The screen showing the parent directory is refreshed. If the delete operation was successful, the directory you deleted does not appear and a confirmation message appears on the screen.
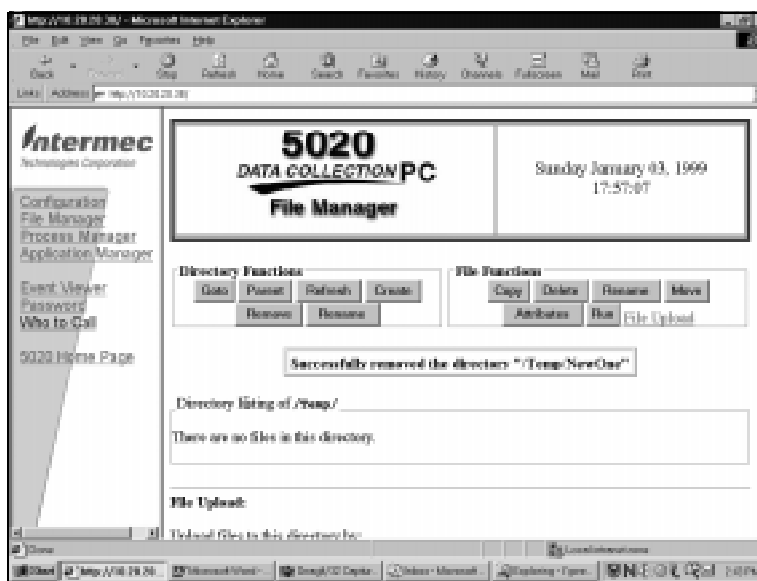
Uploading a File to a Directory

You can upload a file to a directory using the File Upload form at the bottom of the main File Manager screen.

1. Click the Goto or Parent button to navigate to the destination directory on the 5020.

2. Go to the File Upload form at the bottom of the main File Manager screen and click the Browse button.
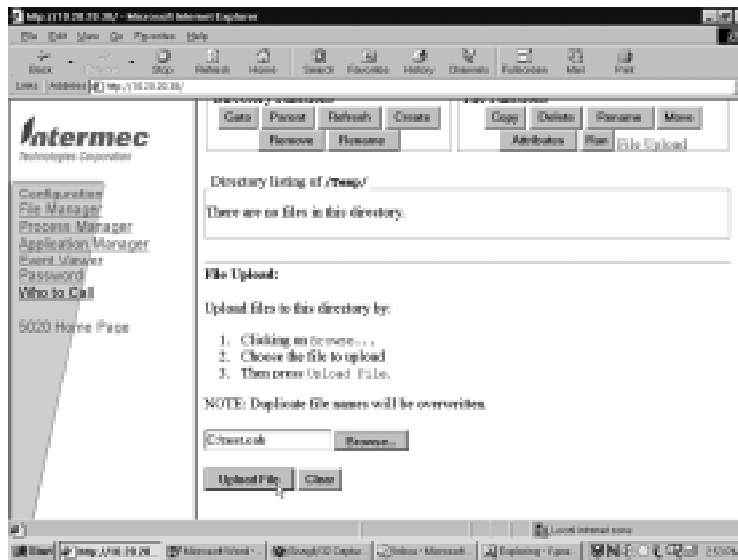
3. From the Choose File dialog box, select the file on your desktop PC that you want to upload.
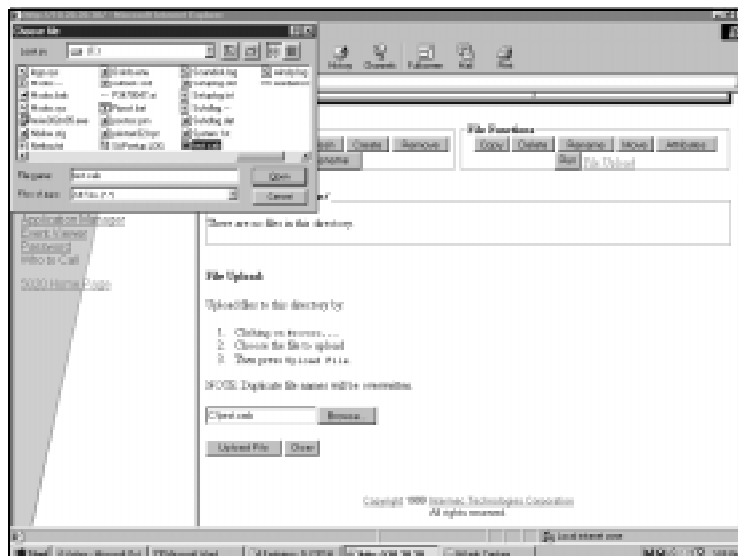
4. Click the Open button. The path and file name of the file you selected appears on the File Upload form.

5. Click the Upload File button.

6. The screen showing the parent directory is refreshed. If the upload operation was successful, the directory you uploaded appears along with a confirmation message on the screen.
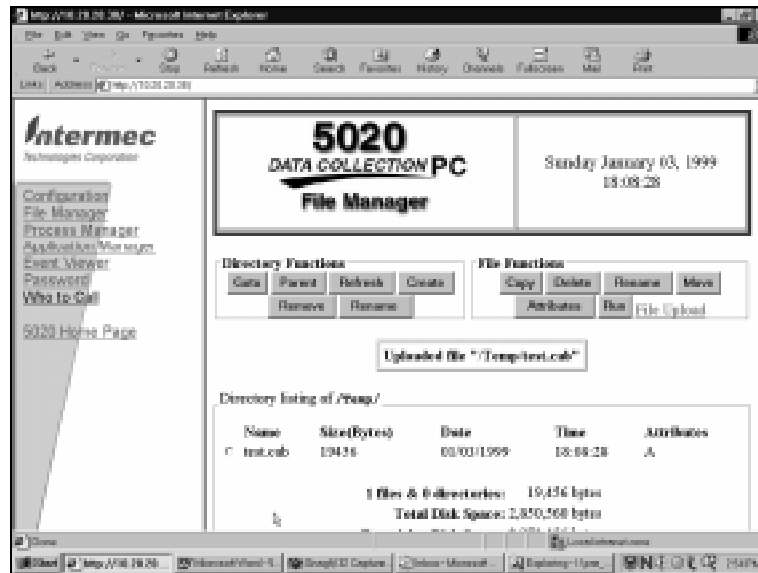
Copying a File

You can use File Manager to make a copy of a file.

To copy a file

1. Click the Goto or Parent button to navigate to the directory containing the file you want to copy.

2. Click on the option button to select the file you want to copy.

3. Click the Copy button. If you want to save the copied file to the same directory as the original file, enter a distinctive new file name in the New Name field.

4. Click the Copy File button to create a copy of the file, or click Cancel to end the request. The screen showing the parent directory is refreshed. If the copy operation was successful, you will see the file you copied in the directory listing and a confirmation message on the screen.
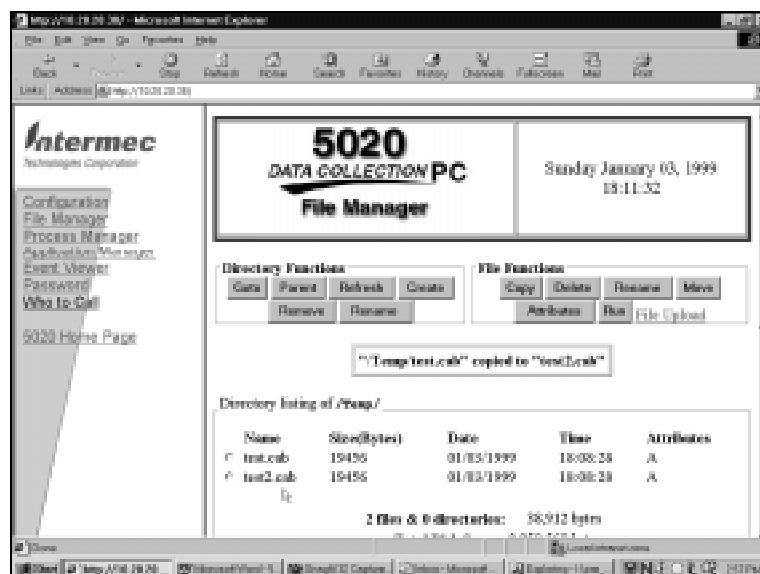
Moving a File to Another Directory

You can use File Manager to move a file into another directory on the 5020.

To move a file to another directory

1. Click the Goto or Parent button to navigate to the directory with the file you want to move.

2. Click on the option button to select the file you want to move.

3. Click the Move button. The current directory is listed. Enter the path to the new location and the file name in the New Path and Name field.

4. Click the Move File button to move the file, or click Cancel to end the request. The screen showing the parent directory is refreshed. If the move operation was successful, the file you moved does not appear in the directory listing and a message confirming the move appears on the screen.

Renaming a File

You can use File Manager to rename a file on the 5020.

To rename a file

1. Click the Goto or Parent button to navigate to the directory with the file you want to rename.

2. Click on the option button to select the file you want to rename.
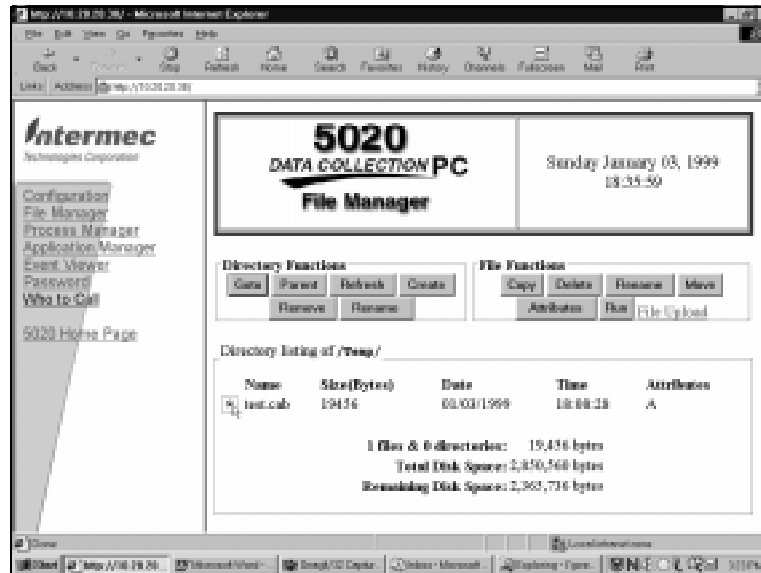
3. Click the Rename button. Enter a descriptive name for the file in the New Name field.
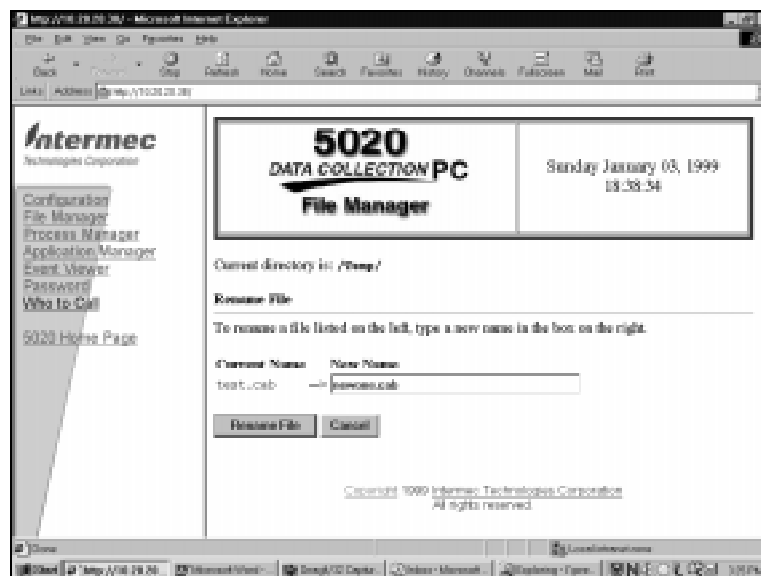
4. Click the Rename File button to rename the file, or click Cancel to end the request. The screen showing the parent directory is refreshed. If the rename operation was successful, the renamed file appears in the directory listing and a message confirming the action appears on the screen.
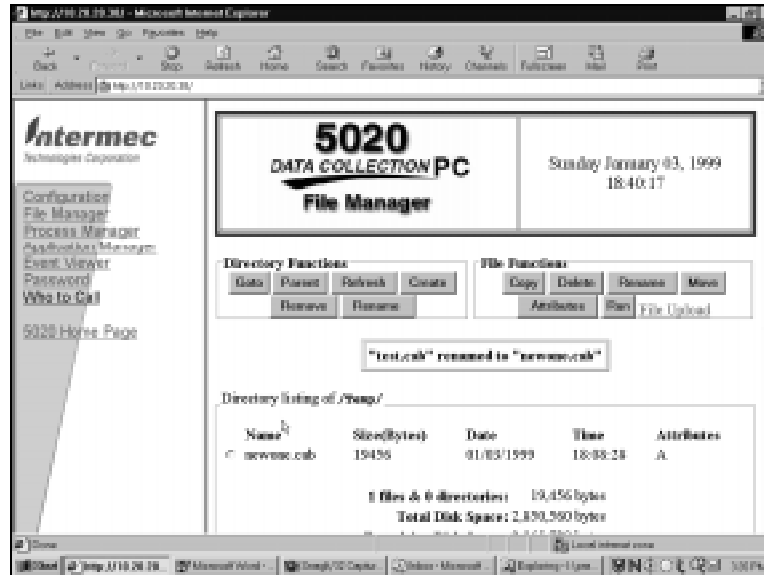
Deleting a File

You can use File Manager to delete a file on the 5020.

To delete a file

1. Click the Goto or Parent button to navigate to the directory with the file you want to delete.

2. Click on the option button to select the file you want to delete.

3. Click the Delete button or click cancel to end the request. A message asking you to confirm the deletion appears.
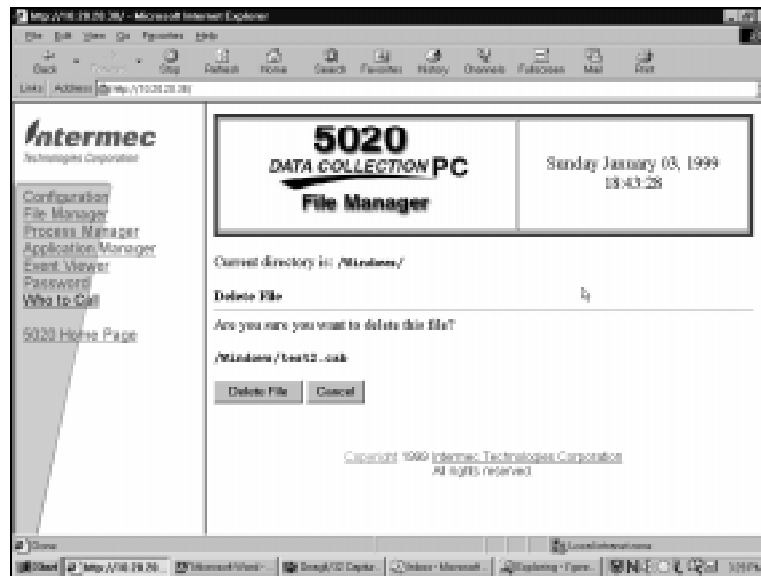
4. If the delete operation was successful, a message on the screen indicates that the file was deleted.
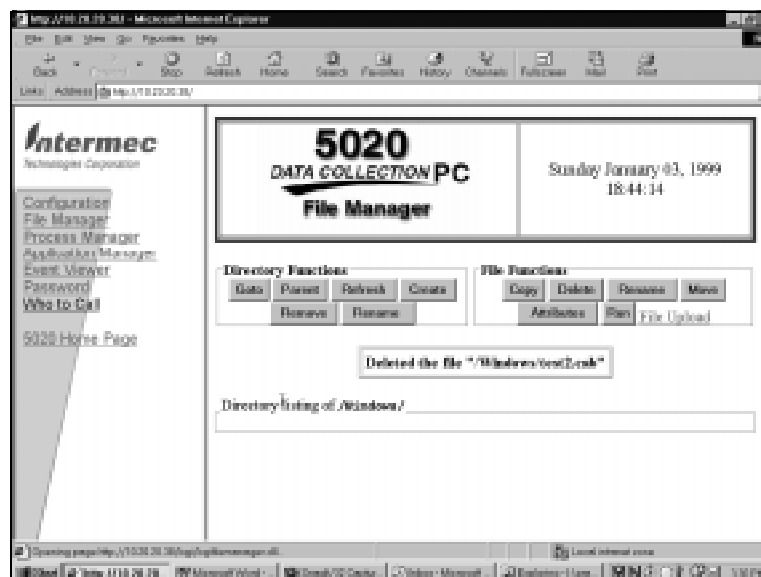
Changing File Attributes

You can use File Manager to change the attributes of a file.

To change file attributes

1. Click the Goto or Parent button to navigate to the directory with the file you want to change.

2. Click on the option button to select the file you want to change.

3. Click the Attributes button. Select or clear the appropriate check box in the New Attributes box. You can only change the Read-only, Hidden, and Archive attributes.
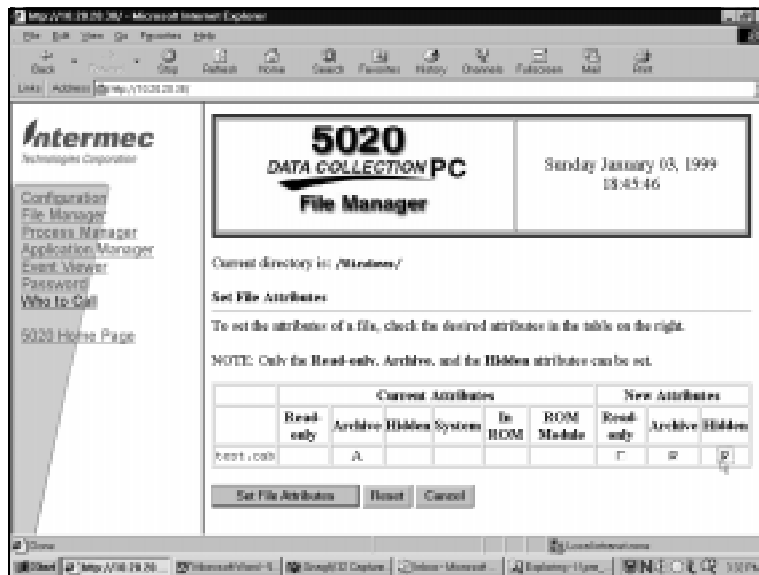
4.   Click the Set File Attributes button to change the file attribute, click Cancel to end the request, or click Reset to erase all changes on the form. The screen showing the parent directory is refreshed. If the change attribute operation was successful, the file attributes are displayed in the directory listing and a message confirming the action appears on the screen.
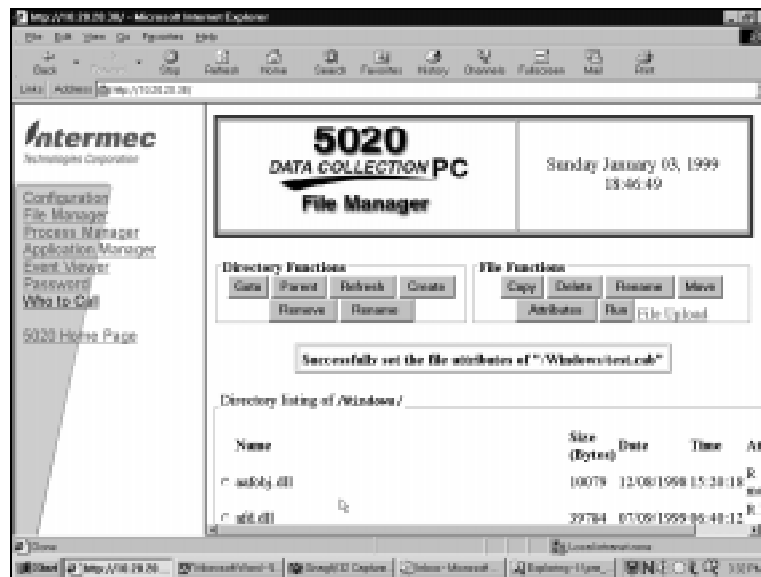
Using File Manager to Run an Executable on the 5020

You can use File Manager to run an executable (EXE) file on the 5020.

To run an executable file

1.   Click the Goto or Parent button to navigate to the directory with the file you want to run.

2.   Click on the option button to select the file you want to run.

3.   Click the Run button.

4. Enter any command line parameters on the form.
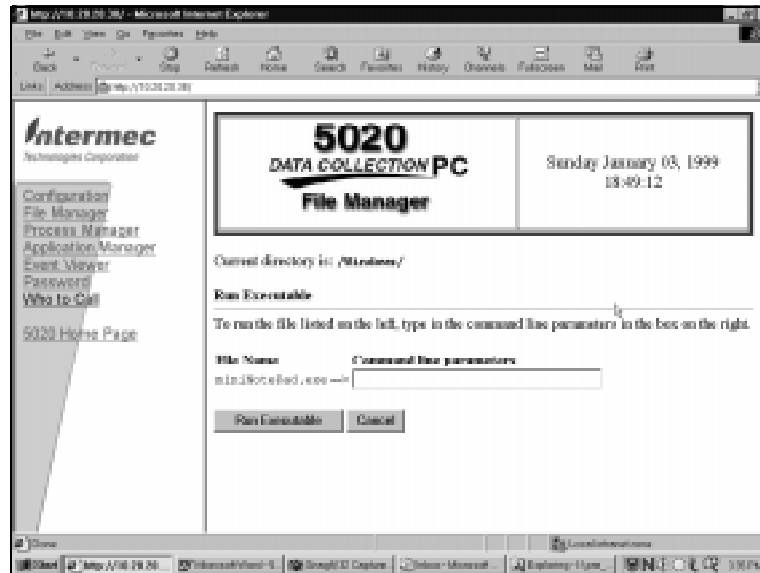
5. Click the Run Executable button to run the executable, or click Cancel to end the request. A confirmation message appears on the screen.
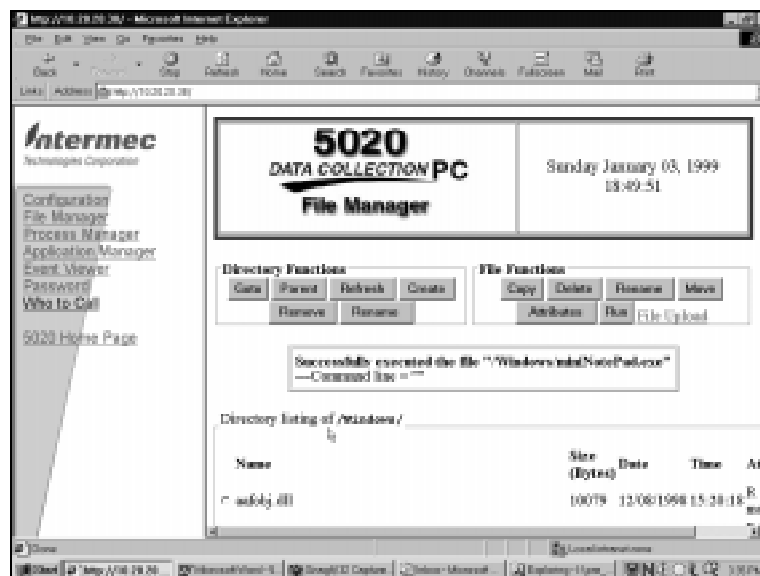
Using Process Manager

The Process Manager is very similar to the Windows Task Manager. You can use Process Manager to

- display processes running on the 5020.

- close processes running on the 5020. A close command ends a process, but gives the process time to "clean up" before it stops functioning.

- kill processes running on the 5020. A kill command ends a process, but does not let the process "clean up" before it stops functioning.

- view all threads associated with specific processes.

- view all modules associated with specific processes.

To run Process Manager

1. Click Process Manager. The initial Process Manager screen appears on your desktop.
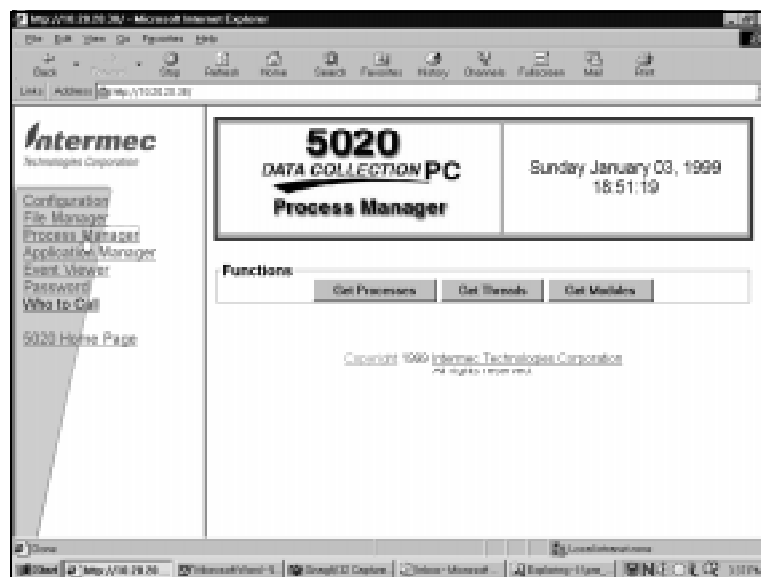
2. Choose Get Processes, Get Threads, or Get Modules.

Displaying Processes Running on the 5020

When you click Get Processes, you will see a screen that displays the processes that are part of a larger process or program on the 5020.

To close a process

1. Click the Get Processes button.

2. Click on the option button and select the process you want to close.
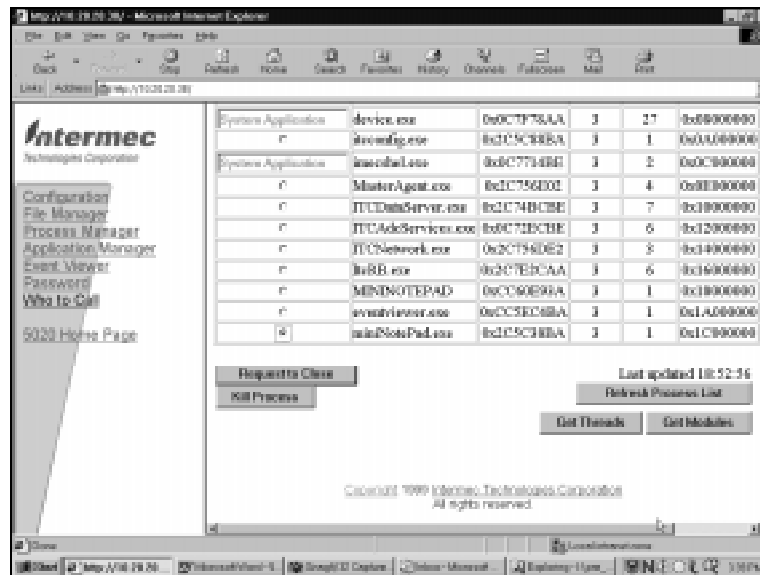
3. Click the Request to Close button.

4. An informative message indicates that the request to close command was successful.
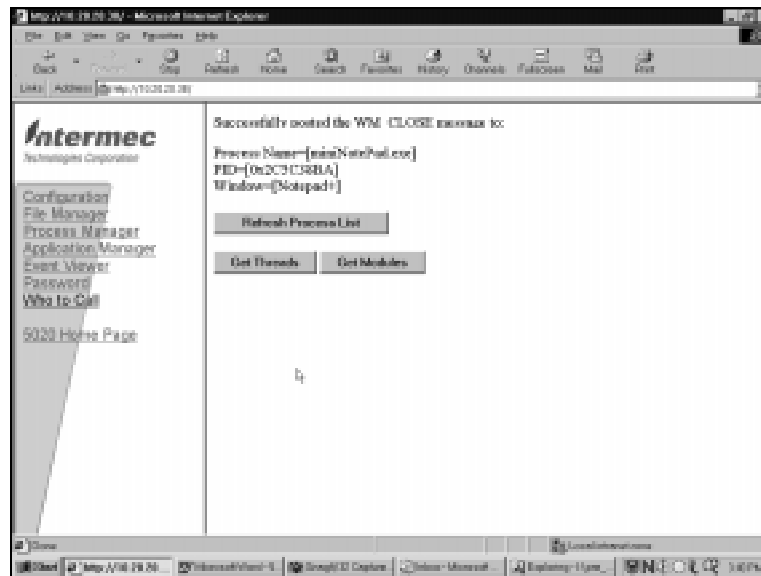
An error message may appear if you try to close a process that does not have a window. Processes without windows do not have handles, and you can't send a close command to a process without a handle.

5. Click the Refresh Processes List button to get an updated list of processes running on the 5020.

To kill a process

1. Click the Get Processes button.

2. Click on the option button and select the process you want to kill.
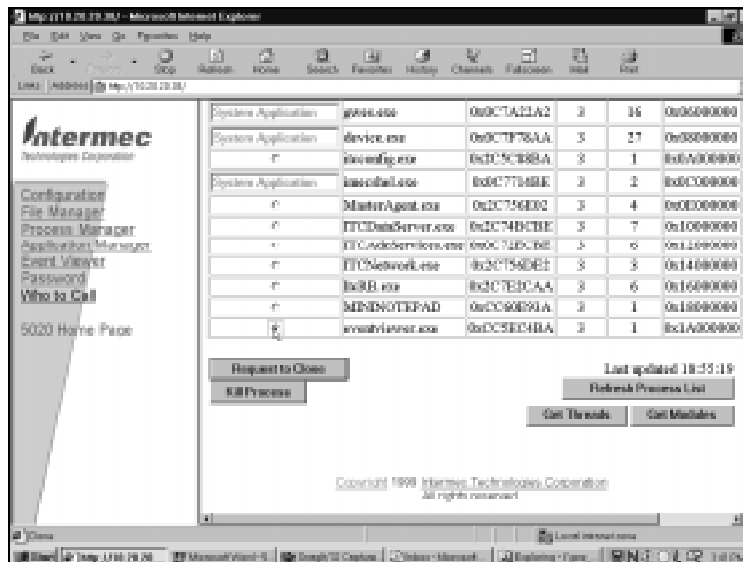
3. Click the Kill Process button.

4. An informative message indicates that the kill command was successful.
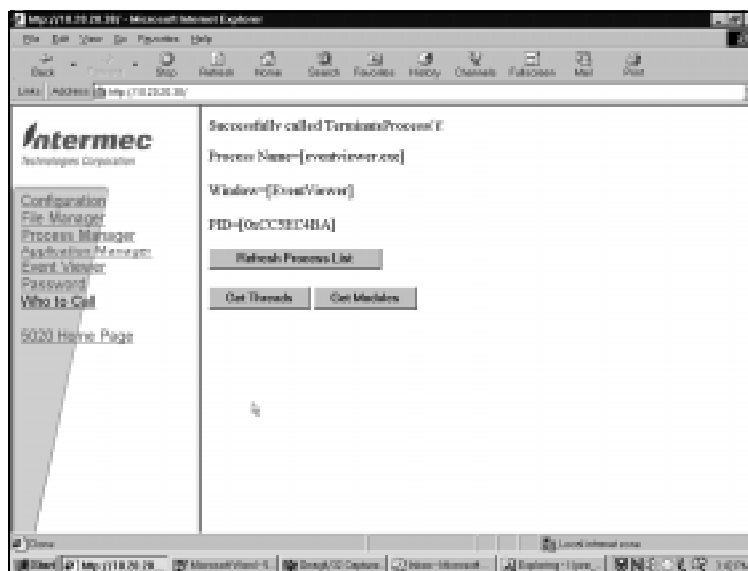
An error message may appear if you try to close a process that does not have a window. Processes without windows do not have handles. You cannot send a kill command to a process without a handle.

5. Click the Refresh Processes button to get an updated list of processes running on the 5020.

Displaying Threads Running on the 5020

You can use Process Manager to view all threads associated with specific processes.

To view all threads

1. Click the Get Threads button.

2. The Thread List appears on your desktop.
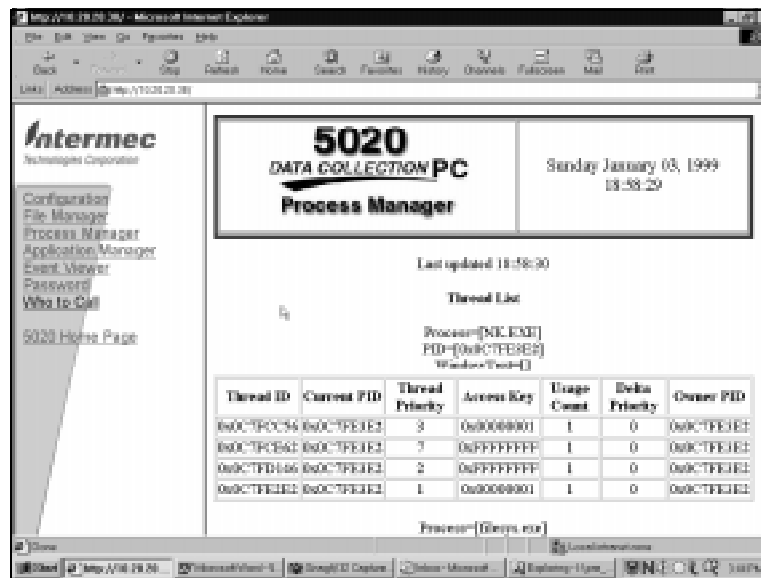
Displaying Modules Running on the 5020

You can use Process Manager to view all modules associated with specific processes.

To view all modules

1. Click the Get Modules button.

2. The Module List appears on your desktop.
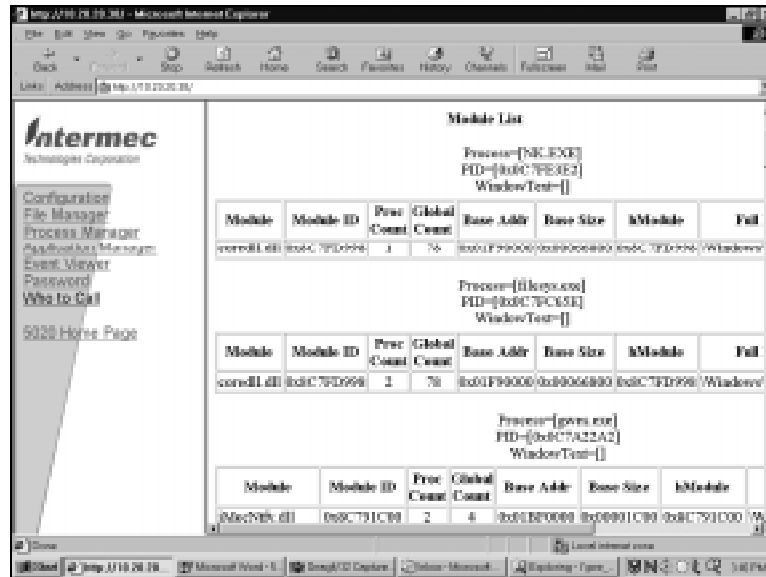
Using the Application Manager

You can use the Application Manager to install or uninstall applications on your 5020.

- The Application Manager can only be used to install cabinet (CAB) files created using CABARC. CABARC is the CAB file creation software included on the Software Developer's Kit and Support Files CD-ROM (Part No.069511) that ships with this manual. CAB files contain EXE files, data files, and registry settings for an application.

- You can also uninstall an application by removing the device information file (INF) from the 5020.

Note: Application Manager cannot be used to directly install EXE files.

