



Intermec



User's Manual



**CK31 Handheld
Computer**

Intermec Technologies Corporation

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Before You Begin

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

Safety Summary

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

Do Not Repair or Adjust Alone

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

First Aid

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

Resuscitation

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

Energized Equipment

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

Before You Begin

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.

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



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.

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



Note: Notes 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 **Service & Support > Service & Support**. The **Intermec Global Sales & Service** page appears. From the **Service & Support** menu, move your pointer over **Support**, and then click **Warranty**.

Before You Begin

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 format. 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 by calling **1-800-755-5505** and choosing an option.

Service	Description	In the U.S.A. and Canada, choose this option
Factory Repair and On-site Repair	Request a return authorization number for authorized service center repair, or request an on-site repair technician.	1
Technical Support	Get technical support on your Intermec product.	2
Service Contract Status	Inquire about an existing contract, renew a contract, or ask invoicing questions.	3
Schedule Site Surveys or Installations	Schedule a site survey, or request a product or system installation.	4
Ordering Products	Talk to sales administration, place an order, or check the status of your order.	5

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**.

Before You Begin

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 included with this manual on a CD or is available 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 contains pages of 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 format.

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,
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5834749, 5837987, 5841121, 5842070, 5844222, 5854478,
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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

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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. (ey@cryptsoft.com)

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

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

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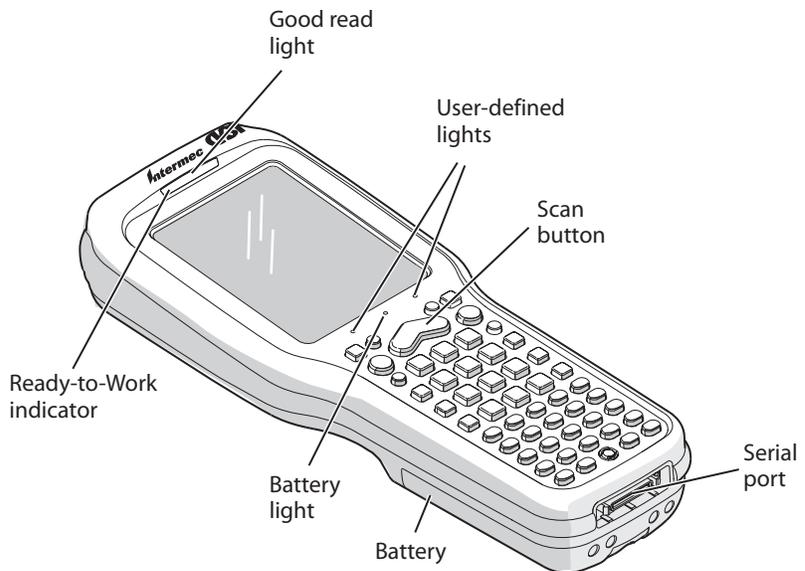
1 Using the CK31 Handheld Computer

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

- Introducing the CK31 Handheld Computer
- Using the Battery
- Using the Keypad
- Using the Touch Screen
- Understanding the Status Lights
- Understanding the Beeps
- Scanning Bar Codes
- Using 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 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.

Chapter 1 — Using the CK31 Handheld Computer

The CK31 includes these features:

- 802.11b/g radio
- .NET Compact Framework
- Internet Explorer 6, SQL Server CE
- iBrowse
- CCX v1.0 compliance
- Color display with touch screen
- 1D linear imager or 2D area imager
- 64MB RAM/64MB Flash Memory
- 400 MHz Processor
- TE 2000 terminal emulation application including 3270, 5250, and VT/ANSI as well as support for third-party TE applications (optional)
- Data Collection Browser (dcBrowser™) application (optional)

Use this manual to understand how to use the features and options available on the CK31. For additional help using terminal emulation, see the *TE 2000 Terminal Emulation Programmer's Guide* (P/N 977-055-008).

For additional 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 additional help using iBrowse, see the *iBrowse User's Guide* (P/N 961-055-015).

For a complete list of accessories, see "Accessories for the CK31" on page 98.

Using the Battery

The CK31 uses an AB1G 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 $\frac{1}{2}$ key. You must replace the battery with a fully charged battery before you can restore factory defaults or boot your CK31.



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.

Avvertimento: Le paquet de piles d'ions de lithium qui est utilisé dans cet appareil peut présenter un risque feu ou un risque chimique de brûlure s'il est maltraité. Il ne faut pas le désassembler, le réchauffer à une température plus élevée que 100°C (212°F) ou l'incinérer.



Caution

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

Attention: L'enlèvement de la batterie principale quand le bas de secours de batterie ou les affichages en critique bas d'icône sur le taskbar peut causer votre CK31 à la botte froide et de vous peut perdre des données.



Caution

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

Attention: Si la batterie n'est pas remplacée immédiatement, des données ou applications importantes risquent d'être perdues.

Chapter 1 — Using the CK31 Handheld Computer

Dispose of used battery packs promptly. Keep away from children. Contact your local Intermec sales representative for replacement batteries.

Several factors determine the life of your battery such as extreme temperatures, input devices, and your usage. For example, if you use a tethered scanner every day, you will need to replace your battery more often than someone who uses an internal scanner.

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 98.

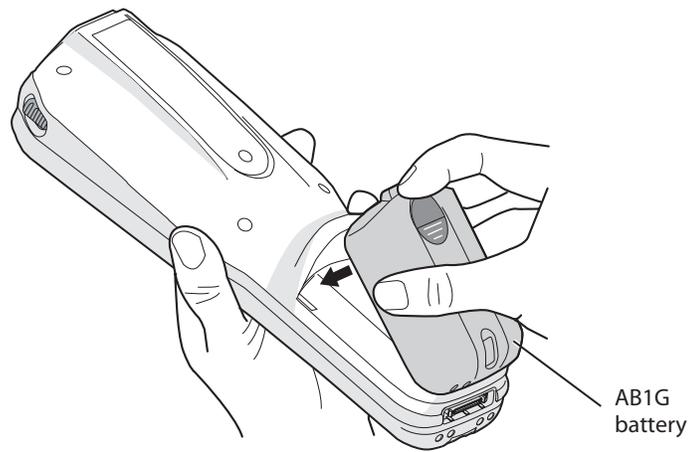
Use the next table to understand how long it will take to charge your batteries in each of the CK31 charging or communications dock accessories.

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	3 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 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 Locally With Intermec Settings” on page 28.

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 light, see “Understanding the Status Lights” on page 17. For help using the Battery Information diagnostic screen, see “Battery Information” on page 74.

Using the Keypad

Your CK31 has a 52-key full alphanumeric keypad. The 52-key full alphanumeric keypad is designed for applications that enter mainly numeric data (0-9) and that may need to enter the entire alphabet. The keypad also provides function keys (F1-F24) and special characters, symbols, and functions by pressing color-coded key sequences.

You can order 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.

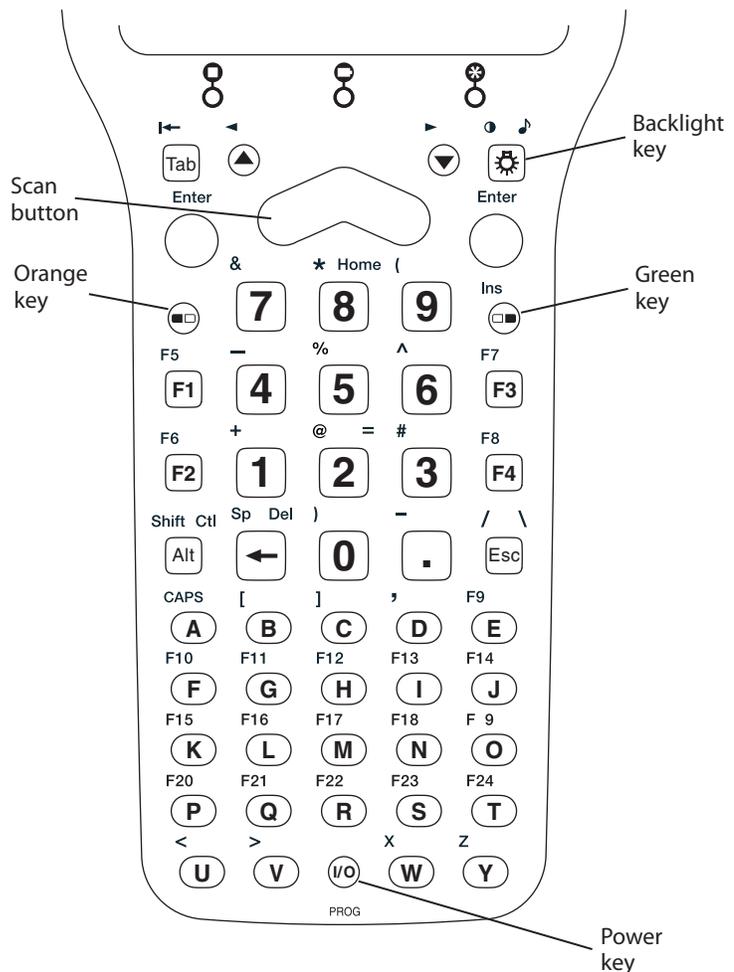
The CK31 supports TE 2000 VT100/220/320/340 and ANSI, TE 2000 5250, and TE 2000 3270. When you order the CK31 with a TE 2000 application, you must order the corresponding keypad overlay.

Chapter 1 — Using the CK31 Handheld Computer

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 more help using TE 2000 terminal emulation, see the TE 2000 programmer's guide.



The 52-Key Full Alphanumeric Keypad



Note: There are several hidden characters (such as { and }) on the CK31 keypad that require using the color-coded keys to access them. For more information on accessing these hidden characters, refer to “Typing Characters Not Printed on the Keypad” on page 99.

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 will know how to 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, Ctrl , Alt , or Shift key to stay on.	 ,  , Ctrl , Alt , or Shift key twice.	Press  twice and the  appears in the status bar.
Unlock a green, orange, Ctrl , Alt , or Shift key.	 ,  , Ctrl , Alt , or Shift key once.	If  is in the status bar, press Alt and the locked icon disappears from the status bar.

Capitalizing All Characters

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

Chapter 1 — Using the CK31 Handheld Computer

To enable Caps Lock

- 1 Press the orange  key. The  icon appears on the status bar.
- 2 Press **A**. The Caps Lock icon () appears on the status bar.
- 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 **A**. The Caps Lock icon disappears from the status bar.

Using the Power (⏻) Key

When you press the **⏻** 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 **⏻** key to turn the CK31 back on, your computer resumes where it was when you turned it off. If you are using WPA or 802.1x security, the computer may need to reauthenticate before it starts your application.

If the Battery light flashes and your CK31 does not resume after pressing **⏻**, 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 92.

Disabling or Modifying Keypad Functions

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

You can disable these keypad functions:

- Beeper volume
- Backlight on and off
- Task Manager (opened by pressing **Alt** and then **Tab**)

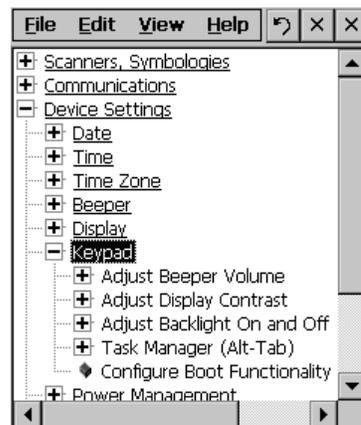
Chapter 1 — Using the CK31 Handheld Computer

You can modify this keypad function:

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

To disable 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.

