MK3100 MICROKIOSK FOR WINDOWS EMBEDDED COMPACT 7
PRODUCT REFERENCE GUIDE

MK3100 MICROKIOSK FOR WINDOWS® EMBEDDED COMPACT 7

PRODUCT REFERENCE GUIDE

72E-163525-05

Revision A

April 2015

Warranty

For the complete Zebra hardware product warranty statement, go to:
http://www.zebra.com/warranty.

Revision History

Changes to the original guide are listed below:

Change	Date	Description
-01 Rev A	2/2013	Initial release
-02 Rev A	5/2013	Remove references to System Configuration Manager (SCM) and Device Configuration Package (DCP), change references of USB 1.1 ports to USB 2.0, removed *Downloading Partitions to the MK3100*
-03 Rev A	2/2014	Update *Function Buttons* section
-04 Rev A	3/2015	Zebra rebranding
-05 Rev A	4/2015	Removed *Local Configuration Using the Microsoft Windows Control Panel* section

TABLE OF CONTENTS

Appendix A: Technical Specifications

Appendix B: Wireless Configuration

Appendix C: Maintenance and Troubleshooting

Index

ABOUT THIS GUIDE

Introduction

The *MK3100 MicroKiosk for Windows Embedded Compact 7 Product Reference Guide* provides information on installing, operating, and programming the MK3100.

✓ **NOTE** Unless otherwise noted, the term MK3100 refers to all configurations of the device.

Configurations

This guide includes the following configurations:

- MK3100-030BG4EZZWW - Imager, Ethernet
- MK3190-030BG4EBTWW - Imager, 802.11 a/b/g/n, Bluetooth

Chapter Descriptions

Following are brief descriptions of each chapter in this guide.

- *Chapter 1, MK3100 Introduction* provides an overview of the MK3100 that includes parts of the device, features, and scanning modes.
- *Chapter 2, Installation* describes the hardware setup and installation of the MK3100.
- *Chapter 3, Configuration* describes the configuration parameters of the MK3100.
- *Chapter 4, System Features* describes the wide range of capabilities used to support independent application development on the MK3100.
- *Chapter 5, Application Deployment* describes the software development environments and how to install and upgrade applications and images.
- *Appendix A, Technical Specifications* provides technical information about the MK3100.

- *Appendix B, Wireless Configuration* refers to the *Wireless Fusion Enterprise Mobility Suite User Guide for Version X2.00* for information on configuring the wireless connection.

- *Appendix C, Maintenance and Troubleshooting* provides maintenance and troubleshooting information, and describes how to identify the MK3100 version.

Notational Conventions

This document uses these conventions:

- "User" refers to anyone using an application on the terminal.

- "Device" refers to the MK3100.

- *Italics* are used to highlight specific items in the general text, and to identify chapters and sections in this and related documents. It also identifies names of windows, menus, menu items, and fields within windows.

- **Bold** identifies buttons to be tapped or clicked.

- Bullets (•) indicate:
  - lists of alternatives or action items.
  - lists of required steps that are not necessarily sequential.

- Numbered lists indicate a set of sequential steps, i.e., those that describe step-by-step procedures.

NOTE   This symbol indicates something of special interest or importance to the reader. Failure to read the note will not result in physical harm to the reader, equipment or data.

CAUTION   This symbol indicates that if this information is ignored, the possibility of data or material damage may occur.

WARNING!   **This symbol indicates that if this information is ignored the possibility that serious personal injury may occur.**

Related Publications

Following is a list of documents that provide additional information about configuring the MK3100:

- *MK3100 Quick Reference Guide*, p/n 72-167095-xx

- *MK3100 Platform Software Development Kit (PSDK)*

- *Enterprise Mobility Developer Kit (EMDK) for C*

- *Enterprise Mobility Developer Kit (EMDK) for .NET*

- *RhoElements*

- *Wireless Fusion Enterprise Mobility Suite User Guide for Version X2.00*, p/n 72E-164268-xx

- *Control Panel User Guide,* p/n 72E-114860-xx

- *MSP 3.X User's Guide*, p/n 72E-100158-xx

For the latest version of these guides and software, and all Zebra guides, go to: http://www.zebra.com/support.

Service Information

If you have a problem using the equipment, contact your facility's technical or systems support. If there is a problem with the equipment, they will contact the Zebra Global Customer Support Center at: http://www.zebra.com/support.

When contacting Zebra support, please have the following information available:

- Serial number of the unit

- Model number or product name

- Software type and version number

Zebra responds to calls by e-mail, telephone or fax within the time limits set forth in service agreements.

If your problem cannot be solved by Zebra support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your business product from a Zebra business partner, please contact that business partner for support.

CHAPTER 1 MK3100 INTRODUCTION

Overview

The MK3100 MicroKiosk provides retail consumers access to data critical to making an informed purchasing decision. The MK3100 verifies prices on bar coded merchandise and obtains up-to-the-minute information on in-store promotions. Its easy-to-read display can be used as an electronic billboard for instant in-store merchandising and multimedia presentations to promote seasonal sales and upcoming events. The touch screen and programmable function buttons enhance in-store applications and allow customer interaction.

Parts of the MK3100

Figure 1-1 and *Figure 1-2* illustrate MK3100 parts. See *MK3100 Features on page 1-3* for explanations of these parts as well as other MK3100 features.
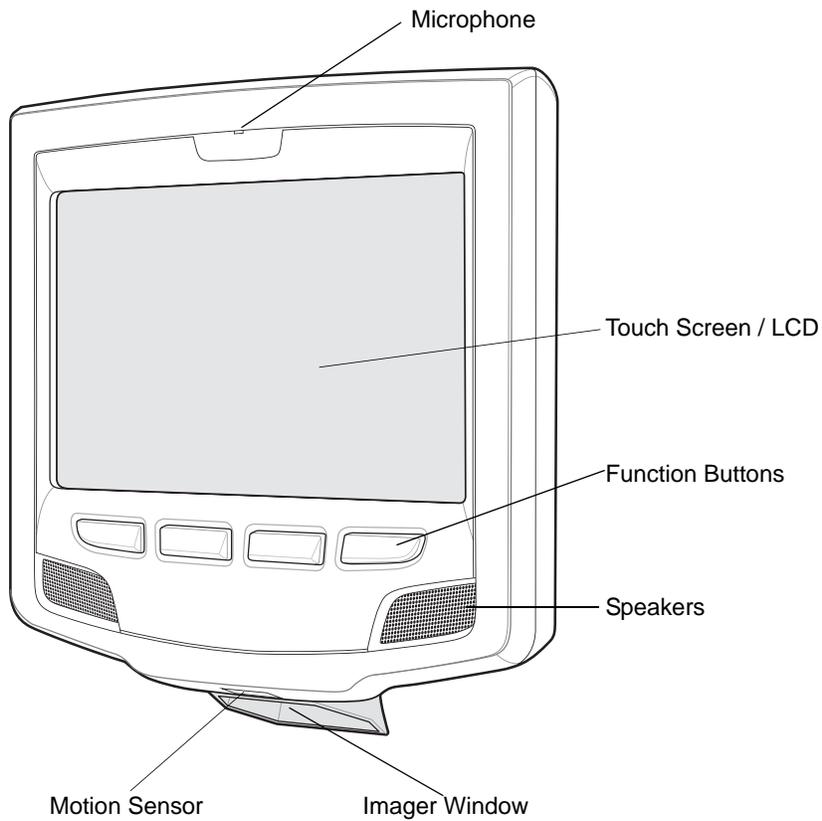
Figure 1-1 *MK3100 Front View*

Cable Run

Mounting Hole (4)

Cable Run

Mini-USB Host/Client Port

Mini-USB Host Ports (2)

Headset Jack

MicroSD Card Slot

Cable Run

Power

RJ45 (Ethernet)

Reset Button
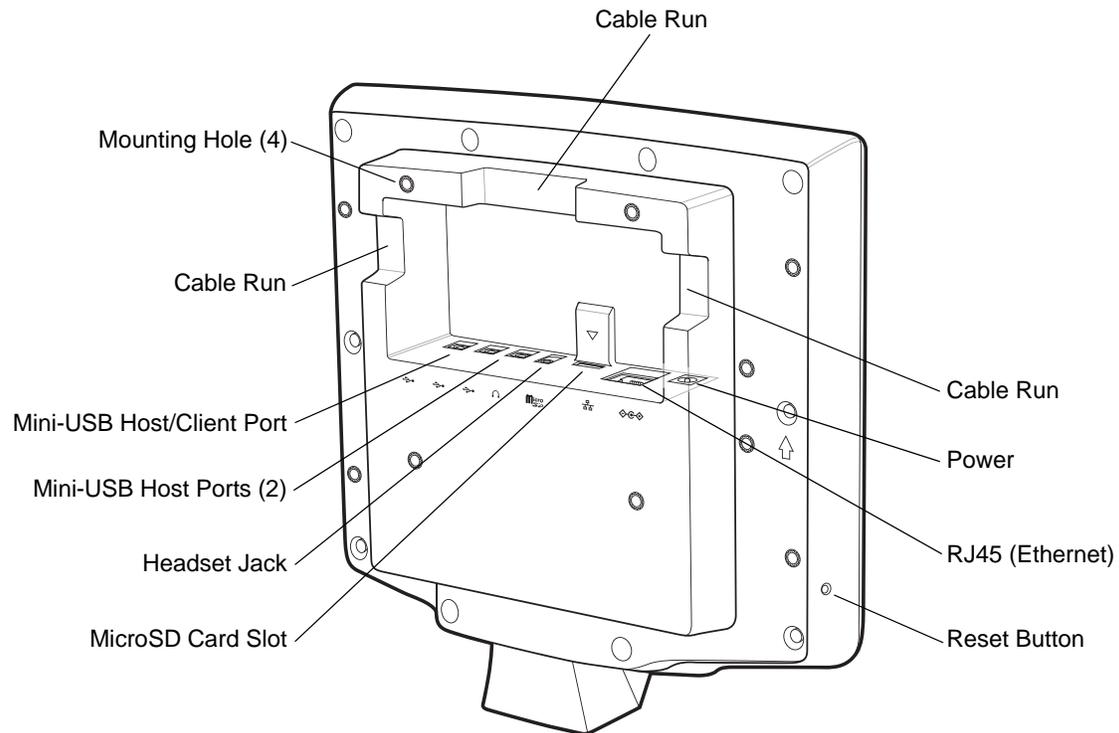
Figure 1-2   *MK3100 Rear View*

MK3100 Features

The MK3100 supports the following features.

Touch Screen / LCD

The full-color 8-inch diagonal WVGA (800 X 480 pixels) LCD is ideal for presenting text, graphics, and video. The touch screen accommodates greater user interaction and enhances custom designed applications.

Speakers

The MK3100 speakers are ideal for multimedia applications.

Microphone

The MK3100 includes a microphone built into its front housing.

Bar Code Imager

The MK3100 decodes 1D bar codes as well as 2D symbologies such as PDF417. See *Bar Code Decoding on page 1-7*. The imager window protects the engine.