Installing an Application

1. Click Application Manager. The initial Application Manager screen appears on your desktop.

2. Click the Browse button to locate the CAB file you want to install. The CAB file is located on your development PC.
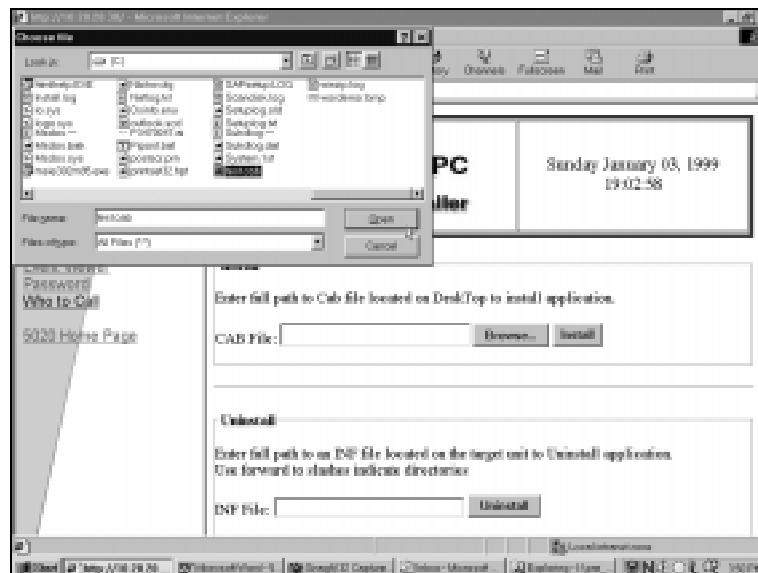
3. From the Choose File dialog box, select the CAB file you want to install on the 5020 and click Open.

4. Click the Install/Uninstall button to install the application.

   You will see informative messages as the installation progresses.
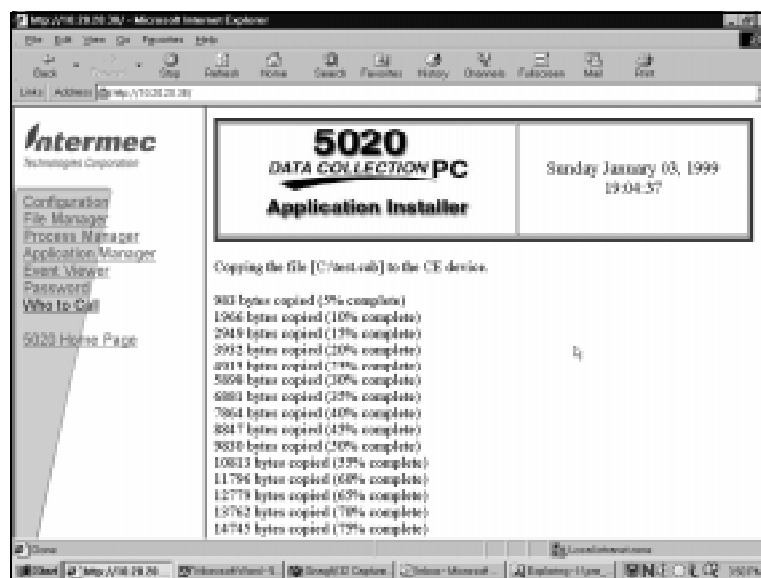
Application Manager also provides informative messages if there are problems installing an application on the 5020.

Message	Explanation
The file [Filename.ext] is not a valid CAB file.	You can only install CAB files on the 5020. This message appears when you try to install another type of file, usually an EXE or DLL, on the 5020.
The CAB File [Filename] is for another CPU type!	This message appears if you selected a CAB file that is for another CPU type.
There isn't enough free disk space on the CE device. Current free disk space on the CE device = _____ Size of CAB file [Filename] = _____	You need to remove files from the 5020 to create additional disk space for the application.

Uninstalling an Application

1. Click Application Manager. The initial Application Manager screen appears on your desktop.
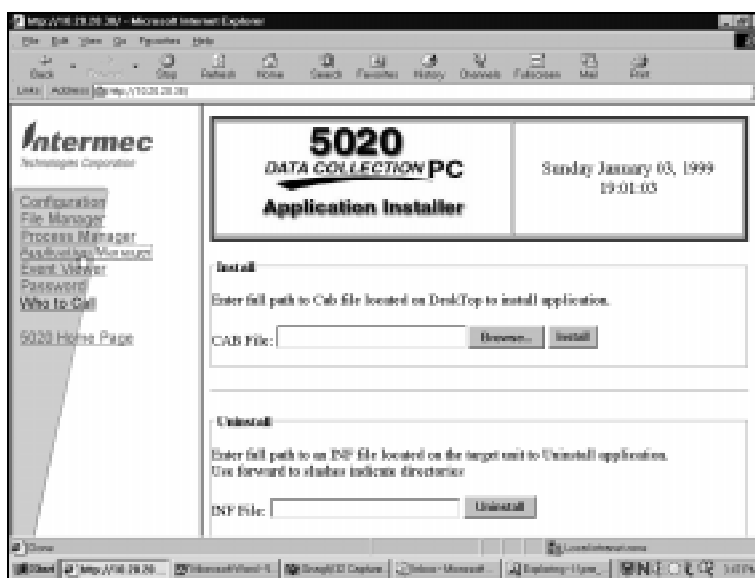
2. Enter the full path of the INF file that you want to uninstall. If you don't know the location of the INF file, use File Manager to determine the path of the INF file that you want to remove.

3. Click the Uninstall button to uninstall the application.

4. If the uninstall was successful, you will see the following message:

   ```
   Successfully uninstalled the application [Application Name]
   ```

Using the Event Viewer

You can use the Event Viewer when you are troubleshooting problems on the 5020. You can copy the transactions on the Event Viewer screen and email them to Intermec Product Support (support@intermec.com) to aid in problem resolution. Product Support can access the Event Viewer directly if the 5020 is accessible through the Internet.

Viewing Events

- Click Event Viewer. The initial Event Viewer screen appears on your desktop.
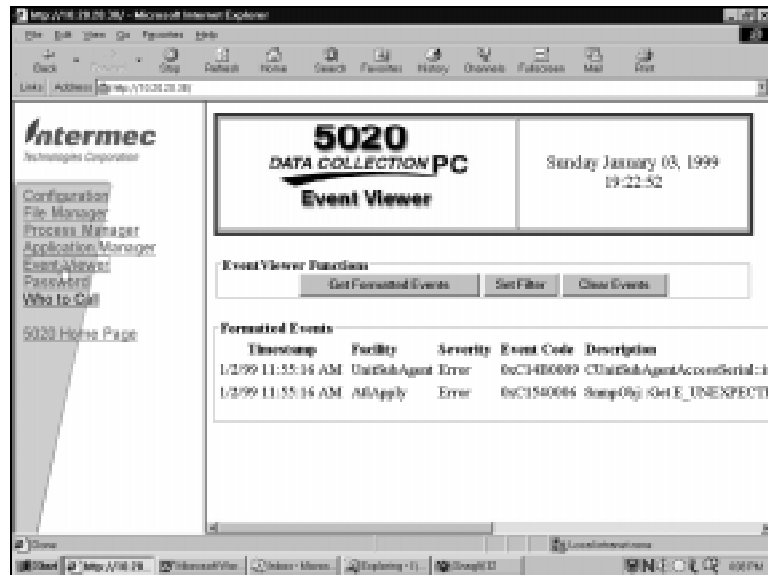
Setting the Event Filter

You can set the Global Filter or the Facility Filter. The Global Filter determines the events that can be captured on a system wide basis. The Facility Filter determines the event that can be captured on a software component basis. You can use the Facility Filter to filter out specific events that would be allowed by the Global Filter.

To set the event filter

- Click the Set Filter button. You can choose to globally capture all error, warning, or success events, or you can choose to capture selected events.
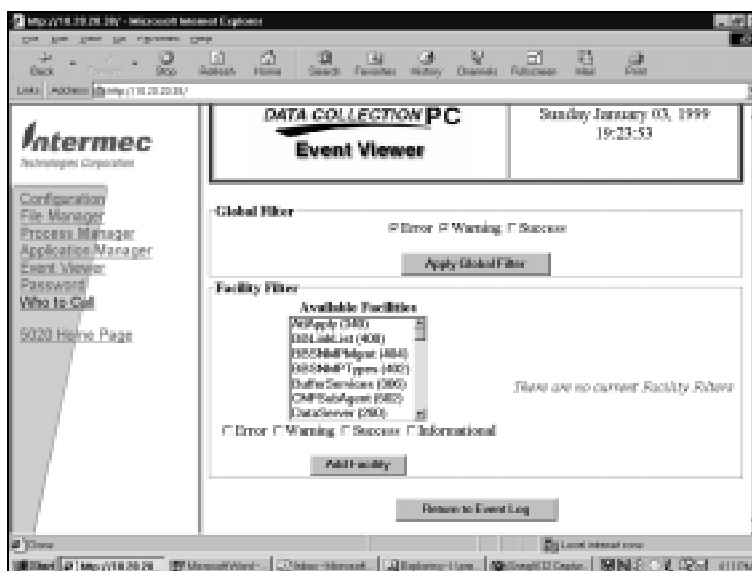
Clearing Events

- Click the Clear Events button to clear the Event Viewer screen.
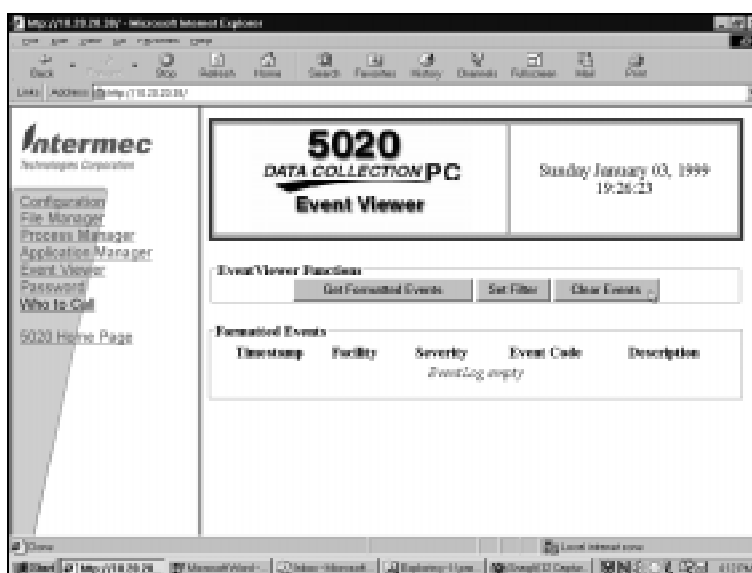
Managing Your Passwords

You can use the Password program to set a password on a remote 5020.

To set a password

1. Click Password. The Password screen appears on your desktop.

2. Type the password in the Password box. Type the password again to confirm the password you selected.

3. Click the Enable Security check box to enable security.

4. Click the Submit button to send the password to the 5020.
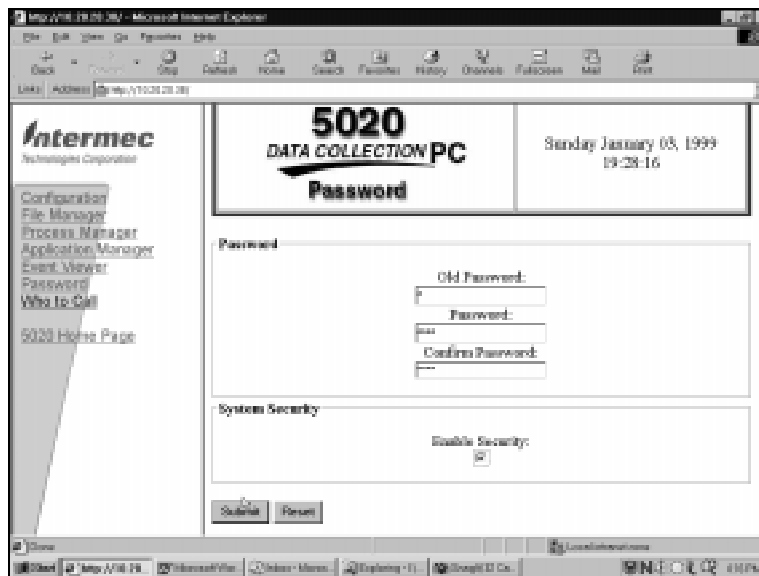
5. A success message confirms that the password was set or changed.
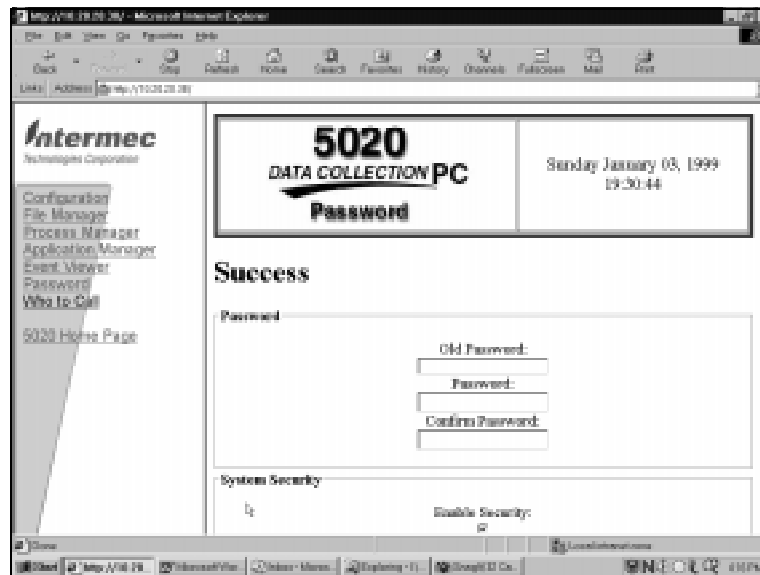
Using Windows CE Services

You can use Windows CE Services to establish a serial connection between your desktop PC and a 5020 for viewing and file transfers. You can establish a serial link by using an L5020 Serial Communications Adapter, a D5020 Serial Communications Dock, the IrDA port, or by using a serial I/O card in the PC card slot.

The D5020 Communications Dock and L5020 Serial Communications Adapter do not ship with an RS-232 cable. You need to purchase your own, or order one from Intermec (Part No. 061953). You must use this cable when you make an RS-232 connection to the 5020 from the communication dock or the serial adapter.

When you perform a cold boot, you lose the configuration settings that enable a serial connection to Windows CE Services. IrDA, RF, or Ethernet connections remain after a cold boot.

⚠ CAUTION

Caution
The 5020 should be powered by an AC power source when you use CE Services.

Conseil
Il faut alimenter le 5020 par une source de courant AC lors de l'exécution du CE Services.

Installing CE Services

Windows CE Services is used to establish a serial connection between a 5020 and a desktop PC. Instructions for using CE Services are provided with the product. The Optional Components directory on the CE Services CD-ROM contains several additional components that may be useful. Consult the Readme file or release notes information on the CD-ROM for details on the features of each optional component. The Windows CE Services CD-ROM (Part No. 470-004-126) ships with this manual.

Note: The default baud rate setting on the 5020 is 115200 bits per second. If you have problems establishing a connection, set the baud rate on the host PC and the 5020 to 19200. For help setting the 5020 baud rate, see Chapter 3, "Configuring the 5020."

To install CE Services

1. Insert the CE Services CD-ROM in your CD-ROM drive. The Setup program starts automatically from the CD-ROM

2. Reinstall Service Pack 3 on Windows NT systems after you install CE Services. Service Pack 3 is provided in the Optional Components directory.

Unsupported Functions

The following functions are not supported.

- CE Services synchronization option

- Direct IrDA will not be supported until Windows NT 5.0 is released

Using CE Services with a Serial I/O Card

1. Press ⬤ to turn on the 5020.

2. Press ⬤ ③ to open the Start menu.

3.   Press ▲ to select Run and press 〇.

4.   Type REMNET and press 〇.
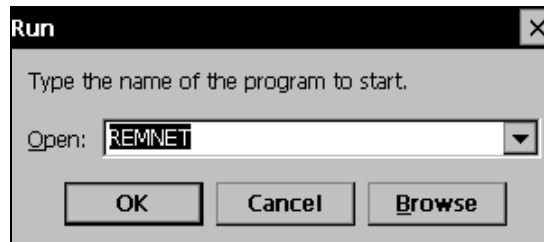
5.   Select Make New Connection and press 〇.
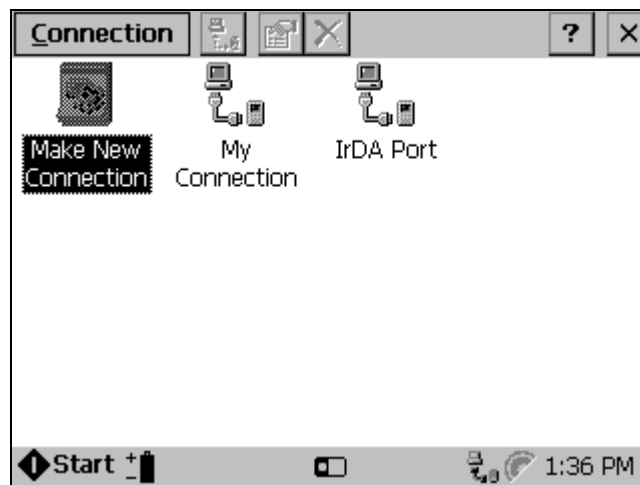
6.   Type the name of the new connection.

7. Press ⮌ to move to the Next button and press ⏻.

8. Press ▲ or ▼ to select Socket I/O Serial.

9. Press ⮌ to move to the Configure button and press ⏻. Change the Baud Rate setting to 115200.
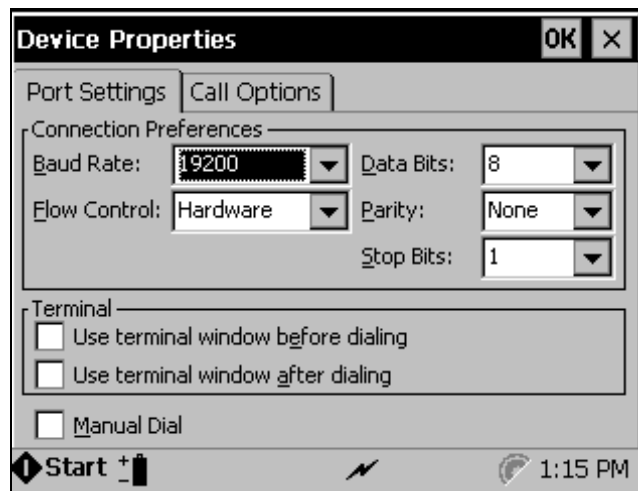
10. Press ⏻ to save your changes.

11. Press ⮌ to move to the Finish button and press ⏻.

12. Press ⟨Alt⟩ ⟨━⟩ ⟨9⟩ to open the Connection drop down menu. Use ▼ to highlight Close and press ⟨⟩.
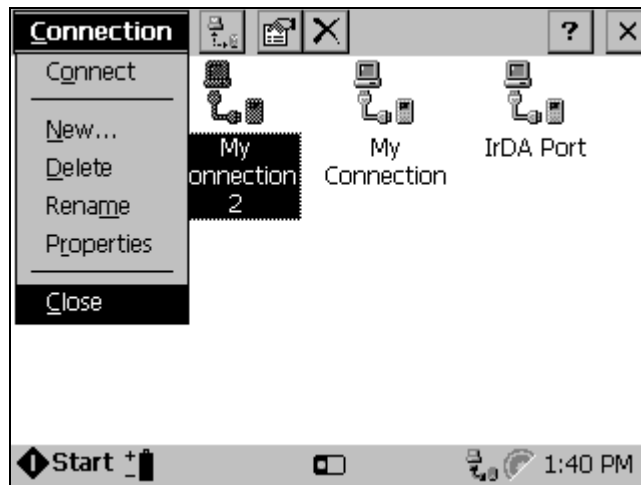
13. Press ⟨━⟩ ⟨3⟩ to open the Start menu.

14. Press ▼ to select Settings and press ⟨⟩.

15. Highlight the Communications icon and press ⟨⟩.

16. Press ⟨Ctl⟩ ⟨⟩ to select the PC Connection tab and press ⟨⟩.
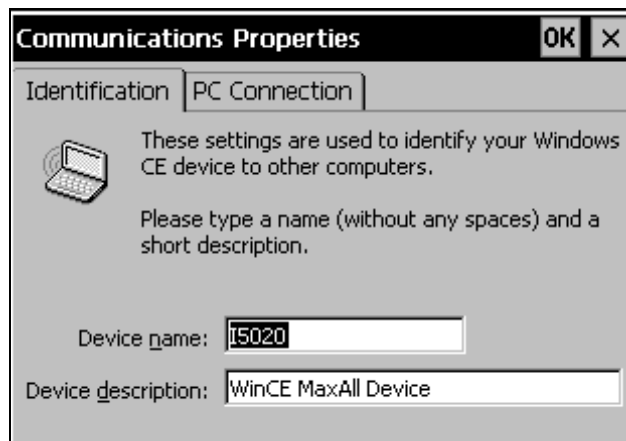
17. ⊜ to select the Change button and press ◯.

18. Press ▼ to select the connection you created and press ◯.
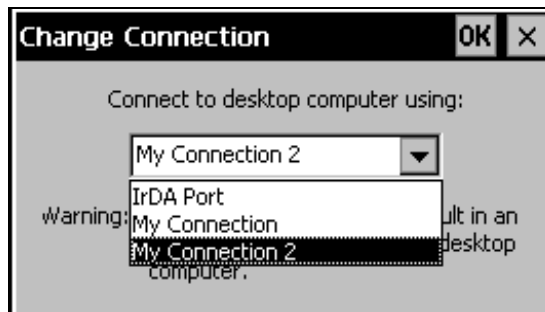
19. Press ◯ again to return to the PC Connection tab.

20. Press ⊜ to move the focus from the Change button.

21. Press ◯ again to make your change and exit.

22. Double-click the Mobile Devices icon on your desktop PC to start CE Services. The connected 5020 appears as "Guest" on the Mobile Devices dialog.

23. Press ⬚ ③ to open the Start menu.

24. Press ▼ to select Programs, press ▶ and ▼ to highlight PC Connection and press ◯. The connection will be established.
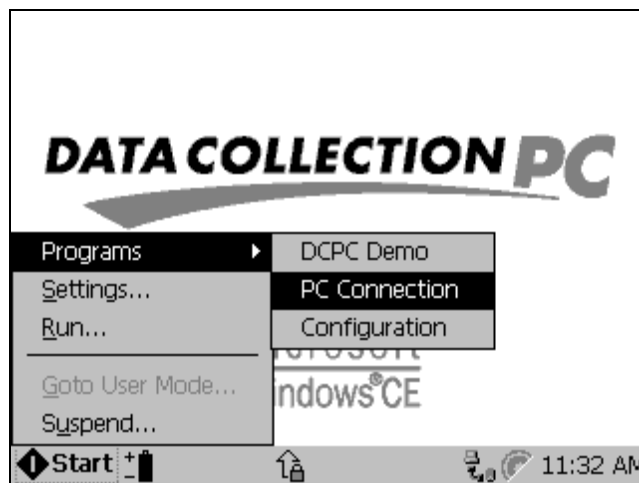
Using CE Services with an D5020 Dock or L5020 Adapter

1. Place the 5020 in a D5020 dock or attach an L5020 adapter.

2. Connect the serial adapter or communications dock to the host PC using an RS-232 cable. You need to purchase your own or order one from Intermec (Part No. 061953).

3. Double-click the Mobile Devices icon on your PC desktop to start CE Services. The connected 5020 appears as "Guest" on the Mobile Devices dialog box.
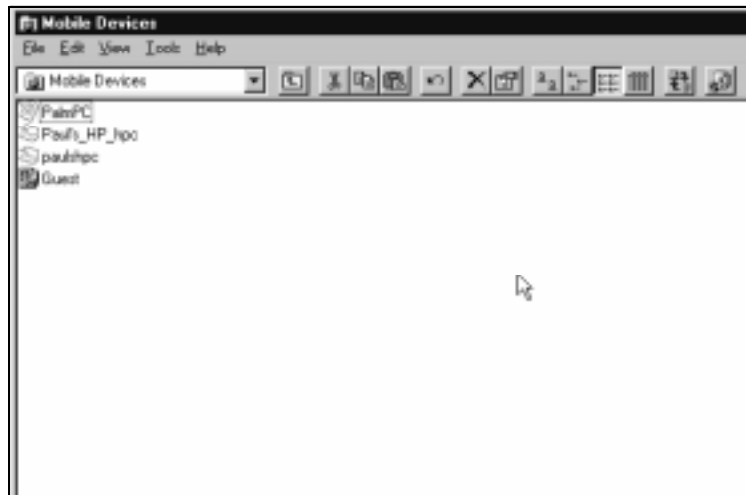
4. Press ⬜ ③ to open the Start menu on the 5020.

5. Press ▼ to select Programs, press ▶ and ▼ to highlight PC Connection, and press ◠. The connection will be established.
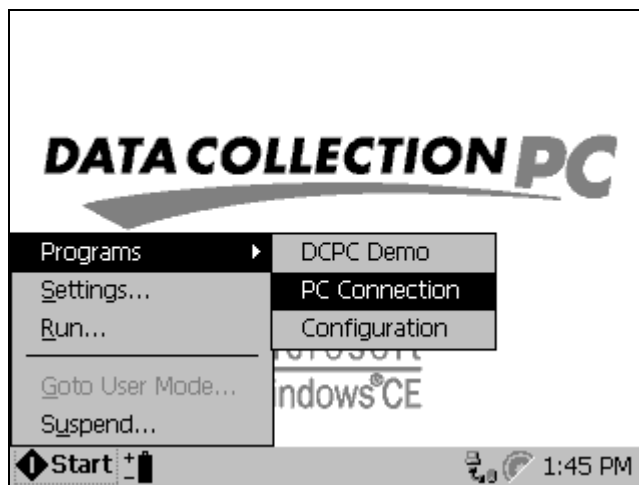
> **Note:** The default baud rate setting on the 5020 is 115200 bits per second. If you have problems establishing a connection, set the baud rate on the host PC and the 5020 to 19200. For help setting the baud rate, see Chapter 3, "Configuring the 5020."

Disconnecting From CE Services

1. Right click the CE Services icon on your PC taskbar or double-click the Mobile Devices icon on your PC desktop.

2. Select Communications from the File menu.

3. Clear the Enable mobile device connection check box on the Communications tab if it is selected.
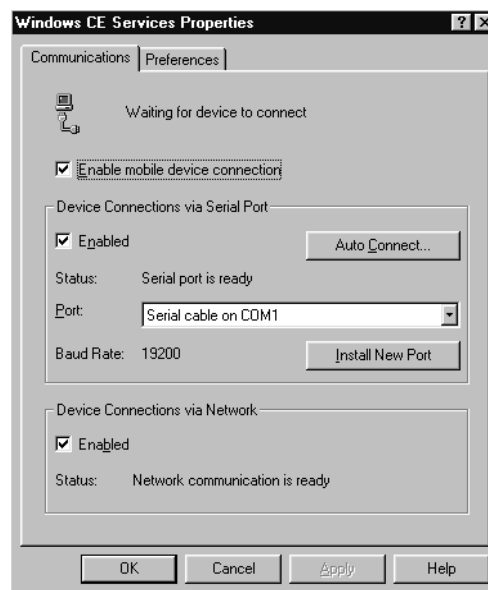
4. Click the Apply button.

5. Wait for the Mobile device connection icon to disappear on the 5020. The icon on the Communications tab and on the taskbar also change and indicate that the connection is disabled. Turning off the 5020 or disconnecting the cable also disconnects the 5020 from CE Services.
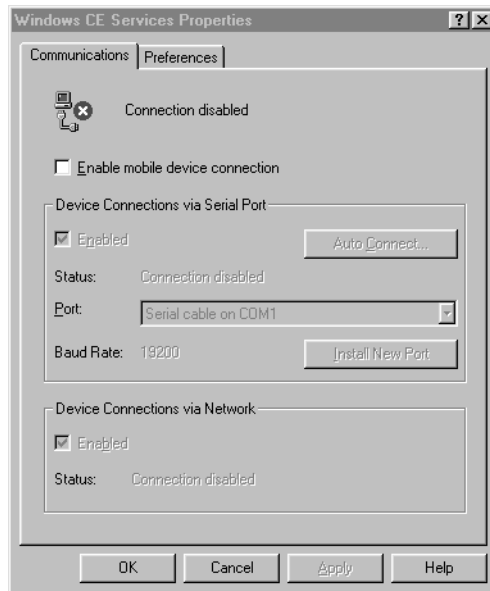
Problems Establishing a Connection

1. Right click the CE Services icon on your PC taskbar or double-click the Mobile Devices icon on your PC desktop.

2. Select Communications from the File menu.

3. Clear the Enable mobile device connection check box on the Communications tab.
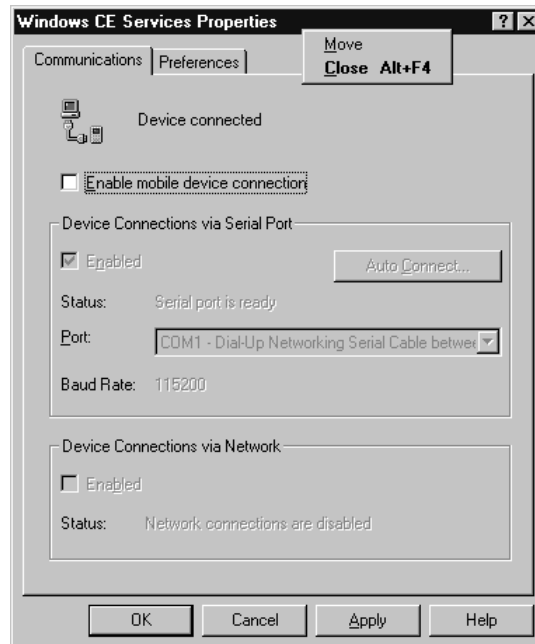
4. Click the Apply button. Wait for the hour glass to go away.

5. Click the Enable mobile device connection check box. Wait for the hour glass to go away.

6. Press ⬜3️⃣ to open the Start menu on the 5020.

7. Press ▼ to select Programs, press ▶ and ▼ to highlight PC Connection and press ◌. The connection will be established.
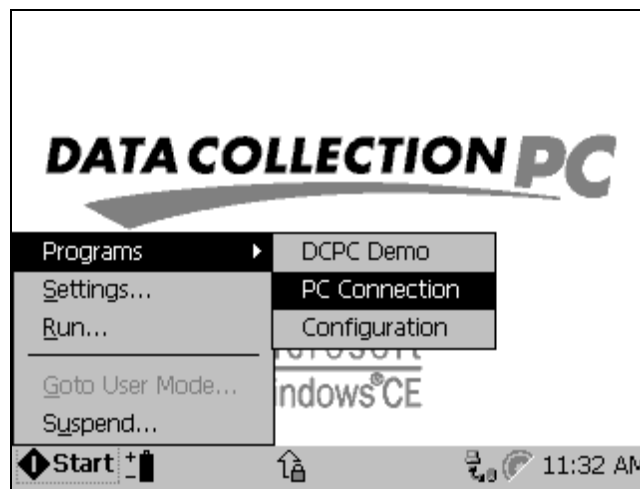
If you still have problems establishing a connection, you can:

- Warm boot the 5020. For information on booting the 5020, see "Booting the 5020" in Chapter 9.

- Set the baud rate on the host PC and the 5020 to 19200. For help setting the baud rate, see Chapter 3, "Configuring the 5020."

6

Developing and Installing Applications

This chapter describes the hardware and software you need to develop applications for your 5020 Data Collection PC and provides guidelines for developing applications using the Intermec Software Development Kit (SDK). It also explains how to install and remove applications from your 5020 Data Collection PC.

Hardware and Software You Need to Develop Applications

You need the following hardware and software components to develop applications for the 5020 Data Collection PC.

• Intel based system–Pentium 266 MHz or faster

• 64MB RAM–128MB recommended

• Hard Disk with 400MB available for the Intermec SDK

• Super VGA (800 x 600)–1280 x 1024 recommended

• CD-ROM drive 16X or faster

• Microsoft Mouse or compatible pointing device

• Microsoft Windows NT Version 4.0 (Service Pack 3) or newer. You also need to have Remote Access Services (RAS) installed. RAS allows you to communicate with a remote device.

• CE Services 2.2, which allows you to establish a serial connection between the 5020 and your development computer.

• Microsoft Visual C++ Professional or Enterprise Edition 6.0 or newer

• Microsoft Windows CE 2.1 Toolkit for Visual C++ 6.0 if you plan to develop in C++

• Microsoft Visual Studio 6.0 if you plan to develop in Visual Basic

• Microsoft Windows CE 2.1 Toolkit for Visual Basic if you plan to develop in Visual Basic

If you are planning to develop applications that utilize any of the unique 5020 SDK interfaces, you also need to install the Intermec 5020 Software Development Kit (SDK). The SDK library helps you to take advantage of the unique functionality available on the 5020 device and facilitates software development for that environment.

The SDK Library is compatible with the Windows CE Win32 programming environment. Applications developed for the 5020 can use combinations of functions available in the Windows CE Win32 programming environment and the Intermec SDK Library.

Intermec recommends that you install the software components in the following order:

1. Remote Access Services

2. CE Services

3. Visual C++ 6.0

4. Visual C++ Service Pack 2

5. CE Toolkit for Visual C++ 6.0

6. Intermec 5020 SDK

Using the SDK to Develop Applications

The 5020 SDK provides a functional subset of JANUS and TRAKKER Antares PSK functions. Functionality available with Windows CE development tools is not duplicated with the 5020 SDK. The 5020 SDK, sample code, and examples are provided on the 5020 Software Developer's Kit and Support Files CD-ROM that ships with this manual. The 5020 SDK provides

• the necessary development targets for Visual Studio.

• the Library and Header files required to use the SDK functionality.

• bar code scanning emulation environment.

Note: Additional information about using the Intermec SDK, SDK functions, and components (FileCopy, FileServer, and ADC Simulator) is provided in the Intermec SDK online help. The online help is provided with the SDK software, which ships on the 5020 CD-ROM.

Key features of the 5020 SDK are

• SDK functions, which are available as COM interfaces, DLL interfaces, and as ActiveX Controls. The COM and DLL interfaces are used when developing Visual C++ applications. The ActiveX Controls can be used when developing Visual C++ and Visual Basic applications.

• Automatic Data Collection (ADC) Simulator. The ADC Simulator simulates the operation of the 5020 bar code scan engine in a Windows environment. You can use the ADC simulator to send bar code data to an application that you are developing to run on the 5020 PC.

• The FileServer utility. Use the FileServer utility on a host PC to receive messages from 5020 devices through the serial port (RS-232 connection) or a TCP/IP port.

• The FileCopy utility. Use the FileCopy utility to download or upload files or applications between a desktop computer and a 5020 using a serial link.

- Microsoft Foundation Classes (MFC) custom edit component that integrates 5020 input devices into a Windows control.

- QuickWin, a simplified Windows interface to ease the migration of JANUS or TRAKKER Antares applications.

