Intermec

User's Manual

CK31 Handheld Computer

Intermec

User's Manual

CK31 Handheld
Computer

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Document Change

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

Version	Date	Description of Change
002	10/2005	Added new scanner options, new keypad options, updated information on Funk security and configuration, added new diagnostics, and added information on SmartSystems.
003	06/2006	Revised to support RoHS compliance. Other new information includes an updated list of scanners and cables, instructions for scanning PDF417 or Micro PDF417 bar codes, instructions for loading multiple certificates, expanded information about the backup battery and the Backup Battery Very Low dialog box, troubleshooting information for the SD card, bar code symbologies listed by scanner option, new information on scanner reading distances, and an illustration that identifies the pins in the serial adapter.
004	07/2006	Added the standard range laser and the long range laser as scanning options. Added instructions for configuring Bluetooth wireless printing. Added two Bluetooth error messages to the Troubleshooting chapter. Corrected the minimum reading distances setbacks for the area imager and linear imager.
005	06/2007	Added the near-far range area imager scanning option. Added notes about not using the undecoded serial adapter if you have a near-far range area imager and about the impact of radio use on battery life. Updated the path for the warranty information.
006	11/2007	Added additional information about how you scan bar code data using a near-far range area imager.

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Before You Begin

This section provides you with safety information, technical support information, and sources for additional product information.

Safety Icons

This section explains how to identify and understand warnings, cautions, and notes that are in this document.

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.

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.

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

Global Services and Support

Warranty Information

To understand the warranty for your Intermec product, visit the Intermec web site at www.intermec.com and click **Support** > **Returns and Repairs** > **Warranty**.

Disclaimer of warranties: The sample code included in this document is presented for reference only. The code does not necessarily represent complete, tested programs. The code is provided "as is with all faults." All warranties are expressly disclaimed, including the implied warranties of merchantability and fitness for a particular purpose.

Web Support

Visit the Intermec web site at www.intermec.com to download our current manuals (in PDF). To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Visit the Intermec technical knowledge base (Knowledge Central) at intermec.custhelp.com to review technical information or to request technical support for your Intermec product.

Telephone Support

These services are available from Intermec.

Service	Description	In the U.S.A. and Canada call 1-800-755-5505 and choose this option
Order Intermec products	• Place an order. • Ask about an existing order.	1 and then choose 2
Order Intermec media	Order printer labels and ribbons.	1 and then choose 1
Order spare parts	Order spare parts.	1 or 2 and then choose 4
Technical Support	Talk to technical support about your Intermec product.	2 and then choose 2
Service	• Get a return authorization number for authorized service center repair. • Request an on-site repair technician.	2 and then choose 1
Service contracts	• Ask about an existing contract. • Renew a contract. • Inquire about repair billing or other service invoicing questions.	1 or 2 and then choose 3

Outside the U.S.A. and Canada, contact your local Intermec representative. To search for your local representative, from the Intermec web site, click **Contact**.

Who Should Read This Document?

The *CK31 Handheld Computer User's Manual* provides you with information about the features of the CK31 and how to install, operate, maintain, and troubleshoot the CK31. Before you install and configure the CK31, you should be familiar with your network and general networking terms, such as IP address.

The *Intermec Computer Command Reference Manual* (P/N 073529) is available on the CD attached to the inside front cover of this user's manual and as a download from the Intermec web site. Please refer to this manual for help configuring your CK31. The reference manual contains information about all of the CK31 commands and provides bar codes that you can print and scan when configuring supported commands.

Related Documents

The Intermec web site at www.intermec.com contains our documents that you can download (in PDF).

To order printed versions of the Intermec manuals, contact your local Intermec representative or distributor.

Patent Information

Product is covered by one or more of the following patents: 4882476, 4894523, 4953113, 4961043, 4970379, 4988852, 5019699, 5021642, 5038024, 5081343, 5095197, 5144119, 5144121, 5182441, 5187355, 5187356, 5195183, 5216233, 5216550, 5195183, 5195183, 5218191, 5227614, 5233172, 5241488, 5243602, 5258606, 5278487, 5288985, 5308966, 5322991, 5331136, 5331580, 5342210, 5349678, 5359185, 5371858, 5373478, 5389770, 5397885, 5410141, 5414251, 5416463, 5442167, 5464972, 5468947, 5468950, 5477044, 5486689, 5488575, 5500516, 5502297, 5504367, 5508599, 5514858, 5530619, 5534684, 5536924, 5539191, 5541419, 5548108, 5550362, 5550364, 5565669, 5567925, 5568645, 5572007, 5576529, 5592512, 5594230, 5598007, 5608578, 5616909, 5619027, 5627360, 5640001, 5657317, 5659431, 5671436, 5672860, 5684290, 5719678, 5729003, 5742041, 5761219, 5764798, 5777308, 5777309, 5777310, 5786583, 5793604, 5798509, 5798513, 5804805, 5805807, 5811776, 5811777, 5818027, 5821523, 5828052, 5831819, 5834753,

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5969326, 5969328, 5979768, 5986435, 5987192, 5992750,
6003775, 6012640, 6016960, 6018597, 6024289, 6034379,
6036093, 6039252, 6064763, 6075340, 6095422, 6097839,
6102289, 6102295, 6109528, 6119941, 6128414, 6138915,
6149061, 6149063, 6152370, 6155490, 6158661, 6164542,
6164545, 6173893, 6195053, 6234393, 6234395, 6244512,
6249008, 6328214, 6330975, 6345765, 6356949, 6367699,
6375075, 6375076, 6431451, 6435411, 6484944, 6488209,
6497368, 6532152, 6538413, 6539422, 6621942, 6641046,
6681994, 6687403, 6688523, 6732930

There may be other U.S. and foreign patents pending.

Other Copyright Information

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Bluetooth is a trademark of Bluetooth SIG, Inc., U.S.A.

Wi-Fi is a registered certification mark of the Wi-Fi Alliance.

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/)

This product includes cryptographic software written by Eric Young. (eay@cryptsoft.com)

This product uses Regex++, Index software during its operational phases. The owner of Regex++ has granted use of the software to anyone provided such use is accompanied by the following copyright and permission notice:

Regex++, Index. (Version 3.31, 16th Dec 2001)

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1 Using the CK31 Handheld Computer

Use this chapter to familiarize yourself with the CK31 Handheld Computer. In this chapter, you will find these sections:

- Introducing the CK31 Handheld Computer
- What's New?
- Using the Battery
- Using the Keypad
- Using the Touch Screen
- Understanding the Status Lights
- Understanding the Beeps
- Scanning Bar Codes
- Verifying That Your Scanner Is Working
- Installing the SD Card

Introducing the CK31 Handheld Computer

The Intermec CK31 is an ergonomically designed handheld computer built on the Microsoft® Windows® CE .NET operating system. It is a lightweight, easy-to-use, reliable computer that both runs client/server applications and browser-based applications.
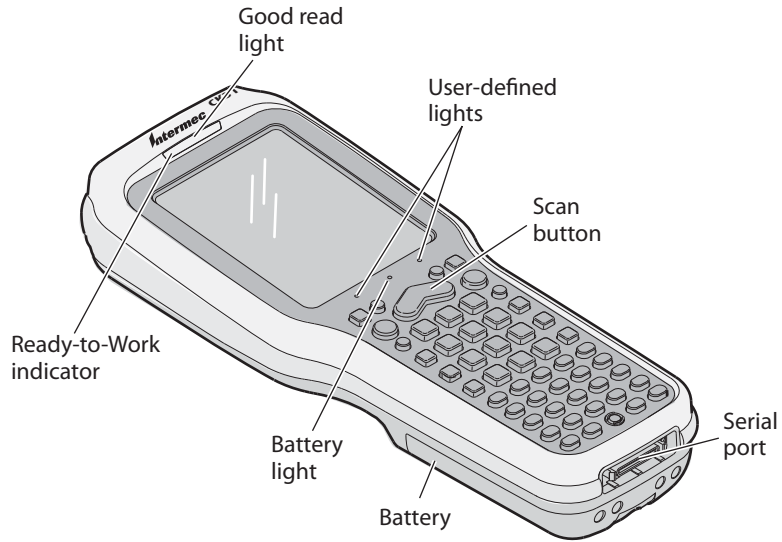
CK31 Handheld Computer

CK31 Handheld Computers with an IEEE 802.11b/g radio installed are Wi-Fi® certified for interoperability with other 802.11b/g wireless LAN devices.

The CK31 includes these features:

- .NET Compact Framework
- Internet Explorer 6, SQL Server CE
- iBrowse
- CCX v2.0 compliance
- Color display with touch screen
- 64 MB RAM/64 MB Flash Memory
- 400 MHz Processor

These options are available for the CK31:

- 802.11b/g radio
- Bluetooth radio
- Linear imager, area imager, near-far range area imager, standard range laser, or long range laser

Note: If you have a CK31 with the near-far range area imager, do not use the undecoded serial adapter.

- TE 2000 terminal emulation application including 3270, 5250, and VT/ANSI as well as support for third-party TE applications
- Data Collection Browser (dcBrowser™) application

Use this manual to understand how to use the features and options available on the CK31. For help using terminal emulation, see the *TE 2000 Terminal Emulation Programmer's Guide* (P/N 977-055-xxx).

For help using dcBrowser, see the documentation that ships with the dcBrowser gateway software or the *Data Collection Browser Client User's Guide* (P/N 070011).

iBrowse is a locked-down web browser for Intermec devices that is compatible with Microsoft's Internet Explorer but does not allow the user to exit the browser or access non-work related web sites. For help using iBrowse, see the *iBrowse User's Guide* (P/N 961-055-xxx).

For a complete list of accessories, see "Accessories for the CK31" on page 139.

What's New?

The CK31 is now available with a near-far range area imager.

Using the Battery

The CK31 uses a model AB1G (P/N 318-020-xxx) lithium-ion battery as its main power source. You must fully charge the main battery before you can use the CK31. When you change the battery, a backup battery maintains your status, memory, and real-time clock for at least 10 minutes.

If the battery light blinks or turns on solid, you cannot restore factory defaults or perform a warm or cold boot on your CK31 by using the **I/O** key. You must replace the battery with a fully charged battery before you can restore factory defaults or boot your CK31.

To ensure maximum battery life and product performance, periodically replace the rechargeable lithium-ion battery. Contact your local Intermec sales representative for replacement batteries.

Note: The AB1G battery is designed to provide more than a full shift of daily use. However, battery life depends on individual usage patterns. Conditions such as wireless coverage, power settings, roaming frequency, applications in use, number of radios in use, ambient temperature, lithium-ion battery maintenance, and individual use cases have an effect on overall battery performance.

Warning

The lithium-ion battery pack that is used in this device may present a fire or chemical burn hazard if it is mistreated. Do not disassemble it, heat it above 100°C (212°F) or incinerate it. Dispose of used battery packs promptly. Keep away from children.

Caution

Removing the main battery when the backup battery low or critically low icon appears on the taskbar may cause your CK31 to cold boot and you may lose data.

If you fail to replace the battery immediately, you may lose important data or applications.

Charging and Installing the Battery

Make sure you fully charge the AB1G battery before you use your CK31. You can charge the battery before or after you install it into the CK31.

To charge the battery

- Either insert the battery into the AC1 4-slot battery charger or place the CK31 with battery installed in the AC2 4-Bay Charging Dock, AC3 8-Bay Charging Dock, AD1 1-Bay Communications Dock, or AD2 4-Bay Communications Dock. For more information on these accessories, see page 139.

Use the next table to understand how long it will take to charge your batteries in each of the CK31 charging or communications dock accessories.

Charging Times for CK31 Batteries

CK31 Accessory	Battery Charging Time
AC1 4-Slot Battery Charger	5 hours
AC2 4-Bay Charging Dock	5 hours
AC3 8-Slot Charging Dock	5 hours
AD1 1-Bay Communications Dock	5 hours
AD2 4-Bay Communications Dock	5 hours

To install the battery

- Insert the tabs on the bottom of the charged battery into the CK31 and snap the battery into place.
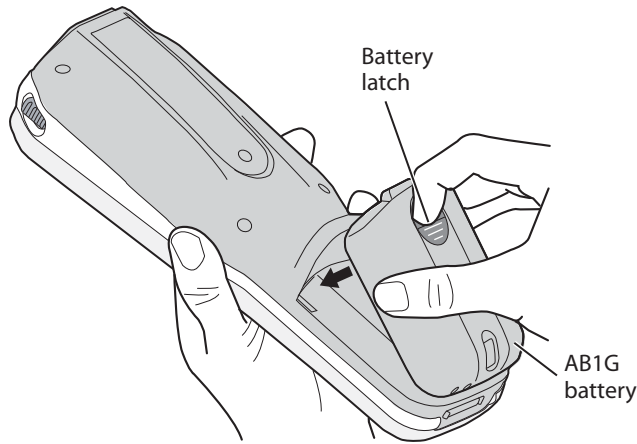
Inserting the AB1G Battery

Maximizing Battery Life

There are several things that you can do to extend the life of your fully charged battery.

- Verify that Radio Power Management is enabled (Fast PSP). Enabling radio power management allows your radio to switch between awake and sleep modes based on network traffic. If you use the default setting of disabled (CAM), you will have the best network performance (data throughput) but it will draw the most power from your battery.

- Verify that the backlight timeout is set to 15 seconds.

- Verify that each setting under Power Management (User Idle, System Idle, and Suspend) has a value of 1 minute for a combined automatic shutoff time of 3 minutes.

You can use Intermec Settings to easily make all of these configuration changes. For help, see "Configuring the CK31 With Intermec Settings" on page 40.

Checking the Battery Status

The easiest way to tell the status of your battery is to look at the battery icon in the status bar of your CK31. If you do not see a battery icon, your battery has a good charge.

Battery Icon Status

Icon	Status
▭	Battery has a medium charge. You should be able to work for several more hours before changing batteries.
▭	Battery is low. You need to replace the battery soon.
⟁	Battery is critically low. You need to replace the battery now.

You can also check the battery status by looking at the Battery light on the front of the CK31 or by using the battery diagnostics screen. For help using the Battery Information diagnostic screen, see "Battery Information" on page 98.

Using the Keypad

Your CK31 has one of the following keypad overlay options:

- 42-key large numeric and function

- 50-key full alphanumeric

- 52-key full alphanumeric

You can order all versions of the CK31 keypad with an international overlay. The international overlay supports English and many Western European languages, such as French, German, Italian, Portuguese, and Spanish. You enter all of the characters and functions printed above the keys just like you would on a standard keypad.

Note: You must use the color-coded keys to access several hidden characters (such as { and }) on the CK31 keypad. For more information on the hidden characters, refer to "Typing Characters Not Printed on the Keypad" on page 142.

The CK31 supports TE 2000 VT100/220/320/340 and ANSI, TE 2000 5250, and TE 2000 3270. When you order the CK31 with a TE 2000 application, you must order the corresponding keypad overlay. Use the TE 2000 keypad overlays to enter the same keys that you can enter on a VT/ANSI keyboard, and IBM 5250 keyboard, or an IBM 3270 keyboard. Like the standard CK31 overlay, the TE 2000 keypad overlays let you enter all the characters printed on or above the keys. The terminal emulation keypads also come with the same color-coded keys that are on the standard overlay.

For help using TE 2000 terminal emulation, see the *TE 2000 Terminal Emulation Programmer's Guide* (P/N 977-055-xxx).
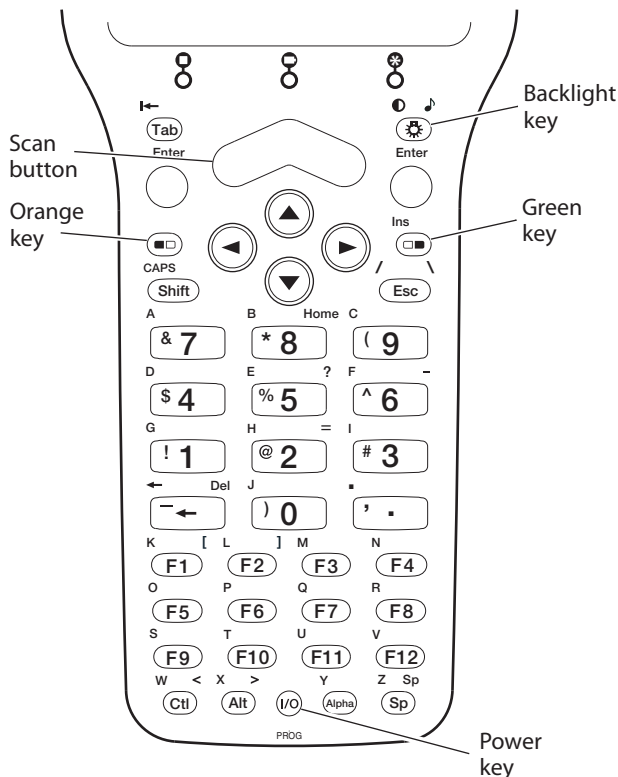
42-Key Large Numeric and Function Keypad: *This keypad is designed for applications that accept mainly numeric data (0-9) and that need dedicated function keys (F1- F12). This keypad also lets you enter the entire alphabet and special characters by pressing color-coded key sequences.*
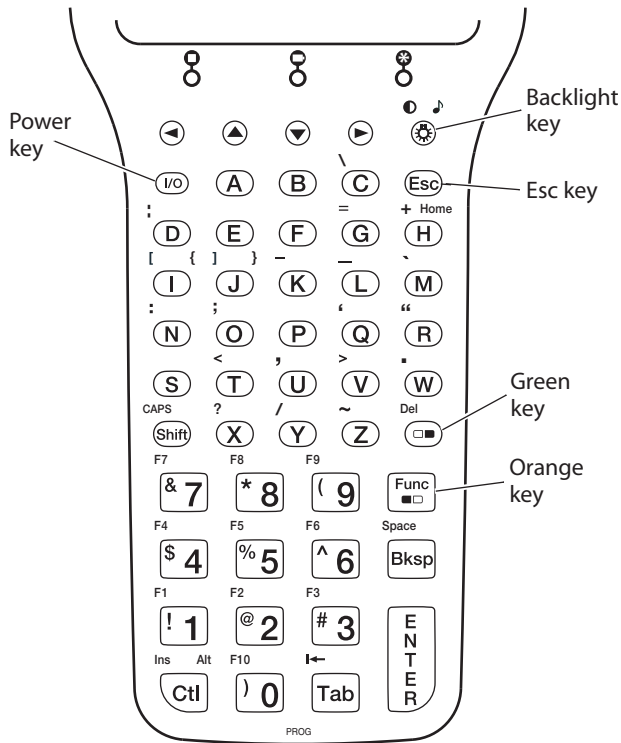
Power key

Backlight key

Esc key

Green key

Orange key

50-Key Full Alphanumeric Keypad: *This keypad is designed for applications that accept mainly numeric data (0-9) and that may need to accept the entire alphabet. The keypad also provides shifted function keys (F1-F9) and special characters, symbols, and functions by pressing color-coded key sequences.*

Note: The 50-key keypad does not have a scan key, because it was designed to work with the required handle with the built-in scanner trigger.
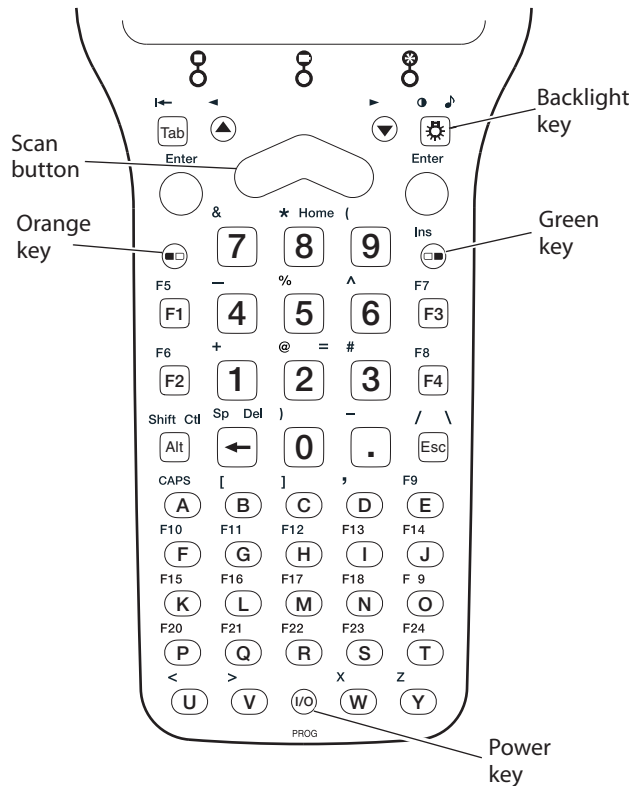
52-Key Full Alphanumeric Keypad: *This keypad is designed for applications that accept mainly numeric data (0-9) and that may need to accept the entire alphabet. The keypad also provides function keys (F1-F24) and special characters, symbols, and functions by pressing color-coded key sequences.*

Using the Color-Coded Keys

The keypad of the CK31 provides color-coded keys to let you access additional characters, symbols, and functions printed on the keypad overlay. Once you understand how to use the color-coded keys and key sequences, you can access all of the additional features printed on the keypad overlay. There are two color-coded modifier keys on the CK31: the orange ▬▭ key and the green ▭▬ key.

You press and release the first key and then press and release the second key to access the color-coded character or function printed above a key.

Using the Color-Coded Keys

You Want To:	Press:	Example
Use an orange character or function printed above a key.	■□ key and then the key with character or function printed above it.	Press ■□ and then **2** to type the @ character**.**
Use a green character or function printed above a key.	□■ key and then the key with character or function printed above it.	Press □■ and then **2** to type the = character.
Lock the orange, green, **Ctl**, **Alt**, or **Shift** key to stay on.	■□, □■, **Ctl**, **Alt**, or **Shift** key twice.	Press □■ twice and the ⌨ appears in the status bar.
Unlock a green, orange, **Ctl**, **Alt**, or **Shift** key**.**	■□, □■, **Ctl**, **Alt**, or **Shift** key once.	If Alt is in the status bar, press **Alt** and the locked icon disappears from the status bar.

Note: The orange Contrast function (◖ or ◗) printed above the Backlight ☼ key does not perform any function on the CK31.

Capitalizing All Characters

To type all alphabetic characters as uppercase letters, you can enable the Caps Lock feature on the CK31 keypad.

To enable Caps Lock

1 Press the **orange** ■□ key. The ■□ icon appears on the status bar.

2 To enable Caps Lock and make the Caps Lock icon (⇪) appear on the status bar, press a second key:

   • On the 42-key keypad, press **Shift**.

   • On the 50-key keypad, press **Shift**.

   • On the 52-key keypad, press **A**.

3 Type an alphanumeric character. The letter appears as an uppercase character on the screen.

To disable Caps Lock

• Press the **orange** ◼▭ key and then press either **Shift** or **A** (depending on your keypad). The Caps Lock icon disappears from the status bar.

Using the Power (⅟ₒ) Key

When you press the ⅟ₒ key to turn off the CK31, you actually put the computer in Suspend mode. In Suspend mode, the CK31 continues to supply power to all memory, but turns off power to most hardware. This power-saving feature is designed to prolong battery life.

When you press the ⅟ₒ key to turn the CK31 back on, your computer resumes at the screen that was displayed when you turned it off. If you are using WPA or 802.1x security, the computer may need to reauthenticate before it resumes your application.

If the Battery light flashes and your CK31 does not resume after pressing ⅟ₒ, your battery may be too low to supply power. Replace the battery. If replacing the battery does not solve the problem, see "Booting the CK31" on page 125.

Disabling or Modifying Keypad Functions

If you want to restrict the ability to perform adjustments made from the keypad, such as changing the beeper volume, you can disable the functionality of several keys on the keypad.

You can disable these keypad functions:

• Beeper volume

• Task Manager (opened by pressing **Alt** and then **Tab**)

Note: When you disable **Alt Tab**, you also disable **Alt Esc**.

You can modify this keypad function:

• The behavior of the ⅟ₒ key. You can configure the boot functionality to either warm or cold boot when you press and hold the ⅟ₒ key for five seconds.

To disable specific keypad functions

1 From the **Start** menu, tap **Intermec Settings**. The Intermec Settings application appears.

2 Tap **Device Settings** > **Keypad**. The Keypad menu expands to show you the options.
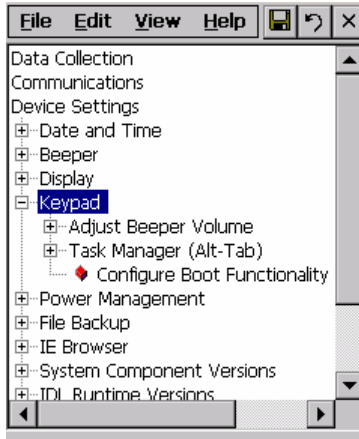
3 Tap the function you want to disable from the Keypad menu to expand the branch.

4 Tap **Disable** to select it.

5 Save your changes and tap **File** > **Exit** to exit Intermec Settings.

To change the ⅒ key behavior

1 From the Start menu, tap **Intermec Settings**. The Intermec Settings application appears.

2 Tap **Device Settings** > **Keypad**. The Keypad menu expands to show you the options.

3 Tap **Configure Boot Functionality** and select **Warm boot** or **Cold boot**.
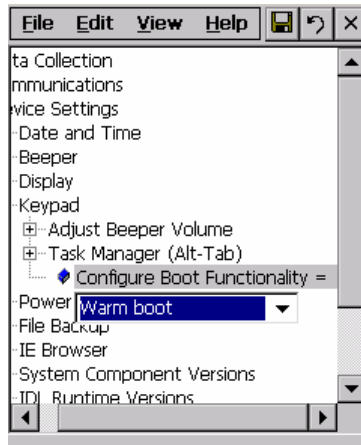
4 Save your changes and tap **File** > **Exit** to exit Intermec Settings.

Using the Touch Screen

The CK31 has a color touch screen display that features:

- a full screen size of 240 x 320 pixels.

- a desktop size of 240 x 300 pixels.

- a taskbar size of 240 x 20 pixels.

- support for Unicode characters, user-programmable fonts, and bitmap graphics.
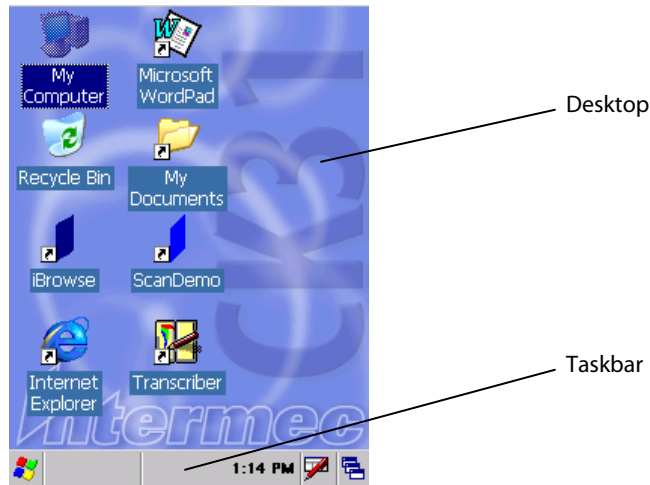
Desktop

Taskbar

CK31 Start Screen

The Start screen has two distinct areas: the desktop and the taskbar.