Motion Sensor

The motion sensor detects motion in front of the MK3100 to trigger imaging.

Function Buttons

The MK3100 has four programmable function buttons (see *Figure 1-1*) that correspond to Up Arrow, Down Arrow, Enter, and Escape from left to right, by default. You can remap these buttons to other functions using the following registry keys:

Button 1

; P1 - TRIG01 - UP

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\ProgrammableKeys\P1]

;;; simulate VK_UP

"Action"=dword:00000002

"KeyCode"=dword:0026 ; UP

Button 2

; P2 - TRIG02 - DOWN

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\ProgrammableKeys\P2]

;;; simulate VK_DOWN

"Action"=dword:00000002

"KeyCode"=dword:0028 ; DOWN

Button 3

; P3 - TRIG03 - ENTER

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\ProgrammableKeys\P3]

;;; simulate VK_ENTER

"Action"=dword:00000002

"KeyCode"=dword:000D ; ENTER

Button 4

; P4 - TRIG04 - ESCAPE

[HKEY_LOCAL_MACHINE\SOFTWARE\Symbol\ProgrammableKeys\P4]

;;; simulate VK_ESCAPE

"Action"=dword:00000002

"KeyCode"=dword:001B ; ESCAPE

Reset Button

To reset the device, use a paper clip to press the reset button until you feel a slight click, and hold for 10 seconds.

External Ports

The MK3100 has the following external ports:

Power Port

A power supply connects to the power port (2.0 mm barrel jack connector) on the MK3100. For more information, see *Power Connection on page 2-3*.

Mini-USB Ports

The MK3100 includes a Mini-USB 2.0 host/client port and two Mini-USB 2.0 host ports for peripheral connections. For more information, see *USB Connection to a PC and Peripherals on page 2-5*.

RJ45 Ethernet / 10/100Base-T

Wired/Wireless Ethernet: Power through AC Outlet

The Ethernet / 10/100Base-T (10-conductor RJ45) port accommodates Ethernet data connection. The MK3100 receives power through the Zebra approved power supply.

Wired Ethernet: Power through Power-over-Ethernet

The MK3100 supports Power-over-Ethernet (POE). An Ethernet (10/100Base-T) cable connected to the Ethernet port provides both data communication and power to the MK3100.

MicroSD Card Slot

The MK3100 contains a slot for microSD cards of up to 32 GB.

Headset Jack

The MK3100 includes a port for headset connection.

> ⚠️ **CAUTION** When connecting a headset, Zebra recommends using cable ties or other securing mechanisms outside the unit to provide strain relief.

Memory

The MK3100 standard system configuration contains 1 GB RAM / 8 GB flash. The flash memory is non-volatile and stores the system firmware, user applications, and data.

Software

Standard well-supported operating system and development tools ease application development for the Microsoft® Windows® Embedded Compact 7 operating system: Embedded Visual C/C++ 4.0, Visual Studio.NET, Internet Explorer 7.0, C#, VisualBasic.NET, Windows media and video players, and RhoElements.

Magnetic Stripe Reader (Optional)

An optional three-track Magnetic Stripe Reader (MSR) module attaches to the MK3100 and adds the ability to read and process loyalty card and credit card transactions. The MSR connects via USB to the MK3100.

Mounting Options

You can mount the MK3100 on a desktop or wall using a commercially available bracket or stand that conforms to the 100 mm VESA Flat Panel Monitor Physical Mounting Interface (FPMPMI™) mounting standards. See *MK3100 Mounting on page 2-6*.

Developer Kits

The following developer kits are available for the MK3100:

- EMDK for C (see *Enterprise Mobility Developer Kit (EMDK) for C on page 5-1*) for developing native C/C++ applications

- RhoElements (see *RhoElements on page 5-2*) for web development

- EMDK for .NET (see *Enterprise Mobility Developer Kit (EMDK) for .NET on page 5-2*) for developing managed .NET applications in C# or VB.NET.

Bar Code Decoding

The MK3100 decodes any traditional retail 1D or 2D bar code presented in its field of view.

Imaging with the MK3100

When imaging, the MK3100 projects a red aiming dot which allows positioning the bar code within its field of view. Ensure the bar code is within the decode range and and that the aiming dot is centered on the bar code. The MK3100 beeps to indicate a successful decode.
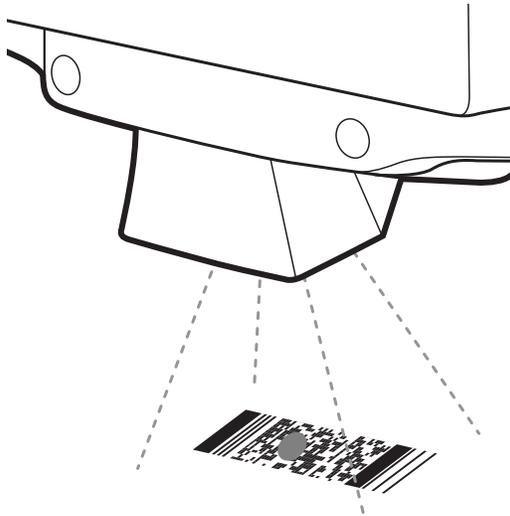
Figure 1-3   *Imaging with the MK3100*

Positioning the Symbol

To decode a symbol, center the aiming dot on the symbol, in any orientation.
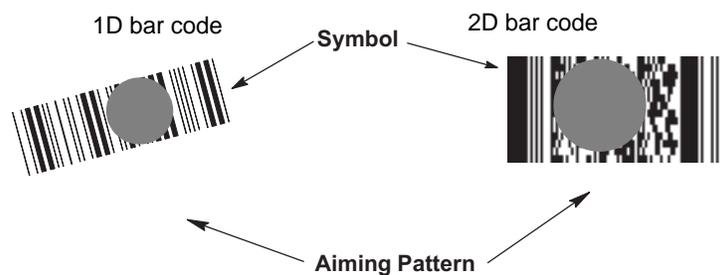
Figure 1-4   *Imaging Orientation with Aiming Dot*

The MK3100 can also decode with the aiming dot on a symbol but not centered. The top examples in *Figure 1-5* show acceptable aiming options, while the bottom examples may not decode.
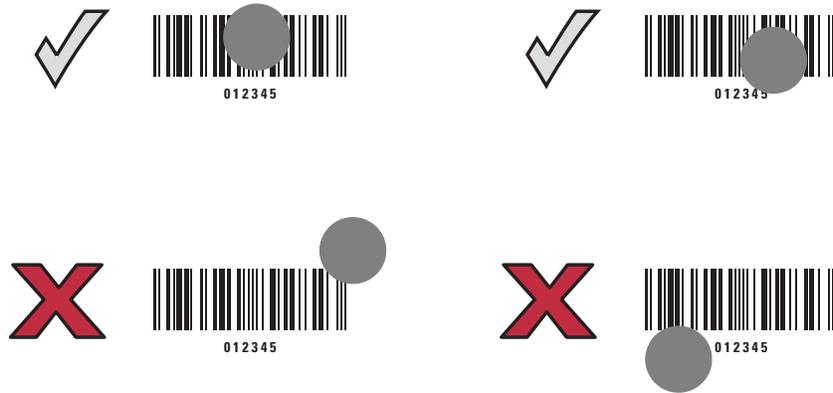
Figure 1-5   *Acceptable and Incorrect Aiming*

The aiming dot is smaller when the symbol is closer to the MK3100 and larger when it is farther away. Scan symbols with smaller bars or elements (mil size) closer to the MK3100, and those with larger bars or elements (mil size) farther from the MK3100.

CHAPTER 2 INSTALLATION

Overview

This chapter describes MK3100 installation and setup, including:

Unpacking the MK3100

Remove the MK3100 from its packing and inspect it for damage. Keep the packing, it is the approved shipping container and should be used if the MK3100 needs to be returned for servicing.

Removing the Screen Protector

A screen protector is applied to the MK3100. Zebra recommends using this to minimize wear and tear. Screen protectors enhance the usability and durability of touch screen displays.

To remove the screen protector, lift the corner using a thin plastic card, such as a credit card, then carefully lift it off the display.

⚠️ **CAUTION**   Do not use a sharp object to remove the protector. Doing so can damage the display.

For a package of five replacement screen protectors, contact Zebra.

Inserting a MicroSD Card

To use a microSD card, insert it into the slot in the back of the MK3100 as shown on the device. See *Figure 1-2 on page 1-3* for slot location. To remove the card, press down gently on it to eject, then remove it from the slot.

Connecting the MK3100

The MK3100 supports both wired and wireless solutions. Connecting the MK3100 includes the following:

- *Power Connection on page 2-3* (not required for POE configurations)
- *Wired Ethernet Connection to a Host on page 2-3*
  - *Power through AC Outlet*
  - *Power through POE*
- *Wireless Ethernet Connection to a Host on page 2-4*
- *USB Connection to a PC and Peripherals on page 2-5*
  - *Connecting to a PC* - ActiveSync connection to a desktop computer for programming via the mini-USB 2.0 host/client port
  - *Connecting to Peripheral Devices* - via the mini-USB 2.0 host ports

To access the Windows® CE Desktop, see *Accessing the Windows CE Desktop on page 4-2*.

Power Connection

The universal AC power supply connects to the power port on the MK3100 using a 5.5 x 2.5 mm OD barrel connector. The center pin on the connector is positive, and the outer barrel is negative. It is compatible with:

- 120V 60 Hz (North America)
- 230V 50 Hz (International excluding Japan)
- 100V 50/60 Hz (Japan).

To connect the power supply:

1. Insert the power supply barrel connector into the MK3100 power port. See *Figure 1-2 on page 1-3*.

2. Route the power cable.

3. Plug the Zebra AC power supply into a wall outlet.

Wired Ethernet Connection to a Host

Power through AC Outlet

The MK3100 communicates to the host through a 10/100Base-T Ethernet cable and receives power through an AC power supply.

1. See *Power Connection* to provide power.

2. Connect the Ethernet cable to the RJ45 port on the MK3100. See *Figure 1-2 on page 1-3*.

3. Plug the other end of the Ethernet cable into the host system LAN port.

Power through POE

The POE 802.3at/af installation option allows the MK3100 to communicate and receive power on the same 10/100Base-T Ethernet cable.

1. Connect the Ethernet cable to the RJ45 port on the MK3100. See *Figure 1-2 on page 1-3*.

2. Plug the other end of the Ethernet cable into an 802.3at/af certified host system LAN port or 802.3at/af port injector.

    NOTE 802.3af host systems can provide power to the MK3100 via POE if certain peripherals are shut off. If POE is not providing enough power, connect a power supply. See *Power Connection*.