SDK Development Environment
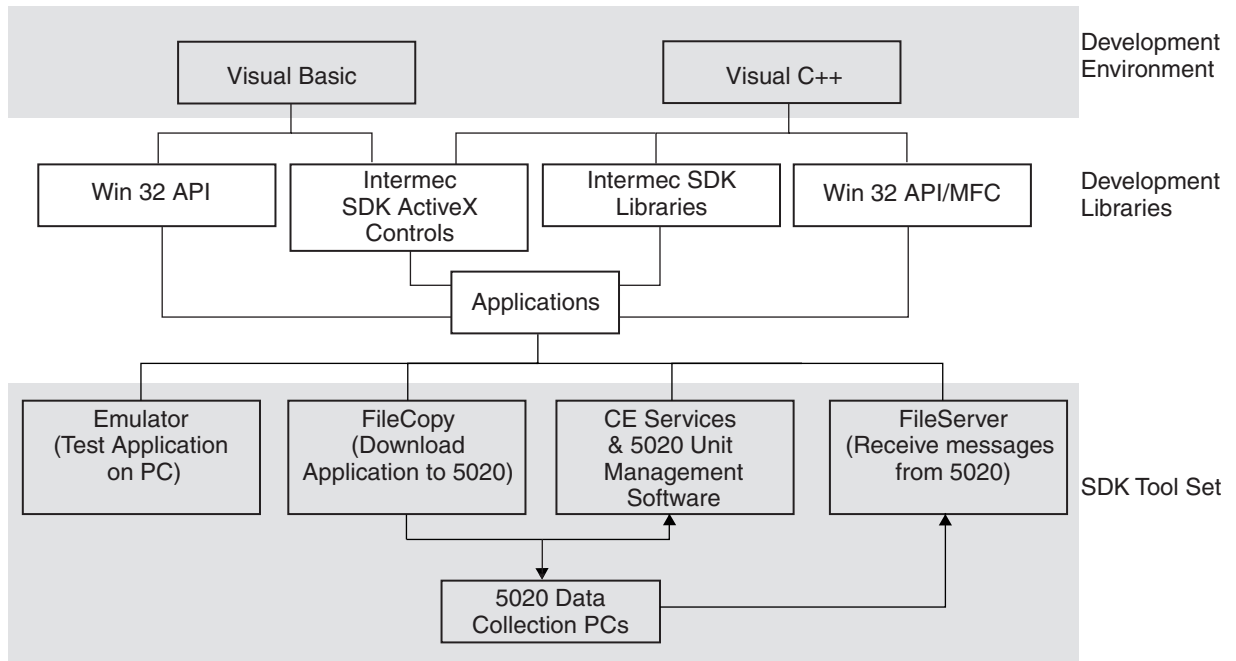
5020U019.eps

The following types of functions are provided in the Intermec SDK.

Reader Command Function

Reader Command functions are used to modify and retrieve configuration information from the 5020 PCs using the reader interface command.

Message Functions

The SDK Library Message functions are used to simplify retrieval and display of 5020 messages and Windows CE system messages. You can use Win 32 API FormatMessage to retrieve and display messages, but the SDK Message functions can simplify the calls. The SDK Message functions support messages for Intermec subsystems only; third party subsystems can use the Microsoft message system directly to store and retrieve messages.

System Information Functions

The System Information function retrieves system information about battery power status.

Communications Functions

Communications functions are used to transmit or receive messages. The following communications protocols are supported:

• Serial communications over COM ports

• Serial communications over IrDA transceivers

• RF communications over a TCP/IP network

• RF communications over a UDP Plus network and ADC input.

The communications functions are wrapper functions for:

• Win32 serial communications API functions

• IrSock API functions

• WinSock API functions

• Intermec emulated WinSock 1.1 UDP Plus API functions

• Automatic Data Collection functions

File Transfer Functions

File Transfer functions are used to transmit and receive files using the Trivial File Transfer Protocol (TFTP). The TFTP client ITCTftpClient.DLL is provided as a Windows DLL on the 5020. ITCTftpClient exposes a COM interface to 5020 programs and supports file transfers to and from any TFTP Server. ITCTftpClient executes in the process of the caller.

Virtual Wedge Functions

The Virtual Wedge functions are used to access the virtual wedge configuration on the 5020. The virtual wedge retrieves ADC data from the 5020 and sends it to the keyboard driver so that the device can receive and interpret the data as keyboard input.

UDP Plus Functions

UDP Plus allows 5020 applications to send data to and receive data from a DCS 300. The DCS 300 routes the data to and from applications running on a variety of computer platforms. UDP Plus is designed to work in adverse networking environments, such as wireless units moving in and out of range, and battery-powered units that power down during periods of inactivity. UDP Plus offers the guaranteed delivery and permanent connection of TCP, but using the lower overhead of UDP.

UDP Plus protocol functions expose a minimal emulated Winsock 1.1 API as its application-level interface on the 5020. This API provides a sockets-based method to support UDP Plus transactions.

- Only one socket is allowed since the UDP Plus protocol does not allow more than one connection.

- The UDP Plus system supports a second communication mode, the Reader Command gateway. The Reader Command gateway allows configuration messages (TMF Reader Commands) to be sent to the 5020 via the DCS 300. The TMF Reader Commands are compatible with other Intermec devices such as TRAKKER Antares and JANUS.

- Only one UDP Plus socket client for data transmissions is allowed at a time by this emulation layer, while concurrently providing configuration transactions. Non-Unicode string parameters are used in UDP Plus protocol functions.

Automatic Data Collection Functions

The ADC functions are accessed through custom COM interfaces. These COM interfaces allow the application to receive bar code data, configure the bar code reader engine, and control the bar code reader engine. In addition, the COM interfaces allow applications to specify the data it will receive. The COM interfaces are:

IADC   Provides ADC data in an input device independent manner. On a 5020, there may be multiple reader engines to decode different types of ADC data. For example, a bar code reader engine decodes raw bar code data and passes it to a bar code reader COM object. An RFID reader engine decodes raw RFID tag data and passes it to an RFID tag reader COM object.

IBarCodeReaderConfig   Allows the application to directly configure the bar code reader engine and to get statistics.

IBarCodeReaderControl   Allows the application to trigger the bar code laser scanner, disable the scanner, and receive bar codes with data details such as symbology scanned, data type (Unicode, ASCII, or other), and the time the data was received. This interface also allows the application to specify a data grid to filter ADC data.

Desktop Configuration Functions

Desktop Configuration functions allow you to customize the 5020 desktop.

QuickWin Functions

QuickWin functions allow you to create a simple Windows CE data collection application. You can create a VT like terminal screen that occupies the entire display on a 5020. You can create label prompts and edit fields on the display and receive input from the edit fields.

Developing Applications Without the Intermec SDK

You can develop data collection applications using Visual C++, Visual Basic, or by using the standard Win32 API or Microsoft Foundation Classes (MFC).

If you develop applications without the Intermec SDK, you can use

- standard virtual wedge to scan input through the keyboard interfaces to any 5020 application. This includes any application using a standard input control.

- standard Win32 serial and Winsock communication layer support.

Without the Intermec SDK, you cannot use the following features of the 5020 in your application:

- Advanced scanning. No data routing, scanner control, or symbology information.

- TFTP File Transfer capabilities

- UDP Plus communication support

- System information functions

Creating an Application Package

In Windows program development, a cabinet file (CAB) is used to install an application on a Windows device. A cabinet file is a single file created to hold a number of application files. A cabinet file typically contains EXE, INF, DLL, and other application components.

Note: The 5020 runs the embedded version of the Windows CE operating system. Intermec does not guarantee that software designed for the dedicated versions of Windows CE, such as the PalmPC, Handheld PC, and Handheld PC Pro, will function properly on the 5020. For best results, use the Intermec SDK that ships with the 5020 to develop your applications.

Creating a CAB File

The 5020 uses standard Win32 CAB files. You can create CAB files using the CABARC program, which is included on the 5020 SDK and Support Files CD-ROM. When you install the Intermec SDK, the CABARC program is installed in the TOOLS\CABARC directory on your desktop PC.

CAB files created by CABARC are somewhat different from the CAB files created by the Windows CE CAB Wizard. The CE CAB Wizard adds proprietary information into the CAB file that is not useful for the 5020. The CABARC created files used on the 5020 are not compressed; they are simply a set of files combined into a single file to make it easier to move over a network.

5020U010.eps
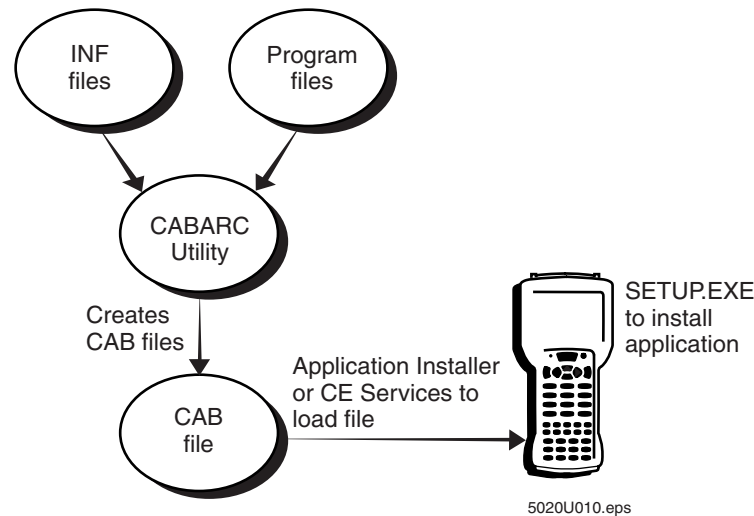
Creating a SETUP.DLL to Customize Setup

You need to develop a SETUP.DLL file to perform custom operations when you install or remove custom applications on the 5020. The SETUP.DLL file should export the following functions, which are fully documented in the *Windows CE Programmer's Guide* (ISBN 1-57231-643-8).

Install_Init   This function is called before installation begins. You can use Install_Init to check the application version in a reinstall scenario and to determine if a dependent application is present.

Install_Exit   This function is called after installation is completed. You can use Install_Exit to handle errors that occurred during installation.

Uninstall_Init   This function is called before the uninstall begins. You can use Uninstall_Init to close the application if it is running.

Uninstall_Exit   This function is called after the uninstall completes. You can use Uninstall_Exit to save database data into a file, delete the database, and tell the user where the data files are stored and how to reinstall the application.

Installing and Uninstalling Applications

This section explains how to install and uninstall applications on your 5020.

Installing Your Application

You can use the Application Manager component of the Unit Management application or Windows CE Services to install applications on your 5020.

- Use Application Manager to install applications on you 5020 device over a network.

- Use Windows CE Services to establish a serial connection between your desktop PC and a 5020 device. You can establish a serial link using an L5020 serial communications adapter, a D5020 serial communications dock, or by using a serial I/O card in the PC card slot.

For more information about Application Manager and Windows CE Services, see Chapter 5, "Managing Your Computer."

To install an application on the 5020

1. Use CABARC to create your application CAB file.

2. Transfer the CAB file to the 5020 using Application Manager or Windows CE Services.

3. Press ⬭ and then press ③ to open the Start menu.

4. Press ▲ or ▼ to highlight Run and then press ⟨⟩.

5. From the Run dialog box, press ⟨⟩ until you select Browse and press ⟨⟩.
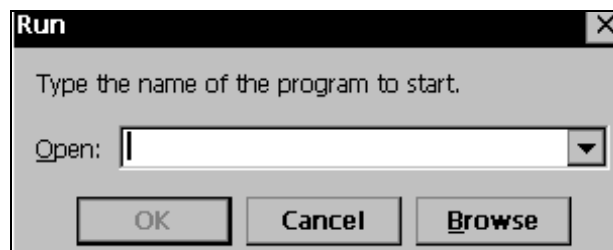
Note: You can also choose to delete the CAB file as it is installed. Type SETUP /D YOURFILE.CAB in the Run dialog box and press ⟨⟩. The application will be installed and the CAB file deleted.

6. Press ⟨⟩ until you select the Windows list box.

7. Use the cursor keys to select the CAB file and then press ⟨⟩.

The 5020 system software automatically associates the CAB file with SETUP.EXE and installs the application. SETUP.EXE extracts the entire contents of the CAB file into the \SETUPTMP directory. SETUP.EXE then uses the information in the INF file to copy files to their destinations, make registry changes, configure the application on the 5020, store the INF file in the application directory, and store the uninstall information in the registry.

Note: When you run SETUP.EXE, the contents of the CAB file are preserved. You can also use /D, /d, /delete, or /DELETE to remove the CAB file as the setup process progresses.

If the CAB file you are installing is very large or the available space on the 5020 is limited, you may need to use the /DELETE option. This option reduces the size of the CAB file as application files are extracted, freeing more program memory.

IMPORTANT! SETUP.EXE writes status messages about the installation to the SETUP.LOG file. The SETUP.LOG is a text file located in the WINDOWS directory of the 5020. Errors or problems with the installation are not displayed on the 5020 screen, only the messages in the SETUP.LOG will indicate what has occurred.

Automatic Application Installation

You can automatically install an application during a cold boot by copying an application CAB file to a compact flash or PC card and inserting the card in the 5020.

To automatically install an application

1. Use CABARC on the host PC to create your application CAB file.

2. Rename the application CAB file OEMINSTALL.CAB.

3. On the host PC, copy the application CAB file to a compact flash or PC card.

4. Insert the storage card in the 5020 and cold boot the device. For more information on cold booting the 5020, see "Cold Booting the 5020" in Chapter 9.

   When the OEMINSTALL.CAB file is found in the Storage Card folder, SETUP.EXE automatically installs the application from the CAB file. SETUP.EXE does not delete the CAB file after installation.

Note: Storage Card may refer to the compact flash or the PC card slot, depending on which card was inserted first. If both slots contain storage cards at cold boot time, the PC card slot is designated as the Storage Card folder and the compact flash is designated as Storage Card 2. If the PC card slot contains a radio, Ethernet, or other I/O card, the internal compact flash card is designated as the Storage Card folder.

Uninstalling Your Application

When you uninstall an application using the Remove Programs utility, the SETUP.EXE program removes application information stored in the registry. As part of the uninstall process, all files and registry entries specified in the Files and Registry sections of the INF file are removed.

Shared system files have their usage count in the registry decremented when the uninstall processes the Files section of the INF file. If the resulting value is zero, the unused shared files are also deleted during the uninstall.

IMPORTANT! SETUP.EXE writes status messages about the installation to the SETUP.LOG file. The SETUP.LOG is a text file located in the WINDOWS directory of the 5020. Errors or problems with the installation are not displayed on the 5020 screen, only the messages in the SETUP.LOG will indicate what has occurred.

To uninstall your application

1. Press ▭ ③ to open the Start menu.

2. Press ▼ to highlight Settings and then press ◌. The Control Panel appears:
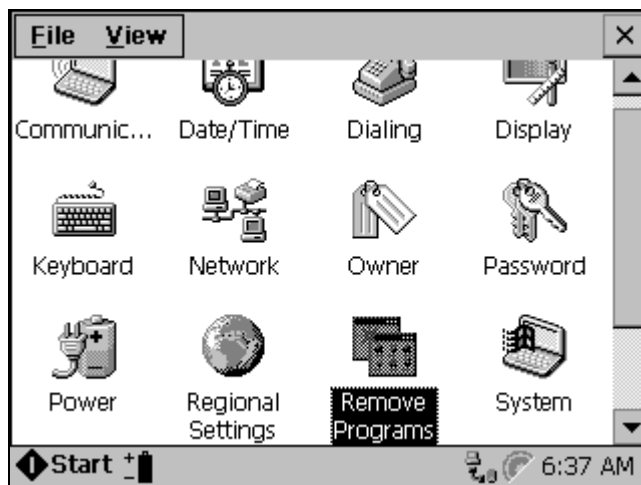
3. Highlight the Remove Programs icon and press ⬭.

4. Use the cursor keys (▲ ▼) to select the program you want to remove.

5. Select the Remove button and press ⬭.

```
┌─────────────────────────────────────────────┐
│ Remove Programs Properties            │ ✕ │ │
├─────────────────────────────────────────────┤
│ Select the program to uninstall. It will be removed │
│ from the system according to instructions in the │
│ program's INF file.                         │
│ ┌─────────────────────────────────────────┐ │
│ │                                         │ │
│ │                                         │ │
│ │                                         │ │
│ └─────────────────────────────────────────┘ │
│   ┌───────────────┐   ┌───────────────┐     │
│   │    Remove     │   │    Cancel     │     │
│   └───────────────┘   └───────────────┘     │
└─────────────────────────────────────────────┘
```
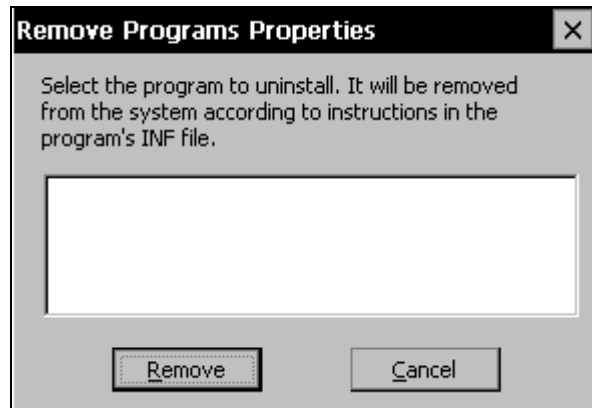
Understanding the Information File Format

Device information files (INF) contain scripts, which are used to control hardware operations. You can use the INF file to add custom applications to the 5020 Start menu, Desktop, and/or the Auto Run list. In all of these cases, the custom application is added at the end of the list.

Note: See the *Windows CE Programmer's Guide* (ISBN 1-57231-643-8) for essential information about programming for Windows CE devices.

The 5020 uses the INF file format described in the Windows CE SDK with two extensions added as optional parameters. A %CE99% substitution string was added that resolves to the path \WINDOWS\STARTMENU. The following additional parameters were added to CE Shortcuts format.

[*shortcut-list-section*]
shortcut-file-name,shortcut-type-flag,target-file/path,[standard-destination-path],[run-time-arguments],[working-directory],[user-mode],[application-type]

shortcut-file-name
This string identifies the shortcut. It is the application's description and will show up on the desktop or appropriate menu.

shortcut-type-flag
This field is retained for consistency with existing CE applications. A zero or empty represents a shortcut to a file; any non-zero numeric value represents a shortcut to a folder. Since folders are not supported, all shortcuts to folders are ignored without any error indications.

target-file/path
This string specifies the destination directory. It is used to determine the path of the program to execute. This string can be a simple name, for example, MYAPP.EXE in which case the path will be determined according to where it was installed.

[*standard-destination-path*]
This string specifies the destination directory for the shortcut. You can use a standard %Cex% path or %InstallDir%. If no value is specified, the *target-file/path* determines where the application appears:

String	Destination Directory
%CE3% or \WINDOWS\DESKTOP	Desktop
%CE4% or \WINDOWS\STARTUP	AutoStart
%CE11% or \WINDOWS\PROGRAMS	Start Menu, Program sub-menu
%CE99% or \WINDOWS\STARTMENU	Start Menu

[*run-time-arguments*]
This string specifies the arguments that are passed to *target-file/path* when it is started. If it is omitted, then no arguments are passed.

[*working-dir*]
This string specifies the working directory to be established when *target-file/path* is started. If it is omitted, then the directory that *target-file/path* exists in is used.

[*user-mode*]
This string indicates under which user modes the shortcut is visible. The default is 3, which makes the shortcut visible to both the administrator and the end user. If supplied, it must be one of the following values:

String	User Mode
1	Visible to administrator
2	Visible to end user
3	Visible to administrator and end user

[*Application-Type*]
This string identifies where this application will appear. If it is omitted, then *standard-destination-path* determines where it should appear. If supplied, it must be one of the following values. If you want the application to appear in more than one location, you can specify multiple installed locations.

String	Installed Location
1	Desktop
2	Start Menu
4	Start Menu Programs Sub-menu
8	Auto Start

Setting Up the Visual Studio Tools for Remote Ethernet Access

Setting up the Visual Studio tools for remote Ethernet access allows you to test programs on the 5020 while you are developing them on your desktop PC. Remote Ethernet debugging allows you to single step a program, to set break points, and to examine variables.

You need to have the following components installed to use the remote debugging feature:

• An Ethernet connection to your desktop PC. You can make an Ethernet connection using RF communications or by using an Ethernet PC card.

• Microsoft Visual C++ or other development environment with remote tools installed on your desktop PC.

• The Intermec SDK installed on your desktop PC. The 5020 SDK, sample code, and examples are provided on the 5020 Software Developer's Kit and Support Files CD-ROM that ships with this manual.

To set up the Visual Studio tools for remote debugging

1. Start the Visual Studio Integrated Development Environment.

2. Select Configure Platform Manager from the Tools menu.

3. Choose the Intermec 5020 and click the Properties button.
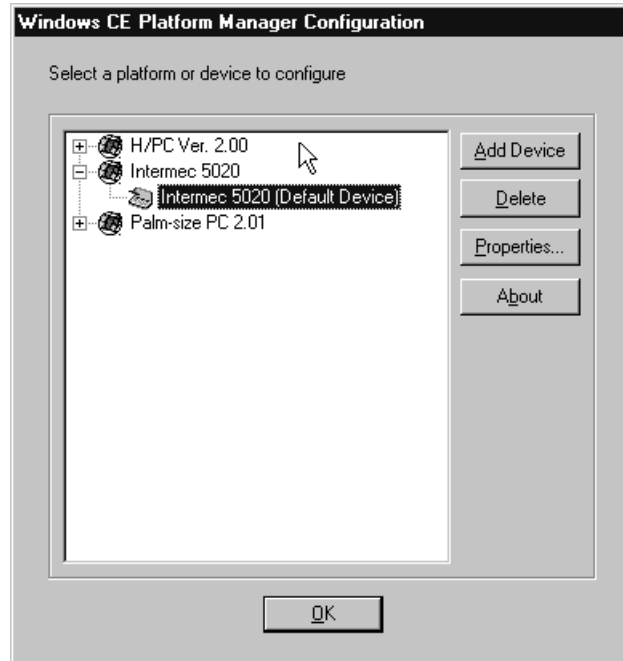
4. Select TCP/IP Transport for Windows CE.
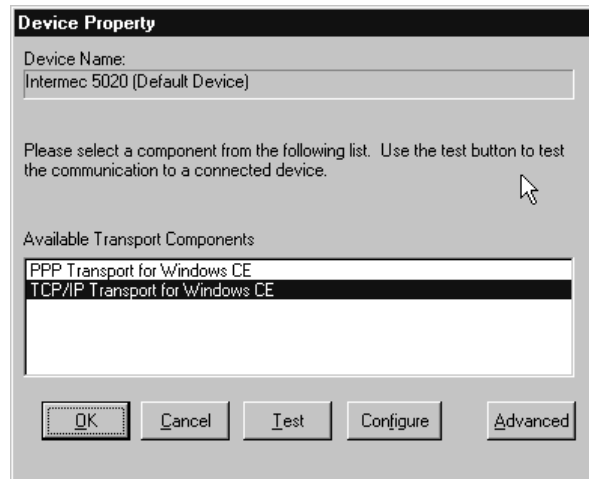
5. Click the Advanced button.

6. Select Manual Server.

7. Click OK twice to exit.

8. Use the Configuration application to configure the 5020 for network operation. For help, see "Configuring the Network Parameters" in Chapter 3.

Note: If you are not on a network with a WINS server, a Hosts file must be in the Windows directory on the 5020. The Hosts file must contain the name and IP address of the desktop PC you are using.

9. The Manual Server - Action dialog box appears when you try to run a remote debugging tool on your desktop PC. Highlight and copy the cmd line displayed in the dialog box.

Note: The required files (TCPIPC.DLL, CEMGRC.EXE, and CETLSTUB.DLL) listed in the dialog box are installed on the 5020.
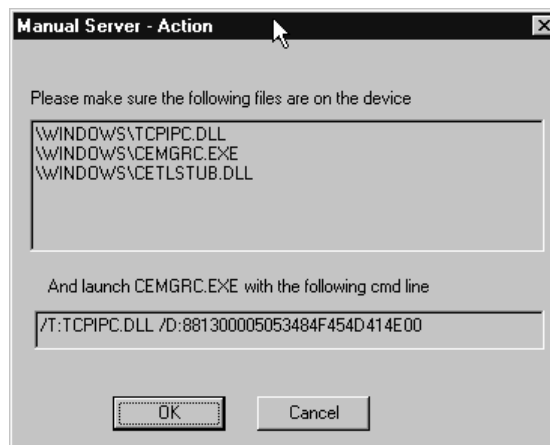
10. Start the remote Unit Management application and choose File Manager. For help, see Chapter 5, "Managing Your 5020."

11. Click the option button to select the WINDOWS directory.

12. Click the Goto button to display the WINDOWS directory listing.

13. In the file list, click the option button to select CEMGRC.EXE. This program establishes a remote session with the desktop process CEMGR.
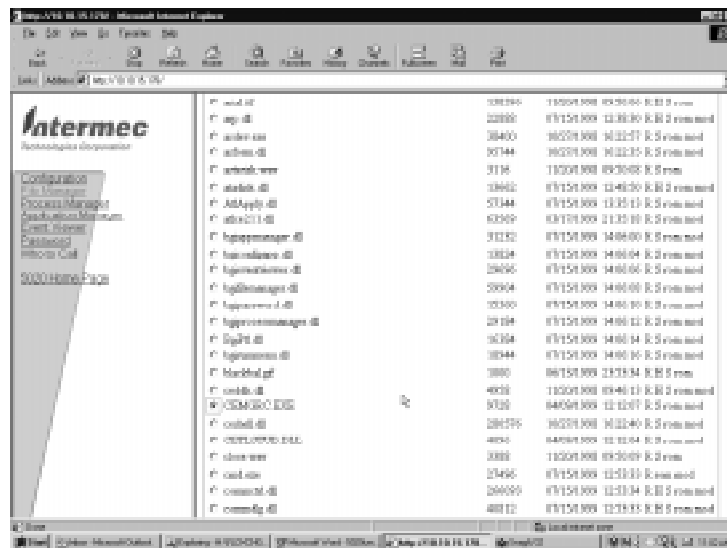
14. Click the Run button.

15. Paste the cmd line you copied from the Manual Server Action dialog box (Step 9) in the Command line parameters field.
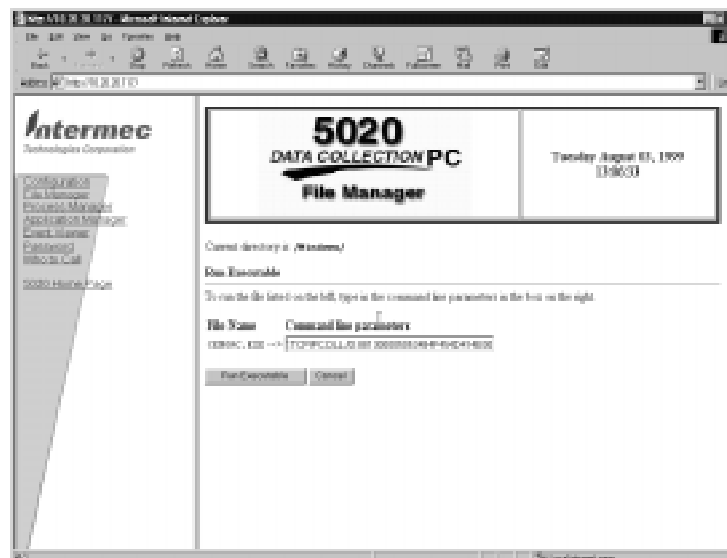
16. Click the Run Executable button.

17. Click the OK button on the Manual Server Action dialog box. An Ethernet connection between the desktop PC and 5020 will now be established.

Problems Establishing a Connection

Problem or Message

You are unable to establish a connection.

Solution

1. Make sure the WINS or DNS network configuration is correct and that you have access to a WINS or DNS server.

2. Exit all Visual Studio tools. Use Task Manager to verify that the CEMGR process is not running. End the process if it is running.

3. Set up the Visual Studio tools for remote debugging.

Installing and Removing Commercial Off-the-Shelf Software

Commercial off-the-shelf software products use an installation program that installs the software differently than the 5020 SETUP.EXE program. After installing the application, you need to run IMECSYNC.EXE to make the installation compatible with the 5020 by reinstalling the application shortcuts as 5020 shortcuts. IMECSYNC is installed in the WINDOWS directory on your 5020.

When you install off-the-shelf applications on a 5020, the registry entries are not set to have these applications appear on the Start Menu, Desktop, Startup, or Programs Menu. IMECSYNC.EXE compares the contents of the \WINDOWS\DESKTOP, \WINDOWS\STARTUP, \WINDOWS\STARTMENU, and \WINDOWS\PROGRAMS directories with the contents of the registry. The registry is modified when any programs are found in these directories that are not currently defined in the appropriate registry entries.

Some assumptions have to be made since the installation process has no way of indicating whether the program is accessible for administrators and/or end users. The defaults are that the program name becomes the description, the working directory is the directory that the program was found in, there are no command line arguments, and the program is accessible to both administrators and end users.

The program also understands shortcut files and follows the path to the resultant program to which it points. If IMECSYNC detects any programs that are defined in the registry but are no longer on the 5020, the registry entries are removed. IMECSYNC displays an activity log in a list box.

You can also use IMECSYNC after you remove the application. IMECSYNC acts as a cleanup program and removes any residual information about an uninstalled application.

IMPORTANT! Commercial off-the-shelf applications are not guaranteed to be fully compatible with the 5020.

7

Reader Command Reference

This chapter describes the reader commands that you can use while operating the 5020 PC. Reader commands, such as Backlight On, allow you to perform a task on the 5020.

Using Reader Commands

A reader command causes the computer to perform a task such as turning the backlight on or off. Some reader commands temporarily override the configuration settings and some actually change the configuration settings. You can execute reader commands by

- scanning a command from a Code 39 or Code 93 bar code label.

- pressing keys on the keypad or using the Configuration application.

- sending a command from a device in a UDP Plus network.

- sending a command from an application.

There are two general types of reader commands:

- Accumulate mode commands

- Operating commands

Reader commands are listed in alphabetical order within these two categories. You will find the purpose, command syntax, and bar code labels for each reader command in this chapter.

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

Using Accumulate Mode

You can use Accumulate mode to collect data from a series of bar code labels and enter them as a single label. When you put the 5020 in Accumulate mode, the computer will collect all scanned bar code labels in the computer's buffer until you scan either the Enter or Exit Accumulate mode command.

You can edit the accumulated data with the Clear and Enter commands.

- The Clear command deletes the entire data record you are accumulating.

- The Enter command will enter data as a record and leaves the 5020 PC in Accumulate mode.

Note: If you are not in Accumulate mode, the Clear command has no effect and you will hear an error beep.

When you exit Accumulate mode, the accumulated data is "entered" as a data record. Up to 250 characters can be held in the buffer. If the data record count exceeds 250 characters, the data is truncated. If you reset the 5020 (software or hardware reset), you exit Accumulate mode, the entire buffer is cleared, and all data accumulated is lost.

To use Accumulate mode

The syntax to use the Enter Accumulate command is:

`+/data`

where:

`+/`   is the syntax for the Enter Accumulate mode command.

data   is the optional data you want to enter. *Data* can be a reader command that is executed when you exit Accumulate mode.

1. Scan this bar code label to Enter Accumulate mode:

   Enter Accumulate Mode

   ‖‖‖‖‖‖‖‖‖‖‖

   +/

2. Scan the bar code label(s) for the data you want to enter. You can scan labels from the "Full ASCII Bar Code Chart" in Appendix B.

   For example, scan this label to change the 5020's configuration and set the preamble to the characters XYZ.

   Change Configuration / Set Preamble to XYZ

   ‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

   $+ADXYZ

   Or, to edit the accumulated data, scan one of these bar code labels:

   Clear   Enter

   ‖‖‖‖‖‖‖‖‖   ‖‖‖‖‖

   - -   **

   Note: You can create one bar code label by combining Steps 1 and 2 above. Most of the examples in this manual use one bar code label.

3. Scan this bar code label to exit Accumulate mode and enter the data record.

   Exit Accumulate Mode

   ‖‖‖‖‖‖‖‖‖‖‖

   -/

Enter Accumulate Mode

Purpose: Enters Accumulate mode. You can accumulate data from a series of bar code labels and enter them as a single label.

From Network: Not supported

Keypad: Not supported

Scan: Enter Accumulate Mode

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

+/

Clear

Purpose: Deletes the entire data record you are accumulating. If there is no data in the buffer, the command has no effect.

From Network: Not supported

Keypad: Not supported

Scan: Clear

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

- -

Enter

Purpose: Enters the current data record and remains in Accumulate mode. If no data exists, a null string is entered.

From Network: Not supported

Keypad: Not supported

Scan: Enter

||||||||||

**

Exit Accumulate Mode

Purpose: Exits Accumulate mode and transmits the current data record. If no data has been accumulated, an empty data record is entered.

From Network: Not supported

Keypad: Not supported

Scan: Exit Accumulate Mode

‖█‖‖█‖‖ ‖‖ ‖‖‖

-/

Operating Reader Commands

The reader commands you can use to operate or change the 5020's configuration are listed in this section. The operating commands are listed in alphabetical order. You will find the purpose, syntax for commands sent from a network device in a UDP Plus network, and bar code labels for these reader commands in this section.

- Backlight On and Off

- Change Configuration

- Multiple-Read Labels

- Scanner Trigger On and Off

- Set Time and Date

Backlight On and Off

Purpose: Turns the backlight on to easily view the 5020 screen in dimly lit environments.

From Network: `%.1`

You can send the command from a device such as the DCS 300 in a UDP Plus network.

Keypad: Press ⊚ to turn the backlight on or off.

Scan: Backlight On

‖█‖‖‖ ‖ ‖ █‖‖ ‖‖ █‖

%.1

Purpose:	Turns the backlight off.
From Network:	%.0
	You can send the command from a device such as the DCS 300 in a UDP Plus network.
Keypad:	Press ⊚ to turn the backlight on or off.
Scan:	Backlight Off

‖‖‖‖‖ ‖ ‖ ‖‖ ‖‖‖ ‖‖ ‖‖‖
%.0

> **Note:** You can use the command %. to toggle the backlight on and off.

Change Configuration

Purpose:	This command must precede any configuration command. If you enter a valid string, the 5020 configuration is modified and the computer sounds a high beep. For help on the configuration commands, see Chapter 8, "Configuration Command Reference."
From Network:	$+command[command]...[command n]
	where *command* is a configuration command with the value you want to set. You can send the command from a device such as the DCS 300 in a UDP Plus network.
Keypad:	In the Configuration or Unit Management application, choose Configure.
Example:	Change Configuration / Turn Off Beep Volume

‖‖‖‖‖ ‖ ‖ ‖‖‖ ‖‖ ‖‖‖ ‖‖‖ ‖‖‖
$+BV0

The Change Configuration command is followed by the configuration command to turn off the beep volume (BV0).

Multiple-Read Labels

Purpose:	A multiple-read label is a Code 39 or Code 93 bar code label that has a space as the first character after the start code. The 5020 stores a multiple-read label in the buffer until you execute a command to transmit the label or scan a regular label. A regular bar code label is executed as soon as you scan it.
From Network:	Not supported
Keypad:	Not supported

Multiple-Read Labels (continued)

Label Syntax: \<Start Code\>\<SP\>*data*\<Stop Code\>

where \<SP\> is the ASCII space character and *data* is the content of the label.

Example: Multiple-Read Bar Code Label

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

* A*

After you scan a multiple-read bar code label, you can use the Accumulate mode commands, such as Enter or Clear, to accumulate or edit the data. Once you scan a non-multiple-read label, the data is entered.

Set Time and Date

Purpose: Sets the time and date on the 5020 PC. The default date and time is January 1, 1999 at 12:00 AM.

From Network: `/+yyyymmddhhmmss`

where acceptable values for the date are:

yyyy	0000-9999	Year
mm	01-12	Month of the year
dd	01-31	Day of the month
hh	00-23	Hour
mm	00-59	Minutes
ss	00-59	Seconds

You can send the command from a device such as the DCS 300 in a UDP Plus network.

Keypad: In the Control Panel, choose Date/Time. For help, see Chapter 4, "Customizing the 5020 Using the Control Panel."

Scan: Not supported.

8

Configuration Command Reference

This chapter is an alphabetical list of all the configuration commands supported on the 5020 PC.

Using Configuration Commands

A configuration command changes the way the 5020 operates. For example, you can change the Beep Volume to make the 5020 beep very loud in a noisy environment. You can execute configuration commands by

- scanning a command from a Code 39 or Code 93 bar code label.

- sending a command from an application.

- sending a command from a device in a UDP Plus network.

- sending a command from an SNMP management station.

There is a limited set of commands that you can configure by scanning bar code labels. For a complete list, see "Configuring the 5020 by Scanning Bar Code Labels" in Chapter 3.