The desktop displays shortcuts to some of the applications installed on the CK31. The first time you turn on the CK31, the taskbar displays the Start menu icon, the time, the keyboard icon, and the desktop icon.

Using the Stylus

Use the stylus, in place of a mouse, to select items and enter information on the touch screen.

Functions You Can Perform With the Stylus

Action	Description
Tap	Touch the screen once with the stylus to select options, close applications, or launch menus from the taskbar.
Double-tap	Double-tap the screen with the stylus to launch applications.
Drag	Hold the stylus on the screen and drag across the screen to select text and images.
Tap and hold	Tap and hold the stylus on an item to see a list of actions available for that item. On the pop-up menu that appears, tap the action you want to perform.

You can disable the touch screen if you want to prevent others from performing functions using the stylus.

To disable the touch screen

1 From the **Start** menu, tap **Settings** > **Control Panel**.

2 Double-tap **Stylus**.

3 Select the **Touch Panel Disable** check box.

4 Exit the control panel.

To enable the touch screen capabilities again, you need to navigate to the control panel using the keypad and use the **Space** key to clear the **Touch Panel Disable** check box.

Understanding the Screen Icons

Use the screen icons on the status bar to see the battery status, network connections, and special keys or functions you may be using. Standard Microsoft icons are not included in this table.

CK31 Screen Icons

Icon	Description
	Battery is approximately half full. You should be able to work for several more hours before changing batteries.
	Battery is low. You need to replace the battery soon.
	Battery is critically low. You need to replace the battery now.
	The window positioning feature is turned on.
	The CK31 is connected using ActiveSync.
	Backup battery is low. Replace the battery or place the CK31 in a charger. Allow 15 minutes for the backup battery to recharge.
	Strong signal strength with the access point and security is enabled.*
	Medium signal strength with the access point and security is enabled.*
	Weak signal strength with the access point and security is enabled.*
	Strong signal strength with the access point, but security is not configured correctly.
	Medium signal strength with the access point, but security is not configured correctly.
	Weak signal strength with the access point and security is not configured correctly.
	No connection to the access point. For help, see "Problems With Wireless Connectivity" on page 119.
	Orange key is enabled.
	Green key is enabled.
	Orange key is locked.
	Green key is locked.

* If you are using static WEP and you cannot send information wirelessly, make sure your WEP key setting is correct.

CK31 Screen Icons (continued)

Icon	Description
Alt	**Alt** key is locked.
Alt	**Alt** key is enabled.
Ctl	**Ctl** key is locked.
Ctl	**Ctl** key is enabled.
⇧	**Shift** key is locked.
⇧	**Shift** key is enabled.
✗	No UDP Plus connection. For help, see "Configuring the Network Parameters for a UDP Plus Network" on page 47.
⤧	UDP Plus is transferring data.
✛	UDP Plus is connected.
⬗	**Caps Lock** key is enabled.
▤	The CPU monitor is enabled.
▦	The RAM monitor is enabled.

Repositioning a Window

If you need to move a window to see more of a screen, you can reposition the window using the numeric keypad instead of the mouse pointer. When you turn on the positioning feature, the focus is on the top window. You can change the focus to another window by using Task Manager to select a different task. Simply press **Alt** and then **Tab** to bring up Task Manager to select a different task.

To reposition a window

1 Press **Alt** and then ☼. An icon (🖳) appears on the status bar.

2 Use the numeric keypad to move the window.
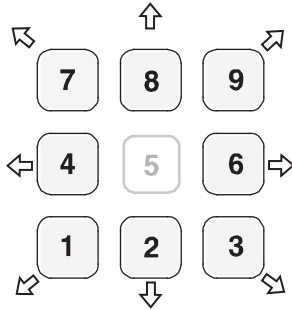
Repositioning a Window: *Press the appropriate number key for the direction you want to move the window.*

To center the window in the CK31 screen

• Press **5**.

To turn off the repositioning feature

• Press **Alt** and then ☼.

Calibrating the Touch Screen

If the touch screen does not respond when you tap it with the stylus, you may need to calibrate the screen.

To calibrate the screen

1 Press ⬚◗ and then ⬚◗. The Start menu appears.

2 Press ▼ to highlight **Touch Calibrate** and then press **Enter**. The calibration screen appears.

3 Follow the instructions to calibrate the screen.

Understanding the Status Lights

The status lights on the CK31 turn on to indicate the status of the battery, a successful decode of a bar code, or a user-defined function.
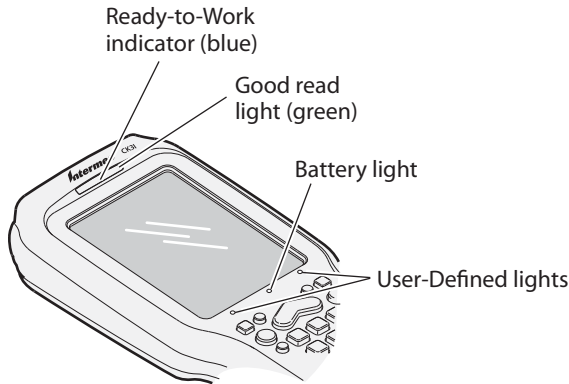
CK31 Status Lights

The battery light and the battery screen icons work with each other to alert you to the status of your battery. If the battery light comes on, check the taskbar to see which battery icon appears on it. Use the CK31 Screen Icons table on page 17 to help determine when you need to replace your battery.

Understanding the CK31 Status Lights

Light Name	Light	Description	
User-defined	■ ✱	Use the Intermec resource kits to program these lights to turn on and off for any task or error within your application. The resource kits are part of the Intermec Developer Library (IDL), which is available from the Intermec web site at www.intermec.com/idl.	
Battery	▬	**Light Status**	**What It Means**
		Off	The battery is charged.
		On	Battery is critically low. You need to replace the battery now.

Understanding the CK31 Status Lights (continued)

Light Name	Light	Description
Good Read		This light comes on when the CK31 successfully decodes a bar code.
Ready-to-Work™ indicator		This blue light indicates when the CK31 is ready to use in your application, typically TE 2000. If you have problems using TE 2000, see the *TE 2000 Terminal Emulation Programmer's Guide* (P/N 977-055-xxx).

Light Status	What It Means
Off	The TE 2000 application has not loaded successfully, or you are not running a Ready-to-Work application.
Blinking	The CK31 is not connected to the host.
On	A connection to the server has been established and all network connections are active.

Understanding the Beeps

The CK31 uses beeps to provide you with audio feedback when it performs some functions. For example, you hear a beep each time you scan a valid bar code.

Understanding the CK31 Beeps

Beep Sequence	What It Means
High beep	You entered valid data or a valid command, the CK31 decoded a label, or the CK31 decoded the last row of a two-dimensional bar code.
Three low beeps	You entered or scanned an invalid command.
Click	You pressed a key.

You can change the beeper volume for your needs and environment. You can set the beeper volume to off, low (quiet), medium, high (loud), and very high (very loud - default).

If necessary, you can also change the beep duration and beep frequency for good read, low, and high beeps. You cannot adjust the keyclick volume or duration.

Changing the Beeper Volume

Method	Procedure
Use the keypad.	Press ▭◼ and then press ☼ to increase the volume. There are five beep volumes on the CK31 including off. When you reach the loudest setting, the next setting is off.
Use the Intermec Settings application.	Go to **Start** > **Intermec Settings** > **Device Settings** > **Beeper** > **Volume**.
Use the Beeper Volume command.	For help, see "Beeper Volume" in the *Intermec Computer Command Reference Manual*.

Scanning Bar Codes

⚠ **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.

Use the scanner to scan and enter bar code data. The type of scanner you are using and the type of bar code you are decoding determines the way you scan the bar code. The CK31 supports the scanning of 1D linear bar codes and 2D images, depending on the scanner model in your CK31. Plus, the way you scan bar codes is different if you are using an integrated handle or a scanner attached to the serial port.

When you unpack the CK31, these bar code symbologies are enabled:

- Code 39
- Code 128
- PDF417 (if supported)
- UPC/EAN
- DataMatrix (area imagers only)

If you are using bar code labels that are encoded in a different symbology, you need to enable the symbology on the CK31. Use Intermec Settings to enable and disable symbologies for your scanner. For help, see "Configuring the CK31 With Intermec Settings" on page 40.

The following two sections describe how to scan a bar code label with the laser scanner (standard range laser or long range laser), linear imager, and area imager.

Scanning With the Laser Scanner or Linear Imager

If the CK31 has a standard range laser, long range laser, or linear imager, use the following procedure to practice scanning a bar code.

The linear imager can decode PDF417 bar codes as well as bar codes with high-density, low-density, and poor quality in any lighting conditions. For help scanning PDF417 bar codes, see the procedure on the next page.

To scan most bar code labels with the laser scanner or linear imager

1 Press **Ι/o** to turn on the CK31.

2 Point the scanner window at the bar code label and hold the computer at a slight angle 15 to 25 cm (6 to 10 in) from the label.

Note: If you have a long range scanner, you may need to hold the computer further away from the label.

3 Press the **Scan** button on the keypad, or pull the trigger on a handle, and direct the red beam so that it falls across all bars in the bar code label.

Good Read light (green)
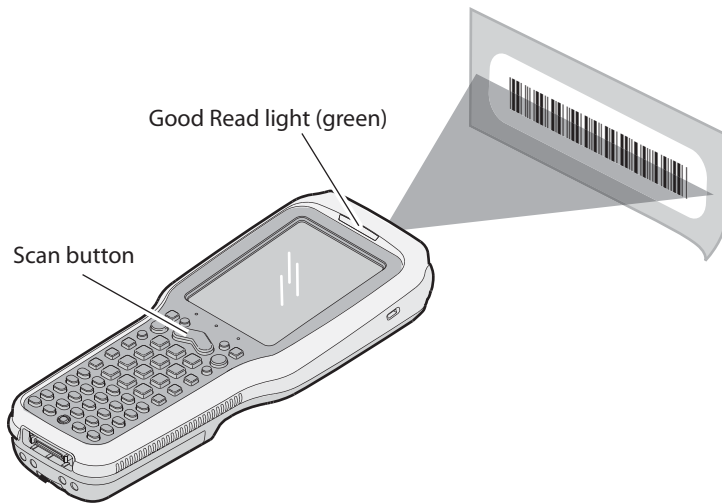
Scan button

Use this test bar code:

Code 39 Test Bar Code

123456

When the CK31 successfully reads a bar code label, you hear a high beep and the green Good Read light turns on briefly.

4 Release the **Scan** button.

To scan a PDF417 or Micro PDF417 bar code with the linear imager

1 Press **⅟o** to turn on the CK31.

2 Point the scanner window PDF417 or Micro PDF417 bar code label and hold the computer at a slight angle 15 to 25 cm (6 to 10 in) from the label.

3 Press the **Scan** button on the keypad or pull the trigger on a handle, and direct the red beam so that it falls across at the top row of the bar code label.

Good Read light (green)

Scan button
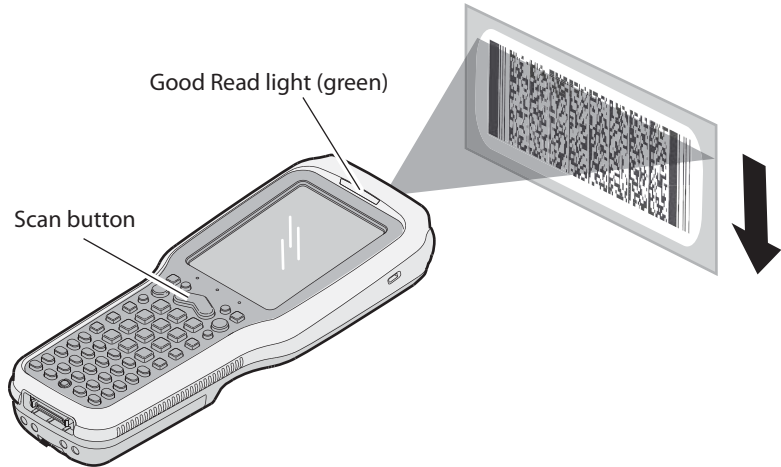
Scanning a PDF417 or Micro PDF417 Bar Code Label

Use this test bar code:

PDF417 Test Bar Code

123456789abcdefg

4 Move the beam down all rows of the bar code label. The CK31 clicks as it reads each row.

5 The CK31 emits a high beep and the green Good Read light turns on briefly when the CK31 successfully reads the entire bar code label.

You may need to continue moving the beam from the bottom of the bar code label to the top, and back to the bottom, until you hear the high beep.

6 Release the **Scan** button.

Scanning With the Standard or Near-Far Range Area Imager

Your CK31 may come with one of two types of area imagers:

• A standard area imager

• A near-far range area imager

Both area imagers allow you to scan 2D bar code symbologies and supports omni-directional (360°) scanning. Omni-directional scanning means that you can position the CK31 in any orientation to scan a bar code label.

Scanning with the Standard Area Imager

The standard area imager comes equipped with an aiming beam to help you scan bar codes. Use the following procedure to scan a bar code label with the standard area imager.

To scan a bar code label with the area imager

1 Press **I/o** to turn on the CK31.

2 Point the scanner window at the bar code label and hold the CK31 steady a few inches from the label.

3 Press the **Scan** button on the keypad or pull the trigger on a handle and center the red aiming beam over the bar code label, as shown in the illustration on the next page.

The aiming beam flashes repeatedly while the imager tries to read a bar code. Also, the aiming beam is smaller when the imager is closer to the bar code and larger when it is further away.

When the CK31 successfully reads a bar code label, you hear a high beep and the green Good Read light turns on briefly.

Aiming beam

Good Read light (green)
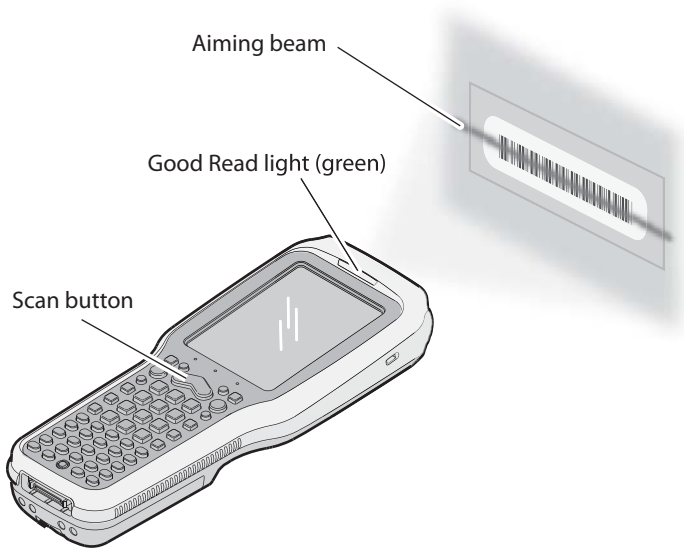
Scan button

4 Release the **Scan** button or the trigger.

Scanning with the Near-Far Range Area Imager

The near-far range area imager allows you to scan a bar code at both near and far distances. It is equipped with a laser pointer to help you aim at bar codes.

To scan a bar code using the near-far range area imager

1 Press **⅟₀** to turn on the CK31.

2 Point the scanner window at the bar code label.

3 Press the **Scan** button on the keypad or pull the trigger on the handle. The illumination beam and laser pointer appear.

- For near or close-in scanning distances of 30 cm (11.8 in.) or less, use the laser pointer and aim slightly to the right side of the center of the bar code and make sure that the illumination beam covers the bar code you are trying to decode.

- For standard and long range scanning distances of 30 cm (11.8 in.) or more, use the laser pointer and aim towards the middle of the bar code and make sure that the

illumination beam covers the bar code you are trying to decode.

Note: For near (close-in), standard, and long range scanning, the illumination beam must be completely over the bar code. The laser pointer acts as a guide and does not need to be on the bar code.

4 When the CK31 successfully reads a bar code label, you hear a high beep and the green Good Read light turns on briefly.

If there are multiple bar codes in one area, you should enable the center-decoding parameter to read your bar codes. Use Intermec Settings to enable and disable this parameter. For help, see "Configuring the CK31 With Intermec Settings" on page 40.

The center-decoding parameter only decodes a bar code if:

• the laser pointer is on the bar code

• the illumination beam covers the bar code

To scan a bar code using center-decoding

1 Press ⅟ₒ to turn on the CK31.

2 Point the scanner window at the bar code label.

3 Press the **Scan** button on the keypad or pull the trigger on the handle. The illumination beam and the laser pointer appear.

4 Aim both the illumination beam and the laser pointer at the bar code you want to scan.

Laser pointer

Good Read light (green)

Scan button
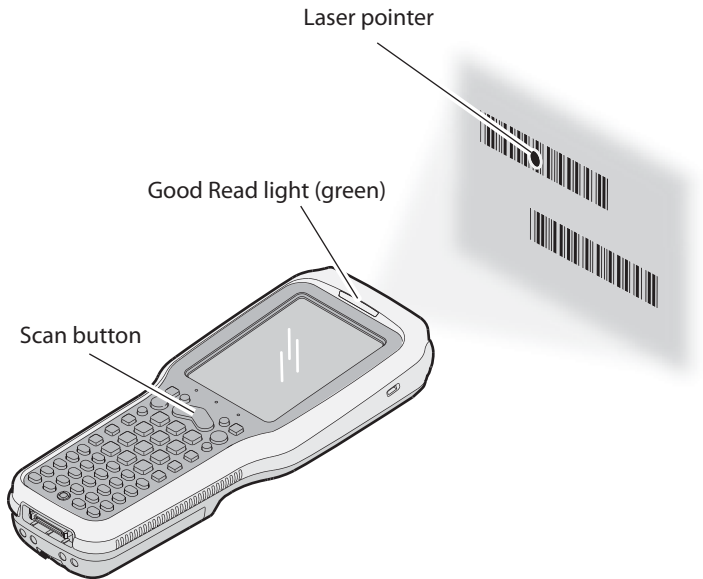
5 When the CK31 successfully reads a bar code label, you hear a high beep and the green Good Read light turns on briefly.

Troubleshooting the Area Imager

If you have problems scanning a bar code with the area imager, try following some of these tips to improve the performance of your imager:

- Position the imager as close to the bar code as possible while still being able to capture the entire bar code.

- Make sure that **Aimer LED Duration** is set to zero.

- Set **Lighting mode** to **Illum LED Priority**.

- Enable only the bar codes that you need to use every day.

Use Intermec Settings to configure these imager commands. For help, see "Configuring the CK31 With Intermec Settings" on page 40. For more information on the commands and their parameters, see the *Intermec Computer Command Reference Manual* (P/N 073529). The *Intermec Computer Command Reference Manual* is available on the CD attached to the inside front cover of this user's manual. You can check the Intermec web site for a more recent version of this online manual.

Attaching a Scanner to the Serial Port

You can attach a scanner to the serial port of the CK31 if you order a serial adapter and a required cable. There are two serial adapters available to support decoded and undecoded scanners.

Use the following two tables to locate the serial adapter and the required cable you need for your scanner.

Undecoded Serial Adapter and Required Cables

Supported Scanner	Undecoded Serial Adapter	Required Cable
128X wands*	225-714-001	069444-005*
1550C0500*, 1550C0502*, 1550C0504*	225-714-001	068424* or 068425*
155XE	225-714-001	3-606030-10
1400	225-714-001	3-606030-10

* These products are not RoHS compliant and are discontinued. This information is included here only for customers who have already purchased these products.

Decoded Serial Adapter or AA2 and Required Cables

Supported Scanner	Decoded Serial Adapter	Required Cable
1400	225-715-001 or AA2	3-604032-15, 3-604032-06*, or 3-606032-03*
1551E*	225-715-001 or AA2	3-604032-15, 3-604032-06*, or 3-606032-03*
1553E*	225-715-001 or AA2	3-604032-15, 3-604032-06*, or 3-606032-03*
1800	225-715-001 or AA2	3-366032-01*
SR60	225-715-001 or AA2	321-639-002

* These products are not RoHS compliant and are discontinued. This information is included here only for customers who have already purchased these products.

To attach a scanner to the serial port

1 Connect a scanner to the DB9 connector on the serial adapter or cable.

2 Hook the serial adapter onto the battery on the CK31 and then snap it into place, or connect the AA2 serial cable adapter to the serial adapter.

Serial adapter

DB9 connector

Battery
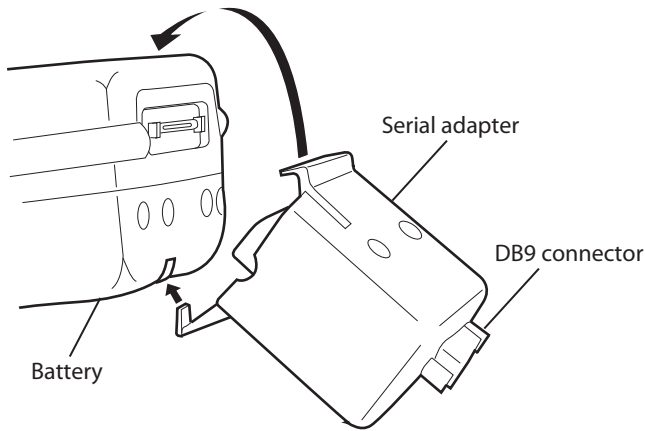
3 Refresh Intermec Settings. If you attach the undecoded serial adapter, the default scanner is the 1550C05XX. If you attach the decoded serial adapter, the default scanner is the 1551E.

4 Use Intermec Settings to select your scanner model and configure the serial port. For help using Intermec Settings, see "Configuring the CK31 With Intermec Settings" on page 40.

Note: When you attach an undecoded serial adapter to the CK31, the internal scanner does not work.

Using Energy Saver Mode With Your 1551E or 1553 Scanner

Note: The 1551E, 1553, and the energy saver cable (P/N 3-606032-03) are not RoHS compliant and are discontinued. This information is included here only for customers who have already purchased these products.

Use Energy Saver mode with your 1551E or 1553 scanner to save battery power on your CK31. When you use Energy Saver mode, the scanner is active while you are pressing the trigger and goes into Standby mode after a good read. With Energy Saver mode enabled, the current consumption drops to zero during standby. Full energy is restored when you scan the next label.

To use Energy Saver mode, you need:

• an energy saver cable P/N 3-606032-03 for the serial port.

• firmware version 2.13 or later on the scanner.

For help using Intermec Settings, see "Configuring the CK31 With Intermec Settings" on page 40.

To enable Energy Saver mode

1 From Intermec Settings, choose **Data Collection** > **Dock Tethered Scanner** > **Scanner Settings** > **Energy saver mode**.

2 Select **Enable**.

3 Exit Intermec Settings and save your changes.

Note: If the scanner stops working after you enable energy saver mode, you may not be using an energy saver cable. For

help, see "Problems While Scanning Bar Codes" on page 121.

Verifying That Your Scanner Is Working

Most of the default shortcuts on the desktop are standard Windows CE applications. However, Intermec provides a shortcut to an additional application called ScanDemo. ScanDemo is a simple application you can use to verify that your scanner is working correctly. ScanDemo enables the CK31 to read bar code labels and display the information encoded on the label along with the symbology used to encode it.

To open ScanDemo

1 Double-tap the **ScanDemo** shortcut on the desktop. The ScanDemo application opens.

2 Scan a bar code label. For information on how to scan a bar code label, see "Scanning Bar Codes" on page 22. The information you scanned along with the symbology used to encode it appears on the screen:
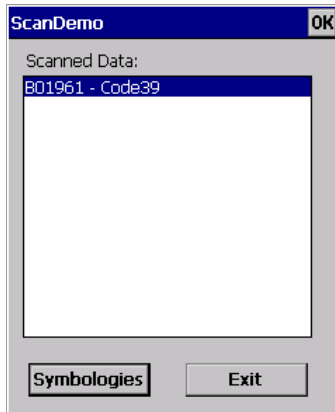
To enable or disable symbologies

1 From the ScanDemo window, tap the **Symbologies** button to see the symbologies that are enabled.

Scanner Symbologies

1D Symbologies:

☑ Code 39   ☑ UPC
☑ Code 128   ☐ Codabar
☑ Code I 2 of 5   ☑ EAN

2D Symbologies:

☐ UCC Composite   ☑ PDF417
☑ Data Matrix   ☐ MaxiCode

Intermec Settings
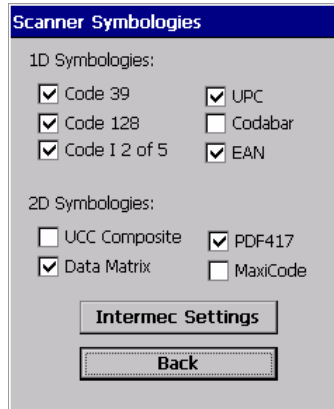
Back

2 Select or clear the symbologies you want to use and tap **Back**.

3 If you want to enable symbologies not shown on the Scanner Symbologies window, tap **Intermec Settings**. Intermec Settings appears on your screen.

4 From the Intermec Settings application, go to **Scanners, Symbologies** > **Internal Scanner** > **Symbologies**.

5 Enable or disable any of the symbologies you want to use.

6 Save your settings and close Intermec Settings. The Scanner Symbologies window reappears.

7 Tap **Back**.

8 Scan bar code labels.

Installing the SD Card

You can use a Secure Digital (SD) card to increase file storage and install software. The CK31 currently supports SD cards that hold up to 1 GB of information. The SD card slot is located on the top of the CK31 just above the laser scanner window.

To insert an SD card

1 Press ⅙ to turn off the CK31.

2 Unscrew the two captive screws on the SD card door and remove the door.

3 Gently insert the SD card into the CK31 with the printed side facing the keypad and screen side of the CK31.
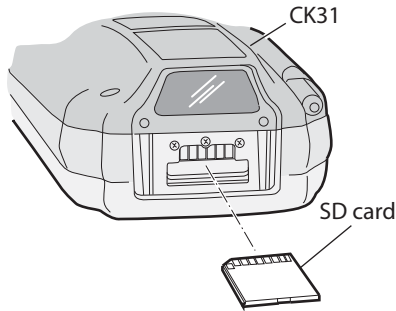
4 Push the card into the slot until it latches in place.

5 To verify that the SD card is seated correctly, press **I/o** to turn on the CK31.

- If the SD card is bootable, the CK31 should boot from the card. If not, see page 115 for troubleshooting help.

- You should be able to navigate to the SDMMC Disk folder to see the contents of the SD card. If not, see page 115 for troubleshooting help.