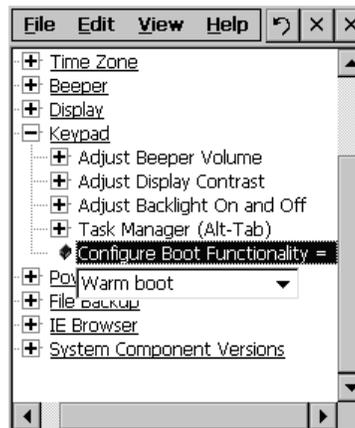


- 3 Tap the function you want to disable from the Keypad menu to expand the branch.
- 4 Tap **Disable** to select it.
- 5 Save your changes and exit Intermec Settings.

To change the **⏏** 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**.

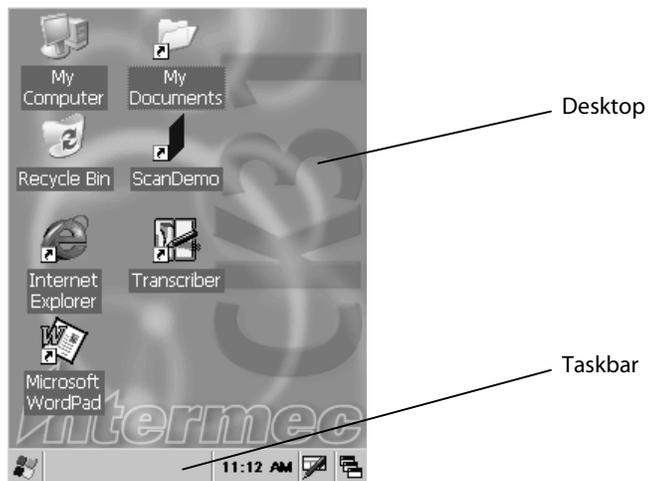
Chapter 1 — Using the CK31 Handheld Computer



- 4 Save your changes and exit Intermec Settings.

Using the Touch Screen

The CK31 has a color touch screen display. The screen is 240 x 320 pixels. The desktop is 240 x 300 pixels and the taskbar is 240 x 20 pixels. In addition, the screen supports Unicode characters, user-programmable fonts, and bitmap graphics.



CK31 Start Screen

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

Chapter 1 — Using the CK31 Handheld Computer

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 Touch Screen and Stylus

Your CK31 has a stylus for selecting items and entering information. Use the stylus in place of a mouse.

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.

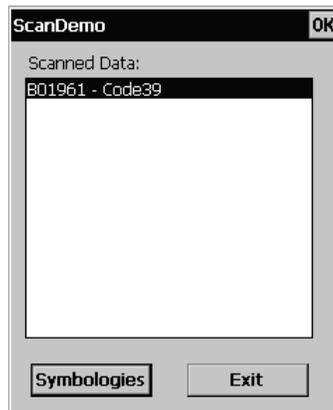
Using ScanDemo

Most of the default shortcuts on the desktop are standard Windows CE applications. However, Intermec provides shortcuts to an additional application called ScanDemo. ScanDemo is a simple application you can use to verify that your imager 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

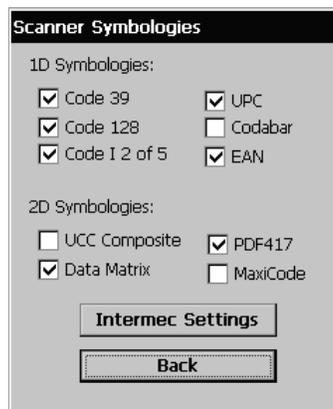
- 1 Double-tap the **ScanDemo** shortcut on the desktop. The ScanDemo application opens.
- 2 Scan a bar code label. For information on how to scan a bar code label, see “Scanning Bar Codes” on page 20. The information you scanned along with the symbology used to encode it appears on the screen:

Chapter 1 — Using the CK31 Handheld Computer



To enable or disable symbologies

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



- 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.

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- 6 Save your settings and close Intermec Settings. The Scanner Symbologies window reappears.
- 7 Tap **Back**.
- 8 Scan bar code labels.

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.
	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 89.
	Orange key is enabled.
	Green key is enabled.
	Orange key is locked.
	Green key is locked.
	Alt key is enabled.
	Alt key is locked.
	Ctl key is enabled.

CK31 Screen Icons (continued)

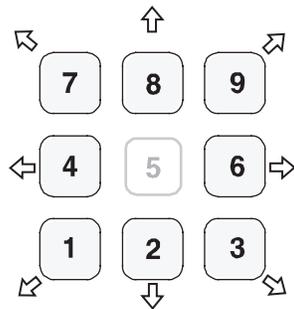
Icon	Description
	Ctl key is locked.
	Shift key is enabled.
	Shift key is locked.
	Caps Lock key is enabled.
	No UDP Plus connection. For help, see “Configuring the Network Parameters for a UDP Plus Network” on page 36.
	UDP Plus is transferring data.
	UDP Plus is connected.
	The window positioning feature is turned on.
	The CK31 is connected using ActiveSync.

Repositioning a Window

If you need to move a window to see more of a screen, you can reposition the window without having to use 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 recenter the window in the CK31 screen

- Press 5.

To turn off the repositioning feature

- Press **Alt** and then .

Calibrating the Screen

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

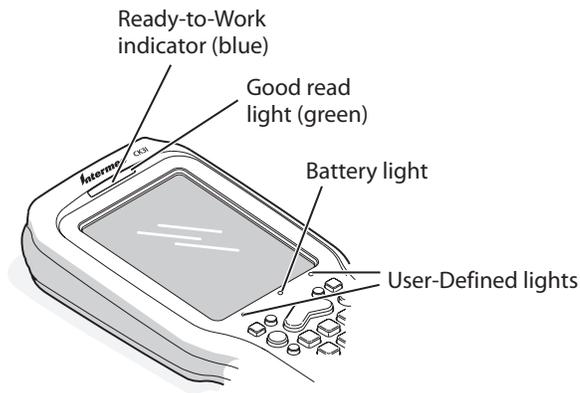
To calibrate the screen

- 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.

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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 15 to help determine when you need to replace your battery.

Understanding the CK31 Status Lights

Light Name	Light	Description	
User-defined	■ ✱	Use the Software Developer's Kit (SDK) to program these lights to turn on and off for any task or error within your application. For help, see the <i>Intermec SDK User's Manual</i> available on the Intermec Developer's Library CD or the Intermec web site.	
Battery	■	Light Status	What It Means
		Off	The battery is charged.
		On	Battery is critically low. You need to replace the battery now.
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.	
		Light Status	What it Means
		Off	TE 2000 has not loaded successfully.
		Blinking	The CK31 is not connected to the host.
		On	A connection to the server has been established and all network connections are active. You can use TE 2000.

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.	From the Start menu, choose Intermec Settings. Go to Device Settings > Beeper > Volume .
Use the Beeper Volume command.	For help, see “Beeper Volume” in the <i>Intermec Computer Command Reference Manual</i> .

Scanning Bar Codes



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

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

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.

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

- Code 39
- Code 128
- PDF417
- UPC/EAN
- DataMatrix

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 understanding how to use Intermec Settings, see “Configuring the CK31 Locally With Intermec Settings” on page 28.

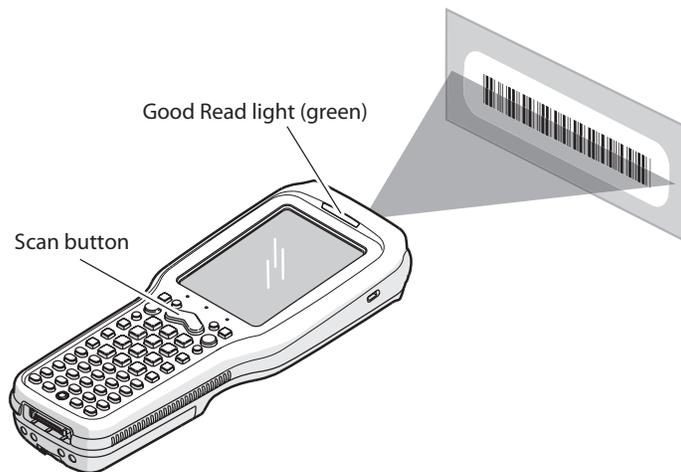
The next sections describe how to scan a bar code label with the 1D linear imager and the 2D area imager.

Scanning With the 1D Linear Imager

If the CK31 has a 1D linear imager, use the following procedure to practice how to scan 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.

To scan a bar code label with the 1D linear imager

- 1 Press **⏻** to turn on the CK31.
- 2 Point the scanner window at the bar code label and hold the computer at a slight angle six to ten inches 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.



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.

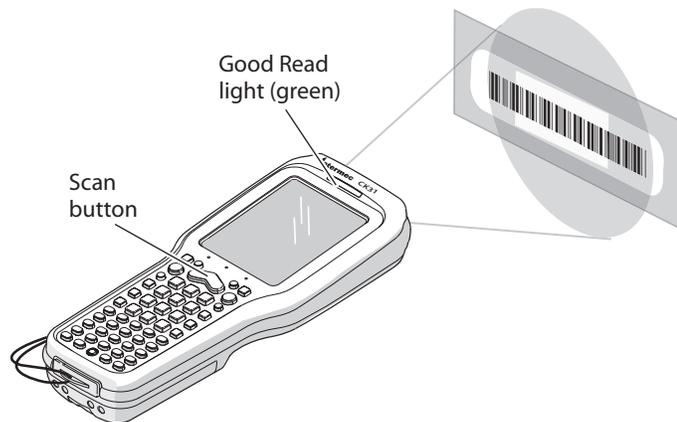
- 4 Release the **Scan** button.

Scanning With a 2D Area Imager

If the CK31 has a 2D imager, use the following procedure to practice how to scan a bar code. The 2D imager provides the ability 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. Using the 2D area imager is very similar to taking a picture with a digital camera.

To scan a bar code label with the 2D area imager

- 1 Press **⏻** 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.



Scanning: Using the 2D imager to scan a bar code label.

The imager flashes repeatedly while it is trying to read a bar code. 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.

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

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If you have problems scanning a bar code with the 2D imager, try following some of these tips to improve the performance of your imager:

- Set Lighting mode to Illum LED Priority.
- Keep your hand as steady as possible while scanning a label.
- Make sure that Aimer LED Duration is set to zero.
- Position the imager as close to the bar code as possible while still being able to capture the entire bar code.
- Enable only the bar codes that you need to use every day.

Use Intermec Settings to configure these imager commands. For help using Intermec Settings, see “Configuring the CK31 Locally With Intermec Settings” on page 28. 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 from the Intermec web site or from the CD that ships on the inside front cover of the user’s manual.

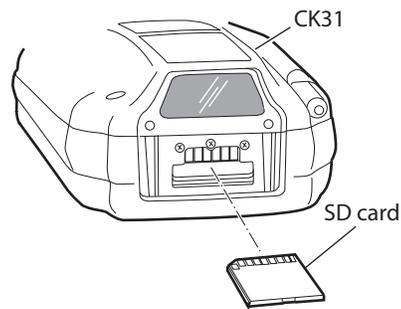
Using the SD Card

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.