You can find the following information about each configuration command in this chapter:

- Command description and purpose

- Command syntax and options

- Configuration methods

- SNMP OID

- Default setting

- Bar code labels (where available) you can scan to set or change each command

The configuration commands are listed alphabetically by command name. For a list of data collection, network communications, SNMP, UDP Plus, or unit commands, use the next table, "Configuration Commands Listed by Category." If you want to look up a command by its syntax, see the "Configuration Commands by Syntax" list in Appendix A.

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

Configuration Commands Listed by Category

This chapter lists the configuration commands in alphabetical order. Use this next list to find the configuration commands you may need to set for data collection, network communications, SNMP, UDP Plus, or the unit (5020).

Configuration Commands Listed by Category (continued)

Entering Variable Data in a Configuration Command

You can enter variable data for many of the configuration commands. For example, you can set a preamble that is up to 31 ASCII characters long. You need to follow these general instructions to enter variable data.

To enter variable data in a configuration command

1. Scan a bar code label with this syntax:

   `+/$+command`

   where:

+/	is the syntax for the Enter Accumulate Mode command.
$+	is the syntax for the Change Configuration command.
command	is the syntax and data for the command you want to change.

   For example, the command syntax for a preamble is AD*data*. To change or set a preamble, scan this bar code:

   Enter Accumulate Mode / Change Configuration / Set Preamble

   +/$+AD

2. Scan a bar code label from the "Full ASCII Bar Code Chart" in Appendix B. If the data you enter forms a reader or configuration command such as BV for Beep Volume, you must enclose the data in quotes. If you are entering quotation marks as data, you must enclose the data within quotation marks and precede each quotation mark with another quotation mark. For help, see "Configuring the 5020 by Scanning Bar Code Labels" in Chapter 3.

   To set the preamble to the character T, scan this label:

   T

   T

   Note: To use the bar code labels in Appendix B, you must configure the 5020 to use Code 39 in Full ASCII mode. For help, see "Code 39" later in this chapter.

3. Scan the Exit Accumulate Mode bar code label to update the 5020's configuration:

   Exit Accumulate Mode

   -/

5020 IP Address

Purpose: Defines the IP address assigned to the 5020 in your RF or Ethernet network. An IP address is a unique network level address you assign to each device in a TCP/IP network. If you are using a DHCP server, the IP address is automatically assigned. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose either Radio or Ethernet, then IP Address, then Obtain IP Address via DHCP, and finally choose IP Address. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.2.1.2.*index*

where *index* is the radio or I/O adapter card number.

Options: The 5020 IP address must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

```
n.n.n.n
```

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

Default: 0.0.0.0

Access Point MAC Address

Purpose:	Displays the MAC address of the OpenAir radio in the access point to which the 5020 is currently connected.
Configuration:	The Access Point MAC Address is a read-only parameter that cannot be changed.
	In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then choose Radio, and finally choose Access Pt MAC Address. Choose Refresh to view the current assignments. For help, see Chapter 3, "Configuring the 5020."
On Cold Boot:	Not applicable (read-only)
SNMP OID:	1.3.6.1.4.1.1963.5.5.2.5.1.1.2.*index*
	where *index* is the radio adapter card number.
Default:	None

Access Point Name

Purpose:	Displays the first 11 characters of the name of the access point to which the 5020 is currently connected.
Configuration:	The Access Point Name is a read-only parameter that cannot be changed.
	In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then choose Radio, and finally choose Access Pt Name. Choose Refresh to view the current assignments. For help, see Chapter 3, "Configuring the 5020."
On Cold Boot:	Not applicable (read-only)
SNMP OID:	1.3.6.1.4.1.1963.5.5.2.5.1.1.1.*index*
	where *index* is the radio adapter card number.
Default:	None

Acknowledgement Delay Lower Limit

Purpose: When the 5020 sends a message to the DCS 300, the 5020 waits to receive a response acknowledging the message. If no response is received within the Acknowledgement Delay Lower Limit time, the 5020 sends the message again at the time interval set for the lower limit. The 5020 will continue to send the data at increasingly longer intervals until it reaches the Acknowledgement Delay Upper Limit time. The 5020 continues sending the message at the time interval set for the upper limit until a response is received or a timeout error occurs.

You only use this command in a UDP Plus network.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Ack Delay Low Limit. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.2.1

Options: Acceptable values for the lower limit are any number from 200 to 2000 ms.

Default: 300 ms

Acknowledgement Delay Upper Limit

Purpose: When the 5020 sends a message to the DCS 300, the 5020 waits to receive a response acknowledging the message. If no response is received within the Acknowledgement Delay Lower Limit time, the 5020 sends the message again at the time interval set for the lower limit. The 5020 will continue to send the data at increasingly longer intervals until it reaches the Acknowledgement Delay Upper Limit time. The computer continues sending the message at the time interval set for the upper limit until a response is received or a timeout error occurs.

You only use this command in a UDP Plus network.

Acknowledgement Delay Upper Limit (continued)

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Ack Delay Upper Limit. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.3.1

Options: Acceptable values for the upper limit are any number from 2 to 60 seconds.

Default: 5 seconds

Automatic Shutoff

Purpose: Defines the maximum length of time the 5020 remains on when there is no activity. When you do not use the 5020 for the length of time set with this command, the computer automatically turns off as if you had pressed ⌐I/O⌐ to turn it off.

When you press ⌐I/O⌐ to turn on the 5020, the PC either resumes exactly where it was when you turned it off or the 5020 boots and restarts your application.

You can use the Configuration application, the Unit Management application, or the Power applet in the Control Panel to set the Automatic Shutoff parameter. In the Configuration and Unit Management applications, the value you set will turn off the 5020 when you are using it on battery power.

In the Control Panel, you can set separate values to turn off the 5020 when it is on battery power or on AC power. If the 5020 is connected to AC power through the D5020 or L5020, automatic shutoff is disabled unless you enable the suspend while on external power in the Control Panel Power applet. For help, see Chapter 4, "Customizing the 5020 Using the Control Panel."

Power Management Tip: You should use the Automatic Shutoff feature to preserve the main battery pack's power.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Power Management and then choose Automatic Shutoff. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.11.3.0

Syntax: EZ*data*

You only use the two-character command EZ for bar code configuration labels. Acceptable values for *data* are:

0   Disabled (always on)
1   1 minute
5   5 minutes
30   30 minutes
60   60 minutes

Default: 5 minutes

Scan: One of these bar codes:

Disable Automatic Shutoff
||||||| | ||| || ||||| ||||||| ||| ||||
$+EZ0

Automatic Shutoff 1 Minute
||||||| | ||| || ||| ||||||| ||| ||||
$+EZ1

Automatic Shutoff 5 Minutes
||||||| | ||| || |||| ||| ||||| ||| ||||
$+EZ5

Automatic Shutoff 30 Minutes
||||||| | ||| ||| |||| ||| ||||| |||| ||| ||||
$+EZ30

Automatic Shutoff 60 Minutes
||||||| | ||| || |||| ||| ||||| |||| ||| ||||
$+EZ60

Beep Duration

Purpose:	Defines the duration of the beeps on the 5020. There are two types of beeps:

- Low beep
- High beep

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Speaker and then choose either Low Beep Duration or High Beep Duration. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.1.4.1.2.1   Low beep duration
1.3.6.1.4.1.1963.15.3.1.4.1.3.1   High beep duration

Syntax: BB*data*   Low beep duration
BC*data*   High beep duration

You only use the two-character command BB or BC for bar code configuration labels. Acceptable values for *data* are from 10 to 60,000 ms (60 seconds).

Default: 50 ms for the low beep duration
60 ms for the high beep duration

Scan: 1. Scan this bar code:

Enter Accumulate Mode

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

+/

2. Scan one of these bar codes:

Change Low Beep Duration   Change High Beep Duration

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

$+BB   *$+BC*

3. Scan a numeric value for *data* in milliseconds from these bar codes:

||||||| |||| ||| ||||||| ||| |||
0   *1*

||||||| ||| ||| ||||||| |||| |||
2   *3*

||||||| ||| ||| ||||||| |||| |||
4   *5

||||||| ||| ||| ||||||| ||| |||
6   *7*

||||||| ||| ||| ||||||| ||| |||
8   *9*

4. Scan this bar code:

Exit Accumulate Mode
||||||| |||||| |||| |||
-/

5. Repeat Steps 1 through 4 to set the other beep duration.

Beep Frequency

Purpose: Defines the individual frequencies of the 5020 beeps. There are two types of beeps:

- Low beep
- High beep

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Speaker and then choose either Low Beep Frequency or High Beep Frequency. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.1.4.1.4.1   Low beep frequency
1.3.6.1.4.1.1963.15.3.1.4.1.5.1   High beep frequency

Syntax: BG*data*   Low beep frequency
BH*data*   High beep frequency

You only use the two-character command BG or BH for bar code configuration labels. Acceptable values for *data* are from 100 to 20,000 Hz (20 KHz).

Note: If you set the frequency outside the range of 100 Hz to 10,000 Hz, the beeps are inaudible.

Default: 1000 Hz for the low beep
2300 Hz for the high beep

Scan: 1. Scan this bar code:

Enter Accumulate Mode

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

+/

2. Scan one of these bar codes:

Change Low Beep Frequency   Change High Beep Frequency

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

$+BG   *$+BH*

3. Scan a numeric value for *data* in Hz from these bar codes:

‖‖‖‖‖‖‖‖‖‖‖‖ *0*	‖‖‖‖‖‖‖‖‖‖‖‖ *1*
‖‖‖‖‖‖‖‖‖‖‖‖ *2*	‖‖‖‖‖‖‖‖‖‖‖‖ *3*
‖‖‖‖‖‖‖‖‖‖‖‖ *4*	‖‖‖‖‖‖‖‖‖‖‖‖ *5*
‖‖‖‖‖‖‖‖‖‖‖‖ *6*	‖‖‖‖‖‖‖‖‖‖‖‖ *7*
‖‖‖‖‖‖‖‖‖‖‖‖ *8*	‖‖‖‖‖‖‖‖‖‖‖‖ *9*

4. Scan this bar code:

Exit Accumulate Mode

‖‖‖‖‖‖‖‖‖‖‖‖

-/

5. Repeat Steps 1 through 4 to set the other beep frequency.

Beep (Speaker) Volume

Purpose: Adjusts the volume of the 5020's audio signals. For a list of all the beep sounds, key clicks, and audio signals, see "Understanding the 5020's Audio Signals" in Chapter 2. Set the beep volume according to operator preference and work environment.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Speaker and then choose Volume. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

Beep (Speaker) Volume (continued)

SNMP OID: 1.3.6.1.4.1.1963.15.3.1.3.0

Syntax: BV*data*

You only use the two-character command BV for bar code configuration labels. Acceptable values for *data* are:

0   Off
1   Very quiet
2   Quiet
3   Normal
4   Loud
5   Very loud

Default: Normal

Scan: One of these bar codes:

Beep Volume Off

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

$+BV0

Beep Volume Very Quiet

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

$+BV1

Beep Volume Quiet

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

$+BV2

Beep Volume Nornal

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

$+BV3

Beep Volume Loud

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

$+BV4

Beep Volume Very Loud

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

$+BV5

Codabar

Purpose: Enables or disables decoding of Codabar symbology. Codabar is a self-checking, discrete symbology. The American Blood Commission (ABC) Codabar requires that you retain and transmit the start/stop code digits when processing a Codabar symbol. As a result, configuration CD10 is an illegal configuration**.**

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Codabar. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.5.1

Syntax: CD*data*

You only use the two-character command CD for bar code configuration labels. Acceptable values for *data* must be two digits, corresponding to:

Digit	Value	Description
First	0	Disabled
	1	ABC
	2	Standard
	3	Concatenated
Second	0	Discard Start/Stop
	1	Transmit ABCD Start/Stop
	2	Transmit DC1-DC4 Start/Stop

Default: Standard, Transmit ABCD start/stop

Scan: One of these bar codes**:**

Disabled, Discard Start/Stop

$+CD00

ABC, Transmit ABCD Start/Stop

$+CD11

Codabar (continued)

ABC, Transmit DC1-DC4 Start/Stop

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

$+CD12

Standard, Discard Start/Stop

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

$+CD20

Standard, Transmit ABCD Start/Stop

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

$+CD21

Standard, Transmit DC1-DC4 Start/Stop

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

$+CD22

Concatenated, Discard Start/Stop

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

$+CD30

Concatenated, Transmit ABCD Start/Stop

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

$+CD31

Concatenated, Transmit DC1-DC4 Start/Stop

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

$+CD32

Code 11

Purpose: Enables or disables decoding of Code 11 symbology. Code 11 is a very high density, discrete numeric bar code. It is most extensively used in labeling telecommunications components and equipment.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 11. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.8.1

Syntax: CG*data*

You only use the two-character command CG for bar code configuration labels. Acceptable values for *data* are:

0   Disabled
1   Code 11 enabled with one check digit
2   Code 11 enabled with two check digits

Default: Enabled with two check digits

Scan: One of these bar codes:

Disable Code 11

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

$+CG0

Code 11 Enabled With One Check Digit

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

$+CG1

Code 11 Enabled With Two Check Digits

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

$+CG2

Code 16K

Purpose:	Enables or disables decoding of Code 16K symbology. Code 16K is a two-dimensional (stacked rows), high density bar code. It is based on Code 128 and is used widely to label unit-dose packaging for the healthcare industry.
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 16K. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.4.1.1963.15.3.3.1.1.16.1
Syntax:	CP*data*

You only use the two-character command CP for bar code configuration labels. Acceptable values for *data* are:

0   Disabled
1   Standard Code 16K enabled
2   Code 16K enabled with Function Code 1

When you enable Code 16K with Function Code 1, the 5020 decodes the bar code label and checks for a Function Code 1 in the first data character position. If a Function Code 1 is the first character, the computer substitutes this Code 16K symbology identifier string for the Function Code 1 character.

```
]K1
```

Default:	Standard Code 16K enabled
Scan:	One of these bar codes:

Disable Code 16K

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

$+CP0

Standard Code 16K Enabled

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

$+CP1

Code 16K Enabled With Function Code 1

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

$+CP2

Code 2 of 5

Purpose: Enables or disables decoding of Code 2 of 5 symbology. Code 2 of 5 uses the bars to encode information and the spaces to separate the individual bars. This code is discrete and self-checking. You can only enable Code 2 of 5 if the Interleaved 2 of 5 (I 2 of 5) code is disabled. If you enable I 2 of 5, Code 2 of 5 is automatically disabled.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 2 of 5. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.4.1

Syntax: CC*data*

where *data* consists of three digits as follows:

First digit:	0	Code 2 of 5, 3 Bar Start/Stop
	1	Code 2 of 5, 2 Bar Start/Stop

Second and third digits:	00	Disable Code 2 of 5
	01-32	Label Length

You only use the two-character command CC for bar code configuration labels.

Default: Disabled

Scan: To disable Code 2 of 5, scan this bar code:

Disable Code 2 of 5

$+CC000

Code 2 of 5 (continued)

Or: To enable Code 2 of 5:

1. Scan one of these bar codes:

Code 2 of 5, 3 Bar Start/Stop

+/$+CC0

Code 2 of 5, 2 Bar Start/Stop

+/$+CC1

2. Scan a two-digit numeric value to set the label length (01-32) from these bar codes.

0

1

2

3

4

5

6

7

8

9

3. Scan this bar code:

Exit Accumulate Mode

-/

Code 39

Purpose: Enables or disables decoding of Code 39 symbology. Code 39 is discrete, variable length, and self-checking. The character set is uppercase A to Z, 0 to 9, dollar sign ($), period (.), slash (/), percent (%), space ( ), plus (+), and minus (-).

There are three types of ASCII the 5020 decodes:

- Code 39 non-full ASCII
- Code 39 full ASCII
- Code 39 mixed-full ASCII

Code 39 non-full ASCII   Non-full ASCII uses a one-character encoding scheme. For example, you encode the data "SAMPLE" as follows:

|||||||||| ||| |||||| |||| |||| ||| ||||
SAMPLE

This label decodes as *SAMPLE*.

Code 39 full ASCII   Full ASCII uses a two-character encoding scheme to extend the character set to 128 characters. You use the dollar sign ($), slash (/), percent (%), or plus (+) followed by an uppercase letter to represent one of the characters in the extended set. You must encode lowercase letters as a plus sign (+) followed by their uppercase equivalents. For a list of ASCII characters and their Code 39 representations, see the "Full ASCII Table" in Appendix B.

Use Code 39 full ASCII to enter ASCII control characters or lowercase characters as data. You should also enable Code 39 full ASCII to use ASCII command characters.

For example, you encode the data "sample" in Code 39 full ASCII as follows:

||||||| |||| ||| | ||| ||| ||||||| ||| ||||| ||| ||||| ||| ||||
+S+A+M+P+L+E

In Code 39 non-full ASCII, this label decodes as *+S+A+M+P+L+E*. In Code 39 full ASCII, this label decodes as *sample*.

Code 39 mixed-full ASCII   Use mixed-full ASCII when printers encode the same label two different ways. For example, if you have a bar code with the data $%a, some printers encode the data as follows:

||||||| || |||| || ||| ||||| ||| |||| ||||
/D/E+A

Code 39 (continued)

In the Full ASCII Table in Appendix B, /D represents $ and /E represents %. If you configure the 5020 for Code 39 full ASCII, the computer decodes the data as $%a because there are three valid full ASCII character pairs to represent the data.

Other printers encode the data $%a as:

$%+A

The $ and % are valid Code 39 characters in the non-full ASCII character set. However, the 5020 will not decode this label if it is configured for full ASCII, because the data is not represented by valid full ASCII character pairs. To decode the label correctly, you need to configure the 5020 for mixed-full ASCII.

When you configure the 5020 for Code 39 mixed-full ASCII, the 5020 will decode both of the labels above as $%a.

Mixed-full ASCII interprets any valid full ASCII character pairs that appear in the label, but does not require that all data be encoded with a valid full ASCII character pair. If you are uncertain how your labels are encoded, configure the 5020 for mixed-full ASCII, which decodes all valid Code 39 labels.

If you configure the 5020 for Code 39 full ASCII, you should check for Code 39 mixed-full ASCII. Mixed-full ASCII does not apply when you configure the computer for non-full ASCII.

Note: The interpretive text shown under bar code labels does not always accurately reflect the data that is encoded in the label. The interpretive text represents how the label should be decoded.

Use this table to help configure your 5020.

Code 39 Option	Bar Code Label	Decodes
Non-full ASCII	$%+A /D/E+A	$%+A /D/E+A
Full ASCII	$%+A /D/E+A	No decode $%a
Mixed-full ASCII	$%+A /D/E+A	$%a $%a

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 39. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.3.1

Syntax: CB*data*

You only use the two-character command CB for bar code configuration labels. Acceptable values for *data* must be three digits, corresponding to:

First digit:	0	Disabled
	1	Enabled with no check digit
	2	Enabled with check digit
	3	HIBC (Health Industry Bar Code)
	4	With AIAG check digit
Second digit:	0	Discard check digit
	1	Transmit check digit
Third digit:	0	Code 39 non-full ASCII
	1	Code 39 full ASCII
	2	Code 39 mixed-full ASCII

Note: Selecting HIBC Code 39 automatically sets the configuration to non-full ASCII with the check digit transmitted.

Default: Enable Code 39 Full ASCII with no check digit (101)

Scan: To disable Code 39:

Disable Code 39

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

$+CB0

Or: To enable Code 39:

1.   Scan this bar code:

Enter Accumulate Mode / Enable Code 39

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

+/$+CB

Code 39 (continued)

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

Without a Check Digit

‖||‖|‖ |‖ |‖|

1

With a Check Digit

‖||‖|‖|‖ |‖|

2

HIBC Code 39

‖||‖|‖|‖ |‖|

3

With AIAG Check Digit

| ‖|‖|‖ ‖‖ |‖|

4

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

Discard Check Digit

‖||‖|‖ ‖‖|‖|

0

Transmit Check Digit

‖||‖|‖|‖ |‖|

1

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

Code 39 Non-Full ASCII

‖||‖|‖ ‖‖|‖|

0

Code 39 Full ASCII

‖||‖|‖|‖ |‖|

1

Code 39 Mixed-Full ASCII

‖||‖‖|‖ |‖|

2

5. Scan this bar code:

Exit Accumulate Mode

‖||‖|‖|‖‖ ||| |‖‖

-/

Code 49

Purpose: Enables or disables decoding of Code 49 symbology. Code 49 is a multirow symbology for high data density. The last character in each row is used for row checking and the last two characters of the symbol are used for overall checking.

Function codes designate where to place the predefined data string in a Code 49 label. Whenever a 5020 encounters a function code, it replaces the function code with the defined string before transmitting the data. A single Code 49 symbol may contain several different variable length data fields. Function Code 1 (F1) identifies a data system. Function Code 2 (F2) indicates the end of a data field**.**

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 49. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID:
1.3.6.1.4.1.1963.15.3.3.1.1.11.1   Code 49
1.3.6.1.4.1.1963.15.3.3.1.1.12.1   Function Code 1
1.3.6.1.4.1.1963.15.3.3.1.1.13.1   Function Code 2
1.3.6.1.4.1.1963.15.3.3.1.1.14.1   Function Code 3

Syntax:
CJ*data*   Code 49
CK*data*   Function Code 1
CL*data*   Function Code 2
CM*data*   Function Code 3

You only use the two-character command CJ, CK, CL, or CM for bar code configuration labels. Acceptable values for *data* are:

Code 49:   0   Disabled
                            1   Enabled

Function Code 1:   Any two ASCII characters

Function Code 2:   Any four ASCII characters

Function Code 3:   Any two ASCII characters

Code 49 (continued)

Default: Code 49   Enabled
              Function Code 1   NULL
              Function Code 2   CR LF (\r\n)
              Function Code 3   NULL

Scan: One of these bar codes:

Disable Code 49

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

$+CJ0

Enable Code 49

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

$+CJ1

Scan: To disable any of the function codes, scan one of these bar codes:

Disable Function Code 1

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

$+CK

Disable Function Code 2

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

$+CL

Disable Function Code 3

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

$+CM

Or: To set one of the function codes to a character string:

1. Scan one of these bar codes:

    Enter Accumulate Mode / Set Function Code 1

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

    +/$+CK

    Enter Accumulate Mode / Set Function Code 2

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

    +/$+CL

    Enter Accumulate Mode / Set Function Code 3

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

    +/$+CM

2. Scan any character from the "Full ASCII Bar Code Chart" in Appendix B. You can define two characters each for Function Codes 1 and 3, and four characters for Function Code 2.

3. Scan this bar code:

Exit Accumulate Mode

||‖|‖|‖|| ||| ‖|

-/

Code 93

Purpose: Enables or disables decoding of Code 93 symbology. Code 93 is a variable length, continuous symbology that uses four element widths.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 93. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.7.1

Syntax: CF*data*

You only use the two-character command CF for bar code configuration labels. Acceptable values for *data* are:

0   Disabled
1   Enabled

Default: Enabled

Scan: One of these bar codes:

Disable Code 93

‖|‖|| ||| || |‖ ‖|| ‖|‖ ‖| ‖|| ‖|

$+CF0

Enable Code 93

‖|‖|| ||| || |‖ ‖|‖ ‖| ‖|| ‖|

$+CF1

Code 128

Purpose: Enables or disables decoding of Code 128 symbology. Code 128 is a very high density alphanumeric symbology that supports the extended ASCII character set. It is a variable length, continuous code that uses multiple element widths.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Code 128. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.9.1

Syntax: CH*data*

You only use the two-character command CH for bar code configuration labels. Acceptable values for *data* are:

0　　Disabled
1　　Standard Code 128
2　　UCC/EAN Code 128

Default: Standard

Scan: One of these bar codes:

Disable Code 128

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

$+CH0

Enable Standard Code 128

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

$+CH1

Enable UCC/EAN Code 128

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

$+CH2

Notes: If you configure Standard Code 128, the 5020 will not decode Function Code 1 characters in the first position of a bar code label. Any subsequent Function Code 1 characters are translated to the ASCII GS character as a separator for variable length fields.

If you configure UCC/EAN Code 128, the 5020 will decode a bar code label as Standard Code 128 unless one of the first two characters are a start character and a Function Code 1. In this case, the bar code label is processed as described next:

1. The Function Code 1 character is not transmitted.

2. The three symbology ID characters,]C1, are transmitted.

3. The remaining Code 128 characters are decoded as Standard Code 128.

Configuration Manager Enable

Purpose: This Network menu command is reserved for future use. Intermec strongly recommends that you leave this command enabled so it is set correctly for future upgrades. After you change this parameter, warm boot the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Advanced and then choose Config Manager Enable. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.15.501.7.1.0

Options: Acceptable values for the configuration manager parameter are:

0 Disabled
1 Enabled

Default: Enabled

Configuration SubAgent Enable

Purpose: This Network menu command is reserved for future use on batch 5020s. Intermec strongly recommends that you leave this command enabled so it is set correctly for future upgrades. After you change this parameter, warm boot the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Advanced and then choose Config SubAgent Enable. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.15.501.7.2.0

Options: Acceptable values for the configuration subagent parameter are:

0   Disabled
1   Enabled

Default: Enabled

Controller Connect Check Receive Timer

Purpose: During periods of inactivity on the 5020, the PC still sends messages to the DCS 300 to check the RF or Ethernet connection. If no message is received within the time set for the Controller Connect Check Receive Timer, the 5020 is no longer connected to the DCS 300 and the Data Buffered icon flashes. The timer countdown resets each time a valid message is received.

You only use this command in a UDP Plus network.

Power Management Tip: Intermec strongly recommends that you use the optimum setting of 45 seconds.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Connect Rcv Timer. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.5.1

Options: Acceptable values for the receive timer are any number from 1 to 3600 seconds (60 minutes).

Default: 45 seconds

Controller Connect Check Send Timer

Purpose: During periods of inactivity on the 5020, the PC still sends messages to the DCS 300 to check the RF or Ethernet connection. The 5020 sends a message at the time interval set for the Controller Connect Check Send Timer. The timer countdown resets each time a valid message is sent or received.

You only use this command in a UDP Plus network.

Power Management Tip: Intermec strongly recommends that you use the optimum setting of 20 seconds.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Connect Send Timer. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.6.1

Options: Acceptable values for the send timer are any number from 1 to 3600 seconds (60 minutes).

Default: 20 seconds

Controller IP Address

Purpose:	Defines the IP address assigned to the DCS 300 in your network. An IP address is a network level address you assign to each device in a TCP/IP network. The controller IP address you set on the 5020 must match the address that is set on the DCS 300. You must set the controller IP address even if you plan to enable DHCP (Dynamic Host Configuration Protocol).	
	You only use this command in a UDP Plus network.	
Configuration:	Use one of these methods:	

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Controller IP Address. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.11.1

Options: The controller IP address must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

n.n.n.n

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

Default: 0.0.0.0

Decode Priority

Purpose: Defines the decode priority to use when decoding bar code symbologies. The 5020 uses an initial order to decode the symbology of each bar code label. As bar code labels are decoded, the 5020 attempts to decode the labels in an order determined by the frequency of past decoded symbologies, that is, the most frequently decoded symbology is attempted first, then the second most, and so on.

For example, if you have only been scanning Code 39 bar code labels, the 5020 will set the decode priority to Code 39 and will first attempt to decode every label as Code 39. If you suddenly begin scanning only Code 128 bar code labels, the 5020 will eventually reset the decode priority.

Although you can set the decode priority, the 5020 will establish the priority order based on the bar code labels you scan. You can also reset the statistics through SNMP or an SDK application so that the 5020 can establish a fresh set of decode statistics.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Decode Options and then choose Decode Priority. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.2.1.3.1

Syntax: CT*data*

You only use the two-character command CT for bar code configuration labels. Acceptable values for *data* are from 2 to 24 numbers from this list:

01   Code 39
02   Code 93
03   Code 49
04   Interleaved 2 of 5
05   Codabar
06   UPC/EAN
07   Code 128
08   Code 16K
09   Plessey
10   Code 11

11   MSI
12   PDF 417

You must enter leading zeros and you cannot duplicate numbers.

Default: 010203040506070809101112

Scan: To set the decode priority to the default, scan this bar code:

Set Decode Priority to Default

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

$+CT00

Or: To set the decode priority:

1.   Scan this bar code:

Enter Accumulate Mode / Set Decode Priority

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

+/$+CT

2.   Scan one bar code at a time (up to a total of all 12) in the order you want to set for the decode priority:

Code 39

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

01

Code 93

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

02

Code 49

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

03

Interleaved 2 of 5

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

04

Codabar

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

05

UPC/EAN

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

06

Code 128

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

07

Code 16K

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

08

Plessey

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

09

Code 11

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

10

Decode Priority (continued)

MSI

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

11

PDF 417

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

12

3. Scan this bar code:

Exit Accumulate Mode

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

-/

Decode Security

Purpose:	Defines the security level to use when decoding bar codes. When you select a lower decode security level, the 5020 can decode bar codes with poorer print quality.

> **Note:** Only use the low parameter as a temporary solution until you can improve the bar code label print quality.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Decode Options and then choose Decode Security Level. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.10.1.1

Syntax: CS*data*

You only use the two-character command CS for bar code configuration labels. Acceptable values for *data* are:

0   Low
1   Moderate
2   High

Default: Moderate

Scan: One of these bar codes:

Low Decode Security

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

$+CS0

Moderate Decode Security

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

$+CS1

High Decode Security

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

$+CS2

Default Router

Purpose: Defines the IP address assigned to the default router in your RF or Ethernet network. The router provides a software and hardware connection between two or more networks that permits traffic to be routed from one network to another on the basis of the intended destinations of that traffic.

When the DCS 300 or host is on a different subnetwork than the 5020, you need to set the IP address assigned to the default router. The 5020 uses the router address to send packets across the network to the DCS 300 or host. The default of 0.0.0.0 means there is no default router. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then IP Address, then Obtain IP Address Via DHCP, and finally choose Default Router. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.2.1.4.*index*

where *index* is the radio or I/O adapter card number.

Default Router (continued)

Options: The default router address field consists of four separate numbers, each separated by a period. Each *n* address segment is a number from 0 to 255.

   n.n.n.n

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

Default: 0.0.0.0

DHCP (Obtain IP Address Via DHCP)

Purpose: DHCP (Dynamic Host Control Protocol) allocates IP addresses dynamically so that addresses can be reused when hosts no longer need them. DHCP is automatically enabled on the 5020. If you are using a DHCP server in your Ethernet or RF network, the 5020 broadcasts a message to the server and the DHCP server assigns these network parameters:

- IP address
- Subnet mask
- Default router
- Primary and secondary DNS servers
- Primary and secondary WINS servers

Once the IP address, subnet mask, default router, DNS servers, and WINS servers are dynamically assigned, you can check their status and IP assignments. For help, see "DHCP Status" later in this chapter.

If you are not using a DHCP server, you need to disable DHCP and then set the network parameters listed above. When you disable DHCP, the 5020 sets the IP address, subnet mask, and default router to zero so you can assign static addresses. After you change this parameter, suspend and resume the 5020 to make the change effective.

In a UDP Plus network, you need to configure the Controller IP Address on the 5020 even if you are using a DHCP server in your network. For help, see "Controller IP Address" earlier in this chapter.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then IP Address, and finally Obtain IP Address Via DHCP. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.2.1.1.*index*

where *index* is the radio or I/O adapter card number.

Options: Acceptable values for DHCP are:

0   Disable DHCP
1   Enable DHCP

Default: Enabled

DHCP Status

Purpose: If DHCP is enabled, you can display the dynamically-assigned address parameters once the 5020 has negotiated with the DHCP server. You can check the current information for these parameters:

- IP address
- Subnet mask
- Default router
- DNS servers (primary and secondary)
- WINS servers (primary and secondary)

Configuration: The DHCP Status parameters are read-only parameters that cannot be changed.

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then choose DHCP Status and then choose a parameter. Choose Refresh to view the current assignments. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not applicable (read-only)

SNMP OID: Not applicable (see each DHCP parameter)

Default: None

Display Backlight Level

Purpose: Defines the intensity of the backlight on the 5020 screen. You can set the intensity to either high or low.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Display and then choose Backlight Level. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.501.4.1.0

Options: Acceptable values for the backlight level are:

0   Low
1   High

Default: High

Display Backlight Timeout

Purpose: Defines the amount of time the backlight remains on. The backlight timeout setting significantly affects the 5020's battery life. If you set a longer backlight timeout value, you will use the power in the main battery pack at a faster rate.

You can use the Configuration application, the Unit Management application, or the Display applet in the Control Panel to set the Display Backlight Timeout parameter. In the Configuration or Unit Management applications, the value you set will turn off the backlight when you are using it on battery power or on AC power. In the Control Panel, you can set separate values to turn off the backlight when it is on battery power or on AC power. For help, see Chapter 4, "Customizing the 5020 Using the Control Panel."

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Display and then choose Backlight Timeout. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.13.1.0

Syntax: DF*data*

You only use the two-character command DF for bar code configuration labels. Acceptable values for *data* are:

15	15 seconds
30	30 seconds
60	1 minute
120	2 minutes
300	5 minutes

Default: 15 seconds

Scan: One of these bar codes:

Backlight Timeout 15 Seconds

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

$+DF15

Backlight Timeout 30 Seconds

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

$+DF30

Backlight Timeout 1 Minute

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

$+DF60

Backlight Timeout 2 Minutes

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

$+DF120

Backlight Timeout 5 Minutes

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

$+DF300

Interleaved 2 of 5

Purpose: Enables or disables decoding of Interleaved 2 of 5 (I 2 of 5) symbology. I 2 of 5 is a high-density, self-checking, continuous numeric symbology. It is mainly used in inventory distribution and the automobile industry.

Enabling I 2 of 5 automatically disables Code 2 of 5.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Interleaved 2 of 5. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.2.1

Syntax: CA*data*

You only use the two-character command CA for bar code configuration labels. Acceptable values for *data* are:

0	Disabled
2-32	Fixed length (even number only)
97	Variable length without a check digit
98	Case code (6 or 14) with a check digit
99	Variable length with a check digit

Caution
Using the variable length without a check digit configuration option can cause substitution errors.

Conseil
Des erreurs de substitution peuvent survenir si vous utilisez la longueur variable sans option de vérification de configuration de chiffres.

Default: Variable length with a check digit

Scan: One of these bar codes:

Disable Interleaved 2 of 5

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

$+CA0

Enable Variable Length With a Check Digit

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

$+CA99

Enable Variable Length Without a Check Digit

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

$+CA97

Enable Interleaved 2 of 5, Case Code

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

$+CA98

Or: To set Interleaved 2 of 5 to a fixed length:

1. Scan this bar code:

Enter Accumulate Mode / Set Fixed Length

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

+/$+CA

2. Scan a numeric value for *data* from these bar codes. (Use even numbers 2-32 only)

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

0   *1*

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

2   *3*

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

4   *6*

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

8

3. Scan this bar code:

Exit Accumulate Mode

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

-/

IrDA Baud Rate

Purpose: Sets the baud rate for the IrDA communications port on the connected device. The baud rate must match the baud rate of the device (i.e., the host computer) that the 5020 is communicating with through the IrDA port and the D5020 communications dock or the L5020 serial communications adapter. You must connect the 5020 to a D5020 or an L5020 to set the IrDA baud rate.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Serial Port and then choose IrDA Baud Rate. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.7.3.2.1.2.0

Options: Acceptable values for the baud rate are:

9600
19200
38400
57600
115200

Default: 115200

Keypad Caps Lock

Purpose: Turns the caps lock on and off. With the caps lock turned on, all alphabetic characters you type on the keypad will be uppercase or capital letters.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Keypad and then choose Caps Lock. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.12.2.0

Syntax: KA*data*

You only use the two-character command KA for bar code configuration labels. Acceptable values for *data* are:

0   Caps lock off
1   Caps lock on

Default: Caps lock on

Scan: One of these bar codes:

Caps Lock Off

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

$+KA0

Caps Lock On

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

$+KA1

Keypad Clicker

Purpose: Enables or disables the keypad clicks. The 5020 sounds a click each time you press a key or decode a row of a two-dimensional symbology.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Unit. Next, choose Keypad and then choose Key Clicks. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.12.1.0

Syntax: KC*data*

You only use the two-character command KC for bar code configuration labels. Acceptable values for *data* are:

0   Disable keypad clicker
1   Enable soft keyclicks
2   Enable loud keyclicks

Default: Enabled with loud keyclicks

Scan: One of these bar codes:

Disable Keypad Clicker

$+KC0

Enable Soft Keyclicks

$+KC1

Enable Loud Keyclicks

$+KC2

Maximum Retries

Purpose: Defines the number of times the 5020 will attempt to send a disconnect request message to the DCS 300. The 5020 sends connect and disconnect request messages to the DCS 300 when you turn the 5020 on and off.