- If the SD card contains operating system upgrade files, the upgrade process begins automatically. For more information, see "Upgrading Your CK31" on page 92.

6 Replace the door and attach it with the two captive screws.
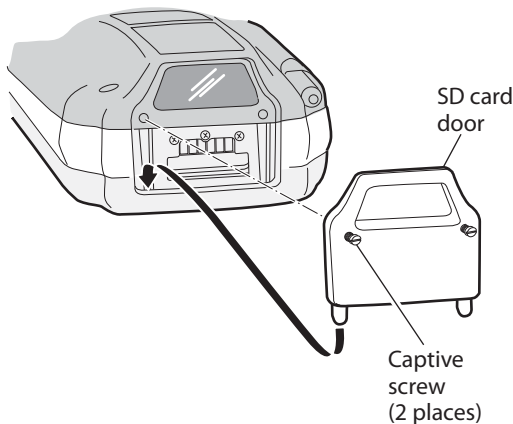
7 Press **I/o** to turn on the CK31.

8 (Optional) Navigate to the SDMMC Disk folder to see the contents of the SD card.

To remove the SD card

1 Press **⅟o** to turn off the CK31.

2 Remove the two screws on the SD card slot door and remove the door.

3 Push in on the SD card until you hear it unlatch. The card should eject far enough to easily remove it from the CK31.

4 Remove the SD card from the CK31.

5 Replace the door and attach it with the two captive screws.

2 Configuring the CK31

Use this chapter to understand how to configure the CK31 to communicate in your network. In this chapter, you will find these sections:

- How to Configure the CK31 Parameters

- Configuring the CK31 for Your Network

- Configuring Security

How to Configure the CK31 Parameters

You can configure many parameters on the CK31, such as the bar code symbologies it decodes or the network settings. These characteristics are controlled by configuration parameters. The values you set for these configuration parameters determine how the computer operates.

Use Setup Assistant
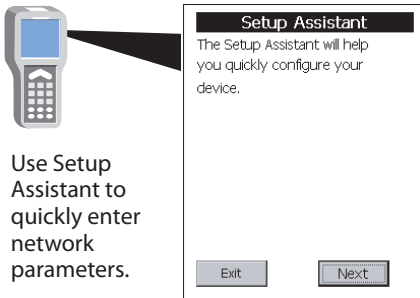
Use Setup Assistant to quickly enter network parameters.

Use the SmartSystems Console
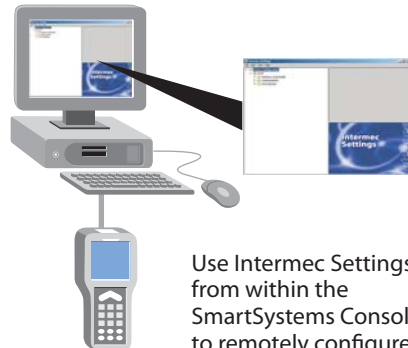
Use Intermec Settings from within the SmartSystems Console to remotely configure network parameters.

Use Intermec Settings

Use Intermec Settings on the CK31 to set most parameters.

Configuring the CK31: *The CK31 provides several ways for you to configure the communications, device, and imaging parameters.*

Configuring the CK31 With Setup Assistant

When first setting up the CK31, use Setup Assistant to set or enable basic network parameters and connect your CK31 to the network. Setup Assistant guides you through setting the following basic network parameters:

- Date and time (including time zone)

- 802.11 radio

- WEP security

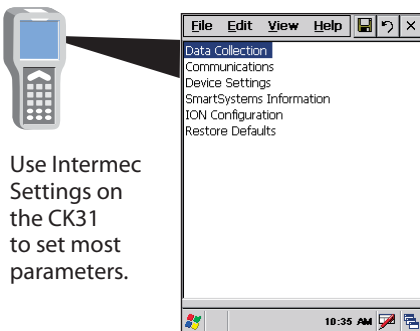- DHCP server or IP address, subnet mask, and default router

- Device name

To set other parameters, use the Intermec Settings or another configuration method. The Setup Assistant runs on the CK31 the first time you turn on the computer.
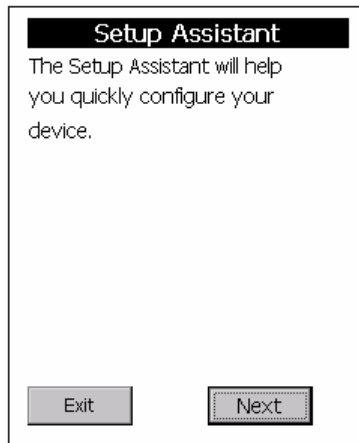
The Setup Assistant Start Screen

After you complete the Setup Assistant, the CK31 should be communicating with your network. A network connection icon appears in your taskbar. For more information on the network icons, see "Understanding the Screen Icons" on page 17. For detailed information on most of the commands available in Intermec Settings, see the *Intermec Computer Command Reference Manual* (P/N 073529).

Configuring the CK31 With Intermec Settings

Use Intermec Settings to configure the CK31 and view system information.

Opening Intermec Settings

You can open Intermec Settings while running any application.

To open Intermec Settings

1 Tap the **Start** icon or press ⌐▪ and then ▪⌐. The Start menu appears.
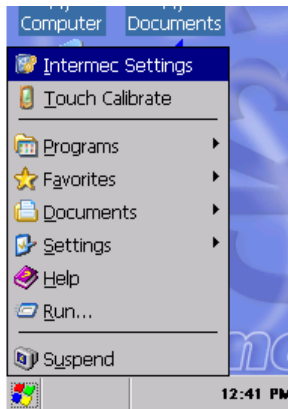
2 Select **Intermec Settings**. The Intermec Settings application appears.
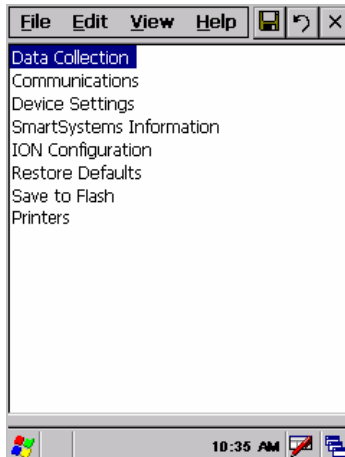
Understanding the Commands in Intermec Settings

Use the following diagram to help find the commands you need to use to configure your CK31. These screens do not represent the exact information you will see on your CK31. They have been modified to show you how the information is structured.

For detailed information on most of the commands available in Intermec Settings, see the *Intermec Computer Command Reference Manual* (P/N 073529). The *Intermec Computer Command Reference Manual* is available on the CD attached to the inside front cover of this user's manual. You can check the Intermec web site for a more recent version of this online manual.
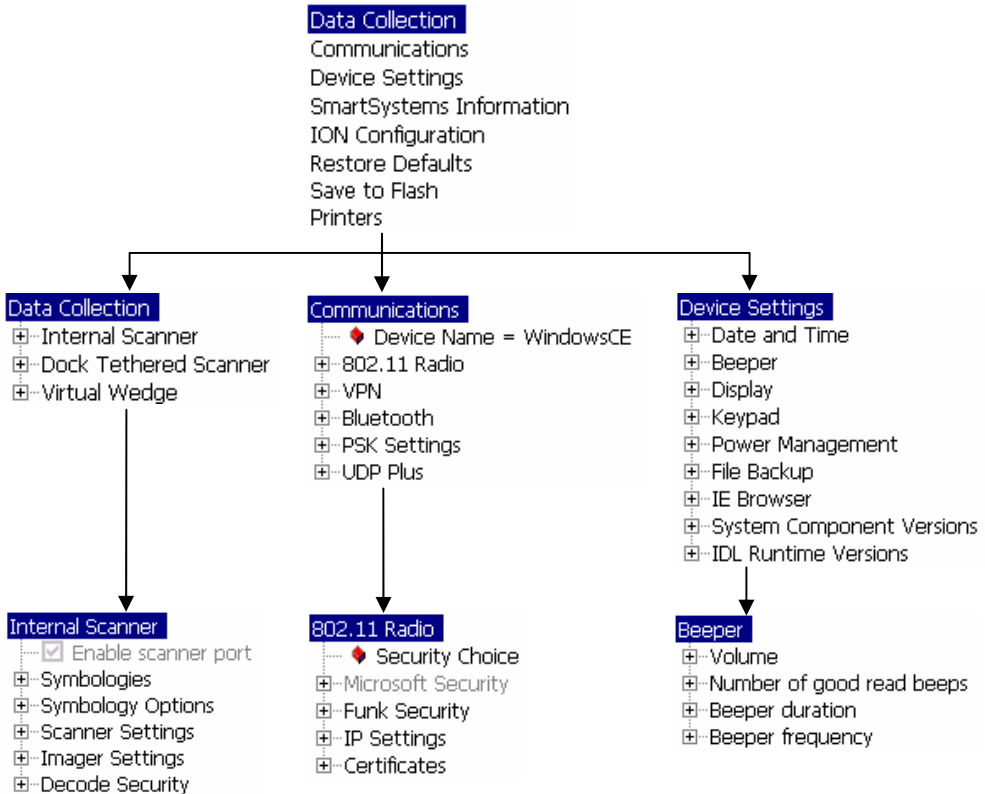
Intermec Settings Menus: *Use this diagram to help navigate through the Intermec Settings application. This diagram should only be used as a guide; it does not accurately represent all of the information you will see on your screen.*

Navigating in Intermec Settings

Use this table to understand how to navigate and enter information in Intermec Settings.

Performing Tasks in Intermec Settings

To Perform This Task	Do This
Select or expand an option	• Tap the option • ▲ or ▼ to select an option
Select text in a text box	• From the highlighted option, press **Tab** • Tap in the text box and drag the stylus over the text
Expand an option	• Tap the option • Press ▲ or ▼ to select an option and then press ◼▢ ▼
Save settings	• Tap **File** > **Save Settings** • Press **Alt F** and then press **Enter**

Restoring Default Settings

You can restore the CK31 to factory default settings from Intermec Settings. For a complete list of the default settings, see "Default Configuration" on page 148.

Note: The Restore Defaults command, restores all parameters, including network settings, and erases the registry. As a result, you may lose network communications. This option should only be used by network administrators or by Intermec support personnel.

To restore factory default settings

1 From Intermec Settings, select **Restore Defaults**.

2 Select **Restore Defaults**. The **Run Apps** button appears.

3 Tap the **Run App** button. The Restore Defaults dialog box appears.

4 Tap **OK**. The CK31 erases the registry and then performs a cold boot. When the CK31 is done booting, the calibration screen appears.

5 Follow the instructions on the screen to calibrate your stylus. When you are done calibrating your stylus, the Setup Assistant appears.

Note: You may need to reinstall some applications after restoring the default settings because any settings that were modified for your application will be reset.

Exiting Intermec Settings

When you are done modifying your device configuration and saving your settings, exit Intermec Settings.

To exit Intermec Settings

• From the Main Menu choose **File** > **Exit**.

  or

• Tap the **X** in the upper right corner of the window.

If you try to exit Intermec Settings without saving your changes, a message box appears asking if you want to save your configuration changes. Tap **Yes**.

Configuring the CK31 With SmartSystems Console

The SmartSystems™ Console lets you manage all of your SmartSystems-enabled devices at the same time from a centralized host PC. The CK31 ships with a SmartSystems client, which means it is SmartSystems-enabled. The console displays all of the CK3 s in your network. In the console, you can right-click a CK31 and a menu appears. To configure the CK31, choose **Intermec Settings** from the menu.

The console is part of SmartSystems Foundation, which is available for free from the Intermec web site. Go to www.intermec.com/SmartSystems to download SmartSystems Foundation. For help using the console, see the online manual available from the Help menu in the console.

Synchronizing the CK31 System Time With a Time Server

To ensure real-time communications and updates, the time on all of your CK31s needs to be synchronized with a network time server. Network time servers acquire Coordinated Universal Time (UTC) from an outside source such as the U.S. Naval Observatory (USNO). The CK31 uses Simple Network Time Protocol (SNTP) to synchronize with a network time server.

The default reference time server is the USNO (tock.usno.navy.mil). To synchronize the time on your CK31 with this time server, you must have a valid connection to the Internet.

You can also synchronize the CK31 system time with a corporate network server within your firewall that is SNTP capable. To use an internal corporate network server, you need to set the domain name in the registry.

Configuring the CK31 for Your Network

The CK31 is a versatile handheld computer that you can easily add to your wired or wireless data collection network. You can connect your CK31 to your network using:

- 802.11b/g radio communications.

- Bluetooth communications

- Serial communications.

Configuring 802.11b/g Radio Communications

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

The wireless CK31 has an internal 802.11b/g radio to transfer data using wireless communications. This section of the manual assumes that you have already set up your wireless communications network including your access points. If you are using a UDP Plus network, you also need to have your Intermec Application Server communicating with a host computer.

Your CK31 supports these network protocols:

- TCP/IP

- UDP Plus

The next sections explain the parameters you need to configure for the CK31 to work in your wireless network.

Configuring the Network Parameters for a TCP/IP Network

In a TCP/IP network, the CK31 communicates directly with a host computer using TCP/IP. The access point acts as a bridge to allow communications between the wired network and the wireless network.
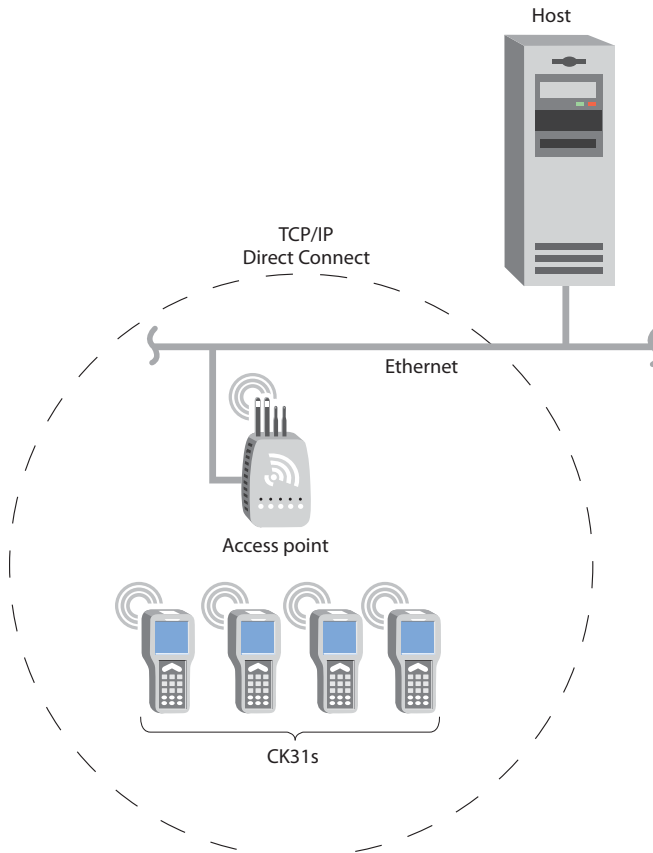
CK31 in a TCP/IP Direct Connect Network

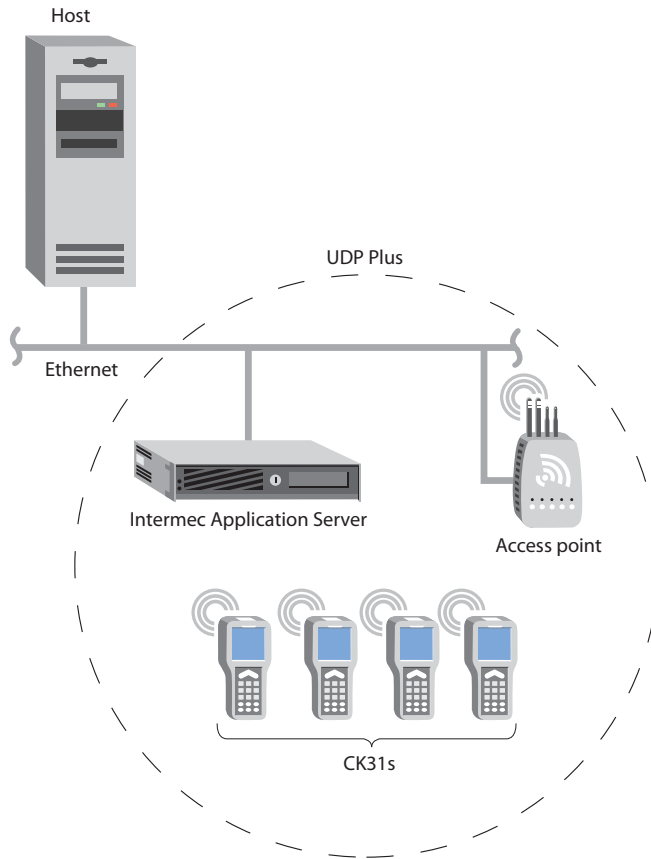### To use wireless communications in a TCP/IP network

1 Configure these network parameters on each CK31 in the network:

- Network name (SSID)

- IP settings (if not using DHCP)

2 Make sure that your CK31 is communicating with the network and that the network can see your CK31.

3 Configure security. For help, see "Configuring Security" on page 59.

The easiest way to configure the network parameters on the CK31 is to use Intermec Settings. For help, see "Configuring the CK31 With Intermec Settings" on page 40.

Configuring the Network Parameters for a UDP Plus Network

In a UDP Plus network, the CK31 communicates with a host computer through the Intermec Application Server.

CK31 in a UDP Plus Network

The Intermec Application Server translates UDP Plus packets on the wireless network into TCP/IP packets on the wired network and vice versa. The access point acts as a bridge to allow communications between the wired network and the wireless network.

To use wireless communications in a UDP Plus network

1 Configure these network parameters on each CK31 in the network:

- Network name (SSID)

- Controller IP address

- IP settings (if not using DHCP)

- Network port

2 Make sure that your CK31 is communicating with the network and that the network can see your CK31.

3 Configure the security. For help, see "Configuring Security" on page 59.

The easiest way to configure the network parameters on the CK31 is to use Intermec Settings. For help, see "Configuring the CK31 With Intermec Settings" on page 40.

Configuring Bluetooth Communications for Wireless Scanners

You can send and receive information to devices wirelessly using the Bluetooth radio. The Bluetooth technology uses short-range radio links and allows for communications over a 10-meter (32.8 foot) range. The nominal Bluetooth range for the CK31 is typically less than 3 meters (9.8 feet).

This section explains how to configure the CK31 to communicate with Bluetooth wireless scanners.

To configure Bluetooth communications for wireless scanners

1 From Intermec Settings, select **Communications** > **Bluetooth**.

```
 File   Edit   View   Help    🖫 🄌 🗙
Data Collection                          ▲
Communications
 ┊┈┈ ◆ Device Name = CK31
⊞┈802.11 Radio
⊟┈Bluetooth
 ┊  ⊞┈Power
 ┊  ⊞┈Discoverable
 ┊  ⊞┈Connectable
 ┊  ┊┈┈ ◆ Class of Device = 0x920100
 ┊  ┊┈┈ ◈ IBT = 0.1.6
 ┊  ┊┈┈ ◈ Radio = 525
 ┊  ┊┈┈ ◈ Device Address = 0013e025:
⊞┈PSK Settings
⊞┈UDP Plus                               ▼
Device Settings
◄ ┊                                    ► ┊
 🏃    ⊕⊕ ◇ ⊕🗙 10:24 AM 📝 🔁
```

2 Tap the **Power** parameter and select **On**.

3 If you want to allow incoming connections from wireless scanners, you must enable two parameters:

- Tap the **Discoverable** parameter and select **Enable**.

- Tap the **Connectable** parameter and select **Enable**.

If you do not want to allow incoming connections, make sure **Discoverable** and **Connectable** are both disabled.

4 Save your changes and exit Intermec Settings.

5 From the **Start** menu, tap **Programs** > **Windows Explorer** > **Program Files** > **Intermec** > **Network** > **Bluetooth**.

6 Double-tap the **BluetoothScannerWizard** icon. The Connection Wizard appears.

Bluetooth...

7 Tap **Add Device**. The wizard advances to the next screen.

8 Make sure **Device Discovery** is selected and tap **Next**. The wizard starts discovering devices.

9 Select the device you want to connect to from the Devices list and then tap **Next**.

10 In the Authen. Request dialog box, type 0000 for the PIN and tap **OK**.

11 Tap **Finish**.

Use this table to understand the settings you see in the Bluetooth menu.

Bluetooth Settings

Setting	Description
Power	Set and view whether the Bluetooth radio is on or off.
Discoverable	Allows other Bluetooth devices to be able to discover your CK31 during a device discovery.
Connectable	Allows other Bluetooth devices to connect to your CK31.
Class of Device	Determines how the device appears to other devices during discovery.
IBT	Displays the version of the Intermec Bluetooth Library.
Radio	Displays the version of the Bluetooth Radio Hardware.
Device Address	Displays the Bluetooth address of your CK31.

Configuring Bluetooth Communications for Wireless Printing

You can send and receive information to Bluetooth printers wirelessly using the Bluetooth radio. The Bluetooth technology uses short-range radio links and allows for communications over a 10-meter (32.8-foot) range.

This section explains how to configure the CK31 for Bluetooth wireless printing. You need to:

- make sure that Bluetooth power is on. For help, see the next section, "Turning on Bluetooth Power."

- create an application that lets you print. For help, see "Creating an Application That Lets You Print Wirelessly" on page 51.

- select the current wireless printer on the CK31. For help, see "Selecting the Current Wireless Printer on the CK31" on page 52.

Turning On Bluetooth Power

By default, Bluetooth power is off, so you need to make sure that Bluetooth power is on.

Note: If you already configured the CK31 for Bluetooth wireless scanners (as described in the previous section, "Configuring Bluetooth Communications for Wireless Scanners") this task is already complete.

To turn on Bluetooth power

1 From Intermec Settings, select **Communications** > **Bluetooth**.

2 Tap the **Power** parameter and select **On**.

3 Save your changes and exit Intermec Settings.

Creating an Application That Lets You Print Wirelessly

The CK31 does not ship with an application that lets you print wirelessly. You must create an application that opens the wireless printing COM port on the CK31. For help, see the Bluetooth Resource Kit. The resource kit is part of the Intermec Developer Library (IDL), which is available as a download from the Intermec web site at www.intermec.com/idl.

The Wireless Printing applet is available in the Control Panel and separates the task of wireless printing setup from other Bluetooth management tasks.

The Wireless Printing applet uses the concept of a "current wireless printer." The CK31 connects to the current wireless printer when your application opens the wireless printing COM port on the CK31. If there is no current wireless printer selected on your CK31, there is no wireless printing COM port registered on your CK31. You must select a current wireless printer on your CK31, as described in the next section, "Selecting the Current Wireless Printer on the CK31."

The Wireless Printing applet performs these tasks on the CK31:

- Helping you select the current wireless printer

- Storing the current wireless printer in the registry

- Registering/deregistering the wireless printing COM port

- Storing the wireless printing COM port in the registry as the WPort

Specifically, the current wireless printer is registered and deregistered on Bluetooth stack load/unload. If you select a different current wireless printer, the existing wireless printing COM port is deregistered and the new one is registered instead. The Wireless Printing applet uses the Bluetooth COM Port Control to handle COM port registration/deregistration.

Selecting the Current Wireless Printer on the CK31
By default, there is no current wireless printer selected on the CK31.

There are three ways to select the current wireless printer:

- Discovering the printer using Bluetooth device discovery

- Manually entering the printer's Bluetooth device address

- Choosing the printer from a list of previously discovered printers

To discover the printer with Bluetooth device discovery

1 Select **Start** > **Settings** > **Control Panel** and double-tap the **Wireless Printing** icon. The Wireless Printing dialog box appears.

Wireless Printing

2 Select **Device Discovery** and tap **Acquire Printer** to initiate device discovery. All Bluetooth devices discovered within range appear in the **Devices** box.

3 When your preferred printer appears in the **Devices** box, select the printer name and tap **OK**.

If your preferred printer does not appear, make sure the printer is powered on and discovery is enabled, and then repeat Steps 1 through 3.

Note: Bluetooth devices that are not printers may be displayed on this screen even though the **Show Printers Only** check box is checked.

4 Tap **Test Print**. The printer prints a short message, verifying that the printer has been selected as the current wireless printer.

To manually enter the device address of the printer

1 Select **Start** > **Settings** > **Control Panel** and double-tap the **Wireless Printing** icon. The Wireless Printing dialog box appears.

2 Select **Manual** and tap **Acquire Printer**. The Manual Set dialog box appears.
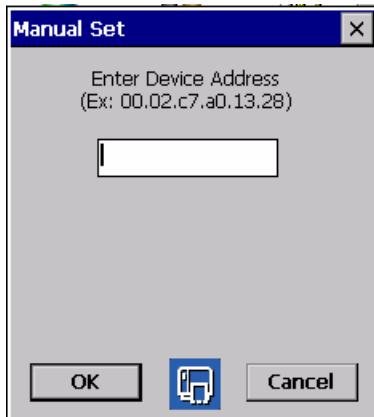
3 Type the address of the printer in the field and tap **OK**. The Wireless Printing dialog box appears.

The keyword -unknown- appears in the **Device Name** field, because the printer's name is not sent to the CK31 when you manually enter the printer address.

4 Tap **Test Print**. The printer prints a short message, verifying that the printer has been selected as the current wireless printer.

To choose the printer from a list of previously discovered devices

1 Make sure you have already performed a Bluetooth device discovery.

2 Select **Start** > **Settings** > **Control Panel** and double-tap the **Wireless Printing** icon. The Wireless Printing dialog appears.

Wireless Printing

3 Select **Device Manager** and tap **Acquire Printer**. The Device Manager dialog appears with the list of previously discovered devices.
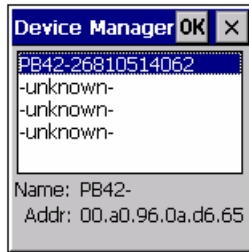
4 Select the printer and tap **OK**. The Wireless Printing dialog box appears.

5 Tap **Test Print**. The printer prints a short message, verifying that the printer has been selected as the current wireless printer.

Configuring Ethernet Communications on Older CK31s

Note: The Ethernet option is no longer available on the CK31. The information in this section is useful only if you already have an installed base of older CK31s with the Ethernet option.

You can use an older CK31 directly in an Ethernet network if you have ordered the Ethernet option on your CK31. Insert the CK31 into an AD1 or AD2 Communications Dock. The communications dock has an Ethernet connector that allows the CK31 to communicate with your Ethernet network.

The CK31CN does not support Ethernet communications.

To use an older CK31 in an Ethernet network

1 Configure these network parameters on each CK31:

 • If you have a DHCP server, enable DHCP.