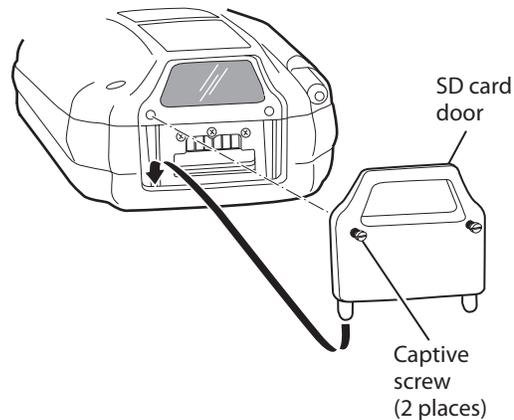
To insert an SD card

- 1 Press **⏻** 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.

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- 4 Push the card into the slot until it latches in place.
- 5 Replace the door and attach it with the two captive screws.



- 6 Press $\frac{1}{2}$ to turn on the CK31.

To remove the SD card

- 1 Press $\frac{1}{2}$ 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

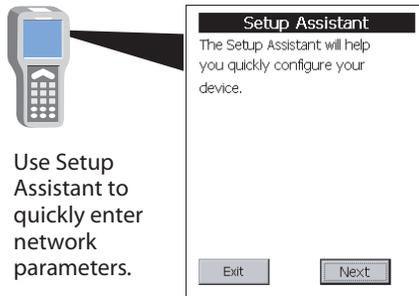
Use this chapter to understand how to configure the CK31 to communicate in your network. In this chapter, you will find these sections:

- How to Configure the CK31 Parameters
- Configuring the CK31 for Your Network
- Configuring Security

How to Configure the CK31 Parameters

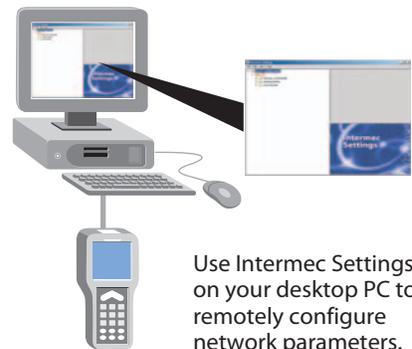
You can configure many parameters on the CK31, such as the bar code symbologies it decodes or the network settings. These characteristics are controlled by configuration parameters. The values you set for these configuration parameters determine how the computer operates.

Use Setup Assistant

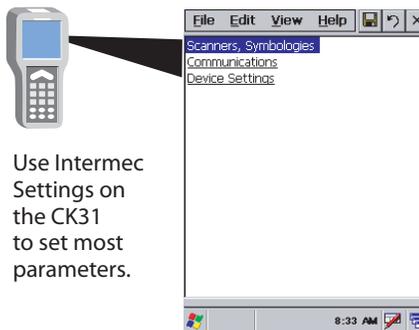


Use Setup Assistant to quickly enter network parameters.

Use Intermec Settings Remotely



Use Intermec Settings Locally



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 the Setup Assistant

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

- Date and time (including time zone)
- SSID (Network name)
- 802.1x security
- DHCP server or IP address, subnet mask, and default router
- Primary and secondary DNS and WINS addresses
- 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

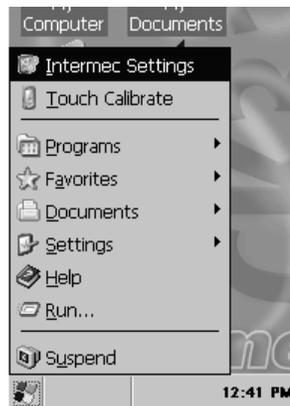
After you complete the Setup Assistant, the CK31 should be communicating with your network. A network connection icon appears in your taskbar. For more information on the network icons, see “Understanding the Screen Icons” on page 15.

Configuring the CK31 Locally With Intermec Settings

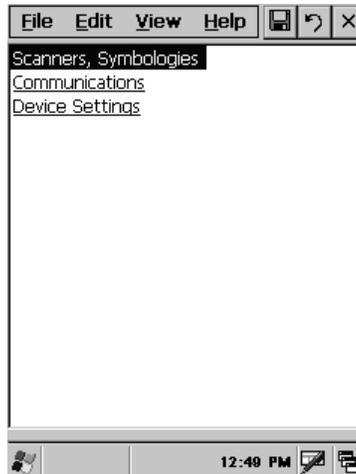
Use Intermec Settings to configure the CK31 and view system information. You can access Intermec Settings while running any application.

To open Intermec Settings

- 1 Tap the **Start** icon or press **□■** and then **■□**. The Start menu appears.

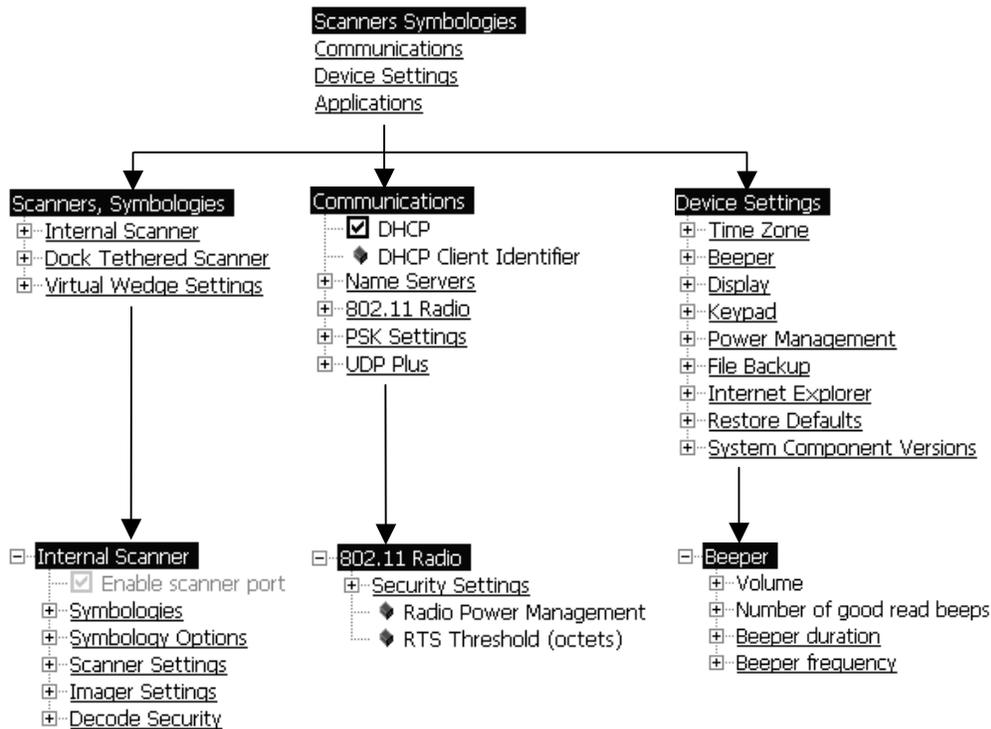


- 2 Select **Intermec Settings**. The Intermec Settings application appears.



Chapter 2 — Configuring the CK31

Use the following diagram to help find the commands you need to use to configure your CK31s. 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 from the Intermec web site or from the CD that ships on the inside front cover of the user's 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.

Chapter 2 — Configuring the CK31

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

Navigating in Intermec Settings

To Do This:	Press:
Select or expand an option	<ul style="list-style-type: none">• Tap the option• ▲ or ▼ to select an option
Select text in a text box	<ul style="list-style-type: none">• From the highlighted option, press Tab• Tap in the text box and drag the stylus over the text
Expand an option	<ul style="list-style-type: none">• Tap the option• Press ▲ or ▼ to select an option and then press Alt-▼
Save settings	<ul style="list-style-type: none">• 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 104.



Note: Using the Restore Defaults option restores all parameters including network settings. When you choose to restore defaults, you erase 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 **Device Settings > Restore Defaults**.
- 2 Select **Restore Defaults** and choose the **Run App** button. A Run Application dialog box appears asking if you want to run the restore defaults program.

- 3 Select **Yes**. 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 have saved your settings, you should 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 Remotely With Intermec Settings

You can also use Intermec Settings remotely to configure your CK31. The remote version of Intermec Settings provides these features:

- Intermec Settings can configure CK31s one-to-one through an ActiveSync connection.
- Intermec Settings can run as a plug-in to the Wavelink Avalanche device management system. Avalanche automates device management within a network and lets you install, update, and manage the software and configurations of wireless and other devices.

The ActiveSync (one-to-one) version of Intermec Settings is available from the Intermec web site as part of the Intermec Developer's Library (IDL) download or from the IDL CD. For information on installing ActiveSync and establishing a partnership, see "Installing Applications Using ActiveSync" on page 59. Intermec Settings is also available as part of a Wavelink Avalanche package for the CK31. You can also download this package from the Intermec web site.

For information on how to use the Intermec Settings application, see the online manual available from the Help menu in Intermec Settings.

Synchronizing the CK31 System Time With a Time Server

It is important that the time on all of your CK31s be synchronized with a network time server to ensure real-time communications and updates. 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.

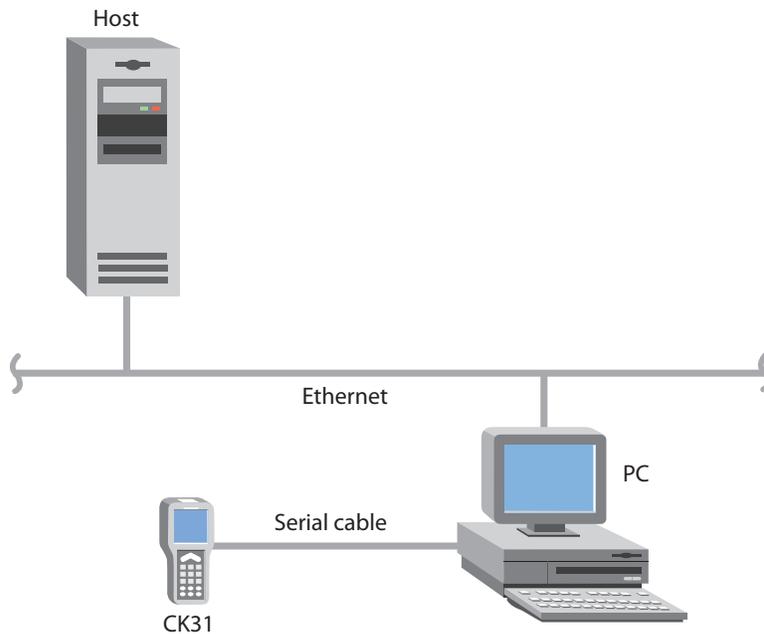
Configuring the CK31 for Your Network

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:

- serial communications.
- 802.11b/g radio communications.

Configuring Serial Communications

The CK31 has a serial port to transfer data to and receive data from another device via RS-232 communications. 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 98.



CK31 in a Serial Network.

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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.

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.