RJ45/Ethernet Connector Pinouts

Figure 2-1 identifies the locations for the Ethernet port pins, and *Table 2-1* lists pin descriptions.
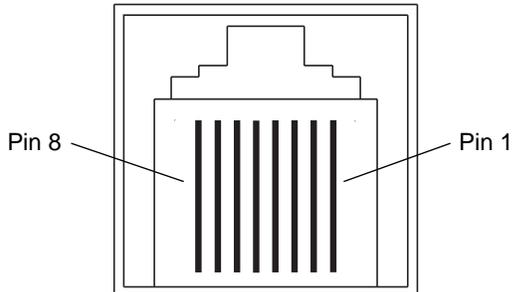
Figure 2-1   *8-Pin RJ45 Connector Port*

Table 2-1   *RJ45/Ethernet Pin Descriptions*

Pin	Description
1	TXD (+)
2	TXD (-)
3	RXD (+)
4	POE VCC
5	POE VCC
6	RXD (-)
7	POE GND
8	POE GND

Wireless Ethernet Connection to a Host

For wireless configuration, refer to the *Wireless Fusion Enterprise Mobility Suite User Guide for Version X2.00.*

USB Connection to a PC and Peripherals

Connecting to a PC

To program the MK3100, connect it to a desktop PC:

1. See *Power Connection on page 2-3* to provide power.

2. Connect a mini-B USB cable to the mini-USB host/client port on the MK3100. See *Figure 1-2 on page 1-3* for port locations.

3. Connect the other end of the cable to a USB port on the host.

Connecting to Peripheral Devices

To connect a peripheral device such as a printer, a handheld scanner, a keyboard, or mouse:

1. Connect a mini-A USB cable to one of the mini-USB ports on the MK3100. See *Figure 1-2 on page 1-3* for port locations.

2. If necessary, connect a USB adapter cable (available from Zebra) to the mini-A USB cable.

3. Connect the other end of the cable to the peripheral device.

MK3100 Mounting

To mount the MK3100 on a wall or counter top, use a mounting bracket that conforms to the 100 mm VESA specification. Also, Zebra offers an optional wall mount kit and pole mount kit for mounting the MK3100.

Using a VESA Mount

To mount the MK3100 using a 100 mm VESA mounting bracket:

1. The device's mounting inserts are M4 x 8.1 mm. When selecting an appropriate screw type, ensure its length does not penetrate the device's back housing more than 8.1 mm after going through the mounting plate.

2. Align the VESA mounting holes with the mounting holes on the back of the device.

3. Insert the screws through each of the four aligned mounting holes.

Figure 2-2 provides MK3100 dimensions for mounting reference.
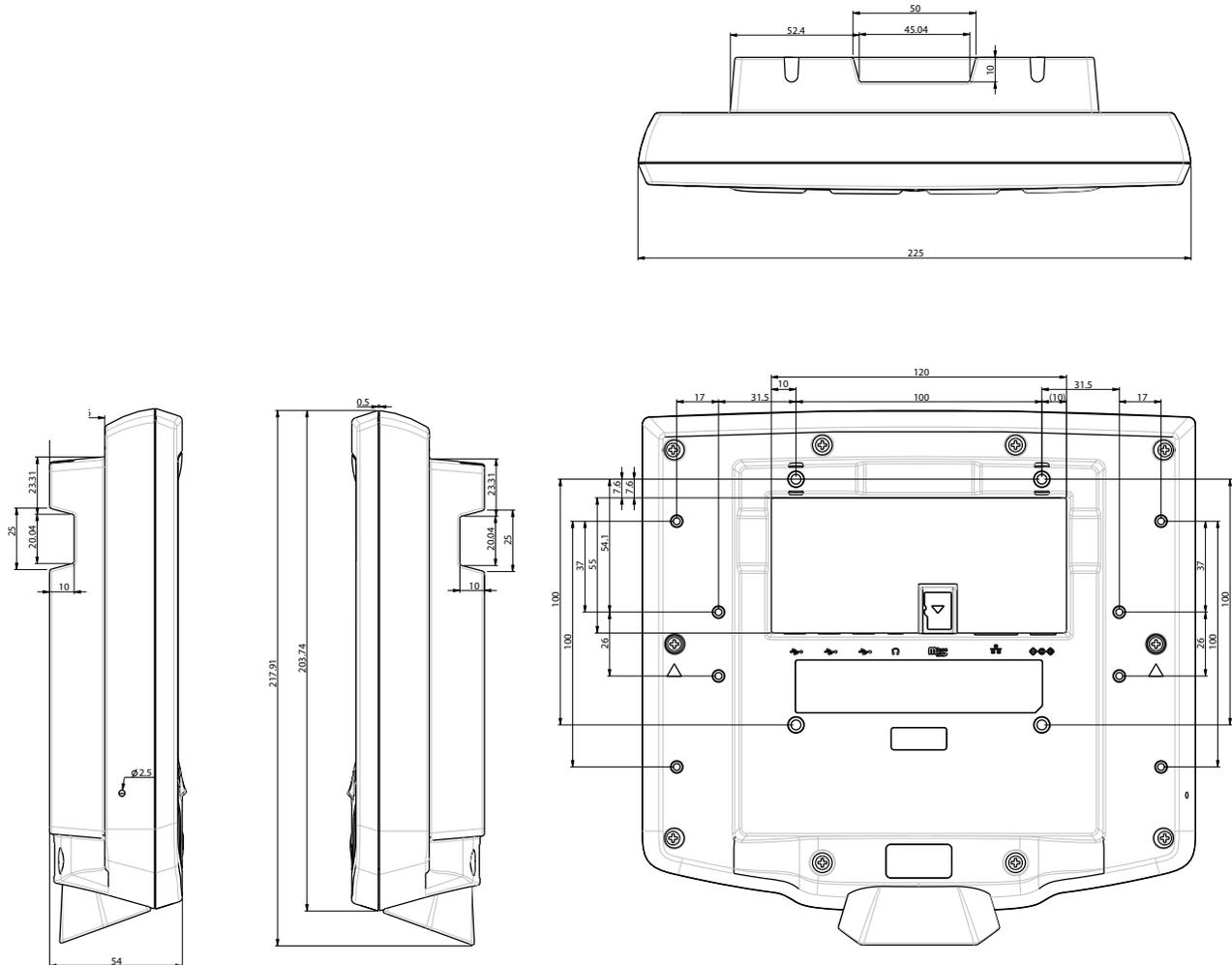
Note: Dimensions are in mm.

Figure 2-2   *MK3100 Mounting Dimensions*

Using the MK3100 Wall Mount Kit

Securing the Mounting Plate

Determine the mounting location and the orientation of the power adapter behind the mounting plate.

Configuration 1: Power Port Facing Down

1. Secure the mounting plate to the wall using the four mounting screws provided.

2. Slide the power adapter down into the plate with the power port facing down.

3. Plug the power supply into the power adapter.
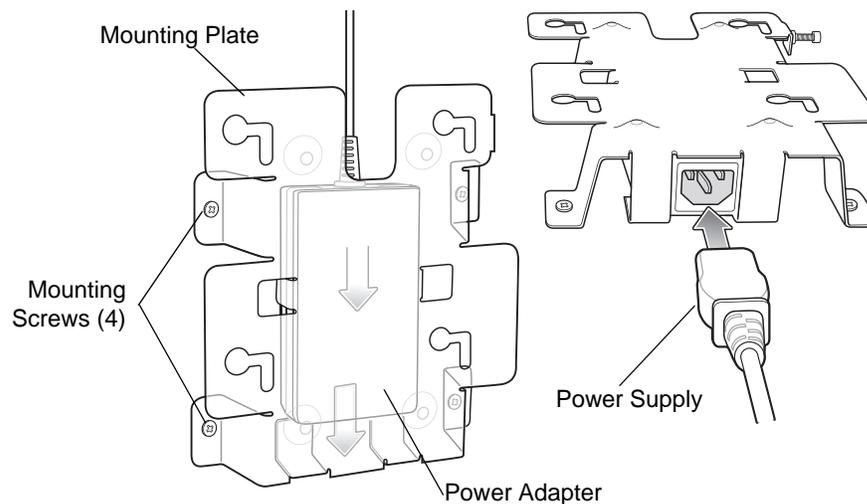
Figure 2-3   *Securing the Mounting Plate - Configuration 1*

Configuration 2: Power Port Facing Up

1. Plug the power supply into the power adapter.

2. Position the power adapter behind the mounting plate with the power port facing up and the power connector routing between the two bottom tabs.
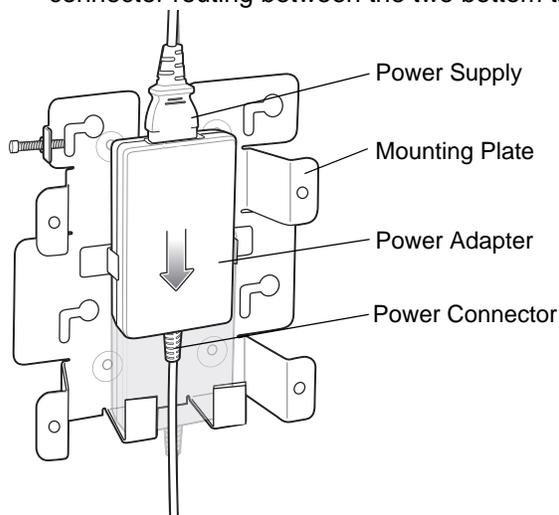
Figure 2-4   *Securing the Mounting Plate - Configuration 2*

3. Secure the mounting plate to the wall using the four mounting screws provided.
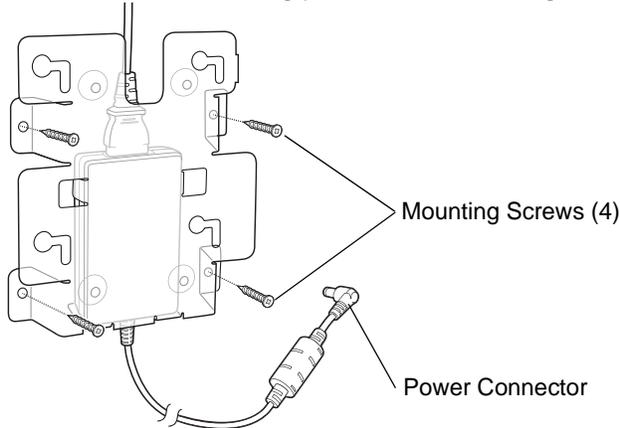
Figure 2-5 *Inserting Mounting Screws*

Mounting the MK3100 on the Mounting Plate

1. Insert the four shoulder screws provided into the mounting holes in the back of the MK3100.
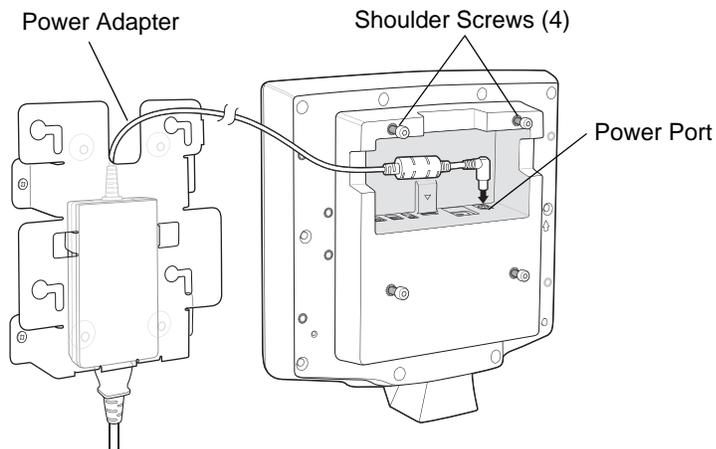
Figure 2-6 *Inserting Shoulder Screws*

2. Connect the power adapter to the power port in the back of the MK3100.

3. Connect other required cables and route and secure them properly.

4. Mount the MK3100 by placing the shoulder screws through the four keyholes on the mounting plate, and slide the MK3100 over and down to secure.
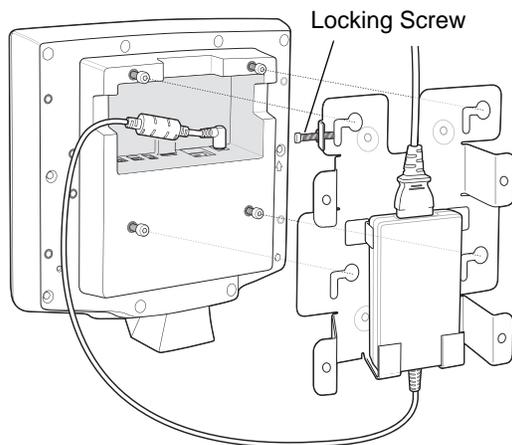
Locking Screw

Figure 2-7   *Mounting MK3100 on Mounting Plate*

5. Insert the locking screw through the hole in the tab at the side of the mounting plate. Hand tighten the screw to secure the MK3100.

