



MK2000 MicroKiosk



Product Reference Guide



MK2000 MicroKiosk
Product Reference Guide

72-57772-01

Revision A

June 2003



© **2003** by Symbol Technologies, Inc. All rights reserved.

No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, without permission in writing from Symbol. This includes electronic or mechanical means, such as photocopying, recording, or information storage and retrieval systems. The material in this manual is subject to change without notice.

The software is provided strictly on an “as is” basis. All software, including firmware, furnished to the user is on a licensed basis. Symbol grants to the user a non-transferable and non-exclusive license to use each software or firmware program delivered hereunder (licensed program). Except as noted below, such license may not be assigned, sublicensed, or otherwise transferred by the user without prior written consent of Symbol. No right to copy a licensed program in whole or in part is granted, except as permitted under copyright law. The user shall not modify, merge, or incorporate any form or portion of a licensed program with other program material, create a derivative work from a licensed program, or use a licensed program in a network without written permission from Symbol. The user agrees to maintain Symbol's copyright notice on the licensed programs delivered hereunder and to include the same on any authorized copies it makes, in whole or in part. The user agrees not to decompile, disassemble, decode, or reverse engineer any licensed program delivered to the user or any portion thereof.

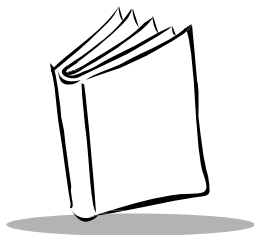
Symbol reserves the right to make changes to any software or product to improve reliability, function, or design.

Symbol does not assume any product liability arising out of, or in connection with, the application or use of any product, circuit, or application described herein.

No license is granted, either expressly or by implication, estoppel, or otherwise under any Symbol Technologies, Inc., intellectual property rights. An implied license only exists for equipment, circuits and subsystems contained in Symbol products.

Symbol, Spectrum One and Spectrum24 are registered trademarks of Symbol Technologies, Inc. Other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, New York 11742-1300
<http://www.symbol.com>



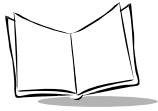
Contents

About This Guide

| | |
|----------------------------------|-----|
| Introduction | ix |
| Chapter Descriptions | ix |
| Notational Conventions | x |
| Related Publications | xi |
| Service Information | xi |
| Symbol Support Center | xii |

Chapter 1. MK2000 Introduction

| | |
|--|-----|
| Overview | 1-1 |
| MK2000 Parts | 1-2 |
| Touch Screen LCD | 1-2 |
| Speakers and Microphone | 1-2 |
| Scanner Window | 1-2 |
| Function Buttons | 1-2 |
| Access Covers | 1-2 |
| External Ports | 1-5 |
| MK2000 Features | 1-7 |
| Programmable Function Buttons | 1-7 |
| Bar Code Scanner | 1-7 |
| Software | 1-7 |
| Touch Screen | 1-7 |
| Magnetic Strip Reader (Optional) | 1-7 |
| Memory | 1-7 |
| Connectivity Options | 1-7 |
| Two Expansion Card Slots | 1-7 |
| Power Options | 1-8 |
| Mounting Options | 1-8 |
| Signage (Optional) | 1-8 |



| | |
|---|------|
| Software Development Kit (SDK) | 1-8 |
| Bar Code Scanning | 1-9 |
| Scanning Modes | 1-9 |
| Scanning Guidelines | 1-10 |
| Cyclone Omnidirectional | 1-10 |
| Smart Raster | 1-11 |
| Scanning Composite (2D) Bar Codes | 1-13 |
| Specular Reflection | 1-14 |

Chapter 2. Installation

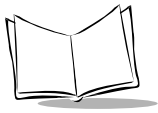
| | |
|---|------|
| Overview | 2-1 |
| MK2000 Unpacking | 2-1 |
| Installation Overview | 2-2 |
| MK2000 Mounting | 2-3 |
| MK2000 Wall Mounting Options | 2-4 |
| Pole Mounting | 2-7 |
| VESA Mounting | 2-8 |
| Power | 2-9 |
| AC Power Supply Connection | 2-9 |
| Power-Over-Ethernet Connection | 2-9 |
| Communication Interfaces | 2-10 |
| Wired Ethernet | 2-10 |
| Wired RS-485 Setup | 2-13 |
| Wired RS-232 Setup | 2-14 |
| Peripherals | 2-16 |
| Signage | 2-16 |
| COM Port | 2-19 |
| Connector Pin-Outs | 2-19 |
| Ethernet / Bias-T Port Connections | 2-20 |
| RS-485 Port Connections | 2-21 |
| Printer/Scanner (RS-232) Port Connections | 2-21 |

Chapter 3. Setup and Configuration

| | |
|---|------|
| Overview | 3-1 |
| Control Panel Configuration Parameters | 3-2 |
| File System Structure Description | 3-4 |
| Managing the Startup Process | 3-5 |
| Startup Program | 3-5 |
| Configuring User Application(s) | 3-5 |
| Reliable Sequencing of Application Programs | 3-6 |
| Reset Function | 3-7 |
| Control Panel Settings | 3-7 |
| Stylus Settings | 3-8 |
| Specifying an ESSID For a Wireless Network Connection | 3-8 |
| Configuration Utility | 3-9 |
| Configuration Utility Main Screen | 3-13 |
| Removing The Configuration Utility | 3-16 |
| Updating The Configuration Utility | 3-16 |

Chapter 4. Resident Demo Application

| | |
|--|------|
| Overview | 4-1 |
| Resident Demo Application Functionality | 4-2 |
| Demo Application Versions | 4-3 |
| Resident Demo Application | 4-3 |
| Laptop Driven Demo Application | 4-3 |
| Demo Application Bar Codes | 4-3 |
| Installing the Resident Demo Application | 4-4 |
| Bypass Application Auto-Boot | 4-4 |
| Delete The Current Resident Demo Application Version | 4-4 |
| Install A New Resident Demo Application Version | 4-4 |
| Disable/Restore Demo Application | 4-5 |
| Starting The Resident Demo Application | 4-6 |
| Resident Demo Application Structure | 4-7 |
| Customer Application Screens | 4-8 |
| Store Operations Screen | 4-14 |



Chapter 5. Updating Data

| | |
|--|-----|
| Updating Data on the MK2000 | 5-1 |
| Partition Update vs. File Update | 5-1 |
| Downloading Partitions | 5-2 |
| Downloading Files | 5-3 |

Chapter 6. System Features

| | |
|---|-----|
| Overview | 6-1 |
| Control Panel Non-Volatile Settings | 6-1 |
| Registry Persistence | 6-2 |
| MK2000 Protected Mode | 6-2 |
| Gatekeeper | 6-3 |
| Network Time Update: SNTP Client | 6-6 |
| Inactivity Application (Screen Saver) | 6-8 |

Chapter 7. User Applications

| | |
|--|-----|
| Overview | 7-1 |
| Software Development Environments | 7-1 |
| Browser Applications | 7-2 |
| Windows® CE Applications | 7-2 |
| Windows® Applications via Terminal Server Client | 7-2 |
| VT220 Emulation (Support for MK1000 Legacy Applications) | 7-3 |
| PCK Emulation (Support for MK1000 Legacy Applications) | 7-3 |
| IBM 4690 Applications | 7-3 |

Appendix A. Technical Specifications

| | |
|--------------------------------|-----|
| Technical Specifications | A-1 |
|--------------------------------|-----|

Appendix B. Laptop Driven Demo Application

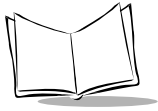
| | |
|---|------|
| Overview | B-1 |
| Laptop Driven Demo Functionality | B-2 |
| Customizable Features | B-3 |
| Setting-Up The Laptop Driven Demo Application | B-4 |
| Folder, File and Database Structure | B-7 |
| Application Set-Up and Customizing | B-7 |
| Communication Modes Set-Up | B-7 |
| Laptop Driven Demo Application Structure | B-8 |
| Customer Application Screens | B-9 |
| Demo Setup Text File | B-23 |

Appendix C. Demo Application Bar Codes

| | |
|----------------------------------|-----|
| Demo Application Bar Codes | C-1 |
|----------------------------------|-----|

Appendix D. Terminal Configuration Manager

| | |
|---|-----|
| TCM Introduction | D-1 |
| Starting Terminal Configuration Manager | D-2 |
| Defining Script Properties | D-4 |
| Creating the Script for the Hex Image | D-5 |
| Open a New or Existing Script | D-5 |
| Copy Components to the Script | D-6 |
| Save the Script | D-6 |
| Building the Image | D-7 |
| Sending the Hex Image | D-8 |
| Saving the Script | D-8 |
| TCM Error Messages | D-9 |
| Creating a Splash Screen | D-9 |
| Creating a Splash Screen on Color Terminals | D-9 |



Appendix E. Upgrade Procedures

| | |
|--|------|
| Overview | E-1 |
| Partition Update vs. File Update | E-1 |
| Upgrade Requirements | E-2 |
| MK2000 Operating System Upgrade | E-2 |
| IPL Menu Navigation | E-3 |
| OS Upgrade | E-4 |
| IPL Mode, OS Upgrade Procedures | E-4 |
| Monitor Upgrade | E-8 |
| Monitor Upgrade Procedures | E-8 |
| Partition Table | E-12 |
| Partition Table Upgrade Procedures | E-12 |
| Demo Application Install/Upgrade | E-15 |

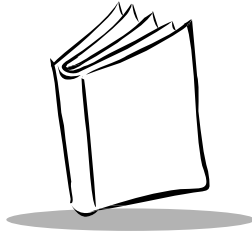
Appendix F. Troubleshooting

| | |
|-----------------------------|-----|
| Troubleshooting | F-1 |
| Read MK2000 Settings | F-4 |
| Troubleshooting Notes | F-4 |

Glossary

Index

Feedback



About This Guide

Introduction

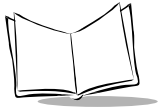
The *MK2000 MicroKiosk Product Reference Guide* provides information on installing, operating and programming the MK2000.

Note: *Unless otherwise noted, the term MK2000 refers to all configurations of the device.*

Chapter Descriptions

Following are brief descriptions of each chapter in this guide.

- Chapter 1, *MK2000 Introduction*, provides an overview of the MK2000 that includes quick start-up instructions, parts of the MK2000, features and scanning modes.
- Chapter 2, *Installation*, describes the hardware setup and installation of the MK2000.
- Chapter 3, *Setup and Configuration*, describes the MK2000 configuration steps.
- Chapter 4, *Resident Demo Application*, describes the browser-based Resident Demo Application. Includes an operational overview of the MK2000 using the Demo application.
- Chapter 5, *Updating Data*, describes the tools that can be used to update partitions (which are packages of one or more files that completely fill a partition region).
- Chapter 6, *System Features*, describes the wide range of capabilities, used to support independent application development on the MK2000.



- Chapter 7, *User Applications*, describes the capabilities to support user application development.
- Appendix A, *Technical Specifications*, provides technical information about MK2000.
- Appendix B, *Laptop Driven Demo Application*, provides technical information about Laptop Driven Demo Application. The Laptop Driven Demo Application is a browser based thin client application hosted by a laptop/desktop computer via a network connection that can be modified / customized.
- Appendix C, *Demo Application Bar Codes*, provides the sample bar codes that are required for use with the Demo Applications.
- Appendix D, *Terminal Configuration Manager*, provides the TCM (Terminal Configuration Manager) overview. TCM is used to specify and load files into the flash memory of the MK2000 using the terminal's Initial Program Loader (IPL).
- Appendix E, *Upgrade Procedures* provides instructions on using the IPL mode to upgrade the MK2000 OS (Operating System).
- *Glossary*, provides definitions of technical terms used in this document.

Notational Conventions

This document uses these conventions:

- “User” refers to anyone using an application on the terminal.
- *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 taped on windows.
- 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.

Related Publications

The following is a list of documents that may provide additional useful information about configuring the MK2000:

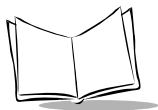
- MK2000 Quick Reference Guide, p/n 72-57769-xx
- MK2000 SDK (Software Development Kit), p/n MK2000CESDK-x.xx
- *AirBEAM Package Builder Product Reference Guide*, p/n 72-55769-xx.
- *VT 220 Terminal Emulation Program Programmer's User Guide*
p/n SSS-9000-04.

Service Information

For equipment problems, contact the Symbol Support Center. Before calling, have the model number and serial number at hand.

Call the Support Center from a phone near the equipment so that the service person can try to talk you through the problem. If the equipment is found to be working properly and the problem is symbol readability, the Support Center will request samples of your bar codes for analysis at our plant.

If the problem cannot be solved over the phone, you may need to return the equipment for servicing. If that is necessary, you will be given specific directions.



Symbol Support Center

For service information, warranty information or technical assistance contact or call the Symbol Support Center in:

United States ¹

Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, New York 11742-1300
1-800-653-5350

United Kingdom

Symbol Technologies
Symbol Place
Winnersh Triangle, Berkshire RG41 5TP
United Kingdom
0800 328 2424 (Inside UK)
+44 118 945 7529 (Outside UK)

Australia

Symbol Technologies Pty. Ltd.
432 St. Kilda Road
Melbourne, Victoria 3004
1-800-672-906 (Inside Australia)
+61-3-9866-6044 (Outside Australia)

Denmark/Danmark

Symbol Technologies AS
Dr. Neergaardsvej 3
2970 Hørsholm
7020-1718 (Inside Denmark)
+45-7020-1718 (Outside Denmark)

Finland/Suomi

Oy Symbol Technologies
Kaupintie 8 A 6
FIN-00440 Helsinki, Finland
9 5407 580 (Inside Finland)
+358 9 5407 580 (Outside Finland)

Canada

Symbol Technologies Canada, Inc.
2540 Matheson Boulevard East
Mississauga, Ontario, Canada L4W 4Z2
905-629-7226

Asia/Pacific

Symbol Technologies Asia, Inc.
230 Victoria Street #04-05
Bugis Junction Office Tower
Singapore 188024
337-6588 (Inside Singapore)
+65-337-6588 (Outside Singapore)

Austria/Österreich

Symbol Technologies Austria GmbH
Prinz-Eugen Strasse 70 / 2.Haus
1040 Vienna, Austria
01-5055794-0 (Inside Austria)
+43-1-5055794-0 (Outside Austria)

Europe/Mid-East Distributor Operations

Contact your local distributor or call
+44 118 945 7360

France

Symbol Technologies France
Centre d'Affaire d'Antony
3 Rue de la Renaissance
92184 Antony Cedex, France
01-40-96-52-21 (Inside France)
+33-1-40-96-52-50 (Outside France)

Germany/Deutschland

Symbol Technologies GmbH
Waldstrasse 66
D-63128 Dietzenbach, Germany
6074-49020 (Inside Germany)
+49-6074-49020 (Outside Germany)

Latin America Sales Support

2730 University Dr.
Coral Springs, FL 33065 USA
1-800-347-0178 (Inside United States)
+1-954-255-2610 (Outside United States)
954-340-9454 (Fax)

Netherlands/Nederland

Symbol Technologies
Kerkplein 2, 7051 CX
Postbus 24 7050 AA
Varsseveld, Netherlands
315-271700 (Inside Netherlands)
+31-315-271700 (Outside Netherlands)

South Africa

Symbol Technologies Africa Inc.
Block B2
Rutherford Estate
1 Scott Street
Waverly 2090 Johannesburg
Republic of South Africa
11-809 5311 (Inside South Africa)
+27-11-809 5311 (Outside South Africa)

Italy/Italia

Symbol Technologies Italia S.R.L.
Via Cristoforo Colombo, 49
20090 Trezzano S/N Naviglio
Milano, Italy
2-484441 (Inside Italy)
+39-02-484441 (Outside Italy)

Mexico/México

Symbol Technologies Mexico Ltd.
Torre Picasso
Boulevard Manuel Avila Camacho No 88
Lomas de Chapultepec CP 11000
Mexico City, DF, Mexico
5-520-1835 (Inside Mexico)
+52-5-520-1835 (Outside Mexico)

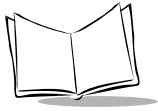
Norway/Norge

Symbol's registered and mailing address:
Symbol Technologies Norway
Hoybratenveien 35 C
N-1055 OSLO, Norway

Symbol's repair depot and shipping address:
Symbol Technologies Norway
Enebakkveien 123
N-0680 OSLO, Norway
+47 2232 4375

Spain/España

Symbol Technologies S.L.
Avenida de Bruselas, 22
Edificio Sauce
Alcobendas, Madrid 28108
Spain
Telephone: +34.91.324.4000
Service Telephone: +34.91.324.4000
Fax: +34.91.324.4010



Sweden/Sverige

"Letter" address:

Symbol Technologies AB

Box 1354

S-171 26 SOLNA

Sweden

Visit/shipping address:

Symbol Technologies AB

Solna Strandväg 78

S-171 54 SOLNA

Sweden

Switchboard: 08 445 29 00 (domestic)

Call Center: +46 8 445 29 29 (international)

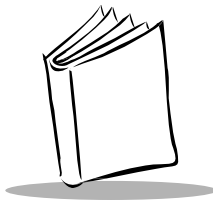
Support E-Mail:

Sweden.Support@se.symbol.com

¹Customer support is available 24 hours a day, 7 days a week.

If the Symbol product was purchased from a Symbol Business Partner, contact that Business Partner for service.

For the latest version of this guide go to: <http://www.symbol.com/manuals>.



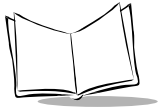
Chapter 1

MK2000 Introduction

Overview

The MK2000 MicroKiosk allows shoppers to become more self sufficient in the retail environment. It provides consumers access to data critical to making an informed purchasing decision, including verifying prices on bar coded merchandise and obtaining up-to-the-minute information on in-store promotions. In addition to price verification the MK2000's large easy-to-read display can be used as an electronic billboard for instant in-store merchandising and multimedia presentations to promote seasonal sales, in-store promotions and upcoming events. The touch screen and programmable function buttons can enhance in-store applications and allow for customer interaction.

Two Demo Applications are available, the Resident Demo Application: MK2000RDEMOAPP-x.xx and the Laptop Driven Demo Application: MK2000SDEMOAPP-x.xx. Both are supplied with the MK2000 Software Development Kit (SDK) p/n MK2000CESDK-x.xx. The Demo Applications are available for download, either individually or as part of the SDK at: <http://devzone.symbol.com>.



MK2000 Parts

The MK2000 parts are shown in front, rear and bottom views Figure 1-1 on page 1-3, Figure 1-2 on page 1-4 and Figure 1-3 on page 1-5. The parts include:

- Touch screen
- Speakers and microphone
- Scanner window
- Function buttons
- External ports.

Touch Screen LCD

Full color 6.4 inch diagonal VGA active matrix LCD (640 X 480 pixels) ideal for presenting text, graphics and motion video clips. The touch screen feature provides greater user interaction and enhances the capabilities of custom designed applications.

Speakers and Microphone

The MK2000's speakers are ideal for multimedia applications.

The MK2000 also has a built in microphone which can be used for recording audio.

Scanner Window

The scanner window protects the scan engine.

Function Buttons

The MK2000 has four programmable function buttons (shown in Figure 1-1 on page 1-3). The buttons are functionally identified A, B, C and D (from right to left) for reference purposes in this document only, the alphabetic button labeling is not physically present on the MK2000. These buttons are programmable to allow the user to perform various tasks such as navigating through an application and making decisions when prompted. For a detailed description of setting the buttons values, see *Inactivity Manager* on page 3-7.

Access Covers

The rear of the unit has three access covers that allow access to the expansion card slot features of the MK2000. Expansion card slot access is intended only for development or maintenance purposes and requires removal of the access cover.

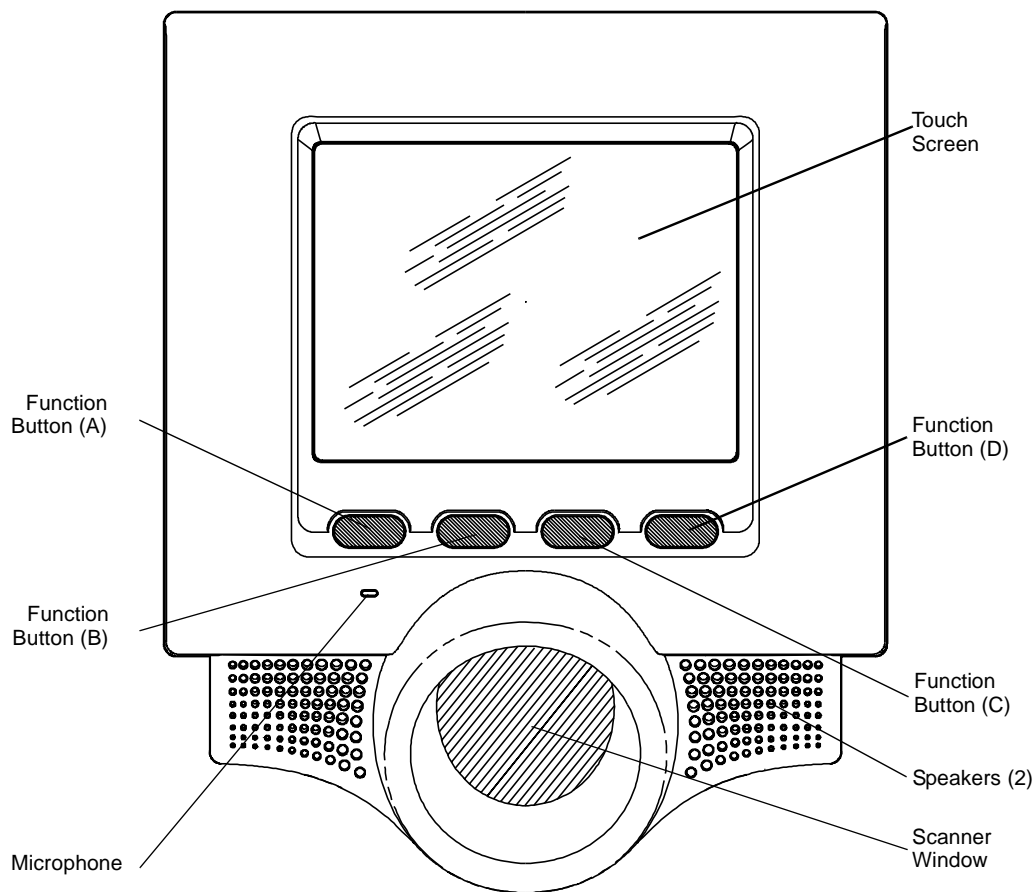


Figure 1-1. MK2000 Front View

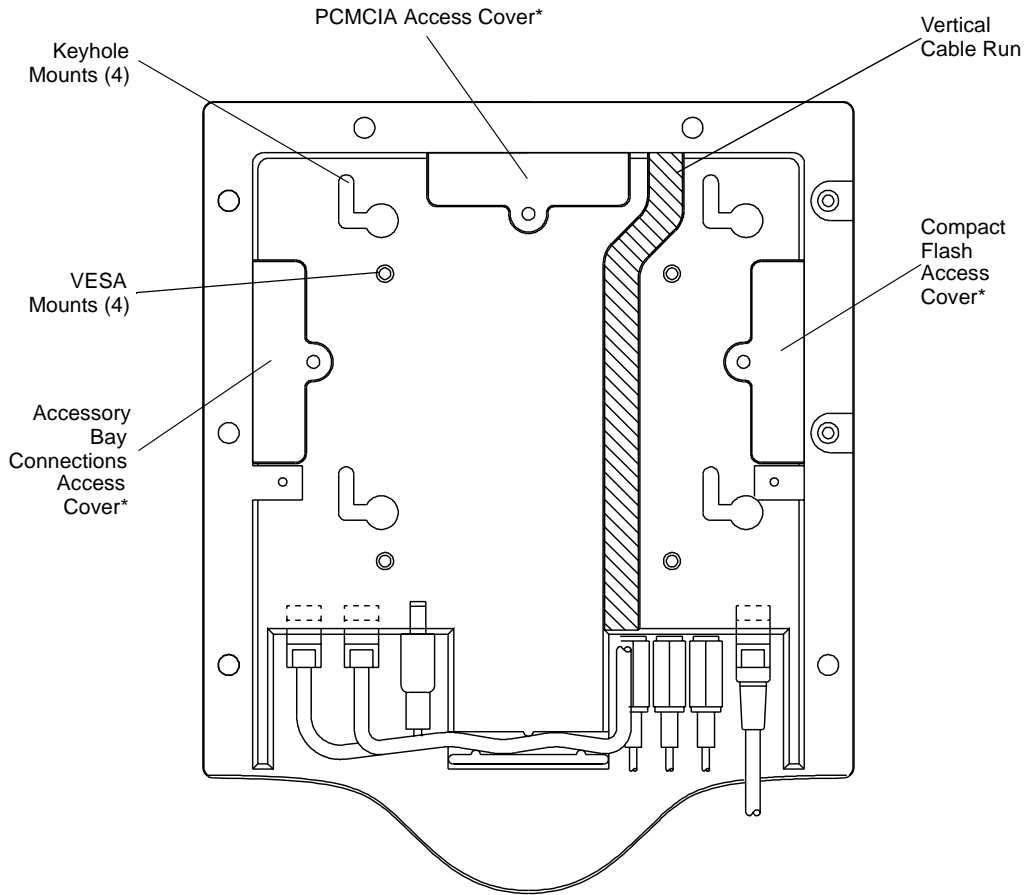
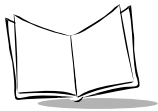


Figure 1-2. MK2000 Rear View

Caution

*While any of the access covers are removed, the user must follow proper ESD (Electro-Static Discharge) precautions to avoid damaging sensitive components. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded. Failure to apply proper ESD precautions may cause damage to the unit and could potentially void your warranty.

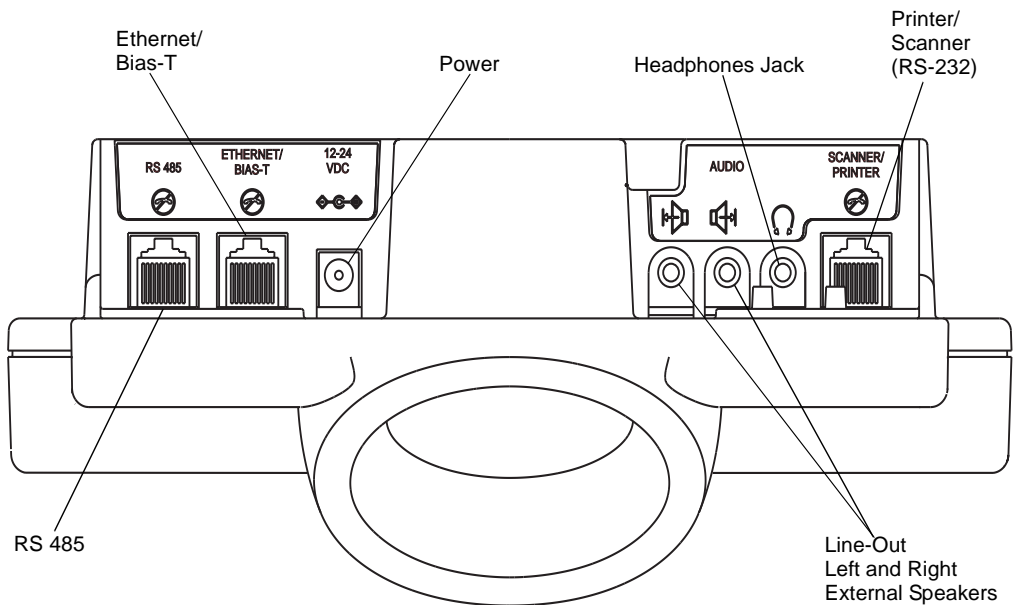
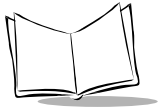


Figure 1-3. MK2000 Bottom (Connectors) View

External Ports

The MK2000 has the following external ports located at the rear/bottom of the unit (see Figure 1-3):

- Power
- Ethernet / Bias-T (Power-over-Ethernet)
- RS485
- Line out - Left and Right External Speakers
- Headphones
- Printer/Scanner (RS-232, powered).



Power Port

The MK2000 can be powered by a Symbol approved power supply plugged into the power port (2.0 mm barrel jack connector) on the rear of the MK2000, for additional information see *Power* on page 2-9 and/or *Technical Specifications* on page A-1.

Ethernet/Bias-T

Wired Ethernet: Power via AC Outlet

The Ethernet / Bias-T port can be used for an Ethernet data connection*. It uses a 10-conductor RJ-45 plug. With this Ethernet installation the MK2000 receives power via the Symbol approved power supply.

Wired Ethernet: Power via Power-over-Ethernet

The MK2000 supports Power-over-Ethernet (POE) Symbol Technologies' Bias-T functionality. When an Ethernet (10/100Base-T) cable is connected to the Ethernet/Bias-T port, in addition to being the conduit for data exchange*, it can also be used as a conduit to provide power to the MK2000.

*Factory built, wireless ready units do not have the Ethernet/Bias-T port enabled.

RS-485

RS-485 (10-conductor RJ-45 plug) is sometimes termed the Multidrop LAN since it can connect several devices in a LAN network environment. These devices are all connected to a single pair wire (i.e., transmit and receive share the same two wires).