 • If you do not have a DHCP server, set these parameters:

   a IP address

   b Subnet mask

   c Default router

2 If required for your network, you may also need to set these parameters on each CK31:

 • Primary and secondary DNS Servers

 • Primary and secondary WINS Servers

3 Make sure that your CK31 is communicating with the network and that the network can see your CK31.
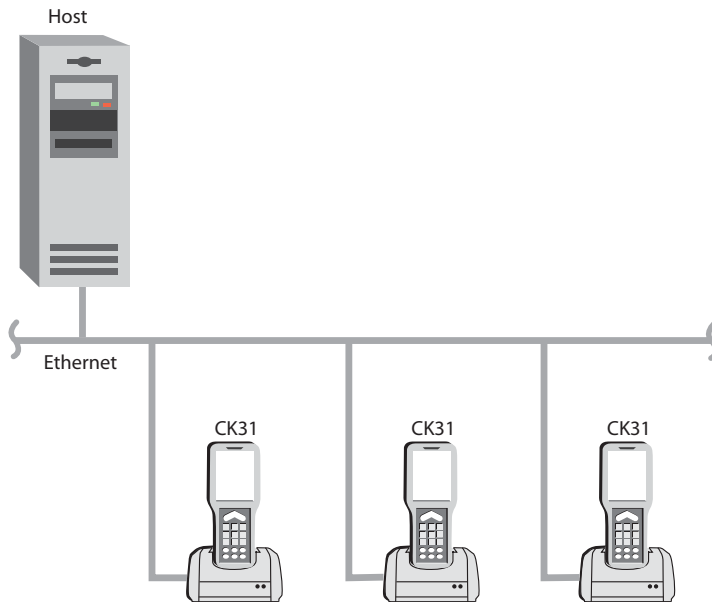
Older CK31s in an Ethernet Network

Configuring Serial Communications

The CK31 has a serial port to transfer data to and receive data from another device via RS-232 communications. For a technical description of the serial port, see "Pin Assignments for the Serial Port" on page 145.

You can also insert the CK31 into a communications dock to transmit data to and receive data from a host computer or PC using RS-232 communications.

The serial adapter and the communications dock are sold separately. For more information on accessories and how to order them, see page 139.
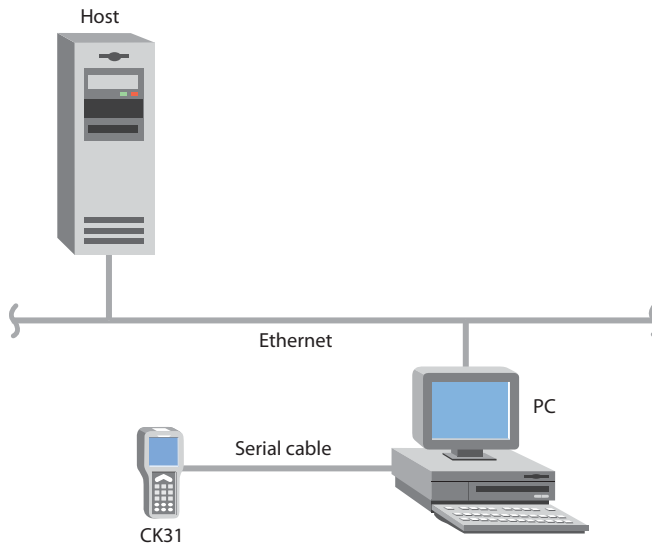
CK31 in a Serial Network

To use serial communications with your CK31

1 Turn off the CK31.

2 Connect the CK31 to the serial port of another device. You can do this in one of the following ways:

- Connect the CK31 serial port to a button link or serial printer using the 26-pin to DB9 (9-pin) serial adapter and a male-to-female null modem RS-232 cable.

- Connect the AD1 communications dock to the serial port of the other device using a DB9 to DB9 serial adapter cable. Insert the CK31 into the dock.

3 Turn on the CK31.

4 Make sure that your CK31 is communicating with the network and that the network can see your CK31.

Configuring Security

The CK31 provides four types of security for your wireless network:

- Wi-Fi Protected Access (WPA)

- Wi-Fi Protected Access 2 (WPA2™)

- 802.1x

- WEP

This section explains how to configure security on your wireless CK31. If you choose not to use security, see "Disabling Security" on page 77. Intermec always recommends that you implement security.

You must use either Funk or Microsoft security to implement your security solution. For details, see the next section, "Choosing Between Funk and Microsoft Security."

If you are using WPA-802.1x, WPA2-802.1x, or 802.1x security, this section also assumes that your authentication server and authenticators are properly configured. For more information on 802.1x security, see the *MobileLAN™ secure 802.1x Security Solution Installation Guide* (P/N 073134) available at www.intermec.com.

Note: Your security choice does not depend on your authentication server. For example, you can choose Funk security if you use Microsoft Active Directory® to issue certificates.

Choosing Between Funk and Microsoft Security

The CK31 provides both Funk and Microsoft security choices. Funk security is the default setting. Use the following sections to set security using either Funk or Microsoft as your security choice.

Both Funk and Microsoft offer similar features, but Funk security also offers these features:

- CCX v2.0 compliance

- Support for LEAP and TTLS

- Configuration of up to four profiles

If you want to use the default Funk security, you need to select a profile. For help, see the next section, "Selecting a Profile for Funk Security."

If you want to use Microsoft security, you need to select it as your security choice. For help, see "Selecting Microsoft as Your Security Choice" on page 61.

Selecting a Profile for Funk Security

You can define up to four profiles for Funk security. Different profiles let your CK31 communicate in different networks without having to change all of your security settings. For example, you may want to set up one profile for the manufacturing floor and one for the warehouse.

By default, the active profile is Profile 1.

To select a profile for Funk security

1 Tap the **Start** icon or press ▢◼ and then ◼▢. The Start menu appears.

2 Select **Intermec Settings**. The **Intermec Settings** application appears.

3 Select **Communications** > **802.11 Radio** > **Funk Security**.

4 Select **Active Profile,** choose a profile from the list, and press **Enter**.

5 Select the active profile to expand it.

6 (Optional) Give your profile a meaningful name:

   a Select **Profile Label** and a text box appears.

   b Select the text in the box, type a meaningful name, and press **Enter**.

7 Configure your security settings.

8 (Optional) Repeat this process for each profile you want to define.

9 Select one profile as the active profile by tapping Active Profile and choosing a profile from the drop-down list.

10 Save your settings.

Selecting Microsoft as Your Security Choice

The default security setting is Funk. If you want to use Microsoft security, you need to select it as your security choice.

To select Microsoft security as your security choice

1 Tap the **Start** icon or press ▢◼ and then ◼▢. The Start menu appears.

2 Select **Intermec Settings**. The Intermec Settings application appears.

3 Select **Communications** > **802.11 Radio** > **Security Choice**.

4 From the **Security Choice** list, select **Microsoft Security**.

5 Press **Enter**. An alert box appears telling you that you must save your settings and warm boot the CK31 for your new security choice to take effect.

6 Tap **Yes**.

7 Save your settings.

8 Warm boot your CK31 by pressing and holding the **I/O** key for five seconds.

Using WPA Security

Wi-Fi Protected Access (WPA) is a strongly enhanced, interoperable Wi-Fi security that addresses many of the vulnerabilities of Wired Equivalent Privacy (WEP). Instead of WEP, WPA uses Temporal Key Integrity Protocol (TKIP) for its data encryption method.

Currently, WPA satisfies some of the requirements in the IEEE 802.11i draft standard. When the standard is finalized, WPA will maintain forward compatibility.

WPA runs in 802.1x (Enterprise) mode or PSK (Pre-Shared Key) mode:

• In Enterprise mode, WPA provides user authentication using 802.1x and the Extensible Authentication Protocol (EAP). That is, an authentication server (such as a RADIUS server) must authenticate each device before the device can communicate with the wireless network.

• In PSK mode, WPA provides user authentication using a shared key between the authenticator and the CK31. WPA-PSK is a good solution for small offices or home offices that do not want to use an authentication server.

To use WPA security, you need:

• an authentication server (Enterprise mode only).

Note: You can also use a MobileLAN access point with software release 1.80 or later as an authentication server. For help, see the system manual for your access point.

• an access point with an 802.11b/g radio that supports WPA.

• a CK31 with the 802.11b/g radio and the 802.1x/WPA security option.

The CK31 also supports Wi-Fi Protected Access 2 (WPA2) if you are using Funk security. WPA2 is a product certification available through the Wi-Fi Alliance that certifies wireless equipment is compatible with the 802.11i standard. WPA2 uses the Advanced Encryption Standard (AES) for data encryption.

WPA2 runs in 802.1x (Enterprise) mode or PSK (Pre-Shared Key) mode:

• For WPA2-802.1x mode, WPA2 requires authentication in two phases; the first is an open system authentication and the second uses 802.1x and an Extensible Authentication Protocol (EAP) authentication method.

• In PSK mode, WPA2 provides user authentication using a shared key between the authenticator and the CK31. WPA2-PSK is a good solution for small offices or home offices that do not want to use an authentication server.

Configuring WPA Security With Funk Security
Use these procedures to set WPA-802.1x, WPA2-802.1x, WPA-PSK, or WPA2-PSK security on your CK31 with Funk security.

To configure WPA-802.1x or WPA2-802.1x with Funk security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Make sure you have selected Funk as your security choice.

3 Open Intermec Settings.

4 Choose **Communications** > **802.11 Radio** > **Funk Security** > **Profile**.

5 For **Association**, choose **WPA** or **WPA2** and press **Enter**. Encryption automatically defaults to TKIP if you are using WPA. Encryption automatically defaults to AES if you are using WPA2.

6 For **8021x**, choose **TTLS**, **PEAP**, or **TLS** and press **Enter**.

If you choose TTLS or PEAP:

a For **Prompt for Credentials**, choose **Enter credentials now**.

Note: You can use **Prompt for credentials** to troubleshoot your connection to the network if you have problems.

b Select **User name**, type your user name, and then press **Enter**.

c Select **User Password**, type a user password, and then press **Enter**.

d For **Validate Server Certificate**, choose **Yes** and press **Enter**.

Note: You must have the date on the CK31 set correctly when you enable Validate Server Certificate.

If you choose TLS:

a Load a user and root certificate on your CK31. For help, see "Loading a Certificate" on page 73.

b For **Validate Server Certificate,** choose **Yes** and press **Enter**.

c You must enter a **User Name** and **Subject Name**. You can also enter a **Server Common Name** if you want to increase your level of security.

7 Exit Intermec Settings.

To enable WPA-PSK or WPA2-PSK with Funk security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Make sure you have selected Funk as your security choice.

3 Open Intermec Settings.

4 Choose **Communications** > **802.11 Radio** > **Funk Security** > **Profile**.

5 For **Association**, choose **WPA** or **WPA2** and press **Enter**.

6 For **8021x**, choose **None** and press **Enter**.

7 For **Pre-Shared Key**, enter the pre-shared key or the passphrase.

The pre-shared key must be a value of 32 hex pairs preceded by 0x for a total of 66 characters. The value must match the key value on the access point. The passphrase must be from 8 to 63 characters. After you enter a passphrase, the CK31 internally converts it to a pre-shared key.

This value must match the passphrase on the authenticator.

8 Exit Intermec Settings.

Configuring WPA Security With Microsoft Security

Use these procedures to set WPA-802.1x and WPA-PSK security on your CK31 with Microsoft security.

To enable WPA-802.1x with Microsoft security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Open Intermec Settings.

3 Choose **Communications** > **802.11 Radio** > **Microsoft Security**.

4 For **Infrastructure Mode**, choose **Infrastructure**.

5 For **Network Authentication**, choose **WPA**. Data Encryption automatically defaults to TKIP.

6 For **802.1x Authentication**, choose either **TLS** or **PEAP**.

If you choose TLS:

a Select **Properties** and tap the **Run App** button. The Auth. Settings dialog box appears.

Auth. Settings ⬛OK⬛
┌─ **User Certificate** ─┐
Issued to :
Issued by :
│   **Select..**   │
└────────────────────────┘
☑ Validate Server
Cancel [Esc] Save [Enter]

b From the Auth. Settings box, tap the **Select** button.

c Select your certificate from the list and press **Enter**. The User Logon dialog box appears.

User Logon ⬛OK⬛

Enter user name to logon

User Name: ▯

Domain:

Exit [Esc]   OK [Enter]
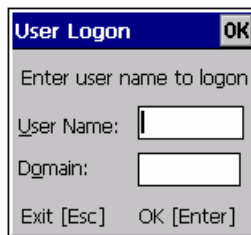
d Enter a **User Name** and a **Domain**.

e Press **Enter**.

If you choose PEAP:

a Select **Properties** and tap the **Run App** button. The Auth. Settings box appears.

b Enable the **Validate Server** check box.

c Press **Enter**. Once the radio starts to authenticate, the Network Password dialog box appears.

Network Password ⬛OK⬛

User Name
Password
Domain
☐ Save password
          Exit [Esc]
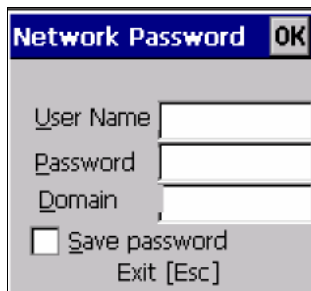
d Enter a **User Name** and **Password** and enable the **Save Password** check box.

e (Optional) In the **Domain** field, enter the Active Directory domain associated with the user account.

f Press **Enter**.

7 Exit Intermec Settings.

To enable WPA-PSK With Microsoft Security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Open Intermec Settings.

3 Choose **Communications** > **802.11 Radio** > **Microsoft Security**.

4 For **Infrastructure Mode**, choose **Infrastructure**.

5 For **Network Authentication**, choose **WPA-PSK**. Data Encryption automatically defaults to TKIP.

6 For **Pre-Shared Key**, enter the pre-shared key or the passphrase.

The pre-shared key must be a value of 32 hex pairs preceded by 0x for a total of 66 characters. The value must match the key value on the authenticator. The passphrase must be from 8 to 63 characters. After you enter a passphrase, the CK31 internally converts it to a pre-shared key.

This value must match the passphrase on the authenticator.

7 Exit Intermec Settings.

Using 802.1x Security

802.1x security provides centralized user authentication using an authentication server, authenticators (access points), and supplicants. These components communicate using an EAP authentication type, such as TLS (Transport Layer Security) or PEAP (Protected Extensible Authentication Protocol). 802.1x security provides data encryption using dynamic WEP key management.

To use 802.1x security, you need:

- an authentication server.

Note: You can also use a MobileLAN access point with software release 1.80 or later as an authentication server. For help, see the system manual for your access point.

- an access point with an 802.11b/g radio.
- a CK31 with an 802.11b/g radio and the 802.1x/WPA security option.

Configuring 802.1x Security With Funk Security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Make sure you have selected Funk as your security choice.

3 Open Intermec Settings.

4 Choose **Communications** > **802.11 Radio** > **Funk Security** > **Profile**.

5 For **Association**, choose **Open** and then press **Enter**.

6 For **Encryption**, choose **WEP** and then press **Enter**.

7 For **Authentication**, choose **TTLS**, **PEAP**, or **TLS** and then press **Enter**.

If you choose TTLS or PEAP:

a Select **User name**, type your user name, and then press **Enter**.

b Select **Password prompt**, choose **Enter password now**, and then press **Enter**.

Note: You can use **Prompt for password** to troubleshoot your connection to the network if you have problems.

c Select **User Password**, type a user password, and then press **Enter**.

d For **Validate Server Certificate**, choose **Enabled** and press **Enter**.

If you choose TLS:

   a Load a user and root certificate on your CK31. For help, see "Loading a Certificate" on page 73.

   b For **Validate Server Certificate,** choose **Yes** and press **Enter**.

   c You must enter a **User Name** and **Subject Name**. You can also enter a **Server Common Name** if you want to increase your level of security.

8 Exit Intermec Settings.

Configuring 802.1x Security With Microsoft Security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Open Intermec Settings.

3 Choose **Communications** > **802.11 Radio** > **Microsoft Security**.

4 For **Infrastructure Mode**, choose **Infrastructure**.

5 For **Network Authentication**, choose **Open**.

6 For **Data Encryption**, choose **WEP**.

7 For **802.1X Authentication**, choose **TLS** or **PEAP**.

If you choose TLS:

   a Select **Properties** and tap the **Run App** button. The Auth. Settings box appears.

```
┌─────────────────────────┐
│ Auth. Settings      OK  │
│ ┌─User Certificate──────┐│
│ │ Issued to :           ││
│ │ Issued by :           ││
│ │     Select..          ││
│ └───────────────────────┘│
│ ☑ Validate Server        │
│ Cancel [Esc]  Save [Enter]│
└─────────────────────────┘
```

   b From the Auth. Settings box, choose the **Select** button.

   c Select your certificate from the list and press **Enter**. The User Logon dialog box appears.

User Logon   **OK**

Enter user name to logon

User Name: [   ]

Domain: [   ]

Exit [Esc]   OK [Enter]
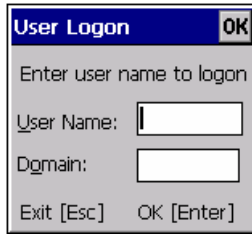
d Enter a **User Name** and a **Domain**.

e Press **Enter**.

If you choose PEAP:

a Select **Properties** and choose the **Run App** button. The Auth. Settings box appears.

b Select the **Validate Server** check box.

c Press **Enter**. Once the radio starts to authenticate, the Network Password dialog box appears.

Network Password   **OK**

User Name [   ]

Password [   ]

Domain [   ]

☐ Save password

Exit [Esc]
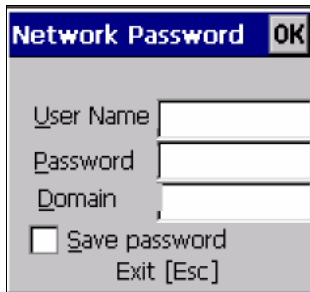
d Enter a **User Name** and **Password** and enable the **Save Password** check box.

e (Optional) In the **Domain** field, enter the domain.

f Press **Enter**.

8 For **Network Key Setting**, choose **Automatic**.

9 Exit Intermec Settings.

Using LEAP Security

Lightweight Extensible Authentication Protocol (LEAP), also known as Cisco-Wireless EAP, provides username/password-based authentication between a wireless client and a RADIUS

server. In the 802.1x framework, traffic cannot pass through an Ethernet hub or wireless network access point until it successfully authenticates itself.

The station must identify itself and prove that it is an authorized user before it is actually allowed to use the LAN. LEAP also delivers a session key to the authenticated station, so that future frames can be encrypted with a key that is different than keys used by other sessions.

To use LEAP security, you need:

- a RADIUS server.

- Cisco access points.

LEAP security is not supported with Microsoft security.

To enable LEAP security on your CK31

1 Make sure you have selected Funk as your security choice.

2 Make sure you have configured the communications and radio parameters on your CK31.

3 From Intermec Settings, choose **Communications** > **802.11 Radio** > **Funk Security** > **Profile**.

4 For **8021x**, choose **LEAP** and then press **Enter**.

5 For **Association**, choose **Open**, **WPA**, **WPA2**, or **Network EAP** and then press **Enter**. Encryption automatically defaults to TKIP if you choose WPA, to AES if you choose WPA2, and to WEP if you choose Open or Network EAP.

6 For **Prompt for Credentials**, choose **Enter credentials now**.

7 Select **User name**, type your user name, and then press **Enter**.

8 Select **User Password**, type a user password, and then press **Enter**.

9 Exit Intermec Settings.

Using Static WEP Security

The CK31 uses the Wired Equivalent Privacy (WEP) protocol to add security to your wireless network based on the 802.11b standard.

To use WEP security, you need:

• a CK31 handheld computer with an 802.11b/g radio.

• an access point with an 802.11b/g radio.

Configuring Static WEP Security With Funk Security

1 Make sure you have selected Funk as your security choice.

2 Make sure you have configured the communications and radio parameters on your CK31.

3 Open Intermec Settings.

4 Choose **Communications** > **802.11 Radio** > **Funk Security** > **Profile**.

5 For **Association**, choose **Open** and then press **Enter**.

6 For **Encryption**, choose **WEP** and then press **Enter**.

7 For **8021x**, choose **None** and then press **Enter**.

8 Define a value for the keys you want to use. You can define up to four keys (**Key 1** through **Key 4**).

Enter an ASCII key or a hex key that is either 5 bytes or 13 bytes long depending on the capability of the radio. Set a 5-byte value for 64-bit WEP or a 13-byte value for 128-bit WEP. Hex keys must be preceded by 0x and contain 5 or 13 hex pairs.

9 For **Transmit key**, choose the key you want to use for transmitting data.

10 Exit Intermec Settings.

Configuring Static WEP Security With Microsoft Security

1 Make sure you have configured the communications and radio parameters on your CK31.

2 Open Intermec Settings.

3 Choose **Communications** > **802.11 Radio** > **Microsoft Security**.

4 For **Network Authentication**, choose **Open**.

5 For **Data Encryption**, choose **WEP**.

6 For **Network Key Setting**, choose **Enter Key and Index**.

7 For **Network Key Value**, enter an ASCII key or a hex key that is either 5 bytes or 13 bytes long depending on the capability of the radio.

Set a 5-byte value for 64-bit WEP or a 13-byte value for 128-bit WEP. Hex keys must be preceded by 0x and contain 5 or 13 hex pairs.

8 For **Network Key Index**, select the key you want to use for data transmission.

9 Exit Intermec Settings.

Loading a Certificate

If you choose to use transport layer security (TLS) with WPA or 802.1x security, you need to have a unique client certificate on the CK31 and a trusted root certificate authority (CA) certificate. You can use a third-party CA to issue unique client certificates and a root certificate.

There are three ways to load certificates on the CK31:

- If you are using Active Directory to issue certificates, you can use the Enroll Certificates application to load the certificates.

- If you are using another third-party CA, you can use the Import Certificates application to load the certificates.

- If you have multiple certificates to install, you can use the Import Root Certificates and Import User Certificates functions.

Note: For certificates to be valid, the CK31 must be set to the correct date and time. After cold booting the CK31, you may need to correct the date and time.

To load certificates if you are using Active Directory

1 Configure the network and radio settings for the CK31 to communicate with your certificate authority or establish an ActiveSync connection with the CA.

2 From Intermec Settings, select **Communications** > **802.11 Radio** > **Certificates**.

3 Select **Enroll Certificates** and tap the **Run App** button. The Enroll Certificates dialog box appears.

Enroll Certificates OK

User Name

Password

Server

OK   Cancel

6:33 PM
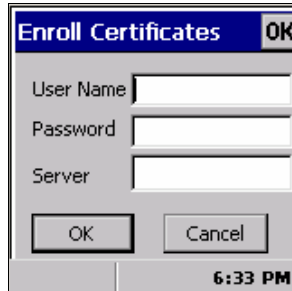
4 In the Enroll Certificates dialog box, enter the **User Name**, **Password**, and **Server** (IP address) to log into the CA server.

5 Tap **OK** or press **Enter**. A dialog box appears asking if you want to load the root certificate.

Save Settings

Do you want to add a certificate to the root store?
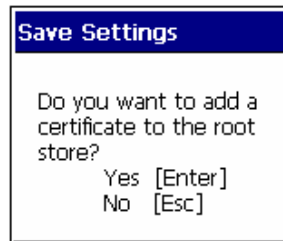
Yes [Enter]
No [Esc]

6 Press **Enter** for yes. The Enrollment Tool message box appears telling you that the user certificate has been added.

7 Press **Enter** to close the Enrollment Tool message box.

8 Configure your CK31 for WPA, WPA2, or 802.1x security.

To load certificates if you are using a third-party CA

1 From Intermec Settings, select **Communications** > **802.11 Radio** > **Certificates**.

2 Select **Import Certificates** and tap the **Run App** button. The certificates application appears.
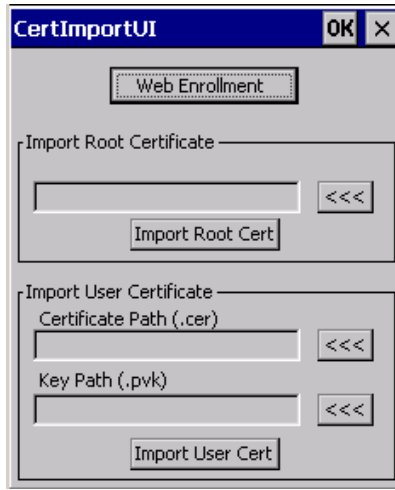
3 Tap $<<<$ in the Import Root Certificate box and navigate to your root .cer file.

4 Tap **OK**. The path to your .cer file now appears in the text box.

5 Tap **Import Root Cert**. A dialog box appears asking if you want to add the certificate to the root store.
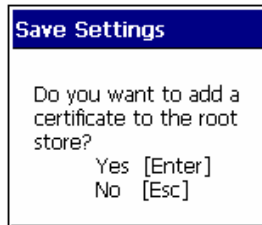
6 Press **Enter** to add the certificate. A message box appears telling you that the root certificate has been imported.

7 Tap **OK** or press **Enter** to close the Success message box.

8 Tap $<<<$ next to the Certificate Path text box and navigate to your user .cer file.

9 Tap **OK**. The path to your .cer file now appears in the text box.

10 Tap $\boxed{<<<}$ next to the Key Path text box and navigate to your user .pvk file.

11 Tap **OK**. The path to your .pvk file now appears in the text box.

12 Tap **Import User Cert**. A dialog box appears telling you that the user certificate and the associated key were successfully imported.
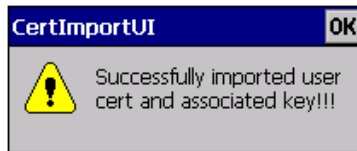
13 Tap **OK** or press **Enter** to close the Success message box.

14 Configure your CK31 for WPA, WPA2, or 802.1x security.

To load multiple certificates

1 Create the \Temp\Root and the \Temp\User folders on the CK31.

2 Copy at least one root certificate .cer file into the \Temp\Root folder.

3 Copy at least one user certificate .cer file and key .pvk file into the \Temp\User folder. The filenames must match (for example, cert1.cer and cert1.pvk).

4 From Intermec Settings, select **Communications** > **802.11 Radio** > **Certificates**.

5 Select **Import Root Certificates = False**. Choose **True** from the drop-down menu.

6 Select **Import User Certificates = False**. Choose **True** from the drop-down menu.

7 Exit Intermec Settings and save your settings. The certificates are immediately imported:

- All root certificates in \Temp\Root are imported into the Trusted Authorities certificate store.

Note: You are prompted when a root certificate is imported, unless that certificate is already in the store.

- All certificate and key files in \Temp\User are imported into the My Certificates certificate store.

- The Import Root Certificates and the Import User Certificates settings are changed from **True** to **False**.

8 Configure your CK31 for WPA, WPA2, or 802.1x security.

Disabling Security

If you choose not to use security with your wireless network, you can disable it on the CK31. Intermec recommends that you always set security in your network.