Attention: Assurez-vous que la distance entre tous les éléments avec antennes soit d'au moins 30 centimètres (un pied) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

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:

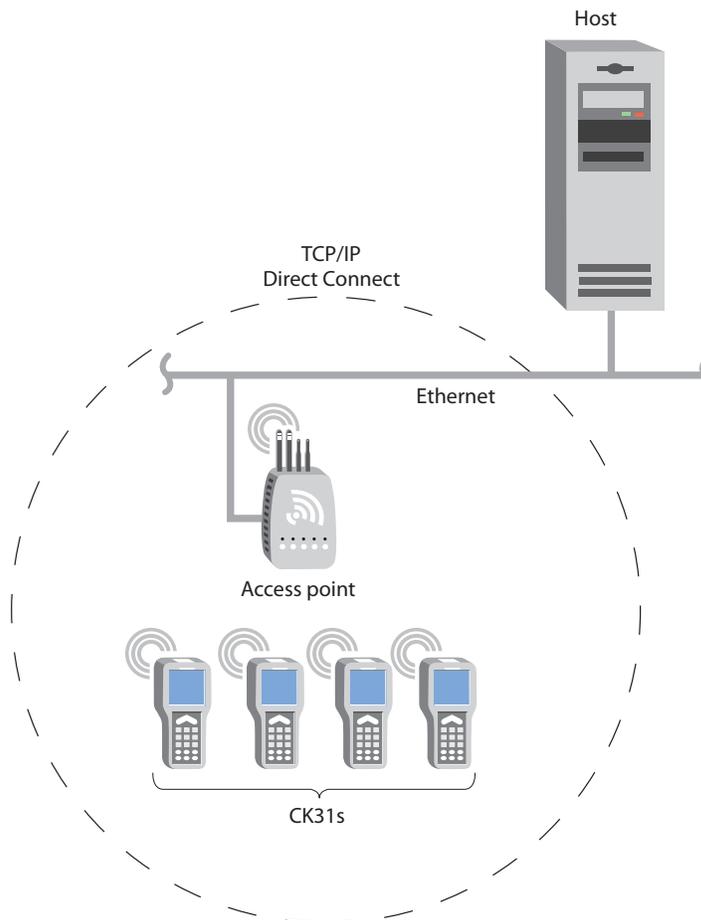
- TCP/IP
- UDP Plus

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

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Configuring the Network Parameters for a TCP/IP Network

In a TCP/IP network, the CK31 communicates with a host computer directly 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)

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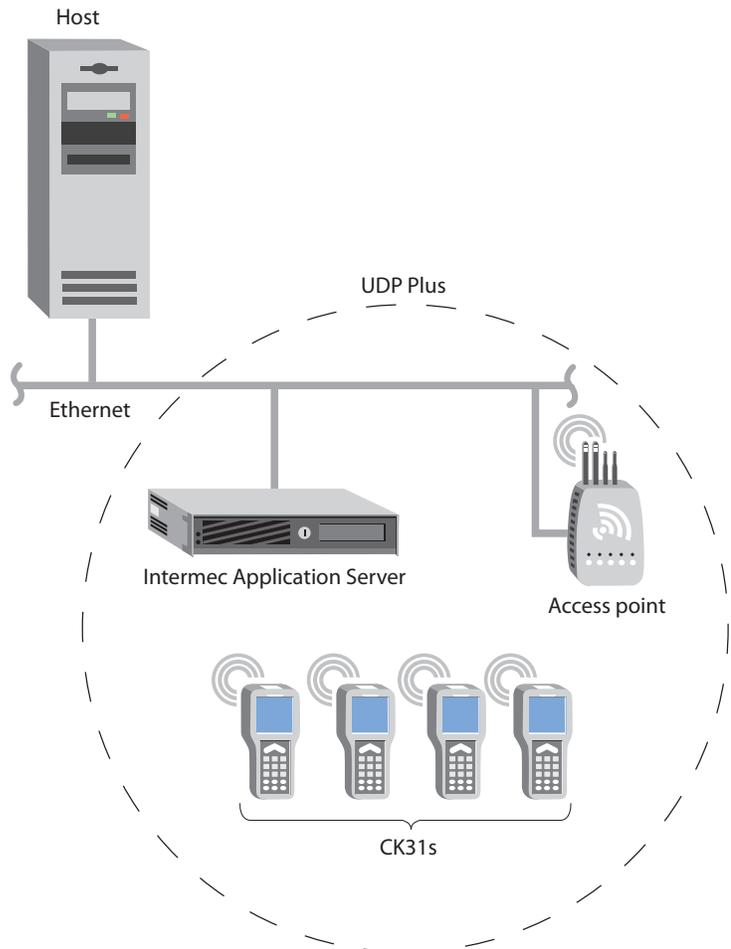
- IP settings (if not using DHCP)

2 Configure security. For help, see “Configuring Security” on page 37.

The easiest way to configure the network parameters on the CK31 is to use Intermec Settings. For help, see “Configuring the CK31 Locally With Intermec Settings” on page 28.

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

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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 Configure the security. For help, see “Configuring Security” in the next section.

The easiest way to configure the network parameters on the CK31 is to use Intermec Settings. For help, see “Configuring the CK31 Locally With Intermec Settings” on page 28.

Configuring Security

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

- Wi-Fi Protected Access (WPA)
- 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 53. Intermec always recommends that you implement security.

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



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

Choosing Between Microsoft and Funk Security

Before you can implement a security solution on the CK31, you need to choose between Microsoft and Funk security:

- Microsoft security is the default setting. If you want to use Microsoft security, you can start configuring your WPA, 802.1x, or WEP security now.
- Funk security provides everything you get with Microsoft security plus the addition of CCX v1.0 compliance. Funk security enables you to use LEAP and TTLS authentication on your CK31.

If you choose to use Funk security, you need to:

- select Funk security as your security choice.
- select a profile.



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.

Selecting Funk as Your Security Choice

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

To select Funk 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.

Chapter 2 — Configuring the CK31

- 3 Select **Communications > 802.11 Radio > Security Settings > Security Choice**.
- 4 From the **Security Choice** list, select **Funk 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 **OK** or press **Esc** to clear the alert box.
- 7 Save your settings.
- 8 Warm boot your CK31 by pressing and holding the **⏻** key for five seconds.

Selecting a Profile for Funk Security

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

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 > Security Settings > Funk Security**.
- 4 (Optional) Give your profiles meaningful names.
 - a Select a profile. The profile expands.
 - b Select **Profile Label** and a text box appears.
 - c Select the text in the box and type in your meaningful name.
 - d Press **Enter**.
- 5 Repeat Step 4 for as many profiles as you want to define.

Chapter 2 — Configuring the CK31

- 6 Select the active profile you want to configure with security settings.
- 7 Configure your security settings.

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 Enterprise (802.1x) 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 *MobileLAN access WA2XG System Manual* (P/N 074921).

- 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.

Configuring WPA Security With Funk Security

Use these procedures to set WPA and WPA-PSK security on your CK31 with Funk security.

To configure WPA security on your CK31 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 > Security Settings > Funk Security > Profile**.
- 5 For **Association**, choose **WPA** and press **Enter**. Encryption automatically defaults to TKIP.
- 6 For **Authentication**, choose **TTLS**, **PEAP**, or **TLS** and 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**.



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 50.

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- b** For **Validate Server Certificate**, choose **Enabled** 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 security on your CK31 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 > Security Settings > Funk Security > Profile**.
- 5 For **Association**, choose **WPA** and press **Enter**.
- 6 For **Authentication**, 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 and WPA-PSK security on your CK31 with Microsoft security.

To enable WPA security on your CK31 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 > Security Settings > 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:

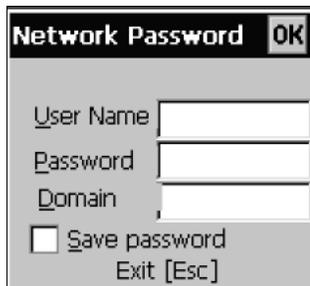
- a Select **Properties** and tap the **Run App** button. The Auth. Settings box appears.



- b From the Auth. Settings box, tap the **Select** button.
- c Select your certificate from the list and 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.



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- 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 security on your CK31 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 > Security Settings > 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.

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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 *MobileLAN access WA2X System Manual* (P/N 073915).

- 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 > Security Settings > 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**.

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If you choose TLS:

- a Load a user and root certificate on your CK31. For help, see “Loading a Certificate” on page 50 for help.
 - b For **Validate Server Certificate**, choose **Enabled** and press **Enter**.
 - c You can also enter a **User Name**, **Subject Name** and **Server Common Name** if you want to increase your level of security.
- 8 Exit Intermecc Settings.

Configuring 802.1x Security With Microsoft Security

- 1 Make sure you have configured the communications and radio parameters on your CK31.
- 2 Open Intermecc Settings.
- 3 Choose **Communications > 802.11 Radio > Security Settings > 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:

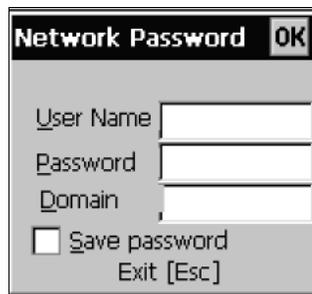
- a Select **Properties** and tap the **Run App** button. The Auth. Settings box appears.



- b From the **Auth. Settings** box, choose the **Select** button.
- c Select your certificate from the list and 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.



- 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.

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To use LEAP security, you need:

- a RADIUS server.
- Cisco access point.s



Note: 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 > Security Settings > Funk Security > Profile**.
- 4 For **Authentication**, choose **LEAP** and then press **Enter**.
- 5 For **Association**, choose **Open** or **Network EAP** and then press **Enter**.
- 6 For **Encryption**, choose **WEP** and then press **Enter**.
- 7 Select **User name**, type your user name, and then press **Enter**.
- 8 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.

- 9 Select **User Password**, type a user password, and then press **Enter**.
- 10 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.

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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 > Security Settings > 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 **None** and then press **Enter**.
- 8 Select **WEP Key** and then define a value for each WEP key. You can define up to four WEP keys.

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 Select **Network Key Index**, choose the WEP 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 > Security Settings > Microsoft Security**.
- 4 For **Network Authentication**, choose **Open**.
- 5 For **Data Encryption**, choose **WEP**.

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- 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.

If you are using Active Directory® to issue certificates, you can use the Enroll Certificates application to load the certificates. If you are using a third-party CA, you can use the Import Root or User Certificates programs to load the certificates.



Note: Do not cold boot the CK31. Cold booting the computer resets the time and date.

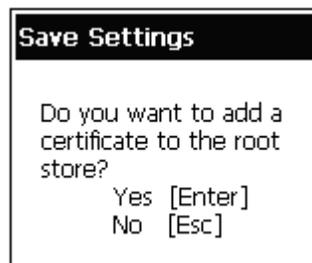
To load certificates on the CK31 if you are using Active Directory

- 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 the Configuration Utility, Select **Communications > 802.11 Radio > Security Settings > Certificates**.
- 3 Select **Enroll Certificates** and tap the **Run App** button.

- 4 From the **Run Application** box, tap **Yes**. The Enroll Certificates dialog box appears.



- 5 In the Enroll Certificates dialog box, enter the **User Name**, **Password**, and **Server (IP address)** to log into the CA server.
- 6 Tap **OK** or press **Enter**. A dialog box appears asking if you want to load the root certificate.



- 7 Press **Enter** for yes. The Enrollment Tool message box appears telling you that the user certificate has been added.
- 8 Press **Enter** to close the Enrollment Tool message box.
- 9 Configure your CK31 for WPA or 802.1x security.

To load certificates on the CK31 if you are using a third-party CA

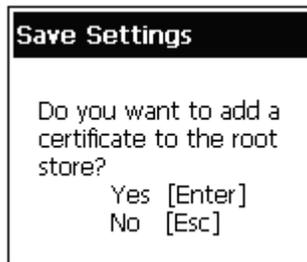


Note: You need to create the `\temp\root` and `\temp\user` folders on your CK31 before you can copy the certificate files to your handheld computer.