Line out - Left and Right External Speakers

Provides connections (3.5 mm) for left and right external speakers. Each line is powered, 2.2 watts. Internal speakers are disabled when the external speakers are connected.

Headphones Jack

Provides a standard 3.5 mm headphone connection. This standard jack is compatible with headphones used on many portable audio products (MP3 players). Headphones that do not protrude into the ear are recommended. The internal and external speakers are disabled when the headphones jack is used.

Printer/Scanner (RS-232)

The Printer/Scanner (RS-232) port (RJ-45 jack, 10 conductor) is powered (5V/500mA) and can be used for serial communication with a host, connection of an external device such as a decoded scanner. It is important to confirm the cable pin-outs before attaching the cable. For cable pin-outs, see *Printer/Scanner (RS-232) Port Connections* on page 2-21.

MK2000 Features

Programmable Function Buttons

The four function buttons are programmable, see *Figure 1-1 on page 1-3 and Inactivity Manager on page 3-7*.

Bar Code Scanner

Provides superior scanning capabilities. Omni-directional scan pattern decodes all traditional 1D bar codes. In addition 2D symbologies such as PDF and composite codes can also be scanned in Smart Raster mode, see *Bar Code Scanning on page 1-9*.

Software

Open architecture development tools are used to ease application development including Microsoft® Windows® CE .NET operating system, Internet Explorer 5.5 and Media Player.

Touch Screen

The touch screen provides user interaction and enhances the capabilities of custom designed applications.

Magnetic Strip Reader (Optional)

The three track Magnetic Strip Reader (MSR) provides the capability to read Magnetic Strip Cards.

Memory

The MK2000 standard system configuration contains 64 MB flash/32 MB DRAM. The Flash Memory is non-volatile and is responsible for storing the system firmware.

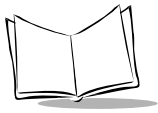
The Dynamic Random Access Memory (DRAM) is used for storage of system parameters, user programs and data and for use by the system as a whole during normal program executions. Items such as bitmaps can also be stored and retrieved for later use.

Connectivity Options

The MK2000 connectivity options include wired 10/100 Mbps Ethernet, Printer/Scanner (RS-232) and RS-485 as well as wireless 802.11 2Mbps and 802.11b 11Mbps.

Two Expansion Card Slots

The MK2000 contains two expansion slots: one Personal Computer Memory Card International Association (PCMCIA) slot and one Compact Memory Flash (CF) slot. The



PCMCIA card slot also has a connection to an internal antenna (for an RF card). Common uses for the expansion card slots include to enable the insertion of:

- Spectrum 24 wireless radio card (PCMCIA slot only)
- Flash memory card.

Power Options

As an alternative to the standard Symbol approved power supply, power can be supplied by Power Over Ethernet (POE). The POE option may be utilized even if an Ethernet cable is not used for data transmission.

Mounting Options

The MK2000 can be mounted using the standard Symbol provided mounting options; wall mounting and column mounting, see *MK2000 Mounting* on page 2-3. The MK2000 can also be mounted using any commercially available bracket or stand that conforms to the 100 mm Video Electronics Standards Association (VESA) Flat Panel Monitor Physical Mounting Interface (FPMPMI™) mounting standards.

Signage (Optional)

A user designed foam core sign can be attached to the MK2000 using the optional *Signage Mounting Kit*. The *Signage Mounting Kit* placard mounting brackets will accommodate foam core or other material signs in the range from 1/8" to 3/8" in thickness, see *Signage* on page 2-16.

Software Development Kit (SDK)

The MK2000 SDK is based upon industry standard Microsoft® Windows® CE development tools, making it easier and faster to create applications. The SDK includes standard Symbol C APIs plus MK2000 specific C APIs and Active X Objects. In addition, the SDK includes fully functional demo applications with source code as well as other templates to help reduce development time. The SDK provides support for application development using Microsoft® Embedded Visual C++ 4.0 with Service Pack 1* (eVC++ 4.0). To download the SDK go to <http://devzone.symbol.com/> .

*The MK2000 does not support development of Embedded Visual Basic applications.

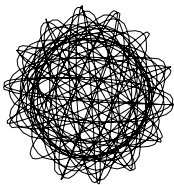
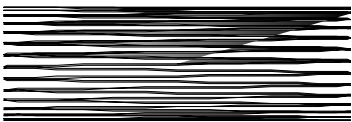

Bar Code Scanning

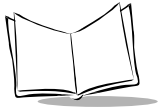
The MK2000 automatically decodes a bar code presented in its field of view. It decodes all traditional retail bar codes plus PDF, RSS and composite bar codes.

Scanning Modes

The MK2000 operates in a number of selectable scanning modes, Table 1-1 lists the MK2000 scan modes:

Table 1-1. Common Scan Modes

| Scan Mode | Description | Scan Pattern |
|--|--|--|
| Cyclone Omnidirectional 1D Scan Pattern (factory default) | This is a highly efficient omnidirectional scan pattern which decodes 1D and EAN/UCC reduced space symbologies in any orientation Note: While in this mode, the MK2000 does not decode 2D bar codes like PDF417. |  |
| Always Raster Scan Pattern | Directly opens the laser to a full sized Raster pattern. Decodes 1D, PDF417, RSS and Composite Codes. |  |
| Smart Raster Scan Pattern | Creates a single scan line which opens vertically for PDF417 symbols using the Smart Raster feature. This feature autodetects the type of bar code being scanned and adjusts its pattern accordingly. This provides optimal performance on 1D, PDF417, EAN/UCC, RSS and Composite Codes. |  |



Scanning Guidelines

When scanning a bar code:

- Hold the bar code at an angle which does not cause specular reflection (see *Specular Reflection* on page 1-14).
- Hold the bar coded item close for small bar codes and farther away for large bar codes.

Cyclone Omnidirectional

In Cyclone Omnidirectional mode the scan pattern is set to decode standard and EAN/UCC reduced space symbologies in any orientation. This mode can not be used to decode 2D bar codes like PDF417.

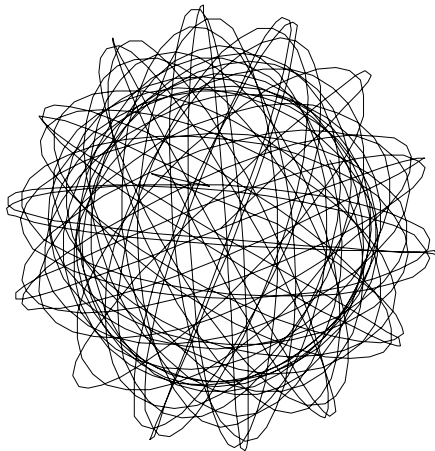


Figure 1-4. Cyclone Omnidirectional Pattern

Smart Raster

In Smart Raster mode, a single scan line pattern appears. If the bar code is a standard bar code, the scanner decodes the symbol. If the bar code is a 2-D bar code, the scanning patterns open up to a full, optimized Raster pattern as soon as the scanner is properly aligned over the bar code.

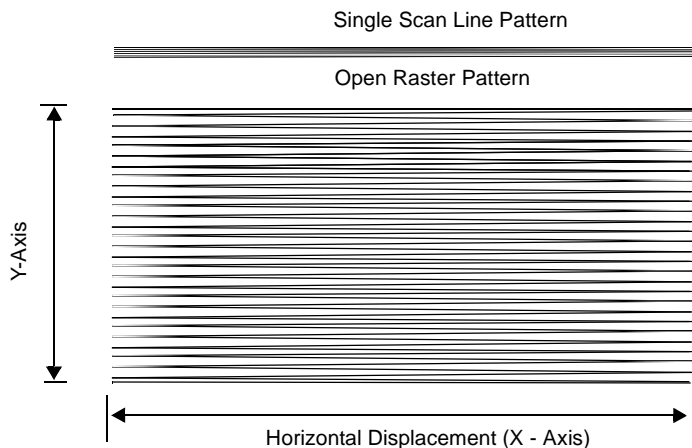


Figure 1-5. Smart Raster Scanning Pattern

When using the Raster pattern, the pattern must cover the top and bottom of the 2D symbol. If it does not completely cover the bar code pull the bar code further away until the pattern completely covers the bar code. Make sure the scan pattern extends *at least three quarters of an inch* beyond the edges of the bar code.

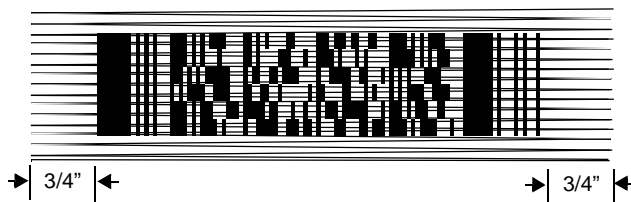
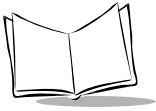


Figure 1-6. Raster Pattern Expanded Over PDF417 Bar Code



If the vertical scan pattern is not high enough to cover a “tall” PDF417 symbol, move the bar code slowly down toward the bottom of the scan beam, keeping the beam horizontal to the rows and then slowly back upward to the top. Alternatively, move the bar code further away from the scanner until the scan pattern covers a larger portion of the bar code in the vertical direction.

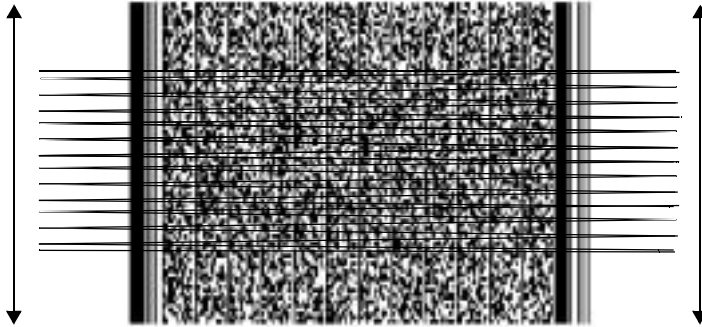


Figure 1-7. Moving Scan Pattern Upward and Downward on “Tall” PDF417 Bar Code

The scan beam does not have to be *perfectly* parallel with the top and bottom of the symbol (up to a 4° tilt is permitted).

Ensure the symbol is in good condition.

Scanning Composite (2D) Bar Codes

A composite bar code is a combination of a standard bar code (RSS, UPC/EAN or UPC/EAN-128) and a 2-D bar code (CC-A, CC-B or CC-C).

When scanning a composite bar code:

- Keep the scan pattern parallel to the 2D symbol's rows.
- Hold the bar coded item at an angle which does not cause specular reflection (see *Specular Reflection* on page 1-14).
- Hold the bar code close for small bar codes and farther away for large bar codes.
- When using the single scan line pattern, aim the scan line at the middle of the 2-D portion. The scan pattern will open up to an optimized Raster pattern and decode both the 2-D and standard bar code portion of the composite code.

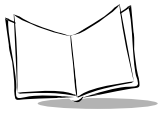


Aim the single scan line at the center of the 2D portion



Raster pattern will expand to decode both portions

Figure 1-8. Composite Scanning



Specular Reflection

When laser beams reflect *directly* back into the scanner from the bar code, they can “blind” the scanner and make decoding difficult. This phenomenon is called specular reflection.

To avoid this, scan the bar code so that the beam does not bounce *directly* back. But don't scan at too oblique an angle; the scanner needs to collect scattered reflections from the scan to make a successful decode. Practice quickly shows what tolerances to work within.

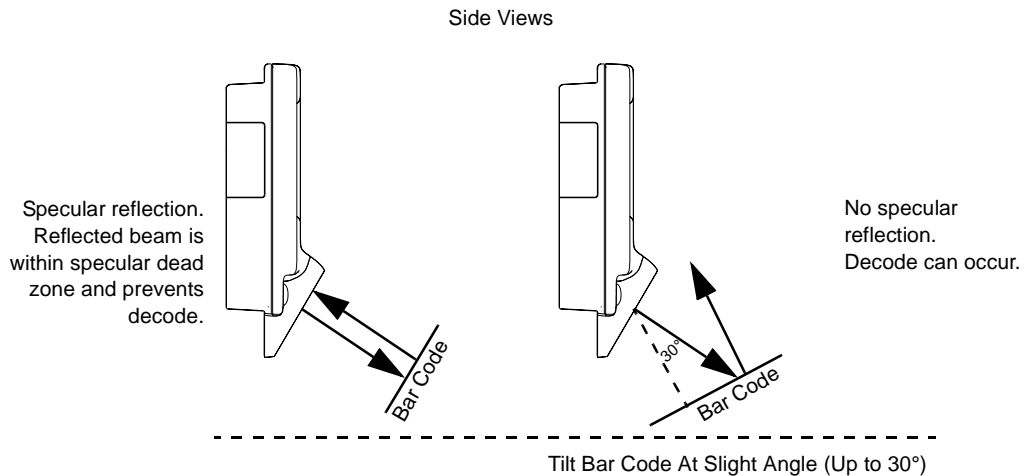
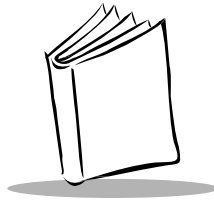


Figure 1-9. Avoiding Specular Reflection

When scanning a 1D bar code, there is only a small specular dead zone to avoid ($\pm 2^\circ$ from the direct laser beam). The specular dead zone is larger for scanning PDF417 ($\pm 9^\circ$ from the direct laser beam). However, the scanner is not effective if its beams hit the bar code's surface at an angle greater than 30° from the normal to that surface.



Chapter 2

Installation

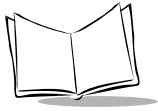
Overview

This chapter describes the MK2000 installation. Topics covered include:

- Installation steps
 - Mounting
 - Providing Power
 - Communications Interfaces
 - Installing Accessories
 - Peripherals
 - Signage
- Connector Pin-Outs.

MK2000 Unpacking

Remove the MK2000 from its packing and inspect it for damage. Keep the packing, it is the approved shipping container and should be used if the MK2000 ever needs to be returned for servicing.



Installation Overview

To install the MK2000 perform the following seven steps:

1. Select the mounting method:

- Wall Mount
- Pole Mount
- Desk Mount.

Refer to *MK2000 Mounting* on page 2-3 for mounting instructions.

2. Select the method of supplying power:

- Symbol approved AC power supply
- Power-over-Ethernet.

Refer to *Power* on page 2-9 for power connection options.

3. Select the data communications method:

- Wired Ethernet (10/100 Base-T cable)
- Wireless Ethernet (2Mb or 11Mb RF)
- Wired RS-485 (serial cable)
- Wired Printer/Scanner (RS-232, serial cable).

Refer to *Communication Interfaces* on page 2-10.

4. Select optional peripherals:

- Printer
- External hand held scanner
- Printer/Scanner (RS-232) Communication Devices.

Refer to *Peripherals* on page 2-16.

5. For Configuration settings, refer to the *Configuration Utility* on page 3-9

- To configure the communications interfaces refer to: *Configuration Utility* on page 3-9, or set the communications configuration using Windows® CE, desktop (Settings/Control Panel).
- Enter Windows® CE Desktop, see *MK2000 Protected Mode* on page 6-2.

6. Add a sign to the MK2000 (if desired). Refer to *Signage* on page 2-16.

MK2000 Mounting

The MK2000 can be mounted on a wall, pole or counter top, see Figure 2-1 on page 2-3 for mounting dimensions. Separately sold mounting accessories are listed below:

- Wall Mounts
- Pole Mount Kit, see page 2-7
- VESA Mounting, see page 2-8.

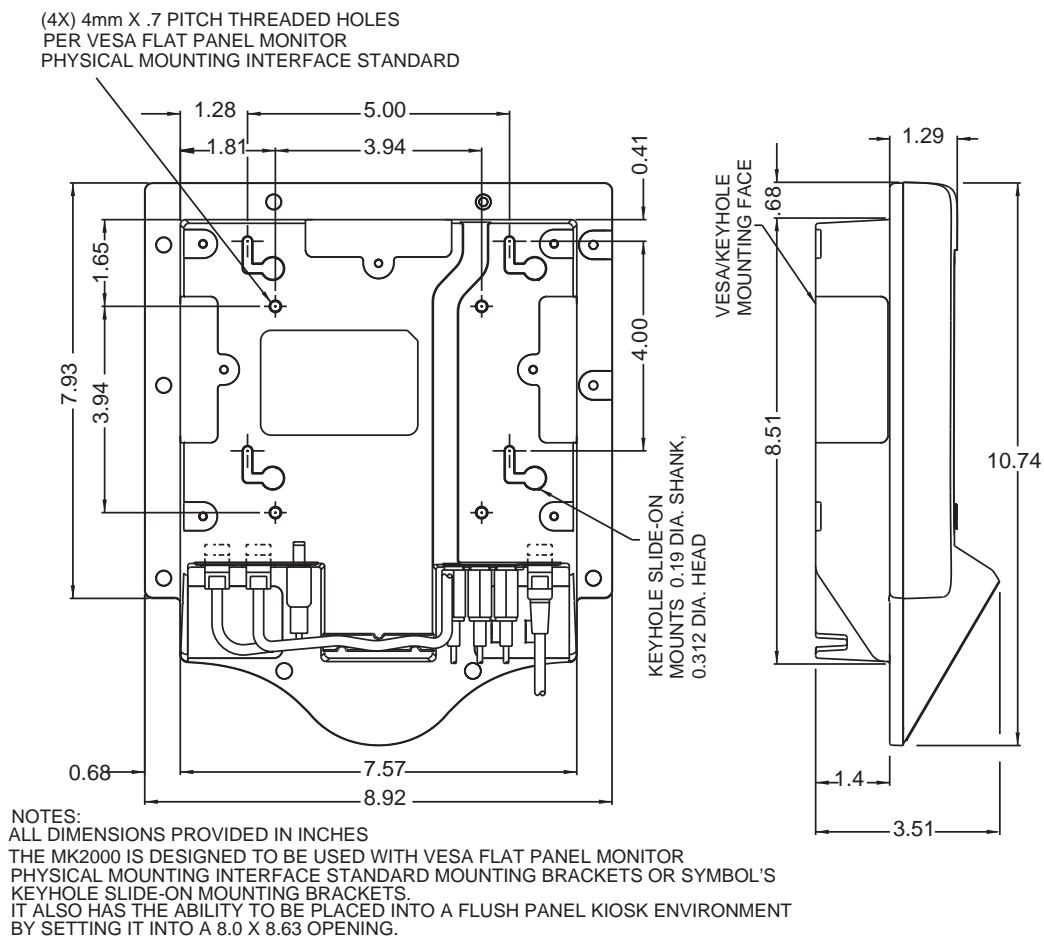
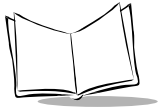


Figure 2-1. Mounting Dimensions



MK2000 Wall Mounting Options

The MK2000 mounting options include:

- Wall Mount Kit, see page 2-4
- Recessing the MK2000 into a kiosk or wall, see page 2-6.

Using the Wall Mount Kit

1. Determine the MK2000 mounting location.
2. Follow the instructions and use the template provided in the Wall Mount Kit. Four #10 wood screws are provided for securing the Connector/Port Cover to the wall. The installer may need to source alternate fasteners appropriate for the wall material.
3. Connect the cables to the MK2000 (see Figure 1-3 on page 1-5) and ensure the cables have been routed and secured correctly (see Figure 2-4 on page 2-6). Cables that are incorrectly mounted or secured may become pinched when the terminal is attached to the Connector/Port Cover. Install the Connector/Port Cover, place the keyholes on the back housing over the shoulder head bolts protruding from the plate and slide the MK2000 to the left and down to secure in place, see *Wall Mounting Kit* on page 2-5 and *Mounting Directions* on page 2-5.
4. After the MK2000 is installed, screw one 8-32 pan head screw (lock screw) into the Connector/Port Cover tab (located at the top left corner). Hand tighten the screw or for additional security use a nylon locknut (not included). This screw prevents removal of the terminal.
5. When the mounting is completed, return to *Installation Overview* on page 2-2 and proceed with step 2 supplying power.

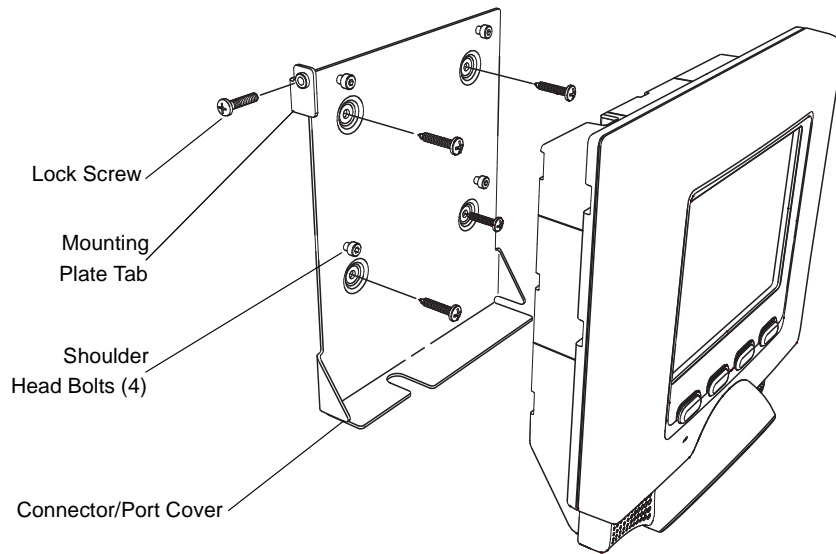


Figure 2-2. Wall Mounting Kit

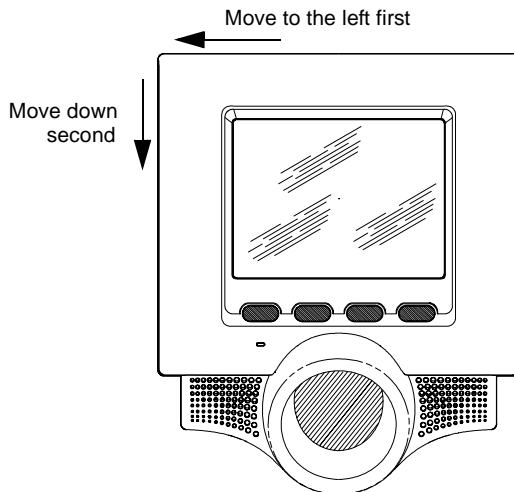


Figure 2-3. Mounting Directions

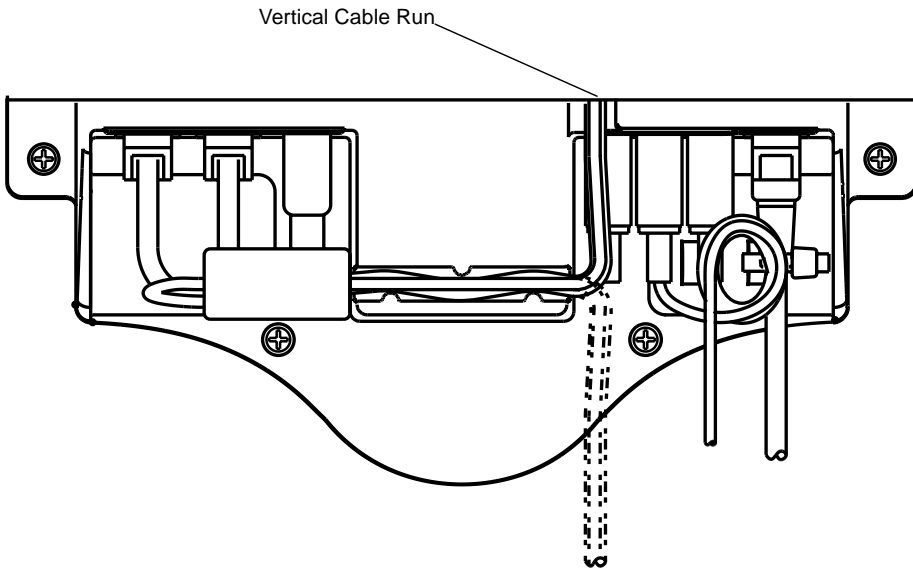
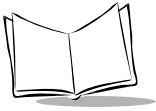


Figure 2-4. Cable Routing

Recessed Wall/Kiosk Mounting

To recess the MK2000, use the same basic steps as the *Using the Wall Mount Kit* on page 2-4. With the exception that an opening is cut 8.63" min. height x 8.0" min. width, in a wall or kiosk and the back housing is placed into the opening see *Wall Mounting Kit* on page 2-5 and *Mounting Directions* on page 2-5). Symbol does not provide hardware to support this installation. Recessed mounting may degrade the wireless network performance.

Pole Mounting

1. To install the Pole Mounting Kit, wrap the pole mount straps around the pole and tighten.
2. Secure the connector port cover to the pole mount bracket using the four shoulder screws.
3. Connect the cables to the MK2000 (see Figure 1-3 on page 1-5) and ensure the cables have been routed and secured correctly. Cables that are incorrectly mounted or secured may become pinched (see Figure 2-4 on page 2-6) when the terminal is attached to the Connector/Port Cover.
4. Position the MK2000 keyholes (on the back housing, see Figure 1-2 on page 1-4) over the shoulder head bolts and slide the MK2000 to the left and down to secure in place, see *Wall Mounting Kit* on page 2-5 and *Mounting Directions* on page 2-5.
5. After the MK2000 is installed, screw one 8-32 pan head locking screw into the pole mount bracket bottom left tab, see Figure 2-5 on page 2-7. Hand tighten the locking screw or for additional security use a nylon locknut (not included). The locking screw prevents removal of the terminal.

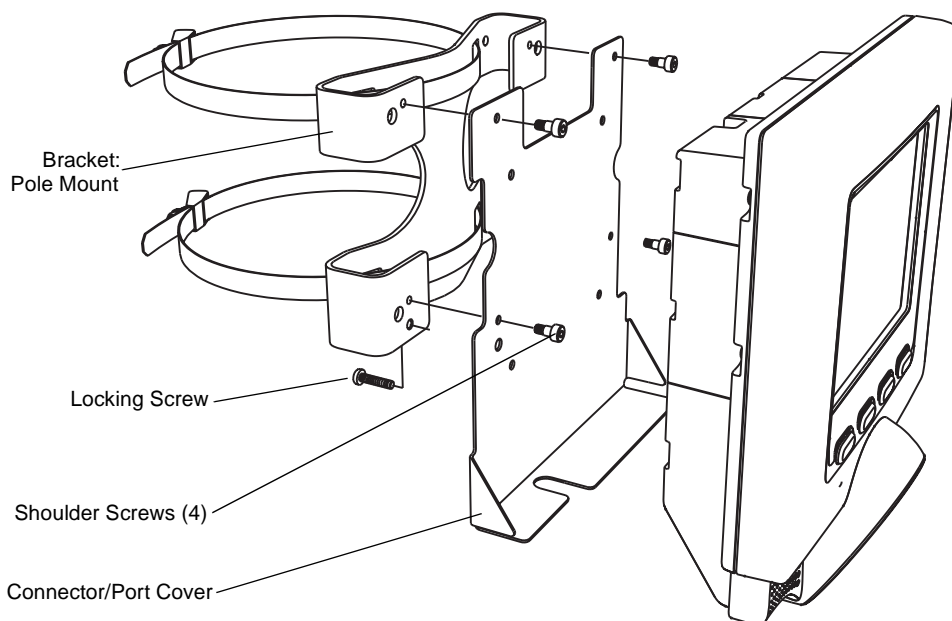
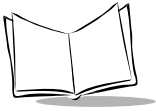


Figure 2-5. Pole Mount Kit



VESA Mounting

The MK2000 includes provisions for mounting to an industry standard VESA stand, see Figure 2-6 on page 2-8 and Figure 2-1 on page 2-3. The MK2000's rear housing includes four VESA® standard (M4 threads at a 100mm x 100mm spacing) screw holes. The VESA® (Video Electronics Standards Association) industry standard mounting interface allows many Off-the-Shelf 3rd party stands to be used with the MK2000. To find commercially available Off-the-Shelf stands, search the internet for "VESA Mount".

Symbol also offers an optional VESA Mounting Kit. The kit includes a Connector/Port Cover which provides enhanced security by covering the MK2000's cables and ports (see Figure 2-6 on page 2-8).

1. Route and secure the cables, confirm that the cables are not pinched, see Figure 2-4 on page 2-6. Position the Connector/Port Cover between the 3rd party VESA mount and the MK2000. The MK2000 is secured to the VESA mount with four M4 screws. The Connector/Port Cover protects the cables and connections at the back of the MK2000 and prevents tampering.