You only use this command in a UDP Plus network.

Tip: Intermec strongly recommends that you use the optimum setting of seven retries.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Maximum Retries. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.4.1

Options: Acceptable values for the retries are:

0   5020 retries indefinitely
1-99   Number of retries

Default: 7

MSI

Purpose: Enables or disables decoding of MSI symbology. MSI code is similar to Plessey code. MSI code includes a start pattern, data characters, one or two check digits, and a stop pattern.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose MSI. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.15.1

Syntax: CN*data*

You only use the two-character command CN for bar code configuration labels. Acceptable values for *data* are:

First digit:	0	Disabled
	1	No check digits
	2	1 modulus 10 check digit
	3	2 modulus 10 check digit

Second digit:	0	Discard check digit
	1	Transmit check digit

Default: Disabled

Scan: One of these bar codes:

Disable MSI

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

$+CN00

MSI Without Check Digits

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

$+CN10

MSI With 1 Modulus 10 Check Digit, Discard Check Digit

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

$+CN20

MSI With 1 Modulus 10 Check Digit, Transmit Check Digit

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

$+CN21

MSI With 2 Modulus 10 Check Digits, Discard Check Digits

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

$+CN30

MSI With 2 Modulus 10 Check Digits, Transmit Check Digits

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

$+CN31

Network Loopback

Purpose: Transmits all messages received from the DCS 300 back to the DCS 300. Messages received by the radio are not passed on to the 5020 applications unless they are configuration commands. Messages continue to be looped back to the DCS 300 as long as this feature is enabled. Messages originating from the 5020 are still transmitted to the DCS 300.

Use the Network Loopback parameter to troubleshoot RF or Ethernet communications problems. You only use this command in a UDP Plus network.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Network Loopback. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.13.1

Options: Acceptable values for the Network Loopback parameter are:

0   Disabled
1   Enabled

Default: Disabled

Network Port

Purpose:	Defines the network port that UDP Plus uses for communications in your RF or Ethernet network. The network port you set on the 5020 must match the network port that is set on the DCS 300.

You only use this command in a UDP Plus network.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then UDP Plus, and finally choose Network Port. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.20.1.1.1.12.1

Options: The network port can be any number from 5001 to 65535.

Default: 5555

Plessey

Purpose: Enables or disables decoding of Plessey symbology. Plessey code is pulse-width modulated like most other bar codes. It includes a start character, data characters, an eight-bit cyclic check digit, and a termination bar. The code is continuous and not self-checking. You need to configure two parameters for Plessey code: Start Code and Check Digit.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose Plessey. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.10.1

Syntax: CI*data*

You only use the two-character command CI for bar code configuration labels. Acceptable values for *data* are:

00   Disabled
30   Transmit check digit
31   Discard check digit

Default: Disabled

Scan: To disable Plessey:

Disable Plessey

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

$+CI00

Or: To set Plessey, scan one of these bar codes to transmit or discard the check digit:

Transmit Check Digit

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

$+CI30

Discard Check Digit

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

$+CI31

Postamble

Purpose: Sets the postamble that is appended to any data you scan with the 5020. Common postambles include cursor controls such as tabs or carriage return line feeds.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Virtual Wedge and finally choose Postamble. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.2.1.1.4.1

Syntax: AE*data*

You only use the two-character command AE for bar code configuration labels. Acceptable values for *data* are up to 31 ASCII characters. Embedded null (<NUL>) characters are not allowed. If you enter the AE command without *data*, the postamble is disabled. If you are entering quotation marks as data or grouping configuration commands, you need to enclose the *data* within quotation marks (see the example).

Note: To scan a bar code label that includes quotes, you must configure the 5020 to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.

Default: Tab character (\t)

Scan: To disable the postamble, scan this bar code:

Disable Postamble

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

$+AE

Or: To set the postamble to an ASCII character string:

1. Scan this bar code:

Enter Accumulate Mode / Set Postamble

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

+/$+AE

Postamble (continued)

      2.   Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The postamble can be from 1 to 31 characters.

      3.   Scan this bar code:

Exit Accumulate Mode

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

-/

Example: You want to set a postamble that includes quotation marks. Enter the postamble by scanning this full ASCII bar code label:

Set Postamble to "B"

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

$+AE"""B"""

You must enclose the data within quotation marks and precede each quotation mark with another quotation mark so that the quotation marks are not treated as the end of the data.

Preamble

Purpose: Sets the preamble that precedes any data you scan with the 5020. Common preambles include a data location number or an operator number.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Virtual Wedge and finally choose Preamble. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.2.1.1.3.1

Syntax: AD*data*

You only use the two-character command AD for bar code configuration labels. Acceptable values for *data* are up to 31 ASCII characters. Embedded null (<NUL>) characters are not allowed. When you enter the AD command without *data*, the preamble is disabled. If you are entering quotation marks as data or grouping configuration commands, you need to enclose the *data* within quotation marks (see the example).

Note: To scan a bar code label that includes quotes, you must configure the 5020 to use Code 39 in Full ASCII mode. For help, see "Code 39" earlier in this chapter.

Default: No characters (disabled)

Scan: To disable the preamble, scan this bar code:

Disable Preamble

|||█||||||█|█|███|██||███

$+AD

Or: To set the preamble to an ASCII character string:

1. Scan this bar code:

Enter Accumulate Mode / Set Preamble

|██||||||||||||█|███|██||███

+/$+AD

2. Scan a value for *data* from the "Full ASCII Bar Code Chart" in Appendix B. The preamble can be from 1 to 31 characters.

3. Scan this bar code:

Exit Accumulate Mode

||██|||███|||||███

-/

Example: You want to set a preamble that includes quotation marks. Enter the preamble by scanning this full ASCII bar code label:

Set Preamble to "B"

||██|||||██||||██|███|██|██|||||██||||██|██|||██|██|||||██|██|||██|||||██|██||██

$+AD"""B"""

You must enclose the data within quotation marks and precede each quotation mark with another quotation mark so that the quotation marks are not treated as the end of the data.

Primary DNS Server

Purpose: The IP address to which the 5020 sends DNS requests. DNS (Domain Name Service) is used to associate IP addresses with machine names. DNS is the protocol that a Web browser uses to determine the IP address when you type in a Web site name like www.intermec.com. You can use DNS with DHCP enabled or disabled. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then Name Servers, and finally choose Primary DNS. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.7.1.1.1.1.*index*

where *index* is the radio or I/O adapter card number.

Options: The primary DNS server must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

`n.n.n.n`

Default: 0.0.0.0

Primary WINS Server

Purpose:	The IP address to which the 5020 sends WINS requests. WINS (Windows Internet Name Service) is used to associate IP addresses with machine names. After you change this parameter, suspend and resume the 5020 to make the change effective.
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

	In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then Name Servers, and finally choose Primary WINS. For help, see Chapter 3, "Configuring the 5020."
On Cold Boot:	Saved
SNMP OID:	1.3.6.1.4.1.1963.5.15.6.1.1.1.*index*
	where *index* is the radio or I/O adapter card number.
Options:	The primary WINS server must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.
	n.n.n.n
Default:	0.0.0.0

Radio MAC Address

Purpose: Displays the MAC address of the OpenAir radio that is installed in the 5020.

Configuration: The Radio MAC Address is a read-only parameter that cannot be changed.

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Radio MAC Address. Choose Refresh to view the current assignments. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not applicable (read-only)

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.4.*index*

where *index* is the radio adapter card number.

Default: None

Radio ROM Version

Purpose: Displays the OpenAir radio ROM version that is installed in the 5020.

Configuration: The Radio ROM Version is a read-only parameter that cannot be changed.

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Radio ROM Version. Choose Refresh to view the current assignments. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not applicable (read-only)

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.3.*index*

where *index* is the radio adapter card number.

Default: None

RF Domain

Purpose: Defines a logical partition or subnetwork of the OpenAir RF network. To establish communications, you must assign the same domain number to every OpenAir RF device in a wireless network. The domain number you set on the 5020 must match the domain that is set on each access point the 5020 may communicate with. You can continue to collect data with the 5020 as you roam in between access points as long as all the devices have the same domain number and security ID. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Domain. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.7.*index*

where *index* is the radio adapter card number.

Options: The domain can be any number from 0 to 15.

Default: 0

RF Inactivity Timeout

Purpose: Defines the amount of time the OpenAir radio on the 5020 waits to go into a low power state. If no data is sent or received within the RF inactivity timeout period set, the radio goes into a low power state to conserve power. If you set a high value, the radio stays on longer at a higher power rate and uses battery power at a faster rate. After you change this parameter, suspend and resume the 5020 to make the change effective.

Power Management Tip: Intermec strongly recommends that you use the optimum RF inactivity timeout of 5 seconds to preserve power.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Inactivity Timeout. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.8.*index*

where *index* is the radio adapter card number.

Options: Acceptable values for the inactivity timeout are:

0   Radio never turns off
1-60   RF inactivity timeout in seconds

Although you can enter any value from 1-60, the inactivity timeout is rounded to the nearest multiple of five (i.e. 5, 10, 15, …, 60).

Default: 5 seconds

RF Roaming Allowed

Purpose: Determines whether or not the OpenAir radio can roam between access points. All access points are master stations and each master has a unique channel. If you have five access points in one domain, the 5020 will connect to one access point when you turn it on. This access point becomes the master station for the 5020.

When you set the RF roaming flag to "Not Allowed," the 5020 will only communicate with the master station (access point) to which it first connects. If you allow roaming, the 5020 can communicate with any access point in the same domain. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Roaming Allowed. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.5.*index*

where *index* is the radio adapter card number.

Options: Acceptable values for the roaming flag are:

0   Not allowed
1   Allowed

Default: Allowed

RF Security Identification (ID)

Purpose: Defines the password you can set for secured transmission and receipt of data between devices in the OpenAir RF network. To communicate, all access points and 5020 PCs in the subnetwork must have matching security IDs. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Security ID. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

The RF security ID is stored internally in the OpenAir radio card rather than being stored in permanent memory on the 5020.

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.9.*index*

where *index* is the radio adapter card number.

Options: The RF security ID can be up to 20 ASCII characters.

Default: No characters or blank (disabled)

Notes: If you view the RF security ID in the Configuration or Unit Management applications, the actual security ID does not display on the screen. If you change the security ID, you see the new password until you exit the application.

RF Transmit Mode

Purpose: Defines the transmit mode that the OpenAir radio uses. There are three modes:

BFSK Binary Frequency Shift Key. A broadcasting method the radio uses that lengthens the range, but halves the throughput. This method is switched when the RF protocol on the 5020 determines that communications are degrading.

QFSK Quad Frequency Shift Key. A broadcasting method the radio uses that shortens the range, but doubles the throughput. QFSK is the method used under standard radio conditions.

Auto The radio automatically switches modes between BFSK and QFSK as needed.

After you change this parameter, suspend and resume the 5020 to make the change effective.

Note: Even if you set this configuration command, the 5020 radio will reset the parameter as needed to maximize the broadcasting range and throughput.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then Radio, and finally choose Transmit Mode. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.5.2.5.1.1.6.*index*

where *index* is the radio adapter card number.

Options: Acceptable values for the RF Transmit mode are:

0 BFSK (Binary Frequency Shift Key)
1 QFSK (Quad Frequency Shift Key)
3 Auto

Default: Auto

Scanner Mode

Purpose: Defines how the scanner operates when you press the Scan button or activate a cabled laser scanner. There are two types of modes:

- In One-Shot mode, you must press the Scan button or activate the cabled laser scanner each time you want to scan a bar code. Once you scan a bar code, the scanner turns off.

- In Automatic (Auto-trigger) mode, you press the Scan button once or activate the cabled laser scanner once to scan a series of bar codes. When you release the button or trigger, the scanner turns off. To scan the same bar code more than once, you must release the Scan button or trigger, or scan a different bar code before attempting a second scan.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Scanner and then choose Mode. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.6.1.1

Syntax: SB*data*

You only use the two-character command SB for bar code configuration labels. Acceptable values for *data* are:

0   One-Shot mode
1   Automatic mode

Default: One-Shot mode

Scan: One of these bar codes:

Enable One-Shot Mode

‖█‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

$+SB0

Enable Automatic Mode

‖█‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖‖

$+SB1

Scanner Redundancy

Purpose: Defines the number of scans (voting) the scanner takes of the same label that must decode correctly for a good read of the label. Voting requires the 5020 to decode the same bar code multiple times during a single scanner event and to compare the decoded information a specific number of times before signaling a good read. There are three options:

None   Allows the 5020 to accept the first good read, which speeds up computer performance. This setting is recommended when scanning good quality bar codes.

Normal   The 5020 decodes the bar code a minimum number of times in each scanner event. The number of comparisons that are made depends on each bar code symbology.

High   The 5020 scans and decodes the bar code a maximum number of times in each scanner event. The specific number of comparisons depends on each bar code symbology. The high setting is recommended when scanning poor quality labels that may cause substitution errors.

For example, when you scan Code 39 labels and the scanner redundancy is set to normal, two successive matching decodes in a single scanner event are required. When scanner redundancy is set to high, three successive matching decodes in a single scanner event are required.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Scanner and then choose Redundancy. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.8.1.1

Syntax: SR*data*

You only use the two-character command SR for bar code configuration labels. Acceptable values for *data* are:

0   None
1   Normal
2   High

Default: Normal

Scanner Redundancy (continued)

Scan: One of these bar codes:

Scanner Redundancy None

||||||| ||||| |||| ||||| |||| ||| |||| |||
$+SR0

Scanner Redundancy Normal

||||||| ||||| |||| ||||| |||| || ||| |||
$+SR1

Scanner Redundancy High

||||||| ||||| |||| ||||| |||| ||| || |||
$+SR2

Scanner Selection

Purpose: Identifies the type of tethered scanner you have connected to the 5020 or the type of integrated scanner that is installed in the 5020. The PC can optimize the scanning performance by using the scanner you define in this command. When you select a specific scanner, other scanners may not function properly. Your 5020 may not work if you connect an incompatible tethered scanner.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Scanner and then choose Selection. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.9.1.1

Syntax: SS*data*

You only use the two-character command SS for bar code configuration labels.

Acceptable values for *data* are:

0	All Intermec-compatible scanners (including wands)
4	Intermec 1545 laser scanner
7	Intermec decoded output scanner (Intelligent Input Devices or IID)
8	Intermec 155x laser scanners
10	Internal standard-range scanner
11	Internal long-range scanner
12	Internal extra long-range scanner
13	Internal raster scanner

SS0 through SS8 work only when a tethered scanner is connected to the 5020. SS10 through SS13 are set at the Intermec factory to match the integrated scanner that is installed in the 5020. If you have an internal scanner, do not change the Scanner Selection command or the scanner may not function properly.

Note: See your Intermec sales representative for information about the availability of the internal extra long-range scanner and internal raster scanner.

Default: All compatible scanners for tethered scanner
Internal scanner (10-13) to match the factory-installed scanner

Scan: One of these bar codes:

All Intermec-Compatible Scanners

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

$+SS0

1545 Laser Scanner

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

$+SS4

Decoded Output Scanner

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

$+SS7

155X Laser Scanners

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

$+SS8

Internal Standard-Range Scanner

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

$+SS10

Internal Long-Range Scanner

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

$+SS11

Internal Extra Long-Range Scanner

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

$+SS12

Internal Raster Scanner

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

$+SS13

Scanner Timeout

Purpose: Defines the maximum length of time the scanner stays after you press the Scan button or activate a tethered laser scanner.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Scanner and then choose Timeout. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.5.1.1

Syntax: SA*data*

You only use the two-character command SA for bar code configuration labels. Acceptable values for *data* are:

0 Disabled
1-60 Shutoff time in seconds

Default: Disabled (no timeout)

Scan: 1. Scan this bar code:

Enter Accumulate Mode / Set Scanner Timeout

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

+/$+SA

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

||||||||||||||
0

||||||||||||||
1

||||||||||||||
2

||||||||||||||
3

||||||||||||||
4

||||||||||||||
5

‖‖‖‖‖‖‖‖
6

‖‖‖‖‖‖‖‖
7

‖‖‖‖‖‖‖‖
8

‖‖‖‖‖‖‖‖
9

3. Scan this bar code:

Exit Accumulate Mode
‖‖‖‖‖‖‖‖
-/

Scanner Trigger

Purpose: Scanner trigger allows you to set level triggering or edge triggering.

- With level triggering, you activate the scanner and the laser turns on and stays on until you release the button or the trigger on a cabled scanner.

- In edge triggering, you activate the scanner and the laser turns on and stays on. When you activate the scanner a second time, the laser turns off. Simply releasing the button or the trigger does not turn the laser off. If the laser is left on, the scanner timeout turns the laser off.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Scanner and then choose Trigger Mode. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.3.1.1.7.1.1

Syntax: SC*data*

You only use the two-character command SC for bar code configuration labels. Acceptable values for *data* are:

0   Level triggering
1   Edge triggering

Default: Level triggering

Scan: One of these bar codes:

Enable Level Triggering

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

$+SC0

Enable Edge Triggering

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

$+SC1

Secondary DNS Server

Purpose: The IP address to which the 5020 sends DNS requests when the Primary DNS Server is not responding. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then Name Servers, and finally choose Secondary DNS. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.7.1.1.1.2.*index*

where *index* is the radio or I/O adapter card number.

Options: The secondary DNS server must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

`n.n.n.n`

Default: 0.0.0.0

Secondary WINS Server

Purpose: The IP address to which the 5020 sends WINS requests when the Primary WINS Server is not responding. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then Name Servers, and finally choose Secondary WINS. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.6.1.1.2.*index*

where *index* is the radio or I/O adapter card number.

Options: The secondary WINS server must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

```
n.n.n.n
```

Default: 0.0.0.0

SNMP Identification Contact

Purpose:	This command gives you the information for the person who is responsible for this managed node or 5020. You can also set the information on how to contact this person.
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Identification and then choose Contact. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.2.1.1.4.0
Options:	The identification contact may be up to 255 ASCII characters.
Default:	No characters or blank

SNMP Identification Location

Purpose:	The identification location is the physical location for this 5020. For example, the location may be "Shipping."
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Identification and then choose Location. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.2.1.1.6.0
Options:	The identification location may be up to 255 ASCII characters.
Default:	No characters or blank

SNMP Identification Name

Purpose:	The identification name is the assigned name for this managed node or 5020. Usually, the name is the 5020's fully-qualified domain name.	
Configuration:	Use one of these methods:	

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Identification and then choose Name. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.2.1.1.5.0
Options:	The identification name may be up to 255 ASCII characters.
Default:	No characters or blank

SNMP Security Encryption Key

Purpose: The security encryption key identifies the key that the 5020 uses to encrypt or decipher SNMP packets. Encryption is used only by Intermec-provided software. If encryption is enabled, SNMP management platforms will no longer be able to communicate with the 5020. The encryption key is returned encrypted.

To enable security encryption, set the encryption key and one or both of these two commands:

- SNMP Security Read Encryption

- SNMP Security Write Encryption

For help, see "SNMP Security Read Encryption" and "SNMP Security Write Encryption," later in this chapter.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Security and then choose Encryption Key. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.6.0

Options: The encryption key can be from 4 to 20 ASCII characters.

Default: NULL

SNMP Security IP Address

Purpose: The security IP address is the IP address from which the 5020 will accept SNMP requests. The 5020 uses the security IP address and security subnet mask to determine if the SNMP request was from a valid IP address. If no security IP address is set, the 5020 will accept SNMP requests from any source.

You can set multiple pairs of valid security IP addresses and subnet mask addresses so that the 5020 will accept SNMP requests from multiple sources. For help with the subnet mask, see "SNMP Security Subnet Mask" later in this chapter.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
No	Yes	No

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.1.1.1.*index*

where *index* is the SNMP security IP address.

Options: The security IP address must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

`n.n.n.n`

Default: None (5020 accepts SNMP requests from any IP host)

SNMP Security Read Encryption

Purpose: Sets the packet-level mode of security for SNMP read-only requests. If you enable read encryption, all SNMP get and get next packets that are received have to be encrypted or the packet will not be authorized. If encryption is enabled, you can only use Intermec-provided software.

To enable security encryption, you also need to set the encryption key. For help, see "SNMP Security Encryption Key" earlier in this chapter.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Security and then choose Read Encryption. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.4.0

Options: Acceptable values for the read encryption are:

1   On - SNMP get and get next packets must be encrypted.
2   Off - SNMP packets do not have to be encrypted.

Default: Off

SNMP Security Read Only Community String

Purpose:	The read-only community string is required so that SNMP get and get next requests can be processed by the 5020.
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Security and then choose Read Only Community String. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.4.1.1963.10.5.1.2.0
Options:	The read only community string can be up to 128 ASCII characters.
Default:	public

SNMP Security Read/Write Community String

Purpose: The read/write community string is required so that SNMP set requests can be processed by the 5020. An SNMP packet with this name as the community string will also process SNMP get and next requests.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Security and then choose Read/Write Community String. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.3.0

Options: The read/write community string can be up to 128 ASCII characters.

Default: private

SNMP Security Subnet Mask

Purpose: The subnet mask that corresponds to the SNMP Security IP address. The 5020 uses the security IP address and the security subnet mask to determine if the SNMP request was from a valid IP address. You can set multiple pairs of valid security IP addresses and subnet mask addresses so that the 5020 will accept SNMP requests from multiple sources. For help with the IP address, see "SNMP Security IP Address" earlier in this chapter.

For example, if you set a security IP address of 10.20.0.0 and a security subnet mask of 255.255.0.0, the 5020 would authorize all SNMP requests with a source IP address of 10.20.*n.n*.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
No	Yes	No

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.1.1.2.*index*

where *index* is the SNMP security IP address.

Options: The security subnet mask must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

```
n.n.n.n
```

Default: None

SNMP Security Write Encryption

Purpose: Sets the packet-level mode of security for SNMP read/write requests. If you enable write encryption, all SNMP packets that are received with the read/write community string have to be encrypted or the packet will not be authorized. You need to use Intermec-provided software that supports encryption.

To enable security encryption, you also need to set the encryption key. For help, see "SNMP Security Encryption Key" earlier in this chapter.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Security and then choose Write Encryption. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.1.5.0

Options: Acceptable values for the write encryption are:

1   On - SNMP packets must be encrypted.
2   Off - SNMP packets do not have to be encrypted.

Default: Off

SNMP Trap Authentication

Purpose: This command determines whether or not authentication traps are sent. If trap authentication is enabled, an authentication trap is sent if an SNMP packet is received by the master agent and the community string is not valid.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Traps and then choose Authentication. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.2.2.0

Options: Acceptable values for the trap authentication are:

1   On
2   Off

Default: On

SNMP Trap Community Name

Purpose:	The community name is attached to a trap that is sent to this trap destination.		
Configuration:	Use one of these methods:		

Configuration Applications	SNMP	Bar Codes
No	Yes	No

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.4.1.1963.10.5.2.1.1.3.*index*
	where *index* is the SNMP trap IP address.
Options:	The community name can be up to 128 ASCII characters.
Default:	NULL

SNMP Trap IP Address

Purpose:	The trap IP address is the IP address from which the 5020 will accept SNMP requests. If no trap IP address is set, the 5020 will accept SNMP requests from any source. You can set multiple combinations of valid trap IP addresses, trap ports, and trap community names so that the 5020 will accept SNMP requests from multiple sources.
Configuration:	Use one of these methods:

Configuration Applications	SNMP	Bar Codes
No	Yes	No

On Cold Boot:	Not saved
SNMP OID:	1.3.6.1.4.1.1963.10.5.2.1.1.1.*index*
	where *index* is the SNMP trap IP address.
Options:	The trap IP address must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.
	`n.n.n.n`
Default:	None

SNMP Trap Port

Purpose: The port to which the trap packet is sent.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
No	Yes	No

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.2.1.1.2.*index*

where *index* is the SNMP trap IP address.

Options: The trap port can be any valid IP port.

Default: 162

SNMP Trap Threshold

Purpose: The trap threshold determines the maximum number of traps per second that the master agent generates. If the threshold is reached, the trap will not be sent.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then SNMP. Next, choose Traps and then choose Threshold. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.10.5.2.3.0

Options: Any positive Integer value.

Default: 10

Subnet Mask

Purpose: Defines the subnet mask, an internal TCP/IP protocol stack variable that is used to separate the subnetwork address from the local IP address. The TCP/IP protocol stack performs a bit-wise AND on the IP address and the subnet mask. Each address segment represents one byte, where 255 converts to FF hex.

This computation is used to find out if the DCS 300 (UDP Plus) or host (TCP/IP) and 5020 are on different subnetworks. If the 5020 is on a different IP subnetwork than the DCS 300 or host, you must set the subnet mask. The default subnet mask 255.255.255.0 means the 5020 uses a standard IP network mask. After you change this parameter, suspend and resume the 5020 to make the change effective.

For example, if the IP address is 192.9.150.184 and the subnet mask is 255.255.255.0, the subnetwork address is 192.9.150.0.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio or Ethernet, then IP Address, then Obtain IP Address Via DHCP, and finally choose Subnet Mask. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.2.1.3.*index*

where *index* is the radio or I/O adapter card number.

Options: The subnet mask must be a valid IP address that consists of four separate numbers, each separated by a period. Each address segment is a number from 0 to 255.

n.n.n.n

Default: 0.0.0.0

TCP/IP Extensions Delayed Acknowledgement Timer

Purpose: The delayed acknowledgement timer specifies the time that TCP will delay an acknowledgement on the arrival of data. You can use the TCP/IP extensions commands to fine tune the network performance in a wireless networking environment. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then TCP/IP Extensions, and finally choose Delayed ACK Timer. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.3.1.3.*index*

where *index* is the radio adapter card number.

Options: An acceptable value for the delayed acknowledgement timer is any number from 100 to 3000 ms.

Default: 200 ms

TCP/IP Extensions Initial Roundtrip Time

Purpose: The initial roundtrip time is an average measurement of the delay between two hosts. In general, this value is greater for wireless networks than for wired networks. You can use the TCP/IP extensions commands to fine tune the network performance in a wireless networking environment. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then TCP/IP Extensions, and finally choose Initial Round Trip Time. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.3.1.2.*index*

where *index* is the radio adapter card number.

Options: An acceptable value for the initial roundtrip time is any number from 0 to 2,147,483,647 ms.

Default: 3000 ms

TCP/IP Extensions Receive Window Size

Purpose: This parameter determines the maximum TCP receive window size offered by the system. The receive window specifies the number of bytes a sender may transmit without receiving an acknowledgement. In general, larger receive windows work better with high-delay, high-bandwidth networks. For the greatest efficiency, the receive window should be an even multiple of the TCP Maximum Segment Size (MSS) and it should not exceed the system maximum.

You can use the TCP/IP extensions commands to fine tune the network performance in a wireless networking environment. After you change this parameter, suspend and resume the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Radio, then TCP/IP Extensions, and finally choose Receive Window Size. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.5.15.5.3.1.1.*index*

where *index* is the radio adapter card number.

Options: An acceptable value for the receive window size is any number from 0 to the Global Maximum TCP Window Size (default of 64K).

Default: 8192 bytes

TFTP Resend Limit

Purpose: The TFTP resend limit identifies the maximum number of resent data blocks during a Put to server request.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then TFTP, and finally choose Resend Limit. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.10.3.3.1.11.0

Options: An acceptable value for the TFTP resend limit is any value from 10 to 10,000.

Default: 100

TFTP Timeout

Purpose: The TFTP timeout sets the amount of time that the 5020 will wait for a response from a TFTP server.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Protocols, then TFTP, and finally choose Timeout. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.10.3.3.1.10.0

Options: An acceptable value for the TFTP timeout is any value from 200 to 25,000 ms.

Default: 500 ms

UDP Plus Enable

Purpose: Enables or disables the Intermec UDP Plus protocol for enhanced wireless networking. You only use this command in an Intermec UDP Plus network where the 5020 communicates with a host through a DCS 300. After you change this parameter, warm boot the 5020 to make the change effective.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Network. Next, choose Advanced and then choose UDP Plus Enable. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Saved

SNMP OID: 1.3.6.1.4.1.1963.15.501.7.3.0

Options: Acceptable values for the UDP Plus Enable parameter are:

0   Disabled
1   Enabled

Default: Disabled

UPC/EAN

Purpose: Enables or disables the decoding of Universal Product Code (UPC)/European Article Numbering (EAN) symbology. UPC/EAN are fixed length, numeric, continuous symbologies that use four element widths. A 5020 that is configured to decode EAN bar codes can decode UPC, but the reverse is not true. UPC code is a subset of EAN code.

To define the UPC/EAN symbology, you set up to seven digits. The fifth, sixth, and seventh digits are optional. To set the sixth digit, you must set the fifth digit. To set the seventh digit, you must set all seven digits.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	Yes

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Symbologies and then choose UPC/EAN. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.3.1.1.6.1

Syntax: CE*data*

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

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

UPC/EAN (continued)

You only use the two-character command CE for bar code configuration labels.

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

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

Disable UPC/EAN

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

$+CE0000000

Or: To enable UPC/EAN:

1. Scan this bar code:

   Enter Accumulate Mode / Enable UPC/EAN

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

   +/$+CE

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

   Disable UPC/EAN-13   Enable UPC/EAN-13

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

   0   *1*

   Enable UPC-A Only

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

   2

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

   Disable UPC-E   Enable UPC-E

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

   0   *1*

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

Disable EAN-8

‖‖‖‖‖‖‖‖‖

0

Enable EAN-8

‖‖‖‖‖‖‖‖

1

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

Supplementals Not Allowed

‖‖‖‖‖‖‖‖

0

Supplementals Allowed

‖‖‖‖‖‖‖

1

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

Discard Check Digit

‖‖‖‖‖‖‖‖

0

Transmit Check Digit

‖‖‖‖‖‖‖

1

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

Discard Number System Digit

‖‖‖‖‖‖‖

0

Transmit Number System Digit

‖‖‖‖‖‖

1

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

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

Discard Leading Zero for UPC-A

‖‖‖‖‖‖‖

0

Transmit Leading Zero for UPC-A

‖‖‖‖‖‖

1

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

9. Scan this bar code:

Exit Accumulate Mode

‖‖‖‖‖‖‖‖‖‖‖

-/

Virtual Wedge

Purpose: Enables or disables the virtual wedge for the internal scanner or the input device that is connected to the tethered scanner port. The virtual wedge retrieves scanned Automatic Data Collection (ADC) data and sends it to the keypad driver so that the 5020 can receive and interpret the data as keypad input.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Virtual Wedge and finally choose Virtual Wedge. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.2.1.1.2.1

Options: Acceptable values for the Virtual Wedge parameter are:

0   Disabled
1   Enabled

Default: Enabled

Virtual Wedge Code Page

Purpose: Sets the virtual wedge code page. The code page controls the translation from the character set of the raw collected data to Unicode, which is the character set expected by Windows CE applications. The default code page is 1252, which is the Windows Latin 1 (ANSI) character set.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Virtual Wedge and finally choose Code Page. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.2.1.1.6.1

Options: The only acceptable value for the code page parameter is 1252.

Default: 1252

Virtual Wedge Grid

Purpose: Sets the virtual wedge grid. The grid filters the data coming from a 5020. The 5020 data server supports data filtering, which allows you to selectively send scanned data. You can also use the virtual wedge grid function in the Software Developer's Kit (SDK) to selectively send scanned data to an application. For help, see the SDK online help. The virtual wedge grid is similar to the "format" argument of the C Runtime Library scanf function.

Configuration: Use one of these methods:

Configuration Applications	SNMP	Bar Codes
Yes	Yes	No

In the Configuration or Unit Management application, choose Configure and then Data Collection. Next, choose Virtual Wedge and finally choose Grid. For help, see Chapter 3, "Configuring the 5020."

On Cold Boot: Not saved

SNMP OID: 1.3.6.1.4.1.1963.15.3.2.1.1.5.1

Options: The grid can be from 0 to 31 ASCII characters in this format:

<field><field>…<field>

where *<field>* is any of the following:

- Literal characters

  Any character that must match the corresponding data character. If you want a literal % symbol in the *<field>*, you must precede it by another % symbol. For example, ABC matches the label ABC and ABC%% matches the label ABC%.

- %*<width><type>*

  % is a format prefix for a *<field>*.

  <width> is any positive integer or NULL. A NULL width means that the field type (defined next) applies all the way to the end of the data string. A non-null width means that the field applies to that many characters of data.

  <type> is one of the following:

  s   Any characters. For example, %4s matches any 4-character string.

  d   Decimal digit. For example, %4d matches any 4-digit decimal number.

[<class>]   Any character in <class>.

[^<class>]   Any character NOT in <class>.

A <class> is a string of characters. Every character in the field must match (or not match if ^ is used) at least one of the class's characters. For example, the class field %4[1357] matches the data "1357", "3333", "7531", and so on. Ranges are permitted. For example, %4[1a-z] matches a 4-character string containing the digit '1' or any lowercase character, such as "az1q", "1111", or "abcd".

Default: NULL

Example 1:   Virtual wedge grid set to: %3d-%2d-%4d

where %3d is a 3-digit field, - is a literal character field, %2d is a 2-digit field, - is a literal character field, and %4d is a 4-digit field. In this example, the 5020 would only accept bar code labels that are defined in a Social Security Number format.

Example 2:   Virtual wedge grid set to: AB%2[1-9]

where AB is a literal character field and %2[0-9] defines a 2-digit field that accepts any numbers. AB12, AB94, AB52, and AB73 are all valid labels.

Example 3:   Virtual wedge grid set to: AB%d

where AB is a literal character field and %d defines a multi-digit field that accepts any numbers. AB12, AB123, and AB12345 are all valid labels, but AB123Z is not.

9

Troubleshooting

This chapter provides information to help solve problems while using your 5020. You will also find instructions for upgrading and restoring the operating system image.

How to Use This Chapter

Use this chapter to find solutions to problems; instructions on upgrading, booting, and verifying communications; and guidelines for battery management. This chapter consists of the following sections:

Troubleshooting

If you have a problem while configuring or using the 5020, use the tables in this section to find a solution. For easy reference, problems are grouped into these topics:

- Problems While Operating the 5020

- Problems While Configuring the 5020

- Problems While Using the Remote Unit Management

- Bar Codes Will Not Scan

- Problems Upgrading the Operating System Image

- Application Installation Error Messages

Caution
There are no user-serviceable parts inside the 5020. Opening the unit will void the warranty and may cause damage to the internal components.

Conseil
Le 5020 ne contient pas de pièces révisibles par l'utilisateur. Le fait d'ouvrir l'unité annule la garantie et peut endommager les pièces internes.

If you send the 5020 in for service, it is your responsibility to save your 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 5020.

Problems While Operating the 5020

Problem or Message

Solution

You press ⌷ to turn on the 5020 and nothing happens.

Make sure you have a charged main battery pack installed in the 5020.

After placing the 5020 in storage, you press ⌷ to turn on the 5020 and nothing happens.