- 1 Copy your `.cer` file to the `\temp\root` folder on the CK31.

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- 2 Copy your .der and .pvk files to the \temp\user folder on the CK31.
- 3 From the Configuration Utility, select **Communications > 802.11 Radio > Security Settings > Certificates**.
- 4 Select **Import Root Certificates** and tap the **Run App** button to load the .cer file. A dialog box appears asking if you want to add the certificate to the root store.



- 5 Press **Enter** to add the certificate. A message box appears telling you that the root certificate has been imported.



- 6 Tap **OK** or press **Enter** to close the Success message box.
- 7 Select **Import User Certificate** to load the .der and .pvk files. A message box appears telling you that the certificate has been imported.



- 8 Tap **OK** or press **Enter** to close the Success message box.
- 9 Configure your CK31 for WPA 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 > Security Settings > Microsoft Security**.
- 3 For **Network Authentication**, choose **Open**.
- 4 For **Data Encryption**, choose **Disabled**.
- 5 Close Intermec Settings.

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3 Developing and Installing Applications

In this chapter you will find guidelines for developing applications using the Software Developer's Kit (SDK) and converting existing Trakker Antares applications using the Programmer Software Kit (PSK). 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 SDK to develop new applications to run on the CK31. The Intermec SDK is a library of C++ language functions you can use to create applications for the CK31.

See the SDK online user's manual for help developing your application. The *Intermec CK31 SDK User's Manual* contains hardware and software requirements, all of the functions that are supported by the CK31, and how to use these functions. The SDK is part of the Intermec Developer's Library (IDL), which is available on CD (P/N 235-114-001) or as a download from the Intermec web site at www.intermec.com.

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

- 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
- 128MB RAM (196MB recommended)

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- 360MB hard drive space for minimum installation (720MB 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 PSK to convert it. The Intermec PSK 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 PSK functions. You may need to rewrite parts of your application when converting it for use on the CK31. See the online Intermec PSK User's Manual for a list of functions that are not supported.

You need these hardware and software components to use the PSK:

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

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- Microsoft embedded Visual C++ version 4.0 with Service Pack 2
- Intermec SDK and development tools
- Intermec PSK, which contains these files and utilities:
 - PSK functions library
 - Header files
 - Example files

The PSK is part of the Intermec Developer's Library (IDL), which is available on CD (P/N 235-114-001) or as a download from the Intermec web site at www.intermec.com.

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.

Intermec recommends that you store your applications in the CK_FFS folder where they can persist through a cold boot. The CK_FFS folder is an area of storage that is part of the CK31 flash memory. This storage area is not deleted during a cold boot.

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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 install files.

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

- ActiveSync
- SD Card
- FTP Server
- Wavelink Avalanche

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.

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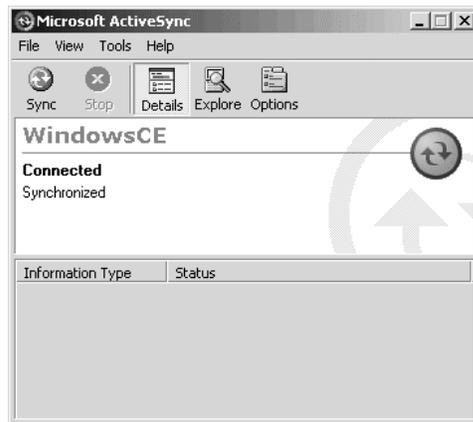
- 2 Connect the AD1 to your PC with the USB or serial cable.
- 3 If you are using a serial cable, from the CK31 Start Screen tap My Computer and then choose **Program Files > ActiveSync Serial**.

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.

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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.

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To install an application on the CK31 using ActiveSync

- 1 Connect the CK31 to your PC using ActiveSync. For help, see the previous section, “Installing ActiveSync and Establishing a Partnership.”
- 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 “Using the SD Card” on page 23.
- 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 on it.

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.

Launching Your Application Automatically

To launch your application automatically 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

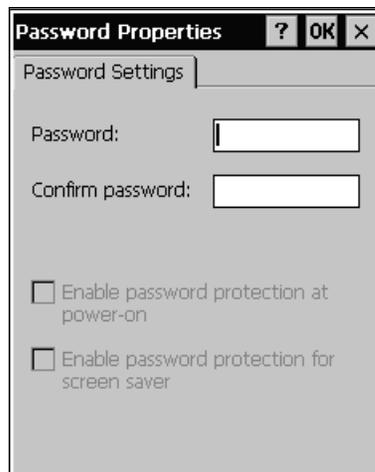
When you initially start the CK31, there is no password to protect access to the CK31. Anyone can turn on the CK31 and access all of the information and tools loaded on it. When you login to your CK31 with password protection enabled, the password icon () appears in the taskbar.

To set a password

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

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- 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 your new password in 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.



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- 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 your new password in 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 remotely upgrade your computer using Intermec Settings.

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.

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 ZIP 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 and that it has an SD at the end of the file name.

You can use any file transfer method (ActiveSync, FTP server, and so on) to copy the ZIP file 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 “Using the SD Card” on page 23 for information on how to remove and insert the SD card.

Chapter 3 — Developing and Installing Applications

To upgrade the operating system

- 1 Download the latest upgrade ZIP file from the Intermec web site to your desktop PC.
- 2 Unzip the files on your desktop PC.
- 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 to your SD card.

If you are using ActiveSync, an FTP server, or Wavelink Avalanche 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 92.

Upgrading Your CK31 Remotely Using Intermec Settings

You can use Intermec Settings to upgrade the operating system on your Intermec CK31 through an ActiveSync connection. For information on installing ActiveSync and establishing a partnership, see “Installing Applications Using ActiveSync” on page 59.

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

- the Intermec Settings application. This file is available from the Intermec web site as part of the Intermec Developer’s Library (IDL) download or from the IDL CD.

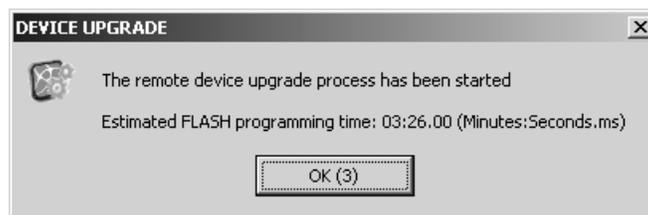
Chapter 3 — Developing and Installing Applications

- the device upgrade ZIP 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 and that it says Intermec Settings upgrade in the filename.

To remotely upgrade a CK31 using Intermec Settings

- 1 Install the Intermec Settings application on your PC.
- 2 Create a device upgrade folder and unzip the device upgrade files to it.
- 3 On your PC, go to **Start > Programs > Intermec > Intermec Settings > Upgrade Device**.
- 4 In the Select upgrade folder dialog box, browse to the folder containing your upgrade files and click **OK**.

Intermec Settings begins the upgrade process. When the next message box appears on the PC display, you can remove the CK31 from the communications dock and place it in a charging dock.



The CK31 updates the system and then cold boots.

- 5 If you need to upgrade more CK31s, place another CK31 in the communications dock and the remote device upgrade starts automatically.
- 6 When you are done upgrading CK31s, choose **File > Exit** from the Main Menu.

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4 Running Diagnostics

Use diagnostics on the CK31 to analyze hardware problems, fix application problems, and view system information.

Diagnostic Test	Page Number
802.11 Information	73
Authentication Information	73
Battery Information	74
Boot Code Version	75
Configuration Table	75
CPU Registers	76
Display Test	77
Installed Fonts	77
Intermec Value Version	78
Keypad Test	79
LED Test	79
Network Information	80
Network Test	80
Operating System Version	81
Ping Utility	82
RAM Information	82
SD Card Memory Test	83
Sound Test	84

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

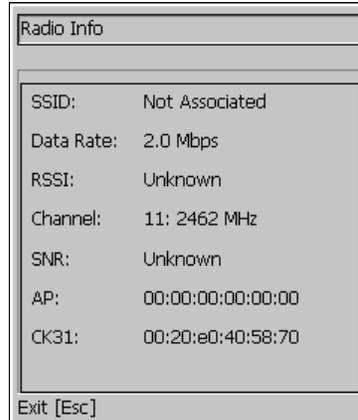
802.11 Information

The 802.11 Information diagnostic tool 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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > System > 802.11 Information**

Sample Screen



Authentication Information

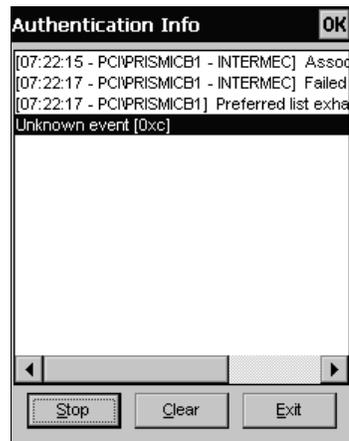
Use the Authentication Information diagnostic to see the state of your security authentication. You can use this information to troubleshoot why your device may not be authenticating. This diagnostic works with both Microsoft and Funk security choices.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > System > Authentication Information**

Chapter 4 — Running Diagnostics

Sample Screen



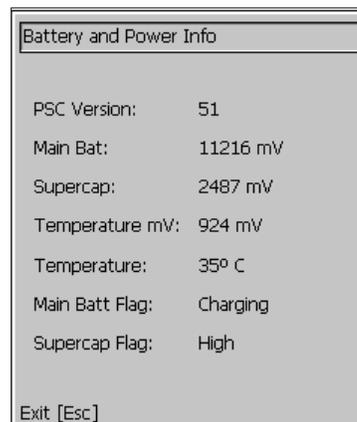
Battery Information

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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > Battery Information**

Sample Screen



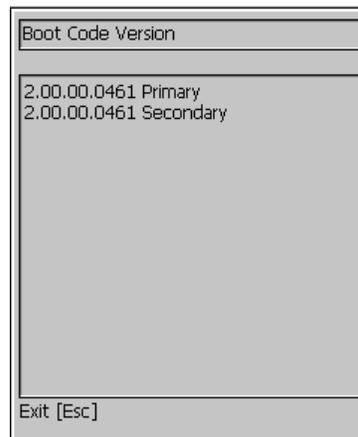
Boot Code Version

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

From the Start menu:

- Go to **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 information to tell the Intermec representative information on the hardware and software that were installed at the Intermec factory.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > Configuration Table**

Chapter 4 — Running Diagnostics

Sample Screen



```
Hardware Configuration Table
Kernel APIs: Passed
Country Code App: Passed
Serial Num: 311204300504
GUID: ffffffff-ffff-ffff-ffff-ffffffffff
Cnfg Num: CK31G114E11N2804
Contrast: +050
Model: CK31G
Keypad: 11, 52 Pgm'able
Scanner: 4, IT4000 Imager
Local: E, English
SW Option: 1, Std Cnfg
BlueTooth: N, No BlueTooth
Security: 2, CCX
Radio: 804, US/Canada
Exit [Esc]
```

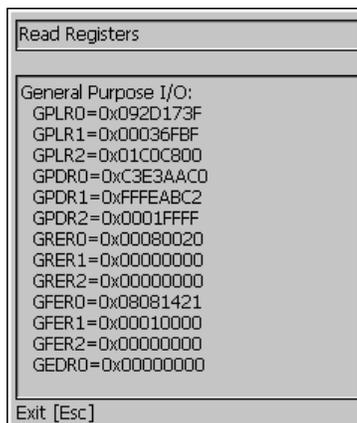
CPU Registers

The CPU Registers diagnostic reads every register in the x-scale processor chip and displays the values.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > CPU Registers**

Sample Screen



```
Read Registers
General Purpose I/O:
GPLR0=0x092D173F
GPLR1=0x00036FBF
GPLR2=0x01C0C800
GPDRO=0xC3E3AAC0
GPDR1=0xFFFEABC2
GPDR2=0x0001FFFF
GRERO=0x00080020
GRER1=0x00000000
GRER2=0x00000000
GFER0=0x08081421
GFER1=0x00010000
GFER2=0x00000000
GEDRO=0x00000000
Exit [Esc]
```

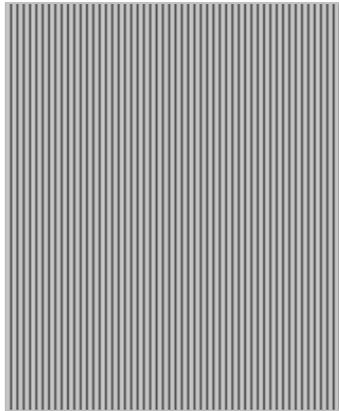
Display Test

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.