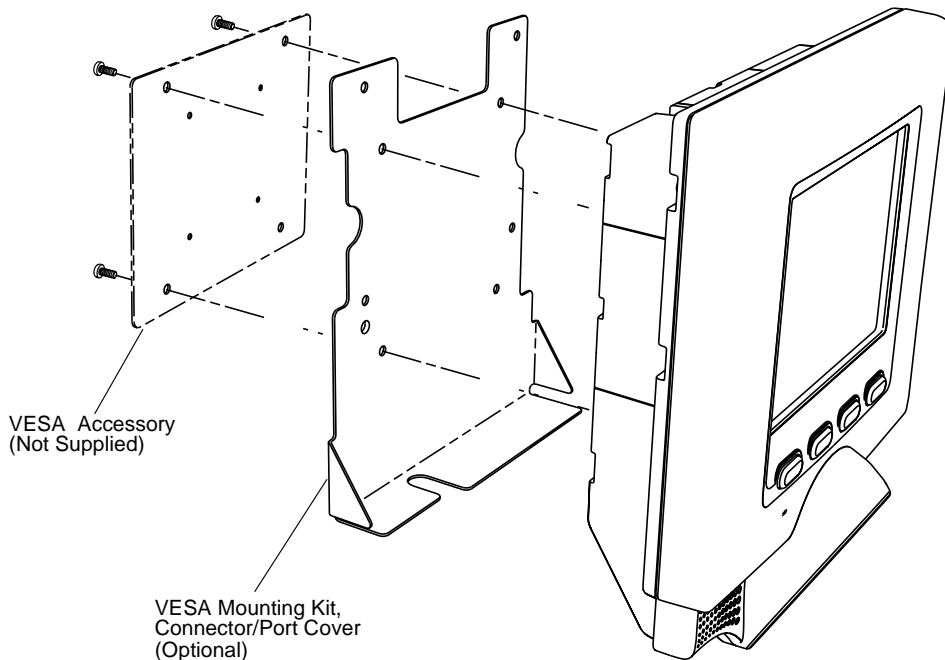


Figure 2-6. VESA Mounting

Power

The MK2000 power can be supplied by using the Symbol approved universal AC power supply or by using Symbol's BiasT, the *Power-over-Ethernet* option.

AC Power Supply Connection

The MK2000 can be powered by the Symbol approved universal AC power supply plugged into the power port on the rear of the MK2000 via a 2.0mm barrel jack. The power supply has a positive center pin and the outer tab is ground, it is compatible with:

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

To connect the Symbol approved universal AC power supply:

1. Insert the power supply's barrel connector into the MK2000's power port, see Figure 1-3 on page 1-5.
2. Route the power cable, see Figure 1-3 on page 1-5.
3. Plug the Symbol approved AC power supply into a wall outlet.
4. When the power installation is completed, return to *Installation Overview* on page 2-2 and proceed with step 3 Select the data communications method.

Power-Over-Ethernet Connection

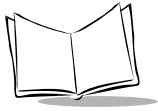
The Ethernet cable in the *Power-over-Ethernet* (POE) installation has two components, power and data. The Ethernet cable can be used only to supply power, it can be used only to supply data or it can be used to supply both power and data.

Power Connection (Attach the Ethernet cable):

- Connect the Ethernet cable to the Ethernet port on the MK2000, see Figure 1-3 on page 1-5 for port locations. Ensure the Ethernet cable is terminated according to the *Ethernet / Bias-T Port Connections* described in *Table 2-2*.
- Plug the other end of the Ethernet cable into the POE Bias-T module.
- If Ethernet cable will be supplying both power and data, proceed to step 2. If Ethernet cable will only be supplying power proceed directly to step 3.

Data Connection:

Connect a patch cable from the Bias-T (Power-over-Ethernet) module to the host system's Ethernet port.



Communication Interfaces

The MK2000 communications interfaces include both wired and wireless solutions:

- Wired Ethernet (10Base-T cable)
 - Power via AC outlet, see page 2-10
 - Power via Power-over-Ethernet, see page 2-11
- Wireless Ethernet (2Mb or 11Mb RF)
 - Power via AC outlet, see page 2-10
 - Power via Power-over-Ethernet, see page 2-11
- Wired RS-485 (serial cable), see page 2-13.
- Wired RS-232 (serial cable), see page 2-14.

To configure the communications interfaces refer to the *Configuration Utility* on page 3-9 or the communications configuration may be set up in the Windows[®] CE desktop (Settings/ Control Panel). To enter the Windows[®] CE Desktop, see *MK2000 Protected Mode* on page 6-2.

Wired Ethernet

The MK2000 communication options include a wired Ethernet connection (10Base-T cable). When a wired Ethernet connection is used the MK2000 can be powered either using the MK2000's Symbol approved AC power supply connected to an AC outlet, or by receiving Power-over-Ethernet through the Ethernet cable.

Wired Ethernet: Power via AC Outlet

With this option, the MK2000 communicates to the host via a 10Base-T Ethernet cable and receives power via a Symbol approved AC power supply plugged into an AC outlet, see *AC Power Supply Connection* on page 2-9.

1. Attach the Ethernet cable.
2. Connect the Ethernet cable to the LAN port on the MK2000, see Figure 1-3 on page 1-5.
3. Ensure the Ethernet cable is terminated according to Table 2-2 on page 2-20.
4. Plug the other end of the Ethernet cable into the host system's LAN port.

Wired Ethernet: Power via POE

The POE installation option allows the MK2000 to communicate and receive power on the same 10Base-T Ethernet cable, see Figure 2-7 on page 2-12.

Caution

POE should NOT be used in conjunction with an external power supply connected to the power port on the MK2000. Using two power sources may damage the MK2000 and/or the network.

1. Connect the Ethernet cable to the MK2000 Ethernet / Bias-T port, see Figure 1-3 on page 1-5.
2. Ensure the Ethernet cable is terminated according to Table 2-2 on page 2-20.
3. Plug the other end of the Ethernet cable into the Bias-T (POE) module.
4. Connect a patch cable from the Bias-T (POE) module to the host system's LAN port.

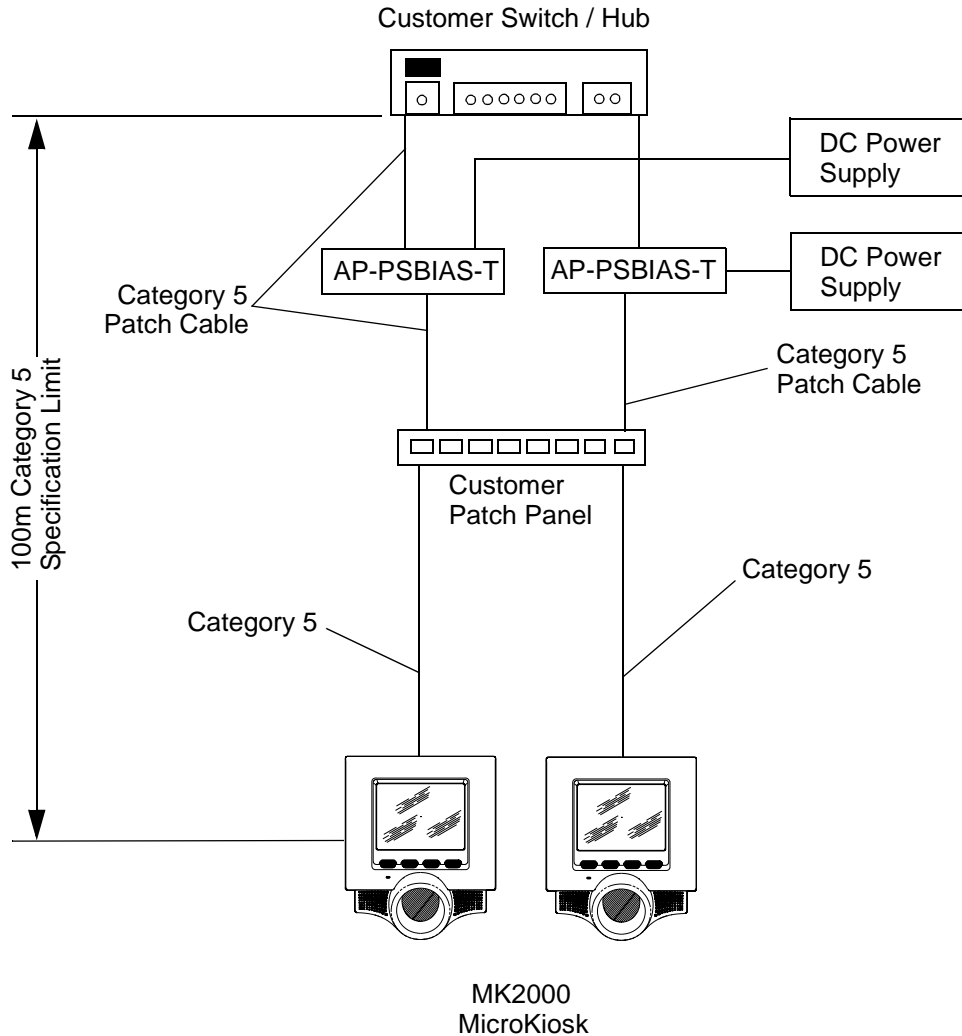
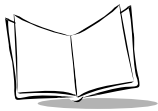


Figure 2-7. MK2000 Power-Over-Ethernet, Network Connectivity

Wired RS-485 Setup

The MK2000 can communicate with a host via a wired RS-485 serial connection. Typically the MK2000 Symbol approved AC power supply is used with this communications interface.

For MK2000 devices installed where pre-existing PCK 9100, PCK 9140 or MK1000 wiring exists, the pre-existing wiring can be plugged directly into the MK2000.

RS-485 is a two-wire multidrop network: RS-485 signal and RS-485 inverted signal, see Figure 2-9 on page 2-15 for an illustration of the two-wire multidrop differential signal.

When installing an RS-485 configuration, ensure each MK2000 is connected directly to the RS-485 bus, see Figure 2-8.

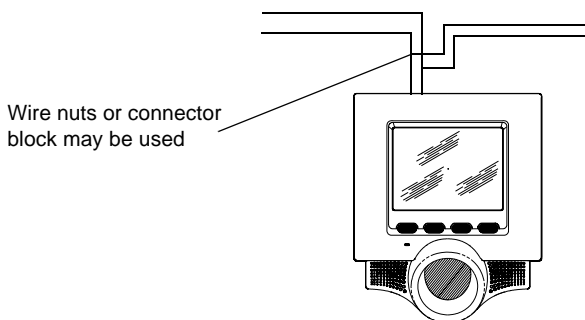
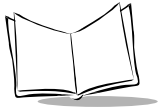


Figure 2-8. Connector Block

The cable required for an RS-485 installation should meet or exceed the following specifications:

- 1 twisted pair 26 AWG (7/34) tinned copper
- twisted pair foil wrapped - 100% coverage
- nominal impedance 120 ohms
- capacitance between twisted pair 10-25 pf per foot
- capacitance between conductors & shield 20-35 pf per foot
- DC resistance of each conductor 45 ohms per 1000 feet
- DC resistance of shield 10 ohms per 1000 feet.



If the host does not support RS-485 and RS-485 is the desired communication interface, an RS-232 to RS-485 conversion box is required. The conversion box must be sourced locally and configured per manufacture's instructions. The conversion box is not available from Symbol Technologies.

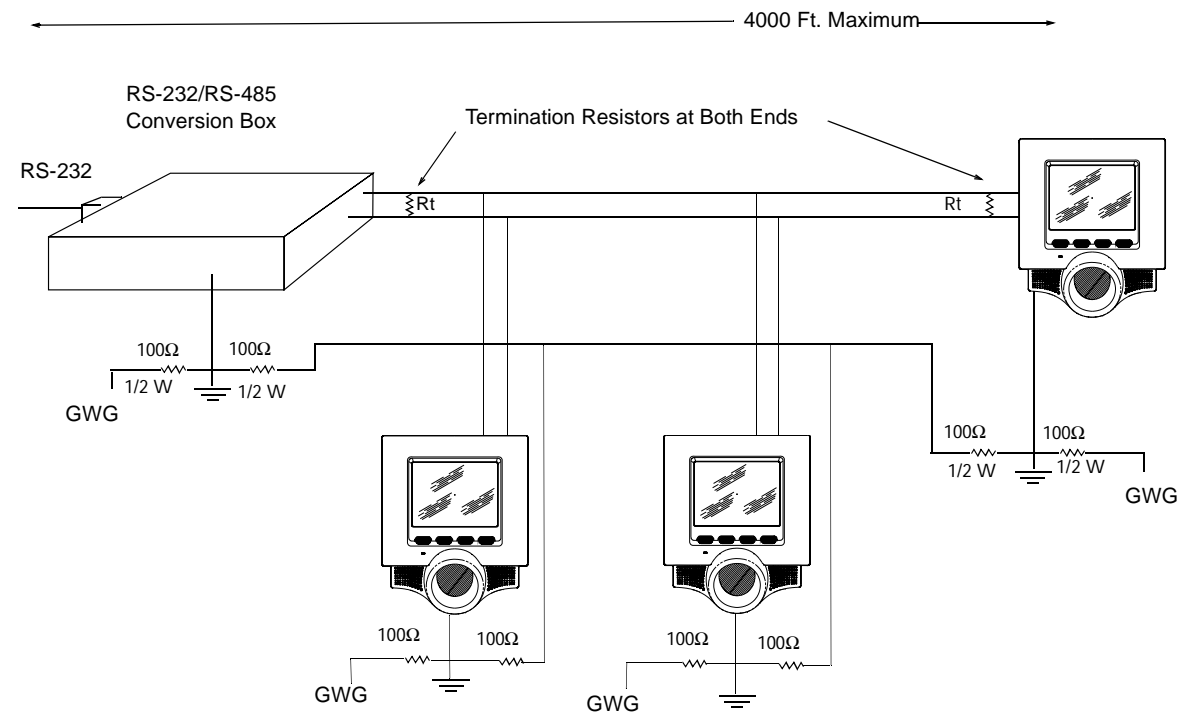
To install the MK2000 with a host that does not support RS-485:

1. Connect the conversion box to the host using an RS-232 cable.
2. Attach the RS-485 serial cable.
 - Connect the RS-485 serial cable to the LAN port on the MK2000, see Figure 1-3 on page 1-5 for port locations. Ensure the serial cable is terminated according to the *RS-485 Port Connections* described in Table 2-3.
 - Plug the other end of the RS-485 serial cable into the converter box.
3. When the data communications installation is completed, return to *Installation Overview* on page 2-2 and proceed with step 4 select accessories.

Wired RS-232 Setup

The MK2000 can communicate with a host using a serial cable connected to the Printer/Scanner (RS-232) port.

1. Connect the RS-232 serial cable to the Printer/Scanner (RS-232) port on the MK2000, see Figure 1-3 on page 1-5 for port locations. Ensure the serial cable is terminated according to the *Printer/Scanner (RS-232) Port Connections* pin-outs described in Table 2-4.
2. Plug the other end of the serial cable into the host.




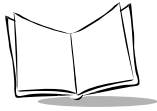
| | |
|---|--|
| GWG | Green wire ground or power system ground |
|  | Circuit ground or circuit common |
| R_t | 120 Ω 1/2W |

Figure 2-9. RS-485 Two-Wire Multidrop Network Example



Peripherals

Peripheral devices such as a printer, decoded external scanner or RS-232 communicating devices can attach to the MK2000. This port can be used for serial communication with a host, connection of an external device like a printer or for the connection of an decoded external scanner, for port locations, see Figure 1-3 on page 1-5. The Printer/Scanner (RS-232) port can supply power to peripheral devices (up to 500mA).

It is important to confirm the connector pin-out before attaching the cable. For connector pin-outs, see *Printer/Scanner (RS-232) Port Connections* on page 2-21. To connect an external device:

1. Attach the auxiliary device's cable to the Printer/Scanner (RS-232) port on the MK2000, see Figure 1-3 on page 1-5 for port locations. Ensure the cable is terminated properly. For *Printer/Scanner (RS-232) Port Connections* pin-outs see *Table 2-4*.
2. If not already connected, plug the other end of the cable into the auxiliary device.

Signage

The Signage placard mounting brackets and attaching screws are provided in the Signage Mounting Kit. The mounting brackets will accommodate foam core or other material signs mounted on the MK2000, in the thickness range of 1/8" to 3/8". Refer to Figure 2-1 on page 2-3 for cutout dimensions.

Signage Mounting Kit Installation:

1. Position the mounting brackets on the back of the MK2000 as shown in Figure 2-10 on page 2-17. Attach the mounting brackets using supplied screws.
2. Trim the sign (customer provided) to 7 5/8 inch wide and 7 1/4 inches high (see dimensions shown in Figure 2-1 on page 2-3). The cut out in the sign is shown in Figure 2-11 on page 2-18.
3. Slide the sign under the mounting brackets, see Figure 2-11 on page 2-18.
4. The finished sign will be displayed as shown in Figure 2-11 on page 2-18.

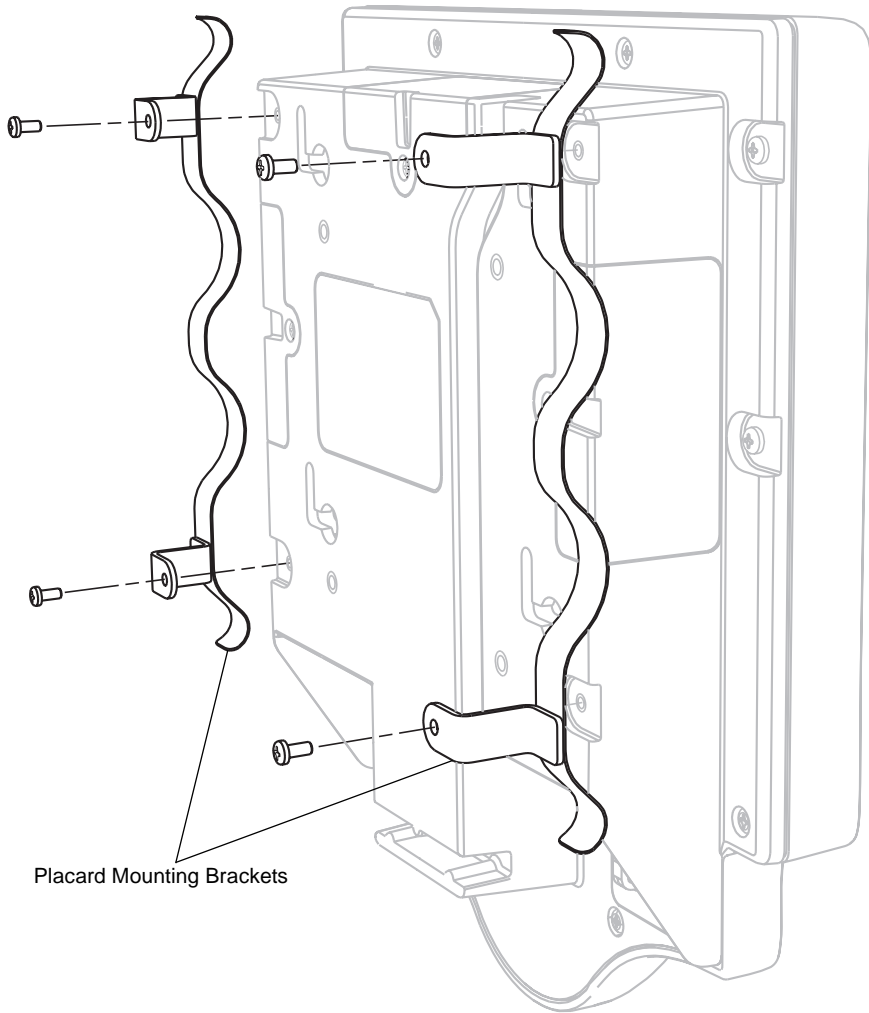


Figure 2-10. Placard Mounting Brackets, Installation

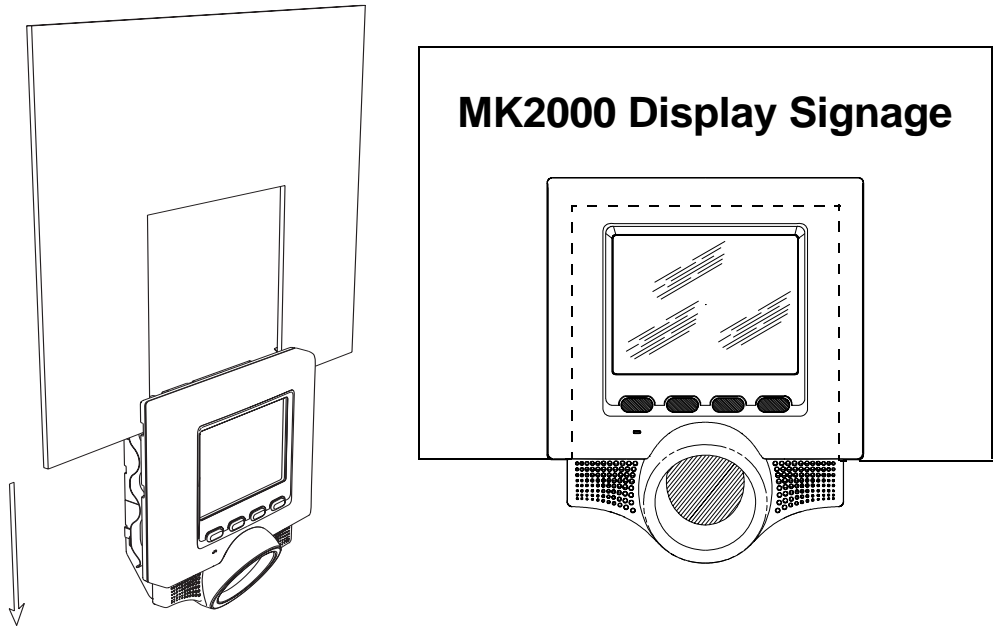
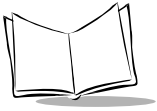


Figure 2-11. Sign Installation

COM Port

Table 2-1. COM Port

| COM | Port |
|------|---------------------|
| COM1 | RS-485 |
| COM4 | RS-232 (no power) |
| COM6 | RS-232 (with 5 VDC) |

Connector Pin-Outs

Table 2-2 through Table 2-4 describe the MK2000 connector pin outs, see Figure 1-3 on page 1-5 for port locations.

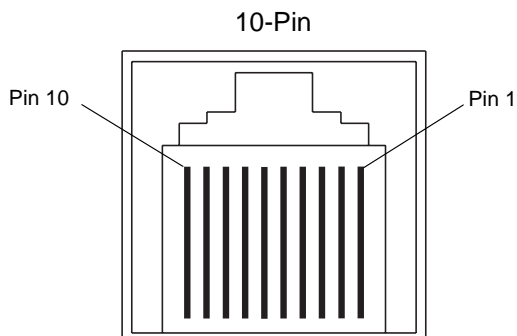
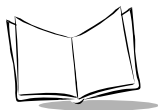


Figure 2-12. 10-Pin Connector Port



Ethernet / Bias-T Port Connections

The Ethernet connector provides the interface for both the ethernet signals and power supply voltage to the MK2000 through a single Ethernet cable. If power to the MK2000 is being provided via POE, do NOT use the Symbol approved AC power supply.

Table 2-2. Power-over-Ethernet Connections

| Pin | Description |
|--------------------------------------|---------------------|
| Pin 1 | Reserved/Do not Use |
| Pin 2 | TXD (+) |
| Pin 3 | TXD (-) |
| Pin 4 | RXD (+) |
| Pin 5* | Bias-T VCC |
| Pin 6* | Bias-T VCC |
| Pin 7 | RXD (-) |
| Pin 8* | Bias-T GND |
| Pin 9* | Bias-T GND |
| Pin 10 | Reserved/Do not Use |
| * Used only with Power-over-Ethernet | |

RS-485 Port Connections

Table 2-3. RS-485 Connector: 10-Pin

| Pin | Description |
|--------|-------------|
| Pin 1 | RS-485 (+) |
| Pin 2 | RS-485 (+) |
| Pin 3 | Reserved |
| Pin 4 | Reserved |
| Pin 5 | USB PWR |
| Pin 6 | USB - |
| Pin 7 | USB + |
| Pin 8 | RS-485 (-) |
| Pin 9 | GND |
| Pin 10 | RS-485 (-) |

Printer/Scanner (RS-232) Port Connections

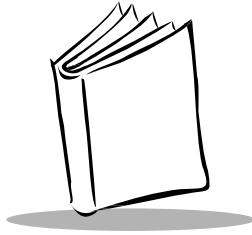
This connector pin-out can be used for both serial communication from the host to the MK2000 and/or communication between an external hand held decoded scanner and the MK2000. The powered Printer/Scanner (RS-232) port specification are: RJ-45 jack, 10 conductor, 5V/500mA.

Table 2-4. Printer/Scanner (RS-232) Connector: 10-Pin

| Pin | Description |
|--------|--------------|
| Pin 1 | +5V |
| Pin 2 | Not Used |
| Pin 3 | RXD (input) |
| Pin 4 | Not Used |
| Pin 5 | RTS (output) |
| Pin 6 | GND |
| Pin 7 | CTS (input) |
| Pin 8 | Not Used |
| Pin 9 | TXD (output) |
| Pin 10 | Not Used |



MK2000 MicroKiosk Product Reference Guide



Chapter 3

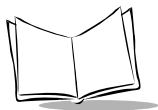
Setup and Configuration

Overview

This chapter describes the MK2000 setup and configuration steps. All of the configuration parameters can be set using the Configuration Utility, see *Configuration Utility* on page 3-9. In addition, Table 3-1 on page 3-2 provides cross reference for which configuration parameters can also be set using the Control Panel.

Setup and configuration steps covered include:

- Control Panel Configuration Parameters
- File System Structure Description
- Managing the Startup Process
 - Startup Program
 - Configuring User Application(s)
 - Reliable Sequencing of Application Programs
 - Reset Function
 - Control Panel Settings
 - Stylus Settings
 - Specifying an ESSID For a Wireless Network Connection
- Configuration Utility
 - Configuration Utility Main Screen
 - Removing The Configuration Utility
 - Updating The Configuration Utility



Control Panel Configuration Parameters

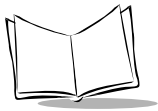
The configuration parameters that can be set using the Windows® desktop Control Panel as well as the Windows® desktop Control Panel Icon used to access the configuration parameters are provided in Table 3-1.

Table 3-1. Control Panel Configuration Parameter

| Configuration Parameter | Description |
|---|---|
| Backlight Brightness | See <i>Stylus Settings</i> on page 3-8. |
| Button Settings Button mappings Trigger Time | Button Definitions, see <i>Configuration Utility</i> on page 3-9. |
| Daylight Savings Time Auto Adjust Time? | See <i>Date and Time</i> on page 3-7. |
| Inactivity Manager Idle Time Before Launch Inactivity Application Name | See <i>Inactivity Manager</i> on page 3-7. |
| Protected Mode Password Application | See <i>Gatekeeper</i> on page 3-7. |

Table 3-1. Control Panel Configuration Parameter (Continued)

| Configuration Parameter | Description |
|--|--|
| Scan Wedge Append Enter to bar code? Append Tab to bar code? No Shell Present Prefix Scanning Mode Suffix Transmit Code Id Trigger Mode | Not configurable with Control Panel (configurable by selecting Programs, Tools, Scanner Wedge) |
| User App(s) Application Path Arguments Delay Before Launch Waiting For Completion | There are seven user application slots with identical parameters. Each slot is under a group called "X application launched," where "X" is first, second, etc., see <i>Configuring User Application(s)</i> on page 3-5 |
| Volume and Sounds Default Volume Keypress Sounds Screen Tap Sounds Sound Scheme Sounds Generated By | See <i>Volume and Sounds</i> on page 3-7. |



File System Structure Description

The Windows[®] CE file system uses folders to represent physical devices (such as PC Cards), as well as flash file systems (such as the FlashFx file system used on the MK2000). This file system is different from the drive letter file systems designation that the Windows[®] desktop versions use.

The Object Store file system has unique properties. The Operating System files in the Object Store file system are stored in flash and cannot be changed individually (they are read-only). Windows[®] CE also uses a portion of the system's RAM for a writeable file system, and allows read-only files to be "replaced" in flash with new versions in RAM. The files aren't actually replaced: when a "replaced" file is referenced Windows[®] CE provides the RAM version. If the RAM version is deleted, the ROM version still exists.

Table 3-2 summarizes the top-level folders of the MK2000. Non-Object-Store folders will only be present if the device/file system is also present.

Table 3-2. Object Store File System

| Folder | Device |
|---------------|-----------------|
| Application | Flash Partition |
| Data | Flash Partition |
| Platform | Flash Partition |
| Storage Card | PC or CF Card |
| Storage Card2 | PC or CF Card |
| Databases | Object Store |
| My Documents | Object Store |
| Profiles | Object Store |
| Program Files | Object Store |
| Temp | Object Store |
| Windows | Object Store |
| Control Panel | Object Store |

Managing the Startup Process

When the MK2000 boots it runs the regmerge/copyfiles and the startup program. Regmerge/copyfiles is responsible for configuring the unit and merging new functionality (such as optional drivers and the User Application) into the operating system. The Symbol MK2000 SDK provides additional details on regmerge/copyfiles.

Startup Program

The Startup program launches both system resources and user selectable resources. The registry configures the Startup program. To add user application(s) to the Startup program, add the user application entry to the registry.

Configuring User Application(s)

The Configuration Utility configures the user application(s). There are seven application "slots" that can be defined. Each slot is processed in sequence until all items are used.

The Startup program supports four parameters for each slot: executable path, command line arguments, delay before running, and a special flag. See Table 3-3 for descriptions of each parameter.

Programs launch one after the other with no delay unless either Delay Before Launch or Waiting For Completion parameters are set.