The main battery pack has a low charge. Replace the main battery pack with a fully charged one. Press ⌷ to turn on the 5020. A message saying that the main battery pack is low appears. The Power applet opens and the 1-minute low-power shutdown process has begun. The 5020 will turn off in 1-minute. To stop the 5020 from turning off and clear the message, press Esc and then press ⌷ twice.

You see this message on the 5020:

```
DHCP was unable to obtain an IP
address. You can reinsert your
card later or statically assign
an address.
```

If you are upgrading the 5020 operating system image, do **not** press any keys, wait for the message to disappear, and then continue with the upgrade.

If you turned on the 5020 for the first time, press ⌷ or Esc to exit the message box. If you are using a batch 5020 or do not have a DHCP server, disable DHCP. For help, see "Configuring the 5020 to Operate in a Network" in Chapter 3.

If you are using an RF 5020 or have an Ethernet card installed and have a DHCP server, press ⌷ or Esc to exit the message box. For the RF 5020, make sure the Radio Connect icon (⟋) is displayed in the Notification Tray and not blinking. Make sure you are in range of an access point. Also make sure the radio parameters, such as RF security ID or domain, are set correctly. For help, see "Configuring the 5020 to Operate in a Network" in Chapter 3.

You hotswap a network PC card, such as an Ethernet card, and the 5020 does not recognize the new card.

Warm boot the 5020. For help, see "Booting the 5020" later in this chapter.

If the PC card is a storage card, such as a RAM card, remove the PC card before booting.

While working with an application on the 5020, you open the Start menu and cannot close the Start menu.

Press Alt ⌷ to open the Task Manager. Select your application or press Ctl Esc twice.

You added notes to the Owner Properties applet of the Control Panel, selected the Apply button, and pressed ⌷ and nothing happened.

Press ⌷ to put the focus on Notes and press ⌷. The Owner Properties applet saves the information and closes.

Problems While Operating the 5020 (continued)

Problem or Message	Solution

Problem or Message

The host communicates with the RF 5020 through an Intermec 011X access point and the host cannot initiate communications with the 5020.

Solution

To conserve battery life, the 5020 radio does not wake up on broadcast messages unless an access point with an address resolution protocol (ARP) server converts the multicast ARP request to a unicast request. The 011X access points do not provide ARP server support, so you must add a static entry in the host's ARP table.

To solve the problem, add the 5020's IP address and MAC address to your host's ARP table. You must disable DHCP before adding the 5020's IP address to the ARP table.

On a Windows 95, 98, or NT host, you can open an MS-DOS window and enter the following command:

```
ARP -s IP_address MAC_address [IF_address]
```

where:

IP_address	is the 5020's IP address.
MAC_address	is the 5020's MAC address.
IF_address	is the IP address for the ARP table. This part of the command is optional.

For a complete description of this command, enter the following at a DOS prompt at the host PC:

```
ARP -?
```

You scan a valid bar code label to enter data for your application. The data decoded by the scan module does not match the data encoded in the bar code label.

The 5020 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 5020 quickly and efficiently, you should enable only the bar code symbologies that you are going to scan. If you enable multiple symbologies, the 5020 may on rare occasions decode a bar code according to the wrong symbology and produce erroneous results.

You cannot establish a connection with Windows CE Services.

Try the following solutions in the order given:

- From the Communications tab in CE Services on your PC, clear the Enable mobile device connection check box, click Apply, and then click the Enable mobile device connection check box. On the 5020, select PC Connection from the Start menu. For more detailed instructions, see "Problems Establishing a Connection" in Chapter 5.

- Warm boot the 5020. For help, see "Booting the 5020" later in this chapter.

- Set the baud rate on the host PC and the 5020 to 19200. For help setting the baud rate, see "Configuring the Baud Rate" in Chapter 3.

___

Problems While Operating the 5020 (continued)

Problem or Message	Solution
The 5020 is running slowly.	Remove any unnecessary programs. Use the Application Manager in the Unit Management application to remove programs. For help, see "Removing Application Programs" in Chapter 4.
	If the 5020 is still running slowly, increase the program memory. Use the System applet in the Control Panel to adjust the memory allocation. For help, see "Adjusting Memory Allocation" in Chapter 4.
The 5020 does not have enough storage memory to load a file.	Remove any unnecessary files. Use File Manager in the Unit Management application to delete files. For help, see "Deleting a File" in Chapter 5.
	If the 5020 still does not have enough storage memory, increase the storage memory. Use the System applet in the Control Panel to adjust the memory allocation. For help, see "Adjusting Memory Allocation" in Chapter 4.
With DHCP enabled, you check the network parameters and they are incorrect.	In the Configuration application or the remote Unit Management application, click or choose the Refresh button in whatever screen you are at.
You have an RF 5020 but the Radio Connect icon ( ) is not displayed in the Notification Tray.	The 5020 is not connected to an access point. You may be out of range of an access point, the access point may be turned off, or the 5020 may not be configured correctly. For help configuring the 5020, see "Configuring the 5020 to Operate in a Network" in Chapter 3.
The Radio Connect icon blinks.	The 5020 is trying to connect to an access point. You may be out of range of an access point, you may be about to go out of range of an access point, or the access point may have recently been turned off.
	Also make sure that the radio parameters are set correctly. In the Configuration application under Network, select Radio. For help, see "Using the Configuration Application on the 5020" in Chapter 3.
You open a text file in mini-Notepad and only see a row (or rows) of boxes instead of text.	Mini-Notepad only supports Unicode text files. You may have opened an RTF (rich text format) file or a regular text file. To exit the file, choose File and then Exit from the mini-Notepad menu. You must save a text file as a Unicode text file to view it in mini-Notepad on the 5020.
One of the Data Buffer icons blinks:	There is a connection problem with a UDP Plus Gateway. Make sure the 5020 is in range of an access point and that the 5020 and DCS 300 are configured correctly. For help configuring for UDP Plus, see "Configuring UDP Plus Protocol for a DCS 300 Network" in Chapter 3.

Data buffered in

Data buffered out

Data buffered in and out

No data is currently pending

Problem or Message	Solution
While using the Visual Studio tools, you are unable to establish a connection to the 5020.	1. Make sure the WINS or DNS network configuration is correct and that you have access to a WINS or DNS server.
	2. Exit all Visual Studio tools. Use Task Manager to verify that the CEMGR process is not running. End the process if it is running.
	3. Set up the Visual Studio tools for remote debugging.

Problems While Configuring the 5020

Problem or Message	Solution
You changed the radio, Ethernet, or UDP Plus parameters, such as DHCP enable or the 5020 IP address, but the parameters did not take effect on the 5020.	Press ⏻ twice to suspend and resume the 5020 and have the changes take effect.
	If you have DHCP enabled and the DHCP-assigned parameters are not displayed, select the Refresh button in the Configuration application or Unit Management.
You enabled or disabled UDP Plus in the Advanced tab of the Network menu in the Configuration application or remote Unit Management but the change did not take effect on the 5020.	Warm boot the 5020 to enable the change. For help, see "Booting the 5020" later in this chapter.
You have an Ethernet PC card installed but the Ethernet tab does not appear in the Network menu of the Configuration application or remote Unit Management application.	Warm boot the 5020 to initialize the PC card then restart the Configuration application or Unit Management. For help booting the 5020, see "Booting the 5020" later in this chapter.
You try to configure the 5020 using SNMP and SNMP does not work.	Check community strings, IP addresses, and whether encryption is turned on or off. If encryption is on, turn it off. (SNMP encryption only works with Intermec software that supports it.) For help, see "Configuring the 5020 by Using SNMP" in Chapter 3.

Problems While Configuring the 5020 (continued)

Problem or Message

Solution

You want to set certain parameters back to the factory default.

1. Open the Configuration application on the 5020 or the remote Unit Management application on your host PC. For help, see Chapter 3, "Configuring the 5020."

2. Go to the screen for the parameters you want to change.

3. Press ⊕ to put the focus on the Defaults button and press ⬭ or click on the Defaults button.

4. Press ⊕ to put the focus on the Apply button and press ⬭ or click on the Apply button.

5. Press ⬭ or **Enter** at the prompt.

6. Exit the Configuration application or Unit Management.

You scan a configuration command, such as Beep Volume Very Quiet, and nothing happens.

There are two possible solutions:

- If you are working in the Configuration application, you cannot scan configuration commands. Use the Configure menu to change the 5020's configuration, or exit the Configuration application to scan configuration commands.

- The 5020 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 8, "Configuration Command Reference."

You scan a configuration command, such as Beep Duration, and you hear three low beeps.

You scanned an invalid configuration command. Make sure the variable (*data*) part of the command is valid for that command. For example, the beep duration cannot be lower than 10 ms, so the following configuration, which would set the duration to 5 ms, would be invalid.

Invalid Beep Duration (5 ms)

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

$+BB5

You choose Data Collection from the Configure menu in the Configuration application or Configuration from the remote Unit Management and some or all of the parameters do not display or show as Not Available.

You may not have waited for the warm or cold boot to finish before you opened the Configuration application. Choose Refresh to refresh the parameters. On a warm or cold boot, wait until the beep sequence (three high beeps and one low beep) sounds before you open any applications.

Problems While Using the Remote Unit Management Application

Problem or Message	Solution

You enter the 5020 IP address in your Web browser and you get a message that your browser cannot connect.

Check these solutions:

- If your network uses a proxy server, the 5020 IP address must be added to the proxy exceptions list. Add the IP address to the proxy exceptions list and try again.

- The 5020 may be off. Turn on the 5020 and either disable automatic shutoff or connect AC power through the D5020 or the L5020.

- Make sure that ITCRB.EXE (Rainbow) is running. Look for the rainbow icon ( ) in the Notification Tray.

- If you have an RF 5020, you may be out of range of an access point. Make sure the 5020 is on and connected to an access point.

- If you are using an Ethernet PC card, make sure you have the 5020 configured correctly for your network.

- Warm boot the 5020.

You choose Configuration from the Unit Management menu and nothing displays in the right hand window.

Check these solutions in order:

- The Java 1.2 plug-in may not be installed. If you are on the Internet, it should download automatically. If you do not have an Internet connection or you fail to connect to the Sun Microsystems Web site, you can install the Java plug-in from the SDK CD-ROM.

- If you move or rename the Java plug-in directory on your desktop PC, the Java plug-in installation may be corrupted. Reinstall the Java plug-in from the SDK CD-ROM or from http://java.sun.com/products/plugin/.

- If your network uses a proxy server, the 5020 IP address must be added to the proxy exceptions list. Add the IP address to the proxy exceptions list and try again.

- If you still cannot get Configuration to work after trying all the solutions listed above, you may need to configure the Java 1.2 plug-in. Choose Java Plug-in Control Panel from the Start menu on your PC. Choose Proxies to change the proxy configuration options. You may need to uncheck "Use Browser Settings." For help with the Java plug-in, see the documentation for the Java plug-in at http://java.sun.com/products/plugin/.

The remote Unit Management works best with Internet Explorer 4.0 or higher or Netscape Navigator 4.0 or higher on Windows 95/98/NT. The remote Unit Management will work on other platforms such as Unix or Macintosh using Netscape Navigator 4.0. However, the installation process and performance of the Java plug-in varies by platform. You may experience some limitations due to browser implementation issues. For help with platforms other than Windows, see the documentation for the Java plug-in at http://java.sun.com/products/plugin/.

Problems While Using the Remote Unit Management (continued)

Problem or Message	Solution
In the Configuration application of Unit Management, the Web browser locks up when you press **Tab** to move out of a field.	You did not complete the entry for the field you just left, such as the IP address field. Close the browser and then open the browser and start Unit Management. Make sure you enter all of the data for a field before moving to a different field.
You are in Unit Management and the Web browser screen goes blank or becomes jumbled.	The 5020 may have suspended or been turned off. Make sure the 5020 is on and remains on. If you have an RF 5020, you may be out of range. Make sure the 5020 is on and connected to an access point.
While a web page or application is loading, you resize or refresh the window of your Web browser and your Web browser crashes.	Restart your Web browser and open Unit Management. When you click on a link or choose an option, wait until the application is loaded (the hour glass disappears) before resizing or refreshing the window.
In Unit Management, you changed the scanner selection and the following error message appears: `Unable to apply new value.`	Press ⏎ to clear the message and continue configuring the 5020. Unit Management did make the scanner selection change.
You add or remove a network PC card and warm boot the 5020 and the appropriate screen does not appear in the Network menu in the remote Unit Management application. For example, you remove an Ethernet PC card and Ethernet still appears in Unit Management.	The 5020 web page menu options and graphics are loaded first from the browser's cache although the configuration data is always loaded from the 5020. You may need to delete the cache so that Unit Management will reload the Configuration web page and Network parameters from the 5020. Delete the browser cache (temporary files) and history and restart your browser.

Bar Code Labels Will Not Scan

Problem or Message	Solution

You cannot see a red beam of light from the integrated scan module when you aim the scanner at a bar code label and press the Scan button or pull the trigger on the handle.

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 scanning it again.

- You may be scanning the bar code label "straight on." Try changing the scanning angle until the laser beam is the brightest. This is the best scanning angle.

You can test the effective range of the scanner. Move within 2 feet of a wall and test the scanner. You need to be within the scanning range to scan bar code labels. For help on scanning distances, see "Physical and Environmental Specifications" in Appendix A.

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

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

You cannot scan a bar code label because an input device is not attached to the tethered scanner port.

Make sure an input device, such as a 1550 laser scanner, is attached correctly to the tethered scanner port. You must install an input device before scanning bar code labels.

The integrated scan module does not read the bar code labels quickly, or the scanning beam seems to be faint or obscured.

The scan module window may be dirty. Clean the scan module window with a solution of ammonia and water. Wipe dry. Do not allow abrasive material to touch the window.

You have an input device attached to the tethered scanner port and cannot read any bar code labels.

You may not be using an input device that is supported with tethered scanner port. Make sure you are using one of the supported input devices:

- Intermec 126X, 127X, and 128X wands
- Intermec 151X, 1545, and 1550 laser scanners

Also make sure that the 5020 is configured for the scanner you are using. In the Configuration application under Data Collection, select Scanner and then Selection. For more information, see "Using the Configuration Application on the 5020" in Chapter 3.

Bar Code Labels Will Not Scan (continued)

Problem or Message	Solution
The scan module or input device will not read the bar code label.	Try one of these solutions:

Try one of these solutions:

- Make sure you aim the scanner beam so it crosses the entire bar code label in one pass.

- The angle you are scanning the bar code label may not be working well, or you may be scanning the label "straight on." Try scanning the bar code label again, but vary the scanning angle.

- The bar code label print quality may be poor or unreadable. To check the quality of the bar code label, try scanning a bar code label that you know scans. Compare the two bar code labels to see if the bar code quality is too low. You may need to replace the label that you cannot scan.

- Make sure the bar code symbology you are scanning is enabled. Use the Configuration application to check the symbologies. From the Configure menu, select Data Collection and then select the Symbologies tab.

The input device connected to the tethered scanner port does not appear to work well or read bar code labels very quickly.

Try setting the Scanner Selection tab to the specific input device you have attached. Check the bar code symbologies you have enabled on the 5020. Enable only the symbologies that you are using.

When you press the Scan button or pull the trigger, the scanner LED above the display do not light up.

Move within 2 feet of a wall and press the Scan button again or pull the trigger again. Make sure the scan module emits the red laser beam. If the LEDs do not light, there may be a problem with them. For help, contact your local Intermec service representative. If the laser beam does not turn on, check the other problems in this section for a possible solution.

Problems Upgrading the Operating System Image

Problem or Message	Solution

The following message appears on the host PC:
 	
`Ser_EstablishConnection Recvd`
`Header Error`
	On your PC keyboard, press **Ctrl-C** and try to run the upgrade program again. For help, see "Upgrading the 5020 Operating System Image" later in this chapter.

The green and red LEDs do not turn off when the upgrade is finished.	This indicates that the upgrade was unsuccessful. Try running the upgrade program again. For help, see "Upgrading the 5020 Operating System Image" later in this chapter.
The operating system image was not completely upgraded.	Upgrade the operating system image again and do **not** press ⟨ ⟩ when the next message appears: `DHCP was unable to obtain an IP address. You can reinsert your card later or statically assign an address.` For help upgrading the operating system image, see "Upgrading the 5020 Operating System Image" later in this chapter.

Application Manager Error Messages

If a problem occurs when you are installing an application on the 5020, you may see one of the following messages in the Application Manager. For help with the Application Manager, see "Using the Application Manager" in Chapter 5.

Message	Explanation
`The file [Filename.ext] is not a valid CAB file.`	You can only install CAB files on the 5020. This message appears when you try to install another type of file, usually an EXE or DLL, on the 5020.
`The CAB File [Filename] is for another CPU type!`	This message appears if you selected a CAB file that is for another CPU type.

`There isn't enough free disk space on the CE device.`
 	
`Current free disk space on the CE device = _____`
 	
`Size of CAB file [Filename] = _____`
	You need to remove files from the 5020 to create additional disk space for the application. Use File Manager in the Unit Management application to delete files. For help, see "Deleting a File" in Chapter 5.

Maintaining the Batteries in the 5020

The next sections explain how to recognize when the main battery pack or bridge battery is low or discharged and provide general guidelines for managing both batteries.

Recognizing a Low or Discharged Main Battery Pack

The following Notification Tray icons or low battery warnings indicate that the main battery pack is low or discharged.

Icon or Warning	Description or What You Need to Do
(Full Charge)	The main battery pack is at or near full charge. Battery is charged 75% to 100% of capacity.
(Half Charge)	The main battery pack is charged to about 50% capacity.
(Low Charge)	The main battery pack is at a critically low level and needs to be charged.
(Unknown Main Battery Status)	Indicates the main battery pack is charging or the status is not known. Select the Power icon in the Control Panel to check the status of the main battery pack. For help, see Chapter 4, "Customizing the 5020 Using the Control Panel."

The 5020 beeps every 15 seconds, the Power applet starts, and the Main Battery Very Low dialog box appears.
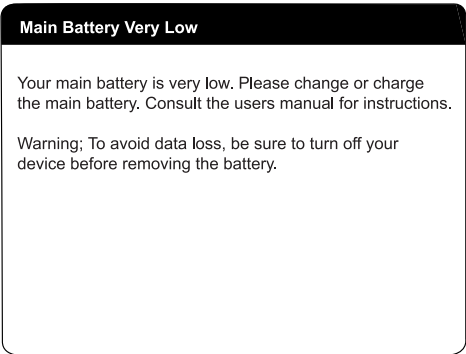
Follow this procedure to clear the Main Battery Very Low dialog box:

1. Press (Esc) to shut down the Power applet.

2. Exit any running applications.

3. Press (I/O) to suspend the 5020.

4. Replace the main battery pack with a spare charged battery pack, or apply AC power to charge the main battery pack.

Main Battery Very Low

Your main battery is very low. Please change or charge the main battery. Consult the users manual for instructions.

Warning; To avoid data loss, be sure to turn off your device before removing the battery.

5020U013.eps

Recognizing a Low or Discharged Bridge Battery

The following low battery warning indicates the 5020 has a low or discharged bridge battery.

Low Bridge Battery Warning

The Bridge Battery Very Low dialog box displays once every 15 minutes when the bridge battery charge falls below 25% of capacity.

> **Bridge Battery Very Low**
>
> Your bridge battery is very low or missing. Please apply AC power to recharge the battery. Consult the users manual for instructions.
>
> WARNING: DO NOT REMOVE THE MAIN BATTERY PACK OR DATA LOSS MAY OCCUR.
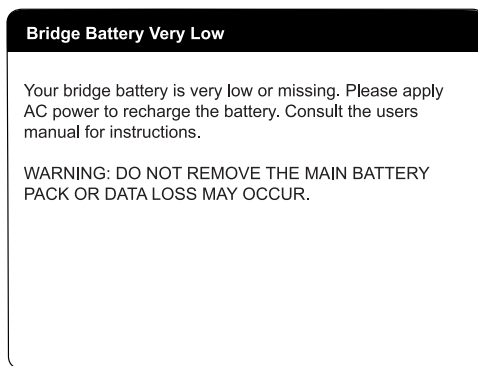
5020U012.eps

What You Need to Do

Press ⎕ to close the dialog box.

Apply AC power to charge the bridge battery. The bridge battery will be fully charged in approximately 72 hours. Do not remove the main battery pack until the Power applet indicates the bridge battery has at least a 50% charge or data loss may occur.

You can remove the 5020 from AC power after the main battery pack is charged.

Guidelines for Managing Batteries

Follow these guidelines to manage the 5020 batteries, prevent problems, and preserve battery power. For more help on charging or replacing batteries, see "Learning About the 5020's Batteries" in Chapter 2.

Main Battery Pack

- ALWAYS turn off the 5020 BEFORE you remove the main battery pack.

- ALWAYS keep a charged or partially charged main battery pack in the 5020.

- Keep a spare, charged main battery pack on hand.

- If the low Battery icon appears, you have a low main battery pack. Replace or charge the battery pack as soon as possible.

- When you remove a low main battery pack from the 5020, recharge the battery pack you just removed.

- If the 5020 turns off due to a low main battery pack, do not turn on the 5020. Replace or charge the main battery pack before you continue using the 5020.

- Use the battery charger to charge the main battery pack. Charge the main battery pack for a minimum of 2 hours to make sure the battery pack is fully charged.

Guidelines for Managing Batteries (continued)

Bridge Battery
- If the charge on the bridge battery falls below 50%, turn off the 5020 and insert a fully charged main battery pack. The main battery pack will fully charge the bridge battery in approximately 72 hours.

- If the charge on the bridge battery falls below 25%, turn off the 5020 and apply AC power. Remove AC power after the main battery pack is charged. Do not remove the main battery pack until the Power applet indicates that the bridge battery has at least a 50% charge. For help using the Power applet, see Chapter 4, "Customizing the 5020 Using the Control Panel."

Storing the 5020
- If you are going to store the 5020 for less than 2 weeks, insert a fully charged main battery pack before you store the 5020.

- If you are going to store the 5020 for more than 2 weeks, save your data and remove the main battery pack.

Cold Temperatures
(Using the 5020 in sub-freezing environments)
- If you use the 5020 in a cold temperature environment, battery life will be reduced. Battery life depends on temperature, battery model, input device, age of the battery pack, your usage, and duty cycle factors. If you use the 5020 for extended periods of time in sub-freezing environments, you may need to change the main battery pack more often.

- Do not store the 5020 in a cold temperature environment. When you are not using the 5020, keep it in a warmer area to make sure the battery chargers will continue operating.

- Store the battery chargers and spare batteries in a warm (office) environment to ensure the most efficient operation.

- If the bridge battery charge is low, move the 5020 to a warmer environment to charge the bridge battery. The bridge battery charger operates between 0°C and 40°C (32°F and 104°F). If you are using the 5020 in an area outside this temperature range, the bridge battery will not charge.

- Charge the main battery pack in an area or room where the temperature is above freezing.

- If you have been using the 5020 in a cold temperature environment and need to replace or charge either battery, let the batteries warm up for a half hour before you charge them.

Booting the 5020

You can use the recessed Reset switch to warm boot or cold boot the 5020.
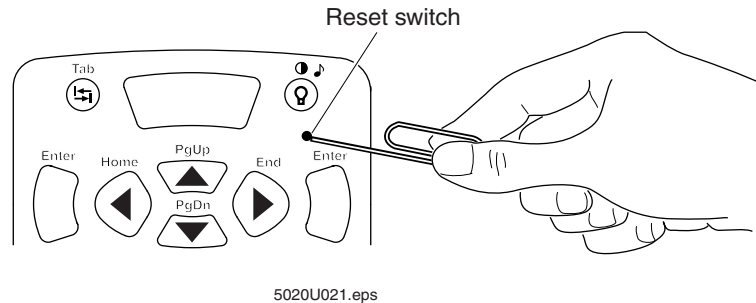
Reset switch

5020U021.eps

Note: If you have storage cards installed in both the PC card slot and the compact flash card slot, remove the PC card before booting the 5020. Reinsert the PC card after the boot process is complete. For help, see "Using PC Cards" in Chapter 2.

You do not need to remove nonstorage PC cards, such as modem and Ethernet cards.

Warm Booting the 5020

On a warm boot, the system reboots without changing the object store. The object store contains the 5020 settings and user files. These settings and files are stored in RAM and revert to the factory defaults when you do a cold boot. During a warm boot, the 5020 exits or cancels any open applications, but the applications do not have to be reloaded into the object store. All configuration settings are saved when you warm boot the 5020.

To warm boot the 5020

1. If you have a storage PC card installed, remove the PC card. For help, see "Using PC Cards" in Chapter 2.

2. Insert a small straightened paper clip in the Reset switch and press the switch. Hold it momentarily and then remove it from the Reset switch.

    The red LED flashes until the warm boot is finished and the 5020 desktop appears.

3. If necessary, reinstall your PC card.

Cold Booting the 5020

On a cold boot, the settings in the object store revert to the default factory settings. Only the network settings and scanner selection are preserved and restored on a cold boot. For a complete list of network settings that are restored, see "5020 Default Configuration" in Appendix A.

When you perform a cold boot, you lose the configuration settings that enable a serial connection to Windows CE Services. IrDA, RF, or Ethernet connections remain after a cold boot.

Caution
Only the network settings and scanner selection are preserved and restored on a cold boot.

Conseil
Seuls les paramètres réseau et la sélection de scanner sont conservés et rétablis après un démarrage à froid.

To cold boot the 5020

1. If you have a storage PC card installed, remove the PC card. For help, see "Using PC Cards" in Chapter 2.

2. Simultaneously press ⬡ and insert a small straightened paper clip in the Reset switch and press the switch. Hold it momentarily and then remove it from the Reset switch and release ⬡.

   The green LED flashes until the cold boot is finished, which is about 1 minute after the 5020 desktop appears. The 5020 sounds a series of beeps when the cold boot is complete.

3. If necessary, reinstall the PC card.

Note: After a cold boot, the date is set to January 1, 1999, and the time is set to 12:00 AM.

Verifying RF or Ethernet Communications

If your 5020 is configured for an RF or Ethernet network, use the following procedure to verify that the 5020 PC is communicating with your desktop PC.

To verify communications

- On your host PC, type this command at the DOS prompt to verify communications:

  ```
  PING xxx.xxx.xxx.xxx
  ```

  where *xxx.xxx.xxx.xxx* is the IP address of the 5020.

  You should receive a response similar to this:

  ```
  Pinging xxx.xxx.xxx.xxx with 32 bytes of data:

  Reply from xxx.xxx.xxx.xxx: bytes=32 time=8ms TTL=32
  Reply from xxx.xxx.xxx.xxx: bytes=32 time=8ms TTL=32
  Reply from xxx.xxx.xxx.xxx: bytes=32 time=8ms TTL=32
  Reply from xxx.xxx.xxx.xxx: bytes=32 time=8ms TTL=32
  ```

Upgrading the 5020 Operating System Image

Use the following procedure to upgrade the 5020 with a new operating system image.

When you upgrade your operating system image, you lose the configuration settings that enable a serial connection to Windows CE Services. IrDA, RF, or Ethernet connections remain after you upgrade.

You need the following things to upgrade the 5020 operating system image:

- A compact flash card (24MB)

- An Internet connection

Note: You can also use a compact flash card in a PC Card holder to upgrade the operating system image on a batch 5020 PC.

Caution
To perform this upgrade, you MUST first connect to AC power and have a fully charged main battery.

Before you upgrade, back up any files and applications. Only the network settings and scanner selection are preserved on an upgrade.

Conseil
Pour effectuer cette mise à niveau, vous devez d'abord brancher l'appareil sur l'alimentation secteur et disposer d'une batterie principale entièrement chargée.

Avant d'effectuer la mise à niveau, faites une sauvegarde de vos fichiers et applications. Seuls les paramètres réseau et le choix du scanner sont conservés lors d'une mise à niveau.

To install a new operating system image

1. Download the new operating system image from the 5020 product page at www.intermec.com. For help getting a new operating system image, contact your Intermec service representative.

2. Write the new operating system image to a 24MB compact flash card.

3. If you want to use the PC card slot for the upgrade, insert the compact flash card into a PC card holder.

4. Connect the 5020 to AC power using either a D5020 dock or L5020 adapter and make sure the main battery pack is fully charged.

5. Insert the compact flash card into your 5020. For information on inserting a compact flash card, see "Accessing and Using the Compact Flash Card" or "Using PC Cards" in Chapter 2.

6. Press ⬚ ③ to open the Start menu.

7. Select Run and press ⬚.

8. Press ⬚ until the tone sounds and the left modifier is enabled.

9. Press ⬚ until the tone sounds to enable Caps Lock.

10. Type EIOSUPGRADE and press ⬚.

11. Press ⬚ to answer Yes to the "Initiate an OS upgrade?" prompt.

12. Press ⬚ to answer Yes to the "Do you want to upgrade from a local FLASH card?" prompt. The amber LED flashes, and the 5020 reboots a few times while it loads the new image. You see status messages as the upgrade occurs and the 5020 beeps constantly. The upgrade takes approximately 3 minutes.

13. If you have an RF 5020 or a 5020 with an Ethernet card, the following message may appear:

    ```
    DHCP was unable to obtain an IP address. You can
    reinsert your card later or statically assign an
    address.
    ```

    Do **not** press ⬭ to clear the message. Wait for the message to disappear and the upgrade to continue.

14. Press ⬭ to answer Yes to the "The new OS installed successfully. Reboot the downloaded OS?" prompt.

    The green LED flashes until the reboot is finished, a tone sounds, and the 5020 desktop appears.

15. The message in Step 13 appears. Press ⬭ to clear the message and then configure your 5020 for your network.

Restoring a Corrupted Operating System Image

If you think that you have a corrupted operating system image, contact your Intermec service representative to confirm that you need to restore your operating system image and to receive a new operating system image.

The following procedure should only be used to restore a corrupted operating system image or if the normal upgrade procedure does not work.

Caution
Before you upgrade, back up any files and applications. Only the network settings and scanner selection are preserved on an upgrade.

Conseil
Avant d'effectuer la mise à niveau, faites une sauvegarde de vos fichiers et applications. Seuls les paramètres réseau et le choix du scanner sont conservés lors d'une mise à niveau.

To restore a corrupted operating system image

1. Connect the 5020 to AC power using either a D5020 dock or L5020 adapter and make sure the main battery pack is fully charged.

2. Connect the 5020 to the host PC using either a D5020 dock or L5020 adapter. For help, see the documentation that shipped with your dock or adapter.

3. Create a directory on the host PC for the operating system image (NK_FLASH.BIN) and download program (OSDOWNLOADSERVER.EXE)

4. Copy the download program from the Software Developer's Kit and Support Files CD-ROM (Part No. 069511) to the directory you created on the host PC.

5. Copy the operating system image to the directory you created on the host PC. Contact your Intermec service representative for a copy of the operating system image.

6. Run the upgrade program from a DOS window on the host PC. The upgrade program takes approximately 30 minutes to finish restoring the operating system image.

7. Insert a small straightened paper clip in the Reset switch on the 5020. Press and hold the Reset switch for 5 seconds. The green and red LEDs are both on when the 5020 is in the correct mode.

   The new operating system image is now downloaded to the 5020. The "Finished sending file" message appears on the host PC when the download is complete. The green and red LEDs turn off when the download is complete.

8. Cold boot the 5020 after the download is complete. For help, see "Cold Booting the 5020" earlier in this chapter.

A

5020 Specifications

This appendix lists the 5020 Data Collection PC's physical and environmental specifications, lists the default configuration, and provides a bar code configuration command reference list in alphabetical order by command syntax.

Physical and Environmental Specifications

You can use the tables in this section to find technical information and specifications for the 5020 Data Collection PC:

- Physical Dimensions

- Power Specifications

- Electrical Specifications

- Temperature and Environmental Specifications

- Hardware Specifications

- Keypad Options

- Screen Specifications

- RF Communications

- Connectivity Options

- Bar Code Symbologies

- Bar Code Scanning Options

- Standard-Range Integrated Scanner Optical Parameters

- Long-Range Integrated Scanner Optical Parameters

- Input Devices for the Tethered Scanner Port

Physical Dimensions

Width:	10.2 cm (4.0 in) at the screen 7.0 cm (2.75 in) at the grip
Length:	22.9 cm (9.0 in)
Depth:	7.1 cm (2.8 in) maximum 4.572 cm (1.8 in) at the grip

Weight:
Batch 5020:	703.1 g (24.8 oz) (includes batteries and handstrap)
RF 5020:	748.4 g (26.4 oz) (includes batteries and handstrap)

Power Specifications

Operating: Rechargeable lithium-ion 1500 mAh battery pack

Memory Backup: Rechargeable lithium 90 mAh manganese-dioxide bridge battery

Electrical Specifications

Model: 5020

Electrical Rating: --- 7,4 to 12V; 750mA peak

Temperature and Environmental Specifications

Operating Temperature: -20°C to 50°C   -4°F to 122°F

Storage Temperature:
  Less than 2 weeks   -20°C to 60°C   -4°F to 140°F
  More than 2 weeks   -20°C to 45°C   -4°F to 113°F

Relative humidity: 0 to 95% non-condensing

Hardware Specifications

- Hitachi SH3 processor

- 8MB RAM

- 16MB Flash

- PC card slot for radio, serial, modem, and memory cards

- Compact flash card slot

Keypad Options

- Alphanumeric keypad with 43 keys and 10 function keys

- Four keypad overlays available: Simplified English, Full English, European 1, European 2

    - European 1 keypad overlay supports French, Italian, Portuguese, and Spanish languages

    - European 2 keypad overlay supports Danish, Finnish, German, Norwegian, and Swedish languages

Screen Specifications

- 320 by 240 pixel monochrome display

- 5.1 cm by 6.73 cm (2 inch by 2.65 inch) screen size and 8.4 cm (3.3 inch) diagonal

- Graphics capable

RF Communications

- 2.4 GHz radio (frequency varies by country)

- WLI-Forum OpenAir™ compatible frequency hopping spread spectrum radio

- 100 mW maximum output power

- 1.6 / 0.8 Mbits per second data speed

- Coverage > 80 meters (262.4 feet)

Connectivity Options

- Winsock 1.1

- TCP/IP, SLIP, IrDA, IRSOCK

- LAN using NDIS

- UDP Plus

5020 Communications Protocol Stack
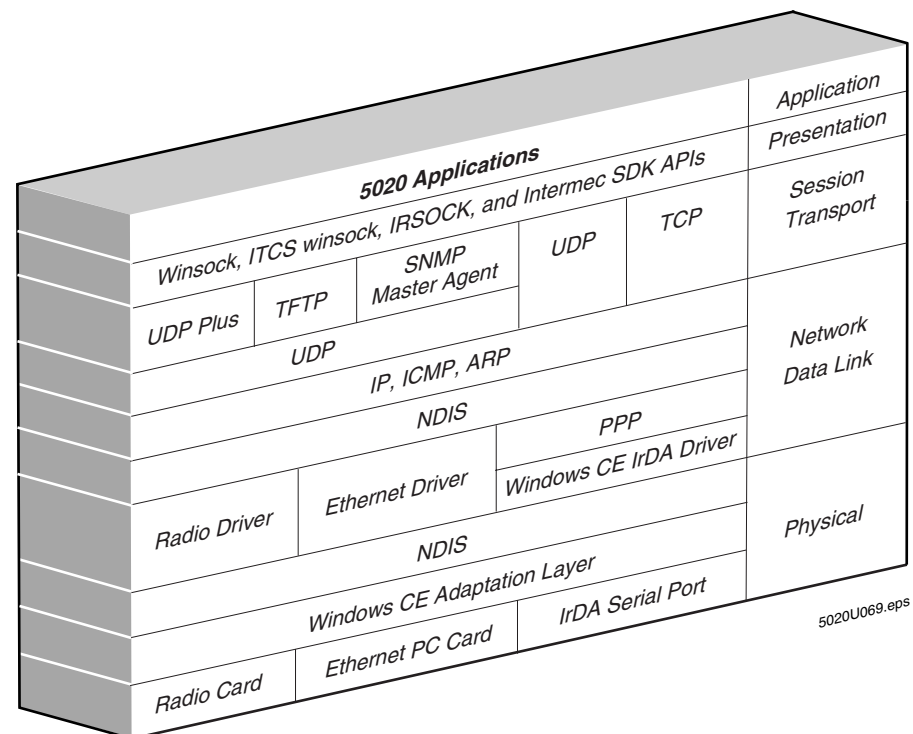
Bar Code Symbologies

- Codabar
- Code 11
- Code 16K
- Code 2 of 5
- Code 39
- Code 49

- Code 93
- Code 128
- Interleaved 2 of 5
- MSI
- Plessey
- UPC/EAN

Bar Code Scanning Options

- Standard-range integrated scanner with visible laser diode (670 nm)
- Long-range integrated scanner with visible laser diode (650 nm)
- Tethered scanner port for cabled scanners and wands

Standard-Range Integrated Scanner Optical Parameters

The depth of field specifications are:

Bar Code Specification	Depth of Field / Scanning Range	
5 mil code	9.4 to 15.7 cm	3.7 to 8.2 inches
10 mil code	7.4 to 35.3 cm	2.5 to 13.9 inches
20 mil code	10.2 to 63.5 cm	4 to 25 inches
30 mil code	10.2 to 86.4 cm	4 to 34 inches
40 mil code	12.7 to 99 cm	5 to 39 inches
55 mil code	19.1 cm to 1.26 m	7.5 to 49 inches
55 mil code, retroreflective	1.05 to 1.51 m	41 to 59 inches
100 mil code, retroreflective	1.13 to 2.27 m	44 to 89 inches

Long-Range Integrated Scanner Optical Parameters

The depth of field specifications are:

Bar Code Specification	Depth of Field / Scanning Range	
5 mil code	29.5 to 49.8 cm	11.6 to 19.6 inches
10 mil code	21.8 to 85.3 cm	8.5 to 33.6 inches
20 mil code	21.8 to 98 cm	8.5 to 38.6 inches
30 mil code	24.4 cm to 1.92 m	9.6 to 75.6 inches
40 mil code	24.4 cm to 2.047 m	9.6 to 80.6 inches
70 mil code, retroreflective	1.92 to 4.105 m	76.8 to 161.6 inches
100 mil code, retroreflective	2.123 to 5.324 m	83.6 to 209.6 inches

Input Devices for the Tethered Scanner Port

You can attach these input devices to the tethered scanner port:

- 126X, 127X, and 128X wands

- 1515, 1545, and 1550 laser scanners

- RS-232 scanners and other RS-232 devices through a 9-pin adapter cable

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

Cables for RS-232 Serial Communications

You use these accessory cables (sold and ordered separately) with the L5020 Serial Communications Adapter or the D5020 Serial Communications Dock:

- 3-wire, 9-pin to 25-pin, RS-232 null-modem serial cable (Part No. 047569)

- 5-wire, 9-pin to 9-pin, RS-232 null-modem serial cable (Part No. 061953)

- RS-232 adapter cable, 9-pin to 10-pin (Part No. 064438)

If you are using Windows CE Services through a serial connection, you must use Part No. 061953 with the D5020 and L5020. For help, contact your local Intermec service representative.