Using the MK3100 Pole Mount Kit

To mount the MK3100 to a pole using the Pole Mount Kit:

1. Insert the four shoulder screws provided into the mounting holes in the back of the MK3100.

2. Connect the cables to the MK3100 and route and secure them properly. Position the power adapter behind the mounting plate. See *Securing the Mounting Plate*.

3. Secure the mounting plate to the pole mount bracket using the four mounting screws provided.

4. Mount the MK3100 by placing the shoulder screws through the four keyholes on the mounting plate, and slide the MK3100 over and down to secure.
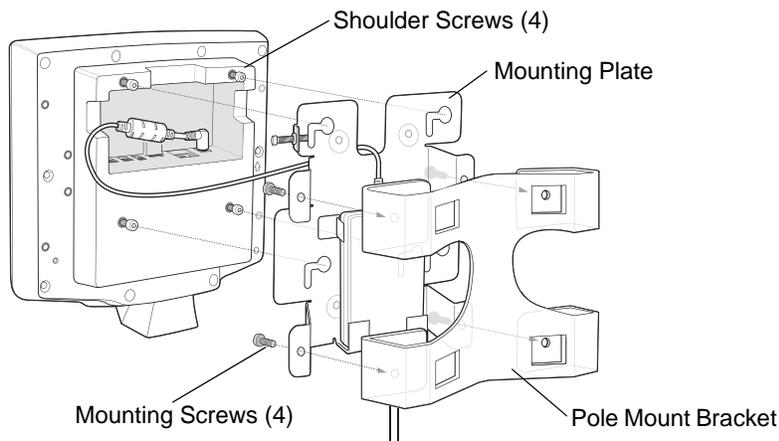
Figure 2-8   *Securing Pole Mount Bracket*

5. Route the pole mount straps through the mounting bracket. Wrap them around the pole and tighten.

6. Insert the locking screw through the hole in the tab at the side of the mounting plate. Hand tighten the screw to secure the MK3100.
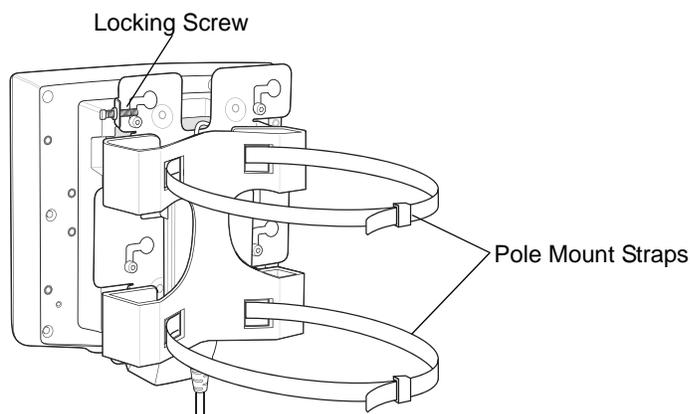
Figure 2-9   *Inserting Locking Screw*

Magstripe Reader Installation

To install the optional MSR:

1. Secure the mounting plate to either side of the MK3100 using the four screws provided.
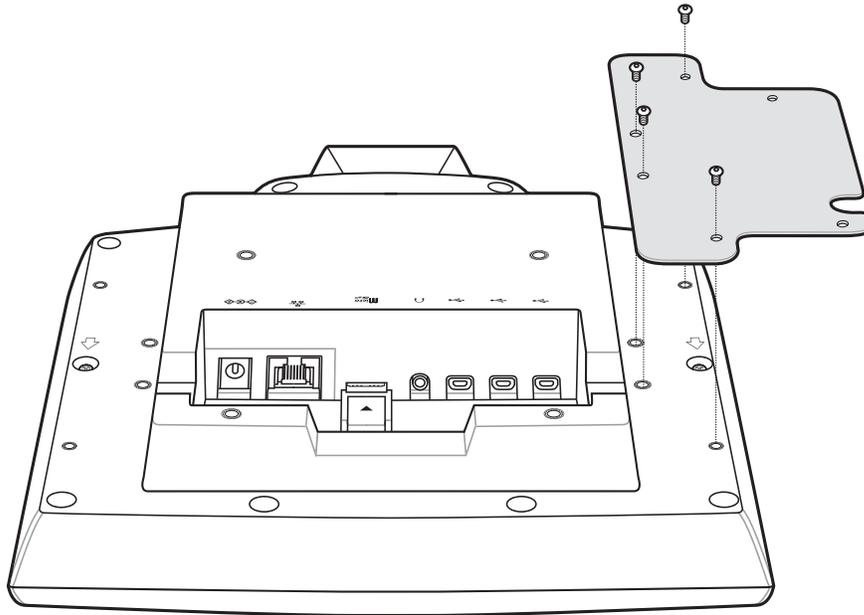
Figure 2-10   *Securing the MSR Mounting Plate*

2. Secure the MSR to the plate using the two screws provided.
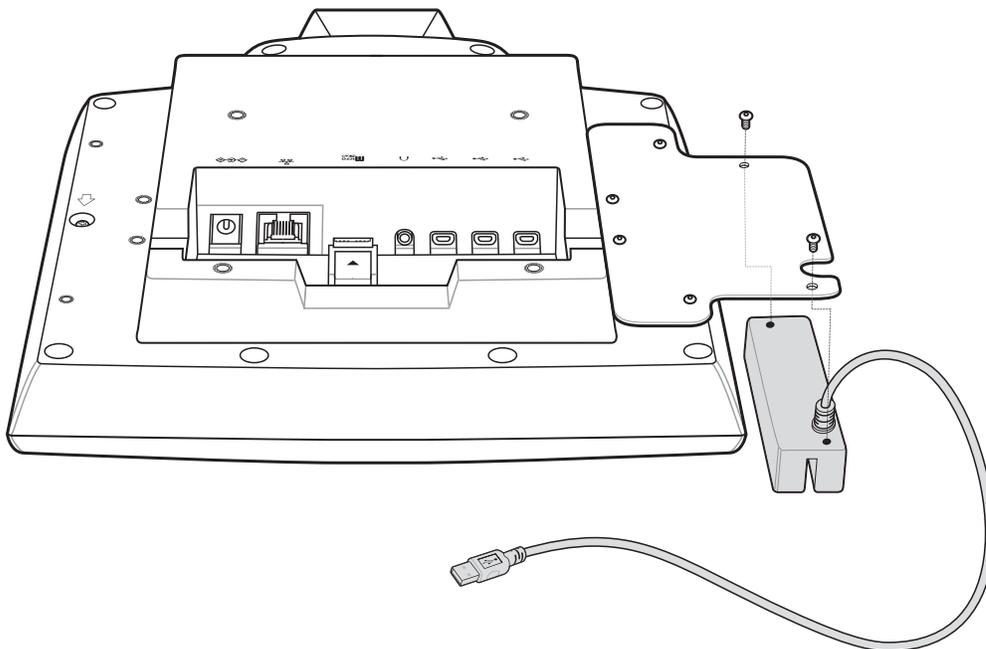
Figure 2-11   *Securing the MSR to the Mounting Plate*

3.   Connect the USB cable to one of the two mini-USB host ports.
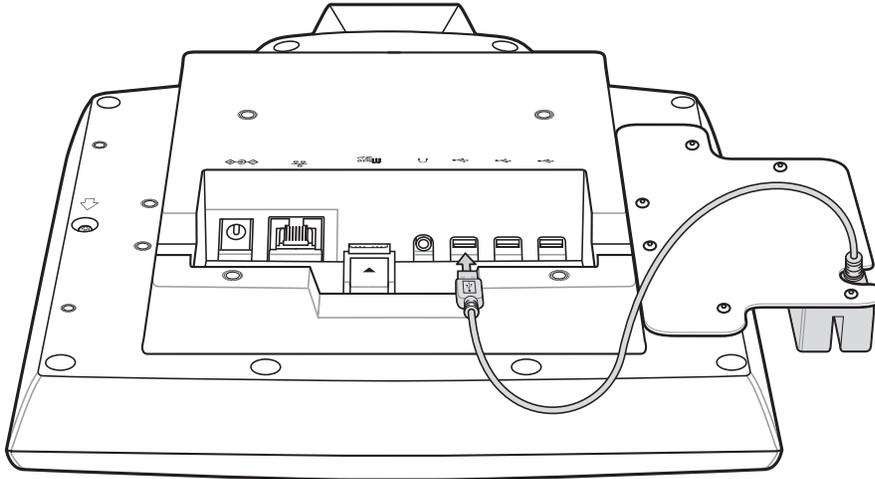
Figure 2-12   *Connecting the USB Cable*

Card Swiping

Swipe a card through the MSR in either direction, with the magnetic stripe facing in toward the MK3100.
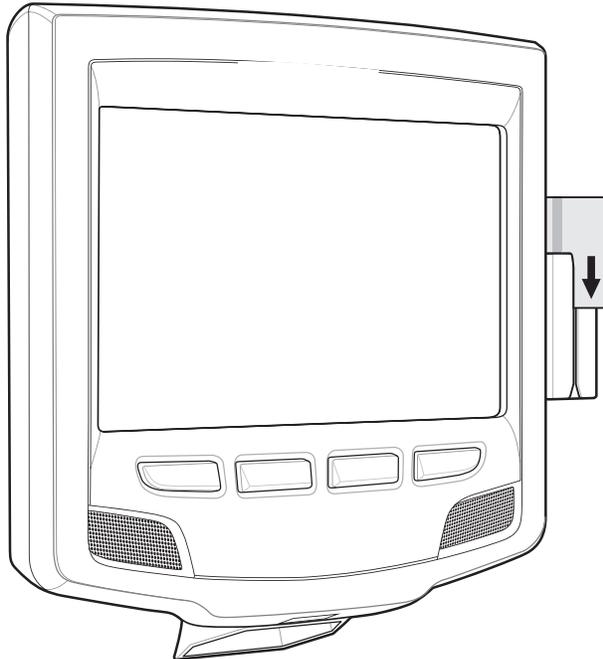
Figure 2-13   *Card Swiping*

CHAPTER 3 CONFIGURATION

Overview

This chapter describes how to set up and configure MK3100 applications, communications, and network settings which include parameters such as the device name, internet browser settings, date and time, and several other key settings.