Table 3-3. Startup Program, Parameter Descriptions

| Parameter | Description |
|---------------------|--|
| Application Path | The <i>Application Path</i> is the full "run" path to the executable. This must be defined for the entry to be processed (i.e., do not just specify a delay). File type associations are not supported. For example if the <i>Argument</i> contains a word document then specify the full path to wordpad.exe in the <i>Application Path</i> . |
| Arguments | Optional. Command line arguments for the program above. Double quotation marks must be themselves quoted using a back slash character, as in \". Back slashes must also be quoted, (i.e., \\). |
| Delay Before Launch | Optional. Specifies the number of seconds to delay before launching the program. This allows a delay time to be set before launching the User Application, if a previous program needs to complete or to ensure system resources are available. This is a simplified method of handling sequencing, see <i>Reliable Sequencing of Application Programs</i> on page 3-6 to handle more complex situations (requires "wait for completion"). |

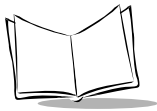


Table 3-3. Startup Program, Parameter Descriptions (Continued)

| Parameter | Description |
|------------------------|--|
| Waiting For Completion | Whether the startup sequence should wait for this program to complete before launching the next one, typically set to FALSE. See <i>Reliable Sequencing of Application Programs</i> on page 3-6 for a more detailed description. |

Reliable Sequencing of Application Programs

The Delay before launch and Wait for Completion parameters can be used to set the startup process parameters:

- If an application requires a definitive order of execution
- To provide a signal between components to detect failures
- To verify that local or networked resources are available before the main application launches.

The Delay Before Launch parameter can be used to achieve a fixed delay in the launch sequence. However, this is not a robust way to ensure correct system operation. The recommended method is to write a separate program, with or without a user interface, that performs whatever checks are required, and then terminates, possibly setting a registry value or filesystem flag to indicate success. Set the Wait For Completion flag for this program and run it before running the main application(s).

For example: use the program to confirm connection to a database server or web site that the application relies on before launching the application. This is suitable for web-based applications where lack of control over the application software limits the ability to build contingency into the startup process.

For failure recovery, the application could be set to reboot the unit after a timeout was exceeded if a necessary resource became unavailable, and a startup program could check for its return, possibly presenting an "Out Of Service" screen. When the resource returns, the application would launch normally.

Reset Function

If an application is running, perform the Reset function and enter the Windows® CE protected mode to access the Control Panel settings.

1. To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons (see Figure 1-1 on page 1-3). The MK2000 reboots.
2. To prevent the MK2000 from entering an application, simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
3. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
4. The MK2000 enters Protected Mode and the Win CE desktop appears.

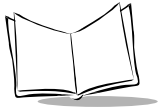
Control Panel Settings

Settings include the following:

- Backlight Settings
- Button Definitions
- Date and Time
- Inactivity Manager
- Gatekeeper
- Volume and Sounds
- Stylus Settings.

To access the Control Panel Settings:

1. Select **Start**
2. Select **Control Panel** from the Settings window
3. Select the item from the Control Panel window
4. Enter the desired settings.



Stylus Settings

The Stylus settings include setting the Double Tap Speed and the Calibration setting. These values are pre-configured at the factory. To recalibration the Stylus settings:

Simultaneously press and release buttons A,C and D, see Figure 1-1 on page 1-3. This command proceeds directly to the stylus calibration.

or

1. Enter Protected mode, see *MK2000 Protected Mode* on page 6-2
2. From the Windows® CE desktop, select **Start**
3. Select **Settings**
4. Select **Control Panel** from the Settings window
5. Select **Stylus** from the Control Panel window
6. From the Stylus window set the **Double Tap Speed** and the touch screen **Calibration**. **Double Tap Speed** settings are not persistent and will default back to factory settings on startup, see *Registry Persistence* on page 6-2.

Specifying an ESSID For a Wireless Network Connection

The ESSID for the Spectrum24 radio card is set using the Symbol Mobile Companion application. It is saved with the other values of the current configuration. As always, if the value is changed, save the new configuration.

To set the value, use the Configuration Utility (Communications - S24 802.11b - ESSID) or perform the following steps (from Windows® CE Protected Mode):

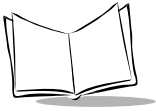
1. To run Mobile Companion select Start - Programs - Tools - S24 Event Monitor. The task tray icon to appears on the task tray.
2. Tap on the task tray icon and select Find WLANs from the menu. The Mobile Companion program launches.
3. A list of valid networks (ESSIDs) is presented, select one and tap the Connect button.
4. Review the Mode, Encryption, IPConfig and Power tab settings. Tap the OK button in the upper right hand corner to close the Mobile Companion.
5. The Mobile Companion icon should exhibit a vertical green bar graph indicating radio signal quality. Absence of this bar graph indicates lack of communication between the MK2000 radio and an access point.

Configuration Utility

The MK2000 Configuration Utility is a Windows® program that allows many of the MK2000 parameters to be configured on a PC and then saved to a registry/configuration file for transfer to the MK2000's non-volatile Flash Memory. Parameters set in the registry/configuration file are retained between power down and power up cycles. The registry files can also be transferred from the MK2000 to a host PC (for cloning) and/or edited using the Configuration Utility.

The Configuration Utility presents a "tree" view of parameters (see Figure 3-5 on page 3-13) on the left-hand side, similar to Windows® Explorer. Users navigate to and select the desired parameter. The right-hand pane then displays editing controls suitable for editing the parameter data. When the user has completed customizing the MK2000 settings, the information is saved to a configuration file and can then be loaded on to the MK2000's non-volatile storage location. In non-volatile storage, the configuration file is retained even when the MK2000 is powered-down.

The parameters set by the Configuration Utility can be updated using control panels or applications on the MK2000. However, the user must manually save the configuration settings. To save the configuration, choose Save Configuration from the Start menu. Any control panel changes that were not saved to non-volatile storage are lost if the MK2000 is powered down.



Download and Install The Configuration Utility

The Configuration Utility is available for download from Symbol's Developer's Zone web site (<http://devzone.symbol.com/>). Download the Configuration Utility install file and save it on the PC's hard drive. Select Start/Run from the Windows® task bar and use the Browse button, locate the Configuration Utility install file and select OK.

Follow the instructions presented by the installation wizard:

1. The *Configuration Utility First Install Screen* welcomes the installer and provides copyright information, select Next to continue.



Figure 3-1. Configuration Utility First Install Screen

2. The *Configuration Utility Select Folder Screen* provides the installer with the directory information for the installation. Enter a new install path or accept the default path, and select the Configuration Utility users. Select Next to continue.

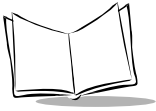


Figure 3-2. Configuration Utility Select Folder Screen

3. The *Configuration Utility Confirm Install Screen* allows the installer to confirm the installation, select Next to continue.



Figure 3-3. Configuration Utility Confirm Install Screen



4. The *Configuration Utility Install Complete Screen* confirms the installation was completed successfully, select Close to exit.

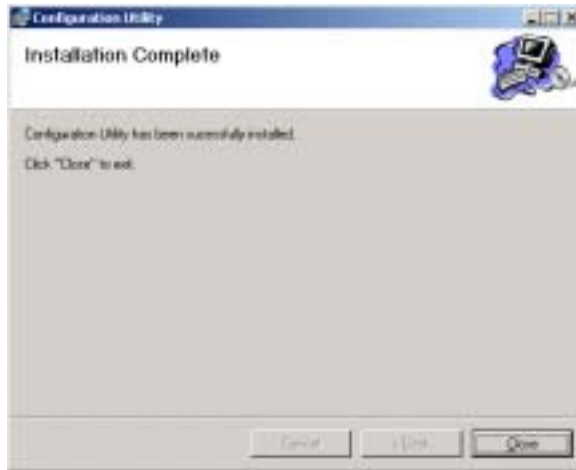


Figure 3-4. Configuration Utility Install Complete Screen

Configuration Utility Main Screen

The Configuration Utility main screen provides an overview of the configuration categories provided by the Configuration Utility, see Figure 3-5 on page 3-13. The main configuration category listings are provided:

- Communication
- System Configuration
- Update
- DHCPConfig.

An overview of the editing functions is provided, see *Edit Data Entry Formats* on page 3-14. A discussion of the DHCP editing options is also provided, see *Editing DHCP Options* on page 3-15.

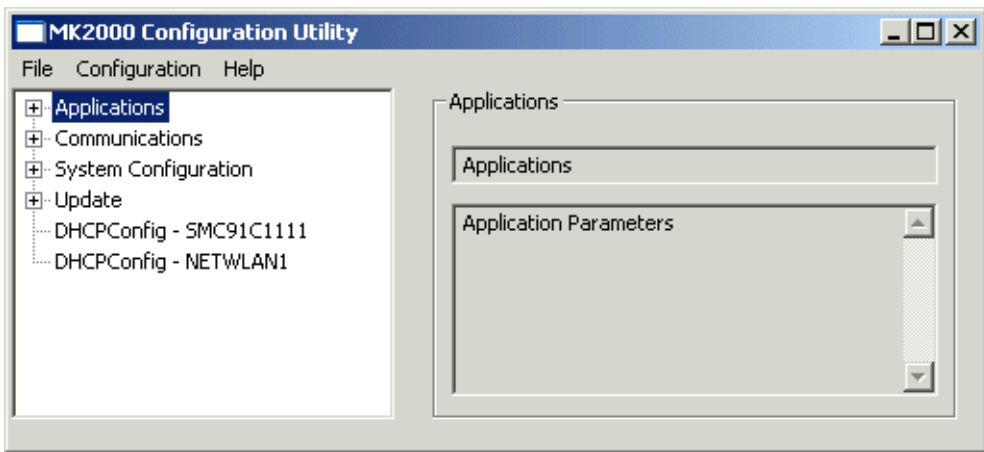
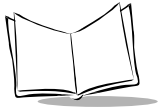


Figure 3-5. MK2000 Configuration Utility



Edit Data Entry Formats

The Configuration Utility uses standard data entry formats, that depend on the data type.

- **Check Box**
The fields are used for true or false values. If the check box has an "X" in it, the value is selected, otherwise it is not. Tap on the box to check or uncheck. The identified function is either applied or not applied depending on the status of the check box.
- **Text Data Entry Box**
The fields require text entries. Examples are IP addresses, domain name or server name.
- **Numeric Data Entry Box**
The fields require numeric entries, either in hexadecimal (base 16) or decimal (base 10) notation. Hex values must be preceded by "0x" (zero-ex).
- **List**
The fields require the selection of a single option. The stored configuration item is likely to be different than the text displayed, so when viewing the registry file it may not match the selection.
- **Bit Fields**
A number of items that are presented in a list with check boxes beside each item. Multiple items can be selected (from none to all). Each selected item affects the value stored. The value stored is a single number, so the selections will not match what is in the generated file.
- **Multiple Text**
The fields allow multiple free-form strings to be entered. A new string is created by pressing Enter on the keyboard. Multiple text values are not represented in the registry file as text, so the value entered will not be recognizable in the generated file.

Restoring Defaults

Some fields (but not all fields) have default values. The default value of a single field, or the default value for all fields can be restored, by choosing appropriate menu items from the Configuration menu. The two restore options are: *Restore Default* and *Restore All Defaults*.

Save Configuration / Generate a .reg File

Choose File - Save Configuration from the menu, provide or select a file name and press OK.

Load Configuration / .reg File

Choose File - Open Configuration from the menu, select a file name and press OK.

DHCPConfig

Editing DHCP Options

Topics covered in this section include how to edit options and save them to the Configuration File. User familiarity with the general topic of selecting DHCP Options is required.

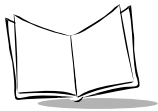
A network adapter may set DHCP Options that determine what additional data is both sent-to and received-from the DHCP server if that adapter is configured for DHCP address resolution. Selecting the DHCP Options field opens a separate dialog box for editing the options. The dialog contains names and help text for all defined DHCP Options, according to RFC 2132.

When the DHCP Options dialog is closed, the options are included in the saved Configuration File.

The edit button is used to access both the send and receive option selections. Two windows are provided, the first contains the Available Options selections and the second lists the options that have already been selected. To add a receive option, highlight the option and select the Add button to move the item to the items selected for receive window. To Remove an item from the items selected for receive window, highlight it and select the Remove button.

The dialog has a Send and a Receive page. Items on the Receive page are selected and their information is present in the registry after the DHCP request is resolved. The "Receive page" pulls information from the server. Items on the Send page must be selected into the configuration and then their value must be set. The "Send page" pushes information to the server.

DHCP requests are generally made when the adapter is first configured and then every time the Lease Period expires.



DHCPConfig

To edit the DHCPConfig options open the DHCPConfig window first select the Edit button to enter the *Send/Receive* window. From the *Receive* tab, select new values from the available options (use *Ctrl* key to enter more than one value) and tap on the *Add* button. Reverse the procedure and tap on the *Remove* button to remove selected options.

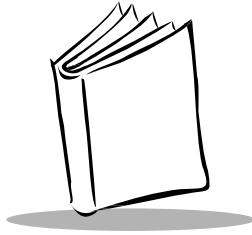
From the *Send* tab, select new options from the pull-down menu and tap on the *Enable Option* box. The Enter value data entry box appears. Enter the option value(s) desired. Reverse the procedure and clear the Enable Option box to remove the selected options.

Removing The Configuration Utility

Use the Windows[®] Add/Remove a program utility to remove the Configuration Utility from the desktop PC.

Updating The Configuration Utility

Remove the Configuration Utility and reinstall an updated Configuration Utility version, see *Download and Install The Configuration Utility* on page 3-10.



Chapter 4

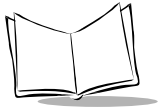
Resident Demo Application

Overview

The Resident Demo Application (MK2000RDEMOAPP-x.xx) is a browser-based application available for download, either individually or as part of the SDK at: <http://devzone.symbol.com>. The purpose of the Resident Demo Application is to provide a visual and audible demonstration of the MK2000's capabilities. The Resident Demo Application can be set to launch automatically on MK2000 boot up.



Figure 4-1. Main Screen



Resident Demo Application Functionality

The Resident Demo Application provides a visual and audible demonstration of the MK2000's capabilities. It provides an overview of a basic MK2000 retail application and it is useful in demonstrating the basic functionality of the MK2000 in a retail environment. The Resident Demo Application is functionally divided into Customer Applications and Store Operations.

The Customer Application screens provide:

- Advertising (Attract Mode)
- Price Verification
- Music Listen Station
- Alternate Language Information
- Loyalty Program.

The Store Operations screens provide:

- Item Information
- In-Store Messaging (Text and Voice)
- Voice Recording
- Voicemail Playback
- 2D bar code Scanning and Display Data
- Scan engine deactivation / reactivation.

Demo Application Versions

There are two versions of the Demo Application, the Resident Demo Application (MK2000RDEMOAPP-x.xx) and the Laptop Driven Demo Application (MK2000SDEMOAPP-x.xx). Both versions (along with the source code) are available at: <http://devzone.symbol.com>. The Laptop Driven Demo Application is also supplied with the MK2000 SDK p/n MK2000CESDK-x.xx.

Resident Demo Application

The Resident Demo Application is a self-contained program that is run on the MK2000. This version of the Resident Demo Application does not require any external connectivity to be run. The Resident Demo Application cannot be modified or customized.

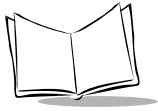
Laptop Driven Demo Application

The Laptop Driven Demo Application (see *Setting-Up The Laptop Driven Demo Application* on page B-4) is a browser based thin client application hosted by a laptop/desktop computer via a network connection. For more about this version of the Demo Application and what features can be modified or customized see *Laptop Driven Demo Application* on page B-1.

The Laptop Driven Demo Application has been designed for ease of customization. The referenced text and database files have been provided and can be simply customized. See *Customizable Features* on page B-3 and *Application Set-Up and Customizing* on page B-7 for more details.

Demo Application Bar Codes

The Demo Application bar codes are used by both Demo Applications. They provide the bar code inputs required to demonstrate the MK2000's capabilities, see *Demo Application Bar Codes* on page C-1.



Installing the Resident Demo Application

If MK2000 is set to automatically launch an application on power-up, then proceed to the *Bypass application auto-boot* steps.

If there is an existing copy of the *Demo Applications* on the MK2000 perform the *Delete the current Demo Applications version* steps and provide access to the Windows® CE Desktop.

Bypass Application Auto-Boot

1. To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.
2. To prevent the MK2000 from entering an application, simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
3. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
4. The MK2000 enters Protected Mode and the Win CE desktop appears.

Delete The Current Resident Demo Application Version

1. Double tap the *My Computer* icon on the CE desktop.
2. Double tap the *Application* folder.
3. Select and delete the *Resident_MK2000_Demo_App* folder
4. Select and delete the *mkconfig.reg* file.

Note: Use the delete functionality contained in the Files Menu to remove the desired files.

Install A New Resident Demo Application Version

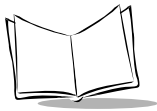
1. Download the Resident Demo Application: MK2000RDEMOAPP-x.xx (individually or as part of the SDK) at: <http://devzone.symbol.com>.
2. To load *Resident Demo Application* onto a CF card, use a PC to copy the following two items onto the CF card:
 - A folder labeled *Resident_MK2000_Demo_App*
 - A file labeled *mkconfig.reg*.

3. Insert the compact flash card into the CF card slot, see Figure 1-2 on page 1-4. To access the CF card contents use the *Storage Card* folder located in *My Computer*.
4. Double tap the *My Computer* icon.
5. Double tap the *Application* folder.
6. Use copy function to copy the folder and file from the *My Computer\Storage Card* folder into the *My Computer\Application* folder.
7. Reboot the MK2000 to launch the new version of the Resident *Demo Application*.
 - To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.
 - The *Resident Demo Application* launches automatically on power-up.

Disable/Restore Demo Application

1. To prevent the MK2000 from entering an application, simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
2. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
3. The MK2000 enters Protected Mode and the Win CE desktop appears.
4. Double tap the *My Computer* icon.
5. Double tap the *Application* folder.
6. Use cut function to cut the *mkconfig.reg* file from the *My Computer\Application* folder.
7. Locate *Resident_MK2000_Demo App* folder and double tap on the folder.
8. Paste the *mkconfig.reg* file into the *My Computer\Application\Resident_MK2000_Demo_App* folder.
9. Reboot the MK2000, the Windows® CE desktop will appear.
10. To restore the Resident Demo Application move the *mkconfig.reg* file back to the *My Computer\Application* folder.

Note: Delete the application if freeing up storage space is a requirement.



Starting The Resident Demo Application

Prior to launching the Resident Demo Application print out the *Demo Application Bar Codes* on page C-1. The printed bar codes are required to access the MK2000 features. The Resident Demo Application can be set to launch automatically on MK2000 boot up.

Automatic Resident Demo Application Launch

Apply power to the MK2000 and allow the boot sequence to proceed uninterrupted and the Resident Demo Application will automatically launch.

Exit the Resident Demo Application and Launch the Windows® CE Desktop

1. To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.
2. To prevent the MK2000 from entering an application, simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
3. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
4. The MK2000 enters Protected Mode and the Win CE desktop appears.

Resident Demo Application Structure

The Resident Demo Application uses two categories of screens to demonstrate the MK2000 capabilities. The *Customer Application Screens* are designed to be used and accessed by customers. The *Store Operations Screens* are designed to be used and accessed only by store employees. Access to the *Store Operations Screens* is limited to employees who have their scannable bar code ID programmed into the database. Both screen sets use the 4 programmable buttons and/or virtual touch screen buttons (displayed over the 4 function buttons).

The *Customer Application Screens* demonstrate the customer support features.

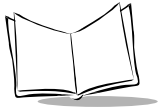
Customer Application Screens on page 4-8:

- *Main Menu Bar* on page 4-8
- *Scanning Bar Codes* on page 4-8
- *Attract Mode* on page 4-9
- *Price Verification* on page 4-10
 - Price Verification Menu Bar* on page 4-12
- *Loyalty Program* on page 4-13.

The *Store Operations Screens* demonstrate some of the types of store operations that can be supported on the MK2000.

Store Operations Screen on page 4-14

- *In-Store Messaging Screen* on page 4-15
 - Voicemail Options Screen* on page 4-16
 - Voicemail Playback Screen* on page 4-17
 - Voicemail Response Screen* on page 4-18
 - Text Messaging Screen* on page 4-19
- *Scan a 2D Bar Code Screen* on page 4-20.



Customer Application Screens

Main Menu Bar

The MK2000 displays the Main Menu Bar titles above the programmable buttons while in Attract Mode (Idle Mode).



Figure 4-2. Main Menu Bar

Scanning Bar Codes

A bar code (item's SKU, employee badge or loyalty card) can be scanned from any point within the application. However, 2D bar codes can only be scanned from the Scan a 2D bar code screen, see page 4-20. For example, after a store employee has scanned an item's SKU for price lookup and they are on the price verification screen, they can scan their employee badge to directly access the store operations menu.

Attract Mode

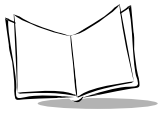
The MK2000 Resident Demo Application automatically enters Attract Mode and displays a slide show. Attract Mode is automatically entered after a period of inactivity on any screen, the slides are displayed in preset intervals.

Slide Show (screen saver)

While the slide show displays, the Main Menu Bar (see page 4-8), is visible. The slides are displayed serially.



Figure 4-3. Slide Show Screens



Price Verification

The Resident Demo Application has three price verification screen formats:

- Price Verification screen (Loyalty Program enabled)
Requires the Loyalty Program bar code to access special Loyalty Program product information
- Price Verification screen (Non-Loyalty Program)
Displays standard non-Loyalty Program product information
- Price Verification screen (Audio Enabled).



Figure 4-4. Loyalty Program Enabled, Price Verification Screen



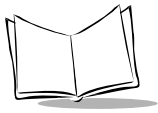
Figure 4-5. Non-Loyalty Program, Price Verification Screen

Audio Enabled Price Verification screen provides an audio listening station to the price verification screen:

- Two Volume Control Buttons (Louder/Quieter)
- Pause
- *Home*, returns to *Attract Mode* (see page 4-9).



Figure 4-6. Audio Enabled Price Verification Screen



Price Verification Menu Bar

The MK2000's Price Verification Screen uses the Price Verification Menu Bar to identify the button functions. The Price Verification Menu Bar appears directly over the function buttons and it identifies the button functions (while in the Price Verification Screen).



Figure 4-7. Price Verification Menu Bar

The Menu Bar enables the following functionality:

- Espanol (Alternate Language)
 - The MK2000 Demo Application's default primary language is English and the default alternate language is Spanish.
 - On the Price Verification screen, the title above button 1 labels the alternate language. Once selected, the alternate language remains in effect until the screen is exited or until another button is pressed.
 - Selecting button 1 on the Price Verification screen changes the text on the screen from the primary language to the alternate language including, all screen titles, buttons titles and price verification field titles.
- Print
 - Print information shown on the screen.
- Loyalty Program, see *Loyalty Program* on page 4-13.

Loyalty Program

Selecting the Loyalty Program button from the Main Menu Bar (see page 4-8), or from the Price Verification screen (see page 4-10), displays the Loyalty Program screen.

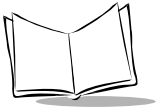


Figure 4-8. Loyalty Program Screen

Scanning the Loyalty Program (see *Demo Application Bar Codes* on page C-1), provides details about the customer's Loyalty Program account status.



Figure 4-9. Loyalty Program Account Status



Store Operations Screen

Scan an employee badge (5 digit code 128) to enter the "Store Operations" mode. A detailed description of each of the button functions available from the Store Operations screen is provided below. While on this screen the internal scan engine is disabled.

The Store Operations Menu Bar, displays the following button titles:

- *Item Info*, (see page 4-14)
- *Messages*, (see page 4-15)
- *Scan 2D*, (see page 4-20)
- *Home*, returns to *Attract Mode* (see page 4-9).



Figure 4-10. Store Operations Screen

Item Information

The Item Information selection, is a non-functional button.

In-Store Messaging Screen

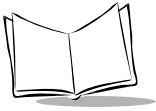
Selecting In-Store Messaging from the *Store Operations Screen* (see page 4-14) displays the In-Store Messaging Screen. When the screen is initially displayed, the first (most recently received) item is highlighted. The In-Store Messaging View Menu Bar indicates the current button functions. The Up and Down buttons are used to scroll the message list. While the scroll bar is on a message, the information displayed in the row is highlighted. Selecting a Voicemail message displays the *Voicemail Options Screen* (see page 4-16) and selecting a text message (in this Demo “Employee Bulletin”) displays the *Text Messaging Screen* (see page 4-19).

Select Options:

- Up Arrow, to scroll up on the Item list
- Down Arrow, to scroll down on the Item list
- *Open*, to select an item on the Item list and proceed to either the *Voicemail Options Screen* (see page 4-16) or the *Text Messaging Screen* (see page 4-19) (depending on the message type)
- *Home*, to return to the *Store Operations Screen* (see page 4-14).



Figure 4-11. In-Store Messaging Screen



Voicemail Options Screen

Selecting a voice mail item from the In-Store Messaging screen displays the Voicemail Options screen. The Voicemail Options Screen is used to listen or respond to a voice message.

Select Options:

- Right Pointer, to play the message
- *Reply*, to enter the *Voicemail Response Screen* (see page 4-18)
- *Delete*, to delete the message
- *Back*, to return to the previous messaging screen.



Figure 4-12. Voicemail Options Screen

Voicemail Playback Screen

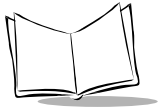
Selecting an item from the Voicemail Options Screen displays the Voicemail Playback screen. The Voicemail Playback Screen is used to listen to and/or reply to a message.

Select Options:

- First Speaker button increases volume
- Second Speaker button decreases volume
- Double bar button to pause the recorded message
- Square returns to the *Voicemail Options Screen* on page 4-16.



Figure 4-13. Voicemail Options Screen



Voicemail Response Screen

Selecting Reply from the Voicemail Options Screen displays the Voicemail Response screen. The Voicemail Response Screen is used to record a voice mail reply using the MK2000's built in microphone, see Figure 1-1 on page 1-3. This screen can be used to record a message and play the message back.

Select Options:

- Circle Button, press Circle Button and speak into the microphone to record a reply message, press Circle Button again to stop recording
- Right Pointer, to play the recorded message
- *Send*, to send the message
- *Back*, to return to the *Voicemail Options Screen* (see page 4-16).



Figure 4-14. Voicemail Response Screen

Text Messaging Screen

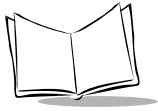
Selecting a text based message item from the In-Store Messaging screen displays the Text Messaging screen. The Text Messaging Screen is used to view a text based message.

Select Options:

- *Delete* to delete the message and return to the *In-Store Messaging Screen* (see page 4-15).
- *Back* to save the message and return to the *In-Store Messaging Screen* (see page 4-15).



Figure 4-15. Text Messaging Screen



Scan a 2D Bar Code Screen

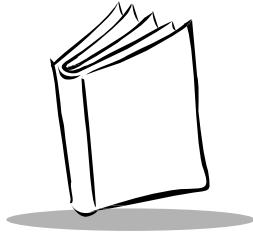
Selecting Scan a 2D bar code from the *Store Operations Screen* (see page 4-14) displays the Scan a 2D bar code Screen. The Scan a 2D bar code screen allows store associates to read a 2-D bar code such as a PDF or composite code (see sample *2D bar code (PDF417)* on page C-7).

After selecting the Scan a 2D bar code button, the scanning mode (laser scan pattern) is switched from omni-directional (cyclone) 1-D scanning mode to 2-D scan mode. When a 2D bar code is scanned and decoded, the MK2000 beeps and displays the bar code data.

Select *Home* to return to the *In-Store Messaging Screen* (see page 4-15).



Figure 4-16. Scan a 2D Bar Code Screen



Chapter 5

Updating Data

Updating Data on the MK2000

This chapter outlines the partition downloading and file downloading procedures for the MK2000.

Partition Update vs. File Update

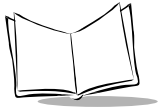
There are two types of update supported by the MK2000: partitions and files.

The file system used by the MK2000 is the same as the file system used on a desktop computer. A file is a unit of data that can be accessed using a file name and a location in the file system. When a file is replaced, only the contents of the previous file are erased. The operating system must be running for a file to be updated.

A typical partition is a group of files combined into a single "partition" that represents a specific area of storage. Examples of partitions are the operating system, or a flash file system, such as platform or application. (Using the desktop computer comparison a partition is equivalent to a C: or D: hard disk drive.) When a partition is updated, all data that was previously in its storage region is erased - i.e., it is not a merge but rather a replacement operation. Typically, the operating system is not running when partitions are updated.

Partition images for selected partitions can be created using TCM. See the TCM documentation for details. The partition image is then transferred to the MK2000 using one of the tools listed below.

Different utilities are used for partition and file updates. The type of update that can be performed for a given tool is listed in the accompanying description.



Downloading Partitions

The following tools can be used to update partitions (which are packages of one or more files that completely fill a partition region).

- Initial Program Load (IPL)
- AirBEAM Smart.