From the Start menu:

- Go to **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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Software > Installed Fonts**

Chapter 4 — Running Diagnostics

Sample Screen

```
CK30 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, E

Esc - Exit
```

Intermec Value Version

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

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Software > Intermec Value Version**

Sample Screen

```
IVA Versions
1 IVA
  <iva_2.02.00.0647>
2 CommPortWedgeDH
  <2.02.00.0647>
3 DataServer
  <2.02.00.0647>
4 Decodes Select App
  <2.02.00.0647>
9 More...
```

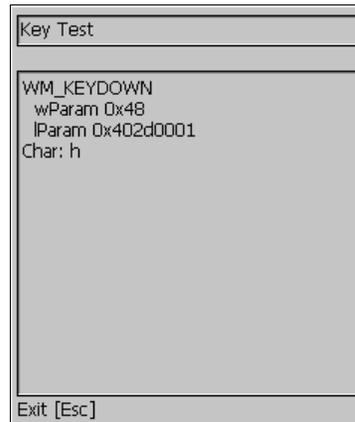
Keypad Test

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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > Keypad Test**

Sample Screen



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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > LED Test**

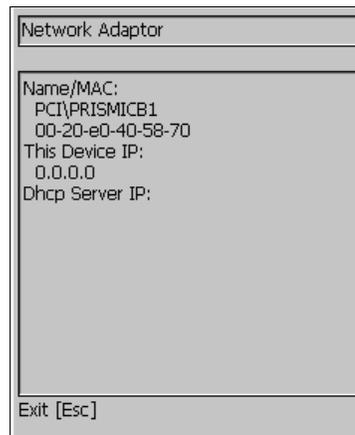
Network Information

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

From the Start menu:

- Go to **Programs > Intermec Diagnostics > System > Network Information**

Sample Screen



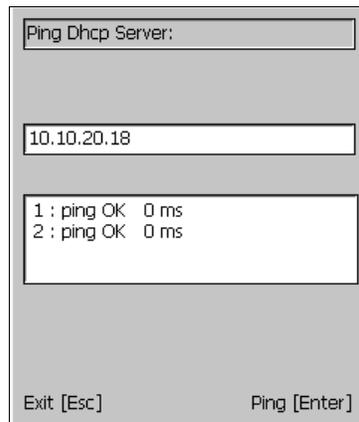
Network Test

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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > System > Network Test**

Sample Screen



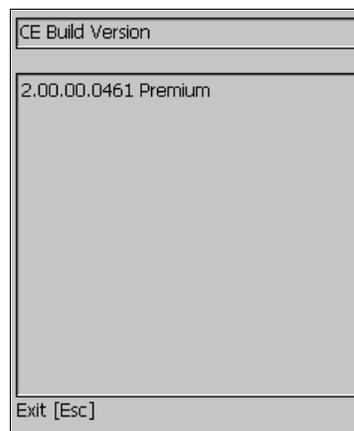
Operating System Version

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

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Software > OS Version**

Sample Screen



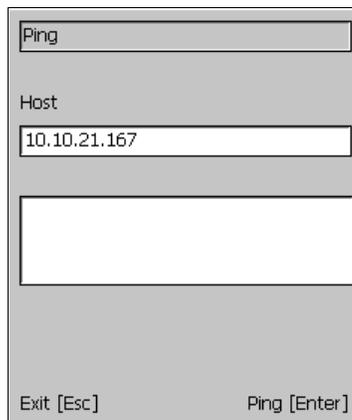
Ping Utility

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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > System > Ping Utility**

Sample Screen



The screenshot shows a simple graphical user interface for the Ping Utility. At the top, there is a title bar with the word "Ping". Below the title bar, the word "Host" is displayed above a text input field. The input field contains the IP address "10.10.21.167". Below the input field is a large, empty rectangular area, likely intended for displaying the results of the ping test. At the bottom of the window, there are two buttons: "Exit [Esc]" on the left and "Ping [Enter]" on the right.

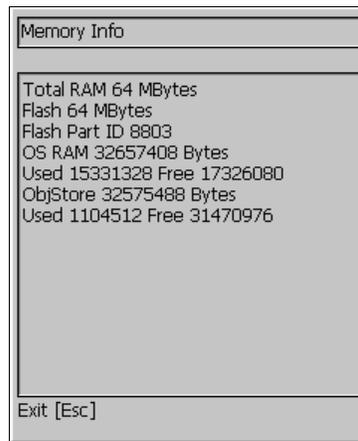
RAM Information

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.

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > RAM Information**

Sample Screen



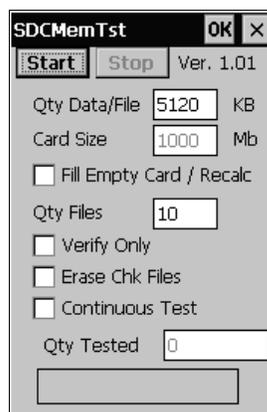
SD Card Memory Test

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

From the Start menu:

- Go to **Programs > Intermec Diagnostics > Hardware > SD Card Memory Test**

Sample Screen



Chapter 4 — Running Diagnostics

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.

From the Start menu:

- Go to **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:

Sections	Page
Problems While Operating the CK31	86
Problems While Configuring 802.1x Security	87
Problems With Wireless Connectivity	89
Problems Transmitting Data Through the Serial Port	90
Problems While Scanning Bar Codes	90
Booting the CK31	92
Cleaning the Scanner Window and Screen	94

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 71.

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 ⏻ to turn on the CK31 and nothing happens.	<ul style="list-style-type: none"> • 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. For help, see “Charging and Installing the Battery” on page 5. • 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.
The CK31 appears to be locked up and you cannot enter data.	<ul style="list-style-type: none"> • 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 ⏻ to turn off the CK31 and then press ⏻ again to turn on the CK31. • Press and hold the ⏻ button for five seconds to warm boot the CK31. • Perform a cold boot on the CK31. For help, see “Cold Booting the CK31” on page 92. • Try reloading the firmware. For help, see “Upgrading Your CK31” on page 67. • If the CK31 will not boot or reset, contact your local Intermec service representative for help.

Problems While Operating the CK31 (continued)

Problem	Solution
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.

Problems While Configuring 802.1x Security

If you have trouble configuring the computer for 802.1x security, check these problems and possible solutions.

Problems While Configuring 802.1x Security

Problem	Solution
The CK31 indicates that it is authenticated, but it does not communicate with the host.	Make sure that the CK31 IP address, host IP address, subnet mask, and default router are properly configured for your network. Note: Do not cold boot the CK31. Cold booting the computer resets the time and date.
The CK31 does not appear to be authenticating and a network connection icon does not appear on the status bar. To see a list of network connections icons, see “Understanding the Screen Icons” on page 15.	The CK31 may not be communicating with your access point. Make sure the network name on the CK31 is the same as the network name (SSID) of the access point that you are trying to communicate with. The default network name is “INTERMEC.” The 802.1x security network may not be active. Make sure that the server software is properly loaded and configured on the server PC. For help, see the documentation that shipped with your server software.



Chapter 5 — Troubleshooting and Maintaining the CK31

Problems While Configuring 802.1x Security (continued)

Problem	Solution
A network connection icon appears in the status bar, but it disappears.	<p>The CK31 may not be communicating with the access point that you want it to communicate with. Make sure that the network name on the CK31 is the same as the network name of the access point that you are trying to communicate with. The default network name is “INTERMEC.”</p> <p>The access point that you are trying to communicate with may not be communicating with the server. Make sure your access point is turned on, properly configured, and has 802.1x security enabled.</p>
The CK31 indicates that it is not authenticated.	<p>Make sure that:</p> <ul style="list-style-type: none">• The User Name and Password parameters 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 the 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 that it can communicate with your access point. You can use the PING utility to determine communications. Go to Start > Programs > Intermec Diagnostics > System > Ping Utility.• The authentication server software is running on the server PC.
You are setting up multiple access points in a network, with different SSIDs, and the connection fails.	<p>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.</p>
You receive a message saying “The server certificate has expired or your system date is incorrect” after you cold boot the CK31.	<p>The date and time on the CK31 are not saved through a cold boot. You need to re-enter the date and time and then save your changes.</p>

Problems With Wireless Connectivity

Problem	Solution
<p>When you turn on the CK31 after it was suspended for a while (10-15 minutes or longer), it can no longer send or receive messages over the network.</p>	<p>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.</p>
<p>The no network connection icon (🚫) appears on the status bar. The CK31 is not communicating with the access point.</p>	<ul style="list-style-type: none"> • 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 34. • If you have an 802.11b radio, the radio initialization process may have failed. Try resetting the CK31. See “Booting the CK31” on page 92. • 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.
<p>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.</p>	<p>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.</p>
<p>The network connection icon is in the status bar, but the host computer is not receiving any data from the CK31.</p>	<p>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.</p> <p>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.</p>

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.

For more information on using the serial port, see “Configuring Serial Communications” on page 33.

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.	There are two possible problems: <ul style="list-style-type: none">• You may be too far away from the bar code label. Try moving closer to the bar code label and scan it again.• You may be scanning the bar code label “straight on.” 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 test the scanner. You need to be within the scanning range to scan bar code labels. For help scanning bar codes, see “Scanning Bar Codes” on page 20.
When you release the Scan button or handle trigger, the Good Read light does not turn off.	The Good Read light will remain on if you configure the CK31 to use continuous/edge triggering. If you configure the CK31 for level triggering and the Good Read light remains on, there may be a problem. Press the Scan button or pull the trigger again without scanning a bar code label. If the light is still on, contact your local Intermec service representative.

Chapter 5 — Troubleshooting and Maintaining the CK31

Problems While Scanning Bar Codes (continued)

Problem	Solution
The scanner will not read the bar code label.	<ul style="list-style-type: none">• 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.
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.	<ul style="list-style-type: none">• 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.