Configuration via Registry File

Before downloading the configuration file (.reg file) to the MK3100 **Application** folder, rename it **mkconfig.reg**. Use one of the following methods to download the file to the MK3100:

- Copy the mkconfig.reg file to the MK3100 **Application** folder using a USB ActiveSync connection (see *Downloading Files to the MK3100 on page 5-5*).

- Send the file to the MK3100 **Application** folder using FTP (see the instructions provided with the FTP software).

- Copy the mkconfig.reg file to a microSD card, then transfer the file into the MK3100 **Application** folder.

Rebooting the MK3100

After downloading the mkconfig.reg file, cold boot the MK3100 to apply the new settings.

Cold Boot

To reset the device, use a paper clip to press the reset button until you feel a slight click, and hold for 10 seconds.

Alternatively, remove and apply power to reset the device.

Warm Boot

Run the warm boot application. Select **Start > Programs > Warmboot**. Alternatively, use the Application Program Interface (API).

CHAPTER 4 SYSTEM FEATURES

Overview

This chapter discusses the following operating system features:

RegMerge and CopyFiles

RegMerge and CopyFiles are two device drivers included in the Windows CE OS to assist developers in configuring the MK3100 following a cold boot. See *Flash Storage on page 5-15* for more information.

Accessing the Windows CE Desktop

If an MK3100 is configured to launch an application on power-up, you can bypass the application at boot-up to access to the Windows® CE desktop.

Network Time Update: SNTP Client

The MK3100 Simple Network Time Protocol (SNTP) client can automatically set and update the MK3100 time and date through the network. Use this feature to set the system time and date after reboots or power outages. This feature also ensures consistent time and date stamping across a fleet of MK3100s. The SNTP Client program queries the specified SNTP server over the network to set the time and date.

The SNTP client shipped with MK3100 Microsoft Windows Embedded Compact 7 is the Microsoft default SNTP Client program.

Memory Management

Flash: Nonvolatile (Persistent) Memory

The MK3100 has 8 GB of available flash memory. The data partition (folder) has no available memory. The data stored in flash memory persists through cold boot cycles.

Add a microSD card to the MK3100 to increase the non-volatile memory available for file storage.

RAM: Volatile (Non-Persistent) Memory

The MK3100 has 1 GB of RAM volatile memory. Developers can automate control of the device's RAM (volatile) memory allocation (storage vs. memory used to run programs) to persist memory allocation settings through cold boot cycles.

RhoElements

RhoElements is a powerful HTML5 development framework that supports all of today's popular mobile operating systems, including Windows® CE and Windows® Embedded Handheld. RhoElements applications work when connected to a wireless network and offline, so mobile workers always have the information they need. RhoElements features include:

- HTML5 application development environment that supports any operating system and hardware.

- Complete control of user interface (UI) design for simple creation of intuitive business applications.

- A set of Application Programming Interfaces (APIs) that enable easy incorporation of any mobile device function into your application.

- Deployment of both hybrid and native HTML5 applications on any mobile device.

Loading Additional Fonts on the MK3100

You can program the MK3100 to support additional fonts such as Unicode and double-byte character font.

The MK3100 supports the following system fonts as shipped from the factory. The font files corresponding to these formats are located in the **\windows** folder with .ttf extension.

- Courier New

- Symbol

- Tahoma

- Times New Roman

- Wingding.

The default system font path for these fonts is \windows.

Use one of the following options to load fonts not supplied with the MK3100:

- Change the system font path where the system looks for fonts. For example, to change default system font path from **\windows** to **\application\fonts** add the following registry to the system along with new fonts in **\application\fonts:**

  [HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\FontPath]
  "FontPath"="\application\fonts"

  Adding this registry changes the entire system fonts directory, so fonts supplied with the OS are no longer available. To use both the provided system fonts and new fonts, copy the system default fonts to the new font directory.

- Copy new/alternate fonts to the default **\windows** directory.

- Copy alternate fonts to the **\windows\fonts** directory.

Copying new fonts to the \windows or \windows\fonts preserves existing fonts. However the new fonts consume system RAM as they are part of the ObjectStore.

Using the third option, i.e., copying fonts to the \windows\fonts directory, makes it easier to manage the system. Note that fonts copied to \windows or \windows\fonts do not persist over power cycles or cold boots. Use the copy file feature to persist them over power cycles or cold boots.

Using Additional Fonts in Native Applications

Any application written in EVC can use the additional fonts using either MFC or Win32 APIs. If a specified font is missing, the system uses an available font for display.

Using Additional Fonts in Managed Applications

All fonts installed in the system are available to the .Net Compact Framework during runtime.

Using Additional Fonts in Browser Applications

Regardless of how you installed the font in the system, to reference it using a browser page, specify the font as a STYLE, or use FONT tags. Use intuitive names for the fonts (use FontViewer on a Windows desktop and locate the **Typeface Name** line), and use quotes to enclose names with spaces. If the specified font is missing, Internet Explorer uses its default font to display the text.

Things to Consider when Using Additional Fonts

- Different font styles (e.g., bold and italic) often require separate TTF files; be sure to provide all required styles. Do not reference styles by name (e.g., Arial Bold); set the style separately from the font (e.g., using a "b" or "strong" tag, or a style).

- For best results, do not direct the system font path to a storage card (PCMCIA), as this can negatively impact system performance. If this method is necessary, test the use of a storage card thoroughly for fonts to ensure proper operation.

- Most Web pages contain information that tells the browser what language encoding (the language and character set) to use. If the page does not include that information, and the Language Encoding Auto-Select feature is on, Internet Explorer can usually determine the appropriate language encoding. If not, manually select it using **View** menu > **Encoding > More**, then select the appropriate language.

    NOTE   If the Auto-Select feature or a specific language pack is not installed, Internet Explorer prompts you to download the files. Adding languages does not guarantee Web pages display in the preferred language.

Input Panel and Keyboard

Use the input panel or full keyboard on the touchscreen of the MK3100 to enter information. To access, tap the icon in the icon tray, then select **Input Panel** or **Keyboard**. To enter information, use a stylus to select the keys. To close the **Input Panel** or **Keyboard**, double-tap the icon.

NOTE   Use Ctrl-C to copy text, and Ctrl-V to paste text.

Microsoft Applications

The MK3100 includes Microsoft WordPad, Internet Explorer, and audio and video players.

CHAPTER 5 APPLICATION DEPLOYMENT

Software Installation on Development PC

To develop applications to run on the MK3100, use one or all of the following:

- Enterprise Mobility Developer Kit (EMDK) for C for developing native C/C++ applications
- Enterprise Mobility Developer Kit (EMDK) for .NET for developing managed .NET applications
- RhoElements for support for web development.

Enterprise Mobility Developer Kit (EMDK) for C

The Enterprise Mobility Developer Kit for C is based on industry-standard Microsoft® Windows® CE development tools and enables development of native C and C++ applications. Use this developer kit in conjunction with Microsoft® Visual Studio 2008 or later, and MK3100 Platform Software Development Kit (PSDK).

The EMDK for C includes the following components:

- Standard Symbol C API Libraries
- MK3100-specific C API Libraries
- Help file containing a C API reference guide
- Sample applications with full source code.

Sample Applications

The sample applications are included as a learning tool, to show developers how to interface with the Symbol C API functions. Some of the sample applications contained in the kit include:

- **Hello**: A simple Hello World application.

- **DisplayTest**: Displays various colors on the LCD screen.

- **KeyCheck**: A keyboard checking utility that displays the keys pressed on the device and their associated WM_MESSAGE.

- **ScanSamp2**: Demonstrates the bar code scan engine (and external scanner).

- **MSRSamp2**: Displays the MSR track data when a card is swiped.

- **MemTest**: Displays the amount of available memory. Allocate and free blocks of memory to see how available memory changes.

- **Win32PrintSamp**: Prints a sample page to a connected printer.

> **NOTE** The MK3100 supports the Signature Capture API via the EMDK for C only. Refer to the Enterprise Mobility Developer Kit version 1.4 or later, under MK Series C APIs - Signature Capture.

Enterprise Mobility Developer Kit (EMDK) for .NET

The Enterprise Mobility Developer Kit for .NET allows Microsoft® .NET Compact Framework developers to create managed (C# and VisualBasic.NET) applications that harness value-add features on the MK3100.

The EMDK for .NET includes the following components:

- Class libraries

- Sample applications

- Documentation describing how to use the methods for each class library

RhoElements

RhoElements is a powerful HTML5 development framework that supports all of today's popular mobile operating systems, including Windows® CE and Windows® Embedded Handheld. RhoElements applications work when connected to a wireless network and offline, so mobile workers always have the information they need. RhoElements features include:

- HTML5 application development environment that supports any operating system and hardware.

- Complete control of user interface (UI) design for simple creation of intuitive business applications.

- A set of Application Programming Interfaces (APIs) that enable easy incorporation of any mobile device function into your application.

- Deployment of both hybrid and native HTML5 applications on any device.

Platform SDK

To download and install the Platform SDK:

1. Download the appropriate Platform SDK from the Zebra Support web site: http://www.zebra.com/support.

   a. On http://www.zebra.com/support. select *Software Downloads*.

   b. Select *MicroKiosks* and then select *MK3100*.

   c.   Select the *Platform SDK*.

   d.   Save the .exe file to the development computer.

2.   Run the file and follow the screen prompts to install.

Installing Enterprise Mobility Developer Kits

To install an EMDK:

1.   Download the EMDK from http://www.zebra.com/support.

   a.   On http://www.zebra.com/support, select *Developer Downloads* and sign in.

   b.   Select *MicroKiosks* and then select *MK3100*.

   c.   Select the latest version of the *Enterprise Mobility Developer Kit*.

   d.   Download the .exe file to the development computer.

2.   Double-click the executable file and follow the install screen prompts.

Installing Other Development Software

Developing applications for the MK3100 requires installing other development software such as application development environments on the development PC. Follow the installation instructions provided with this software.

Deployment

With the appropriate accessory, software, and connection, the MK3100 can share information with the host device. This chapter provides information about installing software and files on the MK3100.