Initial Program Loader

Initial Program Loader (IPL) is a menu-based method of downloading partitions to non-volatile storage (flash) on the MK2000, see *Upgrade Procedures* on page E-1. It cannot be used for RAM downloads, nor can it be used to download diagnostics. The following partitions can be downloaded:

- OS Partition
- Platform Partition
- Application Partition
- Data Partition
- Partition Table
- Splash Screen
- Monitor.

AirBEAM SMART

The MK2000 supports AirBEAM and is shipped with Smart Client 2.1. AirBEAM Smart Client software enables automated upgrades to the operating system, RF card firmware and embedded application. Custom applications written by a retailer or software integrator can also be loaded onto the MK2000 using AirBEAM.

AirBEAM Smart is available for the MK2000:

- as a menu option from the Protected Mode Desktop (manual)
- auto-launched at boot (optional)
- periodically according to a user-setable interval.

The AirBEAM application resides in the Platform partition. See the *AirBEAM Package Builder Product Reference Guide*, p/n 72-55769-xx for more information on the components and use of this feature.

Note: *When running AirBEAM in non-interactive mode a temporary loss of the UI is possible. AirBEAM may be processing in the background and therefore dominating the CPU. This may appear to the user as though pen taps and key-presses are not being recognized. That is not the case, the keystrokes are placed in the queue and processed accordingly when AirBEAM completes its updates.*

Creating Partitions and Packages

AirBEAM Package Builder, can be used to update and create partitions and packages.

Downloading Files

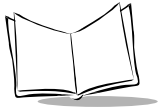
The following tools can be used to copy a file or files to any file system on the device:

- AirBEAM Smart
- FTP Server
- CF Card.

AirBEAM is the only one of these tools that can be used to update partitions, which are packages of one or more files that completely fill a partition region.

AirBEAM Smart

AirBEAM is available as a menu option from the Protected Mode Desktop (manual), it can be auto-launched at boot (optional) or launched periodically according to a user-setable interval.



FTP Server

The FTP server is implemented based on RFC 959, which defines the FTP requirements. FTP server supports the minimum implementation of the FTP server defined in RFC 959. This minimum implementation includes configuration values, transfer parameters and supports only ASCII and image data types.

Note: *Partitions cannot be updated using FTP.*

This server has had minimal security auditing and is intended as an aid for development only. Production use of this server is not warranted and under no circumstances should it be enabled in anonymous mode if the device is accessible from the internet.

The FTP server is enabled by default when shipped.

FTP Server Registry Parameters

Allow Anonymous

There is no authentication of users so users do not need to have an account on the local machine. Allows copying of data from device.

Allow Anonymous Upload

Allows anonymous users to copy data to the device.

Root Directory

Root directory. Only this directory and subdirectories are accessible remotely. Defaults to "\".

Is Enabled

Causes the server to be automatically launched at boot time.

Use Authentication

Determines whether authorization is required to connect to the server. If set, a valid user account on the local machine is required and the correct id and password for the account must be specified to the server.

User List

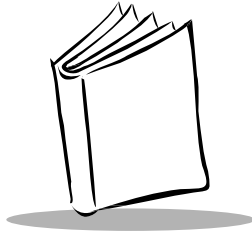
If Use Authentication is set, specifies the list of users that are allowed to login to the server. These accounts must already exist in order for the user to be admitted access.

CF Card

Files can be uploaded and/or downloaded to the MK2000 from a CF card inserted in the MK2000. The CF card can then be removed and the downloaded data accessed from any device capable of reading CF card data.



MK2000 MicroKiosk Product Reference Guide



Chapter 6

System Features

Overview

The MK2000 provides a wide range of capabilities, to support independent application development.

Control Panel Non-Volatile Settings

The following Control Panel Non-Volatile settings can be re-set and saved. The saved new settings are retained after power down (see *Configuration Utility* on page 3-9):

- Button Definitions
- Backlight
- Touchscreen Calibration
- Inactivity Manager
- Scan Wedge
- Password
- Volume
- Internet Settings

Selected values on the Control Panels:

User Application Launcher:

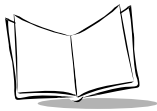
- Application
- Password

Volume and Sounds

- Volume tab

Internet Settings

- General tab



Registry Persistence

The MK2000 achieves configuration persistence across cold boots by selectively writing portions of the registry to the flash file system (using Registry Export) and then merging those registry entries at boot time (using Regmerge).

To store parameter changes made to the current configuration, use the Configuration Export utility, available from the Start menu by selecting "Save Configuration", alternatively applications can make a call to the MK_SaveConfiguration C API. The file that is used to store the configuration information is named mkconfig.reg and it normally resides at \Application\mkconfig.reg.

Note: *The MK2000 does not automatically save the configuration, it must be manually saved. This applies to changes made via control panel, application or directly to the registry, see Configuration Utility on page 3-9 and Save Configuration / Generate a .reg File on page 3-14.*

Regmerge

Regmerge is a driver, run during startup that imports registry files into the active registry. It is the loading mechanism used by the configuration files and it is used as part of the platform and application "install" of additional software components, see the "Regmerge / Copyfiles" section for additional information.

MK2000 Protected Mode

If an MK2000 has been configured to automatically launch an application on power-up, this auto-boot must be bypassed when the system is booted to enter Windows® CE Protected Mode.

Bypass application auto-boot:

1. To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.
2. To prevent the MK2000 from entering an application, simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
3. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
4. The MK2000 enters Protected Mode and the Win CE desktop appears.

Gatekeeper

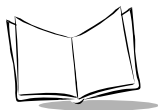
Normally, the user application has control of the device and this is referred to as "User Mode". In Protected Mode, a standard Windows® desktop is (normally) available and the entire machine can be configured. The Gatekeeper is responsible for providing the opportunity to enter a Protected Mode password. After Windows® CE boots, but before any application takes over the desktop, the Gatekeeper checks (for two seconds) to see if the user has selected the appropriate combination of buttons (currently A and D) to request password entry. If the combination is detected, a dialog box is launched for the user to enter a password. The buttons are also remapped to produce the characters (1, 2, 3, 4, Enter and Cancel - see below for mapping). The user enters the desired character sequence and presses "Enter" to submit the password, or "Cancel" to abort the attempt. If the password is submitted and correct, the Gatekeeper launches the Windows® desktop. If the password is incorrect, or Protected Mode access was not requested and the User Application is defined, it launches the Symbol "Startup" program. "Startup" is responsible for running AirBEAM (if present) any system-level programs and finally the User Application. If no User Application is defined the system boots to Protected Mode.

Regardless of the outcome of the Protected Mode request, the Gatekeeper restores the button mappings to settings in effect prior to the password entry (or attempt).

Table 6-1. Button Mappings

| Button Combo | Character / Action | Note |
|--------------|------------------------|-------------------------------|
| A and D | Request Protected Mode | Only for 2 seconds after boot |
| A | '1' | During password entry |
| B | '2' | During password entry |
| C | '3' | During password entry |
| D | '4' | During password entry |
| A and B | 'Enter' | During password entry |
| C and D | 'Escape' (Cancel) | During password entry |

Note: During startup, some combinations are mapped to provide access to Protected Mode (see Table: Button Mappings for Protected Mode/Password Entry, below). The mappings are restored when the device fully boots.



Remapping Buttons

The four buttons can be used individually, or in combinations. 14 of the 15 combinations can be remapped to a virtual keycode that represents a given character or key sequence, as defined in the table at the end of this section. The other combination is permanently mapped to reset. Use the Control Panel - Button Definitions utility to remap the buttons.

Table 6-2. Remapping Buttons

| Button Combo | Mapping (Default or Permanent) | Hex Code |
|--------------|--|----------|
| A | Up (D) | 0x26 |
| B | Down (D) | 0x28 |
| C | Left (D) | 0x25 |
| D | Right (D) | 0x27 |
| AB | Enter/Return (D) | 0x0D |
| AC | Alt-Down (pop-up combo box list) (D) | 0xC3 |
| AD | Alt (D) | 0x12 |
| ABC | (see Note 2 below) | |
| ABD | Shift-Tab (move to previous control) (D) | 0xC2 |
| ACD | Calibration (D) | 0xC4 |
| BC | Reset (P) (see Note 2 below) | |
| BCD | (see Note 2 below) | |
| BD | Tab (D) | 0x09 |
| CD | Cancel/Escape (D) | 0x1B |
| ABCD | (see Note 3 below) | |

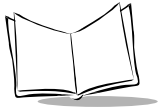
Note 1: To disable a button combination, set its mapping to 0.

Note 2: To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.

Use a keycode value from the following table:

Table 6-3. Keycode Values

| Button Values | | | |
|---------------|-------|---|-------------|
| Function | Value | Function | Value |
| BACK | 0x08 | COMMA | 0xBC |
| TAB | 0x09 | HYPHEN | 0xBD |
| CLEAR | 0x0C | PERIOD | 0xBE |
| RETURN | 0x0D | SLASH | 0xBF |
| SHIFT | 0x10 | BACKQUOTE | 0xC0 |
| CONTROL | 0x11 | F1 | 0x70 |
| ALT | 0x12 | F2 | 0x71 |
| CAPITAL | 0x14 | F3 | 0x72 |
| ESCAPE | 0x1B | F4 | 0x73 |
| SPACE | 0x20 | F5 | 0x74 |
| PRIOR | 0x21 | F6 | 0x75 |
| NEXT | 0x22 | F7 | 0x76 |
| END | 0x23 | F8 | 0x77 |
| HOME | 0x24 | F9 | 0x78 |
| LEFT | 0x25 | F10 | 0x79 |
| UP | 0x26 | F11 | 0x7A |
| RIGHT | 0x27 | F12 | 0x7B |
| DOWN | 0x28 | 0 thru 9 are the same as ASCII '0' thru '9' | 0x30 – 0x39 |
| MULTIPLY | 0x6A | A thru Z are the same as ASCII 'A' thru 'Z' | 0x41 - 0x5A |
| ADD | 0x6B | Shift-Tab | 0xC2 |
| SEPARATOR | 0x6C | Alt-Down | 0xC3 |
| SUBTRACT | 0x6D | Calibration | 0xC4 |
| DECIMAL | 0x6E | System Menu | 0xC5 |
| DIVIDE | 0x6F | Signal Strength | 0xC6 |
| SEMICOLON | 0xBA | COMMA | 0xBC |
| EQUAL | 0xBB | HYPHEN | 0xBD |



Network Time Update: SNTP Client

The MK2000 provides a Simple Network Time Protocol (SNTP) client that can be used to automatically set and update the system time. This is advantageous for remote management of MK2000s because they do not have a backup battery to maintain the system time across reboots or power outages. Regular updating of system time will also ensure consistent reporting from devices.

The SNTPClient program sets the MK2000's date and time by querying one or more SNTP servers over the network.

Sites typically do not provide their own SNTP server, but may wish to do so to ensure that MK2000s have the same time as the servers they are reporting to. There are publicly available SNTP servers available on the Internet - search the internet for closest server.

The SNTP client has three registry parameters, the most important of which is the Server(s) setting.

- **Server(s)**

A multi string value specifying the SNTP servers to be queried. The servers will be queried in order until one is successful or the list is exhausted. If the device is unable to obtain a time value from a server it will use the default setting (July 1, 1999 12:00:00 AM). An attempt to acquire a time value will not be made again unless a regular update is also configured, and the attempt will be made at the configured time.

The value can be specified as a DNS name or an IP address.

If this value is not set, or set to a NULL string (""), the SNTP client is disabled.

- **Quiet Mode**

A flag that instructs the program to report its results and/or problems (via message boxes) or to not report results and/or problems. A zero value is used for "report", any other value means "don't report". This is generally set to non-zero to disable reporting so user's do not see system messages. Setting this to zero is generally used for trouble-shooting.

- **Update Period**

A number indicating the interval in minutes between executions of the program. A value of zero means the program is not scheduled to run periodically. A non-zero value means the program will run again in "Update Period" minutes. Updating the time once a day is generally sufficient to ensure consistently accurate time reporting.

Default values are:

Server(s) = "" (i.e., a null string which means "disabled")

Quiet Mode = 1

Period = 0

The program also accepts the following command line parameters, all of which override the registry values:

hosts

A comma separated list of SNTP servers to be queried. The servers will be queried in order until one is successful.

/Q

Don't report any results and/or problems (quiet).

/N

Report all results and/or problems (noisy).

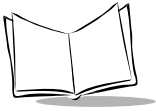
/P

Run the program periodically according to the period value in the registry.

The SNTPClient program is run as part of the MK2000's StartUp sequence, before any user programs are run, with the following command line:

SNTPClient /Q /P

This means that it will use the Hosts registry entry if one is available, not report any results and/or errors, and will schedule itself to run periodically if there's a non-zero Period value in the registry. Therefore, the default parameters effectively cause the program to be disabled.



Inactivity Application (Screen Saver)

The Inactivity Application Manager (IAM) is the screen saver engine for the MK2000. It is responsible for launching and terminating the screen saver at appropriate times but does not provide the screen saver application itself. The screen saver application is termed here an "Inactivity Application".

Users can use one of the provided applications, or can create their own application. The IAM can be configured via Control Panel or Configuration Utility.

SimpleSaver

The SimpleSaver program is a very simple screen saver application. It clears the screen to white and repeatedly displays this message at different locations on the screen:

Perform some action to wake me up!

This program is used as the default IAM (Inactivity Application Manager) application.

This Inactivity Application is designed to provide a simple example of how to implement a custom application, it is not intended to be used as a final presentation tool. Source code is provided in the SDK (part number MK2000CESDK-x.xx).

SlideShow

The SlideShow program is a screen saver program that endlessly displays a group of graphics files (slides) one at a time. The program is capable of displaying graphics files with the following extensions:

- JPG
- GIF
- BMP
- 2BP.

The program uses the following registry entries under the [HKEY_LOCAL_MACHINE\Software\Symbol\SlideShow] key:

- **Directory**

A string value specifying the graphics files location directory.

- **Delay**

A DWORD value indicating the number of seconds to display each graphic for. If not specified, the default delay is 5 seconds.

- **Background**

A DWORD value specifying the background color to use around graphics that are smaller than the screen size. If not specified, the default background is 0x700000 (a middle range blue).

These value can be set using the Config Utility.

The program does not accept any command line parameters.

Once the program has read the registry entries, it tries to read a file named SlideShow.txt from the graphics directory. If this file exists, it should contain one file name per line. These file names should not include a path and they must exist within the graphics directory. The files will be displayed in the order specified.

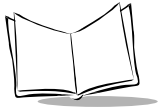
If the SlideShow.txt file is not present, the program will scan the graphics directory for all files with the appropriate file name extensions. These files will be displayed in a sequence that is determined by the file system.

If a slide is smaller than the screen size, it will be centered on the screen and the background color will be drawn in the area around the slide. If a slide is larger than the screen size, it will be scaled to fit on the screen. This scaling can result in a strange effect if the slide is not proportional to the screen size. For best results, use slides that are the same size as the screen. Source code is provided in the SDK (part number MK2000CESDK-x.xx).

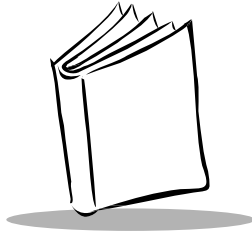
Other Inactivity Applications

Internet Explorer can be used as both the User Application and the Inactivity Application.

Media Player, as shipped with the operating system, provides a good example of how to create a multi-media Inactivity Application (see the SDK for location of the source) but may not be practical as an Inactivity Application because it does not cover the entire screen space.



MK2000 MicroKiosk Product Reference Guide



Chapter 7

User Applications

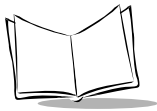
Overview

The MK2000 provides a wide range of capabilities, to support user application development. Additional information, source code and examples are provided in the MK2000 SDK.

Software Development Environments

The MK2000's operating system is WinCE .NET 4.1. The MK2000 allows several choices for development environments. The operating system contains support for the major technologies and functions needed to develop an application in any of these environments.

- Web Browser application
- Windows® CE applications
 - Unmanaged applications
- Windows® applications via Terminal Server Client (RDP)
- VT220 Emulation
- PCK Emulation
- IBM 4690 applications via StoreWave.



Browser Applications

Web Browser applications can be developed for the MK2000. The browser provided with the MK2000 is Internet Explorer CE version 5.5, which supports VBScript and Jscript. (See <http://www.microsoft.com> for detailed information on Internet Explorer CE version 5.5 features and limitations.)

The MK2000's browser supports Symbol's Kiosk Mode, which enables the browser to be configured with its tool bar and the Window's Start bar hidden, not accessible from the screen. This enables the developer to have full control over the application and prevent a user from accessing the CE desktop.

Control over the scan engine and four programmable buttons is provided via ActiveX objects.

Removing Toolbars

The standard browser is `iesample.exe`, it includes toolbars, etc. To run the final application with no toolbars, status bar, location, etc use `kioskie.exe`. It is the same browser, but without the toolbars etc. The application can be developed using `iesample.exe` and the final test using `kioskie.exe`.

Windows[®] CE Applications

Windows[®] CE applications can be grouped into two categories, managed applications and Unmanaged Applications.

Unmanaged Applications

Unmanaged or native applications are standard compiled Windows[®] CE applications. Unmanaged C and C++ applications can be created using Microsoft[®] Embedded Visual C++ 4.0 Service Pack 1.

The Software Development Kit (SDK, part number MK2000CESDK-x.xx) includes standard Symbol C APIs and MK2000 specific APIs.

Note: Embedded Visual Basic applications are not supported by the MK2000.

Windows[®] Applications via Terminal Server Client

The MK2000 supports Remote Desktop Protocol (RDP) technology, which allows a thin client, such as the Terminal Server Client, to communicate with Microsoft's[®] Terminal Server across a LAN or WLAN.

VT220 Emulation (Support for MK1000 Legacy Applications)

A version of Symbol's VT220 terminal emulation program is available (Symbol Developer zone, <http://devzone.symbol.com/>) for the MK2000. This program is backwards compatible with the MK1000's VT220 emulation.

PCK Emulation (Support for MK1000 Legacy Applications)

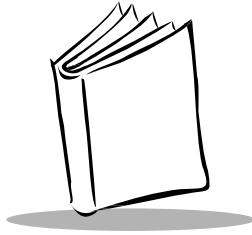
A version of Symbol's PCK terminal emulation program is available (Symbol Developer zone, <http://devzone.symbol.com/>) for the MK2000. This program is backwards compatible with the MK1000's PCK emulation.

IBM 4690 Applications

The MK2000 will communicate with IBM 4690 systems via Symbols Storewave 4690 software. To communicate with Storewave, the MK2000 must be running PCK emulation. Many 3rd party IBM 4690 solutions are also available.



MK2000 MicroKiosk Product Reference Guide



Appendix A

Technical Specifications

Technical Specifications

Table A-1. MK2000 Technical Specifications

| MK2000 Technical Specifications | |
|--|--|
| Dimensions | 10.9 in. H x 8.9 in. W x 3.6 in. D 27.7 cm H x 22.6 cm W x 9.1 cm D |
| Weight | 3.5 lbs / 1.6 kg (typical) |
| Power | 12-24 VDC 24 Watts |
| | Supports Power-over-Ethernet |
| Data Ports | RS-232: Powered (5V / 500 mA), RJ-45 Connector |
| | RS-485: RJ-45 Connector |
| | Ethernet: Wired 10/100Mb base T |
| Audio Ports | Speaker: Two, integrated stereo speakers |
| | Head Phone Jack: Standard 3.5 mm jack |
| | Stereo Line Out: 2.2 watts per channel, 3.5 mm jacks |
| | Microphone: Located under left side of display |
| Buttons | 4 Programmable Buttons |

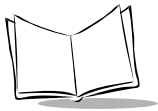
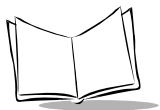


Table A-1. MK2000 Technical Specifications (Continued)

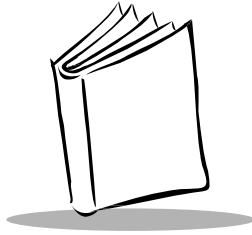
| MK2000 Technical Specifications | |
|--|--|
| Expansion Capabilities | One Type II/III PC Card |
| | One Type I/II Compact Flash Card |
| Display Resolution | Size 6.4 inches (162.6 cm) diagonal, resistive touch panel 640 x 480 pixels (Full VGA) active matrix |
| Scanner Scan Modes Light Source Decode Capability | 1D: Omni-directional scanning 2D: Smart raster 650 nm laser diode All standard retail codes including: UPC/EAN, Code 39, Interleaved 2 of 5, Code 128, Codabar, MSI Plessey, PDF417, RSS and Composite Codes |
| Processor | Intel XScale™ (400 MHz) |
| Memory | Flash:64 MB Flash |
| | RAM:32 MB DRAM |
| Software | Operating System: Windows® CE V4.1 |
| Browser | Internet Explorer |
| Audio/Video | Windows® Media Player |
| Available Applications | Demo Applications (Resident and Laptop, also see SDK) PCK9100 Emulation VT220 Emulation AirBEAM® On-board FTP Server On-board SNTP Client For off-the-shelf 3rd party applications, visit www.Symbol.com |

Table A-1. MK2000 Technical Specifications (Continued)

| MK2000 Technical Specifications | |
|--|--|
| Application Development Tools | <p>MK2000 SDK includes C APIs and Active X objects, Demo Applications with source code.</p> <p>SDK provides support for application development using eVC++ 4.0 SP1.*</p> <p>Configuration Utility</p> <p>*Embedded Visual Basic Application development is not supported.</p> |
| Communications | Serial: Powered RS-232, RJ-45 jack, +5V @ 500mA maximum (output) and RS-485. |
| Wired LAN | Ethernet: Wired 10/100Mb base T |
| Wireless LAN | 2 Mbps FH (802.11) and 11 Mbps DS (802.11b) |
| Operating Temp | 32° F to 104° F (0° C to 40° C) |
| Storage Temp | -13° F to 158° F (-25° C to 70° C) |
| Humidity | 5% to 80% non-condensing |
| Electrical Safety | Certified to UL1950, CSA C22.2 No. 950, EN60950/IEC950 |
| EMI/RFI | FCC Part 15 Class B, ICES-003 Class B, European Union EMC Directive, Australian SMA |
| Laser Safety | IEC Class 2, CDRH Class II |
| Mounting Options | Conforms to VESA, 100mm mounting standard |
| | Wall Mount Bracket available from Symbol Technologies |
| | Pole Mount Bracket available from Symbol Technologies |
| Optional Accessories | 3 track Magnetic Stripe Reader |
| | Signage Mounting Kit |



MK2000 MicroKiosk Product Reference Guide



Appendix B

Laptop Driven Demo Application

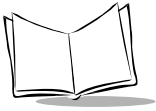
Overview

The Laptop Driven Demo Application is a browser based thin client application hosted by a laptop/desktop computer via a network connection. While running the Laptop Driven Demo Application, the MK2000 operates as a thin client. The Laptop Driven Demo Application is loaded onto and resides on a laptop/desktop server. This server connects to the MK2000 via a network connection.

The Laptop Driven Demo Application is supplied with the MK2000 SDK. In addition, both the Laptop Driven Demo Application and the Resident Demo Application are available at: <http://devzone.symbol.com>.

Laptop Driven Demo Application / Resident Demo Application differences:

- The Laptop Driven Demo Application requires the operation of a computer in addition to the MK2000.
The Resident Demo Application does not require any additional external connectivity to operate.
- The Laptop Driven Demo Application has been designed for ease of customization. The referenced text and database files have been provided and can be simply customized. See *Customizable Features* on page B-3 and *Application Set-Up and Customizing* on page B-7 for more details.



Laptop Driven Demo Functionality

The demonstration application works with the touch screen and with the 4 programmable buttons, either can be used to navigate the menu system. The 4 function buttons and or the touch screen virtual buttons (titles displayed over the 4 programmable buttons) can be used to navigate the menu system. The look and feel of the Laptop Driven Demo Application is the same as the Resident Demo Application and both demos use the same menu structure and bar codes.

Laptop Driven Demo Application Source Code

The Laptop Driven Demo Application is distributed (with the source code) to facilitate application development. The Laptop Driven Demo Application's source code targets the following MK2000 capabilities.

- Scan Engine control (turning on/off and switching scan modes, ActiveX Object)
- Bar code data processing based on symbology type
- Developing a browser based, thin client application
- Microphone control (ActiveX Object)
- Developing screen layouts
- Button control (ActiveX Object)
- Dynamic labeling of button functionality
- Audio file playback / speaker control (Windows® Media Player)
- Displaying advertising message and videos on an idle unit
- Hiding Internet Explorer's toolbar and the CE Task bar
- ODBC Data Base Connections.

Customizable Features

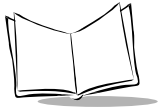
The Laptop Driven Demo Application is easy to customize and is designed for international use. The items listed below can be modified:

- Currency type symbol (\$, £, F, etc...)
- Images displayed in advertising (attract) mode
- Loyalty Program message
- Contents of SKU database (data displayed on price verification screens)
- Images displayed during Price Verification
- Primary and alternate languages displayed on Price Verification screens.

The items listed above can be modified by altering the appropriate field contained in one of three files: Demo_App_Setup.txt (text document), LoyaltyCardSpecial.txt (text document), MK2000Demo.mdb (Access database).

The ad image files displayed in the Attract Mode screen can be replaced by replacing slide1.jpg, ... in the MK2000\Slideshow_images directory. Additional images can also be added by creating an ads7.asp and pointing ads6.asp to it in the meta tag. The meta tag in ads7.asp should point to ads.asp, see the source code comment in ads6.asp for more information. To remove an ad image change the meta statement in ads5.asp to point to the ads.asp.

To change the loyalty card information, modify the image name on the first line and the text in the following lines in the file, LoyaltyCardSpecial.txt. A line in the file, SubmitLoyaltyCard.asp, also needs to change. It is marked in the source code by a comment.



Setting-Up The Laptop Driven Demo Application

The application is run from a Windows® 2000 laptop with MS IIS (Internet Information Services) software enabled and a direct ethernet network connection via an ethernet crossover cable.

Required Files

Required files are provided in the SDK (part number MK2000CESDK-x.xx).

- Laptop Driven Demo Application, in a folder named MK2000.
- mkconfig.reg setup file.

Note: A file named *mkconfig.reg* is used by both the Laptop Driven Demo Application and the Demonstration Application. However, the contents of the two files are different. When the *mkconfig.reg* file used by the Laptop Driven Demo Application is copied into the directory containing the *mkconfig.reg* file used by Demonstration Application the Demonstration Application's *mkconfig.reg* file is overwritten. Answer YES to the prompt asking if the file should be overwritten.

Web Server Setup

Copy the folder labeled *MK2000* (which contains the Laptop Driven Demo Application) onto the computer being used as the web server.

The MK2000 folder's directory path on the web server must be *C:\inetpub\wwwroot\MK2000*.

Set the web server's IP address to a static IP address (such as 192.168.0.10 and using a subnet mask of 255.255.255.0).

MK2000 Setup

Access the Windows® CE desktop:

At boot up, the MK2000 automatically launches the Laptop Driven Demo Application, to access the Windows® CE Desktop use the following steps:

1. To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots.
2. To prevent the MK2000 from entering the Laptop Driven Demo Application simultaneously hold down buttons A and D just after the blue Performing System Initialization (Phase 1) screen appears. The A and D buttons must be held down before the message changes to Phase 2.
3. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
4. The MK2000 enters Protected Mode and the Win CE desktop appears.

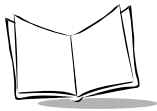
Load the mkconfig.reg file onto the MK2000.

- Insert the compact flash card (containing the mkconfig.reg file) into the MK2000 CF card slot.
- Double tap the *My Computer* icon on the CE desktop.
- The contents of the CF card will be accessible via a *Storage Card* folder from within *My Computer*.
- Use the Copy functionality under the Task bar/Edit to copy the mkconfig.reg file from the *My Computer\Storage Card* folder into the *My Computer\Application* folder.

Note: *The default web server's IP address (set in the mkconfig.reg file) is 192.168.0.10. The IP address setting (in the mkconfig.reg file) must match the actual web server's IP address. If required, modify the mkconfig.reg file to match the IP address of the web server. The mkconfig.reg file also configures the MK2000 to have a static IP address of 192.168.0.15 with a subnet mask of 255.255.255.0.*

Connect MK2000 To Web Server

Connect the MK2000 to the web server using an Ethernet crossover cable. Connect one end of the cable to the MK2000 wired ethernet port and connect the other end to the web server's wired ethernet port.



Starting The Application

After the mkconfig.reg file is loaded, press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3.

The MK2000 reboots to the Laptop Driven Demo Application.

Note: *The MS IIS software must be enabled and working properly to run the Laptop Driven Demo Application. If there is any doubt about the MS IIS software running properly, uninstall and re-install the MS IIS software.*

Delete Current *Laptop Driven Demo Application* Version:

- Double tap the *My Computer* icon on the CE desktop
 - Double tap the *Application* folder
- Delete the *mkconfig.reg* file.