To disable security

1 Open Intermec Settings.

2 Choose **Communications** > **802.11 Radio** > **Microsoft Security**.

3 For **Network Authentication**, choose **Open**.

4 For **Data Encryption**, choose **Disabled**.

5 Close Intermec Settings.

3 Developing and Installing Applications

In this chapter, you will find guidelines for developing applications and converting existing Trakker Antares applications. You will also find information on installing applications and automatically launching them. In this chapter, you will find these sections:

- Developing Applications for the CK31

- Installing Applications on the CK31

- Launching Your Application Automatically

- Setting or Changing the CK31 Password

- Backing Up Your Files

- Upgrading Your CK31

Developing Applications for the CK31

The CK31 Handheld Computers run applications programmed in Microsoft eMbedded Visual C++. The CK31 can also run applications developed for the .NET Compact Framework using Microsoft C# and Visual Basic.

Use this section to understand the hardware and software you need to:

- develop a new application for the CK31.
- develop a web-based application for the CK31.
- convert a Trakker Antares application to a CK31 application.

Developing a New Application

Use the Intermec resource kits to develop new applications to run on the CK31. The Intermec resource kits are a library of C++ and .NET components grouped by functionality that you can use to create applications for the CK31. The resource kits are part of the Intermec Developer Library (IDL), which is available as a download from the Intermec web site at www.intermec.com/idl.

You need these hardware and software components to use the Intermec resource kits:

- Pentium PC, 400 MHz or higher
- Windows 2000 (Service Pack 2 or later) or Windows XP (Home, Professional, or Server)
- For native C++ development, Microsoft eMbedded Visual C++ version 4.0 with eVC++ Service Pack 2
- For .NET Development and Compact Framework (C# and VB.NET), Microsoft Visual Studio .NET 2003
- 128 MB RAM (196 MB recommended)
- 360 MB hard drive space for minimum installation (720 MB for complete)
- CD-ROM drive compatible with multimedia PC specification

- VGA or higher-resolution monitor (Super VGA recommended)

- Microsoft Mouse or compatible pointing device

Developing a Web-Based Application

You can develop web-based data collection applications for use on the CK31. For help, see any HTML source book. The CK31 contains Internet Explorer (IE) 6.0 for Windows CE or iBrowse for you to use. The Microsoft standard IE 6.0 is available from the desktop and provides all of the common elements you expect to find. iBrowse is also available from the desktop and provides a locked-down browser with IE 6.0 compatibility.

To open Microsoft Internet Explorer or iBrowse

- Double-tap **Internet Explorer** or **iBrowse** from the desktop. The Internet Explorer or iBrowse default window appears.

Converting a Trakker Antares Application to a CK31 Application

If you have an existing Trakker Antares application that you would like to run on the CK31, you can use the Antares Migration Resource Kit to convert it. The Antares Migration Resource Kit is a set of libraries and tools that you use to convert your existing Trakker Antares C applications into C++ applications for use on the CK31.

The CK31 does not support all Trakker Antares functions. You may need to rewrite parts of your application when converting it for use on the CK31. See the resource kit for a list of functions that are not supported.

You need these hardware and software components to use the resource kit:

- PC with at least 1 MB of free disk space running Microsoft Windows 2000/XP

- Microsoft embedded Visual C++ version 4.0 with Service Pack 2

- Antares Migration Resource Kit

The resource kit is part of the Intermec Developer's Library (IDL), which is available from the Intermec web site at www.intermec.com/idl.

Installing Applications on the CK31

There are several ways you can install applications on the CK31:

• You can package your application as a cabinet (.cab) file.

• If you have a simple application, you may only need to deliver the .exe file.

• You can copy a directory structure that contains the application, supporting files, DLLs, images, and data files.

Intermec recommends using CAB files to install your applications. The CK31 uses standard Windows CE CAB files and will install third-party CAB files. Before the CK31 executes a CAB file, it marks the file as read-only so that it will not be deleted after installation. After the CAB file is extracted, the CK31 automatically saves any changes you have made to the registry or file system so that they will persist through a cold boot. This process means that you will not have to reinstall your applications when your battery goes dead or you perform a cold boot.

You can have your CAB files place your application in any of these memory locations on the CK31:

• The RAM based file store (anywhere in the root \ directory)

• The Flash File System (the CK_FFS folder)

• On the SD card (SDMMC folder)

Intermec recommends that your CAB files place applications in the Flash File System or on the SD card. Files in these non-volatile storage locations are preserved through a cold boot.

You can also place applications in RAM, and they will automatically be backed up to the Flash File System (\CK_FFS\Persistent Copy folder). These files will be preserved through a cold boot, or a complete battery drain and accompanying cold boot.

If you have an SD card inserted in your CK31, it appears as the SDMMC Disk folder. This folder is the recommended location for placing your application installation files.

There are several ways you can install files and applications on the CK31:

- ActiveSync
- SD Card
- FTP Server
- Wavelink Avalanche
- SmartSystems Console

The following sections explain how to use each one of these processes to install your application on the CK31.

Installing Applications Using ActiveSync

You can use ActiveSync to establish a connection between your PC and the CK31. ActiveSync allows you to transfer files, synchronize files, perform remote debugging, and other device management activities. ActiveSync is a free application available from the Microsoft web site.

To establish a partnership between your PC and the CK31, you will need:

- a USB cable or a female-to-female null modem serial cable.
- an AD1 communications dock.
- ActiveSync version 3.7.1 or later.

Installing ActiveSync and Establishing a Partnership
You can use either a USB cable or a serial cable to establish your initial partnership between the CK31 and your PC.

To install ActiveSync and establish a partnership

1 Download ActiveSync from the Microsoft web site and follow the onscreen instructions for installing it on your PC. When the installation process is complete, the Get Connected dialog box appears.
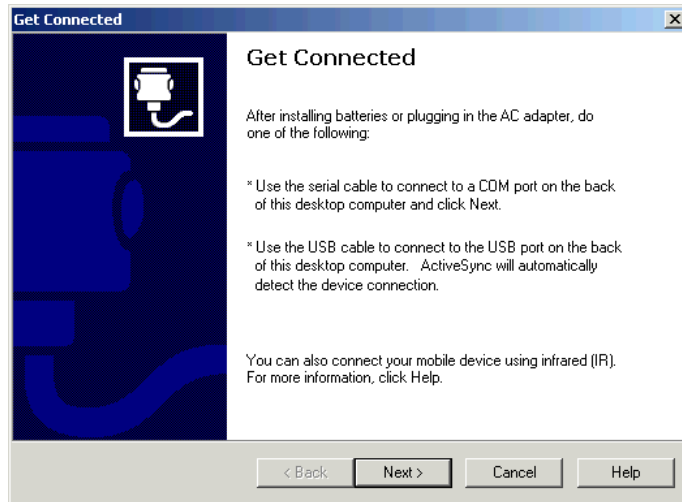
2 Connect the AD1 to your PC with the USB or serial cable.

3 If you are using a serial cable, from the CK31 Start Screen tap My Computer and then choose **Program Files** > **ActiveSync Serial**.

The default setting for ActiveSync on the CK31 is USB.

4 Click **Next** in the Get Connected dialog box. ActiveSync detects a device on the USB or serial port and prompts you to set up a new partnership.

5 In the Set Up a Partnership dialog box, click **Next**.

6 In the Select Number of Partnerships dialog box, select **Yes, I want to synchronize with only this computer** and then click **Next**.

7 In the Select Synchronization Settings dialog box, check the items you want to synchronize and click **Next**.

8 In the Setup Complete dialog box, click **Finish**.

When the partnership has been established, the following screen appears on your PC showing the device name of your CK31 and the Connected status.
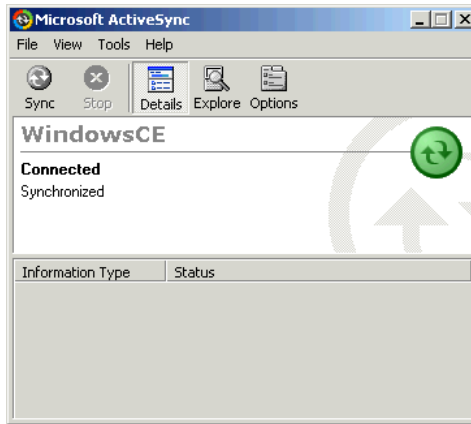
The Microsoft ActiveSync Screen

An ActiveSync icon ( ) also appears on the CK31 status bar indicating that it has established an ActiveSync partnership with your PC.

Note: If ActiveSync does not establish a partnership on the first try, the Get Connected dialog box appears on your PC with the message "Your device was not detected." Make sure all of your cables are securely connected and click **Next** on the Get Connected dialog box until your device is detected. You may have to try removing the CK31 from the AD1 and then inserting it back into the communications dock to establish a partnership.

Now that the partnership has been established, ActiveSync initiates all future connections. To connect to your PC using ActiveSync in the future, simply place a CK31 in the AD1 communications dock, connect the CK31 serially to your PC, or turn on the CK31.

Using ActiveSync to Copy Files and Install Applications

You can use ActiveSync to copy files to the CK31 and to install applications. Use the following procedures to learn how to copy files and install applications on the CK31 using ActiveSync.

To install an application on the CK31 using ActiveSync

1 Connect the CK31 to your PC using ActiveSync. For help, see "Installing ActiveSync and Establishing a Partnership" on page 83.

2 In the Microsoft ActiveSync screen, click **Explore**. Windows Explorer opens the Mobile Device window of your CK31.

3 In Windows Explorer on your PC, browse to the file that you want to copy to your CK31.

4 Right-click the file and click **Copy**.

5 Place the cursor in the SDMMC Disk or CK_FFS folder of your CK31, right-click, and click **Paste**.

The file has now been copied to the CK31 and you can see it using My Computer on the CK31.

6 Navigate to your application file and run it.

After your application is installed, you can run it from the Program files folder from My Computer.

Installing Applications Using Your SD Card

If you have an SD card for your CK31, this is the best place for you to install applications.

To install applications using the SD card

1 If you are using an SD card reader, remove the SD card from the CK31 and place it in the reader. For help, see "Installing the SD Card" on page 34.

2 Copy your application file to the SD card.

If you are using ActiveSync, an FTP server, or Wavelink Avalanche to copy the files to the SD card, place the application in the SDMMC Disk folder located in My Computer.

3 If you are using an SD card reader, insert the SD card back into the CK31.

4 Navigate to the SDMMC Disk folder and run your application.

Installing Applications Using the FTP Server

The CK31 has a built-in FTP server that connects to a network through the 802.11b/g radio. You can use the server to transfer your application file to the CK31. Another benefit of using the FTP server is that you can create FTP scripts to automate the process of copying your files to the CK31. This option is useful when you need to send files to a large number of CK31s.

If you want to disable the FTP server, use a CAB file or another method to modify the registry key HKEY_LOCAL_MACHINE\COMM\FTPD. You need to set the value IsEnabled (a REG_DWORD) to zero (0). If you set the value to zero, the Web server will not accept connections from the network, even from the local host.

Installing Applications Using Wavelink Avalanche

You can use the Wavelink Avalanche device management system to install applications on all of your wireless CK31s. The CK31 ships with the Avalanche Enabler already loaded.

Each time the Avalanche Enabler is activated (typically on a warm boot), the CK31 attempts to connect to the Avalanche Agent. When the CK31 connects to the agent, the Agent determines whether an update is available and immediately starts the software upgrade, file transfer, or configuration update.

To use Avalanche to remotely manage the CK31

1 Install software packages and updates for the CK31 using the Avalanche Administrative Console.

2 Schedule the CK31 updates or manually initiate an update using the Avalanche Administrative Console.

For more information on using Wavelink Avalanche, contact your local Intermec representative or visit the Wavelink web site at www.wavelink.com.

Installing Applications Using SmartSystems Console

You can use the SmartSystems Console to drag-and-drop Intermec applications onto your CK31. The CK31 ships with the SmartSystems client, which means it is SmartSystems-enabled. The console is part of SmartSystems Foundation, which you can download from www.intermec.com/SmartSystems.

For help using the console, see the online help.

To use SmartSystems Console to install an application

1 Download your application file from the Intermec web site and unzip it on your desktop.

2 Double-click the application file to install it. The application file should appear in the software vault.

3 From the SmartSystems Console in the software vault, drag-and-drop the application onto each CK31 discovered in your network.

Launching Your Application Automatically

To automatically launch your application on the CK31 every time you perform a warm or cold boot, make sure your CAB file places a shortcut to your application in the \Windows\StartUp folder.

Setting or Changing the CK31 Password

When you initially start the CK31, there is no password to protect access to the CK31. Anyone can turn on the CK31 and access all of the information and tools loaded on it. When you login to your CK31 with password protection enabled, the password icon (🔑) appears in the taskbar.

Setting a password is sometimes called entering Admin mode or Lockdown mode.

To set a password

1 Tap the **Start** icon or press ▭◼ and then ◼▭. The Start menu appears.

2 Select **Settings** > **Control Panel** > **Password**. The Password Properties dialog box appears.
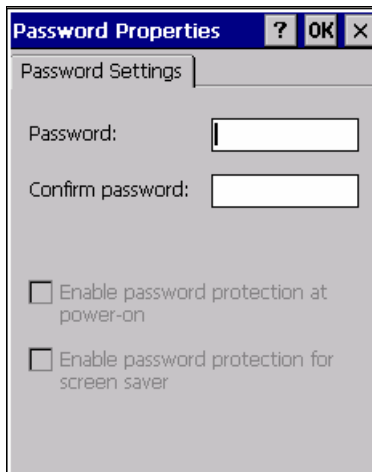
3 Type your new password in the **Password** field, and then press **Tab** to move to the **Confirm password** field.

4 Type in your new password again.

5 Select the **Enable password protection at power-on** option.

6 Tap **OK** or press **Enter**. You are returned to the Control Panel.

7 Close the Control Panel.

To change your password

1 Tap the **Start** icon or press ⬜▪ and then ▪⬜. The Start menu appears.

2 Select **Settings** > **Control Panel** > **Password**. The Enter Password dialog box appears.

3 In the **Password** field, type your password and tap **OK** or press **Enter**.

4 Type your new password in the **Password** field, and then press **Tab** to move to the **Confirm password** field.

5 Type in your new password again.

6 Select the **Enable password protection at power-on** option.

7 Tap **OK** or press **Enter**. You are returned to the Control Panel.

8 Close the Control Panel.

Backing Up Your Files

The CK31 makes it easy for you to make a backup copy of all files you have installed or modified on the computer that are not already located in the SDMMC Disk or CK_FFS folders. When you make a backup copy of the file system, the CK31 saves the file system to a folder called Persistent Copy. This folder and all of the files and subfolders it contains are automatically restored when the CK31 cold boots.

You should back up your files any time you want to make permanent changes to the files in the Persistent Copy folder. You also need to back up the files when you want to permanently delete a file. When you install a CAB file, the CK31 automatically performs this backup process.

To back up your files

1 Tap the **Start** icon or press ▢■ and then ●▢. The Start menu appears.

2 Select **Intermec Settings**.

3 From Intermec Settings, select **Device Settings** > **File Backup**.

4 Select **Backup Files Location** and choose the location where you want your files to be backed up.

5 Select **Backup the File System** and choose the **Run App** button. A Run Application dialog box appears asking if you want to run the file backup program.

6 Select **Yes**. The Finalizing dialog box appears with a status bar showing you the progress of your file backup.

A copy of all your files is saved to the Persistent Copy folder in your desired location.

7 Close Intermec Settings.

Upgrading Your CK31

There are two ways to upgrade your CK31:

- You can upgrade your computer using an SD card.

- You can upgrade your computer using SmartSystems Console.

When you remotely upgrade your computer, you are updating the operating system and the embedded Intermec Value Add (IVA) files.

Upgrading the Operating System Using an SD Card

To upgrade the operating system, you need:

- an SD card.

- an SD card reader (optional).

- the latest upgrade file. This file is available from the Intermec web site at www.intermec.com. Go to **Service & Support** > **Downloads**. Make sure the file you select is for your language.

You can use any file transfer method (ActiveSync, FTP server, and so on) to copy the upgrade files to your SD card. Intermec recommends using an SD card reader.

Note: If you are using an SD card reader to copy files to your SD card, see "Installing the SD Card" on page 34 for information on how to remove and insert the SD card.

When you upgrade the operating system, you erase the current configuration and replace it with the new default configuration. You will need to set the network communications parameters on the CK31 to reestablish communications with the other devices in the wireless network.

To upgrade the operating system

1 Download the latest upgrade (.exe) file from the Intermec web site to your desktop PC.

2 Double-click the .exe file on your desktop PC. An InstallShield application starts and walks you through the process of extracting the upgrade files. You can designate the folder where you want the files to unzip.

If you do not have SmartSystems Console installed, the default location that the files are extracted to is:

Program Files\Intermec\CK3x OS v*x.xx.xx.xxxx*

where:
x.xx.xx.xxxx is the operating system upgrade version.

If you have SmartSystems Console installed, the default location the files are extracted to is:

Program files\Intermec\SmartSystem\Ss_Lib\Software\ CK3x OS v*x.xx.xx.xxxx*

where:
x.xx.xx.xxxx is the operating system upgrade version.

3 If you are using an SD card reader, remove the SD card from the CK31 and place it in the reader.

4 Copy all of the files in Program Files\Intermec\CK3x OS v*x.xx.xx.xxxx* to your SD card.

If you are using ActiveSync or an FTP server to copy the files to your CK31, place the files in the SDMMC Disk folder.

5 If you are using an SD card reader, insert the SD card into the CK31.

Note: Make sure the CK31 has completely loaded all of the upgrade files before you remove the SD card, warm boot, or cold boot the computer.

6 Perform a cold boot on the CK31. For help, see "Cold Booting the CK31" on page 125.

Upgrading Your CK31 Using SmartSystems Console

You can use the SmartSystems Console to upgrade the operating system on your CK31. The console is part of SmartSystems Foundation, which is available from the Intermec web site.

Before you can upgrade your computer, you need:

- SmartSystems Foundation. To download SmartSystems Foundation, go to www.intermec.com/SmartSystems.

- the device upgrade .exe file. This file is available from the Intermec web site at www.intermec.com. Go to **Service & Support** > **Downloads**. Make sure the file you select is for your language.

To upgrade a CK31 using SmartSystems Console

1 Install SmartSystems Foundation on your PC and open the console.

2 Make sure the console and the CK31s are on the same subnet.

3 Make sure your CK31s are either in a communications dock or charging dock or that power management is disabled.

4 Download the device upgrade .exe file to your desktop PC.

5 Double-click the .exe file on your desktop PC. An InstallShield application starts and walks you through the process of extracting the upgrade files in the default location.

Note: Do not change the default location where InstallShield extracts the files. SmartSystems Console requires that the files be located in the default directory.

6 In the software vault, locate the device upgrade you want to install.

7 Drag-and-drop the device upgrade onto each CK31 you want to upgrade. SmartSystems Console will tell you that it is installing the upgrade on your CK31.

Once the upgrade is done downloading to your CK31, your CK31 replaces the operating system and then automatically cold boots. Progress messages appear on the CK31 screen.

The SmartSystems Console will show your CK31 as being offline until the CK31 reboots and reconnects to the system.

4 Running Diagnostics

The CK31 provides these diagnostic tests for troubleshooting.

Diagnostic Test	Page	Diagnostic Test	Page
802.11 Information	97	LED Test	106
Authentication Information	97	Network Information	106
Battery Information	98	Network Test	107
Boot Code Version	100	Operating System Version	107
Configuration Table	101	Ping Utility	108
CPU Monitor	102	Radio Driver Version	109
CPU Registers	102	RAM Information	109
Display Test	103	RAM Monitor	110
Installed Fonts	104	SD Card Memory Test	110
Intermec Value Version	104	Sound Test	111
Keypad Test	105		

Using Diagnostics on the CK31

You can access the Intermec Diagnostics at any time, even while running an application. The Intermec Diagnostics menu contains these options:

- Hardware

- Software

- System

Use the Hardware diagnostics menu to run tests on the CK31 or view system information. For example, you can run an LED test to determine if your CK31 lights are working correctly.

Use the Software diagnostics menu to view the version of your operating system, the bootcode version, and Intermec Value Add (IVA) information.

Use the System diagnostics menu to help analyze network, system, or applications problems on the CK31. For example, you can run diagnostics to check the network communications.

Understanding the Diagnostics Screens

This section lists all of the diagnostics screens in alphabetical order. You will see the following information for each diagnostics screen:

- Description, purpose, and definition

- Location of diagnostic from the Start menu

- A sample diagnostics screen

802.11 Information

The 802.11 Information diagnostic provides detailed information about your 802.11b/g radio. You can view information such as the SSID, the radio signal strength indicator (RSSI), the channel, and the MAC address of the connected access point.

To open the 802.11 Information diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **802.11 Information**.

Sample Screen
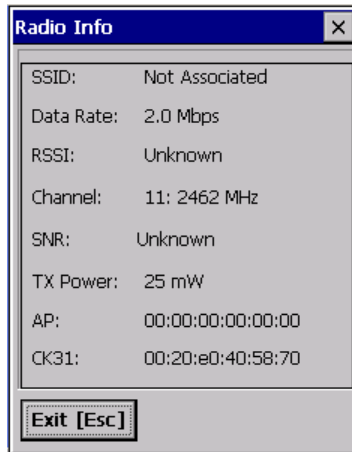
Authentication Information

Use the Authentication Information diagnostic to see the state of your security authentication. You can use this information to troubleshoot why your device may not be authenticating. This diagnostic works with both Microsoft and Funk security choices.

To open the Authentication Information diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **Authentication Information**.

Sample Screen

Authentication Info **OK**

```
[07:22:15 - PCI\PRISMICB1 - INTERMEC] Assoc
[07:22:17 - PCI\PRISMICB1 - INTERMEC] Failed
[07:22:17 - PCI\PRISMICB1] Preferred list exha
Unknown event [0xc]
```

◄ ▬▬▬▬▬▬▬▬▬▬ ►

| Stop | Clear | Exit |
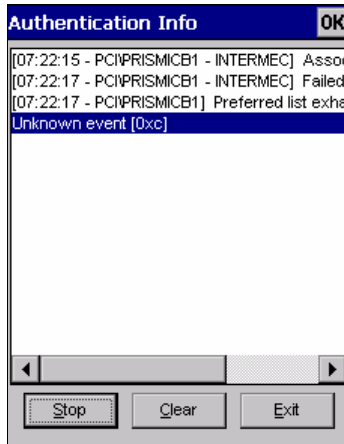
Battery Information

Use this diagnostic to view information on the CK31 main battery, backup battery, and AC power status. You can also use this screen to see the current volts and charging status.

To open the Battery Information diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **Battery Information**.

Sample Screen

Battery and Power Info **✕**

PSC Version: 51

Main Bat: 11270 mV

Supercap: 2498 mV

Temperature mV: 957 mV

Temperature: 35º C

Main Batt Flag: Charging

Supercap Flag: High

Exit [Esc]
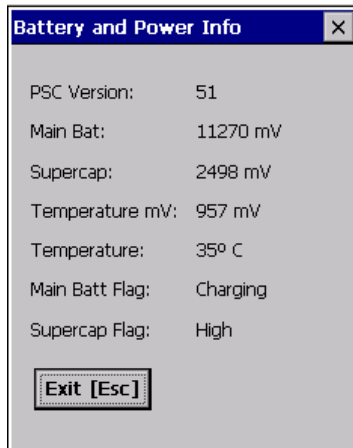
The **Main Bat** field displays the voltage of the AB1G battery. The following table shows how to interpret the voltage levels.

Main Battery Status	Main Battery Voltage	Percentage of Battery
High	8500 mV	100%
High	> 8000 mV	> 75%
Medium	7600 to 7999 mV	50% to 75%
Low	7200 to 7599 mV	25% to 50%
Critically low	< 7199 mV	< 25%

The **Main Batt Flag** field displays the battery status, which is linked to the battery icon described on page 7. You can continue using the battery until the CK31 indicates that the battery is low: the battery light turns on and the low battery icon (🗗) appears on the taskbar.

The **Supercap** field displays the voltage of the backup battery. The main battery continually charges the backup battery unless the main battery is critically low or removed.

Backup Battery Status	Backup Battery Voltage	Condition
High	> 2400 mV	Fully charged
High	> 2200 mV	OK to swap the main battery
Low	> 1750 mV	OK to swap the main battery if you first suspend the CK31
Low	< 1750 mV	Do not swap the main battery because the CK31 might cold boot

There are some usage patterns that can deplete the backup battery. For example, if you remove the main battery every night to charge it outside the CK31, the backup battery will be low in the morning. This usage pattern does not harm the backup battery.

When the backup battery is low, the Backup Battery Very Low dialog box appears on your CK31 screen.

Backup Battery Very Low

Your backup battery is very low or missing. Data loss may result from failure to replace the battery very soon.

Consult the manufacturer's instructions for directions on replacing or charging the backup battery.
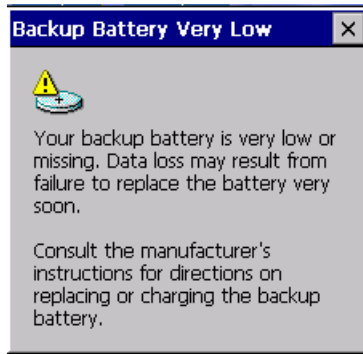
Click the **X** to close the dialog box. The dialog box continues to appear until the backup battery is fully charged. You must install a fully charged main battery or place the CK31 in a charger. It takes about 15 minutes for the backup battery to charge up to 2.4V.

If the Backup Battery Very Low dialog box continues to appear for more than 15 minutes, view the Battery Information diagnostic screen. If the **Supercap Flag** field is not **Charging**, the backup battery may have failed. You may need to send the CK31 to Intermec to have the backup battery replaced. For help, see "Calling Product Support" on page 114.

Boot Code Version

The Boot Code Version diagnostic displays the version of boot code loaded on your CK31.

To open the Boot Code Version diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Software** > **Boot Code Version**.

Sample Screen
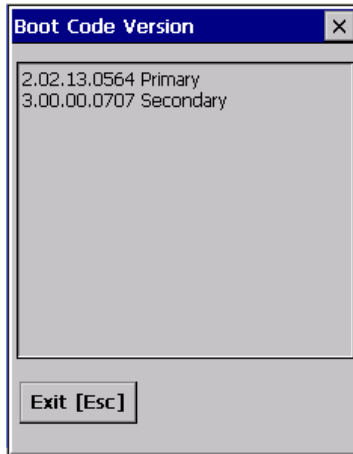
Configuration Table

Use the Configuration table to view important information about your CK31 such as the serial number, configuration number, model, software options, and the scanner type.

You can use this table to give the Intermec representative information on the hardware and software that were installed at the Intermec factory.

To open the Hardware Configuration diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **Configuration Table**.