Download and install software using one of the following methods:

- ActiveSync (see *page 5-3*)
- OS Update (via microSD card) (see *page 5-6*)
- Bootloader (see *page 5-7*)
- FTP server using Rapid Deployment (see *page 5-14*).

ActiveSync

The MK3100 communicates with a host computer via USB connection using Microsoft® ActiveSync (version 4.5.1 or higher), enabling data transfer data between a host computer and the MK3100. Microsoft Activesync allows copying and pasting (rather than synchronizing) files between the MK3100 and host computer.

Installing ActiveSync

To install ActiveSync on the host computer, download the latest version of the software from http://www.microsoft.com. Refer to the installation instructions included with the ActiveSync software.

Connecting the MK3100 to the Host Computer

To configure ActiveSync for Guest access (suitable for copying files between the host computer and the MK3100):

1. Connect the USB cable to the mini-USB host/client port on the MK3100 (see *Figure 1-2 on page 1-3*). Connect the other end of the cable to a USB port on the host computer.

2. If the **New Partnership** window does not appear, on the host computer, select **Start > Programs > Microsoft ActiveSync**.

Figure 5-1   *New Partnership Window*

3. Click **No** and then **Next**. The **Microsoft ActiveSync Guest Connected** window displays.
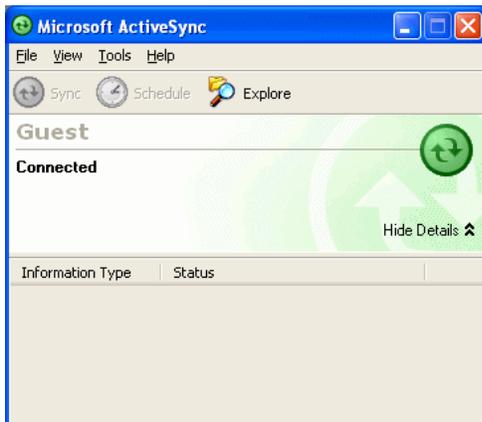
Figure 5-2   *Microsoft ActiveSync Guest Connected Window*

Downloading Files to the MK3100

To download files (such as the mkconfig.reg file) from the host computer to the MK3100, use Windows Explorer to copy the files:

1. On the host computer, select **Explore**.
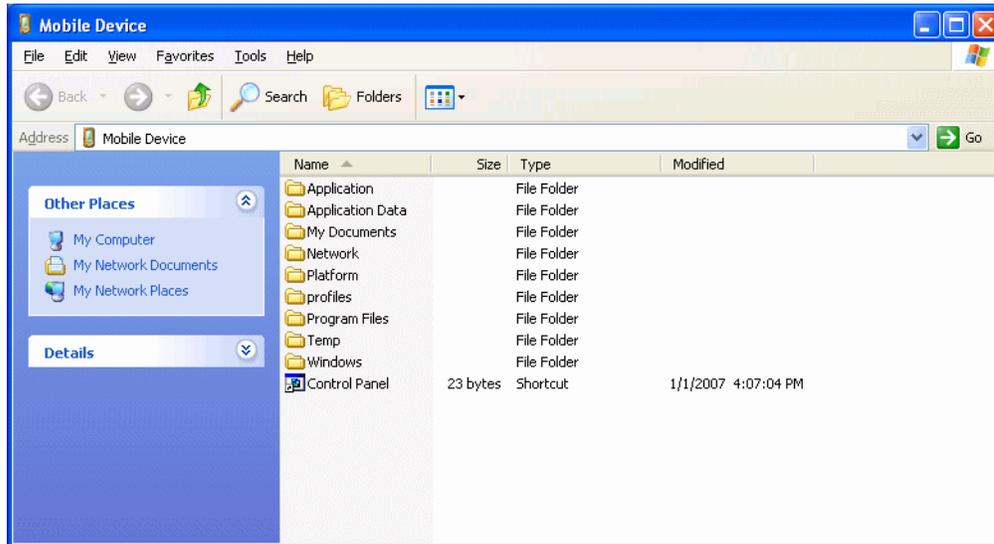
Figure 5-3 *ActiveSync Explorer*

2. Double-click the folder to expand the contents of the folder.
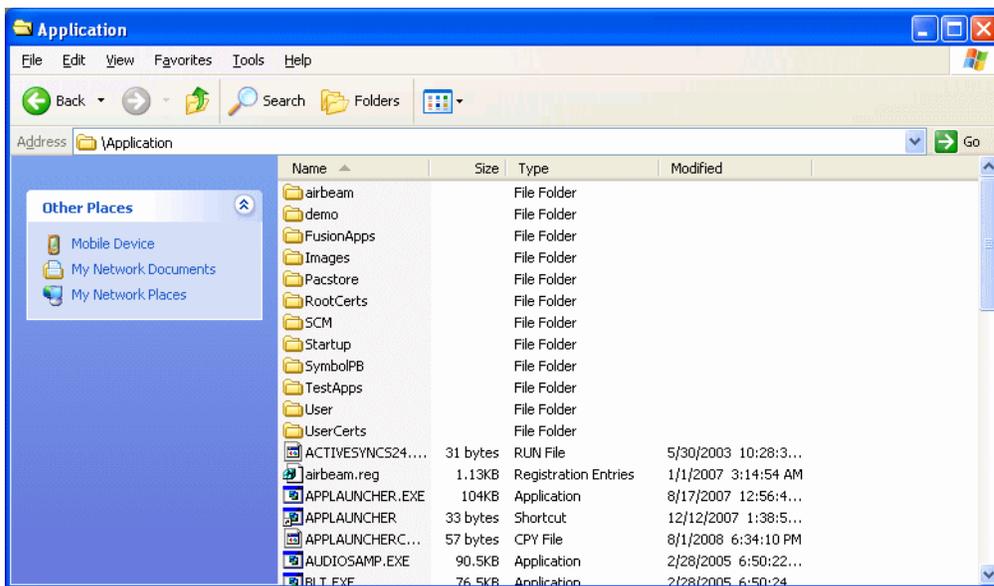
Figure 5-4 *Viewing Folder Contents*

3. Use Explorer to locate the host computer directory that contains the file to download. Click on that directory in the left pane to display its contents in the right pane.

4. Drag the desired file(s) from the host computer to the desired device folder.

    • *Program Files* folder: files stored in this folder are discarded after a cold boot.

    • *Application* folder: files stored in this folder are retained after a cold boot.

    ✓ *NOTE* Cold booting the MK3100 erases all files in RAM. Be sure to save any critical files in the Application folder, e.g., radio profile, time zone setting, license keys. See *Downloading Files to the MK3100 on page 5-5*.

OS Update

To upgrade the operating system using a microSD card:

1. Download the MK3100 OS update package from http://www.zebra.com/support to the desktop computer.

2. Insert a microSD card with at least 1 GB of storage into the MK3100. See the *Inserting a MicroSD Card on page 2-2*.

3. Connect the MK3100 to power and to the desktop computer via a USB cable, and set up a partnership between the two computers using ActiveSync. See *ActiveSync on page 5-3*.

4. In the *ActiveSync* window on the desktop computer, select **Explore**.

5. Navigate to the OSUpdate folder downloaded in Step 1, and copy this folder into the My Device\SD Card\ folder on the MK3100.

6. On the MK3100, tap **Start > Programs > Windows Explorer**.

7. Navigate to the \SD Card\OSUpdate folder.

8. Double-tap the MK3100c50BenColor_SD.LNK file.

9. After the update completes and the MK3100 reboots, remove the microSD card.

Bootloader

Use Bootloader to download hex files to the MK3100 from an SD card or from a host computer via USB.

Loading Files From an SD Card

To load the hex files on to the MK3100 using an SD card:

1. Copy the files to the root directory of an SD card.

2. Insert a microSD card with at least 1 GB of storage into the MK3100. See the *Inserting a MicroSD Card on page 2-2*.

3. Hold the MK3100's first and third buttons until the Bootloader screen appears.

```
    Select required operation
Download from SD card
Download from USB
Exit
```

Figure 5-5   *Bootloader Menu*

⚠️ **CAUTION**   To ensure a successful download, do not remove power from the MK3100 while in Bootloader.

4. Use the up and down scroll buttons to select **Download from SD card**, then press **Enter**. The Bootloader displays the hex files available on the SD card.

```
a:\
All Done
CleanAppl.hex
CleanPlat.hex
MK30c70BenOS992411.hex.gz
MK30c70BenSC9924XX.hex
MK30c70XenBL0105XX.hex
MK30c70XenEA023800.hex
MK30c70XenIS0114XX.hex
MK30c70XenMO0117XX.hex
MK30c70XenPT9924XX.hex
MK30c70XenSS000030.hex
MK3100_Config_BB.hex
```

Figure 5-6   *Hex File List*

5. Use the up and down scroll buttons to select a hex file, then press **Enter** to download the hex file to the device.

```
Splash screen
#############         100%
Download complete
in - 0.042 seconds
(1854142 bytes/second)


 Hit Enter to Acknowledge -
```

Figure 5-7   *Download Complete Screen*

6. On completion, press **ENTER** to return to the Bootloader menu to select the next file to download.

7. To exit Bootloader, select **Exit** from the Bootloader main screen and press **ENTER**.

Loading Files via USB

Use Bootloader to download customized flash file system partitions and load hex files to the flash memory of the MK3100.

To load the hex files on to the MK3100 using USB:

1. Download the *WCE USBDownload* application from the Zebra Support web site. Follow the installation instructions with the application.

2. Connect the MK3100 to a host computer via USB. See *USB Connection to a PC and Peripherals on page 2-5*.

3. On the host computer, launch the *WCE USBDownload* application.

```
WCE USB Download      Ver. (3, 0, 0, 5)
C:\My Local Documents\Release_MK30_B_en\SD_Card\BigBoardMPA3\MK30c70XenIS0114XX.hex    ▼  ...

                                          ▼        Send Data    Exit
SymbolicName


Not Connected
```
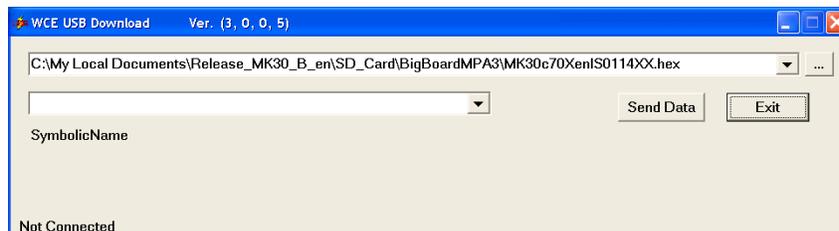
Figure 5-8   *USB Download Window*

4. Hold the MK3100's first and third buttons until the Bootloader screen appears.

```
   Select required operation
Download from SD card
Download from USB
Exit
```

Figure 5-9   *Bootloader Screen*

⚠️ *CAUTION*   To ensure a successful download, do not remove power from the MK3100 while in Bootloader.