Note: *Use the delete functionality contained in the Taskbar/Files to remove the desired files.*

Disable/Restore *Laptop Driven Demo Application*:

1. To prevent the MK2000 from entering the Laptop Driven Demo Application simultaneously hold down buttons A and D just after the blue *Performing System Initialization (Phase 1)* screen appears. The A and D buttons must be held down before the message changes to *Phase 2*.
2. When the Enter Password prompt appears, enter DDBAC and touch OK on the screen, or simultaneously press the A and B buttons for Enter.
3. The MK2000 enters Protected Mode and the Win CE desktop appears.
4. Double tap the *My Computer* icon.
5. Double tap the *Application* folder.
6. Use Taskbar/Edit cut function to cut the *mkconfig.reg* file from the *My Computer\Application* folder.
7. Double tap the *Up* icon to return to the *My Computer* directory and Double tap the *My Documents* icon to enter the *My Documents* folder.
8. Paste the *mkconfig.reg* file into the *My Computer\My Documents* folder.
9. Reboot the MK2000, the Windows® CE desktop will appear.
10. To restore the Laptop Driven Demo Application move the *mkconfig.reg* file back to the *My Computer\Application* folder.

Folder, File and Database Structure

The Laptop Driven Demo Application uses the following folder structure.

Main Application Folder: **MK2000**

Directory Path: **C:\inetpub\wwwroot\MK2000**

Residing in the main application folder are three sub-folders.

Access Database: **MK2000\Database**

Images of Retail Items: **MK2000\SKU_Images**

Slide Show Images / Video: **MK2000\SlideShow_Images**

The following files are used to setup and run this application.

Various field and buttons titles: **Demo_App_Setup.txt (page 23)**

SKU (Access) database: **MK2000Demo.mdb**

Loyalty Card/Account Information: **LoyaltyCardSpecial.txt (page 15)**

Application Set-Up and Customizing

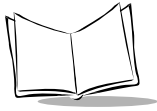
The Laptop Driven Demo Application operation is controlled by the parameters set in the *Demo_App_Setup.txt* document (see, *Demo Setup Text File* on page B-23). This document is located in the *MK2000* folder in the C:\inetpub\wwwroot directory.

Communication Modes Set-Up

- Wired Ethernet
Use config utility or open the *Network and Dialup Connections* control panel and open the SMC91C1111 connection.
- Wireless Ethernet (Spectrum 24 DS - 802.11b only)
Use config utility or open the *Network and Dialup Connections* control panel and open the NETWLAN1 connection.
- RS-232 (None)
- RS-485 (None)

Modifying Button Titles

To change the text displayed in the Main Menu Bar (above the buttons) and/or to change the primary and secondary languages edit the *Demo_App_Setup.txt* file (see, *Demo Setup Text File* on page B-23).



Laptop Driven Demo Application Structure

The Laptop Driven Demo Application uses two categories of screens to demonstrate the MK2000 capabilities. The *Customer Application Screens* are designed to be used and accessed by customers. The *Store Operations Screens* are designed to be used and accessed only by store employees. Access to the *Store Operations Screens* is limited to employees who have their scannable bar code ID programmed into the database. Both screen sets use the 4 programmable buttons and/or virtual touch screen buttons (displayed over the 4 function buttons).

The *Customer Application Screens* demonstrate the customer support features.

Customer Application Screens on page B-9:

- *Main Menu Bar* on page B-9
- *Scanning Bar Codes* on page B-9
- *Attract Mode* on page B-10
- *Price Verification* on page B-11
 - Price Verification Menu Bar* on page B-11r
- *Loyalty Card Program* on page B-14.

The *Store Operations Screens* demonstrate some of the types of store operations that can be supported on the MK2000.

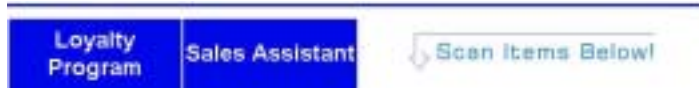
Store Operations Screen on page B-16

- *In-Store Messaging Screen* on page B-17
 - Voicemail Options Screen* on page B-18
 - Voicemail Playback Screen* on page B-19
 - Voicemail Response Screen* on page B-20
 - Text Messaging Screen* on page B-21
- *Scan a 2D Bar Code Screen* on page B-22.

Customer Application Screens

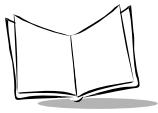
Main Menu Bar

The MK2000 displays the Main Menu Bar titles above the programmable buttons while in Attract Mode (Idle Mode), see *Modifying Button Titles* on page B-7 to change the titles.



Scanning Bar Codes

A bar code (item's SKU, employee badge or loyalty card) can be scanned from any point within the application. For example, after a store employee has scanned an item's SKU for price lookup and they are on the price verification screen, they can scan their employee badge to directly access the store operations menu.



Attract Mode

The MK2000 Laptop Driven Demo Application automatically enters Attract Mode and displays a slide show in 5 second intervals (typical).

Slide Show (screen saver)

While the slide show displays, the Main Menu Bar, is visible. Slides displayed in this mode are located in the *SlideShow_Images* folder. Name the slides slide 1.jpg, slide 2.jpg, slide 3.jpg etc... The slides are displayed serially.

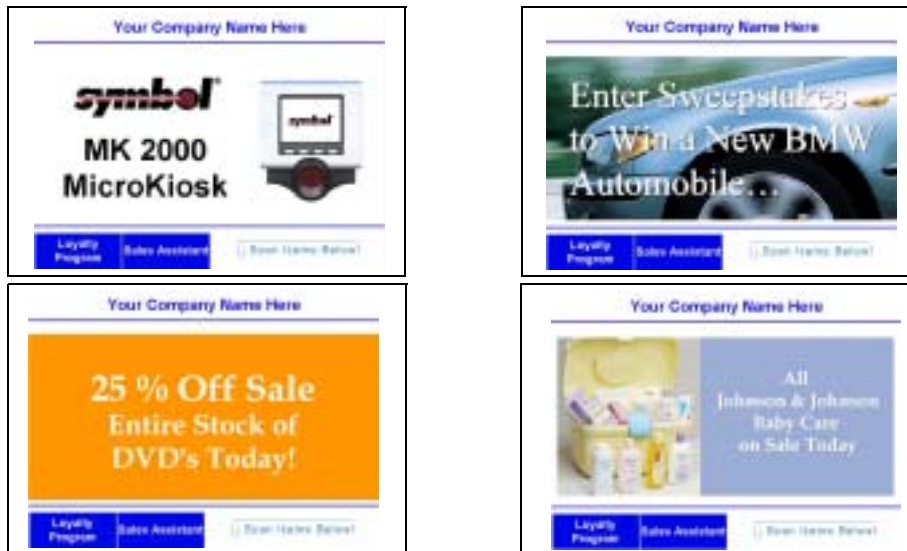


Figure 2-1. Slide Show

Inactivity Application Manager (IAM)

When there are no user inputs for a preset duration the Inactivity Application functions like a screen-saver. The Inactivity Application exits when it detects a user input and restores control to the User Application. The User Application can continue to perform tasks while the IAM is running.

Table 2-1. Interfaces Supported

| Interface | Supported | Where | Notes |
|---------------|-----------|------------------------|-------|
| Config Util | X | | |
| Control Panel | X | Inactivity App Manager | |
| 'C' | X | mk2kfunc | |
| ActiveX | X | mk2kobj | |
| .NET | | | |

Price Verification

The Laptop Driven Demo Application has three different price verification screen formats.

Price Verification Menu Bar

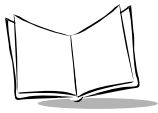
The Laptop Driven Demo Application has three different types of price verification screens:

- Loyalty Program Price Verification
- Non-Loyalty Program Price Verification
- Audio Enabled Price Verification.

The Menu Bar enables the following functionality:



Figure 2-2. Loyalty Program Enabled, Price Verification Screen



Espanol (Alternate Language)

The MK2000 Laptop Driven Demo Application's default primary language is English and the default alternate language is Spanish. On the Price Verification screen, the title above button 1 labels the alternate language. Once selected, the alternate language remains in effect until the screen is exited or until another button is pressed. Selecting button 1 on the Price Verification screen changes the text on the screen from the primary language to the alternate language including, all screen titles, buttons titles and price verification field titles.

Print

Print button is not enabled.

Loyalty Program

See *Loyalty Card Program* on page B-14.



Figure 2-3. Non-Loyalty Program, Price Verification Screen

Audio Enabled Price Verification Screen

Audio Enabled Price Verification screen provides an audio listening station to the price verification screen:

- Two Volume Control Buttons (Louder/Quieter)
- Pause
- Home, returns to Attract Mode *Attract Mode* on page B-10.



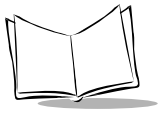
Figure 2-4. Audio Enabled Price Verification Screen

Currency Type

The currency type is programmable. It is a field in the database and associated with an item's SKU. The default value is the US dollar (\$). Other commonly used symbols for currency include but are not limited to European Euro, British pound and Japanese yen.

Display An Image

Display an image (JPEG or BMP) of the item scanned. For the image of the SKU to be displayed, the image name must be called out in the appropriate database field. This field is located in the database row associated with the scanned item's SKU. If an image is not specified in the database field, no image is shown on the Price Verification screen.



Loyalty Card Program

Selecting the Loyalty Card button from the Main Menu Bar (see *Attract Mode* on page 4-9) or from the Price Verification screen, displays the Loyalty Program screen.



Figure 2-5. Loyalty Program Screen

Scanning the Loyalty Card, see *Demo Application Bar Codes* on page C-1 provides details about the customer's Loyalty Program account status. The information provided on the Loyalty Program account status screen is programmable. In this example, the customer's name and status (how many dollars away from a free turkey) is displayed.



Figure 2-6. Loyalty Program Screen

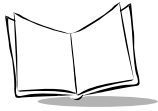
Loyalty Card Setup File:

The Loyalty Card promotion details are obtained from the *LoyaltyCardSpecial.txt* file. The text file is used to specify the graphic used and the text to be displayed on the Loyalty Card Program display screens. To change the information on the Loyalty Card Program display screens change the *LoyaltyCardSpecial.txt* file.

maleturkey.gif

Our Thanksgiving Turkey Drive is under way.

If you have a loyalty card, for every \$250 spent in the month of November you earn a free turkey.



Store Operations Screen

Scan an employee badge (5 digit code 128) to enable the *Store Operations* mode. A detailed description of each of the button functions is provided (see the referenced pages). Select Exit to return to *Attract Mode* on page B-10.

The Store Operations Menu Bar, displays the following button titles:

- *Item Information*
- *In-Store Messaging*
- *Scan a 2D bar code*
- *Exit Store Menu* returns to *Attract Mode* on page B-10.



Figure 2-7. Store Operations Screen

Item Information

The Item Information selection, is not enabled in this Laptop Driven Demo Application.

In-Store Messaging Screen

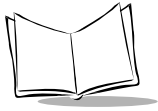
Selecting In-Store Messaging from the *Store Operations Screen* on page B-16 displays the In-Store Messaging View Screen. When the screen is initially displayed, the first (most recently received) item is highlighted. The In-Store Messaging View Menu Bar indicates the current button functions. The Up and Down buttons are used to scroll the message list. While the scroll bar is on a message, the information displayed in the row is highlighted. Selecting a Voicemail message displays the *Voicemail Options Screen* on page B-18 and selecting a text message (in this Demo “Employee Bulletin”) displays the *Text Messaging Screen* on page B-21.

Select Options:

- *Up* scroll up on the Item list
- *Down* scroll down on the Item list
- *Select* to select an item on the Item list and proceed to either the *Voicemail Options Screen* on page B-18 or the *Text Messaging Screen* on page B-21 (depending on the message type)
- *Exit* to return to the *Store Operations Screen* on page B-16.

| In-Store Messaging | | | | |
|--|-------------------|-----------------|-----------------|-----|
| Item | Type | From | Sent | New |
| 1. | Employee Bulletin | Human Resources | 8/15/02 1:15PM | X |
| 2. | Employee Bulletin | Human Resources | 8/15/02 1:15PM | |
| 3. | Voicemail | Mike Harris | 8/10/02 10:10AM | |
| <div> <div>Up</div> <div>Down</div> <div>Select</div> <div>Exit</div> </div> | | | | |

Figure 2-8. In-Store Messaging Screen



Voicemail Options Screen

Selecting a voice mail item from the In-Store Messaging screen displays the Voicemail Options screen, see *Voicemail Options Screen* on page B-18. The Voicemail Options Screen is used to listen or respond to a voice message.

Select Options:

- *Play* button to play the message
- *Respond* to enter the *Voicemail Playback Screen* on page B-19
- *Delete* to delete the message
- *Exit* return to the previous messaging screen.



Figure 2-9. Voicemail Options Screen

Voicemail Playback Screen

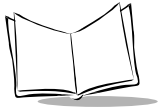
Selecting an item from the Voicemail Options Screen displays the Voicemail Playback screen. The Voicemail Playback Screen is used to listen to and/or reply to a message.

Select Options:

- Two volume control buttons (Louder/Quieter)
- *Pause* button to pause the recorded message
- *Stop/Exit* to returns to the *Voicemail Options Screen* on page B-18.



Figure 2-10. Voicemail Response Screen



Voicemail Response Screen

Selecting Reply from the Voicemail Options Screen displays the Voicemail Response screen. The Voicemail Response Screen is used to record a voicemail reply using the MK2000's built in microphone, see Figure 1-1 on page 1-3. This screen can be used to record a message and play the message back.

Select Options:

- *Record Response*, press *Record Response* and speak into the microphone to record a reply message, press *Record Response* again to stop recording
- *Playback*, to play the recorded message
- *Send*, to send the message
- *Exit* to returns to the *Voicemail Options Screen* on page B-18.



Figure 2-11. Voicemail Response Screen

Text Messaging Screen

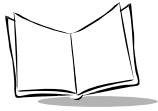
Selecting a text based message item from the In-Store Messaging screen displays the Text Messaging screen, see *Text Messaging Screen* on page B-21. The Text Messaging Screen is used to view a text based message.

Select Options:

- *Delete* to delete the message and return to the *In-Store Messaging Screen* on page B-17.
- *Back* to save the message and return to the *In-Store Messaging Screen* on page B-17.



Figure 2-12. Text Messaging Screen



Scan a 2D Bar Code Screen

The Scan a 2D bar code screen allows store associates to read a 2-D bar code such as a PDF or composite code (see sample *2D bar code (PDF417)* on page C-7).

After selecting the Scan a 2D bar code button, the scanning mode (laser scan pattern) is switched from omni-directional (cyclone) 1-D scanning mode to 2-D scan mode. The a 2D bar code is scanned, the MK2000 beeps and displays the bar code data.

Select *Return* to return to the *In-Store Messaging Screen* on page B-17.



Figure 2-13. Scan a 2D Bar Code Screen



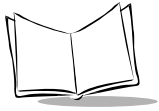
Figure 2-14. 2D Bar Code Data Screen

Demo Setup Text File

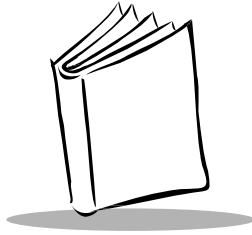
The Demo_App_Setup.txt file contains the text references used by the Laptop Driven Demo Application. The text references are read sequentially into the application program. Make changes to the Demo_App_Setup.txt file and the changes are applied to the entire Laptop Driven Demo Application. Do not make any changes to the Laptop Driven Demo Application variables. Variables with an *alt* preface are used for the alternative language text entries.

Table 2-2. Demo Setup Text File

| Demo_App_Setup.txt File, Contents | Laptop Demo Application Variables |
|-----------------------------------|-----------------------------------|
| Your Company Here | CompanyName |
| Scan Item | ScanPrompt |
| Item # | ItemPrompt |
| Regularly | Price |
| Description | Description |
| Sale Price | SalePrice |
| Loyalty Discount | LoyaltyDiscount |
| Loyalty Price | LoyaltyPrice |
| Artículo # | AltItemPrompt |
| Regularmente | AltPrice |
| Descripción | AltDescription |
| Precio de Venta | AltSalePrice |
| Descuento/Miembro | AltLoyaltyDiscount |
| Oferta/Miembro | AltLoyaltyPrice |
| Item Not Found In This Aisle | ItemNotFound |
| Español | PriceButton1 |
| Inprimir Pantalla | AltButton1 |
| Tarjeta Cliente Leal | AltButton2 |



| Demo_App_Setup.txt File, Contents | Laptop Demo Application Variables |
|--|--|
| Regreso | AltButton3 |
| 49 | Button1 |
| 50 | Button2 |
| 51 | Button3 |
| 52 | Button4 |



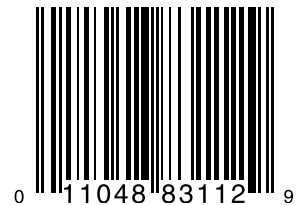
Appendix C

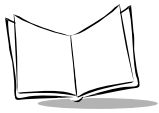
Demo Application Bar Codes

Demo Application Bar Codes

Sample bar codes are provided for use with the Demo Application.

Wide Screen TV





DVD Player



White Correction Fluid

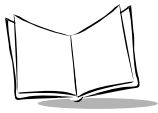


Glue Stick



Transparent Tape





Standard Staples



Tylenol

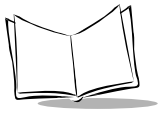


Standard Staples



CD





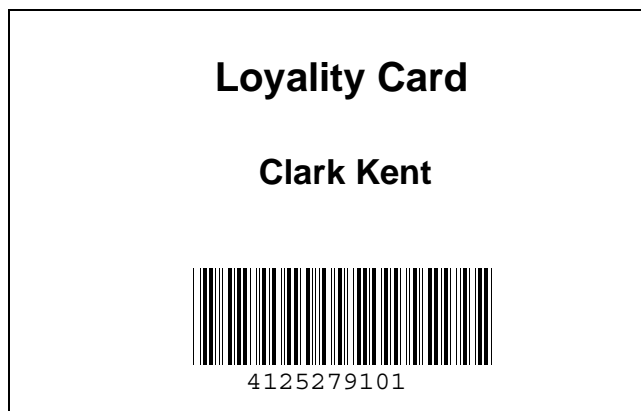
Employee Badge

John Ryan
(Code 128)



Loyalty Card

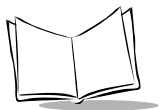
Clark Kent
(Code 39)



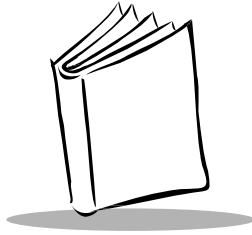
2D bar code (PDF417)



Text Reads: "You have just scanned a PDF417 bar code using the MK2000!"



MK2000 MicroKiosk Product Reference Guide



Appendix D

Terminal Configuration Manager

TCM Introduction

The Terminal Configuration Manager (TCM), is used to specify a group of files to use when creating a partition and to load partitions from a host computer into the MK2000's flash memory using the terminal's Initial Program Loader (IPL).

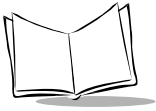
In TCM, a *script* is created that contains the information (commands to copy files) for building the image. TCM works with directory windows which display the script and the source files directory structure. Functions that can be performed include opening multiple scripts, drag drop items from a drive/directory to the script, renaming and deleting files in the script. Upon building the image, TCM adds all the files and directories referenced in the script to the image.

The SDK includes a number of standard scripts and demos/samples to use as a base for creating new scripts. These scripts can be found in the SYMSDK\SCRIPTS directory.

Note: *Before creating a script to build a hex image, identify the files required (system files, drivers, applications, etc.) and locate the files' source directories to make the script building process easier.*

The required processes for building a hex image in TCM include:

- Starting TCM
- Creating or modifying a script
- Building the hex image
- Sending the hex image.



Starting Terminal Configuration Manager

To start TCM, double tap on the TCM icon in the SYMSDK group. The following screen appears, displaying two directory windows; Script1 and File Explorer. Each directory window is split; the left half (or *pane*) of the window displays the directory tree for the current drive and the right half displays the directory contents for the current drive.

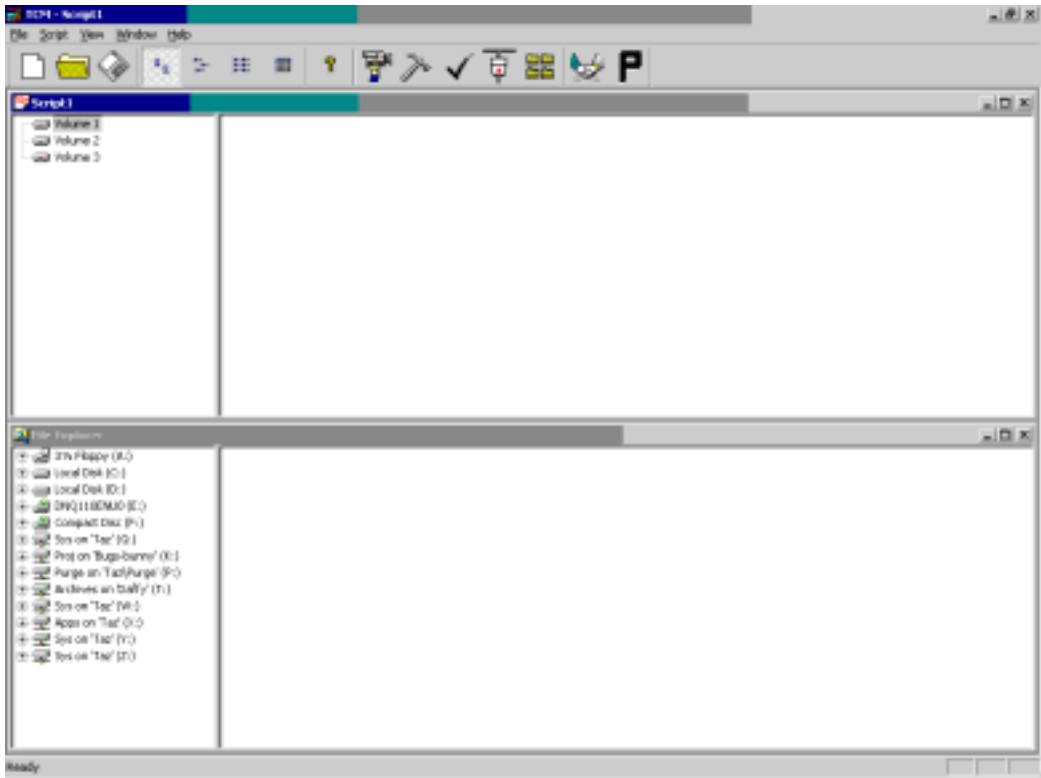














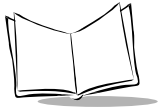


Table D-1 lists the components of the TCM start-up screen.

Table D-1. TCM Start-Up Screen Components

| Component | Description | | |
|---------------|--|---------------------------|---|
| Script Window | Associated with a script file containing the information to create a Flash Disk image. This window is the <i>target</i> window, or the primary TCM window to create a script or change a script file's contents by copying, deleting and renaming files and directories. More than one script window can be open at a time. The Script Window consists of two panes, the Directory Tree Pane on the left and the Directory Contents Pane on the right. Subordinate directories and files of each partition are listed in the Directory Contents Pane. | | |
| File Explorer | A <i>read-only source</i> window for files and/or directories to include in the script being built. | | |
| Tool Bar | Contains the tools, illustrated below, for taking action on a script. | | |
| |  | Create a new script file. |  Check script for existing files. |
| |  | Open a script file. |  Select the hex image to load. |
| |  | Save a script file. |  Tile windows. |
| |  | View script properties. |  Build and send the hex image to the terminal. |
| |  | Build a script. |  Preferences. |
| |  | View large icons. |  About TCM. |
| |  | View small icons. |  View list. |




Defining Script Properties

Before a script is created, the script properties must be defined. This defines the type of terminal, flash type, number of disks being created and the memory configuration of each disk partition.

To define the script properties:

1. With TCM open, tap on the Script Window to make it the active window.
2. From the *Script* menu, select the *Properties* option.

OR

Tap on  from the tool bar. The *Script Properties* window displays.

3. From the *Terminal* drop-down menu, select MK2000.
4. From the *Disks* drop-down menu, select the number of disk partitions to be created.

Note: *The options available under the disks drop-down menu changes depending on the flash type. Some flash types only have one option for the number of disk partitions, others have two options.*

5. If two partitions have been selected under the *Disk* drop-down menu, the memory configuration of the two partitions may be changed. Tap on the up or down arrow for either of the partitions, until the memory configuration of each is set to the desired value. As the one partition's size is changed, the other partition is automatically changed accordingly.
6. For each disk partition, determine the Read/Write access option.
7. The Script File Path displays the path of the selected script file.
8. Select a Cushion percentage from the *Cushion* drop-down menu to specify the percent of flash reserved for cushion. Choosing a higher number reduces disk storage space, but also increases write performance on fragmented disks or disks becoming full. To speed the writing process, select as high a number as storage needs permit (up to 25%).
9. Tap the OK button to complete the settings.

Creating the Script for the Hex Image

On start-up, TCM displays the screen shown on page D-2, with the Script1 window and File Explorer window pointing to the following directory:

Symbol Windows® CE SDK(\\xxxx)\SymbolPlatforms\PDT\\xxxx\TCMScripts


The Script1 Window directory pane displays three partitions: Volume1, Volume2 and Volume3. Depending on the type of flash chip, the number of partitions may change. Files can be added to each of the partitions. TCM functionality includes:

- Create a new script file or open an existing script
- Drag and drop existing files and directories to that script
- Set the script parameters
- Save the script
- Review and modify the script.


Each process is described in the sections that follow.

Open a New or Existing Script

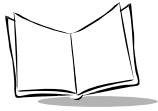
Scripts are created in the Script Window. To open a new script:

- Choose *New* from the *File* menu, OR
- Tap on  from the tool bar.

To open an existing script (e.g., a standard script provided in the SDK):

- Choose *Open* from the *File* menu and select the script file name, OR
- Tap on  from the toolbar and select the script file name, OR
- Double tap on an existing script in the Script Browser window.

Note: *If an existing script is opened and changes are made, saving the changes writes over the original script. To use an original or Symbol-supplied standard script as a base and save the changes in a new script, use Save As instead of Save after making the changes and save to a different filename.*



Copy Components to the Script

To copy files or directories to the script being generated:

1. Tap on the File Explorer Window to make it the active window.
2. Tap on the source directory in the Directory Tree Pane. TCM displays the directory contents in the Contents Pane.
3. Tap on the file(s) and/or directory in File Explorer.

Note: *Optionally, use the standard Windows® Shift+Left-tap and Control+Left-tap features to select multiple files and directories.*


4. Drag and drop the selected file(s) and/or directory from File Explorer to the target directory in the Script Window,
OR

Tap on the target directory and select the File Explorer Copy icon from the toolbar.

Save the Script

To save the changes to a new script:


1. From the *File* menu, choose *Save As*,
OR

On the toolbar, tap on  .

2. Enter the path and filename. TCM appends a .TCM extension to the script.
3. Choose the OK button.

Note: *TCM by default saves untitled scripts to the directory that the Script Browser is pointing to.*

To save changes to an existing script:

- From the *File* menu, choose *Save*, OR
- On the toolbar, tap  .

Note: *Saving changes to an existing script, writes over the original script.*

To use an original or Symbol-supplied standard script as a base and save the changes in a new script, use *Save As* instead of *Save* after making the changes and save to a different filename.


Building the Image

As part of the build, TCM performs a check on the script which verifies that all files referenced in the script exist.

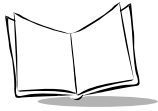
Note: *Performing a check is more important for previously existing scripts to ensure that files referenced in the script are still in the designated locations.*

To check a script:

1. In the Script Window, select the script.
2. Save the script, if not already saved.
3. From the *Script* menu, choose *Check*,
OR


On the toolbar, choose  .

4. TCM verifies that files referenced in the script exist on available drives and lists an error message in the Errors found box for any missing files.
5. Choose the *OK* button to exit.



To build a script:

1. In the Script Window, select the script to be built.
2. From the *Script* menu, select *Build*,
OR

On the toolbar, choose  . The Configure Build window appears.

3. Select the item to build. If an application is selected to build, specify the application.
4. Select Compression for the hex image, which reduces the size of most hex images in order to speed downloading. Tap **OK**.
5. TCM performs a check. If the script is has no errors, TCM proceeds with the building the partition.
6. Which can be transferred via IPL to the MK2000 as a hex file.

If the Build Fails

If the build fails, TCM displays a message indicating which file(s) are missing.

If the total amount of flash required by the script exceeds the image size, a TCM error results. To correct this, reduce the number of files in the partition. Refer to *Defining Script Properties* on page D-4 for more information on setting the image size appropriately.

Sending the Hex Image

Once the hex file is built, download it to the terminal using IPL to download the files from a compact flash card. Refer to *Upgrade Procedures* on page E-1 for detailed procedures.

Saving the Script

If changes were made to the script since last saving it, save the script again.

TCM Error Messages

TCM validates the cells in the partition table when the `Execute` button is selected. Cells highlighted in red contain an error. Partition loading is disabled until all errors are corrected. Following are errors that TCM may encounter and possible solutions.

Table D-2.