Sample Screen

Hardware Configuration ✕

Kernel APIs: Passed
Serial Num: 01234567890
GUID: fb358fbd-7c60-460a-
           a7f4-2f841cb19ba1
Cnfg Num: CK31CN1114001804
Contrast: +000
Model: CK31CN
SW Opt: 1, TE2000
Keypad: 11, 52 Pgm'able
Scanner: L, STD_RANGE_LASER
BlueTooth: 0, No BlueTooth
Local: 0, Euro/English
Radio: 804, US/Canada
Scan Engine: EL20

Exit [Esc]
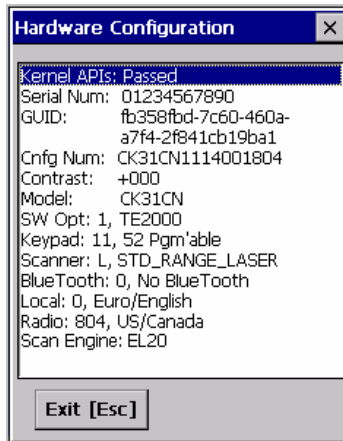
CPU Monitor

The CPU Monitor displays the activity of the CPU by using bars in a graphical icon.

To open the CPU Monitor diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **CPU Monitor**.

The CPU Monitor icon ( ) appears on the taskbar.

To close the CPU Monitor diagnostic

1 From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **CPU Monitor**. A dialog box appears asking if you want to stop the CPU Monitor.

2 Press **Enter**.

CPU Registers

The CPU Registers diagnostic reads every register in the PXA255 processor chip and displays the values.

To open the CPU Registers diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **CPU Registers**.

Sample Screen
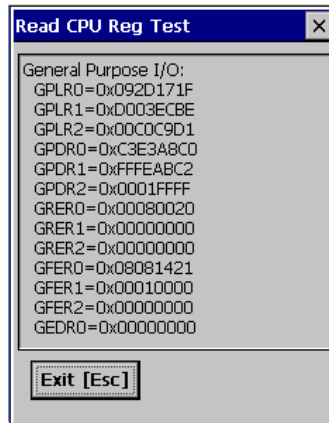
Display Test

Use the Display Test to make sure that every pixel on the CK31 screen is working correctly. For example, you may want to test the screen if you do not see complete characters on the screen. The Display Test turns all pixels on, displays horizontal stripes, displays vertical stripes, and then turns all pixels off.

To open the Display Test diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **Display Test**.

Sample Screen
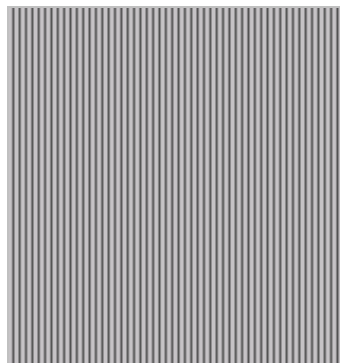
Installed Fonts

Use this screen to view all of the fonts installed on your CK31. You can press the number associated with a font to see an example of how the font appears on the screen. For example, press **1** to see how Lucida Console looks on the screen.

To open the Installed Fonts diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Software** > **Installed Fonts**.

Sample Screen

Font Test

1- Lucida Console (W. Europe)
2- Wingdings (W. Europe)
3- Tahoma (W. Europe)
4- Courier New (W. Europe)
5- Arial (W. Europe)
6- Symbol (W. Europe)
7- Times New Roman (W. Europe)

Back [Esc]

Intermec Value Version

Use this screen to see the versions of Intermec Value Add (IVA) products on your CK31.

To open the Intermec Value Version diagnostic

- From the **Start** menu, tap **Programs >Intermec Diagnostics** > **Software** > **Intermec Value Version**.

Sample Screen

IVA Info

IKLDriver: 22-61-12
FPGA: 0/ 0/ 0 20
IVA: iva_4.01.17.0520

Exit [Esc]
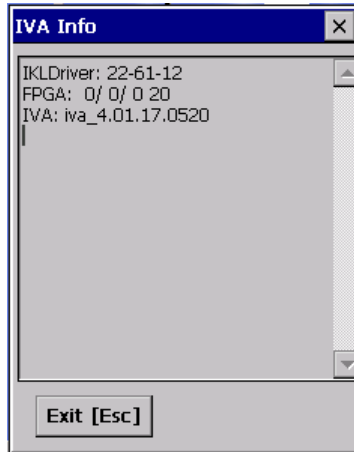
Keypad Test

A developer can use the Keypad Test to quickly find the hex value for any key on the keypad. You can also test to make sure the keypad is operating correctly.

To open the Keypad Test diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **Keypad Test**.

Sample Screen

Keypad Test

WM_KEYDOWN
  wParam 0x11
  lParam 0x1

Exit [Esc]
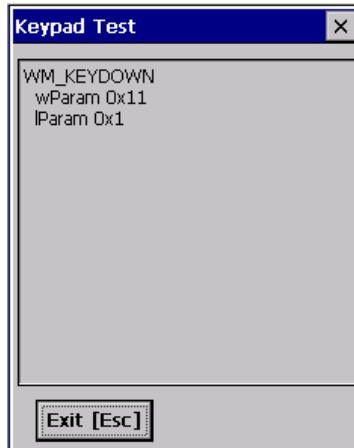
LED Test

Use the LED Test to make sure that your LEDs (lights) are operating correctly. The LED Test turns the lights on the CK31 on in this sequence: Good Read light, the user-defined lights, Ready-to-Work indicator, and then the System Status light. The lights blink one time each and then they blink five times each.

To open the LED Test diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **LED Test**.

Network Information

Use the Network Information diagnostic screen to view the DHCP server IP address, the CK31 device address, and the MAC address.

To open the Network Information diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **Network Information**.

Sample Screen

```
Network Interface Test         [×]
Name/MAC:
  PCI\PRISMICB1
  00-20-e0-40-58-70
Device IP: 0.0.0.0
Subnet: 0.0.0.0
DHCP Server IP:
Gateway:
Primary DNS: 127.0.0.1
Primary WINS: 0.0.0.0



  [ Exit [Esc] ]
```
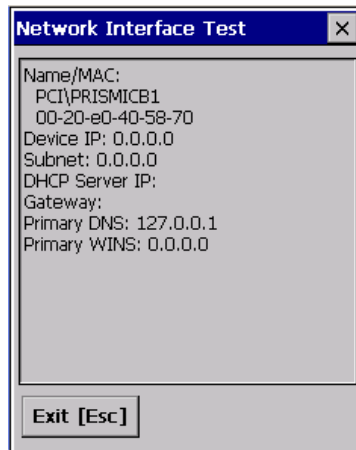
Network Test

Use the Network Test to test the network interface connection if you are using DHCP. The Network Test searches for a DHCP server first. When the test finds a server, press **Enter** to send the Ping command. If you do not have DHCP enabled, you need to enter the IP address of the host to ping and then press **Enter**. The test sends the ping command four times and displays the results. If you receive a result other than ping OK, the test failed.

To open the Network Test diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **Network Test**.

Sample Screen

Ping Dhcp Server: ✕

10.10.21.167

1 : ping OK   0 ms
2 : ping OK   0 ms

Exit [Esc]   Ping [Enter]
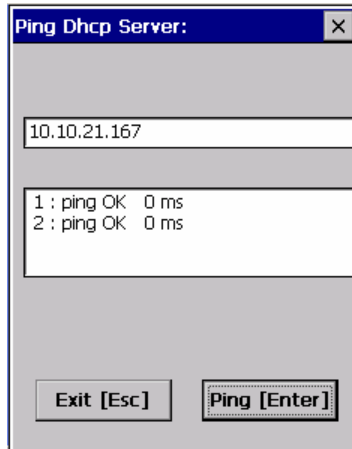
Operating System Version

Use the OS Version diagnostic screen to view the operating system software version loaded on the CK31.

To open the OS Version diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Software** > **OS Version**.

Sample Screen

OS Version Info [×]

3.00.00.0707 Premium

Exit [Esc]
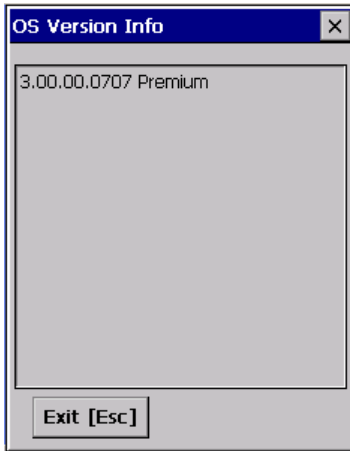
Ping Utility

Use the Ping Utility to test the network interface connection. Enter the IP address of the host to ping and then press **Enter**. The test sends the ping command four times and displays the results. If you receive a result other than ping OK, the test failed.

To open the Ping Utility diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **Ping Utility**.

Sample Screen

Ping [×]

Host

127.0.0.1

Exit [Esc]   Ping [Enter]
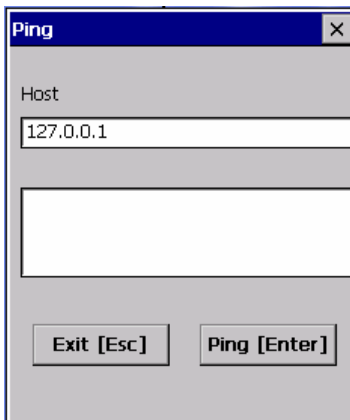
Radio Driver Version

Use the Radio Driver Version diagnostic to see the type of radio driver your CK31 contains and its version.

To open the Radio Driver Version diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Software** > **Radio Driver Version**.

Sample Screen
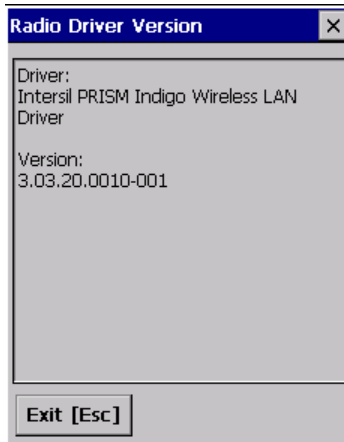
RAM Information

Use the RAM Information diagnostic to see how much RAM and flash memory is available on the CK31. You can also see the Flash Part ID.

To open the RAM Information diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **RAM Information**.

Sample Screen

Memory Info Test   ✕

Total RAM 64 MBytes
Flash 64 MBytes
Flash Part ID 891C
OS RAM 32657408 Bytes
 Used 15691776
 Free 16965632
ObjStore 32575488 Bytes
 Used 1225716
 Free 31349772

Exit [Esc]
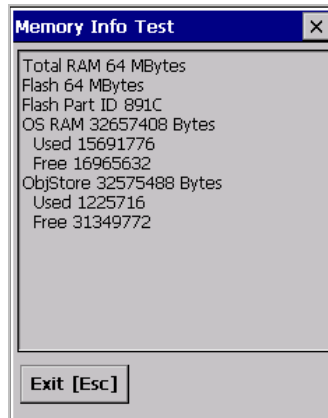
RAM Monitor

Use the RAM Monitor to see a graphical representation of RAM usage.

To open the RAM Monitor diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **RAM Monitor**.

The RAM Monitor icon ( ) appears on the taskbar.

To close the RAM Monitor diagnostic

1 From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **System** > **RAM Monitor**. A dialog box appears asking if you want to stop the RAM Monitor.

2 Press **Enter**.

SD Card Memory Test

Use the SD Card Memory Test to view memory information on your SD card. Tap **Start** to initiate the memory test.

To open the SD Card Memory Test diagnostic

- From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **SD Card Memory Test**.

Sample Screen
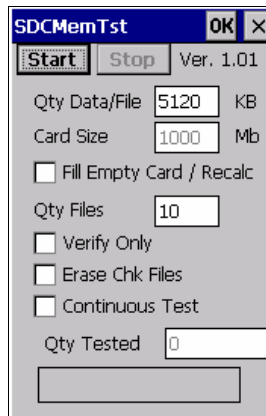
Sound Test

Use the Sound Test to make sure the entire beeper volume range and beep frequency range are available and working correctly. The Sound Test can also help you choose a beeper volume and frequency that you can hear in your working environment.

When you select the test, the CK31 sounds a series of beeps from the default beep through the entire range of quiet to loud beeps. After it sounds the beeper volume, it cycles through the beeps starting with low frequency up through the highest frequency supported.

To start the Sound Test diagnostic

• From the **Start** menu, tap **Programs** > **Intermec Diagnostics** > **Hardware** > **Sound Test**.

5 Troubleshooting and Maintaining the CK31

Use this chapter to solve problems you may encounter while using the CK31. You will also find information on booting the computer and routine maintenance.

If you have any problems using the CK31, look in this chapter to find a possible solution. This chapter consists of the following sections:

Troubleshooting the CK31

Use this chapter to troubleshoot some common problems you may experience with your CK31. If you cannot find the answer to your problem in the "Problems and Solutions" section, you may need to call Product Support.

Calling Product Support

To talk to an Intermec Product Support representative, call 1-800-755-5505.

Before you call Intermec Product Support, make sure you have the following information ready:

• Operating system version

• Configuration number

• Power management settings

• If you are using security, know the type (Funk or Microsoft) and the full set of parameters

• If you are using terminal emulation (TE), know the version and protocol

• If you are not using TE, know the language your custom application was written in and the tools you used to create it

You can find most of the information listed above in Intermec Diagnostics or Intermec Settings. Consult your application developer for information on your custom application.

To find your operating system version

• Tap **Start** > **Programs** > **Intermec Diagnostics** > **Software** > **OS Version**. Note the OS version and then press **Esc** to exit.

To find your configuration number

• Tap **Start** > **Programs** > **Intermec Diagnostics** > **Hardware** > **Configuration Table**. Note the configuration number and then press **Esc** to exit.

To open Intermec Settings

• Tap **Start** > **Intermec Settings**.

Problems and Solutions

You can also use the CK31 diagnostics to help analyze and solve problems. For help, see Chapter 4, "Running Diagnostics," on page 95.

If you send the CK31 in for service, it is your responsibility to save the computer 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 computer.

Problems While Operating the CK31

Problem	Solution
You press ⅙ to turn on the CK31 and nothing happens.	• Make sure the contrast is not set all the way to the darkest or lightest setting. Press ▪▫ and then ☼ repeatedly until you reach the desired contrast level. • Make sure the backlight is on by pressing ☼. • Make sure you have a charged battery installed correctly. • The battery may be discharged. Replace the battery with a spare charged battery, or charge the battery and try again.
The Battery light is on.	The battery charge is low. You have a few minutes of power left. Immediately replace the battery with a spare charged battery, or charge the battery.
You use your stylus to tap the screen and nothing happens.	Recalibrate your touch screen. For help, see "Calibrating the Touch Screen" on page 19.
You cannot type a character on the keypad or you can only type uppercase or lowercase letters.	You may have accidentally locked a modifier key on the keypad. Check the CK31 taskbar to see if it contains an icon with a locked symbol. Press the necessary key sequence to unlock the key. For help, see "Using the Keypad" on page 7.
You insert an SD card and cannot find the SDMMC Disk folder on the CK31. Or, you insert a bootable SD card and the CK31 is not booting from the card.	The SD card may not be seated correctly. Push in on the SD card until you hear it unlatch and the card is ejected. Insert the SD card as described in Steps 3 and 4 of "Installing the SD Card" on page 34. If this does not solve the problem, try another SD card.

Problems While Operating the CK31 (continued)

Problem	Solution
The CK31 appears to be locked up and you cannot enter data.	• Wait at least 10 seconds and try again. If the CK31 is still connecting to the Intermec Application Server or the host, it ignores any input from the keypad or scanner.
	• Press **I/o** to turn off the CK31 and then press **I/o** again to turn on the CK31.
	• Press and hold **I/o** for five seconds to warm boot the CK31.
	• Perform a cold boot on the CK31. For help, see "Cold Booting the CK31" on page 125.
	• Try reloading the firmware. For help, see "Upgrading Your CK31" on page 92.
	• If the CK31 will not boot or reset, contact your local Intermec service representative for help.
The Backup Battery Very Low dialog box appears.	Click the **X** to close the dialog box. This dialog box continues to appear until the backup battery is fully charged. You must install a fully charged main battery or place the CK31 into a charger. The backup battery will fully charge in about 15 minutes.
	Do not swap the main battery until this dialog box stops appearing.
	If the Backup Battery Very Low dialog box continues to appear for more than 15 minutes, make sure that the backup battery is charging. Follow the instructions in "Battery Information" on page 98. If the **Supercap Flag** field on the battery information screen does not display **Charging**, you may need to send the CK31 to Intermec to replace the backup battery. For help, contact Product Support as described on page 114.
	You may also insert a fully charged main battery into the CK31 and allow the backup battery to charge overnight. In the morning, if the main battery is in good condition and can run the CK31, cold boot the CK31. The Backup Battery Very Low dialog box should not appear. If it does, contact Product Support.

Problems While Operating the CK31 (continued)

Problem	Solution
The blue Ready-to-Work indicator is off.	Try these possible solutions: • The Ready-to-Work application (such as TE 2000) has not loaded successfully. For help, see the documentation or online help for the application. • The CK31 is not running a Ready-to-Work application.
The blue Ready-to-Work indicator is blinking.	Try these possible solutions: • The Ready-to-Work application (such as TE 2000) may be running, but is not connected to a host. Verify that the application is properly configured to communicate with the host. • The CK31 may be connected to the network through an ActiveSync connection because it is not SmartSystems-enabled. Upgrade the CK31 to make it SmartSystems-enabled.
The blue Ready-to-Work indicator is on.	A connection has been established, and all network connections are active. There is nothing to troubleshoot.

Problems While Configuring Security

If you have trouble configuring the computer for security, check these problems and possible solutions.

Problems While Configuring Security

Problem	Solution
You are using static WEP keys and you have a strong connection to the access point, but you cannot communicate with it.	Make sure that you are using the correct static WEP key. Sometimes you can see the strong signal strength and security enabled icon ( ) even though you have the WEP key set incorrectly.
You are setting up multiple access points in a network, with different SSIDs, and the connection fails.	The CK31 does not save WEP key values when you change the SSID. Re-enter the WEP key value after you change the SSID and save your changes. You should now be able to connect to the different access points.

Problems While Configuring Security (continued)

Problem	Solution
You receive a message saying "The server certificate has expired or your system date is incorrect" after you cold boot the CK31.	The correct date and time on the CK31 are not always saved through a cold boot. You need to re-enter the date and time, and then save your changes.
The CK31 indicates that it is not authenticated.	Make sure that: - the User Name and Password on your CK31 match the user name and password on your authentication server. You may need to re-enter the password on both your CK31 and authentication server. - on your authentication server, the user and group are allowed and the group policy is allowed to log in to the server. For help, see the documentation that shipped with your authentication server software. - the IP address and secret key for your access point must match the IP address and secret key on your authentication server. You may need to re-enter the IP address and secret key on both your access point and authentication server. - your authentication server is active and can communicate with your access point. You can use the PING utility to determine communications by selecting **Start** > **Programs** > **Intermec Diagnostics > System** > **Ping Utility**. - the authentication server software is running on the server PC.

Problems With Wireless Connectivity

Problem	Solution
When you turn on the CK31 after it was suspended for 10-15 minutes or longer, it can no longer send or receive messages over the network.	The host may have deactivated or lost your current terminal emulation session. In a TCP/IP direct connect network, you need to turn off the "Keep Alive" message (if possible) from the host so that the TCP session is maintained while a CK31 is suspended.
The network connection icon is in the status bar, but the host computer is not receiving any data from the CK31.	In a UDP Plus network, there may be a problem with the connection between the Intermec Application Server and the host computer. Check with your network administrator or see the user's manual for the Intermec Application Server. In a TCP/IP network, there may be a problem with the connection between the access point and the host computer. Check with your network administrator or use your access point user's manual.
The no network connection icon ( ) appears on the status bar. The CK31 is not communicating with the access point.	• The CK31 is not connected to the access point. Make sure the access point is turned on and operating. You may also be using the CK31 out of range of an access point. Try moving closer to an access point to re-establish communications. • Make sure the CK31 is configured correctly for your network. The radio parameters on the CK31 must match the values set for all access points the CK31 may communicate with. For help, see "Configuring 802.11b/g Radio Communications" on page 45. • If you have an 802.11b radio, the radio initialization process may have failed. Try resetting the CK31. See "Booting the CK31" on page 125. • If you have tried these possible solutions and the no network connection icon still appears, you may have a defective radio card. For help, contact your local Intermec service representative.
The CK31 is connected to the Intermec Application Server or host computer and you move to a new site to collect data. The network connection icon was visible but now the no network connection icon ( ) is visible.	You may have gone out of range of an access point. Try moving closer to an access point or to a different location to re-establish communications. Once you are in range again, the network connection icon appears again. Any data you collected while out of range is transmitted over the network.

Problems With Wireless Connectivity (continued)

Problem	Solution
While configuring or using wireless printing, you see the message, "The Bluetooth COM port does not exist [55]. This is probably because the computer was just resumed. Please wait a few seconds and try again."	If you recently resumed the CK31, wait a few seconds and try again. Otherwise, you need to make sure that the device you selected as the current wireless printer is a printer, is turned on, and is discoverable. To learn about the current wireless printer and the Bluetooth COM port, see "Creating an Application That Lets You Print Wirelessly" on page 51.
While configuring or using wireless printing, you see the message, "Bluetooth is off. Would you like to turn it on and continue?"	Tap **Yes** to dismiss the message. Follow the instructions in "Turning On Bluetooth Power" on page 51 to turn on the power to the Bluetooth radio.

Problems Transmitting Data Through the Serial Port

If you are having problems sending or receiving data through the integrated serial port on the CK31, check these possible problems:

- Make sure the CK31 is connected to the PC, host computer, or RS-232 serial device using the appropriate cable adapter and null modem cable.

- If the CK31 is in a communications dock, make sure that the communications dock is connected to the serial device using the appropriate cable.

- Make sure that ActiveSync is not connecting to the CK31 through the serial port.

- You cannot use the decoded serial adapter or AA2 to connect to any device other than a decoded scanner. The CK31 auto-detects the serial adapter or AA2, and the scanner software makes the COM port unavailable. Instead, use the AA3 to connect a device like a printer to the CK31. The AA3 requires an external power source.

For more information on using the serial port, see "Configuring Serial Communications" on page 58.

Problems While Scanning Bar Codes

Problem	Solution
You cannot see a red beam of light from the scanner when you press the **Scan** button and aim the scanner at a bar code label.	Make sure you are using a supported scanner, as listed in "Attaching a Scanner to the Serial Port" on page 30. If you are using a supported scanner, try these solutions in order: • You may be too far from the bar code label. Move closer to the bar code label and try again. • You may be scanning the bar code label "straight on." Change the scanning angle and try again. • You can test the effective range of the scanner. Move within 61 cm (2 feet) of a wall and try again. You must be within the scanning range to scan bar code labels. For help, see "Scanning Bar Codes" on page 22.
When you release the **Scan** button or handle trigger, the red beam of light from the scanner does not turn off.	If your CK31 contains an imager: • If the CK31 is configured for continuous/edge triggering, the red beam should remain on. This is not a troubleshooting issue. • If the CK31 is configured for level triggering (default), the red beam should turn off. If the red beam remains on, there may be a problem with the scanner. Press the **Scan** button or pull the trigger again without scanning a bar code label. If the red beam is still on, contact your local Intermec service representative. If your CK31 contains a laser scanner: • If you set the Aim then Scan parameter to Enable and the Turn off after good read parameter to Disable/Auto-Trigger, the red beam should remain on. This is not a troubleshooting issue. • If those parameters are not configured, the red beam should turn off. If the red beam remains on, there may be a problem with the scanner. Press the **Scan** button or pull the trigger again without scanning a bar code label. If the red beam is still on, contact your local Intermec service representative.

Problems While Scanning Bar Codes (continued)

Problem	Solution
The scanner does not read the bar code labels quickly, or the scanning beam seems to be faint or obscured.	The scanner window may be dirty. Clean the window with a solution of ammonia and water. Wipe dry. Do not allow abrasive material to touch the window.
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.	Try these possible solutions in order: • The computer 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 computer quickly and efficiently, you should enable only the bar code symbologies that you are going to scan.
You receive an error when changing the scanner model with a serial adapter attached.	Try these steps in order: 1 Check to make sure the serial adapter is attached to the CK31. 2 Disconnect and then reconnect the serial adapter to the CK31. The green Good Read light flashes to indicate that the software is auto-detecting the adapter and loading the software. 3 Warm boot the CK31.
You receive a message reading "Scanner Communication Failure" when trying to connect a 1551E or 1553 decoded scanner.	Try these possible solutions in order: • Make sure that you are using the correct cable (P/N 3-606034-xx). • Try enabling the scanner port. Go to **Data Collection** > **Dock Tethered Scanner** > **Enable scanner port**. • Try upgrading the scanner firmware. • Select ASCII as the scanner model.

Problems While Scanning Bar Codes (continued)

Problem	Solution
Your 1551E or 1553 scanner stopped working after you activated energy saver mode or connected a cable.	You can enable energy saver mode only if the scanner is connected to the CK31 by the energy saver cable P/N 3-606032-03. Follow these steps:

1 Disconnect the scanner from the CK31.

2 Find the Reset Factory Defaults bar code in the scanner documentation.

3 While pulling the trigger, hold the scanner over the Reset Factory Defaults bar code, and apply external power to the scanner. The scanner is reset to factory defaults.

4 Use Intermec Settings to disable energy saver mode on the CK31.

5 Use Intermec Settings to disable the port.

6 Attach the scanner to the CK31.

7 Use Intermec Settings to enable the port.

8 Use the scanner to scan a bar code. The scanner should work now, but energy saver mode is disabled. Continue with Steps 9 through 11 only if you want to use energy saver mode.

9 Install the P/N 3-606032-03 energy saver cable.

10 Use Intermec Settings to enable energy saver mode on the CK31.

11 Use the scanner to scan a bar code. Energy saver mode is enabled.

Problems While Scanning Bar Codes (continued)

Problem	Solution
The scanner will not read the bar code label.	• 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 will scan. 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 Intermec Settings to check the symbologies. If your bar code symbology is disabled, enable it and then try scanning the bar code label again.
	• Make sure that the application you are running on the computer is expecting input from a bar code. You may need to type this information instead of scanning it.
	• If you are using the 2D imager, set Lighting Mode to Illum LED priority and set Lighting Goal to 100 (or greater). Use Intermec Settings to change the Lighting Mode setting.
	• If the bar code is rotated, make sure that you have 1D Omni-directional scanning enabled. Use Intermec Settings to enable 1D Omni-directional scanning.

Booting the CK31

You seldom need to warm or cold boot the CK31. The CK31 uses the configuration currently saved in flash memory during the boot process.

You need to boot the CK31 when an application is locked up and will not respond, when you upgrade the firmware, or when you reflash the computer. The next instructions explain how you warm and cold boot the CK31.

Warm Booting the CK31

If your charged CK31 does not resume after pressing **⅟₀**, or if the computer or an application is locked up, you may need to warm boot it.