5. Use the up and down scroll buttons to select **Download from USB**, then press **ENTER**. The Bootloader displays the following:

```
Waiting for input. . .
```

Figure 5-10   *Waiting for Input*

6. On the *WCE USBDownload* application, locate the hex files to download.
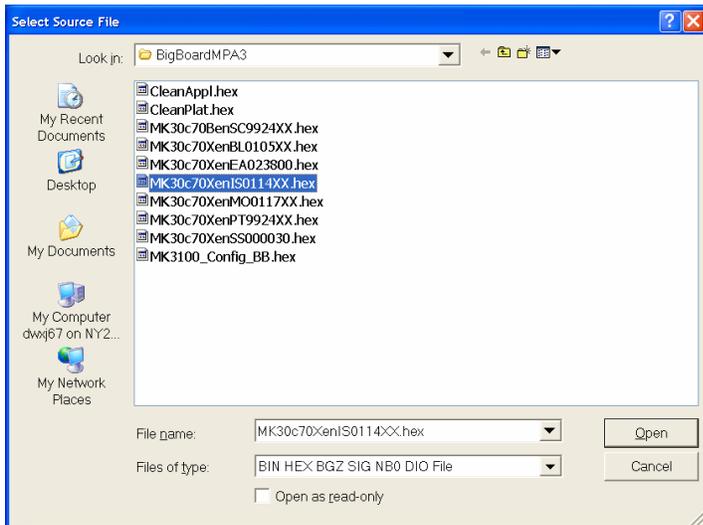
Figure 5-11   *Select Source File Window*

7. Select the hex files and then click **Open**.

> **NOTE** To select multiple files, press the **Ctrl** key while selecting files.
> If selecting multiple files to download, USBDownload reads the header of the file and identifies the file type. If the Partition table file is among the files selected, then USBDownload downloads that file first. Similarly, USBDownload downloads the CPLD file last.

8. Click the **SEND DATA** button. The hex file is downloaded to the MK3100.

```
Splash screen
##########)          100%
Download complete
in - 0.042 seconds
(1854142 bytes/second)


 Hit Enter to Acknowledge
```

Figure 5-12   *Download Complete Screen*

9. On completion, press **ENTER** to return to the Bootloader main screen to select the next file to download.

10. To exit Bootloader, select **Exit** from the Bootloader main screen and press **ENTER**.

Calibrating the Screen

Use the **Calibration** screen to align the touch screen:

1. Remove and restore power to the MK3100 to reboot.

Press and hold the stylus on the center of the target.
Repeat as the target moves around the screen.
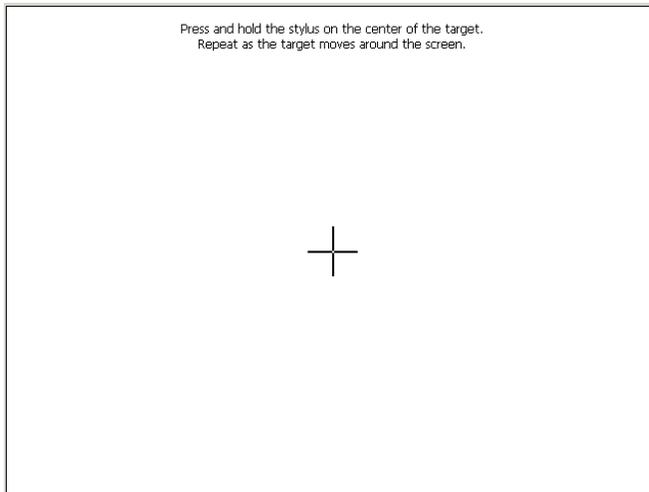
Figure 5-13   *Calibration Screen*

> **NOTE**   To access the **Calibration** screen from the Windows CE Control Panel, tap **Start > Settings > Control Panel**. Double-tap the **Stylus** icon, tap the **Calibration** tab, and tap the **Recalibrate** button. The **Calibration** screen appears.

2. Carefully press and briefly hold the stylus tip on the center of the **Calibration** screen target. Repeat the procedure as the target moves and stops at different locations on the screen.

3. The **Confirm Calibration** screen displays. Tap the screen to accept the settings, or wait 30 seconds and the MK3100 returns to the Calibration screen.

Bootloader Error Detection

While receiving data, Bootloader performs many checks on the data to ensure that the data is received correctly. If an error is detected, Bootloader immediately aborts the download, and reports the error on an error screen.

This error message screen displays until a key is pressed. Once the screen is acknowledged, Bootloader returns to the main menu to wait for a new selection.

To find the probable cause of the error, use the error number and/or the error text displayed on the screen to look up the error in *Table 5-1*.

Table 5-1   *Bootloader Errors*

Error Text	Error Number	Probable Cause
Unknown error	-1	A general error occurred. Retry the download. If the failure persists, it is most likely due to a hardware failure; the MK3100 requires servicing.
Cancelled by user	-2	The user cancelled the download.
Can't open the source	-7	An error occurred opening the source device (either USB or SDMMC). Check source device connectivity and retry.
Can't open the destination	-8	An error occurred opening the destination device (either NAND, RAM, Power Micro, IST, Keyboard Controller or CPLD). Retry the download. If the failure persists, it is most likely due to a hardware failure; the MK3100 requires servicing.
Can't read from the source device	-9	The source device (either USB or SDMMC) could not be read from. Check source device connectivity and retry.
Can't write to the destination device	-10	The destination device (either NAND, RAM, Power Micro, IST, Keyboard Controller or CPLD) could not be written to. Retry the download. If the failure persists, it is most likely due to a hardware failure; the MK3100 requires servicing.
Transmission checksum error	-11	An error occurred during transmission from the source device (either USB or SDMMC) and the checksum check failed. Check source device connectivity and retry.
Readback checksum error	-12	A checksum, generated from reading back data that was written to the destination device, was incorrect. An error during transmission or a write error to the destination device could cause this.
There is no more heap space available	-14	There is no more heap space available for the download procedure. Restart Bootloader and retry the download. If the failure persists, contact service with details of what is being downloaded.
Invalid data in verify file	-19	The file contains invalid data. Check that the file is suitable for downloading on this terminal.
Insufficient memory for buffering data	-20	There is no more heap space available for the download procedure. Restart Bootloader and retry the download. If the failure persists, contact service with details of what is being downloaded.
Insufficient data available to complete record	-21	A HEX file download was attempted but the HEX file is invalid. Ensure the file is in proper HEX file format.

Table 5-1   *Bootloader Errors (Continued)*

Error Text	Error Number	Probable Cause
Invalid Symbol HEX file	-23	A HEX file download was attempted but the HEX file is invalid. Ensure the file is in proper HEX file format.
Unrecognized or unsupported HEX record	-24	The HEX file being downloaded contains an invalid or unrecognized HEX record. Ensure the file is in proper HEX file format.
Invalid data in HEX file	-25	The HEX file being downloaded contains invalid data. Ensure the file is in proper HEX file format with valid HEX data.
Exceeded max size	-26	The download file is too large to fit into the space allocated for it. Either make the file smaller or increase the space allocated for it by altering the partition table.
Partition is not valid on this device	-27	The downloaded file specifies a partition entry that does not exist on the device. Only download files that are valid for this device, or change the partition table so that the new file is valid on the device.
Wrong destination code	-28	A specific partition was chosen from the *Bootloader* main menu but the file selected for download was for another partition. Ensure that the partition selected from the *Bootloader* main menu matches the file selected for download.
Non-contiguous record found	-30	A HEX file download was attempted but the HEX file is invalid. Ensure the file is in proper HEX file format.
Timed Out - No data	-31	Bootloader was waiting for data from the source device but timed out before receiving any. Check the source device connectivity and retry.
Invalid file format	-33	The file format is invalid. Only HEX files are supported by Bootloader.
Partition Table not Valid	-34	The size of flash memory is different than that described in the partition table. Retry the download with the correct partition table file.
Invalid data in file	-35	The .bin or .sig file being downloaded contains invalid data. Ensure the file is in proper file format.
File cannot be loaded to this unit	-38	The file contains valid data that indicates it cannot be loaded onto the device.
File validation failed	-40	The file has either been signed incorrectly, or contains data that indicates that it cannot be loaded onto the terminal.

Rapid Deployment Client

The Rapid Deployment (RD) Client facilitates software downloads to an MK3100 from a Mobility Services Platform (MSP) Console's FTP server. The MSP Console is a web-based interface to the wireless infrastructure monitoring and management tools provided by the MSP Lite or MSP Enterprise server.

When software packages transfer to the FTP server, an MK3100 on the wireless network can download them by scanning RD bar codes encoding the location of the software packages. Multiple MK3100s can scan a single RD bar code.

NOTE   For detailed information about the Rapid Deployment Client and creating RD bar codes, refer to the *MSP 3.X User's Guide*.

Creating a Splash Screen

Source bitmap files that create the default splash screens for the MK3100 are available on the Zebra Support web site at http://www.zebra.com/support. You can customize the screen by modifying these files using any standard windows image editor.

To create a custom splash screen:

1.   Use an image editor to open the Splashcolor.bmp file.

2.   Modify the bitmap file and save.

3.   Create a splash partition.

If you don't use the default files to create the new splash screens, be sure to preserve the image format of 800 x 480, 8 bits per pixel. Note that 8 bits per pixel only applies to splash screen images. Once Windows CE is running, the color density is 16 bits per pixel. See *Bootloader on page 5-7* for information about loading the splash screen.

Flash Storage

In addition to the RAM-based storage standard on Windows CE devices, the MK3100 also includes a non-volatile flash-based storage area which can store data (partitions) that a cold boot cannot corrupt. This flash area is divided into two sections: flash file system (FFS) partitions and non-FFS partitions.

FFS Partitions

The MK3100 includes two FFS partitions. These partitions appear to the MK3100 as a hard drive that the OS file system can write files to and read files from. Data is retained even if power is removed.

The two FFS partitions appear as the following two separate folders in the Windows CE file system:

- Platform: The Platform FFS partition contains Zebra-supplied programs and Dynamic Link Libraries (DLLs). This FFS is configured to include DLLs that control system operation. Since the MK3100 needs these drivers for basic operation, only experienced users should modify the content of this partition.

- Application: The Application FFS partition stores application programs needed to operate the MK3100.

Working with FFS Partitions

Because the FFS partitions appear as folders under the Windows CE file system, you can read and write to them like any other folder. For example, an application program can write data to a file located in the Application folder just as it would to the Windows folder. However, the file in the Application folder is in non-volatile storage and is not lost on a cold boot (e.g., when power is removed for a long period of time).

You can use standard tools such as ActiveSync to copy files to and from the FFS partitions. They appear as the *Application* and *Platform* to the ActiveSync explorer. This is useful when installing applications on the MK3100. Applications stored in the Application folder are retained even after a cold boot.

There are two device drivers included in the Windows CE image to assist developers in configuring the MK3100 following a cold boot: RegMerge and CopyFiles.

RegMerge.dll

RegMerge.dll is a built-in driver that allows making registry edits to the Windows CE Registry. Regmerge.dll runs very early in the boot process and looks for registry files (.reg files) in certain flash file system folders during a cold boot. It then merges the registry changes into the system registry located in RAM.