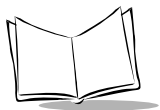
| Error | Description |
|--|---|
| Error - Partition Size | The size of a partition must be an integral multiple of the <code>FFSSectorSizeInBytes</code> specified by the .ini file. When the user enters a partition size, TCM rounds up to the next highest integral multiple of the sector size and displays this value in the partition table grid. This error check is made upon value entry, independent of the <code>Execute</code> button. |
| Error - Image Larger than Partition | If the required size of the binary image file is larger than the associated partition size, the Partition Size cell in the partition grid turns red to highlight the error. The Required Size cell indicates the actual size required. |
| Error - Total size of all FFS Partition | If the total memory allocated to the 3 FFS partitions is greater than the total Flash Memory on the MK2000, the Used FFS Memory display box turns red. Decrease the size of one or more of the partitions, then recheck the configuration using the <code>Execute</code> button. |
| Error - Source/ Destination Path Verification | If the directory paths specified by the Source and Destination cells do not exist, the cell containing the non-existent path turns red to highlight the error. |

Creating a Splash Screen

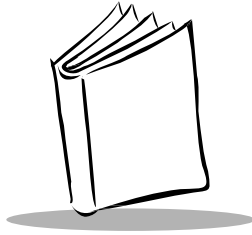
To generate a custom splash screen, use a bitmap editor, such as Paintbrush.

Creating a Splash Screen on Color Terminals

1. Create a 8 or 16 bit color bitmap with dimensions of BX x BY where:
 - BX is less than or equal to 640 pixels
 - BY is less than or equal to 480 pixels
2. For best quality, use a relatively high resolution color image (for example, 16-bit color). Lower resolution images will also work.



MK2000 MicroKiosk Product Reference Guide



Appendix E

Upgrade Procedures

Overview

The MK2000 Upgrade functions allow the user to upgrade the MK2000 with software updates and/or feature enhancements.

Partition Update vs. File Update

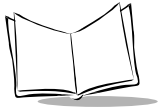
There are two types of update supported by the MK2000: partitions and files.

The file system used by the MK2000 is the same as the file system used on a desktop computer. A file is a unit of data that can be accessed using a file name and a location in the file system. When a file is replaced, only the contents of the previous file are erased. The operating system must be running for a file to be updated.

A typical partition is a group of files combined into a single "partition" that represents a specific area of storage. Examples of partitions are the operating system, or a flash file system, such as platform or application. (Using the desktop computer comparison a partition is equivalent to a C: or D: hard disk drive.) When a partition is updated, all data that was previously in its storage region is erased - i.e., it is not a merge but rather a replacement operation. Typically, the operating system is not running when partitions are updated.

Partition images for selected partitions can be created using TCM, see *Terminal Configuration Manager* on page D-1 for details. The partition image is then transferred to the MK2000 using one of the tools listed below.

Different utilities are used for partition and file updates. The type of update that can be performed for a given tool is listed in the accompanying description.



Upgrade Requirements

Upgrade requirements:

- Compact Flash (CF) card with the appropriate upgrade files

Caution

While any of the access covers are removed, the user must follow proper ESD (Electro-Static Discharge) precautions to avoid damaging sensitive components. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded. Failure to apply proper ESD precautions may cause damage to the unit and could potentially void your warranty.

- ESD mat and equipment required to ensuring that the operator is properly grounded.

Note: A PC card may be substituted for the CF card on units that do not have a RF radio card. The PC card uses the same slot as the RF radio card and removing the RF radio card is not recommended.

MK2000 Operating System Upgrade

Refer to the pages listed, to upgrade the following MK2000 Operating System (OS) components:

- OS Upgrade, see *page E-4*
- Monitor Upgrade, see *page E-8*
- Partitions Upgrade, see *page E-12*.

To upgrade the MK2000 Demo Application:

- Demo Application, see *page E-15*.

IPL Menu Navigation

The Initial Program Loader (IPL) Menu selection screens use the MK2000's first three buttons to navigate the menus and make selections.

The button functions for using the menus are:

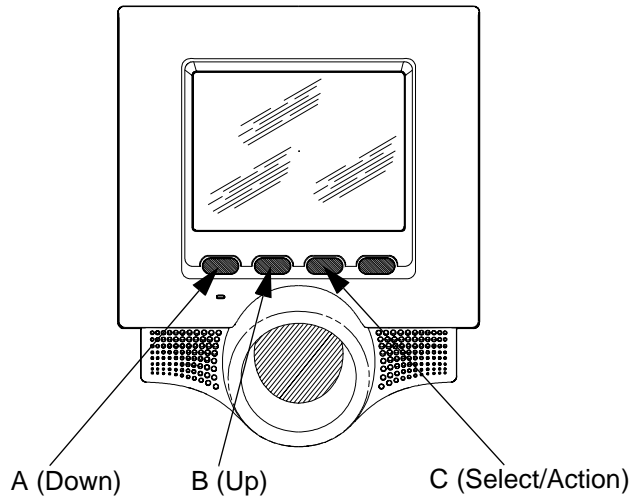
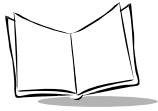


Figure E-1. Button Functions

Use the A button (Down) to scroll down, the B button (Up) to scroll Up and the C button (Select/Action) to select menu options.



OS Upgrade

The IPL mode is used to upgrade the MK2000 OS.

IPL Mode, OS Upgrade Procedures

The OS Upgrade procedures consists of nine steps:

- Insert the CF Card
 - Enter IPL Mode
 - Set OS Upgrade
 - Select the File Media Source
 - Select OS Upgrade File
 - Initiate Download
 - OS Upgrade, Downloading Message
 - Upgrade Complete Message
 - Restore MK2000.
-
1. Remove the CF access cover (see Figure 1-2 on page 1-4) and insert the CF Card into the CF Card slot.
 2. Enter IPL Mode. If the MK2000 is not in the IPL Main menu, power up the MK2000 while pressing the A button (Down) see Figure E-1 on page E-3 to enter the IPL Main menu. The IPL Main menu displays.

3. Select OS Partition Upgrade, see Figure E-2. When a partition is used it refers to any download component in the Mk2000 (such as OS). Use the A button (Down) see Figure E-1 on page E-3 to scroll down to the *Windows® CE* option and select the option using the C button (Select/Action).

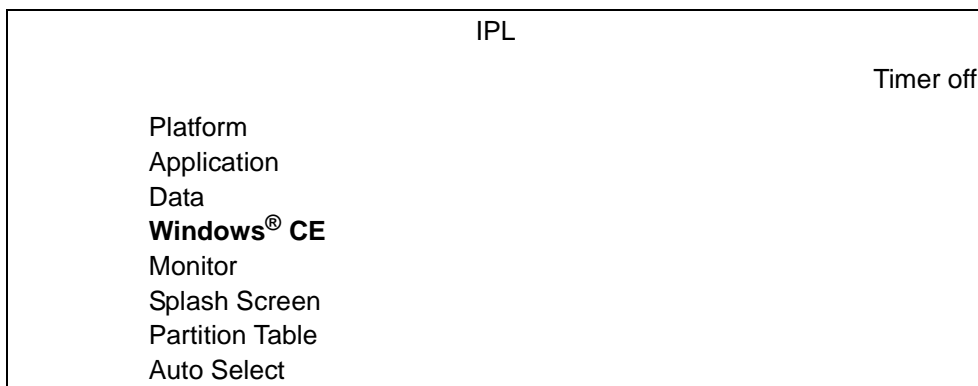


Figure E-2. IPL Mode Menu

4. Select the File Media Source, see Figure E-3. The Select Transport menu displays, use the A button (Down), see Figure E-1 on page E-3 to highlight *CF Card* and select using the C button (Select/Action).

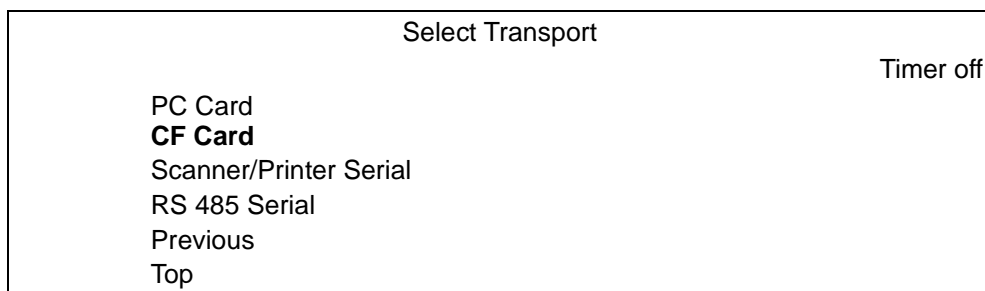
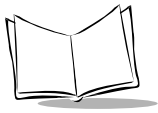


Figure E-3. Select Transport Menu



5. Select the OS Upgrade File, see Figure E-4. The Select File Name menu is displayed, use the A button (Down), see Figure E-1 on page E-3 to highlight *NKXXX.Bin* and select using the C button (Select/Action).

Note: *NKXXX.Bgz* is the upgrade file.

| | |
|------------------|-----------|
| Select File Name | |
| | Timer off |
| Monitor Bin | |
| NKXXX.Bgz | |
| Prev | |
| Top | |

Figure E-4. Select File Name Menu

6. Initiate Download, see Figure E-5. The Download File? menu is displayed, select *Download* using the C button (Select/Action) to initiate the OS Upgrade.

| | |
|-----------------|-----------|
| Download File? | |
| | Timer off |
| Download | |
| Cancel | |
| Show Params | |
| Reset | |
| Previous | |
| Top | |

Figure E-5. Download File? Menu

7. OS Upgrade, Downloading Message, see Figure E-6. When the OS upgrade has initiated, the following message is displayed (be patient this takes 15-25 minutes):

Windows CE

Downloading:
via CF Card NWRMKOAC.BGZ
#####__ 95%"

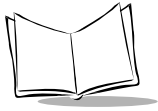
Figure E-6. OS Upgrade, Downloading Message

8. Upgrade Complete Message, see Figure E-7. When the new OS is successfully loaded the following message is displayed:

Downloading:
via CF Card NWRMKOAC.BGZ
Result was: Success!
Press Enter to continue

Figure E-7. OS Upgrade, Success! Message

9. Restore MK2000, if no additional upgrade procedures are required, remove power from the MK2000, remove the CF card, replace the CF access cover (see Figure 1-2 on page 1-4) and restore power to the MK2000. The new operating system will automatically boot up.



Monitor Upgrade

Note: Failures during the Monitor upgrade often render the device inoperable. If the device does not boot after performing a monitor update call for factory service.

Monitor Upgrade Procedures

The Monitor Upgrade procedures consists of eight steps:

- Insert the CF Card
 - Enter IPL Mode
 - Select Monitor upgrade mode
 - Select the File Media Source
 - Select Monitor Upgrade File
 - Initiate Download
 - Upgrade Complete Message
 - Restore MK2000.
-
1. Remove the CF access cover (see Figure 1-2 on page 1-4) and insert the CF Card into the CF Card slot.
 2. Enter IPL Mode. If the MK2000 is not in the IPL Mode menu, power up the MK2000 while holding the A button (Down) see Figure E-1 on page E-3 to enter the IPL Mode menu. When the IPL mode menu is displayed. The IPL mode menu is the first menu displayed.

3. Select the Monitor upgrade mode, see Figure E-8. Use the A button (Down) see Figure E-1 on page E-3 to scroll down to the *Monitor* option and select the option using the C button (Select/Action).

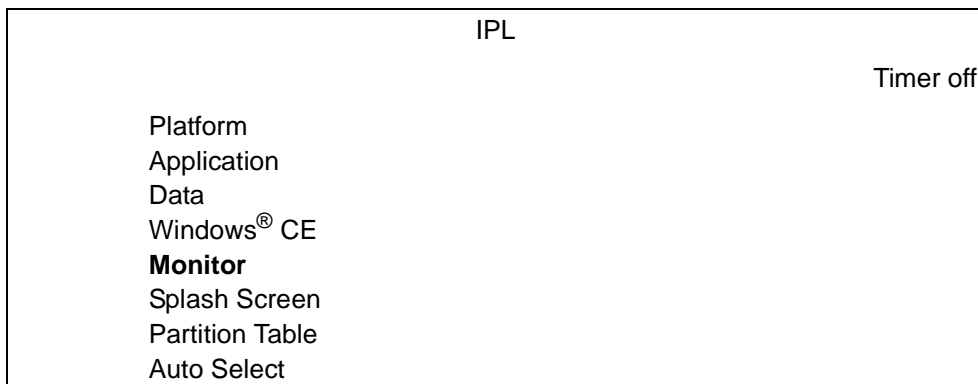


Figure E-8. IPL Mode Menu

4. Select the File Media Source, see Figure E-9. The Select Transport menu is displayed, use the A button (Down), see Figure E-1 on page E-3 to highlight *CF Card* and select using the C button (Select/Action).

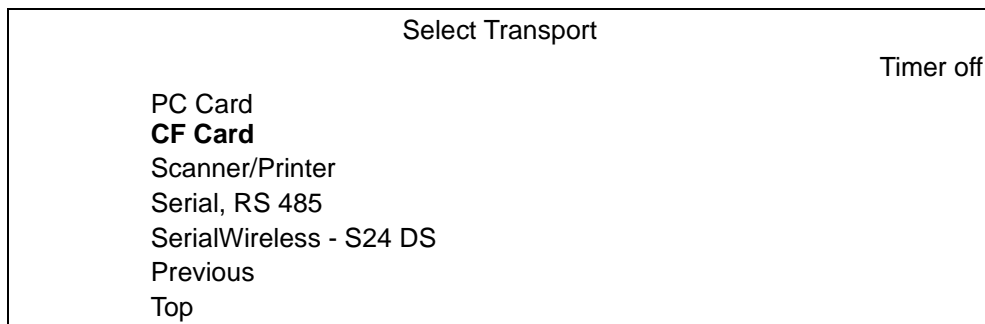
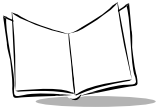


Figure E-9. Select Transport Menu



5. Select the Monitor Upgrade File, see Figure E-10. The Select File Name menu is displayed, use the A button (Down), see Figure E-1 on page E-3 to highlight *MonXXX.Bin* and select using the C button (Select/Action).

Note: *MoXXX.bin* or *Monitor.bgz* are the two possible upgrade files.

| | |
|-------------------|-----------|
| Select File Name | Timer off |
| MonXXX.bin | |
| NK-Flash.bin | |
| ORCAPT8.HEX | |
| Prev | |
| Top | |

Figure E-10. Select File Name Menu

6. Initiate Download, see Figure E-11. The “Download File?” menu is displayed, select *Download* using the C button (Select/Action) to initiate the Monitor Upgrade.

| | |
|-----------------|-----------|
| Download File? | Timer off |
| Download | |
| Cancel | |
| Show ParmS | |
| Reset | |
| Previous | |
| Top | |

Figure E-11. Download File? Menu

7. Monitor Upgrade, Downloading Message, see Figure E-12. When the Monitor upgrade has initiated, the following message is displayed:

```
Windows CE
Downloading:
Via CF Card MONITOR.BIN
Downloading BIN: 351856 bytes to
address 00000000 in Flash ROM
##### 100%"
```

Figure E-12. Monitor Upgrade, Downloading Message

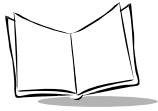
8. Upgrade Complete Message, see Figure E-13. When the new Monitor is successfully loaded The MK2000 reboots automatically:

Note: *if the MonitorSuccessful message does not appear, reboot the MK2000.*

```
Result was: Success!
Press Action to Continue
```

Figure E-13. Monitor Successful Message

9. Restore MK2000, Upgrade Procedures Completed. If no additional upgrade procedures are required, remove power from the MK2000, remove the CF card, replace the CF access cover (see Figure 1-2 on page 1-4) and restore power to the MK2000. The upgrades will automatically boot up.



Partition Table

Partition Table Upgrade Procedures

The *Partition Table* Upgrade procedures consists of the following steps:

- Insert the CF Card
 - Enter IPL Mode
 - Select *Partition Table* upgrade mode
 - Select the File Media Source
 - Select the *Partition Table* File
 - Initiate Download
 - *Partition Table* Upgrade
 - Partition Table Successfully Loaded
 - Re-Boot
-
1. Remove the CF access cover (see Figure 1-2 on page 1-4) and insert the CF Card into the CF Card slot.
 2. IPL Mode Menu, if the MK2000 is not in the IPL Mode menu, power up the MK2000 while holding the A button (Down) see Figure E-1 on page E-3 to enter the IPL Mode menu. When the IPL mode menu is displayed. The IPL mode menu is the first menu displayed.

3. Select The Partition Table Upgrade Mode, see Figure E-14. Use the B button (Up) see Figure E-1 on page E-3 to scroll up to the *Partition Table* option and select the option using the C button (Select/Action).

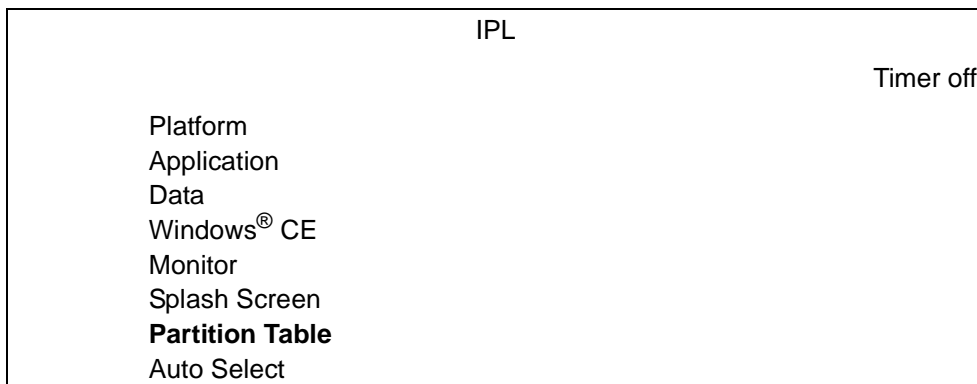


Figure E-14. IPL Mode Menu

4. Select the File Media Source, see Figure E-15. The Select Transport menu is displayed, use the A button (Down), see Figure E-1 on page E-3 to highlight *CF Card* and select using the C button (Select/Action).

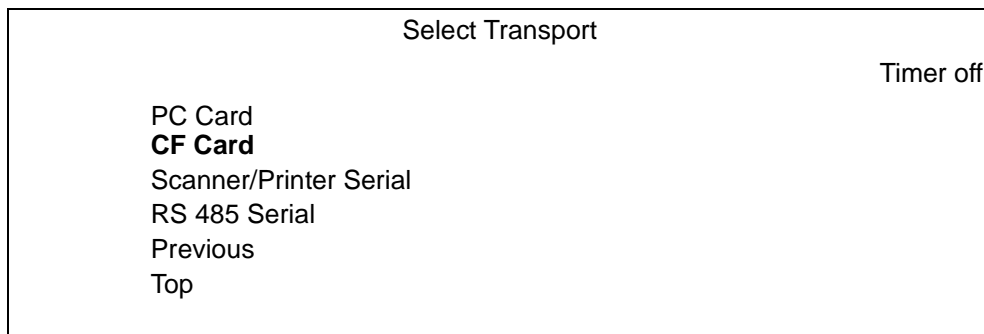
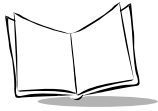


Figure E-15. Select Transport Menu



5. Select the Partition Table Upgrade File, see Figure E-16. The Select File Name menu is displayed, use the A button (Down), see Figure E-1 on page E-3 to highlight *PARTBLXX.HEX* and select using the C button (Select/Action).

Note: *PARTBLXX.HEX is the upgrade file.*

| | |
|---------------------|-----------|
| Select File Name | Timer off |
| MonXXX.bin | |
| NKXXX.bin | |
| PARTBLXX.HEX | |
| Prev | |
| Top | |

Figure E-16. Select File Name Menu

6. Initiate Download, see Figure E-17. The Download File? menu is displayed, select *Download* using the C button (Select/Action) to initiate the Partition Table Upgrade.

| | |
|-----------------|-----------|
| Download File? | Timer off |
| Download | |
| Cancel | |
| Show Params | |
| Reset | |
| Previous | |
| Top | |

Figure E-17. Download File? Menu

7. Partition Table Upgrade, Downloading Message, see Figure E-18. When the Partition Table upgrade has initiated, the following message is displayed:

Partition Table

Downloading:
Via CF Card NWRMKTAB.HEX
100%"

Figure E-18. Partition Table Upgrade, Downloading Message

8. Partition Table Successfully Loaded Message, see Figure E-19. When the new Partition Table is successfully loaded the following message is displayed:

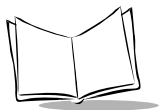
Result was: Success!
Press Action to Continue

Figure E-19. Partition Table is successfully loaded, Success! Message

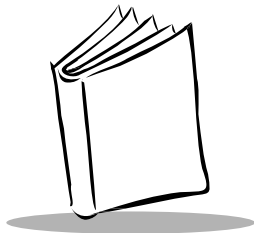
9. Re-Boot, if no additional upgrade procedures are required, remove power from the MK2000, remove the CF card, replace the CF access cover (see Figure 1-2 on page 1-4) and restore power to the MK2000. The upgrades will automatically boot up.

Demo Application Install/Upgrade

Demo Application Install/Upgrade Procedures are provided in *Installing the Resident Demo Application* on page 4-4.



MK2000 MicroKiosk Product Reference Guide



Appendix F

Troubleshooting

Troubleshooting

Troubleshooting topics include:

- The MK2000 does not turn on.
- The MK2000 does not respond to polls from the host computer.
- The MK2000 does not send data to host computer.
- How to Re-Boot the MK2000.
- How to enter Windows[®] Protected Mode (Windows[®] CE desktop).
- How to load files into the MK2000.
- Demo Application (Resident or Laptop) does not work after changes were made to the unit.
- How do I configure the MK2000?
- Parameter changes were not retained after the MK2000 was re-booted.
- Reg files values are not being copied into the Registry at boot time
- ControlPanel-StorageManager-Properties-Defrag does not appear to perform any action.

If the problem cannot be corrected, refer to *Read MK2000 Settings* on page F-4 to obtain system information, prior to calling for service help.

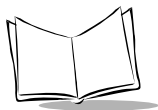
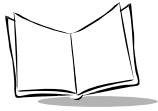


Table F-1. Troubleshooting

| Problem | Possible Causes | Possible Solutions |
|---|--|--|
| MK2000 does not turn on. | No power to the device. | <ul style="list-style-type: none"> - Power via AC outlet <ul style="list-style-type: none"> - Check power to the device. Ensure the Symbol approved power supply is plugged into an AC power source and connected to the MK2000 powered port, see Figure 1-3 on page 1-5. - Power via power-over-Ethernet <ul style="list-style-type: none"> - Confirm 8-wire Ethernet cable is plugged into MK2000 LAN port. - Confirm other end of Ethernet cable is plugged into Bias-T Power-Over-Ethernet (POE). - Confirm Bias-T POE module is plugged into an AC outlet. - Perform continuity check on the Ethernet cable. |
| MK2000 does not respond to polls from the host computer. | No communication between the host and MK2000. | <p>Check cabling to the MK2000. Ensure the MK2000 address is the address being polled.</p> <p>Check communication parameters.</p> |
| MK2000 does not send data to host computer. | <p>MK2000 is not programmed to work with the host.</p> <p>MK2000 is not connected to the host.</p> | <p>Check setup communication parameters.</p> <p>Check cables to host computer.</p> |
| How to Re-Boot the MK2000. | | To perform a cold boot press and hold buttons B and C until the display goes blank (typically 15 seconds) then release buttons, see Figure 1-1 on page 1-3. The MK2000 reboots. |
| How to enter Windows® Protected Mode (Windows® CE desktop). | | To enter Windows® Protected Mode see <i>MK2000 Protected Mode</i> on page 6-2. |

Table F-1. Troubleshooting (Continued)

| Problem | Possible Causes | Possible Solutions |
|--|--|--|
| How to load files into the MK2000. | | See <i>Downloading Files</i> on page 5-3. |
| Demo Application (Resident or Laptop) does not work after changes were made to the unit. | Demo program parameter settings inconsistent with latest program changes and/or corrupt files. Reload the Demo Application (Resident or Laptop). | Locate and delete the files associated with the Demo Application (located in the My Computer/Application folder). Then reload the files associated with the demo application, for detailed instruction on loading the demo application, see <i>Installing the Resident Demo Application</i> on page 4-4. |
| How do I configure the MK2000? | | Refer to <i>Setup and Configuration</i> on page 3-1. |
| Parameter changes were not retained after the MK2000 was re-booted. | Parameter changes were not saved. | Refer to <i>Registry Persistence</i> on page 6-2 and <i>Save Configuration / Generate a .reg File</i> on page 3-14. |
| Reg files values are not being copied into the Registry at boot time. | More than one .reg file and duplicate registry entries are present. | Ensure the .reg files in /Application and /Platform have no conflicts. |
| ControlPanel-StorageManager-Properties-Defrag does not appear to perform any action. | Defrag is not implemented in WinCE4. | Reload the partition. |



Read MK2000 Settings

If an MK2000 has been configured to automatically launch an application on power-up, this auto-boot must be bypassed when the system is booted to enter Windows[®] CE Protected Mode, see *MK2000 Protected Mode* on page 6-2.

1. Select **Start** from the Windows[®] task bar
2. Select **Settings** from the Start menu
3. Select **Control Panel** from the Settings window
4. Select **MK2000** identification from the Control Panel window. The following information is provided:

Device Name:

Description:

O.S. Version:

Monitor Version:

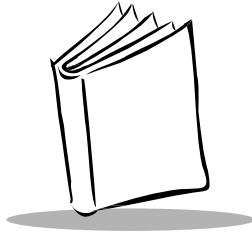
Display Type:

Memory Sizes:

Troubleshooting Notes

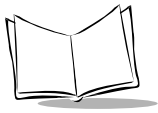
Changes made while navigating the MK2000 system menu screens must be saved and the device rebooted before the changes will take effect.

Most control panel changes will take effect immediately.