5020 Default Configuration

The next tables show the 5020's default configuration. There are several ways to configure the 5020. For help, see Chapter 3, "Configuring the 5020."

Default Configuration for Data Collection

Parameter	Default	Saved on Cold Boot
Codabar	Standard, transmit ABCD start/stop	No
Code 11	Enabled with two check digits	No
Code 16K	Standard Code 16K enabled	No
Code 2 of 5	Disabled	No
Code 39	Full ASCII Code 39 enabled with no check digit	No
Code 49	Enabled	No
Code 93	Enabled	No
Code 128	Standard	No
Decode Priority	010203040506070809101112	No
Decode Security	Moderate	No
Interleaved 2 of 5	Enabled, variable length with check digit	No
MSI	Disabled	No
Plessey	Disabled	No
Postamble	Tab character (\t)	No
Preamble	No characters (disabled)	No
Scanner Mode	One-Shot mode	No
Scanner Redundancy	Normal	No
Scanner Selection	All compatible scanners for tethered scanner Or, internal scanner to match the factory-installed scanner	Yes
Scanner Timeout	Disabled (no timeout)	No
Scanner Trigger	Level triggering	No
UPC/EAN	UPC-A/EAN-13 enabled, UPC-E and EAN-8 enabled, supplementals allowed, transmit check digit, transmit number system digit, and retain leading zero for UPC-A	No
Virtual Wedge	Enabled	No
Virtual Wedge Code Page	1252	No
Virtual Wedge Grid	NULL	No

Default Configuration for Network Communications (Ethernet and Radio)

Parameter	Default	Saved on Cold Boot
5020 IP Address	0.0.0.0	Yes
Access Point MAC Address	Not applicable (read-only)	Not applicable
Access Point Name	Not applicable (read-only)	Not applicable
Configuration Manager Enable	Enabled	Yes
Configuration SubAgent Enable	Enabled	Yes
Default Router	0.0.0.0	Yes
DHCP (Obtain IP Address Via DHCP)	Enabled	Yes
Primary DNS Server	0.0.0.0	Yes
Primary WINS Server	0.0.0.0	Yes
Radio MAC Address	Not applicable (read-only)	Not applicable
Radio ROM Version	Not applicable (read-only)	Not applicable
RF Domain	0	Yes
RF Inactivity Timeout	5 seconds	Yes
RF Roaming Allowed	Allowed	Yes
RF Security Identification (ID)	None	Yes (see Note)
RF Transmit Mode	Auto	Yes
Secondary DNS Server	0.0.0.0	Yes
Secondary WINS Server	0.0.0.0	Yes
Subnet Mask	0.0.0.0	Yes
TCP/IP Extensions Delayed Acknowledgement Timer	200 ms	No
TCP/IP Extensions Initial Roundtrip Time	3000 ms	No
TCP/IP Extensions Receive Window Size	8192 bytes	No
TFTP Resend Limit	100	Yes
TFTP Timeout	500 ms	Yes

Note: The RF security ID is stored internally in the OpenAir radio card rather than being stored in permanent memory on the 5020.

Default Configuration for SNMP

Parameter	Default	Saved on Cold Boot
Identification Contact	No characters	No
Identification Location	No characters	No
Identification Name	No characters	No
Security Encryption Key	NULL	No
Security IP Address	None (5020 accepts requests from any host)	No
Security Read Encryption	Off	No
Security Read Only Community String	public	No
Security Read/Write Community String	private	No
Security Subnet Mask	None	No
Security Write Encryption	Off	No
Trap Authentication	On	No
Trap Community Name	NULL	No
Trap IP Address	None	No
Trap Port	162	No
Trap Threshold	10	No

Default Configuration for UDP Plus

Parameter	Default	Saved on Cold Boot
Acknowledgement Delay Lower Limit	300 ms	No
Acknowledgement Delay Upper Limit	5 seconds	No
Controller Connect Check Receive Timer	45 seconds	No
Controller Connect Check Send Timer	20 seconds	No
Controller IP Address	0.0.0.0	No
Maximum Retries	7	No
Network Loopback	Disabled	No
Network Port	5555	No
UDP Plus Enable	Disabled	Yes

Default Configuration for Unit Operations

Parameter		Default	Saved on Cold Boot
Automatic Shutoff		5 minutes	No
Beep Duration:	Low Beep	50 ms	No
	High Beep	60 ms	
Beep Frequency:	Low Beep	1000 Hz	No
	High Beep	2300 Hz	
Beep (Speaker) Volume		Normal	No
Display Backlight Level		High	No
Display Backlight Timeout		15 seconds	No
IrDA Baud Rate		115200	No
Keypad Caps Lock		Caps lock on	No
Keypad Clicker		Enabled with loud keyclicks	No

Bar Code Configuration Commands by Syntax

The next table lists all the bar code configuration commands that are available on the 5020. The configuration commands are listed in alphabetic order by syntax. You can configure these commands by scanning bar code labels, using the Configuration application, the Unit Management application, or using SNMP.

Syntax	Command	For Help, See Page
AD*data*	Preamble	8-56
AE*data*	Postamble	8-55
BV*data*	Beep (Speaker) Volume	8-15
BB*data*	Low Beep Duration	8-12
BC*data*	High Beep Duration	8-12
BG*data*	Low Beep Frequency	8-14
BH*data*	High Beep Frequency	8-14
CA*data*	Interleaved 2 of 5 Code (I 2 of 5)	8-44
CB*data*	Code 39	8-23
CC*data*	Code 2 of 5 (2 of 5)	8-21
CD*data*	Codabar	8-17
CE*data*	UPC/EAN	8-93
CF*data*	Code 93	8-29
CG*data*	Code 11	8-19
CH*data*	Code 128	8-30
CI*data*	Plessey	8-54
CJ*data*	Code 49	8-27
CK*data*	Code 49 Function Code 1	8-27
CL*data*	Code 49 Function Code 2	8-27
CM*data*	Code 49 Function Code 3	8-27
CN*data*	MSI	8-50
CP*data*	Code 16K	8-20
CS*data*	Decode Security	8-38
CT*data*	Decode Priority	8-36
DF*data*	Display Backlight Timeout	8-42
EZ*data*	Automatic Shutoff	8-10
KA*data*	Keypad Caps Lock	8-47

Bar Code Configuration Commands by Syntax (continued)

Syntax	Command	For Help, See Page
KC*data*	Keypad Clicker	8-48
SA*data*	Scanner Timeout	8-70
SB*data*	Scanner Mode	8-66
SC*data*	Scanner Trigger	8-72
SR*data*	Scanner Redundancy	8-67
SS*data*	Scanner Selection	8-68

B
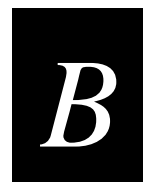
Full ASCII Charts

This appendix contains a full ASCII chart and charts of Code 39 bar code labels that you can scan with the 5020 PC.

Full ASCII Table

This table lists the ASCII characters and their binary, hexadecimal, and Code 39 equivalents.

Full ASCII Table

Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]	Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]
00000000	00	00	%U	NUL	00100000	20	32	SP	SP[3]
00000001	01	01	$A	SOH	00100001	21	33	/A	!
00000010	02	02	$B	STX	00100010	22	34	/B	"
00000011	03	03	$C	ETX	00100011	23	35	/C	#
00000100	04	04	$D	EOT	00100100	24	36	/D	$
00000101	05	05	$E	ENQ	00100101	25	37	/E	%
00000110	06	06	$F	ACK	00100110	26	38	/F	&
00000111	07	07	$G	BEL	00100111	27	39	/G	'
00001000	08	08	$H	BS	00101000	28	40	/H	(
00001001	09	09	$I	HT	00101001	29	41	/I	)
00001010	0A	10	$J	LF	00101010	2A	42	/J	*
00001011	0B	11	$K	VT	00101011	2B	43	/K	+
00001100	0C	12	$L	FF	00101100	2C	44	/L	,
00001101	0D	13	$M	CR	00101101	2D	45	/M	-
00001110	0E	14	$N	SO	00101110	2E	46	/N	.
00001111	0F	15	$O	SI	00101111	2F	47	/O	/
00010000	10	16	$P	DLE	00110000	30	48	/P[4]	0
00010001	11	17	$Q	DC1	00110001	31	49	/Q	1
00010010	12	18	$R	DC2	00110010	32	50	/R	2
00010011	13	19	$S	DC3	00110011	33	51	/S	3
00010100	14	20	$T	DC4	00110100	34	52	/T	4
00010101	15	21	$U	NAK	00110101	35	53	/U	5
00010110	16	22	$V	SYN	00110110	36	54	/V	6
00010111	17	23	$W	ETB	00110111	37	55	/W	7
00011000	18	24	$X	CAN	00111000	38	56	/X	8
00011001	19	25	$Y	EM	00111001	39	57	/Y	9
00011010	1A	26	$Z	SUB	00111010	3A	58	/Z	:
00011011	1B	27	%A	ESC	00111011	3B	59	%F	;
00011100	1C	28	%B	FS	00111100	3C	60	%G	<
00011101	1D	29	%C	GS	00111101	3D	61	%H	=
00011110	1E	30	%D	RS	00111110	3E	62	%I	>
00011111	1F	31	%E	US	00111111	3F	63	%J	?

Full ASCII Table (continued)

Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]	Binary[0]	Hex[1]	Decimal	Code 39	ASCII[2]
01000000	40	64	%V	@	01100000	60	96	%W	`
01000001	41	65	A	A	01100001	61	97	+A	a
01000010	42	66	B	B	01100010	62	98	+B	b
01000011	43	67	C	C	01100011	63	99	+C	c
01000100	44	68	D	D	01100100	64	100	+D	d
01000101	45	69	E	E	01100101	65	101	+E	e
01000110	46	70	F	F	01100110	66	102	+F	f
01000111	47	71	G	G	01100111	67	103	+G	g
01001000	48	72	H	H	01101000	68	104	+H	h
01001001	49	73	I	I	01101001	69	105	+I	i
01001010	4A	74	J	J	01101010	6A	106	+J	j
01001011	4B	75	K	K	01101011	6B	107	+K	k
01001100	4C	76	L	L	01101100	6C	108	+L	l
01001101	4D	77	M	M	01101101	6D	109	+M	m
01001110	4E	78	N	N	01101110	6E	110	+N	n
01001111	4F	79	O	O	01101111	6F	111	+O	o
01010000	50	80	P	P	01110000	70	112	+P	p
01010001	51	81	Q	Q	01110001	71	113	+Q	q
01010010	52	82	R	R	01110010	72	114	+R	r
01010011	53	83	S	S	01110011	73	115	+S	s
01010100	54	84	T	T	01110100	74	116	+T	t
01010101	55	85	U	U	01110101	75	117	+U	u
01010110	56	86	V	V	01110110	76	118	+V	v
01010111	57	87	W	W	01110111	77	119	+W	w
01011000	58	88	X	X	01111000	78	120	+X	x
01011001	59	89	Y	Y	01111001	79	121	+Y	y
01011010	5A	90	Z	Z	01111010	7A	122	+Z	z
01011011	5B	91	%K	[	01111011	7B	123	%P	{
01011100	5C	92	%L	\	01111100	7C	124	%Q	|
01011101	5D	93	%M	]	01111101	7D	125	%R	}
01011110	5E	94	%N	^	01111110	7E	126	%S	~
01011111	5F	95	%O	_	01111111	7F	127	%T[5]	n[6]

Notes for the Full ASCII Table

0   Bit positions are 76543210.
1   This column lists the hexadecimal value.
2   This column lists the ASCII character.
3   SP is the SPACE character.
4   The Code 39 characters /P through /Y may be interchanged with the numbers 0 through 9.
5   %T may be interchanged with %X or %Y or %Z.
6   n is the Delete character.

Full ASCII Control Characters Table

Control Character	Definition	Control Character	Definition
NUL	Null or all zeroes	DC1	Device Control 1 (XON)
SOH	Start of Heading	DC2	Device Control 2
STX	Start of Text	DC3	Device Control 3 (XOFF)
ETX	End of Text	DC4	Device Control
EOT	End of Transmission	NAK	Negative Acknowledge
ENQ	Enquiry	SYN	Synchronous Idle
ACK	Acknowledgment	ETB	End Transmission Block
BEL	Bell	CAN	Cancel
BS	Backspace	EM	End of Medium
HT	Horizontal Tab	SUB	Substitute
LF	Line Feed	ESC	Escape
VT	Vertical Tab	FS	File Separator
FF	Form Feed	GS	Group Separator
CR	Carriage Return	RS	Record Separator
SO	Shift Out	US	Unit Separator
SI	Shift In	SP	Space
DLE	Data Link Escape	DEL	Delete

Full ASCII Bar Code Chart

The charts in this section list the Code 39 bar code label for each ASCII character. To use these bar code labels, you must configure the 5020 PC to use Code 39 in Full ASCII mode.

Control Characters

NUL	SOH	STX
%U	*$A*	*$B*

ETX	EOT	ENQ
$C	*$D*	*$E*

ACK	BEL	BS
$F	*$G*	*$H*

HT	LF	VT
$I	*$J*	*$K*

FF	CR	SO
$L	*$M*	*$N*

SI	DLE	DC1
$O	*$P*	*$Q*

DC2	DC3	DC4
$R	*$S*	*$T*

NAK	SYN	ETB
$U	*$V*	*$W*

Control Characters (continued)

CAN
||||||||||||||||||||
$X

EM
||||||||||||||||||||
$Y

SUB
||||||||||||||||||||
$Z

ESC
||||||||||||||||||||
%A

FS
||||||||||||||||||||
%B

GS
||||||||||||||||||||
%C

RS
||||||||||||||||||||
%D

US
||||||||||||||||||||
%E

DEL
||||||||||||||||||||
%T

Symbols and Punctuation Marks

! (exclamation point)
||||||||||||||||||||
/A

" (quotation marks)
||||||||||||||||||||
/B

#
||||||||||||||||||||
/C

$
||||||||||||||||||||
/D

%
||||||||||||||||||||
/E

&
||||||||||||||||||||
/F

' (apostrophe)
||||||||||||||||||||
/G

(
||||||||||||||||||||
/H

)
||||||||||||||||||||
/I

* (asterisk)
||||||||||||||||||||
/J

+
||||||||||||||||||||
/K

- (dash)
||||||||||||||||||||
/M

/
||||||||||||||||||||
/O

=
||||||||||||||||||||
%H

. (period)
||||||||||||||||||||
/N

, (comma)
||||||||||||||||||||
/L

: (colon)
||||||||||||||||||||
/Z

; (semicolon)
||||||||||||||||||||
%F

Symbols and Punctuation Marks (continued)

?
‖‖‖‖‖‖‖‖‖
%J

<
‖‖‖‖‖‖‖‖‖
%G

>
‖‖‖‖‖‖‖‖‖
%I

@
‖‖‖‖‖‖‖‖‖
%V

[
‖‖‖‖‖‖‖‖‖
%K

]
‖‖‖‖‖‖‖‖‖
%M

~ (tilde)
‖‖‖‖‖‖‖‖‖
%S

^
‖‖‖‖‖‖‖‖‖
%N

_ (underline)
‖‖‖‖‖‖‖‖‖
%O

\
‖‖‖‖‖‖‖‖‖
%L

` (left single quote)
‖‖‖‖‖‖‖‖‖
%W

¦ (pipe)
‖‖‖‖‖‖‖‖‖
%Q

{
‖‖‖‖‖‖‖‖‖
%P

}
‖‖‖‖‖‖‖‖‖
%R

Space
‖‖‖‖‖‖‖‖‖
* *

Numbers

0
‖‖‖‖‖‖‖‖‖
0

1
‖‖‖‖‖‖‖‖‖
1

2
‖‖‖‖‖‖‖‖‖
2

3
‖‖‖‖‖‖‖‖‖
3

4
‖‖‖‖‖‖‖‖‖
4

5
‖‖‖‖‖‖‖‖‖
5

6
‖‖‖‖‖‖‖‖‖
6

7
‖‖‖‖‖‖‖‖‖
7

8
‖‖‖‖‖‖‖‖‖
8

9
‖‖‖‖‖‖‖‖‖
9

Uppercase Letters

A

A

B

B

C

C

D

D

E

E

F

F

G

G

H

H

I

I

J

J

K

K

L

L

M

M

N

N

O

O

P

P

Q

Q

R

R

S

S

T

T

U

U

V

V

W

W

X

X

Y

Y

Z

Z

Lowercase Letters

a

+A

b

+B

c

+C

d

+D

e

+E

f

+F

g

+G

h

+H

i

+I

j

+J

k

+K

l

+L

m

+M

n

+N

o

+O

p

+P

q

+Q

r

+R

s

+S

t

+T

u

+U

v

+V

w

+W

x

+X

y

+Y

z

+Z

C

Extending Remote Unit Management

This appendix explains how to extend and customize the remote Unit Management application. It includes 5020 registry definitions and examples.

Getting Started

The remote Unit Management application is a web-based, data-driven presentation engine. When you access a 5020 through your Web browser, the 5020 sends the Web pages to the browser. For example, the main menu is displayed next.
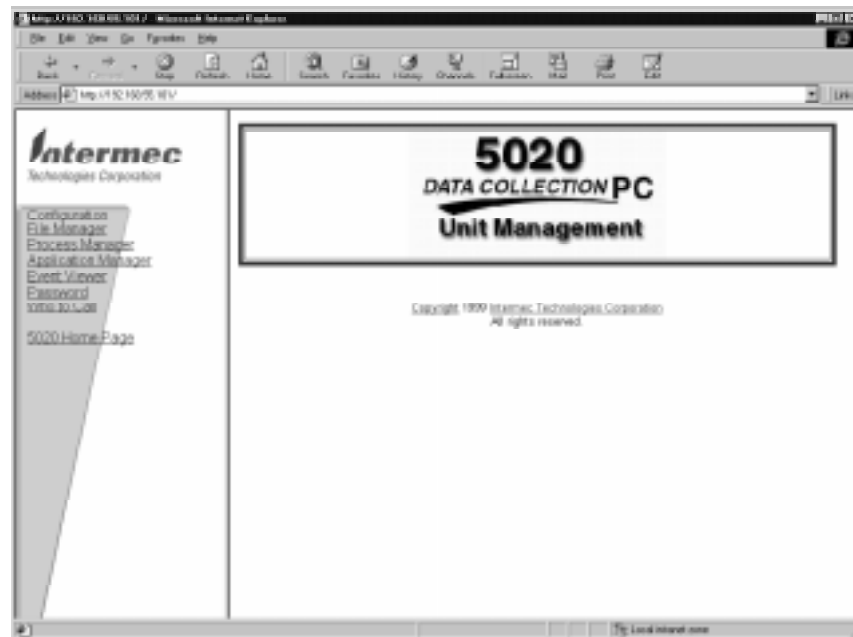
The Unit Management Web page consists of two frames: "content" and "main." The menu on the left side of the frame is the "content" and reflects the data in the data store. The content frame is data-driven and references links that display the file or URL in the "main" or right frame when each menu option is clicked.

The menu options or links in the content frame are properties in the 5020 registry. This appendix explains the 5020 registry and how you modify the properties to extend and customize the remote Unit Management application.

Required Tools

To extend the remote Unit Management application, you need a Windows CE registry editor or you can construct a registry file that you import on the 5020. For example, you can use the Remote Registry Editor in the Microsoft Windows CE 2.1 Toolkit for Visual C++ 6.0.

The instructions in this appendix assume that you are experienced in Windows programming.

Understanding the 5020 Registry

The 5020 registry is a Windows CE registry. The registry is a system-defined database that applications and system components use to store and retrieve configuration data. The configuration data that is stored in the 5020 registry drives the Unit Management menu in the left or "content" frame. The next illustration shows the remote Unit Management section of the 5020 registry.

5020 Registry
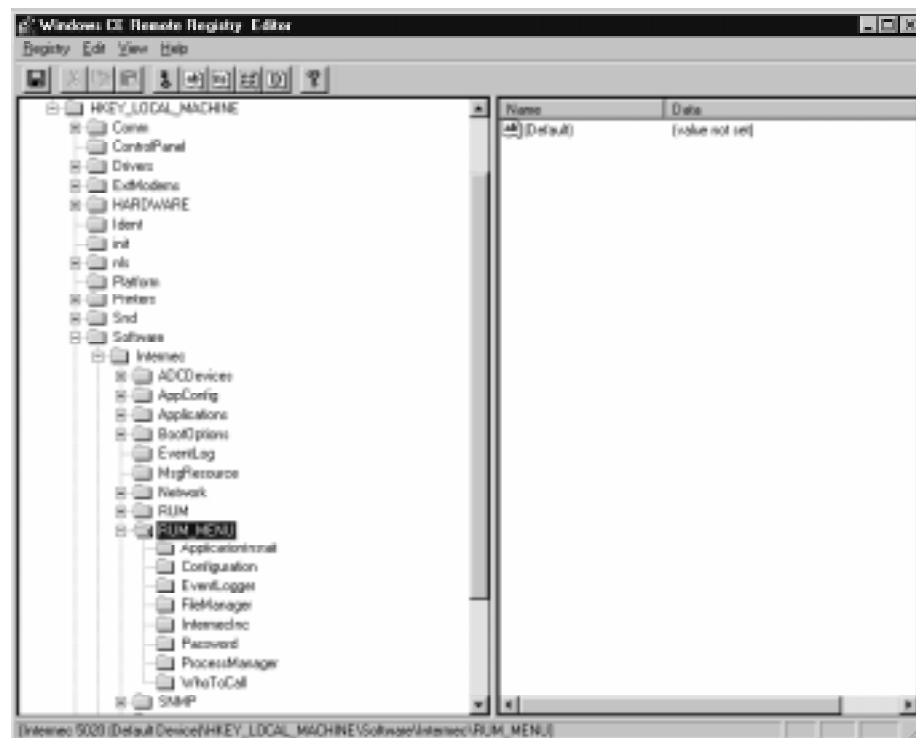
The registry subkeys under RUM_MENU define the menu options for the remote Unit Management application. For example, Configuration and Process Manager are two of the menu options or properties.

The next sections explain how to

- extend the remote Unit Management application.

- import a registry file.

Use the last section in this appendix to look up the definitions for the "Registry Property Values."
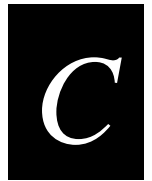
Extending the Remote Unit Management Application

You use the remote Unit Management application and a Web browser on your PC to configure and manage the 5020. You can modify the properties in the RUM_MENU section of the 5020 registry to add, change, or delete menu options in the contents frame. For help using Unit Management, see Chapter 5, "Managing Your 5020."

Note: If you cold boot the 5020, you lose all registry changes and extensions. Make sure you export the registry file and save a backup copy.

To extend the remote Unit Management application

1. Connect the 5020 to your development PC and establish communications.

   For example, connect the 5020 by using an Ethernet or serial PC card. Use Windows CE Services to establish communications between the 5020 and your PC. For help with CE Services, see Chapter 5, "Managing Your 5020."

2. Edit the 5020 registry. For help, see "Registry Property Values" later in this appendix. The remote Unit Management menu section begins at this branch:

   `HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU`

   For example, open a Windows CE registry editor like the Remote Registry Editor in Microsoft Windows CE 2.1 Toolkit for Visual C++ 6.0.

3. Save the changes.

4. Choose only the remote Unit Management section at this branch:

   `HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU`

   Export your registry changes and save the registry file on your development PC as a backup file. You can import the registry file to recover your changes after a cold boot. For help importing a registry file, see "Importing a Registry File" later in this appendix.

5. Exit the registry editor.

6. To see the changes, restart the remote Unit Management application in your Web browser.

Example 1

In this example, rename the Event Viewer option in remote Unit Management.

Remote Unit Management Main Menu
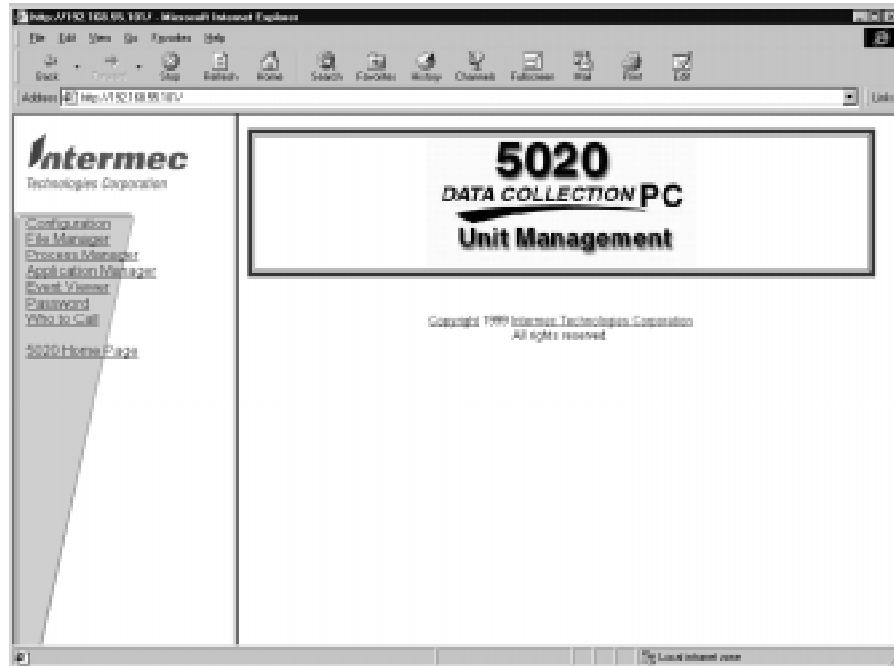
To rename Event Viewer

1. Follow the instructions earlier in this section to connect the 5020 to your development PC.

2. Edit the 5020 registry.

3. Open the RUM_MENU branch of the registry and choose EventLogger as shown below.
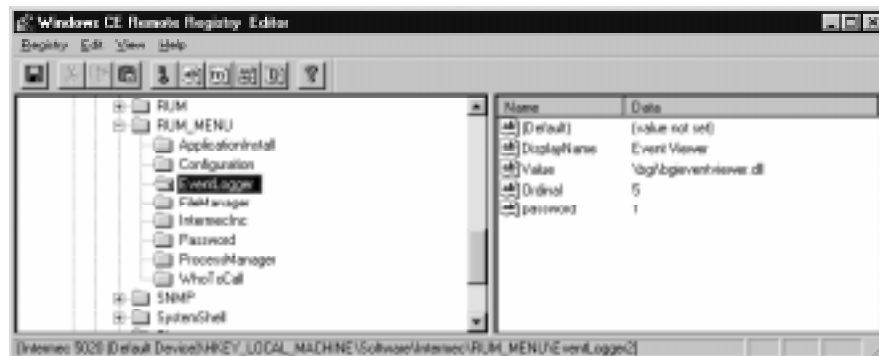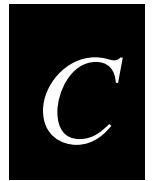
4. Edit the DisplayName field and change the name from "Event Viewer" to "View Events on 5020." The registry appears as shown next.
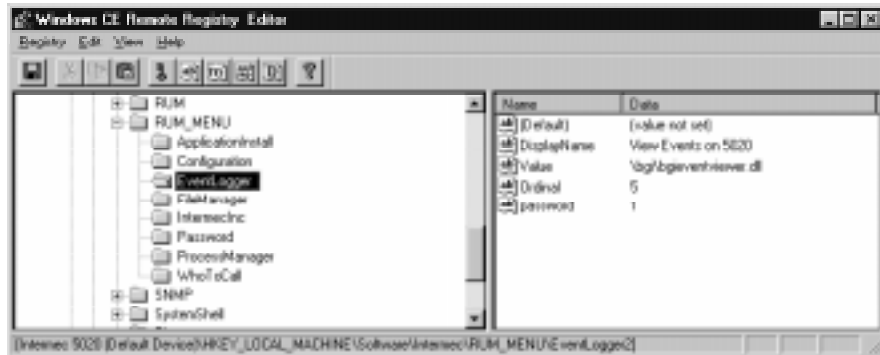
5. Save the changes and exit the registry editor.

6. To see the changes, restart the remote Unit Management application. Event Viewer now shows the new display name.
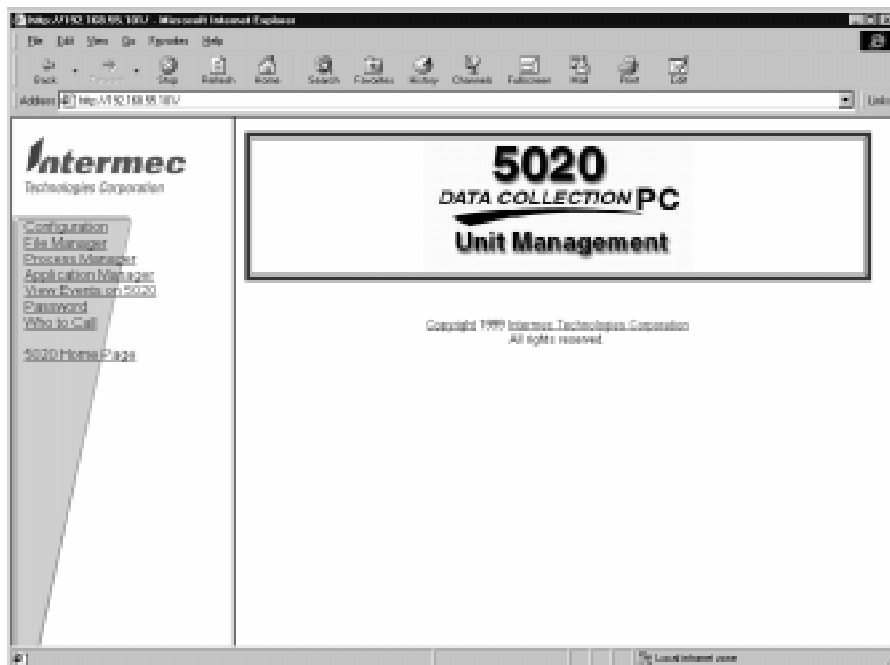
Example 2

In this example, add a link to your company's home page.