Since the registry is re-created on every cold boot from the default ROM image, the RegMerge driver is necessary to make registry modifications persistent over cold boots.

RegMerge looks in the root of two specific folders for .reg files in the following order:

> \Platform

> \Application

Regmerge continues to look for .reg files in these folders until it checks all folders. This allows folders later in the list to override folders earlier in the list. This way, it is possible to override Registry changes made by the Platforms partitions folders. Take care when using Regmerge to make Registry changes. Examples of .reg files are available on http://www.zebra.com/support.

> ✓ **NOTE**   Regmerge only merges the .reg files on cold boots. A warm boot skips the merge process.

Typically, you would not modify the registry values for drivers loaded before RegMerge, although this may be necessary during software development. Since these early loading drivers read these keys before RegMerge can change them, you must cold boot the MK3100. The warm boot does not re-initialize the registry and the early loading driver reads the new registry values.

Do not use Regmerge to modify built-in driver registry values, or merge the same Registry value to two files in the same folder, as the results are not predictable.

CopyFiles

Windows CE expects certain files to be in the Windows folder, residing in volatile storage. Windows CE maintains the System Registry in volatile storage. CopyFiles copies files from one folder to another on a cold boot. Files can be copied from a non-volatile partition (Application or Platform) to the Windows or other volatile partition during a cold boot. During a cold boot CopyFiles looks for files with a .CPY extension in the root of the Platform, then the Application FFS partitions. These files are text files containing the source and destination for the desired files to copy, separated by ">". The following example from the file *application.cpy* is available on the Zebra Support web site at http://www.zebra.com/support.

Files are copied to the Windows folder from the flash file system using copy files (*.cpy) in the following order:

> \Platform

> \Application

Example:

> \Application\ScanSamp2.exe>\Windows\ScanSamp2.exe

This line directs CopyFiles to copy the ScanSamp2.exe application from the \Application folder to the \Windows folder.

Non-FFS Partitions

Non-FFS partitions include additional software and data pre-loaded on the MK3100 that you can upgrade. Unlike FFS partitions, these partitions are not visible when the operating system is running. They also contain system information. Non-FFS partitions include the following:

- Windows CE: The complete Windows CE operating system is stored on flash devices. If necessary, you can download the entire OS image to the MK3100 using Zebra provided files. The installation package includes the current OS partition on the MK3100. Obtain any upgrades from Zebra. This partition is mandatory for the MK3100.

- Splash Screen: A 675 kb maximum bitmap appears as the MK3100 cold boots. To download a customized screen to display, see *Creating a Splash Screen on page 5-14*.

✓ **NOTE**   8 bits per pixel only applies to splash screen images. Once Windows CE is running, the color density is 16 bits per pixel.

- Partition Table: Identifies where each partition is loaded in the MK3100.

APPENDIX A TECHNICAL SPECIFICATIONS

Technical Specifications

Table A-1 *MK3100 Technical Specifications*

Item	Description
Physical Characteristics	
Dimensions	8.87 in. H x 8.87 in. W x 2.17 in. D 22.5 cm H x 22.5 cm W x 5.5 cm D
Weight	1.9 lbs./0.86 kg
Display	Size: 8 in. diagonal WVGA LCD Resolution: 800 x 480 pixels Resistive Touch Screen: standard
Power	DC power: 12 VDC
Expansion Capabilities	MicroSD card slot (user accessible); USB host
Data Ports	1 Mini-USB 2.0 host/client; 2 Mini-USB 2.0 host; Ethernet RJ-45
Audio	Two integrated stereo speakers; microphone
Scanner	Imager for capture of 1D, 2D, and PDF417 codes
2D Imager Decode Capability:	**1D Symbologies**: Code 39, Code 128, EAN-8, EAN-13, UPC/EAN-128, UPCA, UPCE, UPC/EAN Supplementals (disabled in demo browser application), GS1 DataBar, Chinese 2 of 5, Code 93, Discrete 2 of 5, Interleaved 2 of 5 (including ITF14 and ITF 2 of 5), Codabar, ISBT 128 **2D Symbologies**: PDF417, QR, Aztec, DataMatrix, MaxiCode

Table A-1 *MK3100 Technical Specifications*

Item	Description
Performance Characteristics	
CPU	TI OMAP 4430 processor @ 1 GHz
Operating System	Windows Embedded Compact 7
Browser	Internet Explorer 7.0; RhoElements
Memory	1 GB RAM / 8 GB flash
Additional Memory	Up to 32 GB flash using accessible microSD slot
Communications	WLAN: 802.11a: up to 54 Mbps 802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n Ethernet: 10/100 Mb Ethernet
Power-over-Ethernet	802.3at/af
User Environment	
Operating Temperature	32F° to 104°F / 0° to 40°C
Storage Temperature	-40°F to 158°F / -40°C to 70°C
Humidity	5% to 85% (non-condensing)
Software	
Available Applications	Rapid Deployment Client Mobility Services Platform (MSP)
Application Development Tools	RhoElements for web development Enterprise Mobility Developer Kit (EMDK) for C for developing native C/C++ applications Enterprise Mobility Developer Kit (EMDK) for .NET for developing managed .NET applications in C# or VB.NET
Peripherals and Accessories	
Mounting Options	Conforms to the VESA 100mm mounting standard for attachment of third-party, off-the-shelf mounting solutions; four (4) M4 x 8.1 mm inserts provided

APPENDIX B WIRELESS CONFIGURATION

Overview

To configure the MK3100 11 Mbps wireless connection, refer to the *Wireless Fusion Enterprise Mobility Suite User Guide for Version X2.00*, p/n 72E-164268-xx.

APPENDIX C MAINTENANCE AND TROUBLESHOOTING

Overview

This chapter provides maintenance and troubleshooting information, and describes how to identify the MK3100 version.

Maintenance

Clean the housing and touch screen / LCD with a damp cloth and, if necessary, a non-ammonia based detergent. Do not allow any abrasive material to touch the screen.

> ⚠️ *CAUTION*   Excessive liquids can damage the protective screen and necessitate replacement.

Troubleshooting

When configuring the MK3100, save and reboot the MK3100 to apply the changes.

- *MK3100 does not turn on on page C-3*
- *MK3100 appears to lock up upon bootup on page C-3*
- *MK3100 does not respond to polls from the host computer on page C-3*
- *MK3100 does not send data to host computer on page C-3*
- *MK3100 does not recognize configuration bar codes on page C-3*
- *Reg file values are not copied into the Registry at boot time on page C-3*
- *The screen does not respond to pen input on page C-3*
- *Need to determine a device MAC address on page C-3*
- *The wireless MK3100 does not retain its WEP Key encryption after a reboot on page C-4*
- *The Mobile Companion icon does not appear in the task tray on page C-4*
- *When downloading files to the MK3100 from a .zip file using ActiveSync, a message displays indicating there is not enough free disk space to copy the application on page C-4*
- *When downloading a large file over Ethernet, IE issues an insufficient memory message on page C-4*
- *When upgrading using a microSD card, the MK3100 cannot find files on the card on page C-4*
- *Flash file system is corrupt on page C-4*
- *Copying large amount of files from PC card to the application folder fails with error "Access is denied" on page C-4*

Table C-1 *Troubleshooting*

Problem	Possible Causes	Possible Solutions
MK3100 does not turn on	No power to the MK3100.	Connect the Zebra approved power supply to an AC power source and to the MK3100 power connector. See *Figure 1-2 on page 1-3*.
MK3100 appears to lock up upon bootup	A utility with no user interface was specified as the first user application, or user application failed to run.	Either specify no user application, or a UI-based application as the first user application. If no user application is specified, Explorer.exe is used. Note: this is a substitution of Explorer.exe as the user application, not protected mode.
MK3100 does not respond to polls from the host computer	No communication between the host and MK3100.	Check cables to the MK3100. Ensure the MK3100 address is the address the host is polling. Check communication parameters. Open a command window using **Start > Programs > Command** and type **ipconfig** to list the status of all radio and Ethernet interfaces.
MK3100 does not send data to host computer	MK3100 is not programmed to work with the host.	Check setup communication parameters.
	MK3100 is not connected to the host.	Check cables to host computer.
MK3100 does not recognize configuration bar codes	The scan driver does not support parameter bar code scanning.	Configure the MK3100 using scanning C API scanner object.
Reg file values are not copied into the Registry at boot time	More than one .reg file and duplicate registry entries are present.	Review all .reg files in /Application and /Platform and ensure they have no conflicts.
The screen does not respond to pen input	The screen is not properly calibrated, or is off center.	Re-calibrate the screen.
Need to determine a device MAC address		Open **Start > Programs > CommandPrompt**. Type ipconfig /all to display the MAC address next to 'address'.

Table C-1 *Troubleshooting (Continued)*

Problem	Possible Causes	Possible Solutions
The wireless MK3100 does not retain its WEP Key encryption after a reboot	Encryption keys not saved in Spectrum24.reg.	Set encryption keys using Mobile Companion, then select **Start > Tools > Save Spectrum24** to save them to Spectrum24.reg. Check communication parameter settings. Open a command window using **Start > Programs > Command** and type **ipconfig** to list the status of all radio and Ethernet interfaces.
The Mobile Companion icon does not appear in the task tray	The radio software is not present in the \platform folder.	Verify presence of radio software or re-install \Platform partition software.
When downloading files to the MK3100 from a .zip file using ActiveSync, a message displays indicating there is not enough free disk space to copy the application	Files cannot download directly from a .zip file.	Extract/unzip the files to the host computer, then transfer the unzipped files to the MK3100 using ActiveSync.
When downloading a large file over Ethernet, IE issues an insufficient memory message	For some file types, IE requires free RAM equivalent to twice the file's size.	This is an IE limitation.
When upgrading using a microSD card, the MK3100 cannot find files on the card	The microSD card is absent, corrupt, or not supported.	Replace the microSD card. The MK3100 supports up to a 32 GB microSD card.
Flash file system is corrupt	Reset or power loss during write to file system.	Format file system partition using **Start > Settings > Control Panel > Storage Manager**, and re-install partition data.
Copying large amount of files from PC card to the application folder fails with error "Access is denied"	Archive bit of the folder properties set.	Clear the archive bit of folder properties.
When using SaveConfig to save settings and cycling power before the Save Complete message appears, the device does not boot properly. Similarly, when using C API to save configurations, the device does not boot properly.	Corrupt mkconfig.reg file.	Use ActiveSync to delete the existing mkconfig.reg file or use Monitor to repartition the Application partition.

If problems still occur, see *MK3100 Version Information on page C-5* for system information before calling for service help.

MK3100 Version Information

If an MK3100 is configured to launch an application on power-up, bypass this upon booting to access the Windows® CE Desktop. See *Accessing the Windows CE Desktop on page 4-2*.

1. From the Windows® task bar, select **Start > Settings > Control Panel**.

2. Select **MK3100** identification from the Control Panel window to view the following information:

   - Device name
   - Description
   - OS version
   - Monitor version
   - Display type
   - Memory sizes.

INDEX

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