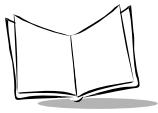
Glossary

| | |
|---------------------------|--|
| ACK/NAK | ACK/NAK is the default software handshaking. |
| AirBEAM Manager | AirBEAM Manager is a comprehensive wireless network management system that provides essential functions that are required to configure, monitor, upgrade and troubleshoot the Spectrum24 [®] wireless network and its components (including networked terminals). Some features include event notification, access point configuration, diagnostics, statistical reports, auto-discovery, wireless proxy agents and monitoring of access points and mobile units. |
| Aperture | The opening in an optical system defined by a lens or baffle that establishes the field of view. |
| ANSI Terminal | A display terminal that follows commands in the ANSI standard terminal language. For example, it uses escape sequences to control the cursor, clear the screen and set colors. Communications programs support the ANSI terminal mode and often default to this terminal emulation for dial-up connections to online services. |
| ASCII | American Standard Code for Information Interchange. A 7 bit-plus-parity code representing 128 letters, numerals, punctuation marks and control characters. It is a standard data transmission code in the U.S. |
| Autodiscrimination | The ability of an interface controller to determine the code type of a scanned bar code. After this determination is made, the information content is decoded. |
| Bar | The dark element in a printed bar code symbol. |
| Bar Code Density | The number of characters represented per unit of measurement (e.g., characters per inch). |
| Bar Height | The dimension of a bar measured perpendicular to the bar width. |



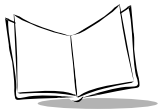
| | |
|----------------------|--|
| Bar Width | Thickness of a bar measured from the edge closest to the symbol start character to the trailing edge of the same bar. |
| Baud Rate | A measure of the data flow or number of signaling events occurring per second. When one bit is the standard "event," this is a measure of bits per second (bps). For example, a baud rate of 50 means transmission of 50 bits of data per second. |
| Bit | Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning. |
| Byte | On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory is used to store one ASCII character. |
| BOOTP | A protocol for remote booting of diskless devices. Assigns an IP address to a machine and may specify a boot file. The client sends a bootp request as a broadcast to the bootp server port (67) and the bootp server responds using the bootp client port (68). The bootp server must have a table of all devices, associated MAC addresses and IP addresses. |
| CDRH | Center for Devices and Radiological Health. A federal agency responsible for regulating laser product safety. This agency specifies various laser operation classes based on power output during operation. |
| CDRH Class 1 | This is the lowest power CDRH laser classification. This class is considered intrinsically safe, even if all laser output were directed into the eye's pupil. There are no special operating procedures for this class. |
| CDRH Class 2 | No additional software mechanisms are needed to conform to this limit. Laser operation in this class poses no danger for unintentional direct human exposure. |
| Character | A pattern of bars and spaces which either directly represents data or indicates a control function, such as a number, letter, punctuation mark, or communications control contained in a message. |
| Character Set | Those characters available for encoding in a particular bar code symbology. |

| | |
|------------------------------|--|
| Check Digit | A digit used to verify a correct symbol decode. The scanner inserts the decoded data into an arithmetic formula and checks that the resulting number matches the encoded check digit. Check digits are required for UPC but are optional for other symbologies. Using check digits decreases the chance of substitution errors when a symbol is decoded. |
| Codabar | A discrete self-checking code with a character set consisting of digits 0 to 9 and six additional characters: (- \$: / , +). |
| Code 128 | A high density symbology which allows the controller to encode all 128 ASCII characters without adding extra symbol elements. |
| Code 3 of 9 (Code 39) | A versatile and widely used alphanumeric bar code symbology with a set of 43 character types, including all uppercase letters, numerals from 0 to 9 and 7 special characters (- . / + % \$ and space). The code name is derived from the fact that 3 of 9 elements representing a character are wide, while the remaining 6 are narrow. |
| Code 93 | An industrial symbology compatible with Code 39 but offering a full character ASCII set and a higher coding density than Code 39. |
| Code Length | Number of data characters in a bar code between the start and stop characters, not including those characters. |
| Continuous Code | A bar code or symbol in which all spaces within the symbol are parts of characters. There are no intercharacter gaps in a continuous code. The absence of gaps allows for greater information density. |
| Dead Zone | An area within a scanner's field of view, in which specular reflection may prevent a successful decode. |
| Decode | To recognize a bar code symbology (e.g., UPC/EAN) and then analyze the content of the specific bar code scanned. |
| Decode Algorithm | A decoding scheme that converts pulse widths into data representation of the letters or numbers encoded within a bar code symbol. |
| Decryption | Decryption is the decoding and unscrambling of received encrypted data. Also see, Encryption and Key. |
| Depth of Field | The range between minimum and maximum distances at which a scanner can read a symbol with a certain minimum element width. |



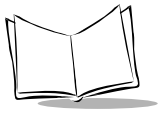
| | |
|------------------------|--|
| DHCP | (Dynamic Host Configuration Protocol) Software that automatically assigns IP addresses to client stations logging onto a TCP/IP network. Similar to BOOTP, but also permits the leasing of an IP address. It eliminates having to manually assign permanent IP addresses. DHCP software typically runs in servers and is also found in network devices such as routers that allow multiple users access to the Internet. |
| DHCP Server | A server in the network or a service within a server that assigns IP addresses. |
| Discrete Code | A bar code or symbol in which the spaces between characters (intercharacter gaps) are not part of the code. |
| Discrete 2 of 5 | A binary bar code symbology representing each character by a group of five bars, two of which are wide. The location of wide bars in the group determines which character is encoded; spaces are insignificant. Only numeric characters (0 to 9) and START/STOP characters may be encoded. |
| EAN | European Article Number. This European/International version of the UPC provides its own coding format and symbology standards. Element dimensions are specified metrically. EAN is used primarily in retail. |
| Element | Generic term for a bar or space. |
| Encoded Area | Total linear dimension occupied by all characters of a code pattern, including start/stop characters and data. |
| ENQ (RS-232) | ENQ software handshaking is also supported for the data sent to the host. |
| Encryption | Encryption is the scrambling and coding of data, typically using mathematical formulas called algorithms, before information is transmitted over any communications link or network. A key is the specific code used by the algorithm to encrypt or decrypt the data. Also see, Decryption and Key. |
| ESD | Electro-Static Discharge |
| ESS_ID | Extended Service Set Identifier, defines the coverage area. Prior to the release of the 802.11 specification the ESS_ID was called the Net_ID or Network Identifier. ESS_ID: 32 Alphanumeric characters, (case sensitive). |
| Flash Memory | Flash memory is responsible for storing the system firmware and is non-volatile. If the system power is interrupted the data will not be lost. |

| | |
|-----------------------------|--|
| Host Computer | A computer that serves other terminals in a network, providing such services as computation, database access, supervisory programs and network control. |
| IEC | International Electrotechnical Commission. This international agency regulates laser safety by specifying various laser operation classes based on power output during operation. |
| IEC (825) Class 1 | This is the lowest power IEC laser classification. Conformity is ensured through a software restriction of 120 seconds of laser operation within any 1000 second window and an automatic laser shutdown if the scanner's oscillating mirror fails. |
| IEEE Address | See MAC Address . |
| Intercharacter Gap | The space between two adjacent bar code characters in a discrete code. |
| Interleaved Bar Code | A bar code in which characters are paired together, using bars to represent the first character and the intervening spaces to represent the second. |
| Interleaved 2 of 5 | A binary bar code symbology representing character pairs in groups of five bars and five interleaved spaces. Interleaving provides for greater information density. The location of wide elements (bar/spaces) within each group determines which characters are encoded. This continuous code type uses no intercharacter spaces. Only numeric (0 to 9) and START/STOP characters may be encoded. |
| IP | (Internet Protocol) The IP part of the TCP/IP communications protocol. IP implements the network layer (layer 3) of the protocol, which contains a network address and is used to route a message to a different network or subnetwork. IP accepts "packets" from the layer 4 transport protocol (TCP or UDP), adds its own header to it and delivers a "datagram" to the layer 2 data link protocol. It may also break the packet into fragments to support the maximum transmission unit (MTU) of the network. |
| IP Address | (Internet Protocol address) The address of a computer attached to an IP network. Every client and server station must have a unique IP address. A 32-bit address used by a computer on a IP network. Client workstations have either a permanent address or one that is dynamically assigned to them each session. IP addresses are written as four sets of numbers separated by periods; for example, 204.171.64.2. |



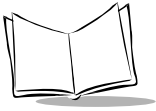
| | |
|--|--|
| Kerberos | Kerberos is a network authentication protocol. It is designed to provide strong authentication for client/server applications by using secret-key cryptography. A free implementation of this protocol is available from the Massachusetts Institute of Technology. Kerberos is available in many commercial products as well. |
| Key | A key is the specific code used by the algorithm to encrypt or decrypt the data. Also see, Encryption and Decrypting. |
| LASER - Light Amplification by Stimulated Emission of Radiation | The laser is an intense light source. Light from a laser is all the same frequency, unlike the output of an incandescent bulb. Laser light is typically coherent and has a high energy density. |
| Laser Diode | A gallium-arsenide semiconductor type of laser connected to a power source to generate a laser beam. This laser type is a compact source of coherent light. |
| LED Indicator | A semiconductor diode (LED - Light Emitting Diode) used as an indicator, often in digital displays. The semiconductor uses applied voltage to produce light of a certain frequency determined by the semiconductor's particular chemical composition. |
| MAC Address (also called IEEE Address) | Spectrum24 [®] devices, like other Ethernet devices, have unique, hardware-encoded MAC (also called IEEE addresses). MAC addresses determine the device sending or receiving data. The MAC address is a 48-bit number written as six hexadecimal bytes separated by colons. |
| MIL | 1 mil = 1 thousandth of an inch. |
| Misread (Misdecode) | A condition which occurs when the data output of a reader or interface controller does not agree with the data encoded within a bar code symbol. |
| MU | The MU (Mobile Unit) searches for APs with the same ESS_ID and associates with an AP to establish communications. |
| Null Modem Cable | An RS-232 cable used to connect two personal computers together in close proximity for file transfer. It attaches to the serial ports of both machines and simulates what would occur naturally if modems and the phone system were used. It crosses the sending wire with the receiving wire. |
| Nominal | The exact (or ideal) intended value for a specified parameter. Tolerances are specified as positive and negative deviations from this value. |

| | |
|------------------------------------|---|
| Nominal Size | Standard size for a bar code symbol. Most UPC/EAN codes are used over a range of magnifications (e.g., from 0.80 to 2.00 of nominal). |
| Open System Authentication | Open System authentication is a null authentication algorithm. |
| Parameter | A variable that can have different values assigned to it. |
| Percent Decode | The average probability that a single scan of a bar code would result in a successful decode. In a well-designed bar code scanning system, that probability should approach near 100%. |
| PING | (Packet Internet Groper) An Internet utility used to determine whether a particular IP address is online. It is used to test and debug a network by sending out a packet and waiting for a response. |
| Print Contrast Signal (PCS) | Measurement of the contrast (brightness difference) between the bars and spaces of a symbol. A minimum PCS value is needed for a bar code symbol to be scannable. $PCS = (RL - RD) / RL$, where RL is the reflectance factor of the background and RD the reflectance factor of the dark bars. |
| Programming Mode | The state in which a scanner is configured for parameter values. See SCANNING MODE. |
| Quiet Zone | A clear space, containing no dark marks, which precedes the start character of a bar code symbol and follows the stop character. |
| Reflectance | Amount of light returned from an illuminated surface. |
| Resolution | The narrowest element dimension which is distinguished by a particular reading device or printed with a particular device or method. |
| Scan Area | Area intended to contain a symbol. |
| Scanner | An electronic device used to scan bar code symbols and produce a digitized pattern that corresponds to the bars and spaces of the symbol. Its three main components are: <ol style="list-style-type: none"> 1. Light source (laser or photoelectric cell) - illuminates a bar code. 2. Photodetector - registers the difference in reflected light (more light reflected from spaces). 3. Signal conditioning circuit - transforms optical detector output into a digitized bar pattern. |
| Scanning Mode | The scanner is energized, programmed and ready to read a bar code. |
| Scanning Sequence | A method of programming or configuring parameters for a bar code reading system by scanning bar code menus. |

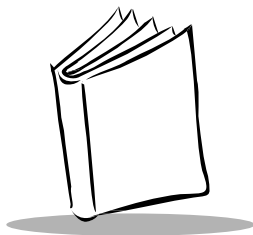


| | |
|-----------------------------|--|
| SDK | Software Development Kit |
| Self-Checking Code | A symbology that uses a checking algorithm to detect encoding errors within the characters of a bar code symbol. |
| Shared Key | Shared Key authentication is an algorithm where both the AP and the MU share an authentication key. |
| Space | The lighter element of a bar code formed by the background between bars. |
| Specular Reflection | The mirror-like direct reflection of light from a surface, which can cause difficulty decoding a bar code. |
| Start/Stop Character | A pattern of bars and spaces that provides the scanner with start and stop reading instructions and scanning direction. The start and stop characters are normally to the left and right margins of a horizontal code. |
| Subnet Mask | A 32-bit number used to separate the network and host sections of an IP address. A custom subnet mask subdivides an IP network into smaller subsections. The mask is a binary pattern that is matched up with the IP address to turn part of the host ID address field into a field for subnets. Default is often 255.255.255.0. |
| Substrate | A foundation material on which a substance or image is placed. |
| Symbol | A scannable unit that encodes data within the conventions of a certain symbology, usually including start/stop characters, quiet zones, data characters and check characters. |
| Symbol Aspect Ratio | The ratio of symbol height to symbol width. |
| Symbol Height | The distance between the outside edges of the quiet zones of the first row and the last row. |
| Symbol Length | Length of symbol measured from the beginning of the quiet zone (margin) adjacent to the start character to the end of the quiet zone (margin) adjacent to a stop character. |
| Symbology | The structural rules and conventions for representing data within a particular bar code type (e.g. UPC/EAN, Code 39). |

| | |
|----------------------------------|--|
| TCP/IP | <p>(Transmission Control Protocol/Internet Protocol) A communications protocol used to internetwork dissimilar systems. This standard is the protocol of the Internet and has become the global standard for communications.</p> <p>TCP provides transport functions, which ensures that the total amount of bytes sent is received correctly at the other end. UDP is an alternate transport that does not guarantee delivery. It is widely used for real-time voice and video transmissions where erroneous packets are not retransmitted.</p> <p>IP provides the routing mechanism. TCP/IP is a routable protocol, which means that all messages contain not only the address of the destination station, but the address of a destination network. This allows TCP/IP messages to be sent to multiple networks within an organization or around the world, hence its use in the worldwide Internet. Every client and server in a TCP/IP network requires an IP address, which is either permanently assigned or dynamically assigned at startup.</p> |
| Telnet | <p>A terminal emulation protocol commonly used on the Internet and TCP/IP-based networks. It allows a user at a terminal or computer to log onto a remote device and run a program.</p> |
| TFTP | <p>(Trivial File Transfer Protocol) A version of the TCP/IP FTP (File Transfer Protocol) protocol that has no directory or password capability. It is the protocol used for upgrading firmware, downloading software and remote booting of diskless devices.</p> |
| Tolerance | <p>Allowable deviation from the nominal bar or space width.</p> |
| UDP | <p>(User Datagram Protocol) A protocol within the IP protocol suite that is used in place of TCP when a reliable delivery is not required. For example, UDP is used for real-time audio and video traffic where lost packets are simply ignored, because there is no time to retransmit. If UDP is used and a reliable delivery is required, packet sequence checking and error notification must be written into the applications.</p> |
| UPC | <p>Universal Product Code. A relatively complex numeric symbology. Each character consists of two bars and two spaces, each of which is any of four widths. The standard symbology for retail food packages in the United States.</p> |
| Visible Laser Diode (VLD) | <p>A solid state device which produces visible laser light.</p> |



| | |
|---|--|
| WEP Encryption | <p>(Wired Equivalent Privacy encryption) The conversion of data into a secret code for transmission over a public network. The original text, or plaintext, is converted into a coded equivalent called ciphertext via an encryption algorithm. The ciphertext is decoded (decrypted) at the receiving end and turned back into plaintext.</p> <p>The encryption algorithm uses a key, which is a binary number that is typically from 40 to 128 bits in length. The greater the number of bits in the key (cipher strength), the more possible key combinations and the longer it would take to break the code. The data is encrypted, or “locked,” by combining the bits in the key mathematically with the data bits. At the receiving end, the key is used to “unlock” the code and restore the original data.</p> |
| WEP | <p>Wired Equivalent Privacy, is specified by IEEE for encryption and decryption of RF (wireless) communications.</p> |
| WNMP | <p>(Wireless Network Management Protocol) This is Symbol's proprietary MAC layer protocol used for inter access point communication and other MAC layer communication.</p> |
| WNMS (has been renamed to AirBEAM Manager) | <p>See AirBEAM Manager</p> |



Index

Numerics

2D bar code 4-20, B-22
3rd party applications A-2

A

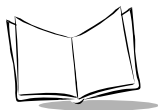
AC power supply 2-9
access cover
 accessory bay 1-4
 CF card 1-4
 PCMCIA 1-4
access windows CE desktop B-5
accessories
 signage mounting kit 2-16
accessory bay access cover 1-4
ActiveX 7-2
AirBEAM 5-2, A-2
application auto-boot 4-4
applications
 auto-boot 6-2
 configuration 3-5
 development 3-4, 3-5, 7-1
 startup 3-5
attract mode 4-8, 4-9, B-9, B-10
auto-boot 4-4, 6-2
auxiliary scanner 1-7

B

bar code scanner 1-7
bar codes, demo application C-1
browsers
 applications 7-1
 iesample.exe 7-2
 kioskie.exe 7-2
 removing toolbars 7-2
buttons
 function 1-2
 mapping 6-3
 remapping 6-4
 reset 3-7
bypass auto-boot 4-4, 6-2

C

C 7-2
cable pin-outs 2-19
cable routing 2-6
calibration 6-1, 6-5
CE applications 7-1
CF card 1-7, 3-4, 5-5, E-2
 access cover 1-4
clock 6-6
Code 128 A-2
Code 39 A-2
cold boot
 3-7, 4-4, 4-5, 4-6, 6-2, 6-4, B-5, B-6, F-2



communications 2-10, 2-19
 ethernet, wired 2-10
 port 2-19
 RS-232, wired 2-10, 2-14, 2-19
 RS-485, wired 2-10, 2-13, 2-19
 wired ethernet 2-10
 wireless ethernet 2-10
compact flash card. see CF card
composite codes A-2
configuration utility 3-9
 DHCP options 3-15
 generate a .reg file 3-14
 loading a .reg file 3-15
 restore default 3-14
 saving 3-14
control panel 3-7, 6-1
creating partitions 5-3
creating splash screen D-9
currency B-13
customer application 4-8, B-9
customizable features B-3
C++ 7-2

D

date 6-6
default, restoring 3-14
demo application 1-1, 4-4
 bar codes 4-3, C-1
 delete 4-4, B-6
 differences B-1
 disable 4-5, B-6
 functionally 4-2
 installing 4-4
 laptop 1-1, B-1
 overview 4-7, B-8
 resident 4-1
 update 4-4
 versions 4-3

demo mode
 2D bar code B-22
 application overview 4-7, B-4, B-8
 application set-up B-7
 languages B-7
 loyalty card program 4-13, B-14
 menu bar 4-8, B-9
 messaging 4-15, B-17
 price verification 4-10, B-11
 price verification menu bar 4-12, B-11
 scan a 2D bar code 4-20
 scan modes 1-9
 setting-up 4-6, B-4
 slide show 4-9, B-10
 store operations 4-14, B-16
demo setup file B-23
desktop image, splash screen D-9
development environments 7-1
development tools 1-8
DHCP 3-15
 PCK emulation 7-3
 unmanaged C/C++ apps 7-2
 VT220 emulation 7-3
 web browser 7-2
 Win apps via terminal server client 7-2
disable demo app B-6
double tap setting 3-8
download
 files 5-1, 5-3, D-1, E-1, E-6, E-10, E-14
 partitions 5-2
 website
 . 1-1, 1-8, 3-10, 4-1, 4-3, 4-4, 7-2, 7-3, B-1

E

Electro-Static Discharge. see ESD
error messages D-9
ESD 1-4, E-2
ethernet setup 2-10, 2-11
 wired 2-10
expansion slots 1-4, 1-7
external ports 1-5
external speakers 1-6

F

| | |
|--------------------------|-----|
| failure recovery | 3-6 |
| file explorer | D-2 |
| file system | 3-4 |
| files, downloading | 5-3 |
| folder structure | 3-4 |
| FTP server | 5-4 |
| parameters | 5-4 |
| function buttons | 1-7 |

G

| | |
|------------------|----------|
| gatekeeper | 3-7, 6-3 |
|------------------|----------|

H

| | |
|-----------------------|------|
| headphones jack | 1-6 |
| host communications | |
| ethernet, wired | 2-10 |
| RS-232, wired | 2-14 |
| RS-485, wired | 2-13 |

I

| | |
|--|-------------------------|
| IAM | 4-9, 6-8, B-11 |
| IBM 4690 | 7-3 |
| applications | 7-1 |
| idle mode | 4-8, B-9 |
| IE | 1-7, 6-9, 7-2, A-2, B-2 |
| IIS | B-4 |
| import registry files | 6-2 |
| Initial Program Loader. <i>see</i> IPL | |
| installation overview | 2-2 |
| installation steps | 2-2 |
| installing | |
| mounting mk1000 | 2-3 |
| RS-485 setup diagram | 2-15 |
| internet explorer. <i>see</i> IE | |
| internet information services | B-4 |
| IPL | 5-2, D-1 |
| mode menu | E-12 |

J

| | |
|---------------|-----|
| JScript | 7-2 |
|---------------|-----|

K

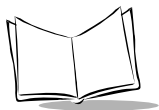
| | |
|---------------------|-----|
| keycode value | 6-5 |
| kiosk mode | 7-2 |
| kioskie.exe | 7-2 |

L

| | |
|-------------------------------|------|
| laptop demo application | B-1 |
| laser patterns | |
| omnidirectional 1D | 1-9 |
| raster | 1-9 |
| line out - speakers | 1-6 |
| load configuration | 3-15 |

M

| | |
|-------------------------------|---------------|
| media player | 1-7, 6-9, A-2 |
| memory | 1-7, A-2 |
| messaging | 4-15, B-17 |
| microphone | 1-2 |
| MK1000 | 2-13, 7-3 |
| MK2000 features | 1-7 |
| modifying button titles | B-7 |
| mounting | 1-8, 2-3 |
| pole | 2-7 |
| pole mount kit | 2-7 |
| recessed | 2-6 |
| VESA | 2-8 |
| wall mount kit | 2-4 |
| MSI Plessey | A-2 |
| MSR | 1-7 |



N

| | |
|-------------------------|-----|
| native applications | 7-2 |
| non-volatile settings | |
| | 6-1 |
| backlight | 6-1 |
| button definitions | 6-1 |
| inactivity manager | 6-1 |
| internet settings | 6-1 |
| password | 6-1 |
| scan wedge | 6-1 |
| touchscreen calibration | 6-1 |
| volume | 6-1 |
| NTP. see SNTP | |

O

| | |
|----------------------------|------|
| object store file system | 3-4 |
| ODBC | B-2 |
| omnidirectional 1D pattern | 1-9 |
| open configuration | 3-15 |

P

| | |
|----------------------------|----------------------------|
| parameter persistence | 6-2 |
| partitions | 3-4, 5-1, 5-2, 5-3, E-1 |
| parts | 1-2 |
| password prompt | 3-7, 4-4-4-6, 6-2, B-5-B-6 |
| PC card | 3-4, E-2 |
| PCK | 7-3 |
| 9100 | A-2 |
| 9100, 9140 | 2-13 |
| emulation | 7-1, A-2 |
| PCMCIA | 1-7 |
| access cover | 1-4 |
| PDF-417 | 1-11, A-2 |
| tall symbol | 1-12 |
| persistence, registry | 6-2 |
| pin-outs | |
| cable | 2-19 |
| power-over-ethernet 10-pin | 2-20 |
| RS-232 10-pin | 2-21 |
| RS-485 10-pin | 2-21 |
| POE | 1-5, 1-6, 2-9 |

ports

| | |
|------------------------------|--------------------------------------|
| ethernet | 2-10 |
| ethernet/bias | 1-6 |
| Ethernet/Bias-T | 1-5, 2-20 |
| external speakers | 1-5 |
| headphones | 1-5, 1-6 |
| power | 1-5, 1-6 |
| powered RS-232 | 1-5 |
| RS-232 | 2-14, 2-19, 2-21 |
| RS-232 ext. | 1-6, 2-19, 2-21 |
| RS-485 | 1-5, 1-6, 2-13, 2-19, 2-21 |
| power | 1-6 |
| AC power supply | 1-5, 2-9 |
| POE | 2-9, 2-11, 2-20 |
| power options | 1-8, 2-9 |
| power supply | 1-6, 2-9 |
| power-over-ethernet. see POE | |
| price verification | 4-10, B-11 |
| price verification menu bar | 4-12 |
| processor | A-2 |
| programmable buttons | 1-2, 4-7, B-2, B-8 |
| programming bar codes | 3-1, 5-1, 6-1, 7-1 |
| protected mode | |
| | 3-7, 4-4-4-6, 6-2, B-5-B-6, F-2, F-4 |

Q

| | |
|---------------|-----|
| quick startup | 1-2 |
|---------------|-----|

R

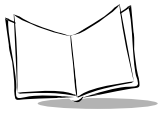
| | |
|---|---|
| raster pattern | 1-9, 1-11 |
| slab | 1-11 |
| RDP | 7-1, 7-2 |
| re-boot | 3-7, 4-4, 4-5, 4-6, 6-2, 6-4, B-5, B-6, F-2 |
| registry persistence | 6-2 |
| regmerge | 3-5, 6-2 |
| remapping buttons | 6-4 |
| remote desktop protocol | 7-2 |
| removing toolbars | 7-2 |
| Resident | 4-1 |
| resident demo application. see demo application | |
| resident demo app. see demo app | |
| restore defaults | 3-14 |

RF setup 3-15
 RFC 959 5-4
 RS-232
 pin-outs 2-21
 port 1-6, 2-21
 RS-485
 connection setup diagram 2-15
 port 1-6
 setup 2-13, 2-14
 wired 2-13, 2-14
 RSS A-2

S

safe mode 3-7, 4-4, 4-5, 4-6, 6-2, B-5, B-6
 save configuration 3-9, 3-14, 6-2
 scan beam 1-12
 scan mode 1-9
 scan wedge 6-1
 scanner 1-7
 scanning
 bar code scanning 1-9
 scanning modes
 commonly used scan patterns 1-9
 omnidirectional 1D pattern 1-9
 raster pattern 1-9
 smart raster 1-11
 screen calibration 3-8
 screen saver 6-8, B-10, B-11
 scripts
 building D-8
 checking D-7
 creating D-5
 demo, samples D-1
 opening in TCM D-5
 saving D-6
 standard D-1
 SDK 1-1, 1-8, 3-5, 7-1

setup
 wired ethernet 2-10
 wired ethernet AC outlet 2-10
 wired ethernet, power-over 2-11
 wired RS-232 2-14
 wired RS-485 2-13
 signage 1-8
 mounting kit 2-16
 Simple Network Time Protocol. *see* SNTP
 slab raster 1-11
 slide show 6-8, B-10
 smart raster 1-11
 SNTP 6-6
 software 1-7
 development 3-6, 7-1
 development kit 1-1
 SDK 1-8
 software development 7-1
 Software Development Kit. *see* SDK
 source code B-2
 speakers 1-2, 1-6
 external 1-6
 internal 1-6
 specifications A-1
 specular reflection 1-14
 splash screen D-9
 creating D-9
 startup
 quick startup 1-2
 unpacking 2-1
 startup options 4-6
 status bar 7-2
 store operations 4-14, B-16
 StoreWave 7-1
 stylus 3-8
 system configuration 1-7
 system menu 6-5



T

| | |
|---|---------------|
| TCM | D-1 |
| building hex image | D-1, D-7, D-8 |
| components | D-3 |
| creating script | D-5 |
| defining properties | D-4 |
| error messages | D-9 |
| file browser window | D-3 |
| hex image download | D-8 |
| saving script | D-6 |
| script window | D-3 |
| starting | D-2 |
| tool bar | D-3 |
| technical specifications | A-1 |
| Terminal Configuration Manager. see TCM | |
| terminal server client | 7-2 |
| thin client | 7-2 |
| time | 6-6 |
| toolbars | 7-2 |
| removing | 7-2 |
| touch screen | 1-7 |
| troubleshooting | F-2 |

U

| | |
|---------------------------|----------|
| unmanaged applications | 7-2 |
| unpacking | 2-1 |
| update partitions | 5-2 |
| update time | 6-6 |
| updating data | 5-1 |
| flash screen | 5-2 |
| monitor | 5-2 |
| OS partition | 5-2 |
| partition table | 5-2 |
| platform partition | 5-2 |
| upgrade | E-4 |
| monitor | E-2 |
| operating system | E-2 |
| partitions | E-2 |
| resident demo application | E-2 |
| upgrade partition table | E-12 |
| user applications | 3-5, 7-1 |

V

| | |
|---------------------------|----------|
| VBScript | 7-2 |
| versions | |
| upgrade | E-4 |
| VESA mounting | 2-8 |
| virtual keycode | 6-4 |
| VT 220 Terminal Emulation | iii-xi |
| VT220 emulation | 7-1, A-2 |
| VT220 terminal emulation | 7-3 |

W

| | |
|--|-----------------------------------|
| wall mount kit | 2-4 |
| web browser | 7-2 |
| website | |
| 1-1, 1-8, 3-10, 4-1, 4-3, 4-4, 7-2, 7-3, B-1 | |
| win CE desktop | 3-7, 4-4, 4-5, 4-6, 6-2, B-5, B-6 |
| winCE.NET | 7-1 |

Tell Us What You Think...

We'd like to know what you think about this Manual. Please take a moment to fill out this questionnaire and fax this form to: (631) 738-3318, or mail to:

Symbol Technologies, Inc.
One Symbol Plaza M/S B-4
Holtsville, NY 11742-1300
Attention: Technical Publications Manager

IMPORTANT: If you need product support, please call the appropriate customer support number provided. Unfortunately, we cannot provide customer support at the fax number above.

User's Manual Title: _____
(please include revision level)

How familiar were you with this product before using this manual?

☐ Very familiar ☐ Slightly familiar ☐ Not at all familiar

Did this manual meet your needs? If not, please explain.

What topics need to be added to the index, if applicable?

What topics do you feel need to be better discussed? Please be specific.

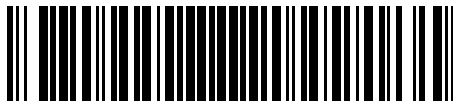
What can we do to further improve our manuals?

Thank you for your input—We value your comments.

Quick Startup Instructions

| | |
|--|----------------------------|
| Product Features | 1-7 to 1-9 |
| - Parts and Feature Diagrams | 1-3 to 1-5 |
| Installation Overview | 2-2 |
| - Mounting | 2-3 to 2-8 |
| - Cable Pin-outs | 2-19 , 2-20, 2-21 |
| - Power and Communication Interfaces | 2-9, 2-10, 2-19 |
| Setup and Configuration | |
| - Control Panel Settings | 3-7 , 3-8, 6-1, 6-2 |
| - Configuration Utility | 3-9 |
| - Software Development Environments | 3-5, 6-6, 7-1 |
| - ESSID Setup (RF units) | 3-8, 3-15 |
| - Touch Screen Calibration | 3-8 |
| - Internet Settings | 6-1 |
| - Loading Files | 3-9, 3-14, 5-2 |
| - Time/Date | 3-7 , 6-6 |
| Demo Application | 4-1 , 4-7, B-1 |
| - Installing the Demo Application | 4-4 |
| - Bar Codes | C-1 |
| - Exiting The Demo Application | 4-8 , B-6 |
| Troubleshooting | F-1 |
| - How to Reboot the MK2000 | 3-7 |
| - Accessing Windows® CE Desktop (Protected Mode) | 4-5, 6-4 , E-4, F-2 |
| - Up-Grading the Demo Application | 4-4 |
| - How do I configure the MK2000 | 3-9 |

MK2000 MicroKiosk Product Reference Guide



72-57772-01
Revision A - June 2003