To warm boot the CK31

- Press and hold **⅟₀** for 5 seconds. The CK31 tells you it is performing a warm boot and the screen comes back up to the start screen.

Cold Booting the CK31

If the CK31 or application is locked up and does not respond to a warm boot, follow this procedure to perform a cold boot. When you perform a cold boot, all data in your RAM storage is deleted. To make a backup copy of everything in your RAM-based storage system, see "Backing Up Your Files" on page 91.

To cold boot the CK31

1 Remove the battery.

2 Using a small pointed device (such as the end of the stylus), press the reset switch on the backside of the CK31.
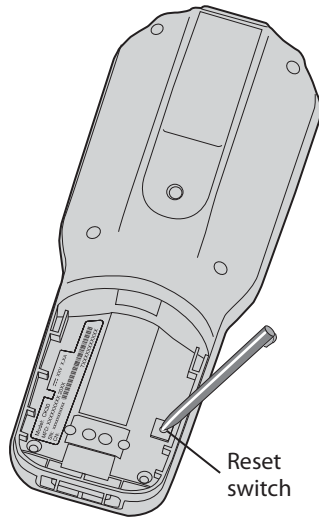
Reset
switch

> **Caution**
>
> **Do not use force or a sharp object when pressing the reset switch. You may damage the reset switch.**

3 Replace the battery.

The battery light on the CK31 blinks three times and the CK31 starts the power on sequence.

> **Note:** The correct date and time settings are not always saved through a cold boot. You may need to need to reset the time and date.

Cleaning the Scanner Window and Screen

To keep the computer in good working order, you may need to perform these minor maintenance tasks:

- Clean the scanner window.

- Clean the CK31 screen.

Clean the scanner window and CK31 screen as often as needed for the environment in which you are using the computer. To clean the CK31, use a solution of ammonia and water.

⚠ **Caution**

There are no user-serviceable parts inside the CK31. Opening the unit will void the warranty and may cause damage to the internal components.

To clean the scanner window and computer screen

1 Press **⅟o** to turn off the CK31.

2 Dip a clean towel or rag in the ammonia solution and wring out the excess. Wipe off the scanner window and screen. Do not allow any abrasive material to touch these surfaces.

3 Wipe dry.

A Specifications

Physical and Environmental Specifications

Use this section to locate technical information about the CK31 and its available features and options.

Physical Dimensions

Length: 23.4 cm (9.22 in)

Width: 9 cm (3.54 in)

Thickness: 5.3 cm (2.07 in)

Weight: 594 g (20.8 oz)

Power Specifications

Operating: Rechargeable 2400 mAh lithium-ion battery

Backup: Super Cap supplies 10 minutes bridge time while replacing the main battery

Electrical Specifications

Models: CK31

Electrical rating: $=$ 7,4 to 12; 500 mA peak

Temperature and Humidity Specifications

Operating temperature: -20°C to 50°C (-4°F to 122°F)

Operating humidity: 5 to 95% non-condensing

Storage temperature: -20°C to 60°C (-4°F to 140°F)

Storage humidity: 0 to 95% relative humidity, non-condensing

Screen Specifications

• 240 RGB x 320 pixels

• 8.9 cm (3.52 in) diagonal square active area, ¼ VGA

• LED backlight with high and low settings

Keypad Options

• 42-key large numeric and function keypad, available with programmable, international, 3270 TE/5250 TE, and VT/ANSI TE overlays

- 50-key full alphanumeric keypad, available with programmable, international, 3270 TE/5250 TE, and VT/ANSI TE overlays

- 52-key full alphanumeric keypad, available with programmable, international, 3270 TE/5250 TE, and VT/ANSI TE overlays

Bar Code Symbologies

If you are using a scanner attached to the serial port, see your scanner manual for a list of supported bar code symbologies.

If you are using the standard or near-far range area imager, the CK31 supports these bar code symbologies:

• Australia Post	• Japan Post
• Aztec	• Matrix 2 of 5
• BPO (British Post 4-state)	• Maxicode
• China Post (Matrix 2 of 5)	• Micro PDF417
• Codabar	• MSI
• Codablock A	• PDF417
• Codablock F	• Planet
• Code 11	• Plessey
• Code 2 of 5	• Postnet
• Code 39	• QR Code
• Code 93	• RSS 14
• Code 128	• RSS Limited
• Datamatrix	• RSS Expanded
• Dutch Post	• Telepen
• EAN.UCC Composite	• TLC 39
• Interleaved 2 of 5	• UPC/EAN

If you are using the linear imager, the standard range laser, or the long range laser, the CK31 supports these bar code symbologies:

- China Post (Matrix 2 of 5)
- Codabar
- Codablock A
- Codablock F
- Code 11
- Code 2 of 5
- Code 39
- Code 93
- Code 128
- EAN.UCC Composite
- Interleaved 2 of 5
- Matrix 2 of 5
- Micro PDF417
- MSI
- PDF417
- Plessey
- RSS 14
- RSS Limited
- RSS Expanded
- Telepen
- TLC 39
- UPC/EAN

Area Imager Standard Minimum Reading Distances

Minimum reading distances are measured in the dark (0 lux).

Minimum Reading Distances With 0.69 cm (0.272 in) Setback

Symbology	Density	Minimum Distance	Maximum Distance
Code 39	0.125 mm (5 mils)	6.675 cm (2.628 in)	11.501 cm (4.528 in)
	0.20 mm (8 mils)	3.373 cm (1.328 in)	20.391 cm (8.028 in)
	0.25 mm (10 mils)	2.865 cm (1.128 in)	24.455 cm (9.628 in)
	0.5 mm (20 mils)	4.389 cm (1.728 in)	39.695 cm (15.628 in)
UPC/EAN	0.33 mm (13 mils)	4.389 c (1.728 in)	29.027 cm (11.428 in)
Data Matrix	0.191 mm (7.5 mils)	5.659 cm (2.228 in)	15.819 cm (6.228 in)
	0.254 mm (10 mils)	4.389 cm (1.728 in)	20.137 cm (7.928 in)
	0.381 mm (15 mils)	Depends on symbology length and scan angle	26.995 cm (10.628 in)
PDF417	0.160 mm (6.6 mils)	5.659 cm (2.228 in)	13.279 cm (5.228 in)
	0.254 mm (10 mils)	3.881 cm (1.528 in)	21.153 cm (8.328 in)
	0.381 mm (15 mils)	4.389 cm (1.728 in)	32.837 cm (12.928 in)

Data Matrix 7.5 mils		
PDF417 6.6 mils		
0.125mm / 5mils		
0.25 mm / 10 mils		
100% contrast UPC EAN		
0.5 mm / 20 mils		
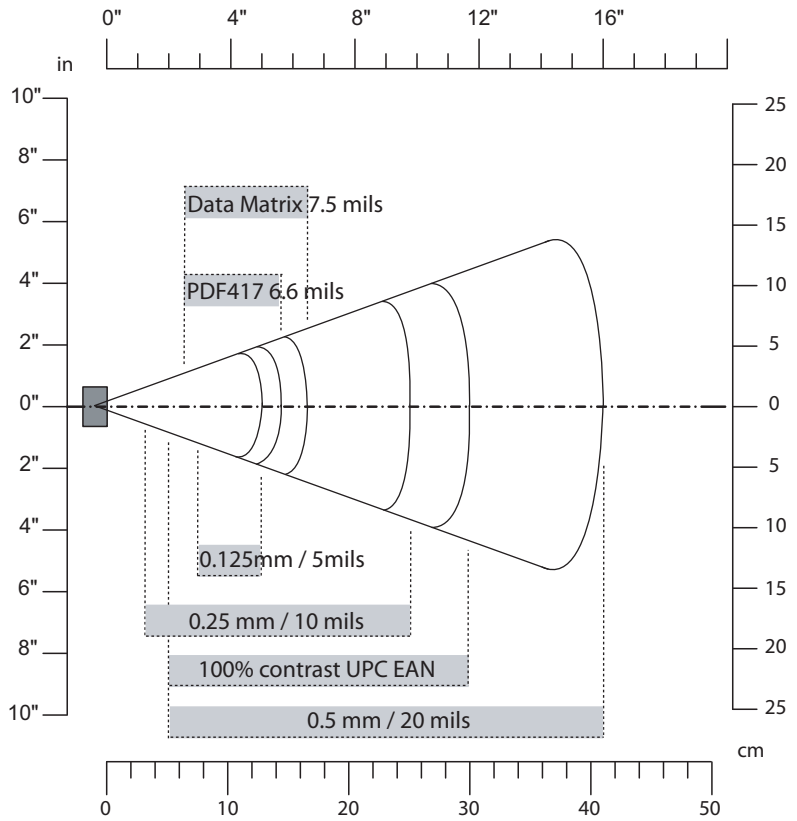
Area Imager Minimum Reading Distances: *This graphic does not include the 0.69 cm (0.272 in) setback for the CK31.*

Linear Imager Reading Distances

Minimum reading distances are measured in the dark (0 lux).

Minimum Reading Distances With 0.655 cm (0.258 in) Setback

Symbology	Bar Code Contents	Density	Minimum Distance	Maximum Distance
Code 39	RESO 0.100 MM	0.1 mm (4 mils)	10.27 cm (4.04 in)	13.31 cm (5.24 in)
	R 0.125 MM	0.125 mm (5 mils)	9.25 cm (3.64 in)	16.36 cm (6.44 in)
	0.25	0.25 mm (10 mils)	5.44 cm (2.14 in)	23.22 cm (9.14 in)
	0.5	0.5 mm (20 mils)	3.41 cm (1.34 in)	30.33 cm (11.94 in)
	R1MM	1 mm (40 mils)	6.96 cm (2.74 in)	39.22 cm (15.44 in)
UPC/EAN	120010010100	0.33 mm (13 mils)	4.42 cm (1.74 in)	25.25 cm (9.94 in)
PDF417	10 mils	0.254 mm (10 mils)	9.25 cm (3.64 in)	16.10 cm (6.34 in)
	15 mils	0.381 mm (15 mils)	7.22 cm (2.84 in)	18.39 cm (7.24 in)
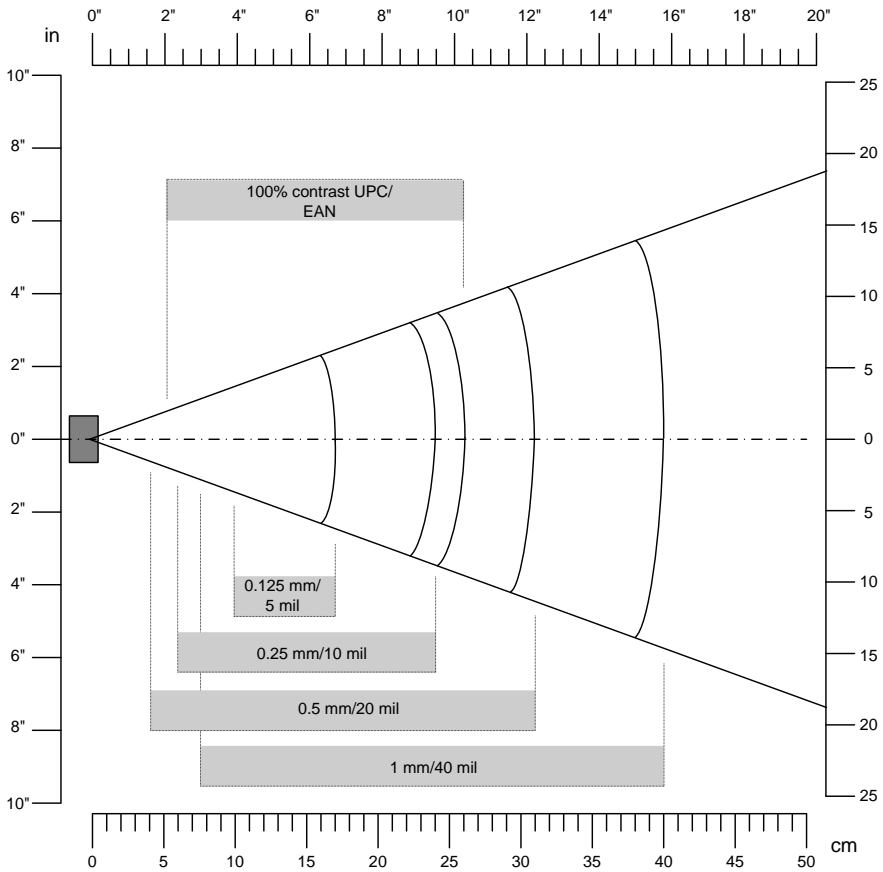
Linear Imager Minimum Reading Distances: *This graphic does not include the 0.665 cm (0.258 in) setback for the CK31.*

Standard Range Laser Minimum Reading Distances
Minimum reading distances are measured in the dark (0 lux).

Minimum Reading Distances With 1.087 cm (0.428 in) Setback

Symbology	Density	Minimum Distance	Maximum Distance
Code 39	0.125 mm (5 mils)	8.564 cm (3.272 in)	17.962 cm (7.072 in)
	0.25 mm (10 mils)	5.770 cm (2.272 in)	37.774 cm (14.872 in)
	0.5 mm (20 mils)	7.802 cm (3.072 in)	78.922 cm (31.072 in)
	1 mm (40 mils)	8.818 cm (3.472 in)	130.992 cm (51.572 in)
	1.3 mm (51 mils)	Depends on the symbology length and scan angle	148.772 cm (58.572 in)
UPC/EAN	0.33 mm (13 mils)	5.516 cm (2.172 in)	46.918 cm (18.472 in)
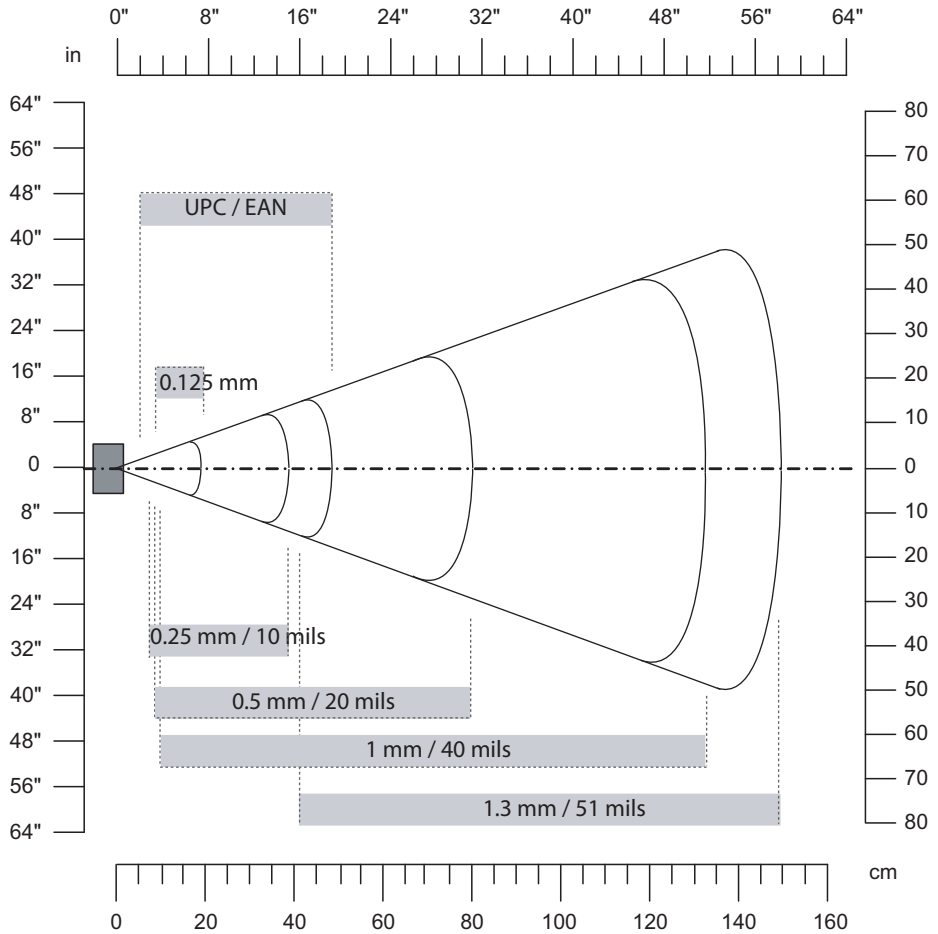
Standard Range Laser Minimum Reading Distances: *This graphic does not include the 1.087 cm (0.428 in) setback for the CK31.*

Near-Far Range Area Imager Reading Distances

This section contains minimum and typical reading distances for the near far range area imager.

Minimum Reading Distances

Minimum reading distances are measured in the dark (0 lux).

1D Symbologies Minimum Reading Distances With 0.889 cm (0.350 in) Setback

Symbology	Density	Minimum Distance	Maximum Distance
Code 39	0.10 mm (3.8 mils)	18.889 cm (7.437 in)	31.111 cm (12.248 in)
	0.25 mm (10 mils)	18.889 cm (7.437 in)	68.111 cm (26.815 in)
	0.5 mm (20 mils)	19.889 cm (7.830 in)	109.111 cm (42.957 in)
	1 mm (40 mils)	40.889 cm (16.098 in)	219.111 cm (86.264 in)
	1.3 mm (51 mils)	100.889 cm (39.720 in)	309.111 cm (121.697 in)
	2.54 mm (100 mils)	130.889 cm (51.531 in)	429.111 cm (168.941 in)
EAN 100%	0.33 mm	22.889 cm (9.011 in)	99.111 cm (39.020 in)

Accessories for the CK31

You can use these accessories (sold and ordered separately) with the CK31. To order accessories, contact your local Intermec sales representative.

851-082-xxx Power Supply

Use the 851-082-xxx power supply to provide power for the communications docks and chargers.

AA2 Serial Cable Adapter (P/N 236-069-xxx)

The AA2 serial cable adapter converts the CK31 serial connector to a DB 9 serial connector. This adapter includes power on pin 9.

AA3 Serial Cable Adapter (P/N 236-070-xxx)

The AA3 serial cable adapter is a 26-pin dual-row connector to DB-9 connector that connects directly to the bottom of the CK31. This adapter does not include power on pin 9.

AB1G Battery (P/N 318-020-xxx)

Use the lithium-ion battery to provide main power to the computer.

AC1 4-Slot Battery Charger (P/N 852-904-xxx)

Use the AC1 to charge up to four AB1G batteries at a time.

AC2 4-Bay Battery Charging Dock (P/N 852-905-xxx)

Use the AC2 to charge up to four AB1G batteries without having to remove them from the CK31.

AC3 8-Slot Battery Charging Dock (P/N 852-906-xxx)

Use the AC3 to charge up to eight AB1G batteries without having to remove from the CK31. This charging dock requires the 851-064-xxx power supply.

AD1 Communications Dock (P/N 225-709-xxx)

Use the AD1 to charge your AB1G battery and provide power to your CK31 while still having the ability to communicate via a serial, Ethernet, or USB port.

AD2 4-Bay Communications Dock (P/N 225-710-xxx)

Use the AD2 to hold up to four CK31s with a battery installed. The AD2 dock charges the batteries, provides power to the computer, provides one Ethernet connector, and provides a serial port for each inserted CK31.

CK30 and CK31 Handle (P/N 203-754-xxx)

The handle works with all models of the CK30 and CK31, and provides a convenient scanning trigger.

CK31 Handstrap (P/N 075289)

The removable and adjustable handstrap makes it easy for you to hold and use the CK31 without tiring your hand.

CK31 Holster and Belt

The holster and belt provide an easy way for you to carry the CK31 while not using it. The holster and belt support either right or left-handed use and you can use it to carry a CK31 with or without a handle.

CK31 Protective Boot

The protective boot provides additional ruggedness for the CK31.

CK31 Protective Case

The protective case provides a clear vinyl covering to protect the screen and keypad area.

CK31 Tethered Stylus (P/N 203-773-xxx)

Use the tethered stylus to make sure that you never lose your stylus.

CK31 Vehicle Cradle (P/N 075436)

Use the vehicle to attach your CK30 to a vehicle, such as a forklift. The vehicle cradle provides protection from vibrations that exceed the level the CK31 can withstand alone.

Dust Cover

The dust cover protects the CK31 keypad in dusty work areas.

Decoded Serial Adapter (P/N 225-715-001)

The decoded serial adapter converts the 26-pin serial port on the CK31 into a DB9 (9-pin) male serial connector that you can connect to a decoded scanner.

Undecoded Serial Adapter (P/N 225-714-001)

The undecoded serial adapter converts the 26-pin serial port on the CK31 into a DB9 (9-pin) male serial connector that you can connect to an undecoded scanner.

Note: If you have a CK31 with the near-far range area imager, do not use the undecoded serial adapter.

Typing Characters Not Printed on the Keypad

The keypads use hidden key sequences to access characters not printed on the keypad overlay. Use the following table to understand how to access these hidden characters on the keypads.

Typing Hidden Characters on the Keypad

To Type:	Press This Key Sequence on One of the Keypads: 42-Key	52-Key
$	Not hidden	▭◼ and then **6**
`	▭◼ and then **F9**	▭◼ and then **G**
!	Not hidden	▭◼ and then **I**
"	▭◼ and then **F6**	▭◼ and then **K**
'	▭◼ and then **F7**	▭◼ and then **L**
{	▭◼ and then **F11**	▭◼ and then **N**
}	▭◼ and then **F12**	▭◼ and then **O**
:	▭◼ and then **F3**	▭◼ and then **P**
;	▭◼ and then **F4**	▭◼ and then **Q**
|	▭◼ and then **F8**	▭◼ and then **R**
?	Not hidden	▭◼ and then **S**
~	▭◼ and then **F10**	▭◼ and then **T**
Y	▭◼ and then **Alpha**	Not hidden
,	▭◼ and then **Right Enter**	Not hidden

Typing Hidden Characters on the International Keypads

To Type:	Press This Key Sequence on One of the Keypads:		
	42-Key	**50-Key**	**52-Key**
$	Not hidden	Not hidden	▭◼ and then **6**
{	◼▭ and then ▲	▭◼ and then **S**	▭◼ and then **9**
}	◼▭ and then ▼	▭◼ and then **T**	▭◼ and then **0**
<	◼▭ and then ◀	Not hidden	Not hidden
>	◼▭ and then ▶	Not hidden	Not hidden
]	▭◼ and then **9**	Not hidden	Not hidden
[	▭◼ and then **Tab**	Not hidden	Not hidden
,	▭◼ and then **Right Enter**	Not hidden	Not hidden

Typing Hidden Characters on the 3270/5250 TE Keypads

To Type:	Press This Key Sequence on One of the Keypads: 42-Key	52-Key
$	Not hidden	▭◼ and then **6**
<	◼▭ and then ◀	Not hidden
>	◼▭ and then ▶	Not hidden
]	▭◼ and then **Alpha**	Not hidden
[	▭◼ and then **Tab**	Not hidden
`	Not applicable	▭◼ and then **G**
!	Not hidden	▭◼ and then **I**
"	Not applicable	▭◼ and then **K**
'	Not applicable	▭◼ and then **L**
{	◼▭ and then ▲	▭◼ and then **N**
}	◼▭ and then ▼	▭◼ key and then **O**
:	Not applicable	▭◼ and then **P**
;	Not applicable	▭◼ and then **Q**
?	Not hidden	▭◼ and then **R**
⁓	Not applicable	▭◼ and then **T**
,	▭◼ and then **Right Enter**	Not hidden

Typing Hidden Characters on the VT/ANSI TE Keypads

To Type:	Press This Key Sequence on One of the Keypads: 42-Key	52-Key
$	Not hidden	⬜◼ and then **6**
`	Not applicable	⬜◼ and then **G**
!	Not hidden	⬜◼ and then **I**
«	Not applicable	⬜◼ and then **K**
'	Not applicable	⬜◼ and then **L**
{	◼⬜ and then ▲	⬜◼ and then **N**
}	◼⬜ and then ▼	⬜◼ key and then **O**
:	Not applicable	⬜◼ and then **P**
?	⬜◼ and then **5**	⬜◼ and then **R**
]	⬜◼ and then **Alpha**	Not hidden
[	⬜◼ and then **Tab**	Not hidden
<	◼⬜ and then ◀	Not hidden
>	◼⬜ and then ▶	Not hidden
,	⬜◼ and then **Right Enter**	Not hidden

Pin Assignments for the Serial Port

This section describes the 26-pin serial port of the CK31.
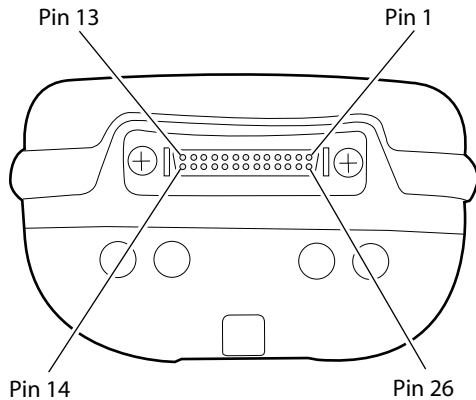
Identifying the Pins in the CK31 Serial Port

Pin Assignments for the Serial Port

Pin	Signal Name	I/O to Terminal	Description
1	GND		Ground
2	VCC_EXT (5V)	O	External 5V @ 500 mA maximum output
3	TXD	O	RS-232 TXD
4	RTS	O	RS-232 RTS
5	DTR	O	RS-232 DTR
6	RXD	I	RS-232 RXD
7	CD	I	RS-232 DCD (ActiveSync wakeup)
8	CTS	I	RS-232 CTS
9	DSR	I	RS-232 DSR
10	VIDEO	I	DBP from tethered undecoded scanner
11	SOS	I	Start of scan from tethered undecoded scanner
12	TETH_SCAN	I	Active low input used to indicate an external scanner connection
13	GND		Ground
14	GND		Ground
15	TRIGGER	I	Trigger input from tethered undecoded scanner
16	LASEN	O	Laser enable output to tethered undecoded scanner
17	BEEP	O	Beep output to tethered undecoded scanner
18	GOODREAD	O	Good Read output to tethered undecoded scanner
19	VBUS	I	USB Wake-up (5V power from USB host)
20	UDC-	I/O	USB DATA – (Client)
21	UDC+	I/O	USB DATA + (Client)
22	TX+	O	Ethernet TPETXP
23	TX-	O	Ethernet TPETXN
24	RX+	I	Ethernet TPERXP
25	RX-	I	Ethernet TPERXN
26	GND		Ground

B Default Settings

Default Configuration

Use the following tables to see the default configuration settings of the CK31. If you restore the CK31 to factory default settings, it will use these values.

The tables are organized according to the options in Intermec Settings. For detailed information on most of the commands available in Intermec Settings, see the *Intermec Computer Command Reference Manual* (P/N 073529). The *Intermec Computer Command Reference Manual* is available on the CD attached to the inside front cover of this user's manual. You can check the Intermec web site for a more recent version of this online manual.