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 **Vo**, 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 **Vo** 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

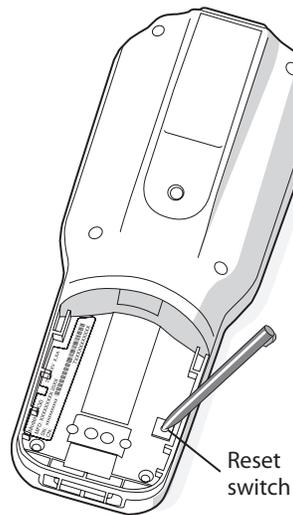
If the CK31 or application is locked up and does not respond to a warm boot, follow this procedure to perform a cold boot.

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 66.

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.

Chapter 5 — Troubleshooting and Maintaining the CK31



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

Attention: N'employez pas la force ou un objet pointu quand appuyant sur le remettez à zéro le bouton . Vous pouvez endommager le remettez à zéro le bouton.

3 Replace the battery.

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



Note: Date and time settings are not saved through a cold boot. You will 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.



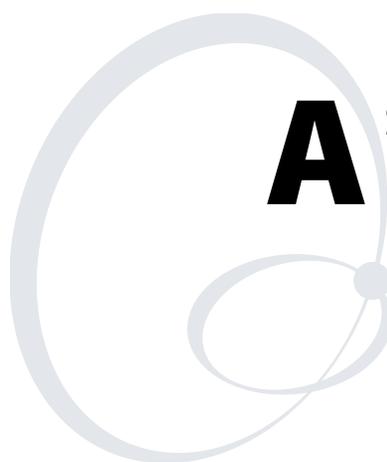
Caution

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

Attention: Le CK31 ne contient pas de pièces réparables par l'utilisateur. Le fait d'ouvrir l'unité annule la garantie et peut endommager les pièces internes.

To clean the scanner window and computer screen

- 1 Press ⏻ 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: \approx 7,4 to 12 VDC; 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

- 52-key full alphanumeric keypad

Appendix A — Specifications

Bar Code Symbologies

- Codabar
- Codablock
- Code 11
- Code 2 of 5
- Code 39
- Code 93
- Code 128
- DataMatrix
- EAN.UCC Composite
- Interleaved 2 of 5
- Maxicode
- Matrix 2 of 5
- Micro PDF417
- MSI
- PDF417
- Plessey
- QR Code
- RSS
- Telepen
- UPC/EAN

1D Linear Imager Reading Distances

Reading distance on the 1D line

Symbology	Density (mm)	Density (mil)	Min (mm)	Max (mm)	Min (inch)	Max (inch)
Code 39	0.1	4	95	136	3.7	5.4
	0.3	12	45	240	1.8	9.4
	0.5	20	44	300	1.7	11.8
	1	39	120	400	4.7	15.7
EAN	0,33 mm/ 100% contrast	13 mils/ 100% contrast	45	240	1.8	9.4
	0,33 mm/ 25% contrast	13 mils/ 25% contrast	61	157	2.4	6.2

Reading distances on the 2D line

Symbology	Density (mm)	Density (mil)	Min (mm)	Max (mm)	Min (inch)	Max (inch)
Code 39	0.125	5	95	146	3.7	5.7
EAN	0,33 mm/ 100% contrast	13 mils/ 100% contrast	60	205	2.4	8.1

Appendix A — Specifications

2D Area Imager Reading Distances

Code Size	Near Distance	Far Distance
MaxiCode 35 mil	2.5 cm (1.0 inches)	30.5 cm (12 inches)
DataMatrix 15 mil	6.9 cm (2.7 inches)	14 cm (5.5 inches)
PDF417 10 mil	5.3 cm (2.1 inches)	20.3 cm (8 inches)
PDF417 8 mil	5.8 cm (2.3 inches)	17.8 cm (7 inches)
PDF417 6.6 mil	8.9 cm (3.5 inches)	13.3 cm (5.25 inches)
Code 39 15 mil	2.8 cm (1.1 inches)	30 cm (11.8 inches)
Code 39 8 mil	6.4 cm (2.5 inches)	16.8 cm (6.6 inches)
UPC 13 mil	3.8 cm (1.5 inches)	29.2 cm (11.5 inches)

*Code 39 retroreflective

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.

073573 Power Supply

Use the 073573 power supply to provide power for the communications docks and chargers.

AB1G Battery

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

AC1 4-Slot Battery Charger

Use the AC1 to charge up to four AB1G batteries at a time. The battery charger is designed to sense when a battery is fully charged and not overcharge it, ensuring long and consistent battery life.

AC2 4-Bay Battery Charging Dock

Use the AC2 to charge up to four AB1 batteries without having to remove them from the CK31. You can insert up to four CK31s with batteries installed making it easy to remember to charge your batteries overnight.

AC3 8-Slot Battery Charging Dock

Use the AC3 to charge up to eight AB1 batteries without having to remove them from the CK31.

AD1 Communications Dock

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

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.

CK31 Handle (P/N 074141)

The handle provides a convenient scanning trigger for the CK31.

Typing Characters Not Printed on the Keypad

The keypad uses 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 keypad.

Typing Hidden Characters on the Keypad

To Type:	Press This Key Sequence on the Keypad:
\$	☐ and then 6
`	☐ and then G
!	☐ and then I
“	☐ and then K
'	☐ and then L
{	☐ and then N
}	☐ and then O
:	☐ and then P
;	☐ and then Q
	☐ and then R
?	☐ and then S
~	☐ and then T

Appendix A — Specifications

Typing Hidden Characters on the International Keypads

To Type:	Press This Key Sequence on One of the Keypads:
\$	 and then 6
{	 and then 9
}	 and then 0
<	Not hidden
>	Not hidden
]	Not hidden
[Not hidden
,	Not hidden

Typing Hidden Characters on the 3270/5250 TE Keypads

To Type:	Press This Key Sequence on the Keypad:
\$	 and then 6
<	Not hidden
>	Not hidden
]	Not hidden
[Not hidden
`	 and then G
!	 and then I
“	 and then K
‘	 and then L
{	 and then N
}	 key and then O
:	 and then P
;	 and then Q
?	 and then R
~	 and then T
,	Not hidden

Typing Hidden Characters on the VT/ANSI TE Keypads

To Type:	Press This Key Sequence on the Keypad:
\$	☐ and then 6
`	☐ and then G
!	☐ and then I
«	☐ and then K
'	☐ and then L
{	☐ and then N
}	☐ key and then O
:	☐ and then P
?	☐ and then R
]	Not hidden
[Not hidden
<	Not hidden
>	Not hidden
,	Not hidden

Appendix A — Specifications

A decorative graphic consisting of two overlapping circles. The larger circle is light gray and the smaller one is a slightly darker shade of gray. They overlap on the right side, with the smaller circle positioned lower and to the right of the larger one.

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 from the Intermec web site or from the CD that ships on the inside front cover of the user's manual.

Default Scanner Configuration

Symbology	Default Value
Codabar	Disabled
Codablock	Disabled
Code 11	Disabled
Code 2 of 5	Disabled
Code 39	Enabled
Code 93	Disabled
Code 128	Enabled
DataMatrix	Enabled
EAN.UCC Composite	Disabled
Interleaved 2 of 5	Disabled
Matrix 2 of 5	Disabled
Maxicode	Disabled
Micro PDF417	Disabled
MSI	Disabled
PDF417	Enabled
Plessey	Disabled
QR Code	Disabled
RSS	Disabled
Telepen	Disabled
UPC/EAN	Enabled

Appendix B — Default Settings

Default Scanner Configuration (continued)

Symbology Options	Default Value
Preamble	No characters (disabled)
Postamble	No characters (disabled)
Global Symbology ID	Disable

Scanner Settings	Default Value
Triggering Mode	Level
Hardware Trigger	Enable
Turn Off After Good Read	Enable/One-shot

Imager Settings	Default Value
1D Omni-directional Decode Enable	Enable
Lighting Mode	Illum LED Priority
Lighting Goal	50
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

Virtual Wedge Settings	Default Value
Virtual Wedge Enable	Enable
Grid	Null

Default Communications Configuration

Communication Settings	Default Value
DHCP	Enable
DHCP Client Identifier	Null
Device Name	WindowsCE

Appendix B — Default Settings

Default Communications Configuration (continued)

Name Server Settings	Default Value
Primary DNS	0.0.0.0
Secondary DNS	0.0.0.0
Primary WINS	0.0.0.0
Secondary WINS	0.0.0.0

802.11 Radio Settings	Default Value
Network Name (SSID)	INTERMEC
Infrastructure Mode	Infrastructure
Security	
Security Choice	Microsoft
Network Authentication	Open
Data Encryption	Disabled
Network Key Setting	Automatic
802.1x Authentication	Disabled
Radio Power Management	Disabled (CAM)
RTS Threshold	2347 octets

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

Appendix B — Default Settings

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

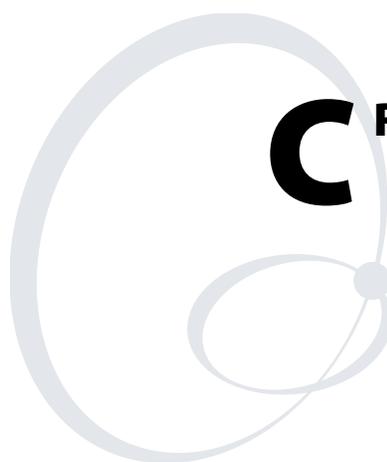
Default Device Settings Configuration

Device Settings	Default Value
Date	January 10, 2015
Time	Time of current update
Time Zone	
Select Time Zone	GMT-8 Pacific US
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
Keypad	
Adjust Beeper Volume	Enable
Adjust Display Contrast	Enable
Adjust Backlight On and Off	Enable
Task Manager	Enable
Configure Boot Functionality	Warm boot

Appendix B — Default Settings

Default Device Settings Configuration (continued)

Device Settings	Default Value
Power Management	
User Idle	1 minute
System Idle	1 minute
Suspend	1 minute
Backup Files Location	Flash File System
Start Page	File://\windows\itcbrowserck31.htm



C **Reprogrammable 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.

Use this table to understand how to navigate 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 Keypad 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.



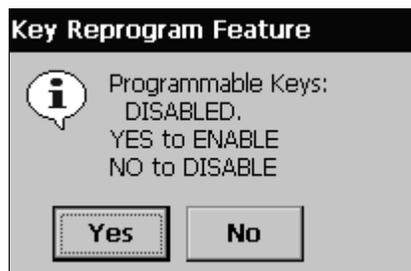
Note: You cannot easily reprogram several keys on the CK31 keypad. If you have a special request, please contact your local Intermec representative.

Starting the Reprogrammable Keypad Utility

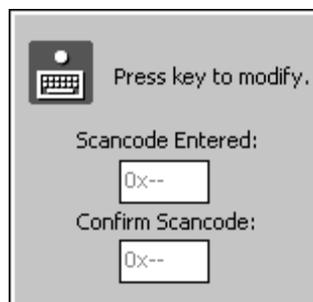
Before you can reprogram any key, you need to enable the reprogrammable keypad utility.

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 **Ctrl Alt Shift ▲**. The reprogrammable keypad utility appears.



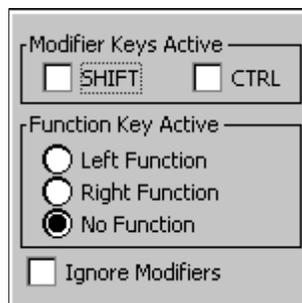
Programming a Unicode Character

You can program any Unicode character to any key or modified key combination.