Remote Unit Management Main Menu
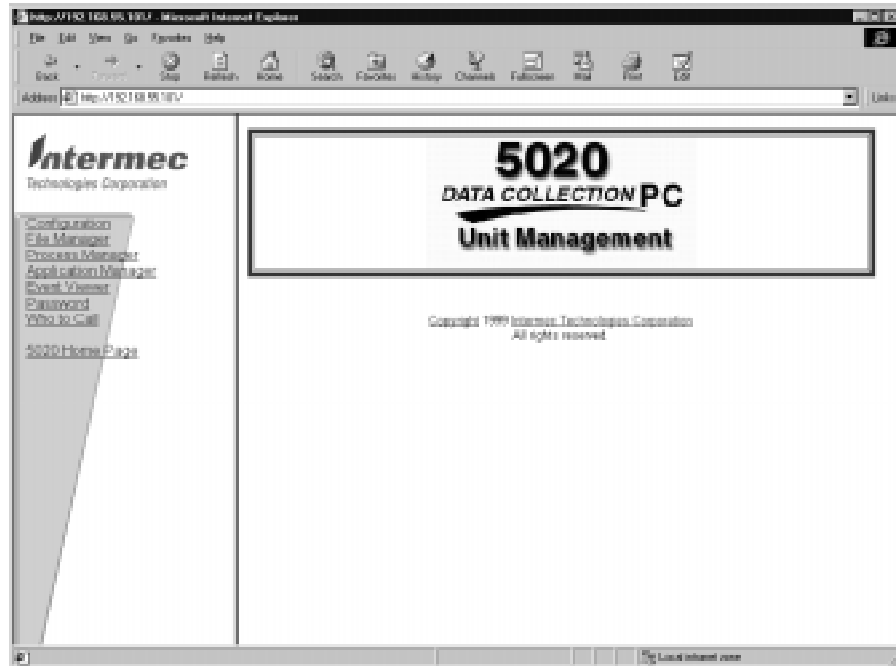
To add a link to your company's home page

1. Follow the instructions earlier in this section to connect the 5020 to your development PC.

2. Edit the 5020 registry.

3. Open the RUM_MENU branch of the registry as shown below.
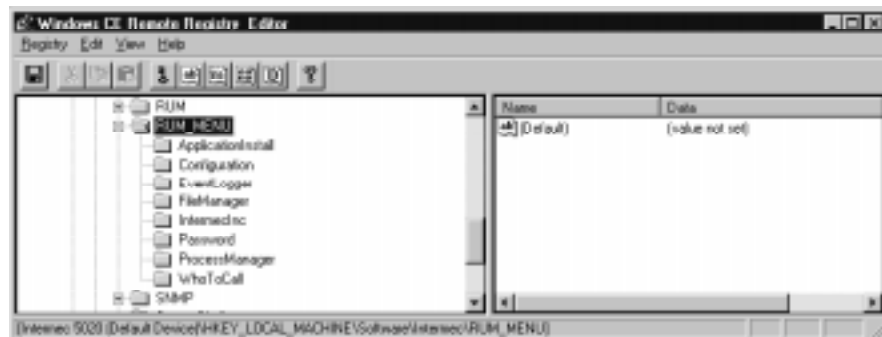
4. Add a subkey under RUM_MENU. Next, define the DisplayName, Value, and Ordinal for the link to your company's home page.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\MyCompany]
"DisplayName"="My Company"
"Value"="http://www.mycompany.com/homepage.htm"
"Ordinal"="9"
```

In this example, you add a link to "My Company" as the last menu item after the link to the 5020 Home Page. The registry appears as shown next.
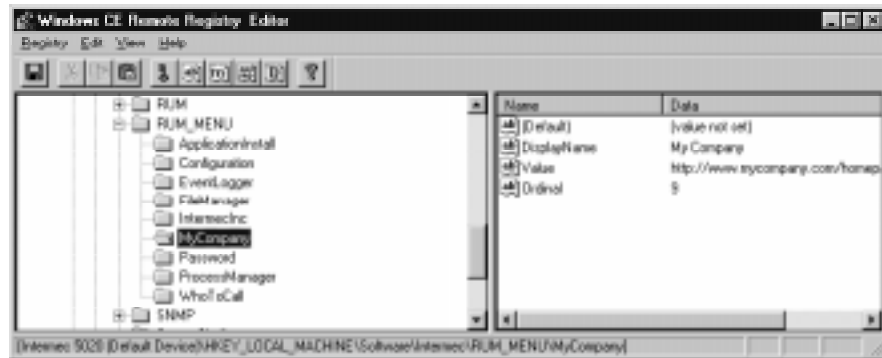
5. Save the changes and exit the registry editor.

6. To see the changes, restart the remote Unit Management application. My Company is now a menu option.
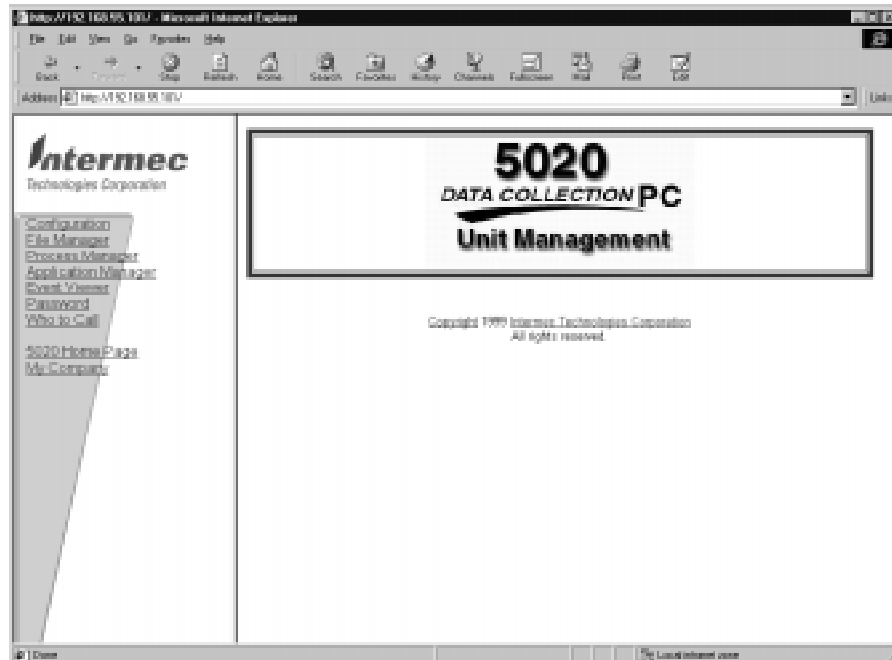
Importing a Registry File

Once you have extended the remote Unit Management application on a 5020, you can import the customized registry file into another 5020. You may also need to import the registry file if you cold boot the 5020.

Note: If you cold boot the 5020, you will lose all registry changes and extensions. Make sure you export the registry file on your development PC and save a backup copy.

To import a registry file

1. Copy the registry file from your development PC to the 5020. For help, see Chapter 5, "Managing Your 5020."

2. On the 5020, choose Run from the Start menu.

3. Type this command and choose OK:

   `itcconfig.exe filename.reg`

   where *filename.reg* is the name of your customized registry file for the remote Unit Management menu.

4. Repeat Steps 1 through 3 for each 5020.

Note: ITCCONFIG.EXE is only designed to import 5020 properties. It is not a full-featured registry import application.

Registry Property Values

These are the possible values that can go in the registry for the remote Unit Management application. Every property (menu option) must have a DisplayName, Ordinal, and Value.

Break

Purpose: Defines a line break before a menu item. Break is equivalent to the HTML tag, <BR>.

Syntax: "Yes"

Required Field: No

Example: A break is set before the Who To Call menu item.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\WhoToCall]
"DisplayName"="Who to Call"
"Value"="http://www.intermec.com/support.htm"
"Ordinal"="7"
"Break"="Yes"
```

DisplayName

Purpose: Text that displays on the user interface for the menu item.

Syntax: "string"

where "string" is a text string in quotes.

Required Field: Yes

Example: Here is the DisplayName for the File Manager menu option.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\FileManager]
"DisplayName"="File Manager"
"Value"="/bgi/bgifilemanager.dll"
"Ordinal"="2"
"password"="1"
```

Ordinal

Purpose: Specifies the order of the item relative to its siblings or properties at the same level. The ordinal also indicates the order in each sublevel.

Syntax: "*n*"

where "*n*" is an integer.

Required Field: Yes

Example: Event Viewer is the fifth menu item, so it has an ordinal value of "5."

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\EventLogger]
"DisplayName"="Event Viewer"
"Value"="/bgi/bgieventviewer.dll"
"Ordinal"="5"
"password"="1"
```

Password

Purpose: Reserved for future use.

Syntax: Reserved.

Required Field: Reserved.

Example:

Value

Purpose: Defines the URL or link including the path if necessary. When the user clicks on the link, the "Value" displays in the right side of the remote Unit Management frame.

Syntax: "URL" or "*/path/filename*"

where the URL is a valid Internet or Intranet Web address and */path/filename* is a valid path and filename on the 5020.

If you place HTML files in the HTML directory on the 5020, you only need to define the *filename*. If you place BGI script files in the Windows directory on the 5020, you only need to define the *filename*. For all other files or directories, identify the *path* and *filename*.

Required Field: Yes

Example: The Password menu option links to a BGI script file named `bgiPassWord.dll` in the BGI directory on the 5020. The Who To Call menu option links to a specific URL on the Intermec Web site.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\Password]
"DisplayName"="Password"
"Value"="/bgi/bgiPassWord.dll"
"Ordinal"="6"
"password"="1"
"Break"="Yes"

[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM_MENU\WhoToCall]
"DisplayName"="Who to Call"
"Value"="http://www.intermec.com/support.htm"
"Ordinal"="7"
"Break"="Yes"
```

D

Extending the Configuration Application

This appendix explains how to extend and customize the local and remote Configuration applications. It includes 5020 registry definitions and examples.

Getting Started

The local and remote Configuration applications are data-driven presentation engines. You access the local Configuration application from the Start menu on the 5020. You access the same data in the remote Configuration application by choosing Configuration from the remote Unit Management application.

The menus and options in the Configuration applications are properties in the 5020 registry. You can modify the properties in the 5020 registry to change the menus, configuration tabs, parameters, and options. This appendix explains the 5020 registry and how you can extend and customize the Configuration applications.
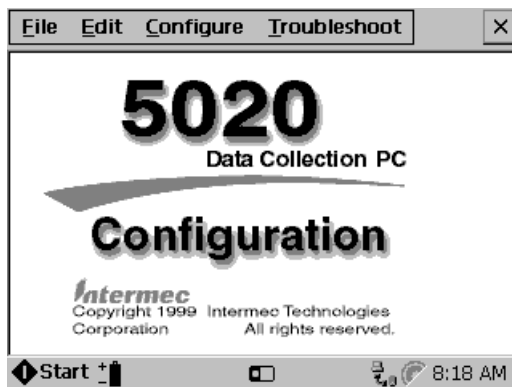
Local Configuration Application   *Remote Configuration Application*
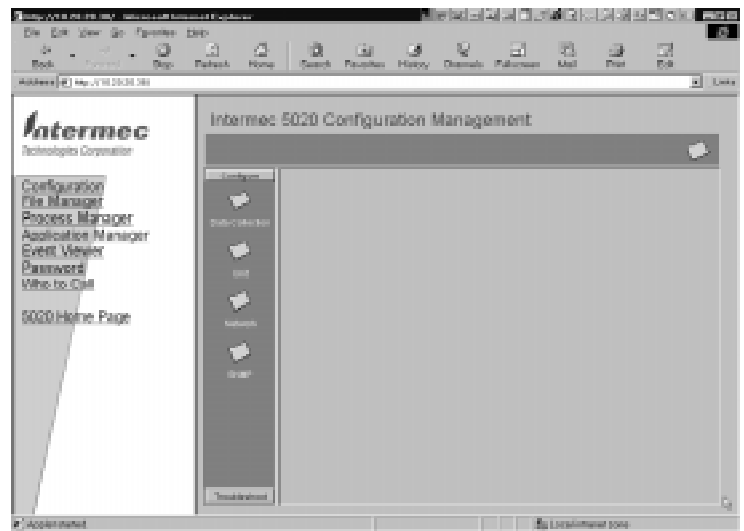
Required Tools

To extend the Configuration applications, you need a Windows CE registry editor or you can construct a registry file that you import on the 5020. For example, you can use the Remote Registry Editor in the Microsoft Windows CE 2.1 Toolkit for Visual C++ 6.0.

The instructions in this appendix assume that you are experienced in Windows programming.

Understanding the 5020 Registry

The 5020 registry is a Windows CE registry. The registry is a system-defined database that applications and system components use to store and retrieve configuration data. The next illustration shows the Configuration application section of the 5020 registry.

5020 Registry
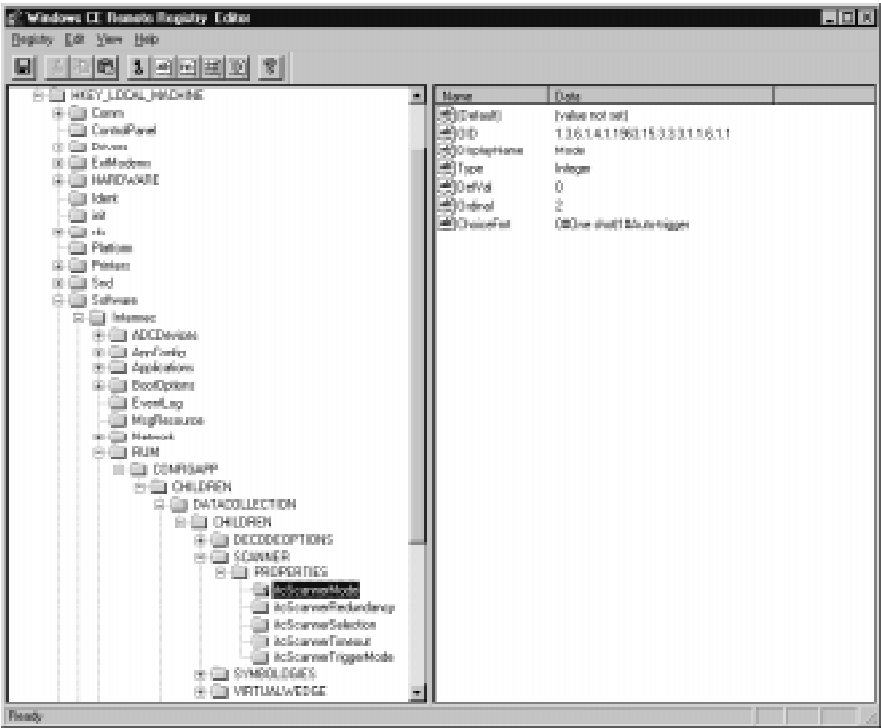
The Configuration applications use the registry to dynamically create the user interface. The next table defines the structure and levels of the registry.

Registry Level	Description
Root	The highest level in the registry. In this example, the root is HKEY_LOCAL_MACHINE/SOFTWARE/INTERMEC/RUM/CONFIGAPP.
MenuItem	Registry subkey that defines a major grouping of configuration items. For example, DATACOLLECTION is a MenuItem.
PageView	Registry subkey that defines a configuration tab page under a MenuItem. For example, SCANNER is a PageView item.
[Children]	Specifies the next level in the registry.
[Properties]	The registry subkeys under Properties define the configuration items for a PageView item. For example, the properties of the Scanner page are Scanner Mode, Scanner Redundancy, Scanner Selection, Scanner Timeout, and Scanner Trigger Mode.

The next sections explain how to

- extend the Configuration application.

- import a registry file.

Use the last two sections in this appendix to look up the definitions for the "Registry Property Values" and the "Required and Optional Registry Property Values."

Extending the Configuration Application

The local and remote Configuration applications are data-driven presentation engines that let you configure the 5020 and view system information. You can modify the properties in RUM section of the 5020 registry to change the configuration menus, tabs, parameters, and options in the local and remote Configuration applications. For help using the Configuration application, see Chapter 3, "Configuring the 5020."

Note: If you cold boot the 5020, you will lose all registry changes and extensions. Make sure you export the registry file on your development PC and save a backup copy.

To extend the Configuration application

1. Connect the 5020 to your development PC and establish communications.

   For example, connect the 5020 by using an Ethernet or serial PC card. Use Windows CE Services to establish communications between the 5020 and your PC. For help with CE Services, see Chapter 5, "Managing Your 5020."

2. Edit the 5020 registry. For help, see "Registry Property Values" later in this appendix. The Configuration application section begins at this branch:

   `HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP`

   For example, open a Windows CE registry editor like the Remote Registry Editor in Microsoft Windows CE 2.1 Toolkit for Visual C++ 6.0.

3. Save the changes.

4. Choose RUM or the folder in RUM that you customized beginning at this branch:

   `HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP`

   Export your registry changes and save the registry file on your development PC as a backup file. You can import the registry file to recover your changes after a cold boot. For help importing a registry file, see "Importing a Registry File" later in this appendix.

5. Exit the registry editor.

6. To see the changes, restart the Configuration application on the 5020. Or, access the 5020 through the remote Unit Management application and choose Configuration.

Example 1

In this example, change the Scanner Selection options from a list of eight scanners or input devices to a list of three input devices.

Scanner Selection in the Local Configuration Application
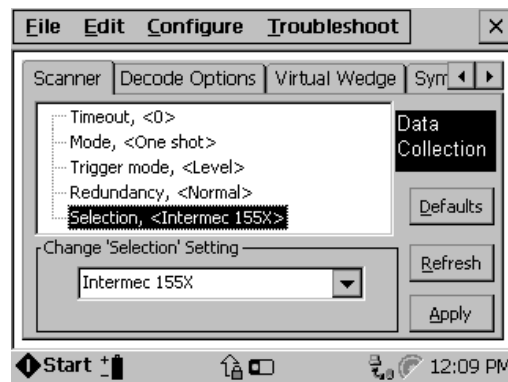
To change the Scanner Selection options

1. Follow the instructions earlier in this section to connect the 5020 to your development PC.

2. Edit the 5020 registry.

3. Open the Scanner Selection branch of the registry as shown below.
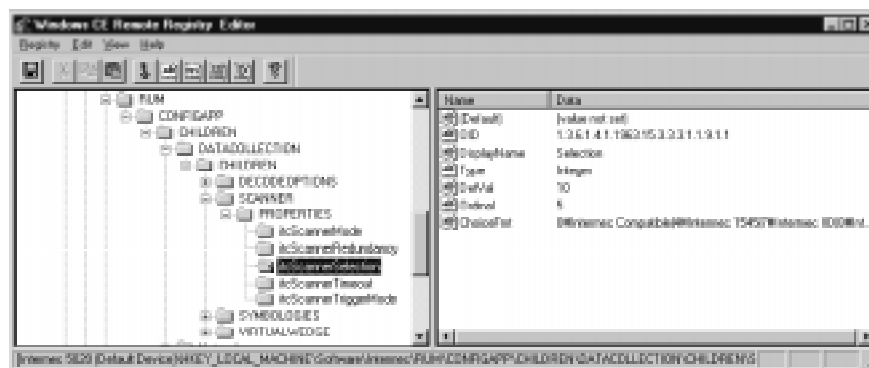
4. Edit the ChoiceFmt line. The current ChoiceFmt line is:

```
"ChoiceFmt"="0#Intermec Compatible|4#Intermec 1545|7#Intermec
IID|8#Intermec 155X|10#Internal|11#Internal long range|
12#Internal extra long range|13#Internal raster"
```

Remove the Scanner Selection options 4, 7, 8, 12, and 13 as shown.

```
"ChoiceFmt"="0#Intermec Compatible|10#Internal|11#Internal
long range"
```

The registry appears as shown next.

5. Save the changes and exit the registry editor.

6. To see the changes, restart the Configuration application on the 5020. The Scanner Selection parameter only has three options. You also see the new list of scanners in the Configuration menu option of remote Unit Management.
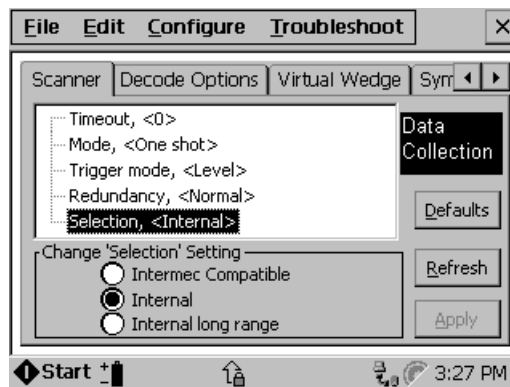
Example 2
In this example, rename the Scanner tab to Input Device.

To rename the Scanner tab

1. Follow the instructions earlier in this section to connect the 5020 to your development PC.

2. Edit the 5020 registry.

3. Open the Scanner branch of the registry as shown below.
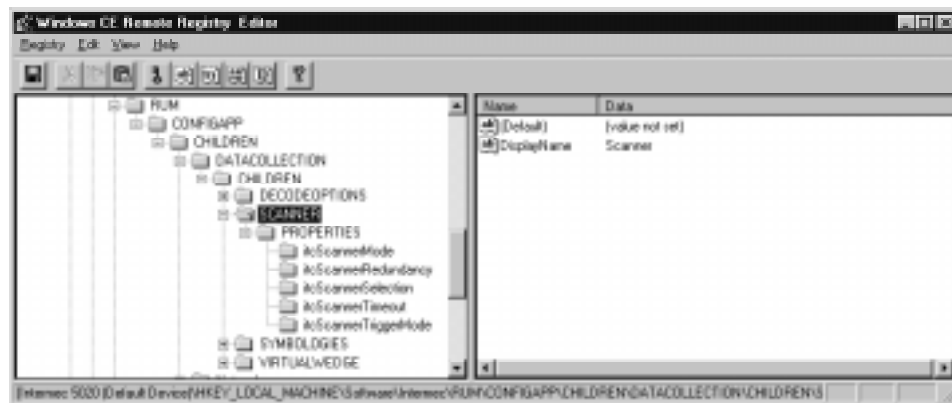
4. Edit the DisplayName field and change the name from "Scanner" to "Input Device." The registry appears as shown next.
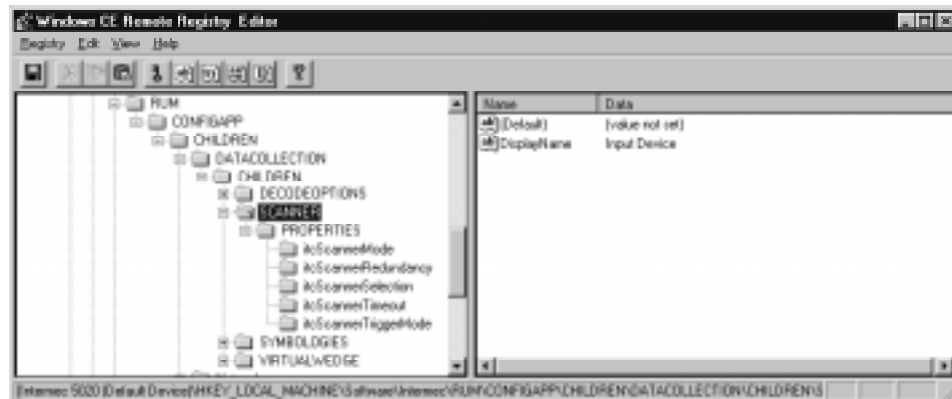
5. Save the changes and exit the registry editor.

6. To see the changes, restart the Configuration application on the 5020. The Scanner configuration tab in the Data Collection menu shows the new display name. You also see the new name in the Configuration menu option of remote Unit Management.

Importing a Registry File

Once you have extended the Configuration application on a 5020, you can import the customized registry file into another 5020. You may also need to import the registry file if you cold boot the 5020.

Note: If you cold boot the 5020, you will lose all registry changes and extensions. Make sure you export the registry file on your development PC and save a backup copy.

To import a registry file

1. Copy the registry file from your development PC to the 5020. For help, see Chapter 5, "Managing Your 5020."

2. On the 5020, choose Run from the Start menu.

3. Type this command and choose OK:

   `itcconfig.exe` *filename.reg*

   where *filename.reg* is the name of your customized registry file for the Configuration application.

4. Repeat Steps 1 through 3 for each 5020.

Note: ITCCONFIG.EXE is only designed to import 5020 properties. It is not a full-featured registry import application.

Registry Property Values

These are the possible values that can go in the registry. Not all of these values are required for each configuration item. For a list of required items, see the next section, "Required and Optional Registry Property Values."

Adapter

Purpose: Reserved for use by Intermec. The adapter identifies the communications PC card.

Syntax: Reserved.

Type: Reserved.

See also:

Example: Reserved for use by Intermec as shown next.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\Network\
CHILDREN\OpenAir1]
"Ordinal"="2"
"DisplayName"="Radio"
"PageDependency"="PageDependency.PageDependency.1"
"Adapter"="OpenAir"

[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\Network\CHI
LDREN\OpenAir1\PROPERTIES\IPAddress\PROPERTIES\itcDHCPEnable.2]
"OID"="1.3.6.1.4.1.1963.5.15.5.2.1.1.?"
"Adapter"="OpenAir"
"Type"="Integer"
"DefVal"="1"
"Ordinal"="1"
"DisplayName"="Obtain IP Address via DHCP"
"ShortDesc"="The next time the adapter is used it will have the new
settings. If the adapter is currently in the device you can suspend and
then resume the device to have the changes take affect."
"ChoiceFmt"="0#FALSE|1#TRUE"
```

Bound

Purpose: Reserved for future use.

Syntax: Reserved.

Type: Reserved.

See also:

Example:

ChoiceFmt

Purpose:	Specifies a choice list in the user interface.
Syntax:	"*n*#\<text\>¦*n1*#\<text\>¦…"
	where *n, n1*, and so on is the numeric value and \<text\> is the corresponding textual description of *n, n1*, and so on.
Type:	Integer
See also:	
Example:	The ChoiceFmt definition for Beep (or Beeper) Volume is:

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\UNIT\
CHILDREN\SPEAKER\PROPERTIES\itcBeeperVolume]
"DisplayName"="Volume"
"OID"="1.3.6.1.4.1.1963.15.3.1.3.0"
"Type"="Integer"
"DefVal"="3"
"Ordinal"="1"
"ChoiceFmt"="0#Off|1#Very quiet|2#Quiet|3#Normal|4#Loud|5#Very loud"
```

CmdOID

Purpose:	Used by subitems of reader or configuration commands to indicate the parent's OID. The value you enter is the OID of the item of which this is a parameter (parent's OID). The CmdOID is designed for reader and configuration commands. You can also use CmdOID for any item that is a string where you want to edit substrings independently. For help with commands, see Chapter 7, "Reader Command Reference," or Chapter 8, "Configuration Command Reference."
Syntax:	"*n*:*y*"
	where *n* is the parent OID and *y* is the position.
Type:	Integer
See also:	CmdString, OID, reader and configuration commands
Example:	The CmdOID for the third digit of Code 39 is:

```
"CmdOID"= "1.3.6.1.4.1.1963.15.3.3.1.1.3.1:3"
```

Code 39 is a parent and has its own OID. However, you can set three options for Code 39 and each option or digit has a CmdOID. The third digit is where you select non-full ASCII, full ASCII, or mixed-full ASCII Code 39. For help, see "Code 39" in Chapter 8.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SYMBOLOGIES\PROPERTIES\itcCode39\PROPERTIES\3]
"DisplayName"="ASCII"
"Type"="Integer"
"DefVal"="1"
"Ordinal"="3"
"CmdOID"="1.3.6.1.4.1.1963.15.3.3.1.1.3.1:3"
"ChoiceFmt"="0#Non-full ASCII|1#Full ASCII|2#Mixed full ASCII"
```

CmdString

Purpose: Specifies the number and widths of the subitems for a reader or configuration command. This entry is required for properties where the type is ReaderCmd.

Syntax: "*n,w1,w2...w^n*"

where *n* is the number of options, *w1* is the field width of the first option, *w2* is the field width of the second option, and so on to *w^n*.

Type: ReaderCmd

See also: CmdOID, reader and configuration commands

Example: Code 39 has three options or digits, so the CmdString is:

"CmdString"= "3,1,1,1"

The "3" defines the three options and each option is a single digit. For help, see "Code 39" in Chapter 8.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SYMBOLOGIES\PROPERTIES\itcCode39]
"OID"="1.3.6.1.4.1.1963.15.3.3.1.1.3.1"
"DisplayName"="Code 39"
"Type"="ReaderCmd"
"Ordinal"="1"
"CmdString"="3,1,1,1"
"DefVal"="101"
"ShortDesc"="If Code 39 Options equals HIBC, then Check digit must equal
Retain and ASCII must equal Non-full ASCII"
```

Constraint

Purpose: Reserved for future use.

Syntax: Reserved.

Type: Reserved.

See also:

Example:

DefVal

Purpose: The Intermec factory default value for this configuration item. You do not set DefVal for ReadOnly items.

Syntax: "string"

where "string" is the default value in quotes.

Type: All

See also:

Example: The DefVal for Beeper Volume is "3", where 3 is a normal beep volume.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\UNIT\
CHILDREN\SPEAKER\PROPERTIES\itcBeeperVolume]
"DisplayName"="Volume"
"OID"="1.3.6.1.4.1.1963.15.3.1.3.0"
"Type"="Integer"
"DefVal"="3"
"Ordinal"="1"
"ChoiceFmt"="0#Off|1#Very quiet|2#Quiet|3#Normal|4#Loud|5#Very loud"
```

DisplayName

Purpose: Text that displays on the user interface (menu, label, or caption).

Syntax: "string"

where "string" is a text string in quotes.

Type: All

See also:

Example: Here is the DisplayName for the Scanner configuration tab or page and for one of the parameters, Scanner Timeout.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SCANNER]
"DisplayName"="Scanner"
```

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SCANNER\PROPERTIES\itcScannerTimeout]
"OID"="1.3.6.1.4.1.1963.15.3.3.3.1.1.5.1.1"
"DisplayName"="Timeout"
"Type"="Integer"
"DefVal"="0"
"Ordinal"="1"
"Range"="0,60"
```

Expert

Purpose:	Reserved for future use.
Syntax:	Reserved.
Type:	Reserved.
See also:	
Example:	

Hidden

Purpose:	Reserved for future use.
Syntax:	Reserved.
Type:	Reserved.
See also:	
Example:	

MaxChars

Purpose: Specifies the maximum number of characters that can be entered in the user interface.

Syntax: "*n*"

where *n* is any positive integer.

Type: Octet string

See also: TextFmt

Example: The MaxChars for preamble is 31 characters.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\VIRTUALWEDGE\PROPERTIES\itcRVWPreAmble]
"OID"="1.3.6.1.4.1.1963.15.3.2.1.1.3.1"
"DisplayName"="Preamble"
"Type"="Octet String"
"DefVal"=""
"Ordinal"="2"
"MaxChars"="31"
```

OID

Purpose:	SNMP Object Identifier (OID) for the configuration item.
Syntax:	"*n.n.n.n…*"
	where *n* is an OID.
Type:	All
See also:	CmdOID
Example:	The OID for preamble is 1.3.6.1.4.1.1963.15.3.2.1.1.3.1.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\VIRTUALWEDGE\PROPERTIES\itcRVWPreAmble]
"OID"="1.3.6.1.4.1.1963.15.3.2.1.1.3.1"
"DisplayName"="Preamble"
"Type"="Octet String"
"DefVal"=""
"Ordinal"="2"
"MaxChars"="31"
```

Ordinal

Purpose:	Specifies the order of the item relative to its siblings or properties at the same level. The ordinal also indicates the order in each sublevel.
Syntax:	"*n*"
Type:	Not applicable.
See also:	
Example:	In the Scanner page, Scanner Timeout is the first property or parameter, so it has an ordinal value of "1." Scanner Mode is the second property or parameter, so the ordinal value is "2."

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SCANNER\PROPERTIES\itcScannerTimeout]
"OID"="1.3.6.1.4.1.1963.15.3.3.3.1.1.5.1.1"
"DisplayName"="Timeout"
"Type"="Integer"
"DefVal"="0"
"Ordinal"="1"
"Range"="0,60"

[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SCANNER\PROPERTIES\itcScannerMode]
"OID"="1.3.6.1.4.1.1963.15.3.3.3.1.1.6.1.1"
"DisplayName"="Mode"
"Type"="Integer"
"DefVal"="0"
"Ordinal"="2"
"ChoiceFmt"="0#One shot|1#Auto-trigger"
```

PageDependency

Purpose: Reserved for use by Intermec.

Syntax: Reserved.

Type: Reserved.

See also:

Example: Reserved for use by Intermec as shown next.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SYMBOLOGIES]
"PageDependency"="PageDependency.PageDependency.1"
"DisplayName"="Symbologies"
```

PropEditor

Purpose: Reserved for future use.

Syntax: Reserved.

Type: Reserved.

See also:

Example:

Range

Purpose: Specifies the range of allowed values.

Syntax: "*n,m*"

where *n* is the lower limit of the range and *m* is the upper limit.

Type: Integer

See also:

Example: The range for Scanner Timeout is any number from 0 to 60.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\SCANNER\PROPERTIES\itcScannerTimeout]
"OID"="1.3.6.1.4.1.1963.15.3.3.3.1.1.5.1.1"
"DisplayName"="Timeout"
"Type"="Integer"
"DefVal"="0"
"Ordinal"="1"
"Range"="0,60"
```

ReadOnly

Purpose: Specifies a read-only configuration item.

Syntax: "True"

Type: Not applicable.

See also:

Example: The Access Point Name is a read-only configuration item since the information is supplied from the access point.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\Network\
CHILDREN\OpenAir1\PROPERTIES\OpenAirConfig\PROPERTIES\itcOpenAir
ConnectedAP.2]
"OID"="1.3.6.1.4.1.1963.5.5.2.5.1.1.1.?"
"Adapter"="OpenAir"
"Type"="Octet String"
"Ordinal"="1"
"DisplayName"="Access Pt Name"
"ShortDesc"="The next time the adapter is used it will have the new
settings. If the adapter is currently in the device you can suspend and
then resume the device to have the changes take affect."
"MaxChars"="255"
"ReadOnly"="True"
```

Security

Purpose: Reserved for future use.

Syntax: Reserved.

Type: Reserved.

See also:

Example:

ShortDesc

Purpose: When you edit a configuration item in the remote Unit Management application, this text displays below the options for the configuration item. The short description does not display on the 5020 Configuration application.

Syntax: "string"

where "string" is a text string in quotes.

Type: All

See also:

ShortDesc (continued)

Example: Here is the short description for Code 2 of 5.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\DATACOLLECT
ION\CHILDREN\SYMBOLOGIES\PROPERTIES\itc2of5]
"OID"="1.3.6.1.4.1.1963.15.3.3.1.1.4.1"
"DisplayName"="Code 2 of 5"
"Type"="ReaderCmd"
"Ordinal"="3"
"CmdString"="2,1,2"
"DefVal"="000"
"ShortDesc"="If Code 2 of 5 is enabled, Interleaved 2 of 5 will be
disabled."
```

TextFmt

Purpose: Specifies the formatting for a string of characters that you can enter in the user interface. You specify the maximum length of the string by the number of formatting characters (# or &).

Syntax: "#" or "&"

where:

\#   Allows only a numeric character between 0 and 9.
 &   Allows any ASCII character.

You can only use one type of formatting character (# or &) in a string.

Type: Octet string

See also: MaxChars

Example: In the Decode Priority command, TextFmt defines a numeric-only field that is 24 digits long.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\DATACOLLECT
ION\CHILDREN\DECODEOPTIONS\PROPERTIES\itcSymPriority]
"OID"="1.3.6.1.4.1.1963.15.3.3.2.1.3.1"
"DisplayName"="Decode priority"
"Type"="Octet String"
"DefVal"="010203040506070809101112"
"Ordinal"="2"
"TextFmt"="########################"
```

Type

Purpose: SNMP data type. Each property has a type.

Syntax: "Integer" or "Octet String" or "ReaderCmd" or "IP Address"

where ReaderCmd is a reader or configuration command. For help, see Chapter 7, "Reader Command Reference," or Chapter 8, "Configuration Command Reference."

Type: Not applicable.

See also:

Example: The type for preamble is an octet string.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Intermec\RUM\CONFIGAPP\CHILDREN\
DATACOLLECTION\CHILDREN\VIRTUALWEDGE\PROPERTIES\itcRVWPreAmble]
"OID"="1.3.6.1.4.1.1963.15.3.2.1.1.3.1"
"DisplayName"="Preamble"
"Type"="Octet String"
"DefVal"=""
"Ordinal"="2"
"MaxChars"="31"
```

Required and Optional Registry Property Values

This table indicates, for each level in the registry, whether the value is required, optional, or not applicable (N/A).

Every property (label or non-label) MUST have the following:

- DisplayName
- Ordinal

All non-label properties MUST have the following:

- DisplayName
- Ordinal
- Type
- DefVal
- OID or CmdOID

Required and Optional Registry Property Values

Registry Property Value	Root	MenuItem	PageView	Properties
Adapter	N/A	N/A	Optional	N/A
Bound	N/A	N/A	N/A	Optional
ChoiceFmt	N/A	N/A	N/A	Optional
CmdOID	N/A	N/A	N/A	Required for ReaderCmd subitems
CmdString	N/A	N/A	N/A	Required for ReaderCmd
Constraint	N/A	N/A	N/A	Optional
DefVal	N/A	N/A	N/A	Required if non-label
DisplayName	N/A	Required	Required	Required
Expert	N/A	Optional	Optional	Optional

Required and Optional Registry Property Values (continued)

Registry Property Value	Root	MenuItem	PageView	Properties
Hidden	N/A	Optional	Optional	Optional
MaxChars	N/A	N/A	N/A	Optional
OID	N/A	N/A	N/A	Required if non-label
Ordinal	N/A	N/A	N/A	Required
PageDependency	N/A	N/A	Optional	N/A
PropEditor	N/A	N/A	N/A	Optional
Range	N/A	N/A	N/A	Optional
ReadOnly	N/A	N/A	N/A	Optional
Security	N/A	Optional	Optional	Options
ShortDesc	N/A	N/A	N/A	Optional
TextFmt	N/A	N/A	N/A	Optional
Type	N/A	N/A	N/A	Required if non-label
[CHILDREN]	Required	Required	N/A	N/A
[PROPERTIES]	N/A	N/A	Required	Optional

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