Default Scanner Configuration

Symbology	Default Value
AustraliaPost	Disabled
Aztec	Disabled
BPO	Disabled
Codabar	Disabled
Codablock A	Disabled
Codablock F	Disabled
Code 11	Disabled
Code 2 of 5	Disabled
Code 39	Enabled
Code 93	Disabled
Code 128	Enabled
DataMatrix	Enabled
DutchPost	Disabled
EAN.UCC Composite	Disabled
Interleaved 2 of 5	Disabled
JapanPost	Disabled
Matrix 2 of 5	Disabled
Maxicode	Disabled
Micro PDF417	Disabled

Default Scanner Configuration (continued)

Symbology	Default Value
MSI	Disabled
PDF417	Enabled
Planet	Disabled
Plessey	Disabled
Postnet	Disabled
QR Code	Disabled
RSS 14	Disabled
RSS Limited	Disabled
RSS Expanded	Disabled
Telepen	Disabled
TLC 39	Disabled
UPC/EAN	Enabled

Symbology Options	Default Value
Preamble	No characters (disabled)
Postamble	No characters (disabled)
Global Symbology ID	Disabled

Scanner Settings	Scanner Option	Default Value
Triggering Mode	Imager only	Level
Aim then Scan	Laser only	Disable
Hardware Trigger	Any scanner	Enable
Turn Off After Good Read	Any scanner	Enable/One-shot

Imager Settings	Default Value
Imager Decode Mode	2D imager
Lighting Mode	Illum LED Priority

Default Scanner Configuration (continued)

Imager Settings	Default Value
Lighting Goal	60
Image Dimension	
Top Position	0
Bottom Position	479
Aimer LED Duration	0 ms
Sticky Aimer LED Duration	0 ms

Decode Security Settings	Default Value
Consecutive Data Validation	0
Identical Consecutive Timeout	300 ms
Different Consecutive Timeout	0 ms

Virtual Wedge Settings	Default Value
Virtual Wedge Enable	Enable
Grid	Null

Default Communications Configuration

Communication Settings	Default Value
Device Name	WindowsCE

802.11 Radio Settings	Default Value
Security Choice	Funk Security
Funk Security	
Active Profile	Profile 1
Profile Label	Profile_1
Network Type	Infrastructure
Channel	3
SSID	INTERMEC
Power Mode	Disabled (CAM)
8021x	None
Association	Open
Encryption	None
Pre-Shared Key	Null

Default Communications Configuration (continued)

802.11 Radio Settings	Default Value
IP Settings	
DHCP	Enabled
DHCP Client Identifier	Null
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
Primary WINS	0.0.0.0
Secondary WINS	0.0.0.0

Bluetooth Settings	Default Value
Power	Off
Discoverable	Disable
Connectable	Disable
Class of Device	Null
IBT	0.16
Radio	525
Device Address	Text string

PSK Settings	Default Value
Protocol Selection	TCP/IP
Remote Connection	
Host IP	0.0.0.0
Host Port	5555
Controller IP	0.0.0.0
Controller Port	5555
Serial Port	
Baud Rate	115200 bps
Parity	Even
Data Bits	7 bits
Stop Bits	1 stop bit
Flow Control	None
Protocol	Configurable
EOM1	0x03
EOM2	No characters
SOM	0x02
Reader Command	Enabled without TMF
LRC	Disable
Handshake	0x00 - Disable

Default Communications Configuration (continued)

UDP Plus Settings	Default Value
UDP Plus Activate	Disable
Controller IP	0.0.0.0
Controller Port	5555
Ack Delay Upper Limit	5000 ms
Ack Delay Lower Limit	300 ms
Retries	7
Send Timer	20 s
Receive Timer	45 s

Default Device Settings Configuration

Device Settings	Default Value
Date and Time	
Date	Tuesday, January 06, 2015
Time	Time of current update
Adjust for Daylight Time	Enabled
Beeper Volume	Very high
Number of Good Read Beeps	One
Beeper Duration	
Good Read Beep	80 ms
Low Beep	100 ms
High beep	150 ms
Beeper Frequency	
Good Read Beep	1950 Hz
Low Beep	512 Hz
High beep	1950 Hz
Display	
Backlight Timeout	15 seconds
Maximum Backlight Level	Low
Backlight On Good Read	Off
Screen Rotation	Disable

Default Device Settings Configuration (continued)

Device Settings	Default Value
Keypad	
Adjust Beeper Volume	Enable
Task Manager	Enable
Configure Boot Functionality	Warm boot
Power Management	
User Idle	1 minute
System Idle	1 minute
Suspend	1 minute
Backup Files Location	Flash File System

C Reprogramming the Keypad

Reprogramming the Keypad

You can use the reprogrammable keypad utility of the CK31 to:

- change the functionality of keypad keys or key combinations.

- create keypad macros.

Navigating Through the Reprogrammable Keypad Utility

To Do This	Press This Key
Accept changes and advance to next dialog box	**Enter**
Cancel a procedure	**Esc**
Move between fields	**Tab**
Move backward a field	**Shift Tab**
Select or clear a radio button or check box	**Space**
Move up or down selections within a box	▲ or ▼

Changing the Functionality of Keys or Key Combinations

Use the reprogrammable keypad utility to change the functionality of keypad keys or key combinations. The reprogrammable keypad utility enables you to:

- program any Unicode character to any key or modified key combination.

- program any Virtual Key/Unicode character to any key or modified keystroke.

- use any key as a function key such as backlight and contrast.

- launch an application from a key or key combination.

- remap hardware scan codes.

Note: You cannot easily reprogram several keys on the CK31 keypad. If you have a special request, please contact your local Intermec representative.

Starting the Reprogrammable Keypad Utility

Before you can reprogram any key, you need to enable the reprogrammable keypad utility.

To enable the reprogrammable keypad utility

1 Double-tap **My Computer** on the desktop.

2 Double-tap the Windows folder.

3 From the Windows folder, double-tap **FilterKeysToggle.exe.** The Key Reprogram Feature dialog box appears.

4 Tap **Yes**.

5 Press **Ctl Alt Shift ▲**. The reprogrammable keypad utility appears.
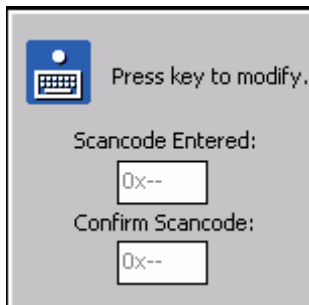
Programming a Unicode Character

You can program any Unicode character to any key or modified key combination.

To program a Unicode character

1 Start the reprogrammable keypad utility.

2 Press the key you want to reprogram twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.
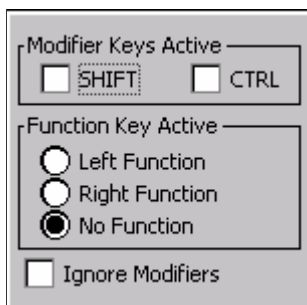
4 Select the modifier or function keys that you want to press before you access the key you are modifying. For example, if you want to press **Shift** to access the reprogrammed key, you select **Shift**. You do not need to select a modifier or function key.

5 Press **Enter**. The Key Response dialog box appears.
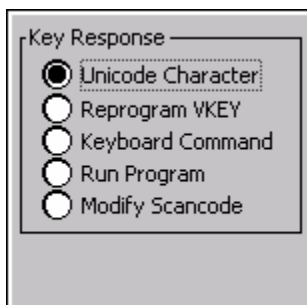
6 Select **Unicode Character** and press **Enter**. The Unicode dialog box appears.
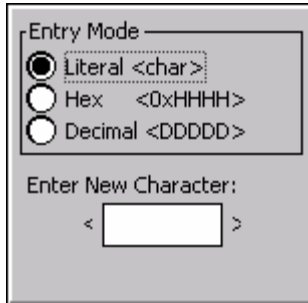
7 Select the Entry Mode for the Unicode character.

Entry Mode	Description
Literal	You enter the actual character that the key combination produces.
Hex	You enter a hex string. The hex string must be preceded by 0x. The range is from 0x0 to 0xFFFF.
Decimal	You enter a decimal string. The range is from 0 to 65535.

8 Press **Tab** or tap in the text box to select the Enter New Character text box.

9 Type the new character or string and press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent storage.

10 Tap **Yes** or **No**.

Programming a Virtual Key or Unicode Character

You can program any Virtual Key or Unicode character to any key or modified key combination.

To program a Virtual Key or Unicode character

1 Start the reprogrammable keypad utility.

2 Press the key you want to reprogram twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.
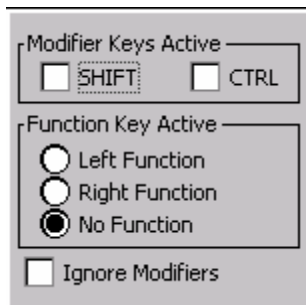
4 Select the modifier or function keys that you want to press before you access the key you are modifying. For example, if you want to press **Shift** to access the reprogrammed key, you select **Shift**. You do not need to select a modifier or function key.

5 Press **Enter**. The Key Response dialog box appears.
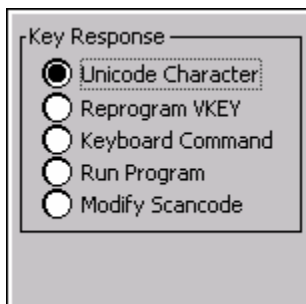
6 Select **Reprogram VKEY** and press **Enter**. The Virtual Key (VKEY) dialog box appears.
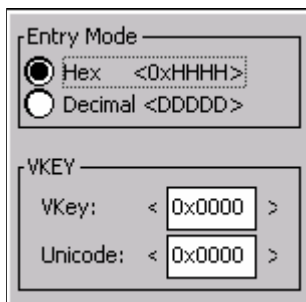
7 Select the Entry Mode for the VKEY character.

Entry Mode	Description
Hex	You enter a hex string. The hex string must be preceded by 0x. The range is from 0x0 to 0xFFFF.
Decimal	You enter a decimal string. The range is from 0 to 65535.

8 Press **Tab** or tap in the text box to select the first VKEY text box.

9 Type the Vkey string and press **Tab** or tap in the Unicode text box.

10 Type the Unicode string and press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent storage.

11 Tap **Yes** or **No**.

Programming Any Key as a Function Key

You can program any key to work as a function key. You can choose for your function key to behave as:

- Scanner Trigger
- Backlight Key
- Contrast Key
- Volume Key
- Mouse Key Toggle
- Rotate Display
- Insert VKey
- LWIN VKey (Menu launch on CK31)
- Delete VKey
- Backtab VKey
- Pan Mode Toggle
- High Contrast Toggle (Accessibility changes to system colors)
- Contrast Lighter

- Contrast Darker

- Reprogram Key (key sequence to launch the reprogrammable keypad utility)

- Reprogram Key Delete (deletes the key sequence to launch the reprogrammable keypad utility)

- Record MACRO (record a new key sequence to launch the Macro Utility)

- Delete MACRO (deletes the key sequence to launch the Macro Utility)

To program any key as a function key

1 Start the reprogrammable keypad utility.

2 Press the key you want to reprogram twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.

4 Select the modifier or function keys that you want to press before you access the key you are modifying. For example, if you want to press **Shift** to access the reprogrammed key, you select **Shift**. You do not need to select a modifier or function key.

5 Press **Enter**. The Key Response dialog box appears.

Key Response
- ◉ Unicode Character
- ○ Reprogram VKEY
- ○ Keyboard Command
- ○ Run Program
- ○ Modify Scancode
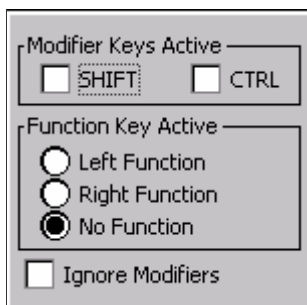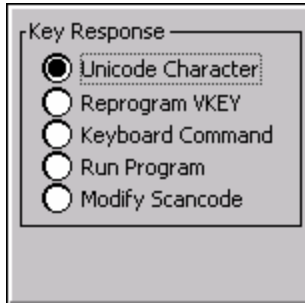
6 Select **Keyboard Command** and press **Enter**. The Keyboard Command Select dialog box appears.

Keyboard Command Select
Delete MACRO ▼
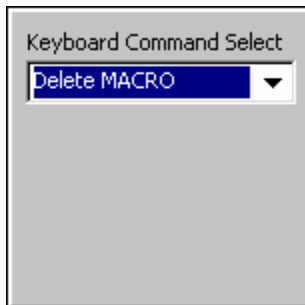
7 Select the desired function from the list and press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent storage.

8 Tap **Yes** or **No**.

Launching an Application From a Key or Key Combination

You can program any key or key combination to launch an application.

To program a key or key combination to launch an application

1 Start the reprogrammable keypad utility.

2 Press the key you want to reprogram twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.
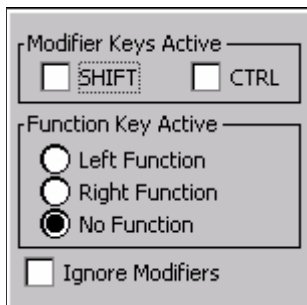
4 Select the modifier or function keys that you want to press before you access the key you are modifying. For example, if you want to press **Shift** to access the reprogrammed key, you select **Shift**. You do not need to select a modifier or function key.

5 Press **Enter**. The Key Response dialog box appears.
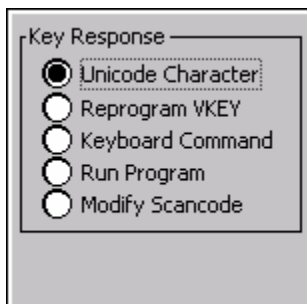
6 Select **Run Program** and press **Enter**. The application dialog box appears.
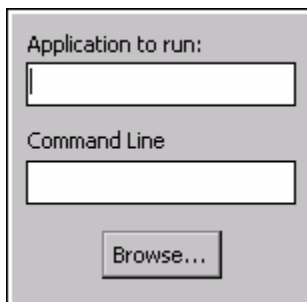
7 In the Application to run text box, type the location of the application you want to launch or tap **Browse** to locate the application.

8 (Optional) Enter any command line parameters you want to use.

9 Press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent storage.

10 Tap **Yes** or **No**.

Remapping a Hardware Scan Code

You can remap the keys on the keypad to function the way you want them to function for your work environment. For example, you can remap the left **Enter** key to function as the right **Enter** key on a 52-key keypad. This remapping is useful for a left-handed person. When you remap a key, it ignores the select modifiers dialog box.

To remap a key

1 Start the reprogrammable keypad utility.

2 Press the key you want to reprogram twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.
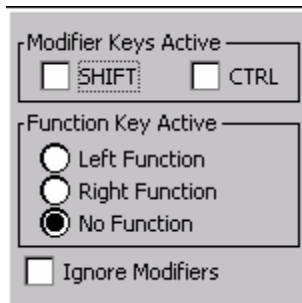
4 Press **Enter**. The Key Response dialog box appears.
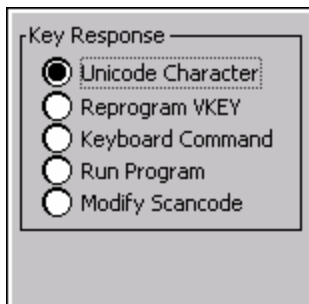
5 Select **Modify Scancode** and press **Enter**. The Press Key to Translate dialog box appears.
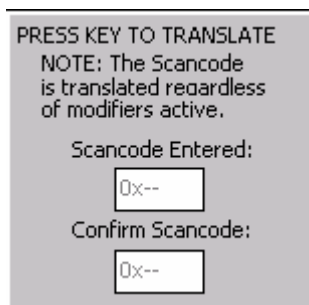
6 Press the new key you want the scan code remapped to twice.

7 Press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent storage.

8 Tap **Yes** or **No**.

Removing One or All Reprogramming Modifications

You can remove all reprogramming modifications you made or pick a specific modification to remove. Another way you can remove all modifications is by choosing to restore defaults. For help restoring defaults, see "Restoring Default Settings" on page 42.

To remove all reprogramming modifications

1 Press **Ctl Alt Shift** ▼. The Remove all keypad modifications dialog box appears.

2 Tap **Yes**. A dialog box appears asking if you want to remove the entry from permanent storage.

3 Tap **Yes** or **No**. You will hear a beep when your changes are successful.

To remove one reprogramming modification

1 Press **Ctl Alt Shift** ▼. The Remove all keypad modifications dialog box appears.
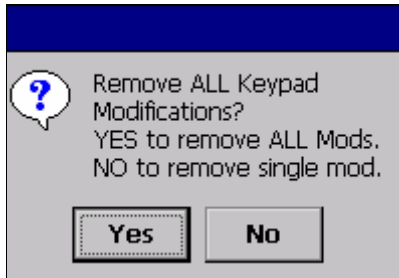
2 Tap **No**. The next dialog box appears.
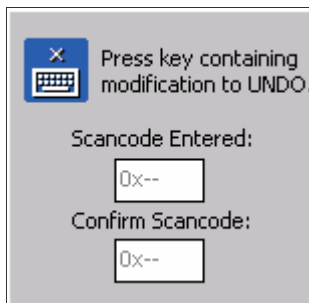
3 Press the key containing the modification you want to remove twice and press **Enter**. The select modifiers dialog box appears.

4 Select the modifiers that you have assigned to the key and press **Enter**. You will hear a beep when your changes are successful.

Finding the Registry Entries for Keypad Changes

The CK31 provides registry files for each keypad change you make. These files are located at:

\CK_FFS\KeypadMods\KeypadModxxxx.reg

Each modification has its own entry. To combine entries, copy all the keys into a single registry file and combine identical keys to contain the data from both files.

For example if one .reg file contains:

```
[HKEY_LOCAL_MACINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    0a,00,00,00,04,00,00,00,00,00
```

And the other .reg contains:

```
[HKEY_LOCAL_MACINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    11,00,01,00,03,00,00,00,00,00
"KeyFilterProcess0x111"="\Windows\cmd.exe"
"KeyFilterCmd0x111"="test"
```

Your combined reg file should look like this:

```
[HKEY_LOCAL_MACINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    11,00,01,00,03,00,00,00,00,00,
    0a,00,00,00,04,00,00,00,00,00
"KeyFilterProcess0x111"="\Windows\cmd.exe"
"KeyFilterCmd0x111"="test"
```

Creating Keypad Macros

A keypad macro is a sequence of keys mapped to a single key or key combination. Keep the following considerations in mind when programming with macros:

- You can only use one macro at a time.

- Do not use scan triggers in macros because they are timing dependent.

- Avoid using key sequences that launch applications because of timing issues.

- The best use of macros is as a tool for repetitive data entry.

Understanding the Macro Icons in the Status Bar

Icon	Description
🔺	You are recording a macro.
🔺	You are deleting the macro.
🔺	You are playing the macro.

Starting the Keypad Macro Utility

Before you can record a macro, you need to enable the keypad macro utility.

To enable the keypad macro utility

1 Double-tap **My Computer**.

2 Double-tap the Windows folder.

3 From the Windows folder, double-tap **FilterKeysToggle.exe**. The Key Reprogram Feature dialog box appears.

Key Reprogram Feature

i) Programmable Keys:
   DISABLED.
   YES to ENABLE
   NO to DISABLE

[Yes]   [No]

4 Tap **Yes**.

5 Press **Ctl Alt Shift** ◼▭. The keypad macro utility appears.

Press MACRO key.

Scancode Entered:
[0x--]

Confirm Scancode:
[0x--]
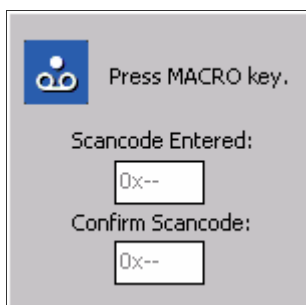
Recording a Keypad Macro

The best use of a macro is for entering repetitive data. However, you can also record a series of steps in a procedure.

To record a keypad macro

1 Start the keypad macro utility.

2 Press the key you want to activate the macro twice. The hexadecimal scan code for the key appears in both fields.

3 Press **Enter**. The select modifiers dialog box appears.

Modifier Keys Active
☐ SHIFT   ☐ CTRL

Function Key Active
○ Left Function
○ Right Function
⦿ No Function

☐ Ignore Modifiers
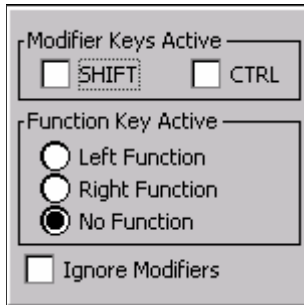
4 Select the modifier or function keys that you want to press before you activate the macro. For example, if you want to press **Shift** to activate the macro key, you select **Shift**. You do not need to select a modifier or function key.

5 Press **Enter**. The select timing dialog box appears.

Key Down Delay
⦿ Timed
○ Manual   25   msec

Key Up Delay
○ Timed
⦿ Manual   25   msec
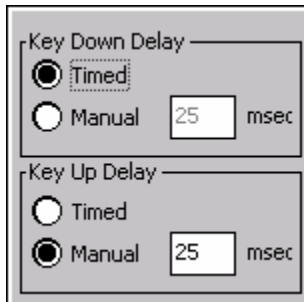
6 Select **Timed** or **Manual** for Key Down Delay and Key Up Delay. If you select Timed, the key response delay matches the timing of the key press. If you select Manual, you need to enter the time for the delay.

7 Press **Enter**. The macro entry dialog box appears.

MACRO Entry

Macro Sequence Entry.
Yes - Use PWord
No - Use Shell
Cancel to Exit

[Yes]   [No]   [Cancel]
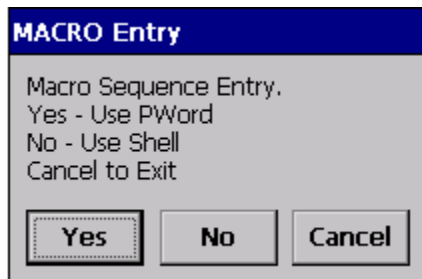
8 Tap **Yes** to launch Pocket Word if you want to enter data for the macro. Tap **No** to use the Shell for recording your macro.

9 Either enter data in Pocket Word or perform a process in the Shell.

10 Press **Ctl Alt Shift** ●▭ to stop recording the macro. The reprogram key dialog box appears.

Reprogram Key

⚠ Macro Sequence
Complete.
Yes to Accept
No to Quit
Cancel to Retry

| Yes | No | Cancel |
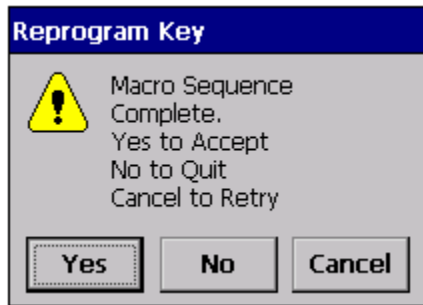
11 Tap **Yes** to accept your macro. A dialog box appears asking if you want to commit your macro to permanent storage.

12 Tap **Yes** or **No**.

Removing All or One Keypad Macro

You can remove all macros or pick a specific macro to remove.

To remove all macros

1 Press **Ctl Alt Shift** ▭●. The Remove all keypad macros dialog box appears.
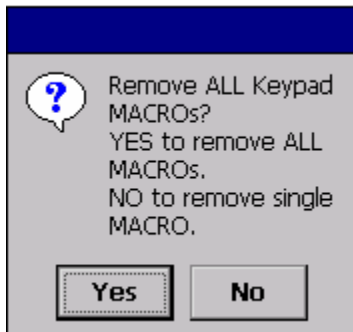
❓ Remove ALL Keypad
MACROs?
YES to remove ALL
MACROs.
NO to remove single
MACRO.

| Yes | No |

2 Tap **Yes**. A dialog box appears asking if you want to remove the entry from permanent storage.

3 Tap **Yes** or **No**. You hear a beep when your changes are successful.

To remove one macro

1 Press **Ctl Alt Shift** ▭◼. The Remove all keypad macros dialog box appears.
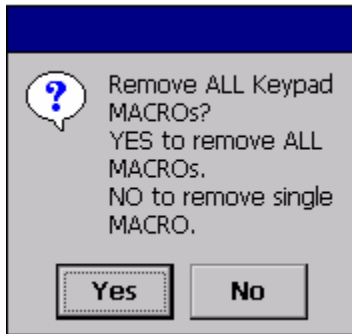
2 Tap **No**. The next dialog box appears.
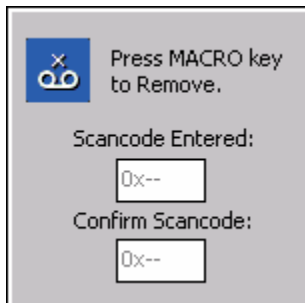
3 Press the key that activates the macro twice and press **Enter**. The select modifiers dialog box appears.

4 Select the modifiers that you have assigned to the macro key and press **Enter**. You will hear a beep when your changes are successful.

Finding the Registry Entries for Keypad Macros

Registry files for each keypad macro are provided for you. These files are located at:

\CK_FFS\KeypadMods\KeypadModxxxx.reg

Each macro has its own entry. To combine entries, copy all the keys into a single registry file and combine identical keys to contain the data from both files.

For example if one .reg file contains:

```
[HKEY_LOCAL_MACINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    08,00,0d,00,06,00,06,00,00,00
"KeyMacro0xd08"=hex:\
08,00,00,00,00,00,00,00,\
08,f0,00,00,7a,00,00,00,\
10,00,00,00,19,00,00,00,\
10,f0,00,00,01,00,00,00,\
18,00,00,00,19,00,00,00,\
18,f0,00,00,6e,00,00,00
```

And the other .reg contains:

```
[HKEY_LOCAL_MACINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    0d,00,05,00,06,00,06,00,00,00
"KeyMacro0x50d"=hex:\
0a,00,00,00,00,00,00,00,\
0a,f0,00,00,a0,00,00,00,\
11,00,00,00,19,00,00,00,\
11,f0,00,00,6c,00,00,00,\
19,00,00,00,19,00,00,00,\
19,f0,00,00,6b,00,00,00
```

Your combined reg file should look like this:

```
"ScancodeFilterArray"=hex:\
    08,00,0d,00,06,00,06,00,00,00,
    0d,00,05,00,06,00,06,00,00,00

"KeyMacro0xd08"=hex:\
08,00,00,00,00,00,00,00,\
08,f0,00,00,7a,00,00,00,\
10,00,00,00,19,00,00,00,\
10,f0,00,00,01,00,00,00,\
18,00,00,00,19,00,00,00,\
18,f0,00,00,6e,00,00,00

"KeyMacro0x50d"=hex:\
```

```
0a,00,00,00,00,00,00,00,\
0a,f0,00,00,a0,00,00,00,\
11,00,00,00,19,00,00,00,\
11,f0,00,00,6c,00,00,00,\
19,00,00,00,19,00,00,00,\
19,f0,00,00,6b,00,00,00
```

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CK31 Handheld Computer User's Manual

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