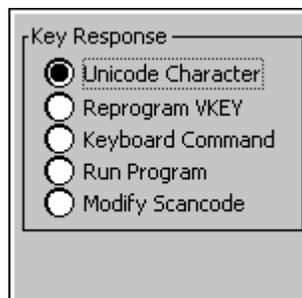
Appendix C — Reprogrammable Keypad

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.

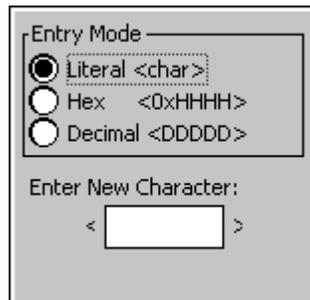


- 4 Select the modifier or function keys that you want to press before you access the key you are modifying. For example, if you want to press **Shift** to access the reprogrammed key, you select **Shift**. You do not need to select a modifier or function key.
- 5 Press **Enter**. The Key Response dialog box appears.



- 6 Select **Unicode Character** and press **Enter**. The Unicode dialog box appears.

Appendix C — Reprogrammable Keypad



- 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**.

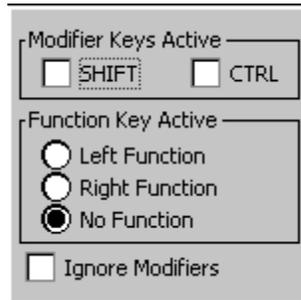
Programming a Virtual Key or Unicode Character

You can program any Virtual Key or Unicode character to any key or modified key combination.

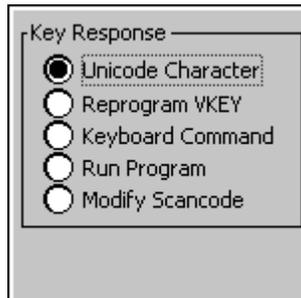
To program a Virtual Key or Unicode character

- 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.

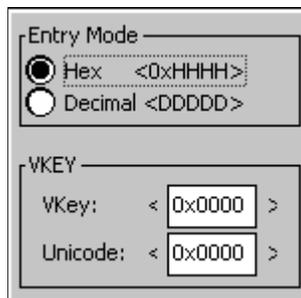
Appendix C — Reprogrammable Keypad



- 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.

Appendix C — Reprogrammable Keypad

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:

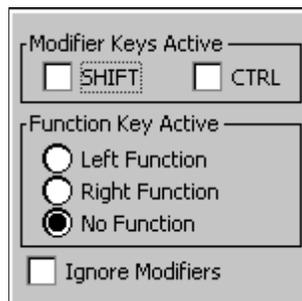
- Scanner Trigger
- Backlight Key
- Contrast Key
- Volume Key
- Mouse Key Toggle
- Rotate Display
- Insert VKey
- LWIN VKey (Menu launch on CK31)
- Delete VKey
- Backtab VKey
- Pan Mode Toggle
- High Contrast Toggle (Accessibility changes to system colors)
- Contrast Lighter
- Contrast Darker

Appendix C — Reprogrammable Keypad

- 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)

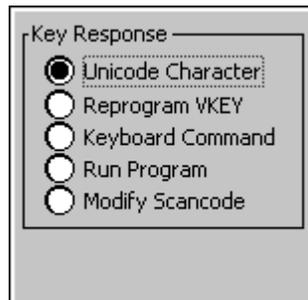
To program any key as a function key

- 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.

Appendix C — Reprogrammable Keypad



- 6 Select **Keyboard Command** and press **Enter**. The Keyboard Command Select dialog box appears.



- 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.

Appendix C — Reprogrammable Keypad

The dialog box contains two sections. The first section, titled 'Modifier Keys Active', has two checkboxes: 'SHIFT' and 'CTRL', both of which are currently unchecked. The second section, titled 'Function Key Active', has three radio buttons: 'Left Function', 'Right Function', and 'No Function'. The 'No Function' radio button is selected. Below these sections is a checkbox labeled 'Ignore Modifiers', which is also unchecked.

- 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.

The dialog box is titled 'Key Response' and contains five radio buttons. The first radio button, 'Unicode Character', is selected. The other four radio buttons are 'Reprogram VKEY', 'Keyboard Command', 'Run Program', and 'Modify Scancode', all of which are currently unselected.

- 6 Select **Run Program** and press **Enter**. The application dialog box appears.

The dialog box has two text input fields. The first is labeled 'Application to run:' and the second is labeled 'Command Line'. Below the 'Command Line' field is a button labeled 'Browse...'. Both input fields are currently empty.

Appendix C — Reprogrammable Keypad

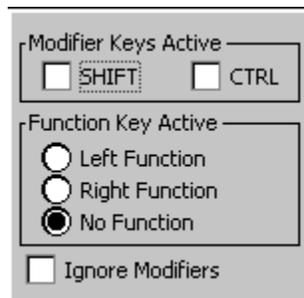
- 7 In the Application to run text box, type the location of the application you want to launch or tap **Browse** to locate the application.
- 8 (Optional) Enter any command line parameters you want to use.
- 9 Press **Enter**. A dialog box appears asking if you want to commit your new entry to permanent 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.

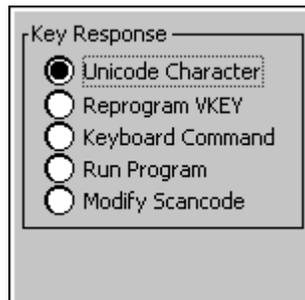
To remap a key

- 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.

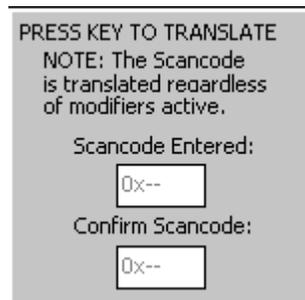


- 4 Press **Enter**. The Key Response dialog box appears.

Appendix C — Reprogrammable Keypad



- 5 Select **Modify Scan code** 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 30.

To remove all reprogramming modifications

- 1 Press **Ctrl Alt Shift ▼**. The Remove all keypad modifications dialog box appears.

Appendix C — Reprogrammable Keypad



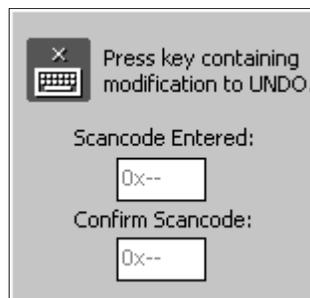
- 2 Tap **Yes**. A dialog box appears asking if you want to remove the entry from permanent storage.
- 3 Tap **Yes** or **No**. You will hear a beep when your changes are successful.

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.



Appendix C — Reprogrammable Keypad

- 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_MACHINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    0a,00,00,00,04,00,00,00,00,00
```

And the other .reg contains:

```
[HKEY_LOCAL_MACHINE\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_MACHINE\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.

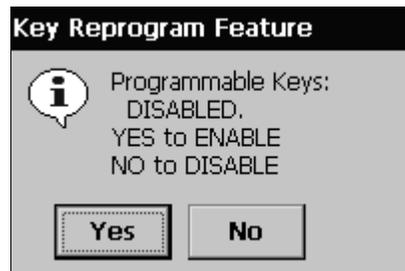
Starting the Keypad Macro Utility

Before you can record a macro, you need to enable the keypad macro utility.

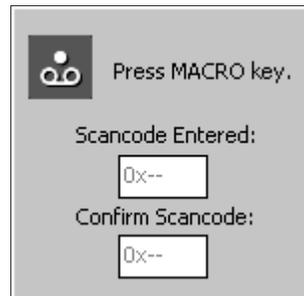
To enable the keypad macro utility

- 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.

Appendix C — Reprogrammable Keypad



- 4 Tap **Yes**.
- 5 Press **Ctrl Alt Shift** . The keypad macro utility appears.



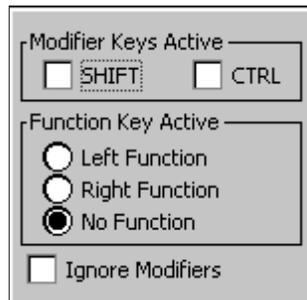
Recording a Keypad Macro

The best use of a macro is for entering repetitive data. However, you can also record a series of steps in a procedure.

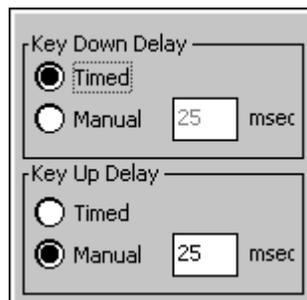
To record a keypad macro

- 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.

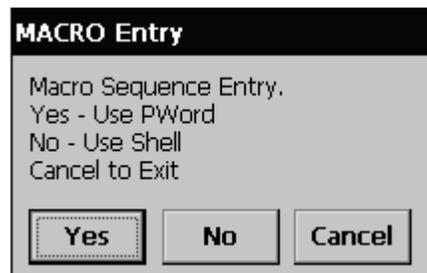
Appendix C — Reprogrammable Keypad



- 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.

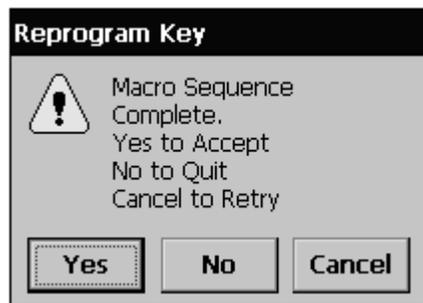


- 6 Select **Timed** or **Manual** for Key Down Delay and Key Up Delay. If you select **Timed**, the key response delay matches the timing of the key press. If you select **Manual**, you need to enter the time for the delay.
- 7 Press **Enter**. The macro entry dialog box appears.



Appendix C — Reprogrammable Keypad

- 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 **Ctrl Alt Shift**  to stop recording the macro. The reprogram key dialog box appears.



- 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 **Ctrl Alt Shift** . The Remove all keypad macros dialog box appears.



- 2 Tap **Yes**. A dialog box appears asking if you want to remove the entry from permanent storage.

Appendix C — Reprogrammable Keypad

- 3 Tap **Yes** or **No**. You will hear a beep when your changes are successful.

To remove one macro

- 1 Press **Ctrl 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`

Appendix C — Reprogrammable Keypad

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_MACHINE\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:

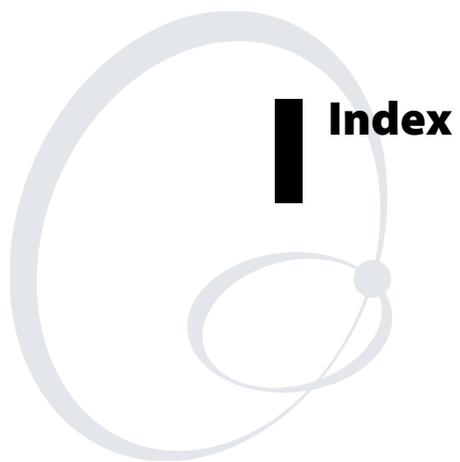
```
[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\KEYBD]
"ScancodeFilterArray"=hex:\
    0d,00,05,00,06,00,06,00,00,00
"KeyMacro0x50d"=hex:\
0a,00,00,00,00,00,00,00,\
0a,f0,00,00,a0,00,00,00,\
11,00,00,00,19,00,00,00,\
11,f0,00,00,6c,00,00,00,\
19,00,00,00,19,00,00,00,\
19,f0,00,00,6b,00,00,00
```

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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